AIP

AERONAUTICAL INFORMATION PUBLICATION

UNITED STATES OF AMERICA

TWENTY−FIFTH EDITION DATED 13 SEPTEMBER 2018

AMENDMENT 3

30 JAN 2020

CONSULT NOTAM FOR LATEST INFORMATION

DEPARTMENT OF TRANSPORTATION

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AIP Amendment 3

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GEN 0.5 List of Hand Amendments to the AIP − Not applicable

INTST	intensity
IRU	Inertial Reference Unit
J	
J−bar	jet runway barrier
K	
KHZ	kilohertz
L	
L	left (used only to designate rwys; e.g., rwy 12L)
ICAO:	L − left/runway identification/locator
LAT	latitude
LB	pounds (weight)
LCTD	located
LDA	localizer type directional aid
ICAO:	LDA − landing distance available LLZ − localizer
LGTD	lighted
LMM	compass locator at ILS middle marker
LNDG	landing
ICAO:	LDG − landing
LOC	localizer
ICAO:	LOC−localizer or locally or location or located
LOM	compass locator at ILS outer marker
LONG	longitude
LRCO	limited remote communications outlet
M	
MAA	maximum authorized altitude
MAG	magnetic
MAINT	maintain, maintenance
ICAO:	MNTN − maintain; MAINT − maintenance
MALS	medium intensity approach light system
MALSR	medium intensity approach light system with runway alignment indicator lights
MAP	missed approach point
ICAO:	MAP − aeronautical maps and charts
MAX	maximum
MCA	minimum crossing altitude
MDA	minimum descent altitude
MEA	minimum en route IFR altitude
MHZ	megahertz
MIN	minimum or minute
MIRL	medium intensity runway edge lights
MM	middle marker ILS
MOCA	minimum obstruction clearance altitude
MRA	minimum reception altitude
MSA	minimum safe altitude
MSL	mean sea level
MUNI	municipal
N	
N	north
NA	not authorized
NATL	national
NAVAID	navigational aid
NDB	nondirectional radio beacon
NM	nautical mile(s)
NOPT	no procedure turn required
NR	number
O	
OBSTN	obstruction
OCA	Oceanic Control Area
ODALS	omnidirectional approach lighting system
OM	outer marker ILS
OPER	operate
OPN	operation
ICAO:	OPR − operator/operate/operative/ operating/operational
ORIG	original
OTS	out of service
OVRN	overrun
P	
PAR	precision approach radar
PAT	pattern
PBCS	Performance−Based Communication and Surveillance
PCN	pavement classification number
PERMLY	permanently
POB	persons on board
PPR	prior permission required
PROC	procedure
Q	
QUAD	quadrant

R	
R	right (used only to designate rwys; e.g., rwy 19R)
ICAO:	R − received (acknowledgement of receipt)/red/restricted area (followed by identification)/right (runway identification)
RADAR	radio detection and ranging
RAPCON	Radar Approach Control facility (USAF, USN and USMC)
RATCF	Radar Air Traffic Control Facility (USN and USMC)
RCAG	remote communications air/ground
RCLS	runway centerline lights system
ICAO:	RCL − runway centerline
RCO	remote communications outlet
RCV	receive
RCVG	receiving
REIL	runway end identifier lights
REQ	request
RNAV	area navigation
RRP	runway reference point
REL	runway entrance lights
RLLS	Runway Lead−in Light System
RSTRD	restricted
RTS	returned to service
RVR	runway visual range
RVRM	runway visual range midpoint
RVRR	runway visual range rollout
RVRT	runway visual range touchdown
RWSL	runway status light
RWY	runway
ICAO:	RWY−runway
S	
S	runway weight bearing capacity for aircraft with single−wheel type landing gear
S	south
ICAO:	S − south/south latitude
SDF	simplified directional facility
SEC	second
SFC	surface
SFL	sequenced flashing lights
SI	straight−in approach
ICAO:	STA − straight−in approach
SM	statute mile(s)
SR	sunrise
SS	sunset
ICAO:	SS − sandstorm
SSALF	simplified short approach lighting system with sequenced flashers
SSALR	simplified short approach lighting system with runway alignment indicator lights
SSALS	simplified short approach lighting system
STOL	short take−off and landing runway
ICAO:	STOL − short takeoff and landing
SVC	service
ICAO:	SVC − service message
T	
T	true (after a bearing)
ICAO:	T − temperature
TAC	terminal area chart
TACAN	UHF navigational facility − omnidirectioal course and distance information
ICAO:	TACAN − VHF tactical navigational aid
TAS	true air speed
ICAO:	TMA − TERMINAL CONTROL AREA
TCH	threshold crossing height
TFC	traffic
THL	takeoff hold lights
THR	threshold
THRU	through
ICAO:	THRU − through/I am connecting you to another switchboard
TKOF	take−off
TEMPRLY	temporarily
TMPRY	temporary/temporarily
ICAO:	TEMPO − Temporary/temporarily
TPA	traffic pattern altitude
TRACON	terminal radar approach control
TRML	terminal
TRSA	terminal radar service area
TSNT	transient
TWEB	transcribed weather broadcast
TWR	tower
TWY	taxiway

GEN 3. SERVICES

GEN 3.1 Aeronautical Information Services

1. Aeronautical Information Service

1.1 The U.S. Aeronautical Information Service is the National Flight Data Center, which forms a part of the Air Traffic Organization of the Federal Aviation Administration.

Postal Address:
Federal Aviation Administration
National Flight Data Center
1305 East−West Highway
Silver Spring, MD 20910
Telephone: 301−427−5000
Telex: 892−562
Commercial Telegraphic Address: FAA WASH
AFTN Address: KRWAYAYX

1.2 The U.S. NOTAM office is located at the following address:

Postal Address:
Federal Aviation Administration
U.S. NOTAM Office
Air Traffic Control System Command Center
3701 Macintosh Drive
Warrenton, VA 20187
Telephone: 540−422−4260
Toll Free: 1−888−876−6826
Facsimile: 540−422−4298
Telex: None
AFTN Address (Administrative)*:*
KDCAYNYX
AFTN (NOTAM): KDZZNAXX

2. Area of Responsibility of AIS

2.1 The National Flight Data Center is responsible for the collection, validation, and dissemination of aeronautical information for the U.S. and areas under its jurisdiction for air traffic control purposes.

3. Aeronautical Publications

3.1 United States AIP

3.1.1 The AIP, issued in one volume, is the basic aeronautical information document published for international use. It contains information of a lasting character, with interim updates published in various other publications. The AIP is available in English only and is maintained on a current basis by a 6−month amendment service.

3.2 NOTAM Publication

3.2.1 NOTAM information is published every 28 days in the Notices to Airmen Publication (NTAP). This book contains airspace, facility, service, and procedural information pertinent to international and domestic civil aviation users. The information will eventually be published in either the U.S. AIP or in other publications for domestic use, as applicable. The NTAP will also contain information regarding temporary changes or unscheduled interruptions to flight procedures and navigational aids or airport services, the duration of which is expected to last seven or more days.

3.3 Aeronautical Information Circulars

3.3.1 These circulars, called Advisory Circulars, contain information of general or technical interest relating to administrative or aviation matters which are inappropriate to either the AIP or the NOTAM. Advisory Circulars are available in English only. A checklist of outstanding circulars is issued annually.

3.4 En Route Aeronautical Charts, En Route Supplements, Approach Procedure Charts, Chart Supplements

3.4.1 These publications, available in English only, contain specific information on airspace, airports, navigational aids, and flight procedures applicable to the regional areas of the U.S. and the territories and airspace under its jurisdiction. These publications are available on the AIS website at:
http://www.faa.gov/air_traffic/flight_info/aeronav.

4. Distribution of Publications

4.1 This publication is available on the FAA website. All foreign aeronautical authorities are responsible for viewing, downloading, and subscribing to receive electronic mail notifications when changes occur to this publication. Electronic subscription information can be obtained by visiting www.faa.gov/air_traffic/publications or by contacting the Federal Aviation Administration, Mission Support Services, Policy Directorate (AJV−P), 600 Independence Avenue, SW Washington, DC 20597. See information in paragraph 1.2 for published NOTAMs.

4.2 Private paying subscriptions must be obtained for each AIP document from the:

Superintendent of Documents
U.S. Government Publishing Office
P. O. Box 979050
St. Louis, MO 63197−9000
Telephone: 202−512−1800
Internet: https://bookstore.gpo.gov

4.3 Advisory Circulars are available, upon request, from the:

U.S. Department of Transportation
Subsequent Distribution Office
Ardmore East Business Center
3341 Q 75th Avenue
Landover, MD 20785

4.4 Public sales of charts and publications are available through FAA approved print providers. A listing of products, dates of latest editions, and print providers is available on the AIS website at: http://www.faa.gov/air_traffic/flight_info/aeronav.

4.5 For the latest information regarding publication availability of world−wide products see the National Geospatial−Intelligence Agency (NGA) website: **https://www.nga.mil/ProductsServices/Pages/PublicProducts.aspx**

5. NOTAM Service

5.1 NOTAM Class I (Telecommunication Distribution)

5.1.1 NOTAM Class I distribution is used mainly for the notification of temporary information of timely significance such as unforeseen changes in services, facilities, airspace utilization, or any other emergency. Distribution is via telecommunications through the International NOTAM Office of the National Flight Data Center, in accordance with the following classifications:

5.1.1.1 International NOTAM. NOTAM containing full information on all airports, facilities and flight procedures available for use by international civil aviation. NOTAMs are given selected distribution to adjacent or appropriate International NOTAM Offices which require their exchange.

5.1.1.2 International Airspace NOTAM. NOTAM containing short term information pertaining to potentially hazardous international and domestic airspace utilization which is of concern to international flights. NOTAMs are given selected distribution to adjacent or appropriate International NOTAM Offices which require their exchange.

5.1.1.3 International Airspace NOTAM. NOTAM containing permanent changes−en route airway structure/aeronautical service and information of a general nature. NOTAMs are given selected distribution to adjacent or appropriate International NOTAM Offices which require their exchange.

5.1.1.4 Domestic NOTAM. NOTAM containing information of concern to aircraft other than those engaged in international civil aviation. Distribution is to local or national users only. (See ENR 1.10.)

5.1.2 Each NOTAM is assigned a four digit serial number which is followed by the location indicator for which the series is applicable. The serial numbers start with number 0001 at 0000 UTC on 1 July of each year. Each serial number is preceded by a letter:

5.1.2.1 "**A**" for NOTAM classification "1."

NOTE−
NOTAM number one for the year 1984 for the New York, John F. Kennedy International Airport would read A0001/84 KJFK. All NOTAMs issued will be preceded by an "A."

5.1.2.2 "**B**" for NOTAM classification "2." (Airspace): the identifier of the affected air traffic control center/FIR will be used.

NOTE−
NOTAM number one for the year 1984 for the Oakland ARTCC/FIR (Pacific Ocean Area) would read A0001/84 KZOA.

5.1.2.3 "**C**" for NOTAM classification "3" (Permanent Airspace): The KFDC identifier will be used for data of permanent airway/aeronautical services and of a general nature that are transmitted as NOTAMs and are given selected distribution to adjacent or appropriate International NOTAM Offices which require their exchange.

NOTE−
NOTAM number one for the year 1984 for KFDC is A0001/84 KFDC.

GEN 3.2 Aeronautical Charts

1. General

1.1 Civil aeronautical charts for the U.S. and its territories, and possessions are produced by Aeronautical Information Services (AIS), http://www.faa.gov/air_traffic/flight_info/aeronav, which is part of FAA's Air Traffic Organization, Mission Support Services.

2. Obtaining Aeronautical Charts

2.1 Public sales of charts and publications are available through a network of FAA approved print providers. A listing of products, dates of latest editions, and print providers is available on the AIS website at:
http://www.faa.gov/air_traffic/flight_info/aeronav.

3. Selected Charts and Products Available

VFR Navigation Charts
IFR Navigation Charts
Planning Charts
Supplementary Charts and Publications
Digital Products

4. General Description of Each Chart Series

4.1 VFR Navigation Charts

4.1.1 Sectional Aeronautical Charts. Sectional Charts are designed for visual navigation of slow to medium speed aircraft. The topographic information consists of contour lines, shaded relief, drainage patterns, and an extensive selection of visual checkpoints and landmarks used for flight under VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special−use airspace, obstructions, and related data. Scale 1 inch = 6.86nm/1:500,000. 60 x 20 inches folded to 5 x 10 inches. Revised biannually, except most Alaskan charts are revised annually.
(See FIG GEN 3.2−1 and FIG GEN 3.2−2.)

4.1.2 VFR Terminal Area Charts (TAC). TACs depict the airspace designated as Class B airspace. While similar to sectional charts, TACs have more detail because the scale is larger. The TAC should be used by pilots intending to operate to or from airfields within or near Class B or Class C airspace. Areas with TAC coverage are indicated by a • on the Sectional Chart indexes. Scale 1 inch = 3.43nm/1:250,000. Charts are revised biannually, except Puerto Rico−Virgin Islands which is revised annually.
(See FIG GEN 3.2−1 and FIG GEN 3.2−2.)

4.1.3 U.S. Gulf Coast VFR Aeronautical Chart. The Gulf Coast Chart is designed primarily for helicopter operation in the Gulf of Mexico area. Information depicted includes offshore mineral leasing areas and blocks, oil drilling platforms, and high density helicopter activity areas. Scale 1 inch = 13.7nm/1:1,000,000. 55 x 27 inches folded to 5 x 10 inches. Revised annually.

4.1.4 Grand Canyon VFR Aeronautical Chart. Covers the Grand Canyon National Park area and is designed to promote aviation safety, flight free zones, and facilitate VFR navigation in this popular area. The chart contains aeronautical information for general aviation VFR pilots on one side and commercial VFR air tour operators on the other side. Revised biannually.

FIG GEN 3.2−1

Sectional and VFR Terminal Area Charts for the Conterminous U.S., Hawaii, Puerto Rico, and Virgin Islands

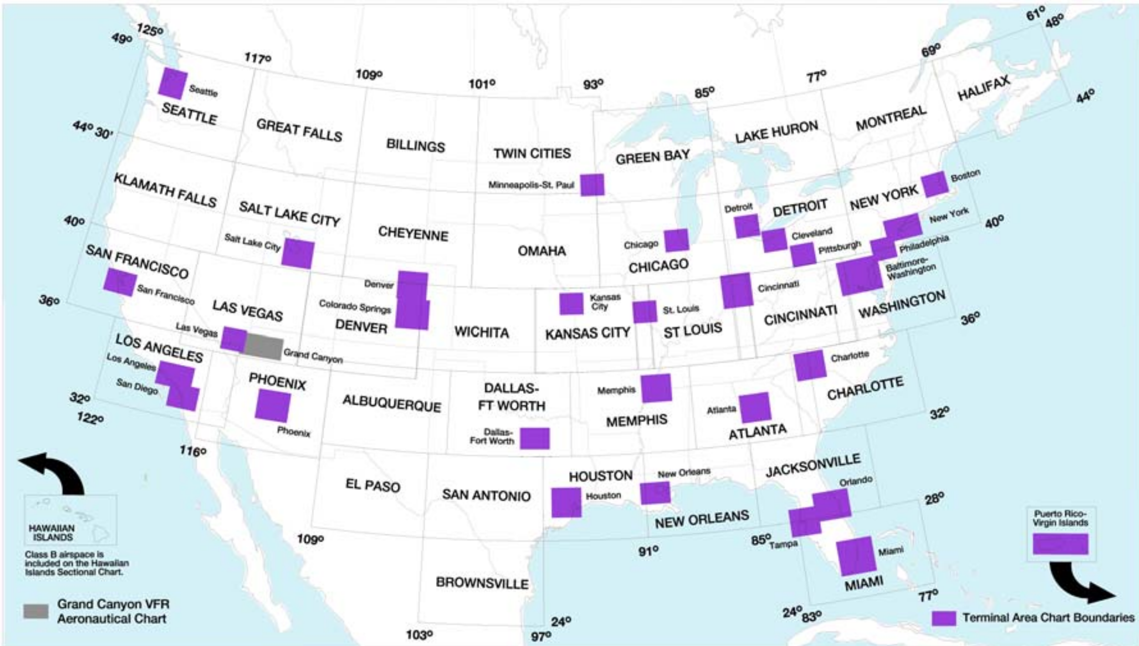
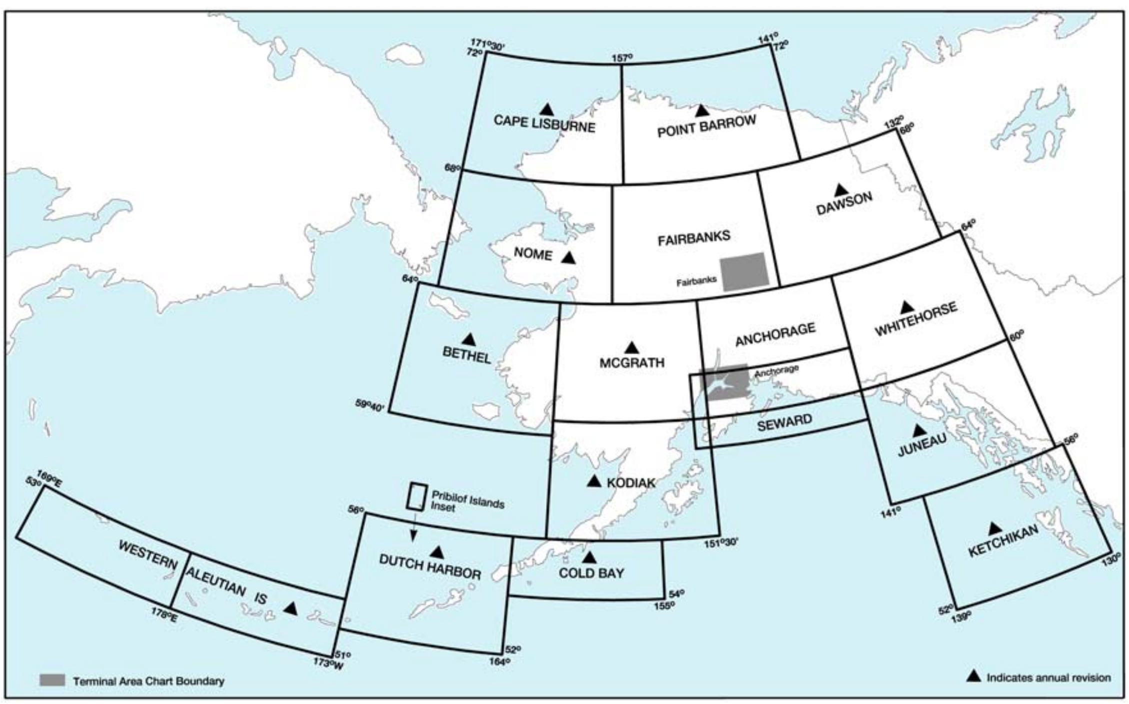


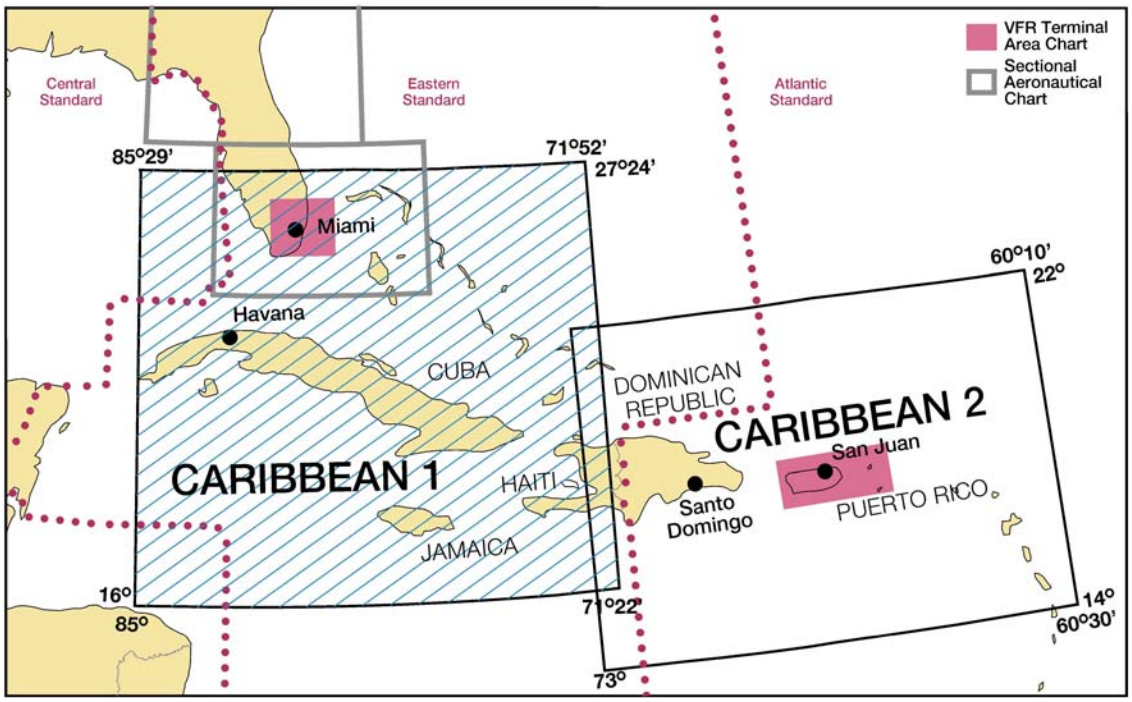
FIG GEN 3.2−2

Sectional and VFR Terminal Area Charts for Alaska



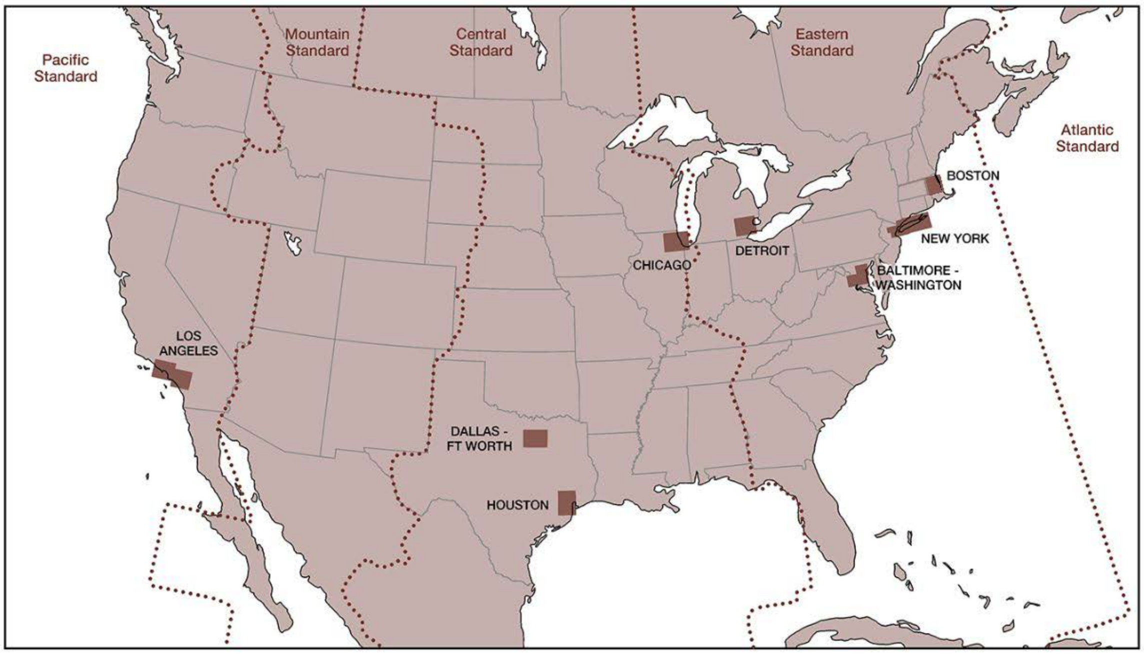
4.1.5 Caribbean VFR Aeronautical Charts. Caribbean 1 and 2 (CAC−1 and CAC−2) are designed for visual navigation to assist familiarization of foreign aeronautical and topographic information. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special−use airspace, obstructions, and related data. The topographic information consists of contour lines, shaded relief, drainage patterns, and a selection of landmarks used for flight under VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. Scale 1 inch = 13.7nm/1:1,000,000. CAC−1, revised annually, consists of two sides measuring 30" x 60" each. CAC−2, revised biennially, consists of two sides measuring 20" x 60" each. (See FIG GEN 3.2−3.)

FIG GEN 3.2−3
Caribbean VFR Aeronautical Charts



4.1.6 Helicopter Route Charts. A three−color chart series which shows current aeronautical information useful to helicopter pilots navigating in areas with high concentrations of helicopter activity. Information depicted includes helicopter routes, four classes of heliports with associated frequency and lighting capabilities, NAVAIDs, and obstructions. In addition, pictorial symbols, roads, and easily identified geographical features are portrayed. Helicopter charts have a longer life span than other chart products and may be current for several years. Helicopter Route Charts are updated as requested by the FAA. Scale 1 inch = 1.71nm/1:125,000. 34 x 30 inches folded to 5 x 10 inches. Revised biannually. (See FIG GEN 3.2−4)

FIG GEN 3.2−4
Helicopter Route Charts



4.2 IFR Navigation Charts

4.2.1 IFR En Route Low Altitude Charts (Conterminous U.S. and Alaska). En route low altitude charts provide aeronautical information for navigation under IFR conditions below 18,000 feet MSL. This four−color chart series includes airways; limits of controlled airspace; VHF NAVAIDs with frequency, identification, channel, geographic coordinates; airports with terminal air/ground communications; minimum en route and obstruction clearance altitudes; airway distances; reporting points; special use airspace; and military training routes. Scales vary from 1 inch = 5nm to 1 inch = 20nm. 50 x 20 inches folded to 5 x 10 inches. Charts revised every 56 days. *Area charts* show congested terminal areas at a large scale. They are included with subscriptions to any conterminous U.S. Set Low (Full set, East or West sets).
(See FIG GEN 3.2−5 and FIG GEN 3.2−6.)

TBL GEN 3.3−6

Crossing Constraint Message Elements (CSTU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM49 CROSS (*position*) AT AND MAINTAIN (*altitude*) *Note 1. − A vertical range cannot be provided.* *Note 2. − This message element is equivalent to CSTU−1 plus LVLU−5 in Doc 4444.*	N/A	W/U	CSTU−1	Instruction that the specified position is to be crossed at the specified level or within the specified vertical range.	CROSS *(position)* AT *(level)*
UM61 CROSS *(position)* AT AND MAINTAIN *(altitude)* AT *(speed)* *Note 1. − A vertical range cannot be provided.* *Note 2. − This message element is equivalent to CSTU−14 plus LVLU−5 in Doc 4444.*	UM61 CROSS *(position)* AT AND MAINTAIN *(level)* AT *(speed)*	W/U	CSTU−14	Instruction that the specified position is to be crossed at the level or within the vertical range, as specified, and at the specified speed.	CROSS *(position)* AT *(level)* AT *(speed)*

TBL GEN 3.3−7

Air Traffic Advisory Uplink Message Elements (ADVU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM154 RADAR SERVICES TERMINATED	N/A	R	ADVU−2	*Advisory that the ATS surveillance service is terminated.*	SURVEILLANCE SERVICE TERMINATED

TBL GEN 3.3−8
Voice Communications Uplink Message Elements (COMU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM117 CONTACT *(ICAO unit name) (frequency)*	UM117 CONTACT *(unit name) (frequency)*	W/U	COMU−1	Instruction to establish voice contact with the specified ATS unit on the specified frequency.	CONTACT *(unit name) (frequency)*
UM120 MONITOR *(ICAO unit name) (frequency)*	UM120 MONITOR (*unit name) (frequency)*	W/U	COMU−5	Instruction to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.	MONITOR *(unit name) (frequency)*

TBL GEN 3.3−9
Voice Communications Downlink Message Elements (COMD)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM20 REQUEST VOICE CONTACT *Note − Used when a frequency is not required.*	N/A	Y	COMD−1	Request for voice contact on the specified frequency.	REQUEST VOICE CONTACT *(frequency)*

TBL GEN 3.3−10
Emergency/Urgency Uplink Message Elements (EMGU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
Used in combination with LVLU−6 and LVLU−9, which is implemented in FANS 1/A as: UM38 IMMEDIATELY CLIMB TO (*altitude*) UM39 IMMEDIATELY DESCEND TO (*altitude*)	N/A	N	EMGU−2	Instruction to immediately comply with the associated instruction to avoid imminent situation.	Immediately

TBL GEN 3.3−16

Free Text Uplink Message Elements (TXTU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM169 (*free text*)	UM203 (*free text*)	R	TXTU−1		(*free text*) *Note − M alert attribute.*
UM169 (*free text*) CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION	N/A	R	See Note		(*free text*)
UM169 (*free text*) “[facility designation]” LOCAL ALTIMETER (for Altimeter Reporting Station)	N/A	R	See Note		(*free text*)
UM169 (*free text*) “[facility designation] LOCAL ALTIMETER MORE THAN ONE HOUR” OLD	N/A	R	See Note		(*free text*)
UM169 (*free text*) DUE TO WEATHER	N/A	R	See Note		(*free text*)
UM169 (*free text*) REST OF ROUTE UNCHANGED	N/A	R	See Note		(*free text*)
UM169 (*free text*) TRAFFIC FLOW MANAGEMENT REROUTE	N/A	R	See Note		(*free text*)

NOTE−
These are FAA scripted free text messages with no GOLD equivalent.

TBL GEN 3.3−17

Free Text Downlink Message Elements (TXTD)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM68 (*free text*) *Note 1. − Urgency or Distress Alr (M)* *Note 2. − Selecting any of the emergency message elements will result in this message element being enabled for the flight crew to include in the emergency message at their discretion.*	N/A	Y	TXTD−1		(*free text*) *Note − M alert attribute.*

TBL GEN 3.3−18

System Management Uplink Message Elements (SYSU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM159 ERROR *(error information)*	UM159 ERROR *(error information)*	N	SYSU−1	System−generated notification of an error.	ERROR *(error information)*
UM160 NEXT DATA AUTHORITY *(ICAO facility designation)* *Note − The facility designation is required.*	UM160 NEXT DATA AUTHORITY *(facility)* *Note − Facility parameter can specify a facility designation or no facility.*	N	SYSU−2	System−generated notification of the next data authority or the cancellation thereof.	NEXT DATA AUTHORITY *(facility designation [O])*

TBL GEN 3.3−19

System Management Downlink Message Elements (SYSD)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM62 ERROR *(error information)*	DM62 ERROR *(error information)*	N	SYSD−1	System−generated notification of an error.	SYSD−1
DM63 NOT CURRENT DATA AUTHORITY	DM63 NOT CURRENT DATA AUTHORITY	N	SYSD−3	System−generated rejection of any CPDLC message sent from a ground facility that is not the current data authority.	SYSD−3
DM64 *(ICAO facility designation)* *Note − Use by FANS 1/A aircraft in B1 environments.*	DM107 NOT AUTHORIZED NEXT DATA AUTHORITY *Note − CDA and NDA cannot be provided.*	N	SYSD−5	System−generated notification that the ground system is not designated as the next data authority (NDA), indicating the identity of the current data authority (CDA). Identity of the NDA, if any, is also reported.	SYSD−5

3.1.4.5 Nondirectional Radio Beacon (NDB)

a) NDBs are classified according to their intended use.

b) The ranges of NDB service volumes are shown in TBL GEN 3.4−2. The distances (radius) are the same at all altitudes.

TBL GEN 3.4−1

VOR/DME/TACAN Standard Service Volumes

SSV Class Designator	Altitude and Range Boundaries
T (Terminal)	From 1,000 feet above ground level (AGL) up to and including 12,000 feet AGL at radial distances out to 25 NM.
L (Low Altitude)	From 1,000 feet AGL up to and including 18,000 feet AGL at radial distances out to 40 NM.
H (High Altitude)	From 1,000 feet AGL up to and including 14,500 feet AGL at radial distances out to 40 NM. From 14,500 AGL up to and including 60,000 feet at radial distances out to 100 NM. From 18,000 feet AGL up to and including 45,000 feet AGL at radial distances out to 130 NM.

TBL GEN 3.4−2

NDB Service Volumes

Class	Distance (Radius)
Compass Locator	15 NM
MH	25 NM
H	50 NM*
HH	75 NM
** Service ranges of individual facilities may be less than 50 nautical miles (NM). Restrictions to service volumes are first published as a Notice to Airmen and then with the alphabetical listing of the NAVAID in the Chart Supplement U.S.*	

FIG GEN 3.4−4

Service Volume Lower Edge Terminal

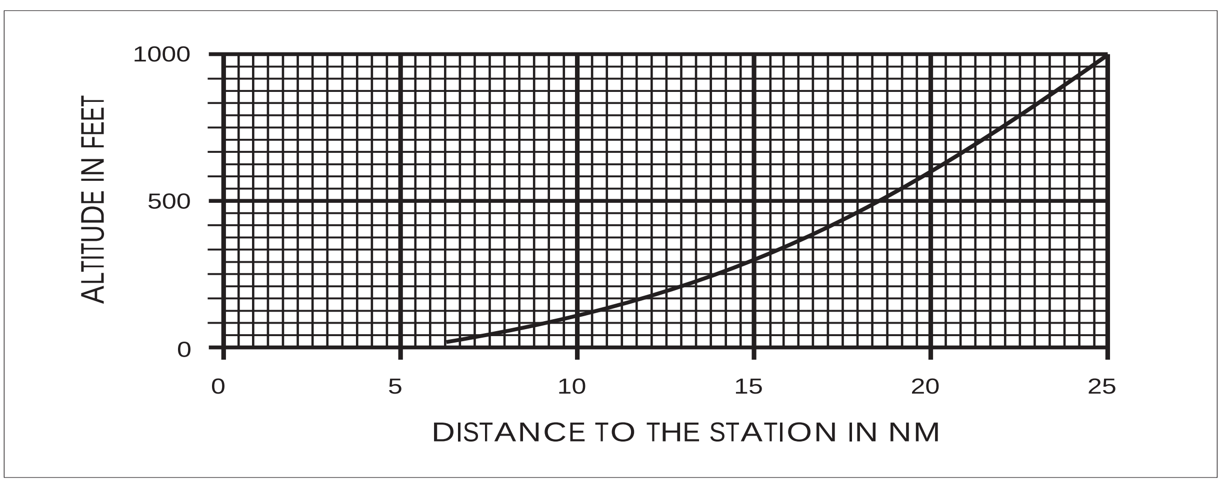
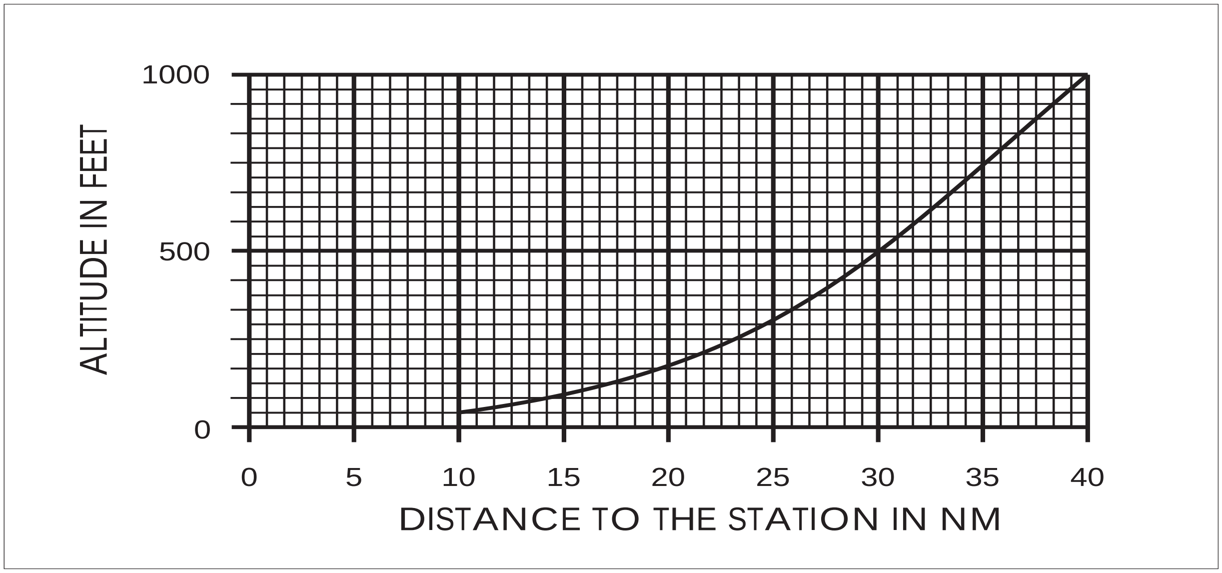


FIG GEN 3.4−5
Service Volume Lower Edge
Standard High and Low



3.1.5 NAVAIDs with Voice

3.1.5.1 Voice equipped en route radio navigational aids are under the operational control of either a Flight Service Station (FSS) or an approach control facility. Facilities with two−way voice communication available are indicated in the Chart Supplement U.S. and aeronautical charts.

3.1.5.2 Unless otherwise noted on the chart, all radio navigation aids operate continuously except during shutdowns for maintenance. Hours of operation of facilities not operating continuously are annotated on charts and in the Chart Supplement U.S.

3.2 Mobile Service

3.2.1 The aeronautical stations (Airport Traffic Control Towers, Air Route Traffic Control Centers, and Flight Service Stations) maintain a continuous watch on their assigned frequencies during the published hours of service unless otherwise notified. An aircraft should normally communicate with the air−ground control radio station which exercises control in the area in which it is flying. Aircraft should maintain continuous watch on the appropriate frequency of the control station and should not abandon watch, except in an emergency, without informing the control radio station.

3.2.2 Flight Service Stations (FSSs) are allocated frequencies for different functions. For Airport Advisory Service, the pilot should contact the FSS on 123.6 MHz. Individually assigned FSS frequencies are listed in the Chart Supplement U.S. under the FSS entry. If you are in doubt as to what frequency to use to contact an FSS, transmit on 122.1 MHz and advise the FSS of the frequency on which you are receiving.

3.3 Fixed Service

3.3.1 Messages to be transmitted over the Aeronautical Fixed Service are accepted only if they satisfy the requirements of:

3.3.1.1 ICAO Annex 10, Vol. II, Chapter 3, paragraph 3.3.

3.3.1.2 Are prepared in the form specified in Annex 10.

3.3.1.3 The text of an individual message does not exceed 200 groups.

b) Transmitter Inoperative. Remain outside or above Class D airspace until the direction and flow of traffic has been determined, then join the airport traffic pattern. Monitor the primary local control frequency as depicted on sectional charts for landing or traffic information, and look for a light signal which may be addressed to your aircraft. During hours of daylight, acknowledge tower transmissions or light signals by rocking your wings. At night, acknowledge by blinking the landing or navigational lights.

NOTE−
To acknowledge tower transmissions during daylight hours, hovering helicopters will turn in the direction of the controlling facility and flash the landing light. While in flight, helicopters should show their acknowledgment of receiving a transmission by making shallow banks in opposite directions. At night, helicopters will acknowledge receipt of transmissions by flashing either the landing or the search light.

c) Transmitter and Receiver Inoperative. Remain outside or above Class D airspace until the direction and flow of traffic has been determined, then join the airport traffic pattern and maintain visual contact with tower to receive light signals.

4.5.7.2 Departing Aircraft. If you experience radio failure prior to leaving the parking area, make every effort to have the equipment repaired. If you are unable to have the malfunction repaired, call the tower by telephone and request authorization to depart without two−way radio communications. If tower authorization is granted, you will be given departure information and requested to monitor the tower frequency or watch for light signals, as appropriate. During daylight hours, acknowledge tower transmissions or light signals by moving the ailerons or rudder. At night, acknowledge by blinking the landing or navigation lights. If radio malfunction occurs after departing the parking area, watch the tower for light signals or monitor tower frequency.

4.5.8 Contact Procedures

4.5.8.1 Initial Contact

a) The terms "initial contact" or "initial call up" mean the first radio call you make to a given facility, or the first call to a different controller/FSS specialist within a facility. Use the following format:

1) Name of facility being called.

2) Your full aircraft identification as filed in the flight plan or as discussed under aircraft call signs.

3) When operating on an airport surface, state your position.

4) The type of message to follow or your request if it is short; and

5) The word "Over," if required.

EXAMPLE−
1. *"New York Radio, Mooney Three One One Echo."*

2. *"Columbia Ground, Cessna Three One Six Zero Foxtrot, south ramp, I−F−R Memphis."*

3. *"Miami Center, Baron Five Six Three Hotel, request VFR traffic advisories."*

b) Many FSSs are equipped with remote communications outlets and can transmit on the same frequency at more than one location. The frequencies available at specific locations are indicated on charts above FSS communications boxes. To enable the specialist to utilize the correct transmitter, advise the location and frequency on which you expect a reply.

EXAMPLE−
St. Louis FSS can transmit on frequency 122.3 at either Farmington, MO, or Decatur, IL. If you are in the vicinity of Decatur, your callup should be "Saint Louis radio, Piper Six Niner Six Yankee, receiving Decatur One Two Two Point Three."

c) If radio reception is reasonably assured, inclusion of your request, your position or altitude, the phrase "Have numbers" or "Information Charlie received" (for ATIS) in the initial contact helps decrease radio frequency congestion. Use discretion and do not overload the controller with information he/she does not need. When you do not get a response from the ground station, recheck your radios or use another transmitter and keep the next contact short.

EXAMPLE−
"Atlanta Center, Duke Four One Romeo, request VFR traffic advisories, Twenty Northwest Rome, Seven Thousand Five Hundred, over."

4.5.9 Initial Contact when your Transmitting and Receiving Frequencies are Different

4.5.9.1 If you are attempting to establish contact with a ground station and you are receiving on a different frequency than that transmitted, indicate the VOR name or the frequency on which you expect a reply. Most FSSs and control facilities can transmit on several VOR stations in the area. Use the appropriate FSS call sign as indicated on charts.

EXAMPLE−
New York FSS transmits on the Kennedy, Deer Park and Calverton VORTACs. If you are in the Calverton area, your callup should be "New York Radio, Cessna Three One Six Zero Foxtrot, receiving Riverhead VOR, over."

4.5.9.2 If the chart indicates FSS frequencies above the VORTAC or in FSS communications boxes, transmit or receive on those frequencies nearest your location.

4.5.9.3 When unable to establish contact and you wish to call any ground station, use the phrase "any radio (tower) (station), give Cessna Three One Six Zero Foxtrot a call on (frequency) or (VOR)." If an emergency exists or you need assistance, so state.

4.5.10 Subsequent Contacts and Responses to Call Up from a Ground Facility. Use the same format as used for initial contact except you should state your message or request with the call up in one transmission. The ground station name and the word "Over" may be omitted if the message requires an obvious reply and there is no possibility for misunderstandings. You should acknowledge all callups or clearances unless the controller of FSS specialist advises otherwise. There are some occasions when the controller must issue time−critical instructions to other aircraft and he/she may be in a position to observe your response, either visually or on radar. If the situation demands your response, take appropriate action or immediately advise the facility of any problem. Acknowledge with your aircraft identification, either at the beginning or at the end of your transmission, and one of the words "Wilco, Roger, Affirmative, Negative" or other appropriate remarks; e.g., "Piper Two One Four Lima, Roger." If you have been receiving services such as VFR traffic advisories and you are leaving the area or changing frequencies, advise the ATC facility and terminate contact.

4.6 Acknowledgement of Frequency Changes

4.6.1 When advised by ATC to change frequencies, acknowledge the instruction. If you select the new frequency without an acknowledgement, the controller's workload is increased because he/she has no way of knowing whether you received the instruction or have had radio communications failure.

4.6.2 At times, a controller/specialist may be working a sector with multiple frequency assignments. In order to eliminate unnecessary verbiage and to free the controller/specialist for higher priority transmissions, the controller/specialist may request the pilot "(Identification), change to my frequency 123.4." This phrase should alert the pilot that he/she is only changing frequencies, not controller/specialist, and that initial call−up phraseology may be abbreviated.

EXAMPLE−
"United Two Twenty−two on One Two Three Point Four" or "One Two Three Point Four, United Two Twenty−two."

4.6.3 Compliance with Frequency Changes. When instructed by ATC to change frequencies, select the new frequency as soon as possible unless instructed to make the change at a specific time, fix, or altitude. A delay in making the change could result in an untimely receipt of important information. If you are instructed to make the frequency change at a specific time, fix, or altitude, monitor the frequency you are on until reaching the specified time, fix, or altitudes unless instructed otherwise by ATC.

5. Communications for VFR Flights

5.1 FSSs and Supplemental Weather Service Locations (SWSLs) are allocated frequencies for different functions; for example, in Alaska, certain FSSs provide Local Airport Advisory on 123.6 MHz or other frequencies which can be found in the Chart Supplement U.S. If you are in doubt as to what frequency to use, 122.2 MHz is assigned to the majority of FSSs as a common en route simplex frequency.

NOTE−
In order to expedite communications, state the frequency being used and the aircraft location during initial call−up.

EXAMPLE−
Dayton radio, November One Two Three Four Five on one two two point two, over Springfield V−O−R, over.

5.2 Certain VOR voice channels are being utilized for recorded broadcasts; for example, ATIS. These services and appropriate frequencies are listed in the Chart Supplement U.S. On VFR flights, pilots are urged to monitor these frequencies. When in contact with a control facility, notify the controller if you plan to leave the frequency to monitor these broadcasts.

6. Over−water Flights Radio Procedure

6.1 Pilots should remember that there is a need to continuously guard the VHF emergency frequency 121.5 MHz when on long over−water flights, except when communications on other VHF channels,

3.6.11.1 Federal Government. The FAA and NWS collect raw weather data, analyze the observations, and produce forecasts. The FAA and NWS disseminate meteorological observations, analyses, and forecasts through a variety of systems. In addition, the Federal Government is the only approval authority for sources of weather observations; for example, contract towers and airport operators may be approved by the Federal Government to provide weather observations.

3.6.11.2 Enhanced Weather Information System (EWINS). An EWINS is an FAA authorized, proprietary system for tracking, evaluating, reporting, and forecasting the presence or lack of adverse weather phenomena. The FAA authorizes a certificate holder to use an EWINS to produce flight movement forecasts, adverse weather phenomena forecasts, and other meteorological advisories. For more detailed information regarding EWINS, see the Aviation Weather Services Advisory Circular 00−45 and the Flight Standards Information Management System 8900.1.

3.6.11.3 Commercial Weather Information Providers. In general, commercial providers produce proprietary weather products based on NWS/FAA products with formatting and layout modifications but no material changes to the weather information itself. This is also referred to as "repackaging." In addition, commercial providers may produce analyses, forecasts, and other proprietary weather products that substantially alter the information contained in government−produced products. However, those proprietary weather products that substantially alter government−produced weather products or information, may only be approved for use by 14 CFR Part 121 and Part 135 certificate holders if the commercial provider is EWINS qualified.

NOTE−
Commercial weather information providers contracted by FAA to provide weather observations, analyses, and forecasts (e.g., contract towers) are included in the Federal Government category of approved sources by virtue of maintaining required technical and quality assurance standards under Federal Government oversight.

3.7 Graphical Forecasts for Aviation (GFA)

3.7.1 The GFA website is intended to provide the necessary aviation weather information to give users a complete picture of the weather that may affect flight in the continental United States (CONUS). The website includes observational data, forecasts, and warnings that can be viewed from 14 hours in the past to 15 hours in the future, including thunderstorms, clouds, flight category, precipitation, icing, turbulence, and wind. Hourly model data and forecasts, including information on clouds, flight category, precipitation, icing, turbulence, wind, and graphical output from the National Weather Service's (NWS) National Digital Forecast Data (NDFD) are available. Wind, icing, and turbulence forecasts are available in 3,000 ft increments from the surface up to 30,000 ft MSL, and in 6,000 ft increments from 30,000 ft MSL to 48,000 ft MSL. Turbulence forecasts are also broken into low (below 18,000 ft MSL) and high (at or above 18,000 ft MSL) graphics. A maximum icing graphic and maximum wind velocity graphic (regardless of altitude) are also available. Built with modern geospatial information tools, users can pan and zoom to focus on areas of greatest interest. Target users are commercial and general aviation pilots, operators, briefers, and dispatchers.

3.7.2 Weather Products.

3.7.2.1 The Aviation Forecasts include gridded displays of various weather parameters as well as NWS textual weather observations, forecasts, and warnings. Icing, turbulence, and wind gridded products are three−dimensional. Other gridded products are two−dimensional and may represent a "composite" of a three−dimensional weather phenomenon or a surface weather variable, such as horizontal visibility. The following are examples of aviation forecasts depicted on the GFA:

a) Terminal Aerodrome Forecast (TAF)

b) Ceiling & Visibility (CIG/VIS)

c) Clouds

d) Precipitation / Weather (PCPN/WX)

e) Thunderstorm (TS)

f) Winds

g) Turbulence

h) Ice

3.7.2.2 Observations & Warnings (Obs/Warn). The Obs/Warn option provides an option to display weather data for the current time and the previous 14 hours (rounded to the nearest hour). Users may advance through time using the arrow buttons or by clicking on the desired hour. Provided below are the Obs/Warn product tabs available on the GFA website:

a) METAR

b) Precipitation/Weather (PCPN/WX)

c) Ceiling & Visibility (CIG/VIS)

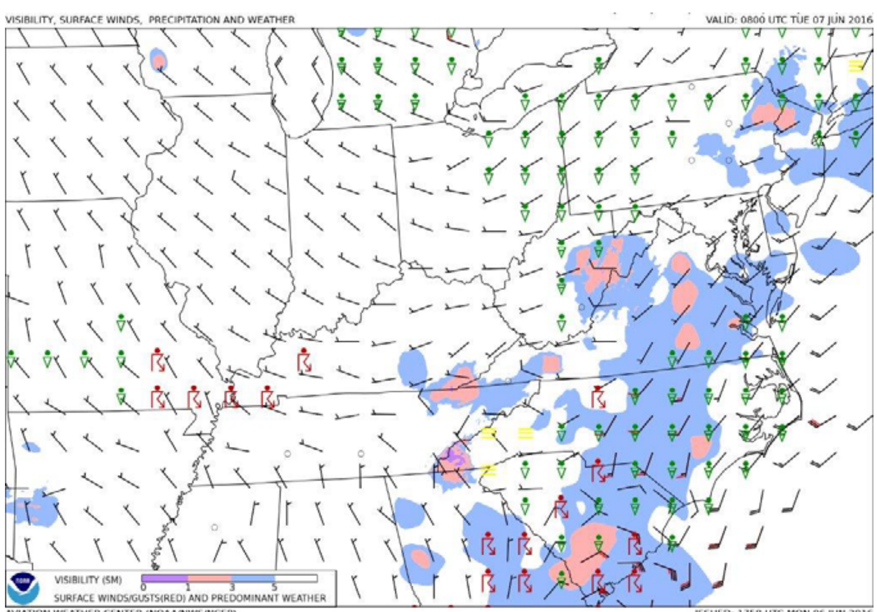
d) Pilot Reports (PIREP)

e) Radar & Satellite (RAD/SAT)

3.7.2.3 The GFA will be continuously updated and available online at **http://aviationweather.gov/gfa**. Upon clicking the link above, select INFO on the top right corner of the map display. The next screen presents the option of selecting Overview, Products, and Tutorial. Simply select the tab of interest to explore the enhanced digital and graphical weather products designed to replace the legacy FA. Users should also refer to AC 00−45, *Aviation Weather Services,* for more detailed information on the GFA.

3.7.2.4 GFA Static Images. Some users with limited internet connectivity may access static images via the Aviation Weather Center (AWC) at: **http://www.aviationweather.gov/gfa/plot**. There are two static graphical images available, titled *Aviation Cloud Forecast* and *Aviation Surface Forecast*. The Aviation Cloud Forecast provides cloud coverage, bases, layers, and tops with Airmet Sierra for mountain obscuration and Airmet Zulu for icing overlaid. The Aviation Surface Forecast provides visibility, weather phenomena, and winds (including wind gusts) with Airmet Sierra for instrument flight rules conditions and Airmet Tango for sustained surface winds of 30 knots or more overlaid. These images are presented on ten separate maps providing forecast views for the entire CONUS on one and nine regional views which provide more detail for the user. They are updated every 3 hours and provide forecast snapshots for 3, 6, 9, 12, 15, and 18 hours into the future. (See FIG GEN 3.5−2 and FIG GEN 3.5−3.)

FIG GEN 3.5−2
Aviation Surface Forecast



5. Telephone Information Briefing Service (TIBS) (Alaska Only)

5.1 TIBS, provided by FSS, is a system of automated telephone recordings of meteorological and aeronautical information available in Alaska. Based on the specific needs of each area, TIBS provides route and/or area briefings in addition to airspace procedures and special announcements concerning aviation interests that may be available. Depending on user demand, other items may be provided; for example, surface weather observations, terminal forecasts, wind and temperatures aloft forecast, etc.

6. Inflight Weather Advisory Broadcasts

ARTCCs broadcast a Severe Weather Forecast Alert (AWW), Convective SIGMET, SIGMET, AIRMET, Urgent Pilot Report, or CWA alert once on all frequencies, except emergency, when any part of the area described is within 150 miles of the airspace under their jurisdiction. These broadcasts advise pilots of the availability of hazardous weather advisories and to contact the nearest Flight Service facility for additional details.

EXAMPLE−

1. *Attention all aircraft, SIGMET Delta Three, from Myton to Tuba City to Milford, severe turbulence and severe clear icing below one zero thousand feet. Expected to continue beyond zero three zero zero zulu.*

2. *Attention all aircraft, Convective SIGMET Two Seven Eastern. From the vicinity of Elmira to Phillipsburg. Scattered embedded thunderstorms moving east at one zero knots. A few intense level five cells, maximum tops four five zero.*

3. *Attention all aircraft, Kansas City Center weather advisory one zero three. Numerous reports of moderate to severe icing from eight to niner thousand feet in a three zero mile radius of St. Louis. Light or negative icing reported from four thousand to one two thousand feet remainder of Kansas City Center area.*

NOTE−

Terminal control facilities have the option to limit the AWW, Convective SIGMET, SIGMET, or CWA broadcast as follows: local control and approach control positions may opt to broadcast SIGMET or CWA alerts only when any part of the area described is within 50 miles of the airspace under their jurisdiction.

7. Flight Information Services (FIS)

7.1 FIS. FIS is a method of disseminating meteorological (MET) and aeronautical information (AI) to displays in the cockpit in order to enhance pilot situational awareness, provide decision support tools, and improve safety. FIS augments traditional pilot voice communication with Flight Service Stations (FSSs), ATC facilities, or Airline Operations Control Centers (AOCCs). FIS is not intended to replace traditional pilot and controller/flight service specialist/aircraft dispatcher preflight briefings or inflight voice communications. FIS, however, can provide textual and graphical information that can help abbreviate and improve the usefulness of such communications. FIS enhances pilot situational awareness and improves safety.

7.1.1 Data link Service Providers (DLSP) - DLSP deploy and maintain airborne, ground-based, and, in some cases, space-based infrastructure that supports the transmission of AI/MET information over one or more physical links. DLSP may provide a free of charge or for-fee service that permits end users to uplink and downlink AI/MET and other information. The following are examples of DLSP:

7.1.1.1 FAA FIS-B. A ground-based broadcast service provided through the ADS-B Universal Access Transceiver (UAT) network. The service provides users with a 978 MHz data link capability when operating within range and line-of-sight of a transmitting ground station. FIS-B enables users of properly equipped aircraft to receive and display a suite of broadcast weather and aeronautical information products.

7.1.1.2 Non-FAA FIS Systems. Several commercial vendors provide customers with FIS data over both the aeronautical spectrum and on other frequencies using a variety of data link protocols. Services available from these providers vary greatly and may include tier based subscriptions. Advancements in bandwidth technology permits preflight as well as inflight access to the same MET and AI information available on the ground. Pilots and operators using non-FAA FIS for MET and AI information should be knowledgeable regarding the weather services being provided as some commercial vendors may be repackaging NWS sourced weather, while other commercial vendors may alter the weather information to produce vendor−tailored or vendor−specific weather reports and forecasts.

7.1.2 Three Data Link Modes. There are three data link modes that may be used for transmitting AI and MET information to aircraft. The intended use of the

AI and/or MET information will determine the most appropriate data link service.

7.1.2.1 Broadcast Mode: A one-way interaction in which AI and/or MET updates or changes applicable to a designated geographic area are continuously transmitted (or transmitted at repeated periodic intervals) to all aircraft capable of receiving the broadcast within the service volume defined by the system network architecture.

7.1.2.2 Contract/Demand Mode: A two-way interaction in which AI and/or MET information is transmitted to an aircraft in response to a specific request.

7.1.2.3 Contract/Update Mode: A two-way interaction that is an extension of the Demand Mode. Initial AI and/or MET report(s) are sent to an aircraft and subsequent updates or changes to the AI and/or MET information that meet the contract criteria are automatically or manually sent to an aircraft.

7.1.3 To ensure airman compliance with Federal Aviation Regulations, manufacturer's operating manuals should remind airmen to contact ATC controllers, FSS specialists, operator dispatchers, or airline operations control centers for general and mission critical aviation weather information and/or NAS status conditions (such as NOTAMs, Special Use Airspace status, and other government flight information). If FIS products are systemically modified (for example, are displayed as abbreviated plain text and/or graphical depictions), the modification process and limitations of the resultant product should be clearly described in the vendor's user guidance.

7.1.4 Operational Use of FIS. Regardless of the type of FIS system being used, several factors must be considered when using FIS:

7.1.4.1 Before using FIS for inflight operations, pilots and other flight crewmembers should become familiar with the operation of the FIS system to be used, the airborne equipment to be used, including its system architecture, airborne system components, coverage service volume and other limitations of the particular system, modes of operation and indications of various system failures. Users should also be familiar with the specific content and format of the services available from the FIS provider(s). Sources of information that may provide this specific guidance include manufacturer's manuals, training programs, and reference guides.

7.1.4.2 FIS should not serve as the sole source of aviation weather and other operational information. ATC, FSSs, and, if applicable, AOCC VHF/HF voice remain as a redundant method of communicating aviation weather, NOTAMs, and other operational information to aircraft in flight. FIS augments these traditional ATC/FSS/AOCC services and, for some products, offers the advantage of being displayed as graphical information. By using FIS for orientation, the usefulness of information received from conventional means may be enhanced. For example, FIS may alert the pilot to specific areas of concern that will more accurately focus requests made to FSS or AOCC for inflight updates or similar queries made to ATC.

7.1.4.3 The airspace and aeronautical environment is constantly changing. These changes occur quickly and without warning. Critical operational decisions should be based on use of the most current and appropriate data available. When differences exist between FIS and information obtained by voice communication with ATC, FSS, and/or AOCC (if applicable), pilots are cautioned to use the most recent data from the most authoritative source.

7.1.4.4 FIS aviation weather products (for example, graphical ground−based radar precipitation depictions) are not appropriate for tactical (typical timeframe of less than 3 minutes) avoidance of severe weather such as negotiating a path through a weather hazard area. FIS supports strategic (typical timeframe of 20 minutes or more) weather decisionmaking such as route selection to avoid a weather hazard area in its entirety. The misuse of information beyond its applicability may place the pilot and aircraft in jeopardy. In addition, FIS should never be used in lieu of an individual preflight weather and flight planning briefing.

7.1.4.5 DLSP offer numerous MET and AI products with information that can be layered on top of each other. Pilots need to be aware that too much information can have a negative effect on their cognitive work load. Pilots need to manage the amount of information to a level that offers the most pertinent information to that specific flight without creating a cockpit distraction. Pilots may need to adjust the amount of information based on numerous factors including, but not limited to, the phase of flight, single pilot operation, autopilot availability, class of airspace, and the weather conditions encountered.

7.1.4.6 FIS NOTAM products, including Temporary Flight Restriction (TFR) information, are advisory−use information and are intended for situational awareness purposes only. Cockpit displays of this information are not appropriate for tactical navigation − pilots should stay clear of any geographic area displayed as a TFR NOTAM. Pilots should contact FSSs and/or ATC while en route to obtain updated information and to verify the cockpit display of NOTAM information.

7.1.4.7 FIS supports better pilot decisionmaking by increasing situational awareness. Better decision−making is based on using information from a variety of sources. In addition to FIS, pilots should take advantage of other weather/NAS status sources, including, briefings from Flight Service Stations, data from other air traffic control facilities, airline operation control centers, pilot reports, as well as their own observations.

7.1.4.8 FAA's Flight Information Service−Broadcast (FIS−B).

a) FIS−B is a ground−based broadcast service provided through the FAA's Automatic Dependent Surveillance−Broadcast (ADS−B) Services Universal Access Transceiver (UAT) network. The service provides users with a 978 MHz data link capability when operating within range and line−of−sight of a transmitting ground station. FIS−B enables users of properly−equipped aircraft to receive and display a suite of broadcast weather and aeronautical information products.

b) The following list represents the initial suite of text and graphical products available through FIS−B and provided free−of−charge. Detailed information concerning FIS−B meteorological products can be found in Advisory Circular 00−45, Aviation Weather Services, and AC 00-63, Use of Cockpit Displays of Digital Weather and Aeronautical Information. Information on Special Use Airspace (SUA), Temporary Flight Restriction (TFR), and Notice to Airmen (NOTAM) products can be found in Chapters ENR 1 and ENR 5 of this manual.

1) Text: Aviation Routine Weather Report (METAR) and Special Aviation Report (SPECI);

2) Text: Pilot Weather Report (PIREP);

3) Text: Winds and Temperatures Aloft;

4) Text: Terminal Aerodrome Forecast (TAF) and amendments;

5) Text: Notice to Airmen (NOTAM) Distant and Flight Data Center;

6) Text/Graphic: Airmen's Meteorological Conditions (AIRMET);

7) Text/Graphic: Significant Meteorological Conditions (SIGMET);

8) Text/Graphic: Convective SIGMET;

9) Text/Graphic: Special Use Airspace (SUA);

10) Text/Graphic: Temporary Flight Restriction (TFR) NOTAM; and

11) Graphic: NEXRAD Composite Reflectivity Products (Regional and National).

c) Users of FIS−B should familiarize themselves with the operational characteristics and limitations of the system, including: system architecture; service environment; product lifecycles; modes of operation; and indications of system failure.

d) FIS−B products are updated and transmitted at specific intervals based primarily on product issuance criteria. Update intervals are defined as the rate at which the product data is available from the source for transmission. Transmission intervals are defined as the amount of time within which a new or updated product transmission must be completed and/or the rate or repetition interval at which the product is rebroadcast. Update and transmission intervals for each product are provided in TBL GEN 3.5−2.

NOTE−
The NOTAM−D and NOTAM−FDC products broadcast via FIS−B are limited to those issued or effective within the past 30 days. Except for TFRs, NOTAMs older than 30 days are not provided. The pilot in command is responsible for reviewing all necessary information prior to flight.

e) Where applicable, FIS−B products include a look−ahead range expressed in nautical miles (NM) for three service domains: Airport Surface; Terminal Airspace; and Enroute/Gulf−of−Mexico (GOMEX). TBL GEN 3.5−3 provides service domain availability and look−ahead ranging for each FIS−B product.

f) Prior to using this capability, users should familiarize themselves with the operation of FIS−B avionics by referencing the applicable User's Guides. Guidance concerning the interpretation of information displayed should be obtained from the appropriate avionics manufacturer.

g) FIS−B malfunctions not attributed to aircraft system failures or covered by active NOTAM should be reported by radio or telephone to the nearest FSS facility.

7.2 Non−FAA FIS Systems. Several commercial vendors also provide customers with FIS data over both the aeronautical spectrum and on other frequencies using a variety of data link protocols. In some cases, the vendors provide only the communications system that carries customer messages, such as the Aircraft Communications Addressing and Reporting System (ACARS) used by many air carrier and other operators.

7.2.1 Operators using non−FAA FIS data for inflight weather and other operational information should ensure that the products used conform to FAA/NWS standards. Specifically, aviation weather and NAS status information should meet the following criteria:

7.2.1.1 The products should be either FAA/NWS "accepted" aviation weather reports or products, or based on FAA/NWS accepted aviation weather reports or products. If products are used which do not meet this criteria, they should be so identified. The operator must determine the applicability of such products to their particular flight operations.

7.2.1.2 In the case of a weather product which is the result of the application of a process which alters the form, function or content of the base FAA/NWS accepted weather product(s), that process, and any limitations to the application of the resultant product, should be described in the vendor's user guidance material.

7.2.2 An example would be a NEXRAD radar composite/mosaic map, which has been modified by changing the scaling resolution. The methodology of assigning reflectivity values to the resultant image components should be described in the vendor's guidance material to ensure that the user can accurately interpret the displayed data.

TBL GEN 3.5−2
FIS−B Over UAT Product Update and Transmission Intervals

Product	**FIS−B Over UAT Service Update Intervals[1]**	**FIS−B Service Transmission Intervals[2]**
AIRMET	As Available	5 minutes
Convective SIGMET	As Available	5 minutes
METARs/SPECIs	1 minute/As Available	5 minutes
NEXRAD Composite Reflectivity (CONUS)	15 minutes	15 minutes
NEXRAD Composite Reflectivity (Regional)	5 minutes	2.5 minutes
NOTAMs−D/FDC/TFR	As Available	10 minutes
PIREP	As Available	10 minutes
SIGMET	As Available	5 minutes
SUA Status	As Available	10 minutes
TAF/AMEND	8 Hours/As Available	10 minutes
Temperatures Aloft	12 Hours	10 minutes
Winds Aloft	12 Hours	10 minutes

[1] *The Update Interval is the rate at which the product data is available from the source.*

[2] *The Transmission Interval is the amount of time within which a new or updated product transmission must be completed and the rate or repetition interval at which the product is rebroadcast.*

[3] *NOTAM−D and NOTAM−FDC products broadcast via FIS−B are limited to those issued or effective within the past 30 days.*

TBL GEN 3.5−3

Product Parameters for Low/Medium/High Altitude Tier Radios

Product	Surface Radios	Low Altitude Tier	Medium Altitude Tier	High Altitude Tier
CONUS NEXRAD	N/A	CONUS NEXRAD not provided	CONUS NEXRAD imagery	CONUS NEXRAD imagery
Winds & Temps Aloft	500 NM look−ahead range	500 NM look−ahead range	750 NM look−ahead range	1,000 NM look−ahead range
METAR	100 NM look−ahead range	250 NM look−ahead range	375 NM look−ahead range	CONUS: CONUS Class B & C airport METARs and 500 NM look−ahead range Outside of CONUS: 500 NM look-ahead range
TAF	100 NM look−ahead range	250 NM look−ahead range	375 NM look−ahead range	CONUS: CONUS Class B & C airport TAFs and 500 NM look−ahead range Outside of CONUS: 500 NM look-ahead range
AIRMET, SIGMET, PIREP, and SUA/SAA	100 NM look−ahead range. PIREP/SUA/SAA is N/A.	250 NM look−ahead range	375 NM look−ahead range	500 NM look−ahead range
Regional NEXRAD	150 NM look−ahead range	150 NM look−ahead range	200 NM look−ahead range	250 NM look−ahead range
NOTAMs D, FDC, and TFR	100 NM look−ahead range	100 NM look−ahead range	100 NM look−ahead range	100 NM look−ahead range

8. Weather Observing Programs

8.1 Manual Observations. Aviation Routine Weather Reports (METAR) are taken at more than 600 locations in the U.S. With only a few exceptions, these stations are located at airport sites and most are staffed by FAA personnel who manually observe, perform calculations, and enter the observation into the distribution system. The format and coding of these observations are contained in FIG GEN 3.5−25 and FIG GEN 3.5−26.

8.2 Automated Weather Observing System (AWOS)

8.2.1 Automated weather reporting systems are increasingly being installed at airports. These systems consist of various sensors, a processor, a computer−generated voice subsystem, and a transmitter to broadcast local, minute−by−minute weather data directly to the pilot.

NOTE−
When the barometric pressure exceeds 31.00 inches Hg., see Section ENR 1.7, Altimeter Setting Procedures.

8.2.2 The AWOS observations will include the prefix "AUTO" to indicate that the data are derived from an automated system. Some AWOS locations will be augmented by certified observers who will provide weather and obstruction to vision information in the remarks of the report when the reported visibility is less than 3 miles. These sites, along with the hours of augmentation, are published in the Chart Supplement U.S. Augmentation is identified in the observation as "OBSERVER WEATHER." The AWOS wind speed, direction and gusts, temperature, dew point, and altimeter setting are exactly the same as for manual observations. The AWOS will also report density altitude when it exceeds the field elevation by more than 1,000 feet. The reported visibility is derived from a sensor near the touchdown of the primary instrument runway. The visibility sensor output is converted to a visibility value using a 10−minute harmonic average. The reported sky condition/ceiling is derived from the ceilometer located next to the visibility sensor. The AWOS algorithm integrates the last 30 minutes of ceilometer data to derive cloud layers and heights. This output may also differ from the observer sky condition in that the AWOS is totally dependent upon the cloud advection over the sensor site.

8.2.3 Referred to as AWOS, these real−time systems are operationally classified into nine basic levels:

8.2.3.1 AWOS−A only reports altimeter setting.

NOTE−
Any other information is advisory only.

8.2.3.2 AWOS−AV reports altimeter and visibility;

NOTE−
Any other information is advisory only.

8.2.3.3 AWOS−l usually reports altimeter setting, wind data, temperature, dew point, and density altitude.

8.2.3.4 AWOS−2 provides the information provided by AWOS−l, plus visibility.

8.2.3.5 AWOS−3 provides the information provided by AWOS−2, plus cloud/ceiling data.

8.2.3.6 AWOS− 3P provides reports the same as the AWOS 3 system, plus a precipitation identification sensor.

8.2.3.7 AWOS− 3PT reports the same as the AWOS 3P System, plus thunderstorm/lightning reporting capability.

8.2.3.8 AWOS− 3T reports the same as AWOS 3 system and includes a thunderstorm/lightning reporting capability.

8.2.3.9 AWOS− 4 reports the same as the AWOS 3 system, plus precipitation occurrence, type and accumulation, freezing rain, thunderstorm, and runway surface sensors.

8.2.4 The information is transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAID. AWOS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the AWOS site and a maximum altitude of 10,000 feet AGL. At many locations, AWOS signals may be received on the surface of the airport, but local conditions may limit the maximum AWOS reception distance and/or altitude. The system transmits a 20− to 30−second weather message updated each minute. Pilots should monitor the designated frequency for the automated weather broadcast. A description of the broadcast is contained in Paragraph 8.3, Automated Weather Observing System (AWOS) Broadcasts. There is no two−way communication capability. Most AWOS sites also have a dial−up capability so that the minute−by−minute weather messages can be accessed via telephone.

8.2.5 AWOS information (system level, frequency, phone number) concerning specific locations is published, as the systems become operational, in the Chart Supplement U.S. and, where applicable, on published Instrument Approach Procedure (IAP) charts. Selected individual systems may be incorporated into nationwide data collection and dissemination networks in the future.

8.3 AWOS Broadcasts. Computer−generated voice is used in AWOS to automate the broadcast of the minute−by−minute weather observations. In addition, some systems are configured to permit the addition of an operator−generated voice message; e.g., weather remarks, following the automated parameters. The phraseology used generally follows that used for other weather broadcasts. Following are explanations and examples of the exceptions.

8.3.1 Location and Time. The location/name and the phrase "AUTOMATED WEATHER OBSERVATION" followed by the time are announced.

8.3.1.1 If the airport's specific location is included in the airport's name, the airport's name is announced.

EXAMPLE−
"Bremerton National Airport automated weather observation one four five six zulu."

"Ravenswood Jackson County Airport automated weather observation one four five six zulu."

8.3.1.2 If the airport's specific location is not included in the airport's name, the location is announced followed by the airport's name.

EXAMPLE−
"Sault Ste. Marie, Chippewa County International Airport automated weather observation."

"Sandusky, Cowley Field automated weather observation."

8.3.1.3 The word "TEST" is added following "OBSERVATION" when the system is not in commissioned status.

EXAMPLE−
"Bremerton National Airport automated weather observation test one four five six zulu."

8.3.1.4 The phrase "TEMPORARILY INOPERATIVE" is added when the system is inoperative.

EXAMPLE−
"Bremerton National Airport automated weather observing system temporarily inoperative."

8.3.2 Ceiling and Sky Cover

8.3.2.1 Ceiling is announced as either "CEILING" or "INDEFINITE CEILING." The phrases "MEASURED CEILING" and "ESTIMATED CEILING" are not used. With the exception of indefinite ceilings, all automated ceiling heights are measured.

EXAMPLE−
"Bremerton National Airport automated weather observation one four five six zulu, ceiling two thousand overcast."

"Bremerton National Airport automated weather observation one four five six zulu, indefinite ceiling two hundred."

8.3.2.2 The word "CLEAR" is not used in AWOS due to limitations in the height ranges of the sensors. No clouds detected is announced as, "No clouds below XXX" or, in newer systems as, "Clear below XXX" (where XXX is the range limit of the sensor).

EXAMPLE−
"No clouds below one two thousand."

"Clear below one two thousand."

8.3.2.3 A sensor for determining ceiling and sky cover is not included in some AWOS. In these systems, ceiling and sky cover are not announced. "SKY CONDITION MISSING" is announced only if the system is configured with a ceilometer, and the ceiling and sky cover information is not available.

8.3.3 Visibility

8.3.3.1 The lowest reportable visibility value in AWOS is "less than $^1/_4$." It is announced as "VISIBILITY LESS THAN ONE QUARTER."

8.3.3.2 A sensor for determining visibility is not included in some AWOSs. In these systems, visibility is not announced. "VISIBILITY MISSING" is announced only if the system is configured with a visibility sensor and visibility information is not available.

8.3.4 Weather. In the future, some AWOSs are to be configured to determine the occurrence of precipitation. However, the type and intensity may not always be determined. In these systems, the word "PRECIPITATION" will be announced if precipitation is occurring, but the type and intensity are not determined.

8.3.5 Remarks. If remarks are included in the observation, the word "REMARKS" is announced following the altimeter setting. Remarks are announced in the following order of priority:

8.3.5.1 Automated "remarks."

a) Variable visibility.

b) Density altitude.

8.3.5.2 Manual input remarks. Manual input remarks are prefaced with the phrase "OBSERVER WEATHER." As a general rule the manual remarks are limited to:

a) Type and intensity of precipitation.

b) Thunderstorms, intensity (if applicable), and direction.

c) Obstructions to vision when the visibility is less than 7 miles.

EXAMPLE−
"Remarks...density altitude, two thousand five hundred...visibility variable between one and two...wind direction variable between two four zero and three one zero...observed weather...thunderstorm moderate rain showers and mist...thunderstorm overhead."

8.3.5.3 If an automated parameter is "missing" and no manual input for that parameter is available, the parameter is announced as "MISSING." For example, a report with the dew point "missing," and no manual input available, would be announced as follows:

EXAMPLE−
"Ceiling one thousand overcast, visibility three, precipitation, temperature three zero, dew point missing, wind calm, altimeter three zero zero one."

8.3.5.4 "REMARKS" are announced in the following order of priority:

a) Automated "REMARKS":

1) Variable visibility.

2) Density altitude.

b) Manual Input "REMARKS." As a general rule, the remarks are announced in the same order as the parameters appear in the basic text of the observation.

EXAMPLE−
"Remarks, density altitude, two thousand five hundred, visibility variable between one and two, wind direction variable between two four zero and three one zero, observer ceiling estimated two thousand broken, observer temperature two, dew point minus five."

8.4 Automated Surface Observing System (ASOS)/Automated Weather Observing System (AWOS)

8.4.1 The ASOS/AWOS is the primary surface weather observing system of the U.S. The program to install and operate these systems throughout the U.S. is a joint effort of the NWS, the FAA and the Department of Defense. ASOS/AWOS is designed to support aviation operations and weather forecast activities. The ASOS/AWOS will provide continuous minute-by- minute observations and perform the basic observing functions necessary to generate an aviation routine weather report (METAR) and other aviation weather information. The information may be transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAID. ASOS/AWOS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the ASOS/AWOS site and a maximum altitude of 10,000 feet AGL. At many locations, ASOS/AWOS signals may be received on the surface of the airport, but local conditions may limit the maximum reception distance and/or altitude. While the automated system and the human may differ in their methods of data collection and interpretation, both produce an observation quite similar in form and content. For the "objective" elements such as pressure, ambient temperature, dew point temperature, wind, and precipitation accumulation, both the automated system and the observer use a fixed location and time-averaging technique. The quantitative differences between the observer and the automated observation of these elements are negligible. For the "subjective" elements, however, observers use a fixed time, spatial averaging technique to describe the visual elements (sky condition, visibility and present weather), while the automated systems use a fixed location, time averaging technique. Although this is a fundamental change, the manual and automated techniques yield remarkably similar results within the limits of their respective capabilities. (See FIG GEN 3.5−25 and FIG GEN 3.5−26, Key to Decode an ASOS/AWOS (METAR) Observation.

8.4.2 System Description

8.4.2.1 The ASOS/AWOS at each airport location consists of four main components:

a) Individual weather sensors.

b) Data collection and processing units.

c) Peripherals and displays.

8.4.2.2 The ASOS/AWOS sensors perform the basic function of data acquisition. They continuously sample and measure the ambient environment, derive raw sensor data and make them available to the collection and processing units.

8.4.3 Every ASOS/AWOS will contain the following basic set of sensors.

8.4.3.1 Cloud height indicator (one or possibly three).

8.4.3.2 Visibility sensor (one or possibly three).

8.4.3.3 Precipitation identification sensor.

8.4.3.4 Freezing rain sensor.

8.4.3.5 Pressure sensors (two sensors at small airports; three sensors at large airports).

8.4.3.6 Ambient temperature/dew point temperature sensor.

8.4.3.7 Anemometer (wind direction and speed sensor).

8.4.3.8 Rainfall accumulation sensor.

8.4.3.9 Automated Lightning Detection and Reporting System (ALDARS) (excluding Alaska and Pacific Island sites).

8.4.4 The ASOS/AWOS data outlets include:

8.4.4.1 Those necessary for on−site airport users.

8.4.4.2 National communications networks.

8.4.4.3 Computer−generated voice (available through FAA radio broadcast to pilots and dial−in telephone line).

NOTE−
Wind direction broadcast over FAA radios is in reference to magnetic north.

8.5 A comparison of weather observing programs and the elements observed by each are in TBL GEN 3.5−4, Weather Observing Programs.

8.6 Service Standards. During 1995, a government/industry team worked to comprehensively reassess the requirements for surface observations at the nation's airports. That work resulted in agreement on a set of service standards and the FAA and NWS ASOS sites to which the standards would apply. The term "Service Standards" refers to the level of detail in the weather observation. The service standards consist of four different levels of service (A, B, C, and D) as described below. Specific observational elements included in each service level are listed in TBL GEN 3.5−5, Weather Observation Service Standards.

8.6.1 Service Level D defines the minimum acceptable level of service. It is a completely automated service in which the ASOS/AWOS observation will constitute the entire observation; i.e., no additional weather information is added by a human observer. This service is referred to as a stand alone D site.

8.6.2 Service Level C is a service in which the human observer, usually an air traffic controller, augments or adds information to the automated observation. Service Level C also includes backup of ASOS/AWOS elements in the event of an ASOS/AWOS malfunction or an unrepresentative ASOS/AWOS report.

8.6.3 In backup, the human observer inserts the correct or missing value for the automated ASOS/AWOS elements. This service is provided by air traffic controllers under the Limited Aviation Weather Reporting Station (LAWRS) process, FSS and NWS observers, and, at selected sites, Non−Federal Observation Program observers.

Two categories of airports require detail beyond Service Level C in order to enhance air traffic control efficiency and increase system capacity. Services at these airports are typically provided by contract weather observers, NWS observers, and, at some locations, FSS observers.

8.6.4 Service Level B is a service in which weather observations consist of all elements provided under Service Level C, plus augmentation of additional data beyond the capability of the ASOS/AWOS. This category of airports includes smaller hubs or airports special in other ways that have worse than average bad weather operations for thunderstorms and/or freezing/frozen precipitation, and/or that are remote airports.

8.6.5 Service Level A, the highest and most demanding category, includes all the data reported in Service Standard B, plus additional requirements as specified. Service Level A covers major aviation hubs and/or high volume traffic airports with average or worse weather.

TBL GEN 3.5−4

Weather Observing Programs

Element Reported / Type	Wind	Visibility	Temperature Dew Point	Altimeter	Density Altimeter	Cloud/Ceiling	Precipitation Identification	Thunderstorm/ Lightning	Precipitation Occurrence	Rainfall Accumulation	Runway Surface Condition	Freezing Rain Occurrence	Remarks
ASOS	X	X	X	X	X	X	X			X		X	X
AWOS−A				X									
AWOS−A/V		X		X									
AWOS−1	X		X	X	X								
AWOS−2	X	X	X	X	X								
AWOS−3	X	X	X	X	X	X							
AWOS−3P	X	X	X	X	X	X	X						
AWOS−3T	X	X	X	X	X	X		X					
AWOS−3P/T	X	X	X	X	X	X	X	X					
AWOS−4	X	X	X	X	X	X	X	X	X	X	X	X	
Manual	X	X	X	X		X	X						X
REFERENCE− FAA Order JO 7900.5, Surface Weather Observing, for element reporting.													

TBL GEN 3.5−5

Weather Observation Service Standards

SERVICE LEVEL A	
Service Level A consists of all the elements of Service Levels B, C and D plus the elements listed to the right, if observed.	10 minute longline RVR at precedented sites or additional visibility increments of 1/8, 1/16 and 0 Sector visibility Variable sky condition Cloud layers above 12,000 feet and cloud types Widespread dust, sand and other obscurations Volcanic eruptions
SERVICE LEVEL B	
Service Level B consists of all the elements of Service Levels C and D plus the elements listed to the right, if observed.	Longline RVR at precedented sites (may be instantaneous readout) Freezing drizzle versus freezing rain Ice pellets Snow depth & snow increasing rapidly remarks Thunderstorm and lightning location remarks Observed significant weather not at the station remarks
SERVICE LEVEL C	
Service Level C consists of all the elements of Service Level D plus augmentation and backup by a human observer or an air traffic control specialist on location nearby. Backup consists of inserting the correct value if the system malfunctions or is unrepresentative. Augmentation consists of adding the elements listed to the right, if observed. During hours that the observing facility is closed, the site reverts to Service Level D.	Thunderstorms Tornadoes Hail Virga Volcanic ash Tower visibility Operationally significant remarks as deemed appropriate by the observer
SERVICE LEVEL D	
This level of service consists of an ASOS or AWOS continually measuring the atmosphere at a point near the runway. The ASOS or AWOS senses and measures the weather parameters listed to the right.	Wind Visibility Precipitation/Obstruction to vision Cloud height Sky cover Temperature Dew point Altimeter

9. Weather Radar Services

9.1 The National Weather Service operates a network of radar sites for detecting coverage, intensity, and movement of precipitation. The network is supplemented by FAA and DOD radar sites in the western sections of the country. Local warning radars augment the network by operating on an as needed basis to support warning and forecast programs.

9.2 Scheduled radar observations are taken hourly and transmitted in alpha−numeric format on weather telecommunications circuits for flight planning purposes. Under certain conditions special radar reports are issued in addition to the hourly transmittals. Data contained in the reports is also collected by the National Meteorological Center and used to prepare hourly national radar summary charts for dissemination on facsimile circuits.

9.3 All En route Flight Advisory Service facilities and many Automated Flight Service Stations have equipment to directly access the radar displays from the individual weather radar sites. Specialists at these locations are trained to interpret the display for pilot briefing and inflight advisory services. The Center Weather Service Units located in the ARTCCs also have access to weather radar displays and provide support to all air traffic facilities within their center's area.

9.4 A clear radar display (no echoes) does not mean that there is no significant weather within the coverage of the radar site. Clouds and fog are not detected by the radar. However, when echoes are present, turbulence can be implied by the intensity of the precipitation, and icing is implied by the presence of the precipitation at temperatures at or below zero degrees Celsius. Used in conjunction with other weather products, radar provides invaluable information for weather avoidance and flight planning.

9.5 Additional information on weather radar products and services can be found in FAA Advisory Circular 00−45, "Aviation Weather Services."

REFERENCE−
Pilot/Controller Glossary Term− Precipitation Radar Weather Descriptions.
AIP, Thunderstorms, GEN 3.5, Paragraph 27.
Chart Supplement U.S., Charts, NWS Upper Air Observing Stations and Weather Network for the location of specific radar sites.

10. ATC Inflight Weather Avoidance Assistance

10.1 ATC Radar Weather Display

10.1.1 ATC radars are able to display areas of precipitation by sending out a beam of radio energy that is reflected back to the radar antenna when it strikes an object or moisture which may be in the form of rain drops, hail, or snow. The larger the object is, or the more dense its reflective surface, the stronger the return will be presented. Radar weather processors indicate the intensity of reflective returns in terms of decibels (dBZ). ATC systems cannot detect the presence or absence of clouds. The ATC systems can often determine the intensity of a precipitation area, but the specific character of that area (snow, rain, hail, VIRGA, etc.) cannot be determined. For this reason, ATC refers to all weather areas displayed on ATC radar scopes as "precipitation."

10.1.2 All ATC facilities using radar weather processors with the ability to determine precipitation intensity, will describe the intensity to pilots as:

10.1.2.1 "LIGHT" (< 26 dBZ)

10.1.2.2 "MODERATE" (26 to 40 dBZ)

10.1.2.3 "HEAVY" (> 40 to 50 dBZ)

10.1.2.4 "EXTREME" (> 50 dBZ)

NOTE−
En Route ATC radar's Weather and Radar Processor (WARP) does not display light precipitation intensity.

10.1.3 ATC facilities that, due to equipment limitations, cannot display the intensity levels of precipitation, will describe the location of the precipitation area by geographic position, or position relative to the aircraft. Since the intensity level is not available, the controller will state "INTENSITY UNKNOWN."

10.1.4 ARTCC facilities normally use a Weather and Radar Processor (WARP) to display a mosaic of data obtained from multiple NEXRAD sites. There is a time delay between actual conditions and those displayed to the controller. For example, the precipitation data on the ARTCC controller's display could be up to 6 minutes old. When the WARP is not available, a second system, the narrowband Air Route Surveillance Radar (ARSR) can display two distinct levels of precipitation intensity that will be described to pilots as "MODERATE" (26 to 40 dBZ) and

“HEAVY TO EXTREME” (> 40 dBZ). The WARP processor is only used in ARTCC facilities.

10.1.5 *ATC radar is not able to detect turbulence.* Generally, turbulence can be expected to occur as the rate of rainfall or intensity of precipitation increases. Turbulence associated with greater rates of rainfall/precipitation will normally be more severe than any associated with lesser rates of rainfall/precipitation. Turbulence should be expected to occur near convective activity, even in clear air. Thunderstorms are a form of convective activity that imply severe or greater turbulence. Operation within 20 miles of thunderstorms should be approached with great caution, as the severity of turbulence can be markedly greater than the precipitation intensity might indicate.

10.2 Weather Avoidance Assistance

10.2.1 To the extent possible, controllers will issue pertinent information of weather or chaff areas and assist pilots in avoiding such areas if requested. Pilots should respond to a weather advisory by either acknowledging the advisory or by acknowledging the advisory and requesting an alternative course of action as follows:

10.2.1.1 Request to deviate off course by stating a heading or degrees, direction of deviation, and approximate number of miles. In this case, when the requested deviation is approved, navigation is at the pilot’s prerogative, but must maintain the altitude assigned, and remain within the lateral restrictions issued by ATC.

10.2.1.2 An approval for lateral deviation authorizes the pilot to maneuver left or right within the limits specified in the clearance.

NOTE−
1. *It is often necessary for ATC to restrict the amount of lateral deviation (“twenty degrees right,” “up to fifteen degrees left,” “up to ten degrees left or right of course”).*

2. *The term “when able, proceed direct,” in an ATC weather deviation clearance, refers to the pilot’s ability to remain clear of the weather when returning to course/route.*

10.2.1.3 Request a new route to avoid the affected area.

10.2.1.4 Request a change of altitude.

10.2.1.5 Request radar vectors around the affected areas.

10.2.2 For obvious reasons of safety, an IFR pilot must not deviate from the course or altitude/flight level without a proper ATC clearance. When weather conditions encountered are so severe that an immediate deviation is determined to be necessary and time will not permit approval by ATC, the pilot’s emergency authority may be exercised.

10.2.3 When the pilot requests clearance for a route deviation or for an ATC radar vector, the controller must evaluate the air traffic picture in the affected area and coordinate with other controllers (if ATC jurisdictional boundaries may be crossed) before replying to the request.

10.2.4 It should be remembered that the controller’s primary function is to provide safe separation between aircraft. Any additional service, such as weather avoidance assistance, can only be provided to the extent that it does not derogate the primary function. It is also worth noting that the separation workload is generally greater than normal when weather disrupts the usual flow of traffic. ATC radar limitations and frequency congestion may also be factors in limiting the controller’s capability to provide additional service.

10.2.5 It is very important that the request for deviation or radar vector be forwarded to ATC as far in advance as possible. Delay in submitting it may delay or even preclude ATC approval or require that additional restrictions be placed on the clearance. Insofar as possible, the following information should be furnished to ATC when requesting clearance to detour around weather activity:

10.2.5.1 Proposed point where detour will commence.

10.2.5.2 Proposed route and extent of detour (direction and distance).

10.2.5.3 Point where original route will be resumed.

10.2.5.4 Flight conditions (IFR or VFR).

10.2.5.5 Any further deviation that may become necessary as the flight progresses.

10.2.5.6 Advise if the aircraft is equipped with functioning airborne radar.

10.2.6 To a large degree, the assistance that might be rendered by ATC will depend upon the weather information available to controllers. Due to the extremely transitory nature of severe weather situations, the controller’s weather information may be of only limited value if based on weather observed on radar only. Frequent updates by pilots giving specific information as to the area affected, altitudes, intensity, and nature of the severe weather can be of considerable value. Such reports are relayed by radio or phone to other pilots and controllers, and they also receive widespread teletypewriter dissemination.

10.2.7 Obtaining IFR clearance or an ATC radar vector to circumnavigate severe weather can often be accommodated more readily in the en route areas away from terminals because there is usually less congestion and, therefore, greater freedom of action. In terminal areas, the problem is more acute because of traffic density, ATC coordination requirements, complex departure and arrival routes, and adjacent airports. As a consequence, controllers are less likely to be able to accommodate all requests for weather detours in a terminal area or be in a position to volunteer such routes to the pilot. Nevertheless, pilots should not hesitate to advise controllers of any observed severe weather and should specifically advise controllers if they desire circumnavigation of observed weather.

10.3 ATC Severe Weather Avoidance Plans

10.3.1 Air Route Traffic Control Centers and some Terminal Radar Control facilities utilize plans for severe weather avoidance within their control areas. Aviation−oriented meteorologists provide weather information. Preplanned alternate route packages developed by the facilities are used in conjunction with flow restrictions to ensure a more orderly flow of traffic during periods of severe or adverse weather conditions.

10.3.2 During these periods, pilots may expect to receive alternative route clearances. These routes are predicated upon the forecasts of the meteorologist and coordination between the Air Traffic Control System Command Center and the other centers. The routes are utilized as necessary in order to allow as many aircraft as possible to operate in any given area, and frequently they will deviate from the normal preferred routes. With user cooperation, this plan may significantly reduce delays.

10.4 Procedures for Weather Deviations and Other Contingencies in Oceanic Controlled Airspace

10.4.1 See ENR 7.3, Paragraph 4, General Weather Deviation Procedures.

11. Notifications Required From Operators

11.1 Preflight briefing and flight documentation services provided by FSSs do not require prior notification.

11.2 Preflight briefing and flight documentation services provided by a National Weather Service Office (or contract office) are available upon request for long−range international flights for which meteorological data packages are prepared for the pilot−in−command. Briefing times should be coordinated between the local representative and the local meteorological office.

11.3 Flight Service Stations do not normally have the capability to prepare meteorological data packages for a preflight briefing.

12. Weather Observing Systems and Operating Procedures

For surface wind readings, most meteorological reporting stations have a direct reading, 3−cup anemometer wind system for which a 1−minute mean wind speed and direction (based on true north) is taken. Some stations also have a continuous wind speed recorder which is used in determining the gustiness of the wind.

13. Runway Visual Range (RVR)

There are currently two configurations of the RVR, commonly identified as Taskers and New Generation RVR. The Taskers use transmissometer technology. The New Generation RVRs use forward scatter technology and are currently being deployed to replace the existing Taskers.

13.1 RVR values are measured by transmissometers mounted on 14−foot towers along the runway. A full RVR system consists of:

13.1.1 A transmissometer projector and related items.

13.1.2 A transmissometer receiver (detector) and related items.

13.1.3 An analog recorder.

13.1.4 A signal data converter and related items.

13.1.5 A remote digital or remote display programmer.

13.2 The transmissometer projector and receiver are mounted on towers 250 feet apart. A known intensity of light is emitted from the projector and is measured by the receiver. Any obscuring matter, such as rain, snow, dust, fog, haze, or smoke, reduces the light intensity arriving at the receiver. The resultant intensity measurement is then converted to an RVR value by the signal data converter. These values are displayed by readout equipment in the associated air traffic facility and updated approximately once every minute for controller issuance to pilots.

13.3 The signal data converter receives information on the high−intensity runway edge light setting in use (step 3, 4, or 5), transmission values from the transmissometer, and the sensing of day or night conditions. From the three data sources, the system will compute appropriate RVR values.

13.4 An RVR transmissometer established on a 250−foot baseline provides digital readouts to a minimum of 600 feet, which are displayed in 200−foot increments to 3,000 feet, and in 500−foot increments from 3,000 feet to a maximum value of 6,000 feet.

13.5 RVR values for Category IIIa operations extend down to 700−foot RVR; however, only 600 and 800 feet are reportable RVR increments. The 800 RVR reportable value covers a range of 701 feet to 900 feet and is therefore a valid minimum indication of Category IIIa operations.

13.6 Approach categories with the corresponding minimum RVR values are listed in TBL GEN 3.5−6.

TBL GEN 3.5−6

Category	Visibility (RVR)
Nonprecision	2,400 feet
Category I	1,800 feet*
Category II	1,000 feet
Category IIIa	700 feet
Category IIIb	150 feet
Category IIIc	0 feet

* 1,400 feet with special equipment and authorization

13.7 Ten−minute maximum and minimum RVR values for the designated RVR runway are reported in the body of the aviation weather report when the prevailing visibility is less than 1 mile and/or the RVR is 6,000 feet or less. ATCTs report RVR when the prevailing visibility is 1 mile or less and/or the RVR is 6,000 feet or less.

13.8 Details on the requirements for the operational use of RVR are contained in FAA Advisory Circular 97−1, "Runway Visual Range (RVR)." Pilots are responsible for compliance with minimums prescribed for their class of operations in appropriate Federal Aviation Regulations and/or operations specifications.

13.8.1 RVR values are also measured by forward scatter meters mounted on 14−foot frangible fiberglass poles. A full RVR system consists of:

13.8.1.1 Forward scatter meter with a transmitter, receiver and associated items.

13.8.1.2 A runway light intensity monitor (RLIM).

13.8.1.3 An ambient light sensor (ALS).

13.8.1.4 A data processor unit (DPU).

13.8.1.5 A controller display (CD).

13.8.2 The forward scatter meter is mounted on a 14−foot frangible pole. Infrared light is emitted from the transmitter and received by the receiver. Any obscuring matter such as rain, snow, dust, fog, haze, or smoke increases the amount of scattered light reaching the receiver. The resulting measurement along with inputs from the runway light intensity monitor and the ambient light sensor are forwarded to the DPU which calculates the proper RVR value. The RVR values are displayed locally and remotely on controller displays.

13.8.3 The runway light intensity monitors both the runway edge and centerline light step settings (steps 1 through 5). Centerline light step settings are used for CAT IIIb operations. Edge light step settings are used for CAT I, II, and IIIa operations.

13.8.4 New Generation RVRs can measure and display RVR values down to the lowest limits of Category IIIb operations (150 foot RVR). RVR values are displayed in 100−foot increments and are reported as follows:

13.8.4.1 100−foot increments for products below 800 feet.

13.8.4.2 200−foot increments for products between 800 feet and 3,000 feet.

13.8.4.3 500−foot increments for products between 3,000 feet and 6,500 feet.

13.8.4.4 25−meter increments for products below 150 meters.

13.8.4.5 50−meter increments for products between 150 meters and 800 meters.

13.8.4.6 100−meter increments for products between 800 meters and 1,200 meters.

13.8.4.7 200−meter increments for products between 1,200 meters and 2,000 meters.

14. Reporting of Cloud Heights

14.1 Ceiling, by definition in Federal Aviation Regulations, and as used in Aviation Weather Reports and Forecasts, is the height above ground (or water) level of the lowest layer of clouds or obscuring phenomenon that is reported as "broken," "overcast," or "the vertical visibility into an obscuration." For example, an aerodrome forecast which reads "BKN030" refers to heights above ground level (AGL). An area forecast which reads "BKN030" states that the height is above mean sea level (MSL). See FIG GEN 3.5−23 for the Key to Routine Aviation Weather Reports and Forecasts for the definition of "broken," "overcast," and "obscuration."

14.2 Information on cloud base height is obtained by use of ceilometers (rotating or fixed beam), ceiling lights, ceiling balloons, pilot reports, and observer estimations. The systems in use by most reporting stations are either the observer estimation or the rotating beam ceilometer.

14.3 Pilots usually report height values above mean sea level, since they determine heights by the altimeter. This is taken into account when disseminating and otherwise applying information received from pilots. ("Ceiling" heights are always above ground level.) In reports disseminated as pilot reports, height references are given the same as received from pilots; that is, above mean sea level.

14.4 In area forecasts or inflight Advisories, ceilings are denoted by the contraction "CIG" when used with sky cover symbols as in "LWRG TO CIG OVC005," or the contraction "AGL" after the forecast cloud height value. When the cloud base is given in height above mean sea level, it is so indicated by the contraction "MSL" or "ASL" following the height value. The heights of cloud tops, freezing level, icing, and turbulence are always given in heights above mean sea level (ASL or MSL).

15. Reporting Prevailing Visibility

15.1 Surface (horizontal) visibility is reported in METAR reports in terms of statute miles and increments thereof; e.g., 1/16, 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, etc. (Visibility reported by an unaugmented automated site is reported differently than in a manual report; i.e., ASOS/AWOS: 0, 1/16, 1/8, 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/2, 3, 4, 5, etc., AWOS: M1/4, 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/2, 3, 4, 5, etc.) Visibility is determined through the ability to see and identify preselected and prominent objects at a known distance from the usual point of observation. Visibilities which are determined to be less than 7 miles, identify the obscuring atmospheric condition; e.g., fog, haze, smoke, etc., or combinations thereof.

15.2 Prevailing visibility is the greatest visibility equaled or exceeded throughout at least one−half the horizon circle, not necessarily contiguous. Segments of the horizon circle which may have a significantly different visibility may be reported in the remarks section of the weather report; i.e., the southeastern quadrant of the horizon circle may be determined to be 2 miles in mist while the remaining quadrants are determined to be 3 miles in mist.

15.3 When the prevailing visibility at the usual point of observation, or at the tower level, is less than 4 miles, certificated tower personnel will take visibility observations in addition to those taken at the usual point of observation. The lower of these two values will be used as the prevailing visibility for aircraft operations.

16. Estimating Intensity of Rain and Ice Pellets

16.1 Rain

16.1.1 Light. From scattered drops that, regardless of duration, do not completely wet an exposed surface up to a condition where individual drops are easily seen.

16.1.2 Moderate. Individual drops are not clearly identifiable; spray is observable just above pavements and other hard surfaces.

16.1.3 Heavy. Rain seemingly falls in sheets; individual drops are not identifiable; heavy spray to a height of several inches is observed over hard surfaces.

16.2 Ice Pellets

16.2.1 Light. Scattered pellets that do not completely cover an exposed surface regardless of duration. Visibility is not affected.

16.2.2 Moderate. Slow accumulation on the ground. Visibility is reduced by ice pellets to less than 7 statute miles.

16.2.3 Heavy. Rapid accumulation on the ground. Visibility is reduced by ice pellets to less than 3 statute miles.

17. Estimating the Intensity of Snow or Drizzle (Based on Visibility)

17.1 Light. Visibility more than $^1/_2$ statute mile.

17.2 Moderate. Visibility from more than $^1/_4$ statute mile to $^1/_2$ statute mile.

17.3 Heavy. Visibility $^1/_4$ statute mile or less.

18. Pilot Weather Reports (PIREPs)

18.1 FAA air traffic facilities are required to solicit PIREPs when the following conditions are reported or forecast: ceilings at or below 5,000 feet, visibility at or below 5 miles (surface or aloft), thunderstorms and related phenomena, icing of a light degree or greater, turbulence of a moderate degree or greater, wind shear, and reported or forecast volcanic ash clouds, including the presence of sulphur gases (SO_2 or H_2S). SO_2 is identifiable as the sharp, acrid odor of a freshly struck match. H_2S, also known as sewer gas, has the odor of rotten eggs. Electrical smoke and fire and SO_2 are two odors described as somewhat similar.

NOTE−
After determining there are no secondary indications that would result from and indicate an electrical fire, the flight crew must establish whether the sulphur odor is transient or not. This is best achieved by flight crew donning oxygen mask(s) and breathing 100 percent oxygen for the period of time that results in a complete change of air within the cockpit and also allows the sense of smell to be regained. After the appropriate time period, the flight crew should remove the oxygen mask and determine if the odor is still present. The detection of sulphur gases are to be reported as SO_2 to conform to ICAO practices.

18.2 Pilots are urged to cooperate and promptly volunteer reports of these conditions and other atmospheric data, such as cloud bases, tops and layers, flight visibility, precipitation, visibility restrictions (haze, smoke, and dust), wind at altitude, and temperature aloft.

18.3 PIREPs should be given to the ground facility with which communications are established; i.e., FSS, ARTCC, or terminal ATC. One of the primary duties of the Inflight position is to serve as a collection point for the exchange of PIREPs with en route aircraft.

18.4 If pilots do not make PIREPs by radio, it is helpful if, upon landing, they report to the nearest FSS or Weather Forecast Office the inflight conditions which they encountered. Some of the uses made of the reports are:

18.4.1 The ATCT uses the reports to expedite the flow of air traffic in the vicinity of the field and for hazardous weather avoidance procedures.

18.4.2 The FSS uses the reports to brief other pilots, to provide inflight advisories and weather avoidance information to en route aircraft.

18.4.3 The ARTCC uses the reports to expedite the flow of en route traffic, to determine most favorable altitudes, and to issue hazardous weather information within the center's area.

18.4.4 The NWS uses the reports to verify or amend conditions contained in aviation forecasts and advisories; (In some cases, pilot reports of hazardous conditions are the triggering mechanism for the issuance of advisories.)

18.4.5 The NWS, other government organizations, the military, and private industry groups use PIREPs for research activities in the study of meteorological phenomena.

18.4.6 All air traffic facilities and the NWS forward the reports received from pilots into the weather distribution system to assure the information is made available to all pilots and other interested parties.

18.5 The FAA, NWS, and other organizations that enter PIREPs into the weather reporting system use the format listed in TBL GEN 3.5−7,PIREP Element Code Chart. Items 1 through 6 are included in all transmitted PIREPs along with one or more of items 7 through 13. Although the PIREP should be as complete and concise as possible, pilots should not be overly concerned with strict format or phraseology. The important thing is that the information is relayed so other pilots may benefit from your observation. If a portion of the report needs clarification, the ground station will request the information.

18.6 Completed PIREPs will be transmitted to weather circuits as in the following examples:

EXAMPLE−
KCMH UA/OV APE 230010/TM 1516/FL085/TP BE20/SK BKN065/WX FV03SM HZ FU/TA 20/TB LGT.

Translation: one zero miles southwest of Appleton VOR; time 1516 UTC; altitude eight thousand five hundred; aircraft type BE20; base of the broken cloud layer is six thousand five hundred; flight visibility 3 miles with haze and smoke; air temperature 20 degrees Celsius; light turbulence.

EXAMPLE−
KCRW UA/OV KBKW 360015−KCRW/TM 1815/ FL120/TP BE99/SK IMC/WX RA−/TA M08/WV 290030/TB LGT−MDT/IC LGT RIME/RM MDT MXD ICG DURC KROA NWBND FL080−100 1750Z.
Translation: from 15 miles north of Beckley VOR to Charleston VOR; time 1815 UTC; altitude 12,000 feet; type aircraft, BE−99; in clouds; rain; temperature minus 8 Celsius; wind 290 degrees magnetic at 30 knots; light to moderate turbulence; light rime icing during climb northwestbound from Roanoke, VA, between 8,000 and 10,000 feet at 1750 UTC.

TBL GEN 3.5−7
PIREP Element Code Chart

	PIREP ELEMENT	PIREP CODE	CONTENTS
1.	3−letter station identifier	XXX	Nearest weather reporting location to the reported phenomenon
2.	Report type	UA or UUA	Routine or urgent PIREP
3.	Location	/OV	In relation to a VOR
4.	Time	/TM	Coordinated Universal Time
5.	Altitude	/FL	Essential for turbulence and icing reports
6.	Type aircraft	/TP	Essential for turbulence and icing reports
7.	Sky cover	/SK	Cloud height and coverage (sky clear, few, scattered, broken, or overcast)
8.	Weather	/WX	Flight visibility, precipitation, restrictions to visibility, etc.
9.	Temperature	/TA	Degrees Celsius
10.	Wind	/WV	Direction in degrees magnetic north and speed in knots
11.	Turbulence	/TB	See paragraph 22.
12.	Icing	/IC	See paragraph 20.
13.	Remarks	/RM	For reporting elements not included or to clarify previously reported items

19. Mandatory MET Points

19.1 Within the ICAO CAR/SAM Regions and within the U.S. area of responsibility, several mandatory MET reporting points have been established. These points are located within the Houston, Miami, and San Juan Flight Information Regions (FIR). These points have been established for flights between the South American and Caribbean Regions and Europe, Canada and the U.S.

19.2 Mandatory MET Reporting Points Within the Houston FIR

Point	For Flights Between
ABBOT	Acapulco and Montreal, New York, Toronto, Mexico City and New Orleans.
ALARD	New Orleans and Belize, Guatemala, San Pedro Sula, Mexico City and Miami, Tampa.
ARGUS	Toronto and Guadalajara, Mexico City, New Orleans and Mexico City.
SWORD	Dallas−Fort Worth, New Orleans, Chicago and Cancun, Cozumel, and Central America.

19.3 Mandatory MET Reporting Points Within the Miami FIR

Point	For Flights Between
Grand Turk	New York and Aruba, Curacao, Kingston, Miami and Belem, St. Thomas, Rio de Janeiro, San Paulo, St. Croix, Kingston and Bermuda.
GRATX	Madrid and Miami, Havana.
MAPYL	New York and Guayaquil, Montego Bay, Panama, Lima, Atlanta and San Juan.
RESIN	New Orleans and San Juan.
SLAPP	New York and Aruba, Curacao, Kingston, Port−au−Prince. Bermuda and Freeport, Nassau. New York and Barranquilla, Bogota, Santo Domingo, Washington and Santo Domingo, Atlanta and San Juan.

19.4 Mandatory MET Reporting Points Within the San Juan FIR

Point	For Flights Between
GRANN	Toronto and Barbados, New York and Fort de France. At intersection of routes A321, A523, G432.
KRAFT	San Juan and Buenos Aires, Caracas, St. Thomas, St. Croix, St. Maarten, San Juan, Kingston and Bermuda.
PISAX	New York and Barbados, Fort de France, Bermuda and Antigua, Barbados.

20. PIREPs Relating to Airframe Icing

20.1 The effects of ice accretion on aircraft are: cumulative−thrust is reduced, drag increases, lift lessens, weight increases. The results are an increase in stall speed and a deterioration of aircraft performance. In extreme cases, 2 to 3 inches of ice can form on the leading edge of the airfoil in less than 5 minutes. It takes but $^1/_2$ inch of ice to reduce the lifting power of some aircraft by 50 percent and to increase the frictional drag by an equal percentage.

20.2 A pilot can expect icing when flying in visible precipitation, such as rain or cloud droplets, and the temperature is between +02 and −10 degrees Celsius. When icing is detected, a pilot should do one of two things (particularly if the aircraft is not equipped with deicing equipment). The pilot should get out of the area of precipitation or go to an altitude where the temperature is above freezing. This "warmer" altitude may not always be a lower altitude. Proper preflight action includes obtaining information on the freezing level and the above−freezing levels in precipitation areas. Report the icing to an ATC or FSS facility, and if operating IFR, request new routing or altitude if icing will be a hazard. Be sure to give the type of aircraft to ATC when reporting icing. TBL GEN 3.5−8 describes how to report icing conditions.

TBL GEN 3.5−8

Intensity	Ice Accumulation
Trace	Ice becomes noticeable. The rate of accumulation is slightly greater than the rate of sublimation. A representative accretion rate for reference purposes is less than ¼ inch (6 mm) per hour on the outer wing. The pilot should consider exiting the icing conditions before they become worse.
Light	The rate of ice accumulation requires occasional cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is ¼ inch to 1 inch (0.6 to 2.5 cm) per hour on the unprotected part of the outer wing. The pilot should consider exiting the icing condition.
Moderate	The rate of ice accumulation requires frequent cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1 to 3 inches (2.5 to 7.5 cm) per hour on the unprotected part of the outer wing. The pilot should consider exiting the icing condition as soon as possible.
Severe	The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice and ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. A representative accretion rate for reference purposes is more than 3 inches (7.5 cm) per hour on the unprotected part of the outer wing. By regulation, immediate exit is required.
Pilot Report: Aircraft Identification, Location, Time (UTC), Intensity of Type[1], Altitude/FL, Aircraft Type, Indicated Air Speed (IAS), and Outside Air Temperature (OAT)[2].	
[1]Rime or Clear Ice: Rime ice is a rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets. Clear ice is a glossy, clear, or translucent ice formed by the relatively slow freezing of large supercooled water droplets.	
[2]The Outside Air Temperature (OAT) should be requested by the FSS or ATC if not included in the PIREP.	
NOTE − Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate when the icing rate or ice accumulations exceed the tolerance of the aircraft.	

21. Definitions of Inflight Icing Terms

See TBL GEN 3.5−9, Icing Types, and TBL GEN 3.5−10, Icing Conditions.

TBL GEN 3.5−9

Icing Types

Clear Ice	See Glaze Ice.
Glaze Ice	Ice, sometimes clear and smooth, but usually containing some air pockets, which results in a lumpy translucent appearance. Glaze ice results from supercooled drops/droplets striking a surface but not freezing rapidly on contact. Glaze ice is denser, harder, and sometimes more transparent than rime ice. Factors, which favor glaze formation, are those that favor slow dissipation of the heat of fusion (i.e., slight supercooling and rapid accretion). With larger accretions, the ice shape typically includes "horns" protruding from unprotected leading edge surfaces. It is the ice shape, rather than the clarity or color of the ice, which is most likely to be accurately assessed from the cockpit. The terms "clear" and "glaze" have been used for essentially the same type of ice accretion, although some reserve "clear" for thinner accretions which lack horns and conform to the airfoil.
Intercycle Ice	Ice which accumulates on a protected surface between actuation cycles of a deicing system.
Known or Observed or Detected Ice Accretion	Actual ice observed visually to be on the aircraft by the flight crew or identified by on−board sensors.
Mixed Ice	Simultaneous appearance or a combination of rime and glaze ice characteristics. Since the clarity, color, and shape of the ice will be a mixture of rime and glaze characteristics, accurate identification of mixed ice from the cockpit may be difficult.
Residual Ice	Ice which remains on a protected surface immediately after the actuation of a deicing system.
Rime Ice	A rough, milky, opaque ice formed by the rapid freezing of supercooled drops/droplets after they strike the aircraft. The rapid freezing results in air being trapped, giving the ice its opaque appearance and making it porous and brittle. Rime ice typically accretes along the stagnation line of an airfoil and is more regular in shape and conformal to the airfoil than glaze ice. It is the ice shape, rather than the clarity or color of the ice, which is most likely to be accurately assessed from the cockpit.
Runback Ice	Ice which forms from the freezing or refreezing of water leaving protected surfaces and running back to unprotected surfaces.
Note− *Ice types are difficult for the pilot to discern and have uncertain effects on an airplane in flight. Ice type definitions will be included in the AIP for use in the "Remarks" section of the PIREP and for use in forecasting.*	

TBL GEN 3.5−10

Icing Conditions

Appendix C Icing Conditions	Appendix C (14 CFR, Part 25 and 29) is the certification icing condition standard for approving ice protection provisions on aircraft. The conditions are specified in terms of altitude, temperature, liquid water content (LWC), representative droplet size (mean effective drop diameter [MED]), and cloud horizontal extent.
Forecast Icing Conditions	Environmental conditions expected by a National Weather Service or an FAA−approved weather provider to be conducive to the formation of inflight icing on aircraft.
Freezing Drizzle (FZDZ)	Drizzle is precipitation at ground level or aloft in the form of liquid water drops which have diameters less than 0.5 mm and greater than 0.05 mm. Freezing drizzle is drizzle that exists at air temperatures less than 0°C (supercooled), remains in liquid form, and freezes upon contact with objects on the surface or airborne.
Freezing Precipitation	Freezing precipitation is freezing rain or freezing drizzle falling through or outside of visible cloud.
Freezing Rain (FZRA)	Rain is precipitation at ground level or aloft in the form of liquid water drops which have diameters greater than 0.5 mm. Freezing rain is rain that exists at air temperatures less than 0°C (supercooled), remains in liquid form, and freezes upon contact with objects on the ground or in the air.
Icing in Cloud	Icing occurring within visible cloud. Cloud droplets (diameter < 0.05 mm) will be present; freezing drizzle and/or freezing rain may or may not be present.
Icing in Precipitation	Icing occurring from an encounter with freezing precipitation, that is, supercooled drops with diameters exceeding 0.05 mm, within or outside of visible cloud.
Known Icing Conditions	Atmospheric conditions in which the formation of ice is observed or detected in flight. ***Note−*** *Because of the variability in space and time of atmospheric conditions, the existence of a report of observed icing does not assure the presence or intensity of icing conditions at a later time, nor can a report of no icing assure the absence of icing conditions at a later time.*
Potential Icing Conditions	Atmospheric icing conditions that are typically defined by airframe manufacturers relative to temperature and visible moisture that may result in aircraft ice accretion on the ground or in flight. The potential icing conditions are typically defined in the Airplane Flight Manual or in the Airplane Operation Manual.
Supercooled Drizzle Drops (SCDD)	Synonymous with freezing drizzle aloft.
Supercooled Drops or /Droplets	Water drops/droplets which remain unfrozen at temperatures below 0°C. Supercooled drops are found in clouds, freezing drizzle, and freezing rain in the atmosphere. These drops may impinge and freeze after contact on aircraft surfaces.
Supercooled Large Drops (SLD)	Liquid droplets with diameters greater than 0.05 mm at temperatures less than 0°C, i.e., freezing rain or freezing drizzle.

22. PIREPs Relating to Turbulence

22.1 When encountering turbulence, pilots are urgently requested to report such conditions to ATC as soon as practicable. PIREPs relating to turbulence should state:

22.1.1 Aircraft location.

22.1.2 Time of occurrence in UTC.

22.1.3 Turbulence intensity.

22.1.4 Whether the turbulence occurred in or near clouds.

22.1.5 Aircraft altitude, or flight level.

22.1.6 Type of aircraft.

22.1.7 Duration of turbulence.

EXAMPLE−
1. *Over Omaha, 1232Z, moderate turbulence in clouds at Flight Level three one zero, Boeing 707.*

2. *From five zero miles south of Albuquerque to three zero miles north of Phoenix, 1250Z, occasional moderate chop at Flight Level three three zero, DC8.*

22.2 Duration and classification of intensity should be made using TBL GEN 3.5−11, Turbulence Reporting Criteria Table.

TBL GEN 3.5−11
Turbulence Reporting Criteria Table

Intensity	Aircraft Reaction	Reaction inside Aircraft	Reporting Term−Definition
Light	Turbulence that momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw). Report as **Light Turbulence;** [1] or Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. Report as **Light Chop.**	Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. Food service may be conducted, and little or no difficulty is encountered in walking.	Occasional−Less than $^{1}/_{3}$ of the time. Intermittent−$^{1}/_{3}$ to $^{2}/_{3}$. Continuous−More than $^{2}/_{3}$.
Moderate	Turbulence that is similar to Light Turbulence but of greater intensity. Changes in altitude and/or attitude occur, but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed. Report as **Moderate Turbulence;** [1] or Turbulence that is similar to Light Chop but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude. Report as **Moderate Chop.** [1]	Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.	**NOTE** 1. Pilots should report location(s), time (UTC), intensity, whether in or near clouds, altitude, type of aircraft and, when applicable, duration of turbulence. 2. Duration may be based on time between two locations or over a single location. All locations should be readily identifiable.
Severe	Turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control. Report as **Severe Turbulence.**[1]	Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food service and walking are impossible.	**EXAMPLES:** a. Over Omaha. 1232Z, Moderate Turbulence, in cloud, Flight Level 310, B707.
Extreme	Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage. Report as **Extreme Turbulence.** [1]		b. From 50 miles south of Albuquerque to 30 miles north of Phoenix, 1210Z to 1250Z, occasional Moderate Chop, Flight Level 330, DC8.

[1] High level turbulence (normally above 15,000 feet ASL) not associated with cumuliform cloudiness, including thunderstorms, should be reported as clear air turbulence (CAT) preceded by the appropriate intensity, or light or moderate chop.

23. Wind Shear PIREPs

23.1 Because unexpected changes in wind speed and direction can be hazardous to aircraft operations at low altitudes on approach to and departing from airports, pilots are urged to promptly volunteer reports to controllers of wind shear conditions they encounter. An advance warning of this information will assist other pilots in avoiding or coping with a wind shear on approach or departure.

23.2 When describing conditions, the use of the terms "negative" or "positive" wind shear should be avoided. PIREPs of negative wind shear on final, intended to describe loss of airspeed and lift, have been interpreted to mean that no wind shear was encountered. The recommended method for wind shear reporting is to state the loss/gain of airspeed and the altitude(s) at which it was encountered.

EXAMPLE−
1. *Denver Tower, Cessna 1234 encountered wind shear, loss of 20 knots at 400.*

2. *Tulsa Tower, American 721 encountered wind shear on final, gained 25 knots between 600 and 400 feet followed by loss of 40 knots between 400 feet and surface.*

Pilots using Inertial Navigation Systems should report the wind and altitude both above and below the shear layer.

EXAMPLE−
Miami Tower, Gulfstream 403 Charlie encountered an abrupt wind shear at 800 feet on final, max thrust required.

Pilots who are not able to report wind shear in these specific terms are encouraged to make reports in terms of the effect upon their aircraft.

23.3 Wind Shear Escape

23.3.1 Pilots should report to ATC when they are performing a wind shear escape maneuver. This report should be made as soon as practicable, but not until aircraft safety and control is assured, which may not be satisfied until the aircraft is clear of the wind shear or microburst. ATC should provide safety alerts and traffic advisories, as appropriate.

EXAMPLE−
"Denver Tower, United 1154, wind shear escape."

23.3.2 Once the pilot initiates a wind shear escape maneuver, ATC is not responsible for providing approved separation between the aircraft and any other aircraft, airspace, terrain, or obstacle until the pilot reports that the escape procedure is complete and approved separation has been re−established. Pilots should advise ATC that they are resuming the previously assigned clearance or should request an alternate clearance.

EXAMPLE−
"Denver Tower, United ll54, wind shear escape complete, resuming last assigned heading/(name) DP/clearance."
or
"Denver Tower, United ll54, wind shear escape complete, request further instructions."

24. Clear Air Turbulence (CAT) PIREPs

24.1 Clear air turbulence (CAT) has become a very serious operational factor to flight operations at all levels and especially to jet traffic flying in excess of 15,000 feet. The best available information on this phenomenon must come from pilots via the PIREP procedures. All pilots encountering CAT conditions are urgently requested to report time, location, and intensity (light, moderate, severe, or extreme) of the element to the FAA facility with which they are maintaining radio contact. If time and conditions permit, elements should be reported according to the standards for other PIREPs and position reports. See TBL GEN 3.5−11, Turbulence Reporting Criteria Table.

25. Microbursts

25.1 Relatively recent meteorological studies have confirmed the existence of microburst phenomena. Microbursts are small−scale intense downdrafts which, on reaching the surface, spread outward in all directions from the downdraft center. This causes the presence of both vertical and horizontal wind shears that can be extremely hazardous to all types and categories of aircraft, especially at low altitudes. Due to their small size, short life−span, and the fact that they can occur over areas without surface precipitation, microbursts are not easily detectable using conventional weather radar or wind shear alert systems.

25.2 Parent clouds producing microburst activity can be any of the low or middle layer convective cloud types. Note however, that microbursts commonly occur within the heavy rain portion of thunderstorms, and in much weaker, benign−appearing convective cells that have little or no precipitation reaching the ground.

25.3 The life cycle of a microburst as it descends in a convective rain shaft is seen in FIG GEN 3.5−7, Evolution of a Microburst. An important consideration for pilots is the fact that the microburst intensifies for about 5 minutes after it strikes the ground.

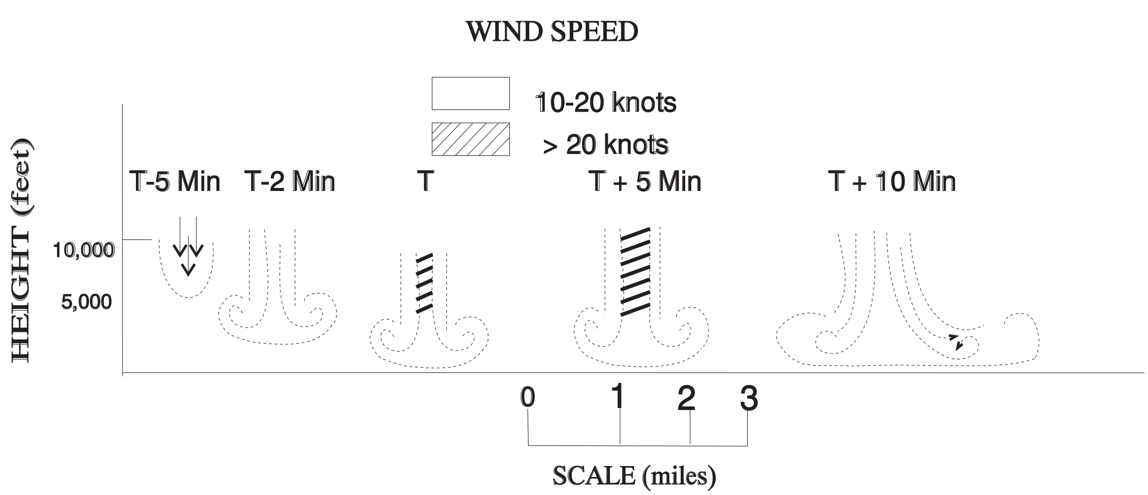
25.4 Characteristics of microbursts include:

25.4.1 Size. The microburst downdraft is typically less than 1 mile in diameter as it descends from the cloud base to about 1,000−3,000 feet above the ground. In the transition zone near the ground, the downdraft changes to a horizontal outflow that can extend to approximately 2 $^{1}/_{2}$ miles in diameter.

25.4.2 Intensity. The downdrafts can be as strong as 6,000 feet per minute. Horizontal winds near the surface can be as strong as 45 knots resulting in a 90−knot shear (headwind to tailwind change for a traversing aircraft) across the microburst. These strong horizontal winds occur within a few hundred feet of the ground.

25.4.3 Visual Signs. Microbursts can be found almost anywhere that there is convective activity. They may be embedded in heavy rain associated with a thunderstorm or in light rain in benign− appearing virga. When there is little or no precipitation at the surface accompanying the microburst, a ring of blowing dust may be the only visual clue of its existence.

FIG GEN 3.5−7
Evolution of a Microburst

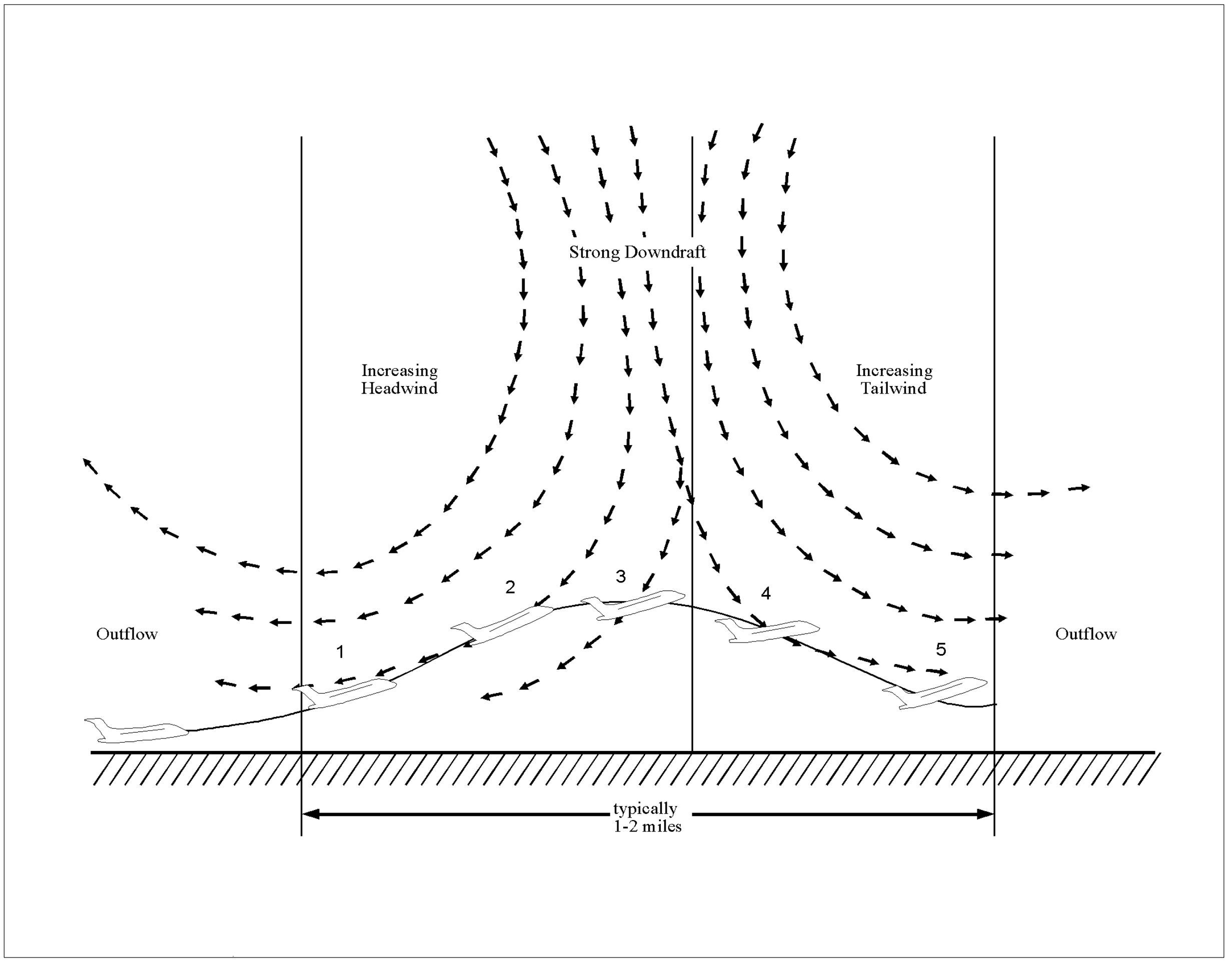


Vertical cross section of the evolution of a microburst wind field. T is the time of initial divergence at the surface. The shading refers to the vector wind speeds. Figure adapted from Wilson et al., 1984, Microburst Wind Structure and Evaluation of Doppler Radar for Wind Shear Detection, DOT/FAA Report No. DOT/FAA/PM-84/29, National Technical Information Service, Springfield, VA 37 pp.

25.4.4 Duration. An individual microburst will seldom last longer than 15 minutes from the time it strikes the ground until dissipation. The horizontal winds continue to increase during the first 5 minutes with the maximum intensity winds lasting approximately 2–4 minutes. Sometimes microbursts are concentrated into a line structure and, under these conditions, activity may continue for as long as 1 hour. Once microburst activity starts, multiple microbursts in the same general area are not uncommon and should be expected.

FIG GEN 3.5−8

Microburst Encounter During Takeoff

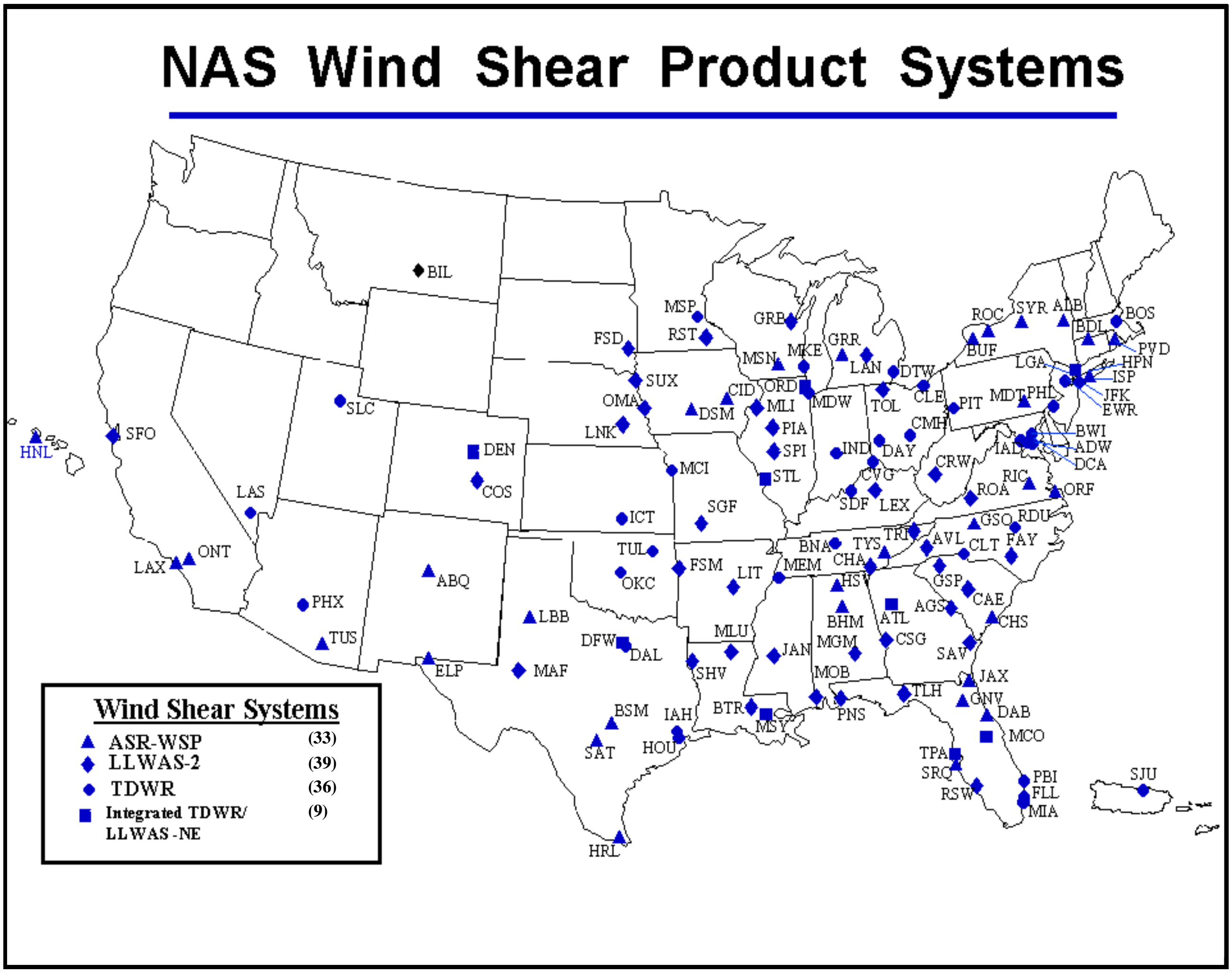


NOTE−

A microburst encounter during takeoff. The airplane first encounters a headwind and experiences increasing performance (1), this is followed in short succession by a decreasing headwind component (2), a downdraft (3), and finally a strong tailwind (4), where 2 through 5 all result in decreasing performance of the airplane. Position (5) represents an extreme situation just prior to impact. Figure courtesy of Walter Frost, FWG Associates, Inc., Tullahoma, Tennessee.

25.5 Microburst wind shear may create a severe hazard for aircraft within 1,000 feet of the ground, particularly during the approach to landing and landing and take−off phases. The impact of a microburst on aircraft which have the unfortunate experience of penetrating one is characterized in FIG GEN 3.5−8. The aircraft may encounter a headwind (performance increasing), followed by a downdraft and a tailwind (both performance decreasing), possibly resulting in terrain impact.

FIG GEN 3.5−9
NAS Wind Shear Product Systems



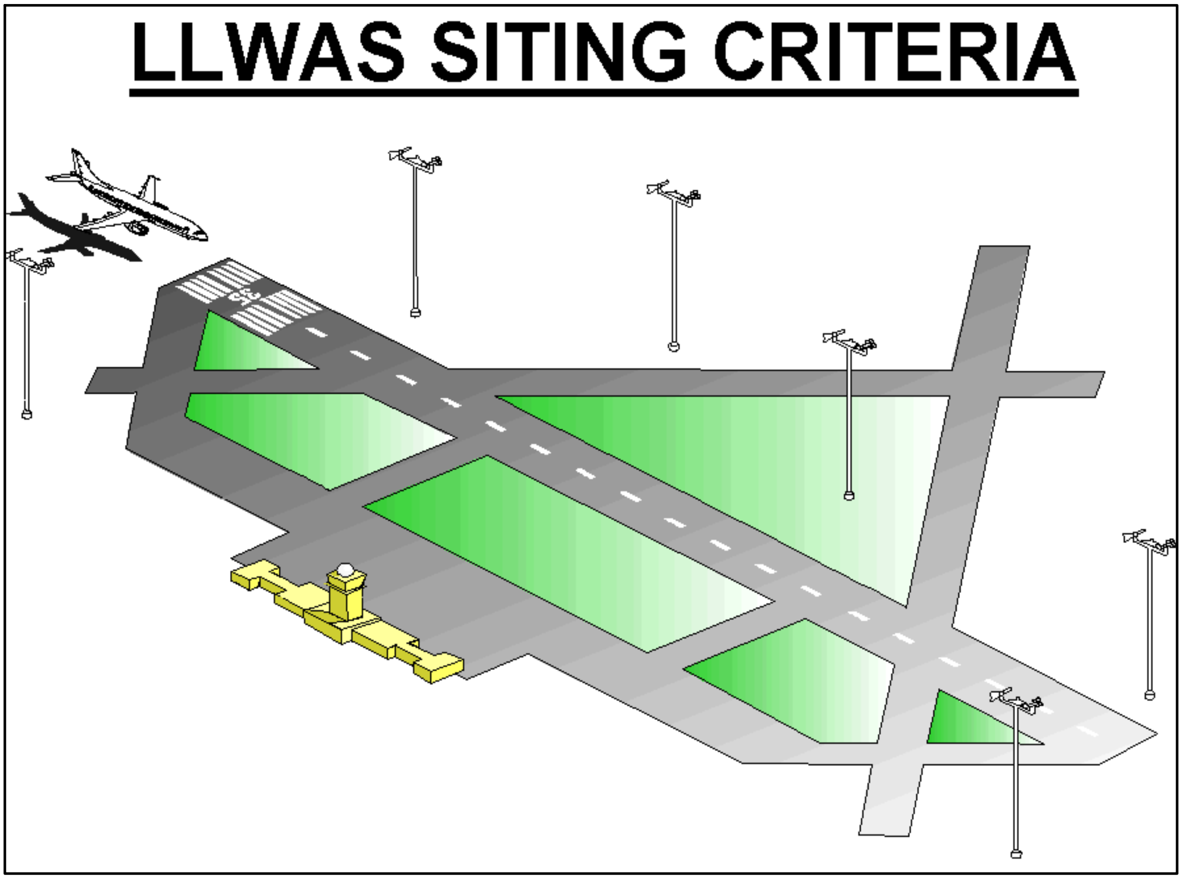
25.6 Detection of Microbursts, Wind Shear, and Gust Fronts

25.6.1 FAA's Integrated Wind Shear Detection Plan

25.6.1.1 The FAA currently employs an integrated plan for wind shear detection that will significantly improve both the safety and capacity of the majority of the airports currently served by the air carriers. This plan integrates several programs, such as the Integrated Terminal Weather System (ITWS), Terminal Doppler Weather Radar (TDWR), Weather System Processor (WSP), and Low Level Wind Shear Alert Systems (LLWAS) into a single strategic concept that significantly improves the aviation weather information in the terminal area. (See FIG GEN 3.5−9.)

25.6.1.2 The wind shear/microburst information and warnings are displayed on the ribbon display terminal (RBDT) located in the tower cabs. They are identical (and standardized) to those in the LLWAS, TDWR and WSP systems, and designed so that the controller does not need to interpret the data, but simply read the displayed information to the pilot. The RBDTs are constantly monitored by the controller to ensure the rapid and timely dissemination of any hazardous event(s) to the pilot.

FIG GEN 3.5−10
LLWAS Siting Criteria



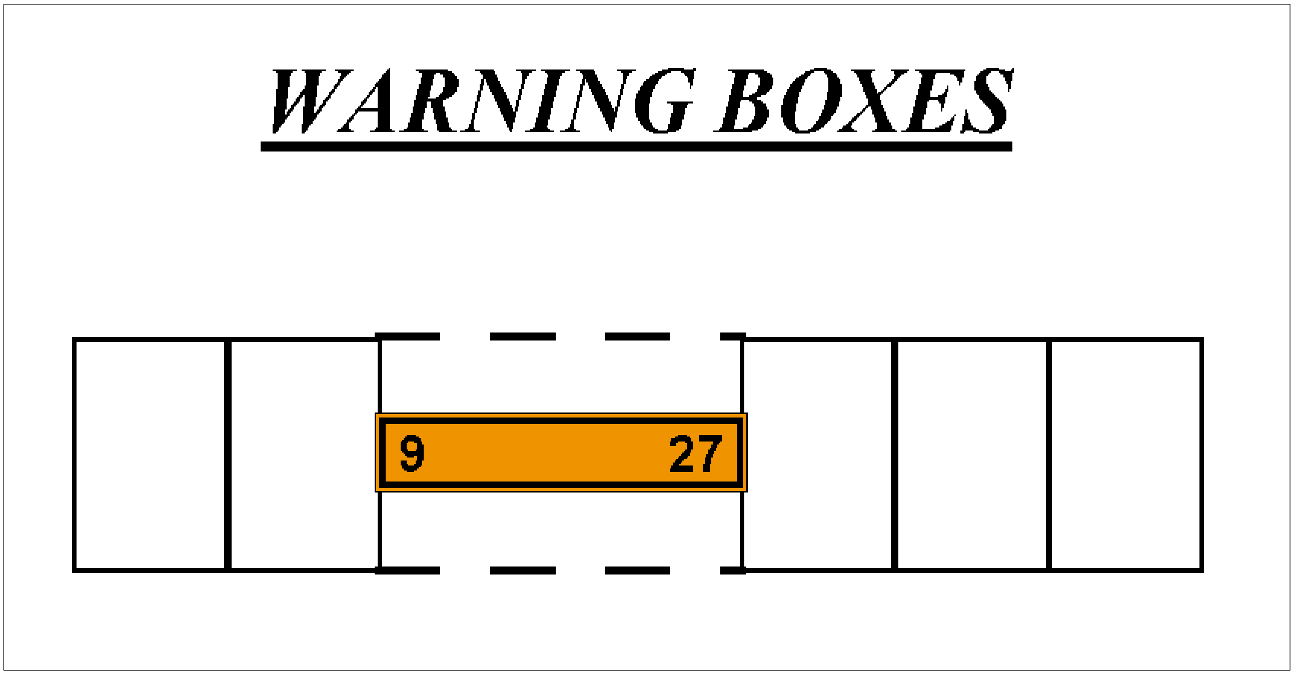
25.6.1.3 The early detection of a wind shear/microburst event, and the subsequent warning(s) issued to an aircraft on approach or departure, will alert the pilot/crew to the potential of, and to be prepared for, a situation that could become very dangerous! Without these warnings, the aircraft may NOT be able to climb out of or safely transition the event, resulting in a catastrophe. The air carriers, working with the FAA, have developed specialized training programs using their simulators to train and prepare their pilots on the demanding aircraft procedures required to escape these very dangerous wind shear and/or microburst encounters.

25.6.1.4 Low Level Wind Shear Alert System (LLWAS)

a) The LLWAS provides wind data and software processes to detect the presence of hazardous wind shear and microbursts in the vicinity of an airport. Wind sensors, mounted on poles sometimes as high as 150 feet, are (ideally) located 2,000 − 3,500 feet, but not more than 5,000 feet, from the centerline of the runway. (See FIG GEN 3.5−10.)

b) The LLWAS was fielded in 1988 at 110 airports across the nation. Many of these systems have been replaced by new terminal doppler weather radar (TDWR) and weather systems processor (WSP) technology. Eventually all LLWAS systems will be phased out; however, 39 airports will be upgraded to the LLWAS−NE (Network Expansion) system, which employs the very latest software and sensor technology. The new LLWAS−NE systems will not only provide the controller with wind shear warnings and alerts, including wind shear/microburst detection at the airport wind sensor location, but will also provide the location of the hazards relative to the airport runway(s). It will also have the flexibility and capability to grow with the airport as new runways are built. As many as 32 sensors, strategically located around the airport and in relationship to its runway configuration, can be accommodated by the LLWAS−NE network.

FIG GEN 3.5−11
Warning Boxes



25.6.1.5 Terminal Doppler Weather Radar (TDWR)

a) TDWRs are being deployed at 45 locations across the U.S. Optimum locations for TDWRs are 8 to 12 miles from the airport proper, and designed to look at the airspace around and over the airport to detect microbursts, gust fronts, wind shifts, and precipitation intensities. TDWR products advise the controller of wind shear and microburst events impacting all runways and the areas $^{1}/_{2}$ mile on either side of the extended centerline of the runways and to a distance of 3 miles on final approach and 2 miles on departure. FIG GEN 3.5−11 is a theoretical view of the runway and the warning boxes that the software uses to determine the location(s) of wind shear or microbursts. These warnings are displayed (as depicted in the examples in subparagraph e) on the ribbon display terminal located in the tower cabs.

b) It is very important to understand what TDWR DOES NOT DO:

1) It **DOES NOT** warn of wind shear outside of the alert boxes (on the arrival and departure ends of the runways).

2) It **DOES NOT** detect wind shear that is NOT a microburst or a gust front.

3) It **DOES NOT** detect gusty or cross wind conditions.

4) It **DOES NOT** detect turbulence.

However, research and development is continuing on these systems. Future improvements may include such areas as storm motion (movement), improved gust front detection, storm growth and decay, microburst prediction, and turbulence detection.

c) TDWR also provides a geographical situation display (GSD) for supervisors and traffic management specialists for planning purposes. The GSD displays (in color) 6 levels of weather (precipitation), gust fronts and predicted storm movement(s). This data is used by the tower supervisor(s), traffic management specialists, and controllers to plan for runway changes and arrival/departure route changes in order to reduce aircraft delays and increase airport capacity.

25.6.1.6 Weather Systems Processor (WSP)

a) The WSP provides the controller, supervisor, traffic management specialist, and ultimately the pilot, with the same products as the terminal doppler weather radar at a fraction of the cost. This is accomplished by utilizing new technologies to access the weather channel capabilities of the existing ASR−9 radar located on or near the airport, thus eliminating the requirements for a separate radar location, land acquisition, support facilities, and the associated communication landlines and expenses.

b) The WSP utilizes the same RBDT display as the TDWR and LLWAS, and, like the TDWR, has a GSD for planning purposes by supervisors, traffic management specialists, and controllers. The WSP GSD emulates the TDWR display; i.e., it also depicts 6 levels of precipitation, gust fronts and predicted storm movement, and like the TDWR, GSD is used to plan for runway changes and arrival/departure route changes in order to reduce aircraft delays and to increase airport capacity.

c) This system is currently under development and is operating in a developmental test status at the Albuquerque, New Mexico, airport. When fielded, the WSP is expected to be installed at 34 airports across the nation, substantially increasing the safety of flying.

25.6.1.7 Operational Aspects of LLWAS, TDWR, and WSP

To demonstrate how this data is used by both the controller and the pilot, 3 ribbon display examples and their explanations are presented:

a) MICROBURST ALERTS

EXAMPLE−
This is what the controller sees on his/her ribbon display in the tower cab.

27A MBA 35K− 2MF 250 20

NOTE−
(See FIG GEN 3.5−12 to see how the TDWR/WSP determines the microburst location).

This is what the controller will say when issuing the alert.

PHRASEOLOGY−
RUNWAY 27 ARRIVAL, MICROBURST ALERT, 35 KT LOSS 2 MILE FINAL, THRESHOLD WINDS 250 AT 20.

In plain language, the controller is telling the pilot that on approach to runway 27, there is a microburst alert on the approach lane to the runway, and to anticipate or expect a 35−knot loss of airspeed at approximately 2 miles out on final approach (where the aircraft will first encounter the phenomena). With that information, the aircrew is forewarned, and should be prepared to apply wind shear/microburst escape procedures should they decide to continue the approach. Additionally, the surface winds at the airport for landing runway 27 are reported as 250 degrees at 20 knots.

NOTE−
Threshold wind is at pilot's request or as deemed appropriate by the controller.

b) WIND SHEAR ALERTS

EXAMPLE−
This is what the controller sees on his/her ribbon display in the tower cab.

27A WSA 20K− 3MF 200 15

NOTE−
(See FIG GEN 3.5−13 to see how the TDWR/WSP determines the wind shear location).

This is what the controller will say when issuing the alert.

PHRASEOLOGY−
RUNWAY 27 ARRIVAL, WIND SHEAR ALERT, 20 KT LOSS 3 MILE FINAL, THRESHOLD WINDS 200 AT 15.

In plain language, the controller is advising the aircraft arriving on runway 27 that at 3 miles out the pilot should expect to encounter a wind shear condition that will decrease airspeed by 20 knots and possibly the aircraft will encounter turbulence. Additionally, the airport surface winds for landing runway 27 are reported as 200 degrees at 15 knots.

NOTE−
Threshold wind is at pilot's request or as deemed appropriate by the controller.

FIG GEN 3.5−12
Microburst Alert

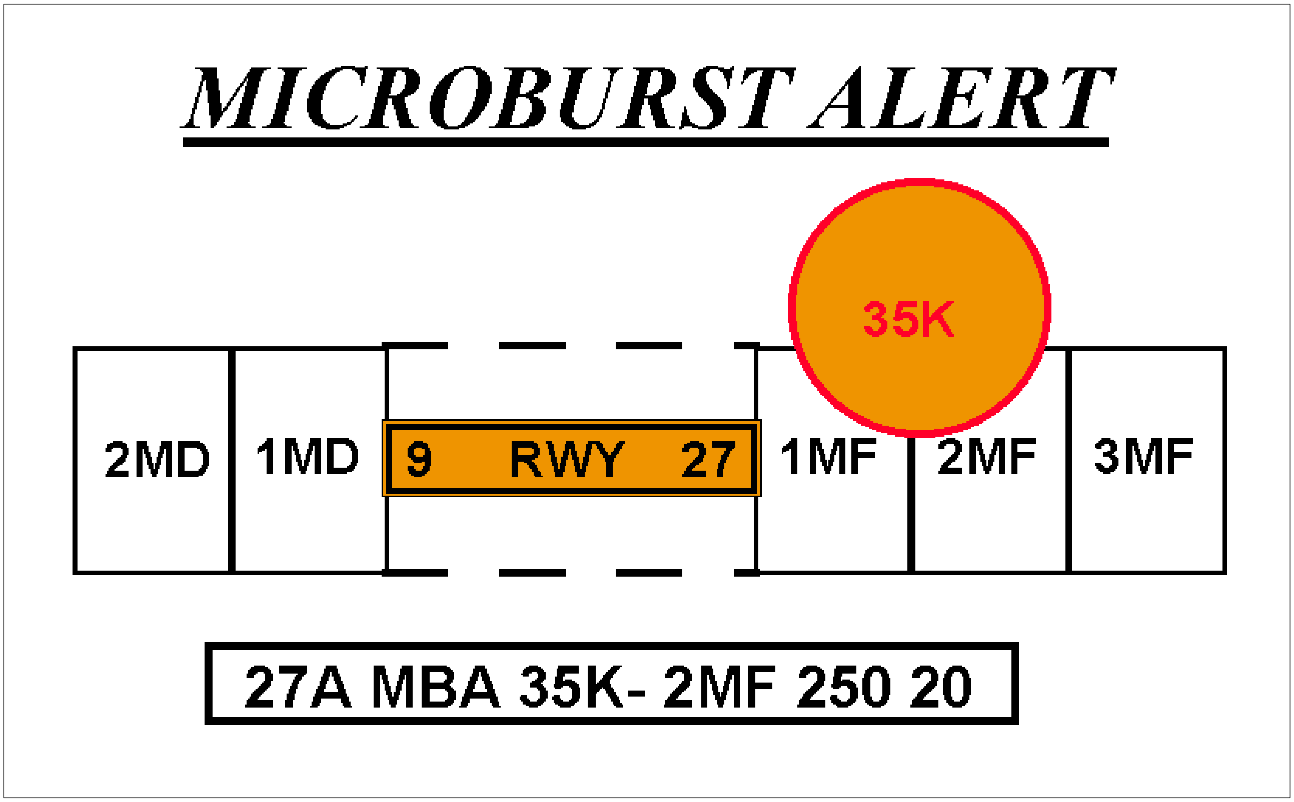


FIG GEN 3.5−13
Weak Microburst Alert

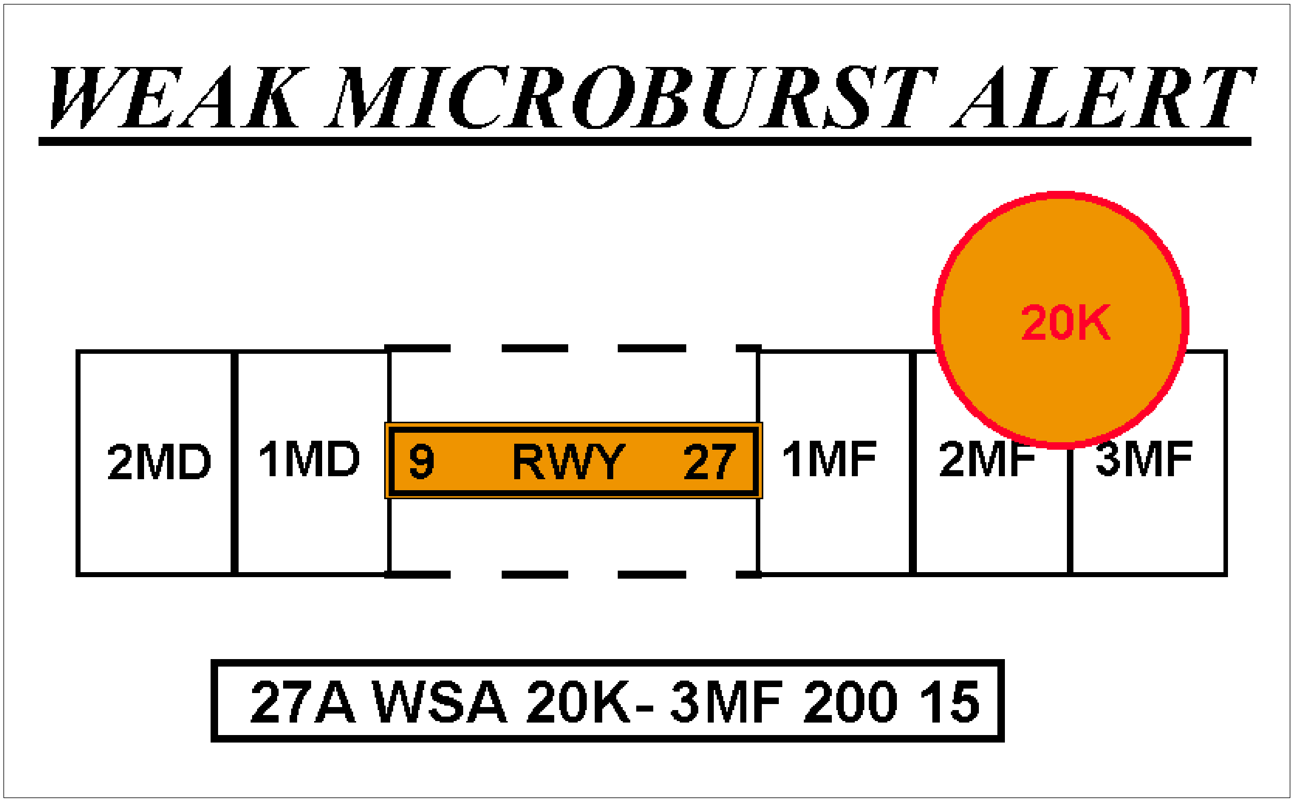
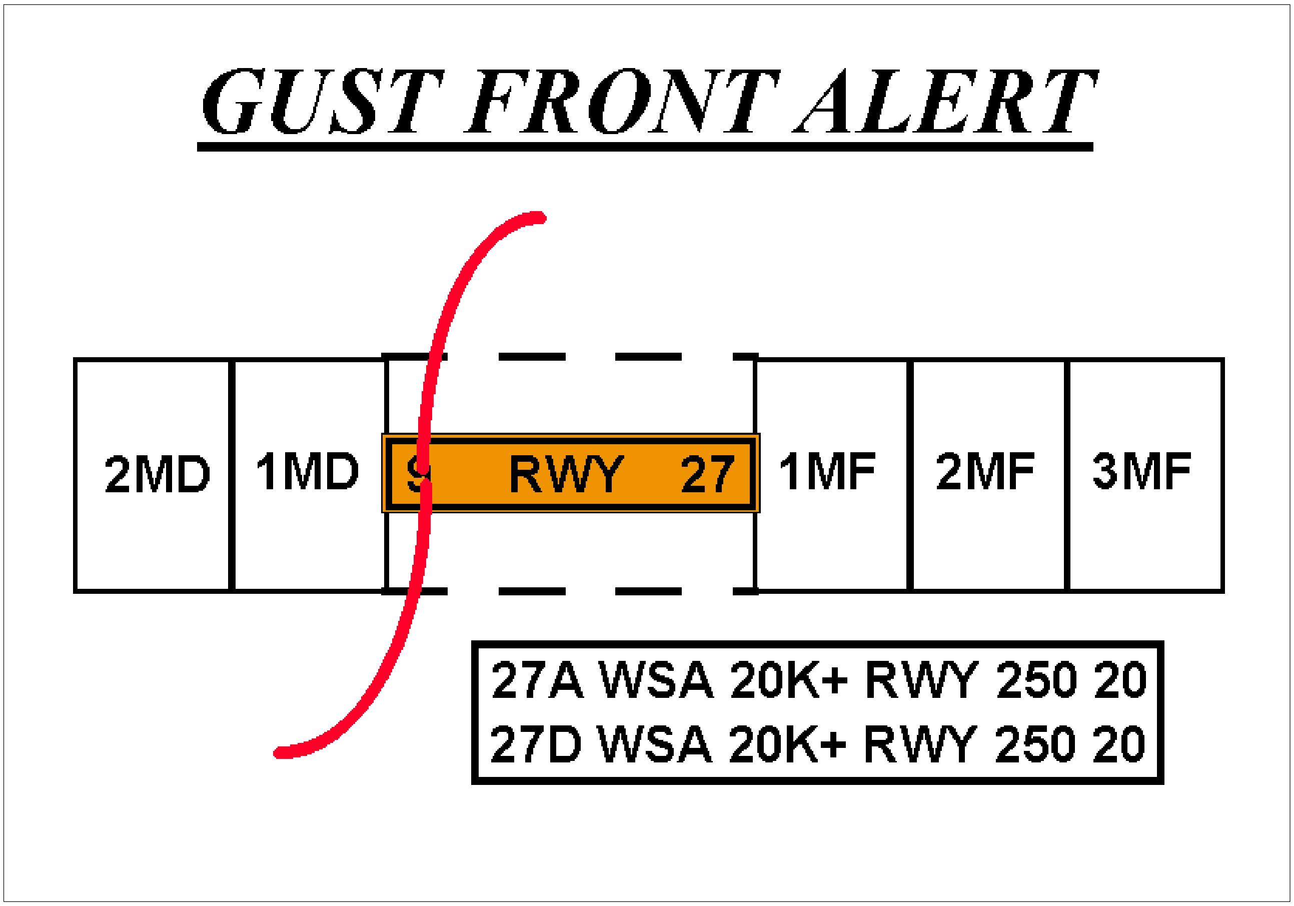


FIG GEN 3.5−14
Gust Front Alert



c) MULTIPLE WIND SHEAR ALERTS

EXAMPLE−
This is what the controller sees on his/her ribbon display in the tower cab.

27A WSA 20K+ RWY 250 20
27D WSA 20K+ RWY 250 20

NOTE−
(See FIG GEN 3.5−14 to see how the TDWR/WSP determines the gust front/wind shear location).

This is what the controller will say when issuing the alert.

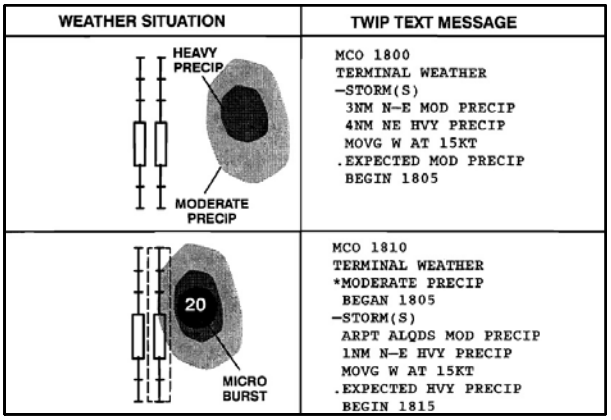
PHRASEOLOGY−
MULTIPLE WIND SHEAR ALERTS.
RUNWAY 27 ARRIVAL, WIND SHEAR ALERT, 20 KT GAIN ON RUNWAY;
RUNWAY 27 DEPARTURE, WIND SHEAR ALERT, 20 KT GAIN ON RUNWAY, WINDS 250 AT 20.

EXAMPLE−
In this example, the controller is advising arriving and departing aircraft that they could encounter a wind shear condition right on the runway due to a gust front (significant change of wind direction) with the possibility of a 20 knot gain in airspeed associated with the gust front. Additionally, the airport surface winds (for the runway in use) are reported as 250 degrees at 20 knots.

25.6.1.8 The Terminal Weather Information for Pilots System (TWIP)

a) With the increase in the quantity and quality of terminal weather information available through TDWR, the next step is to provide this information directly to pilots rather than relying on voice communications from ATC. The National Airspace System has long been in need of a means of delivering terminal weather information to the cockpit more efficiently in terms of both speed and accuracy to enhance pilot awareness of weather hazards and reduce air traffic controller workload. With the TWIP capability, terminal weather information, both alphanumerically and graphically, is now available directly to the cockpit at 43 airports in the U.S. NAS. (See FIG GEN 3.5−15.)

FIG GEN 3.5−15
TWIP Image of Convective Weather at MCO International



b) TWIP products are generated using weather data from the TDWR or the Integrated Terminal Weather System (ITWS) testbed. TWIP products are generated and stored in the form of text and character graphic messages. Software has been developed to allow TDWR or ITWS to format the data and send the TWIP products to a database resident at Aeronautical Radio, Inc. (ARINC). These products can then be accessed by pilots using the ARINC Aircraft Communications Addressing and Reporting System (ACARS) data link services. Airline dispatchers can also access this database and send messages to specific aircraft whenever wind shear activity begins or ends at an airport.

c) TWIP products include descriptions and character graphics of microburst alerts, wind shear alerts, significant precipitation, convective activity within 30 NM surrounding the terminal area, and expected weather that will impact airport operations. During inclement weather; i.e., whenever a predetermined level of precipitation or wind shear is detected within 15 miles of the terminal area, TWIP products are updated once each minute for text messages and once every 5 minutes for character graphic messages. During good weather (below the predetermined precipitation or wind shear parameters) each message is updated every 10 minutes. These products are intended to improve the situational awareness of the pilot/flight crew, and to aid in flight planning prior to arriving or departing the terminal area. It is important to understand that, in the context of TWIP, the predetermined levels for inclement versus good weather has nothing to do with the criteria for VFR/MVFR/IFR/LIFR; it only deals with precipitation, wind shears, and microbursts.

TBL GEN 3.5−12
TWIP−Equipped Airports

Airport	Identifier
Andrews AFB, MD	KADW
Hartsfield−Jackson Atlanta Intl Airport	KATL
Nashville Intl Airport	KBNA
Logan Intl Airport	KBOS
Baltimore/Washington Intl Airport	KBWI
Hopkins Intl Airport	KCLE
Charlotte/Douglas Intl Airport	KCLT
Port Columbus Intl Airport	KCMH
Cincinnati/Northern Kentucky Intl Airport	KCVG
Dallas Love Field Airport	KDAL
James M. Cox Intl Airport	KDAY
Ronald Reagan Washington National Airport	KDCA
Denver Intl Airport	KDEN
Dallas−Fort Worth Intl Airport	KDFW
Detroit Metro Wayne County Airport	KDTW
Newark Liberty Intl Airport	KEWR
Fort Lauderdale−Hollywood Intl Airport	KFLL
William P. Hobby Airport	KHOU
Washington Dulles Intl Airport	KIAD
George Bush Intercontinental Airport	KIAH
Wichita Mid−Continent Airport	KICT
Indianapolis Intl Airport	KIND
John F. Kennedy Intl Airport	KJFK
LaGuardia Airport	KLGA
Kansas City Intl Airport	KMCI
Orlando Intl Airport	KMCO
Midway Intl Airport	KMDW
Memphis Intl Airport	KMEM
Miami Intl Airport	KMIA
General Mitchell Intl Airport	KMKE

Airport	Identifier
Minneapolis St. Paul Intl Airport	KMSP
Louis Armstrong New Orleans Intl Airport	KMSY
Will Rogers World Airport	KOKC
O'Hare Intl Airport	KORD
Palm Beach Intl Airport	KPBI
Philadelphia Intl Airport	KPHL
Pittsburgh Intl Airport	KPIT
Raleigh−Durham Intl Airport	KRDU
Louisville Intl Airport	KSDF
Salt Lake City Intl Airport	KSLC
Lambert−St. Louis Intl Airport	KSTL
Tampa Intl Airport	KTPA
Tulsa Intl Airport	KTUL

26. PIREPs Relating to Volcanic Ash Activity

26.1 Volcanic eruptions which send ash into the upper atmosphere occur somewhere around the world several times each year. Flying into a volcanic ash cloud can be exceedingly dangerous. At least two B747s have lost all power in all four engines after such an encounter. Regardless of the type aircraft, some damage is almost certain to ensue after an encounter with a volcanic ash cloud. Additionally, studies have shown that volcanic eruptions are the only significant source of large quantities of sulphur dioxide (SO_2) gas at jet-cruising altitudes. Therefore, the detection and subsequent reporting of SO_2 is of significant importance. Although SO_2 is colorless, its presence in the atmosphere should be suspected when a sulphur-like or rotten egg odor is present throughout the cabin.

26.2 While some volcanoes in the U.S. are monitored, many in remote areas are not. These unmonitored volcanoes may erupt without prior warning to the aviation community. A pilot observing a volcanic eruption who has not had previous notification of it may be the only witness to the eruption. Pilots are strongly encouraged to transmit a PIREP regarding volcanic eruptions and any observed volcanic ash clouds or detection of sulphur dioxide (SO_2) gas associated with volcanic activity.

26.3 Pilots should submit PIREPs regarding volcanic activity using the Volcanic Activity Reporting form (VAR) as illustrated in FIG GEN 3.5−30. (If a VAR form is not immediately available, relay enough information to identify the position and type of volcanic activity.)

26.4 Pilots should verbally transmit the data required in items 1 through 8 of the VAR as soon as possible. The data required in items 9 through 16 of the VAR should be relayed after landing, if possible.

27. Thunderstorms

27.1 Turbulence, hail, rain, snow, lightning, sustained updrafts and downdrafts, and icing conditions are all present in thunderstorms. While there is some evidence that maximum turbulence exists at the middle level of a thunderstorm, recent studies show little variation of turbulence intensity with altitude.

27.2 There is no useful correlation between the external visual appearance of thunderstorms and the severity or amount of turbulence or hail within them. Also, the visible thunderstorm cloud is only a portion of a turbulent system whose updrafts and downdrafts often extend far beyond the visible storm cloud. Severe turbulence can be expected up to 20 miles from severe thunderstorms. This distance decreases to about 10 miles in less severe storms. These turbulent areas may appear as a well−defined echo on weather radar.

27.3 Weather radar, airborne or ground−based, will normally reflect the areas of moderate to heavy precipitation. (Radar does not detect turbulence.) The frequency and severity of turbulence generally increases with the areas of highest liquid water content of the storm. NO FLIGHT PATH THROUGH AN AREA OF STRONG OR VERY STRONG RADAR ECHOES SEPARATED BY 20−30 MILES OR LESS MAY BE CONSIDERED FREE OF SEVERE TURBULENCE.

27.4 Turbulence beneath a thunderstorm should not be minimized. This is especially true when the relative humidity is low in any layer between the surface and 15,000 feet. Then the lower altitudes may be characterized by strong out−flowing winds and severe turbulence.

27.5 The probability of lightning strikes occurring to aircraft is greatest when operating at altitudes where temperatures are between −5 C and +5 C. Lightning can strike aircraft flying in the clear in the vicinity of a thunderstorm.

27.6 Current weather radar systems are able to objectively determine precipitation intensity. These precipitation intensity areas are described as “light,” “moderate,” “heavy,” and “extreme.”

REFERENCE−
Pilot/Controller Glossary Term− Precipitation Radar Weather Descriptions.

EXAMPLE−
Alert provided by an ATC facility to an aircraft:
(aircraft identification) EXTREME precipitation between ten o'clock and two o'clock, one five miles. Precipitation area is two five miles in diameter.

EXAMPLE−
Alert provided by an FSS:
(aircraft identification) EXTREME precipitation two zero miles west of Atlanta V−O−R, two five miles wide, moving east at two zero knots, tops flight level three niner zero.

28. Thunderstorm Flying

28.1 Thunderstorm Avoidance. Never regard any thunderstorm lightly, even when radar echoes are of light intensity. Avoiding thunderstorms is the best policy. Following are some Do's and Don'ts of thunderstorm avoidance:

28.1.1 Don't land or takeoff in the face of an approaching thunderstorm. A sudden gust front of low−level turbulence could cause loss of control.

28.1.2 Don't attempt to fly under a thunderstorm even if you can see through to the other side. Turbulence and wind shear under the storm could be disastrous.

28.1.3 Don't attempt to fly under the anvil of a thunderstorm. There is a potential for severe and extreme clear air turbulence.

28.1.4 Don't fly without airborne radar into a cloud mass containing scattered embedded thunderstorms. Scattered thunderstorms not embedded usually can be visually circumnavigated.

28.1.5 Don't trust the visual appearance to be a reliable indicator of the turbulence inside a thunderstorm.

28.1.6 Don't assume that ATC will offer radar navigation guidance or deviations around thunderstorms.

28.1.7 Don't use data-linked weather next generation weather radar (NEXRAD) mosaic imagery as the sole means for negotiating a path through a thunderstorm area (tactical maneuvering).

28.1.8 Do remember that the data-linked NEXRAD mosaic imagery shows where the weather was, not where the weather is. The weather conditions may be 15 to 20 minutes older than the age indicated on the display.

28.1.9 Do listen to chatter on the ATC frequency for Pilot Weather Reports (PIREP) and other aircraft requesting to deviate or divert.

28.1.10 Do ask ATC for radar navigation guidance or to approve deviations around thunderstorms, if needed.

28.1.11 Do use data-linked weather NEXRAD mosaic imagery (for example, Flight Information Service-Broadcast (FIS-B)) for route selection to avoid thunderstorms entirely (strategic maneuvering).

28.1.12 Do advise ATC, when switched to another controller, that you are deviating for thunderstorms before accepting to rejoin the original route.

28.1.13 Do ensure that after an authorized weather deviation, before accepting to rejoin the original route, that the route of flight is clear of thunderstorms.

28.1.14 Do avoid by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo. This is especially true under the anvil of a large cumulonimbus.

28.1.15 Do circumnavigate the entire area if the area has 6/10 thunderstorm coverage.

28.1.16 Do remember that vivid and frequent lightning indicates the probability of a severe thunderstorm.

28.1.17 Do regard as extremely hazardous any thunderstorm with tops 35,000 feet or higher whether the top is visually sighted or determined by radar.

28.1.18 Do give a PIREP for the flight conditions.

28.1.19 Do divert and wait out the thunderstorms on the ground if unable to navigate around an area of thunderstorms.

28.1.20 Do contact Flight Service for assistance in avoiding thunderstorms. Flight Service specialists have NEXRAD mosaic radar imagery and NEXRAD single site radar with unique features such as base and composite reflectivity, echo tops, and VAD wind profiles.

28.2 If you cannot avoid penetrating a thunderstorm, following are some Do's before entering the storm:

28.2.1 Tighten your safety belt, put on your shoulder harness (if installed), if and secure all loose objects.

28.2.2 Plan and hold the course to take the aircraft through the storm in a minimum time.

28.2.3 To avoid the most critical icing, establish a penetration altitude below the freezing level or above the level of −15 C.

28.2.4 Verify that pitot heat is on and turn on carburetor heat or jet engine anti−ice. Icing can be rapid at any altitude and cause almost instantaneous power failure and/or loss of airspeed indication.

28.2.5 Establish power settings for turbulence penetration airspeed recommended in your aircraft manual.

28.2.6 Turn up cockpit lights to highest intensity to lessen danger of temporary blindness from lightning.

28.2.7 If using automatic pilot, disengage Altitude Hold Mode and Speed Hold Mode. The automatic altitude and speed controls will increase maneuvers of the aircraft thus increasing structural stress.

28.2.8 If using airborne radar, tilt the antenna up and down occasionally. This will permit the detection of other thunderstorm activity at altitudes other than the one being flown.

28.3 Following are some Do's and Don'ts during the thunderstorm penetration:

28.3.1 Do keep your eyes on your instruments. Looking outside the cockpit can increase danger of temporary blindness from lightning.

28.3.2 Don't change power settings; maintain settings for the recommended turbulence penetration airspeed.

28.3.3 Do maintain constant attitude. Allow the altitude and airspeed to fluctuate.

28.3.4 Don't turn back once you are in the thunderstorm. A straight course through the storm most likely will get the aircraft out of the hazards most quickly. In addition, turning maneuvers increase stress on the aircraft.

29. Wake Turbulence

29.1 General

29.1.1 Every aircraft generates wake turbulence while in flight. Wake turbulence is a function of an aircraft producing lift, resulting in the formation of two counter−rotating vortices trailing behind the aircraft.

29.1.2 Wake turbulence from the generating aircraft can affect encountering aircraft due to the strength, duration, and direction of the vortices. Wake turbulence can impose rolling moments exceeding the roll−control authority of encountering aircraft, causing possible injury to occupants and damage to aircraft. Pilots should always be aware of the possibility of a wake turbulence encounter when flying through the wake of another aircraft, and adjust the flight path accordingly.

29.2 Vortex Generation

29.2.1 The creation of a pressure differential over the wing surface generates lift. The lowest pressure occurs over the upper wing surface and the highest pressure under the wing. This pressure differential triggers the roll up of the airflow at the rear of the wing resulting in swirling air masses trailing downstream of the wing tips. After the roll up is completed, the wake consists of two counter−rotating cylindrical vortices. (See FIG GEN 3.5−16.) The wake vortex is formed with most of the energy concentrated within a few feet of the vortex core.

29.2.2 More aircraft are being manufactured or retrofitted with winglets. There are several types of winglets, but their primary function is to increase fuel efficiency by improving the lift−to−drag ratio. Studies have shown that winglets have a negligible effect on wake turbulence generation, particularly with the slower speeds involved during departures and arrivals.

29.3 Vortex Strength

29.3.1 Weight, speed, wingspan, and shape of the generating aircraft's wing all govern the strength of the vortex. The vortex characteristics of any given aircraft can also be changed by extension of flaps or other wing configuring devices. However, the vortex strength from an aircraft increases proportionately to an increase in operating weight or a decrease in aircraft speed. Since the turbulence from a "dirty" aircraft configuration hastens wake decay, the greatest vortex strength occurs when the generating aircraft is HEAVY, CLEAN, and SLOW.

29.3.2 Induced Roll

29.3.2.1 In rare instances, a wake encounter could cause catastrophic inflight structural damage to an aircraft. However, the usual hazard is associated with induced rolling moments that can exceed the roll−control authority of the encountering aircraft. During inflight testing, aircraft intentionally flew directly up trailing vortex cores of larger aircraft. These tests demonstrated that the ability of aircraft to counteract the roll imposed by wake vortex depends primarily on the wingspan and counter−control responsiveness of the encountering aircraft. These tests also demonstrated the difficulty of an aircraft to remain within a wake vortex. The natural tendency is for the circulation to eject aircraft from the vortex.

29.3.2.2 Counter−control is usually effective and induced roll minimal in cases where the wing span and ailerons of the encountering aircraft extend beyond the rotational flow field of the vortex. It is more difficult for aircraft with short wing span (relative to the generating aircraft) to counter the imposed roll induced by vortex flow. Pilots of short−span aircraft, even of the high−performance type, must be especially alert to vortex encounters. (See FIG GEN 3.5−17.)

29.4 Vortex Behavior

29.4.1 Trailing vortices have certain behavioral characteristics which can help a pilot visualize the wake location and thereby take avoidance precautions.

29.4.1.1 An aircraft generates vortices from the moment it rotates on takeoff to touchdown, since trailing vortices are a by−product of wing lift. Prior to takeoff or touchdown pilots should note the rotation or touchdown point of the preceding aircraft. (See FIG GEN 3.5−18.)

29.4.1.2 The vortex circulation is outward, upward and around the wing tips when viewed from either ahead or behind the aircraft. Tests with larger aircraft have shown that the vortices remain spaced a bit less than a wingspan apart, drifting with the wind, at altitudes greater than a wingspan from the ground. In view of this, if persistent vortex turbulence is encountered, a slight change of altitude (upward) and lateral position (upwind) should provide a flight path clear of the turbulence.

29.4.1.3 Flight tests have shown that the vortices from larger aircraft sink at a rate of several hundred feet per minute, slowing their descent and diminishing in strength with time and distance behind the generating aircraft. Pilots should fly at or above the preceding aircraft's flight path, altering course as necessary to avoid the area directly behind and below the generating aircraft. (See FIG GEN 3.5−19.) Pilots, in all phases of flight, must remain vigilant of possible wake effects created by other aircraft. Studies have shown that atmospheric turbulence hastens wake breakup, while other atmospheric conditions can transport wake horizontally and vertically.

FIG GEN 3.5−16
Wake Vortex Generation

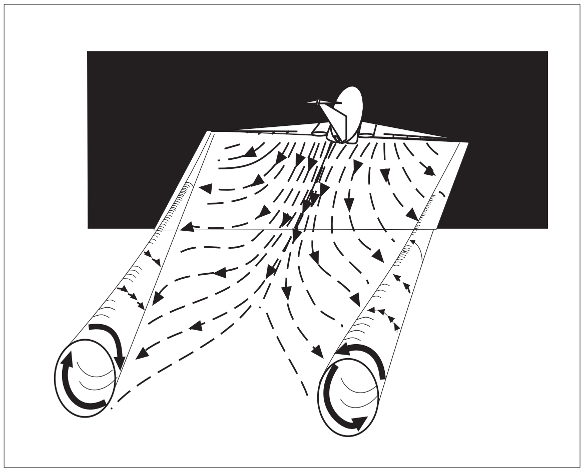


FIG GEN 3.5−17
Wake Encounter Counter Control

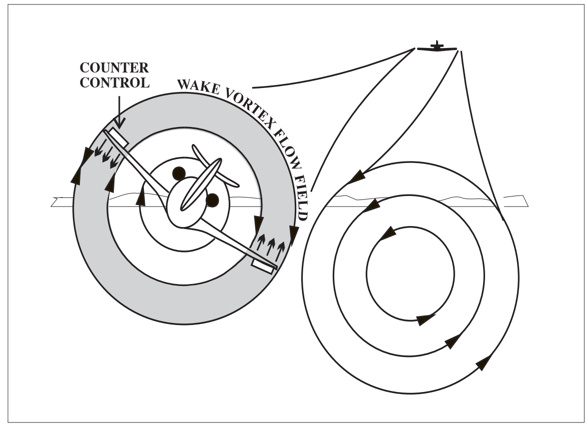


FIG GEN 3.5−18
Wake Ends/Wake Begins

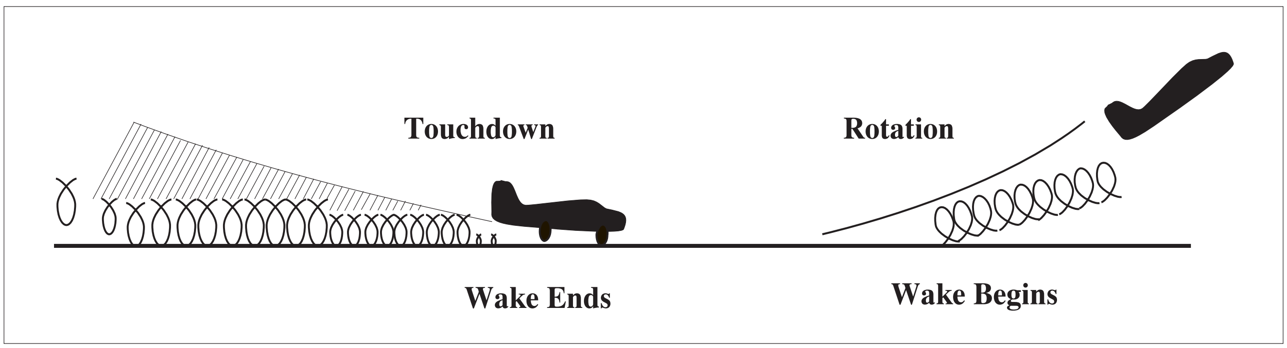


FIG GEN 3.5−19
Vortex Flow Field

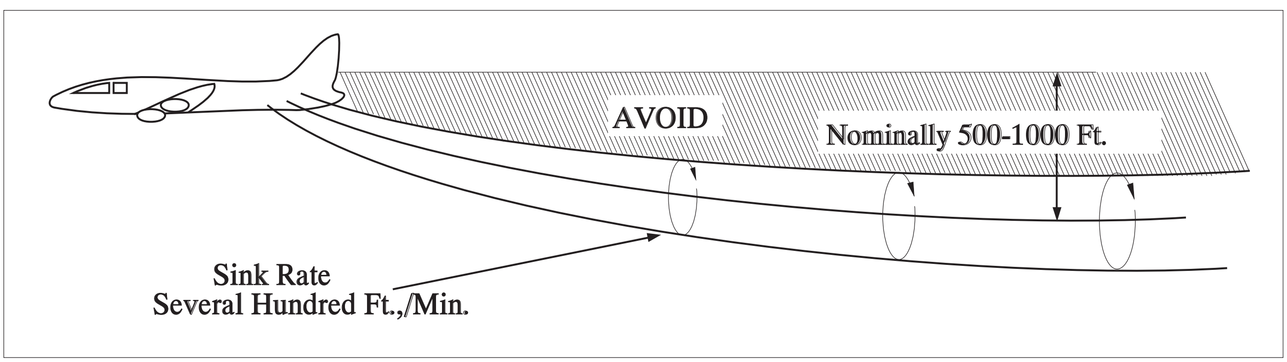
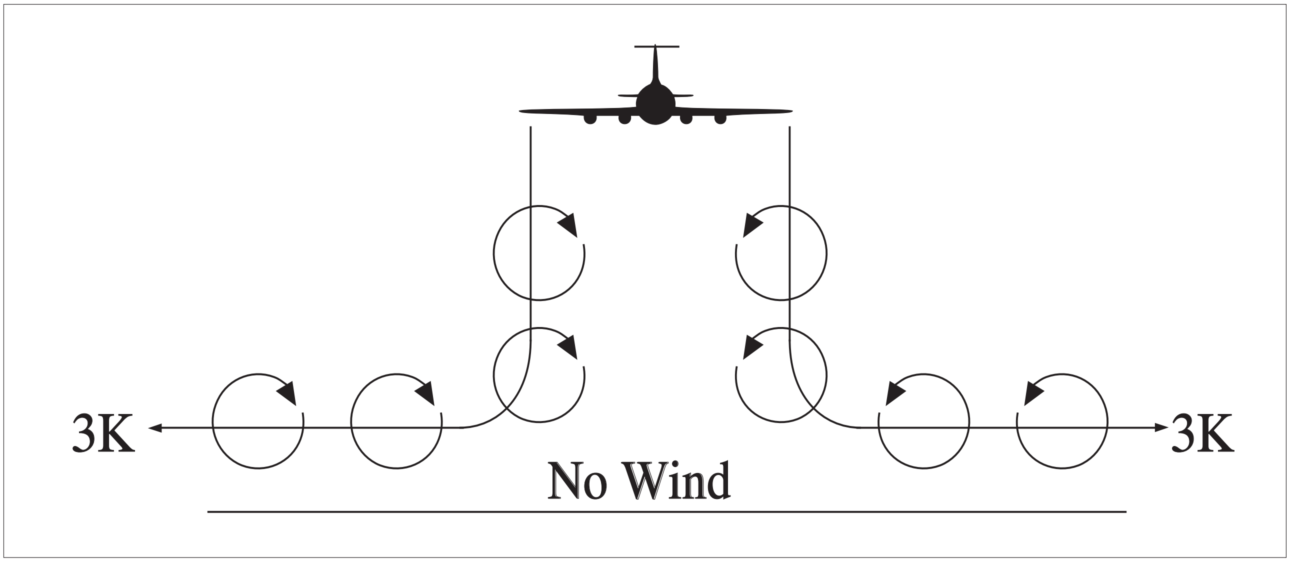


FIG GEN 3.5−20
Vortex Movement Near Ground − No Wind



29.4.1.4 When the vortices of larger aircraft sink close to the ground (within 100 to 200 feet), they tend to move laterally over the ground at a speed of 2 or 3 knots. (See FIG GEN 3.5−20.)

29.4.1.5 Pilots should be alert at all times for possible wake vortex encounters when conducting approach and landing operations. The pilot is ultimately responsible for maintaining an appropriate interval, and should consider all available information in positioning the aircraft in the terminal area, to avoid the wake turbulence created by a preceding aircraft. Test data show that vortices can rise with the air mass in which they are embedded. The effects of wind shear can cause vortex flow field "tilting." In addition, ambient thermal lifting and orographic effects (rising terrain or tree lines) can cause a vortex flow field to rise and possibly bounce.

FIG GEN 3.5−21
Vortex Movement Near Ground − with Cross Winds

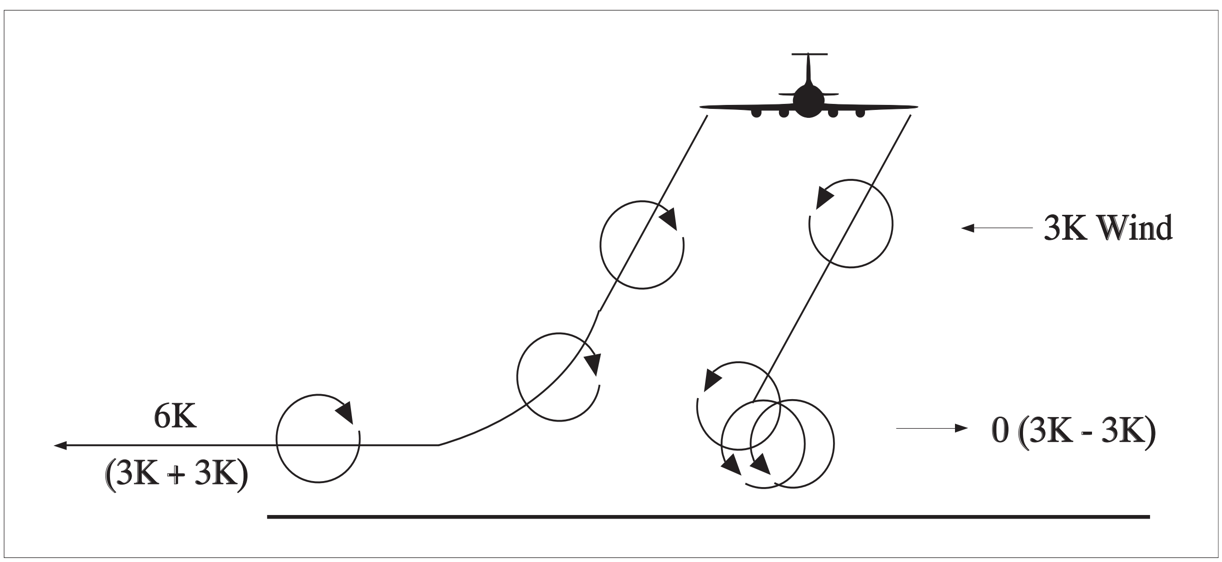
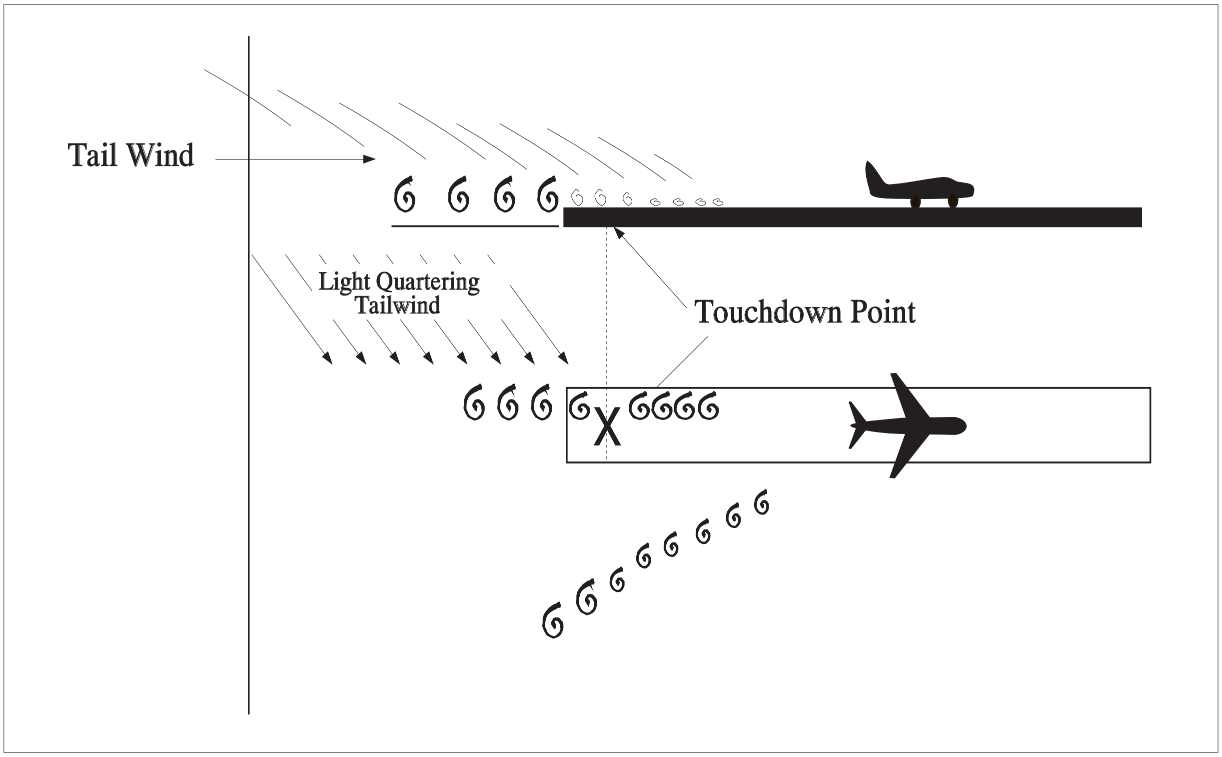


FIG GEN 3.5−22

Vortex Movement in Ground Effect − Tailwind



29.4.2 A crosswind will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex. Thus, a light wind with a cross−runway component of 1 to 5 knots could result in the upwind vortex remaining in the touchdown zone for a period of time and hasten the drift of the downwind vortex toward another runway. (See FIG GEN 3.5−21.) Similarly, a tailwind condition can move the vortices of the preceding aircraft forward into the touchdown zone. THE LIGHT QUARTERING TAILWIND REQUIRES MAXIMUM CAUTION. Pilots should be alert to large aircraft upwind from their approach and takeoff flight paths. (See FIG GEN 3.5−22.)

29.5 Operations Problem Areas

29.5.1 A wake turbulence encounter can range from negligible to catastrophic. The impact of the encounter depends on the weight, wingspan, size of the generating aircraft, distance from the generating aircraft, and point of vortex encounter. The probability of induced roll increases when the encountering aircraft's heading is generally aligned with the flight path of the generating aircraft.

29.5.2 AVOID THE AREA BELOW AND BEHIND THE WAKE GENERATING AIRCRAFT, ESPECIALLY AT LOW ALTITUDE WHERE EVEN A MOMENTARY WAKE ENCOUNTER COULD BE CATASTROPHIC.

NOTE−
A common scenario for a wake encounter is in terminal airspace after accepting clearance for a visual approach behind landing traffic. Pilots must be cognizant of their position relative to the traffic and use all means of vertical guidance to ensure they do not fly below the flight path of the wake generating aircraft.

29.5.3 Pilots should be particularly alert in calm wind conditions and situations where the vortices could:

29.5.3.1 Remain in the touchdown area.

29.5.3.2 Drift from aircraft operating on a nearby runway.

29.5.3.3 Sink into the takeoff or landing path from a crossing runway.

29.5.3.4 Sink into the traffic pattern from other airport operations.

29.5.3.5 Sink into the flight path of VFR aircraft operating on the hemispheric altitude 500 feet below.

29.5.4 Pilots should attempt to visualize the vortex trail of aircraft whose projected flight path they may encounter. When possible, pilots of larger aircraft should adjust their flight paths to minimize vortex exposure to other aircraft.

29.6 Vortex Avoidance Procedures

29.6.1 Under certain conditions, airport traffic controllers apply procedures for separating IFR aircraft. If a pilot accepts a clearance to visually follow a preceding aircraft, the pilot accepts responsibility for separation and wake turbulence avoidance. The controllers will also provide to VFR aircraft, with whom they are in communication and which in the tower's opinion may be adversely affected by wake turbulence from a larger aircraft, the position, altitude and direction of flight of larger aircraft followed by the phrase "CAUTION − WAKE TURBULENCE." After issuing the caution for wake turbulence, the airport traffic controllers generally do not provide additional information to the following aircraft unless the airport traffic controllers know the following aircraft is overtaking the preceding aircraft. WHETHER OR NOT A WARNING OR INFORMATION HAS BEEN GIVEN, HOWEVER, THE PILOT IS EXPECTED TO ADJUST AIRCRAFT OPERATIONS AND FLIGHT PATH AS NECESSARY TO PRECLUDE SERIOUS WAKE ENCOUNTERS. When any doubt exists about maintaining safe separation distances between aircraft during approaches, pilots should ask the control tower for updates on separation distance and aircraft groundspeed.

29.6.2 The following vortex avoidance procedures are recommended for the various situations:

29.6.2.1 Landing Behind a Larger Aircraft − Same Runway. Stay at or above the larger aircraft's final approach flight path − note its touchdown point − land beyond it.

29.6.2.2 Landing Behind a Larger Aircraft − When a Parallel Runway is Closer Than 2,500 Feet. Consider possible drift to your runway. Stay at or above the larger aircraft's final approach flight path − note its touchdown point.

29.6.2.3 Landing Behind a Larger Aircraft − Crossing Runway. Cross above the larger aircraft's flight path.

29.6.2.4 Landing Behind a Departing Larger Aircraft − Same Runway. Note the larger aircraft's rotation point − land well prior to rotation point.

29.6.2.5 Landing Behind a Departing Larger Aircraft − Crossing Runway. Note the larger aircraft's rotation point − if past the intersection − continue the approach − land prior to the intersection. If larger aircraft rotates prior to the intersection, avoid flight below the larger aircraft's flight path. Abandon the approach unless a landing is ensured well before reaching the intersection.

29.6.2.6 Departing Behind a Larger Aircraft. Note the larger aircraft's rotation point − rotate prior to larger aircraft's rotation point − continue climb above the larger aircraft's climb path until turning clear of the larger aircraft's wake. Avoid subsequent headings which will cross below and behind a larger aircraft. Be alert for any critical takeoff situation which could lead to a vortex encounter.

29.6.2.7 Intersection Takeoffs − Same Runway. Be alert to adjacent larger aircraft operations, particularly upwind of your runway. If intersection takeoff clearance is received, avoid subsequent headings which will cross below a larger aircraft's path.

29.6.2.8 Departing or Landing After a Larger Aircraft Executing a Low Approach, Missed Approach, Or Touch−and−go Landing. Because vortices settle and move laterally near the ground, the vortex hazard may exist along the runway and in your flight path after a larger aircraft has executed a low approach, missed approach, or a touch−and−go landing, particular in light quartering wind conditions. You should ensure that an interval of at least 2 minutes has elapsed before your takeoff or landing.

29.6.2.9 En Route VFR (Thousand−foot Altitude Plus 500 Feet). Avoid flight below and behind a large aircraft's path. If a larger aircraft is observed above on the same track (meeting or overtaking) adjust your position laterally, preferably upwind.

29.7 Helicopters

29.7.1 In a slow hover−taxi or stationary hover near the surface, helicopter main rotor(s) generate downwash producing high velocity outwash vortices to a distance approximately three times the diameter of the rotor. When rotor downwash hits the surface, the resulting outwash vortices have behavioral characteristics similar to wing tip vortices produced by fixed−wing aircraft. However, the vortex circulation is outward, upward, around, and away from the main rotor(s) in all directions. Pilots of small aircraft should avoid operating within three rotor diameters of any helicopter in a slow hover−taxi or stationary hover. In forward flight, departing or landing helicopters produce a pair of strong, high−speed trailing vortices similar to wing tip vortices of larger fixed−wing aircraft. Pilots of small aircraft should use caution when operating behind or crossing behind landing and departing helicopters.

29.8 Pilot Responsibility

29.8.1 Research and testing have been conducted, in addition to ongoing wake initiatives, in an attempt to mitigate the effects of wake turbulence. Pilots must exercise vigilance in situations where they are responsible for avoiding wake turbulence.

29.8.2 Pilots are reminded that in operations conducted behind all aircraft, acceptance of instructions from ATC in the following situations is an acknowledgment that the pilot will ensure safe takeoff and landing intervals and accepts the responsibility of providing his/her own wake turbulence separation:

29.8.2.1 Traffic information.

29.8.2.2 Instructions to follow an aircraft.

29.8.2.3 The acceptance of a visual approach clearance.

29.8.3 For operations conducted behind **super** or **heavy** aircraft, ATC will specify the word "**super**" or "**heavy**" as appropriate, when this information is known. Pilots of **super** or **heavy** aircraft should always use the word "**super**" or "**heavy**" in radio communications.

29.8.4 Super, heavy and large jet aircraft operators should use the following procedures during an approach to landing. These procedures establish a dependable baseline from which pilots of in−trail, lighter aircraft may reasonably expect to make effective flight path adjustments to avoid serious wake vortex turbulence.

29.8.4.1 Pilots of aircraft that produce strong wake vortices should make every attempt to fly on the established glidepath, not above it; or, if glidepath guidance is not available, to fly as closely as possible to a "3−1" glidepath, not above it.

EXAMPLE−
Fly 3,000 feet at 10 miles from touchdown, 1,500 feet at 5 miles, 1,200 feet at 4 miles, and so on to touchdown.

29.8.4.2 Pilots of aircraft that produce strong wake vortices should fly as closely as possible to the approach course centerline or to the extended centerline of the runway of intended landing as appropriate to conditions.

29.8.5 Pilots operating lighter aircraft on visual approaches in−trail to aircraft producing strong wake vortices should use the following procedures to assist in avoiding wake turbulence. These procedures apply only to those aircraft that are on visual approaches.

29.8.5.1 Pilots of lighter aircraft should fly on or above the glidepath. Glidepath reference may be furnished by an ILS, by a visual approach slope system, by other ground−based approach slope guidance systems, or by other means. In the absence of visible glidepath guidance, pilots may very nearly duplicate a 3−degree glideslope by adhering to the "3 to 1" glidepath principle.

EXAMPLE−
Fly 3,000 feet at 10 miles from touchdown, 1,500 feet at 5 miles, 1,200 feet at 4 miles, and so on to touchdown.

29.8.5.2 If the pilot of the lighter following aircraft has visual contact with the preceding heavier aircraft and also with the runway, the pilot may further adjust for possible wake vortex turbulence by the following practices:

a) Pick a point of landing no less than 1,000 feet from the arrival end of the runway.

b) Establish a line−of−sight to that landing point that is above and in front of the heavier preceding aircraft.

c) When possible, note the point of landing of the heavier preceding aircraft and adjust point of intended landing as necessary.

EXAMPLE−
A puff of smoke may appear at the 1,000−foot markings of the runway, showing that touchdown was at that point; therefore, adjust point of intended landing to the 1,500−foot markings.

d) Maintain the line−of−sight to the point of intended landing above and ahead of the heavier preceding aircraft; maintain it to touchdown.

e) Land beyond the point of landing of the preceding heavier aircraft. Ensure you have adequate runway remaining, if conducting a touch−and−go landing, or adequate stopping distance available for a full stop landing.

29.8.6 During visual approaches pilots may ask ATC for updates on separation and groundspeed with respect to heavier preceding aircraft, especially when there is any question of safe separation from wake turbulence.

29.8.7 Pilots should notify ATC when a wake event is encountered. Be as descriptive as possible (i.e., bank angle, altitude deviations, intensity and duration of event, etc.) when reporting the event. ATC will record the event through their reporting system. You are also encouraged to use the Aviation Safety Reporting System (ASRS) to report wake events.

29.9 Air Traffic Wake Turbulence Separations

29.9.1 Because of the possible effects of wake turbulence, controllers are required to apply no less than minimum required separation to all aircraft operating behind a Super or Heavy, and to Small aircraft operating behind a B757, when aircraft are IFR; VFR and receiving Class B, Class C, or TRSA airspace services; or VFR and being radar sequenced.

29.9.1.1 Separation is applied to aircraft operating directly behind a super or heavy at the same altitude or less than 1,000 feet below, and to small aircraft operating directly behind a B757 at the same altitude or less than 500 feet below:

a) **Heavy** behind **super** − 6 miles.

b) **Large** behind **super** − 7 miles.

c) **Small** behind **super** − 8 miles.

d) **Heavy** behind **heavy** − 4 miles.

e) **Small/large** behind **heavy** − 5 miles.

f) **Small** behind **B757** − 4 miles.

29.9.1.2 Also, separation, measured at the time the preceding aircraft is over the landing threshold, is provided to small aircraft:

a) **Small** landing behind **heavy** − 6 miles.

b) **Small** landing behind **large, non−B757** − 4 miles.

29.9.2 Additionally, appropriate time or distance intervals are provided to departing aircraft when the departure will be from the same threshold, a parallel runway separated by less than 2,500 feet with less than 500 feet threshold stagger, or on a crossing runway and projected flight paths will cross:

29.9.2.1 Three minutes or the appropriate radar separation when takeoff will be behind a super aircraft;

29.9.2.2 Two minutes or the appropriate radar separation when takeoff will be behind a heavy aircraft.

29.9.2.3 Two minutes or the appropriate radar separation when a small aircraft will takeoff behind a B757.

NOTE−
Controllers may not reduce or waive these intervals.

29.9.3 A 3−minute interval will be provided for a **small** aircraft taking off:

29.9.3.1 From an intersection on the same runway (same or opposite direction) behind a departing **large** aircraft (except B757), or

29.9.3.2 In the opposite direction on the same runway behind a large aircraft (except B757) takeoff or low/missed approach.

NOTE−
This 3−minute interval may be waived upon specific pilot request.

29.9.4 A 3−minute interval will be provided when a small aircraft will takeoff:

29.9.4.1 From an intersection on the same runway (same or opposite direction) behind a departing B757, or

29.9.4.2 In the opposite direction on the same runway behind a B757 takeoff or low/missed approach.

NOTE−
This 3−minute interval may not be waived.

29.9.5 A 4−minute interval will be provided for all aircraft taking off behind a super aircraft, and a 3−minute interval will be provided for all aircraft taking off behind a heavy aircraft when the operations are as described in subparagraphs 29.9.4.1 and 29.9.4.2 above, and are conducted on either the same runway or parallel runways separated by less than 2,500 feet. Controllers may not reduce or waive this interval.

29.9.6 Pilots may request additional separation (i.e., 2 minutes instead of 4 or 5 miles) for wake turbulence avoidance. This request should be made as soon as practical on ground control and at least before taxiing onto the runway.

NOTE−
Federal Aviation Administration Regulations state: "The pilot in command of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft."

29.9.7 Controllers may anticipate separation and need not withhold a takeoff clearance for an aircraft departing behind a **large, heavy,** or **super** aircraft if there is reasonable assurance the required separation will exist when the departing aircraft starts takeoff roll.

NOTE−
With the advent of new wake turbulence separation methodologies known as Wake Turbulence Recategorization, some of the requirements listed above may vary at facilities authorized to operate in accordance with Wake Turbulence Recategorization directives.

REFERENCE−
FAA Order JO 7110.659 Wake Turbulence Recategorization
FAA Order JO 7110.123 Wake Turbulence Recategorization − Phase II
FAA Order JO 7110.126, Consolidated Wake Turbulence

29.10 Development and New Capabilities

29.10.1 The suite of available wake turbulence tools, rules, and procedures is expanding, with the development of new methodologies. Based on extensive analysis of wake vortex behavior, new procedures and separation standards are being developed and implemented in the US and throughout the world. Wake research involves the wake generating aircraft as well as the wake toleration of the trailing aircraft.

29.10.2 The FAA and ICAO are leading initiatives, in terminal environments, to implement next−generation wake turbulence procedures and separation standards. The FAA has undertaken an effort to recategorize the existing fleet of aircraft and modify associated wake turbulence separation minima. This initiative is termed Wake Turbulence Recategorization (RECAT), and changes the current weight−based classes (Super, Heavy, B757, Large, Small+, and Small) to a wake−based categorical system that utilizes the aircraft matrices of weight, wingspan, and approach speed. RECAT is currently in use at a limited number of airports in the National Airspace System.

30. International Civil Aviation Organization (ICAO) Weather Formats

30.1 The U.S. uses the ICAO world standard for aviation weather reporting and forecasting. The World Meteorological Organization's (WMO) publication No. 782 "Aerodrome Reports and Forecasts" contains the base METAR and TAF code as adopted by the WMO member countries.

30.2 Although the METAR code is adopted worldwide, each country is allowed to make modifications or exceptions to the code for use in their particular country, e.g., the U.S. will continue to use statute miles for visibility, feet for RVR values, knots for wind speed, and inches of mercury for altimetry. However, temperature and dew point will be reported in degrees Celsius. The U.S reports prevailing visibility rather than lowest sector visibility. The elements in the body of a METAR report are separated with a space. The only exceptions are RVR, temperature, and dew point which are separated with a solidus (/). When an element does not occur, or cannot be observed, the preceding space and that element are omitted from that particular report. A METAR report contains the following sequence of elements in the following order:

30.2.1 Type of report.

30.2.2 ICAO station identifier.

30.2.3 Date and time of report.

30.2.4 Modifier (as required).

30.2.5 Wind.

30.2.6 Visibility.

30.2.7 Runway Visual Range (RVR).

30.2.8 Weather phenomena.

30.2.9 Sky conditions.

30.2.10 Temperature/Dew point group.

30.2.11 Altimeter.

30.2.12 Remarks (RMK).

30.3 The following paragraphs describe the elements in a METAR report.

30.3.1 Type of Report. There are two types of reports:

30.3.1.1 The METAR, an aviation routine weather report.

30.3.1.2 The SPECI, a nonroutine (special) aviation weather report.

The type of report (METAR or SPECI) will always appear as the lead element of the report.

30.3.2 ICAO Station Identifier. The METAR code uses ICAO 4−letter station identifiers. In the contiguous 48 states, the 3−letter domestic station identifier is prefixed with a "K"; i.e., the domestic identifier for Seattle is SEA while the ICAO identifier is KSEA. For Alaska, all station identifiers start with "PA"; for Hawaii, all station identifiers start with "PH." The identifier for the eastern Caribbean is "T" followed by the individual country's letter; i.e., Puerto Rico is "TJ." For a complete worldwide listing see ICAO Document 7910, "Location Indicators."

30.3.3 Date and Time of Report. The date and time the observation is taken are transmitted as a six−digit date/time group appended with Z to denote Coordinated Universal Time (UTC). The first two digits are the date followed with two digits for hour and two digits for minutes.

EXAMPLE−
172345Z (the 17th day of the month at 2345Z)

30.3.4 Modifier (As Required). "AUTO" identifies a METAR/SPECI report as an automated weather report with no human intervention. If "AUTO" is shown in the body of the report, the type of sensor equipment used at the station will be encoded in the remarks section of the report. The absence of "AUTO" indicates that a report was made manually by an observer or that an automated report had human augmentation/backup. The modifier "COR" indicates a corrected report that is sent out to replace an earlier report with an error.

NOTE−
There are two types of automated stations, AO1 for automated weather reporting stations without a precipitation discriminator, and AO2 for automated stations with a precipitation discriminator. (A precipitation discriminator can determine the difference between liquid and frozen/freezing precipitation). This information appears in the remarks section of an automated report.

30.3.5 Wind. The wind is reported as a five digit group (six digits if speed is over 99 knots). The first three digits are the direction from which the wind is blowing, in tens of degrees referenced to true north, or "VRB" if the direction is variable. The next two digits is the wind speed in knots, or if over 99 knots, the next three digits. If the wind is gusty, it is reported as a "G" after the speed followed by the highest gust reported. The abbreviation "KT" is appended to denote the use of knots for wind speed.

EXAMPLE−
13008KT − wind from 130 degrees at 8 knots

08032G45KT − wind from 080 degrees at 32 knots with gusts to 45 knots

VRB04KT − wind variable in direction at 4 knots

00000KT − wind calm

210103G130KT − wind from 210 degrees at 103 knots with gusts to 130 knots

If the wind direction is variable by 60 degrees or more and the speed is greater than 6 knots, a variable group consisting of the extremes of the wind direction separated by a "V" will follow the prevailing wind group.

32012G22KT 280V350

30.3.5.1 Peak Wind. Whenever the peak wind exceeds 25 knots, "PK WND" will be included in Remarks; e.g., PK WND 280045/1955 "Peak wind two eight zero at four five occurred at one niner five five." If the hour can be inferred from the report time, only the minutes will be appended; e.g., PK WND 34050/38 "Peak wind three four zero at five zero occurred at three eight past the hour."

30.3.5.2 Wind Shift. Whenever a wind shift occurs, "WSHFT" will be included in remarks followed by the time the wind shift began; e.g., WSHFT 30 FROPA "Wind shift at three zero due to frontal passage."

30.3.6 Visibility. Prevailing visibility is reported in statute miles with "SM" appended to it.

EXAMPLE−
7SM . . . . seven statute miles
15SM . . . . fifteen statute miles
$^{1}/_{2}$SM . . . . one−half statute mile

30.3.6.1 Tower/Surface Visibility. If either tower or surface visibility is below 4 statute miles, the lesser of the 2 will be reported in the body of the report; the greater will be reported in remarks.

30.3.6.2 Automated Visibility. ASOS/AWOS visibility stations will show visibility 10 or greater than 10 miles as "10SM." AWOS visibility stations will show visibility less than $^{1}/_{4}$ statute mile as "M$^{1}/_{4}$SM" and visibility 10 or greater than 10 miles as "10SM."

NOTE−
Automated sites that are augmented by human observer to meet service level requirements can report 0, 1/16 SM, and 1/8 SM visibility increments.

30.3.6.3 Variable Visibility. Variable visibility is shown in remarks when rapid increase or decrease by $^1/_2$ statute mile or more and the average prevailing visibility is less than 3 statute miles; e.g., VIS 1V2 means "visibility variable between 1 and 2 statute miles."

30.3.6.4 Sector Visibility. Sector visibility is shown in remarks when it differs from the prevailing visibility, and either the prevailing or sector visibility is less than 3 statute miles.

EXAMPLE−
VIS N2 . . . . visibility north two

30.3.7 Runway Visual Range (when reported). "R" identifies the group followed by the runway heading (and parallel runway designator, if needed) "/" and the visual range in feet (meters in other countries) followed with "FT." ("Feet" is not spoken.)

30.3.7.1 Variability Values. When RVR varies by more than on reportable value, the lowest and highest values are shown with "V" between them.

30.3.7.2 Maximum/Minimum Range. "P" indicates an observed RVR is above the maximum value for this system (spoken as "more than"). "M" indicates an observed RVR is below the minimum value which can be determined by the system (spoken as "less than").

EXAMPLE−
R32L/1200FT − Runway Three Two Left R−V−R one thousand two hundred

R27R/M1000V4000FT − Runway Two Seven Right R−V−R variable from less than one thousand to four thousand.

30.3.8 Weather Phenomena. In METAR, weather is reported in the format:

Intensity / Proximity / Descriptor / Precipitation / Obstruction to Visibility / Other

NOTE−
The "/" above and in the following descriptions (except as the separator between the temperature and dew point) are for separation purposes in this publication and do not appear in the actual METARs.

30.3.8.1 Intensity applies only to the first type of precipitation reported. A "−" denotes light, no symbol denotes moderate, and a "+" denotes heavy.

30.3.8.2 Proximity applies to and is reported only for weather occurring in the vicinity of the airport (between 5 and 10 miles of the point(s) of observation). It is denoted by the letters "VC." (Intensity and "VC" will not appear together in the weather group.)

30.3.8.3 Descriptor. These eight descriptors apply to the precipitation or obstructions to visibility:

TS	thunderstorm
DR	low drifting
SH	showers
MI	shallow
FZ	freezing
BC	patches
BL	blowing
PR	partial

NOTE−
Although "TS" and "SH" are used with precipitation and may be preceded with an intensity symbol, the intensity still applies to the precipitation not the descriptor.

30.3.8.4 Precipitation. There are nine types of precipitation in the METAR code:

RA	rain
DZ	drizzle
SN	snow
GR	hail ($^1/_4''$ or greater)
GS	small hail/snow pellets
PL	ice pellets
SG	snow grains
IC	ice crystals
UP	unknown precipitation (automated stations only)

30.3.8.5 Obstructions to Visibility. Obscurations are any phenomena in the atmosphere, other than precipitation, that reduce horizontal visibility. There are eight types of obscuration phenomena in the METAR code:

FG	fog (visibility less than $^5/_8$ mile)
HZ	haze
FU	smoke
PY	spray
BR	mist (visibility $^5/_8$−6 miles)
SA	sand
DU	dust
VA	volcanic ash

NOTE−
Fog (FG) is observed or forecast only when the visibility is less than $^5/_8$ mile. Otherwise, mist (BR) is observed or forecast.

30.3.8.6 Other. There are five categories of other weather phenomena which are reported when they occur:

SQ	squall
SS	sandstorm
DS	duststorm
PO	dust/sand whirls
FC +FC	funnel cloud tornado/waterspout

EXAMPLES−

TSRA	thunderstorm with moderate rain
+SN	heavy snow
−RA FG	light rain and fog
BRHZ	mist and haze (visibility $^5/_8$ mile or greater)
FZDZ	freezing drizzle
VCSH	rain shower in the vicinity
+SHRASNPL	heavy rain showers, snow, ice pellets (Intensity indicator refers to the predominant rain.)

30.3.9 Sky Condition. In METAR, sky condition is reported in the format:

Amount / Height / (Type) or Indefinite Ceiling / Height

30.3.9.1 Amount. The amount of sky cover is reported in eighths of sky cover, using contractions:

SKC	clear (no clouds)
FEW	>$^0/_8$ to $^2/_8$ cloud cover
SCT	scattered ($^3/_8$ to $^4/_8$ cloud cover)
BKN	broken ($^5/_8$ to $^7/_8$ cloud cover)
OVC	overcast ($^8/_8$ cloud cover)
CB	cumulonimbus when present
TCU	towering cumulus when present

NOTE−
1. *"SKC" will be reported at manual stations. "CLR" will be used at automated stations when no clouds below 12,000 feet are reported.*

2. A *ceiling layer is not designated in the METAR code. For aviation purposes, the ceiling is the lowest broken or overcast layer, or vertical visibility into obscuration. Also, there is no provision for reporting thin layers in the METAR code. When clouds are thin, that layer must be reported as if it were opaque.*

30.3.9.2 Height. Cloud bases are reported with three digits in hundreds of feet above ground level (AGL). (Clouds above 12,000 feet cannot be reported by an automated station).

30.3.9.3 Type. If towering cumulus clouds (TCU) or cumulonimbus clouds (CB) are present, they are reported after the height which represents their base.

EXAMPLE−
SCT025TCU BKN080 BKN250 − "two thousand five hundred scattered towering cumulus, ceiling eight thousand broken, two five thousand broken."

SCT008 OVC012CB − "eight hundred scattered ceiling one thousand two hundred overcast cumulonimbus clouds."

30.3.9.4 Vertical Visibility (indefinite ceiling height). The height into an indefinite ceiling is preceded by "VV" and followed by three digits indicating the vertical visibility in hundreds of feet. This layer indicates total obscuration.

EXAMPLE−
$^1/_8$ SM FG VV006 − visibility one eighth, fog, indefinite ceiling six hundred.

30.3.9.5 Obscurations are reported when the sky is partially obscured by a ground−based phenomena by indicating the amount of obscuration as FEW, SCT, BKN followed by three zeros (000). In remarks, the obscuring phenomenon precedes the amount of obscuration and three zeros.

EXAMPLE−
BKN000 (IN BODY) − “sky partially obscured.”

FU BKN000 (IN REMARKS) − “smoke obscuring five− to seven−eighths of the sky.”

30.3.9.6 When sky conditions include a layer aloft other than clouds, such as smoke or haze, the type of phenomena, sky cover, and height are shown in remarks.

EXAMPLE−
BKN020 (IN BODY) − “ceiling two thousand broken.”
RMK FU BKN020 − “broken layer of smoke aloft, based at two thousand.”

30.3.9.7 Variable Ceiling. When a ceiling is below three thousand and is variable, the remark “CIG” will be shown followed with the lowest and highest ceiling heights separated by a “V.”

EXAMPLE−
CIG 005V010 − “ceiling variable between five hundred and one thousand.”

30.3.9.8 Second Site Sensor. When an automated station uses meteorological discontinuity sensors, remarks will be shown to identify site specific sky conditions which differ and are lower than conditions reported in the body.

EXAMPLE−
CIG 020 RY11 − “ceiling two thousand at Runway One One.”

30.3.9.9 Variable Cloud Layer. When a layer is varying in sky cover, remarks will show the variability range. If there is more than one cloud layer, the variable layer will be identified by including the layer height.

EXAMPLE−
SCT V BKN − “scattered layer variable to broken.”

BKN025 V OVC − “broken layer at two thousand five hundred variable to overcast.”

30.3.9.10 Significant Clouds. When significant clouds are observed, they are shown in remarks, along with the specified information as shown below:

a) Cumulonimbus (CB), or Cumulonimbus Mammatus (CBMAM), distance (if known), direction from the station, and direction of movement, if known. If the clouds are beyond 10 miles from the airport, DSNT will indicate distance.

EXAMPLE−
CB W MOV E − “cumulonimbus west moving east.”

CBMAM DSNT S − “cumulonimbus mammatus distant south.”

b) Towering Cumulus (TCU), location, (if known), or direction from the station.

EXAMPLE−
TCU OHD − “towering cumulus overhead.”

TCU W − “towering cumulus west.”

c) Altocumulus Castellanus (ACC), Stratocumulus Standing Lenticular (SCSL), Altocumulus Standing Lenticular (ACSL), Cirrocumulus Standing Lenticular (CCSL) or rotor clouds, describing the clouds (if needed), and the direction from the station.

ACC W	“altocumulus castellanus west”
ACSL SW−S	“standing lenticular altocumulus southwest through south”
APRNT ROTOR CLD S	“apparent rotor cloud south”
CCSL OVR MT E	“standing lenticular cirrocumulus over the mountains east”

30.3.10 Temperature/Dew Point. Temperature and dew point are reported in two, two−digit groups in degrees Celsius, separated by a solidus (/). Temperatures below zero are prefixed with an “M.” If the temperature is available but the dew point is missing, the temperature is shown followed by a solidus. If the temperature is missing, the group is omitted from the report.

EXAMPLE−
15/08 . . . . “temperature one five, dew point 8”
00/M02 . . . . “temperature zero, dew point minus 2”
M05/ . . . . “temperature minus five, dew point missing”

30.3.11 Altimeter. Altimeter settings are reported in a four−digit format in inches of mercury prefixed with an “A” to denote the units of pressure.

EXAMPLE−
A2995 . . . . “altimeter two niner niner five”

30.3.12 Remarks. Remarks will be included in all observations, when appropriate. The contraction “RMK” denotes the start of the remarks section of a METAR report.

Except for precipitation, phenomena located within 5 statute miles of the point of observation will be reported as at the station. Phenomena between 5 and 10 statute miles will be reported in the vicinity, "VC." Precipitation not occurring at the point of observation but within 10 statute miles is also reported as in the vicinity, "VC." Phenomena beyond 10 statute miles will be shown as distant, "DSNT." Distances are in statute miles except for automated lightning remarks which are in nautical miles. Movement of clouds or weather will be indicated by the direction toward which the phenomena is moving.

There are two categories of remarks: Automated, Manual, and Plain Language; and Additive and Automated Maintenance Data.

30.3.12.1 Automated, Manual, and Plain Language Remarks. This group of remarks may be generated from either manual or automated weather reporting stations and generally elaborates on parameters reported in the body of the report. Plain language remarks are only provided by manual stations.

1) Volcanic Eruptions
2) Tornado, Funnel Cloud, Waterspout
3) Type of Automated Station (AO1 or AO2)
4) Peak Wind
5) Wind Shift
6) Tower or Surface Visibility
7) Variable Prevailing Visibility
8) Sector Visibility
9) Visibility at Second Location
10) Dispatch Visual Range
11) Lightning. When lightning is observed at a manual location, the frequency and location is reported. When cloud−to−ground lightning is detected by an automated lightning detection system, such as ALDARS: [a] Within 5 nautical miles (NM) of the Airport Reference Point (ARP), it will be reported as "TS" in the body of the report with no remark; [b] Between 5 and 10 NM of the ARP, it will be reported as "VCTS" in the body of the report with no remark; [c] Beyond 10 but less than 30 NM of the ARP, it will be reported in remarks as "DSNT" followed by the direction from the ARP. ***EXAMPLE−*** *LTG DSNT W or LTG DSNT ALQDS*
12) Beginning/Ending Time of Precipitation
13) Beginning/Ending Time of Thunderstorms
14) Thunderstorm Location; Movement Direction
15) Hailstone Size
16) Virga
17) Variable Ceiling
18) Obscurations
19) Variable Sky Condition
20) Significant Cloud Types
21) Ceiling Height at Second Location
22) Pressure Rising or Falling Rapidly
23) Sea−Level Pressure
24) Aircraft Mishap (not transmitted)
25) No SPECI Reports Taken
26) Snow Increasing Rapidly
27) Other Significant Information

30.3.12.2 Additive and Automated Maintenance Data Remarks.

1) Hourly Precipitation
2) Precipitation Amount
3) 24−Hour Precipitation
4) Snow Depth on Ground
5) Water Equivalent of Snow on Ground
6) Cloud Types
7) Duration of Sunshine
8) Hourly Temperature and Dew Point (Tenths)
9) 6−Hour Maximum Temperature
10) 6−Hour Minimum Temperature
11) 24−Hour Maximum/Minimum Temperatures
12) Pressure Tendency
13) Sensor Status:
WINO
ZRANO
SNO
VRNO
PNO
VISNO

EXAMPLE−
METAR report and explanation:

METAR KSFO 041453Z AUTO VRB02KT 3SM BR CLR 15/12 A3012 RMK AO2

METAR	Type of report (aviation routine weather report)
KSFO	Station identifier (San Francisco, CA)
041453Z	Date/Time (4th day of month; time 1453 UTC)
AUTO	Fully automated; no human intervention
VRB02KT	Wind (wind variable at two)
3SM	Visibility (visibility three statute miles)
BR	Visibility obscured by mist
CLR	No clouds below one two thousand
15/12	Temperature one five; dew point one two
A3012	Altimeter three zero one two
RMK	Remarks
AO2	This automated station has a weather discriminator (for precipitation).

EXAMPLE−
METAR report and explanation:

METAR KBNA 281250Z 33018KT 290V360 1/2SM R31/2700FT SN BLSN FG VV008 00/M03 A2991 RMK RAE42SNB42

METAR	Aviation routine weather report
KBNA	Nashville, TN
281250Z	28th day of month; time 1250 UTC
(no modifier)	This is a manually generated report, due to the absence of "AUTO" and "AO1 or AO2" in remarks.
33018KT	Wind three three zero at one eight
290V360	Wind variable between two nine zero and three six zero
$^1/_2$SM	Visibility one half statute mile
R31/2700FT	Runway three one RVR two thousand seven hundred feet
SN	Moderate snow
BLSN FG	Visibility obscured by blowing snow and fog
VV008	Indefinite ceiling eight hundred
00/M03	Temperature zero; dew point minus three
A2991	Altimeter two niner niner one
RMK	Remarks
RAE36	Rain ended at three six
SNB42	Snow began at four two

EXAMPLE−
SPECI report and explanation:

SPECI KCVG 152224Z 28024G36KT 3/4SM +TSRA BKN008 OVC020CB 28/23 A3000 RMK TSRAB24 TS W MOV E.

SPECI	Nonroutine aviation special weather report
KCVG	Cincinnati, OH
152224Z	15th day of month; time 2224 UTC
(no modifier)	This is a manually generated report due to the absence of "AUTO" and "AO1 or AO2" in remarks.
28024G36KT	Wind two eight zero at two four gusts three six
3/4SM	Visibility three fourths statute mile
+TSRA	Thunderstorms, heavy rain
BKN008	Ceiling eight hundred broken
OVC020CB	Two thousand overcast cumulonimbus clouds
28/23	Temperature two eight; dew point two three
A3000	Altimeter three zero zero zero
RMK	Remarks
TSRAB24	Thunderstorm and rain began at two four
TS W MOV E	Thunderstorm west moving east

30.4 Aerodrome Forecast (TAF). A concise statement of the expected meteorological conditions at an airport during a specified period. At most locations, TAFs have a 24 hour forecast period. However, TAFs for some locations have a 30 hour forecast period. These forecast periods may be shorter in the case of an amended TAF. TAFs use the same codes as METAR weather reports. They are scheduled four times daily for 24−hour periods beginning at 0000Z, 0600Z, 1200Z, and 1800Z.

Forecast times in the TAF are depicted in two ways. The first is a 6−digit number to indicate a specific point in time, consisting of a two−digit date, two−digit hour, and two−digit minute (such as issuance time or FM). The second is a pair of four−digit numbers separated by a "/" to indicate a beginning and end for a period of time. In this case, each four−digit pair consists of a two−digit date and a two−digit hour.

TAFs are issued in the following format:

TYPE OF REPORT/ICAO STATION IDENTIFIER/DATE AND TIME OF ORIGIN/VALID PERIOD DATE AND TIME/FORECAST METEOROLOGICAL CONDITIONS

NOTE−
The "/" above and in the following descriptions are for separation purposes in this publication and do not appear in the actual TAFs.

TAF KORD 051130Z 0512/0618 14008KT 5SM BR BKN030
TEMPO 0513/0516 1 1/2SM BR
FM051600 16010KT P6SM SKC
FM052300 20013G20KT 4SM SHRA OVC020
PROB40 0600/0606 2SM TSRA OVC008CB
BECMG 0606/0608 21015KT P6SM NSW SCT040

TAF format observed in the above example:

TAF = type of report

KORD = ICAO station identifier

051130Z = date and time of origin (issuance time)

0512/0618 = valid period date and times

14008KT 5SM BR BKN030 = forecast meteorological conditions

30.4.1 Explanation of TAF elements

30.4.1.1 Type of Report. There are two types of TAF issuances, a routine forecast issuance (TAF) and an amended forecast (TAF AMD). An amended TAF is issued when the current TAF no longer adequately describes the on−going weather or the forecaster feels the TAF is not representative of the current or expected weather. Corrected (COR) or delayed (RTD) TAFs are identified only in the communications header which precedes the actual forecasts.

30.4.1.2 ICAO Station Identifier. The TAF code uses ICAO 4−letter location identifiers as described in the METAR section.

30.4.1.3 Date and Time of Origin. This element is the date and time the forecast is actually prepared. The format is a two−digit date and four−digit time followed, without a space, by the letter "Z."

30.4.1.4 Valid Period Date and Time. he UTC valid period of the forecast consists of two four−digit sets, separated by a "/". The first four−digit set is a two−digit date followed by the two−digit beginning hour, and the second four−digit set is a two−digit date followed by the two−digit ending hour. Although most airports have a 24−hour TAF, a select number of airports have a 30−hour TAF. In the case of an amended forecast, or a forecast which is corrected or delayed, the valid period may be for less than 24 hours. Where an airport or terminal operates on a part−time basis (less than 24 hours/day), the TAFs issued for those locations will have the abbreviated statement "AMD NOT SKED" added to the end of the forecasts. The time observations are scheduled to end and/or resume will be indicated by expanding the AMD NOT SKED statement. Expanded statements will include:

a) Observation ending time (AFT DDHHmm; for example, AFT 120200)

b) Scheduled observations resumption time (TIL DDHHmm; for example, TIL 171200Z) or

c) Period of observation unavailability (DDHH/DDHH); for example, 2502/2512).

30.4.1.5 Forecast Meteorological Conditions. This is the body of the TAF. The basic format is:

Wind / Visibility / Weather / Sky Condition / Optional Data (Wind Shear)

The wind, visibility, and sky condition elements are always included in the initial time group of the forecast. Weather is included only if significant to aviation. If a significant, lasting change in any of the elements is expected during the valid period, a new time period with the changes is included. It should be noted that with the exception of an "FM" group, the new time period will include only those elements which are expected to change; i.e., if a lowering of the visibility is expected but the wind is expected to remain the same, the new time period reflecting the lower visibility would not include a forecast wind. The forecast wind would remain the same as in the previous time period.

Any temporary conditions expected during a specific time period are included with that time period. The following describes the elements in the above format.

a) Wind. This five (or six) digit group includes the expected wind direction (first 3 digits) and speed (last 2 digits or 3 digits if 100 knots or greater). The contraction "KT" follows to denote the units of wind speed. Wind gusts are noted by the letter "G" appended to the wind speed followed by the highest expected gust.

NOTE−
A variable wind direction is noted by "VRB" where the three digit direction usually appears. A calm wind (3 knots or less) is forecast as "00000KT."

EXAMPLE−
18010KT − wind one eight zero at one zero (wind is blowing from 180 at 10 knots).

35012G20KT − wind three five zero at one two gust two zero

b) Visibility. The expected prevailing visibility up to and including 6 miles is forecast in statute miles, including fractions of miles, followed by "SM" to note the units of measure. Expected visibilities greater than 6 miles are forecast as P6SM (Plus six statute miles).

EXAMPLE−
1/2SM . . . . visibility one−half
4SM . . . . visibility four
P6SM . . . . visibility more than six

c) Weather Phenomena. The expected weather phenomena is coded in TAF reports using the same format, qualifiers, and phenomena contractions as METAR reports (except UP).

Obscurations to vision will be forecast whenever the prevailing visibility is forecast to be 6 statute miles or less.

If no significant weather is expected to occur during a specific time period in the forecast, the weather group is omitted for that time period. If, after a time period in which significant weather has been forecast, a change to a forecast of no significant weather occurs, the contraction NSW (no significant weather) will appear as the weather group in the new time period. (NSW is included only in temporary (TEMPO) groups.)

NOTE−
It is very important that pilots understand that NSW only refers to weather phenomena, i.e., rain, snow, drizzle, etc. Omitted conditions, such as sky conditions, visibility, winds, etc., are carried over from the previous time group.

d) Sky Condition. TAF sky condition forecasts use the METAR format described in the METAR section. Cumulonimbus clouds (CB) are the only cloud type forecast in TAFs. When clear skies are forecast, the contraction "SKC" will always be used. The contraction "CLR" is never used in the aerodrome forecast (TAF). When the sky is obscured due to a surface−based phenomenon, vertical visibility (VV) into the obscuration is forecast. The format for vertical visibility is "VV" followed by a three−digit height in hundreds of feet.

NOTE−
As in METAR, ceiling layers are not designated in the TAF code. For aviation purposes, the ceiling is the lowest broken or overcast layer or vertical visibility into a complete obscuration.

SKC	"sky clear"
SCT005 BKN025CB	"five hundred scattered, ceiling two thousand five hundred broken cumulonimbus clouds"
VV008	"indefinite ceiling eight hundred"

e) Optional Data (Wind Shear). Wind Shear is the forecast of non−convective, low−level winds (up to 2,000 feet). The forecast includes the letters "WS" followed by the height of the wind shear, the wind direction and wind speed at the indicated height and the ending letters "KT" (knots). Height is given in hundreds of feet (AGL) up to and including 2,000 feet. Wind shear is encoded with the contraction "WS" followed by a three−digit height, slant character "/" and winds at the height indicated in the same format as surface winds. The wind shear element is omitted if not expected to occur.

WS010/18040KT	"low level wind shear at one thousand, wind one eight zero at four zero"

30.5 Probability Forecast. The probability or chance of thunderstorms or other precipitation events occurring, along with associated weather conditions (wind, visibility, and sky conditions). The PROB30 group is used when the occurrence of thunderstorms or precipitation is 30−39% and the PROB40 group is used when the occurrence of thunderstorms or precipitation is 40–49%. This is followed by two four−digit groups separated by a "/", giving the beginning date and hour, and the ending date and hour of the time period during which the thunderstorms or precipitation are expected.

NOTE−
NWS does not use PROB 40 in the TAF. However U.S. Military generated TAFS may include PROB40. PROB30

will not be shown during the first nine hours of a NWS forecast.

EXAMPLE−

PROB40 2221/2302 $^{1}/_{2}$SM +TSRA	*"chance between 2100Z and 0200Z of visibility one−half statute mile in thunderstorms and heavy rain."*
PROB30 3010/3014 1SM RASN .	*"chance between 1000Z and 1400Z of visibility one statute mile in mixed rain and snow."*

30.6 Forecast Change Indicators. The following change indicators are used when either a rapid, gradual, or temporary change is expected in some or all of the forecast meteorological conditions. Each change indicator marks a time group within the TAF report.

30.6.1 From (FM) Group. The FM group is used when a rapid change, usually occurring in less than one hour, in prevailing conditions is expected. Typically, a rapid change of prevailing conditions to more or less a completely new set of prevailing conditions is associated with a synoptic feature passing through the terminal area (cold or warm frontal passage). Appended to the "FM" indicator is the six−digit date, hour, and minute the change is expected to begin and continues until the next change group or until the end of the current forecast. A "FM" group will mark the beginning of a new line in a TAF report (indented 5 spaces). Each "FM" group contains all the required elements−wind, visibility, weather, and sky condition. Weather will be omitted in "FM" groups when it is not significant to aviation. FM groups will not include the contraction NSW.

EXAMPLE−

FM210100 14010KT P6SM SKC − "after 0100Z on the 21st, wind one four zero at one zero, visibility more than six, sky clear."

30.6.2 Becoming (BECMG) Group. The BECMG group is used when a gradual change in conditions is expected over a longer time period, usually two hours. The time period when the change is expected is two four−digit groups separated by a "/", with the beginning date and hour, and ending date and hour of the change period which follows the BECMG indicator. The gradual change will occur at an unspecified time within this time period. Only the changing forecast meteorological conditions are included in BECMG groups. The omitted conditions are carried over from the previous time group.

NOTE−

The NWS does not use BECMG in the TAF.

EXAMPLE−

OVC012 BECMG 0114/0116 BKN020 − "ceiling one thousand two hundred overcast. Then a gradual change to ceiling two thousand broken between 1400Z on the 1st and 1600Z on the 1st."

30.6.3 Temporary (TEMPO) Group. The TEMPO group is used for any conditions in wind, visibility, weather, or sky condition which are expected to last for generally less than an hour at a time (occasional), and are expected to occur during less than half the time period. The TEMPO indicator is followed by two four−digit groups separated by a "/". The first four digit group gives the beginning date and hour, and the second four digit group gives the ending date and hour of the time period during which the temporary conditions are expected. Only the changing forecast meteorological conditions are included in TEMPO groups. The omitted conditions are carried over from the previous time group.

EXAMPLE−

1. *SCT030 TEMPO 0519/0523 BKN030 − "three thousand scattered with occasional ceilings three thousand broken between 1900Z on the 5th and 2300Z on the 5th."*

2. *4SM HZ TEMPO 1900/1906 2SM BR HZ − "visibility four in haze with occasional visibility two in mist and haze between 0000Z on the 19th and 0600Z on the 19th."*

FIG GEN 3.5−23

Key to Aerodrome Forecast (TAF) and Aviation Routine Weather Report (METAR) (Front)

TAF KPIT 091730Z 0918/1024 15005KT 5SM HZ FEW020 WS010/31022KT
FM091930 30015G25KT 3SM SHRA OVC015
TEMPO 0920/0922 1/2SM +TSRA OVC008CB
FM100100 27008KT 5SM SHRA BKN020 OVC040
PROB30 1004/1007 1SM -RA BR
FM101015 18005KT 6SM -SHRA OVC020
BECMG 1013/1015 P6SM NSW SKC

NOTE: Users are cautioned to confirm ***DATE*** and ***TIME*** of the TAF. For example FM**10**0000 is 0000Z on the **10th**. Do not confuse with ***1000Z!***

METAR KPIT 091955Z COR 22015G25KT 3/4SM R28L/2600FT TSRA OVC010CB 18/16 A2992 RMK SLP045 T01820159

Forecast	Explanation	Report
TAF	Message type: TAF-routine or TAF AMD-amended forecast, METAR-hourly, SPECI-special or TESTM-non-commissioned ASOS report	**METAR**
KPIT	ICAO location indicator	**KPIT**
091730Z	Issuance time: ALL times in UTC "Z", 2-digit date, 4-digit time	**091955Z**
0918/1024	Valid period, either 24 hours or 30 hours. The first two digits of EACH four digit number indicate the date of the valid period, the final two digits indicate the time (valid from 18Z on the 9th to 24Z on the 10th).	
	In U.S. METAR: CORrected ob; or AUTOmated ob for automated report with no human intervention; omitted when observer logs on.	**COR**
15005KT	Wind: 3 digit true-north direction , nearest 10 degrees (or VaRiaBle); next 2-3 digits for speed and unit, KT (KMH or MPS); as needed, Gust and maximum speed; 00000KT for calm; for METAR, if direction varies 60 degrees or more, Variability appended, e.g., 180V260	**22015G25KT**
5SM	Prevailing visibility; in U.S., Statute Miles & fractions; above 6 miles in TAF Plus6SM. (Or, 4-digit minimum visibility in meters and as required, lowest value with direction)	**¾SM**
	Runway Visual Range: R; 2-digit runway designator Left, Center, or Right as needed; "/", Minus or Plus in U.S., 4-digit value, FeeT in U.S., (usually meters elsewhere); 4-digit value Variability 4-digit value (and tendency Down, Up or No change)	**R28L/2600FT**
HZ	Significant present, forecast and recent weather: see table (on back)	**TSRA**
FEW020	Cloud amount, height and type: Sky Clear 0/8, FEW >0/8-2/8, ScaTtered 3/8-4/8, BroKeN 5/8-7/8, OverCast 8/8; 3-digit height in hundreds of ft; Towering Cumulus or CumulonimBus in **METAR**; in **TAF**, only CB. Vertical Visibility for obscured sky and height "VV004". More than 1 layer may be reported or forecast. In automated **METAR** reports only, CleaR for "clear below 12,000 feet"	**OVC 010CB**
	Temperature: degrees Celsius; first 2 digits, temperature "/" last 2 digits, dew-point temperature; Minus for below zero, e.g., M06	**18/16**
	Altimeter setting: indicator and 4 digits; in U.S., A-inches and hundredths; (Q-hectoPascals, e.g., Q1013)	**A2992**
WS010/31022KT	In U.S. **TAF**, non-convective low-level (≤¿2,000 ft) Wind Shear; 3-digit height (hundreds of ft); "/"; 3-digit wind direction and 2-3 digit wind speed above the indicated height, and unit, KT	

FIG GEN 3.5−24

Key to Aerodrome Forecast (TAF) and Aviation Routine Weather Report (METAR) (Back)

	In **METAR**, ReMarK indicator & remarks. For example: Sea- Level Pressure in hectoPascals & tenths, as shown: 1004.5 hPa; Temp/ dew-point in tenths °C, as shown: temp. 18.2°C, dew-point 15.9°C	**RMK SLP045 T01820159**
FM091930	FroM: changes are expected at: 2-digit date, 2-digit hour, and 2-digit minute beginning time: indicates significant change. Each FM starts on a new line, indented 5 spaces	
TEMPO 0920/0922	TEMPOrary: changes expected for <1 hour and in total, < half of the period between the 2-digit date and 2-digit hour beginning, and 2-digit date and 2-digit hour ending time	
PROB30 1004/1007	PROBability and 2-digit percent (30 or 40): probable condition in the period between the 2-digit date & 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time	
BECMG 1013/1015	BECoMinG: change expected in the period between the 2-digit date and 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time	

Table of Significant Present, Forecast and Recent Weather - Grouped in categories and used in the order listed below; or as needed in TAF, No Significant Weather.			
Qualifiers **Intensity or Proximity**			
"-" = Light	**No sign** = Moderate		**"+"** = Heavy
"VC" = Vicinity, but not at aerodrome. In the US METAR, 5 to 10 SM from the point of observation. In the US TAF, 5 to 10 SM from the center of the runway complex. Elsewhere, within 8000m.			
Descriptor			
BC – Patches	**BL** – Blowing	**DR** – Drifting	**FZ** – Freezing
MI – Shallow	**PR** – Partial	**SH** – Showers	**TS** – Thunderstorm
Weather Phenomena **Precipitation**			
DZ – Drizzle	**GR** – Hail	**GS** – Small Hail/Snow Pellets	
IC – Ice Crystals	**PL** – Ice Pellets	**RA** – Rain	**SG** – Snow Grains
SN – Snow	**UP** – Unknown Precipitation in automated observations		
Obscuration			
BR – Mist (≥5/8SM)	**DU** – Widespread Dust	**FG** – Fog (<5/8SM)	**FU** – Smoke
HZ – Haze	**PY** – Spray	**SA** – Sand	**VA** – Volcanic Ash
Other			
DS – Dust Storm	**FC** – Funnel Cloud	**+FC** – Tornado or Waterspout	
PO – Well developed dust or sand whirls		**SQ** – Squall	**SS** – Sandstorm
- Explanations in parentheses "()" indicate different worldwide practices. - Ceiling is not specified; defined as the lowest broken or overcast layer, or the vertical visibility. - NWS TAFs exclude BECMG groups and temperature forecasts, NWS TAFS do not use PROB in the first 9 hours of a TAF; NWS METARs exclude trend forecasts. US Military TAFs include Turbulence and Icing groups.			

31. Meteorological Broadcasts (ATIS, VHF and LF)

31.1 Continuous Transcribed Weather Broadcasts (TWEB)

31.1.1 Weather broadcasts are made continuously over selected navigational aids. These broadcasts contain the general weather forecasts and winds up to 12,000 feet within a 250−mile radius of the radio. In some cases the forecasts are for route of flight rather than the general area. They also broadcast pilot reports, radar reports, and hourly weather reports of selected locations within a 400−mile radius of the broadcast station.

31.2 Automatic Terminal Information Service (ATIS) Broadcasts

31.2.1 These broadcasts are made continuously and include as weather information only the ceiling, visibility, wind, and altimeter setting of the aerodrome at which they are located.

31.3 Scheduled Weather Broadcasts (SWB)

31.3.1 Scheduled broadcasts are made only in Alaska at 15 minutes past the hour over en route navigational aids not used for TWEB or ATIS. These broadcasts contain hourly weather reports of selected locations within 150 miles of the station and weather advisories, pilot weather reports, radar weather reports, and Notices to Airmen (NOTAMs).

31.4 Navigational Aids Providing Broadcast Services

31.4.1 A compilation of navigational aids over which weather broadcasts are transmitted is not available for this publication. Complete information concerning all navigational aids providing this service is contained in the Chart Supplement U.S. Similar information for the Pacific and Alaskan areas is contained in the Chart Supplements Pacific and Alaska.

TBL GEN 3.5−13
Meteorological Broadcasts (VOLMET)

Meteorological Broadcasts (VOLMET)							
Name	**Call Sign**	**Frequency**	**Broadcast**	**Form**	**Contents**	**Emission**	**Remarks**
Honolulu	Honolulu Radio	2863, 6679, 8828, 13282 kHz	H00−05 and H30−35	Forecasts	PHNL Honolulu PHTO Hilo PGUM Guam	Voice	Plain language English
				SIGMET	Oakland FIR		
				Hourly Reports	PHNL Honolulu PHTO Hilo PHOG Kahului PGUM Guam		
			E05−10 and E35−40	Hourly Reports	KSFO San Francisco KSEA Seattle KLAX Los Angeles KPDX Portland KSMF Sacramento KONT Ontario KLAS Las Vegas		
				SIGMET	Oakland FIR		
				Aerodrome Forecasts	KSFO San Francisco KSEA Seattle KLAX Los Angeles		
			E25−30 and E55−00	Hourly Reports	PANC Anchorage PAED ElmendorfAFB PAFA Fairbanks PACD Cold Bay PAKN King Salmon CYVR Vancouver		
				SIGMET	Oakland FIR		
				Forecasts	PANC Anchorage PAFA Fairbanks PACD Cold Bay CYVR Vancouver		
New York	New York Radio	3485, 6604, 10051, 13270 kHz	H00−05	Aerodrome Forecasts	KDTW Detroit KCLE Cleveland KCVG Cincinnati	Voice	Plain language English
				Hourly Reports	KDTW Detroit KCLE Cleveland KCVG Cincinnati KIND Indianapolis KPIT Pittsburgh		
			H05−10	SIGMET	Oceanic − New York FIR		
				Aerodrome Forecasts	KBGR Bangor KBDL Windsor Locks KCLT Charlotte		
				Hourly Reports	KBGR Bangor KBDL Windsor Locks KORF Norfolk KCLT Charlotte		
			H10−15	Aerodrome Forecasts	KJFK New York KEWR Newark KBOS Boston		
				Hourly Reports	KJFK New York KEWR Newark KBOS Boston KBAL Baltimore KIAD Washington		

Meteorological Broadcasts (VOLMET) − continued							
Name	**Call Sign**	**Frequency**	**Broadcast**	**Form**	**Contents**	**Emission**	**Remarks**
			H15−20	SIGMET	Oceanic − Miami FIR/San Juan FIR		
				Aerodrome Forecasts	MXKF Bermuda KMIA Miami KATL Atlanta		
				Hourly Reports	MXKF Bermuda KMIA Miami MYNN Nassau KMCO Orlando KATL Atlanta		
			H30−35	Aerodrome Forecasts	KORD Chicago KMKE Milwaukee KMSP Minneapolis		
				Hourly Reports	KORD Chicago KMKE Milwaukee KMSP Minneapolis KDTW Detroit KBOS Boston		
			E35−40	SIGMET	Oceanic − New York FIR		
				Aerodrome Forecasts	KIND Indianapolis KSTL St. Louis KPIT Pittsburgh		
				Hourly Reports	KIND Indianapolis KSTL St. Louis KPIT Pittsburgh KACY Atlantic City		
			E40−45	Aerodrome Forecasts	KBAL Baltimore KPHL Philadelphia KIAD Washington		
				Hourly Reports	KBAL Baltimore KPHL Philadelphia KIAD Washington KJFK New York KEWR Newark		
			E45−50	SIGMET	Oceanic − Miami FIR/San Juan FIR		
				Aerodrome Forecasts	MYNN Nassau KMCO Orlando		
				Hourly Reports	MXKF Bermuda KMIA Miami MYNN Nassau KMCO Orlando KATL Atlanta KTPA Tampa KPBI West Palm Beach		
All stations operate on A3 emission H24.							
All broadcasts are made 24 hours daily, seven days a week.							

FIG GEN 3.5−25

Key to Decode an ASOS/AWOS (METAR) Observation (Front)

METAR KABC 121755Z AUTO 21016G24KT 180V240 1SM R11/P6000FT -RA BR BKN015 OVC025 06/04 A2990
RMK A02 PK WND 20032/25 WSHFT 1715 VIS 3/4V1 1/2 VIS 3/4 RWY11 RAB07 CIG 013V017 CIG 017 RWY11 PRESFR
SLP125 P0003 6009 T00640036 10066 21012 58033 TSNO $

TYPE OF REPORT	METAR: hourly (scheduled report; SPECI: special (unscheduled) report.	METAR
STATION IDENTIFIER	Four alphabetic characters; ICAO location identifiers.	KABC
DATE/TIME	All dates and times in UTC using a 24-hour clock; two-digit date and four-digit time; always appended with Z to indicate UTC.	121755Z
REPORT MODIFIER	Fully automated report, no human intervention; removed when observer signed-on.	AUTO
WIND DIRECTION AND SPEED	Direction in tens of degrees from true north (first three digits); next two digits: speed in whole knots; as needed Gusts (character) followed by maximum observed speed; always appended with KT to indicate knots; 00000KT for calm; if direction varies by 60° or more a Variable wind direction group is reported.	21016G24KT 108V240
VISIBILITY	Prevailing visibility in statute miles and fractions (space between whole miles and fractions); always appended with SM to indicate statute miles.	1SM
RUNWAY VISUAL RANGE	10-minute RVR value in hundreds of feet; reported if prevailing visibility is ≤ one mile or RVR ≤6000 feet; always appended with FT to indicate feet; value prefixed with M or P to indicate value is lower or higher than the reportable RVR value.	R11/P6000FT
WEATHER PHENOMENA	RA: liquid precipitation that does not freeze; SN: frozen precipitation other than hail; UP: precipitation of unknown type; intensity prefixed to precipitation: light (-), moderate (no sign), heavy (+); FG: fog; FZFG: freezing fog (temperature below 0°C); BR: mist; HZ: haze; SQ: squall; maximum of three groups reported; augmented by observer: FC (funnel cloud/tornado/waterspout); TS(thunderstorm); GR (hail); GS (small hail; <1/4 inch); FZRA (intensity; freezing rain); VA (volcanic ash).	-RA BR
SKY CONDITION	Cloud amount and height: CLR (no clouds detected below 12000 feet); FEW (few); SCT (scattered); BKN (broken); OVC (overcast); followed by 3-digit height in hundreds of feet; or vertical visibility (VV) followed by height for indefinite ceiling.	BKN015 OVC025
TEMPERATURE/DEW POINT	Each is reported in whole degrees Celsius using two digits; values are separated by a solidus; sub-zero values are prefixed with an M (minus).	06/04
ALTIMETER	Altimeter always prefixed with an A indicating inches of mercury; reported using four digits: tens, units, tenths, and hundredths.	A2990

FIG GEN 3.5−26

Key to Decode an ASOS/AWOS (METAR) Observation (Back)

REMARKS IDENTIFIER: RMK	RMK
TORNADIC ACTIVITY: Augmented; report should include TORNADO, FUNNEL CLOUD, or WATERSPOUT, time begin/end, location, movement; e.;g., TORNADO B25 N MOV E.	
TYPE OF AUTOMATED STATION: AO2; automated station with precipitation discriminator.	AO2
PEAK WIND: PK WND dddff(f)/(hh)mm; direction in tens of degrees, speed in whole knots, and time.	PK WND 20032/25
WIND SHIFT: WSHFT (hh)mm	WSHFT 1715
TOWER OR SURFACE VISIBILITY: TWR VIS vvvvv: visibility reported by tower personnel, e.g., TWR VIS 2; SFC VIS vvvvv: visibility reported by ASOS, e.g., SFC VIS 2.	
VARIABLE PREVAILING VISIBILITY: VIS v_n v_n v_n v_n v_nV$v_x v_x v_x v_x v_x$; reported if prevailing visibility is <3 miles and variable.	VIS 3/4V1 1/2
VISIBILITY AT SECOND LOCATION: VIS vvvvv [LOC]; reported if different than the reported prevailing visibility in body of report.	VIS 3/4 RWY11
LIGHTNING: [FREQ] LTG [LOC]; when detected the frequency and location is reported, e.g., FRQ LTG NE.	
BEGINNING AND ENDING OF PRECIPITATION AND THUNDERSTORMS: w'w'B(hh)mmE(hh)mm; TSB(hh)mmE(hh)mm	RAB07
VIRGA: Augmented; precipitation not reaching the ground, e.g., VIRGA.	
VARIABLE CEILING HEIGHT: CIG h_n h_n h_nV$h_x h_x h_x$; reported if ceiling in body of report is <3000 feet and variable.	CIG 013V017
CEILING HEIGHT AT SECOND LOCATION: CIG hhh [LOC]; Ceiling height reported if secondary ceilometer site is different than the ceiling height in the body of the report.	CIG 017 RWY11
PRESSURE RISING OR FALLING RAPIDLY: PRESRR or PRESFR; pressure rising or falling rapidly at time of observation.	PRESFR
SEA-LEVEL PRESSURE: SLPppp; tens, units, and tenths of SLP in hPa.	SLP125
HOURLY PRECIPITATION AMOUNT: Prrrr; in .01 inches since last METAR; a trace is P0000.	P0003
3- AND 6-HOUR PRECIPITATION AMOUNT: 6RRRR; precipitation amount in .01 inches for past 6 hours reported in 00, 06, 12, and 18 UTC observations and for past 3 hours in 03, 09, 15, and 21 UTC observations; a trace is 60000.	60009
24-HOUR PRECIPITATION AMOUNT: 7R_{24} R_{24} R_{24} R_{24}; precipitation amount in .01 inches for past 24 hours reported in 12 UTC observation, e.g., 70015.	
HOURLY TEMPERATURE AND DEW POINT: T$s_n T_a T_a T_a s_n T'_a T'_a T'_a$; tenth of degree Celsius; s_n: 1 if temperature below 0° C and 0 if temperature 0°C or higher.	T00640036
6-HOUR MAXIMUM TEMPERATURE: 1$s_n T_x T_x T_x$; tenth of degree Celsius; 00, 06, 12, 18 UTC; s_n: 1 if temperature below 0°C and 0 if temperature 0°C or higher.	10066
6-HOUR MINIMUM TEMPERATURE: 2$s_n T_n T_n T_n$; tenth of degree Celsius; 00, 06, 12, 18 UTC; s_n: 1 if temperature below 0°C and 0 if temperature 0°C or higher.	21012
24-HOUR MAXIMUM AND MINIMUM TEMPERATURE: 4$s_n T_x T_x T_x s_n T_n T_n T_n$; tenth of degree Celsius; reported at midnight local standard time; 1 if temperature below 0°C and 0 if temperature 0°C or higher, e.g., 400461006.	
PRESSURE TENDENCY: 5appp; the character (a) and change in pressure (ppp; tenths of hPa) the past 3 hours.	58033
SENSOR STATUS INDICATORS: RVRNO: RVR missing; PWINO: precipitation identifier information not available; PNO: precipitation amount not available; FZRANO: freezing rain information not available; TSNO: thunderstorm information not available; VISNO [LOC]: visibility at secondary location not available, e.g., VISNO RWY06; CHINO [LOC]: (cloud-height-indicator) sky condition at secondary location not available, e.g., CHINO RWY06.	TSNO
MAINTENANCE CHECK INDICATOR: Maintenance needed on the system.	$
If an element or phenomena does not occur, is missing, or cannot be observed, the corresponding group and space are omitted (body and/or remarks) from that particular report, except for Sea-Level Pressure (SLPppp). SLPNO shall be reported in a METAR when the SLP is not available.	

U.S. DEPARTMENT OF TRANSPORTATION • FEDERAL AVIATION ADMINISTRATION • Aviation Weather Directorate, 400 7TH Street, SW, Rooms 8200-8326, Washington, D.C 20591

FIG GEN 3.5−27
NEXRAD Coverage

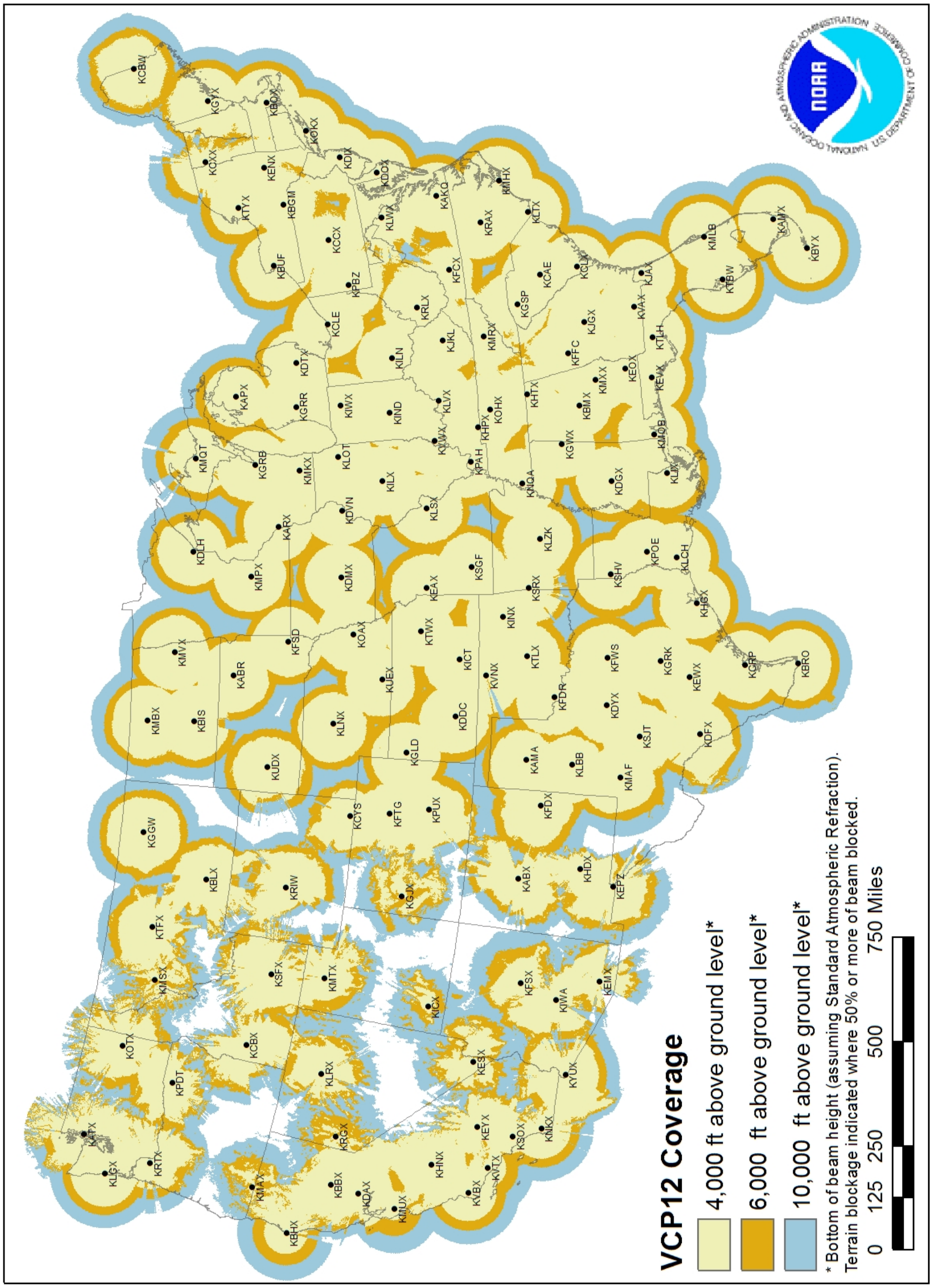


FIG GEN 3.5−28
NEXRAD Coverage

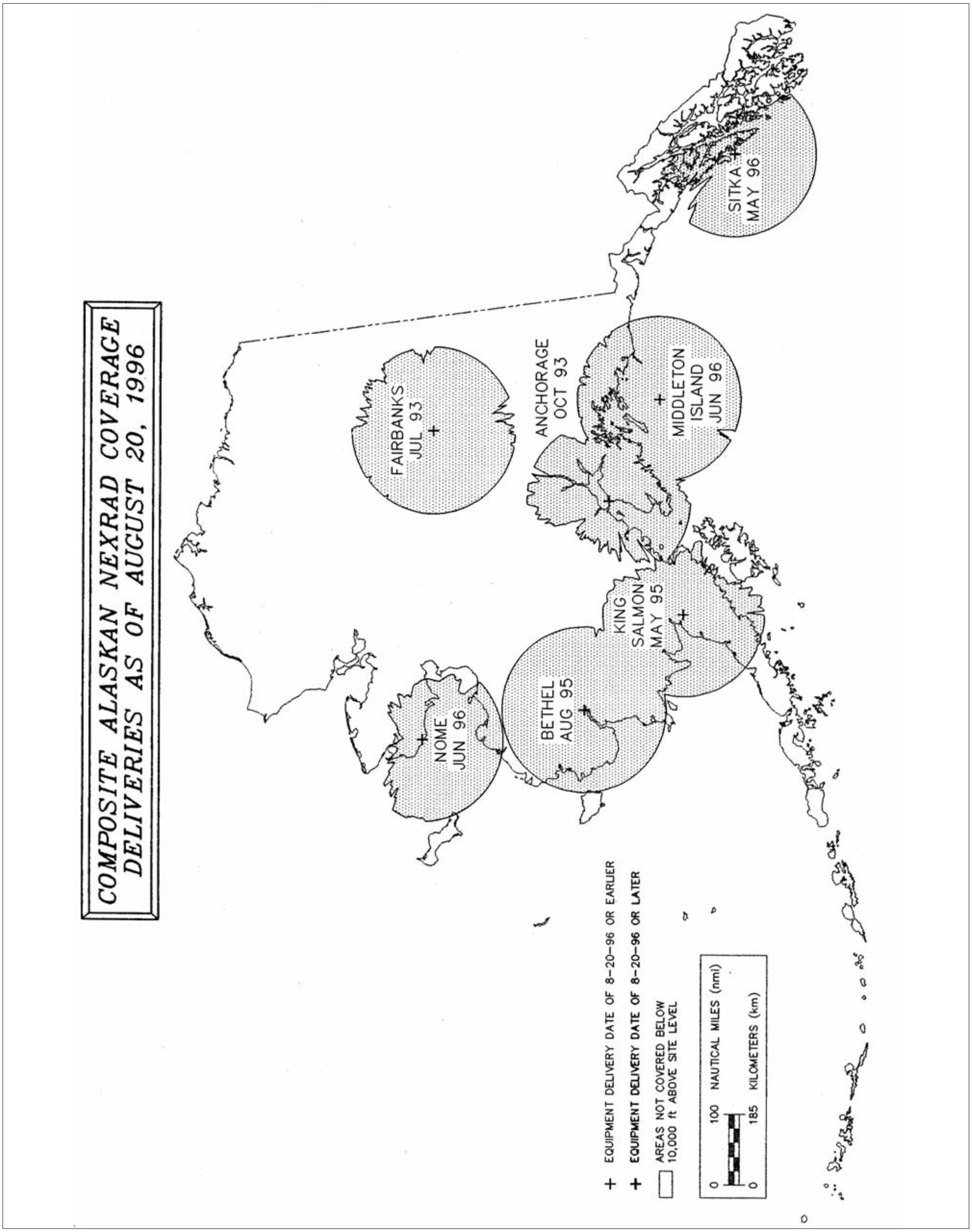


FIG GEN 3.5−29
NEXRAD Coverage

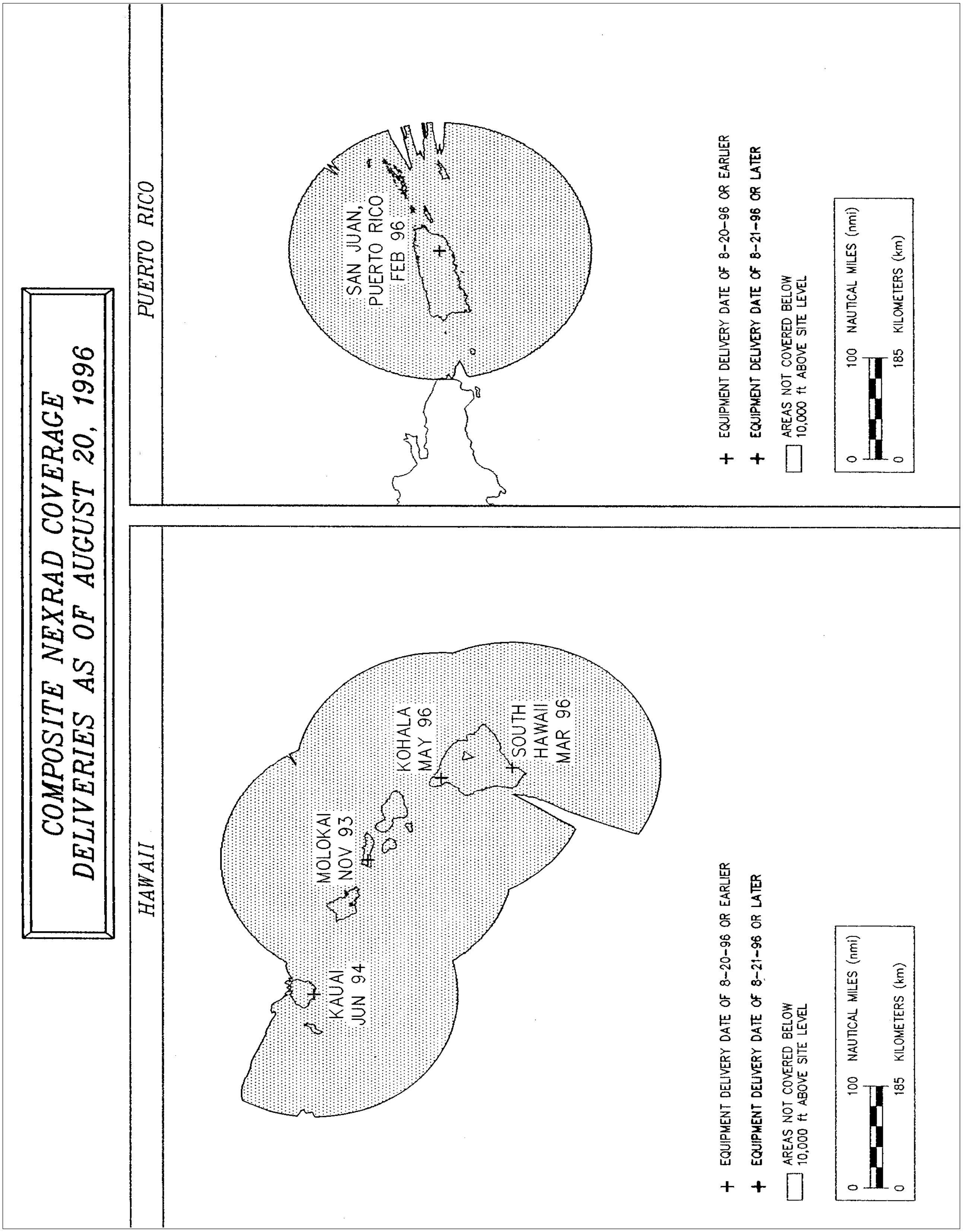


FIG GEN 3.5−30
Volcanic Activity Reporting Form (VAR)

Date ______________

SECTION 1 - Transmit to ATC via radio

1. Aircraft Identification	
2. Position	
3. Time (UTC)	
4. Flight level or altitude	
5. Position/location of volcanic activity or ash cloud	
6. Air temperature	
7. Wind	
8. Supplementary Information (Brief description of activity including vertical and lateral extent of the ash cloud, horizontal movement, rate of growth, etc., as available.)	

SECTION 2 - Complete and forward as directed

Mark the appropriate box(s)

9. *Density of ash cloud*	☐ wispy	☐ moderately dense	☐ very dense
10. *Color of ash*	☐ white ☐ black	☐ light gray	☐ dark gray
11. *Eruption*	☐ continuous	☐ intermittent	☐ not visible
12. *Position of activity*	☐ summit ☐ multiple	☐ side ☐ not observed	☐ single
13. *Other observed features of eruption*	☐ lightning ☐ ash fallout	☐ glow ☐ mushroom cloud	☐ large rocks ☐ none
14. *Effect on aircraft*	☐ communications ☐ pitot static ☐ none	☐ navigation system ☐ windscreen	☐ engines ☐ other windows
15. *Other effects*	☐ turbulence ☐ ash deposits	☐ St. Elmo's fire	☐ fumes
16. *Other information deemed useful*			

Forward completed form via mail to:
Global Volcanism Program
NHB-119
Smithsonian Institution
Washington, DC 20560

Or Fax to:
Global Volcanism Program
(202) 357-2476

PART 2 − EN ROUTE (ENR)

ENR 0.

ENR 0.1 Preface − Not applicable
ENR 0.2 Record of AIP Amendments − See GEN 0.2−1
ENR 0.3 Record of AIP Supplements − Not applicable

ENR 0.4 Checklist of Pages

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14.1.9.1 The runway assignment.

14.1.9.2 Any clearance to enter a specific runway.

14.1.9.3 Any instruction to hold short of a specific runway or line up and wait.

14.1.10 Controllers are required to request a readback of runway hold short assignment when it is not received from the pilot/vehicle.

14.2 ATC clearances or instructions pertaining to taxiing are predicated on known traffic and known physical airport conditions. Therefore, it is important that pilots clearly understand the clearance or instruction. Although an ATC clearance is issued for taxiing purposes, when operating in accordance with the Federal Regulations, it is the responsibility of the pilot to avoid collision with other aircraft. Since "the pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft" the pilot should obtain clarification of any clearance or instruction which is not understood.

14.2.1 Good operating practice dictates that pilots acknowledge all runway crossing, hold short, or takeoff clearances unless there is some misunderstanding, at which time the pilot should query the controller until the clearance is understood. AIR TRAFFIC CONTROLLERS ARE REQUIRED TO OBTAIN FROM THE PILOT A READBACK OF ALL RUNWAY HOLD SHORT INSTRUCTIONS. Pilots operating a single pilot aircraft should monitor only assigned ATC communications after being cleared onto the active runway for departure. Single pilot aircraft should not monitor other than ATC communications until flight from Class D airspace is completed. This same procedure should be practiced from after receipt of the clearance for landing until the landing and taxi activities are complete. Proper effective scanning for other aircraft, surface vehicles, or other objects should be continuously exercised in all cases.

14.2.2 If the pilot is unfamiliar with the airport or for any reason confusion exists as to the correct taxi routing, a request may be made for progressive taxi instructions which include step−by−step routing directions. Progressive instructions may also be issued if the controller deems it necessary due to traffic or field conditions (for example, construction or closed taxiways).

14.3 At those airports where the United States Government operates the control tower and ATC has authorized noncompliance with the requirement for two−way radio communications while operating within Class D airspace, or at those airports where the United States Government does not operate the control tower and radio communications cannot be established, pilots must obtain a clearance by visual light signal prior to taxiing on a runway and prior to takeoff and landing.

14.4 The following phraseologies and procedures are used in radio−telephone communications with aeronautical ground stations.

14.4.1 Request for taxi instructions prior to departure. State your aircraft identification, location, type of operation planned (VFR or IFR), and the point of first intended landing.

EXAMPLE−
Aircraft: *"Washington ground, Beechcraft One Three One Five Niner at hangar eight, ready to taxi, I−F−R to Chicago."*

Tower: *"Beechcraft One Three One Five Niner, Washington ground, runway two seven, taxi via taxiways Charlie and Delta, hold short of runway three three left."*

Aircraft: *"Beechcraft One Three One Five Niner, runway two seven, hold short of runway three three left."*

14.4.2 Receipt of Air Traffic Control Clearance. Air route traffic control clearances are relayed to pilots by airport traffic controllers in the following manner:

EXAMPLE−
Tower: *"Beechcraft One Three One Five Niner, cleared to the Chicago Midway Airport via Victor Eight, maintain eight thousand."*

Aircraft: *"Beechcraft One Three One Five Niner, cleared to the Chicago Midway Airport via Victor Eight, maintain eight thousand."*

NOTE−
Normally, an ATC IFR clearance is relayed to a pilot by the ground controller. At busy locations, however, pilots may be instructed by the ground controller to "contact clearance delivery" on a frequency designated for this purpose. No surveillance or control over the movement of traffic is exercised by this position of operation. (See paragraph 27., ATC Clearances and Aircraft Separation.)

14.4.3 Request for Taxi Instructions After Landing. State your aircraft identification, location, and that you request taxi instructions.

EXAMPLE−
Aircraft: *"Dulles ground, Beechcraft One Four Two Six One clearing runway one right on taxiway echo three, request clearance to Page."*
Tower: *"Beechcraft One Four Two Six One, Dulles ground, taxi to Page via taxiways echo three, echo one, and echo niner."*

or

Aircraft: *"Orlando ground, Beechcraft One Four Two Six One clearing runway one eight left at taxiway bravo three, request clearance to Page."*

Tower: *"Beechcraft One Four Two Six One, Orlando ground, hold short of runway one eight right."*

Aircraft: *"Beechcraft One Four Two Six One, hold short of runway one eight right."*

14.5 During ground operations, jet blast, prop wash, and rotor wash can cause damage and upsets if encountered at close range. Pilots should consider the effects of jet blast, prop wash, and rotor wash on aircraft, vehicles, and maintenance equipment during ground operations.

15. Taxi During Low Visibility

15.1 Pilots and aircraft operators should be constantly aware that during certain low visibility conditions the movement of aircraft and vehicles on airports may not be visible to the tower controller. This may prevent visual confirmation of an aircraft's adherence to taxi instructions.

15.2 Of vital importance is the need for pilots to notify the controller when difficulties are encountered or at the first indication of becoming disoriented. Pilots should proceed with extreme caution when taxiing toward the sun. When vision difficulties are encountered, pilots should immediately inform the controller.

15.3 Advisory Circular 120−57, Low Visibility Operations Surface Movement Guidance and Control System, commonly known as LVOSMGCS (pronounced "LVO SMIGS") describes an adequate example of a low visibility taxi plan for any airport which has takeoff or landing operations in less than 1,200 feet runway visual range (RVR) visibility conditions. These plans, which affect aircrew and vehicle operators, may incorporate additional lighting, markings, and procedures to control airport surface traffic. They will be addressed at two levels; operations less than 1,200 feet RVR to 500 feet RVR and operations less than 500 feet RVR.

NOTE−
Specific lighting systems and surface markings may be found in Paragraph 14, Taxiway Lights, and Paragraph 18, Taxiway Markings, in Section AD 1.1, Aerodrome Availability.

15.4 When low visibility conditions exist, pilots should focus their entire attention on the safe operation of the aircraft while it is moving. Checklists and nonessential communication should be withheld until the aircraft is stopped and the brakes set.

16. Intersection Takeoffs

16.1 In order to enhance airport capacities, reduce taxiing distances, minimize departure delays, and provide for more efficient movement of air traffic, controllers may initiate intersection takeoffs as well as approve them when the pilot requests. If for ANY reason a pilot prefers to use a different intersection or the full length of the runway or desires to obtain the distance between the intersection and the runway end, THE PILOT IS EXPECTED TO INFORM ATC ACCORDINGLY.

16.2 An aircraft is expected to taxi to (but not onto) the end of the assigned runway unless prior approval for an intersection departure is received from ground control.

16.3 Pilots should state their position on the airport when calling the tower for takeoff from a runway intersection.

EXAMPLE−
Cleveland Tower, Apache Three Seven Two Two Papa, at the intersection of taxiway oscar and runway two three right, ready for departure.

16.4 Controllers are required to separate small aircraft that are departing from an intersection on the same runway (same or opposite direction) behind a large nonheavy aircraft (except B757), by ensuring that at least a 3−minute interval exists between the time the preceding large aircraft has taken off and the succeeding small aircraft begins takeoff roll. The 3−minute separation requirement will also be applied to small aircraft with a maximum certificated takeoff weight of 12,500 pounds or less departing behind a small aircraft with a maximum certificated takeoff weight of more than 12,500 pounds. To inform the pilot of the required 3−minute hold, the controller will antenna site. These minimums may be increased or decreased in certain specific situations.

NOTE−
Certain separation standards are increased in the terminal environment when Center Radar Arts Presentation/Processing (CENRAP) is being utilized.

33. Speed Adjustments

33.1 ATC will issue speed adjustments to pilots of radar−controlled aircraft to achieve or maintain appropriate spacing. If necessary, ATC will assign a speed when approving deviations or radar vectoring off procedures that include published speed restrictions. If no speed is assigned, speed becomes pilot's discretion. However, when the aircraft reaches the end of the STAR, the last published speed on the STAR must be maintained until ATC deletes it, assigns a new speed, issues a vector, assigns a direct route, or issues an approach clearance.

33.2 ATC will express all speed adjustments in terms of knots based on indicated airspeed (IAS) in 5 or 10 knot increments except that at or above FL 240 speeds may be expressed in terms of Mach numbers in 0.01 increments. The use of Mach numbers is restricted to turbojet aircraft with Mach meters.

33.3 Pilots of aircraft in U.S. domestic Class A, B, C, D, and E airspace complying with speed adjustments (published or assigned) should maintain a speed within plus or minus 10 knots or 0.02 Mach number, whichever is less, of the assigned speed.

33.4 Pilots of aircraft in offshore controlled airspace or oceanic controlled airspace must adhere to the ATC assigned airspeed and must request ATC approval before making any change thereto. If it is essential to make an immediate temporary change in the Mach number (e.g., due to turbulence), ATC must be notified as soon as possible. If it is not feasible to maintain the last assigned Mach number during an en route climb or descent due to aircraft performance, advise ATC at the time of the request.

33.5 When ATC assigns speed adjustments, it will be in accordance with the following recommended minimums:

33.5.1 To aircraft operating between FL 280 and 10,000 feet, a speed not less than 250 knots or the equivalent Mach number.

NOTE−
1. *On a standard day the Mach numbers equivalent to 250 knots CAS (subject to minor variations) are:*
FL 240−0.6
FL 250−0.61
FL 260−0.62
FL 270−0.64
FL 280−0.65
FL 290−0.66.

2. *When an operational advantage will be realized, speeds lower than the recommended minima may be applied.*

33.5.2 To arriving turbojet aircraft operating below 10,000 feet, a speed not less than 210 knots, except within 20 flying miles of the airport of intended landing, a speed not less than 170 knots.

33.5.3 To arriving reciprocating engine or turboprop aircraft within 20 flying miles of the runway threshold of the airport of intended landing, a speed not less than 150 knots.

33.5.4 Departures, for turbojet aircraft, a speed not less than 230 knots; for reciprocating engine aircraft, a speed not less than 150 knots.

33.6 When ATC combines a speed adjustment with a descent clearance, the sequence of delivery with the word "then" between, indicates the expected order of execution; i.e., "DESCEND AND MAINTAIN (altitude); THEN, REDUCE SPEED TO (speed)," or "REDUCE SPEED TO (speed); THEN, DESCEND AND MAINTAIN (altitude)."

NOTE−
The maximum speeds below 10,000 feet as established in 14 CFR Section *91.117 still apply. If there is any doubt concerning the manner in which such a clearance is to be executed, request clarification from ATC.*

33.7 If ATC determines (before an approach clearance is issued) that it is no longer necessary to apply speed adjustment procedures, they will:

33.7.1 Advise the pilot to "resume normal speed." Normal speed is used to terminate ATC assigned speed adjustments on segments where no published speed restrictions apply. It does not cancel published restrictions on upcoming procedures. This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.

EXAMPLE−
(An aircraft is flying a SID with no published speed restrictions. ATC issues a speed adjustment and instructs the aircraft where the adjustment ends): "Maintain two two zero knots until BALTR then resume normal speed."

NOTE−
The ATC assigned speed assignment of two two zero knots would apply until BALTR. The aircraft would then resume a normal operating speed while remaining in compliance with 14 CFR Section 91.117.

33.7.2 Instruct pilots to "comply with speed restrictions" when the aircraft is joining or resuming a charted procedure or route with published speed restrictions.

EXAMPLE−
(ATC vectors an aircraft off of a SID to rejoin the procedure at a subsequent waypoint. When instructing the aircraft to resume the procedure, ATC also wants the aircraft to comply with the published procedure speed restrictions): "Resume the SALTY ONE departure. Comply with speed restrictions."

CAUTION−
The phraseology "Descend via/Climb via SID" requires compliance with all altitude and/or speed restrictions depicted on the procedure.

33.7.3 Instruct the pilot to "resume published speed." Resume published speed is issued to terminate a speed adjustment where speed restrictions are published on a charted procedure.

NOTE−
When instructed to "comply with speed restrictions" or to "resume published speed," ATC anticipates pilots will begin adjusting speed the minimum distance necessary prior to a published speed restriction so as to cross the waypoint/fix at the published speed. Once at the published speed, ATC expects pilots will maintain the published speed until additional adjustment is required to comply with further published or ATC assigned speed restrictions or as required to ensure compliance with 14 CFR Section 91.117.

EXAMPLE−
(An aircraft is flying a SID/STAR with published speed restrictions. ATC issues a speed adjustment and instructs the aircraft where the adjustment ends): "Maintain two two zero knots until BALTR then resume published speed."

NOTE−
The ATC assigned speed assignment of two two zero knots would apply until BALTR. The aircraft would then comply with the published speed restrictions.

33.7.4 Advise the pilot to "delete speed restrictions" when either ATC assigned or published speed restrictions on a charted procedure are no longer required.

EXAMPLE−
(An aircraft is flying a SID with published speed restrictions designed to prevent aircraft overtake on departure. ATC determines there is no conflicting traffic and deletes the speed restriction): "Delete speed restrictions."

NOTE−
When deleting published restrictions, ATC must ensure obstacle clearance until aircraft are established on a route where no published restrictions apply. This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.

33.7.5 Instruct the pilot to "climb via" or "descend via." A climb via or descend via clearance cancels any previously issued speed restrictions and, once established on the depicted departure or arrival, to climb or descend, and to meet all published or assigned altitude and/or speed restrictions.

EXAMPLE−
1. *(An aircraft is flying a SID with published speed restrictions. ATC has issued a speed restriction of 250 knots for spacing. ATC determines that spacing between aircraft is adequate and desires the aircraft to comply with published restrictions): "United 436, Climb via SID."*

2. *(An aircraft is established on a STAR. ATC must slow an aircraft for the purposes of spacing and assigns it a speed of 280 knots. When spacing is adequate, ATC deletes the speed restriction and desires that the aircraft comply with all published restrictions on the STAR): "Gulfstream two three papa echo, descend via the TYLER One arrival."*

NOTE−
1. *In example 1, when ATC issues a "Climb via SID" clearance, it deletes any previously issued speed and/or altitude restrictions. The pilot should then vertically navigate to comply with all speed and/or altitude restrictions published on the SID.*

2. *In example 2, when ATC issues a "Descend via <STAR name> arrival," ATC has canceled any previously issued speed and/or altitude restrictions. The pilot should vertically navigate to comply with all speed and/or altitude restrictions published on the STAR.*

CAUTION−
When descending on a STAR, pilots should not speed up excessively beyond the previously issued speed. Otherwise, adequate spacing between aircraft descending on the STAR that was established by ATC with the previous restriction may be lost.

33.8 Approach clearances supersede any prior speed adjustment assignments, and pilots are expected to make their own speed adjustments as necessary to complete the approach. However, under certain circumstances, it may be necessary for ATC to issue further speed adjustments after approach clearance is issued to maintain separation between successive arrivals. Under such circumstances, previously issued speed adjustments will be restated if that speed is to be maintained or additional speed adjustments are requested. Speed adjustments should not be assigned inside the final approach fix on final or a point 5 miles from the runway, whichever is closer to the runway.

33.9 The pilots retain the prerogative of rejecting the application of speed adjustment by ATC if the minimum safe airspeed for any particular operation is greater than the speed adjustment. IN SUCH CASES, PILOTS ARE EXPECTED TO ADVISE ATC OF THE SPEED THAT WILL BE USED.

33.10 Pilots are reminded that they are responsible for rejecting the application of speed adjustment by ATC if, in their opinion, it will cause them to exceed the maximum indicated airspeed prescribed by 14 CFR Section 91.117(a), (c) and (d). IN SUCH CASES, THE PILOT IS EXPECTED TO SO INFORM ATC. Pilots operating at or above 10,000 feet MSL who are issued speed adjustments which exceed 250 knots IAS and are subsequently cleared below 10,000 feet MSL are expected to comply with 14 CFR Section 91.117(a).

33.11 Speed restrictions of 250 knots do not apply to U.S. registered aircraft operating beyond 12 nautical miles from the coastline within the U.S. Flight Information Region, in Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such as a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c).

33.12 For operations in a Class C and Class D surface area, ATC is authorized to request or approve a speed greater than the maximum indicated airspeeds prescribed for operation within that airspace (14 CFR Section 91.117(b)).

NOTE−
Pilots are expected to comply with the maximum speed of 200 knots when operating beneath Class B airspace or in a Class B VFR corridor (14 CFR Section 91.117(c) and (d)).

33.13 When in communication with the ARTCC or approach control facility, pilots should, as a good operating practice, state any ATC assigned speed restriction on initial radio contact associated with an ATC communications frequency change.

34. Runway Separation

34.1 Tower controllers establish the sequence of arriving and departing aircraft by requiring them to adjust flight or ground operation as necessary to achieve proper spacing. They may "HOLD" an aircraft short of the runway to achieve spacing between it and another arriving aircraft; the controller may instruct a pilot to "EXTEND DOWNWIND" in order to establish spacing from another arriving or departing aircraft. At times a clearance may include the word "IMMEDIATE." For example: "CLEARED FOR IMMEDIATE TAKEOFF." In such cases "IMMEDIATE" is used for purposes of air traffic separation. It is up to the pilot to refuse the clearance if, in the pilot's opinion, compliance would adversely affect the operation.

35. Visual Separation

35.1 Visual separation is a means employed by ATC to separate aircraft in terminal areas and en route airspace. There are two methods employed to effect this separation:

35.1.1 The tower controller sees the aircraft involved and issues instructions, as necessary, to ensure that the aircraft avoid each other.

35.1.2 A pilot sees the other aircraft involved and upon instructions from the controller provides separation by maneuvering the aircraft to avoid it. When pilots accept responsibility to maintain visual separation, they must maintain constant visual surveillance and not pass the other aircraft until it is no longer a factor.

NOTE−
Traffic is no longer a factor when during approach phase the other aircraft is in the landing phase of flight or executes a missed approach; and during departure or en route, when the other aircraft turns away or is on a diverging course.

35.2 A pilot's acceptance of instructions to follow another aircraft or provide visual separation from it is an acknowledgment that the pilot will maneuver the aircraft as necessary to avoid the other aircraft or to maintain in−trail separation. In operations conducted behind heavy aircraft, or a small aircraft behind a B757 or other large aircraft, it is also an acknowledgment that the pilot accepts the responsibility for wake turbulence separation. Visual separation is prohibited behind super aircraft.

NOTE−
When a pilot has been told to follow another aircraft or to provide visual separation from it, the pilot should promptly notify the controller if visual contact with the other aircraft is lost or cannot be maintained or if the pilot cannot accept the responsibility for the separation for any reason.

35.3 Scanning the sky for other aircraft is a key factor in collision avoidance. Pilots and copilots (or the right seat passenger) should continuously scan to cover all areas of the sky visible from the cockpit. Pilots must develop an effective scanning technique which maximizes one's visual capabilities. Spotting a potential collision threat increases directly as more time is spent looking outside the aircraft. One must use timesharing techniques to effectively scan the surrounding airspace while monitoring instruments as well.

35.4 Since the eye can focus only on a narrow viewing area, effective scanning is accomplished with a series of short, regularly spaced eye movements that bring successive areas of the sky into the central visual field. Each movement should not exceed ten degrees, and each area should be observed for at least one second to enable collision detection. Although many pilots seem to prefer the method of horizontal back−and−forth scanning every pilot should develop a scanning pattern that is not only comfortable but assures optimum effectiveness. Pilots should remember, however, that they have a regulatory responsibility (14 CFR Section 91.113) to see and avoid other aircraft when weather conditions permit.

36. Use of Visual Clearing Procedures

36.1 Before Takeoff. Prior to taxiing onto a runway or landing area in preparation for takeoff, pilots should scan the approach areas for possible landing traffic, executing appropriate clearing maneuvers to provide them a clear view of the approach areas.

36.2 Climbs and Descents. During climbs and descents in flight conditions which permit visual detection of other traffic, pilots should execute gentle banks, left and right at a frequency which permits continuous visual scanning of the airspace about them.

36.3 Straight and Level. Sustained periods of straight and level flight in conditions which permit visual detection of other traffic should be broken at intervals with appropriate clearing procedures to provide effective visual scanning.

36.4 Traffic Patterns. Entries into traffic patterns while descending create specific collision hazards and should be avoided.

36.5 Traffic at VOR Sites. All operators should emphasize the need for sustained vigilance in the vicinity of VORs and airway intersections due to the convergence of traffic.

36.6 Training Operations. Operators of pilot training programs are urged to adopt the following practices:

36.6.1 Pilots undergoing flight instruction at all levels should be requested to verbalize clearing procedures (call out, "Clear" left, right, above, or below) to instill and sustain the habit of vigilance during maneuvering.

36.6.2 High−wing Airplane. Momentarily raise the wing in the direction of the intended turn and look.

36.6.3 Low−wing Airplane. Momentarily lower the wing in the direction of the intended turn and look.

36.6.4 Appropriate clearing procedures should precede the execution of all turns including chandelles, lazy eights, stalls, slow flight, climbs, straight and level, spins, and other combination maneuvers.

37. Surveillance Systems

37.1 Radar

37.1.1 Capabilities

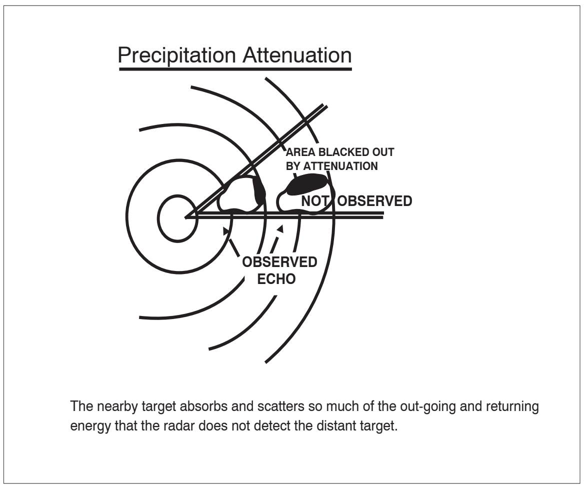
37.1.1.1 Radar is a method whereby radio waves are transmitted into the air and are then received when they have been reflected by an object in the path of the beam. Range is determined by measuring the time it takes (at the speed of light) for the radio wave to go out to the object and then return to the receiving antenna. The direction of a detected object from a radar site is determined by the position of the rotating antenna when the reflected portion of the radio wave is received.

37.1.1.2 More reliable maintenance and improved equipment have reduced radar system failures to a negligible factor. Most facilities actually have some components duplicated − one operating and another which immediately takes over when a malfunction occurs to the primary component.

37.1.2 Limitations

37.1.2.1 It is very important for the aviation community to recognize the fact that there are limitations to radar service and that ATC controllers may not always be able to issue traffic advisories concerning aircraft which are not under ATC control and cannot be seen on radar. (See FIG ENR 1.1−25).

FIG ENR 1.1−25
Limitations to Radar Service



a) The characteristics of radio waves are such that they normally travel in a continuous straight line unless they are:

1) "Bent" by abnormal atmospheric phenomena such as temperature inversions.

2) Reflected or attenuated by dense objects such as heavy clouds, precipitation, ground obstacles, mountains, etc.

3) Screened by high terrain features.

b) The bending of radar pulses, often called anomalous propagation or ducting, may cause many extraneous blips to appear on the radar operator's display if the beam has been bent toward the ground, or may decrease the detection range if the wave is bent upward. It is difficult to solve the effects of anomalous propagation, but using beacon radar and electronically eliminating stationary and slow moving targets by a method called moving target indicator (MTI) usually negate the problem.

c) Radar energy that strikes dense objects will be reflected and displayed on the operator's scope, thereby blocking out aircraft at the same range and greatly weakening or completely eliminating the display of targets at a greater range. Again, radar beacon and MTI are effectively used to combat ground clutter and weather phenomena, and a method of circularly polarizing the radar beam will eliminate some weather returns. A negative characteristic of MTI is that an aircraft flying a speed that coincides with the canceling signal of the MTI (tangential or "blind" speed) may not be displayed to the radar controller.

d) Relatively low altitude aircraft will not be seen if they are screened by mountains or are below the radar beam due to earth curvature. The historical solution to screening has been the installation of strategically placed multiple radars, which has been done in some areas, but ADS−B now provides ATC surveillance in some areas with challenging terrain where multiple radar installations would be impractical.

e) There are several other factors which affect radar control. The amount of reflective surface of an aircraft will determine the size of the radar return. Therefore, a small light airplane or a sleek jet fighter will be more difficult to see on primary radar than a large commercial jet or military bomber. Here again, the use of transponder or ADS−B equipment is invaluable. In addition, all FAA ATC facilities display automatically reported altitude information to the controller from appropriately equipped aircraft.

f) At some locations within the ATC en route environment, secondary−radar−only (no primary radar) gap filler radar systems are used to give lower altitude radar coverage between two larger radar systems, each of which provides both primary and secondary radar coverage. ADS−B serves this same role, supplementing both primary and secondary radar. In those geographical areas served by secondary radar only or ADS−B, aircraft without either transponders or ADS−B equipment cannot be provided with radar service. Additionally, transponder or ADS−B equipped aircraft cannot be provided with radar advisories concerning primary targets and ATC radar−derived weather.

g) The controller's ability to advise a pilot flying on instruments or in visual conditions of the aircraft's proximity to another aircraft will be limited if the unknown aircraft is not observed on radar, if no flight plan information is available, or if the volume of traffic and workload prevent issuing traffic information. First priority is given to establishing vertical, lateral, or longitudinal separation between aircraft flying IFR under the control of ATC.

37.2 Air Traffic Control Radar Beacon System (ATCRBS)

37.2.1 The ATCRBS, sometimes referred to as a secondary surveillance radar, consists of three main components:

37.2.1.1 Interrogator. Primary radar relies on a signal being transmitted from the radar antenna site and for this signal to be reflected or "bounced back" from an object (such as an aircraft). This reflected signal is then displayed as a "target" on the controller's radar scope. In the ATCRBS, the Interrogator, a ground−based radar beacon transmitter−receiver, scans in synchronism with the primary radar and transmits discrete radio signals which repetitiously requests all transponders, on the mode being used, to reply. The replies received are then mixed with the primary returns and both are displayed on the same radar scope.

37.2.1.2 Transponder. This airborne radar beacon transmitter−receiver automatically receives the signals from the interrogator and selectively replies with a specific pulse group (code) only to those interrogations being received on the mode to which it is set. These replies are independent of, and much stronger than a primary radar return.

37.2.1.3 Radar scope. The radar scope used by the controller displays returns from both the primary radar system and the ATCRBS. These returns, called targets, are what the controller refers to in the control and separation of traffic.

37.2.2 The job of identifying and maintaining identification of primary radar targets is a long and tedious task for the controller. Some of the advantages of ATCRBS over primary radar are:

37.2.2.1 Reinforcement of radar targets.

37.2.2.2 Rapid target identification.

37.2.2.3 Unique display of selected codes.

37.2.3 A part of the ATCRBS ground equipment is the decoder. This equipment enables the controller to assign discrete transponder codes to each aircraft under his/her control. Normally only one code will be assigned for the entire flight. Assignments are made by the ARTCC computer on the basis of the National Beacon Code Allocation Plan. The equipment is also designed to receive Mode C altitude information from the aircraft. See FIG ENR 1.1−26 and FIG ENR 1.1−27 for an illustration of the target symbology depicted on radar scopes in the NAS Stage A (en route), the ARTS III (terminal) Systems, and other nonautomated (broadband) radar systems.

37.3 Surveillance Radar

37.3.1 Surveillance radars are divided into two general categories: Airport Surveillance Radar (ASR) and Air Route Surveillance Radar (ARSR).

37.3.1.1 ASR is designed to provide relatively short range coverage in the general vicinity of an airport and to serve as an expeditious means of handling terminal area traffic through observation of precise aircraft locations on a radar scope. The ASR can also be used as an instrument approach aid.

37.3.1.2 ARSR is a long−range radar system designed primarily to provide a display of aircraft locations over large areas.

37.3.1.3 Center Radar Automated Radar Terminal Systems (ARTS) Processing (CENRAP) was developed to provide an alternative to a nonradar environment at terminal facilities should an ASR fail or malfunction. CENRAP sends aircraft radar beacon target information to the ASR terminal facility equipped with ARTS. Procedures used for the separation of aircraft may increase under certain conditions when a facility is utilizing CENRAP, because radar target information updates at a slower rate than the normal ASR radar. Radar services for VFR aircraft are also limited during CENRAP operations because of the additional workload required to provide services to IFR aircraft.

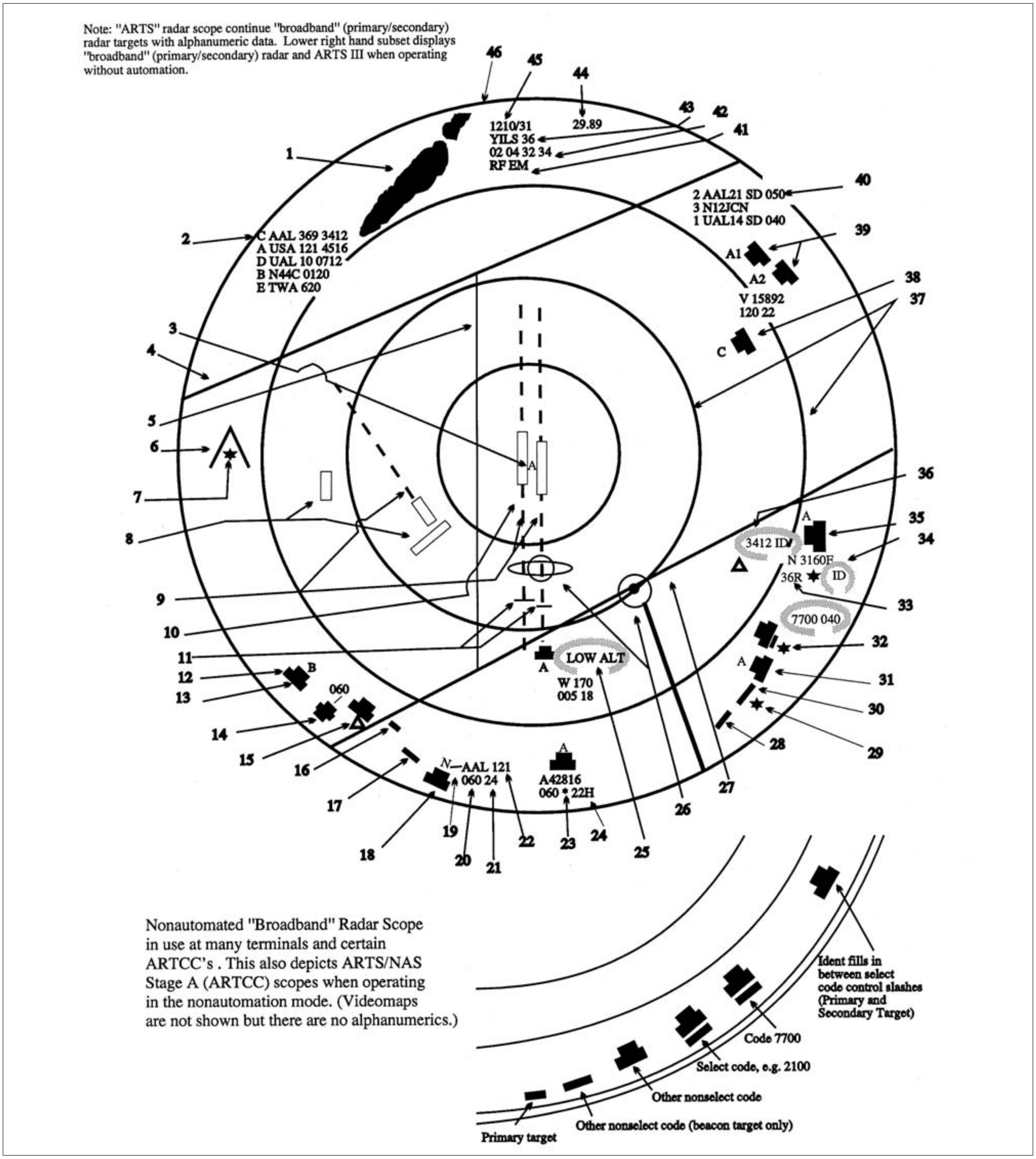
37.3.2 Surveillance radars scan through 360 degrees of azimuth and present target information on a radar display located in a tower or center. This information is used independently or in conjunction with other navigational aids in the control of air traffic.

37.4 Precision Approach Radar (PAR)

37.4.1 PAR is designed for use as a landing aid rather than an aid for sequencing and spacing aircraft. PAR equipment may be used as a primary landing aid (See ENR 1.5 for additional information), or it may be used to monitor other types of approaches. It is designed to display range, azimuth, and elevation information.

37.4.2 Two antennas are used in the PAR array, one scanning a vertical plane, and the other scanning horizontally. Since the range is limited to 10 miles, azimuth to 20 degrees, and elevation to 7 degrees, only the final approach area is covered. Each scope is divided into two parts. The upper half presents altitude and distance information, and the lower half presents azimuth and distance.

FIG ENR 1.1−26
ARTS III Radar Scope With Alphanumeric Data



NOTE−
A number of radar terminals do not have ARTS equipment. Those facilities and certain ARTCCs outside the contiguous U.S. would have radar displays similar to the lower right hand subset. ARTS facilities and NAS Stage A ARTCCs, when operating in the nonautomation mode, would also have similar displays and certain services based on automation may not be available.

EXAMPLE−

1. *Areas of precipitation (can be reduced by CP)*

2. *Arrival/departure tabular list*

3. *Trackball (control) position symbol (A)*

4. *Airway (lines are sometimes deleted in part)*

5. *Radar limit line for control*

6. *Obstruction (video map)*

7. *Primary radar returns of obstacles or terrain (can be removed by MTI)*

8. *Satellite airports*

9. *Runway centerlines (marks and spaces indicate miles)*

10. *Primary airport with parallel runways*

11. *Approach gates*

12. *Tracked target (primary and beacon target)*

13. *Control position symbol*

14. *Untracked target select code (monitored) with Mode C readout of 5,000'*

15. *Untracked target without Mode C*

16. *Primary target*

17. *Beacon target only (secondary radar) (transponder)*

18. *Primary and beacon target*

19. *Leader line*

20. *Altitude Mode C readout is 6,000'*
(Note: readouts may not be displayed because of nonreceipt of beacon information, garbled beacon signals, and flight plan data which is displayed alternately with the altitude readout)

21. *Ground speed readout is 240 knots*
(Note: readouts may not be displayed because of a loss of beacon signal, a controller alert that a pilot was squawking emergency, radio failure, etc.)

22. *Aircraft ID*

23. *Asterisk indicates a controller entry in Mode C block. In this case 5,000' is entered and "05" would alternate with Mode C readout.*

24. *Indicates heavy*

25. *"Low ALT" flashes to indicate when an aircraft's predicted descent places the aircraft in an unsafe proximity to terrain.*
(Note: this feature does not function if the aircraft is not squawking Mode C. When a helicopter or aircraft is known to be operating below the lower safe limit, the "low ALT" can be changed to "inhibit" and flashing ceases.)

26. *NAVAIDs*

27. *Airways*

28. *Primary target only*

29. *Nonmonitored. No Mode C (an asterisk would indicate nonmonitored with Mode C)*

30. *Beacon target only (secondary radar based on aircraft transponder)*

31. *Tracked target (primary and beacon target) control position A*

32. *Aircraft is squawking emergency code 7700 and is nonmonitored, untracked, Mode C*

33. *Controller assigned runway 36 right alternates with Mode C readout*
(Note: a three letter identifier could also indicate the arrival is at specific airport)

34. *Ident flashes*

35. *Identing target blossoms*

36. *Untracked target identing on a selected code*

37. *Range marks (10 and 15 miles) (can be changed/offset)*

38. *Aircraft controlled by center*

39. *Targets in suspend status*

40. *Coast/suspend list (aircraft holding, temporary loss of beacon/target, etc.)*

41. *Radio failure (emergency information)*

42. *Select beacon codes (being monitored)*

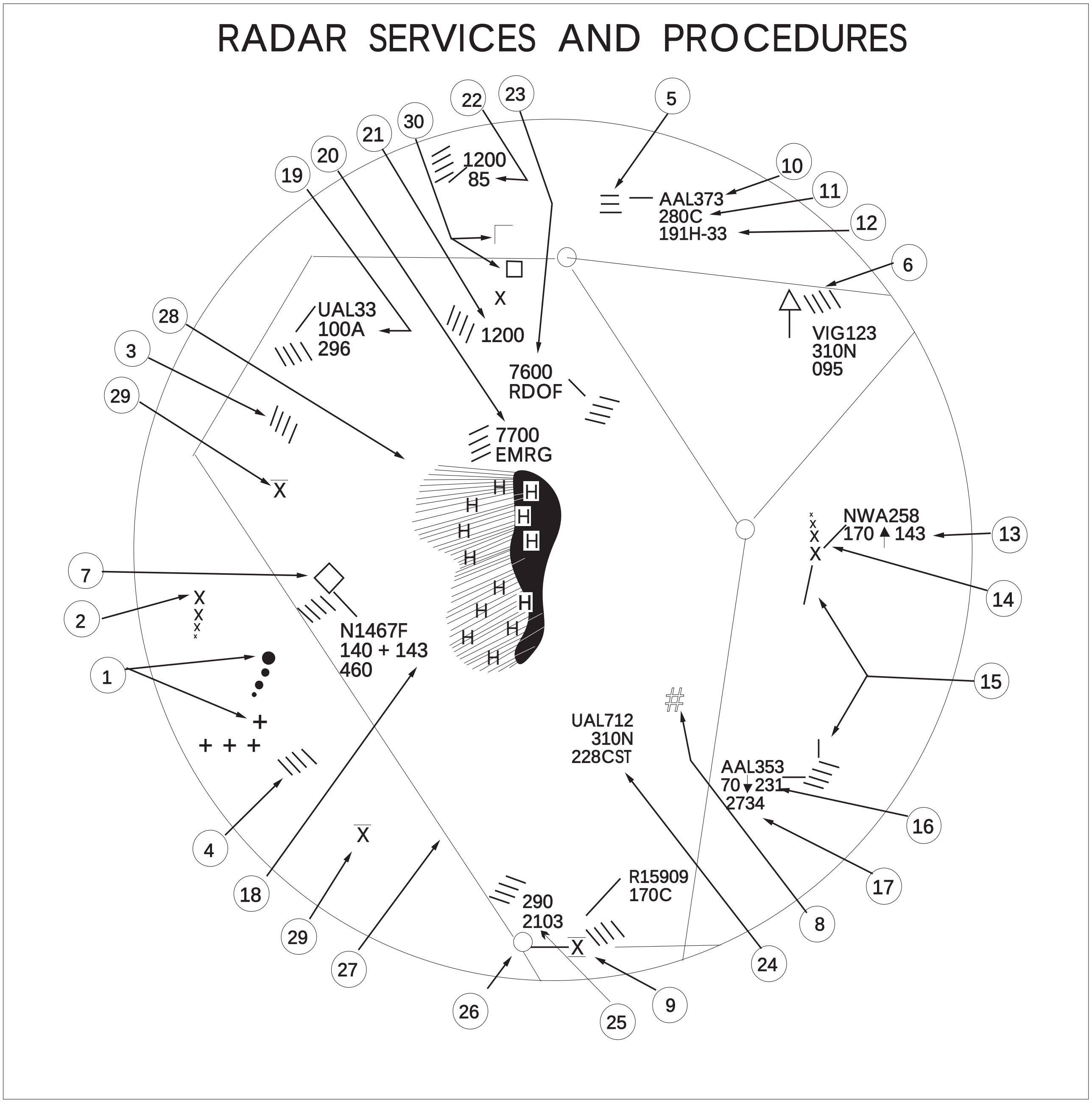
43. *General information (ATIS, runway, approach in use)*

44. *Altimeter setting*

45. *Time*

46. *System data area*

FIG ENR 1.1−27
NAS Stage A Controller's View Plan Display



NOTE−
FIG ENR 1.1−27 illustrates the controller's radar scope (PVD) when operating in the full automation (RDP) mode, which is normally 20 hours per day. When not in automation mode, the display is similar to the broadband mode shown in the ARTS III Radar Scope (FIG ENR 1.1−26). Certain ARTCCs outside the contiguous U.S. also operate in "broadband" mode.

EXAMPLE−
Target symbols:

1. Uncorrelated primary radar target [○] [**+**]

2. Correlated primary radar target [×]
✻See note below.

3. Uncorrelated beacon target [/]

4. Correlated beacon target [\ ]

5. Identing beacon target [≡]

✻Note: in Number 2 correlated means the association of radar data with the computer projected track of an identified aircraft.

Position symbols:

6. Free track (no flight plan tracking) [Δ]

7. Flat track (flight plan tracking) [◊]

8. Coast (beacon target lost) [**#**]

9. Present position hold [$\overline{\times}$]

Data block information:

10. Aircraft ident
✻See note below.

11. Assigned altitude FL 280, Mode C altitude same or within ± 200' of assigned altitude.
✻See note below.

12. Computer ID #191, handoff is to sector 33
(0−33 would mean handoff accepted)
✻See note below.

13. Assigned altitude 17,000', aircraft is climbing, Mode C readout was 14,300 when last beacon interrogation was received.

14. Leader line connecting target symbol and data block.

15. Track velocity and direction vector line (projected ahead of target)

16. Assigned altitude 7,000, aircraft is descending, last Mode C readout (or last reported altitude) was 100' above FL 230

17. Transponder code shows in full data block only when different than assigned code

18. Aircraft is 300' above assigned altitude

19. Reported altitude (no Mode C readout) same as assigned. (An "n" would indicate no reported altitude.)

20. Transponder set on emergency Code 7700. (EMRG flashes to attract attention.)

21. Transponder Code 1200 (VFR) with no Mode C

22. Code 1200 (VFR) with Mode C and last altitude readout

23. Transponder set on radio failure Code 7600 (RDOF flashes)

24. Computer ID #228, CST indicates target is in coast status

25. Assigned altitude FL 290, transponder code (these two items constitute a "limited data block")

✻Note: numbers 10, 11, and 12 constitute a "full data block"

Other symbols:

26. Navigational aid

27. Airway or jet route

28. Outline of weather returns based on primary radar. "H" represents areas of high density precipitation which might be thunderstorms. Radial lines indicated lower density precipitation.

29. Obstruction

30. Airports
Major: □
Small: ⌐

37.5 Airport Surface Detection Equipment (ASDE−X)/Airport Surface Surveillance Capability (ASSC)

37.5.1 ASDE−X/ASSC is a multi−sensor surface surveillance system the FAA is acquiring for airports in the United States. This system provides high resolution, short−range, clutter free surveillance information about aircraft and vehicles, both moving and fixed, located on or near the surface of the airport's runways and taxiways under all weather and visibility conditions. The system consists of:

37.5.1.1 A Primary Radar System. ASDE−X/ASSC system coverage includes the airport surface and the airspace 5 miles from the arrival and departure ends of the runway and up to 200 feet above the surface. Typically located on the control tower or other strategic location on the airport, the Primary Radar antenna is able to detect and display aircraft that are not equipped with or have malfunctioning transponders or ADS−B.

37.5.1.2 Interfaces. ASDE−X/ASSC contains an automation interface for flight identification via all automation platforms and interfaces with the terminal radar for position information.

37.5.1.3 ASDE−X/ASSC Automation. A Multi−sensor Data Processor (MSDP) combines all sensor reports into a single target which is displayed to the air traffic controller.

37.5.1.4 Air Traffic Control Tower Display. A high resolution, color monitor in the control tower cab provides controllers with a seamless picture of airport operations on the airport surface.

37.5.2 The combination of data collected from the multiple sensors ensures that the most accurate information about aircraft location is received in the tower, thereby increasing surface safety and efficiency.

37.5.3 The following facilities are operational with ASDE−X:

TBL ENR 1.1−2

BWI	Baltimore Washington International
BOS	Boston Logan International
BDL	Bradley International
MDW	Chicago Midway
ORD	Chicago O'Hare International
CLT	Charlotte Douglas International
DFW	Dallas/Fort Worth International
DEN	Denver International
DTW	Detroit Metro Wayne County
FLL	Fort Lauderdale/Hollywood Intl
MKE	General Mitchell International
IAH	George Bush International
ATL	Hartsfield−Jackson Atlanta Intl
HNL	Honolulu International
JFK	John F. Kennedy International
SNA	John Wayne−Orange County
LGA	LaGuardia
STL	Lambert St. Louis International
LAS	Las Vegas McCarran International
LAX	Los Angeles International
SDF	Louisville International
MEM	Memphis International
MIA	Miami International
MSP	Minneapolis St. Paul International
EWR	Newark International
MCO	Orlando International
PHL	Philadelphia International
PHX	Phoenix Sky Harbor International
DCA	Ronald Reagan Washington National
SAN	San Diego International
SLC	Salt Lake City International
SEA	Seattle−Tacoma International
PVD	Theodore Francis Green State
IAD	Washington Dulles International
HOU	William P. Hobby International

37.5.4 The following facilities have been projected to receive ASSC:

TBL ENR 1.1−3

SFO	San Francisco International
CLE	Cleveland−Hopkins International
MCI	Kansas City International
CVG	Cincinnati/Northern Kentucky Intl
PDX	Portland International
MSY	Louis Armstrong New Orleans Intl
PIT	Pittsburgh International
ANC	Ted Stevens Anchorage International
ADW	Joint Base Andrews AFB

37.6 Radar Availability

37.6.1 FAA radar units operate continuously at the locations shown in the Chart Supplement U.S., and their services are available to all pilots, both civil and military. Contact the associated FAA control tower or ARTCC on any frequency guarded for initial instructions, or in an emergency, any FAA facility for information on the nearest radar service.

37.7 Transponder and ADS−B Out Operation

37.7.1 General

37.7.1.1 Pilots should be aware that proper application of transponder and ADS−B operating procedures will provide both VFR and IFR aircraft with a higher degree of safety while operating on the ground and airborne. Transponder/ADS−B panel designs differ; therefore, a pilot should be thoroughly familiar with the operation of their particular equipment to maximize its full potential. ADS−B Out, and transponders with altitude reporting mode turned ON (Mode C or S), substantially increase the capability of surveillance systems to see an aircraft. This provides air traffic controllers, as well as pilots of suitably equipped aircraft (TCAS and ADS−B In), increased situational awareness and the ability to identify potential traffic conflicts. Even VFR pilots who are not in contact with ATC will be afforded greater protection from IFR aircraft and VFR aircraft that are receiving traffic advisories. Nevertheless, pilots should never relax their visual scanning for other aircraft.

37.7.1.2 ATCRBS is similar to and compatible with military coded radar beacon equipment. Civil Mode A is identical to military Mode 3.

37.7.1.3 Transponder and ADS-B operations on the ground. Civil and military aircraft should operate with the transponder in the altitude reporting mode (consult the aircraft's flight manual to determine the specific transponder position to enable altitude reporting) and ADS-B Out transmissions enabled at all airports, any time the aircraft is positioned on any portion of the airport movement area. This includes all defined taxiways and runways. Pilots must pay particular attention to ATIS and airport diagram notations, General Notes (included on airport charts), and comply with directions pertaining to transponder and ADS-B usage. Generally, these directions are:

a) Departures. Select the transponder mode which allows altitude reporting and enable ADS-B during pushback or taxi-out from parking spot. Select TA or TA/RA (if equipped with TCAS) when taking the active runway.

b) Arrivals. If TCAS equipped, deselect TA or TA/RA upon leaving the active runway, but continue transponder and ADS−B transmissions in the altitude reporting mode. Select STBY or OFF for transponder and ADS−B upon arriving at the aircraft's parking spot or gate.

37.7.1.4 Transponder and ADS-B Operations While Airborne.

a) Unless otherwise requested by ATC, aircraft equipped with an ATC transponder maintained in accordance with 14 CFR Section 91.413 MUST operate with this equipment on the appropriate Mode 3/A code, or other code as assigned by ATC, and with altitude reporting enabled whenever in controlled airspace. If practicable, aircraft SHOULD operate with the transponder enabled in uncontrolled airspace.

b) Aircraft equipped with ADS−B Out MUST operate with this equipment in the transmit mode at all times, unless otherwise requested by ATC.

c) When participating in a VFR formation flight that is not receiving ATC services, only the lead aircraft should operate their transponder and ADS−B Out. All other aircraft should disable transponder and ADS−B transmissions once established within the formation.

NOTE−
If the formation flight is receiving ATC services, pilots can

expect ATC to direct all non−lead aircraft to STOP SQUAWK, and should not do so until instructed.

37.7.1.5 A pilot on an IFR flight who elects to cancel the IFR flight plan prior to reaching their destination, should adjust the transponder/ADS−B according to VFR operations.

37.7.1.6 If entering a U.S. OFFSHORE AIRSPACE AREA from outside the U.S., the pilot should advise on first radio contact with a U.S. radar ATC facility that such equipment is available by adding "transponder" or "ADS−B" (if equipped) to the aircraft identification.

37.7.1.7 It should be noted by all users of ATC transponders and ADS−B Out systems that the surveillance coverage they can expect is limited to "line of sight" with ground radar and ADS−B radio sites. Low altitude or aircraft antenna shielding by the aircraft itself may result in reduced range or loss of aircraft contact. Though ADS−B often provides superior reception at low altitudes, poor coverage from any surveillance system can be improved by climbing to a higher altitude.

NOTE−
Pilots should refer to AIP, ENR 1.1 Paragraph 45. Automatic Dependent Surveillance − Broadcast Services (ADS−B) Services, for a complete description of operating limitations and procedures.

37.7.2 Transponder/ADS−B Code Designation

37.7.2.1 For ATC to utilize one of the 4096 discrete codes, a four−digit code designation will be used; for example, code 2102 will be expressed as "TWO ONE ZERO TWO."

NOTE−
Circumstances may occasionally require ATC to assign a non−discrete code; i.e., a code ending in "00."

REFERENCE−
FAA Order JO 7110.66, National Beacon Code Allocation Plan.

37.7.3 Automatic Altitude Reporting

37.7.3.1 Most transponders (Modes C and S) and all ADS−B Out systems are capable of automatic altitude reporting. This system converts aircraft altitude in 100−foot increments to coded digital information that is transmitted to the appropriate surveillance facility as well as to ADS−B In and TCAS systems.

37.7.3.2 Adjust the transponder/ADS−B to reply on the Mode 3/A code specified by ATC and with altitude reporting enabled, unless otherwise directed by ATC or unless the altitude reporting equipment has not been tested and calibrated as required by 14 CFR Section 91.217. If deactivation is required by ATC, turn off the altitude reporting feature of your transponder/ADS−B. An instruction by ATC to "STOP ALTITUDE SQUAWK, ALTITUDE DIFFERS BY (number of feet) FEET," may be an indication that the transmitted altitude information is incorrect, or that the aircraft's altimeter setting is incorrect. While an incorrect altimeter setting has no effect on the transmitted altitude information, it will cause the aircraft to fly at a true altitude different from the assigned altitude. When a controller indicates that an altitude readout is invalid, the pilot should verify that the aircraft altimeter is set correctly.

NOTE−
Altitude encoders are preset at standard atmospheric pressure. Local altimeter correction is applied by the surveillance facility before the altitude information is presented to ATC.

37.7.3.3 Pilots should report exact altitude or flight level to the nearest hundred foot increment when establishing initial contact with an ATC facility. Exact altitude or flight level reports on initial contact provide ATC with information that is required prior to using automatically reported altitude information for separation purposes. This will significantly reduce altitude verification requests.

37.7.4 IDENT Feature

37.7.4.1 Transponder/ADS−B Out equipment must be operated only as specified by ATC. Activate the "IDENT" feature only when requested by ATC.

37.7.5 Code Changes

37.7.5.1 When making routine code changes, pilots should avoid inadvertent selection of Codes 7500, 7600, or 7700 thereby causing momentary false alarms at automated ground facilities. For example when switching from Code 2700 to Code 7200, switch first to 2200 then 7200, NOT to 7700 and then 7200. This procedure applies to nondiscrete Code 7500 and all discrete codes in the 7600 and 7700 series (i.e., 7600−7677, 7700−7777) which will trigger special indicators in automated facilities. Only nondiscrete Code 7500 will be decoded as the hijack code.

37.7.5.2 Under no circumstances should a pilot of a civil aircraft operate the transponder on Code 7777.

This code is reserved for military interceptor operations.

37.7.5.3 Military pilots operating VFR or IFR within restricted/warning areas should adjust their transponders to Code 4000, unless another code has been assigned by ATC.

37.7.6 Mode C Transponder and ADS−B Out Requirements

37.7.6.1 Specific details concerning requirements to carry and operate Mode C transponders and ADS−B Out, as well as exceptions and ATC authorized deviations from those requirements, are found in 14 CFR Sections 91.215, 91.225, and 99.13.

37.7.6.2 In general, the CFRs require aircraft to be equipped with an operable Mode C transponder and ADS−B Out when operating:

a) In Class A, Class B, or Class C airspace areas;

b) Above the ceiling and within the lateral boundaries of Class B or Class C airspace up to 10,000 feet MSL;

c) Class E airspace at and above 10,000 feet MSL within the 48 contiguous states and the District of Columbia, excluding the airspace at and below 2,500 feet AGL;

d) Within 30 miles of a Class B airspace primary airport, below 10,000 feet MSL (commonly referred to as the "Mode C Veil");

e) For ADS−B Out: Class E airspace at and above 3,000 feet MSL over the Gulf of Mexico from the coastline of the United States out to 12 nautical miles.

NOTE−
The airspace described in (e) above is specified in 14 CFR § 91.225 for ADS−B Out requirements. However, 14 CFR § 91.215 does not include this airspace for ATC transponder requirements.

f) Transponder and ADS−B Out requirements do not apply to any aircraft that was not originally certificated with an electrical system, or that has not subsequently been certified with such a system installed, including balloons and gliders. These aircraft may conduct operations without a transponder or ADS−B Out when operating:

1) Outside any Class B or Class C airspace area; and

2) Below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport, or 10,000 feet MSL, whichever is lower.

37.7.6.3 14 CFR Section 99.13 requires all aircraft flying into, within, or across the contiguous U.S. ADIZ be equipped with a Mode C or Mode S transponder. Balloons, gliders, and aircraft not equipped with an engine−driven electrical system are excepted from this requirement.

REFERENCE−
AIP, ENR 1.12, National Security and Interception Procedures

37.7.6.4 Pilots must ensure that their aircraft transponder/ADS−B is operating on an appropriate ATC−assigned VFR/IFR code with altitude reporting enabled when operating in such airspace. If in doubt about the operational status of either feature of your transponder while airborne, contact the nearest ATC facility or FSS and they will advise you what facility you should contact for determining the status of your equipment.

37.7.6.5 In−flight requests for "immediate" deviation from the transponder requirements may be approved by controllers only for failed equipment, and only when the flight will continue IFR or when weather conditions prevent VFR descent and continued VFR flight in airspace not affected by the CFRs. All other requests for deviation should be made at least 1 hour before the proposed operation by contacting the nearest Flight Service or Air Traffic facility in person or by telephone. The nearest ARTCC will normally be the controlling agency and is responsible for coordinating requests involving deviations in other ARTCC areas.

37.7.6.6 In−flight requests for "immediate" deviation from the ADS−B Out requirements may be approved by ATC only for failed equipment, and may be accommodated based on workload, alternate surveillance availability, or other factors. All other requests for deviation must be made at least 1 hour before the proposed operation, following the procedures contained in Advisory Circular (AC) 90−114, Automatic Dependent Surveillance−Broadcast Operations.

37.7.7 Transponder/ADS−B Operation Under Visual Flight Rules (VFR)

37.7.7.1 Unless otherwise instructed by an ATC facility, adjust transponder/ADS−B to reply on Mode 3/A Code 1200 regardless of altitude.

NOTE−
1. *Firefighting aircraft not in contact with ATC may squawk 1255 in lieu of 1200 while en route to, from, or within the designated fire fighting area(s).*

2. *VFR aircraft flying authorized SAR missions for the USAF or USCG may be advised to squawk 1277 in lieu of 1200 while en route to, from, or within the designated search area.*

3. *Gliders not in contact with ATC should squawk 1202 in lieu of 1200.*

REFERENCE−
FAA Order JO 7110.66, National Beacon Code Allocation Plan.

37.7.7.2 When required to operate their transponder/ ADS−B, pilots must always operate that equipment with altitude reporting enabled, unless otherwise instructed by ATC or unless the installed equipment has not been tested and calibrated as required by 14 CFR Section 91.217. If deactivation is required, turn off altitude reporting.

37.7.7.3 When participating in a VFR formation flight that is not receiving ATC services, only the lead aircraft should operate their transponder and ADS−B Out. All other aircraft should disable transponder and ADS−B transmissions once established within the formation.

NOTE−
If the formation flight is receiving ATC services, pilots can expect ATC to direct all non−lead aircraft to STOP SQUAWK, and should not do so until instructed.

37.7.8 Cooperative Surveillance Phraseology

37.7.8.1 Air traffic controllers, both civil and military, will use the following phraseology when referring to operation of cooperative ATC surveillance equipment. Except as noted, the following ATC instructions do not apply to military transponders operating in other than Mode 3/A/C/S.

a) SQUAWK (number). Operate radar beacon transponder/ADS−B on designated code with altitude reporting enabled.

b) IDENT. Engage the "IDENT" feature (military I/P) of the transponder/ADS−B.

c) SQUAWK (number) AND IDENT. Operate transponder/ADS−B on specified code with altitude reporting enabled, and engage the "IDENT" (military I/P) feature.

d) SQUAWK STANDBY. Switch transponder/ ADS−B to standby position.

e) SQUAWK NORMAL. Resume normal transponder/ADS−B operation on previously assigned code. (Used after "SQUAWK STANDBY," or by military after specific transponder tests).

f) SQUAWK ALTITUDE. Activate Mode C with automatic altitude reporting.

g) STOP ALTITUDE SQUAWK. Turn off automatic altitude reporting.

h) STOP SQUAWK (Mode in use). Stop transponder and ADS−B Out transmissions, or switch off only specified mode of the aircraft transponder (military).

i) SQUAWK MAYDAY. Operate transponder/ ADS−B in the emergency position (Mode A Code 7700 for civil transponder. Mode 3 Code 7700 and emergency feature for military transponder.)

j) SQUAWK VFR. Operate radar beacon transponder/ADS−B on Code 1200 in the Mode A/3, or other appropriate VFR code, with altitude reporting enabled.

37.8 Emergency Operation

37.8.1 When an emergency occurs, the pilot of an aircraft equipped with a coded radar beacon transponder who desires to alert a ground radar facility to an emergency condition and who cannot establish communications without delay with an ATC facility may adjust the transponder to reply on Mode A/3, Code 7700.

37.8.2 Pilots should understand that they may not be within a radar coverage area and that, even if they are, certain radar facilities are not yet equipped to automatically recognize Code 7700 as an emergency signal. Therefore, they should establish radio communications with an ATC facility as soon as possible.

37.9 Radio Failure Operation

37.9.1 Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two−way radio capability the pilot should:

37.9.1.1 Adjust the transponder to reply on MODE A/3, Code 7600.

37.9.1.2 Understand that the aircraft may not be in an area of radar coverage.

37.9.2 Pilots should understand that they may not be in an area of radar coverage. Also, many radar facilities are not presently equipped to automatically display Code 7600 and will interrogate 7600 only when the aircraft is under direct radar control at the time of radio failure. However, replying on Code 7700 first, increases the probability of early detection of a radio failure condition.

37.10 Radar Services

37.10.1 Safety Alert

37.10.1.1 A safety alert will be issued to pilots of aircraft being controlled by ATC if the controller is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The provision of this service is contingent upon the capability of the controller to have an awareness of situations involving unsafe proximity to terrain, obstructions, and uncontrolled aircraft. The issuance of a safety alert cannot be mandated, but it can be expected on a reasonable, though intermittent, basis. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, will be taken. This procedure is intended for use in time critical situations where aircraft safety is in question. Noncritical situations should be handled via the normal traffic alert procedures.

37.10.2 Terrain/Obstruction Alert

37.10.2.1 Controllers will immediately issue an alert to the pilots of aircraft under their control when they recognize that the aircraft is at an altitude which, in their judgment, may be in unsafe proximity to terrain/obstructions. The primary method of detecting unsafe proximity is through Mode C automatic altitude reports.

EXAMPLE−
Low altitude alert Cessna Three Four Juliet, check your altitude immediately. And if the aircraft is not yet on final approach, the MVA (MEA/MIA/MOCA) in your area is six thousand.

37.10.2.2 Most En Route and Terminal radar facilities have an automated function which, if operating, alerts controllers when a tracked Mode C equipped aircraft under their control is below or is predicted to be below a predetermined minimum safe altitude. This function, called Minimum Safe Altitude Warning (MSAW), is designed solely as a controller aid in detecting potentially unsafe aircraft proximity to terrain/obstructions. The radar facility will, when MSAW is operating, provide MSAW monitoring for all aircraft with an operating Mode C altitude encoding transponder that are tracked by the system and are:

a) Operating on a IFR flight plan.

b) Operating VFR and have requested MSAW monitoring.

37.10.2.3 Terminal AN/TPX−42A (number beacon decoder system) facilities have an automated function called Low Altitude Alert System (LAAS). Although not as sophisticated as MSAW, LAAS alerts the controller when a Mode C transponder equipped aircraft operating on a IFR flight plan is below a predetermined minimum safe altitude.

NOTE−
Pilots operating VFR may request MSAW or LAAS monitoring if their aircraft are equipped with Mode C transponders.

EXAMPLE−
Apache Three Three Papa requests MSAW/LAAS.

37.10.2.4 Due to the lack of terrain and obstacle clearance data, accurate automation databases may not be available for providing MSAW information to aircraft overflying Mexico and Canada. Air traffic facilities along the United States/Mexico/Canada borders may have MSAW computer processing inhibited where accurate terrain data is not available.

37.10.3 Aircraft Conflict Alert

37.10.3.1 Controllers will immediately issue an alert to the pilots of aircraft under their control if they are aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, when feasible, the controller will offer the pilot the position of the traffic if time permits and an alternate course(s) of action. Any alternate course of action the controller may recommend to the pilot will be predicated only on other traffic in the controller's jurisdiction.

EXAMPLE−
American Three, traffic alert, (position of traffic, if time permits), advise you turn right/left heading (degrees) and/or climb/descend to (altitude) immediately.

37.10.4 Radar Traffic Information Service (RTIS)

37.10.4.1 This is a service provided by radar ATC facilities. Pilots receiving this service are advised of any radar target observed on the radar display which may be in such proximity to the position of their aircraft or its intended route of flight that it warrants their attention. This service is not intended to relieve the pilot of the responsibility for continual vigilance to see and avoid other aircraft.

a) Purpose of this Service

1) The issuance of traffic information as observed on a radar display is based on the principle of assisting and advising a pilot that a particular radar target's position and track indicates it may intersect or pass in such proximity to the intended flight path that it warrants the pilot's attention. This is to alert the pilot to the traffic, to be on the lookout for it, and thereby be in a better position to take appropriate action should the need arise.

2) Pilots are reminded that the surveillance radar used by ATC does not provide altitude information unless the aircraft is equipped with Mode C and the radar facility is capable of displaying altitude information.

b) Provisions of the Service

1) Many factors, such as limitations of the radar, volume of traffic, controller workload, and communications frequency congestion could prevent the controller from providing this service. Controllers possess complete discretion for determining whether they are able to provide or continue to provide this service in a specific case. The controller's reason against providing or continuing to provide the service in a particular case is not subject to question nor need it be communicated to the pilot. In other words, the provision of this service is entirely dependent upon whether controllers believe they are in a position to provide it. Traffic information is routinely provided to all aircraft operating on IFR flight plans except when the pilot declines the service, or the pilot is operating within Class A airspace. Traffic information may be provided to flights not operating on IFR Flight Plans when requested by pilots of such flights.

NOTE−
Radar ATC facilities normally display and monitor both primary and secondary radar as well as ADS−B, except that secondary radar or ADS−B may be used as the sole display source in Class A airspace, and under some circumstances outside of Class A airspace (beyond primary coverage and in en route areas where only secondary and/or ADS−B is available). Secondary radar and/or ADS−B may also be used outside Class A airspace as the sole display source when the primary radar is temporarily unusable or out of service. Pilots in contact with the affected ATC facility are normally advised when a temporary outage occurs; i.e., "primary radar out of service; traffic advisories available on transponder or ADS−B aircraft only." This means simply that only aircraft that have transponders and ADS−B installed and in use will be depicted on ATC displays when the primary and/or secondary radar is temporarily out of service.

2) When receiving VFR radar advisory service, pilots should monitor the assigned frequency at all times. This is to preclude controllers' concern for radio failure of emergency assistance to aircraft under the controller's jurisdiction. VFR radar advisory service does not include vectors away from conflicting traffic unless requested by the pilot. When advisory service is no longer desired, advise the controller before changing frequencies, then change your transponder code to 1200 if applicable. THE, as appropriate, MEA/MVA/MOCA IN YOUR AREA IS (altitude) or if past the final approach fix, THE, as appropriate, MDA/DH (if known) is (altitude). Except in programs where radar service is automatically terminated, the controller will advise the aircraft when radar is terminated.

NOTE−
Participation by VFR pilots in formal programs implemented at certain terminal locations constitutes pilot request. This also applies to participating pilots at those locations where arriving VFR flights are encouraged to make their first contact with the tower on the approach control frequency.

c) Issuance of Traffic Information. Traffic information will include the following concerning a target which may constitute traffic for an aircraft that is:

1) Radar identified.

(a) Azimuth from the aircraft in terms of the twelve hour clock.

(b) When rapidly maneuvering civil test or military aircraft prevent accurate issuance of traffic as in a) above, specify the direction from an aircraft's position in terms of the eight cardinal compass points (N, NE, E, SE, S, SW, W, NW). This method must be terminated at the pilot's request.

(c) Distance from the aircraft in nautical miles.

(d) Direction in which the target is proceeding.

(e) Type of aircraft and altitude if known.

EXAMPLE−
Traffic 10 o'clock, 3 miles, west-bound (type aircraft and

altitude, if known, of the observed traffic). The altitude may be known, by means of Mode C, but not verified with the pilot for accuracy. (To be valid for separation purposes by ATC, the accuracy of Mode C readouts must be verified. This is usually accomplished upon initial entry into the radar system by a comparison of the readout to pilot stated altitude, or the field elevation in the case of continuous readout being received from an aircraft on the airport.) When necessary to issue traffic advisories containing unverified altitude information, the controller will issue the indicated altitude of the aircraft. The pilot may upon receipt of traffic information, request a vector (heading) to avoid such traffic. The vector will be provided to the extent possible as determined by the controller provided the aircraft to be vectored is within the airspace under the jurisdiction of the controller.

2) Not radar identified

(a) Distance and direction with respect to a fix.

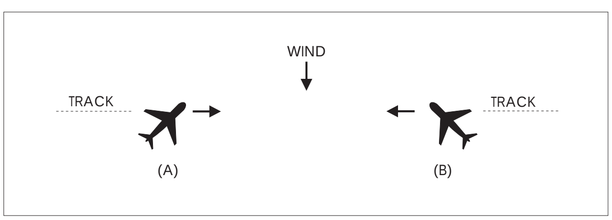
(b) Direction in which the target is proceeding.

(c) Type of aircraft and altitude if known.

EXAMPLE−
Traffic 8 miles south of the airport northeastbound, (type aircraft and altitude if known).

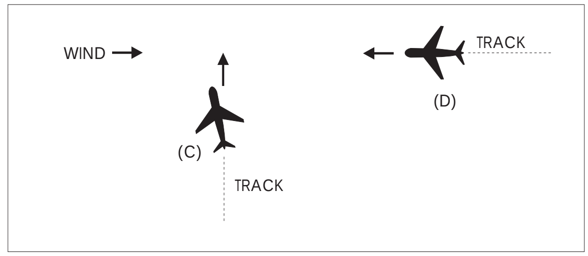
(d) The examples depicted in FIG ENR 1.1−28 and FIG ENR 1.1−29 point out the possible error in the position of this traffic when it is necessary for a pilot to apply drift correction to maintain this track. This error could also occur in the event a change in course is made at the time radar traffic information is issued.

FIG ENR 1.1−28
Induced Error in Position of Traffic



EXAMPLE−
In FIG ENR 1.1−28, traffic information would be issued to the pilot of aircraft "A" as 12 o'clock. The actual position of the traffic as seen by the pilot of aircraft "A" would be one o'clock. Traffic information issued to aircraft "B" would also be given as 12 o'clock, but in this case, the pilot of "B" would see the traffic at 11 o'clock.

FIG ENR 1.1−29
Induced Error in Position of Traffic



EXAMPLE−
In FIG ENR 1.1−29, traffic information would be issued to the pilot of aircraft "C" as two o'clock. The actual position of the traffic as seen by the pilot of aircraft "C" would be three o'clock. Traffic information issued to aircraft "D" would be at an 11 o'clock position. Since it is not necessary for the pilot of aircraft "D" to apply wind correction (CRAB) to remain on track, the actual position of the traffic issued would be correct. Since the radar controller can only observe aircraft track (course) on the radar display, traffic advisories are issued accordingly, and pilots should give due consideration to this fact when looking for reported traffic.

37.11 Radar Assistance to VFR Aircraft

37.11.1 Radar equipped FAA ATC facilities provide radar assistance and navigation service (vectors) to VFR aircraft provided the aircraft can communicate with the facility, are within radar coverage, and can be radar identified.

37.11.2 Pilots should clearly understand that authorization to proceed in accordance with such radar navigational assistance does not constitute authorization for the pilot to violate Federal Aviation Regulations. In effect, assistance provided is on the basis that navigational guidance information issued is advisory in nature and the job of flying the aircraft safely remains with the pilot.

37.11.3 In many cases, controllers will be unable to determine if flight into instrument conditions will result from their instructions. To avoid possible hazards resulting from being vectored into IFR conditions, pilots should keep controllers advised of the weather conditions in which they are operating and along the course ahead.

37.11.4 Radar navigation assistance (vectors) may be initiated by the controller when one of the following conditions exist:

37.11.4.1 The controller suggests the vector and the pilot concurs.

37.11.4.2 A special program has been established and vectoring service has been advertised.

37.11.4.3 In the controller's judgment the vector is necessary for air safety.

37.11.5 Radar navigation assistance (vectors) and other radar derived information may be provided in response to pilot requests. Many factors, such as limitations of radar, volume of traffic, communications frequency, congestion, and controller workload could prevent the controller from providing it. Controllers have complete discretion for determining if they are able to provide the service in a particular case. Their decision not to provide the service in a particular case is not subject to question.

38. Operational Policy/Procedures for Reduced Vertical Separation Minimum (RVSM) in the Domestic U.S., Alaska, Offshore Airspace and the San Juan FIR

38.1 Applicability and RVSM Mandate (Date/Time and Area)

38.1.1 Applicability. The policies, guidance and direction in this section are consistent with the policies and procedures used in Domestic U.S. RVSM Airspace, as specified in the Aeronautical Information Manual, Chapter 4, Section 6. For any oceanic area specific items, see Part II, ENR 7. Oceanic Procedures.

38.1.2 Requirement. The FAA implemented RVSM between flight level (FL) 290−410 (inclusive) in the following airspace: the airspace of the lower 48 states of the United States, Alaska, Atlantic and Gulf of Mexico High Offshore Airspace and the San Juan FIR. RVSM has been implemented worldwide and may be applied in all ICAO Flight Information Regions (FIR).

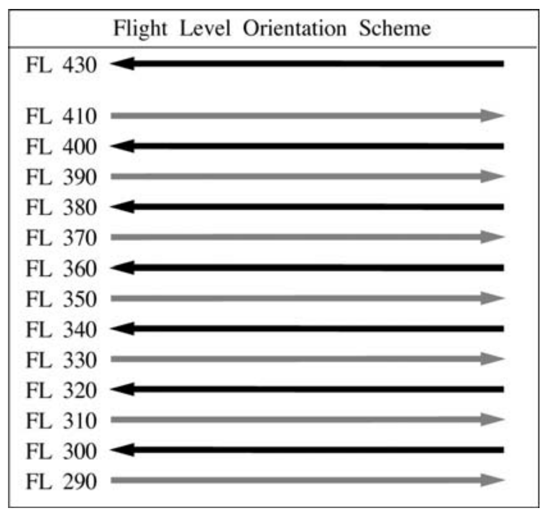
38.1.3 In accordance with 14 CFR Section 91.706, with only limited exceptions, prior to operating in RVSM airspace, operators must comply with the standards of Part 91, Appendix G, and be authorized by the Administrator. If the operator has not been authorized for RVSM operations, or the aircraft is not RVSM compliant, the aircraft will be referred to as "non−RVSM" aircraft. Paragraph 38.10 discusses ATC policies for accommodation of non−RVSM aircraft flown by the Department of Defense, Air Ambulance (MEDEVAC) operators, foreign State governments and aircraft flown for certification and development. Paragraph 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off, contains policies for non−RVSM aircraft climbing and descending through RVSM airspace to/from flight levels above RVSM airspace.

38.1.4 Benefits. RVSM enhances ATC flexibility, mitigates conflict points, enhances sector throughput, reduces controller workload and enables crossing traffic. Operators gain fuel savings and operating efficiency benefits by flying at more fuel efficient flight levels and on more user preferred routings.

38.2 Flight Level Orientation Scheme

Altitude assignments for direction of flight follow a scheme of odd altitude assignment for magnetic courses 000−179 degrees and even altitudes for magnetic courses 180−359 degrees for flights up to and including FL 410, as indicated in FIG ENR 1.1−30.

FIG ENR 1.1−30
Flight Level Orientation Scheme



NOTE−
Odd Flight Levels: Magnetic Course 000−179 Degrees
Even Flight Levels: Magnetic Course 180−359 Degrees.

38.3 Aircraft and Operator Approval Policy/Procedures, RVSM Monitoring and Databases for Aircraft and Operator Approval

38.3.1 RVSM Authority. 14 CFR Section 91.180 applies to RVSM operations within the U.S. 14 CFR Section 91.706 applies to RVSM operations outside the U.S. Both sections require that the operator obtain authorization prior to operating in RVSM airspace.

38.3.2 Sources of Information. Advisory Circular (AC) 91−85, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum (RVSM) Airspace, and the FAA RVSM Website.

38.3.3 TCAS Equipage. TCAS equipage requirements are contained in 14 CFR Sections 121.356, 125.224, 129.18 and 135.189. Part 91 Appendix G does not contain TCAS equipage requirements specific to RVSM, however, Appendix G does require that aircraft equipped with TCAS II and flown in RVSM airspace be modified to incorporate TCAS II Version 7.0 or a later version.

38.3.4 Aircraft Monitoring. Operators are required to participate in the RVSM altitude–keeping performance monitoring program that is appropriate for the type of operation being conducted. The monitoring programs are described in FAA AC 91–85, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace. Monitoring is a quality control program that enables the FAA and other civil aviation authorities to assess the in−service altitude−keeping performance of aircraft and operators.

38.3.5 RVSM Approvals Databases for U.S. operators can be found on the RVSM Documentation Webpage in the "RVSM Approvals" section.

38.4 Flight Planning into RVSM Airspace

38.4.1 Operators that do not file the correct aircraft equipment suffix on the FAA or ICAO Flight Plan may be denied clearance into RVSM airspace. Policies for the FAA Flight Plan are detailed in subparagraph 38.4.3 below. Policies for the ICAO Flight Plan are detailed in subparagraph 38.4.4.

38.4.2 The operator will annotate the equipment block of the FAA or ICAO Flight Plan with an aircraft equipment suffix indicating RVSM capability only after the responsible civil aviation authority has determined that both the operator and its aircraft are RVSM−compliant and has issued RVSM authorization to the operator.

38.4.3 General Policies for FAA Flight Plan Equipment Suffix. TBL ENR 1.10−3, Aircraft Suffixes, allows operators to indicate that the aircraft has both RVSM and Advanced Area Navigation (RNAV) capabilities or has only RVSM capability.

38.4.3.1 The operator will annotate the equipment block of the FAA Flight Plan with the appropriate aircraft equipment suffix from TBL ENR 1.10−3.

38.4.3.2 Operators can only file one equipment suffix in block 3 of the FAA Flight Plan. Only this equipment suffix is displayed directly to the controller.

38.4.3.3 Aircraft with RNAV Capability. For flight in RVSM airspace, aircraft with RNAV capability, but not Advanced RNAV capability, will file "/W". Filing "/W" will not preclude such aircraft from filing and flying direct routes in en route airspace.

38.4.4 Policy for ICAO Flight Plan Equipment Suffixes.

38.4.4.1 Operators/aircraft that are RVSM−compliant and that file ICAO flight plans will file "/W" in block 10 (Equipment) to indicate RVSM authorization and will also file the appropriate ICAO Flight Plan suffixes to indicate navigation and communication capabilities. The equipment suffixes in TBL ENR 1.10−3 are for use only in an FAA Flight Plan (FAA Form 7233−1).

38.4.4.2 Operators/aircraft that file ICAO flight plans that include flight in Domestic U.S. RVSM airspace must file "/W" in block 10 to indicate RVSM authorization.

38.4.5 Importance of Flight Plan Equipment Suffixes. The operator must file the appropriate equipment suffix in the equipment block of the FAA Flight Plan (FAA Form 7233−1) or the ICAO Flight Plan. The equipment suffix informs ATC:

38.4.5.1 Whether or not the operator and aircraft are authorized to fly in RVSM airspace.

38.4.5.2 The navigation and/or transponder capability of the aircraft (e.g., advanced RNAV, Transponder with Mode C).

38.4.6 Significant ATC uses of the flight plan equipment suffix information are:

38.4.6.1 To issue or deny clearance into RVSM airspace.

38.4.6.2 To apply a 2,000 foot vertical separation minimum in RVSM airspace to aircraft that are not authorized for RVSM, but are in one of the limited categories that the FAA has agreed to accommodate. (See Paragraphs 38.10, Procedures for Accommodation of Non−RVSM Aircraft, and 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off, for policy on limited operation of unapproved aircraft in RVSM airspace).

38.4.7 Improperly changing an aircraft equipment suffix and/or adding "NON-RVSM" in the NOTES or REMARKS section (Field 18) while not removing the "W" from Field 10, will not provide air traffic control with the proper visual indicator necessary to detect Non-RVSM aircraft. To ensure information processes correctly for Non-RVSM aircraft, the "W" in Field 10 must be removed. Entry of information in the NOTES or REMARKS section (Field 18) will not affect the determination of RVSM capability and must not be used to indicate a flight is Non-RVSM.

38.5 Pilot RVSM Operating Practices and Procedures

38.5.1 RVSM Requirement. If either the operator is not authorized for RVSM operations, or the aircraft is not RVSM compliant, the pilot will neither request nor accept a clearance into RVSM airspace unless:

38.5.1.1 The flight is conducted by a non−RVSM DOD, MEDEVAC, certification/development or foreign State (government) aircraft in accordance with Paragraph 38.10, Procedures for Accommodation of Non−RVSM Aircraft.

38.5.1.2 The pilot intends to climb to or descend from FL 430 or above in accordance with Paragraph 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off.

38.5.1.3 An emergency situation exists.

38.5.2 Basic RVSM Operating Practices and Procedures. FAA AC 91−85 contains pilot practices and procedures for RVSM. Operators must incorporate RVSM practices and procedures, as supplemented by the applicable paragraphs of this section, into operator training or pilot knowledge programs and operator documents containing RVSM operational policies.

38.5.3 FAA AC 91−85 contains practices and procedures for flight planning, preflight procedures at the aircraft, procedures prior to RVSM airspace entry, inflight (en route) procedures, contingency procedures and post flight.

38.5.4 The following paragraphs either clarify or supplement FAA AC 91−85 practices and procedures.

38.6 Guidance on Severe Turbulence and Mountain Wave Activity (MWA)

38.6.1 Introduction/Explanation

38.6.1.1 The information and practices in this paragraph are provided to emphasize to pilots and controllers the importance of taking appropriate action in RVSM airspace when aircraft experience severe turbulence and/or MWA that is of sufficient magnitude to significantly affect altitude−keeping.

38.6.1.2 Severe Turbulence. Severe turbulence causes large, abrupt changes in altitude and/or attitude usually accompanied by large variations in indicated airspeed. Aircraft may be momentarily out of control. Encounters with severe turbulence must be remedied immediately in any phase of flight. Severe turbulence may be associated with MWA.

38.6.1.3 Mountain Wave Activity (MWA)

a) Significant MWA occurs both below and above the floor of RVSM airspace, FL 290. MWA often occurs in western states in the vicinity of mountain ranges. It may occur when strong winds blow perpendicular to mountain ranges resulting in up and down or wave motions in the atmosphere. Wave action can produce altitude excursions and airspeed fluctuations accompanied by only light turbulence. With sufficient amplitude, however, wave action can induce altitude and airspeed fluctuations accompanied by severe turbulence. MWA is difficult to forecast and can be highly localized and short lived.

b) Wave activity is not necessarily limited to the vicinity of mountain ranges. Pilots experiencing wave activity anywhere that significantly affects altitude−keeping can follow the guidance provided below.

c) Inflight MWA Indicators (Including Turbulence). Indicators that the aircraft is being subjected to MWA are:

1) Altitude excursions and/or airspeed fluctuations with or without associated turbulence.

2) Pitch and trim changes required to maintain altitude with accompanying airspeed fluctuations.

3) Light to severe turbulence depending on the magnitude of the MWA.

38.6.1.4 Priority for Controller Application of Merging Target Procedures

a) Explanation of Merging Target Procedures. As described in subparagraph 38.6.3.3 below, ATC will use “merging target procedures” to mitigate the effects of both severe turbulence and MWA. The procedures in subparagraph 38.6.3.3 have been adapted from existing procedures published in FAA Order JO 7110.65, Air Traffic Control, Paragraph 5−1−8, Merging Target Procedures. Paragraph 5−1−8 calls for en route controllers to advise pilots of potential traffic that they perceive may fly directly above or below his/her aircraft at minimum vertical separation. In response, pilots are given the option of requesting a radar vector to ensure their radar target will not merge or overlap with the traffic's radar target.

b) The provision of “merging target procedures” to mitigate the effects of severe turbulence and/or MWA is not optional for the controller, but rather is a priority responsibility. Pilot requests for vectors for traffic avoidance when encountering MWA or pilot reports of “Unable RVSM due turbulence or MWA” are considered first priority aircraft separation and sequencing responsibilities. (FAA Order JO 7110.65, Paragraph 2−1−2, Duty Priority, states that the controller's first priority is to separate aircraft and issue safety alerts).

c) Explanation of the term “traffic permitting.” The contingency actions for MWA and severe turbulence detailed in Paragraph 38.9, Contingency Actions: Weather Encounters and Aircraft System Failures that Occur After Entry into RVSM Airspace, state that the controller will “vector aircraft to avoid merging targets with traffic at adjacent flight levels, traffic permitting.” The term “traffic permitting” is not intended to imply that merging target procedures are not a priority duty. The term is intended to recognize that, as stated in FAA Order JO 7110.65, Paragraph 2−1−2, Duty Priority, there are circumstances when the controller is required to perform more than one action and must “exercise their best judgment based on the facts and circumstances known to them” to prioritize their actions. Further direction given is: “That action which is most critical from a safety standpoint is performed first.”

38.6.1.5 TCAS Sensitivity. For both MWA and severe turbulence encounters in RVSM airspace, an additional concern is the sensitivity of collision avoidance systems when one or both aircraft operating in close proximity receive TCAS advisories in response to disruptions in altitude hold capability.

38.6.2 Pre−flight tools. Sources of observed and forecast information that can help the pilot ascertain the possibility of MWA or severe turbulence are: Forecast Winds and Temperatures Aloft (FD), Area Forecast (FA), Graphical Turbulence Guidance (GTG), SIGMETs and PIREPs.

38.6.3 Pilot Actions When Encountering Weather (for example, Severe Turbulence or MWA)

38.6.3.1 Weather Encounters Inducing Altitude Deviations of Approximately 200 feet. When the pilot experiences weather induced altitude deviations of approximately 200 feet, the pilot will contact ATC and state “Unable RVSM Due (state reason)” (e.g., turbulence, mountain wave). See contingency actions in paragraph 38.9.

38.6.3.2 Severe Turbulence (including that associated with MWA). When pilots encounter severe turbulence, they should contact ATC and report the situation. Until the pilot reports clear of severe turbulence, the controller will apply merging target vectors to one or both passing aircraft to prevent their targets from merging:

EXAMPLE−
“Yankee 123, FL 310, unable RVSM due severe turbulence.”

“Yankee 123, fly heading 290; traffic twelve o'clock, 10 miles, opposite direction; eastbound MD−80 at FL 320” (or the controller may issue a vector to the MD−80 traffic to avoid Yankee 123).

38.6.3.3 MWA. When pilots encounter MWA, they should contact ATC and report the magnitude and location of the wave activity. When a controller makes a merging targets traffic call, the pilot may request a vector to avoid flying directly over or under the traffic. In situations where the pilot is experiencing altitude deviations of 200 feet or greater, the pilot will request a vector to avoid traffic. Until the pilot reports clear of MWA, the controller will apply merging target vectors to one or both passing aircraft to prevent their targets from merging:

EXAMPLE−
“Yankee 123, FL 310, unable RVSM due mountain wave.”

“Yankee 123, fly heading 290; traffic twelve o'clock, 10 miles, opposite direction; eastbound MD−80 at FL 320” (or the controller may issue a vector to the MD−80 traffic to avoid Yankee 123).

38.6.3.4 FL Change or Re−route. To leave airspace where MWA or severe turbulence is being encountered, the pilot may request a FL change and/or re−route, if necessary.

38.7 Guidance on Wake Turbulence

38.7.1 Pilots should be aware of the potential for wake turbulence encounters in RVSM airspace. Experience gained since 1997 has shown that such encounters in RVSM airspace are generally moderate or less in magnitude.

38.7.2 Prior to DRVSM implementation, the FAA established provisions for pilots to report wake turbulence events in RVSM airspace using the NASA Aviation Safety Reporting System (ASRS). A "Safety Reporting" section established on the FAA RVSM Documentation webpage provides contacts, forms, and reporting procedures.

38.7.3 To date, wake turbulence has not been reported as a significant factor in DRVSM operations. European authorities also found that reports of wake turbulence encounters did not increase significantly after RVSM implementation (eight versus seven reports in a ten−month period). In addition, they found that reported wake turbulence was generally similar to moderate clear air turbulence.

38.7.4 Pilot Action to Mitigate Wake Turbulence Encounters

38.7.4.1 Pilots should be alert for wake turbulence when operating:

a) In the vicinity of aircraft climbing or descending through their altitude.

b) Approximately 10−30 miles after passing 1,000 feet below opposite−direction traffic.

c) Approximately 10−30 miles behind and 1,000 feet below same−direction traffic.

38.7.4.2 Pilots encountering or anticipating wake turbulence in DRVSM airspace have the option of requesting a vector, FL change, or if capable, a lateral offset.

NOTE−

1. *Offsets of approximately a wing span upwind generally can move the aircraft out of the immediate vicinity of another aircraft's wake vortex.*

2. *In domestic U.S. airspace, pilots must request clearance to fly a lateral offset. Strategic lateral offsets flown in oceanic airspace do not apply.*

38.8 Pilot/Controller Phraseology

TBL ENR 1.1−4 shows standard phraseology that pilots and controllers will use to communicate in DRVSM operations.

TBL ENR 1.1−4

Pilot/Controller Phraseology

Message	Phraseology
For a controller to ascertain the RVSM approval status of an aircraft:	(call sign) confirm RVSM approved
Pilot indication that flight is RVSM approved	Affirm RVSM
Pilot report of lack of RVSM approval (non−RVSM status). Pilot will report non−RVSM status, as follows: **a.** On the initial call on any frequency in the RVSM airspace and . . . **b.** In all requests for flight level changes pertaining to flight levels within the RVSM airspace and . . . **c.** In all read backs to flight level clearances pertaining to flight levels within the RVSM airspace and . . . **d.** In read back of flight level clearances involving climb and descent through RVSM airspace (FL 290 − 410)	Negative RVSM, (supplementary information, e.g., “Certification flight”).
Pilot report of one of the following after entry into RVSM airspace: all primary altimeters, automatic altitude control systems or altitude alerters have failed. (See Paragraph 38.9, Contingency Actions: Weather Encounters and Aircraft System Failures that Occur After Entry into RVSM Airspace). ***NOTE−*** *This phrase is to be used to convey both the initial indication of RVSM aircraft system failure and on initial contact on all frequencies in RVSM airspace until the problem ceases to exist or the aircraft has exited RVSM airspace.*	Unable RVSM Due Equipment
ATC denial of clearance into RVSM airspace	Unable issue clearance into RVSM airspace, maintain FL
*Pilot reporting inability to maintain cleared flight level due to weather encounter. (See Paragraph 38.9, Contingency Actions: Weather Encounters and Aircraft System Failures that Occur after Entry into RVSM Airspace).	*Unable RVSM due (state reason) (e.g., turbulence, mountain wave)
ATC requesting pilot to confirm that an aircraft has regained RVSM−approved status or a pilot is ready to resume RVSM	Confirm able to resume RVSM
Pilot ready to resume RVSM after aircraft system or weather contingency	Ready to resume RVSM

38.9 Contingency Actions: Weather Encounters and Aircraft System Failures that Occur After Entry into RVSM Airspace

TBL ENR 1.1−5 provides pilot guidance on actions to take under certain conditions of aircraft system failure that occur after entry into RVSM airspace and weather encounters. It also describes the expected ATC controller actions in these situations. It is recognized that the pilot and controller will use judgment to determine the action most appropriate to any given situation.

TBL ENR 1.1−5

Contingency Actions: Weather Encounters and Aircraft System Failures that Occur After Entry into RVSM Airspace

Initial Pilot Actions in Contingency Situations
Initial pilot actions when unable to maintain flight level (FL) or unsure of aircraft altitude−keeping capability: •Notify ATC and request assistance as detailed below. •Maintain cleared flight level, to the extent possible, while evaluating the situation. •Watch for conflicting traffic both visually and by reference to TCAS, if equipped**.** •Alert nearby aircraft by illuminating exterior lights (commensurate with aircraft limitations).

Severe Turbulence and/or Mountain Wave Activity (MWA) Induced Altitude Deviations of Approximately 200 feet	
Pilot will:	**Controller will:**
•When experiencing severe turbulence and/or MWA induced altitude deviations of approximately 200 feet or greater, pilot will contact ATC and state "Unable RVSM Due (state reason)" (e.g., turbulence, mountain wave) •If not issued by the controller, request vector clear of traffic at adjacent FLs •If desired, request FL change or re−route •Report location and magnitude of turbulence or MWA to ATC	•Vector aircraft to avoid merging target with traffic at adjacent flight levels, traffic permitting •Advise pilot of conflicting traffic •Issue FL change or re−route, traffic permitting •Issue PIREP to other aircraft
See Paragraph 38.6, Guidance on Severe Turbulence and Mountain Wave Activity (MWA), for detailed guidance.	Paragraph 38.6 explains "traffic permitting."

Mountain Wave Activity (MWA) Encounters − General	
Pilot actions:	**Controller actions:**
•Contact ATC and report experiencing MWA •If so desired, pilot may request a FL change or re−route •Report location and magnitude of MWA to ATC	•Advise pilot of conflicting traffic at adjacent FL •If pilot requests, vector aircraft to avoid merging target with traffic at adjacent RVSM flight levels, traffic permitting •Issue FL change or re−route, traffic permitting •Issue PIREP to other aircraft
See paragraph 38.6 for guidance on MWA.	Paragraph 38.6 explains "traffic permitting."
NOTE− *MWA encounters do not necessarily result in altitude deviations on the order of 200 feet. The guidance below is intended to address less significant MWA encounters.*	

Wake Turbulence Encounters	
Pilot should:	**Controller should:**
•Contact ATC and request vector, FL change or, if capable, a lateral offset	•Issue vector, FL change or lateral offset clearance, traffic permitting
See Paragraph 38.7, Guidance on Wake Turbulence.	Paragraph 38.6 explains "traffic permitting."

"Unable RVSM Due Equipment" Failure of Automatic Altitude Control System, Altitude Alerter or All Primary Altimeters	
Pilot will:	**Controller will:**
•Contact ATC and state "Unable RVSM Due Equipment" •Request clearance out of RVSM airspace unless operational situation dictates otherwise	•Provide 2,000 feet vertical separation or appropriate horizontal separation •Clear aircraft out of RVSM airspace unless operational situation dictates otherwise

One Primary Altimeter Remains Operational	
Pilot will:	**Controller will:**
•Cross check stand−by altimeter •Notify ATC of operation with single primary altimeter •If unable to confirm primary altimeter accuracy, follow actions for failure of all primary altimeters	•Acknowledge operation with single primary altimeter

Transponder Failure	
Pilot will: •Contact ATC and request authority to continue to operate at cleared flight level •Comply with revised ATC clearance, if issued	**Controller will:** •Consider request to continue to operate at cleared flight level •Issue revised clearance, if necessary
NOTE− *14 CFR Section 91.215 (ATC transponder and altitude reporting equipment and use) regulates operation with the transponder inoperative.*	

38.10 Procedures for Accommodation of Non−RVSM Aircraft

38.10.1 General Policies for Accommodation of Non−RVSM Aircraft

38.10.1.1 The RVSM mandate calls for only RVSM authorized aircraft/operators to fly in designated RVSM airspace with limited exceptions. The policies detailed below are intended exclusively for use by aircraft that the FAA has agreed to accommodate. They are not intended to provide other operators a means to circumvent the normal RVSM approval process.

38.10.1.2 If either the operator is not authorized or the aircraft is not RVSM−compliant, the aircraft will be referred to as a "non−RVSM" aircraft. 14 CFR Section 91.180 and Part 91 Appendix G enable the FAA to authorize a deviation to operate a non−RVSM aircraft in RVSM airspace.

38.10.1.3 Non−RVSM aircraft flights will be handled on a workload permitting basis. The vertical separation standard applied between aircraft not approved for RVSM and all other aircraft must be 2,000 feet.

38.10.1.4 Required Pilot Calls. The pilot of non−RVSM aircraft will inform the controller of the lack of RVSM approval in accordance with the direction provided in Paragraph 38.8, Pilot/Controller Phraseology.

38.10.2 Categories of Non−RVSM Aircraft that may be Accommodated

Subject to FAA approval and clearance, the following categories of non−RVSM aircraft may operate in domestic U.S. RVSM airspace provided they have an operational transponder.

38.10.2.1 Department of Defense (DOD) aircraft.

38.10.2.2 Flights conducted for aircraft certification and development purposes.

38.10.2.3 Active air ambulance flights utilizing a "MEDEVAC" call sign.

38.10.2.4 Aircraft climbing/descending through RVSM flight levels (without intermediate level off) to/from FLs above RVSM airspace (Policies for these flights are detailed in Paragraph 38.11, Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off.

38.10.2.5 Foreign State (government) aircraft.

38.10.3 Methods for operators of non−RVSM aircraft to request access to RVSM Airspace. Operators may:

38.10.3.1 LOA/MOU. Enter into a Letter of Agreement (LOA)/Memorandum of Understanding (MOU) with the RVSM facility (the Air Traffic facility that provides air traffic services in RVSM airspace). Operators must comply with LOA/MOU.

38.10.3.2 File−and−Fly. File a flight plan to notify the FAA of their intention to request access to RVSM airspace.

NOTE−
Priority for access to RVSM airspace will be afforded to RVSM compliant aircraft, then File−and−Fly flights.

38.11 Non−RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off

38.11.1 File−and−Fly. Operators of Non−RVSM aircraft climbing to and descending from RVSM flight levels should just file a flight plan.

38.11.2 Non−RVSM aircraft climbing to and descending from flight levels above RVSM airspace will be handled on a workload permitting basis. The vertical separation standard applied in RVSM airspace between non−RVSM aircraft and all other aircraft must be 2,000 feet.

38.11.3 Non−RVSM aircraft climbing to/descending from RVSM airspace can only be considered for accommodation provided:

38.11.3.1 Aircraft is capable of a continuous climb/descent and does not need to level off at an intermediate altitude for any operational considerations and

38.11.3.2 Aircraft is capable of climb/descent at the normal rate for the aircraft.

38.11.4 Required Pilot Calls. The pilot of non−RVSM aircraft will inform the controller of the lack of RVSM approval in accordance with the direction provided in paragraph 38.8, Pilot/Controller Phraseology.

39. Terminal Radar Services for VFR Aircraft

39.1 Basic Radar Service

39.1.1 In addition to the use of radar for the control of IFR aircraft, all commissioned radar facilities provide the following basic radar services for VFR aircraft:

39.1.1.1 Safety alerts.

39.1.1.2 Traffic advisories.

39.1.1.3 Limited radar vectoring (on a workload permitting basis).

39.1.1.4 Sequencing at locations where procedures have been established for this purpose and/or when covered by a letter of agreement.

NOTE−
When the stage services were developed, two basic radar services (traffic advisories and limited vectoring) were identified as "Stage I." This definition became unnecessary and the term "Stage I" was eliminated from use. The term "Stage II" has been eliminated in conjunction with the airspace reclassification, and sequencing services to locations with local procedures and/or letters of agreement to provide this service have been included in basic services to VFR aircraft. These basic services will still be provided by all terminal radar facilities whether they include Class B, C, D, or E airspace. "Stage III" services have been replaced with "Class B" and "Terminal Radar Service Area" service where applicable.

39.1.2 Vectoring service may be provided when requested by the pilot or with pilot concurrence when suggested by ATC.

39.1.3 Pilots of arriving aircraft should contact approach control on the publicized frequency and give their position, altitude, aircraft call sign, type aircraft, radar beacon code (if transponder equipped), destination, and should request traffic information.

39.1.4 Approach control will issue wind and runway, except when the pilot states "have numbers" or this information is contained in the ATIS broadcast and the pilot states that the current ATIS information has been received. Traffic information is provided on a workload permitting basis. Approach control will specify the time or place at which the pilot is to contact the tower on local control frequency for further landing information. Radar service is automatically terminated and the aircraft need not be advised of termination when an arriving VFR aircraft receiving radar services to a tower−controlled airport where basic radar service is provided has landed, or to all other airports, is instructed to change to tower or advisory frequency.

39.1.5 Sequencing for VFR aircraft is available at certain terminal locations (see locations listed in the Chart Supplement U.S.). The purpose of the service is to adjust the flow of arriving VFR and IFR aircraft into the traffic pattern in a safe and orderly manner and to provide radar traffic information to departing VFR aircraft. Pilot participation is urged but is not mandatory. Traffic information is provided on a workload permitting basis. Standard radar separation between VFR or between VFR and IFR aircraft is not provided.

39.1.5.1 Pilots of arriving VFR aircraft should initiate radio contact on the publicized frequency with approach control when approximately 25 miles from the airport at which sequencing services are being provided. On initial contact by VFR aircraft, approach control will assume that sequencing service is requested. After radar contact is established, the pilot may use pilot navigation to enter the traffic pattern or, depending on traffic conditions, approach control may provide the pilot with routings or vectors necessary for proper sequencing with other participating VFR and IFR traffic en route to the airport. When a flight is positioned behind a preceding aircraft and the pilot reports having that aircraft in sight, the pilot will be instructed to follow the preceding aircraft. THE ATC INSTRUCTION TO FOLLOW THE PRECEDING AIRCRAFT DOES NOT AUTHORIZE THE PILOT TO COMPLY WITH ANY ATC CLEARANCE OR INSTRUCTION ISSUED TO THE PRECEDING AIRCRAFT. If other "nonparticipating" or "local" aircraft are in the traffic pattern, the tower will issue a landing sequence. If an arriving aircraft does not want radar service, the pilot should state "NEGATIVE RADAR SERVICE" or make a similar comment, on initial contact with approach control.

39.1.5.2 Pilots of departing VFR aircraft are encouraged to request radar traffic information by notifying ground control, or where applicable, clearance delivery, on initial contact with their request and proposed direction of flight.

EXAMPLE−
Xray ground control, November One Eight Six, Cessna One Seventy Two, ready to taxi, VFR southbound at 2,500, have information bravo and request radar traffic information.

NOTE−
Following takeoff, the tower will advise when to contact departure control.

39.1.5.3 Pilots of aircraft transiting the area and in radar contact/communication with approach control will receive traffic information on a controller workload permitting basis. Pilots of such aircraft should give their position, altitude, aircraft call sign, aircraft type, radar beacon code (if transponder equipped), destination, and/or route of flight.

39.2 Terminal Radar Service Area (TRSA) Service (Radar Sequencing and Separation Service for VFR Aircraft in a TRSA).

39.2.1 This service has been implemented at certain terminal locations. The service is advertised in the Chart Supplement U.S. The purpose of this service is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the airspace defined as the TRSA. Pilot participation is urged but is not mandatory.

39.2.2 If any aircraft does not want the service, the pilot should state "NEGATIVE TRSA SERVICE" or make a similar comment, on initial contact with approach control or ground control, as appropriate.

39.2.3 TRSAs are depicted on sectional aeronautical charts and listed in the Chart Supplement U.S.

39.2.4 While operating within a TRSA, pilots are provided TRSA service and separation as prescribed in this paragraph. In the event of a radar outage, separation and sequencing of VFR aircraft will be suspended as this service is dependent on radar. The pilot will be advised that the service is not available and will be issued wind, runway information, and the time or place to contact the tower. Traffic information will be provided on a workload permitting basis.

39.2.5 Visual separation is used when prevailing conditions permit and it will be applied as follows:

39.2.5.1 When a VFR flight is positioned behind a preceding aircraft and the pilot reports having that aircraft in sight, the pilot will be instructed by ATC to follow the preceding aircraft. THE ATC INSTRUCTION TO FOLLOW THE PRECEDING AIRCRAFT DOES NOT AUTHORIZE THE PILOT TO COMPLY WITH ANY ATC CLEARANCE OR INSTRUCTION ISSUED TO THE PRECEDING AIRCRAFT. Radar service will be continued to the runway.

39.2.5.2 If other "nonparticipating" or "local" aircraft are in the traffic pattern, the tower will issue a landing sequence.

39.2.5.3 Departing VFR aircraft may be asked if they can visually follow a preceding departure out of the TRSA. The pilot will be instructed to follow the other aircraft provided that the pilot can maintain visual contact with that aircraft.

39.2.6 VFR aircraft will be separated from VFR/IFR aircraft by one of the following:

39.2.6.1 500 feet vertical separation.

39.2.6.2 Visual separation.

39.2.6.3 Target resolution (a process to ensure that correlated radar targets do not touch).

39.2.7 Participating pilots operating VFR in a TRSA:

39.2.7.1 Must maintain an altitude when assigned by ATC unless the altitude assignment is to maintain at or below a specified altitude. ATC may assign altitudes for separation that do not conform to 14 CFR Section 91.159. When the altitude assignment is no longer needed for separation or when leaving the TRSA, the instruction will be broadcast, "RESUME APPROPRIATE VFR ALTITUDES." Pilots must then return to an altitude that conforms to 14 CFR Section 91.159 as soon as practicable.

39.2.7.2 When not assigned an altitude, the pilot should coordinate with ATC prior to any altitude change.

39.2.8 Within the TRSA, traffic information on observed but unidentified targets will, to the extent possible, be provided to all IFR and participating VFR aircraft. The pilot will be vectored upon request to avoid the observed traffic, provided the aircraft to be vectored is within the airspace under the jurisdiction of the controller.

39.2.9 Departing aircraft should inform ATC of their intended destination and/or route of flight and proposed cruising altitude.

39.2.10 ATC will normally advise participating VFR aircraft when leaving the geographical limits of the TRSA. Radar service is not automatically terminated with this advisory unless specifically stated by the controller.

39.3 Class C Service. This service provides, in addition to basic radar service, approved separation between IFR and VFR aircraft, and sequencing of VFR arrivals to the primary airport.

39.4 Class B Service. This service provides, in addition to basic radar service, approved separation of aircraft based on IFR, VFR, and/or weight, and sequencing of VFR arrivals to the primary airport(s).

39.5 PILOT RESPONSIBILITY. THESE SERVICES ARE NOT TO BE INTERPRETED AS RELIEVING PILOTS OF THEIR RESPONSIBILITIES TO SEE AND AVOID OTHER TRAFFIC OPERATING IN BASIC VFR WEATHER CONDITIONS, TO ADJUST THEIR OPERATIONS AND FLIGHT PATH AS NECESSARY TO PRECLUDE SERIOUS WAKE ENCOUNTERS, TO MAINTAIN APPROPRIATE TERRAIN AND OBSTRUCTION CLEARANCE, OR TO REMAIN IN WEATHER CONDITIONS EQUAL TO OR BETTER THAN THE MINIMUMS REQUIRED BY 14 CFR SECTION 91.155. WHENEVER COMPLIANCE WITH AN ASSIGNED ROUTE, HEADING AND/OR ALTITUDE IS LIKELY TO COMPROMISE PILOT RESPONSIBILITY RESPECTING TERRAIN AND OBSTRUCTION CLEARANCE, VORTEX EXPOSURE, AND WEATHER MINIMUMS, APPROACH CONTROL SHOULD BE SO ADVISED AND A REVISED CLEARANCE OR INSTRUCTION OBTAINED.

39.6 ATC services for VFR aircraft participating in terminal radar services are dependent on ATC radar. Services for VFR aircraft are not available during periods of radar outage and are limited during CENRAP operations. The pilot will be advised when VFR services are limited or not available.

NOTE−
Class B and Class C airspace are areas of regulated airspace. The absence of ATC radar does not negate the requirement of an ATC clearance to enter Class B airspace or two−way radio contact with ATC to enter Class C airspace.

40. Tower En Route Control (TEC)

40.1 TEC is an ATC program to provide a service to aircraft proceeding to and from metropolitan areas. It links designated approach control areas by a network of identified routes made up of the existing airway structure of the National Airspace System. The FAA has initiated an expanded TEC program to include as many facilities as possible. The program's intent is to provide an overflow resource in the low altitude system which would enhance ATC services. A few facilities have historically allowed turbojets to proceed between certain city pairs, such as Milwaukee and Chicago, via tower en route and these locations may continue this service. However, the expanded TEC program will be applied, generally, for nonturbojet aircraft operating at and below 10,000 feet. The program is entirely within the approach control airspace of multiple terminal facilities. Essentially, it is for relatively short flights. Participating pilots are encouraged to use TEC for flights of 2 hours duration or less. If longer flights are planned, extensive coordination may be required with the multiple complex which could result in unanticipated delays.

40.2 There are no unique requirements upon pilots to use the TEC program. Normal flight plan filing procedures will ensure proper flight plan processing. Pilots should include the acronym "TEC" in the remarks selection of the flight plan when requesting tower en route.

40.3 All approach controls in the system may not operate up to the maximum TEC altitude of 10,000 feet. IFR flight may be planned to any satellite airport in proximity to the major primary airport via the same routing.

41. Services in Offshore Controlled Airspace

41.1 Pilots requesting TEC are subject to the same delay factor at the destination airport as other aircraft in the ATC system. In addition, departure and en route delays may occur depending upon individual facility workload. When a major metropolitan airport is incurring significant delays, pilots in the TEC program may want to consider an alternative airport experiencing no delay.

41.2 Flights which operate between the U.S. 3−mile territorial limit and the adjoining oceanic controlled airspace/flight information region (CTA/FIR) boundaries generally operate in airspace designated by federal regulation as "controlled airspace," or "offshore controlled airspace."

41.3 Within the designated areas ATC radar surveillance, ground based navigational signal coverage, and air/ground communications are capable of supporting air traffic services comparable to those provided over U.S. domestic controlled airspace.

41.4 Pilots should be aware that domestic procedures will be applied in offshore controlled airspace to both VFR and IFR aircraft using ATC services.

42. Pilot/Controller Roles/Responsibilities

42.1 General

42.1.1 The roles and responsibilities of the pilot and controller for effective participation in the ATC system are contained in several documents. Pilot responsibilities are in the Federal Aviation Regulations (Title 14 of the U.S. Code of Federal Regulations) and the air traffic controller's are in FAA Order JO 7110.65, Air Traffic Control, and supplemental FAA directives. Additional and supplemental information for pilots can be found in the current Aeronautical Information Manual, Notices to Airmen, advisory circulars, and aeronautical charts. Since there are many other excellent publications produced by nongovernment organizations as well as other Government organizations with various updating cycles, questions concerning the latest or most current material can be resolved by cross−checking with the above mentioned documents.

42.1.2 The pilot in command of an aircraft is directly responsible for and is the final authority as to the safe operation of that aircraft. In an emergency requiring immediate action, the pilot in command may deviate from any rule in the General, Subpart A, and Flight Rules, Subpart B, in accordance with 14 CFR Section 91.3.

42.1.3 The air traffic controller is responsible to give first priority to the separation of aircraft and to the issuance of radar safety alerts; second priority to other services that are required, but do not involve separation of aircraft; and third priority to additional services to the extent possible.

42.1.4 In order to maintain a safe and efficient air traffic system, it is necessary that every party fulfill their responsibilities to the fullest.

42.1.5 The responsibilities of the pilot and the controller intentionally overlap in many areas providing a degree of redundancy. Should one or the other fail in any manner, this overlapping responsibility is expected to compensate, in many cases, for failures that may affect safety.

42.1.6 The following, while not intended to be all inclusive, is a brief listing of pilot and controller responsibilities for some commonly used procedures or phases of flight. More detailed explanations are contained in the appropriate Federal Aviation Regulations, Advisory Circulars, and similar publications. The information provided here is an overview of the principles involved and is not meant as an interpretation of the rules nor is it intended to extend or diminish responsibilities.

42.2 Air Traffic Clearance

42.2.1 Pilot

42.2.1.1 Acknowledges receipt and understanding of an ATC clearance.

42.2.1.2 Reads back any hold short of runway instructions issued by ATC.

42.2.1.3 Requests clarification or amendment, as appropriate, any time a clearance is not fully understood, or considered unacceptable from a safety standpoint.

42.2.1.4 Promptly complies with an air traffic clearance upon receipt, except as necessary to cope with an emergency. Advises ATC as soon as possible and obtains an amended clearance if deviation is necessary.

NOTE−
A clearance to land means that appropriate separation on the landing runway will be ensured. A landing clearance does not relieve the pilot from compliance with any previously issued altitude crossing restriction.

42.2.2 Controller

42.2.2.1 Issues appropriate clearances for the operation being, or to be, conducted in accordance with established criteria.

42.2.2.2 Assigns altitudes in IFR clearances that are at or above the minimum IFR altitudes in Classes A, B, C, D, and E airspace.

42.2.2.3 Ensures acknowledgements by the pilot for issued information, clearance, or instructions.

42.2.2.4 Ensures that readbacks by the pilot of altitude, heading, or other items are correct. If incorrect, distorted, or incomplete, makes corrections as appropriate.

42.3 Contact Approach

42.3.1 Pilot

42.3.1.1 This approach must be requested by the pilot and is made in lieu of a standard or special instrument approach.

42.3.1.2 By requesting the contact approach, the pilot indicates that the flight is operating clear of clouds, has at least 1 mile flight visibility, and can reasonably expect to continue to the destination airport in those conditions.

42.3.1.3 Be aware that while conducting a contact approach, the pilot assumes responsibility for obstruction clearance.

42.3.1.4 Advises ATC immediately if you are unable to continue the contact approach or if you encounter less than 1 mile flight visibility.

42.3.1.5 Be aware that, if radar service is being received, it may automatically terminate when the pilot is told to contact the tower. "Radar service terminated" is used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact.

REFERENCE−
The Pilot/Controller Glossary is published in the Aeronautical Information Manual (AIM) and FAA Orders JO 7110.10, Flight Services, and JO 7110.65, Air Traffic Control.

42.3.2 Controller

42.3.2.1 Issues clearance for contact approach only when requested by the pilot. Does not solicit the use of this procedure.

42.3.2.2 Before issuing clearance, ascertains that reported ground visibility at destination airport is at least 1 mile.

42.3.2.3 Provides approved separation between aircraft cleared for contact approach and other IFR or special VFR aircraft. When using vertical separation, does not assign a fixed altitude but clears the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below minimum safe altitudes prescribed in 14 CFR Section 91.119.

42.3.2.4 Issues alternative instructions if, in the controller's judgment, weather conditions may make completion of the approach impractical.

42.4 Instrument Approach

42.4.1 Pilot

42.4.1.1 Be aware that the controller issues clearance for approach based only on known traffic.

42.4.1.2 Follows the procedures as shown on the instrument approach chart including all restrictive notations, such as:

a) Procedure not authorized at night.

b) Approach not authorized when local area altimeter not available.

c) Procedure not authorized when control tower not in operation.

d) Procedure not authorized when glide slope not used.

e) Straight−in minimums not authorized at night.

f) Radar required.

g) The circling minimums published on the instrument approach chart provide adequate obstruction clearance. The pilot should not descend below the circling altitude until the aircraft is in a position to make final descent for landing. Sound judgment and knowledge of the pilot's and the aircraft's capabilities are the criteria for a pilot to determine the exact maneuver in each instance since airport design and the aircraft position, altitude, and airspeed must all be considered. (See ENR 1.5, Paragraph 11.6, Circling Minimums.)

42.4.1.3 Upon receipt of an approach clearance while on an unpublished route or being radar vectored:

a) Complies with the minimum altitude for IFR.

b) Maintains last assigned altitude until established on a segment of a published route or Instrument Approach Procedure (IAP), at which time published altitudes apply.

42.4.1.4 When applicable, apply cold temperature correction to instrument approach segments. Advise ATC when intending to apply cold temperature correction and of the amount of correction required for each affected segment on initial contact (or as soon as possible). This information is required for ATC to provide aircraft appropriate vertical separation between known traffic.

REFERENCE−
AIP, Paragraph ENR 1.7−3. Altimeter Errors
AIP, TBL ENR 1.7−3, ICAO Cold Temperature Error

42.4.2 Controller

42.4.2.1 Issues an approach clearance based on known traffic.

42.4.2.2 Issues an IFR approach clearance only after aircraft is established on a segment of published route or IAP; or assigns an appropriate altitude for the aircraft to maintain until so established.

42.5 Missed Approach

42.5.1 Pilot

42.5.1.1 Executes a missed approach when one of the following conditions exist:

a) Arrival at the missed approach point (MAP) or the decision height (DH) and visual reference to the runway environment is insufficient to complete the landing.

b) Determines that a safe approach or landing is not possible (see ENR 1.5 paragraph 27.8).

c) Instructed to do so by ATC.

42.5.1.2 Advises ATC that a missed approach will be made. Include the reason for the missed approach unless initiated by ATC.

42.5.1.3 Complies with the missed approach instructions for the IAP being executed from the MAP, unless other missed approach instructions are specified by ATC.

42.5.1.4 If executing a missed approach prior to reaching the MAP, fly the lateral navigation path of the instrument procedure to the MAP. Climb to the altitude specified in the missed approach procedure, except when a maximum altitude is specified between the final approach fix (FAF) and the MAP. In that case, comply with the maximum altitude restriction. Note, this may require a continued descent on the final approach.

42.5.1.5 When applicable, apply cold temperature correction to the published missed approach segment. Advise ATC when intending to apply cold temperature correction and of the amount of correction required on initial contact (or as soon as possible). This information is required for ATC to provide aircraft appropriate vertical separation between known traffic. The pilot must not apply an altitude correction to an assigned altitude when provided an initial heading to fly or radar vector in lieu of published missed approach procedures, unless approved by ATC.

REFERENCE−
AIP, Paragraph ENR 1.7−3. Altimeter Errors
AIP, TBL ENR 1.7−3, ICAO Cold Temperature Error

42.5.1.6 Following a missed approach, requests clearance for specific action; i.e., another approach, hold for improved conditions, proceed to an alternate airport, etc.

42.5.2 Controller

42.5.2.1 Issues an approved alternate missed approach procedure if it is desired that the pilot execute a procedure other than as depicted on the instrument approach chart.

42.5.2.2 May vector a radar identified aircraft executing a missed approach when operationally advantageous to the pilot or the controller.

42.5.2.3 In response to the pilot's stated intentions, issues a clearance to an alternate airport, to a holding fix, or for reentry into the approach sequence, as traffic conditions permit.

42.6 Radar Vectors

42.6.1 Pilot

42.6.1.1 Promptly complies with headings and altitudes assigned to you by the controller.

42.6.1.2 Questions any assigned heading or altitude believed to be incorrect.

42.6.1.3 If operating VFR and compliance with any radar vector or altitude would cause a violation of any Federal Aviation Regulation, advises ATC and obtain a revised clearance or instruction.

42.6.2 Controller

42.6.2.1 Vectors aircraft in Class A, B, C, D, and E airspace:

a) For separation.

b) For noise abatement.

c) To obtain an operational advantage for the pilot or the controller.

42.6.2.2 Vectors aircraft in Class A, B, C, D, E, and G airspace when requested by the pilot.

42.6.2.3 Vectors IFR aircraft at or above minimum vectoring altitudes.

42.6.2.4 May vector aircraft off assigned procedures. When published altitude or speed restrictions are included, controllers must assign an altitude, or if necessary, a speed.

42.6.2.5 May vector VFR aircraft, not at an ATC assigned altitude, at any altitude. In these cases, terrain separation is the pilot's responsibility.

42.7 Speed Adjustments

42.7.1 Pilot (In U.S. Domestic Class A, B, C, D, and E airspace)

42.7.2 Except as stated in paragraphs 42.7.5 and 42.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.3 Complies with speed adjustments from ATC unless:

42.7.3.1 Except as stated in paragraphs 42.7.5 and 42.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.3.2 Complies with speed adjustments from ATC unless:

a) The minimum or maximum safe airspeed for any particular operation is greater or less than the requested airspeed. In such cases, advises ATC.

b) Operating at or above 10,000 feet MSL on an ATC assigned SPEED ADJUSTMENT of more than 250 knots IAS and subsequent clearance is received for descent below 10,000 feet MSL. In such cases, pilots are expected to comply with 14 CFR Section 97.117(a).

42.7.4 Controller (In U.S. Domestic Class A, B, C, D, and E Airspaces)

42.7.4.1 Assigns aircraft to speed adjustments when necessary, but not as a substitute for good vectoring technique.

42.7.4.2 Adheres to the restrictions of FAA Order JO 7110.65, Air Traffic Control, as to when speed adjustment procedures may be applied.

42.7.4.3 Avoids speed adjustments requiring alternate decreases and increases.

42.7.4.4 Assigns speed adjustments to a specified IAS knots/Mach number or to increase or decrease speed utilizing increments of 5 knots or multiples thereof.

42.7.4.5 Terminates ATC-assigned speed adjustments when no longer required by issuing further instructions to pilots in the following manner:

a) Advises pilots to "resume normal speed" when the aircraft is on a heading, random routing, charted procedure, or route without published speed restrictions.

b) Instructs pilots to "comply with speed restrictions" when the aircraft is joining or resuming a charted procedure or route with published speed restrictions.

CAUTION−
The phraseology "Climb via SID" requires compliance with all altitude and/or speed restrictions depicted on the procedure.

c) Instructs pilots to "resume published speed" when aircraft are cleared via a charted instrument flight procedure that contains published speed restrictions.

d) Advises aircraft to "delete speed restrictions" when ATC assigned or published speed restrictions on a charted procedure are no longer required.

e) Clears pilots for approach without restating previously issued speed adjustments.

42.7.4.6 Gives due consideration to aircraft capabilities to reduce speed while descending.

42.7.5 Pilot (In Oceanic Class A and E Airspace)

42.7.5.1 If ATC has not assigned an airspeed, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by ±10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.5.2 If ATC has assigned an airspeed, aircraft must adhere to the ATC assigned airspeed and must request ATC approval before making any change thereto. If it is essential to make an immediate temporary change in the Mach number (e.g., due to turbulence), ATC must be notified as soon as possible. If it is not feasible, due to aircraft performance, to maintain the last assigned Mach number during an en route climb or descent, advises ATC at the time of the request.

42.7.6 Controller (In Oceanic Class A and E Airspace)

42.7.6.1 Assigns airspeed when necessary for separation of aircraft to comply with 14 CFR, ICAO regulations and procedures, or letters of agreement.

42.8 Traffic Advisories (Traffic Information)

42.8.1 Pilot

42.8.1.1 Acknowledges receipt of traffic advisories.

42.8.1.2 Informs controller if traffic is in sight.

42.8.1.3 Advises ATC if a vector to avoid traffic is desired.

42.8.1.4 Does not expect to receive radar traffic advisories on all traffic. Some aircraft may not appear on the radar display. Be aware that the controller may be occupied with high priority duties and unable to issue traffic information for a variety of reasons.

42.8.1.5 Advises controller if service is not desired.

42.8.2 Controller

42.8.2.1 Issues radar traffic to the maximum extent consistent with higher priority duties except in Class A airspace.

42.8.2.2 Provides vectors to assist aircraft to avoid observed traffic when requested by the pilot.

42.8.2.3 Issues traffic information to aircraft in Class D airspace for sequencing purposes.

42.8.2.4 Controllers are required to issue to each aircraft operating on intersecting or nonintersecting converging runways where projected flight paths will cross.

42.9 Safety Alert

42.9.1 Pilot

42.9.1.1 Initiates appropriate action if a safety alert is received from ATC.

42.9.1.2 Be aware that this service is not always available and that many factors affect the ability of the controller to be aware of a situation in which unsafe proximity to terrain, obstructions, or another aircraft may be developing.

42.9.2 Controller

42.9.2.1 Issues a safety alert if aware an aircraft under their control is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or another aircraft. Types of safety alerts are:

a) Terrain/Obstruction Alerts. Immediately issued to an aircraft under their control if aware the aircraft is at an altitude believed to place the aircraft in unsafe proximity to terrain/obstruction.

b) Aircraft Conflict Alerts. Immediately issued to an aircraft under their control if aware of an aircraft not under their control at an altitude believed to place the aircraft in unsafe proximity to each other. With the alert, they offer the pilot an alternative if feasible.

42.9.2.2 Discontinues further alerts if informed by the pilot action is being taken to correct the situation or that the other aircraft is in sight.

42.10 See and Avoid

42.10.1 Pilot

42.10.1.1 When meteorological conditions permit, regardless of type of flight plan or whether or not under control of a radar facility, the pilot is responsible to see and avoid other traffic, terrain, or obstacles.

42.10.2 Controller

42.10.2.1 Provides radar traffic information to radar identified aircraft operating outside positive control airspace on a workload permitting basis.

42.10.2.2 Issues a safety advisory to an aircraft under their control if aware the aircraft is at an altitude believed to place the aircraft in unsafe proximity to terrain, obstructions or other aircraft.

42.11 Visual Approach

42.11.1 Pilot

42.11.1.1 If a visual approach is not desired, advises ATC.

42.11.1.2 Complies with controller's instructions for vectors toward the airport of intended landing or to a visual position behind a preceding aircraft.

42.11.1.3 The pilot must, at all times, have either the airport or the preceding aircraft in sight. After being cleared for a visual approach, proceed to the airport in a normal manner or follow the preceding aircraft. Remain clear of clouds while conducting a visual approach.

42.11.1.4 If the pilot accepts a visual approach clearance to visually follow a preceding aircraft, you are required to establish a safe landing interval behind the aircraft you were instructed to follow. You are responsible for wake turbulence separation.

42.11.1.5 Advise ATC immediately if the pilot is unable to continue following the preceding aircraft, cannot remain clear of clouds, needs to climb, or loses sight of the airport.

42.11.1.6 Be aware that radar service is automatically terminated, without being advised by ATC, when the pilot is instructed to change to advisory frequency.

42.11.1.7 Be aware that there may be other traffic in the traffic pattern and the landing sequence may differ from the traffic sequence assigned by the approach control or ARTCC.

42.11.2 Controller

42.11.2.1 Does not clear an aircraft for a visual approach unless reported weather at the airport is ceiling at or above 1,000 feet and visibility is 3 miles or greater. When weather is not available for the destination airport, informs the pilot and does not initiate a visual approach to that airport unless there is reasonable assurance that descent and flight to the airport can be made visually.

42.11.2.2 Issues visual approach clearance when the pilot reports sighting either the airport or a preceding aircraft which is to be followed.

42.11.2.3 Provides separation except when visual separation is being applied by the pilot.

42.11.2.4 Continues flight following and traffic information until the aircraft has landed or has been instructed to change to advisory frequency.

42.11.2.5 For all aircraft, inform the pilot when the preceding aircraft is a heavy. Inform the pilot of a small aircraft when the preceding aircraft is a B757. Visual separation is prohibited behind super aircraft.

42.11.2.6 When weather is available for the destination airport, does not initiate a vector for a visual approach unless the reported ceiling at the airport is 500 feet or more above the MVA and visibility is 3 miles or more. If vectoring weather minima are not available but weather at the airport is ceiling at or above 1,000 feet and visibility of 3 miles or greater, visual approaches may still be conducted.

42.11.2.7 Informs the pilot conducting the visual approach of the aircraft class when pertinent traffic is known to be a heavy aircraft.

42.12 Visual Separation

42.12.1 Pilot

42.12.1.1 Acceptance of instructions to follow another aircraft or to provide visual separation from it is an acknowledgment that the pilot will maneuver the aircraft as necessary to avoid the other aircraft or to maintain in−trail separation. Pilots are responsible to maintain visual separation until flight paths (altitudes and/or courses) diverge.

42.12.1.2 If instructed by ATC to follow another aircraft or to provide visual separation from it, promptly notify the controller if you lose sight of that aircraft, are unable to maintain continued visual contact with it, or cannot accept the responsibility for your own separation for any reason.

42.12.1.3 The pilot also accepts responsibility for wake turbulence separation under these conditions.

42.12.2 Controller Applies Visual Separation Only:

42.12.2.1 Within the terminal area when a controller has both aircraft in sight or by instructing a pilot who sees the other aircraft to maintain visual separation from it.

42.12.2.2 Pilots are responsible to maintain visual separation until flight paths (altitudes and/or courses) diverge.

42.12.2.3 Within en route airspace when aircraft are on opposite courses and one pilot reports having seen the other aircraft and that the aircraft have passed each other.

42.13 VFR−on−top

42.13.1 Pilot

42.13.1.1 This clearance must be requested by the pilot on an IFR flight plan, and if approved, allows the pilot the choice to select (subject to any ATC restrictions) an altitude or flight level in lieu of an assigned altitude.

NOTE−
1. *VFR−on−top is not permitted in certain airspace areas, such as Class A airspace, certain restricted areas, etc. Consequently, IFR flights operating VFR−on−top will avoid such airspace.*

2. *See paragraph 32. of this section, IFR Separation Standards; GEN 3.3, Paragraph 6, Position Reporting; and GEN 3.3, Paragraph 7, Additional Reports.*

42.13.1.2 By requesting a VFR−on−top clearance, the pilot assumes the sole responsibility to be vigilant so as to see and avoid other aircraft and to:

a) Fly at the appropriate VFR altitude as prescribed in 14 CFR Section 91.159.

b) Comply with the VFR visibility and distance from clouds criteria in 14 CFR Section 91.155 (Basic VFR Weather Minimums).

c) Comply with instrument flight rules that are applicable to this flight; i.e., minimum IFR altitudes, position reporting, radio communications, course to be flown, adherence to ATC clearance, etc.

d) Advise ATC prior to any altitude change to ensure the exchange of accurate traffic information.

42.13.2 Controller

42.13.2.1 May clear an aircraft to maintain VFR−on−top if the pilot of an aircraft on an IFR flight plan requests the clearance.

42.13.2.2 Informs the pilot of an aircraft cleared to climb to VFR−on−top the reported height of the tops or that no top report is available; issues an alternate clearance if necessary; and once the aircraft reports reaching VFR−on−top, reclears the aircraft to maintain VFR−on−top.

42.13.2.3 Before issuing clearance, ascertains that the aircraft is not in or will not enter Class A airspace.

42.14 Instrument Departures

42.14.1 Pilot

42.14.1.1 Prior to departure, considers the type of terrain and other obstructions on or in the vicinity of the departure airport.

42.14.1.2 Determines if obstruction avoidance can be maintained visually or that the departure procedure should be followed.

42.14.1.3 Determines whether an obstacle departure procedure (ODP) and/or DP is available for obstruction avoidance. One option may be a Visual Climb Over Airport (VCOA). Pilots must advise ATC as early as possible of the intent to fly the VCOA prior to departure.

42.14.1.4 At airports where instrument approach procedures have not been published, hence no published departure procedure, determines what action will be necessary and takes such action that will assure a safe departure.

42.14.2 Controller

42.14.2.1 At locations with airport traffic control service, when necessary, specifies direction of takeoff, turn, or initial heading to be flown after takeoff, consistent with published departure procedures (DP) or diverse vector areas (DVA), where applicable.

42.14.2.2 At locations without airport traffic control service but within Class E surface area, when necessary to specify direction of takeoff/turn or initial heading to be flown, obtains pilot's concurrence that the procedure will allow him/her to comply with local traffic patterns, terrain, and obstruction avoidance.

42.14.2.3 When the initial heading will take the aircraft off an assigned procedure (for example, an RNAV SID with a published lateral path to a waypoint and crossing restrictions from the departure end of runway), the controller will assign an altitude to maintain with the initial heading.

42.14.2.4 Includes established departure procedures as part of the air traffic control clearance when pilot compliance is necessary to ensure separation.

42.15 Minimum Fuel Advisory

42.15.1 Pilot

42.15.1.1 Advises ATC of your "minimum fuel" status when your fuel supply has reached a state where, upon reaching destination, you cannot accept any undue delay.

42.15.1.2 Be aware that this is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur.

42.15.1.3 On initial contact the term "minimum fuel" should be used after stating call sign.

EXAMPLE−
Salt Lake Approach, United 621, "minimum fuel."

42.15.1.4 Be aware a minimum fuel advisory does not imply a need for traffic priority.

42.15.1.5 If the remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, you should declare an emergency due to low fuel, and report the fuel remaining in minutes.

42.15.2 Controller

42.15.2.1 When an aircraft declares a state of "minimum fuel," relay this information to the facility to whom control jurisdiction is transferred.

42.15.2.2 Be alert for any occurrence which might delay the aircraft.

43. Traffic Alert and Collision Avoidance System (TCAS I & II)

43.1 TCAS I provides proximity warning only, to assist the pilot in the visual acquisition of intruder aircraft. No recommended avoidance maneuvers are provided nor authorized as a direct result of a TCAS I warning. It is intended for use by smaller commuter aircraft holding 10 to 30 passenger seats, and general aviation aircraft.

43.2 TCAS II provides traffic advisories (TA) and resolution advisories (RA). Resolution advisories provide recommended maneuvers in a vertical direction (climb or descend only) to avoid conflicting traffic. Transport category aircraft, and larger commuter and business aircraft holding 31 passenger seats or more, are required to be TCAS II equipped.

43.2.1 When a TA occurs, attempt to establish visual contact with the traffic but do not deviate from an assigned clearance based only on TA information.

43.2.2 When an RA occurs, pilots should respond immediately to the RA displays and maneuver as indicated unless doing so would jeopardize the safe operation of the flight, or the flight crew can ensure separation with the help of definitive visual acquisition of the aircraft causing the RA.

43.2.3 Each pilot who deviates from an ATC clearance in response to an RA must notify ATC of that deviation as soon as practicable, and notify ATC when clear of conflict and returning to their previously assigned clearance.

43.3 Deviations from rules, policies, or clearances should be kept to the minimum necessary to satisfy an RA. Most RA maneuvering requires minimum excursion from assigned altitude.

43.4 The serving IFR air traffic facility is not responsible to provide approved standard IFR separation to an IFR aircraft, from other aircraft, terrain, or obstructions after an RA maneuver until one of the following conditions exists:

43.4.1 The aircraft has returned to its assigned altitude and course.

43.4.2 Alternate ATC instructions have been issued.

43.4.3 A crew member informs ATC that the TCAS maneuver has been completed.

NOTE−
TCAS does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. Since TCAS does not respond to aircraft which are not transponder equipped or aircraft with a transponder failure, TCAS alone does not ensure safe separation in every case. At this time, no air traffic service nor handling is predicated on the availability of TCAS equipment in the aircraft.

44. Traffic Information Service (TIS)

44.1 Introduction

The Traffic Information Service (TIS) provides information to the cockpit via data link, that is similar to VFR radar traffic advisories normally received over voice radio. Among the first FAA−provided data services, TIS is intended to improve the safety and efficiency of “see and avoid” flight through an automatic display that informs the pilot of nearby traffic and potential conflict situations. This traffic display is intended to assist the pilot in visual acquisition of these aircraft. TIS employs an enhanced capability of the terminal Mode S radar system, which contains the surveillance data, as well as the data link required to “uplink” this information to suitably−equipped aircraft (known as a TIS “client”). TIS provides estimated position, altitude, altitude trend, and ground track information for up to 8 intruder aircraft within 7 NM horizontally, +3,500 and −3,000 feet vertically of the client aircraft (see FIG ENR 1.1−31, TIS Proximity Coverage Volume). The range of a target reported at a distance greater than 7 NM only indicates that this target will be a threat within 34 seconds and does not display a precise distance. TIS will alert the pilot to aircraft (under surveillance of the Mode S radar) that are estimated to be within 34 seconds of potential collision, regardless of distance or altitude. TIS surveillance data is derived from the same radar used by ATC; this data is uplinked to the client aircraft on each radar scan (nominally every 5 seconds).

44.2 Requirements

44.2.1 In order to use TIS, the client and any intruder aircraft must be equipped with the appropriate cockpit equipment and fly within the radar coverage of a Mode S radar capable of providing TIS. Typically, this will be within 55 NM of the sites depicted in FIG ENR 1.1−32, Terminal Mode S Radar Sites. ATC communication is not a requirement to receive TIS, although it may be required by the particular airspace or flight operations in which TIS is being used.

FIG ENR 1.1−31
TIS Proximity Coverage Volume

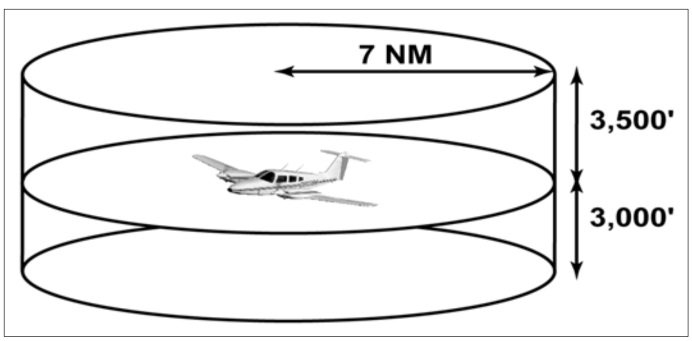


FIG ENR 1.1−32
Terminal Mode S Radar Sites

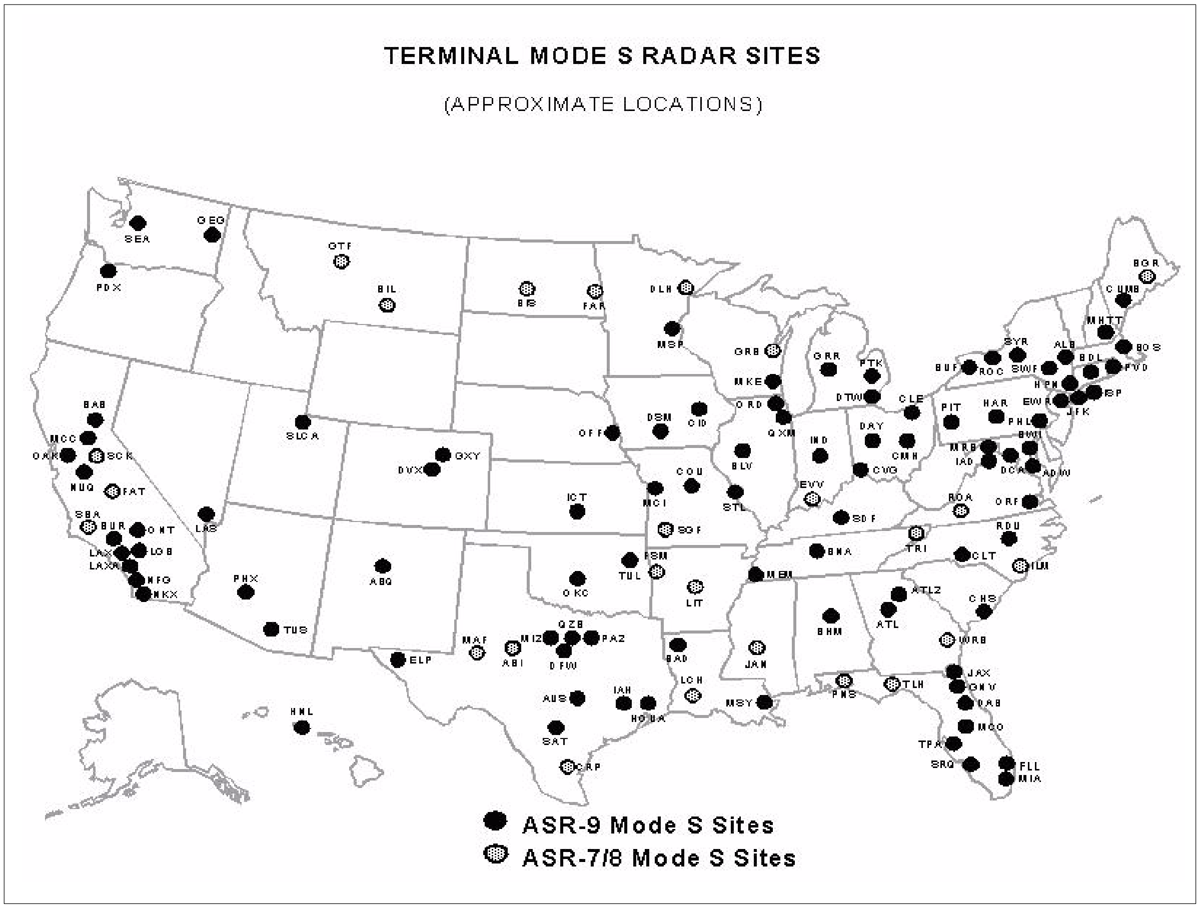
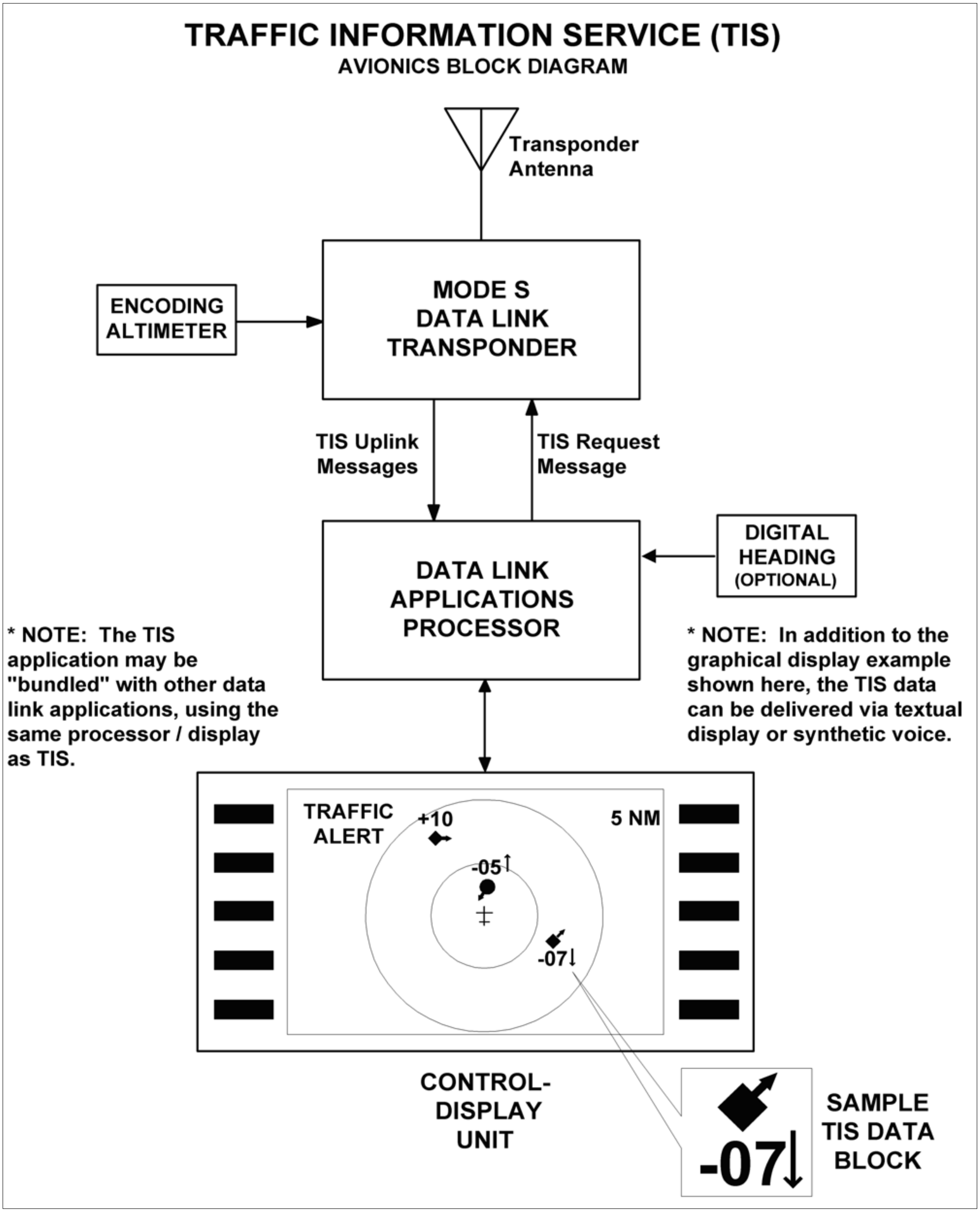


FIG ENR 1.1−33
Traffic Information Service (TIS)
Avionics Block Diagram



44.2.2 The cockpit equipment functionality required by a TIS client aircraft to receive the service consists of the following (refer to FIG ENR 1.1−33):

44.2.2.1 Mode S data link transponder with altitude encoder.

44.2.2.2 Data link applications processor with TIS software installed.

44.2.2.3 Control−display unit.

44.2.2.4 Optional equipment includes a digital heading source to correct display errors caused by "crab angle" and turning maneuvers.

NOTE−
Some of the above functions will likely be combined into single pieces of avionics, such as subparagraphs 44.2.2.1 and 44.2.2.2.

44.2.3 To be visible to the TIS client, the intruder aircraft must, at a minimum, have an operating transponder (Mode A, C or S). All altitude information provided by TIS from intruder aircraft is derived from Mode C reports, if appropriately equipped.

44.2.4 TIS will initially be provided by the terminal Mode S systems that are paired with ASR−9 digital primary radars. These systems are in locations with the greatest traffic densities, thus will provide the greatest initial benefit. The remaining terminal Mode S sensors, which are paired with ASR−7 or ASR−8 analog primary radars, will provide TIS pending modification or relocation of these sites. See FIG ENR 1.1−32, Terminal Mode S Radar Sites, for site locations. There is no mechanism in place, such as NOTAMs, to provide status update on individual radar sites since TIS is a nonessential, supplemental information service.

The FAA also operates en route Mode S radars (not illustrated) that rotate once every 12 seconds. These sites will require additional development of TIS before any possible implementation. There are no plans to implement TIS in the en route Mode S radars at the present time.

44.3 Capabilities

44.3.1 TIS provides ground−based surveillance information over the Mode S data link to properly equipped client aircraft to aid in visual acquisition of proximate air traffic. The actual avionics capability of each installation will vary and the supplemental handbook material must be consulted prior to using TIS. A maximum of eight (8) intruder aircraft may be displayed; if more than eight aircraft match intruder parameters, the eight "most significant" intruders are uplinked. These "most significant" intruders are usually the ones in closest proximity and/or the greatest threat to the TIS client.

44.3.2 TIS, through the Mode S ground sensor, provides the following data on each intruder aircraft:

44.3.2.1 Relative bearing information in 6−degree increments.

44.3.2.2 Relative range information in 1/8 NM to 1 NM increments (depending on range).

44.3.2.3 Relative altitude in 100−foot increments (within 1,000 feet) or 500−foot increments (from 1,000−3,500 feet) if the intruder aircraft has operating altitude reporting capability.

44.3.2.4 Estimated intruder ground track in 45−degree increments.

44.3.2.5 Altitude trend data (level within 500 fpm or climbing/descending >500 fpm) if the intruder aircraft has operating altitude reporting capability.

44.3.2.6 Intruder priority as either a "traffic advisory" or "proximate" intruder.

44.3.3 When flying from surveillance coverage of one Mode S sensor to another, the transfer of TIS is an automatic function of the avionics system and requires no action from the pilot.

44.3.4 There are a variety of status messages that are provided by either the airborne system or ground equipment to alert the pilot of high priority intruders and data link system status. These messages include the following:

44.3.4.1 Alert. Identifies a potential collision hazard within 34 seconds. This alert may be visual and/or audible, such as a flashing display symbol or a headset tone. A target is a threat if the time to the closest approach in vertical and horizontal coordinates is less than 30 seconds <u>and</u> the closest approach is expected to be within 500 feet vertically and 0.5 nautical miles laterally.

44.3.4.2 TIS Traffic. TIS traffic data is displayed.

44.3.4.3 Coasting. The TIS display is more than 6 seconds old. This indicates a missing uplink from the ground system. When the TIS display information is more than 12 seconds old, the "No Traffic" status will be indicated.

44.3.4.4 No Traffic. No intruders meet proximate or alert criteria. This condition may exist when the TIS system is fully functional or may indicate "coasting" between 12 and 59 seconds old (see paragraph 44.3.4.3 above).

44.3.4.5 TIS Unavailable. The pilot has requested TIS, but no ground system is available. This condition will also be displayed when TIS uplinks are missing for 60 seconds or more.

44.3.4.6 TIS Disabled. The pilot has not requested TIS or has disconnected from TIS.

44.3.4.7 Good−bye. The client aircraft has flown outside of TIS coverage.

NOTE−
Depending on the avionics manufacturer implementation, it is possible that some of these messages will not be directly available to the pilot.

44.3.5 Depending on avionics system design, TIS may be presented to the pilot in a variety of different displays, including text and/or graphics. Voice annunciation may also be used, either alone or in combination with a visual display. FIG ENR 1.1−33, Traffic Information Service (TIS), Avionics Block Diagram, shows an example of a TIS display using symbology similar to the Traffic Alert and Collision Avoidance System (TCAS) installed on most passenger air carrier/commuter aircraft in the U.S. The small symbol in the center represents the client aircraft and the display is oriented "track up," with the 12 o'clock position at the top. The range rings indicate 2 and 5 NM. Each intruder is depicted by a symbol positioned at the approximate relative bearing and range from the client aircraft. The circular symbol near the center indicates an "alert" intruder and the diamond symbols indicate "proximate" intruders.

44.3.6 The inset in the lower right corner of FIG ENR 1.1−33, Traffic Information Service (TIS), Avionics Block Diagram, shows a possible TIS data block display. The following information is contained in this data block:

44.3.6.1 The intruder, located approximately four o'clock, three miles, is a "proximate" aircraft and currently not a collision threat to the client aircraft. This is indicated by the diamond symbol used in this example.

44.3.6.2 The intruder ground track diverges to the right of the client aircraft, indicated by the small arrow.

44.3.6.3 The intruder altitude is 700 feet less than or below the client aircraft, indicated by the "−07" located under the symbol.

44.3.6.4 The intruder is descending >500 fpm, indicated by the downward arrow next to the "−07" relative altitude information. The absence of this arrow when an altitude tag is present indicates level flight or a climb/descent rate less than 500 fpm.

NOTE−
If the intruder did not have an operating altitude encoder (Mode C), the altitude and altitude trend "tags" would have been omitted.

44.4 Limitations

44.4.1 TIS is NOT intended to be used as a collision avoidance system and does not relieve the pilot's responsibility to "see and avoid" other aircraft (see Paragraph 42.10, See and Avoid). TIS must not be used for avoidance maneuvers during IMC or other times when there is no visual contact with the intruder aircraft. TIS provides proximity warning only, to assist the pilot in the visual acquisition of intruder aircraft. It is intended for use by aircraft in which TCAS is not required. Avoidance maneuvers are neither provided nor authorized, as a direct result of a TIS intruder display or TIS alert.

44.4.2 TIS does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. Since TIS does not respond to aircraft which are not transponder equipped, aircraft with a transponder failure, or aircraft out of radar coverage, TIS alone does not ensure safe separation in every case.

44.4.3 At this time, no air traffic service nor handling is predicated on the availability of TIS equipment in the aircraft.

44.4.4 While TIS is a useful aid to visual traffic avoidance, it has some system limitations that must be fully understood to ensure proper use. Many of these limitations are inherent in secondary radar surveillance. In other words, the information provided by TIS will be no better than that provided to ATC. Other limitations and anomalies are associated with the TIS predictive algorithm.

44.4.4.1 Intruder Display Limitations. TIS will only display aircraft with operating transponders installed. TIS relies on surveillance of the Mode S radar, which is a "secondary surveillance" radar similar to the ATCRBS described in paragraph 37.2, Air Traffic Control Radar Beacon System (ATCRBS).

44.4.4.2 TIS Client Altitude Reporting Requirement. Altitude reporting is required by the TIS client aircraft in order to receive TIS. If the altitude encoder is inoperative or disabled, TIS will be unavailable, as TIS requests will not be honored by the ground system. As such, TIS requires altitude reporting to determine the Proximity Coverage Volume as indicated in FIG ENR 1.1−31. TIS users must be alert to altitude encoder malfunctions, as TIS has no mechanism to determine if client altitude reporting is correct. A failure of this nature will cause erroneous and possibly unpredictable TIS operation. If this malfunction is suspected, confirmation of altitude reporting with ATC is suggested.

44.4.4.3 Intruder Altitude Reporting. Intruders without altitude reporting capability will be displayed without the accompanying altitude tag. Additionally, nonaltitude reporting intruders are assumed to be at the same altitude as the TIS client for alert computations. This helps to ensure that the pilot will be alerted to all traffic under radar coverage, but the actual altitude difference may be substantial. Therefore, visual acquisition may be difficult in this instance.

44.4.4.4 Coverage Limitations. Since TIS is provided by ground−based, secondary surveillance radar, it is subject to all limitations of that radar. If an aircraft is not detected by the radar, it cannot be displayed on TIS. Examples of these limitations are as follows:

a) TIS will typically be provided within 55 NM of the radars depicted in FIG ENR 1.1−32, Terminal Mode S Radar Sites. This maximum range can vary by radar site and is always subject to "line of sight" limitations; the radar and data link signals will be blocked by obstructions, terrain, and curvature of the earth.

b) TIS will be unavailable at low altitudes in many areas of the country, particularly in mountainous regions. Also, when flying near the "floor" of radar coverage in a particular area, intruders below the client aircraft may not be detected by TIS.

c) TIS will be temporarily disrupted when flying directly over the radar site providing coverage if no adjacent site assumes the service. A ground−based radar, similar to a VOR or NDB, has a zenith cone, sometimes referred to as the cone of confusion or cone of silence. This is the area of ambiguity directly above the station where bearing information is unreliable. The zenith cone setting for TIS is 34 degrees: any aircraft above that angle with respect to the radar horizon will lose TIS coverage from that radar until it is below this 34 degree angle. The aircraft may not actually lose service in areas of multiple radar coverage since an adjacent radar will provide TIS. If no other TIS−capable radar is available, the "Good−bye" message will be received and TIS terminated until coverage is resumed.

44.4.4.5 Intermittent Operations. TIS operation may be intermittent during turns or other maneuvering, particularly if the transponder system does not include antenna diversity (antenna mounted on the top and bottom of the aircraft). As in subparagraph 44.4.4.4 above, TIS is dependent on two−way, "line of sight" communications between the aircraft and the Mode S radar. Whenever the structure of the client aircraft comes between the transponder antenna (usually located on the underside of the aircraft) and the ground−based radar antenna, the signal may be temporarily interrupted.

44.4.4.6 TIS Predictive Algorithm. TIS information is collected one radar scan prior to the scan during which the uplink occurs. Therefore, the surveillance information is approximately 5 seconds old. In order to present the intruders in a "real time" position, TIS uses a "predictive algorithm" in its tracking software. This algorithm uses track history data to extrapolate intruders to their expected positions consistent with the time of display in the cockpit. Occasionally, aircraft maneuvering will cause this algorithm to induce errors in the TIS display. These errors primarily affect relative bearing information; intruder distance and altitude will remain relatively accurate and may be used to assist in "see and avoid." Some of the more common examples of these errors are as follows:

a) When client or intruder aircraft maneuver excessively or abruptly, the tracking algorithm will report incorrect horizontal position until the maneuvering aircraft stabilizes.

b) When a rapidly closing intruder is on a course that crosses the client at a shallow angle (either overtaking or head on) and either aircraft abruptly changes course within ¼ NM, TIS will display the intruder on the opposite side of the client than it actually is.

These are relatively rare occurrences and will be corrected in a few radar scans once the course has stabilized.

44.4.4.7 Heading/Course Reference. Not all TIS aircraft installations will have onboard heading reference information. In these installations, aircraft course reference to the TIS display is provided by the Mode S radar. The radar only determines ground track information and has no indication of the client aircraft heading. In these installations, all intruder bearing information is referenced to ground track and does not account for wind correction. Additionally, since ground−based radar will require several scans to determine aircraft course following a course change, a lag in TIS display orientation (intruder aircraft bearing) will occur. As in subparagraph 44.4.4.6 above, intruder distance and altitude are still usable.

44.4.4.8 Closely−Spaced Intruder Errors. When operating more than 30 NM from the Mode S sensor, TIS forces any intruder within 3/8 NM of the TIS client to appear at the same horizontal position as the client aircraft. Without this feature, TIS could display intruders in a manner confusing to the pilot in critical situations (for example, a closely−spaced intruder that is actually to the right of the client may appear on the TIS display to the left). At longer distances from the radar, TIS cannot accurately determine relative bearing/distance information on intruder aircraft that are in close proximity to the client.

Because TIS uses a ground−based, rotating radar for surveillance information, the accuracy of TIS data is dependent on the distance from the sensor (radar) providing the service. This is much the same phenomenon as experienced with ground−based navigational aids, such as a VOR. As distance from the radar increases, the accuracy of surveillance decreases. Since TIS does not inform the pilot of distance from the Mode S radar, the pilot must assume that any intruder appearing at the same position as the client aircraft may actually be up to 3/8 NM away in any direction. Consistent with the operation of TIS, an alert on the display (regardless of distance from the radar) should stimulate an outside visual scan, intruder acquisition, and traffic avoidance based on outside reference.

44.5 Reports of TIS Malfunctions

44.5.1 Users of TIS can render valuable assistance in the early correction of malfunctions by reporting their observations of undesirable performance. Reporters should identify the time of observation, location, type and identity of aircraft, and describe the condition observed; the type of transponder processor, and software in use can also be useful information. Since TIS performance is monitored by maintenance personnel rather than ATC, it is suggested that malfunctions be reported in the following ways:

44.5.1.1 By radio or telephone to the nearest Flight Service Station (FSS) facility.

45. Automatic Dependent Surveillance−Broadcast (ADS−B) Services

45.1 Introduction

45.1.1 Automatic Dependent Surveillance−Broadcast (ADS−B) is a surveillance technology deployed throughout the NAS (see FIG ENR 1.1−34). The ADS−B system is composed of aircraft avionics and a ground infrastructure. Onboard avionics determine the position of the aircraft by using the GNSS and transmit its position along with additional information about the aircraft to ground stations for use by ATC and other ADS−B services. This information is transmitted at a rate of approximately once per second.
(See FIG ENR 1.1−35 and FIG ENR 1.1−36.)

45.1.2 In the United States, ADS−B equipped aircraft exchange information is on one of two frequencies: 978 or 1090 MHz. The 1090 MHz frequency is also associated with Mode A, C, and S transponder operations. 1090 MHz transponders with integrated ADS−B functionality extend the transponder message sets with additional ADS−B information. This additional information is known as an "extended squitter" message and is referred to as 1090ES. ADS−B equipment operating on 978 MHz is known as the Universal Access Transceiver (UAT).

45.1.3 ADS−B avionics can have the ability to both transmit and receive information. The transmission of ADS−B information from an aircraft is known as ADS−B Out. The receipt of ADS−B information by an aircraft is known as ADS−B In. All aircraft operating within the airspace defined in 14 CFR § 91.225 are required to transmit the information defined in § 91.227 using ADS−B Out avionics.

45.1.4 In general, operators flying at 18,000 feet and above (Class A airspace) are required to have 1090ES equipment. Those that do not fly above 18,000 may use either UAT or 1090ES equipment. (Refer to 14 CFR §§ 91.225 and 91.227.) While the regulations do not require it, operators equipped with ADS−B In will realize additional benefits from ADS−B broadcast services: Traffic Information Service − Broadcast (TIS−B) (Paragraph 46.) and Flight Information Service − Broadcast (FIS−B) (Paragraph 47.).

FIG ENR 1.1−34
ADS−B, TIS−B, and FIS−B:
Broadcast Services Architecture

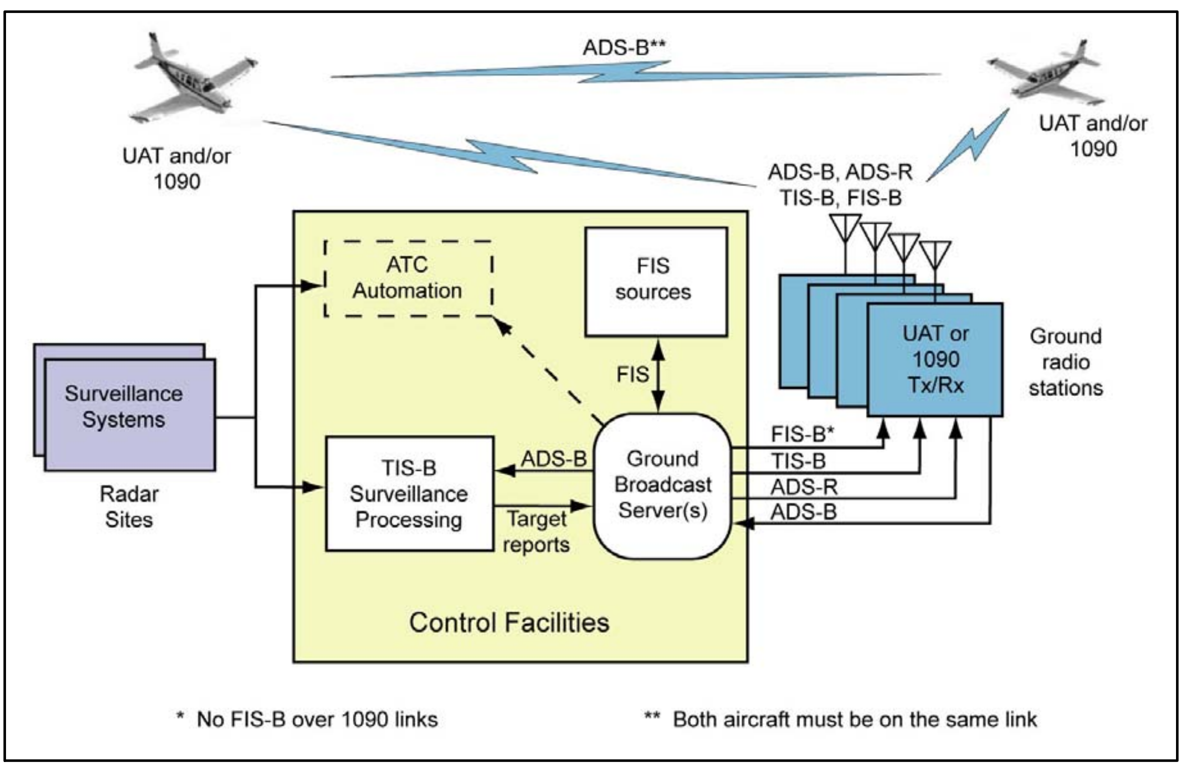


FIG ENR 1.1−35
En Route − ADS−B/ADS−R/TIS−B/FIS−B Service Ceilings/Floors

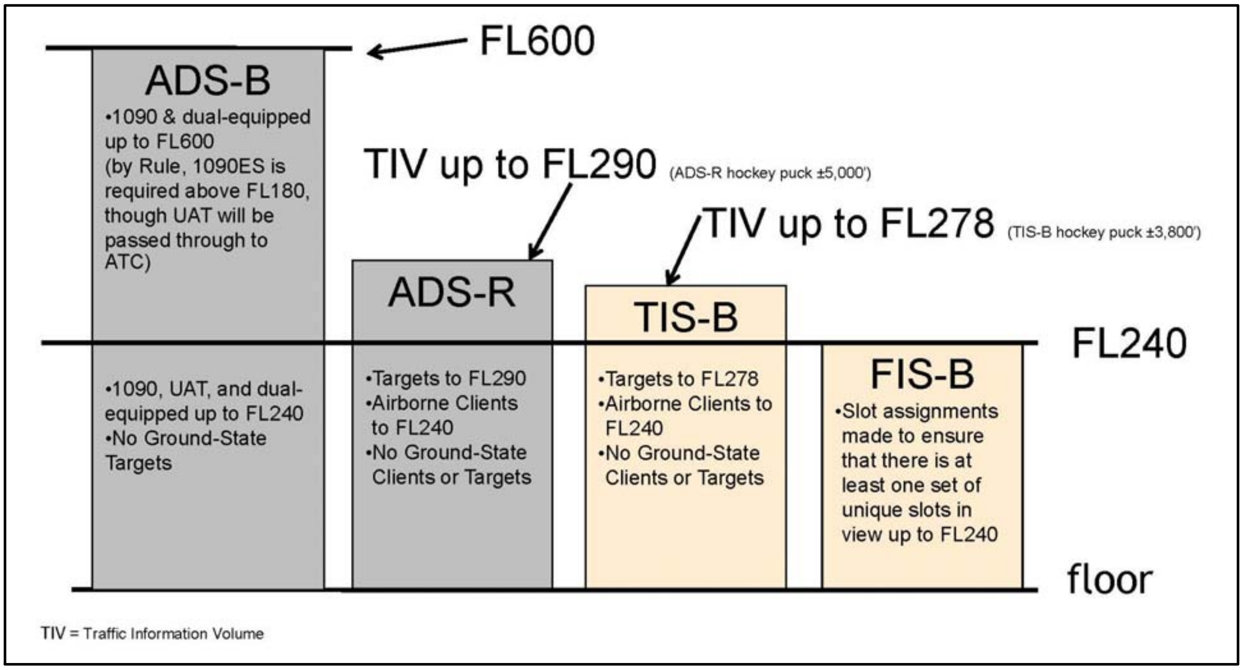
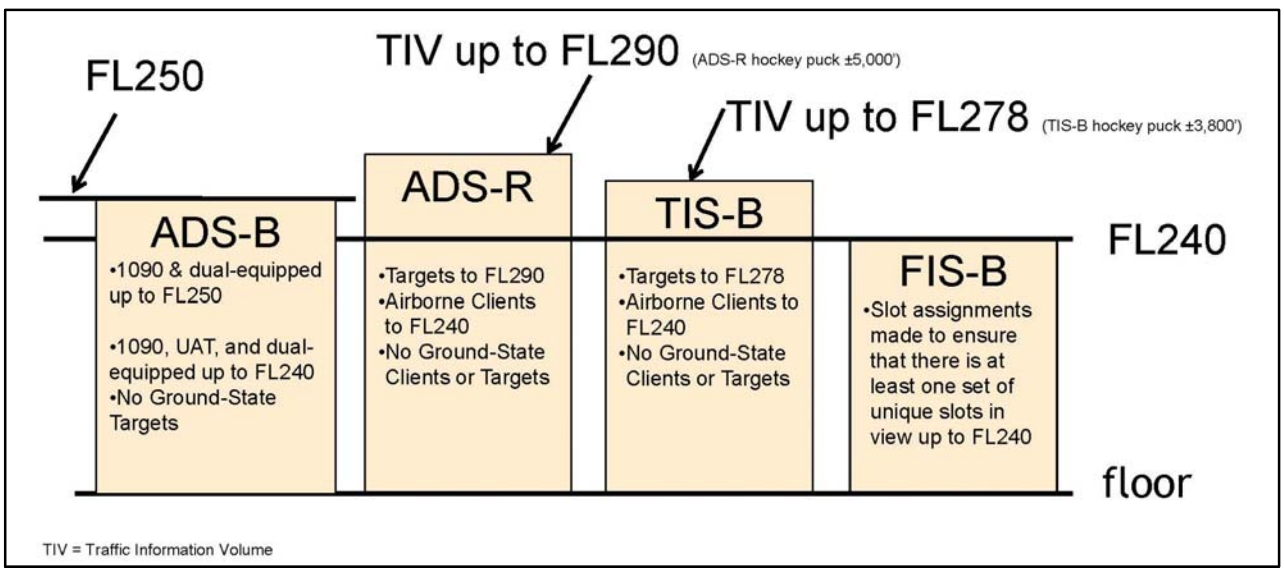


FIG ENR 1.1−36
Terminal − ADS−B/ADS−R/TIS−B/FIS−B Service Ceilings/Floors



45.2 ADS−B Certification and Performance Requirements

ADS−B equipment may be certified as a surveillance source for air traffic separation services using ADS−B Out. ADS−B equipment may also be certified for use with ADS−B In advisory services that enable appropriately equipped aircraft to display traffic and flight information. Refer to the aircraft's flight manual supplement or Pilot Operating Handbook for the capabilities of a specific aircraft installation.

45.3 ADS−B Capabilities and Procedures

45.3.1 ADS−B enables improved surveillance services, both air−to−air and air−to−ground, especially in areas where radar is ineffective due to terrain or where it is impractical or cost prohibitive. Initial NAS applications of air−to−air ADS−B are for "advisory" use only, enhancing a pilot's visual acquisition of other nearby equipped aircraft either when airborne or on the airport surface. Additionally, ADS−B will enable ATC and fleet operators to monitor aircraft throughout the available ground station coverage area.

45.3.2 One of the data elements transmitted by ADS−B is the aircraft's Flight Identification (FLT ID). The FLT ID is comprised of a maximum of seven alphanumeric characters and must correspond to the aircraft identification filed in the flight plan. For airline and commuter aircraft, the FLT ID is usually the company name and flight number (for example, AAL3432), and is typically entered into the avionics by the flight crew during preflight. For general aviation (GA), if aircraft avionics allow dynamic modification of the FLT ID, the pilot can enter it prior to flight. However, some ADS−B avionics require the FLT ID to be set to the aircraft registration number (for example, N1234Q) by the installer and cannot be changed by the pilot from the cockpit. In both cases, the FLT ID must correspond to the aircraft identification filed in its flight plan.

ATC automation systems use the transmitted ADS−B FLT ID to uniquely identify each aircraft within a given airspace, and to correlate it to its filed flight plan for the purpose of providing surveillance and separation services. If the FLT ID and the filed aircraft identification are not identical, a Call Sign Mis−Match (CSMM) is generated and ATC automation systems may not associate the aircraft with its filed flight plan. In this case, air traffic services may be delayed or unavailable until the CSMM is corrected. Consequently, it is imperative that flight crews and GA pilots ensure the FLT ID entry correctly matches the aircraft identification filed in their flight plan.

45.3.3 Each ADS−B aircraft is assigned a unique ICAO address (also known as a 24−bit address) that is broadcast by the ADS−B transmitter. This ICAO address is programmed at installation. Should multiple aircraft broadcast the same ICAO address while transiting the same ADS−B Only Service Volume, the ADS−B network may be unable to track the targets correctly. If radar reinforcement is available, tracking will continue. If radar is unavailable, the controller may lose target tracking entirely on one or both targets. Consequently, it is imperative that the ICAO address entry is correct.

45.3.4 Aircraft that are equipped with ADS−B avionics on the UAT datalink have a feature that allows them to broadcast an anonymous 24−bit ICAO address. In this mode, the UAT system creates a randomized address that does not match the actual ICAO address assigned to the aircraft. The UAT anonymous 24−bit address feature may only be used when the operator has not filed an IFR flight plan and is not requesting ATC services. In the anonymity mode, the aircraft's beacon code must be set to 1200 and, depending on the manufacturer's implementation, the aircraft FLT ID might not be transmitted. Pilots should be aware that while in UAT anonymity mode, they will not be eligible to receive ATC separation and flight following services, and may not benefit from enhanced ADS−B search and rescue capabilities.

45.3.5 ADS−B systems integrated with the transponder will automatically set the applicable emergency status when 7500, 7600, or 7700 are entered into the transponder. ADS−B systems not integrated with the transponder, or systems with optional emergency codes, will require that the appropriate emergency code is entered through a pilot interface. ADS−B is intended for inflight and airport surface use. Unless otherwise directed by ATC, transponder/ADS−B systems should be turned "on" and remain "on" whenever operating in the air or on the airport surface movement area.

45.4 ATC Surveillance Services using ADS−B − Procedures and Recommended Phraseology

Radar procedures, with the exceptions found in this paragraph, are identical to those procedures prescribed for radar in the AIP.

45.4.1 Preflight:

If ATC services are anticipated when either a VFR or IFR flight plan is filed, the aircraft identification (as entered in the flight plan) must be entered as the FLT ID in the ADS−B avionics as described in paragraph 45.3.2.

45.4.2 Inflight:

When requesting surveillance services while airborne, pilots must disable the anonymous feature, if so equipped, prior to contacting ATC. Pilots must also ensure that their transmitted ADS−B FLT ID matches the aircraft identification as entered in their flight plan.

45.4.3 Aircraft with an Inoperative/Malfunctioning ADS−B Transmitter:

45.4.3.1 ATC will inform the flight crew when the aircraft's ADS−B transmitter appears to be inoperative or malfunctioning:

PHRASEOLOGY−
YOUR ADS−B TRANSMITTER APPEARS TO BE INOPERATIVE/MALFUNCTIONING. STOP ADS−B TRANSMISSIONS.

45.4.3.2 ATC will inform the flight crew if it becomes necessary to turn off the aircraft's ADS−B transmitter.

PHRASEOLOGY−
STOP ADS−B TRANSMISSIONS.

45.4.3.3 Other malfunctions and considerations: Loss of automatic altitude reporting capabilities (encoder failure) will result in loss of ATC altitude advisory services.

45.4.4 Procedures for Accommodation of Non−ADS−B Equipped Aircraft:

45.4.4.1 Pilots of aircraft not equipped with ADS−B may only operate outside airspace designated as ADS−B airspace in 14 CFR §91.225. Pilots of unequipped aircraft wishing to fly any portion of a flight in ADS−B airspace may seek a deviation from the regulation to conduct operations without the required equipment. Direction for obtaining this deviation are available in Advisory Circular 90−114.

45.4.4.2 While air traffic controllers can identify which aircraft are ADS−B equipped and which are not, there is no indication if a non−equipped pilot has obtained a preflight authorization to enter ADS−B airspace. Situations may occur when the pilot of a non−equipped aircraft, without an authorization to operate in ADS−B airspace receives an ATC−initiated in−flight clearance to fly a heading, route, or altitude that would penetrate ADS−B airspace. Such clearances may be for traffic, weather, or simply to shorten the aircraft's route of flight. When this occurs, the pilot should acknowledge and execute the clearance, but must advise the controller that they are not ADS−B equipped and have not received prior authorization to operate in ADS−B airspace. The controller, at their discretion, will either acknowledge and proceed with the new clearance, or modify the clearance to avoid ADS−B airspace. In either case, the FAA will normally not take enforcement action for non−equipage in these circumstances.

NOTE−
Pilots operating without ADS−B equipment must not request route or altitude changes that will result in an incursion into ADS−B airspace except for safety of flight; for example, weather avoidance. Unequipped aircraft that have not received a pre−flight deviation authorization will only be considered in compliance with regulation if the amendment to flight is initiated by ATC.

EXAMPLE−
1. ***ATC:*** *"November Two Three Quebec, turn fifteen degrees left, proceed direct Bradford when able, rest of route unchanged."*
Aircraft: *"November Two Three Quebec, turning fifteen degrees left, direct Bradford when able, rest of route unchanged. Be advised, we are negative ADS−B equipment and have not received authorization to operate in ADS−B airspace."*
ATC: *"November Two Three Quebec, roger"*
or
"November Two Three Quebec, roger, turn twenty degrees right, rejoin Victor Ten, rest of route unchanged."

2. ***ATC:*** *"November Four Alpha Tango, climb and maintain one zero thousand for traffic."*
Aircraft: *"November Four Alpha Tango, leaving eight thousand for one zero thousand. Be advised, we are negative ADS−B equipment and have not received authorization to operate in ADS−B airspace."*
ATC: *"November Four Alpha Tango, roger"*
or
"November Four Alpha Tango, roger, cancel climb clearance, maintain eight thousand."

REFERENCE−
Federal Register Notice, Volume 84, Number 62, dated April 1, 2019

45.5 ADS−B Limitations

45.5.1 The ADS−B cockpit display of traffic is NOT intended to be used as a collision avoidance system and does not relieve the pilot's responsibility to "see and avoid" other aircraft. (See Paragraph 42.10, See and Avoid). ADS−B provides proximity warning only to assist the pilot in the visual acquisition of other aircraft. ADS−B must not be used for avoidance maneuvers during IMC or other times when there is no visual contact with the intruder aircraft. No avoidance maneuvers are provided or authorized, as a direct result of an ADS−B display or an ADS−B alert.

45.5.2 ADS−B does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. ADS−B only displays aircraft that are ADS−B equipped; therefore, aircraft that are not ADS−B equipped or aircraft that are experiencing an ADS−B failure will not be displayed. ADS−B alone does not ensure safe separation.

45.5.3 Presently, no air traffic services or handling is predicated on the availability of an ADS−B cockpit display. A "traffic−in−sight" reply to ATC must be based on seeing an aircraft out−the−window, NOT on the cockpit display.

45.6 Reports of ADS−B Malfunctions

Users of ADS−B can provide valuable assistance in the correction of malfunctions by reporting instances of undesirable system performance. Since ADS−B performance is monitored by maintenance personnel rather than ATC, report malfunctions to the nearest Flight Service Station (FSS) facility by radio or telephone. Reporters should identify:

45.6.1 Condition observed.

45.6.2 Date and time of observation.

45.6.3 Altitude and location of observation.

45.6.4 Type and call sign of the aircraft.

45.6.5 Type and software version of avionics system.

46. Traffic Information Service−Broadcast (TIS−B)

46.1 Introduction

TIS−B is the broadcast of ATC derived traffic information to ADS−B equipped (1090ES or UAT) aircraft from ground radio stations. The source of this traffic information is derived from ground−based air traffic surveillance sensors. TIS−B service will be available throughout the NAS where there are both adequate surveillance coverage from ground sensors and adequate broadcast coverage from ADS−B ground radio stations. The quality level of traffic information provided by TIS−B is dependent upon the number and type of ground sensors available as TIS−B sources and the timeliness of the reported data. (See FIG ENR 1.1−35 and FIG ENR 1.1−36.)

46.2 TIS−B Requirements

In order to receive TIS−B service, the following conditions must exist:

46.2.1 Aircraft must be equipped with an ADS−B transmitter/receiver or transceiver, and a cockpit display of traffic information (CDTI).

46.2.2 Aircraft must fly within the coverage volume of a compatible ground radio station that is configured for TIS−B uplinks. (Not all ground radio stations provide TIS−B due to a lack of radar coverage or because a radar feed is not available).

46.2.3 Aircraft must be within the coverage of and detected by at least one ATC radar serving the ground radio station in use.

46.3 TIS−B Capabilities

46.3.1 TIS−B is intended to provide ADS−B equipped aircraft with a more complete traffic picture in situations where not all nearby aircraft are equipped with ADS−B Out. This advisory−only application is intended to enhance a pilot's visual acquisition of other traffic.

46.3.2 Only transponder−equipped targets (i.e., Mode A/C or Mode S transponders) are transmitted through the ATC ground system architecture. Current radar siting may result in limited radar surveillance coverage at lower altitudes near some airports, with subsequently limited TIS−B service volume coverage. If there is no radar coverage in a given area, then there will be no TIS−B coverage in that area.

46.4 TIS−B Limitations

46.4.1 TIS−B is NOT intended to be used as a collision avoidance system and does not relieve the pilot's responsibility to "see and avoid" other aircraft, in accordance with 14CFR §91.113b. TIS−B must not be used for avoidance maneuvers during times when there is no visual contact with the intruder aircraft. TIS−B is intended only to assist in the visual acquisition of other aircraft.

NOTE−
No aircraft avoidance maneuvers are authorized as a direct result of a TIS−B target being displayed in the cockpit.

46.4.2 While TIS−B is a useful aid to visual traffic avoidance, its inherent system limitations must be understood to ensure proper use.

46.4.2.1 A pilot may receive an intermittent TIS−B target of themselves, typically when maneuvering (e.g., climbing turns) due to the radar not tracking the aircraft as quickly as ADS−B.

46.4.2.2 The ADS−B−to−radar association process within the ground system may at times have difficulty correlating an ADS−B report with corresponding radar returns from the same aircraft. When this happens the pilot may see duplicate traffic symbols (i.e., "TIS−B shadows") on the cockpit display.

46.4.2.3 Updates of TIS−B traffic reports will occur less often than ADS−B traffic updates. TIS−B position updates will occur approximately once every 3−13 seconds depending on the type of radar system in use within the coverage area. In comparison, the update rate for ADS−B is nominally once per second.

46.4.2.4 The TIS−B system only uplinks data pertaining to transponder−equipped aircraft. Aircraft without a transponder will not be displayed as TIS−B traffic.

46.4.2.5 There is no indication provided when any aircraft is operating inside or outside the TIS−B service volume, therefore it is difficult to know if one is receiving uplinked TIS−B traffic information.

46.4.3 Pilots and operators are reminded that the airborne equipment that displays TIS−B targets is for pilot situational awareness only and is not approved as a collision avoidance tool. Unless there is an imminent emergency requiring immediate action, any deviation from an air traffic control clearance in response to perceived converging traffic appearing on a TIS−B display must be approved by the controlling ATC facility before commencing the maneuver, except as permitted under certain conditions in 14CFR §91.123. Uncoordinated deviations may place an aircraft in close proximity to other aircraft under ATC control not seen on the airborne equipment and may result in a pilot deviation or other incident.

46.5 Reports of TIS−B Malfunctions

Users of TIS−B can provide valuable assistance in the correction of malfunctions by reporting instances of undesirable system performance. Since TIS−B performance is monitored by maintenance personnel rather than ATC, report malfunctions to the nearest Flight Service Station (FSS) facility by radio or telephone. Reporters should identify:

46.5.1 Condition observed.

46.5.2 Date and time of observation.

46.5.3 Altitude and location of observation.

46.5.4 Type and call sign of the aircraft.

46.5.5 Type and software version of avionics system.

47. Flight Information Service− Broadcast (FIS−B)

47.1 Introduction.

FIS−B is a ground broadcast service provided through the ADS−B Services network over the 978 MHz UAT data link. The FAA FIS−B system provides pilots and flight crews of properly equipped aircraft with a cockpit display of certain aviation weather and aeronautical information. FIS−B reception is line−of−sight within the service volume of the ground infrastructure.
(See FIG ENR 1.1−35 and FIG ENR 1.1−36.)

47.2 Weather Products Provided by FIS−B.

FIS-B does not replace a preflight weather briefing from a source listed in GEN 3.5, Paragraph 3.5, FAA Weather Services, or inflight updates from an FSS or ATC. FIS-B information may be used by the pilot for the safe conduct of flight and aircraft movement; however, the information should not be the only source of weather or aeronautical information. A pilot should be particularly alert and understand the limitations and quality assurance issues associated with individual products. This includes graphical representation of next generation weather radar (NEXRAD) imagery and Notices to Airmen (NOTAM)/temporary flight restrictions (TFR).

REFERENCE−
AIP, ENR 3.5 Paragraph 7, Flight Information Services (FIS)
Advisory Circular AC 00−63, "Use of Cockpit Displays of Digital Weather and Aeronautical Information"

47.3 Reports of FIS−B Malfunctions.

Users of FIS−B can provide valuable assistance in the correction of malfunctions by reporting instances of undesirable system performance. Since FIS−B performance is monitored by maintenance personnel rather than ATC, report malfunctions to the nearest Flight Service Station (FSS) facility by radio or telephone. Reporters should identify:

47.3.1 Condition observed.

47.3.2 Date and time of observation.

47.3.3 Altitude and location of observation.

47.3.4 Type and call sign of the aircraft.

47.3.5 Type and software version of avionics system.

48. Automatic Dependent Surveillance−Rebroadcast (ADS−R)

48.1 Introduction.

ADS−R is a datalink translation function of the ADS−B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 ES). The ADS−B system receives the ADS−B messages transmitted on one frequency and ADS−R translates and reformats the information for rebroadcast and use on the other frequency. This allows ADS−B In equipped aircraft to see nearby ADS−B Out traffic regardless of the operating link of the other aircraft. Aircraft operating on the same ADS−B frequency exchange information directly and do not require the ADS−R translation function. (See FIG ENR 1.1−35 and FIG ENR 1.1−36.)

48.2 Reports of ADS−R Malfunctions.

Users of ADS−R can provide valuable assistance in the correction of malfunctions by reporting instances of undesirable system performance. Since ADS−R performance is monitored by maintenance personnel rather than ATC, report malfunctions to the nearest Flight Service Station (FSS) facility by radio or telephone. Reporters should identify:

48.2.1 Condition observed.

48.2.2 Date and time of observation.

48.2.3 Altitude and location of observation.

48.2.4 Type and call sign of the aircraft.

48.2.5 Type and software version of avionics system.

49. Heavy Traffic Around Military Fields

49.1 Pilots are advised to exercise vigilance when in close proximity to most military airports. These airports may have jet aircraft traffic patterns extending up to 2,500 feet above the surface. In addition, they may have an unusually heavy concentration of jet aircraft operating within a 25−nautical mile radius and from the surface to all altitudes. The precautionary note also applies to the larger civil airports.

ENR 1.4 ATS Airspace Classification

1. General

1.1 There are two categories of airspace or airspace areas:

1.1.1 Regulatory (Class A, B, C, D, and E airspace areas, restricted and prohibited areas).

1.1.2 Nonregulatory (military operations areas [MOA], warning areas, alert areas, controlled firing areas [CFA], and national security areas [NSA]).

NOTE−
Additional information on special use airspace (prohibited areas, restricted areas [permanent or temporary], warning areas, MOAs [permanent or temporary], alert areas, CFAs, and NSAs) may be found in Section ENR 5.1, Prohibited, Restricted and Other Areas, paragraph 1 and Section ENR 5.2, Military Exercise and Training Areas, paragraphs 1. through 3.

1.2 Within these two categories, there are four types:

1.2.1 Controlled.

1.2.2 Uncontrolled.

1.2.3 Special use.

1.2.4 Other airspace.

1.3 The categories and types of airspace are dictated by:

1.3.1 The complexity or density of aircraft movements.

1.3.2 The nature of the operations conducted within the airspace.

1.3.3 The level of safety required.

1.3.4 The national and public interest.

1.4 It is important that pilots be familiar with the operational requirements for each of the various types or classes of airspace. Subsequent sections will cover each class in sufficient detail to facilitate understanding.

1.5 General Dimensions of Airspace Segments

1.5.1 Refer to Title 14 of the U.S. Code of Federal Regulations (14 CFR) for specific dimensions, exceptions, geographical areas covered, exclusions, specific transponder/ADS−B or other equipment requirements, and flight operations.

REFERENCE−
See GEN 1.7, Annex 2, for U.S. Differences From ICAO Standards, Recommended Practices and Procedures.

1.6 Hierarchy of Overlapping Airspace Designations

1.6.1 When overlapping airspace designations apply to the same airspace, the operating rules associated with the more restrictive airspace designation apply.

1.6.2 For the purpose of clarification:

1.6.2.1 Class A airspace is more restrictive than Class B, Class C, Class D, Class E, or Class G airspace.

1.6.2.2 Class B airspace is more restrictive than Class C, Class D, Class E, or Class G airspace.

1.6.2.3 Class C airspace is more restrictive than Class D, Class E, or Class G airspace.

1.6.2.4 Class D airspace is more restrictive than Class E or Class G airspace.

1.6.2.5 Class E is more restrictive than Class G airspace.

1.7 Basic VFR Weather Minimums

1.7.1 No person may operate an aircraft under basic VFR when the flight visibility is less, or at a distance from clouds that is less, than that prescribed for the corresponding altitude and class of airspace. (See TBL ENR 1.4−1.)

NOTE−
Student pilots must comply with 14 CFR Section 61.89(A) (6) and (7).

1.7.2 Except as provided in 14 CFR Section 91.157, Special VFR Minimums, no person may operate an aircraft beneath the ceiling under VFR within the lateral boundaries of controlled airspace designated to the surface for an airport when the ceiling is less than 1,000 feet. (See 14 CFR Section 91.155(c).)

1.8 VFR Cruising Altitudes and Flight Levels

(See TBL ENR 1.4−2.)

TBL ENR 1.4−1

Basic VFR Weather Minimums

Airspace	Flight Visibility	Distance from Clouds
Class A	Not Applicable	Not Applicable
Class B	3 statute miles	Clear of Clouds
Class C	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class D	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class E Less than 10,000 feet MSL	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
At or above 10,000 feet MSL	5 statute miles	1,000 feet below 1,000 feet above 1 statute mile horizontal
Class G 1,200 feet or less above the surface (regardless of MSL altitude). For aircraft other than helicopters:		
Day, except as provided in 14 CFR § 91.155(b)	1 statute mile	Clear of clouds
Night, except as provided in 14 CFR § 91.155(b)	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
For helicopters:		
Day	½ statute mile	Clear of clouds
Night, except as provided in §91.155(b)	1 statute mile	Clear of clouds
More than 1,200 feet above the surface but less than 10,000 feet MSL.		
Day	1 statute mile	500 feet below 1,000 feet above 2,000 feet horizontal
Night	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5 statute miles	1,000 feet below 1,000 feet above 1 statute mile horizontal

TBL ENR 1.4−2

VFR Cruising Altitudes and Flight Levels

If your magnetic course (ground track) is:	And you are more than 3,000 feet above the surface but below 18,000 feet MSL, fly:	And you are above 18,000 feet MSL to FL 290, fly:
0° to 179°	Odd thousands MSL, plus 500 feet (3,500; 5,500; 7,500, etc.)	Odd Flight Levels plus 500 feet (FL 195; FL 215; FL 235, etc.)
180° to 359°	Even thousands MSL, plus 500 feet (4,500; 6,500; 8,500, etc.)	Even Flight Levels plus 500 feet (FL 185; FL 205; FL 225, etc.)

2. Controlled Airspace

2.1 General

2.1.1 Controlled Airspace. A generic term that covers the different classification of airspace (Class A, Class B, Class C, Class D, and Class E airspace) and defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification. (See TBL ENR 1.4−3 for Airspace Classes). Airspace classes are pronounced in the ICAO phonetics for clarification. The term "class" may be dropped when referring to airspace in pilot/controller communications.

2.1.2 IFR Requirements. IFR operations in any class of controlled airspace requires that a pilot must file an IFR flight plan and receive an appropriate ATC clearance.

2.1.3 IFR Separation. Standard IFR separation is provided to all aircraft operating under IFR in controlled airspace.

2.1.4 VFR Requirements. It is the responsibility of the pilot to insure that ATC clearance or radio communication requirements are met prior to entry into Class B, Class C, or Class D airspace. The pilot retains this responsibility when receiving ATC radar advisories. (See 14 CFR Part 91.)

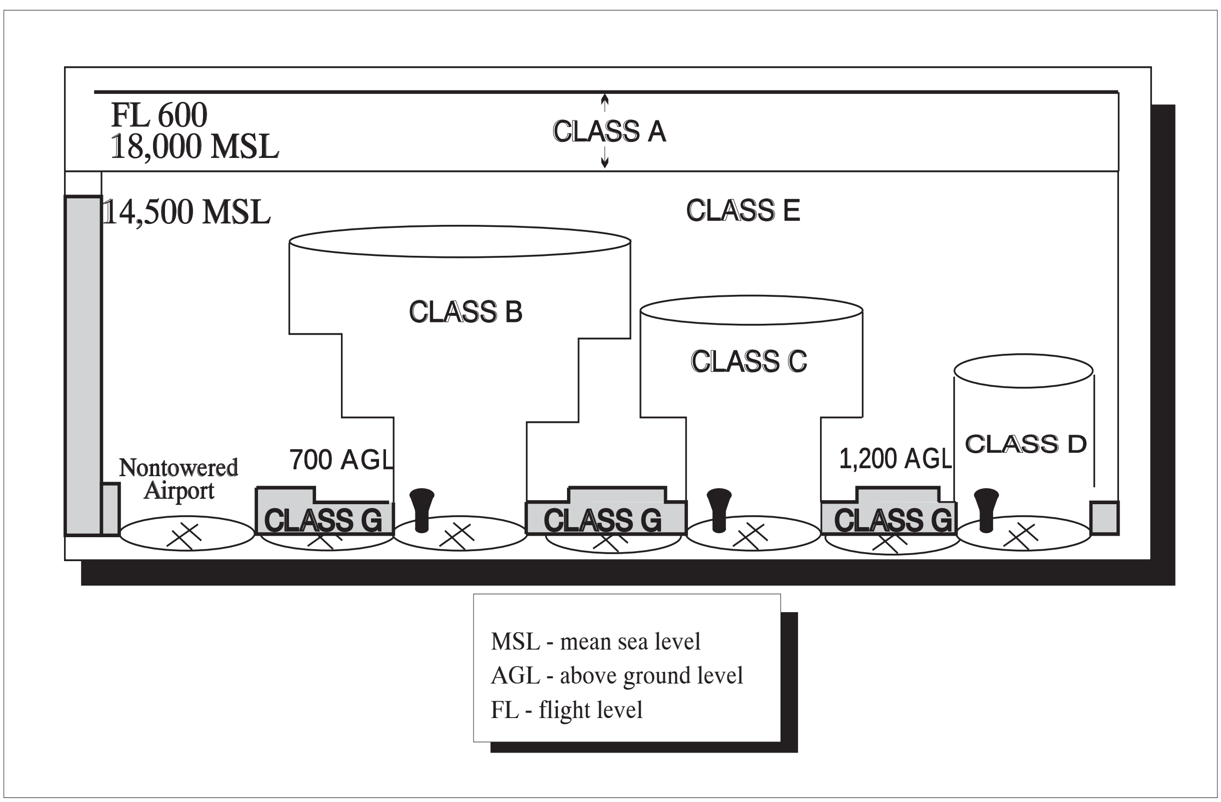
REFERENCE−
14 CFR Part 91.

2.1.5 Traffic Advisories. Traffic advisories will be provided to all aircraft as the controller's work situation permits.

2.1.6 Safety Alerts. Safety Alerts are mandatory services and are provided to ALL aircraft. There are two types of Safety Alerts, Terrain/Obstruction Alert and Aircraft Conflict/Mode Intruder Alert.

2.1.6.1 Terrain/Obstruction Alert. A Terrain/Obstruction Alert is issued when, in the controller's judgment, an aircraft's altitude places it in unsafe proximity to terrain and/or obstructions.

TBL ENR 1.4−3
Airspace Classes



2.1.6.2 Aircraft Conflict/Mode C Intruder Alert. An Aircraft Conflict/Mode C Intruder Alert is issued if the controller observes another aircraft which places it in an unsafe proximity. When feasible, the controller will offer the pilot an alternative course of action.

2.1.7 Ultralight Vehicles. No person may operate an ultralight vehicle within Class A, Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport unless that person has prior authorization from the ATC facility having jurisdiction over that airspace. (See 14 CFR Part 103.)

2.1.8 Unmanned Free Balloons. Unless otherwise authorized by ATC, no person may operate an unmanned free balloon below 2,000 feet above the surface within the lateral boundaries of Class B, Class C, Class D, or Class E airspace designated for an airport. (See 14 CFR Part 101.)

2.1.9 Parachute Jumps. No person may make a parachute jump, and no pilot in command may allow a parachute jump to be made from that aircraft, in or into Class A, Class B, Class C, or Class D airspace without, or in violation of, the terms of an ATC authorization issued by the ATC facility having jurisdiction over the airspace. (See 14 CFR Part 105.)

2.2 Class A Airspace

2.2.1 Definition. Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles off the coast of the 48 contiguous States and Alaska; and designated international airspace beyond 12 nautical miles off the coast of the 48 contiguous States and Alaska within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic procedures are applied.

2.2.2 Operating Rules and Pilot/Equipment Requirements. Unless otherwise authorized, all persons must operate their aircraft under IFR.

REFERENCE−
14 CFR Section 71.33, Sections 91.167 through 91.193, Sections 91.215 through 91.217, and Sections 91.225 through 91.227.

2.2.3 Charts. Class A airspace is not specifically charted.

2.3 Class B Airspace

2.3.1 Definition. Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside−down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

2.3.2 Operating Rules and Pilot/Equipment Requirements. Regardless of weather conditions, an ATC clearance is required prior to operating within Class B airspace. Pilots should not request a clearance to operate within Class B airspace unless the requirements of 14 CFR Sections 91.131, 91.215, and 91.225 are met. Included among these requirements are:

2.3.2.1 Unless otherwise authorized by ATC, aircraft must be equipped with an operable two−way radio capable of communicating with ATC on appropriate frequencies for that Class B airspace.

2.3.2.2 No person may take off or land a civil aircraft at the following primary airports within Class B airspace unless the pilot in command holds at least a private pilot certificate:

a) Andrews Air Force Base, MD.

b) Atlanta Hartsfield Airport, GA.

c) Boston Logan Airport, MA.

d) Chicago O'Hare Intl. Airport, IL.

e) Dallas/Fort Worth Intl. Airport, TX.

f) Los Angeles Intl. Airport, CA.

g) Miami Intl. Airport, FL.

h) Newark Intl. Airport, NJ.

i) New York Kennedy Airport, NY.

j) New York La Guardia Airport, NY.

k) Ronald Reagan Washington National Airport, DC.

l) San Francisco Intl. Airport, CA.

2.3.2.3 No person may take off or land a civil aircraft at an airport within Class B airspace or operate a civil aircraft within Class B airspace unless:

a) The pilot in command holds at least a private pilot certificate; or

b) The pilot−in−command holds a recreational pilot certificate and has met the requirements of 14 CFR Section 61.101; or

c) The pilot−in−command holds a sport pilot certificate and has met the requirements of 14 CFR Section 61.325; or

d) The aircraft is operated by a student pilot:

1) Who seeks a private pilot certificate and has met the requirements of 14 CFR Section 61.95.

2) Who seeks a recreational pilot certificate and has met the requirements of 14 CFR Section 61.94.

2.3.2.4 Unless otherwise authorized by ATC, each person operating a large turbine engine−powered airplane to or from a primary airport must operate at or above the designated floors while within the lateral limits of Class B airspace.

2.3.2.5 Unless otherwise authorized by ATC, each aircraft must be equipped as follows:

a) For IFR operations, an operable VOR or TACAN receiver or an operable and suitable RNAV system; and

b) For all operations, a two−way radio capable of communications with ATC on appropriate frequencies for that area.

c) Unless otherwise authorized by ATC, an operable radar beacon transponder with automatic altitude reporting capability and operable ADS−B Out equipment.

NOTE−
ATC may, upon notification, immediately authorize a deviation from the altitude reporting equipment requirement; however, a request for a deviation from the 4096 transponder equipment requirement must be submitted to the controlling ATC facility at least one hour before the proposed operation. A request for a deviation from the ADS−B equipage requirement must be submitted using the FAA's automated web authorization tool at least one hour but not more than 24 hours before the proposed operation. (See ENR 1.1, Paragraph 37.7, Transponder Operation).

2.3.2.6 Mode C Veil

a) The airspace within 30 nautical miles of an airport listed in Appendix D, Section 1 of 14 CFR Part 91 (generally primary airports within Class B airspace areas), from the surface upward to 10,000 feet mean seal level (MSL). Unless otherwise authorized by air traffic control, aircraft operating within this airspace must be equipped with operable radar beacon transponder with automatic altitude reporting capability and operable ADS−B Out equipment.

b) However, aircraft that were not originally certificated with an engine−driven electrical system or that have not subsequently been certified with a system installed may conduct operations within a Mode C veil provided the aircraft remains outside Class A, B or C airspace; and below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport or 10,000 feet MSL, whichever is lower.

2.3.3 Charts. Class B airspace is charted on Sectional Charts, IFR En Route Low Altitude Charts, and Terminal Area Charts.

2.3.4 Flight Procedures

2.3.4.1 Flights. Aircraft within Class B airspace are required to operate in accordance with current IFR procedures. A clearance for a visual approach to a primary airport is not authorization for turbine powered airplanes to operate below the designated floors of the Class B airspace.

2.3.4.2 VFR Flights

a) Arriving aircraft must obtain an ATC clearance prior to entering Class B airspace and must contact ATC on the appropriate frequency, and in relation to geographical fixes shown on local charts. Although a pilot may be operating beneath the floor of the Class B airspace on initial contact, communications with ATC should be established in relation to the points indicated for spacing and sequencing purposes.

b) Departing aircraft require a clearance to depart Class B airspace and should advise the clearance delivery position of their intended altitude and route of flight. ATC will normally advise VFR aircraft when leaving the geographical limits of the Class B airspace. Radar service is not automatically terminated with this advisory unless specifically stated by the controller.

c) Aircraft not landing or departing the primary airport may obtain an ATC clearance to transit the Class B airspace when traffic conditions permit and provided the requirements of 14 CFR Section 91.131 are met. Such VFR aircraft are encouraged, to the extent possible, to operate at altitudes above or below the Class B airspace or transit through established VFR corridors. Pilots operating in VFR corridors are urged to use frequency 122.750 MHz for the exchange of aircraft position information.

2.3.5 ATC Clearances and Separation. An ATC clearance is required to enter and operate within Class B airspace. VFR pilots are provided sequencing and separation from other aircraft while operating within Class B airspace. (See ENR 1.1, Paragraph 39., Terminal Radar Service for VFR Aircraft.)

NOTE−

1. *Separation and sequencing of VFR will be suspended in the event of a power outage as this service is dependent on radar. The pilot will be advised that the service is not available and issued wind, runway information, and the time or place to contact the tower.*

2. **S***eparation of VFR aircraft will be suspended during Center Radar Presentation (CENRAP) Operations. Traffic advisories and sequencing to the primary airport will be provided on a workload permitting basis. The pilot will be advised when CENRAP is in use.*

2.3.5.1 VFR aircraft are separated from all VFR/IFR aircraft which weigh 19,000 pounds or less by a minimum of:

a) Target resolution; or

b) 500 feet vertical separation; or

c) Visual separation.

2.3.5.2 VFR aircraft are separated from all VFR/IFR aircraft which weigh more than 19,000 and turbojets by no less than:

a) 1 $^1/_2$ miles lateral separation; or

b) 500 feet vertical separation; or

c) Visual separation.

2.3.5.3 This program is not to be interpreted as relieving pilots of their responsibilities to see and avoid other traffic operating in basic VFR weather conditions, to adjust their operations and flight path as necessary to preclude serious wake encounters, to maintain appropriate terrain and obstruction clearance, or to remain in weather conditions equal to or better than the minimums required by 14 CFR Section 91.155. Approach control should be advised and a revised clearance or instruction obtained when compliance with an assigned route, heading, and/or altitude is likely to compromise pilot responsibility with respect to terrain and obstruction clearance, vortex exposure, and weather minimums.

2.3.5.4 ATC may assign altitudes to VFR aircraft that do not conform to 14 CFR Section 91.159. "RESUME APPROPRIATE VFR ALTITUDES" will be broadcast when the altitude assignment is no longer needed for separation or when leaving Class B airspace. Pilots must return to an altitude that conforms to 14 CFR Section 91.159.

2.3.5.5 Proximity Operations. VFR aircraft operating in proximity to Class B airspace are cautioned against operating too closely to the boundaries, especially where the floor of the Class B airspace is 3,000 feet or less above the surface or where VFR cruise altitudes are at or near the floor of higher levels. Observance of this precaution will reduce the potential for encountering an aircraft operating at the altitudes of Class B floors. Additionally, VFR aircraft are encouraged to utilize the VFR Planning Chart as a tool for planning flight in proximity to Class B airspace. Charted VFR Flyway Planning charts are published on the back of the existing VFR Terminal Area Charts.

2.4 Class C Airspace

2.4.1 Definition. Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, and an outer area with a 10 NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation.

2.4.2 Outer Area. Class C airspace areas have a procedural (nonregulatory) Outer Area. Normally this area is 20 NM from the primary Class C airspace airport. Its vertical limit extends from the lower limits of radio/radar coverage up to the ceiling of the approach control's delegated airspace, excluding the Class C airspace itself, and other airspace as appropriate. (This outer area is not charted.)

2.4.3 Charts. Class C airspace is charted on Sectional Charts, IFR En Route Low Altitude, and Terminal Area Charts where appropriate.

2.4.4 Operating Rules and Pilot Equipment Requirements

2.4.4.1 Pilot Certification. No specific certification required.

2.4.4.2 Equipment

a) Two−way radio.

b) Unless otherwise authorized by ATC, an operable radar beacon transponder with automatic altitude reporting capability and operable ADS−B Out equipment.

1) Within the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL, excluding the airspace at and below 2,500 feet above the surface, and

2) At and above 3,000 feet MSL over the Gulf of Mexico from the coastline of the United States out to 12 nautical miles.

NOTE−
See Section ENR 1.1, Paragraph 37.7, Transponder/ADS−B Operation, subparagraph 37.7.6 for Mode C Transponder Requirements and ENR 1.1, paragraph 45, for ADS−B requirements for operating above Class C airspace.

c) Arrival or Through Flight Entry Requirements. Two−way radio communication must be established with the ATC facility providing ATC services prior to entry and thereafter maintain those communications while in Class C airspace. Pilots of arriving aircraft should contact the Class C airspace ATC facility on the publicized frequency and give their position, altitude, radar beacon code, destination, and request Class C service. Radio contact should be initiated far enough from the Class C airspace boundary to preclude entering Class C airspace before two−way radio communications are established.

NOTE−
1. *If the controller responds to a radio call with, "(aircraft callsign) standby," radio communications have been established and the pilot can enter the Class C airspace.*

2. *If workload or traffic conditions prevent immediate provision of Class C services, the controller will inform the pilot to remain outside the Class C airspace until conditions permit the services to be provided.*

3. *It is important to understand that if the controller responds to the initial radio call without using the aircraft identification, radio communications have not been established and the pilot may not enter the Class C airspace.*

4. *Class C airspace areas have a procedural Outer Area. Normally this area is 20 NM from the primary Class C airspace airport. Its vertical limit extends from the lower limits of radio/radar coverage up to the ceiling of the approach control's delegated airspace, excluding the Class C airspace itself, and other airspace as appropriate. (This outer area is not charted.)*

5. *Pilots approaching an airport with Class C service should be aware that if they descend below the base altitude of the 5 to 10 mile shelf during an instrument or visual approach, they may encounter non−transponder/non−ADS−B VFR aircraft.*

EXAMPLE−
1. *[Aircraft callsign] "remain outside the Class Charlie airspace and standby."*

2. *"Aircraft calling Dulles approach control, standby."*

d) Departures from:

1) A primary or satellite airport with an operating control tower. Two−way radio communications must be established and maintained with the control tower, and thereafter as instructed by ATC while operating in Class C airspace.

2) A satellite airport without an operating control tower. Two−way radio communications must be established as soon as practicable after departing with the ATC facility having jurisdiction over the Class C airspace.

e) Aircraft Speed. Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C airspace area at an indicated airspeed of more than 200 knots (230 mph).

2.4.5 Air Traffic Services. When two−way radio communications and radar contact are established, all VFR aircraft are:

2.4.5.1 Sequenced to the primary airport.

2.4.5.2 Provided Class C services within the Class C airspace and the Outer Area.

2.4.5.3 Provided basic radar services beyond the outer area on a workload permitting basis. This can be terminated by the controller if workload dictates.

2.4.6 Aircraft Separation. Separation is provided within the Class C airspace and the Outer Area after two−way radio communications and radar contact are established. VFR aircraft are separated from IFR aircraft within the Class C airspace by any of the following:

2.4.6.1 Visual separation.

2.4.6.2 500 feet vertical separation.

2.4.6.3 Target resolution.

2.4.6.4 Wake turbulence separation will be provided to all aircraft operating:

a) Behind and less than 1,000 feet below super or heavy aircraft,

b) To small aircraft operating behind and less than 500 feet below B757 aircraft, and

c) To small aircraft following a large aircraft on final approach.

NOTE−

1. *Separation and sequencing of VFR aircraft will be suspended in the event of a radar outage as this service is dependent on radar. The pilot will be advised that the service is not available and issued wind, runway information, and the time or place to contact the tower.*

2. *Separation of VFR aircraft will be suspended during CENRAP operations. Traffic advisories and sequencing to the primary airport will be provided on workload permitting basis. The pilot will be advised when CENRAP is in use.*

3. *Pilot participation is voluntary within the outer area and can be discontinued within the outer area at the pilots request. Class C services will be provided in the outer area unless the pilot requests termination of the service.*

4. *Some facilities provide Class C services only during published hours. At other times, terminal IFR radar service will be provided. It is important to note that the communications and transponder/ADS−B requirements are dependent on the class of airspace established outside of the published hours.*

2.4.7 Secondary Airports

2.4.7.1 In some locations, Class C airspace may overlie the Class D surface area of a secondary airport. In order to allow that control tower to provide service to aircraft, portions of the overlapping Class C airspace may be procedurally excluded when the secondary airport tower is in operation. Aircraft operating in these procedurally excluded areas will only be provided airport traffic control services when in communication with the secondary airport tower.

2.4.7.2 Aircraft proceeding inbound to a satellite airport will be terminated at a sufficient distance to allow time to change to the appropriate tower or advisory frequency. Class C services to these aircraft will be discontinued when the aircraft is instructed to contact the tower or change to advisory frequency.

2.4.7.3 Aircraft departing secondary controlled airports will not receive Class C services until they have been radar identified and two−way communications have been established with the Class C airspace facility.

2.4.7.4 This program is not to be interpreted as relieving pilots of their responsibilities to see and avoid other traffic operating in basic VFR weather conditions, to adjust their operations and flight path as necessary to preclude serious wake encounters, to maintain appropriate terrain and obstruction clearance, or to remain in weather conditions equal to or better than the minimums required by 14 CFR Section 91.155. Approach control should be advised and a revised clearance or instruction obtained when compliance with an assigned route, heading, and/or altitude is likely to compromise pilot responsibility with respect to terrain and obstruction clearance, vortex exposure, and weather minimums.

2.4.8 Class C Airspace Areas By State

These states currently have designated Class C airspace areas that are depicted on sectional charts. Pilots should consult current sectional charts and NOTAMs for the latest information on services available. Pilots should be aware that some Class C airspace underlies or is adjacent to Class B airspace. (See TBL ENR 1.4−4.)

2.5 Class D Airspace

2.5.1 Definition. Generally, Class D airspace extends upward from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures.

2.5.1.1 Class D surface areas may be designated as full-time or part-time. Part-time Class D effective times are published in the Chart Supplement U.S.

2.5.1.2 Part−time Class D surface areas may default to either a Class E surface area or Class G airspace. When a part−time Class D surface area defaults to Class G, the surface area airspace becomes Class G up to, but not including, the overlying controlled airspace. Normally, the overlying controlled airspace is the Class E transition area airspace that begins at either 700 feet or 1200 feet AGL. This may be determined by consulting the applicable VFR Sectional or Terminal Area Charts.

2.5.2 Operating Rules and Pilot Equipment Requirements

2.5.2.1 Pilot Certification. No specific certification required.

2.5.2.2 Equipment. Unless otherwise authorized by ATC, an operable two−way radio is required.

2.5.2.3 Arrival or Through Flight Entry Requirements. Two−way radio communication must be established with the ATC facility providing ATC services prior to entry and thereafter maintain those communications while in the Class D airspace. Pilots of arriving aircraft should contact the control tower on the publicized frequency and give their position, altitude, destination, and any request(s). Radio contact should be initiated far enough from the Class D airspace boundary to preclude entering the Class D airspace before two−way radio communications are established.

NOTE−
1. *If the controller responds to a radio call with, "(aircraft callsign) standby," radio communications have been established, and the pilot can enter the Class D airspace.*

2. *If workload or traffic conditions prevent immediate entry into Class D airspace, the controller will inform the pilot to remain outside the Class D airspace until conditions permit entry.*

EXAMPLE−
1. *"[Aircraft callsign] remain outside the Class Delta airspace and standby."*
It is important to understand that if the controller responds to the initial radio call without using the aircraft callsign, radio communications have not been established, and the pilot may not enter the Class D airspace.

2. *"Aircraft calling Manassas tower standby."*
At those airports where the control tower does not operate 24 hours a day, the operating hours of the tower will be listed on the appropriate charts and in the Chart Supplement U.S. During the hours the tower is not in operation, the Class E surface area rules or a combination of Class E rules to 700 feet above ground level and Class G rules to the surface will become applicable. Check the Chart Supplement U.S. for specifics.

2.5.2.4 Departures from:

a) A primary or satellite airport with an operating control tower. Two−way radio communications must be established and maintained with the control tower, and thereafter as instructed by ATC while operating in the Class D airspace.

b) A satellite airport without an operating control tower. Two−way radio communications must be established with the ATC facility having jurisdiction over the Class D airspace as soon as practicable after departing.

2.5.2.5 Aircraft Speed. Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class D airspace area at an indicated airspeed of more than 200 knots (230 mph).

2.5.3 Class D airspace areas are depicted on Sectional and Terminal charts with blue segmented lines, and on IFR En Route Low Altitude charts with a boxed [D].

2.5.4 Arrival extensions.

2.5.4.1 Class D airspace arrival extensions for instrument approach procedures may be Class D or Class E airspace. As a general rule, if all extensions are 2 miles or less, they remain part of the Class D surface area. However, if any one extension is greater than 2 miles, then all extensions become Class E.

2.5.4.2 Surface area arrival extensions are effective concurrent with the published times of the Class D surface area. For example, if a part–time Class D surface area changes to Class E airspace, the arrival extensions will remain in effect as Class E airspace. If a part–time Class D surface area changes to Class G airspace, the associated arrival extensions will become Class G at the same time.

2.5.5 Separation for VFR Aircraft. No separation services are provided to VFR aircraft.

2.6 Class E Airspace

2.6.1 Definition. Class E airspace is a type of controlled airspace that is designated to serve a variety of terminal or en route purposes as described below.

2.6.2 Operating Rules and Pilot/Equipment Requirements.

2.6.2.1 Pilot Certification. No specific certification required.

2.6.2.2 Equipment. Unless otherwise authorized by ATC:

a) An operable radar beacon transponder with automatic altitude reporting capability and operable ADS−B Out equipment are required at and above 10,000 feet MSL within the 48 contiguous states and the District of Columbia, excluding the airspace at and below 2,500 feet above the surface, and

b) Operable ADS−B Out equipment at and above 3,000 feet MSL over the Gulf of Mexico from the coastline of the United States out to 12 nautical miles.

NOTE−
The airspace described in (b) is specified in 14 CFR § 91.225 for ADS−B Out requirements. However, 14 CFR § 91.215 does not include this airspace for transponder requirements.

2.6.2.3 Arrival or Through Flight Entry Requirements. No specific requirements.

2.6.3 Charts. Class E airspace below 14,500 feet MSL is charted on Sectional, Terminal, and IFR Enroute Low Altitude charts.

2.6.4 Vertical limits. Except where designated at a lower altitude, Class E airspace in the United States consists of the airspace extending upward from 14,500 feet MSL to, but not including, 18,000 feet MSL overlying: the 48 contiguous states, including the waters within 12 miles from the coast of the 48 contiguous states; the District of Columbia; Alaska, including the waters within 12 miles from the coast of Alaska, and that airspace above FL 600; excluding:

2.6.4.1 The Alaska peninsula west of longitude 160°00'00"W.; and

2.6.4.2 The airspace below 1,500 feet above the surface of the earth unless specifically designated lower.

NOTE−
Class E airspace above FL 600 has no upper limit.

2.6.5 Types of Class E Airspace

2.6.5.1 Surface area designated for an airport. Class E designated as a surface area for an airport where a control tower is not in operation. The airspace will be configured to contain all instrument procedures. Class E surface areas normally extend from the surface up to but not including the overlying controlled airspace.

2.6.5.2 Extension to a surface area:

a) Class E airspace areas may be designated as extensions to Class B, Class C, and Class D surface areas. Such extensions provide controlled airspace to contain standard instrument approach procedures without imposing a communications requirement on pilots operating under VFR. Surface area arrival extensions for instrument approach procedures become part of the primary core surface area and are effective concurrent with the times of the primary core surface area.

b) When a part–time Class C or Class D surface area defaults to Class E, the arrival extensions will remain in effect as Class E airspace. When a part–time Class C, Class D, or Class E surface area defaults to Class G, the associated arrival extensions will default to Class G at the same time.

2.6.5.3 Airspace used for transition:

a) Class E airspace areas extending upward from either 700 feet AGL (shown as magenta vignette on sectional charts) or 1,200 feet AGL (blue vignette) are designated in conjunction with an airport with an approved instrument procedure. These areas are used for transitioning aircraft to/from the terminal or en route environment.

b) Unless otherwise specified, 700/1200−foot AGL Class E airspace areas remain in effect continuously, regardless of airport operating hours or surface area status. The 700/1200−foot transition areas should not be confused with surface areas or arrival extensions.

2.6.5.4 En Route Domestic Areas. There are Class E airspace areas that extend upward from a specified altitude and are en route domestic airspace areas that provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services, but the Federal airway system is inadequate.

2.6.5.5 Federal Airways and Low−altitude RNAV Routes. Federal airways and low−altitude RNAV routes are Class E airspace areas and, unless otherwise specified, they extend upward from 1,200 feet AGL to, but not including,18,000 feet MSL. Federal airways consist of L/MF airways (colored Federal airways) and VOR Federal airways. L/MF airways are green, red, amber, and blue. VOR Federal airways are classified as Domestic, Alaskan, and Hawaiian. Low−altitude RNAV routes include T−routes and helicopter RNAV routes (TK−routes).

2.6.5.6 Offshore Airspace Areas. There are Class E airspace areas that extend upward from a specified altitude to, but not including, 18,000 feet MSL and are designated as offshore airspace areas. These areas provide controlled airspace beyond 12 nautical miles from the coast of the U.S. in those areas where there is a requirement to provide IFR en route ATC services and within which the U.S. is applying domestic procedures.

2.6.6 Separation for VFR Aircraft. No separation services are provided to VFR aircraft.

3. Class G Airspace

3.1 General

Class G airspace (uncontrolled) is that portion of airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace.

3.2 VFR Requirements

Rules governing VFR flight have been adopted to assist the pilot in meeting his/her responsibility to see and avoid other aircraft. Minimum flight visibility and distance from clouds required for VFR flight are contained in 14 CFR Section 91.155. (See TBL ENR 1.4−1 for a tabular presentation of these rules).

3.3 IFR Requirements

3.3.1 Title 14 CFR specifies the pilot and aircraft equipment requirements for IFR flight. Pilots are reminded that in addition to altitude or flight level requirements, 14 CFR Section 91.177 includes a requirement to remain at least 1,000 feet (2,000 feet in designated mountainous terrain) above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown.

3.3.2 IFR Altitudes. (See TBL ENR 1.4−5.)

4. Other Airspace Areas

4.1 Airport Advisory/Information Services

4.1.1 There are two advisory type services available at selected airports. Airports offering these services are listed in the Chart Supplement U.S. and the published service hours may be changed by NOTAM D.

4.1.1.1 Local Airport Advisory (LAA) service is available only in Alaska and is operated within 10 statute miles of an airport where a control tower is not operating but where a FSS is located on the airport. At such locations, the FSS provides a complete local airport advisory service to arriving and departing aircraft. During periods of fast changing weather the FSS will automatically provide Final Guard as part of the service from the time the aircraft reports “on−final” or “taking−the−active−runway” until the aircraft reports “on−the−ground” or “airborne.”

NOTE−
Current FAA policy, when requesting remote ATC services, requires that a pilot monitor the automated weather broadcast at the landing airport prior to requesting ATC services. The FSS automatically provides Final Guard, when appropriate, during LAA operations. Final Guard is a value added wind/altimeter monitoring service, which provides an automatic wind and altimeter check during active weather situations when the pilot reports on−final or taking the active runway. During the landing or take−off operation when the winds or altimeter are actively changing the FSS will blind broadcast significant changes when the specialist believes the change might affect the operation. Pilots should acknowledge the first wind/altimeter check but due to cockpit activity no acknowledgement is expected for the blind broadcasts. It is prudent for a pilot to report on−the−ground or airborne to end the service.

TBL ENR 1.4−5
IFR Altitudes
Class G Airspace

If your magnetic course (ground track) is:	And you are below 18,000 feet MSL, fly:
0° to 179°	Odd thousands MSL, (3,000; 5,000; 7,000, etc.)
180° to 359°	Even thousands MSL, (2,000; 4,000; 6,000, etc.)

4.1.1.2 Remote Airport Information Service (RAIS) is provided in support of short term special events like small to medium fly−ins. The service is advertised by NOTAM D only. The FSS will not have access to a continuous readout of the current winds and altimeter; therefore, RAIS does not include weather and/or Final Guard service. However, known traffic, special event instructions, and all other services are provided.

NOTE−
The airport authority and/or manager should request RAIS support on official letterhead directly with the manager of the FSS that will provide the service at least 60 days in advance. Approval authority rests with the FSS manager and is based on workload and resource availability.

REFERENCE−
See GEN 3.3, Air Traffic Services, Paragraph 9.2, Traffic Advisory Practices at Airports Without Operating Control Towers.

4.1.1.3 It is not mandatory that pilots participate in the Airport Advisory programs. Participation enhances safety for everyone operating around busy GA airports; therefore, everyone is encouraged to participate and provide feedback that will help improve the program.

4.2 Published VFR Routes. Published VFR routes for transitioning around, under, and through complex airspace such as Class B airspace were developed through a number of FAA and industry initiatives. All of the following terms; i.e., "VFR Flyway," "VFR Corridor," "Class B Airspace VFR Transition Route," and "Terminal Area VFR Route" have been used when referring to the same or different types of routes or airspace. The following paragraphs identify and clarify the functionality of each type of route, and specify where and when an ATC clearance is required.

4.2.1 VFR Flyways

4.2.1.1 VFR Flyways and their associated Flyway Planning charts were developed from the recommendations of a National Airspace Review Task Group. A VFR Flyway is defined as a general flight path not defined as a specific course, for use by pilots in planning flights into, out of, through, or near complex terminal airspace to avoid Class B airspace. An ATC clearance is NOT required to fly these routes.

4.2.1.2 VFR Flyways are depicted on the reverse side of some of the VFR Terminal Area Charts (TAC), commonly referred to as Class B airspace charts. Eventually all TACs will include a VFR Flyway Planning Chart. These charts identify VFR flyways designed to help VFR pilots avoid major controlled traffic flows. They may further depict multiple VFR routings throughout the area which may be used as an alternative to flight within Class B airspace. The ground references provide a guide for improved visual navigation. These routes are not intended to discourage requests for VFR operations within Class B airspace but are designed solely to assist pilots in planning for flights under and around busy Class B airspace without actually entering Class B airspace.

4.2.1.3 It is very important to remember that these suggested routes are not sterile of other traffic. The entire Class B airspace, and the airspace underneath it, may be heavily congested with many different types of aircraft. Pilot adherence to VFR rules must be exercised at all times. Further, when operating beneath Class B airspace, communications must be established and maintained between your aircraft and any control tower while transiting the Class B, Class C, and Class D surface areas of those airports under Class B Airspace.

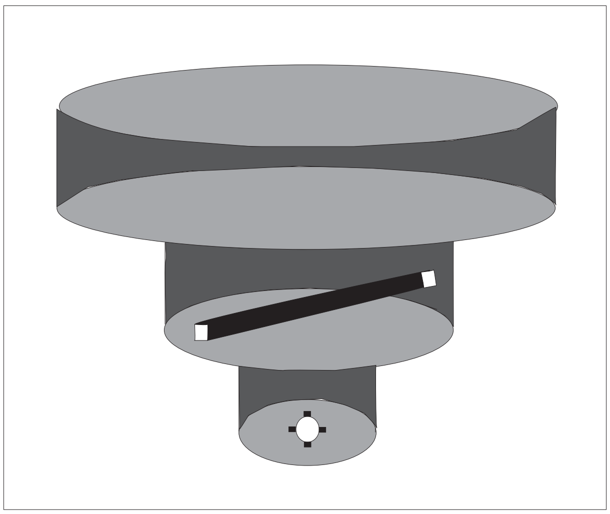
4.2.2 VFR Corridors

4.2.2.1 The design of a few of the first Class B airspace areas provided a corridor for the passage of uncontrolled traffic. A VFR corridor is defined as airspace through Class B airspace, with defined vertical and lateral boundaries, in which aircraft may operate without an ATC clearance or communication with air traffic control.

4.2.2.2 These corridors are, in effect, a "hole" through Class B airspace. (See FIG ENR 1.4−1.) A classic example would be the corridor through the

Los Angeles Class B airspace, which has been subsequently changed to Special Flight Rules airspace (SFR). A corridor is surrounded on all sides by Class B airspace and does not extend down to the surface like a VFR Flyway. Because of their finite lateral and vertical limits, and the volume of VFR traffic using a corridor, extreme caution and vigilance must be exercised.

FIG ENR 1.4−1
Class B Airspace



4.2.2.3 Because of the heavy traffic volume and the procedures necessary to efficiently manage the flow of traffic, it has not been possible to incorporate VFR corridors in the development or modifications of Class B airspace in recent years.

4.2.3 Class B Airspace VFR Transition Routes

4.2.3.1 To accommodate VFR traffic through certain Class B airspace, such as Seattle, Phoenix, and Los Angeles, Class B Airspace VFR Transition Routes were developed. A Class B Airspace VFR Transition Route is defined as a specific flight course depicted on a Terminal Area Chart (TAC) for transiting a specific Class B airspace. These routes include specific ATC assigned altitudes, and pilots must obtain an ATC clearance prior to entering Class B airspace on the route.

4.2.3.2 These routes, as depicted in FIG ENR 1.4−2, are designed to show the pilot where to position his/her aircraft outside of, or clear of, the Class B airspace where an ATC clearance can normally be expected with minimal or no delay. Until ATC authorization is received, pilots must remain clear of Class B airspace. On initial contact, pilots should advise ATC of their position, altitude, route name desired, and direction of flight. After a clearance is received, the pilot must fly the route as depicted and, most importantly, adhere to ATC instructions.

4.3 Terminal Radar Service Area (TRSA)

4.3.1 Background. The terminal radar service areas (TRSA) were originally established as part of the Terminal Radar Program at selected airports. TRSAs were never controlled airspace from a regulatory standpoint because the establishment of TRSAs were never subject to the rulemaking process; consequently, TRSAs are not contained in 14 CFR Part 71 nor are there any TRSA operating rules in Part 91. Part of the Airport Radar Service Area (ARSA) program was to eventually replace all TRSAs. However, the ARSA requirements became relatively stringent, and it was subsequently decided that TRSAs would have to meet ARSA criteria before they would be converted. TRSAs do not fit into any of the U.S. Airspace Classes; therefore, they will continue to be non−Part 71 airspace areas where participating pilots can receive additional radar services which have been redefined as TRSA Service.

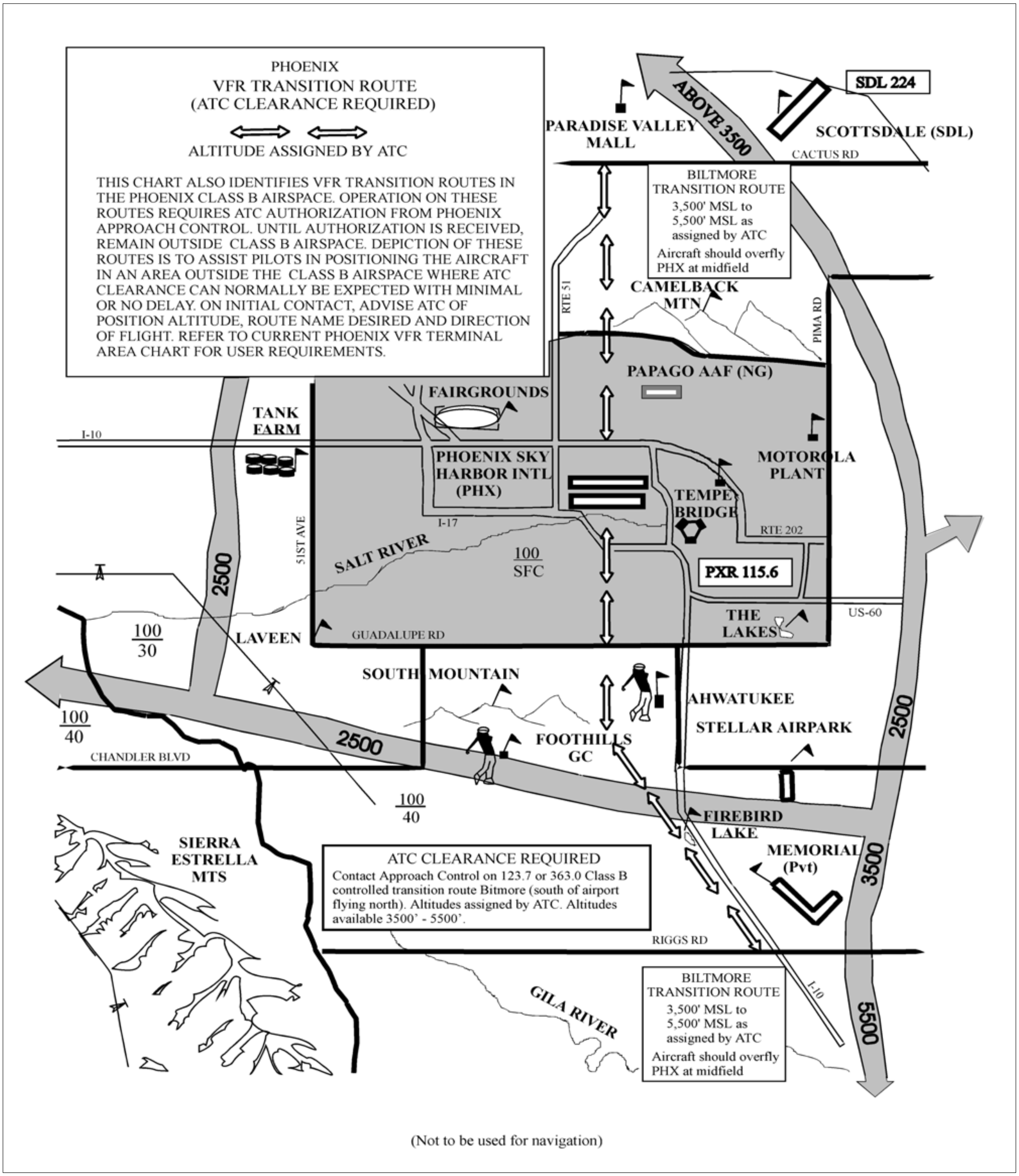
4.3.2 TRSA Areas. The primary airport(s) within the TRSA become(s) Class D airspace. The remaining portion of the TRSA overlies other controlled airspace which is normally Class E airspace beginning at 700 or 1,200 feet and established to transition to/from the en route/terminal environment.

4.3.3 Participation. Pilots operating under VFR are encouraged to contact the radar approach control and avail themselves of the TRSA Services. However, participation is voluntary on the part of the pilot. See ENR 1.1, paragraph 39.2, for details and procedures.

4.3.4 Charts. TRSAs are depicted on VFR sectional and terminal area charts with a solid black line and altitudes for each segment. The Class D portion is charted with a blue segmented line.

FIG ENR 1.4−2

VFR Transition Route



control facilities and towers, and the update rate is not as fast. Therefore, pilots may be requested to report established on the final approach course.

2.2.3 Whether aircraft are vectored to the appropriate final approach course or provide their own navigation on published routes to it, radar service is automatically terminated when the landing is completed or when instructed to change to advisory frequency at uncontrolled airports, whichever occurs first.

3. Standard Terminal Arrival (STAR) Procedures

3.1 A STAR is an ATC coded IFR arrival route established for application to arriving IFR aircraft destined for certain airports. STARs simplify clearance delivery procedures, and also facilitate transition between en route and instrument approach procedures.

3.1.1 STAR procedures may have mandatory speeds and/or crossing altitudes published. Other STARs may have planning information depicted to inform pilots what clearances or restrictions to "**expect**." "**Expect**" altitudes/speeds are not considered STAR procedures crossing restrictions unless verbally issued by ATC. Published speed restrictions are independent of altitude restrictions and are mandatory unless modified by ATC. Pilots should plan to cross waypoints with a published speed restriction, at the published speed, and should not exceed this speed past the associated waypoint unless authorized by ATC or a published note to do so.

NOTE−
*The "**expect**" altitudes/speeds are published so that pilots may have the information for planning purposes. These altitudes/speeds must not be used in the event of lost communications unless ATC has specifically advised the pilot to expect these altitudes/speeds as part of a further clearance.*

REFERENCE−
14 CFR Section 91.185c(2)(iii).

3.1.2 Pilots navigating on, or navigating a published route inbound to, a STAR procedure must maintain last assigned altitude until receiving authorization to descend so as to comply with all published/issued restrictions. This authorization will contain the phraseology "DESCEND VIA." If vectored or cleared to deviate off a STAR, pilots must consider the STAR canceled, unless the controller adds "expect to resume STAR"; pilots should then be prepared to rejoin the STAR at a subsequent fix or procedure leg. If a descent clearance has been received that included a crossing restriction, pilots should expect the controller to issue an altitude to maintain. If the STAR contains published altitude and/or speed restrictions, those restrictions are canceled and pilots will receive an altitude to maintain and, if necessary, a speed.

3.1.2.1 Clearance to "descend via" authorizes pilots to:

a) Descend at pilot's discretion to meet published restrictions and laterally navigate on a STAR.

b) When cleared to a waypoint depicted on a STAR, to descend from a previously assigned altitude at pilot's discretion to the altitude depicted at that waypoint.

c) Once established on the depicted arrival, to descend and to meet all published or assigned altitude and/or speed restrictions.

NOTE−
1. *When otherwise cleared along a route or procedure that contains published speed restrictions, the pilot must comply with those speed restrictions independent of any descend via clearance.*

2. *ATC anticipates pilots will begin adjusting speed the minimum distance necessary prior to a published speed restriction so as to cross the waypoint/fix at the published speed. Once at the published speed, ATC expects pilots will maintain the published speed until additional adjustment is required to comply with further published or ATC assigned speed restrictions or as required to ensure compliance with 14 CFR Section 91.117.*

3. *The "descend via" is used in conjunction with STARs to reduce phraseology by not requiring the controller to restate the altitude at the next waypoint/fix to which the pilot has been cleared.*

4. *Air traffic will assign an altitude to cross the waypoint/fix, if no altitude is depicted at the waypoint/fix, for aircraft on a direct routing to a STAR. Air traffic must ensure obstacle clearance when issuing a "descend via" instruction to the pilot.*

5. *Minimum en route altitudes (MEA) are not considered restrictions; however, pilots must remain above all MEAs, unless receiving an ATC instruction to descend below the MEA.*

EXAMPLE−
1. ***Lateral/routing clearance only.***
"Cleared Tyler One arrival."

NOTE−
In Example 1, pilots are cleared to fly the lateral path of the procedure. Compliance with any published speed restrictions is required. No descent is authorized.

2. ***Routing with assigned altitude:***

"Cleared Tyler One arrival, descend and maintain flight level two four zero."

"Cleared Tyler One arrival, descend at pilot's discretion, maintain flight level two four zero."

NOTE−
In Example 2, the first clearance requires the pilot to descend to FL 240 as directed, comply with any published speed restrictions, and maintain FL 240 until cleared for further vertical navigation with a newly assigned altitude or a"descend via" clearance.

The second clearance authorizes the pilot to descend to FL 240 at his discretion, to comply with any published speed restrictions, and then maintain FL 240 until issued further instructions.

3. ***Lateral/routing and vertical navigation clearance.***

"Descend via the Eagul Five arrival."

"Descend via the Eagul Five arrival, except, cross Vnnom at or above one two thousand."

NOTE−
In Example 3, the first clearance authorized the aircraft to descend at pilot's discretion on the Eagul Five arrival; the pilot must descend so as to comply with all published altitude and speed restrictions.

The second clearance authorizes the same, but requires the pilot to descend so as to cross at Vnnom at or above 12,000.

4. ***Lateral/routing and vertical navigation clearance when assigning altitude not published on procedure.***

"Descend via the Eagul Five arrival, except after Geeno, maintain one zero thousand."

"Descend via the Eagul Five arrival, except cross Geeno at one one thousand then maintain seven thousand."

NOTE−
In Example 4, the first clearance authorized the aircraft to track laterally on the Eagul Five Arrival and to descend at pilot's discretion so as to comply with all altitude and speed restrictions until reaching Geeno and then maintain 10,000. Upon reaching 10,000, aircraft should maintain 10,000 until cleared by ATC to continue to descend.

The second clearance requires the same, except the aircraft must cross Geeno at 11,000 and is then authorized to continue descent to and maintain 7,000.

5. ***Direct routing to intercept a STAR and vertical navigation clearance.***

"Proceed direct Leoni, descend via the Leoni One arrival."

"Proceed direct Denis, cross Denis at or above flight level two zero zero, then descend via the Mmell One arrival."

NOTE−
In Example 5, in the first clearance an altitude is published at Leoni; the aircraft proceeds to Leoni, crosses Leoni at the published altitude and then descends via the arrival. If a speed restrictions is published at Leoni, the aircraft will slow to comply with the published speed.

In the second clearance, there is no altitude published at Denis; the aircraft must cross Denis at or above FL200, and then descends via the arrival.

3.1.2.2 Pilots cleared for vertical navigation using the phraseology "descend via" must inform ATC upon initial contact with a new frequency, of the altitude leaving, "descending via (procedure name)," the runway transition or landing direction if assigned, and any assigned restrictions not published on the procedure.

EXAMPLE−

1. *Delta 121 is cleared to descend via the Eagul Five arrival, runway 26 transition: "Delta One Twenty One leaving flight level one niner zero, descending via the Eagul Five arrival runway two-six transition."*

2. *Delta 121 is cleared to descend via the Eagul Five arrival, but ATC has changed the bottom altitude to 12,000: "Delta One Twenty One leaving flight level one niner zero for one two thousand, descending via the Eagul Five arrival, runway two-six transition."*

3. *(JetBlue 602 is cleared to descend via the Ivane Two arrival, landing south): "JetBlue six zero two leaving flight level two one zero descending via the Ivane Two arrival landing south."*

NOTE−
In reference to published altitude restrictions on a STAR or STAR runway transition, the "bottom altitude" is the lowest altitude authorized.

3.1.2.3 Pilots of IFR aircraft destined to locations for which STARs have been published may be issued a clearance containing a STAR whenever ATC deems it appropriate.

3.2 Use of STARs requires pilot possession of at least the approved chart. RNAV STARs must be retrievable by the procedure name from the aircraft database and conform to charted procedure. As with any ATC clearance or portion thereof, it is the responsibility of each pilot to accept or refuse an issued STAR. Pilots should notify ATC if they do not wish to use a STAR by placing "NO STAR" in the remarks section of the flight plan or by the less desirable method of verbally stating the same to ATC.

3.3 STAR charts are published in the Terminal Procedures Publication (TPP) and are available on subscription from the National Aeronautical Charting Office.

3.4 PBN STAR.

3.4.1 Public PBN STARs are normally designed using RNAV 1, RNP 1, or A−RNP NavSpecs. These procedures require system performance currently met by GPS or DME/DME/IRU PBN systems that satisfy the criteria discussed in the current publication of AC 90−100, U.S. Terminal and En Route Area Navigation (RNAV) Operations. These procedures, using RNAV 1 and RNP 1 NavSpecs, must maintain a total system error of not more than 1 NM for 95% of the total flight time. Minimum values for A−RNP procedures will be charted in the PBN box (for example, 1.00 or 0.30).

3.4.2 In the U.S., a specific procedure's PBN requirements will be prominently displayed in separate, standardized notes boxes. For procedures with PBN elements, the "PBN box" will contain the procedure's NavSpec(s); and, if required: specific sensors or infrastructure needed for the navigation solution, any additional or advanced functional requirements, the minimum RNP value, and any amplifying remarks. Items listed in this PBN box are REQUIRED for the procedure's PBN elements.

3.4.3 For procedures requiring GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.

REFERENCE−
ENR 4.1 Paragraph 16.2.5.11, Impact of Magnetic Variation on PBN Systems

4. Local Flow Traffic Management Program

4.1 This program is a continuing effort by the FAA to enhance safety, minimize the impact of aircraft noise, and conserve aviation fuel. The enhancement of safety and reduction of noise are achieved in this program by minimizing low altitude maneuvering of arriving turbojet and turboprop aircraft weighing more that 12,500 pounds and, by permitting departure aircraft to climb to high altitudes sooner, as arrivals are operating at higher altitudes at the points where their flight paths cross. The application of these procedures also reduces exposure time between controlled aircraft and uncontrolled aircraft at the lower altitudes in and around the terminal environment. Fuel conservation is accomplished by absorbing any necessary arrival delays for aircraft included in this program operating at the higher and more fuel efficient altitudes.

4.2 A fuel efficient descent is basically an uninterrupted descent (except where level flight is required for speed adjustment) from cruising altitude to the point when level flight is necessary for the pilot to stabilize the aircraft on final approach. The procedure for a fuel efficient descent is based on an altitude loss which is most efficient for the majority of aircraft being served. This will generally result in a descent gradient window of 250−350 feet per nautical mile.

4.3 When crossing altitudes and speed restrictions are issued verbally or are depicted on a chart, ATC will expect the pilot to descend first to the crossing altitude and then reduce speed. Verbal clearances for descent will normally permit an uninterrupted descent in accordance with the procedure as described in paragraph 4.2 above. Acceptance of a charted fuel efficient descent (Runway Profile Descent) clearance requires the pilot to adhere to the altitudes, speeds, and headings depicted on the charts unless otherwise instructed by ATC. PILOTS RECEIVING A CLEARANCE FOR A FUEL EFFICIENT DESCENT ARE EXPECTED TO ADVISE ATC IF THEY DO NOT HAVE RUNWAY PROFILE DESCENT CHARTS PUBLISHED FOR THAT AIRPORT OR ARE UNABLE TO COMPLY WITH THE CLEARANCE.

5. Advance Information on Instrument Approaches

5.1 When landing at airports with approach control services and where two or more instrument approach procedures are published, pilots will be provided in advance of their arrival with the type of approach to expect or that they may be vectored for a visual approach. This information will be broadcast either by a controller or on ATIS. It will not be furnished when the visibility is three miles or better and the ceiling is at or above the highest initial approach altitude established for any low altitude instrument approach procedure for the airport.

5.2 The purpose of this information is to aid the pilot in planning arrival actions; however, it is not an ATC clearance or commitment and is subject to change. Pilots should bear in mind that fluctuating weather, shifting winds, blocked runway, etc., are conditions which may result in changes to approach information previously received. It is important that pilots advise ATC immediately if they are unable to execute the approach ATC advised will be used, or if they prefer another type of approach.

5.3 Aircraft destined to uncontrolled airports which have automated weather data with broadcast capability should monitor the ASOS/AWOS frequency to ascertain the current weather for the airport. The pilot must advise ATC when he/she has received the broadcast weather and state his/her intentions.

NOTE−
1. *ASOS/AWOS should be set to provide one−minute broadcast weather updates at uncontrolled airports that are without weather broadcast capability by a human observer.*

2. *Controllers will consider the long line disseminated weather from an automated weather system at an uncontrolled airport as trend and planning information only and will rely on the pilot for current weather information for the airport. If the pilot is unable to receive the current broadcast weather, the last long−line disseminated weather will be issued to the pilot. When receiving IFR services, the pilot/aircraft operator is responsible for determining if weather/visibility is adequate for approach/landing.*

5.4 When making an IFR approach to an airport not served by a tower or FSS, after the ATC controller advises "CHANGE TO ADVISORY FREQUENCY APPROVED," you should broadcast your intentions, including the type of approach being executed, your position, and when over the final approach fix inbound (nonprecision approach) or when over the outer marker or the fix used in lieu of the outer marker inbound (precision approach). Continue to monitor the appropriate frequency (UNICOM, etc.) for reports from other pilots.

6. Approach Clearance

6.1 An aircraft which has been cleared to a holding fix and subsequently "cleared . . . approach" has not received new routing. Even though clearance for the approach may have been issued prior to the aircraft reaching the holding fix, ATC would expect the pilot to proceed via the holding fix (the last assigned route), and the feeder route associated with that fix (if a feeder route is published on the approach chart) to the initial approach fix (IAF) to commence the approach. WHEN CLEARED FOR THE APPROACH, THE PUBLISHED OFF AIRWAY (FEEDER) ROUTES THAT LEAD FROM THE EN ROUTE STRUCTURE TO THE IAF ARE PART OF THE APPROACH CLEARANCE.

6.2 If a feeder route to an IAF begins at a fix located along the route of flight prior to reaching the holding fix, and clearance for an approach is issued, a pilot should commence the approach via the published feeder route; i.e., the aircraft would not be expected to overfly the feeder route and return to it. The pilot is expected to commence the approach in a similar manner at the IAF, if the IAF for the procedure is located along the route of flight to the holding fix.

6.3 If a route of flight directly to the initial approach fix is desired, it should be so stated by the controller with phraseology to include the words "direct . . . ," "proceed direct" or a similar phrase which the pilot can interpret without question. If a pilot is uncertain of the clearance, immediately query ATC as to what route of flight is desired.

6.4 The name of an instrument approach, as published, is used to identify the approach, even though a component of the approach aid, such as the glideslope on an Instrument Landing System, is inoperative or unreliable. The controller will use the name of the approach as published, but must advise the aircraft at the time an approach clearance is issued that the inoperative or unreliable approach aid component is unusable, except when the title of the published approach procedures otherwise allows, for example, ILS or LOC.

6.5 The following applies to aircraft on radar vectors and/or cleared "direct to" in conjunction with an approach clearance:

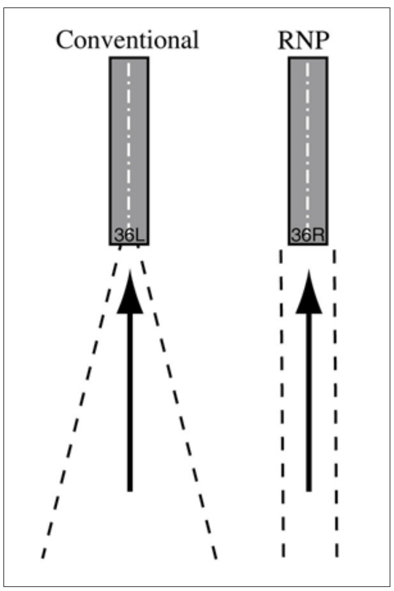
6.5.1 Maintain the last altitude assigned by ATC until the aircraft is established on a published segment of a transition route, or approach procedure segment, or other published route, for which a lower altitude is published on the chart. If already on an established route, or approach or arrival segment, you may descend to whatever minimum altitude is listed for that route or segment

6.5.2 Continue on the vector heading until intercepting the next published ground track applicable to the approach clearance.

regardless of the ground−based NAVAID infrastructure, and can be designed to avoid obstacles, terrain, airspace, or resolve environmental constraints.

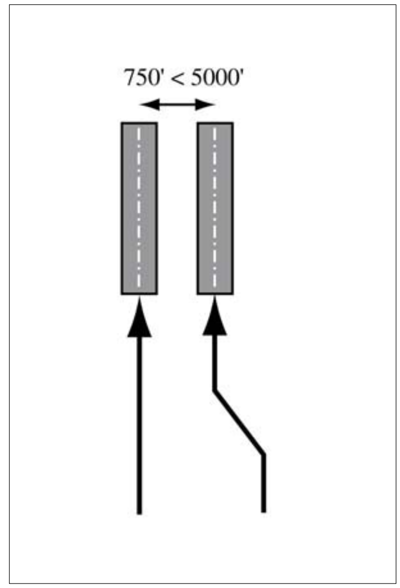
9.2.2 RNP Parallel Approach (RPA) Operations. RNP AR procedures can be used for parallel approaches where the runway separation is adequate (See FIG ENR 1.5−13). Parallel approach procedures can be used either simultaneously or as stand−alone operations. They may be part of either independent or dependent operations depending on the ATC ability to provide radar monitoring.

FIG ENR 1.5−13



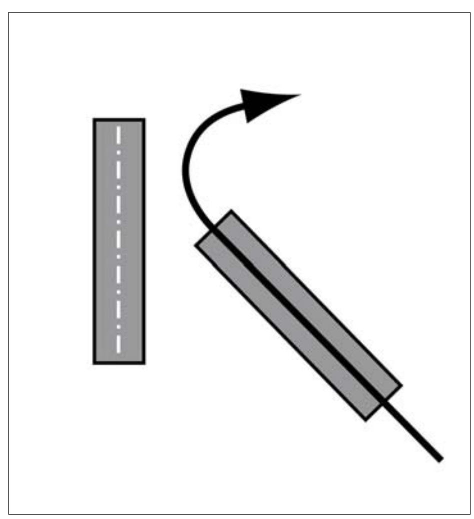
9.2.3 RNP Parallel Approach Runway Transitions (RPAT) Operations. RPAT approaches begin as a parallel IFR approach operation using simultaneous independent or dependent procedures. (See FIG ENR 1.5−14). Visual separation standards are used in the final segment of the approach after the final approach fix, to permit the RPAT aircraft to transition in visual conditions along a predefined lateral and vertical path to align with the runway centerline.

FIG ENR 1.5−14



9.2.4 RNP Converging Runway Operations. At airports where runways converge, but may or may not intersect, an RNP AR approach can provide a precise curved missed approach path that conforms to aircraft separation minimums for simultaneous operations (See FIG ENR 1.5−15). By flying this curved missed approach path with high accuracy and containment provided by RNP, dual runway operations may continue to be used to lower ceiling and visibility values than currently available. This type of operation allows greater capacity at airports where it can be applied.

FIG ENR 1.5−15



10. Side−step Maneuver

10.1 ATC may authorize a standard instrument approach procedure which serves either one of parallel runways that are separated by 1,200 feet or less followed by a straight-in landing on the adjacent runway.

10.2 Aircraft that will execute a side-step maneuver will be cleared for a specified approach procedure and landing on the adjacent parallel runway. Example, "cleared ILS runway 7 left approach, side-step to runway 7 right." Pilots are expected to commence the side-step maneuver as soon as possible after the runway or runway environment is in sight. Compliance with minimum altitudes associated with stepdown fixes is expected even after the side−step maneuver is initiated.

NOTE−
Side−step minima are flown to a Minimum Descent Altitude (MDA) regardless of the approach authorized.

10.3 Landing minimums to the adjacent runway will be based on nonprecision criteria and therefore higher than the precision minimums to the primary runway, but will normally be lower than the published circling minimums.

11. Approach and Landing Minimums

11.1 Landing Minimums. The rules applicable to landing minimums are contained in 14 CFR Section 91.175. TBL ENR 1.5−2 may be used to convert RVR to ground or flight visibility. For converting RVR values that fall between listed values, use the next higher RVR value; do not interpolate. For example, when converting 1800 RVR, use 2400 RVR with the resultant visibility of $^1/_2$ mile.

TBL ENR 1.5−2
RVR Value Conversions

RVR	Visibility (statute miles)
1600	$^1/_4$
2400	$^1/_2$
3200	$^5/_8$
4000	$^3/_4$
4500	$^7/_8$
5000	1
6000	1 $^1/_4$

11.1.1 Aircraft approach category means a grouping of aircraft based on a speed of V_{REF} at the maximum certified landing weight, if specified, or if V_{REF} is not specified, 1.3V_{SO} at the maximum certified landing weight. V_{REF}, V_{SO}, and the maximum certified landing weight are those values as established for the aircraft by the certification authority of the country of registry. A pilot must maneuver the aircraft within the circling approach protected area (see FIG ENR 1.5−16) to achieve the obstacle and terrain clearances provided by procedure design criteria.

11.1.2 In addition to pilot techniques for maneuvering, one acceptable method to reduce the risk of flying out of the circling approach protected area is to use either the minima corresponding to the category determined during certification or minima associated with a higher category. Helicopters may use Category A minima. If it is necessary to operate at a speed in excess of the upper limit of the speed range for an aircraft's category, the minimums for the higher category should be used. This may occur with certain aircraft types operating in heavy/gusty wind, icing, or non−normal conditions. For example, an airplane which fits into Category B, but is circling to land at a speed of 145 knots, should use the approach Category D minimums. As an additional example, a Category A airplane (or helicopter) which is operating at 130 knots on a straight−in approach should use the approach Category C minimums.

11.1.3 A pilot who chooses an alternative method when it is necessary to maneuver at a speed that exceeds the category speed limit (for example, where higher category minimums are not published) should consider the following factors that can significantly affect the actual ground track flown:

11.1.3.1 Bank angle. For example, at 165 knots groundspeed, the radius of turn increases from 4,194 feet using 30 degrees of bank to 6,654 feet when using 20 degrees of bank. When using a shallower bank angle, it may be necessary to modify the flightpath or indicated airspeed to remain within the circling approach protected area. Pilots should be aware that excessive bank angle can lead to a loss of aircraft control.

11.1.3.2 Indicated airspeed. Procedure design criteria typically utilize the highest speed for a particular category. If a pilot chooses to operate at a higher speed, other factors should be modified to ensure that the aircraft remains within the circling approach protected area.

11.1.3.3 Wind speed and direction. For example, it is not uncommon to maneuver the aircraft to a downwind leg where the groundspeed will be considerably higher than the indicated airspeed. Pilots must carefully plan the initiation of all turns to ensure that the aircraft remains within the circling approach protected area.

11.1.3.4 Pilot technique. Pilots frequently have many options with regard to flightpath when conducting circling approaches. Sound planning and judgment are vital to proper execution. The lateral and vertical path to be flown should be carefully considered using current weather and terrain information to ensure that the aircraft remains within the circling approach protected area.

11.1.4 It is important to remember that 14 CFR Section 91.175(c) requires that "where a DA/DH or MDA is applicable, no pilot may operate an aircraft below the authorized MDA or continue an approach below the authorized DA/DH unless the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and for operations conducted under Part 121 or Part 135 unless that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing."

11.1.5 See the following category limits:

11.1.5.1 Category A: Speed less than 91 knots.

11.1.5.2 Category B: Speed 91 knots or more but less than 121 knots.

11.1.5.3 Category C: Speed 121 knots or more but less than 141 knots.

11.1.5.4 Category D: Speed 141 knots or more but less than 166 knots.

11.1.5.5 Category E: Speed 166 knots or more.

NOTE−
V_{REF} in the above definition refers to the speed used in establishing the approved landing distance under the airworthiness regulations constituting the type certification basis of the airplane, regardless of whether that speed for a particular airplane is 1.3 V_{SO}, 1.23 V_{SR}, or some higher speed required for airplane controllability. This speed, at the maximum certificated landing weight, determines the lowest applicable approach category for all approaches regardless of actual landing weight.

11.2 Published Approach Minimums. Approach minimums are published for different aircraft categories and consist of a minimum altitude (DA, DH, MDA) and required visibility. These minimums are determined by applying the appropriate TERPS criteria. When a fix is incorporated in a nonprecision final segment, two sets of minimums may be published; one for the pilot that is able to identify the fix, and a second for the pilot that cannot. Two sets of minimums may also be published when a second altimeter source is used in the procedure. When a nonprecision procedure incorporates both a stepdown fix in the final segment and a second altimeter source, two sets of minimums are published to account for the stepdown fix and a note addresses minimums for the second altimeter source.

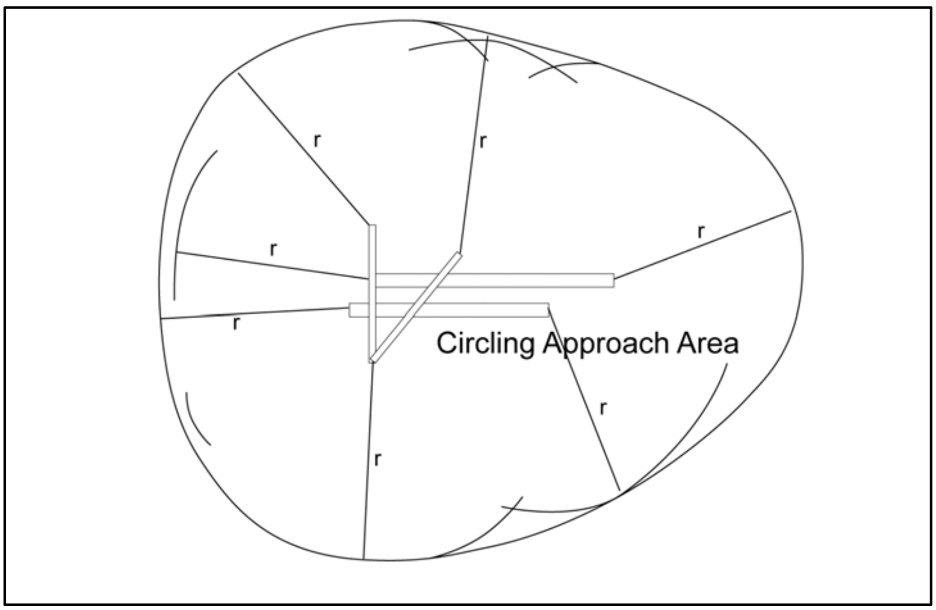
11.3 Obstacle Clearance. Final approach obstacle clearance is provided from the start of the final segment to the runway or missed approach point, whichever occurs last. Side-step obstacle protection is provided by increasing the width of the final approach obstacle clearance area.

11.3.1 Circling approach protected areas are defined by the tangential connection of arcs drawn from each runway end (see FIG ENR 1.5−16). Circling approach protected areas developed prior to late 2012 used fixed radius distances, dependent on aircraft approach category, as shown in the table on page B2 of the U.S. TPP. The approaches using standard circling approach areas can be identified by the absence of the "negative C" symbol on the circling line of minima. Circling approach protected areas developed after late 2012 use the radius distance shown in the table on page B2 of the U.S. TPP, dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the "negative C" symbol on the circling line of minima (see FIG ENR 1.5−17).

Because of obstacles near the airport, a portion of the circling area may be restricted by a procedural note; for example, "Circling NA E of RWY 17−35." Obstacle clearance is provided at the published minimums (MDA) for the pilot who makes a straight−in approach, side−steps, or circles. Once below the MDA the pilot must see and avoid obstacles. Executing the missed approach after starting to maneuver usually places the aircraft beyond the MAP. The aircraft is clear of obstacles when at or above the MDA while inside the circling area, but simply joining the missed approach ground track from the circling maneuver may not provide vertical obstacle clearance once the aircraft exits the circling area. Additional climb inside the circling area may be required before joining the missed approach track. See ENR 1.5−27. Missed Approach for additional considerations when starting a missed approach at other than the MAP.

FIG ENR 1.5−16

Final Approach Obstacle Clearance



NOTE−

Circling approach area radii vary according to approach category and MSL circling altitude due to TAS changes − see FIG ENR 1.5−17.

FIG ENR 1.5−17

Standard and Expanded Circling Approach Radii in the U.S. TPP

STANDARD CIRCLING APPROACH MANEUVERING RADIUS

Circling approach protected areas developed prior to late 2012 used the radius distances shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category. The approaches using standard circling approach areas can be identified by the absence of the C symbol on the circling line of minima.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
All Altitudes	1.3	1.5	1.7	2.3	4.5

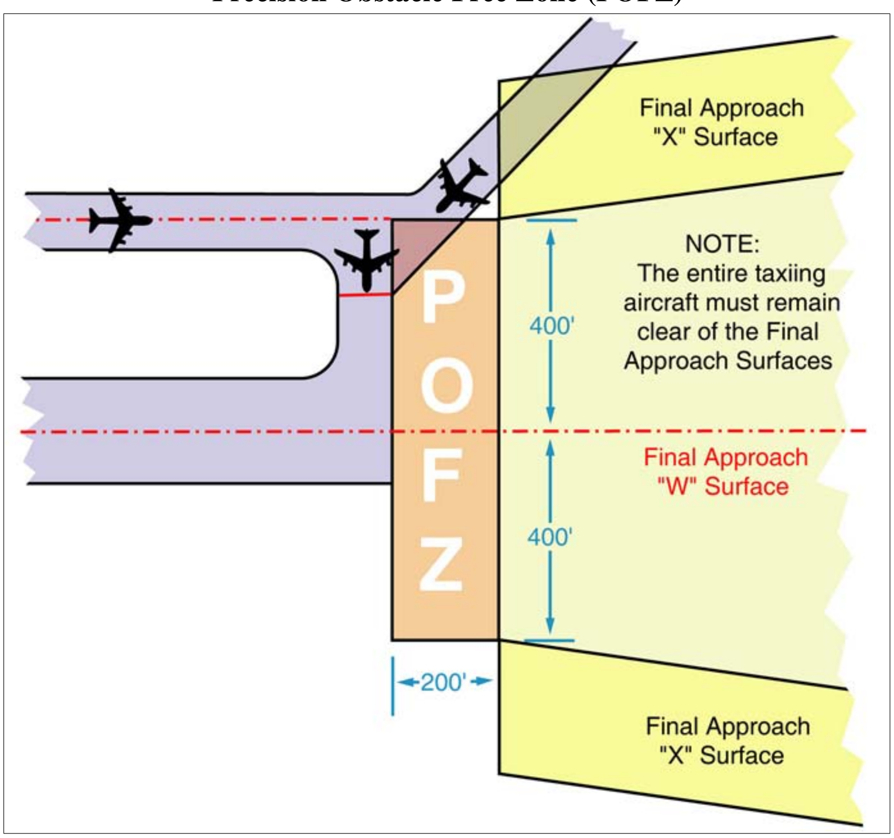
C EXPANDED CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

Circling approach protected areas developed after late 2012 use the radius distance shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the C symbol on the circling line of minima.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
1000 or less	1.3	1.7	2.7	3.6	4.5
1001-3000	1.3	1.8	2.8	3.7	4.6
3001-5000	1.3	1.8	2.9	3.8	4.8
5001-7000	1.3	1.9	3.0	4.0	5.0
7001-9000	1.4	2.0	3.2	4.2	5.3
9001 and above	1.4	2.1	3.3	4.4	5.5

FIG ENR 1.5−18

Precision Obstacle Free Zone (POFZ)



11.3.2 Precision Obstacle Free Zone (POFZ). A volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline. The POFZ is 200 feet (60m) long and 800 feet (240m) wide. The POFZ must be clear when an aircraft on a vertically guided final approach is within 2 nautical miles of the runway threshold and the official weather observation is a ceiling below 250 feet or visibility less than 3/4 statute mile (SM) (or runway visual range below 4,000 feet). If the POFZ is not clear, the MINIMUM authorized height above touchdown (HAT) and visibility is 250 feet and 3/4 SM. The POFZ is considered clear even if the wing of the aircraft holding on a taxiway waiting for runway clearance penetrates the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ. The POFZ is applicable at all runway ends including displaced thresholds. (See FIG ENR 1.5−18.)

11.4 Straight−In Minimums are shown on the IAP when the final approach course is within 30 degrees of the runway alignment (15 degrees for GPS IAPs) and a normal descent can be made from the IFR altitude shown on the IAP to the runway surface. When either the normal rate of descent or the runway alignment factor of 30 degrees (15 degrees for GPS IAPs) is exceeded, a straight−in minimum is not published and a circling minimum applies. The fact that a straight−in minimum is not published does not preclude pilots from landing straight−in if they have the active runway in sight and have sufficient time to make a normal approach for landing. Under such conditions and when ATC has cleared them for landing on that runway, pilots are not expected to circle even though only circling minimums are published. If they desire to circle, they should advise ATC.

11.5 Side−Step Maneuver Minimums. Landing minimums for a side−step maneuver to the adjacent runway will normally be higher than the minimums to the primary runway.

11.6 Circling Minimums. In some busy terminal areas, ATC may not allow circling and circling minimums will not be published. Published circling minimums provide obstacle clearance when pilots remain within the appropriate area of protection. Pilots should remain at or above the circling altitude until the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers. Circling may require maneuvers at low altitude, at low airspeed, and in marginal weather conditions. Pilots must use sound judgment, have an in−depth knowledge of their capabilities, and fully understand the aircraft performance to determine the exact circling maneuver since weather, unique airport design, and the aircraft position, altitude, and airspeed must all be considered. The following basic rules apply:

11.6.1 Maneuver the shortest path to the base or downwind leg, as appropriate, considering existing weather conditions. There is no restriction from passing over the airport or other runways.

11.6.2 It should be recognized that circling maneuvers may be made while VFR or other flying is in progress at the airport. Standard left turns or specific instruction from the controller for maneuvering must be considered when circling to land.

11.6.3 At airports without a control tower, it may be desirable to fly over the airport to observe wind and turn indicators and other traffic which may be on the runway or flying in the vicinity of the airport.

REFERENCE−
AC 90−66A, Recommended Standards Traffic patterns for Aeronautical Operations at Airports without Operating Control Towers.

11.6.4 The missed approach point (MAP) varies depending upon the approach flown. For vertically guided approaches, the MAP is at the decision altitude/decision height. Non−vertically guided and circling procedures share the same MAP and the pilot determines this MAP by timing from the final approach fix, by a fix, a NAVAID, or a waypoint. Circling from a GLS, an ILS without a localizer line of minima or an RNAV (GPS) approach without an LNAV line of minima is prohibited.

11.7 Instrument Approaches at a Military Field. When instrument approaches are conducted by civil aircraft at military airports, they must be conducted in accordance with the procedures and minimums approved by the military agency having jurisdiction over the airport.

12. Instrument Approach Procedure Charts

12.1 14 CFR Section 91.175(a), Instrument approaches to civil airports, requires the use of SIAPs prescribed for the airport in 14 CFR Part 97 unless otherwise authorized by the Administrator (including ATC). If there are military procedures published at a civil airport, aircraft operating under 14 CFR Part 91 must use the civil procedure(s). Civil procedures are defined with "FAA" in parenthesis; e.g., (FAA), at the top, center of the procedure chart. DOD procedures are defined using the abbreviation of the applicable military service in parenthesis; for example, (USAF), (USN), (USA). 14 CFR Section 91.175(g), Military airports, requires civil pilots flying into or out of military airports to comply with the IAP's and takeoff and landing minimums prescribed by the authority having jurisdiction at those airports. Unless an emergency exists, civil aircraft operating at military airports normally require advance authorization, commonly referred to as "Prior Permission Required" or "PPR." Information on obtaining a PPR for a particular military airport can be found in the Chart Supplement U.S.

NOTE−
Civil aircraft may conduct practice VFR approaches using DOD instrument approach procedures when approved by the air traffic controller.

12.1.1 IAPs (standard and special, civil and military) are based on joint civil and military criteria contained in the U.S. Standard for TERPS. The design of IAPs based on criteria contained in TERPS, takes into account the interrelationship between airports, facilities, and the surrounding environment, terrain, obstacles, noise sensitivity, etc. Appropriate altitudes, courses, headings, distances, and other limitations are specified and, once approved, the procedures are published and distributed by government and commercial cartographers as instrument approach charts.

12.1.2 Not all IAPs are published in chart form. Radar IAPs are established where requirements and facilities exist but they are printed in tabular form in appropriate U.S. Government Flight Information Publications.

12.1.3 The navigation equipment required to join and fly an instrument approach procedure is indicated by the title of the procedure and notes on the chart.

12.1.3.1 Straight−in IAPs are identified by the navigational system providing the final approach guidance and the runway to which the approach is aligned (e.g., VOR RWY 13). Circling only approaches are identified by the navigational system providing final approach guidance and a letter (e.g., VOR A). More than one navigational system separated by a slash indicates that more than one type of equipment must be used to execute the final approach (e.g., VOR/DME RWY 31). More than one navigational system separated by the word "or" indicates either type of equipment may be used to execute the final approach (for example, VOR or GPS RWY 15).

12.1.3.2 In some cases, other types of navigation systems including radar may be required to execute other portions of the approach or to navigate to the IAF (e.g., an NDB procedure turn to an ILS, an NDB in the missed approach, or radar required to join the procedure or identify a fix). When radar or other equipment is required for procedure entry from the en route environment, a note will be charted in the planview of the approach procedure chart (for example, RADAR REQUIRED or ADF REQUIRED). When radar or other equipment is required on portions of the procedure outside the final approach segment, including the missed approach, a note will be charted in the notes box of the pilot briefing portion of the approach chart (for example, RADAR REQUIRED or DME REQUIRED). Notes are not charted when VOR is required outside the final approach segment. Pilots should ensure that the aircraft is equipped with the required NAVAID(s) in order to execute the approach, including the missed approach.

NOTE−
Some military (i.e., U.S. Air Force and U.S. Navy) IAPs have these "additional equipment required" notes charted only in the planview of the approach procedure and do not conform to the same application standards used by the FAA.

12.1.3.3 The FAA has initiated a program to provide a new notation for LOC approaches when charted on an ILS approach requiring other navigational aids to fly the final approach course. The LOC minimums will be annotated with the NAVAID required (for example, "DME Required" or "RADAR Required"). During the transition period, ILS approaches will still exist without the annotation.

12.1.3.4 Many ILS approaches having minima based on RVR are eligible for a landing minimum of RVR 1800. Some of these approaches are to runways that have touchdown zone and centerline lights. For many runways that do not have touchdown and centerline lights, it is still possible to allow a landing minimum of RVR 1800. For these runways, the normal ILS minimum of RVR 2400 can be annotated with a single or double asterisk or the dagger symbol "†"; for example "** 696/24 200 (200/1/2)." A note is included on the chart stating "**RVR 1800 authorized with use of FD or AP or HUD to DA." The pilot must use the flight director, or autopilot with an approved approach coupler, or head up display to decision altitude or to the initiation of a missed approach. In the interest of safety, single pilot operators should not fly approaches to 1800 RVR minimums on runways without touchdown and centerline lights using only a flight director, unless accompanied by the use of an autopilot with an approach coupler.

12.1.3.5 The naming of multiple approaches of the same type to the same runway is also changing. Multiple approaches with the same guidance will be annotated with an alphabetical suffix beginning at the end of the alphabet and working backwards for subsequent procedures (e.g., ILS Z RWY 28, ILS Y RWY 28, etc.). The existing annotations such as ILS 2 RWY 28 or Silver ILS RWY 28 will be phased out and replaced with the new designation. The Cat II and Cat III designations are used to differentiate between multiple ILSs to the same runway unless there are multiples of the same type.

12.1.3.6 RNAV (GPS) approaches to LNAV, LP, LNAV/VNAV and LPV lines of minima using WAAS and RNAV (GPS) approaches to LNAV and LNAV/VNAV lines of minima using GPS are charted as RNAV (GPS) RWY (Number) (e.g., RNAV (GPS) RWY 21).

12.1.3.7 Performance−Based Navigation (PBN) Box. As charts are updated, a procedure's PBN requirements and conventional equipment requirements will be prominently displayed in separate, standardized notes boxes. For procedures with PBN elements, the PBN box will contain the procedure's navigation specification(s); and, if required: specific sensors or infrastructure needed for the navigation solution, any additional or advanced functional requirements, the minimum Required Navigation Performance (RNP) value, and any amplifying remarks. Items listed in this PBN box are REQUIRED for the procedure's PBN elements. For example, an ILS with an RNAV missed approach would require a specific capability to fly the missed approach portion of the procedure. That required capability will be listed in the PBN box. The separate Equipment Requirements box will list ground−based equipment requirements. On procedures with both PBN elements and equipment requirements, the PBN requirements box will be listed first. The publication of these notes will continue incrementally until all charts have been amended to comply with the new standard.

12.1.4 Approach minimums are based on the local altimeter setting for that airport, unless annotated otherwise; for example, Oklahoma City/Will Rogers World approaches are based on having a Will Rogers World altimeter setting. When a different altimeter source is required, or more than one source is authorized, it will be annotated on the approach chart; e.g., use Sidney altimeter setting, if not received, use Scottsbluff altimeter setting. Approach minimums may be raised when a nonlocal altimeter source is authorized. When more than one altimeter source is authorized, and the minima are different, they will be shown by separate lines in the approach minima box or a note; e.g., use Manhattan altimeter setting; when not available use Salina altimeter setting and increase all MDAs 40 feet. When the altimeter must be obtained from a source other than air traffic a note will indicate the source; e.g., Obtain local altimeter setting on CTAF. When the altimeter setting(s) on which the approach is based is not available, the approach is not authorized. Baro−VNAV must be flown using the local altimeter setting only. Where no local altimeter is available, the LNAV/VNAV line will still be published for use by WAAS receivers with a note that Baro−VNAV is not authorized. When a local and at least one other altimeter setting source is authorized and the local altimeter is not available Baro−VNAV is not authorized; however, the LNAV/VNAV minima can still be used by WAAS receivers using the alternate altimeter setting source.

NOTE−
Barometric Vertical Navigation (baro−VNAV). An RNAV system function which uses barometric altitude information from the aircraft's altimeter to compute and present a vertical guidance path to the pilot. The specified vertical path is computed as a geometric path, typically computed between two waypoints or an angle based computation from a single waypoint. Further guidance may be found in Advisory Circular 90−105.

12.1.5 A pilot adhering to the altitudes, flight paths, and weather minimums depicted on the IAP chart or vectors and altitudes issued by the radar controller, is assured of terrain and obstruction clearance and runway or airport alignment during approach for landing.

12.1.6 IAPs are designed to provide an IFR descent from the en route environment to a point where a safe landing can be made. They are prescribed and approved by appropriate civil or military authority to ensure a safe descent during instrument flight conditions at a specific airport. It is important that pilots understand these procedures and their use prior to attempting to fly instrument approaches.

12.1.7 TERPS criteria are provided for the following types of instrument approach procedures:

12.1.7.1 Precision Approach (PA). An instrument approach based on a navigation system that provides course and glidepath deviation information meeting the precision standards of ICAO Annex 10. For example, PAR, ILS,and GLS are precision approaches.

12.1.7.2 Approach with Vertical Guidance (APV). An instrument approach based on a navigation system that is not required to meet the precision approach standards of ICAO Annex 10 but provides course and glidepath deviation information. For example, Baro−VNAV, LDA with glidepath, LNAV/VNAV and LPV are APV approaches.

12.1.7.3 Nonprecision Approach (NPA). An instrument approach based on a navigation system which provides course deviation information, but no glidepath deviation information. For example, VOR, NDB and LNAV. As noted in subparagraph 12.10, Vertical Descent Angle (VDA) on Nonprecision Approaches, some approach procedures may provide a Vertical Descent Angle as an aid in flying a stabilized approach, without requiring its use in order to fly the procedure. This does not make the approach an APV procedure, since it must still be flown to an MDA and has not been evaluated with a glidepath.

12.2 The method used to depict prescribed altitudes on instrument approach charts differs according to techniques employed by different chart publishers. Prescribed altitudes may be depicted in four different configurations: minimum, maximum, mandatory, and recommended. The U.S. Government distributes charts produced by National Geospatial−Intelligence Agency (NGA) and FAA. Altitudes are depicted on these charts in the profile view with underscore, overscore, both or none to identify them as minimum, maximum, mandatory or recommended.

12.2.1 Minimum altitude will be depicted with the altitude value underscored. Aircraft are required to maintain altitude at or above the depicted value, for example, $\underline{3000}$.

12.2.2 Maximum altitude will be depicted with the altitude value overscored. Aircraft are required to maintain altitude at or below the depicted value, for example, $\overline{4000}$.

12.2.3 Mandatory altitude will be depicted with the altitude value both underscored and overscored. Aircraft are required to maintain altitude at the depicted value, for example, $\overline{\underline{5000}}$.

12.2.4 Recommended altitude will be depicted with no overscore or underscore. These altitudes are depicted for descent planning, for example, 6000.

NOTE−
1. *Pilots are cautioned to adhere to altitudes as prescribed because, in certain instances, they may be used as the basis for vertical separation of aircraft by ATC. When a depicted altitude is specified in the ATC clearance, that altitude becomes mandatory as defined above.*

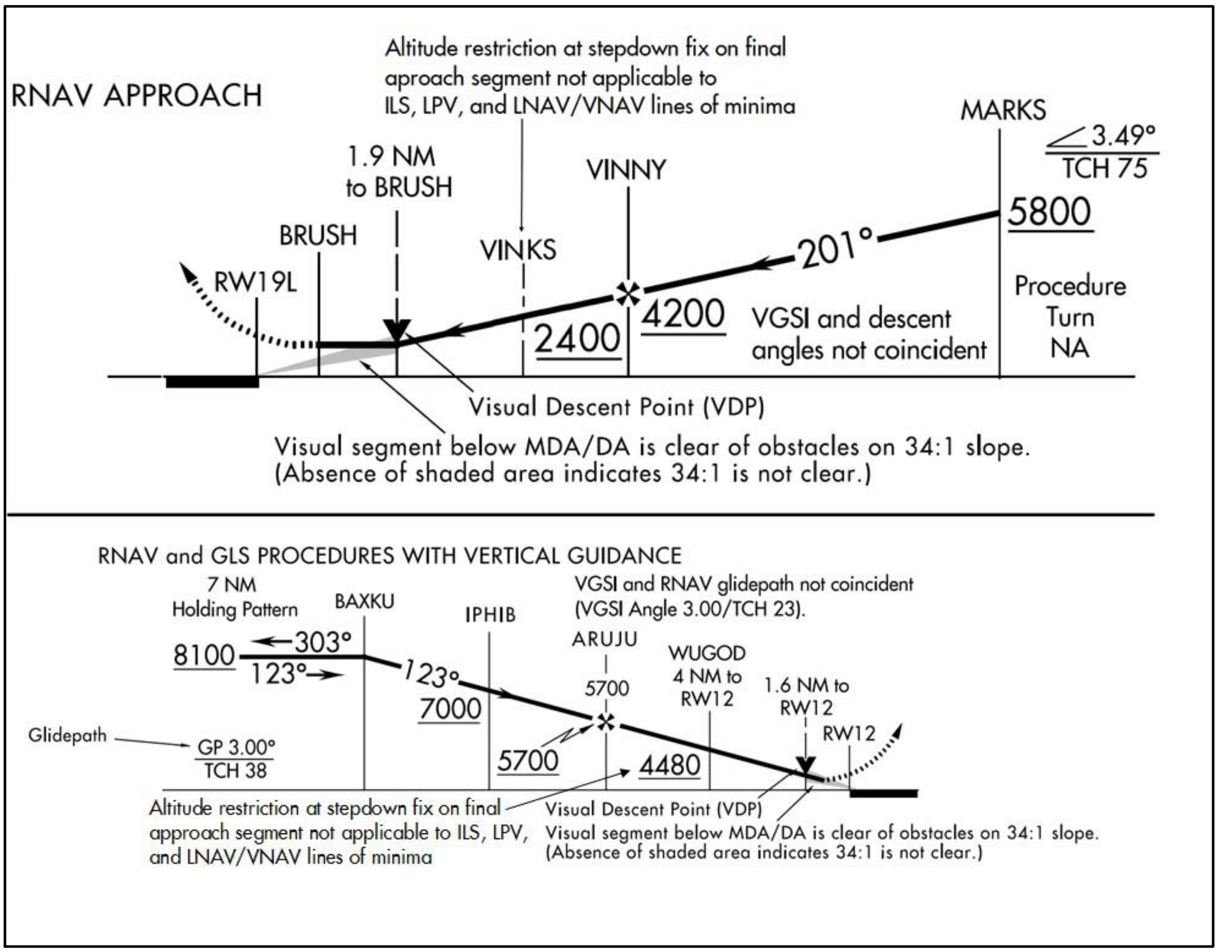
2. *The ILS glide slope is intended to be intercepted at the published glide slope intercept altitude. This point marks the PFAF and is depicted by the "lightning bolt" symbol on U.S. Government charts. Intercepting the glide slope at this altitude marks the beginning of the final approach segment and ensures required obstacle clearance during descent from the glide slope intercept altitude to the lowest published decision altitude for the approach. Interception and tracking of the glide slope prior to the published glide slope interception altitude does not necessarily ensure that minimum, maximum, and/or mandatory altitudes published for any preceding fixes will be complied with during the descent. If the pilot chooses to track the glide slope prior to the glide slope interception altitude, they remain responsible for complying with published altitudes for any preceding stepdown fixes encountered during the subsequent descent.*

3. *Approaches used for simultaneous (parallel) independent and simultaneous close parallel operations procedurally require descending on the glideslope from the altitude at which the approach clearance is issued (refer to ENR 1.5−19. and ENR 1.5−20.). For simultaneous close parallel (PRM) approaches, the Attention All Users Page (AAUP) may publish a note which indicates that descending on the glideslope/glidepath meets all crossing restrictions. However, if no such note is published, and for simultaneous independent approaches (4300 and greater runway separation) where an AAUP is not published, pilots are cautioned to monitor their descent on the glideslope/path* *outside of the PFAF to ensure compliance with published crossing restrictions during simultaneous operations.*

4. *When parallel approach courses are less than 2500 feet apart and reduced in-trail spacing is authorized for simultaneous dependent operations, a chart note will indicate that simultaneous operations require use of vertical guidance and that the pilot should maintain last assigned altitude until established on glide slope. These approaches procedurally require utilization of the ILS glide slope for wake turbulence mitigation. Pilots should not confuse these simultaneous dependent operations with (SOIA) simultaneous close parallel PRM approaches, where PRM appears in the approach title.*

12.2.5 Altitude restrictions depicted at stepdown fixes within the final approach segment are applicable only when flying a Non−Precision Approach to a straight−in or circling line of minima identified as a MDA. Stepdown fix altitude restrictions within the final approach segment do not apply to pilots using Precision Approach (ILS) or Approach with Vertical Guidance (LPV, LNAV/VNAV) lines of minima identified as a DA, since obstacle clearance on these approaches are based on the aircraft following the applicable vertical guidance. Pilots are responsible for adherence to stepdown fix altitude restrictions when outside the final approach segment (i.e., initial or intermediate segment), regardless of which type of procedure the pilot is flying. (See FIG ENR 1.5−19).

FIG ENR 1.5−19
Instrument Approach Procedure Stepdown Fixes



12.3 Minimum Safe Altitudes (MSA) are published for emergency use on IAP charts. MSAs provide 1,000 feet of clearance over all obstacles, but do not necessarily assure acceptable navigation signal coverage. The MSA depiction on the plan view of an approach chart contains the identifier of the center point of the MSA, the applicable radius of the MSA, a depiction of the sector(s), and the minimum altitudes above mean sea level which provide obstacle clearance. For conventional navigation systems, the MSA is normally based on the primary omnidirectional facility on which the IAP is predicated, but may be based on the airport reference point (ARP) if no suitable facility is available. For RNAV approaches, the MSA is based on an RNAV waypoint. MSAs normally have a 25 NM radius; however, for conventional navigation systems, this radius may be expanded to 30 NM if necessary to encompass the airport landing surfaces. A single sector altitude is normally established, however when the MSA is based on a facility and it is necessary to obtain relief from obstacles, an MSA with up to four sectors may be established.

12.4 Terminal Arrival Area (TAA)

12.4.1 The TAA provides a transition from the en route structure to the terminal environment with little required pilot/air traffic control interface for aircraft equipped with Area Navigation (RNAV) systems. A TAA provides minimum altitudes with standard obstacle clearance when operating within the TAA boundaries. TAAs are primarily used on RNAV approaches but may be used on an ILS approach when RNAV is the sole means for navigation to the IF; however, they are not normally used in areas of heavy concentration of air traffic.

12.4.2 The basic design of the RNAV procedure underlying the TAA is normally the "T" design (also called the "Basic T"). The "T" design incorporates two IAFs plus a dual purpose IF/IAF that functions as both an intermediate fix and an initial approach fix. The T configuration continues from the IF/IAF to the final approach fix (FAF) and then to the missed approach point (MAP). The two base leg IAFs are typically aligned in a straight-line perpendicular to the intermediate course connecting at the IF/IAF. A Hold-in-Lieu-of Procedure Turn (HILPT) is anchored at the IF/IAF and depicted on U.S. Government publications using the "hold−in−lieu −of−PT" holding pattern symbol. When the HILPT is necessary for course alignment and/or descent, the dual purpose IF/IAF serves as an IAF during the entry into the pattern. Following entry into the HILPT pattern and when flying a route or sector labeled "NoPT," the dual-purpose fix serves as an IF, marking the beginning of the Intermediate Segment. See FIG ENR 1.5−20 and FIG ENR 1.5−21 for the Basic "T" TAA configuration.

FIG ENR 1.5−20
Basic "T" Design

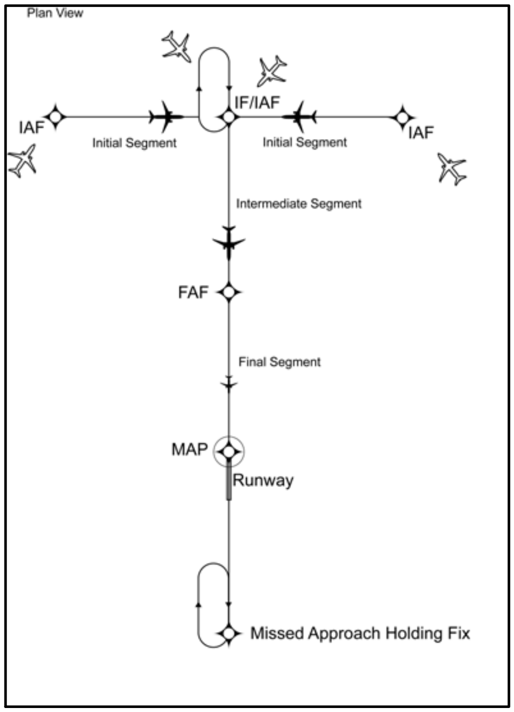
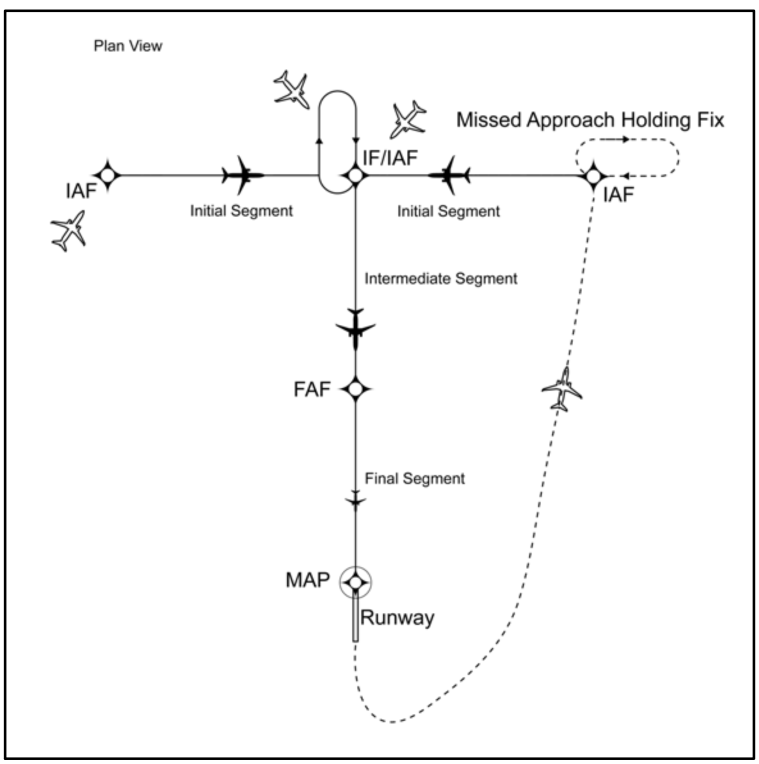
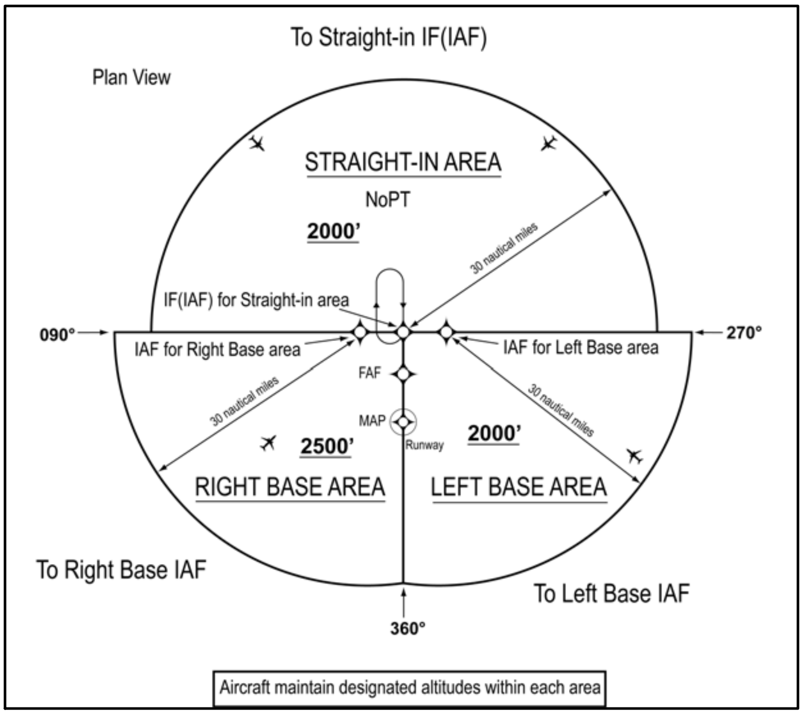


FIG ENR 1.5−21
Basic "T" Design



12.4.3 The standard TAA based on the "T" design consists of three areas defined by the Initial Approach Fix (IAF) legs and the intermediate segment course beginning at the IF/IAF. These areas are called the straight−in, left−base, and right−base areas. (See FIG ENR 1.5−22). TAA area lateral boundaries are identified by magnetic courses TO the IF/IAF. The straight−in area can be further divided into pie−shaped sectors with the boundaries identified by magnetic courses TO the (IF/ IAF), and may contain stepdown sections defined by arcs based on RNAV distances from the IF/IAF. (See FIG ENR 1.5−23). The right/left−base areas can only be subdivided using arcs based on RNAV distances from the IAFs for those areas.

FIG ENR 1.5−22
TAA Area



12.4.4 Entry from the terminal area onto the procedure is normally accomplished via a no procedure turn (NoPT) routing or via a course reversal maneuver. The published procedure will be annotated "NoPT" to indicate when the course reversal is not authorized when flying within a particular TAA sector. Otherwise, the pilot is expected to execute the course reversal under the provisions of 14 CFR Section 91.175. The pilot may elect to use the course reversal pattern when it is not required by the procedure, but must receive clearance from air traffic control before beginning the procedure.

12.4.4.1 ATC should not clear an aircraft to the left base leg or right base leg IAF within a TAA at an intercept angle exceeding 90 degrees. Pilots must not execute the HILPT course reversal when the sector or procedure segment is labeled "NoPT."

12.4.4.2 ATC may clear aircraft direct to the fix labeled IF/IAF if the course to the IF/IAF is within the straight-in sector labeled "NoPT" and the intercept angle does not exceed 90 degrees. Pilots are expected to proceed direct to the IF/IAF and accomplish a straight-in approach. Do not execute HILPT course reversal. Pilots are also expected to fly the straight−in approach when ATC provides radar vectors and monitoring to the IF/IAF and issues a "straight-in" approach clearance; otherwise, the pilot *is expected* to execute the HILPT course reversal.

12.4.4.3 On rare occasions, ATC may clear the aircraft for an approach at the airport without specifying the approach procedure by name or by a specific approach (for example, "cleared RNAV Runway 34 approach") without specifying a particular IAF. In either case, the pilot should proceed direct to the IAF or to the IF/IAF associated with the sector that the aircraft will enter the TAA and join the approach course from that point and if required by that sector (i.e., sector is not labeled "NoPT), complete the HILPT course reversal.

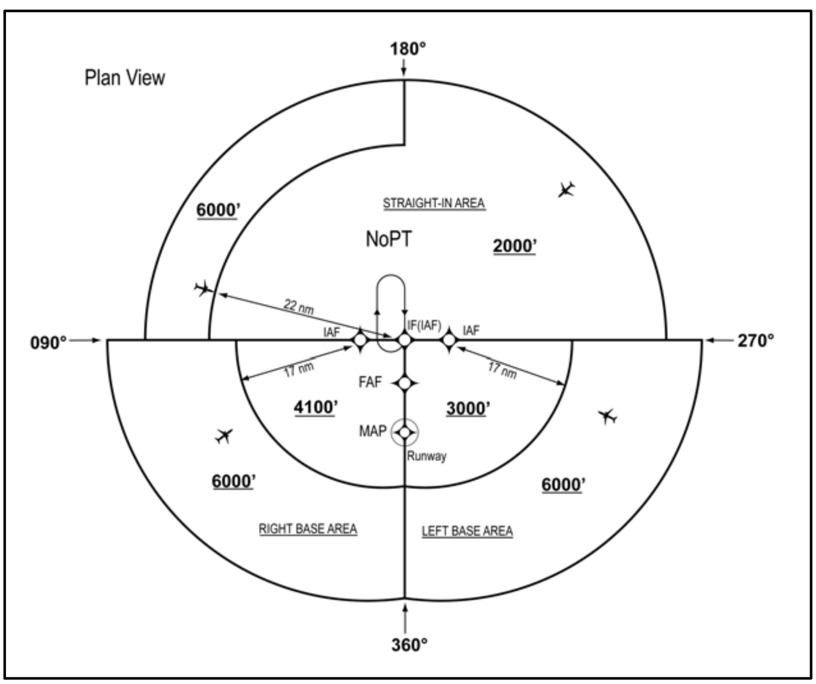
NOTE−
If approaching with a TO bearing that is on a sector boundary, the pilot is expected to proceed in accordance with a "NoPT" routing unless otherwise instructed by ATC.

12.4.5 Altitudes published within the TAA replace the MSA altitude. However, unlike MSA altitudes the TAA altitudes are operationally usable altitudes. These altitudes provide at least 1,000 feet of obstacle clearance, more in mountainous areas. It is important that the pilot knows which area of the TAA the aircraft will enter in order to comply with the minimum altitude requirements. The pilot can determine which area of the TAA the aircraft will enter by determining the magnetic bearing of the aircraft TO the fix labeled IF/IAF. The bearing should then be compared to the published lateral boundary bearings that define the TAA areas. Do not use magnetic bearing to the right-base or left-base IAFs to determine position.

12.4.5.1 An ATC clearance direct to an IAF or to the IF/IAF without an approach clearance does not authorize a pilot to descend to a lower TAA altitude. If a pilot desires a lower altitude without an approach clearance, request the lower TAA altitude from ATC. Pilots not sure of the clearance should confirm their clearance with ATC or request a specific clearance. Pilots entering the TAA with two−way radio communications failure (14 CFR Section 91.185, IFR Operations: Two−way Radio Communications Failure), must maintain the highest altitude prescribed by Section 91.185(c)(2) until arriving at the appropriate IAF.

12.4.5.2 Once cleared for the approach, pilots may descend in the TAA sector to the minimum altitude depicted within the defined area/subdivision, unless instructed otherwise by air traffic control. Pilots should plan their descent within the TAA to permit a normal descent from the IF/IAF to the FAF. In FIG ENR 1.5−23, pilots within the left or right−base areas are expected to maintain a minimum altitude of 6,000 feet until within 17 NM of the associated IAF. After crossing the 17 NM arc, descent is authorized to the lower charted altitudes. Pilots approaching from the northwest are expected to maintain a minimum altitude of 6,000 feet, and when within 22 NM of the IF/IAF, descend to a minimum altitude of 2,000 feet MSL until crossing the IF/IAF.

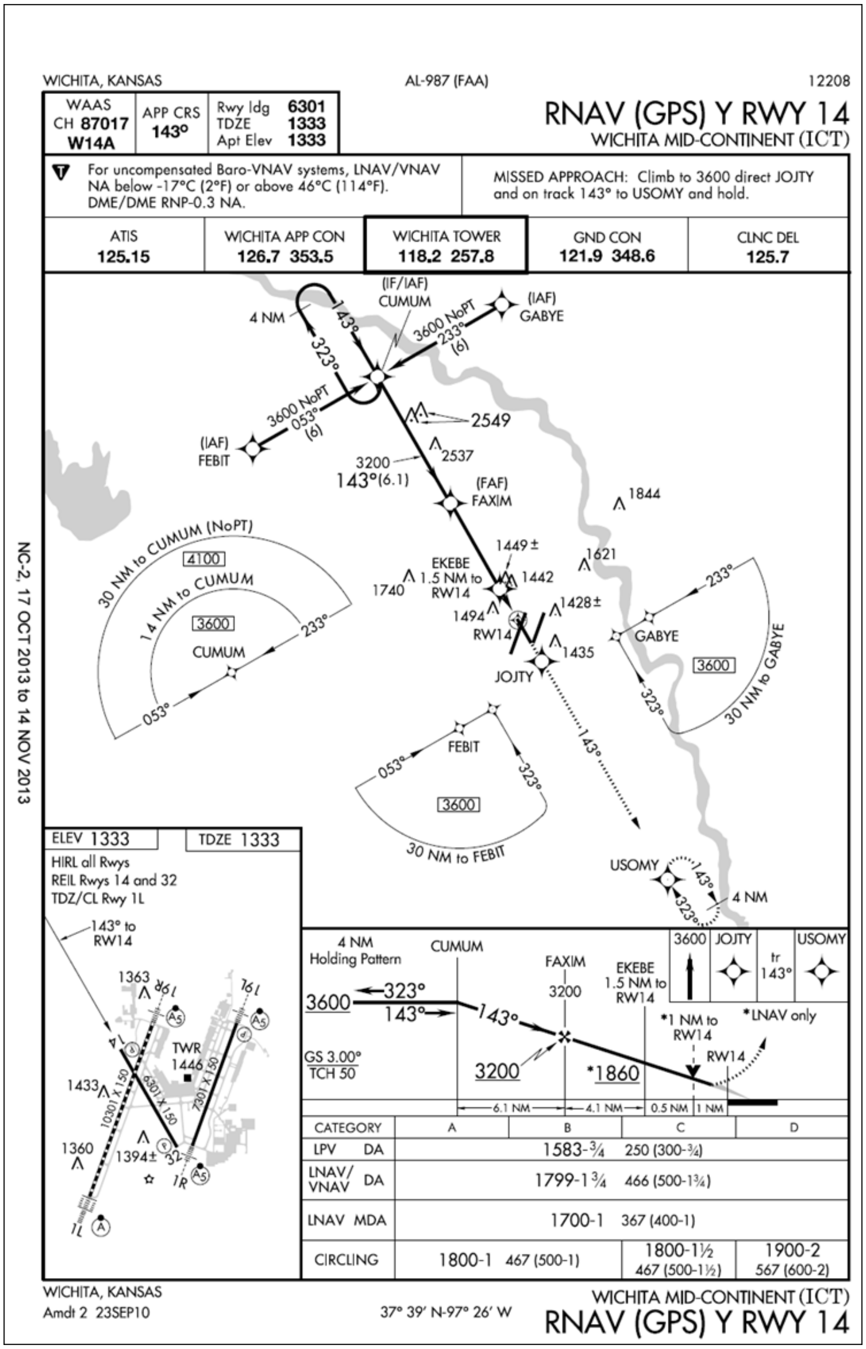
FIG ENR 1.5−23
Sectored TAA Areas



12.4.6 U.S. Government charts depict TAAs using icons located in the plan view outside the depiction of the actual approach procedure. (See FIG ENR 1.5−24). Use of icons is necessary to avoid obscuring any portion of the "T" procedure (altitudes, courses, minimum altitudes, etc.). The icon for each TAA area will be located and oriented on the plan view with respect to the direction of arrival to the approach procedure, and will show all TAA minimum altitudes and sector/radius subdivisions. The IAF for each area of the TAA is included on the icon where it appears on the approach to help the pilot orient the icon to the approach procedure. The IAF name and the distance of the TAA area boundary from the IAF are included on the outside arc of the TAA area icon.

FIG ENR 1.5−24

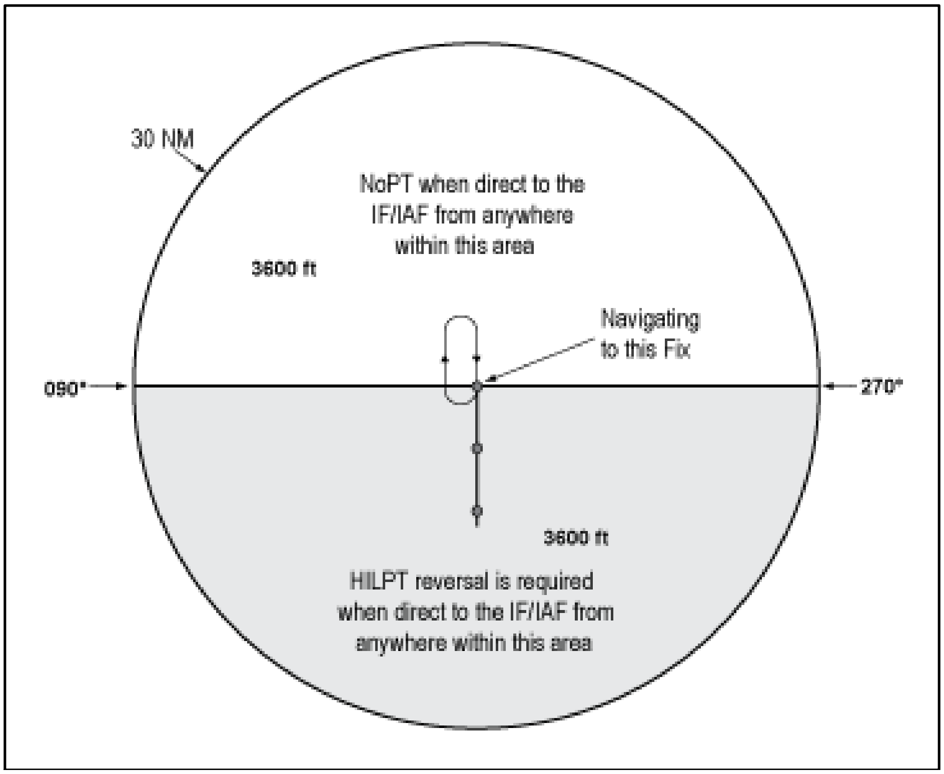
RNAV (GPS) Approach Chart



12.4.7 TAAs may be modified from the standard size and shape to accommodate operational or ATC requirements. Some areas may be eliminated, while the other areas are expanded. The "T" design may be modified by the procedure designers where required by terrain or ATC considerations. For instance, the "T" design may appear more like a regularly or irregularly shaped "Y," upside down "L," or an "I."

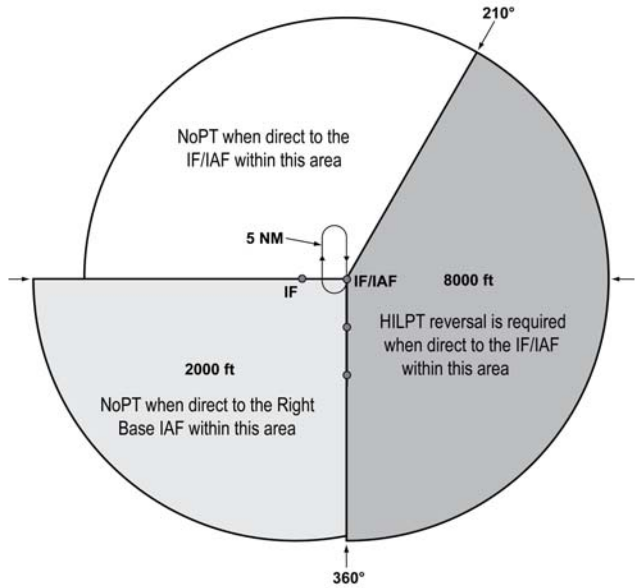
12.4.7.1 FIG ENR 1.5−25 depicts a TAA without a left base leg and right base leg. In this generalized example, pilots approaching on a bearing TO the IF/IAF from 271 clockwise to 089 are expected to execute a course reversal because the amount of turn required at the IF/IAF exceeds 90 degrees. The term "NoPT" will be annotated on the boundary of the TAA icon for the other portion of the TAA.

FIG ENR 1.5−25
TAA with Left and Right Base Areas Eliminated



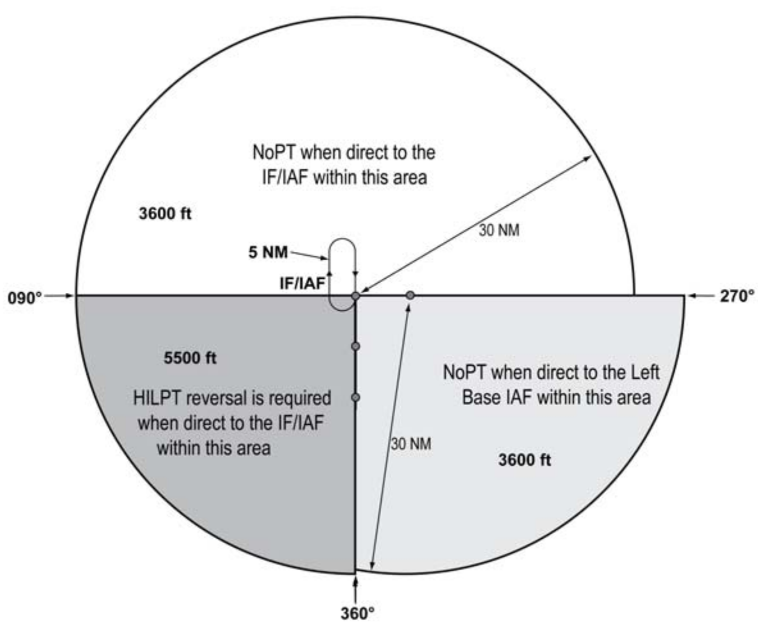
12.4.7.2 FIG ENR 1.5−26 depicts another TAA modification that pilots may encounter. In this generalized example, the left base area and part of the straight-in area have been eliminated. Pilots operating within the TAA between 210 clockwise to 360 bearing TO the IF/IAF are expected to proceed direct to the IF/IAF and then execute the course reversal in order to properly align the aircraft for entry onto the intermediate segment or to avoid an excessive descent rate. Aircraft operating in areas from 001 clockwise to 090 bearing TO the IF/IAF are expected to proceed direct to the right base IAF and not execute course reversal maneuver. Aircraft cleared direct the IF/IAF by ATC in this sector will be expected to accomplish HILTP. Aircraft operating in areas 091 clockwise to 209 bearing TO the IF/IAF are expected to proceed direct to the IF/IAF and not execute the course reversal. These two areas are annotated "NoPT" at the TAA boundary of the icon in these areas when displayed on the approach chart's plan view.

FIG ENR 1.5−26
TAA with Left Base and Part of Straight−In Area Eliminated



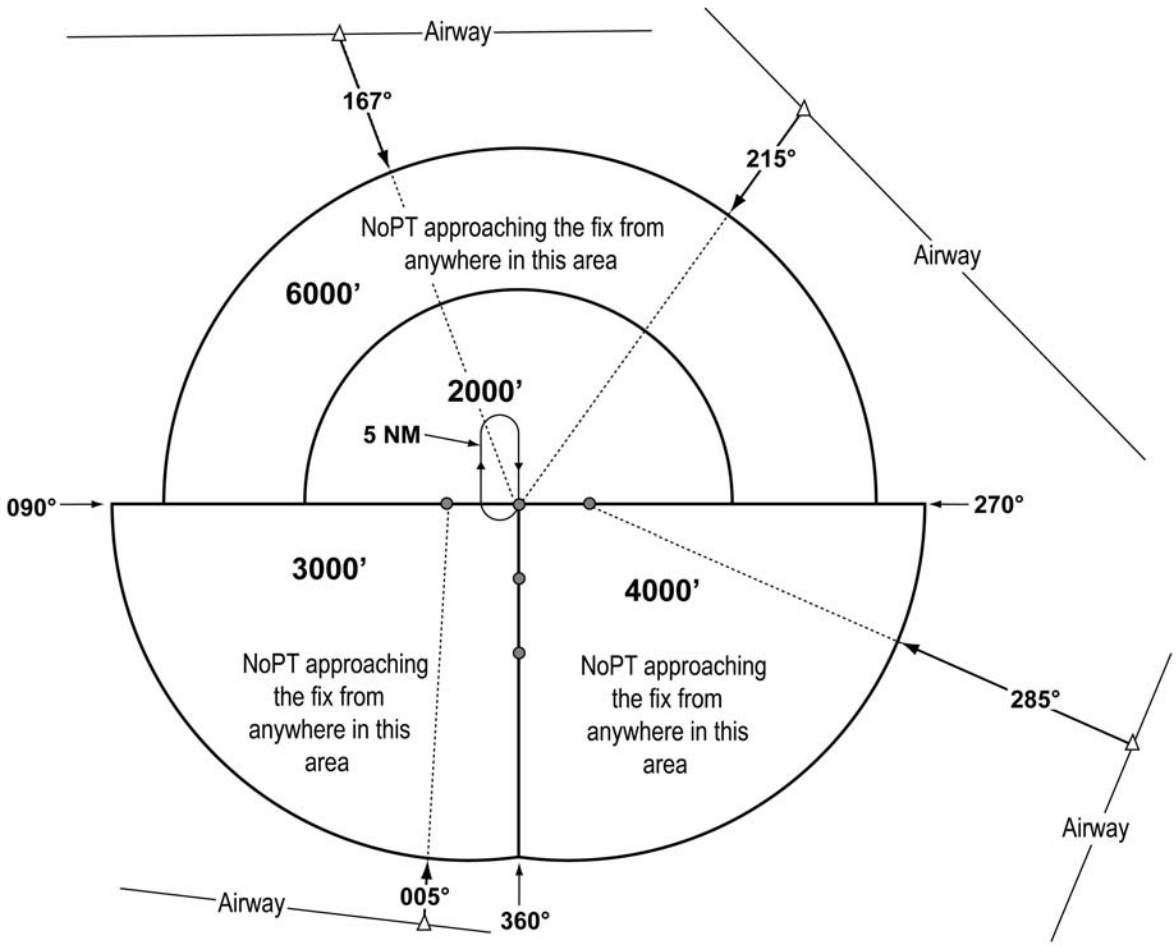
12.4.7.3 FIG ENR 1.5−27 depicts a TAA with right base leg and part of the straight-in area eliminated.

FIG ENR 1.5−27
TAA with Right Base Eliminated



12.4.8 When an airway does not cross the lateral TAA boundaries, a feeder route will be established from an airway fix or NAVAID to the TAA boundary to provide a transition from the en route structure to the appropriate IAF. Each feeder route will terminate at the TAA boundary and will be aligned along a path pointing to the associated IAF. Pilots should descend to the TAA altitude after crossing the TAA boundary and cleared for the approach by ATC.
(See FIG ENR 1.5−28).

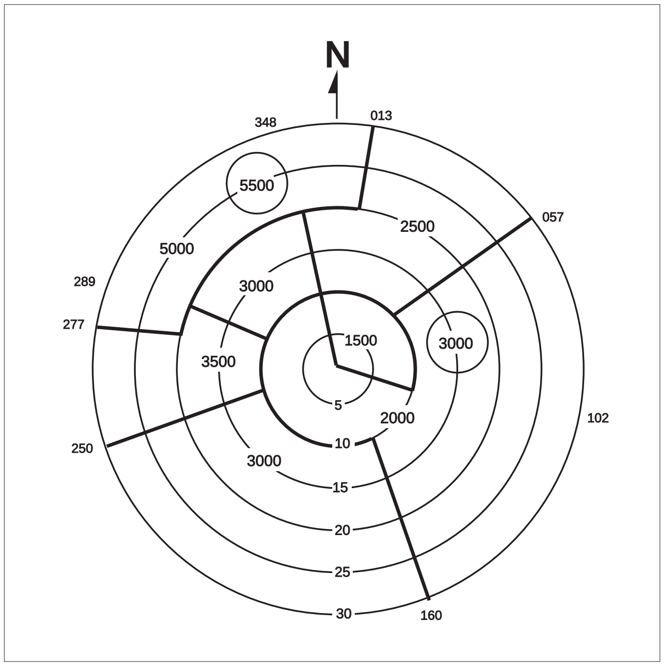
FIG ENR 1.5−28
Examples of a TAA with Feeders from an Airway



12.4.9 Each waypoint on the "T" is assigned a pronounceable 5−letter name, except the missed approach waypoint. These names are used for ATC communications, RNAV databases, and aeronautical navigation products. The missed approach waypoint is assigned a pronounceable name when it is not located at the runway threshold.

FIG ENR 1.5−29

Minimum Vectoring Altitude Charts



12.5 Minimum Vectoring Altitudes (MVAs) are established for use by ATC when radar ATC is exercised. MVA charts are prepared by air traffic facilities at locations where there are numerous different minimum IFR altitudes. Each MVA chart has sectors large enough to accommodate vectoring of aircraft within the sector at the MVA. Each sector boundary is at least 3 miles from the obstruction determining the MVA. To avoid a large sector with an excessively high MVA due to an isolated prominent obstruction, the obstruction may be enclosed in a buffer area whose boundaries are at least 3 miles from the obstruction. This is done to facilitate vectoring around the obstruction. (See FIG ENR 1.5−29.)

12.5.1 The minimum vectoring altitude in each sector provides 1,000 feet above the highest obstacle in nonmountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVAs are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of Airport Surveillance Radar (ASR). The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace.

NOTE−
OROCA is an off−route altitude which provides obstruction clearance with a 1,000 foot buffer in nonmountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground−based navigational aids, air traffic control radar, or communications coverage.

12.5.2 Because of differences in the areas considered for MVA, and those applied to other minimum altitudes, and the ability to isolate specific obstacles, some MVAs may be lower than the nonradar Minimum En Route Altitudes (MEAs), Minimum Obstruction Clearance Altitudes (MOCAs) or other minimum altitudes depicted on charts for a given location. While being radar vectored, IFR altitude assignments by ATC will be at or above MVA.

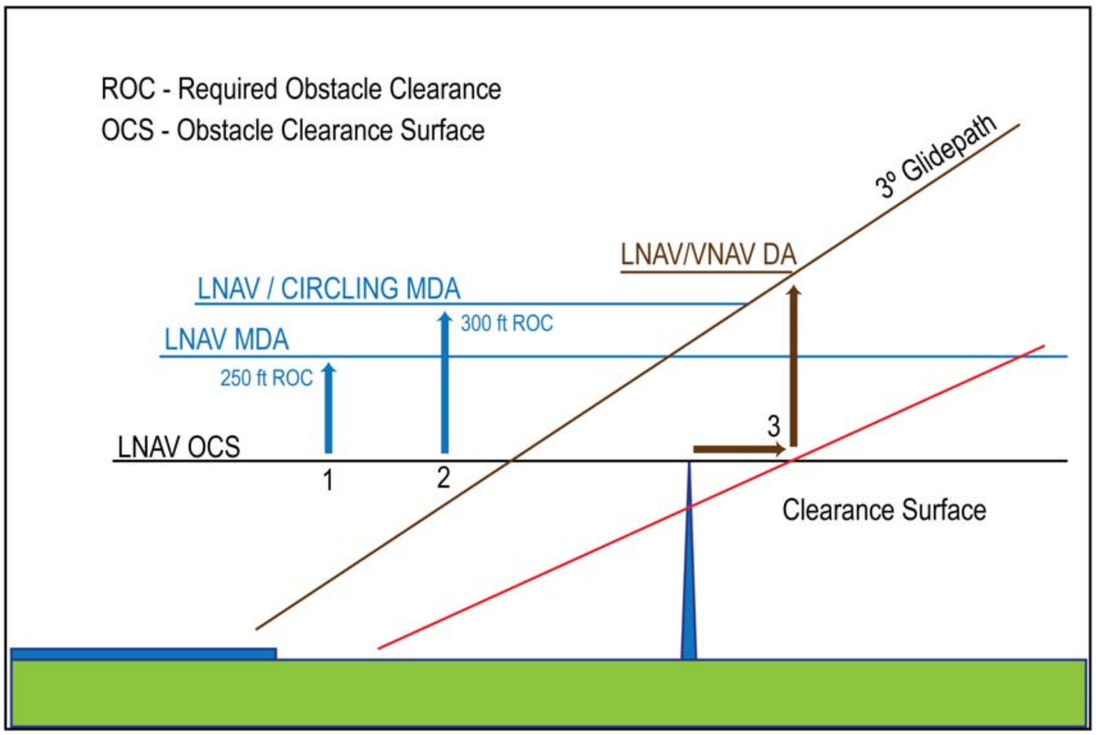
12.5.3 The MVA/MIA may be lower than the TAA minimum altitude. If ATC has assigned an altitude to an aircraft that is below the TAA minimum altitude, the aircraft will either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.

12.6 Circling. Circling minimums charted on an RNAV (GPS) approach chart may be lower than the LNAV/VNAV line of minima, but never lower than the LNAV line of minima (straight-in approach). Pilots may safely perform the circling maneuver at the circling published line of minima if the approach and circling maneuver is properly performed according to aircraft category and operational limitations.

FIG ENR 1.5−30
**Example of LNAV and Circling Minima Lower Than LNAV/VNAV DA.
Harrisburgh International RNAV (GPS) RWY 13**

CATEGORY	A	B	C	D
LPV DA	**558/24** 250 (300 − ½)			
LNAV/ VNAV DA	**1572 − 5** 1264 (1300 − 5)			
LNAV MDA	**1180 / 24** 872 (900 − ½)	**1180 / 40** 872 (900 − ¾)	**1180 / 2** 872 (900 − 2)	**1180 / 2 ¼** 872 (900 − 2 ¼)
CIRCLING	**1180 − 1** 870 (900 − 1)	**1180 − 1 ¼** 870 (900 − 1 ¼)	**1180 − 2 ½** 870 (900 − 2 ½)	**1180 − 2 ¾** 870 (900 − 2 ¾)

FIG ENR 1.5−31
Explanation of LNAV and/or Circling Minima Lower than LNAV/VNAV DA



12.7 FIG ENR 1.5−31 provides a visual representation of an obstacle evaluation and calculation of LNAV MDA, Circling MDA, LNAV/VNAV DA.

12.7.1 No vertical guidance (LNAV). A line is drawn horizontal at obstacle height and 250 feet added for Required Obstacle Clearance (ROC). The controlling obstacle used to determine LNAV MDA can be different than the controlling obstacle used in determining ROC for circling MDA. Other factors may force a number larger than 250 ft to be added to the LNAV OCS. The number is rounded up to the next higher 20 foot increment.

12.7.2 Circling MDA. The circling MDA will provide 300 foot obstacle clearance within the area considered for obstacle clearance and may be lower than the LNAV/VNAV DA, but never lower than the straight in LNAV MDA. This may occur when different controlling obstacles are used or when other controlling factors force the LNAV MDA to be higher than 250 feet above the LNAV OCS. In FIG ENR 1.5−30, the required obstacle clearance for both the LNAV and Circle resulted in the same MDA, but lower than the LNAV/VNAV DA. FIG ENR 1.5−31 provides an illustration of this type of situation.

12.7.3 Vertical guidance (LNAV/VNAV). A line is drawn horizontal at obstacle height until reaching the obstacle clearance surface (OCS). At the OCS, a vertical line is drawn until reaching the glide path. This is the DA for the approach. This method places the offending obstacle in front of the LNAV/VNAV DA so it can be seen and avoided. In some situations, this may result in the LNAV/VNAV DA being higher than the LNAV and/or Circling MDA.

12.8 The Visual Descent Point (VDP) identified by the symbol (V), is a defined point on the final approach course of a nonprecision straight−in approach procedure from which a stabilized visual descent from the MDA to the runway touchdown point may be commenced. The pilot should not descend below the MDA prior to reaching the VDP. The VDP will be identified by DME or RNAV along−track distance to the MAP. The VDP distance is based on the lowest MDA published on the IAP and harmonized with the angle of the visual glide slope indicator (VGSI) (if installed) or the procedure VDA (if no VGSI is installed). A VDP may not be published under certain circumstances which may result in a destabilized descent between the MDA and the runway touchdown point. Such circumstances include an obstacle penetrating the visual surface between the MDA and runway threshold, lack of distance measuring capability, or the procedure design prevents a VDP to be identified.

12.8.1 VGSI systems may be used as a visual aid to the pilot to determine if the aircraft is in a position to make a stabilized descent from the MDA. When the visibility is close to minimums, the VGSI may not be visible at the VDP due to its location beyond the MAP.

12.8.2 Pilots not equipped to receive the VDP should fly the approach procedure as though no VDP had been provided.

12.8.3 On a straight-in nonprecision IAP, descent below the MDA between the VDP and the MAP may be inadvisable or impossible. Aircraft speed, height above the runway, descent rate, amount of turn, and runway length are some of the factors which must be considered by the pilot to determine if a safe descent and landing can be accomplished.

12.9 A visual segment obstruction evaluation is accomplished during procedure design on all IAPs. Obstacles (both lighted and unlighted) are allowed to penetrate the visual segment obstacle identification surfaces. Identified obstacle penetrations may cause restrictions to instrument approach operations which may include an increased approach visibility requirement, not publishing a VDP, and/or prohibiting night instrument operations to the runway. There is no implicit obstacle protection from the MDA/DA to the touchdown point. Accordingly, it is the responsibility of the pilot to visually acquire and avoid obstacles below the MDA/DA during transition to landing.

12.9.1 Unlighted obstacle penetrations may result in prohibiting night instrument operations to the runway. A chart note will be published in the pilot briefing strip “Procedure NA at Night.”

12.9.2 Use of a VGSI may be approved in lieu of obstruction lighting to restore night instrument operations to the runway. A chart note will be published in the pilot briefing strip “ Straight-in Rwy XX at Night, operational VGSI required, remain on or above VGSI glidepath until threshold.”

12.10 The highest obstacle (man-made, terrain, or vegetation) will be charted on the planview of an IAP. Other obstacles may be charted in either the planview or the airport sketch based on distance from the runway and available chart space. The elevation of the charted obstacle will be shown to the nearest foot above mean sea level. Obstacles without a verified accuracy are indicated by a ± symbol following the elevation value.

12.11 Vertical Descent Angle (VDA). FAA policy is to publish a VDA/TCH on all nonprecision approaches except those published in conjunction with vertically guided minimums (i.e., ILS or LOC RWY XX) or no-FAF procedures without a step-down fix (i.e., on−airport VOR or NDB). A

VDA does not guarantee obstacle protection below the MDA in the visual segment. The presence of a VDA does not change any nonprecision approach requirements.

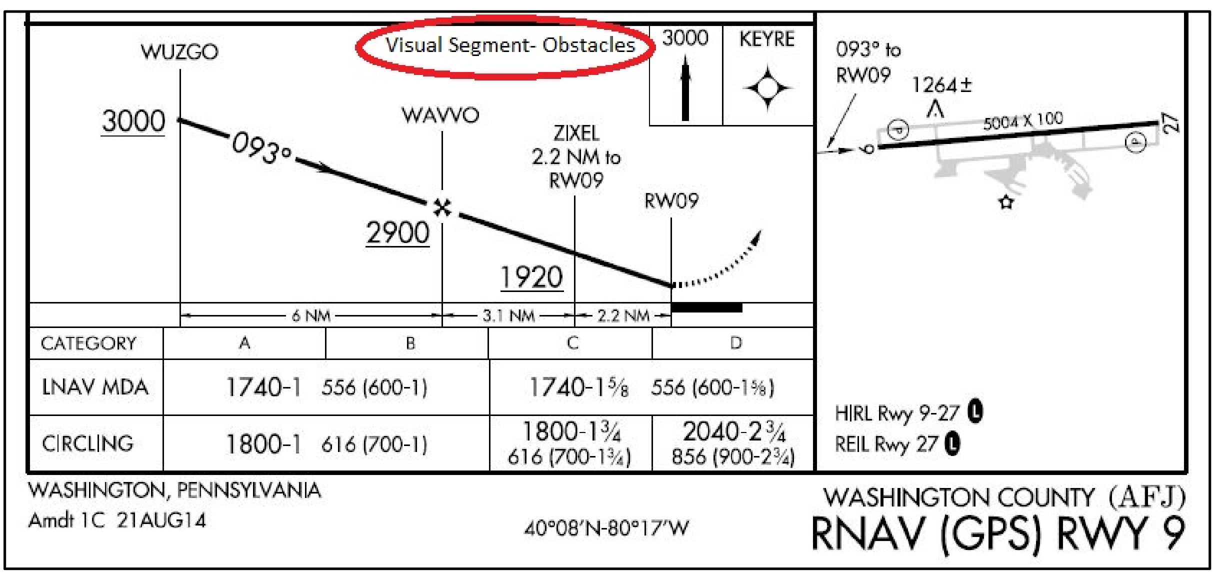
12.11.1 Obstacles may penetrate the obstacle identification surface below the MDA in the visual segment of an IAP that has a published VDA/TCH. When the VDA/TCH is not authorized due to an obstacle penetration that would require a pilot to deviate from the VDA between MDA and touchdown, the VDA/TCH will be replaced with the note "Visual Segment- Obstacles" in the profile view of the IAP (See FIG ENR 1.5−32). Accordingly, pilots are advised to carefully review approach procedures to identify where the optimum stabilized descent to landing can be initiated. Pilots that follow the previously published descent angle, provided by the RNAV system, below the MDA on procedures with this note may encounter obstacles in the visual segment. Pilots must visually avoid any obstacles below the MDA.

12.11.1.1 VDA/TCH data is furnished by FAA on the official source document for publication on IAP charts and for coding in the navigation database unless, as noted previously, replaced by the note "Visual Segment – Obstacles."

12.11.1.2 Commercial chart providers and navigation systems may publish or calculate a VDA/TCH even when the FAA does not provide such data. Pilots are cautioned that they are responsible for obstacle avoidance in the visual segment regardless of the presence or absence of a VDA/TCH and associated navigation system advisory vertical guidance.

12.11.2 The threshold crossing height (TCH) used to compute the descent angle is published with the VDA. The VDA and TCH information are charted on the profile view of the IAP following the fix (FAF/stepdown) used to compute the VDA. If no PA/APV IAP is established to the same runway, the VDA will be equal to or higher than the glide path angle of the VGSI installed on the same runway provided it is within instrument procedure criteria. A chart note will indicate if the VGSI is not coincident with the VDA. Pilots must be aware that the published VDA is for advisory information only and not to be considered instrument procedure derived vertical guidance. The VDA solely offers an aid to help pilots establish a continuous, stabilized descent during final approach.

FIG ENR 1.5−32
Example of a Chart Note



12.11.3 Pilots may use the published angle and estimated/actual groundspeed to find a target rate of descent from the rate of descent table published in the back of the U.S. Terminal Procedures Publication. This rate of descent can be flown with the Vertical Velocity Indicator (VVI) in order to use the VDA as an aid to flying a stabilized descent. No special equipment is required.

12.11.4 A straight−in aligned procedure may be restricted to circling only minimums when an excessive descent gradient necessitates. The descent angle between the FAF/stepdown fix and the Circling MDA must not exceed the maximum descent angle allowed by TERPS criteria. A published VDA on these procedures does not imply that landing straight ahead is recommended or even possible. The descent rate based on the VDA may exceed the capabilities of the aircraft and the pilot must determine how to best maneuver the aircraft within the circling area in order to land safely.

12.12 In isolated cases, an IAP may contain a published visual flight path. These procedures are annotated "Fly Visual to Airport" or "Fly Visual." A dashed arrow indicating the visual flight path will be included in the profile and plan views with an approximate heading and distance to the end of the runway.

12.12.1 The depicted ground track associated with the "Fly Visual to Airport" segment should be flown as a "Dead Reckoning" course. When executing the "Fly Visual to Airport" segment, the flight visibility must not be less than that prescribed in the IAP; the pilot must remain clear of clouds and proceed to the airport maintaining visual contact with the ground. Altitude on the visual flight path is at the discretion of the pilot, and it is the responsibility of the pilot to visually acquire and avoid obstacles in the "Fly Visual to Airport" segment.

12.12.2 Missed approach obstacle clearance is assured only if the missed approach is commenced at the published MAP. Before initiating an IAP that contains a "Fly Visual to Airport" segment, the pilot should have preplanned climb out options based on aircraft performance and terrain features. Obstacle clearance is the responsibility of the pilot when the approach is continued beyond the MAP.

NOTE−
The FAA Administrator retains the authority to approve instrument approach procedures where the pilot may not necessarily have one of the visual references specified in 14 CFR § 91.175 and related rules. It is not a function of procedure design to ensure compliance with § 91.175. The annotation "Fly Visual to Airport" provides relief from § 91.175 requirements that the pilot have distinctly visible and identifiable visual references prior to descent below MDA/DA.

12.13 Area Navigation (RNAV) Instrument Approach Charts. Reliance on RNAV systems for instrument operations is becoming more commonplace as new systems such as GPS and augmented GPS such as the Wide Area Augmentation System (WAAS) are developed and deployed. In order to support full integration of RNAV procedures into the National Airspace System (NAS), the FAA developed a new charting format for IAPs (See FIG ENR 1.5−24). This format avoids unnecessary duplication and proliferation of instrument approach charts. The original stand alone GPS charts, titled simply "GPS," are being converted to the newer format as the procedures are revised. One reason for the revision is the addition of WAAS based minima to the approach chart. The reformatted approach chart is titled "RNAV (GPS) RWY XX." Up to four lines of minima are included on these charts. GLS (Ground Based Augmentation System (GBAS) Landing System) was a placeholder for future WAAS and LAAS minima, and the minima was always listed as N/A. The GLS minima line has now been replaced by the WAAS LPV (Localizer Performance with Vertical Guidance) minima on most RNAV (GPS) charts. LNAV/VNAV (lateral navigation/vertical navigation) was added to support both WAAS electronic vertical guidance and Barometric VNAV. LPV and LNAV/VNAV are both APV procedures as described in paragraph 12.1.7. The original GPS minima, titled "S−XX," for straight in runway XX, is retitled LNAV (lateral navigation). Circling minima may also be published. A new type of nonprecision WAAS minima will also be published on this chart and titled LP (localizer performance). LP will be published in locations where vertically guided minima cannot be provided due to terrain and obstacles and therefore, no LPV or LNAV/VNAV minima will be published. GBAS procedures are published on a separate chart and the GLS minima line is to be used only for GBAS. ATC clearance for the RNAV procedure authorizes a properly certified pilot to utilize any minimums for which the aircraft is certified (for example, a WAAS equipped aircraft utilizes the LPV or LP minima but a GPS only aircraft may not). The RNAV chart includes information formatted for quick reference by the pilot or flight crew at the top of the chart. This portion of the chart, developed based on a study by the Department of

Transportation, Volpe National Transportation System Center, is commonly referred to as the pilot briefing.

12.13.1 The minima lines are:

12.13.1.1 GLS. "GLS" is the acronym for GBAS Landing System. The U.S. version of GBAS has traditionally been referred to as LAAS. The worldwide community has adopted GBAS as the official term for this type of navigation system. To coincide with international terminology, the FAA is also adopting the term GBAS to be consistent with the international community. This line was originally published as a placeholder for both WAAS and LAAS minima and marked as N/A since no minima was published. As the concepts for GBAS and WAAS procedure publication have evolved, GLS will now be used only for GBAS minima, which will be on a separate approach chart. Most RNAV(GPS) approach charts have had the GLS minima line replaced by a WAAS LPV line of minima.

12.13.1.2 LPV. "LPV" is the acronym for localizer performance with vertical guidance. RNAV (GPS) approaches to LPV lines of minima take advantage of the improved accuracy of WAAS lateral and vertical guidance to provide an approach that is very similar to a Category I Instrument Landing System (ILS). The approach to LPV line of minima is designed for angular guidance with increasing sensitivity as the aircraft gets closer to the runway. The sensitivities are nearly identical to those of the ILS at similar distances. This was done intentionally to allow the skills required to proficiently fly an ILS to readily transfer to flying RNAV (GPS) approaches to the LPV line of minima. Just as with an ILS, the LPV has vertical guidance and is flown to a DA. Aircraft can fly this minima line with a statement in the Aircraft Flight Manual that the installed equipment supports LPV approaches. This includes Class 3 and 4 TSO−C146 GPS/WAAS equipment.

12.13.1.3 LNAV/VNAV. LNAV/VNAV identifies APV minimums developed to accommodate an RNAV IAP with vertical guidance, usually provided by approach certified Baro−VNAV, but with lateral and vertical integrity limits larger than a precision approach or LPV. LNAV stands for Lateral Navigation; VNAV stands for Vertical Navigation. This minima line can be flown by aircraft with a statement in the Aircraft Flight Manual that the installed equipment supports GPS approaches and has an approach−approved barometric VNAV, or if the aircraft has been demonstrated to support LNAV/VNAV approaches. This includes Class 2, 3 and 4 TSO−C146 GPS/WAAS equipment. Aircraft using LNAV/VNAV minimums will descend to landing via an internally generated descent path based on satellite or other approach approved VNAV systems. Since electronic vertical guidance is provided, the minima will be published as a DA. Other navigation systems may be specifically authorized to use this line of minima. (See Section A, Terms/Landing Minima Data, of the U.S. Terminal Procedures books.)

12.13.1.4 LP. "LP" is the acronym for localizer performance. Approaches to LP lines of minima take advantage of the improved accuracy of WAAS to provide approaches, with lateral guidance and angular guidance. Angular guidance does not refer to a glideslope angle but rather to the increased lateral sensitivity as the aircraft gets closer to the runway, similar to localizer approaches. However, the LP line of minima is a Minimum Descent Altitude (MDA) rather than a DA (H). Procedures with LP lines of minima will not be published with another approach that contains approved vertical guidance (LNAV/VNAV or LPV). It is possible to have LP and LNAV published on the same approach chart but LP will only be published if it provides lower minima than an LNAV line of minima. LP is not a fail−down mode for LPV. LP will only be published if terrain, obstructions, or some other reason prevent publishing a vertically guided procedure. WAAS avionics may provide GNSS−based advisory vertical guidance during an approach to an LP line of minima. Barometric altimeter information remains the primary altitude reference for complying with any altitude restrictions. WAAS equipment may not support LP, even if it supports LPV, if it was approved before TSO−C145b and TSO−C146b. Receivers approved under previous TSOs may require an upgrade by the manufacturer in order to be used to fly to LP minima. Receivers approved for LP must have a statement in the approved Flight Manual or Supplemental Flight Manual including LP as one of the approved approach types.

12.13.1.5 LNAV. This minima is for lateral navigation only, and the approach minimum altitude will be published as a minimum descent altitude (MDA). LNAV provides the same level of service as the present GPS stand alone approaches. LNAV minimums support the following navigation systems: WAAS, when the navigation solution will not support vertical navigation; and, GPS navigation systems which are presently authorized to conduct GPS approaches.

NOTE−
GPS receivers approved for approach operations in accordance with: AC 20−138, Airworthiness Approval of Positioning and Navigation Systems, qualify for this minima. WAAS navigation equipment must be approved in accordance with the requirements specified in TSO−C145() or TSO−C146() and installed in accordance with Advisory Circular AC 20−138.

12.13.2 Other systems may be authorized to utilize these approaches. See the description in Section A of the U.S. Terminal Procedures books for details. Operational approval must also be obtained for Baro−VNAV systems to operate to the LNAV/VNAV minimums. Baro−VNAV may not be authorized on some approaches due to other factors, such as no local altimeter source being available. Baro−VNAV is not authorized on LPV procedures. Pilots are directed to their local Flight Standards District Office (FSDO) for additional information.

NOTE−
RNAV and Baro−VNAV systems must have a manufacturer supplied electronic database which must include the waypoints, altitudes, and vertical data for the procedure to be flown. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

12.13.3 ILS or RNAV (GPS) Charts.

12.13.3.1 Some RNAV (GPS) charts will also contain an ILS line of minima to make use of the ILS precision final in conjunction with the RNAV GPS capabilities for the portions of the procedure prior to the final approach segment and for the missed approach. Obstacle clearance for the portions of the procedure other than the final approach segment is still based on GPS criteria.

NOTE−
*Some GPS receiver installations inhibit GPS navigation whenever **ANY** ILS frequency is tuned. Pilots flying aircraft with receivers installed in this manner must wait until they are on the intermediate segment of the procedure prior to the PFAF (PFAF is the active waypoint) to tune the ILS frequency and must tune the ILS back to a VOR frequency in order to fly the GPS based missed approach.*

12.13.3.2 Charting. There are charting differences between ILS, RNAV (GPS), and GLS approaches.

a) The LAAS procedure is titled "GLS RWY XX" on the approach chart.

b) The VDB provides information to the airborne receiver where the guidance is synthesized.

c) The LAAS procedure is identified by a four alpha−numeric character field referred to as the RPI or approach ID and is similar to the IDENT feature of the ILS.

d) The RPI is charted.

e) Most RNAV(GPS) approach charts have had the GLS (NA) minima line replaced by an LPV line of minima.

f) Since the concepts for LAAS and WAAS procedure publication have evolved, GLS will now be used only for LAAS minima, which will be on a separate approach chart.

12.13.4 Required Navigation Performance (RNP)

12.13.4.1 Pilots are advised to refer to the "TERMS/LANDING MINIMUMS DATA" (Section A) of the U.S. Government Terminal Procedures books for aircraft approach eligibility requirements by specific RNP level requirements.

12.13.4.2 Some aircraft have RNP approval in their AFM without a GPS sensor. The lowest level of sensors that the FAA will support for RNP service is DME/DME. However, necessary DME signal may not be available at the airport of intended operations. For those locations having an RNAV chart published with LNAV/VNAV minimums, a procedure note may be provided such as "DME/DME RNP−0.3 NA." This means that RNP aircraft dependent on DME/DME to achieve RNP−0.3 are not authorized to conduct this approach. Where DME facility availability is a factor, the note may read "DME/DME RNP−0.3 Authorized; ABC and XYZ Required." This means that ABC and XYZ facilities have been determined by flight inspection to be required in the navigation solution to assure RNP−0.3. VOR/DME updating must not be used for approach procedures.

12.13.5 Chart Terminology

12.13.5.1 Decision Altitude (DA) replaces the familiar term Decision Height (DH). DA conforms to the international convention where altitudes relate to MSL and heights relate to AGL. DA will eventually be published for other types of instrument approach procedures with vertical guidance, as well. DA indicates to the pilot that the published descent profile is flown to the DA (MSL), where a missed approach will be initiated if visual references for landing are not established. Obstacle clearance is provided to allow a momentary descent below DA while transitioning from the final approach to the missed approach. The aircraft is expected to follow the missed instructions while continuing along the published final approach course to at least the published runway threshold waypoint or MAP (if not at the threshold) before executing any turns.

12.13.5.2 Minimum Descent Altitude (MDA) has been in use for many years, and will continue to be used for the LNAV only and circling procedures.

12.13.5.3 Threshold Crossing Height (TCH) has been traditionally used in "precision" approaches as the height of the glide slope above threshold. With publication of LNAV/VNAV minimums and RNAV descent angles, including graphically depicted descent profiles, TCH also applies to the height of the "descent angle," or glidepath, at the threshold. Unless otherwise required for larger type aircraft which may be using the IAP, the typical TCH is 30 to 50 feet.

12.13.6 The MINIMA FORMAT will also change slightly.

12.13.6.1 Each line of minima on the RNAV IAP is titled to reflect the level of service available; e.g., GLS, LPV, LNAV/VNAV, LP, and LNAV. CIRCLING minima will also be provided.

12.13.6.2 The minima title box indicates the nature of the minimum altitude for the IAP. For example:

a) DA will be published next to the minima line title for minimums supporting vertical guidance such as for GLS, LPV or LNAV/VNAV.

b) MDA will be published as the minima line on approaches with lateral guidance only, LNAV, or LP. Descent below the MDA must meet the conditions stated in 14 CFR Section 91.175.

c) Where two or more systems, such as LPV and LNAV/VNAV, share the same minima, each line of minima will be displayed separately.

12.13.7 Chart Symbology changed slightly to include:

12.13.7.1 Descent Profile. The published descent profile and a graphical depiction of the vertical path to the runway will be shown. Graphical depiction of the RNAV vertical guidance will differ from the traditional depiction of an ILS glide slope (feather) through the use of a shorter vertical track beginning at the decision altitude.

a) It is FAA policy to design IAPs with minimum altitudes established at fixes/waypoints to achieve optimum stabilized (constant rate) descents within each procedure segment. This design can enhance the safety of the operations and contribute toward reduction in the occurrence of controlled flight into terrain (CFIT) accidents. Additionally, the National Transportation Safety Board (NTSB) recently emphasized that pilots could benefit from publication of the appropriate IAP descent angle for a stabilized descent on final approach. The RNAV IAP format includes the descent angle to the hundredth of a degree; e.g., 3.00 degrees. The angle will be provided in the graphically depicted descent profile.

b) The stabilized approach may be performed by reference to vertical navigation information provided by WAAS or LNAV/VNAV systems; or for LNAV−only systems, by the pilot determining the appropriate aircraft attitude/groundspeed combination to attain a constant rate descent which best emulates the published angle. To aid the pilot, U.S. Government Terminal Procedures Publication charts publish an expanded Rate of Descent Table on the inside of the back hard cover for use in planning and executing precision descents under known or approximate groundspeed conditions.

12.13.7.2 Visual Descent Point (VDP). A VDP will be published on most RNAV IAPs. VDPs apply only to aircraft utilizing LP or LNAV minima, not LPV or LNAV/VNAV minimums.

12.13.7.3 Missed Approach Symbology. In order to make missed approach guidance more readily understood, a method has been developed to display missed approach guidance in the profile view through the use of quick reference icons. Due to limited space in the profile area, only four or fewer icons can be shown. However, the icons may not provide representation of the entire missed approach procedure. The entire set of textual missed approach instructions are provided at the top of the approach chart in the pilot briefing. (See FIG ENR 1.5−24.)

12.13.7.4 Waypoints. All RNAV or GPS stand−alone IAPs are flown using data pertaining to the particular IAP obtained from an onboard database, including the sequence of all WPs used for the approach and missed approach, except that step down waypoints may not be included in some TSO−C−129 receiver databases. Included in the database, in most receivers, is coding that informs the navigation system of which WPs are fly−over (FO) or fly−by (FB). The navigation system may provide guidance appropriately − including leading the turn prior to a fly−by WP; or causing overflight of a fly−over WP. Where the navigation system does not provide such guidance, the pilot must accomplish the turn lead or waypoint overflight manually. Chart symbology for the FB WP provides pilot awareness of expected actions. Refer to the legend of the U.S. Terminal Procedures books.

12.13.7.5 TAAs are described in subparagraph 12.4, Terminal Arrival Area (TAA). When published, the RNAV chart depicts the TAA areas through the use of "icons" representing each TAA area associated with the RNAV procedure (See FIG ENR 1.5−24). These icons are depicted in the plan view of the approach chart, generally arranged on the chart in accordance with their position relative to the aircrafts arrival from the en route structure. The WP, to which navigation is appropriate and expected within each specific TAA area, will be named and depicted on the associated TAA icon. Each depicted named WP is the IAF for arrivals from within that area. TAAs may not be used on all RNAV procedures because of airspace congestion or other reasons.

12.13.7.6 Hot and Cold Temperature Limitations. A minimum and maximum temperature limitation is published on procedures which authorize Baro−VNAV operation. These temperatures represent the airport temperature above or below which Baro−VNAV is not authorized to LNAV/VNAV minimums. As an example, the limitation will read: "Uncompensated Baro−VNAV NA below −8 °C (+18 °F) or above 47 °C (117 °F)." This information will be found in the upper left hand box of the pilot briefing. When the temperature is above the high temperature or below the low temperature limit, Baro−VNAV may be used to provide a stabilized descent to the LNAV MDA; however, extra caution should be used in the visual segment to ensure a vertical correction is not required. If the VGSI is aligned with the published glidepath, and the aircraft instruments indicate on glidepath, an above or below glidepath indication on the VGSI may indicate that temperature error is causing deviations to the glidepath. These deviations should be considered if the approach is continued below the MDA.

NOTE−
Many systems which apply Baro−VNAV temperature compensation only correct for cold temperature. In this case, the high temperature limitation still applies. Also, temperature compensation may require activation by maintenance personnel during installation in order to be functional, even though the system has the feature. Some systems may have a temperature correction capability, but correct the Baro−altimeter all the time, rather than just on the final, which would create conflicts with other aircraft if the feature were activated. Pilots should be aware of compensation capabilities of the system prior to disregarding the temperature limitations.

NOTE−
Temperature limitations do not apply to flying the LNAV/VNAV line of minima using approach certified WAAS receivers when LPV or LNAV/VNAV are annunciated to be available.

12.13.7.7 WAAS Channel Number/Approach ID. The WAAS Channel Number is an optional equipment capability that allows the use of a 5−digit number to select a specific final approach segment without using the menu method. The Approach ID is an airport unique 4−character combination for verifying the selection and extraction of the correct final approach segment information from the aircraft database. It is similar to the ILS ident, but displayed visually rather than aurally. The Approach ID consists of the letter W for WAAS, the runway number, and a letter other than L, C or R, which could be confused with Left, Center and Right, e.g., W35A. Approach IDs are assigned in the order that WAAS approaches are built to that runway number at that airport. The WAAS Channel Number and Approach ID are displayed in the upper left corner of the approach procedure pilot briefing.

12.13.7.8 At locations where outages of WAAS vertical guidance may occur daily due to initial system limitations, a negative W symbol (W) will be placed on RNAV (GPS) approach charts. Many of these outages will be very short in duration, but may result in the disruption of the vertical portion of the approach. The W symbol indicates that NOTAMs or Air Traffic advisories are not provided for outages which occur in the WAAS LNAV/VNAV or LPV vertical service. Use LNAV or circling minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that

LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required. As the WAAS coverage is expanded, the W will be removed.

NOTE−
Properly trained and approved, as required, TSO-C145() and TSO-C146() equipped users (WAAS users) with and using approved baro-VNAV equipment may plan for LNAV/VNAV DA at an alternate airport. Specifically authorized WAAS users with and using approved baro-VNAV equipment may also plan for RNP 0.3 DA at the alternate airport as long as the pilot has verified RNP availability through an approved prediction program.

13. Special Instrument Approach Procedures

13.1 Instrument Approach Procedure (IAP) charts reflect the criteria associated with the U.S. Standard for Terminal Instrument [Approach] Procedures (TERPs), which prescribes standardized methods for use in developing IAPs. Standard IAPs are published in the Federal Register (FR) in accordance with Title 14 of the Code of Federal Regulations, Part 97, and are available for use by appropriately qualified pilots operating properly equipped and airworthy aircraft in accordance with operating rules and procedures acceptable to the FAA. Special IAPs are also developed using TERPS but are not given public notice in the FR. The FAA authorizes only certain individual pilots and/or pilots in individual organizations to use special IAPs, and may require additional crew training and/or aircraft equipment or performance, and may also require the use of landing aids, communications, or weather services not available for public use. Additionally, IAPs that service private use airports or heliports are generally special IAPs. FDC NOTAMs for Specials, FDC T-NOTAMs, may also be used to promulgate safety-of-flight information relating to Specials provided the location has a valid landing area identifier and is serviced by the United States NOTAM system. Pilots may access NOTAMs online or through an FAA Flight Service Station (FSS). FSS specialists will not automatically provide NOTAM information to pilots for special IAPs during telephone pre−flight briefings. Pilots who are authorized by the FAA to use special IAPs must specifically request FDC NOTAM information for the particular special IAP they plan to use.

14. Radar Approaches

14.1 The only airborne radio equipment required for radar approaches is a functioning radio transmitter and receiver. The radar controller vectors the aircraft to align it with the runway centerline. The controller continues the vectors to keep the aircraft on course until the pilot can complete the approach and landing by visual reference to the surface. There are two types of radar approaches, “Precision” (PAR) and “Surveillance” (ASR).

14.2 A radar approach may be given to any aircraft upon request and may be offered to pilots of aircraft in distress or to expedite traffic; however, a surveillance approach might not be approved unless there is an ATC operational requirement, or in an unusual or emergency situation. Acceptance of a precision or surveillance approach by a pilot does not waive the prescribed weather minimums for the airport or for the particular aircraft operator concerned. The decision to make a radar approach when the reported weather is below the established minimums rests with the pilot.

14.3 Precision and surveillance approach minimums are published on separate pages in the Federal Aviation Administration Instrument Approach Procedure charts.

14.3.1 A Precision Approach (PAR) is one in which a controller provides highly accurate navigational guidance in azimuth and elevation to a pilot. Pilots are given headings to fly to direct them to and keep their aircraft aligned with the extended centerline of the landing runway. They are told to anticipate glidepath interception approximately 10 to 30 seconds before it occurs and when to start descent. The published decision height will be given only if the pilot requests it. If the aircraft is observed to deviate above or below the glidepath, the pilot is given the relative amount of deviation by use of terms “slightly” or “well” and is expected to adjust the aircraft’s rate of descent to return to the glidepath. Trend information is also issued with respect to the elevation of the aircraft and may be modified by the terms “rapidly” and “slowly”; e.g., “well above glidepath, coming down rapidly.” Range from touchdown is given at least once each mile. If an aircraft is observed by the controller to proceed outside of specified safety zone limits in azimuth and/or elevation and continues to operate outside these prescribed limits, the pilot will be directed to execute a missed approach or to fly a specified course unless the pilot has the runway environment (runway, approach lights, etc.) in sight. Navigational guidance in azimuth and elevation is provided the pilot until the aircraft reaches the published decision height (DH). Advisory course and glidepath information is furnished by the controller until the aircraft passes over the landing threshold, at which point the pilot is advised of any deviation from the runway centerline. Radar service is automatically terminated upon completion of the approach.

14.3.2 A Surveillance Approach (ASR) is one in which a controller provides navigational guidance in azimuth only. The pilot is furnished headings to fly to align the aircraft with the extended centerline of the landing runway. Since the radar information used for a surveillance approach is considerably less precise than that used for a precision approach, the accuracy of the approach will not be as great, and higher minimums will apply. Guidance in elevation is not possible but the pilot will be advised when to commence descent to the minimum descent altitude (MDA) or, if appropriate, to an intermediate "step down fix" minimum crossing altitude and subsequently to the prescribed MDA. In addition, the pilot will be advised of the location of the missed approach point (MAP) prescribed for the procedure and the aircraft's position each mile on final from the runway, airport/heliport, or MAP, as appropriate. If requested by the pilot, recommended altitudes will be issued at each mile, based on the descent gradient established for the procedure, down to the last mile that is at or above the MDA. Normally, navigational guidance will be provided until the aircraft reaches the MAP. Controllers will terminate guidance and instruct the pilot to execute a missed approach unless at the MAP the pilot has the runway, airport/heliport in sight or, for a helicopter point−in−space approach, the prescribed visual reference with the surface is established. Also, if at any time during the approach the controller considers that safe guidance for the remainder of the approach cannot be provided, the controller will terminate guidance and instruct the pilot to execute a missed approach. Similarly, guidance termination and missed approach will be effected upon pilot request, and for civil aircraft only, controllers may terminate guidance when the pilot reports the runway, airport/heliport, or visual surface route (point−in−space approach) in sight or otherwise indicates that continued guidance is not required. Radar service is automatically terminated at the completion of a radar approach.

NOTE−

1. *The published MDA for straight−in approaches will be issued to the pilot before beginning descent. When a surveillance approach will terminate in a circle−to−land maneuver, the pilot must furnish the aircraft approach category to the controller. The controller will then provide the pilot with the appropriate MDA.*

2. *ASR approaches are not available when an ATC facility is using center radar arts presentation/ processing (CENRAP).*

14.3.3 A No−Gyro Approach is available to a pilot under radar control who experiences circumstances wherein the directional gyro or other stabilized compass is inoperative or inaccurate. When this occurs, the pilot should so advise ATC and request a No−Gyro vector or approach. Pilots of aircraft not equipped with a directional gyro or other stabilized compass who desire radar handling may also request a No−Gyro vector or approach. The pilot should make all turns at standard rate and should execute the turn immediately upon receipt of instructions. For example, "TURN RIGHT," "STOP TURN." When a surveillance or precision approach is made, the pilot will be advised after the aircraft has been turned onto final approach to make turns at half standard rate.

15. Radar Monitoring of Instrument Approaches

15.1 PAR facilities operated by the FAA and the military services at some joint−use (civil/military) and military installations monitor aircraft on instrument approaches and issue radar advisories to the pilot when weather is below VFR minimum (1,000 and 3), at night, or when requested by a pilot. This service is provided only when the PAR final approach course coincides with the final approach of the navigational aid and only during the operational hours of the PAR. The radar advisories serve only as a secondary aid since the pilot has selected the navigational aid as the primary aid for the approach.

15.2 Prior to starting final approach, the pilot will be advised of the frequency on which the advisories will be transmitted. If, for any reason, radar advisories cannot be furnished, the pilot will be so advised.

15.3 Advisory information, derived from radar observations, includes information on:

15.3.1 Passing the final approach fix inbound (nonprecision approach) or passing the outer marker or the fix used in lieu of the outer marker inbound (precision approach).

15.3.2 Trend advisories with respect to elevation and/or azimuth radar position and movement will be provided.

NOTE−
At this point, the pilot may be requested to report sighting the approach lights or the runway.

NOTE−
Whenever the aircraft nears the PAR safety limit, the pilot will be advised that the aircraft is well above or below the glidepath or well left or right of course. Glidepath information is given only to those aircraft executing a precision approach, such as ILS. Altitude information is not transmitted to aircraft executing other than precision approaches because the descent portions of these approaches generally do not coincide with the depicted PAR glidepath.

15.3.3 If, after repeated advisories, the aircraft proceeds outside the PAR safety limit or if a radical deviation is observed, the pilot will be advised to execute a missed approach if not visual.

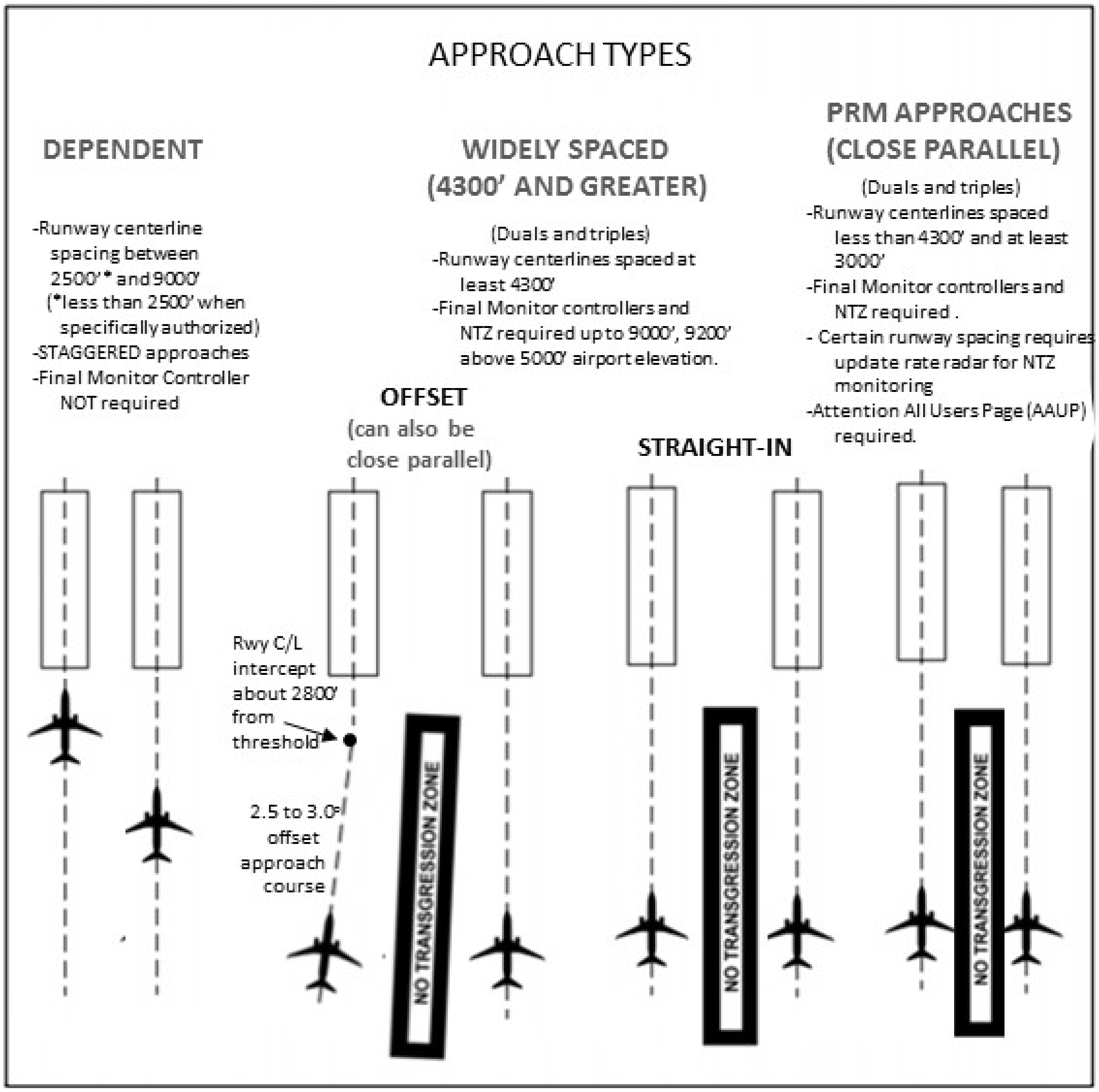
15.4 Radar service is automatically terminated upon completion of the approach.

16. ILS Approach

16.1 Communications should be established with the appropriate FAA control tower or with the FAA FSS where there is no control tower, prior to starting an ILS approach. This is in order to receive advisory information as to the operation of the facility. It is also recommended that the aural signal of the ILS be monitored during an approach as to assure continued reception and receipt of advisory information, when available.

17. Simultaneous Approaches to Parallel Runways

FIG ENR 1.5−33
Simultaneous Approaches
(Approach Courses Parallel and Offset between 2.5 and 3.0 degrees)



17.1 ATC procedures permit ILS/RNAV/GLS instrument approach operations to dual or triple parallel runway configurations. ILS/RNAV/GLS approaches to parallel runways are grouped into three classes: Simultaneous Dependent Approaches; Simultaneous Independent Approaches; and Simultaneous Close Parallel PRM Approaches. RNAV approach procedures that are approved for simultaneous operations require GPS as the sensor for position updating. VOR/DME, DME/DME and IRU RNAV updating is not authorized. The classification of a parallel runway approach procedure is dependent on adjacent parallel runway centerline separation, ATC procedures, and airport ATC final approach radar monitoring and communications capabilities. At some airports, one or more approach courses may be offset up to 3 degrees. ILS approaches with offset localizer configurations result in loss of Category II/III capabilities and an increase in decision altitude/height (50').

17.2 Depending on weather conditions, traffic volume, and the specific combination of runways being utilized for arrival operations, a runway may be used for different types of simultaneous operations, including closely spaced dependent or independent approaches. Pilots should ensure that they understand the type of operation that is being conducted, and ask ATC for clarification if necessary.

17.3 Parallel approach operations demand heightened pilot situational awareness. A thorough Approach Procedure Chart review should be conducted with, as a minimum, emphasis on the following approach chart information: name and number of the approach, localizer frequency, inbound localizer/azimuth course, glideslope/glidepath intercept altitude, glideslope crossing altitude at the final approach fix, decision height, missed approach instructions, special notes/procedures, and the assigned runway location/proximity to adjacent runways. Pilots are informed by ATC or through the ATIS that simultaneous approaches are in use.

17.4 The close proximity of adjacent aircraft conducting simultaneous independent approaches, especially simultaneous close parallel PRM approaches mandates strict pilot compliance with all ATC clearances. ATC assigned airspeeds, altitudes, and headings must be complied with in a timely manner. Autopilot coupled approaches require pilot knowledge of procedures necessary to comply with ATC instructions. Simultaneous independent approaches, particularly simultaneous close parallel PRM approaches necessitate precise approach course tracking to minimize final monitor controller intervention, and unwanted No Transgression Zone (NTZ) penetration. In the unlikely event of a breakout, ATC will not assign altitudes lower than the minimum vectoring altitude. Pilots should notify ATC immediately if there is a degradation of aircraft or navigation systems.

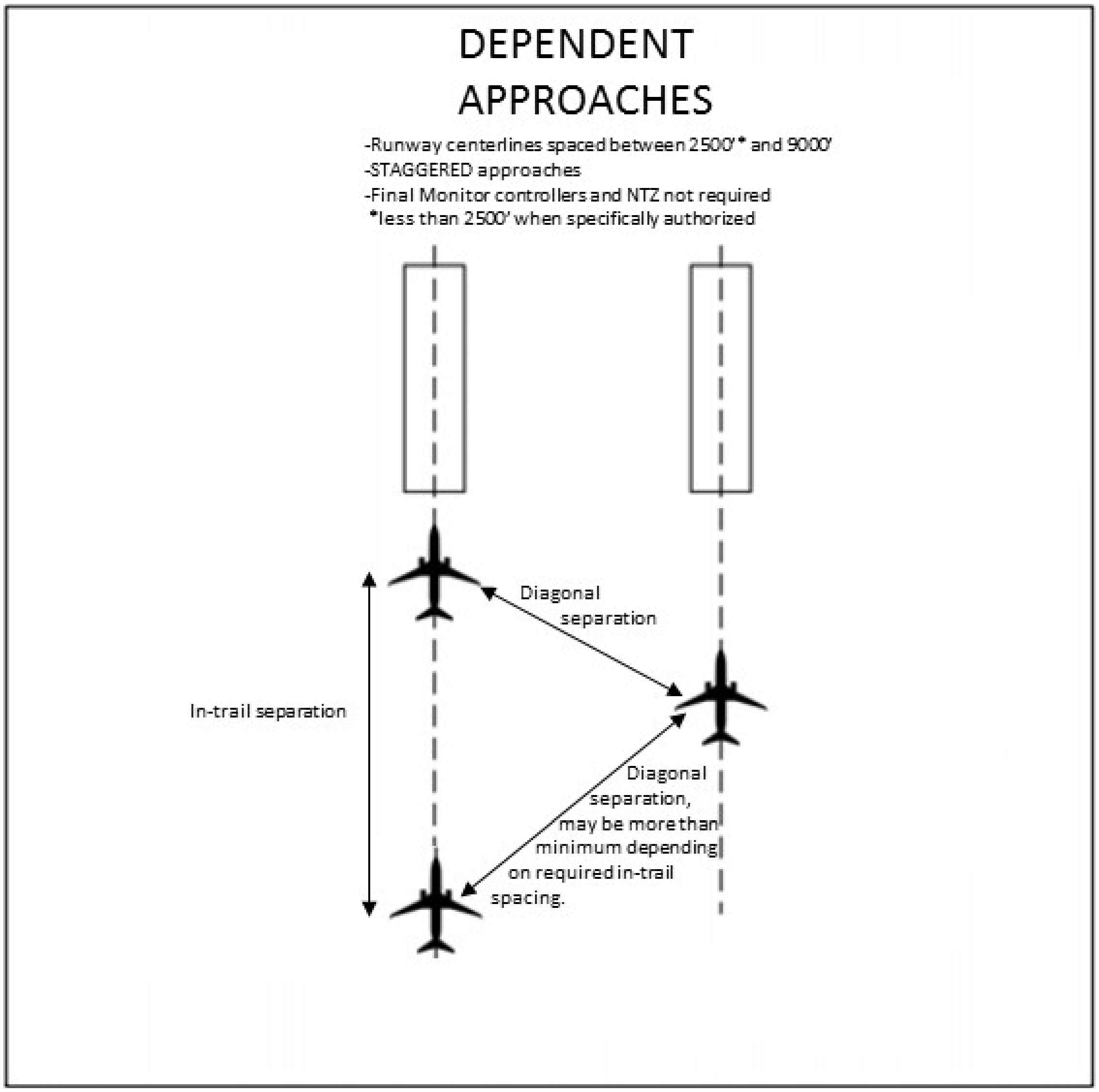
17.5 Strict radio discipline is mandatory during simultaneous independent and simultaneous close parallel PRM approach operations. This includes an alert listening watch and the avoidance of lengthy, unnecessary radio transmissions. Attention must be given to proper call sign usage to prevent the inadvertent execution of clearances intended for another aircraft. Use of abbreviated call signs must be avoided to preclude confusion of aircraft with similar sounding call signs. Pilots must be alert to unusually long periods of silence or any unusual background sounds in their radio receiver. A stuck microphone may block the issuance of ATC instructions on the tower frequency by the final monitor controller during simultaneous independent and simultaneous close parallel PRM approaches. In the case of PRM approaches, the use of a second frequency by the monitor controller mitigates the "stuck mike" or other blockage on the tower frequency.

REFERENCE−
AIP GEN 3.4, Paragraph 4.4, Radio Communications Phraseology and Techniques, gives additional communications information.

17.6 Use of Traffic Collision Avoidance Systems (TCAS) provides an additional element of safety to parallel approach operations. Pilots should follow recommended TCAS operating procedures presented in approved flight manuals, original equipment manufacturer recommendations, professional newsletters, and FAA publications.

18. Simultaneous Dependent Approaches

FIG ENR 1.5−34
Simultaneous Approaches
(Parallel Runways and Approach Courses)



18.1 Simultaneous dependent approaches are an ATC procedure permitting approaches to airports having parallel runway centerlines separated by at least 2,500 feet up to 9,000 feet. Integral parts of a total system are ILS or other system providing approach navigation, radar, communications, ATC procedures, and required airborne equipment. RNAV equipment in the aircraft or GLS equipment on the ground and in the aircraft may replace the required airborne and ground based ILS equipment. Although non−precision minimums may be published, pilots must only use those procedures specifically authorized by chart note. For example, the chart note "LNAV NA during simultaneous operations," requires vertical guidance. When given a choice, pilots should always fly a precision approach whenever possible.

18.2 A simultaneous dependent approach differs from a simultaneous independent approach in that, the minimum distance between parallel runway centerlines may be reduced; there is no requirement for radar monitoring or advisories; and a staggered separation of aircraft on the adjacent final course is required.

18.3 A minimum of 1.0 NM radar separation (diagonal) is required between successive aircraft on the adjacent final approach course when runway centerlines are at least 2,500 feet but no more than 3,600 feet apart. A minimum of 1.5 NM radar separation (diagonal) is required between successive aircraft on the adjacent final approach course when runway centerlines are more than 3,600 feet but no more than 8,300 feet apart. When runway centerlines are more than 8,300 feet but no more than 9,000 feet apart a minimum of 2 NM diagonal radar separation is provided. Aircraft on the same final approach course within 10 NM of the runway end are provided a minimum of 3 NM radar separation, reduced to 2.5 NM in certain circumstances. In addition, a minimum of 1,000 feet vertical or a minimum of three miles radar separation is provided between aircraft during turn on to the parallel final approach course.

18.4 Whenever parallel approaches are in use, pilots are informed by ATC or via the ATIS that approaches to both runways are in use. The charted IAP also notes which runways may be used simultaneously. In addition, the radar controller will have the interphone capability of communicating with the tower controller where separation responsibility has not been delegated to the tower.

NOTE−
ATC will not specifically identify these operations as being dependent when advertised on the ATIS.

EXAMPLE−
Simultaneous ILS Runway 19 right and ILS Runway 19 left in use.

18.5 At certain airports, simultaneous dependent approaches are permitted to runways spaced less than 2,500 feet apart. In this case, ATC will provide no less than the minimum authorized diagonal separation with the leader always arriving on the same runway. The trailing aircraft is permitted reduced diagonal separation, instead of the single runway separation normally utilized for runways spaced less than 2,500 feet apart. For wake turbulence mitigation reasons:

18.5.1 Reduced diagonal spacing is only permitted when certain aircraft wake category pairings exist; typically when the leader is either in the large or small wake turbulence category, and

18.5.2 All aircraft must descend on the glideslope from the altitude at which they were cleared for the approach during these operations.

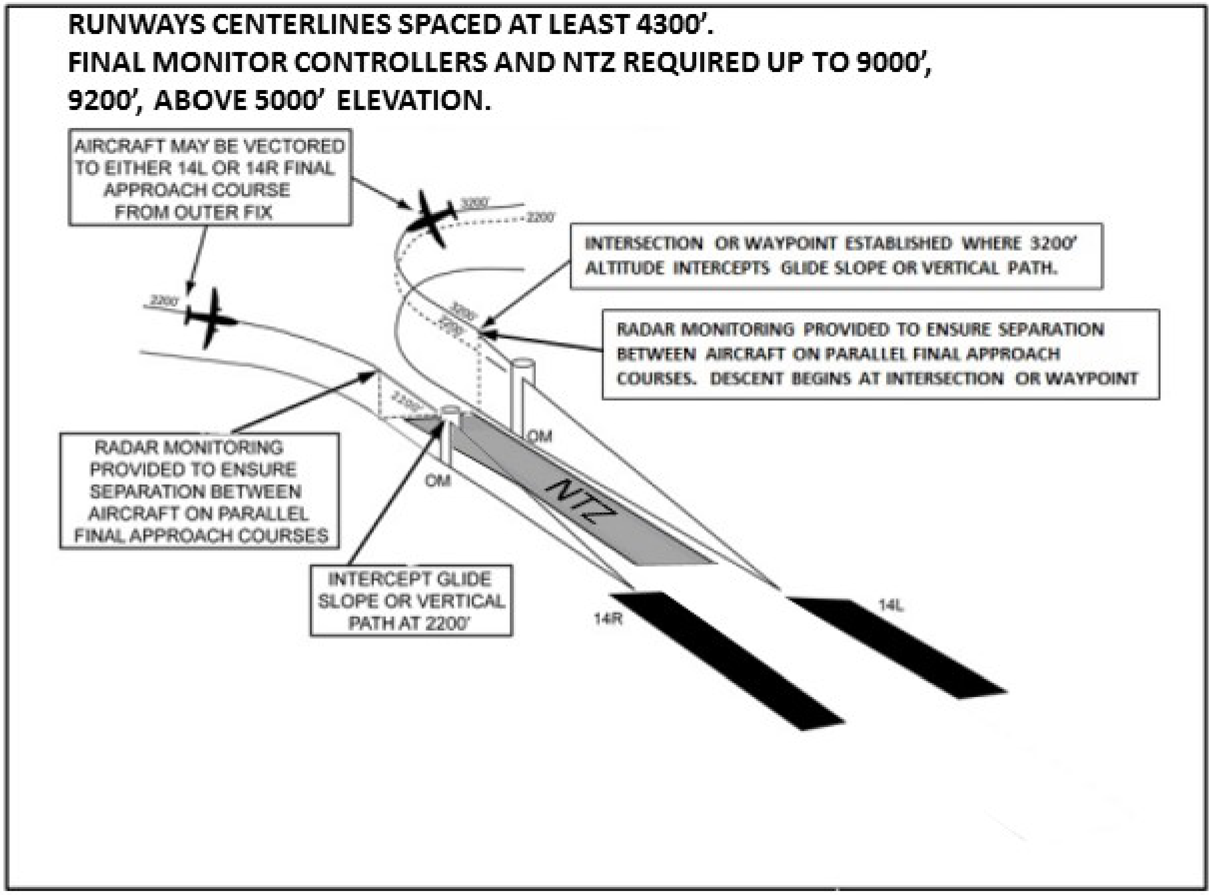
When reduced separation is authorized, the IAP briefing strip indicates that simultaneous operations require the use of vertical guidance and that the pilot should maintain last assigned altitude until intercepting the glideslope. No special pilot training is required to participate in these operations.

NOTE−
Either simultaneous dependent approaches with reduced separation or SOIA PRM approaches may be conducted to Runways 28R and 28L at KSFO spaced 750 feet apart, depending on weather conditions and traffic volume. Pilots should use caution so as not to confuse these operations. Plan for SOIA procedures only when ATC assigns a PRM approach or the ATIS advertises PRM approaches are in use. KSFO is the only airport where both procedures are presently conducted.

REFERENCE−
ENR 1.5, Para 20. Simultaneous Close Parallel PRM Approaches and Simultaneous Offset Instrument Approaches (SOIA)

19. Simultaneous Independent ILS/RNAV/GLS Approaches

FIG ENR 1.5−35
Simultaneous Independent ILS/RNAV/GLS Approaches



19.1 System. An approach system permitting simultaneous approaches to parallel runways with centerlines separated by at least 4,300 feet. Separation between 4,300 and 9,000 feet (9,200' for airports above 5,000') utilizing NTZ final monitor controllers. Simultaneous independent approaches require NTZ radar monitoring to ensure separation between aircraft on the adjacent parallel approach course. Aircraft position is tracked by final monitor controllers who will issue instructions to aircraft observed deviating from the assigned final approach course. Staggered radar separation procedures are not utilized. Integral parts of a total system are radar, communications, ATC procedures, and ILS or other required airborne equipment. A chart note identifies that the approach is authorized for simultaneous use.

When simultaneous operations are in use, it will be advertised on the ATIS. When advised that simultaneous approaches are in use, pilots must advise approach control immediately of malfunctioning or inoperative receivers, or if a simultaneous approach is not desired. Although non−precision minimums may be published, pilots must only use those procedures specifically authorized by chart note. For example, the chart note "LNAV NA during simultaneous operations," requires vertical guidance. When given a choice, pilots should always fly a precision approach whenever possible.

NOTE−
ATC does not use the word independent or parallel when advertising these operations on the ATIS.

EXAMPLE−
Simultaneous ILS Runway 24 left and ILS Runway 24 right approaches in use.

19.2 Radar Services. These services are is provided for each simultaneous independent approach.

19.2.1 During turn on to parallel final approach, aircraft are normally provided 3 miles radar separation or a minimum of 1,000 feet vertical separation. The assigned altitude must be maintained until intercepting the glidepath, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

NOTE−
Some simultaneous operations permit the aircraft to track an RNAV course beginning on downwind and continuing in a turn to intercept the final approach course. In this case, separation with the aircraft on the adjacent final approach course is provided by the monitor controller with reference to an NTZ.

19.2.2 The final monitor controller will have the capability of overriding the tower controller on the tower frequency.

19.2.3 Pilots will be instructed to contact the tower frequency prior to the point where NTZ monitoring begins.

19.2.4 Aircraft observed to overshoot the turn−on or to continue on a track which will penetrate the NTZ will be instructed to return to the correct final approach course immediately. The final monitor controller may cancel the approach clearance, and issue missed approach or other instructions to the deviating aircraft.

PHRASEOLOGY−
"(Aircraft call sign) YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,"

or

"(aircraft call sign) TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE."

19.2.5 If a deviating aircraft fails to respond to such instructions or is observed penetrating the NTZ, the aircraft on the adjacent final approach course (if threatened), will be issued a breakout instruction.

PHRASEOLOGY−
"TRAFFIC ALERT (aircraft call sign) TURN (left/right) IMMEDIATELY HEADING (degrees), (climb/descend) AND MAINTAIN (altitude)."

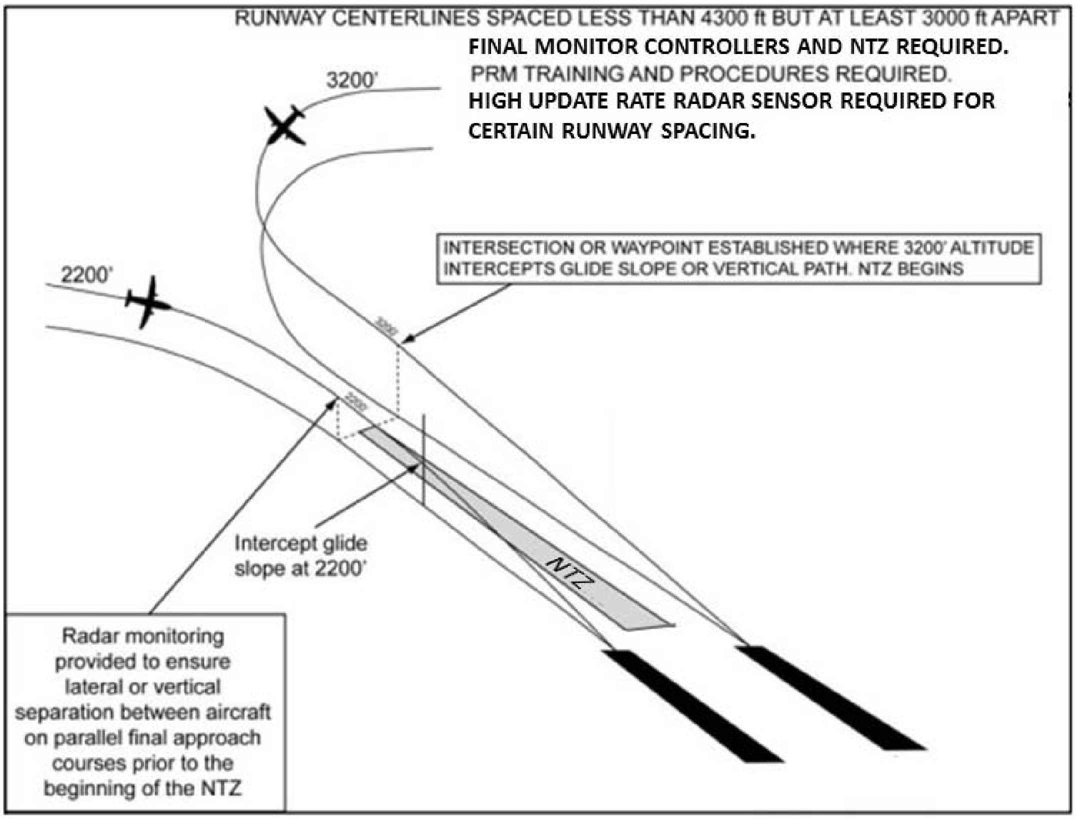
19.2.6 Radar monitoring will automatically be terminated when visual separation is applied, the aircraft reports the approach lights or runway in sight, or the aircraft is 1 NM or less from the runway threshold. Final monitor controllers will not advise pilots when radar monitoring is terminated.

NOTE−
Simultaneous independent approaches conducted to runways spaced greater than 9,000 feet (or 9,200' at airports above 5,000') do not require an NTZ. However, from a pilot's perspective, the same alerts relative to deviating aircraft will be provided by ATC as are provided when an NTZ is being monitored. Pilots may not be aware as to whether or not an NTZ is being monitored.

20. Simultaneous Close Parallel PRM Approaches and Simultaneous Offset Instrument Approaches (SOIA)

FIG ENR 1.5−36

PRM Approaches
Simultaneous Close Parallel



20.1 System

20.1.1 PRM is an acronym for the high update rate Precision Runway Monitor surveillance system which is required to monitor the No Transgression Zone (NTZ) for specific parallel runway separations used to conduct simultaneous close parallel approaches. PRM is also published in the title as part of the approach name for IAPs used to conduct Simultaneous Close Parallel approaches. "PRM" alerts pilots that specific airborne equipment, training, and procedures are applicable.

Because Simultaneous Close Parallel PRM approaches are independent, the NTZ and normal operating zone (NOZ) airspace between the final approach courses is monitored by two monitor controllers, one for each approach course. The NTZ monitoring system (final monitor aid) consists of a high resolution ATC radar display with automated tracking software which provides monitor controllers with aircraft identification, position, speed, and a ten−second projected position, as well as visual and aural NTZ penetration alerts. A PRM high update rate surveillance sensor is a component of this system only for specific runway spacing. Additional procedures for simultaneous independent approaches are described in ENR 1.5, Paragraph 19. Simultaneous Independent ILS/RNAV/GLS Approaches.

20.1.2 Simultaneous Close Parallel PRM approaches, whether conducted utilizing a high update rate PRM surveillance sensor or not, must meet all of the following requirements: pilot training,PRM in the approach title,NTZ monitoring utilizing a final monitor aid, radar display, publication of an AAUP, and use of a secondary PRM communications frequency. PRM approaches are depicted on a separate IAP titled (Procedure type) PRM Rwy XXX (Simultaneous Close Parallel or Close Parallel).

NOTE−
ATC does not use the word "independent" when advertising these operations on the ATIS.

EXAMPLE−
Simultaneous ILS PRM Runway 33 left and ILS PRM Runway 33 right approaches in use.

20.1.2.1 The pilot may request to conduct a different type of PRM approach to the same runway other than the one that is presently being used; for example, RNAV instead of ILS. However, pilots must always obtain ATC approval to conduct a different type of approach. Also, in the event of the loss of ground−based NAVAIDS, the ATIS may advertise other types of PRM approaches to the affected runway or runways.

20.1.2.2 The Attention All Users Page (AAUP) will address procedures for conducting PRM approaches.

20.2 Requirements and Procedures. Besides system requirements and pilot procedures as identified in subparagraph 20.1.1 above, all pilots must have completed special training before accepting a clearance to conduct a PRM approach.

20.2.1 Pilot Training Requirement. Pilots must complete special pilot training, as outlined below, before accepting a clearance for a simultaneous close parallel PRM approach.

20.2.1.1 For operations under 14 CFR Parts 121, 129, and 135, pilots must comply with FAA−approved company training as identified in their Operations Specifications. Training includes the requirement for pilots to view the FAA training slide presentation, "Precision Runway Monitor (PRM) Pilot Procedures." Refer to https://www.faa.gov/training_testing/training/prm/ or search key words "FAA PRM" for additional information and to view or download the slide presentation.

20.2.1.2 For operations under Part 91:

a) Pilots operating transport category aircraft must be familiar with PRM operations as contained in this section of the AIM. In addition, pilots operating transport category aircraft must view the slide presentation, "Precision Runway Monitor (PRM) Pilot Procedures." Refer to https://www.faa.gov/training_testing/training/prm/ or search key words "FAA PRM" for additional information and to view or download the slide presentation.

b) Pilots *not* operating transport category aircraft must be familiar with PRM and SOIA operations as contained in this section of the AIM. The FAA strongly recommends that pilots *not* involved in transport category aircraft operations view the FAA training slide presentation, "Precision Runway Monitor (PRM) Pilot Procedures." Refer to https://www.faa.gov/training_testing/training/prm/ or search key words "FAA PRM" for additional information and to view or download the slide presentation.

NOTE−
Depending on weather conditions, traffic volume, and the specific combination of runways being utilized for arrival operations, a runway may be used for different types of simultaneous operations, including closely spaced dependent or independent approaches. Use PRM procedures only when the ATIS advertises their use. For other types of simultaneous approaches, see ENR 1.5 paragraphs 17.and 18.

20.3 ATC Directed Breakout. An ATC directed "breakout" is defined as a vector off the final approach course of a threatened aircraft in response to another aircraft penetrating the NTZ.

20.4 Dual Communications. The aircraft flying the PRM approach must have the capability of enabling the pilot/s to listen to two communications frequencies simultaneously. To avoid blocked transmissions, each runway will have two frequencies, a primary and a PRM monitor frequency. The tower controller will transmit on both frequencies. The monitor controller's transmissions, if needed, will override both frequencies. Pilots will ONLY transmit on the tower controller's frequency, but will listen to both frequencies. Select the PRM monitor frequency audio only when instructed by ATC to contact the tower. The volume levels should be set about the same on both radios so that the pilots will be able to hear transmissions on the PRM frequency if the tower is blocked. Site−specific procedures take precedence over the general information presented in this paragraph. Refer to the AAUP for applicable procedures at specific airports.

20.5 Radar Services

20.5.1 During turn on to parallel final approach, aircraft will be provided 3 miles radar separation or a minimum of 1,000 feet vertical separation. The assigned altitude must be maintained until intercepting the glideslope/glidepath, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

20.5.2 The final monitor controller will have the capability of overriding the tower controller on the tower frequency as well as transmitting on the PRM frequency.

20.5.3 Pilots will be instructed to contact the tower frequency prior to the point where NTZ monitoring begins. Pilots will begin monitoring the secondary PRM frequency at that time (see Dual VHF Communications Required below).

20.5.4 To ensure separation is maintained, and in order to avoid an imminent situation during PRM approaches, pilots must immediately comply with monitor controller instructions.

20.5.5 Aircraft observed to overshoot the turn or to continue on a track which will penetrate the NTZ will be instructed to return to the correct final approach course immediately. The final monitor controller may cancel the approach clearance, and issue missed approach or other instructions to the deviating aircraft.

PHRASEOLOGY−
"(Aircraft call sign) YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,"
or
"(Aircraft call sign) TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE."

20.5.6 If a deviating aircraft fails to respond to such instructions or is observed penetrating the NTZ, the aircraft on the adjacent final approach course (if threatened) will be issued a breakout instruction.

PHRASEOLOGY−
"TRAFFIC ALERT (aircraft call sign) TURN (left/right) IMMEDIATELY HEADING (degrees), (climb/descend) AND MAINTAIN (altitude)."

20.5.7 Radar monitoring will automatically be terminated when visual separation is applied, or the aircraft reports the approach lights or runway in sight or within 1 NM of the runway threshold. Final monitor controllers will not advise pilots when radar monitoring is terminated.

20.6 Attention All Users Page (AAUP). At airports that conduct PRM operations, the AAUP informs pilots under the "General" section of information relative to all the PRM approaches published at a specific airport, and this section must be briefed in its entirety. Under the "Runway Specific" section, only items relative to the runway to be used for landing need be briefed. (See FIG ENR 1.5−37.) A single AAUP is utilized for multiple PRM approach charts at the same airport, which are listed on the AAUP. The requirement for informing ATC if the pilot is unable to accept a PRM clearance is also presented. The "General" section of AAUP addresses the following:

20.6.1 Review of the procedure for executing a climbing or descending breakout;

20.6.2 Breakout phraseology beginning with the words, "Traffic Alert;"

20.6.3 Descending on the glideslope/glidepath meets all crossing restrictions;

20.6.4 Briefing the PRM approach also satisfies the non−PRM approach briefing of the same type of approach to the same runway; and

20.6.5 Description of the dual communications procedure.

The "Runway Specific" section of the AAUP addresses those issues which only apply to certain runway ends that utilize PRM approaches. There may be no Runway Specific procedures, a single item applicable to only one runway end, or multiple items for a single or multiple runway end/s. Examples of SOIA runway specific procedures are as follows:

FIG ENR 1.5−37
PRM Attention All Users Page (AAUP)

15288
PRM APPROACH AAUP AL-166 (FAA) USA INTL (USA)
USA CITY

ATTENTION ALL USERS PAGE (AAUP)
(PRM CLOSE PARALLEL)

Pilots who are unable to participate will be afforded appropriate arrival services as operational conditions permit and must notify the controlling ATC facility as soon as practical, but at least 120 miles from destination.

ILS PRM or LOC PRM Rwys 10R, 10C, 28L, 28C
RNAV (GPS) PRM RWYS 10R, 10C, 28L, 28C

General

- Review procedure for executing a climbing and descending PRM breakout.
- Breakout phraseology: "TRAFFIC ALERT (call sign) TURN (left/right) IMMEDIATELY HEADING (degrees) CLIMB/DESCEND AND MAINTAIN (altitude)."
- All breakouts: Hand flown, initiate immediately.
- Descending on the glideslope/glidepath ensures compliance with any charted crossing restrictions.
- Dual VHF COMM: When assigned or planning a specific PRM approach, tune a second receiver to the PRM monitor frequency or, if silent, other active frequency (i.e., ATIS), set the volume, retune the PRM frequency if necessary, then deselect the audio. When directed by ATC, immediately switch to the tower frequency and select the secondary radio audio to ON.
- If later assigned the same runway, non-PRM approach, consider it briefed provided the same minimums are utilized. PRM related chart notes and frequency no longer apply.
- TCAS during breakout: Follow TCAS climb/descend if it differs from ATC, while executing the breakout turn.

Runway Specific

- Runway 10R: Exit at taxiway Tango whenever practical.

PRM APPROACH AAUP 41°59'N-87°54'W USA INTL (USA)
USA CITY

20.7 Simultaneous Offset Instrument Approach (SOIA).

20.7.1 SOIA is a procedure used to conduct simultaneous approaches to runways spaced less than 3,000 feet, but at least 750 feet apart. The SOIA procedure utilizes a straight−in PRM approach to one runway, and a PRM offset approach with glideslope/glidepath to the adjacent runway. In SOIA operations, aircraft are paired, with the aircraft conducting the straight−in PRM approach always positioned slightly ahead of the aircraft conducting the offset PRM approach.

20.7.2 The straight−in PRM approach plates used in SOIA operations are identical to other straight−in PRM approach plates, with an additional note, which provides the separation between the two runways used for simultaneous SOIA approaches. The offset PRM approach plate displays the required notations for closely spaced approaches as well as depicts the visual segment of the approach.

20.7.3 Controllers monitor the SOIA PRM approaches in exactly the same manner as is done for other PRM approaches. The procedures and system requirements for SOIA PRM approaches are identical with those used for simultaneous close parallel PRM approaches until near the offset PRM approach missed approach point (MAP), where visual acquisition of the straight−in aircraft by the aircraft conducting the offset PRM approach occurs. Since SOIA PRM approaches are identical to other PRM approaches (except for the visual segment in the offset approach), an understanding of the procedures for conducting PRM approaches is essential before conducting a SOIA PRM operation.

20.7.4 In SOIA, the approach course separation (instead of the runway separation) meets established close parallel approach criteria. (See FIG ENR 1.5−38 for the generic SOIA approach geometry.) A visual segment of the offset PRM approach is established between the offset MAP and the runway threshold. Aircraft transition in visual conditions from the offset course, beginning at the offset MAP, to align with the runway and can be stabilized by 500 feet above ground level (AGL) on the extended runway centerline. A cloud ceiling for the approach is established so that the aircraft conducting the offset approach has nominally at least 30 seconds or more to acquire the leading straight−in aircraft prior to reaching the offset MAP. If visual acquisition is not accomplished prior to crossing the offset MAP, a missed approach must be executed.

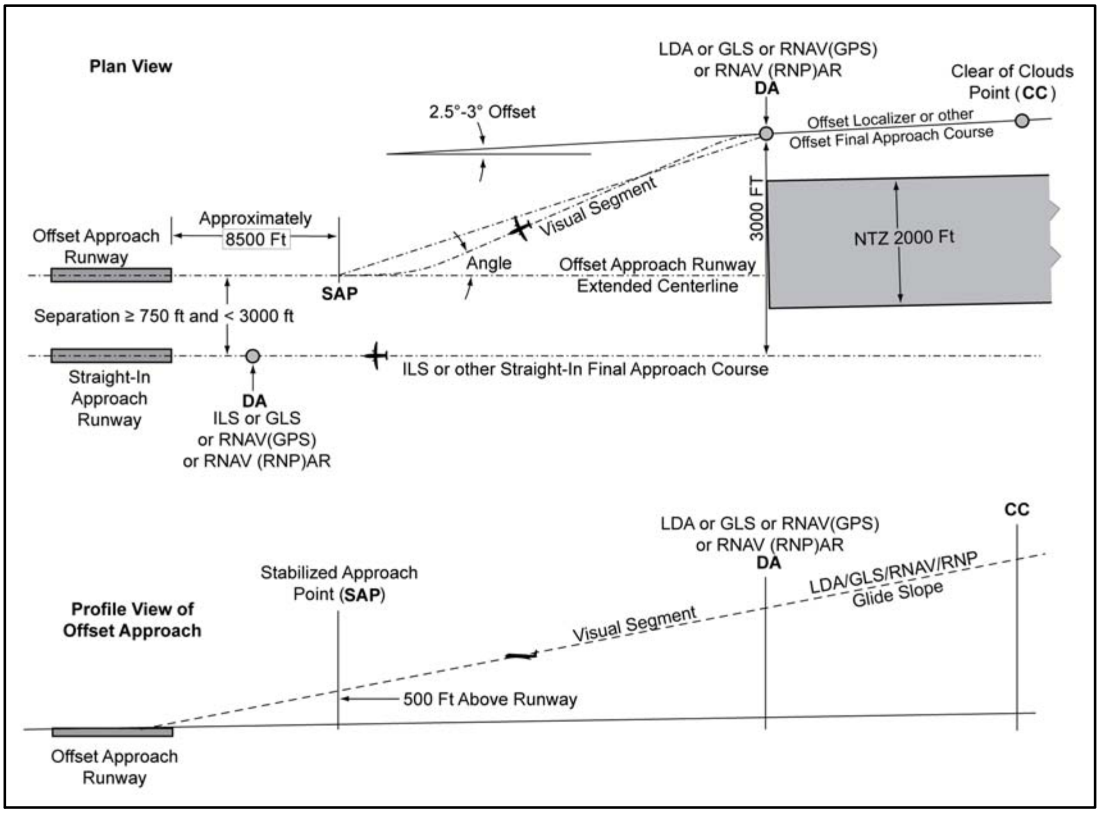
20.7.5 Flight Management System (FMS) coding of the offset RNAV PRM and GLS PRM approaches in a SOIA operation is different than other RNAV and GLS approach coding in that it does not match the initial missed approach procedure published on the charted IAP. In the SOIA design of the offset approach, lateral course guidance terminates at the fictitious threshold point (FTP), which is an extension of the final approach course beyond the offset MAP to a point near the runway threshold. The FTP is designated in the approach coding as the MAP so that vertical guidance is available to the pilot to the runway threshold, just as vertical guidance is provided by the offset LDA glideslope. No matter what type of offset approach is being conducted, reliance on lateral guidance is discontinued at the charted MAP and replaced by visual maneuvering to accomplish runway alignment.

20.7.5.1 As a result of this approach coding, when executing a missed approach at and after passing the charted offset MAP, a heading must initially be flown (either hand−flown or using autopilot "heading mode") before engaging LNAV. If the pilot engages LNAV immediately, the aircraft may continue to track toward the FTP instead of commencing a turn toward the missed approach holding fix. Notes on the charted IAP and in the AAUP make specific reference to this procedure.

20.7.5.2 Some FMSs do not code waypoints inside of the FAF as part of the approach. Therefore, the depicted MAP on the charted IAP may not be included in the offset approach coding. Pilots utilizing those FMSs may identify the location of the waypoint by noting its distance from the FTP as published on the charted IAP. In those same FMSs, the straight−in SOIA approach will not display a waypoint inside the PFAF. The same procedures may be utilized to identify an uncoded waypoint. In this case, the location is determined by noting its distance from the runway waypoint or using an authorized distance as published on the charted IAP.

20.7.5.3 Because the FTP is coded as the MAP, the FMS map display will depict the initial missed approach course as beginning at the FTP. This depiction does not match the charted initial missed approach procedure on the IAP. Pilots are reminded that charted IAP guidance is to be followed, not the map display. Once the aircraft completes the initial turn when commencing a missed approach, the remainder of the procedure coding is standard and can be utilized as with any other IAP.

FIG ENR 1.5−38
SOIA Approach Geometry



NOTE−

SAP	*The stabilized approach point is a design point along the extended centerline of the intended landing runway on the glide slope/glide path at 500 feet above the runway threshold elevation. It is used to verify a sufficient distance is provided for the visual maneuver after the offset course approach DA to permit the pilots to conform to approved, stabilized approach criteria. The SAP is not published on the IAP.*
Offset Course DA	*The point along the LDA, or other offset course, where the course separation with the adjacent ILS, or other straight-in course, reaches the minimum distance permitted to conduct closely spaced approaches. Typically that minimum distance will be 3,000 feet without the use of high update radar; with high update radar, course separation of less than 3,000 ft may be used when validated by a safety study. The altitude of the glide slope/glide path at that point determines the offset course approach decision altitude and is where the NTZ terminates. Maneuvering inside the DA is done in visual conditions.*
Visual Segment Angle	*Angle, as determined by the SOIA design tool, formed by the extension of the straight segment of the calculated flight track (between the offset course MAP/DA and the SAP) and the extended runway centerline. The size of the angle is dependent on the aircraft approach categories (Category D or only selected categories/speeds) that are authorized to use the offset course approach and the spacing between the runways.*
Visibility	*Distance from the offset course approach DA to runway threshold in statute mile.*

Procedure	*The aircraft on the offset course approach must see the runway-landing environment and, if ATC has advised that traffic on the straight-in approach is a factor, the offset course approach aircraft must visually acquire the straight-in approach aircraft and report it in sight to ATC prior to reaching the DA for the offset course approach.*
CC	*The Clear of Clouds point is the position on the offset final approach course where aircraft first operate in visual meteorological conditions below the ceiling, when the actual weather conditions are at, or near, the minimum ceiling for SOIA operations. Ceiling is defined by the Aeronautical Information Manual.*

20.7.6 SOIA PRM approaches utilize the same dual communications procedures as do other PRM approaches.

NOTE−
At KSFO, pilots conducting SOIA operations select the monitor frequency audio when communicating with the final radar controller, not the tower controller as is customary. In this special case, the monitor controller's transmissions, if required, override the final controller's frequency. This procedure is addressed on the AAUP.

20.7.6.1 SOIA utilizes the same AAUP format as do other PRM approaches. The minimum weather conditions that are required are listed. Because of the more complex nature of instructions for conducting SOIA approaches, the "Runway Specific" items are more numerous and lengthy.

20.7.6.2 Examples of SOIA offset runway specific notes:

a) Aircraft must remain on the offset course until passing the offset MAP prior to maneuvering to align with the centerline of the offset approach runway.

b) Pilots are authorized to continue past the offset MAP to align with runway centerline when:

1) the straight−in approach traffic is in sight and is expected to remain in sight,

2) ATC has been advised that "traffic is in sight." (ATC is not required to acknowledge this transmission),

3) the runway environment is in sight. Otherwise, a missed approach must be executed. Between the offset MAP and the runway threshold, pilots conducting the offset PRM approach must not pass the straight−in aircraft and are responsible for separating themselves visually from traffic conducting the straight−in PRM approach to the adjacent runway, which means maneuvering the aircraft as necessary to avoid that traffic until landing, and providing wake turbulence avoidance, if applicable. Pilots maintaining visual separation should advise ATC, as soon as practical, if visual contact with the aircraft conducting the straight−in PRM approach is lost and execute a missed approach unless otherwise instructed by ATC.

20.7.6.3 Examples of SOIA straight−in runway specific notes:

a) To facilitate the offset aircraft in providing wake mitigation, pilots should descend on, not above, the glideslope/glidepath.

b) Conducting the straight−in approach, pilots should be aware that the aircraft conducting the offset approach will be approaching from the right/left rear and will be operating in close proximity to the straight−in aircraft.

20.7.7 Recap.

The following are differences between widely spaced simultaneous approaches (at least 4,300 feet between the runway centerlines) and Simultaneous PRM close parallel approaches which are of importance to the pilot:

20.7.7.1 Runway Spacing. Prior to PRM simultaneous close parallel approaches, most ATC−directed breakouts were the result of two aircraft in−trail on the same final approach course getting too close together. Two aircraft going in the same direction did not mandate quick reaction times. With PRM closely spaced approaches, two aircraft could be alongside each other, navigating on courses that are separated by less than 4,300 feet and as close as 3,000 feet. In the unlikely event that an aircraft "blunders" off its course and makes a worst case turn of 30 degrees toward the adjacent final approach course, closing speeds of 135 feet per second could occur that constitute the need for quick reaction. A blunder has to be recognized by the monitor controller, and breakout instructions issued to the endangered aircraft. The pilot will not have any warning that a breakout is imminent because the blundering aircraft will be on another frequency. It is important that, when a pilot receives breakout instructions, the assumption is made that a blundering aircraft is about to (or has penetrated the NTZ) and is heading toward his/her approach course. The pilot must initiate a breakout as soon as safety allows. While conducting PRM approaches, pilots must maintain an increased sense of awareness in order to immediately react to an ATC (breakout) instruction and maneuver (as instructed by ATC) away from a blundering aircraft.

20.7.7.2 Communications. Dual VHF communications procedures should be carefully followed. One of the assumptions made that permits the safe conduct of PRM approaches is that there will be no blocked communications.

20.7.7.3 Hand−flown Breakouts. The use of the autopilot is encouraged while flying a PRM approach, but the autopilot must be disengaged in the rare event that a breakout is issued. Simulation studies of breakouts have shown that a hand−flown breakout can be initiated consistently faster than a breakout performed using the autopilot.

20.7.7.4 TCAS. The ATC breakout instruction is the primary means of conflict resolution. TCAS, if installed, provides another form of conflict resolution in the unlikely event other separation standards would fail. TCAS is not required to conduct a closely spaced approach.

The TCAS provides only vertical resolution of aircraft conflicts, while the ATC breakout instruction provides both vertical and horizontal guidance for conflict resolutions. Pilots should always immediately follow the TCAS Resolution Advisory (RA), whenever it is received. Should a TCAS RA be received before, during, or after an ATC breakout instruction is issued, the pilot should follow the RA, even if it conflicts with the climb/descent portion of the breakout maneuver. If following an RA requires deviating from an ATC clearance, the pilot must advise ATC as soon as practical. While following an RA, it is extremely important that the pilot also comply with the turn portion of the ATC breakout instruction unless the pilot determines safety to be factor. Adhering to these procedures assures the pilot that acceptable “breakout” separation margins will always be provided, even in the face of a normal procedural or system failure.

21. Simultaneous Converging Instrument Approaches

21.1 ATC may conduct instrument approaches simultaneously to converging runways; i.e., runways having an included angle from 15 to 100 degrees, at airports where a program has been specifically approved to do so.

21.2 The basic concept requires that dedicated, separate standard instrument approach procedures be developed for each converging runway included. These approaches can be identified by the letter “V” in the title; for example, “ILS V Rwy 17 (CONVERGING)”.Missed approach points must be at least 3 miles apart and missed approach procedures ensure that missed approach protected airspace does not overlap.

21.3 Other requirements are: radar availability, nonintersecting final approach courses, precision approach capability for each runway and, if runways intersect, controllers must be able to apply visual separation as well as intersecting runway separation criteria. Intersecting runways also require minimums of at least 700 foot ceilings and 2 miles visibility. Straight in approaches and landings must be made.

21.4 Whenever simultaneous converging approaches are in use, aircraft will be informed by the controller as soon as feasible after initial contact or via ATIS. Additionally, the radar controller will have direct communications capability with the tower controller where separation responsibility has not been delegated to the tower.

22. Timed Approaches From a Holding Fix

22.1 Timed approaches may be conducted when the following conditions are met:

22.1.1 A control tower is in operation at the airport where the approaches are conducted.

22.1.2 Direct communications are maintained between the pilot and the center/approach controller until the pilot is instructed to contact the tower.

22.1.3 If more than one missed approach procedure is available, none requires a course reversal.

22.1.4 If only one missed approach procedure is available, the following conditions are met.

22.1.4.1 Course reversal is not required.

22.1.4.2 Reported ceiling and visibility are equal to or greater than the highest prescribed circling minimums for the instrument approach procedure.

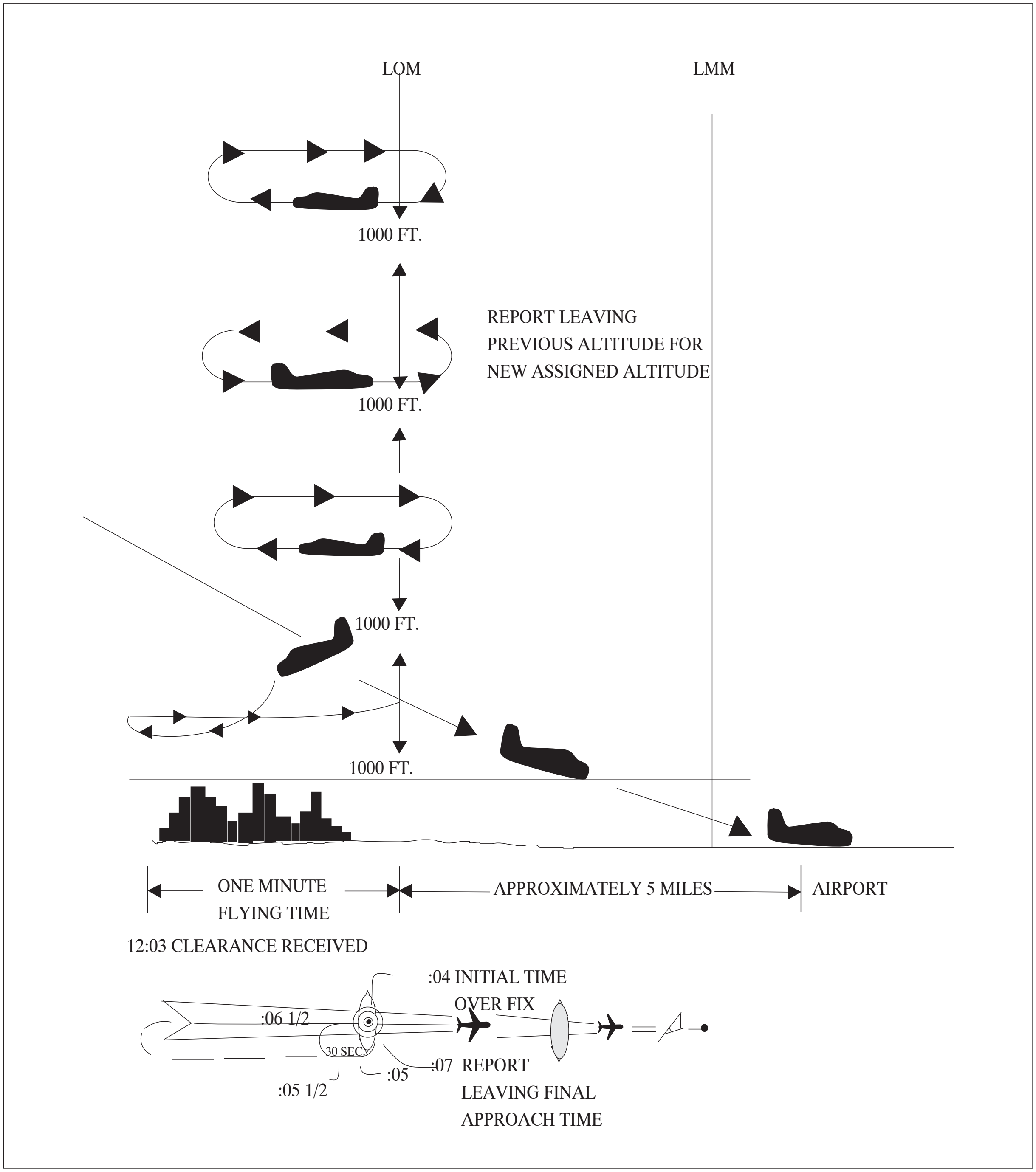
22.1.5 When cleared for the approach, pilots must not execute a procedure turn. (See 14 CFR Section 91.175j.)

22.2 Although the controller will not specifically state that "timed approaches are in use," the assigning a time to depart the final approach fix inbound (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker inbound (precision approach) is indicative that timed approach procedures are being utilized, or in lieu of holding, the controller may use radar vectors to the final approach course to establish a mileage interval between aircraft that will insure the appropriate time sequence between the final approach fix/outer marker or the fix used in lieu of the outer marker and the airport.

22.3 Each pilot in an approach sequence will be given advance notice as to the time he/she should leave the holding point on approach to the airport. When a time to leave the holding point has been received, the pilot should adjust his/her flight path to leave the fix as closely as possible to the designated time. (See FIG ENR 1.5−39.)

FIG ENR 1.5−39

Timed Approaches from a Holding Fix



EXAMPLE−

At 12:03 local time, in the example shown, a pilot holding, receives instructions to leave the fix inbound at 12:07. These instructions are received just as the pilot has completed turn at the outbound end of the holding pattern and is proceeding inbound toward the fix. Arriving back over the fix, the pilot notes that the time is 12:04 and that there are 3 minutes to lose in order to leave the fix at the assigned time. Since the time remaining is more than two minutes, the pilot plans to fly a race track pattern rather than a 360 degree turn, which would use up 2 minutes. The turns at the ends of the race track pattern will consume approximately 2 minutes. Three minutes to go, minus 2 minutes required for the turns, leaves 1 minute for level flight. Since two portions of level flight will be required to get back to the fix inbound, the pilot halves the 1 minute remaining *and plans to fly level for 30 seconds outbound before starting the turn back to the fix on final approach. If the winds were negligible at flight altitude, this procedure would bring the pilot inbound across the fix precisely at the specified time of 12:07. However, if expecting headwind on final approach, the pilot should shorten the 30 second outbound course somewhat, knowing that the wind will carry the aircraft away from the fix faster while outbound and decrease the ground speed while returning to the fix. On the other hand, compensating for a tailwind on final approach, the pilot should lengthen the calculated 30 second outbound heading somewhat, knowing that the wind would tend to hold the aircraft closer to the fix while outbound and increase the ground speed while returning to the fix.*

23. Contact Approach

23.1 Pilots operating in accordance with an IFR flight plan, provided they are clear of clouds and have at least 1 mile flight visibility and can reasonably expect to continue to the destination airport in those conditions, may request ATC authorization for a "contact approach."

23.2 Controllers may authorize a "contact approach" provided:

23.2.1 The contact approach is specifically requested by the pilot. ATC cannot initiate this approach.

EXAMPLE−
Request contact approach.

23.2.2 The reported ground visibility at the destination airport is at least 1 statute mile.

23.2.3 The contact approach will be made to an airport having a standard or special instrument approach procedure.

23.2.4 Approved separation is applied between aircraft so cleared and between these aircraft and other IFR or special VFR aircraft.

EXAMPLE−
Cleared contact approach (and if required) at or below (altitude) (routing) if not possible (alternative procedures) and advise.

23.3 A contact approach is an approach procedure that may be used by a pilot (with prior authorization from ATC) in lieu of conducting a standard or special instrument approach procedure (IAP) to an airport. It is not intended for use by a pilot on an IFR flight clearance to operate to an airport not having a published and functioning IAP. Nor is it intended for an aircraft to conduct an instrument approach to one airport and then, when "in the clear," discontinue that approach and proceed to another airport. In the execution of a contact approach, the pilot assumes the responsibility for obstruction clearance. If radar service is being received, it will automatically terminate when the pilot is instructed to change to advisory frequency.

24. Use of Enhanced Flight Vision Systems (EFVS) on Instrument Approaches

24.1 Introduction. During an instrument approach, an EFVS can enable a pilot to see the approach lights, visual references associated with the runway environment, and other objects or features that might not be visible using natural vision alone. An EFVS uses a head−up display (HUD), or an equivalent display that is a head−up presentation, to combine flight information, flight symbology, navigation guidance, and a real−time image of the external scene to the pilot. Combining the flight information, navigation guidance, and sensor imagery on a HUD (or equivalent display) allows the pilot to continue looking forward along the flightpath throughout the entire approach, landing, and rollout.

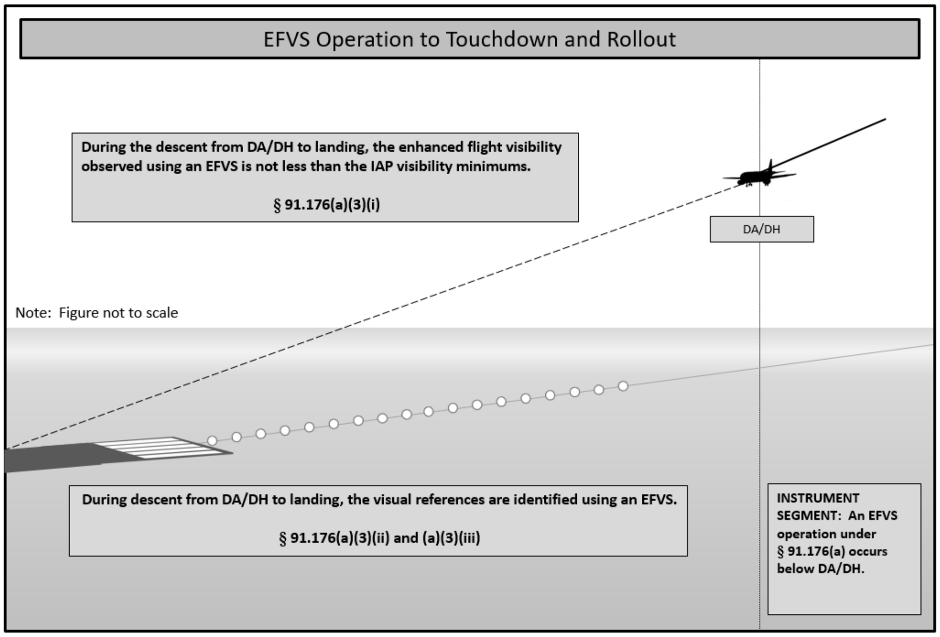
An EFVS operation is an operation in which visibility conditions require an EFVS to be used in lieu of natural vision to perform an approach or landing, determine enhanced flight visibility, identify required visual references, or conduct a rollout. There are two types of EFVS operations:

24.1.1 EFVS operations to touchdown and rollout.

24.1.2 EFVS operations to 100 feet above the touchdown zone elevation (TDZE).

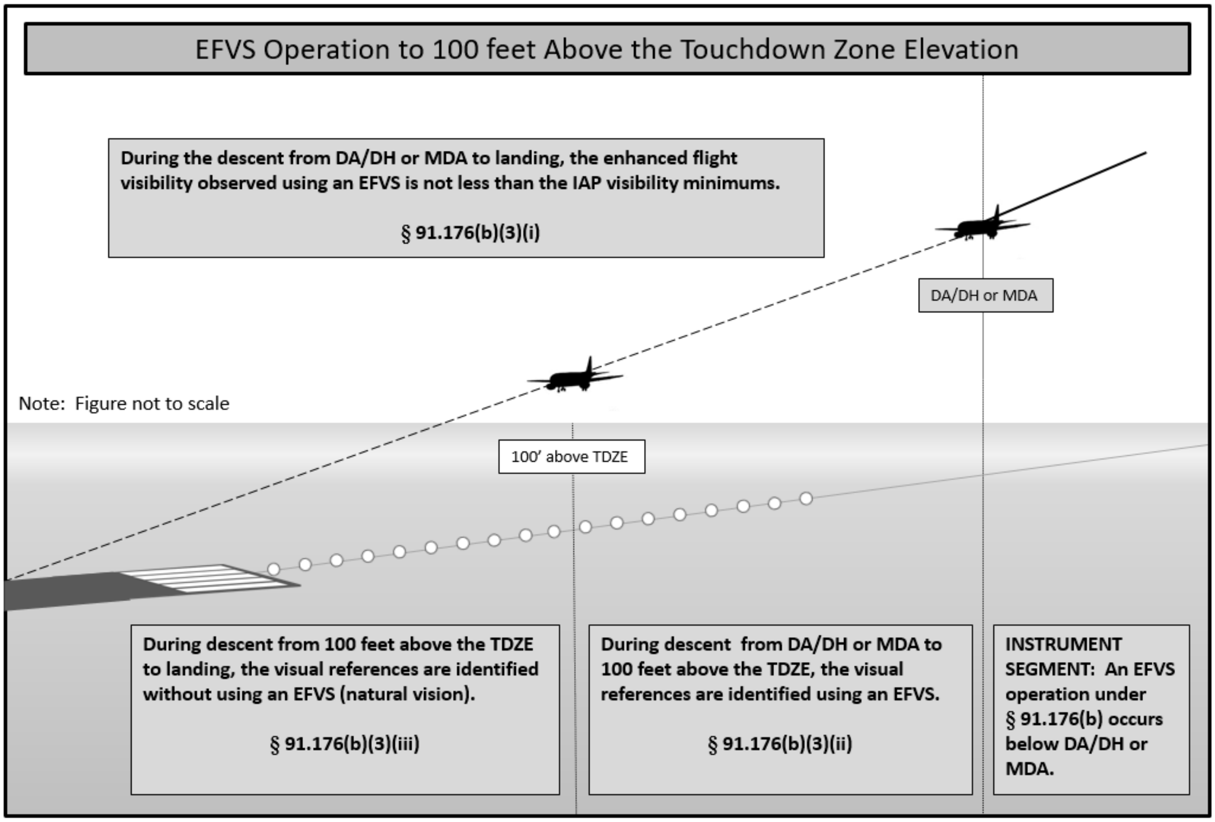
24.2 EFVS Operations to Touchdown and Rollout. An EFVS operation to touchdown and rollout is an operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA or DH to touchdown and rollout. (See FIG ENR 1.5−40.) These operations may be conducted only on Standard Instrument Approach Procedures (SIAP) or special IAPs that have a DA or DH (for example, precision or APV approach). An EFVS operation to touchdown and rollout may not be conducted on an approach that has circling minimums. The regulations for EFVS operations to touchdown and rollout can be found in 14 CFR § 91.176(a).

FIG ENR 1.5−40
EFVS Operation to Touchdown and Rollout



24.3 EFVS Operations to 100 Feet Above the TDZE. An EFVS operation to 100 feet above the TDZE is an operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA/DH or MDA down to 100 feet above the TDZE. (See FIG ENR 1.5−41.) To continue the approach below 100 feet above the TDZE, a pilot must have sufficient flight visibility to identify the required visual references using natural vision and must continue to use the EFVS to ensure the enhanced flight visibility meets the visibility requirements of the IAP being flown. These operations may be conducted on SIAPs or special IAPs that have a DA/DH or MDA. An EFVS operation to 100 feet above the TDZE may not be conducted on an approach that has circling minimums. The regulations for EFVS operations to 100 feet above the TDZE can be found in 14 CFR § 91.176(b).

FIG ENR 1.5−41
EFVS Operation to 100 ft Above the TDZE



24.4 EFVS Equipment Requirements. An EFVS that is installed on a U.S.−registered aircraft and is used to conduct EFVS operations must conform to an FAA−type design approval (i.e., a type certificate (TC), amended TC, or supplemental type certificate (STC)). A foreign−registered aircraft used to conduct EFVS operations that does not have an FAA−type design approval must be equipped with an EFVS that has been approved by either the State of the Operator or the State of Registry to meet the requirements of ICAO Annex 6. Equipment requirements for an EFVS operation to touchdown and rollout can be found in 14 CFR § 91.176(a)(1), and the equipment requirements for an EFVS operation to 100 feet above the TDZE can be found in 14 CFR § 91.176(b)(1). An operator can determine the eligibility of their aircraft to conduct EFVS operations by referring to the Airplane Flight Manual, Airplane Flight Manual Supplement, Rotorcraft Flight Manual, or Rotorcraft Flight Manual Supplement as applicable.

24.5 Operating Requirements. Any operator who conducts EFVS operations to touchdown and rollout (14 CFR § 91.176(a)) must have an OpSpec, MSpec, or LOA that specifically authorizes those operations. Parts 91K, 121, 125, 129, and 135 operators who conduct EFVS operations to 100 feet above the TDZE (14 CFR § 91.176(b))must have an OpSpec, MSpec, or LOA that specifically authorizes the operation. Part 91 operators (other than 91K operators) are not required to have an LOA to conduct EFVS operations to 100 feet above the TDZE in the United States. However, an optional LOA is available to facilitate operational approval from foreign Civil Aviation Authorities (CAA). To conduct an EFVS operation to touchdown and rollout during an authorized Category II or III operation, the operator must have:

24.5.1 An OpSpec, MSpec, or LOA authorizing EFVS operations to touchdown and rollout (14 CFR § 91.176(a)); and

24.5.2 An OpSpec, MSpec, or LOA authorizing Category II or Category III operations.

24.6 EFVS Operations in Rotorcraft. Currently, EFVS operations in rotorcraft can only be conducted on IAPs that are flown to a runway. Instrument approach criteria, procedures, and appropriate visual references have not yet been developed for straight−in landing operations below DA/DH or MDA under IFR to heliports or platforms. An EFVS cannot be used in lieu of natural vision to descend below published minimums on copter approaches to a point in space (PinS) followed by a "proceed visual flight rules (VFR)" visual segment, or on approaches designed to a specific landing site using a "proceed visually" visual segment.

24.7 EFVS Pilot Requirements. A pilot who conducts EFVS operations must receive ground and flight training specific to the EFVS operation to be conducted. The training must be obtained from an authorized training provider under a training program approved by the FAA. Additionally, recent flight experience and proficiency or competency check requirements apply to EFVS operations. These requirements are addressed in 14 CFR §§ 61.66, 91.1065, 121.441, Appendix F to Part 121, 125.287, and 135.293.

24.8 Enhanced Flight Visibility and Visual Reference Requirements. To descend below DA/DH or MDA during EFVS operations under 14 CFR § 91.176(a) or (b), a pilot must make a determination that the enhanced flight visibility observed by using an EFVS is not less than what is prescribed by the IAP being flown. In addition, the visual references required in 14 CFR § 91.176(a) or (b) must be distinctly visible and identifiable to the pilot using the EFVS. The determination of enhanced flight visibility is a separate action from that of identifying required visual references, and is different from ground−reported visibility. Even though the reported visibility or the visibility observed using natural vision may be less, as long as the EFVS provides the required enhanced flight visibility and a pilot meets all of the other requirements, the pilot can continue descending below DA/DH or MDA using the EFVS. Suitable enhanced flight visibility is necessary to ensure the aircraft is in a position to continue the approach and land. It is important to understand that using an EFVS does not result in obtaining lower minima with respect to the visibility or the DA/DH or MDA specified in the IAP. An EFVS simply provides another means of operating in the visual segment of an IAP. The DA/DH or MDA and the visibility value specified in the IAP to be flown do not change.

24.9 Flight Planning and Beginning or Continuing an Approach Under IFR. A Part 121, 125, or 135 operator's OpSpec or LOA for EFVS operations may authorize an EFVS operational credit dispatching or releasing a flight and for beginning or continuing an instrument approach procedure. When a pilot reaches DA/DH or MDA, the pilot conducts the EFVS operation in accordance with 14 CFR § 91.176(a) or (b) and their authorization to conduct EFVS operations.

24.10 Missed Approach Considerations. In order to conduct an EFVS operation, the EFVS must be operable. In the event of a failure of any required component of an EFVS at any point in the approach to touchdown, a missed approach is required. However, this provision does not preclude a pilot's authority to continue an approach if continuation of an approach is considered by the pilot to be a safer course of action.

24.11 Light Emitting Diode (LED) Airport Lighting Impact on EFVS Operations. Incandescent lamps are being replaced with LEDs at some airports in threshold lights, taxiway edge lights, taxiway centerline lights, low intensity runway edge lights, windcone lights, beacons, and some obstruction lighting. Additionally, there are plans to replace incandescent lamps with LEDs in approach lighting systems. Pilots should be aware that LED lights cannot be sensed by infrared−based EFVSs. Further, the FAA does not currently collect or disseminate information about where LED lighting is installed.

24.12 Other Vision Systems. Unlike an EFVS that meets the equipment requirements of 14 CFR § 91.176, a Synthetic Vision System (SVS) or Synthetic Vision Guidance System (SVGS) does not provide a real−time sensor image of the outside scene and also does not meet the equipment requirements for EFVS operations. A pilot cannot use a synthetic vision image on a head−up or a head−down display in lieu of natural vision to descend below DA/DH or MDA. An EFVS can, however, be integrated with an SVS, also known as a Combined Vision System (CVS). A CVS can be used to conduct EFVS operations if all of the requirements for an EFVS are satisfied and the SVS image does not interfere with the pilot's ability to see the external scene, to identify the required visual references, or to see the sensor image.

24.13 Additional Information. Operational criteria for EFVS can be found in Advisory Circular (AC) 90−106, Enhanced Flight Vision System Operations, and airworthiness criteria for EFVS can be found in AC 20−167, Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment.

25. Visual Approach

25.1 A visual approach is conducted on an IFR flight plan and authorizes a pilot to proceed visually and clear of clouds to the airport. The pilot must have either the airport or the preceding identified aircraft in sight. This approach must be authorized and controlled by the appropriate air traffic control facility. Reported weather at the airport must have a ceiling at or above 1,000 feet and visibility 3 miles or greater. ATC may authorize this type of approach when it will be operationally beneficial. Visual approaches are an IFR procedure conducted under Instrument Flight Rules in visual meteorological conditions. Cloud clearance requirements of 14 CFR Section 91.155 are not applicable, unless required by operation specifications. When conducting visual approaches, pilots are encouraged to use other available navigational aids to assist in positive lateral and vertical alignment with the runway.

25.2 Operating to an Airport Without Weather Reporting Service. ATC will advise the pilot when weather is not available at the destination airport. ATC may initiate a visual approach provided there is a reasonable assurance that weather at the airport is a ceiling at or above 1,000 feet and visibility 3 miles or greater (e.g., area weather reports, PIREPs, etc.).

25.3 Operating to an Airport with an Operating Control Tower. Aircraft may be authorized to conduct a visual approach to one runway while other aircraft are conducting IFR or VFR approaches to another parallel, intersecting, or converging runway. When operating to airports with parallel runways separated by less than 2,500 feet, the succeeding aircraft must report sighting the preceding aircraft unless standard separation is being provided by ATC. When operating to parallel runways separated by at least 2,500 feet but less than 4,300 feet, controllers will clear/vector aircraft to the final at an angle not greater than 30 degrees unless radar, vertical, or visual separation is provided during the turn−on. The purpose of the 30 degree intercept angle is to reduce the potential for overshoots of the final and to preclude side−by−side operations with one or both aircraft in a belly−up configuration during the turn−on. Once the aircraft are established within 30 degrees of final, or on the final, these operations may be conducted simultaneously. When the parallel runways are separated by 4,300 feet or more, or intersecting/converging runways are in use, ATC may authorize a visual approach after advising all aircraft involved that other aircraft are conducting operations to the other runway. This may be accomplished through use of the ATIS.

25.4 Separation Responsibilities. If the pilot has the airport in sight but cannot see the preceding aircraft, ATC may clear the aircraft for a visual approach; however, ATC retains both separation and wake vortex separation responsibility. When visually following a preceding aircraft, acceptance of the visual approach clearance constitutes acceptance of pilot responsibility for maintaining a safe approach interval and adequate wake turbulence separation.

25.5 A visual approach is not an IAP and therefore has no missed approach segment. If a go around is necessary for any reason, aircraft operating at controlled airports will be issued an appropriate advisory/clearance/instruction by the tower. At uncontrolled airports, aircraft are expected to remain clear of clouds and complete a landing as soon as possible. If a landing cannot be accomplished, the aircraft is expected to remain clear of clouds and contact ATC as soon as possible for further clearance. Separation from other IFR aircraft will be maintained under these circumstances.

25.6 Visual approaches reduce pilot/controller workload and expedite traffic by shortening flight paths to the airport. It is the pilot's responsibility to advise ATC as soon as possible if a visual approach is not desired.

25.7 Authorization to conduct a visual approach is an IFR authorization and does not alter IFR flight plan cancellation responsibility. See ENR 1.10, Paragraph 11.2, Canceling IFR Flight Plan.

25.8 Radar service is automatically terminated, without advising the pilot, when the aircraft is instructed to change to advisory frequency.

26. Charted Visual Flight Procedures (CVFPs)

26.1 CVFPs are charted visual approaches established for environmental/noise considerations, and/or when necessary for the safety and efficiency of air traffic operations. The approach charts depict prominent landmarks, courses, and recommended altitudes to specific runways. CVFPs are designed to be used primarily for turbojet aircraft.

26.2 These procedures will be used only at airports with an operating control tower.

26.3 Most approach charts will depict some NAVAID information which is for supplemental navigational guidance only.

26.4 Unless indicating a Class B airspace floor, all depicted altitudes are for noise abatement purposes and are recommended only. Pilots are not prohibited from flying other than recommended altitudes if operational requirements dictate.

26.5 When landmarks used for navigation are not visible at night, the approach will be annotated "PROCEDURE NOT AUTHORIZED AT NIGHT."

26.6 CVFPs usually begin within 20 flying miles from the airport.

26.7 Published weather minimums for CVFPs are based on minimum vectoring altitudes rather than the recommended altitudes depicted on charts.

26.8 CVFPs are not instrument approaches and do not have missed approach segments.

26.9 ATC will not issue clearances for CVFPs when the weather is less than the published minimum.

26.10 ATC will clear aircraft for a CVFP after the pilot reports siting a charted landmark or a preceding aircraft. If instructed to follow a preceding aircraft, pilots are responsible for maintaining a safe approach interval and wake turbulence separation.

26.11 Pilots should advise ATC if at any point they are unable to continue an approach or lose sight of a preceding aircraft. Missed approaches will be handled as a go−around.

26.12 When conducting visual approaches, pilots are encouraged to use other available navigational aids to assist in positive lateral and vertical alignment with the assigned runway.

27. Missed Approach

27.1 When a landing cannot be accomplished, advise ATC and, upon reaching the missed approach point defined on the approach procedure chart, the pilot must comply with the missed approach instructions for the procedure being used or with an alternate missed approach procedure specified by ATC.

27.2 Obstacle protection for missed approach is predicated on the missed approach being initiated at the decision altitude/decision height (DA/DH) or at the missed approach point and not lower than minimum descent altitude (MDA). A climb gradient of at least 200 feet per nautical mile is required, (except for Copter approaches, where a climb of at least 400 feet per nautical mile is required), unless a higher climb gradient is published in the notes section of the approach procedure chart. When higher than standard climb gradients are specified, the end point of the non−standard climb will be specified at either an altitude or a fix. Pilots must preplan to ensure that the aircraft can meet the climb gradient (expressed in feet per nautical mile) required by the procedure in the event of a missed approach, and be aware that flying at a higher than anticipated ground speed increases the climb rate requirement (feet per minute). Tables for the conversion of climb gradients (feet per nautical mile) to climb rate (feet per minute), based on ground speed, are included on page D1 of the U.S. Terminal Procedures booklets. Reasonable buffers are provided for normal maneuvers. However, no consideration is given to an abnormally early turn. Therefore, when an early missed approach is executed, pilots should, unless otherwise cleared by ATC, fly the IAP as specified on the approach plate to the missed approach point at or above the MDA or DH before executing a turning maneuver.

27.3 If visual reference is lost while circling to land from an instrument approach, the missed approach specified for that particular procedure must be followed (unless an alternate missed approach procedure is specified by ATC). To become established on the prescribed missed approach course, the pilot should make an initial climbing turn toward the landing runway and continue the turn until established on the missed approach course. Inasmuch as the circling maneuver may be accomplished in more than one direction, different patterns will be required to become established on the prescribed missed approach course depending on the aircraft position at the time visual reference is lost. Adherence to the procedure will help assure that an aircraft will remain laterally within the circling and missed approach obstruction clearance areas. Refer to paragraph 27.8 concerning vertical obstruction clearance when starting a missed approach at other than the MAP. (See FIG ENR 1.5−42.)

FIG ENR 1.5−42

Circling and Missed Approach Obstruction Clearance Areas

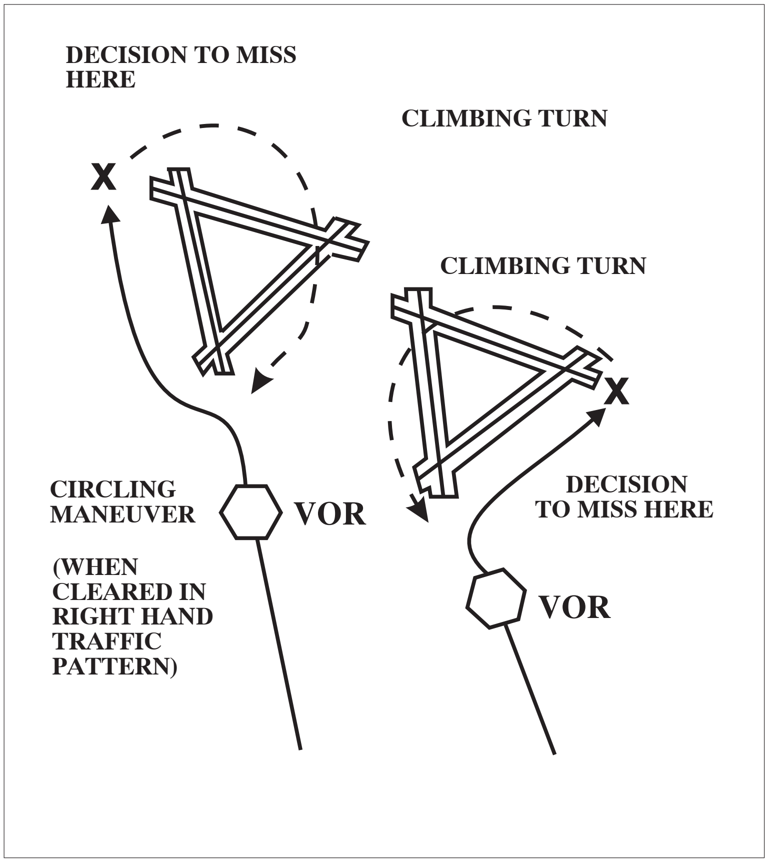


FIG ENR 1.5−43

Missed Approach

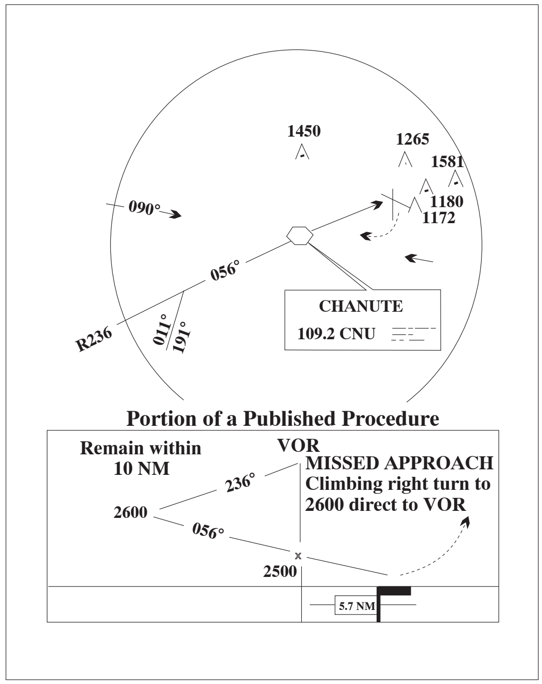
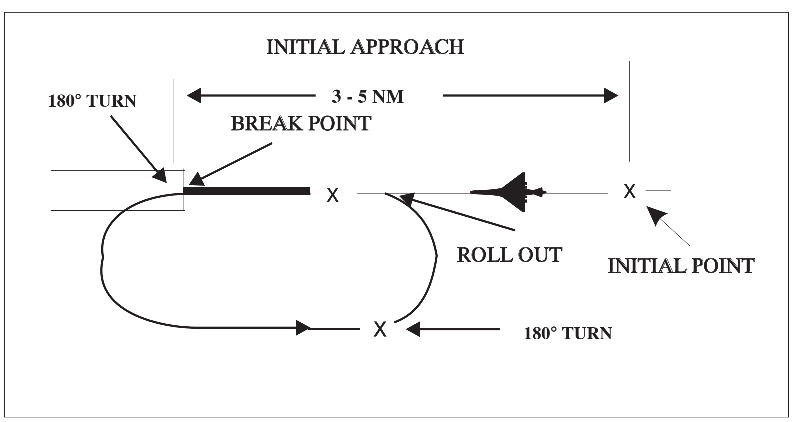


FIG ENR 1.5−44

Overhead Maneuver



27.4 At locations where ATC radar service is provided, the pilot should conform to radar vectors when provided by ATC in lieu of the published missed approach procedure.

27.5 Some locations may have a preplanned alternate missed approach procedure for use in the event the primary NAVAID used for the missed approach procedure is unavailable. To avoid confusion, the alternate missed approach instructions are not published on the chart. However, the alternate missed approach holding pattern will be depicted on the instrument approach chart for pilot situational awareness and to assist ATC by not having to issue detailed holding instructions. The alternate missed approach may be based on NAVAIDs not used in the approach procedure or the primary missed approach. When the alternate missed approach procedure is implemented by NOTAM, it becomes a mandatory part of the procedure. The NOTAM will specify both the textual instructions and any additional equipment requirements necessary to complete the procedure. Air traffic may also issue instructions for the alternate missed approach when necessary, such as when the primary missed approach NAVAID fails during the approach. Pilots may reject an ATC clearance for an alternate missed approach that requires equipment not necessary for the published approach procedure when the alternate missed approach is issued after beginning the approach. However, when the alternate missed approach is issued prior to beginning the approach the pilot must either accept the entire procedure (including the alternate missed approach), request a different approach procedure, or coordinate with ATC for alternative action to be taken, i.e., proceed to an alternate airport, etc.

27.6 When the approach has been missed, request a clearance for specific action; i.e., to alternative airport, another approach, etc.

27.7 Pilots must ensure that they have climbed to a safe altitude prior to proceeding off the published missed approach, especially in nonradar environments. Abandoning the missed approach prior to reaching the published altitude may not provide adequate terrain clearance. Additional climb may be required after reaching the holding pattern before proceeding back to the IAF or to an alternate.

27.8 A clearance for an instrument approach procedure includes a clearance to fly the published missed approach procedure, unless otherwise instructed by ATC. The published missed approach procedure provides obstacle clearance only when the missed approach is conducted on the missed approach segment from or above the missed approach point, and assumes a climb rate of 200 feet/NM or higher, as published. If the aircraft initiates a missed approach at a point other than the missed approach point (see paragraph 12.2), from below MDA or DA (H), or on a circling approach, obstacle clearance is not necessarily provided by following the published missed approach procedure, nor is separation assured from other air traffic in the vicinity.

In the event a balked (rejected) landing occurs at a position other than the published missed approach point, the pilot should contact ATC as soon as possible to obtain an amended clearance. If unable to contact ATC for any reason, the pilot should attempt to re−intercept a published segment of the missed approach and comply with route and altitude instructions. If unable to contact ATC, and in the pilot's judgment it is no longer appropriate to fly the published missed approach procedure, then consider either maintaining visual conditions if practicable and reattempt a landing, or a circle−climb over the airport. Should a missed approach become necessary when operating to an airport that is not served by an operating control tower, continuous contact with an air traffic facility may not be possible. In this case, the pilot should execute the appropriate go−around/missed approach procedure without delay and contact ATC when able to do so.

Prior to initiating an instrument approach procedure, the pilot should assess the actions to be taken in the event of a balked (rejected) landing beyond the missed approach point or below the MDA or DA (H) considering the anticipated weather conditions and available aircraft performance. 14 CFR 91.175(e) authorizes the pilot to fly an appropriate missed approach procedure that ensures obstruction clearance, but it does not necessarily consider separation from other air traffic. The pilot must consider other factors such as the aircraft's geographical location with respect to the prescribed missed approach point, direction of flight, and/or minimum turning altitudes in the prescribed missed approach procedure. The pilot must also consider aircraft performance, visual climb restrictions, charted obstacles, published obstacle departure procedure, takeoff visual climb requirements as expressed by nonstandard takeoff minima, other traffic expected to be in the vicinity, or other factors not specifically expressed by the approach procedures.

28. Overhead Approach Maneuver

28.1 Pilots operating in accordance with an IFR flight plan in Visual Meteorological Conditions (VMC) may request ATC authorization for an overhead maneuver. An overhead maneuver is not an instrument approach procedure. Overhead maneuver patterns are developed at airports where aircraft have an operational need to conduct the maneuver. An aircraft conducting an overhead maneuver is considered to be VFR and the IFR flight plan is canceled when the aircraft reaches the initial point on the initial approach portion of the maneuver. (See FIG ENR 1.5−44.) The existence of a standard overhead maneuver pattern does not eliminate the possible requirement for an aircraft to conform to conventional rectangular patterns if an overhead maneuver cannot be approved. Aircraft operating to an airport without a functioning control tower must initiate cancellation of an IFR flight plan prior to executing the overhead maneuver. Cancellation of the IFR flight plan must be accomplished after crossing the landing threshold on the initial portion of the maneuver or after landing. Controllers may authorize an overhead maneuver and issue the following to arriving aircraft:

28.1.1 Pattern altitude and direction of traffic. This information may be omitted if either is standard.

PHRASEOLOGY−
PATTERN ALTITUDE (altitude). RIGHT TURNS.

28.1.2 Request for a report on initial approach.

PHRASEOLOGY−
REPORT INITIAL.

28.1.3 "Break" information and a request for the pilot to report. The "Break Point" will be specified if nonstandard. Pilots may be requested to report "break" if required for traffic or other reasons.

PHRASEOLOGY−
BREAK AT (specified point).
REPORT BREAK.

29. Departure Procedures

29.1 Pre−Taxi Clearance Procedures

29.1.1 Locations where these procedures are in effect are indicated in the Chart Supplement U.S.

29.1.2 Certain airports have established programs whereby pilots of departing IFR aircraft may elect to receive their IFR clearances before they start taxiing for takeoff. The following provisions are included in such procedures:

29.1.2.1 Pilot participation is not mandatory.

29.1.2.2 Participating pilots call clearance delivery/ ground control not more than 10 minutes before proposed taxi time.

29.1.2.3 IFR clearance (or delay information, if clearance cannot be obtained) is issued at the time of this initial call−up.

29.1.2.4 When the IFR clearance is received on clearance delivery frequency, pilots call ground control when ready to taxi.

29.1.2.5 Normally, pilots need not inform ground control that they have received IFR clearance on clearance delivery frequency. Certain locations may, however, require that the pilot inform ground control of a portion of the routing or that the IFR clearance has been received.

29.1.2.6 If a pilot cannot establish contact on clearance delivery frequency or has not received an IFR clearance before ready to taxi, the pilot should contact ground control and inform the controller accordingly.

30. Automated Pre−Departure Clearance Procedures

30.1 Many airports in the National Airspace System are equipped with the Terminal Data Link System (TDLS) that includes the Pre−Departure Clearance (PDC) and Controller Pilot Data Link Communication–Departure Clearance (CPDLC-DCL) functions. Both the PDC and CPDLC-DCL functions automate the Clearance Delivery operations in the ATCT for participating users. Both functions display IFR clearances from the ARTCC to the ATCT. The Clearance Delivery controller in the ATCT can append local departure information and transmit the clearance via data link to participating airline/service provider computers for PDC. The airline/service provider will then deliver the clearance via the

Aircraft Communications Addressing and Reporting System (ACARS) or a similar data link system, or for non-data link equipped aircraft, via a printer located at the departure gate. For CPDLC-DCL, the departure clearance is uplinked from the ATCT via the Future Air Navigation System (FANS) to the aircraft avionics and requires a response from the flight crew. Both PDC and CPDLC-DCL reduce frequency congestion, controller workload, and are intended to mitigate delivery/read back errors.

30.2 Both services are available only to participating aircraft that have subscribed to the service through an approved service provider.

30.3 In all situations, the pilot is encouraged to contact clearance delivery if a question or concern exists regarding an automated clearance. Due to technical reasons, the following limitations/differences exist between the two services:

30.3.1 PDC

30.3.1.1 Aircraft filing multiple flight plans are limited to one PDC clearance per departure airport within a 24−hour period. Additional clearances will be delivered verbally.

30.3.1.2 If the clearance is revised or modified prior to delivery, it will be rejected from PDC and the clearance will need to be delivered verbally.

30.3.1.3 No acknowledgment of receipt or read back is required for a PDC.

30.3.2 CPDLC−DCL

30.3.2.1 No limitation to the number of clearances received.

30.3.2.2 Allows delivery of revised flight data, including revised departure clearances.

30.3.2.3 A response from the flight crew is required.

30.3.2.4 Requires a logon to the FAA National Single Data Authority − KUSA − utilizing the ATC FANS application.

30.3.2.5 To be eligible, operators must have received CPDLC/FANS authorization from the responsible civil aviation authority, and file appropriate equipment information in ICAO field 10a and in the ICAO field 18 DAT (Other Data Applications) of the flight plan.

31. IFR Clearances Off Uncontrolled Airports

31.1 Pilots departing on an IFR flight plan should consult the Chart Supplement U.S. to determine the frequency or telephone number to use to contact clearance delivery. On initial contact, pilots should advise that the flight is IFR and state the departure and destination airports.

31.2 Air traffic facilities providing clearance delivery services via telephone will have their telephone number published in the Chart Supplement U.S. of that airport's entry. This same section may also contain a telephone number to use for cancellation of an IFR flight plan after landing.

31.3 Except in Alaska, pilots of MEDEVAC flights may obtain a clearance by calling 1−877−543−4733.

32. Taxi Clearance

32.1 Pilots on IFR flight plans should communicate with the control tower on the appropriate ground control/clearance delivery frequency prior to starting engines to receive engine start time, taxi, and/or clearance information.

33. Line Up and Wait (LUAW)

33.1 Line up and wait is an air traffic control (ATC) procedure designed to position an aircraft onto the runway for an imminent departure. The ATC instruction "LINE UP AND WAIT" is used to instruct a pilot to taxi onto the departure runway and line up and wait.

EXAMPLE−
Tower: "N234AR Runway 24L, line up and wait."

33.2 This ATC instruction is not an authorization to takeoff. In instances where the pilot has been instructed to "line up and wait" and has been advised of a reason/condition (wake turbulence, traffic on an intersecting runway, etc.) or the reason/condition is clearly visible (another aircraft that has landed on or is taking off on the same runway), and the reason/condition is satisfied, the pilot should expect an imminent takeoff clearance, unless advised of a delay. If you are uncertain about any ATC instruction or clearance, contact ATC immediately.

33.3 If a takeoff clearance is not received within a reasonable amount of time after clearance to line up and wait, ATC should be contacted.

EXAMPLE−
Aircraft: Cessna 234AR holding in position Runway 24L.

Aircraft: Cessna 234AR holding in position Runway 24L at Bravo.

NOTE−
FAA analysis of accidents and incidents involving aircraft holding in position indicate that two minutes or more elapsed between the time the instruction was issued to "line up and wait" and the resulting event (for example, landover or go−around). Pilots should consider the length of time that they have been holding in position whenever they HAVE NOT been advised of any expected delay to determine when it is appropriate to query the controller.

REFERENCE−
Advisory Circulars 91−73A, Part 91 and Part 135 Single−Pilot Procedures during Taxi Operations, and 120−74A, Parts 91, 121, 125, and 135 Flightcrew Procedures during Taxi Operations.

33.4 Situational awareness during line up and wait operations is enhanced by monitoring ATC instructions/clearances issued to other aircraft. Pilots should listen carefully if another aircraft is on frequency that has a similar call sign and pay close attention to communications between ATC and other aircraft. If you are uncertain of an ATC instruction or clearance, query ATC immediately. Care should be taken to not inadvertently execute a clearance/instruction for another aircraft.

33.5 Pilots should be especially vigilant when conducting "line up and wait" operations at night or during reduced visibility conditions. They should scan the full length of the runway and look for aircraft on final approach or landing roll out when taxiing onto a runway. ATC should be contacted anytime there is a concern about a potential conflict.

33.6 When two or more runways are active, aircraft may be instructed to "LINE UP AND WAIT" on two or more runways. When multiple runway operations are being conducted, it is important to listen closely for your call sign and runway. Be alert for similar sounding call signs and acknowledge all instructions with your call sign. When you are holding in position and are not sure if the takeoff clearance was for you, ask ATC before you begin takeoff roll. ATC prefers that you confirm a takeoff clearance rather than mistake another aircraft's clearance for your own.

33.7 When ATC issues intersection "line up and wait" and takeoff clearances, the intersection designator will be used. If ATC omits the intersection designator, call ATC for clarification.

EXAMPLE−
Aircraft: "Cherokee 234AR, Runway 24L at November 4, line up and wait."

33.8 If landing traffic is a factor during line up and wait operations, ATC will inform the aircraft in position of the closest traffic within 6 flying miles requesting a full−stop, touch−and−go, stop−and−go, or an unrestricted low approach to the same runway. Pilots should take care to note the position of landing traffic. ATC will also advise the landing traffic when an aircraft is authorized to "line up and wait" on the same runway.

EXAMPLE−
Tower: "Cessna 234AR, Runway 24L, line up and wait. Traffic a Boeing 737, six mile final."

Tower: "Delta 1011, continue, traffic a Cessna 210 holding in position Runway 24L."

NOTE−
ATC will normally withhold landing clearance to arrival aircraft when another aircraft is in position and holding on the runway.

33.9 Never land on a runway that is occupied by another aircraft, even if a landing clearance was issued. Do not hesitate to ask the controller about the traffic on the runway and be prepared to execute a go−around.

NOTE−
Always clarify any misunderstanding or confusion concerning ATC instructions or clearances. ATC should be advised immediately if there is any uncertainty about the ability to comply with any of their instructions.

34. Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times

34.1 ATC may assign departure restrictions, clearance void times, hold for release, and release times, when necessary, to separate departures from other traffic or to restrict or regulate the departure flow.

34.1.1 Clearance Void Times. A pilot may receive a clearance, when operating from an airport without a control tower, which contains a provision for the clearance to be void if not airborne by a specific time. A pilot who does not depart prior to the clearance void time must advise ATC as soon as possible of his or her intentions. ATC will normally advise the pilot of the time allotted to notify ATC that the aircraft did not depart prior to the clearance void time. This time cannot exceed 30 minutes. Failure of an aircraft to contact ATC within 30 minutes after the clearance void time will result in the aircraft being considered overdue and search and rescue procedures initiated.

NOTE−
1. *Other IFR traffic for the airport where the clearance is issued is suspended until the aircraft has contacted ATC or until 30 minutes after the clearance void time or 30 minutes after the clearance release time if no clearance void time is issued.*

2. *Pilots who depart at or after their clearance void time are not afforded IFR separation and may be in violation of 14 CFR Section 91.173 which requires that pilots receive an appropriate ATC clearance before operating IFR in Class A, B, C, D, and E airspace.*

EXAMPLE−
Clearance void if not off by (clearance void time) and, if required, if not off by (clearance void time) advise (facility) not later than (time) of intentions.

34.1.2 Hold for Release. ATC may issue "hold for release" instructions in a clearance to delay an aircraft's departure for traffic management reasons (i.e., weather, traffic volume, etc.). When ATC states in the clearance, "hold for release," the pilot may not depart utilizing that IFR clearance until a release time or additional instructions are issued by ATC. In addition, ATC will include departure delay information in conjunction with "hold for release" instructions. The ATC instruction, "hold for release," applies to the IFR clearance and does not prevent the pilot from departing under VFR. However, prior to takeoff the pilot should cancel the IFR flight plan and operate the transponder/ADS−B on the appropriate VFR code. An IFR clearance may not be available after departure.

EXAMPLE−
(Aircraft identification) cleared to (destination) airport as filed, maintain (altitude), and, if required (additional instructions or information), hold for release, expect (time in hours and/or minutes) departure delay.

34.1.3 Release Times. A "release time" is a departure restriction issued to a pilot by ATC, specifying the earliest time an aircraft may depart. ATC will use "release times" in conjunction with traffic management procedures and/or to separate a departing aircraft from other traffic.

EXAMPLE−
(Aircraft identification) released for departure at (time in hours and/or minutes).

34.1.4 Expect Departure Clearance Time (EDCT). The EDCT is the runway release time assigned to an aircraft included in traffic management programs. Aircraft are expected to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT.

34.2 If practical, pilots departing uncontrolled airports should obtain IFR clearances prior to becoming airborne when two−way communication with the controlling ATC facility is available.

35. Departure Control

35.1 Departure Control is an approach control function responsible for ensuring separation between departures. So as to expedite the handling of departures, Departure Control may suggest a takeoff direction other than that which may normally have been used under VFR handling. Many times it is preferred to offer the pilot a runway that will require the fewest turns after takeoff to place the pilot on course or selected departure route as quickly as possible. At many locations particular attention is paid to the use of preferential runways for local noise abatement programs, and route departures away from congested areas.

35.2 Departure Control utilizing radar will normally clear aircraft out of the terminal area using DPs via radio navigation aids.

35.2.1 When a departure is to be vectored immediately following takeoff, the pilot will be advised prior to takeoff of the initial heading to be flown but may not be advised of the purpose of the heading. When the initial heading will take the aircraft off an assigned procedure (for example, an RNAV SID with a published lateral path to a waypoint and crossing restrictions from the departure end of runway), the controller will assign an altitude to maintain with the initial heading and, if necessary, a speed to maintain.

35.2.2 At some airports when a departure will fly an RNAV SID that begins at the runway, ATC may advise aircraft of the initial fix/waypoint on the RNAV route. The purpose of the advisory is to remind pilots to verify the correct procedure is programmed in the FMS before takeoff. Pilots must immediately advise ATC if a different RNAV SID is entered in the aircraft's FMC. When this advisory is absent, pilots are still required to fly the assigned SID as published.

EXAMPLE−
Delta 345 RNAV to MPASS, Runway 26L, cleared for takeoff.

NOTE−
1. *The SID transition is not restated as it is contained in the ATC clearance.*

2. *Aircraft cleared via RNAV SIDs designed to begin with a vector to the initial waypoint are assigned a heading before departure.*

35.2.3 Pilots operating in a radar environment are expected to associate departure headings or an RNAV departure advisory with vectors or the flight path to their planned route or flight. When given a vector taking the aircraft off a previously assigned nonradar route, the pilot will be advised briefly what the vector is to achieve. Thereafter, radar service will be provided until the aircraft has been reestablished "on-course" using an appropriate navigation aid and the pilot has been advised of the aircraft's position or a handoff is made to another radar controller with further surveillance capabilities.

35.3 Controllers will inform pilots of the departure control frequencies and, if appropriate, the transponder code before takeoff. Pilots must ensure their transponder/ADS−B is adjusted to the "on" or normal operating position as soon as practical and remain on during all operations unless otherwise requested to change to "standby" by ATC. Pilots should not change to the departure control frequency until requested. Controllers may omit the departure control frequency if a DP has or will be assigned and the departure control frequency is published on the DP.

36. Abbreviated IFR Departure Clearance (Cleared . . . as Filed) Procedures

36.1 ATC facilities will issue an abbreviated IFR departure clearance based on the ROUTE of flight filed in the IFR flight plan, provided the filed route can be approved with little or no revision. These abbreviated clearance procedures are based on the following conditions:

36.1.1 The aircraft is on the ground or it has departed VFR and the pilot is requesting IFR clearance while airborne.

36.1.2 That a pilot will not accept an abbreviated clearance if the route or destination of a flight plan filed with ATC has been changed by him/her or the company or the operations officer before departure.

36.1.3 That it is the responsibility of the company or operations office to inform the pilot when they make a change to the filed flight plan.

36.1.4 That it is the responsibility of the pilot to inform ATC in the initial call−up (for clearance) when the filed flight plan has been either:

36.1.4.1 Amended.

36.1.4.2 Canceled and replaced with a new filed flight plan.

NOTE−
The facility issuing a clearance may not have received the revised route or the revised flight plan by the time a pilot requests clearance.

36.2 Controllers will issue a detailed clearance when they know that the original filed flight plan has been changed or when the pilot requests a full route clearance.

36.3 The clearance as issued will include the destination airport filed in the flight plan.

36.4 ATC procedures now require the controller to state the DP name, the current number and the DP Transition name after the phrase "Cleared to (destination) airport," and prior to the phrase, "then as filed," for ALL departure clearances when the DP or DP Transition is to be flown. The procedure applies whether or not the DP is filed in the flight plan.

36.5 Standard Terminal Arrivals (STARs), when filed in a flight plan, are considered a part of the filed route of flight and will not normally be stated in an initial departure clearance. If the ARTCC's jurisdictional airspace includes both the departure airport and the fix where a STAR or STAR Transition begins, the STAR name, the current number, and the STAR Transition name MAY be stated in the initial clearance.

36.6 "Cleared to (destination) airport as filed" does NOT include the en route altitude filed in a flight plan. An en route altitude will be stated in the clearance or the pilot will be advised to expect an assigned/filed altitude within a given time frame or at a certain point after departure. This may be done verbally in the departure instructions or stated in the DP.

36.7 In a radar and a nonradar environment, the controller will state "Cleared to (destination) airport as filed" or:

36.7.1 If a DP or DP Transition is to be flown, specify the DP name, the current DP number, the DP Transition name, the assigned altitude/flight level, and any additional instructions (departure control frequency, beacon code assignment, etc.) necessary to clear a departing aircraft via the DP/DP Transition and the route filed.

EXAMPLE−
National Seven Twenty cleared to Miami Airport Intercontinental one departure, Lake Charles transition then as filed, maintain Flight Level two seven zero.

36.7.2 When there is no DP or when the pilot cannot accept a DP, specify the assigned altitude/flight level, and any additional instructions necessary to clear a departing aircraft via an appropriate departure routing and the route filed.

NOTE−
A detailed departure route description or a radar vector may be used to achieve the desired departure routing.

36.7.3 If necessary to make a minor revision to the filed route, specify the assigned DP/DP Transition (or departure routing), the revision to the filed route, the assigned altitude/flight level, and any additional instructions necessary to clear a departing aircraft.

EXAMPLE−
Jet Star One Four Two Four cleared to Atlanta Airport, South Boston two departure then as filed except change route to read South Boston Victor 20 Greensboro, maintain one seven thousand.

36.7.4 Additionally, in a nonradar environment, specify one or more fixes as necessary to identify the initial route of flight.

EXAMPLE−
Cessna Three One Six Zero Foxtrot cleared to Charlotte Airport as filed via Brooke, maintain seven thousand.

36.8 To ensure success of the program, pilots should:

36.8.1 Avoid making changes to a filed flight plan just prior to departure.

36.8.2 State the following information in the initial call−up to the facility when no change has been made to the filed flight plan: Aircraft call sign, location, type operation (IFR), and the name of the airport (or fix) to which you expect clearance.

EXAMPLE−
"Washington clearance delivery (or ground control if appropriate) American Seventy Six at gate one, IFR Los Angeles."

36.8.3 If the flight plan has been changed, state the change and request a full route clearance.

EXAMPLE−
"Washington clearance delivery, American Seventy Six at gate one. IFR San Francisco. My flight plan route has been amended (or destination changed). Request full route clearance."

36.8.4 Request verification or clarification from ATC if ANY portion of the clearance is not clearly understood.

36.8.5 When requesting clearance for the IFR portion of a VFR−IFR flight, request such clearance prior to the fix where IFR operation is proposed to commence in sufficient time to avoid delay. Use the following phraseology:

EXAMPLE−
"Los Angeles center, Apache Six One Papa, VFR estimating Paso Robles VOR at three two, one thousand five hundred, request IFR to Bakersfield."

37. Instrument Departure Procedures (DP) − Obstacle Departure Procedures (ODP), Standard Instrument Departures (SID), and Diverse Vector Areas (DVA)

37.1 Instrument departure procedures are preplanned instrument flight rule (IFR) procedures which provide obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DPs, Obstacle Departure Procedures (ODP), printed either textually or graphically, and Standard Instrument Departures (SID), always printed graphically. All DPs, either textual or graphic may be designed using either conventional or RNAV criteria. RNAV procedures will have RNAV printed in the title; for example, SHEAD TWO DEPARTURE (RNAV). ODPs provide obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstruction clearance and may be flown without ATC clearance unless an alternate departure procedure (SID or radar vector) has been specifically assigned by ATC. Graphic ODPs will have (OBSTACLE) printed in the procedure title; for example, GEYSR THREE DEPARTURE (OBSTACLE), or, CROWN ONE DEPARTURE (RNAV) (OBSTACLE). Standard Instrument Departures are air traffic control (ATC) procedures printed for pilot/controller use in graphic form to provide obstruction clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement and to reduce pilot/controller workload. ATC clearance must be received prior to flying a SID. All DPs provide the pilot with a way to depart the airport and transition to the en route structure safely.

37.2 A Diverse Vector Area (DVA) is an area in which ATC may provide random radar vectors during an uninterrupted climb from the departure runway until above the MVA/MIA, established in accordance with the TERPS criteria for diverse departures. The DVA provides obstacle and terrain avoidance in lieu of taking off from the runway under IFR using an ODP or SID.

37.3 Pilots operating under 14 CFR Part 91 are strongly encouraged to file and fly a DP at night, during marginal Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC), when one is available. The following paragraphs will provide an overview of the DP program, why DPs are developed, what criteria are used, where to find them, how they are to be flown, and finally pilot and ATC responsibilities.

37.4 Why are DPs necessary? The primary reason is to provide obstacle clearance protection information to pilots. A secondary reason, at busier airports, is to increase efficiency and reduce communications and departure delays through the use of SIDs. When an instrument approach is initially developed for an airport, the need for DPs is assessed. The procedure designer conducts an obstacle analysis to support departure operations. If an aircraft may turn in any direction from a runway within the limits of the assessment area (see paragraph 37.5.3) and remain clear of obstacles, that runway passes what is called a diverse departure assessment and no ODP will be published. A SID may be published if needed for air traffic control purposes. However, if an obstacle penetrates what is called the 40:1 obstacle identification surface, then the procedure designer chooses whether to:

37.4.1 Establish a steeper than normal climb gradient; or

37.4.2 Establish a steeper than normal climb gradient with an alternative that increases takeoff minima to allow the pilot to visually remain clear of the obstacle(s); or

37.4.3 Design and publish a specific departure route; or

37.4.4 A combination or all of the above.

37.5 What criteria is used to provide obstruction clearance during departure?

37.5.1 Unless specified otherwise, required obstacle clearance for all departures, including diverse, is based on the pilot crossing the departure end of the runway at least 35 feet above the departure end of runway elevation, climbing to 400 feet above the departure end of runway elevation before making the initial turn, and maintaining a minimum climb gradient of 200 feet per nautical mile (FPNM), unless required to level off by a crossing restriction, until the minimum IFR altitude. A greater climb gradient may be specified in the DP to clear obstacles or to achieve an ATC crossing restriction. If an initial turn higher than 400 feet above the departure end of runway elevation is specified in the DP, the turn should be commenced at the higher altitude. If a turn is specified at a fix, the turn must be made at that fix. Fixes may have minimum and/or maximum crossing altitudes that must be adhered to prior to passing the fix. In rare instances, obstacles that exist on the extended runway centerline may make an "early turn" more desirable than proceeding straight ahead. In these cases, the published departure instructions will include the language "turn left(right) as soon as practicable." These departures will also include a ceiling and visibility minimum of at least 300 and 1. Pilots encountering one of these DPs should preplan the climb out to gain altitude and begin the turn as quickly as possible within the bounds of safe operating practices and operating limitations. This type of departure procedure is being phased out.

NOTE−
"Practical" or "feasible" may exist in some existing departure text instead of "practicable."

37.5.2 ODPs, SIDs, and DVAs assume normal aircraft performance, and that all engines are operating. Development of contingency procedures, required to cover the case of an engine failure or other emergency in flight that may occur after liftoff, is the responsibility of the operator. (More detailed information on this subject is available in Advisory Circular AC 120−91, Airport Obstacle Analysis, and in the "Departure Procedures" section of chapter 2 in the Instrument Procedures Handbook, FAA−H−8083−16.)

37.5.3 The 40:1 obstacle identification surface (OIS) begins at the departure end of runway (DER) and slopes upward at 152 FPNM until reaching the minimum IFR altitude or entering the en route structure. This assessment area is limited to 25 NM from the airport in nonmountainous areas and 46 NM in designated mountainous areas. Beyond this distance, the pilot is responsible for obstacle clearance if not operating on a published route, if below (having not reached) the MEA or MOCA of a published route, or an ATC assigned altitude. See FIG ENR 1.5−45. (Ref 14 CFR 91.177 for further information on en route altitudes.)

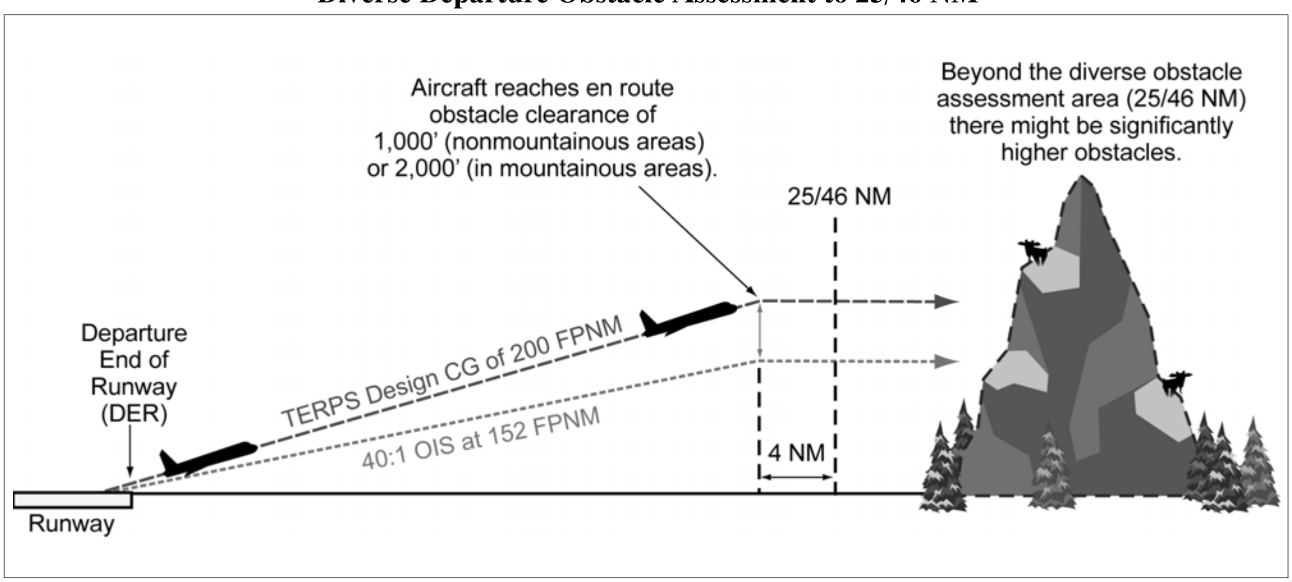
NOTE−
ODPs are normally designed to terminate within these distance limitations, however, some ODPs will contain routes that may exceed 25/46 NM; these routes will insure obstacle protection until reaching the end of the ODP.

37.5.4 Obstacles that are located within 1 NM of the DER and penetrate the 40:1 OCS are referred to as "low, close−in obstacles." The standard required obstacle clearance (ROC) of 48 feet per NM to clear these obstacles would require a climb gradient greater than 200 feet per NM for a very short distance, only until the aircraft was 200 feet above the DER. To eliminate publishing an excessive climb gradient, the obstacle AGL/MSL height and location relative to the DER is noted in the "Take−off Minimums and (OBSTACLE) Departure Procedures" section of a given Terminal Procedures Publication (TPP) booklet.

37.5.4.1 Pilots must refer to the TPP booklet or the Graphic ODP for information on these obstacles. These obstacle notes will no longer be published on SIDs. Pilots assigned a SID for departure must refer to the airport entry in the TPP to obtain information on these obstacles.

37.5.4.2 The purpose of noting obstacles in the "Take−off Minimums and (OBSTACLE) Departure Procedures" section of the TPP is to identify the obstacle(s) and alert the pilot to the height and location of the obstacle(s) so they can be avoided. This can be accomplished in a variety of ways; for example, the pilot may be able to see the obstruction and maneuver around the obstacle(s) if necessary; early liftoff/climb performance may allow the aircraft to cross well above the obstacle(s); or if the obstacle(s) cannot be visually acquired during departure, preflight planning should take into account what turns or other maneuvers may be necessary immediately after takeoff to avoid the obstruction(s).

FIG ENR 1.5−45
Diverse Departure Obstacle Assessment to 25/46 NM



EXAMPLE−
TAKEOFF OBSTACLE NOTES: Rwy 14, trees 2011' from DER, 29' left of centerline, 100' AGL/3829' MSL. Rwy 32, trees 1009' from DER, 697' left of centerline, 100' AGL/3839' MSL. Tower 4448' from DER, 1036' left of centerline, 165' AGL/3886' MSL.

NOTE−
Compliance with 14 CFR Part 121 or 135 one−engine−inoperative (OEI) departure performance requirements, or similar ICAO/State rules, cannot be assured by the sole use of "low, close−in" obstacle data as published in the TPP. Operators should refer to precise data sources (for example, GIS database, etc.) specifically intended for OEI departure planning for those operations.

37.5.5 Climb gradients greater than 200 FPNM are specified when required to support procedure design constraints, obstacle clearance, and/or airspace restrictions. Compliance with a climb gradient for these purposes is mandatory when the procedure is part of the ATC clearance, unless increased takeoff minimums are provided and weather conditions allow compliance with these minimums.

NOTE−
Climb gradients for ATC purposes are being phased out on SIDs.

EXAMPLE−
"Cross ALPHA intersection at or below 4000; maintain 6000." The pilot climbs at least 200 FPNM to 6000. If 4000 is reached before ALPHA, the pilot levels off at 4000 until passing ALPHA; then immediately resumes at least 200 FPNM climb.

EXAMPLE−
"TAKEOFF MINIMUMS: RWY 27, Standard with a minimum climb of 280' per NM to 2500." A climb of at least 280 FPNM is required to 2500 and is mandatory when the departure procedure is included in the ATC clearance.

NOTE−
Some SIDs still retain labeled "ATC" climb gradients published or have climb gradients that are established to meet a published altitude restriction that is not required for obstacle clearance or procedure design criteria. These procedures will be revised in the course of the normal procedure amendment process.

37.5.6 Climb gradients may be specified only to an altitude/fix, above which the normal gradient applies.

An ATC−required altitude restriction published at a fix, will not have an associated climb gradient published with that restriction. Pilots are expected to determine if crossing altitudes can be met, based on the performance capability of the aircraft they are operating.

EXAMPLE−
"Minimum climb 340 FPNM to ALPHA." The pilot climbs at least 340 FPNM to ALPHA, then at least 200 FPNM to MIA.

37.5.7 A Visual Climb Over Airport (VCOA) procedure is a departure option for an IFR aircraft, operating in visual meteorological conditions equal to or greater than the specified visibility and ceiling, to visually conduct climbing turns over the airport to the published "climb−to" altitude from which to proceed with the instrument portion of the departure. VCOA procedures are developed to avoid obstacles greater than 3 statute miles from the departure end of the runway as an alternative to complying with climb gradients greater than 200 feet per nautical mile. Pilots are responsible to advise ATC as early as possible of the intent to fly the VCOA option prior to departure. These textual procedures are published in the Take-Off Minimums and (Obstacle) Departure Procedures section of the Terminal Procedures Publications and/or appear as an option on a Graphic ODP.

EXAMPLE−
"Climb in visual conditions so as to cross the McElory Airport southbound, at or above 6000, then climb via Keemmling radial zero three three to Keemmling VORTAC."

37.6 Who is responsible for obstacle clearance? DPs are designed so that adherence to the procedure by the pilot will ensure obstacle protection. Additionally:

37.6.1 Obstacle clearance responsibility also rests with the pilot when he/she chooses to climb in visual conditions in lieu of flying a DP and/or depart under increased takeoff minima rather than fly the climb gradient. Standard takeoff minima are one statute mile for aircraft having two engines or less and one−half statute mile for aircraft having more than two engines. Specified ceiling and visibility minima (VCOA or increased takeoff minima) will allow visual avoidance of obstacles until the pilot enters the standard obstacle protection area. Obstacle avoidance is not guaranteed if the pilot maneuvers farther from the airport than the specified visibility minimum prior to reaching the specified altitude. DPs may also contain what are called Low Close in Obstacles. These obstacles are less than 200 feet above the departure end of runway elevation and within one NM of the runway end, and do not require increased takeoff minimums. These obstacles are identified on the SID chart or in the Take−off Minimums and (Obstacle) Departure Procedures section of the U. S. Terminal Procedure booklet. These obstacles are especially critical to aircraft that do not lift off until close to the departure end of the runway or which climb at the minimum rate. Pilots should also consider drift following lift−off to ensure sufficient clearance from these obstacles. That segment of the procedure that requires the pilot to see and avoid obstacles ends when the aircraft crosses the specified point at the required altitude. In all cases continued obstacle clearance is based on having climbed a minimum of 200 feet per nautical mile to the specified point and then continuing to climb at least 200 foot per nautical mile during the departure until reaching the minimum en route altitude, unless specified otherwise.

37.6.2 ATC may vector the aircraft beginning with an ATC−assigned heading issued with the initial or takeoff clearance followed by subsequent vectors, if required, until reaching the minimum vectoring altitude by using a published Diverse Vector Area (DVA).

37.6.3 The DVA may be established below the Minimum Vectoring Altitude (MVA) or Minimum IFR Altitude (MIA) in a radar environment at the request of Air Traffic. This type of DP meets the TERPS criteria for diverse departures, obstacles, and terrain avoidance in which random radar vectors below the MVA/MIA may be issued to departing aircraft. The DVA has been assessed for departures which do not follow a specific ground track, but will remain within the specified area. Use of a DVA is valid only when aircraft are permitted to climb uninterrupted from the departure runway to the MVA/MIA (or higher). ATC will not assign an altitude below the MVA/MIA within a DVA.

37.6.3.1 The existence of a DVA will be noted in the Takeoff Minimums and Obstacle Departure Procedure section of the U.S. Terminal Procedures Publication (TPP). The Takeoff Departure procedure will be listed first, followed by any applicable DVA.

EXAMPLE−
DIVERSE VECTOR AREA (RADAR VECTORS)
AMDT 1 14289 (FAA)

> ***Rwy 6R**, headings as assigned by ATC; requires minimum climb of 290' per NM to 400.*
> ***Rwys 6L, 7L, 7R, 24R, 25R**, headings as assigned by ATC.*

37.6.3.2 Pilots should be aware that a published climb gradient greater than the standard 200 FPNM can exist within a DVA. Pilots should note that the DVA has been assessed for departures which do not follow a specific ground track.

37.6.3.3 ATC may also vector an aircraft off a previously assigned DP. If the aircraft is airborne and established on a SID or ODP and subsequently vectored off, ATC is responsible for terrain and obstruction clearance. In all cases, the minimum 200 FPNM climb gradient is assumed.

NOTE−
As is always the case, when used by the controller during departure, the term "radar contact" should not be interpreted as relieving pilots of their responsibility to maintain appropriate terrain and obstruction clearance, which may include flying the obstacle DP.

37.6.4 Pilots must preplan to determine if the aircraft can meet the climb gradient (expressed in feet per nautical mile) required by the departure procedure or DVA, and be aware that flying at a higher than anticipated ground speed increases the climb rate requirement in feet per minute. Higher than standard climb gradients are specified by a note on the departure procedure chart for graphic DPs, or in the Take−Off Minimums and (Obstacle) Departure Procedures section of the U.S. Terminal Procedures booklet for textual ODPs. The required climb gradient, or higher, must be maintained to the specified altitude or fix, then the standard climb gradient of 200 ft/NM can be resumed. A table for the conversion of climb gradient (feet per nautical mile) to climb rate (feet per minute), at a given ground speed, is included on the inside of the back cover of the U.S. Terminal Procedures booklets.

37.7 Where are DPs located? DPs and DVAs will be listed by airport in the IFR Takeoff Minimums and (Obstacle) Departure Procedures Section, Section L, of the Terminal Procedures Publications (TPP). If the DP is textual, it will be described in TPP Section L. SIDs and complex ODPs will be published graphically and named. The name will be listed by airport name and runway in Section L. Graphic ODPs will also have the term "(OBSTACLE)" printed in the charted procedure title, differentiating them from SIDs.

37.7.1 An ODP that has been developed solely for obstacle avoidance will be indicated with the symbol "T" on appropriate Instrument Approach Procedure (IAP) charts and DP charts for that airport. The "T" symbol will continue to refer users to TPP Section C. In the case of a graphic ODP, the TPP Section C will only contain the name of the ODP. Since there may be both a textual and a graphic DP, Section C should still be checked for additional information. The nonstandard minimums and minimum climb gradients found in TPP Section C also apply to charted DPs and radar vector departures unless different minimums are specified on the charted DP. Takeoff minimums and departure procedures apply to all runways unless otherwise specified. New graphic DPs will have all the information printed on the graphic depiction. As a general rule, ATC will only assign an ODP from a nontowered airport when compliance with the ODP is necessary for aircraft to aircraft separation. Pilots may use the ODP to help ensure separation from terrain and obstacles.

37.8 Responsibilities

37.8.1 Each pilot, prior to departing an airport on an IFR flight should:

37.8.1.1 Consider the type of terrain and other obstacles on or in the vicinity of the departure airport;

37.8.1.2 Determine whether an ODP is available;

37.8.1.3 Determine if obstacle avoidance can be maintained visually or if the ODP should be flown; and

37.8.1.4 Consider the effect of degraded climb performance and the actions to take in the event of an engine loss during the departure. Pilots should notify ATC as soon as possible of reduced climb capability in that circumstance.

NOTE−
Guidance concerning contingency procedures that address an engine failure on takeoff after V_1 speed on a large or turbine−powered transport category airplane may be found in AC 120−91, Airport Obstacle Analysis.

37.8.1.5 Determine if a DVA is published and whether the aircraft is capable of meeting the published climb gradient. Advise ATC when requesting the IFR clearance, or as soon as possible, if unable to meet the DVA climb gradient.

37.8.1.6 Check for Takeoff Obstacle Notes published in the TPP for the takeoff runway.

37.8.2 Pilots should not exceed a published speed restriction associated with a SID waypoint until passing that waypoint.

37.8.3 After an aircraft is established on a SID and subsequently vectored or cleared to deviate off of the SID or SID transition, pilots must consider the SID canceled, unless the controller adds "expect to resume SID;" pilots should then be prepared to rejoin the SID at a subsequent fix or procedure leg. If the SID contains published altitude and/or speed restrictions, those restrictions are canceled and pilots will receive an altitude to maintain and, if necessary, a speed. ATC may also interrupt the vertical navigation of a SID and provide alternate altitude instructions while the aircraft remains established on the published lateral path. Aircraft may be vectored off of an ODP, or issued an altitude lower than a published altitude on an ODP, at which time the ODP is canceled. In these cases, ATC assumes responsibility for terrain and obstacle clearance. In all cases, the minimum 200 FPNM climb gradient is assumed.

37.8.4 Aircraft instructed to resume a SID procedure such as a DP or SID which contains speed and/or altitude restrictions, must be:

37.8.4.1 Issued/reissued all applicable restrictions, or

37.8.4.2 Advised to "Climb via SID" or resume published speed.

EXAMPLE−
"Resume the Solar One departure, Climb via SID."
"Proceed direct CIROS, resume the Solar One departure, Climb via SID."

37.8.5 A clearance for a SID which does not contain published crossing restrictions, and/or is a SID with a Radar Vector segment or a Radar Vector SID, will be issued using the phraseology "Maintain (*altitude*)."

37.8.6 A clearance for a SID which contains published altitude restrictions may be issued using the phraseology "climb via." Climb via is an abbreviated clearance that requires compliance with the procedure lateral path, associated speed and altitude restrictions along the cleared route or procedure. Clearance to "climb via" authorizes the pilot to:

37.8.6.1 When used in the IFR departure clearance, in a PDC, DCL or when cleared to a waypoint depicted on a SID, to join the procedure after departure or to resume the procedure.

37.8.6.2 When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously-assigned altitude at pilot's discretion to the altitude depicted for the next waypoint.

37.8.6.3 Once established on the depicted departure, to navigate laterally and climb to meet all published or assigned altitude and speed restrictions.

NOTE−
1. *When otherwise cleared along a route or procedure that contains published speed restrictions, the pilot must comply with those speed restrictions independent of a climb via clearance.*

2. *ATC anticipates pilots will begin adjusting speed the minimum distance necessary prior to a published speed restriction so as to cross the waypoint/fix at the published speed. Once at the published speed ATC expects pilots will maintain the published speed until additional adjustment is required to comply with further published or ATC assigned speed restrictions or as required to ensure compliance with 14 CFR Section 91.117.*

3. *If ATC interrupts lateral/vertical navigation while an aircraft is flying a SID, ATC must ensure obstacle clearance. When issuing a "climb via" clearance to join or resume a procedure ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID.*

4. *ATC will assign an altitude to cross if no altitude is depicted at a waypoint/fix or when otherwise necessary/required, for an aircraft on a direct route to a waypoint/fix where the SID will be joined or resumed.*

5. *SIDs will have a "top altitude;" the "top altitude" is the charted "maintain" altitude contained in the procedure description or assigned by ATC.*

EXAMPLE−
1. ***Lateral route clearance:***
"Cleared Loop Six departure."

NOTE−
The aircraft must comply with the SID lateral path, and any published speed restrictions.

2. ***Routing with assigned altitude:***
"Cleared Loop Six departure, climb and maintain four thousand."

NOTE−
The aircraft must comply with the SID lateral path, and any published speed restriction while climbing unrestricted to four thousand.

3. *(A pilot filed a flight plan to the Johnston Airport using the Scott One departure, Jonez transition, then Q-145. The pilot filed for FL350. The Scott One includes altitude restrictions, a top altitude and instructions to expect the filed altitude ten minutes after departure). Before departure ATC uses PDC, DCL or clearance delivery to issue the clearance:*
"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-OneForty-five. Climb via SID."

NOTE−
In Example 3, the aircraft must comply with the Scott One departure lateral path and any published speed and altitude restrictions while climbing to the SID top altitude.

4. *(Using the Example 3 flight plan, ATC determines the top altitude must be changed to FL180). The clearance will read:*
"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five, Climb via SID except maintain flight level one eight zero."

NOTE−
In Example 4, the aircraft must comply with the Scott One departure lateral path and any published speed and altitude restrictions while climbing to FL180. The aircraft must stop climb at FL180 until issued further clearance by ATC.

5. *(An aircraft was issued the Suzan Two departure, "climb via SID" in the IFR departure clearance. After departure ATC must change a waypoint crossing restriction). The clearance will be:*
"Climb via SID except cross Mkala at or above seven thousand."

NOTE−
In Example 5, the aircraft will comply with the Suzan Two departure lateral path and any published speed and altitude restrictions and climb so as to cross Mkala at or above 7,000; remainder of the departure must be flown as published.

6. *(An aircraft was issued the Teddd One departure, "climb via SID" in the IFR departure clearance. An interim altitude of 10,000 was issued instead of the published top altitude of FL 230). After departure ATC is able to issue the published top altitude. The clearance will be:*
"Climb via SID."

NOTE−
In Example 6, the aircraft will track laterally and vertically on the Teddd One departure and initially climb to 10,000; Once re-issued the "climb via" clearance the interim altitude is canceled aircraft will continue climb to FL230 while complying with published restrictions.

7. *(An aircraft was issued the Bbear Two departure, "climb via SID" in the IFR departure clearance. An interim altitude of 16,000 was issued instead of the published top altitude of FL 190). After departure, ATC is able to issue a top altitude of FL300 and still requires compliance with the published SID restrictions. The clearance will be:*
"Climb via SID except maintain flight level three zero zero."

NOTE−
In Example 7, the aircraft will track laterally and vertically on the Bbear Two departure and initially climb to 16,000;

Once re-issued the "climb via" clearance the interim altitude is canceled and the aircraft will continue climb to FL300 while complying with published restrictions.

8. *(An aircraft was issued the Bizee Two departure, "climb via SID." After departure, ATC vectors the aircraft off of the SID, and then issues a direct routing to rejoin the SID at Rockr waypoint which does not have a published altitude restriction. ATC wants the aircraft to cross at or above 10,000). The clearance will read:*

"Proceed direct Rockr, cross Rockr at or above one-zero thousand, climb via the Bizee Two departure."

NOTE−
In Example 8, the aircraft will join the Bizee Two SID at Rockr at or above 10,000 and then comply with the published lateral path and any published speed or altitude restrictions while climbing to the SID top altitude.

9. *(An aircraft was issued the Suzan Two departure, "climb via SID" in the IFR departure clearance. After departure ATC vectors the aircraft off of the SID, and then clears the aircraft to rejoin the SID at Dvine waypoint, which has a published crossing restriction). The clearance will read:*

"Proceed direct Dvine, Climb via the Suzan Two departure."

NOTE−
In Example 9, the aircraft will join the Suzan Two departure at Dvine, at the published altitude, and then comply with the published lateral path and any published speed or altitude restrictions.

37.8.7 Pilots cleared for vertical navigation using the phraseology "climb via" must inform ATC, upon initial contact, of the altitude leaving and any assigned restrictions not published on the procedure.

EXAMPLE−
1. *(Cactus 711 is cleared to climb via the Laura Two departure. The Laura Two has a top altitude of FL190):*
"Cactus Seven Eleven leaving two thousand, climbing via the Laura Two departure."

2. *(Cactus 711 is cleared to climb via the Laura Two departure, but ATC changed the top altitude to16,000):*
"Cactus Seven Eleven leaving two thousand for one-six thousand, climbing via the Laura Two departure."

37.8.8 If prior to or after takeoff an altitude restriction is issued by ATC, all previously issued "ATC" altitude restrictions are canceled including those published on a SID. Pilots must still comply with all speed restrictions and lateral path requirements published on the SID unless canceled by ATC.

EXAMPLE−
Prior to takeoff or after departure ATC issues an altitude change clearance to an aircraft cleared to climb via a SID but ATC no longer requires compliance with published altitude restrictions:

"Climb and maintain flight level two four zero."

NOTE−
The published SID altitude restrictions are canceled; The aircraft should comply with the SID lateral path and begin an unrestricted climb to FL240. Compliance with published speed restrictions is still required unless specifically deleted by ATC.

37.8.9 Altitude restrictions published on an ODP are necessary for obstacle clearance and/or design constraints. Crossing altitudes and speed restrictions on ODPs cannot be canceled or amended by ATC.

37.9 PBN Departure Procedures

37.9.1 All public PBN SIDs and graphic ODPs are normally designed using RNAV 1, RNP 1, or A−RNP NavSpecs. These procedures generally start with an initial track or heading leg near the departure end of runway (DER). In addition, these procedures require system performance currently met by GPS or DME/DME/IRU PBN systems that satisfy the criteria discussed in the latest AC 90−100, U.S. Terminal and En Route Area Navigation (RNAV) Operations. RNAV 1 and RNP 1 procedures must maintain a total system error of not more than 1 NM for 95 percent of the total flight time. Minimum values for A−RNP procedures will be charted in the PBN box (for example, 1.00 or 0.30).

37.9.2 In the U.S., a specific procedure's PBN requirements will be prominently displayed in separate, standardized notes boxes. For procedures with PBN elements, the "PBN box" will contain the procedure's NavSpec(s); and, if required: specific sensors or infrastructure needed for the navigation solution, any additional or advanced functional requirements, the minimum RNP value, and any amplifying remarks. Items listed in this PBN box are REQUIRED for the procedure's PBN elements.

ENR 1.10 Flight Planning (Restriction, Limitation or Advisory Information)

1. Preflight Preparation

1.1 Every pilot is urged to receive a preflight briefing and to file a flight plan. This briefing should consist of the latest or most current weather, airport, and en route NAVAID information. Briefing service may be obtained from an FSS either by telephone or radio when airborne. Pilots within the contiguous U.S. may access Flight Service through **www.1800wxbrief.com** or by contacting them at 1−800−WX−Brief to obtain preflight weather data and to file IFR and VFR flight plans.

NOTE−
Pilots filing flight plans via "fast file" who desire to have their briefing recorded, should include a statement at the end of the recording as to the source of their weather briefing.

1.2 The information required by the FAA to process flight plans is contained on FAA Form 7233−1, Flight Plan. The forms are available at all flight service stations.

REFERENCE−
AIP, ENR 1.10, Paragraph 4., Flight Plan Requirements.

1.3 Consult an FSS for preflight weather briefing.

1.4 FSSs are required to advise of pertinent NOTAMs if a *standard* briefing is requested, but if they are overlooked, do not hesitate to remind the specialist that you have not received NOTAM information.

NOTE−
NOTAMs, graphic notices, and other information published in the Notices to Airmen Publication (NTAP) are not provided during a briefing unless specifically requested by the pilot since the FSS specialist has no way of knowing whether the pilot has already checked the NTAP prior to calling. Airway NOTAMs, procedural NOTAMs, and NOTAMs that are general in nature and not tied to a specific airport/facility (for example, flight advisories and restrictions, open duration special security instructions, and special flight rules areas) are briefed solely by pilot request. Remember to ask for NOTAMs and graphic notices published in the NTAP if you have not already reviewed this information, and to request all pertinent NOTAMs specific to your flight.

1.5 Pilots are urged to use only the latest issue of aeronautical charts in planning and conducting flight operations. Aeronautical charts are revised and reissued on a periodic basis to ensure that depicted data are current and reliable. In the conterminous U.S., sectional charts are updated each 6 months, IFR en route charts each 56 days, and amendments to civil IFR approach charts are accomplished on a 56−day cycle with a change notice volume issued on the 28−day mid−cycle. Charts that have been superseded by those of a more recent date may contain obsolete or incomplete flight information.

REFERENCE−
AIP, GEN 3.2, contains a description of aeronautical charts.

1.6 When requesting a preflight briefing, identify yourself as a pilot and provide the following:

1.6.1 Type of flight planned; e.g., VFR or IFR.

1.6.2 Aircraft number or pilot's name.

1.6.3 Aircraft type.

1.6.4 Departure airport.

1.6.5 Route of flight.

1.6.6 Destination.

1.6.7 Flight altitude(s).

1.6.8 ETD and ETE.

1.7 Prior to conducting a briefing, briefers are required to have the background information listed above so that they may tailor the briefing to the needs of the proposed flight. The objective is to communicate a "picture" of meteorological and aeronautical information necessary for the conduct of a safe and efficient flight. Briefers use all available weather and aeronautical information to summarize data applicable to the proposed flight. They do not read weather reports and forecasts verbatim unless specifically requested by the pilot. FSS briefers do not provide FDC NOTAM information for special instrument approach procedures unless specifically asked. Pilots authorized by the FAA to use special instrument approach procedures must specifically request FDC NOTAM information for these procedures. Pilots who receive the information electronically will receive NOTAMs for special IAPs automatically.

REFERENCE−
See AIP, GEN 3.5 for meteorological services.

1.8 The Federal Aviation Administration has designated High Density Traffic Airports (HDTA) and has prescribed air traffic rules and requirements for operating aircraft (excluding helicopter operations) to and from these airports.

REFERENCE−
AIP, GEN 3.3, Paragraph 9.7, Airport Reservations Operations and Procedures.

1.9 In addition to the filing of a flight plan, if the flight will traverse or land in one or more foreign countries, it is particularly important that pilots leave a complete itinerary with someone directly concerned and keep that person advised of the flight's progress. If serious doubt arises as to the safety of the flight, that person should first contact the FSS.

1.10 Pilots operating under the provisions of 14 CFR Part 135 without an FAA assigned 3−letter designator, must prefix the normal registration (N) number with the letter "T" on flight plan filing.

EXAMPLE−
TN 1234B.

1.11 Cold Temperature Operations

Pilots should begin planning for operating into airports with cold temperatures during the preflight planning phase. Instrument approach charts will contain a snowflake symbol and a temperature when cold temperature correction must be applied. Pilots operating into airports requiring cold temperature corrections should request the lowest forecast temperature at the airport for departure and arrival times. If the temperature is forecast to be at or below any published cold temperature restriction, calculate an altitude correction for the appropriate segment(s) and/or review procedures for operating automatic cold temperature compensating systems, as applicable. The pilot is responsible to calculate and apply the corrections to the affected segment(s) when the actual reported temperature is at or below any published cold temperature restriction, or pilots with automatic cold temperature compensating systems must ensure the system is on and operating on each designated segment. Advise ATC when intending to apply cold temperature correction and of the amount of correction required on initial contact (or as soon as possible) for the intermediate segment and/or the published missed approach. This information is required for ATC to provide aircraft appropriate vertical separation between known traffic.

2. Follow IFR Procedures Even When Operating VFR

2.1 To maintain IFR proficiency, pilots are urged to practice IFR procedures whenever possible, even when operating VFR. Some suggested practices include:

2.1.1 Obtain a complete preflight and weather briefing. Check the NOTAMs.

2.1.2 File a flight plan. This is an excellent low−cost insurance policy. The cost is the time it takes to fill it out. The insurance includes the knowledge that someone will be looking for you if you become overdue at your destination.

2.1.3 Use current charts.

2.1.4 Use the navigation aids. Practice maintaining a good course by keeping the needle centered.

2.1.5 Maintain a constant altitude appropriate for direction of flight.

2.1.6 Estimate en route position times.

2.1.7 Make accurate and frequent position reports to the FSSs along your route of flight.

2.2 Simulated IFR flight is recommended (under the hood); however, pilots are cautioned to review and adhere to the requirements specified in 14 CFR Section 91.109 before and during such flight.

2.3 When flying VFR at night, in addition to the altitude appropriate for the direction of flight, pilots should maintain an altitude which is at or above the minimum en route altitude as shown on charts. This is especially true in mountainous terrain, where there is usually very little ground reference. Do not depend on your eyes alone to avoid rising unlighted terrain, or even lighted obstructions such as TV towers.

3. Notice to Airmen (NOTAM) System

3.1 Time−critical aeronautical information that is of either a temporary nature or not sufficiently known in advance to permit publication on aeronautical charts or in other operational publications, receives immediate dissemination via the NOTAM System. When data appearing in a NOTAM is printed correctly in a publication or on a chart, or when a temporary condition is returned to normal status, the corresponding NOTAM is canceled. NOTAMs are eligible to be disseminated up to 7 days before the start of activity. Pilots can access NOTAM information via FSS or online via NOTAM Search at: **https://notams.aim.faa.gov/notamSearch/.**

3.1.1 In accordance with 14 CFR § 91.103, Preflight Action, prior to departure, pilots must become familiar with all available information concerning that flight, including NOTAMs. NOTAM information is aeronautical information that could affect a pilot's decision to make a flight and includes changes to:

3.1.1.1 Aerodromes.

3.1.1.2 Runways, taxiways, and ramp restrictions.

3.1.1.3 Obstructions.

3.1.1.4 Communications.

3.1.1.5 Airspace.

3.1.1.6 Status of navigational aids, ILSs, or radar service availability.

3.1.1.7 Other information essential to planned en route, terminal, or landing operations.

3.1.2 Pilots should ensure they review those NOTAMs contained under the ARTCC location (for example, ZDC, ZOB, etc.) that the flight is operating within as they can include NOTAMs relevant to all operations, including Central Altitude Reservation Function (CARF), Special Use Airspace (SUA), Temporary Flight Restrictions (TFR), Global Positioning System (GPS), Flight Data Center (FDC) changes to routes, wind turbine, and Unmanned Aircraft System (UAS).

NOTE−
*NOTAM information is transmitted using ICAO contractions to reduce transmission time. See TBL ENR 1.10−2 for a listing of the most commonly used contractions, or go online to the following URL: **https://www.notams.faa.gov/downloads/contractions.pdf**. For a complete listing of approved NOTAM Contractions, see FAA JO Order 7340.2, Contractions.*

3.1.3 Due to the changeable nature of the NAS components, and frequent processing of NOTAM information, it is recommended, that while en route, pilots contact ATC or FSS and obtain updated information for their route of flight and destination. Pilots should be particularly vigilant when operating at locations without an operating control tower. Dynamic situations, such as snow removal, fire and rescue activities, construction, and wildlife encroachment, may pose hazards that may not reach the pilot prior to arrival/departure.

3.1.4 If a NAVAID fails or is removed from service prior to all airspace and procedural dependencies being removed, a NOTAM is published to inform pilots of the NAVAID being Unserviceable (U/S). Pilots must check NOTAMs to ensure any NAVAID required for the flight is in service. There can be considerable time between the NAVAID being U/S and ultimately its removal from the charts, which, during the transition period, means a NOTAM is the primary method of alerting pilots to its unavailability. It is recommended that pilots using VFR charts should regularly consult the Aeronautical Chart Bulletin found in the back matter of the appropriate Chart Supplement U.S. This bulletin identifies any updates to the chart that have not yet been accounted for because of the extended six−month chart cycle for most VFR charts.

NOTE−
1. *Pilots should be alert for NAVAIDs having a dissimilar identifier from the airport(s) they serve and to use the Chart Supplement U.S. to identify the correct NAVAID NOTAM file. Flight planning should include review of NAVAIDs that aren't included for the departure/destination airport but may be part of the route of flight.*

2. *Charts may indicate a NAVAID's unavailability by depicting a crosshatch pattern through the frequency, which indicates its shutdown status.*

3.2 NOTAM information is classified as Domestic NOTAMs (NOTAM D), Flight Data Center (FDC) NOTAMs, International NOTAMs, or Military NOTAMs.

3.2.1 NOTAM (D) information is disseminated for all navigational facilities that are part of the National Airspace System (NAS), all public use aerodromes, seaplane bases, and heliports listed in the Chart Supplement U.S. NOTAM (D) information includes such data as taxiway closures, personnel and equipment near or crossing runways, and airport lighting aids that do not affect instrument approach criteria, such as VASI. All NOTAM Ds must have one of the keywords listed in TBL ENR 1.10−1, as the first part of the text after the location identifier. These keywords categorize NOTAM Ds by subject; for example, APRON (ramp), RWY (runway), SVC (Services), etc. There are several types of NOTAM Ds:

3.2.1.1 Aerodrome activity and conditions, to include field conditions.

3.2.1.2 Airspace to include CARF, SUA, and general airspace activity like UAS or pyrotechnics.

3.2.1.3 Visual and radio navigational aids.

3.2.1.4 Communication and services.

3.2.1.5 Pointer NOTAMs. NOTAMs issued to point to additional aeronautical information. When pointing to another NOTAM, the keyword in the pointer NOTAM must match the keyword in the original NOTAM. Pointer NOTAMs should be issued for, but are not limited to, TFRs, Airshows, Temporary SUA, major NAS system interruptions, etc.

3.2.2 NOTAM Ds that crossover into International NOTAMs. These NOTAMs contain the same data as NOTAM Ds, only they are referenced differently. They are categorized, stored, and issued with a series letter preceding them and are distributed via Service A to countries requesting NOTAMs for that airport. The FAA currently uses the Series A (and may use Series K) for this type of NOTAM.

3.2.3 FDC NOTAMs. On those occasions when it becomes necessary to disseminate information that is regulatory in nature, an FDC NOTAM is issued. FDC NOTAMs include NOTAMs such as:

3.2.3.1 Amendments to published IAPs and other current aeronautical charts.

3.2.3.2 Temporary Flight Restrictions (TFR). Pilots should read NOTAMs in their entirety as some TFRs may allow pilots to fly through the flight restriction should they request permission to do so and subsequently receive it. Pilots are encouraged to use online preflight resources as they provide graphics and plain language interpretations for TFRs.

3.2.3.3 High barometric pressure warning.

3.2.3.4 Laser light activity.

3.2.3.5 ADS−B, TIS−B, and FIS−B service availability.

3.2.3.6 Satellite−based systems such as WAAS or GPS.

3.2.3.7 Special Notices.

3.2.4 International NOTAMs.

3.2.4.1 Distributed to more than one country, they are published in ICAO format under guidelines established in Annex 15. International NOTAMs issued by the U.S. NOTAM Office use Series A followed by 4 sequential numbers, a slant "/" and a 2−digit number representing the year the NOTAM was issued. For the most part, International NOTAMs duplicate data found in a U.S. Domestic NOTAM.

3.2.4.2 Not every topic of a U.S. Domestic NOTAM is issued as an International NOTAM by the U.S. When possible, the U.S. International NOTAM will be linked to the appropriate U.S. Domestic NOTAM.

3.2.4.3 International NOTAMs received by the FAA from other countries are stored in the U.S. NOTAM System.

3.2.4.4 The International NOTAM format includes a "Q" Line that can be easily read/parsed by a computer and allows the NOTAM to be displayed digitally.

a) Field A: ICAO location identifier or FIR affected by the NOTAM.

b) Field B: Start of Validity.

c) Field C: End of Validity (both in [Year][Month][Day][Hour][Minute] format).

d) Field D: (when present) Schedule.

e) Field E: Full NOTAM description.

f) Field F: (when present) Lowest altitude, or "SFC."

g) Field G: (when present) Highest altitude, or "UNL."

3.2.4.5 For more on International format, please see Annex 15.

3.2.5 Military NOTAMs. NOTAMs originated by the U.S. Air Force, Army, Marine, or Navy, and pertaining to military or joint−use navigational aids/airports that are part of the NAS. Military NOTAMs are published in the International NOTAM format and should be reviewed by users of a military or joint−use facility.

3.3 Notices to Airmen Publication (NTAP). The NTAP is published every 28 days and is divided into two parts:

3.3.1 Part 1, International NOTAMs, is divided into two sections:

3.3.1.1 Section 1, International Flight Prohibitions, Potential Hostile Situations, and Foreign Notices.

3.3.1.2 Section 2, International Oceanic Airspace Notices.

3.3.2 Part 2, Graphic Notices, compiled from data provided by FAA service area offices and other lines of business, contains special notices and graphics pertaining to almost every aspect of aviation such as: military training areas, large scale sporting events, air show information, Special Traffic Management Programs (STMP), and airport-specific information.

This part is comprised of 6 sections: General, Special Military Operations, Airport and Facility Notices, Major Sporting and Entertainment Events, Airshows, and Special Notices.

TBL ENR 1.10−1

NOTAM Keywords

Keyword	Definition
RWY . . . . *Example*	**Runway** !BNA BNA RWY 18/36 CLSD YYMMDDHHMM−YYMMDDHHMM
TWY . . . . *Example*	**Taxiway** !BTV BTV TWY C EDGE LGT OBSC YYMMDDHHMM−YYMMDDHHMM
APRON . . . . . *Example*	**Apron/Ramp** !BNA BNA APRON NORTH APN E 100FT CLSD YYMMDDHHMM−YYMMDDHHMM
AD . . . . *Example*	**Aerodrome** !BET BET AD AP ELK NEAR MOVEMENT AREAS YYMMDDHHMM−YYMMDDHHMM
OBST . . . . *Example*	**Obstruction** !SJT SJT OBST MOORED BALLOON WI AN AREA DEFINED AS 1NM RADIUS OF SJT 2430FT (510FT AGL) FLAGGED YYMMDDHHMM−YYMMDDHHMM
NAV . . . . *Example*	**Navigation Aids** !SHV SHV NAV ILS RWY 32 110.3 COMMISSIONED YYMMDDHHMM−PERM
COM . . . . *Example*	**Communications** !INW INW COM REMOTE COM OUTLET 122.6 U/S YYMMDDHHMM−YYMMDDHHMM EST (Note* EST will auto cancel)
SVC . . . . *Example*	**Services** !ROA ROA SVC TWR COMMISSIONED YYMMDDHHMM−PERM
AIRSPACE . . *Example*	**Airspace** !MHV MHV AIRSPACE AEROBATIC ACFT WI AN AREA DEFINED AS 4.3NM RADIUS OF MHV 5500FT−10500FT AVOIDANCE ADZ CTC JOSHUA APP DLY YYMMDDHHMM−YYMMDDHHMM
ODP . . . . *Example*	**Obstacle Departure Procedure** !FDC 2/9700 DIK ODP DICKINSON − THEODORE ROOSEVELT RGNL, DICKINSON, ND. TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 1... DEPARTURE PROCEDURE: RWY 25, CLIMB HEADING 250 TO 3500 BEFORE TURNING LEFT. ALL OTHER DATA REMAINS AS PUBLISHED. THIS IS TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 1A. YYMMDDHHMM−PERM
SID . . . . *Example*	**Standard Instrument Departure** !FDC x/xxxx DFW SID DALLAS/FORT WORTH INTL, DALLAS, TX. PODDE THREE DEPARTURE... CHANGE NOTES TO READ: RWYS 17C/R, 18L/R: DO NOT EXCEED 240KT UNTIL LARRN. RWYS 35L/C, 36L/R: DO NOT EXCEED 240KT UNTIL KMART YYMMDDHHMM−YYMMDDHHMM
STAR . . . . *Example*	**Standard Terminal Arrival** !FDC x/xxxx DCA STAR RONALD REAGAN WASHINGTON NATIONAL,WASHINGTON, DC. WZRRD TWO ARRIVAL... SHAAR TRANSITION: ROUTE FROM DRUZZ INT TO WZRRD INT NOT AUTHORIZED. AFTER DRUZZ INT EXPECT RADAR VECTORS TO AML VORTAC YYMMDDHHMM−YYMMDDHHMM
CHART . . . . . *Example*	**Chart** !FDC 2/9997 DAL IAP DALLAS LOVE FIELD, DALLAS, TX. ILS OR LOC RWY 31R, AMDT 5... CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 31L. MISSED APPROACH: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 5000 ON HEADING 330 AND CVE R−046 TO FINGR INT/ CVE 36.4 DME AND HOLD. CHART LOC RWY 31L. THIS IS ILS OR LOC RWY 31R, AMDT 5A. YYMMDDHHMM−PERM
DATA . . . . *Example*	**Data** !FDC 2/9700 DIK ODP DICKINSON − THEODORE ROOSEVELT RGNL, DICKINSON, ND. TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 1... DEPARTURE PROCEDURE: RWY 25, CLIMB HEADING 250 TO 3500 BEFORE TURNING LEFT. ALL OTHER DATA REMAINS AS PUBLISHED. THIS IS TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 1A. YYMMDDHHMM−PERM

Keyword	Definition
IAP . . . . *Example*	**Instrument Approach Procedure** !FDC 2/9997 DAL IAP DALLAS LOVE FIELD, DALLAS, TX. ILS OR LOC RWY 31R, AMDT 5... CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 31L. MISSED APPROACH: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 5000 ON HEADING 330 AND CVE R−046 TO FINGR INT/ CVE 36.4 DME AND HOLD. CHART LOC RWY 31L. THIS IS ILS OR LOC RWY 31R, AMDT 5A. YYMMDDHHMM−PERM
VFP . . . . *Example*	**Visual Flight Procedures** !FDC X/XXXX JFK VFP JOHN F KENNEDY INTL, NEW YORK, NY. PARKWAY VISUAL RWY 13L/R, ORIG...WEATHER MINIMUMS 3000 FOOT CEILING AND 3 MILES VISIBILITY. YYMMDDHHMM−YYMMDDHHMM
ROUTE . . . . . *Example*	**Route** !FDC x/xxxx ZFW ROUTE ZFW ZKC. V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4300. YYMMDDHHMM−YYMMDDHHMM EST
SPECIAL . . . *Example*	**Special** !FDC x/xxxx JNU SPECIAL JUNEAU INTERNATIONAL, JUNEAU, AK. LDA−2 RWY 8 AMDT 9 PROCEDURE TURN NA. YYMMDDHHMM−YYMMDDHHMM
SECURITY . . *Example*	**Security** !FDC x/xxxx FDC ...SPECIAL NOTICE... THIS IS A RESTATEMENT OF A PREVIOUSLY ISSUED ADVISORY NOTICE. IN THE INTEREST OF NATIONAL SECURITY AND TO THE EXTENT PRACTICABLE, PILOTS ARE STRONGLY ADVISED TO AVOID THE AIRSPACE ABOVE, OR IN PROXIMITY TO SUCH SITES AS POWER PLANTS (NUCLEAR, HYDRO−ELECTRIC, OR COAL), DAMS, REFINERIES, INDUSTRIAL COMPLEXES, MILITARY FACILITIES AND OTHER SIMILAR FACILITIES. PILOTS SHOULD NOT CIRCLE AS TO LOITER IN THE VICINITY OVER THESE TYPES OF FACILITIES.

TBL ENR 1.10−2

Contractions Commonly Found in NOTAMs

	A
ABN	Aerodrome Beacon
ACFT	Aircraft
ACT	Active
ADJ	Adjacent
AGL	Above Ground Level
ALS	Approach Light System
AP	Airport
APN	Apron
APP	Approach control office *or* approach control *or* approach control service
ARST	Arresting *(specify (part of) aircraft arresting equipment)*
ASDA	Accelerate Stop Distance Available
ASPH	Asphalt
AUTH	Authorized *or* authorization
AVBL	Available *or* availability
AVGAS	Aviation gasoline
AWOS	Automatic Weather Observing System
AZM	Azimuth
	B
BA	Braking action
BCN	Beacon *(aeronautical ground light)*
BCST	Broadcast
BDRY	Boundary
BLDG	Building
BLW	Below
BTN	Between
	C
C	Center *(preceded by runway designator number to identify a parallel runway)*
CD	Clearance delivery
CIV	Civil
CL	Centerline
CLSD	Close *or* closed *or* closing
COM	Communication
CONC	Concrete
COND	Condition
CONS	Continuous
CONST	Construction *or* constructed
CPDLC	Controller Pilot Data Link Communications
CTC	Contact
CUST	Customs
	D
DA	Decision altitude
DEG	Degrees
DEP	Depart *or* Departure
DER	Departure end of the runway
DH	Decision Height
DIST	Distance
DLY	Daily
DP	Dew Point Temperature
DPT	Depth
DTHR	Displaced Runway Threshold

	E
E	East *or* eastern longititude
EB	Eastbound
EMERG	Emergency
ENE	East−northeast
EQPT	Equipment
ESE	East−southeast
EST	Estimate *or* estimated *or* estimation *(message type designator)*
EXC	Except
	F
FL	Flight level
FREQ	Frequency
FRI	Friday
FSS	Flight Service Station
FST	First
FT	Feet *(dimensional unit)*
	G
G	Green
GA	General aviation
GLD	Glider
GND	Ground
GP	Glide Path
GRVL	Gravel
	H
HEL	Helicopter
HGT	Height *or* height above
HLDG	Holding
HLP	Heliport
HVY	Heavy
	I
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IM	Inner Marker
INOP	Inoperative
INT	Intersection
	K
KT	Knots
	L
L	Left *(preceded by runway designator number to identify a parallel runway)*
LAT	Latitude
LDA	Landing Distance Available
LDG	Landing
LEN	Length
LGT	Light *or* lighting
LGTD	Lighted
LOC	Localizer
LONG	Longitude
	M
MAINT	Maintenance
MBST	Microburst
MIL	Military

MIN	Minutes
MNT	Monitor *or* monitoring *or* monitored
MON	Monday
MOV	Move *or* moving *or* movement
	N
N	North
NAVAID	Navigational aid
NB	Northbound
NDB	Nondirectional Radio Beacon
NE	Northeast
NEB	Northeast bound
NM	Nautical Mile/s
NNE	North−northeast
NNW	North−northwest
NOV	November
NW	Northwest
NWB	Northwest bound
	O
OBSC	Obscure *or* obscured *or* obscuring
OBST	Obstacle
OPN	Open *or* opening *or* opened
OPS	Operations
	P
PAPI	Precision Approach Path Indicator
PARL	Parallel
PAX	Passenger/s
PCL	Pilot Controlled Lighting
PCT	Percent
PERM	Permanent
PJE	Parachute Jumping Activities
PLA	Practice Low Approach
PPR	Prior Permission Required
PT	Procedure Turn
	R
R	Red
R	Right *(preceded by runway designator number to identify a parallel runway)*
RAI	Runway Alignment Indicator
RCL	Runway Centerline
RCLL	Runway Centerline Light
REDL	Receive/Receiver
RLLS	Runway Lead−in Light System
RMK	Remark
RTS	Return to Service
RTZL	Runway Touchdown Zone Light(s)
RVR	Runway Visual Range
RWY	Runway
	S
S	South *or* southern latitude
SA	Sand
SAT	Saturday
SB	Southbound
SE	Southeast
SEC	Seconds
SFC	Surface
SN	Snow
SR	Sunrise
SS	Sunset
SSR	Secondary surveillance radar
SSW	South−southwest
STD	Standard
SUN	Sunday
SW	Southwest
SWB	Southwest bound
	T
TAR	Terminal area surveillance radar
TAX	Taxing *or* taxiing
TDZ	Touchdown Zone
TEMPO	Temporary *or* temporarily
TFC	Traffic
THR	Threshold
THU	Thursday
TKOF	Takeoff
TODA	Take−off Distance Available
TORA	Take−off Run Available
TRG	Training
TUE	Tuesday
TWR	Aerodrome Control Tower
TWY	Taxiway
TX	Taxilane
	U
U/S	Unserviceable
UAS	Unmanned Aircraft System
UNL	Unlimited
UNREL	Unreliable
	V
VIS	Visibility
VOR	VHF Omni-Directional Radio Range
VORTAC	VOR and TACAN (collocated)
VOT	VOR Test Facility
	W
W	West *or* western longitude
WB	Westbound
WDI	Wind Direction Indicator
WED	Wednesday
WI	Within
WID	Width *or* wide
WIP	Work in progress
WNW	West−northwest
WS	Wind shear
WSW	West−southwest

4. Flight Plan Requirements

4.1 The types of flight plans in U.S. airspace are:

4.1.1 Visual Flight Rules (VFR).

4.1.2 Defense Visual Flight Rules (DVFR).

4.1.3 Instrument Flight Rules (IFR).

4.1.4 Composite Flight Plan Visual−Instrument Flight Rules (VFR−IFR).

4.1.5 IFR flight plans requesting VFR operations.

NOTE−
ICAO flight plans are required whenever the flight intends to cross an international boundary or an oceanic CTA/FIR boundary. For flights departing U.S. airports and operating over U.S. domestic airspace and/or offshore control areas, but do not penetrate the oceanic CTA/FIR boundary or borders, a U.S. domestic flight plan is preferred.

4.2 Flight Plan−VFR Flights

4.2.1 Except for operations in or penetrating an ADIZ (see ENR 1.12, National Security and Interception Procedures), a flight plan is not required for VFR flight.

4.2.2 It is strongly recommended that a flight plan (for a VFR flight) be filed with an FAA FSS. This will ensure that you receive VFR Search and Rescue Protection. (See GEN 3.6, Search and Rescue, for the proper method of filing a VFR flight plan.)

4.2.3 To obtain maximum benefits of the flight plan program, flight plans should be filed directly with the nearest flight service station. For your convenience, FSSs provide aeronautical and meteorological briefings while accepting flight plans. Radio may be used to file if no other means are available. Also, some States operate aeronautical communications facilities which will accept and forward flight plans to the FSS for further handling.

4.2.4 When a "stopover" flight is anticipated to cover an extended period of time, it is recommended that a separate flight plan be filed for each "leg" when the stop is expected to be more than 1−hour duration.

4.2.5 Pilots are encouraged to give their departure times directly to the FSS serving the departure airport or as otherwise indicated by the FSS when the flight plan is filed. This will ensure more efficient flight plan service and permit the FSS to advise you of significant changes in aeronautical facilities or meteorological conditions. When a VFR flight plan is filed, it will be held by the FSS until 1 hour after the proposed departure time and then canceled unless:

4.2.5.1 The actual departure time is received.

4.2.5.2 A revised proposed departure time is received.

4.2.5.3 At a time of filing, the FSS is informed that the proposed departure time will be met, but actual time cannot be given because of inadequate communications (assumed departures).

4.2.6 On pilot's request, at a location having an active tower, the aircraft identification will be forwarded by the tower to the FSS for reporting the actual departure time. This procedure should be avoided at busy airports.

4.2.7 Although position reports are not required for VFR flight plans, periodic reports to FAA flight service stations along the route are good practice. Such contacts permit significant information to be passed to the transiting aircraft and also serve to check the progress of the flight should it be necessary for any reason to locate the aircraft.

EXAMPLE−
1. *Bonanza 314K, over Kingfisher at (time), VFR flight plan, Tulsa to Amarillo.*

2. *Cherokee 5133J, over Oklahoma City at (time), Shreveport to Denver, no flight plan.*

4.2.8 Pilots not operating on an IFR flight plan, and when in level cruising flight, are cautioned to conform with VFR cruising altitudes appropriate to direction of flight.

4.2.9 When filing VFR flight plans, indicate aircraft equipment capabilities by appending the appropriate suffix to aircraft type in the same manner as that prescribed for IFR flight.

4.2.10 Under some circumstances, ATC computer tapes can be useful in constructing the radar history of a downed or crashed aircraft. In each case, knowledge of the aircraft's transponder/ADS−B equipment is necessary in determining whether or not such computer tapes might prove effective.

REFERENCE−
AIP, ENR 1.10, paragraph 5.1 and TBL ENR 1.10−3, Aircraft Equipment Suffixes.

4.2.11 Explanation of VFR Flight Plan Items.

4.2.11.1 Block 1. Check the type flight plan. Check both the VFR and IFR blocks if composite VFR/IFR.

4.2.11.2 Block 2. Enter your complete aircraft identification including the prefix "N" if applicable.

4.2.11.3 Block 3. Enter the designator for the aircraft, or if unknown, consult an FSS briefer.

4.2.11.4 Block 4. Enter your true airspeed (TAS).

4.2.11.5 Block 5. Enter the departure airport identifier code (or the airport name, city and state, if the identifier is unknown).

4.2.11.6 Block 6. Enter the proposed departure time in Coordinated Universal Time (UTC). If airborne, specify the actual or proposed departure time, as appropriate.

4.2.11.7 Block 7. Enter the appropriate VFR altitude (to assist the briefer in providing weather and wind information).

4.2.11.8 Block 8. Define the route of flight by using NAVAID identifier codes and airways.

4.2.11.9 Block 9. Enter the destination airport identifier code, or if unknown, the airport name.

NOTE−
Include the city name (or even the state name) if needed for clarity.

4.2.11.10 Block 10. Enter your estimated time en route, in hours and minutes.

4.2.11.11 Block 11. Enter only those remarks that may aid in VFR search and rescue, such as planned stops en route or student cross country, or remarks pertinent to the clarification of other flight plan information, such as the radiotelephony (call sign) associated with a designator filed in Block 2, if the radiotelephony is new, has changed within the last 60 days, or is a special FAA-assigned temporary radiotelephony. Items of a personal nature are not accepted.

4.2.11.12 Specify the fuel on board, in hours and minutes.

4.2.11.13 Specify an alternate airport if desired.

4.2.11.14 Enter your complete name, address, and telephone number. Enter sufficient information to identify home base, airport, or operator.

NOTE−
This information is essential in the event of search and rescue operations.

4.2.11.15 Block 15. Enter total number of persons on board including crew (POB).

4.2.11.16 Block 16. Enter the predominant colors.

4.2.11.17 Block 17. (Optional) Record a destination telephone number to assist Search and Rescue should you fail to report or cancel your flight plan within 1/2 hour after your estimated time of arrival (ETA).

CAUTION−
A control tower at destination point does not automatically close VFR flight plans; it remains the responsibility of a pilot to close his/her own flight plan.

4.2.11.18 Record the FSS name for closing the flight plan. If the flight plan is closed with a different FSS or facility, state the recorded FSS name that would normally have closed your flight plan.

NOTE−
The information transmitted to the destination FSS will consist only of flight plans blocks 2, 3, 9, and 10. Estimated time en route (ETE) will be converted to the correct estimated time of arrival (ETA).

FIG ENR 1.10−1

FAA Flight Plan
Form 7233−1 (8−82)

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

FLIGHT PLAN

(FAA USE ONLY) ☐ PILOT BRIEFING ☐ VNR
☐ STOPOVER

TIME STARTED

SPECIALIST INITIALS

1. TYPE
VFR
IFR
DVFR

2. AIRCRAFT IDENTIFICATION

3. AIRCRAFT TYPE/ SPECIAL EQUIPMENT

4. TRUE AIRSPEED
KTS

5. DEPARTURE POINT

6. DEPARTURE TIME
PROPOSED (Z) ACTUAL (Z)

7. CRUISING ALTITUDE

8. ROUTE OF FLIGHT

9. DESTINATION (Name of airport and city)

10. EST. TIME ENROUTE
HOURS MINUTES

11. REMARKS

12. FUEL ON BOARD
HOURS MINUTES

13. ALTERNATE AIRPORT(S)

14. PILOT'S NAME, ADDRESS & TELEPHONE NUMBER & AIRCRAFT HOME BASE

15. NUMBER ABOARD

17. DESTINATION CONTACT/TELEPHONE (OPTIONAL)

16. COLOR OF AIRCRAFT

CIVIL AIRCRAFT PILOTS, FAR 91 requires you file an IFR flight plan to operate under instrument flight rules in controlled airspace. Failure to file could result in a civil penalty not to exceed $1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended). Filing of a VFR flight plan is recommended as a good operating practice. See also Part 99 for requirements concerning DVFR flight plans.

FAA Form 7233-1 (8-82) CLOSE VFR FLIGHT PLAN WITH ________________ FSS ON ARRIVAL

TBL ENR 1.10−3
Aircraft Equipment Suffixes

	Navigation Capability	Transponder Capability	Suffix
RVSM	No GNSS, No RNAV	Transponder with Mode C	/W
	RNAV, No GNSS	Transponder with Mode C	/Z
	GNSS	Transponder with Mode C	/L
No RVSM	No DME	No Transponder	/X
		Transponder with no Mode C	/T
		Transponder with Mode C	/U
	DME	No Transponder	/D
		Transponder with no Mode C	/B
		Transponder with Mode C	/A
	TACAN	No Transponder	/M
		Transponder with no Mode C	/N
		Transponder with Mode C	/P
	RNAV, no GNSS	No Transponder	/Y
		Transponder with no Mode C	/C
		Transponder with Mode C	/I
	GNSS	No Transponder	/V
		Transponder with no Mode C	/S
		Transponder with Mode C	/G

4.3 Operational Information System (OIS)

4.3.1 The FAA's Air Traffic Control System Command Center (ATCSCC) maintains a website with near real−time National Airspace System (NAS) status information. NAS operators are encouraged to access the website at **www.fly.faa.gov** prior to filing their flight plan.

4.3.2 The website consolidates information from advisories. An advisory is a message that is disseminated electronically by the ATCSCC that contains information pertinent to the NAS.

4.3.2.1 Advisories are normally issued for the following items:

a) Ground Stops.

b) Ground Delay Programs.

c) Route Information.

d) Plan of Operations.

e) Facility Outages and Scheduled Facility Outages.

f) Volcanic Ash Activity Bulletins.

g) Special Traffic Management Programs.

4.3.2.2 This list is not all−inclusive. Any time there is information that may be beneficial to a large number of people, an advisory may be sent. Additionally, there may be times when an advisory is not sent due to workload or the short length of time of the activity.

4.3.2.3 Route information is available on the website and in specific advisories. Some route information, subject to the 56−day publishing cycle, is located on the "OIS" under "Products," Route Management Tool (RMT), and "What's New" Playbook. The RMT and Playbook contain routings for use by Air Traffic and NAS operators when they are coordinated "real−time" and are then published in an ATCSCC advisory.

4.3.2.4 Route advisories are identified by the word "Route" in the header; the associated action is required (RQD), recommended (RMD), planned (PLN), or for your information (FYI). Operators are expected to file flight plans consistent with the Route RQD advisories.

4.3.2.5 Electronic System Impact Reports are on the intranet at http://www.atcscc.faa.gov/ois/ under "System Impact Reports." This page lists scheduled outages/events/projects that significantly impact the NAS; for example, runway closures, air shows, and construction projects. Information includes anticipated delays and traffic management initiatives (TMI) that may be implemented.

4.4 Flight Plan−Defense VFR (DVFR) Flights

4.4.1 VFR flights (except DOD or law enforcement flights) into an ADIZ are required to file DVFR flight plans for security purposes. Detailed ADIZ procedures are found in Section ENR 1.12, National Security and Intercept Procedures.

REFERENCE−
14 CFR Part 99, Security Control of Air Traffic

5. Flight Plan−IFR Flights

5.1 General

5.1.1 Prior to departure from within, or prior to entering Class A, B, C, D, and E airspace, a pilot must submit a complete flight plan and receive an air traffic clearance if weather conditions are below VFR minimums. Instrument flight plans may be submitted to the nearest flight service station or the airport traffic control tower either in person or by telephone (or by radio if no other means are available). Pilots should file IFR flight plans at least 30 minutes prior to estimated time of departure to preclude possible delay in receiving a departure clearance from ATC. To minimize your delay in entering a Class B, C, D, or E surface area at destination when IFR weather conditions exist or are forecast at the airport, an IFR flight plan should be filed before departure. Otherwise, a 30−minute delay is not unusual in receiving an ATC clearance because of time spent in processing flight plan data. Traffic saturation frequently prevents control personnel from accepting flight plans by radio. In such cases the pilot is advised to contact the nearest flight service station for the purpose of filing the flight plan.

NOTE−
1. *There are several methods of obtaining IFR clearance at nontower, non−Flight Service Stations and outlying airports. The procedure may vary due to geographical features, weather conditions, and the complexity of the ATC system. To determine the most effective means of receiving an IFR clearance, pilots should ask the nearest Flight Service Station for the most appropriate means of obtaining the IFR clearance.*

2. *When requesting an IFR clearance, it is highly recommended that the departure airport be identified by* *stating the city name and state and/or the airport location identifier in order to clarify to ATC the exact location of the intended airport of departure.*

5.1.2 When filing an IFR flight plan, include as a prefix to the aircraft type, the number of aircraft when more than one and/or heavy aircraft indicator "H/" if appropriate.

EXAMPLE−
H/DC10/A
2/F15/A

5.1.3 When filing an IFR flight plan, identify the equipment capability by adding a suffix, preceded by a slant, to the AIRCRAFT TYPE, as shown in TBL ENR 1.10−3, Aircraft Suffixes.

NOTE−
1. *ATC issues clearances based on filed suffixes. Pilots should determine the appropriate suffix based upon desired services and/or routing. For example, if a desired route/procedure requires GPS, a pilot should file /G even if the aircraft also qualifies for other suffixes.*

2. *For procedures requiring GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.*

3. *The suffix is not to be added to the aircraft identification or be transmitted by radio as part of the aircraft identification.*

5.1.4 It is recommended that pilots file the maximum transponder/ADS−B and navigation capability of their aircraft in the equipment suffix. This will provide ATC with the necessary information to utilize all facets of navigational equipment and transponder capabilities available.

5.1.5 When filing an IFR flight plan via telephone or radio, it is highly recommended that the departure airport be clearly identified by stating the city name and state and/or airport location identifier. With cell phone use and flight service specialists covering larger areas of the country, clearly identifying the departure airport can prevent confusing your airport of departure with those of identical or similar names in other states.

5.2 Airways/Jet Routes Depiction on Flight Plan

5.2.1 It is vitally important that the route of flight be accurately and completely described in the flight plan. To simplify definition of the proposed route, and to facilitate air traffic control, pilots are requested to file via airways or jet routes established for use at the altitude or flight level planned.

5.2.2 If flight is to be conducted via designated airways or jet routes, describe the route by indicating the type and number designators of the airway(s) or jet route(s) requested. If more than one airway or jet route is to be used, clearly indicate points of transition. If the transition is made at an unnamed intersection, show the next succeeding NAVAID or named intersection on the intended route and the complete route from that point. Reporting points should be identified by using authorized name/code as depicted on appropriate aeronautical charts. The following two examples illustrate the need to specify the transition point when two routes share more than one transition fix.

EXAMPLE−
1. *ALB J37 BUMPY J14 BHM*
Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at BUMPY intersection, thence via Jet Route 14 to Birmingham, Alabama.

2. *ALB J37 ENO J14 BHM*
Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at Smyrna VORTAC (ENO) thence via Jet Route 14 to Birmingham, Alabama.

5.2.3 The route of flight may also be described by naming the reporting points or NAVAIDs over which the flight will pass, provided the points named are established for use at the altitude or flight level planned.

EXAMPLE−
BWI V44 SWANN V433 DQO
Spelled out: from Baltimore-Washington International, via Victor 44 to Swann intersection, transitioning to Victor 433 at Swann, thence via Victor 433 to Dupont.

5.2.4 When the route of flight is defined by named reporting points, whether alone or in combination with airways or jet routes, and the navigational aids (VOR, VORTAC, TACAN, LF, RBN) to be used for the flight are a combination of different types of aids, enough information should be included to clearly indicate the route requested.

EXAMPLE−
LAX J5 LKV J3 GEG YXC FL 330 J500 VLR J515 YWG
Spelled out: from Los Angeles International via Jet Route 5 Lakeview, Jet Route 3 Spokane, direct Cranbrook, British Columbia VOR/DME, Flight Level 330 Jet Route 500 to Langruth, Manitoba VORTAC, Jet Route 515 to Winnepeg, Manitoba.

5.2.5 When filing IFR, it is to the pilot's advantage to file a "preferred route."

NOTE−
Preferred IFR routes are described and tabulated in the Chart Supplement U.S.

5.2.6 ATC may issue a SID or a STAR as appropriate (See ENR 1.5, paragraph 3.).

NOTE−
Pilots not desiring a SID or STAR should so indicate in the remarks section of the flight plan as "no SID" or "no STAR."

5.3 Direct Flights

5.3.1 All or any portions of the route which will not be flown on the radials or courses of established airways or routes, such as direct route flights, must be defined by indicating the radio fixes over which the flight will pass. Fixes selected to define the route must be those over which the position of the aircraft can be accurately determined. Such fixes automatically become compulsory reporting points for the flight, unless advised otherwise by ATC. Only those navigational aids established for use in a particular structure; i.e., in the low or high structures, may be used to define the en route phase of a direct flight within that structure.

5.3.2 The azimuth feature of VOR aids and the azimuth and distance (DME) features of VORTAC and TACAN aids are assigned certain frequency protected areas of airspace which are intended for application to established airway and route use, and to provide guidance for planning flights outside of established airways or routes. These areas of airspace are expressed in terms of cylindrical service volumes of specified dimensions called "class limits" or "categories."

5.3.3 An operational service volume has been established for each class in which adequate signal coverage and frequency protection can be assured. To facilitate use of VOR, VORTAC, or TACAN aids, consistent with their operational service volume limits, pilot use of such aids for defining a direct route of flight in Class A, B, C, D, and E airspace should not exceed the following:

5.3.3.1 Operations above Flight Level 450. Use aids not more than 200 nautical miles apart. These aids are depicted on En Route High Altitude Charts.

5.3.3.2 Operation off established routes from 18,000 feet MSL to Flight Level 450. Use aids not more than 260 nautical miles apart. These aids are depicted on En Route High Altitude Charts.

5.3.3.3 Operation off established airways below 18,000 feet MSL. Use aids not more than 80 nautical miles apart. These aids are depicted on En Route Low Altitude Charts.

5.3.3.4 Operation off established airways between 14,500 feet MSL and 17,999 feet MSL in the conterminous United States. (H) facilities not more than 200 NM apart may be used.

5.3.4 Increasing use of self−contained airborne navigational systems which do not rely on the VOR/VORTAC/TACAN system has resulted in pilot requests for direct routes that exceed NAVAID service volume limits. With the exception of GNSS−equipped aircraft, these direct route requests will be approved only in a radar environment, with approval based on pilot responsibility for navigation on the authorized direct route. Radar flight following will be provided by ATC for ATC purposes. For GNSS−equipped aircraft, ATC may approve a direct route that exceeds ground based NAVAID service volume limits; however, in a non−radar environment, the routing must be "point−to−point," defined as navigation from a published point to a published point, and navigational assistance will not be available. (See subparagraph 5.4.1 below.)

5.3.5 At times, ATC will initiate a direct route in a radar environment that exceeds NAVAID service volume limits. In such cases ATC will provide radar monitoring and navigational assistance as necessary. For GNSS−equipped aircraft, if the route is point−to−point, radar monitoring and navigational assistance is not required. (See subparagraph 5.4.1 below.)

5.3.6 Airway or jet route numbers, appropriate to the stratum in which operation will be conducted, may also be included to describe portions of the route to be flown.

EXAMPLE−
MDW V262 BDF V10 BRL STJ SLN GCK
Spelled out: from Chicago Midway Airport via Victor 262 to Bradford, Victor 10 to Burlington, Iowa, direct St. Joseph, Missouri, direct Salina, Kansas, direct Garden City, Kansas.

NOTE−
When route of flight is described by radio fixes, the pilot

will be expected to fly a direct course between the points named.

5.3.7 Pilots are reminded that they are responsible for adhering to obstruction clearance requirements on those segments of direct routes that are outside of Class A, B, C, D, and E airspace. The MEAs and other altitudes shown on Low Altitude IFR En Route Charts pertain to those route segments within Class A, B, C, D, and E airspace, and those altitudes may not meet obstruction clearance criteria when operating off those routes.

5.4 Area Navigation (RNAV)/Global Navigation Satellite System (GNSS)

5.4.1 Except for GNSS−equipped aircraft, random impromptu routes can only be approved in a radar environment. A random impromptu route is a direct course initiated by ATC or requested by the pilot during flight. Aircraft are cleared from their present position to a NAVAID, waypoint, fix, or airport. Factors that will be considered by ATC in approving random impromptu routes include the capability to provide radar monitoring and compatibility with traffic volume and flow. ATC will radar monitor each flight; however, navigation on the random impromptu route is the responsibility of the pilot. GNSS−equipped aircraft are allowed to operate in a non−radar environment when the aircraft is cleared via, or is reported to be established on, a point−to−point route. The points must be published NAVAIDs, waypoints, fixes, or airports recallable from the aircraft's database. The distance between the points cannot exceed 500 miles and navigational assistance will not be provided.

5.4.2 Pilots of aircraft equipped with approved area navigation equipment may file for RNAV routes throughout the National Airspace System and may be filed for in accordance with the following procedures.

5.4.2.1 File airport to airport flight plans.

5.4.2.2 File the appropriate aircraft equipment suffix in the flight plan.

5.4.2.3 Plan the random route portion of the flight plan to begin and end over appropriate arrival and departure transition fixes or appropriate navigation aids for the altitude stratum within which the flight will be conducted. The use of normal preferred departure and arrival routes (DP/STAR), where established, is recommended.

5.4.2.4 File route structure transitions to and from the random route portion of the flight.

5.4.2.5 Define random routes by waypoints. File route description waypoints by using degree−distance fixes based on navigational aids which are appropriate for the altitude stratum.

5.4.2.6 File a minimum of one route description waypoint for each ARTCC through whose area the random route will be flown.

5.4.2.7 File an additional route description waypoint for each turnpoint in the route.

5.4.2.8 Plan additional route description waypoints as required to ensure accurate navigation via the filed route of flight. Navigation is the pilot's responsibility unless ATC assistance is requested.

5.4.2.9 Plan the route of flight so as to avoid Prohibited and Restricted Airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facilities are advised.

NOTE−
To be approved for use in the National Airspace System, RNAV equipment must meet system availability, accuracy, and airworthiness standards. For additional information and guidance on RNAV equipment requirements, see Advisory Circular (AC) 20−138, Airworthiness Approval of Positioning and Navigation Systems, and AC 90−100, U.S. Terminal and En Route Area Navigation (RNAV) Operations.

5.4.3 Pilots of aircraft equipped with latitude/longitude coordinate navigation capability independent of VOR/TACAN references may file for random RNAV routes at and above FL 390 within the conterminous U.S. using the following procedures:

5.4.3.1 File airport−to−airport flight plans prior to departure.

5.4.3.2 File the appropriate RNAV capability certification suffix in the flight plan.

5.4.3.3 Plan the random route portion of the flight to begin and end over published departure/arrival transition fixes or appropriate navigation aids for airports without published transition procedures. The use of preferred departure and arrival routes, such as DP and STAR where established, is recommended.

5.4.3.4 Plan the route of fight so as to avoid prohibited and restricted airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facility is advised.

5.4.3.5 Define the route of flight after the departure fix, including each intermediate fix (turnpoint) and the arrival fix for the destination airport in terms of latitude/longitude coordinates plotted to the nearest minute or in terms of Navigation Reference System (NRS) waypoints. For latitude/longitude filing the arrival fix must be identified by both the latitude/longitude coordinates and a fix identifier.

EXAMPLE−
MIA[1] SRQ[2] 3407/10615[3] 3407/11546 TNP[4] LAX[5]

[1] Departure Airport
[2] Departure Fix
[3] Intermediate Fix (Turning Point)
[4] Arrival Fix
[5] Destination Airport
or
ORD[1] IOW[2] KP49G[3] KD34U[4] KL16O[5] OAL[6] MOD2[7] SFO[8]

[1] Departure airport.
[2] Transition fix (pitch point).
[3] Minneapolis ARTCC waypoint.
[4] Denver ARTCC Waypoint.
[5] Los Angeles ARTCC waypoint (catch point).
[6] Transition fix.
[7] Arrival.
[8] Destination airport.

5.4.3.6 Record latitude/longitude coordinates by four figures describing latitude in degrees and minutes followed by a solidus and five figures describing longitude in degrees and minutes.

5.4.3.7 File at FL 390 or above for the random RNAV portion of the flight.

5.4.3.8 Fly all routes/route segments on Great Circle tracks or GPS−based tracks.

5.4.3.9 Make any in−flight requests for random RNAV clearances or route amendments to an en route ATC facility.

5.5 Flight Plan Form (See FIG ENR 1.10−1.)

5.5.1 Explanation of IFR Flight Plan Items.

5.5.1.1 Block 1. Check the type flight plan. Check both the VFR and IFR blocks if composite VFR/IFR.

5.5.1.2 Block 2. Enter your complete aircraft identification including the prefix "N" if applicable.

5.5.1.3 Block 3. Enter the designator for the aircraft, followed by a slant (/) and the transponder or DME equipment code letter; e.g., C−182/U. Heavy aircraft, add prefix "H" to aircraft type; example, H/DC10/R. Consult an FSS briefer for any unknown elements.

5.5.1.4 Block 4. Enter your computed true airspeed (TAS).

NOTE−
If the average TAS changes plus or minus 5 percent or 10 knots, whichever is greater, advise ATC.

5.5.1.5 Block 5. Enter the departure airport identifier code (or the airport name, city and state, if the identifier is unknown).

NOTE−
Use of identifier codes will expedite the processing of your flight plan.

5.5.1.6 Block 6. Enter the proposed departure time in Coordinated Universal Time (UTC) (Z). If airborne, specify the actual or proposed departure time as appropriate.

5.5.1.7 Block 7. Enter the requested en route altitude or flight level.

NOTE−
Enter only the initial requested altitude in this block. When more than one IFR altitude or flight level is desired along the route of flight, it is best to make a subsequent request direct to the controller.

5.5.1.8 Block 8. Define the route of flight by using NAVAID identifier codes (or names if the code is unknown), airways, jet routes, and waypoints (for RNAV).

NOTE−
Use NAVAIDs or waypoints to define direct routes and radials/bearing to define other unpublished routes.

5.5.1.9 Block 9. Enter the destination airport identifier code (or name if identifier is unknown).

5.5.1.10 Block 10. Enter your estimated time en route based on latest forecast winds.

5.5.1.11 Block 11. Enter only those remarks pertinent to ATC or to the clarification of other flight plan information such as the appropriate radiotelephony (call sign) associated with the FAA-assigned three-letter company designator filed in Block 2, if the radiotelephony is new or has changed within the last 60 days. In cases where there is no three-letter designator but only an assigned radiotelephony, or an assigned three-letter designator is used in a medical emergency, the radiotelephony must be included in the remarks field. Items of a personal nature are not accepted.

NOTE−
1. *The pilot is responsible for knowing when it is appropriate to file the radiotelephony in remarks under the 60-day rule or when using FAA special radiotelephony assignments.*

2. *"DVRSN" should be placed in Block 11 only if the pilot/company is requesting priority handling to their original destination from ATC as a result of a diversion as defined in the Pilot/Controller Glossary.*

3. *Do not assume that remarks will be automatically transmitted to every controller. Specific ATC or en route requests should be made directly to the appropriate controller.*

5.5.1.12 Block 12. Specify the fuel on board, computed from the departure point.

5.5.1.13 Block 13. Specify an alternate airport if desired or required, but do not include routing to the alternate airport.

5.5.1.14 Block 14. Enter the complete name, address, and telephone number of pilot−in−command or, in the case of a formation flight, the formation commander. Enter sufficient information to identify home base, airport, or operator.

NOTE−
This information would be essential in the event of a search and rescue operation.

5.5.1.15 Block 15. Enter the total number of persons on board including crew.

5.5.1.16 Block 16. Enter the predominant colors.

NOTE−
Close IFR flight plans with tower, approach control, ARTCCs, or if unable, with FSS. When landing at an airport with a functioning control tower, IFR flight plans are automatically canceled.

5.5.2 The information transmitted to the ARTCC for IFR Flight Plans will consist of only flight plan blocks 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11.

6. IFR Operations to High Altitude Destinations

6.1 Pilots planning IFR flights to airports located in mountainous terrain are cautioned to consider the necessity for an alternate airport even when the forecast weather conditions would technically relieve them from the requirement to file one.

6.2 The FAA has identified three possible situations where the failure to plan for an alternate airport when flying IFR to such destination airport could result in a critical situation if the weather is less than forecast and sufficient fuel is not available to proceed to a suitable airport.

6.2.1 An IFR flight to an airport where the Minimum Descent Altitudes (MDAs) or landing visibility minimums for *all instrument approaches* are higher than the forecast weather minimums specified in 14 CFR Section 91.167(b). For example, there are 3 high altitude airports in the U.S. with approved instrument approach procedures where all of the MDAs are greater than 2,000 feet and/or the landing visibility minimums are greater than 3 miles (Bishop, California; South Lake Tahoe, California; and Aspen−Pitkin Co/Sardy Field, Colorado). In the case of these airports, it is possible for a pilot to elect, on the basis of forecasts, not to carry sufficient fuel to get to an alternate when the ceiling and/or visibility is actually lower than that necessary to complete the approach.

6.2.2 A small number of other airports in mountainous terrain have MDAs which are slightly (100 to 300 feet) below 2,000 feet AGL. In situations where there is an option as to whether to plan for an alternate, pilots should bear in mind that just a slight worsening of the weather conditions from those forecast could place the airport below the published IFR landing minimums.

6.2.3 An IFR flight to an airport which requires special equipment; i.e., DME, glide slope, etc., in order to make the available approaches to the lowest minimums. Pilots should be aware that all other minimums on the approach charts may require weather conditions better than those specified in 14 CFR Section 91.167(b). An inflight equipment malfunction could result in the inability to comply with the published approach procedures or, again, in the position of having the airport below the published IFR landing minimums for all remaining instrument approach alternatives.

7. Composite Flight Plan (VFR/IFR Flights)

7.1 Flight plans which specify VFR operation for one portion of a flight, and IFR for another portion, will be accepted by the FSS at the point of departure. If VFR flight is conducted for the first portion of the flight, the pilot should report his/her departure time to the FSS with which he/she filed his/her VFR/IFR flight plan; and, subsequently, close the VFR portion and request ATC clearance from the FSS nearest the point at which change from VFR to IFR is proposed. Regardless of the type facility you are communicating with (FSS, center, or tower), it is the pilot's responsibility to request that facility to "CLOSE VFR FLIGHT PLAN." The pilot must remain in VFR weather conditions until operating in accordance with the IFR clearance.

7.2 When a flight plan indicates IFR for the first portion of flight and VFR for the latter portion, the pilot will normally be cleared to the point at which the change is proposed. Once the pilot has reported over the clearance limit and does not desire further IFR clearance, he/she should advise air traffic control to cancel the IFR portion of his/her flight plan. Then, he/she should contact the nearest FSS to activate the VFR portion of his/her flight plan. If the pilot desires to continue his/her IFR flight plan beyond the clearance limit, he/she should contact air traffic control at least five minutes prior to the clearance limit and request further IFR clearance. If the requested clearance is not received prior to reaching the clearance limit fix, the pilot will be expected to establish himself/herself in a standard holding pattern on the radial/course to the fix unless a holding pattern for the clearance limit fix is depicted on a U.S. Government or commercially produced (meeting FAA requirements) Low/High Altitude En Route, Area, or STAR chart. In this case the pilot will hold according to the depicted pattern.

8. Initiating a Change to Flight Plans on File

8.1 All changes to existing flight plans should be completed more than 46 minutes prior to the proposed departure time. Changes must be made with the initial flight plan service provider. If the initial flight plan's service provider is unavailable, filers may contact an ATC facility or FSS to make the necessary revisions. Any revision 46 minutes or less from the proposed departure time must be coordinated through an ATC facility or FSS.

9. Change in Proposed Departure Time

9.1 To prevent computer saturation in the en route environment, parameters have been established to delete proposed departure flight plans which have not been activated. Most centers have this parameter set so as to delete these flight plans a minimum of 2 hours after the proposed departure time or Expect Departure Clearance Time (EDCT). To ensure that a flight plan remains active, pilots whose actual departure time will be delayed 2 hours or more beyond their filed departure time, are requested to notify ATC of their new proposed departure time.

9.2 Due to traffic saturation, ATC personnel frequently will be unable to accept these revisions via radio. It is recommended that you forward these revisions to a flight plan service provider or FSS.

10. Other Changes

10.1 In addition to altitude/flight level, destination, and/or route changes, increasing or decreasing the speed of an aircraft constitutes a change in a flight plan. Therefore, at any time the average true airspeed at cruising altitude between reporting points varies or is expected to vary from that given in the flight plan by plus or minus 5 percent, or 10 knots, whichever is greater, air traffic control should be advised.

11. Canceling Flight Plans

11.1 Closing VFR and DVFR Flight Plans

11.1.1 A pilot is responsible for ensuring that his/her VFR or DVFR flight plan is canceled. You should close your flight plan with the nearest FSS, or if one is not available, you may request any ATC facility to relay your cancellation to the FSS. Control towers do not automatically close VFR or DVFR flight plans as they may not be aware that a particular VFR aircraft is on a flight plan. If you fail to report or cancel your flight plan within $^{1}/_{2}$ hour after your ETA, search and rescue procedures are started.

11.2 Canceling IFR Flight Plan

11.2.1 14 CFR Section 91.153 includes the statement "When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, must notify an FAA Flight Service Station or ATC facility."

11.2.2 An IFR flight plan may be canceled at any time the flight is operating in VFR conditions outside Class A airspace by the pilot stating "CANCEL MY IFR FLIGHT PLAN" to the controller or air/ground station with which he/she is communicating. Immediately after canceling an IFR flight plan, a pilot should take necessary action to change to the appropriate air/ground frequency, VFR radar beacon code, and VFR altitude or flight level.

11.2.3 ATC separation and information services will be discontinued, including radar services (where applicable). Consequently, if the canceling flight desires VFR radar advisory service, the pilot must specifically request it.

NOTE−
Pilots must be aware that other procedures may be applicable to a flight that cancels an IFR flight plan within an area where a special program, such as a designated terminal radar service area, Class C airspace or Class B airspace, has been established.

11.2.4 If a DVFR flight plan requirement exists, the pilot is responsible for filing this flight plan to replace the canceled IFR flight plan. If a subsequent IFR operation becomes necessary, a new IFR flight plan must be filed and an ATC clearance obtained before operating in IFR conditions.

11.2.5 If operating on an IFR flight plan to an airport with a functioning control tower, the flight plan is automatically closed upon landing.

11.2.6 If operating on an IFR flight plan to an airport where there is no functioning control tower, the pilot must initiate cancellation of the IFR flight plan. This can be done after landing if there is a functioning FSS or other means of direct communications with ATC. In the event there is no FSS and air/ground communications with ATC is not possible below a certain altitude, the pilot would, weather conditions permitting, cancel his/her IFR flight plan while still airborne and able to communicate with ATC by radio. This will not only save the time and expense of canceling the flight plan by telephone but will quickly release the airspace for use by other aircraft.

11.3 RNAV and RNP Operations

11.3.1 During the pre−flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non−RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed.

11.3.2 If a pilot determines a specified RNP level cannot be achieved, revise the route or delay the operation until appropriate RNP level can be ensured.

11.3.3 The onboard navigation database must be current and appropriate for the region of intended operation and must include the navigation aids, waypoints, and coded terminal airspace procedures for the departure, arrival and alternate airfields.

11.3.4 During system initialization, pilots of aircraft equipped with a Flight Management System or other RNAV−certified system, must confirm that the navigation database is current, and verify that the aircraft position has been entered correctly. Flight crews should crosscheck the cleared flight plan against charts or other applicable resources, as well as the navigation system textual display and the aircraft map display. This process includes confirmation of the waypoints sequence, reasonableness of track angles and distances, any altitude or speed constraints, and identification of fly−by or fly−over waypoints. A procedure must not be used if validity of the navigation database is in doubt.

11.3.5 Prior to commencing takeoff, the flight crew must verify that the RNAV system is operating correctly and the correct airport and runway data have been loaded.

11.3.6 During the pre−flight planning phase RAIM prediction must be performed if TSO−C129() equipment is used to solely satisfy the RNAV and RNP requirement. GPS RAIM availability must be confirmed for the intended route of flight (route and time) using current GPS satellite information. In the event of a predicted, continuous loss of RAIM of more than five (5) minutes for any part of the intended flight, the flight should be delayed, canceled, or re−routed where RAIM requirements can be met. Operators may satisfy the predictive RAIM requirement through any one of the following methods:

11.3.6.1 Operators may monitor the status of each satellite in its plane/slot position, by accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs), and compute RAIM availability using model−specific RAIM prediction software;

11.3.6.2 Operators may use the Service Availability Prediction Tool (SAPT) on the FAA en route and terminal RAIM prediction website;

11.3.6.3 Operators may contact a Flight Service Station to obtain non−precision approach RAIM;

11.3.6.4 Operators may use a third party interface, incorporating FAA/VOLPE RAIM prediction data without altering performance values, to predict RAIM outages for the aircraft's predicted flight path and times;

11.3.6.5 Operators may use the receiver's installed RAIM prediction capability (for TSO−C129a/Class A1/B1/C1 equipment) to provide non−precision approach RAIM, accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs). Receiver non−precision approach RAIM should be checked at airports spaced at intervals not to exceed 60 NM along the RNAV 1 procedure's flight track. "Terminal" or "Approach" RAIM must be available at the ETA over each airport checked; or

11.3.6.6 Operators not using model−specific software or FAA/VOLPE RAIM data will need FAA operational approval.

NOTE−
If TSO−C145/C146 equipment is used to satisfy the RNAV and RNP requirement, the pilot/operator need not perform the prediction if WAAS coverage is confirmed to be available along the entire route of flight. Outside the U.S. or in areas where WAAS coverage is not available, operators using TSO−C145/C146 receivers are required to check GPS RAIM availability.

12. International Flight Plan (FAA Form 7233−4) − IFR Flights (For Domestic or International Flights)

12.1 FAA Form 7233−4, also known as the International Civil Aviation Organization (ICAO) FPL (Filed Flight Plan), is recommended for domestic IFR flights, and is mandatory for assignment of RNAV SIDs and STARs as well as all IFR flights that will depart U.S. domestic airspace.

12.2 ICAO flight plans are to be filed according to ICAO Doc 4444, Procedures for Air Navigation Services — Air Traffic Management (PANS−ATM).

12.3 ICAO flight plans are required whenever the flight intends to cross an international boundary or an oceanic CTA/FIR boundary. For flights departing U.S. airports and operating over U.S. domestic airspace and/or offshore control areas, but do not penetrate the oceanic CTA/FIR boundary or borders, a U.S. domestic flight plan can be filed, but an **ICAO is always preferred.**

12.4 If the pilot intends to fly an RNAV arrival and/or departure, then an ICAO FPL must be filed using the qualifier "R" in Item 10 with specific PBN capabilities following PBN/ in Item 18. Operators should file their maximum capabilities in order to qualify for the most advanced procedures.

12.4.1 Item 18, Other Information

When Item 10 equipment contains the character "R", Item 18 must contain PBN/ indication of RNAV and/or RNP capabilities. Include as many of the descriptors below as apply to the flight, up to a maximum of eight entries; that is a total of not more than 16 characters.

TBL ENR 1.10−4
PBN/RNAV Specifications

PBN/	RNAV SPECIFICATIONS
A1	RNAV 10 (RNP 10)
B1	RNAV 5 all permitted sensors
B2	RNAV 5 GNSS
B3	RNAV 5 DME/DME
B4	RNAV 5 VOR/DME
B5	RNAV 5 INS or IRS
B6	RNAV 5 LORAN C
C1	RNAV 2 all permitted sensors
C2	RNAV 2 GNSS
C3	RNAV 2 DME/DME
C4	RNAV 2 DME/DME/IRU
D1	RNAV 1 all permitted sensors
D2	RNAV 1 GNSS
D3	RNAV 1 DME/DME
D4	RNAV 1 DME/DME/IRU
	RNP SPECIFICATIONS
L1	RNP 4
O1	Basic RNP 1 all permitted sensors
O2	Basic RNP 1 GNSS
O3	Basic RNP 1 DME/DME
O4	Basic RNP 1 DME/DME/IRU
S1	RNP APCH
S2	RNP APCH with BARO-VNAV
T1	RNP AR APCH with RF (special authorization required)
T2	RNP AR APCH without RF (special authorization required)

12.5 The pilot must file in accordance with (IAW) FAA Form 7233−4 for automatic assignment of

RNAV Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs), and/or Point to Point (PTP) in U.S. domestic airspace and include additional information per the below guidance:

12.5.1 If you are RNAV 1 and/or RNAV 2 capable:

12.5.1.1 Item 10, Equipment
In addition to identifying all available and serviceable communication, navigation, approach aid, and surveillance equipment carried on your aircraft, insert the character "R" to indicate you are authorized Performance−Based Navigation.

12.5.1.2 Performance−Based Navigation (PBN) Item 18, Other Information
When PBN Capability has been filed in PBN/, if PBN routing is desired for only some segment(s) of the flight, then that information can be conveyed by inserting the character "Z" in Item 10 and "NAV/RNV" in field 18 followed by the appropriate RNAV accuracy value(s) per the following:

a) To be assigned an RNAV 1 SID, insert the characters "D1".

b) To be assigned an RNAV 1 STAR, insert the characters "A1".

c) To be assigned en route extensions and/or RNAV PTP, insert the characters "E2".

d) To prevent assignment of an RNAV route or procedure, insert a numeric value of "0" for the segment of the flight. Alternatively, you may simply remove the segment of the flight indicator and numeric value from the character string.

EXAMPLE−
1. *NAV/RNVD1 or NAV/RNVD1E0A0 (Same meaning)*

2. *NAV/RNVA1 or NAV/RNVD0E0A1 (Same meaning)*

3. *NAV/RNVE2 or NAV/RNVD0E2A0 (Same meaning)*

4. *NAV/RNVD1A1 or NAV/RNVD1E0A1 (Same meaning),*

5. *NAV/RNVD1E2A1.*

NOTE−
Route assignments are predicated on NAV/ data over PBN/ data in ERAS.

12.5.2 If you are RNAV PTP capable, but <u>not</u> RNAV 1 and/or RNAV 2 capable:

12.5.2.1 Item 10, Equipment
In addition to identifying all available and serviceable communication, navigation, approach aid, and surveillance equipment carried on your aircraft, insert the character "R", and follow procedures described in subparagraph 12.4.

12.5.2.2 The following variations will be accepted in ERAS for automatic assignment of RNAV routes: One or more spaces may follow "NAV/."

EXAMPLE−
NAV/ RNVD1A1. The "D", "E", and "A" characters may appear in any order following "NAV/RNV".

EXAMPLE−
NAV/RNVD1A1E2 NAV/RNVA1D1E2.

Additional items required by other automation systems may be filed after "NAV/" in any order.

EXAMPLE−
NAV/RNP10 RNVD1E2A1, NAV/RNVD1E2A1 RNP4 NAV/RNAV1 RNAV5 RNVD1E2A1.

12.5.2.3 If the Item 18 entries following "NAV/" do not follow the above instructions, the flight plan will be accepted by ERAS, but **you will not be automatically assigned RNAV**. Common errors include: Putting spaces between RNV, D1, A1, and/or E2 − <u>no spaces are allowed between the segments</u>. Filing "RNAV" instead of "RNV" − RNAV is not acceptable in the U.S. domestic string after "NAV/".

12.6 If the pilot intends to operate in RVSM airspace, he/she must file the qualifier "W" in order to be cleared into RVSM airspace.

12.7 Required Surveillance Performance (RSP) Item 18, Other Information
When RSP Capability has been filed in SUR/, this can be conveyed by inserting the character "Z" in Item 10 and "SUR/" in field 18 followed by the appropriate RSP performance per the following:

12.7.1 For RSP 180 − flight plan RSP180

12.7.2 For RSP 400 − flight plan RSP400

EXAMPLE−
1. *SUR/ RSP180*

2. *SUR/ RSP400*

3. *SUR/ RSP180 RSP400*

12.8 For a copy of FAA Form 7233−4, and for information on how to complete the form, please go to: **www.faa.gov/ato?k=fpl**.

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Aircraft COM, NAV, and Approach Equipment Qualifiers

INSERT one letter as follows:

N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

(OR)

S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (see Note 1),

(AND/OR)

INSERT one or more of the following letters to indicate the COM/NAV/approach aid equipment available and serviceable:

NOTE−

The capabilities described below comprise the following elements:

a. Presence of relevant serviceable equipment on board the aircraft.

b. Equipment and capabilities commensurate with flight crew qualifications.

c. Where applicable, authorization from the appropriate authority.

A	GBAS landing system	L	ILS
B	LPV (APV with SBAS)	M1	ATC RTF SATCOM (INMARSAT)
C	LORAN C	M2	ATC RTF (MTSAT)
D	DME	M3	ATC RTF (Iridium)
E1	FMC WPR ACARS	O	VOR
E2	D-FIS ACARS	P1	CPDLC RCP 400 *(See Note 7.)*
E3	PDC ACARS	P2	CPDLC RCP 240 *(See Note 7.)*
F	ADF	P3	SATVOICE RCP 400 *(See Note 7.)*
G	(GNSS) (S*ee Note 2.)*	P4–P9	Reserved for RCP
H	HF RTF	R	PBN approved (*See Note 4.)*
I	Inertial navigation	T	TACAN
J1	CPDLC ATN VDL Mode 2 (*See Note 3.)*	U	UHF RTF
J2	CPDLC FANS 1/A HFDL	V	VHF RTF
J3	CPDLC FANS 1/A VDL Mode 4	W	RVSM approved
J4	CPDLC FANS 1/A VDL Mode 2	X	MNPS approved/North Atlantic (NAT) High Level Airspace (HLA) approved
J5	CPDLC FANS 1/A SATCOM (INMARSAT)	Y	VHF with 8.33 kHz channel spacing capability
J6	CPDLC FANS 1/A SATCOM (MTSAT)	Z	Other equipment carried or other capabilities (S*ee Note 5.)*
J7	CPDLC FANS 1/A SATCOM (Iridium)		

NOTE−

1. *If the letter S is used, standard equipment is considered to be VHF RTF, VOR, and ILS within U.S. domestic airspace.*

2. *If the letter G is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.*

3. *See RTCA/EUROCAE Interoperability Requirements Standard For ATN Baseline 1 (ATN B1 INTEROP Standard – DO-280B/ED-110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.*

4. *If the letter R is used, the performance−based navigation levels that are authorized must be specified in Item 18 following the indicator PBN/. For further details, see paragraph 12.5.1.2.*

5. *If the letter Z is used, specify in Item 18 the other equipment carried, preceded by COM/, DAT/, and/or NAV/, as appropriate.*

6. *Information on navigation capability is provided to ATC for clearance and routing purposes.*

7. *Guidance on the application of performance−based communication, which prescribes RCP to an air traffic service in a specific area, is contained in the Performance−Based Communication and Surveillance (PBCS) Manual (Doc 9869).*

1.4.3.3 Foreign civil aircraft. If the pilot of a foreign civil aircraft that intends to enter the U.S. through an ADIZ cannot comply with the reporting requirements in subparagraphs 1.4.3.1 or 1.4.3.2 above, as applicable, the pilot must report the position of the aircraft to the appropriate aeronautical facility not less than 1 hour and not more than 2 hours average direct cruising distance from the U.S.

1.4.4 Land−Based ADIZ. Land−Based ADIZ are activated and deactivated over U.S. metropolitan areas as needed, with dimensions, activation dates and other relevant information disseminated via NOTAM. Pilots unable to comply with all NOTAM requirements must remain clear of Land−Based ADIZ. Pilots entering a Land−Based ADIZ without authorization or who fail to follow all requirements risk interception by military fighter aircraft.

1.4.5 Exceptions to ADIZ requirements.

1.4.5.1 Except for the national security requirements in paragraph 1.2, transponder requirements in subparagraph 1.4.2.1, and position reporting in subparagraph 1.4.3, the ADIZ requirements in 14 CFR Part 99 described in this section do not apply to the following aircraft operations pursuant to Section 99.1(b), Applicability:

a) Within the 48 contiguous States or within the State of Alaska, on a flight which remains within 10 NM of the point of departure;

b) Operating at true airspeed of less than 180 knots in the Hawaii ADIZ or over any island, or within 12 NM of the coastline of any island, in the Hawaii ADIZ;

c) Operating at true airspeed of less than 180 knots in the Alaska ADIZ while the pilot maintains a continuous listening watch on the appropriate frequency; or

d) Operating at true airspeed of less than 180 knots in the Guam ADIZ.

1.4.5.2 An FAA air route traffic control center (ARTCC) may exempt certain aircraft operations on a local basis in concurrence with the DOD or pursuant to an agreement with a U.S. Federal security or intelligence agency. (See 14 CFR 99.1 for additional information.)

1.4.6 A VFR flight plan filed inflight makes an aircraft subject to interception for positive identification when entering an ADIZ. Pilots are therefore urged to file the required DVFR flight plan either in person or by telephone prior to departure when able.

1.5 Civil Aircraft Operations To or From U.S. Territorial Airspace

1.5.1 Civil aircraft, except as described in subparagraph 1.5.2 below, are authorized to operate to or from U.S. territorial airspace if in compliance with all of the following conditions:

1.5.1.1 File and are on an active flight plan (IFR, VFR, or DVFR);

1.5.1.2 Are equipped with an operational transponder with altitude reporting capability, and continuously squawk an ATC assigned transponder code;

1.5.1.3 Maintain two−way radio communications with ATC;

1.5.1.4 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2;

1.5.1.5 Comply with all applicable U.S. Customs and Border Protection (CBP) requirements, including Advance Passenger Information System (APIS) requirements (see subparagraph 1.5.3 below for CBP APIS information), in accordance with 19 CFR Part 122, Air Commerce Regulations; and

1.5.1.6 Are in receipt of, and are operating in accordance with, an FAA routing authorization if the aircraft is registered in a U.S. State Department−designated special interest country or is operating with the ICAO three letter designator (3LD) of a company in a country listed as a U.S. State Department−designated special interest country, unless the operator holds valid FAA Part 129 operations specifications. VFR and DVFR flight operations are prohibited for any aircraft requiring an FAA routing authorization. (See paragraph 1.11 for FAA routing authorization information).

1.5.2 Civil aircraft registered in the U.S., Canada, or Mexico with a maximum certificated takeoff gross weight of 100,309 pounds (45,500 kgs) or less that are operating without an operational transponder, and/or the ability to maintain two−way radio communications with ATC, are authorized to operate to or from U.S. territorial airspace over Alaska if in compliance with all of the following conditions:

1.5.2.1 Depart and land at an airport within the U.S. or Canada;

1.5.2.2 Enter or exit U.S. territorial airspace over Alaska north of the fifty−fourth parallel;

1.5.2.3 File and are on an active flight plan;

1.5.2.4 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2;

1.5.2.5 Squawk 1200 if VFR and equipped with a transponder; and

1.5.2.6 Comply with all applicable U.S. CBP requirements, including APIS requirements (see paragraph 1.5.3 below for CBP APIS information), in accordance with 19 CFR Part 122, Air Commerce Regulations.

1.5.3 CBP APIS Information. Information about U.S. CBP APIS requirements is available at http://www.cbp.gov.

1.6 Civil Aircraft Operations Within U.S. Territorial Airspace

1.6.1 Civil aircraft with a maximum certificated takeoff gross weight less than or equal to 100,309 pounds (45,500 kgs) are authorized to operate within U.S. territorial airspace in accordance with all applicable regulations and VFR in airport traffic pattern areas of U.S. airports near the U.S. border, except for those described in subparagraph 1.6.2 below.

1.6.2 Civil aircraft with a maximum certificated takeoff gross weight less than or equal to 100,309 pounds (45,500 kgs) and registered in a U.S. State Department−designated special interest country or operating with the ICAO 3LD of a company in a country listed as a U.S. State Department−designated special interest country, unless the operator holds valid FAA Part 129 operations specifications, must operate within U.S. territorial airspace in accordance with the same requirements as civil aircraft with a maximum certificated takeoff gross weight greater than 100,309 pounds (45,500 kgs), as described in subparagraph 1.6.3 below.

1.6.3 Civil aircraft with a maximum certificated takeoff gross weight greater than 100,309 pounds (45,500 kgs) are authorized to operate within U.S. territorial airspace if in compliance with all of the following conditions:

1.6.3.1 File and are on an active flight plan (IFR or VFR);

1.6.3.2 Equipped with an operational transponder with altitude reporting capability, and continuously squawk an ATC assigned transponder code;

1.6.3.3 Equipped with an operational ADS−B Out when operating in airspace specified in 14 CFR 91.225;

1.6.3.4 Maintain two−way radio communications with ATC;

1.6.3.5 Aircraft not registered in the U.S. must operate under an approved Transportation Security Administration (TSA) aviation security program (see paragraph 1.10 for TSA aviation security program information) or in accordance with an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information), except as authorized in 1.6.3.7 below;

1.6.3.6 Are in receipt of, and are operating in accordance with an FAA routing authorization and an FAA/TSA airspace waiver if the aircraft is registered in a U.S. State Department−designated special interest country or is operating with the ICAO 3LD of a company in a country listed as a U.S. State Department−designated special interest country, unless the operator holds valid FAA Part 129 operations specifications. VFR and DVFR flight operations are prohibited for any aircraft requiring an FAA routing authorization. (See paragraph 1.11 for FAA routing authorization information.); and

1.6.3.7 Aircraft not registered in the U.S., when conducting post−maintenance, manufacturer, production, or acceptance flight test operations, are exempt from the requirements in 1.6.3.5 above if all of the following requirements are met:

a) A U.S. company must have operational control of the aircraft;

b) An FAA−certificated pilot must serve as pilot in command;

c) Only crewmembers are permitted onboard the aircraft; and

d) "Maintenance Flight" is included in the remarks section of the flight plan.

1.7 Civil Aircraft Operations Transiting U.S. Territorial Airspace

1.7.1 Civil aircraft (except those operating in accordance with subparagraphs 1.7.2, 1.7.3, 1.7.4, or 1.7.5) are authorized to transit U.S. territorial airspace if in compliance with all of the following conditions:

1.7.1.1 File and are on an active flight plan (IFR, VFR, or DVFR);

1.7.1.2 Equipped with an operational transponder with altitude reporting capability and continuously squawk an ATC assigned transponder code;

1.7.1.3 Equipped with an operational ADS−B Out when operating in airspace specified in 14 CFR 91.225;

1.7.1.4 Maintain two−way radio communications with ATC;

1.7.1.5 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2;

1.7.1.6 Are operating under an approved TSA aviation security program (see paragraph 1.10 for TSA aviation security program information) or are operating with and in accordance with an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information), if:

a) The aircraft is not registered in the U.S.; or

b) The aircraft is registered in the U.S. and its maximum takeoff gross weight is greater than 100,309 pounds (45,500 kgs);

1.7.1.7 Are in receipt of, and are operating in accordance with, an FAA routing authorization if the aircraft is registered in a U.S. State Department−designated special interest country or is operating with the ICAO 3LD of a company in a country listed as a U.S. State Department−designated special interest country, unless the operator holds valid FAA Part 129 operations specifications. VFR and DVFR flight operations are prohibited for any aircraft requiring an FAA routing authorization. (See paragraph 1.11 for FAA routing authorization information.)

1.7.2 Civil aircraft registered in Canada or Mexico, and engaged in operations for the purposes of air ambulance, firefighting, law enforcement, search and rescue, or emergency evacuation are authorized to transit U.S. territorial airspace within 50 NM of their respective borders with the U.S., with or without an active flight plan, provided they have received and continuously transmit an ATC−assigned transponder code.

1.7.3 Civil aircraft registered in Canada, Mexico, Bahamas, Bermuda, Cayman Islands, or the British Virgin Islands with a maximum certificated takeoff gross weight of 100,309 pounds (45,500 kgs) or less are authorized to transit U.S. territorial airspace if in compliance with all of the following conditions:

1.7.3.1 File and are on an active flight plan (IFR, VFR, or DVFR) that enters U.S. territorial airspace directly from any of the countries listed in this subparagraph 1.7.3. Flights that include a stop in a non−listed country prior to entering U.S. territorial airspace must comply with the requirements prescribed by subparagraph 1.7.1 above, including operating under an approved TSA aviation security program (see paragraph 1.10 for TSA aviation program information) or operating with, and in accordance with, an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information);

1.7.3.2 Equipped with an operational transponder with altitude reporting capability and continuously squawk an ATC assigned transponder code;

1.7.3.3 Equipped with an operational ADS−B Out when operating in airspace specified in 14 CFR 91.225;

1.7.3.4 Maintain two−way radio communications with ATC; and

1.7.3.5 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2.

1.7.4 Civil aircraft registered in Canada, Mexico, Bahamas, Bermuda, Cayman Islands, or the British Virgin Islands with a maximum certificated takeoff gross weight greater than 100,309 pounds (45,500 kgs) must comply with the requirements in subparagraph 1.7.1, including operating under an approved TSA aviation security program (see paragraph 1.10 for TSA aviation program information) or operating with, and in accordance with, an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information).

1.7.5 Civil aircraft registered in the U.S., Canada, or Mexico with a maximum certificated takeoff gross weight of 100,309 pounds (45,500 kgs) or less that are operating without an operational transponder and/or the ability to maintain two−way radio communications with ATC, are authorized to transit U.S.

territorial airspace over Alaska if in compliance with all of the following conditions:

1.7.5.1 Enter and exit U.S. territorial airspace over Alaska north of the fifty−fourth parallel;

1.7.5.2 File and are on an active flight plan;

1.7.5.3 Squawk 1200 if VFR and equipped with a transponder; and

1.7.5.4 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2.

1.8 Foreign State Aircraft Operations

1.8.1 Foreign state aircraft are authorized to operate in U.S. territorial airspace if in compliance with all of the following conditions:

1.8.1.1 File and are on an active IFR flight plan;

1.8.1.2 Equipped with an operational transponder with altitude reporting capability and continuously squawk an ATC assigned transponder code;

1.8.1.3 Equipped with an operational ADS−B Out when operating in airspace specified in 14 CFR 91.225;

1.8.1.4 Maintain two−way radio communications with ATC;

1.8.1.5 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2.

1.8.2 Diplomatic Clearances. Foreign state aircraft may operate to or from, within, or in transit of U.S. territorial airspace only when authorized by the U.S. State Department by means of a diplomatic clearance, except as described in subparagraph 1.8.8 below.

1.8.2.1 Information about diplomatic clearances is available at the U.S. State Department website http://www.state.gov/t/pm/iso/c56895.htm (lower case only).

1.8.2.2 A diplomatic clearance may be initiated by contacting the U.S. State Department via email at DCAS@state.gov or via phone at (202) 663−3390.

NOTE−
A diplomatic clearance is not required for foreign state aircraft operations that transit U.S. controlled oceanic airspace but do not enter U.S. territorial airspace. (See subparagraph 1.8.4 for flight plan information.)

1.8.3 An FAA routing authorization for state aircraft operations of special interest countries listed in subparagraph 1.11.2 is required before the U.S. State Department will issue a diplomatic clearance for such operations. (See paragraph 1.11 for FAA routing authorizations information).

1.8.4 Foreign state aircraft operating with a diplomatic clearance must navigate U.S. territorial airspace on an active IFR flight plan, unless specifically approved for VFR flight operations by the U.S. State Department in the diplomatic clearance.

NOTE−
Foreign state aircraft operations to or from, within, or transiting U.S. territorial airspace; or transiting any U.S. controlled oceanic airspace, should enter ICAO code M in Item 8 of the flight plan to assist in identification of the aircraft as a state aircraft.

1.8.5 A foreign aircraft that operates to or from, within, or in transit of U.S. territorial airspace while conducting a state aircraft operation is not authorized to change its status as a state aircraft during any portion of the approved, diplomatically cleared itinerary.

1.8.6 A foreign aircraft described in subparagraph 1.8.5 above may operate from or within U.S. territorial airspace as a civil aircraft operation, once it has completed its approved, diplomatically cleared itinerary, if the aircraft operator is:

1.8.6.1 A foreign air carrier that holds valid FAA Part 129 operations specifications; and

1.8.6.2 Is in compliance with all other requirements applied to foreign civil aircraft operations from or within U.S. territorial airspace. (See paragraphs 1.5 and 1.6.)

1.8.7 Foreign state aircraft operations are not authorized to or from Ronald Reagan Washington National Airport (KDCA).

1.8.8 Diplomatic Clearance Exceptions. State aircraft operations on behalf of the governments of Canada and Mexico conducted for the purposes of air ambulance, firefighting, law enforcement, search and rescue, or emergency evacuation are authorized to transit U.S. territorial airspace within 50 NM of their respective borders with the U.S., with or without an active flight plan, provided they have received and continuously transmit an ATC assigned transponder code. State aircraft operations on behalf of the governments of Canada and Mexico conducted under this subparagraph 1.8.8 are not required to obtain a diplomatic clearance from the U.S. State Department.

1.9 FAA/TSA Airspace Waivers

1.9.1 Operators may submit requests for FAA/TSA airspace waivers at https://waivers.faa.gov by selecting "international" as the waiver type.

1.9.2 Information regarding FAA/TSA airspace waivers can be found at: http://www.tsa.gov/for−industry/general−aviation or can be obtained by contacting TSA at (571) 227−2071.

1.9.3 All existing FAA/TSA waivers issued under previous FDC NOTAMS remain valid until the expiration date specified in the waiver, unless sooner superseded or rescinded.

1.10 TSA Aviation Security Programs

1.10.1 Applicants for U.S. air operator certificates will be provided contact information for TSA aviation security programs by the U.S. Department of Transportation during the certification process.

1.10.2 For information about applicable TSA security programs:

1.10.2.1 U.S. air carriers and commercial operators must contact their TSA Principal Security Specialist (PSS); and

1.10.2.2 Foreign air carriers must contact their International Industry Representative (IIR).

1.11 FAA Flight Routing Authorizations

1.11.1 Information about FAA routing authorizations for U.S. State Department−designated special interest country flight operations to or from, within, or transiting U.S. territorial airspace is available by country at:

1.11.1.1 FAA website: http://www.faa.gov/air_traffic/publications/us_restrictions/; or

1.11.1.2 Phone by contacting the FAA System Operations Support Center (SOSC) at (202) 267−8115.

1.11.2 Special Interest Countries. The U.S. State Department−designated special interest countries are Cuba, Iran, The Democratic People's Republic of Korea (North Korea), The People's Republic of China, The Russian Federation, Sudan, and Syria.

NOTE−
FAA flight routing authorizations are not required for aircraft registered in Hong Kong, Taiwan, or Macau.

1.11.3 Aircraft operating with the ICAO 3LD assigned to a company or entity from a country listed as a State Department−designated special interest country and holding valid FAA Part 129 operations specifications do not require FAA flight routing authorization.

1.11.4 FAA routing authorizations will only be granted for IFR operations. VFR and DVFR flight operations are prohibited for any aircraft requiring an FAA routing authorization.

1.12 Emergency Security Control of Air Traffic (ESCAT)

1.12.1 During defense emergency or air defense emergency conditions, additional special security instructions may be issued in accordance with 32 CFR Part 245, Plan for the Emergency Security Control of Air Traffic (ESCAT).

1.12.2 Under the provisions of 32 CFR Part 245, the military will direct the action to be taken in regard to landing, grounding, diversion, or dispersal of aircraft in the defense of the U.S. during emergency conditions.

1.12.3 At the time a portion or all of ESCAT is implemented, ATC facilities will broadcast appropriate instructions received from the Air Traffic Control System Command Center (ATCSCC) over available ATC frequencies. Depending on instructions received from the ATCSCC, VFR flights may be directed to land at the nearest available airport, and IFR flights will be expected to proceed as directed by ATC.

1.12.4 Pilots on the ground may be required to file a flight plan and obtain an approval (through FAA) prior to conducting flight operation.

2. Interception Procedures

2.1 General

2.1.1 In conjunction with the FAA, Air Defense Sectors monitor air traffic and could order an intercept in the interest of national security or defense. Intercepts during peacetime operations are vastly different from those conducted under increased states of readiness. The interceptors may be fighters or rotary wing aircraft. The reasons for aircraft intercept include, but are not limited to:

2.1.1.1 Identify an aircraft.

2.1.1.2 Track an aircraft.

2.1.1.3 Inspect an aircraft.

2.1.1.4 Divert an aircraft.

2.1.1.5 Establish communications with an aircraft.

2.1.2 All aircraft operating in US national airspace are highly encouraged to maintain a listening watch on VHF/UHF guard frequencies (121.5 or 243.0 MHz). If subjected to a military intercept, it is incumbent on civilian aviators to understand their responsibilities and to comply with ICAO standard signals relayed from the intercepting aircraft. Specifically, aviators are expected to contact air traffic control without delay (if able) on the local operating frequency or on VHF/UHF guard. Noncompliance may result in the use of force.

2.1.3 When specific information is required (i.e., markings, serial numbers, etc.) the interceptor pilot(s) will respond only if, in their judgment, the request can be conducted in a safe manner. Intercept procedures are described in some detail in the paragraphs below. In all situations, the interceptor pilot will consider safety of flight for all concerned throughout the intercept procedure. The interceptor pilot(s) will use caution to avoid startling the intercepted crew or passengers and understand that maneuvers considered normal for interceptor aircraft may be considered hazardous to other aircraft.

2.2 Fighter Intercept Phases (See FIG ENR 1.12−2)

2.2.1 Approach Phase

2.2.1.1 As standard procedure, intercepted aircraft are approached from behind. Typically, interceptor aircraft will be employed in pairs; however, it is not uncommon for a single aircraft to perform the intercept operation. Safe separation between interceptors and intercepted aircraft is the responsibility of the intercepting aircraft and will be maintained at all times.

2.2.2 Identification Phase

2.2.2.1 Interceptor aircraft will initiate a controlled closure toward the aircraft of interest, holding at a distance no closer than deemed necessary to establish positive identification and to gather the necessary information. The interceptor may also fly past the intercepted aircraft while gathering data at a distance considered safe based on aircraft performance characteristics.

2.2.3 Post Intercept Phase

2.2.3.1 An interceptor may attempt to establish communications via standard ICAO signals. In time-critical situations where the interceptor is seeking an immediate response from the intercepted aircraft or if the intercepted aircraft remains non-compliant to instruction, the interceptor pilot may initiate a divert maneuver. In this maneuver, the interceptor flies across the intercepted aircraft's flight path (minimum 500 feet separation and commencing from slightly below the intercepted aircraft altitude) in the general direction the intercepted aircraft is expected to turn. The interceptor will rock its wings (daytime) or flash external lights/select afterburners (night) while crossing the intercepted aircraft's flight path. The interceptor will roll out in the direction the intercepted aircraft is expected to turn before returning to verify the aircraft of interest is complying. The intercepted aircraft is expected to execute an immediate turn to the direction of the intercepting aircraft. If the aircraft of interest does not comply, the interceptor may conduct a second climbing turn across the intercepted aircraft's flight path (minimum 500 feet separation and commencing from slightly below the intercepted aircraft altitude) while expending flares as a warning signal to the intercepted aircraft to comply immediately and to turn in the direction indicated and to leave the area. The interceptor is responsible to maintain safe separation during these and all intercept maneuvers. Flight safety is paramount.

NOTE−
1. *NORAD interceptors will take every precaution to preclude the possibility of the intercepted aircraft experiencing jet wash/wake turbulence; however, there is a potential that this condition could be encountered.*

2. *During night/IMC, the intercept will be from below flight path.*

ILS/DME navigation facilities are selected. Pilots are cautioned to disregard any distance displays from automatically selected DME equipment when VOR or ILS facilities, which do not have the DME feature installed, are being used for position determination.

5. Tactical Air Navigation (TACAN)

5.1 For reasons peculiar to military or naval operations (unusual siting conditions, the pitching and rolling of a naval vessel, etc.) the civil VOR/DME system of air navigation was considered unsuitable for military or naval use. A new navigational system, Tactical Air Navigation (TACAN), was therefore developed by the military and naval forces to more readily lend itself to military and naval requirements. As a result, the FAA has integrated TACAN facilities with the civil VOR/DME program. Although the theoretical, or technical principles of operation of TACAN equipment are quite different from those of VOR/DME facilities, the end result, as far as the navigating pilot is concerned, is the same. These integrated facilities are called VORTACs.

5.2 TACAN ground equipment consists of either a fixed or mobile transmitting unit. The airborne unit in conjunction with the ground unit reduces the transmitted signal to a visual presentation of both azimuth and distance information. TACAN is a pulse system and operates in the UHF band of frequencies. Its use requires TACAN airborne equipment and does not operate through conventional VOR equipment.

5.3 A VORTAC is a facility consisting of two components, VOR and TACAN, which provides three individual services: VOR azimuth, TACAN azimuth, and TACAN distance (DME) at one site. Although consisting of more than one component, incorporating more than one operating frequency, and using more than one antenna system, a VORTAC is considered to be a unified navigational aid. Both components of a VORTAC are envisioned as operating simultaneously and providing the three services at all times.

5.4 Transmitted signals of VOR and TACAN are each identified by three−letter code transmission and are interlocked so that pilots using VOR azimuth and TACAN distance can be assured that both signals being received are definitely from the same ground station. The frequency channels of the VOR and the TACAN at each VORTAC facility are "paired" in accordance with a national plan to simplify airborne operation.

6. Instrument Landing System (ILS)

6.1 General

6.1.1 The ILS is designed to provide an approach path for exact alignment and descent of an aircraft on final approach to a runway.

6.1.2 The basic components of an ILS are the localizer, glide slope, and Outer Marker (OM) and, when installed for use with Category II or Category III instrument approach procedures, an Inner Marker (IM).

6.1.3 The system may be divided functionally into three parts:

6.1.3.1 Guidance information: localizer, glide slope.

6.1.3.2 Range information: marker beacon, DME.

6.1.3.3 Visual information: approach lights, touchdown and centerline lights, runway lights.

6.1.4 The following means may be used to substitute for the OM:

6.1.4.1 Compass locator; or

6.1.4.2 Precision Approach Radar (PAR); or

6.1.4.3 Airport Surveillance Radar (ASR); or

6.1.4.4 Distance Measuring Equipment (DME), Very High Frequency Omni−directional Range (VOR), or Nondirectional beacon fixes authorized in the Standard Instrument Approach Procedure; or

6.1.4.5 A suitable RNAV system with Global Positioning System (GPS), capable of fix identification on a Standard Instrument Approach Procedure.

6.1.5 Where a complete ILS system is installed on each end of a runway (i.e., the approach end of runway 4 and the approach end of runway 22), the ILS systems are not in service simultaneously.

6.2 Localizer

6.2.1 The localizer transmitter, operates on one of 40 ILS channels within the frequency range of 108.10 MHz to 111.95 MHz. Signals provide the pilot with course guidance to the runway centerline.

6.2.2 The approach course of the localizer is called the front course and is used with other functional parts; e.g., glide slope, marker beacons, etc. The localizer signal is transmitted at the far end of the runway. It is adjusted for a course width (full scale fly−left to a full scale fly−right) of 700 feet at the runway threshold.

6.2.3 The course line along the extended centerline of a runway, in the opposite direction to the front course, is called the back course.

CAUTION−
Unless your aircraft's ILS equipment includes reverse sensing capability, when flying inbound on the back course it is necessary to steer the aircraft in the direction opposite of the needle deflection on the airborne equipment when making corrections from off−course to on−course. This "flying away from the needle" is also required when flying outbound on the front course of the localizer. Do not use back course signals for approach unless a back course approach procedure is published for that particular runway and the approach is authorized by ATC.

6.2.4 Identification is in Morse Code and consists of a three−letter identifier preceded by the letter I (●●) transmitted on the localizer frequency.

EXAMPLE−
I−DIA

6.2.5 The localizer provides course guidance throughout the descent path to the runway threshold from a distance of 18 NM from the antenna between an altitude of 1,000 feet above the highest terrain along the course line and 4,500 feet above the elevation of the antenna site. Proper off−course indications are provided throughout the following angular areas of the operational service volume:

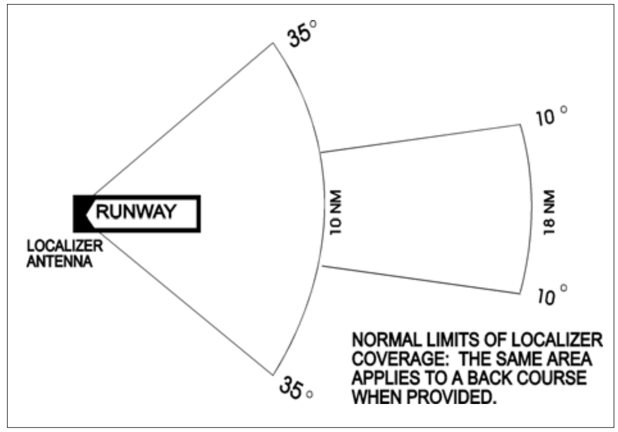
6.2.5.1 To 10° either side of the course along a radius of 18 NM from the antenna.

6.2.5.2 From 10° to 35°either side of the course along a radius of 10 NM. (See FIG ENR 4.1−1.)

6.2.6 Unreliable signals may be received outside these areas.

6.2.7 The areas described in paragraph 6.2.5 and depicted in FIG ENR 4.1−1 represent a Standard Service Volume (SSV) localizer. All charted procedures with localizer coverage beyond the 18 NM SSV have been through the approval process for Expanded Service Volume (ESV), and have been validated by flight inspection.

FIG ENR 4.1−1
Limits of Localizer Coverage



6.3 Localizer−Type Directional Aid

6.3.1 The localizer−type directional aid (LDA) is of comparable use and accuracy to a localizer but is not part of a complete ILS. The LDA course usually provides a more precise approach course than the similar Simplified Directional Facility (SDF) installation, which may have a course width of 6 degrees or 12 degrees.

6.3.2 The LDA is not aligned with the runway. Straight−in minimums may be published where alignment does not exceed 30 degrees between the course and runway. Circling minimums only are published where this alignment exceeds 30 degrees.

6.3.3 A very limited number of LDA approaches also incorporate a glideslope. These are annotated in the plan view of the instrument approach chart with a note, "LDA/Glideslope." These procedures fall under a newly defined category of approaches called Approach with Vertical Guidance (APV) described in ENR 1.5, Paragraph 12., Instrument Approach Procedure Charts, subparagraph 12.1.7.2, Approach with Vertical Guidance (APV). LDA minima for with and without glideslope is provided and annotated on the minima lines of the approach chart as S−LDA/GS and S−LDA. Because the final approach course is not aligned with the runway centerline, additional maneuvering will be required compared to an ILS approach.

6.4 Glide Slope/Glide Path

6.4.1 The UHF glide slope transmitter, operating on one of the 40 ILS channels within the frequency range 329.15 MHz, to 335.00 MHz radiates its signals in the direction of the localizer front course.

CAUTION−
False glide slope signals may exist in the area of the localizer back course approach which can cause the glide slope flag alarm to disappear and present unreliable glide slope information. Disregard all glide slope signal indications when making a localizer back course approach unless a glide slope is specified on the approach and landing chart.

6.4.2 The glide slope transmitter is located between 750 and 1,250 feet from the approach end of the runway (down the runway) and offset 250−600 feet from the runway centerline. It transmits a glide path beam 1.4 degrees wide (vertically).

NOTE−
The term "glide path" means that portion of the glide slope that intersects the localizer.

6.4.3 The glide path projection angle is normally adjusted to 3 degrees above horizontal so that it intersects the middle marker at about 200 feet and the outer marker at about 1,400 feet above the runway elevation. The glide slope is normally usable to the distance of 10 NM. However, at some locations, the glide slope has been certified for an extended service volume which exceeds 10 NM.

6.4.4 Pilots must be alert when approaching glidepath interception. False courses and reverse sensing will occur at angles considerably greater than the published path.

6.4.5 Make every effort to remain on the indicated glide path. Exercise caution: avoid flying below the glide path to assure obstacle/terrain clearance is maintained.

REFERENCE−
14 CFR Section 91.129(e).

6.4.6 A glide slope facility provides descent information for navigation down to the lowest authorized decision height (DH) specified in the approved ILS approach procedure. The glidepath may not be suitable for navigation below the lowest authorized DH and any reference to glidepath indications below that height must be supplemented by visual reference to the runway environment. Glide slopes with no published DH are usable to runway threshold.

6.4.7 The published glide slope threshold crossing height (TCH) DOES NOT represent the height of the actual glide slope on course indication above the runway threshold. It is used as a reference for planning purposes which represents the height above the runway threshold that an aircraft's glide slope antenna should be, if that aircraft remains on a trajectory formed by the four−mile−to−middle marker glidepath segment.

6.4.8 Pilots must be aware of the vertical height between the aircraft's glide slope antenna and the main gear in the landing configuration and, at the DH, plan to adjust the descent angle accordingly if the published TCH indicates the wheel crossing height over the runway threshold may be satisfactory. Tests indicate a comfortable wheel crossing height is approximately 20 to 30 feet, depending on the type of aircraft.

NOTE−
The TCH for a runway is established based on several factors including the largest aircraft category that normally uses the runway, how airport layout affects the glide slope antenna placement, and terrain. A higher than optimum TCH, with the same glide path angle, may cause the aircraft to touch down further from the threshold if the trajectory of the approach is maintained until the flare. Pilots should consider the effect of a high TCH on the runway available for stopping the aircraft.

6.5 Distance Measuring Equipment (DME)

6.5.1 When installed with an ILS and specified in the approach procedure, DME may be used:

6.5.1.1 In lieu of the outer marker.

6.5.1.2 As a back course final approach fix.

6.5.1.3 To establish other fixes on the localizer course.

6.5.2 In some cases, DME from a separate facility may be used within Terminal Instrument Procedures (TERPS) limitations:

6.5.2.1 To provide ARC initial approach segments.

6.5.2.2 As a final approach fix for back course approaches.

6.5.2.3 As a substitute for the outer marker.

6.6 Marker Beacon

6.6.1 ILS marker beacons have a rated power output of 3 watts or less and an antenna array designed to produce an elliptical pattern with dimensions, at 1,000 feet above the antenna, of approximately 2,400 feet in width and 4,200 feet in length. Airborne marker beacon receivers with a selective sensitivity feature should always be operated in the "low" sensitivity position for proper reception of ILS marker beacons.

6.6.2 ILS systems may have an associated OM. An MM is no longer required. Locations with a Category II ILS also have an Inner Marker (IM). Due to advances in both ground navigation equipment and airborne avionics, as well as the numerous means that may be used as a substitute for a marker beacon, the current requirements for the use of marker beacons are:

6.6.2.1 An OM or suitable substitute identifies the Final Approach Fix (FAF) for nonprecision approach (NPA) operations (for example, localizer only); and

6.6.2.2 The MM indicates a position approximately 3,500 feet from the landing threshold. This is also the position where an aircraft on the glide path will be at an altitude of approximately 200 feet above the elevation of the touchdown zone. A MM is no longer operationally required. There are some MMs still in use, but there are no MMs being installed at new ILS sites by the FAA; and

6.6.2.3 An IM, where installed, indicates the point at which an aircraft is at decision height on the glide path during a Category II ILS approach. An IM is only required for CAT II operations that do not have a published radio altitude (RA) minimum.

6.6.3 A back course marker, normally indicates the ILS back course final approach fix where approach descent is commenced.

TBL ENR 4.1−1
Marker Passage Indications

Marker	Code	Light
OM	– – –	BLUE
MM	• – • –	AMBER
IM	• • • •	WHITE
BC	• • • •	WHITE

7. Compass Locator

7.1 Compass locator transmitters are often situated at the middle and outer marker sites. The transmitters have a power of less than 25 watts, a range of at least 15 miles, and operate between 190 and 535 kHz. At some locations, higher−powered radio beacons, up to 400 watts, are used as outer marker compass locators. These generally carry Transcribed Weather Broadcast (TWEB) information.

7.2 Compass locators transmit two−letter identification groups. The outer locator transmits the first two letters of the localizer identification group, and the middle locator transmits the last two letters of the localizer identification group.

8. ILS Frequency

8.1 The frequency pairs in TBL ENR 4.1−2 are allocated for ILS.

TBL ENR 4.1−2
Frequency Pairs Allocated for ILS

Localizer MHz	Glide Slope
108.10	334.70
108.15	334.55
108.3	334.10
108.35	333.95
108.5	329.90
108.55	329.75
108.7	330.50
108.75	330.35
108.9	329.30
108.95	329.15
109.1	331.40
109.15	331.25
109.3	332.00
109.35	331.85
109.50	332.60
109.55	332.45
109.70	333.20
109.75	333.05
109.90	333.80
109.95	333.65
110.1	334.40
110.15	334.25
110.3	335.00
110.35	334.85
110.5	329.60
110.55	329.45
110.70	330.20
110.75	330.05
110.90	330.80
110.95	330.65
111.10	331.70
111.15	331.55
111.30	332.30
111.35	332.15
111.50	332.9
111.55	332.75
111.70	333.5
111.75	333.35
111.90	331.1
111.95	330.95

9. ILS Minimums

9.1 The lowest authorized ILS minimums, with all required ground and airborne systems components operative, are:

9.1.1 Category I. Decision Height (DH) 200 feet and Runway Visual Range (RVR) 2,400 feet (with touchdown zone and centerline lighting, RVR 1,800 feet), or (with Autopilot or FD or HUD, RVR 1,800 feet);

9.1.2 Special Authorization Category I. DH 150 feet and Runway Visual Range (RVR) 1,400 feet, HUD to DH;

9.1.3 Category II. DH 100 feet and RVR 1,200 feet (with autoland or HUD to touchdown and noted on authorization, RVR 1,000 feet);

9.1.4 Special Authorization Category II with Reduced Lighting. DH 100 feet and RVR 1,200 feet with autoland or HUD to touchdown and noted on authorization, (touchdown zone, centerline lighting and ALSF−2 are not required);

9.1.5 Category IIIa. No DH or DH below 100 feet and RVR not less than 700 feet;

9.1.6 Category IIIb. No DH or DH below 50 feet and RVR less than 700 feet but not less than 150 feet; and

9.1.7 Category IIIc. No DH and no RVR limitation.

NOTE−
Special authorization and equipment are required for Category II and III.

10. Inoperative ILS Components

10.1 Inoperative Localizer. When the localizer fails, an ILS approach is not authorized.

10.2 Inoperative Glide Slope. When the glide slope fails, the ILS reverts to a nonprecision localizer approach.

REFERENCE−
See the Inoperative Component Table in the U.S. Government Terminal Procedures Publication (TPP) for adjustments to minimums due to inoperative airborne or ground system equipment.

11. ILS Course Distortion

11.1 All pilots should be aware that disturbance to ILS localizer/glide slope courses may occur when surface vehicles/aircraft are operated near the localizer/glide slope antennas. Most ILS installations are subject to signal interference by either surface vehicles, aircraft, or both. ILS "CRITICAL AREAS" are established near each localizer and glide slope antenna.

11.2 Air traffic control issues control instructions to avoid interfering operations within ILS critical areas at controlled airports during the hours the airport traffic control tower is in operation as follows:

11.2.1 Weather Conditions. Official weather observation is a ceiling of less than 800 feet and/or visibility 2 miles.

11.2.1.1 No critical area protection action is provided.

11.2.1.2 If an aircraft advises the tower that an “AUTOLAND”/“COUPLED” approach will be conducted, an advisory will be promptly issued if a vehicle/aircraft will be in or over a critical area when the arriving aircraft is inside the ILS middle marker.

EXAMPLE−
Critical Area not protected.

11.2.2 Weather Conditions. Less than ceiling 800 feet and/or visibility 2 miles.

11.2.2.1 Glide Slope Critical Area. Do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the ILS outer marker (OM), or the fix used in lieu of the OM, unless the arriving aircraft has reported the runway in sight and is circling or side−stepping to land on another runway.

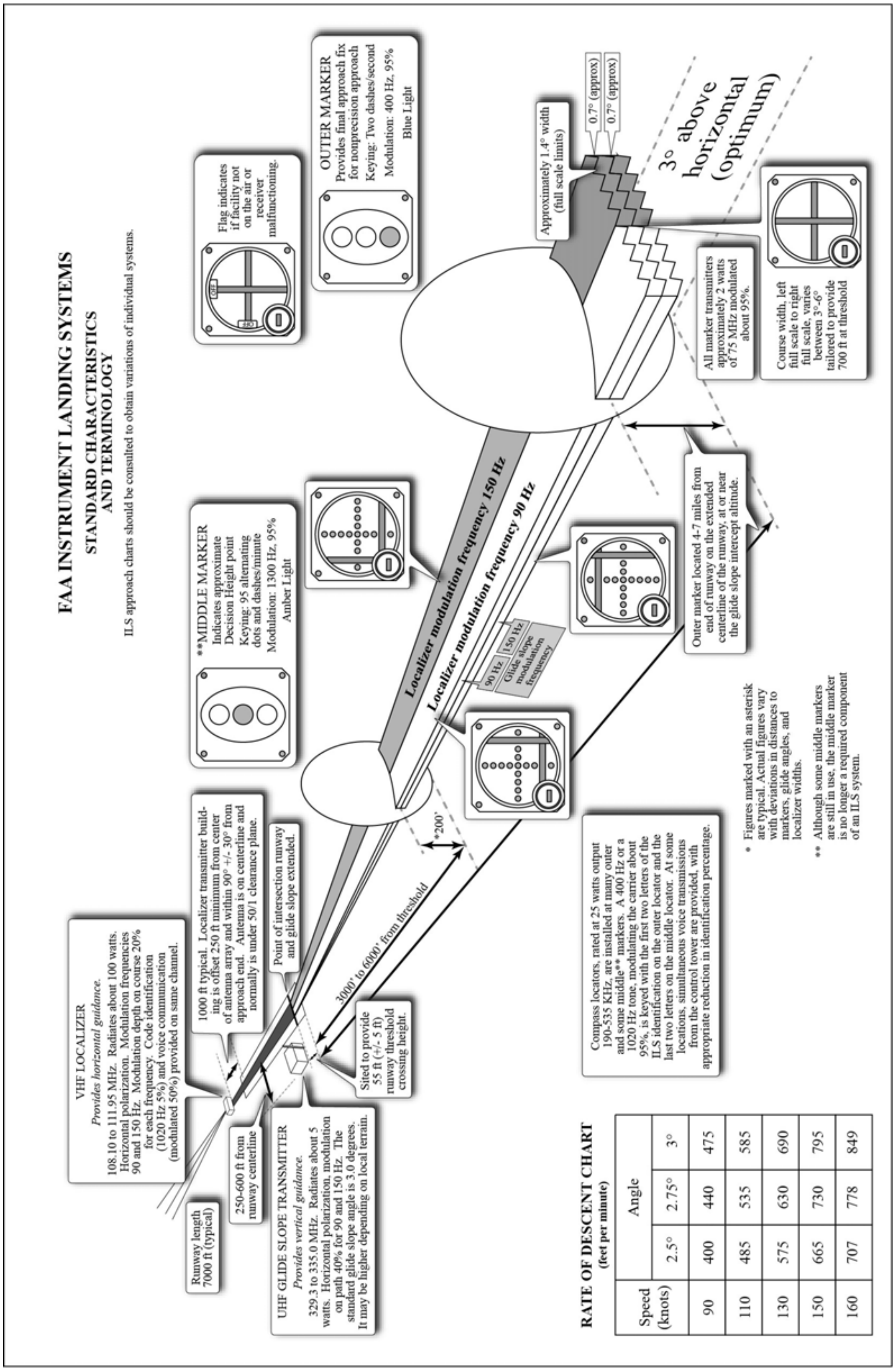
11.2.2.2 Localizer Critical Area. Except for aircraft that land, exit a runway, depart, or execute a missed approach, vehicles and aircraft are not authorized in or over the critical area when an arriving aircraft is inside the outer marker (OM) or the fix used in lieu of the OM. Additionally, whenever the official weather observation is a ceiling of less than 200 feet or RVR less than 2,000 feet, do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the MM, or in the absence of a MM, ½ mile final.

11.3 Aircraft holding below 5000 feet between the outer marker and the airport may cause localizer signal variations for aircraft conducting the ILS approach. Accordingly, such holding is not authorized when weather or visibility conditions are less than ceiling 800 feet and/or visibility 2 miles.

11.4 Pilots are cautioned that vehicular traffic not subject to control by ATC may cause momentary deviation to ILS course/glide slope signals. Also, “critical areas” are not protected at uncontrolled airports or at airports with an operating control tower when weather/visibility conditions are above those requiring protective measures. Aircraft conducting “coupled” or “autoland” operations should be especially alert in monitoring automatic flight control systems. (See FIG ENR 4.1−2.)

NOTE−
Unless otherwise coordinated through Flight Standards, ILS signals to Category I runways are not flight inspected below the point that is 100 feet less than the decision altitude (DA). Guidance signal anomalies may be encountered below this altitude.

FIG ENR 4.1−2
FAA Instrument Landing Systems



12. Continuous Power Facilities

12.1 In order to ensure that a basic ATC system remains in operation despite an area wide or catastrophic commercial power failure, key equipment and certain airports have been designated to provide a network of facilities whose operational capability can be utilized independent of any commercial power supply.

12.2 In addition to those facilities comprising the basic ATC system, the following approach and lighting aids have been included in this program for a selected runway:

12.2.1 ILS (Localizer, Glide Slope, Compass Locator, Inner, Middle and Outer Markers).

12.2.2 Wind Measuring Capability.

12.2.3 Approach Light System (ALS) or Short ALS (SALS).

12.2.4 Ceiling Measuring Capability.

12.2.5 Touchdown Zone Lighting (TDZL).

12.2.6 Centerline Lighting (CL).

12.2.7 Runway Visual Range (RVR).

12.2.8 High Intensity Runway Lighting (HIRL).

12.2.9 Taxiway Lighting.

12.2.10 Apron Light (Perimeter Only).

TBL ENR 4.1−3

Continuous Power Airports	
Airport/Ident	**Runway No.**
Albuquerque (ABQ)	08
Andrews AFB (ADW)	1L
Atlanta (ATL)	9R
Baltimore (BWI)	10
Bismarck (BIS)	31
Boise (BOI)	10R
Boston (BOS)	4R
Charlotte (CLT)	36L
Chicago (ORD)	14R
Cincinnati (CVG)	36
Cleveland (CLE)	5R
Dallas/Fort Worth (DFW)	17L
Denver (DEN)	35R
Des Moines (DSM)	30R
Detroit (DTW)	3L
El Paso (ELP)	22
Great Falls (GTF)	03
Houston (IAH)	08
Indianapolis (IND)	4L
Jacksonville (JAX)	07
Kansas City (MCI)	19
Los Angeles (LAX)	24R
Memphis (MEM)	36L
Miami (MIA)	9L
Milwaukee (MKE)	01
Minneapolis (MSP)	29L
Nashville (BNA)	2L
Newark (EWR)	4R
New Orleans (MSY)	10
New York (JFK)	4R
New York (LGA)	22
Oklahoma City (OKC)	35R
Omaha (OMA)	14
Ontario, California (ONT)	26R
Philadelphia (PHL)	9R
Phoenix (PHX)	08R
Pittsburgh (PIT)	10L
Reno (RNO)	16
Salt Lake City (SLC)	34L
San Antonio (SAT)	12R
San Diego (SAN)	09
San Francisco (SFO)	28R
Seattle (SEA)	16R
St. Louis (STL)	24
Tampa (TPA)	36L
Tulsa (TUL)	35R
Washington (DCA)	36
Washington (IAD)	1R
Wichita (ICT)	01

12.3 The above have been designated "Continuous Power Airports," and have independent back up capability for the equipment installed.

NOTE−
The existing CPA runway is listed. Pending and future changes at some locations will require a revised runway designation.

13. Simplified Directional Facility (SDF)

13.1 The SDF provides a final approach course similar to that of the ILS localizer. It does not provide glide slope information. A clear understanding of the ILS localizer and the additional factors listed below completely describe the operational characteristics and use of the SDF.

13.2 The SDF transmits signals within the range of 108.10 to 111.95 MHz.

13.3 The approach techniques and procedures used in an SDF instrument approach are essentially the same as those employed in executing a standard no−glide−slope localizer approach except the SDF course may not be aligned with the runway and the course may be wider, resulting in less precision.

13.4 Usable off−course indications are limited to 35 degrees either side of the course centerline. Instrument indications received beyond 35 degrees should be disregarded.

13.5 The SDF antenna may be offset from the runway centerline. Because of this, the angle of convergence between the final approach course and the runway bearing should be determined by reference to the instrument approach procedure chart. This angle is generally not more than 3 degrees. However, it should be noted that inasmuch as the approach course originates at the antenna site, an approach which is continued beyond the runway threshold will lead the aircraft to the SDF offset position rather than along the runway centerline.

13.6 The SDF signal is fixed at either 6 degrees or 12 degrees as necessary to provide maximum "fly ability" and optimum course quality.

13.7 Identification consists of a three−letter identifier transmitted in Morse Code on the SDF frequency. The appropriate instrument approach chart will indicate the identifier used at a particular airport.

14. LORAN

NOTE−
In accordance with the 2010 DHS Appropriations Act, the U.S. Coast Guard (USCG) terminated the transmission of all U.S. LORAN−C signals on 08 Feb 2010. The USCG also terminated the transmission of the Russian American signals on 01 Aug 2010, and the Canadian LORAN−C signals on 03 Aug 2010. For more information, visit ***http://www.navcen.uscg.gov****. Operators should also note that TSO−C60b, AIRBORNE AREA NAVIGATION EQUIPMENT USING LORAN−C INPUTS, has been canceled by the FAA.*

15. Inertial Reference Unit (IRU), Inertial Navigation System (INS), and Attitude Heading Reference System (AHRS)

15.1 IRUs are self−contained systems comprised of gyros and accelerometers that provide aircraft attitude (pitch, roll, and heading), position, and velocity information in response to signals resulting from inertial effects on system components. Once aligned with a known position, IRUs continuously calculate position and velocity. IRU position accuracy decays with time. This degradation is known as "drift."

15.2 INSs combine the components of an IRU with an internal navigation computer. By programming a series of waypoints, these systems will navigate along a predetermined track.

15.3 AHRSs are electronic devices that provide attitude information to aircraft systems such as weather radar and autopilot, but do not directly compute position information.

15.4 Aircraft equipped with slaved compass systems may be susceptible to heading errors caused by exposure to magnetic field disturbances (flux fields) found in materials that are commonly located on the surface or buried under taxiways and ramps. These materials generate a magnetic flux field that can be sensed by the aircraft's compass system flux detector or "gate", which can cause the aircraft's system to align with the material's magnetic field rather than the earth's natural magnetic field. The system's erroneous heading may not self-correct. Prior to take off pilots should be aware that a heading misalignment may have occurred during taxi. Pilots are encouraged to follow the manufacturer's or other appropriate procedures to correct possible heading misalignment before take off is commenced.

16. Global Positioning System (GPS)

16.1 System Overview

16.1.1 System Description. The Global Positioning System is a space-based radio navigation system used to determine precise position anywhere in the world. The 24 satellite constellation is designed to ensure at least five satellites are always visible to a user worldwide. A minimum of four satellites is necessary for receivers to establish an accurate three−dimensional position. The receiver uses data from satellites above the mask angle (the lowest angle above the horizon at which a receiver can use a satellite). The Department of Defense (DOD) is responsible for operating the GPS satellite constellation and monitors the GPS satellites to ensure proper operation. Each satellite's orbital parameters (ephemeris data) are sent to each satellite for broadcast as part of the data message embedded in the GPS signal. The GPS coordinate system is the Cartesian earth−centered, earth−fixed coordinates as specified in the World Geodetic System 1984 (WGS−84).

16.1.2 System Availability and Reliability

16.1.2.1 The status of GPS satellites is broadcast as part of the data message transmitted by the GPS satellites. GPS status information is also available by means of the U.S. Coast Guard navigation information service: (703) 313−5907, Internet: **http://www.navcen.uscg.gov/**. Additionally, satellite status is available through the Notice to Airmen (NOTAM) system.

16.1.2.2 GNSS operational status depends on the type of equipment being used. For GPS−only equipment TSO−C129 or TSO-C196(), the operational status of non−precision approach capability for flight planning purposes is provided through a prediction program that is embedded in the receiver or provided separately.

16.1.3 Receiver Autonomous Integrity Monitoring (RAIM). RAIM is the capability of a GPS receiver to perform integrity monitoring on itself by ensuring available satellite signals meet the integrity requirements for a given phase of flight. Without RAIM, the pilot has no assurance of the GPS position integrity. RAIM provides immediate feedback to the pilot. This fault detection is critical for performance-based navigation (PBN)(see ENR 1.17, Performance−Based Navigation (PBN) and Area Navigation (RNAV), for an introduction to PBN), because delays of up to two hours can occur before an erroneous satellite transmission is detected and corrected by the satellite control segment.

16.1.3.1 In order for RAIM to determine if a satellite is providing corrupted information, at least one satellite, in addition to those required for navigation, must be in view for the receiver to perform the RAIM function. RAIM requires a minimum of 5 satellites, or 4 satellites and barometric altimeter input (baro−aiding), to detect an integrity anomaly. Baro−aiding is a method of augmenting the GPS integrity solution by using a non-satellite input source in lieu of the fifth satellite. Some GPS receivers also have a RAIM capability, called fault detection and exclusion (FDE), that excludes a failed satellite from the position solution; GPS receivers capable of FDE require 6 satellites or 5 satellites with baro−aiding. This allows the GPS receiver to isolate the corrupt satellite signal, remove it from the position solution, and still provide an integrity-assured position. To ensure that baro−aiding is available, enter the current altimeter setting into the receiver as described in the operating manual. Do not use the GPS derived altitude due to the large GPS vertical errors that will make the integrity monitoring function invalid.

16.1.3.2 There are generally two types of RAIM fault messages. The first type of message indicates that there are not enough satellites available to provide RAIM integrity monitoring. The GPS navigation solution may be acceptable, but the integrity of the solution cannot be determined. The second type indicates that the RAIM integrity monitor has detected a potential error and that there is an inconsistency in the navigation solution for the given phase of flight. Without RAIM capability, the pilot has no assurance of the accuracy of the GPS position.

16.1.4 Selective Availability. Selective Availability (SA) is a method by which the accuracy of GPS is intentionally degraded. This feature was designed to deny hostile use of precise GPS positioning data. SA was discontinued on May 1, 2000, but many GPS receivers are designed to assume that SA is still active. New receivers may take advantage of the discontinuance of SA based on the performance values in ICAO Annex 10.

16.2 Operational Use of GPS. U.S. civil operators may use approved GPS equipment in oceanic airspace, certain remote areas, the National Airspace System and other States as authorized (please consult the applicable Aeronautical Information Publication). Equipage other than GPS may be required for the desired operation. GPS navigation is used for both Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) operations.

16.2.1 VFR Operations

16.2.1.1 GPS navigation has become an asset to VFR pilots by providing increased navigational capabilities and enhanced situational awareness. Although GPS has provided many benefits to the VFR pilot, care must be exercised to ensure that system capabilities are not exceeded. VFR pilots should integrate GPS navigation with electronic navigation (when possible), as well as pilotage and dead reckoning.

16.2.1.2 GPS receivers used for VFR navigation vary from fully integrated IFR/VFR installation used to support VFR operations to hand−held devices. Pilots must understand the limitations of the receivers prior to using in flight to avoid misusing navigation information. (See TBL ENR 4.1−5.) Most receivers are not intuitive. The pilot must learn the various keystrokes, knob functions, and displays that are used in the operation of the receiver. Some manufacturers provide computer−based tutorials or simulations of their receivers that pilots can use to become familiar with operating the equipment.

16.2.1.3 When using GPS for VFR operations, RAIM capability, database currency, and antenna location are critical areas of concern.

a) RAIM Capability. VFR GPS panel mount receivers and hand−held units have no RAIM alerting capability. This prevents the pilot from being alerted to the loss of the required number of satellites in view, or the detection of a position error. Pilots should use a systematic cross−check with other navigation techniques to verify position. Be suspicious of the GPS position if a disagreement exists between the two positions.

b) Database Currency. Check the currency of the database. Databases must be updated for IFR operations and should be updated for all other operations. However, there is no requirement for databases to be updated for VFR navigation. It is not recommended to use a moving map with an outdated database in and around critical airspace. Pilots using an outdated database should verify waypoints using current aeronautical products; for example, Chart Supplement U.S., Sectional Chart, or En Route Chart.

c) Antenna Location. The antenna location for GPS receivers used for IFR and VFR operations may differ. VFR antennae are typically placed for convenience more than performance, while IFR installations ensure a clear view is provided with the satellites. Antennae not providing a clear view have a greater opportunity to lose the satellite navigational signal. This is especially true in the case of hand−held GPS receivers. Typically, suction cups are used to place the GPS antennas on the inside of cockpit windows. While this method has great utility, the antenna location is limited to the cockpit or cabin which rarely provides a clear view of all available satellites. Consequently, signal losses may occur due to aircraft structure blocking satellite signals, causing a loss of navigation capability. These losses, coupled with a lack of RAIM capability, could present erroneous position and navigation information with no warning to the pilot. While the use of a hand−held GPS for VFR operations is not limited by regulation, modification of the aircraft, such as installing a panel− or yoke−mounted holder, is governed by 14 CFR Part 43. Consult with your mechanic to ensure compliance with the regulation and safe installation.

16.2.1.4 Do not solely rely on GPS for VFR navigation. No design standard of accuracy or integrity is used for a VFR GPS receiver. VFR GPS receivers should be used in conjunction with other forms of navigation during VFR operations to ensure a correct route of flight is maintained. Minimize head−down time in the aircraft by being familiar with your GPS receiver's operation and by keeping eyes outside scanning for traffic, terrain, and obstacles.

16.2.1.5 VFR Waypoints

a) VFR waypoints provide VFR pilots with a supplementary tool to assist with position awareness while navigating visually in aircraft equipped with area navigation receivers. VFR waypoints should be used as a tool to supplement current navigation procedures. The uses of VFR waypoints include providing navigational aids for pilots unfamiliar with an area, waypoint definition of existing reporting points, enhanced navigation in and around Class B and Class C airspace, and enhanced navigation around Special Use Airspace. VFR pilots should rely on appropriate and current aeronautical charts published specifically for visual navigation. If operating in a terminal area, pilots should take advantage of the Terminal Area Chart available for that area, if published. The use of VFR waypoints does not relieve the pilot of any responsibility to comply with the operational requirements of 14 CFR Part 91.

b) VFR waypoint names (for computer−entry and flight plans) consist of five letters beginning with the letters "VP" and are retrievable from navigation databases. The VFR waypoint names are not intended to be pronounceable, and they are not for use in ATC communications. On VFR charts, stand−alone VFR waypoints will be portrayed using the same four−point star symbol used for IFR waypoints. VFR waypoints collocated with visual check points on the chart will be identified by small magenta flag symbols. VFR waypoints collocated with visual check points will be pronounceable based on the name of the visual check point and may be used for ATC communications. Each VFR waypoint name will appear in parentheses adjacent to the geographic location on the chart. Latitude/longitude data for all established VFR waypoints may be found in the appropriate regional Chart Supplement U.S.

c) VFR waypoints may not be used on IFR flight plans. VFR waypoints are not recognized by the IFR system and will be rejected for IFR routing purposes.

d) Pilots may use the five−letter identifier as a waypoint in the route of flight section on a VFR flight plan. Pilots may use the VFR waypoints only when operating under VFR conditions. The point may represent an intended course change or describe the planned route of flight. This VFR filing would be similar to how a VOR would be used in a route of flight.

e) VFR waypoints intended for use during flight should be loaded into the receiver while on the ground. Once airborne, pilots should avoid programming routes or VFR waypoint chains into their receivers.

f) Pilots should be vigilant to see and avoid other traffic when near VFR waypoints. With the increased use of GPS navigation and accuracy, expect increased traffic near VFR waypoints. Regardless of the class of airspace, monitor the available ATC frequency for traffic information on other aircraft operating in the vicinity. See ENR 1.17, Paragraph 2. VFR in Congested Areas, for more information.

16.2.2 IFR Use of GPS

16.2.2.1 General Requirements. Authorization to conduct any GPS operation under IFR requires:

a) GPS navigation equipment used for IFR operations must be approved in accordance with the requirements specified in Technical Standard Order (TSO) TSO−C129(), TSO−C196(), TSO−C145(), or TSO−C146(), and the installation must be done in accordance with Advisory Circular AC 20−138(), *Airworthiness Approval of Positioning and Navigation Systems*. Equipment approved in accordance with TSO−C115a does not meet the requirements of TSO−C129. Visual flight rules (VFR) and hand−held GPS systems are not authorized for IFR navigation, instrument approaches, or as a principal instrument flight reference.

b) Aircraft using un-augmented GPS (TSO-C129() or TSO-C196()) for navigation under IFR must be equipped with an alternate approved and operational means of navigation suitable for navigating the proposed route of flight. (Examples of alternate navigation equipment include VOR or DME/DME/IRU capability). Active monitoring of alternative navigation equipment is not required when RAIM is available for integrity monitoring. Active monitoring of an alternate means of navigation is required when the GPS RAIM capability is lost.

c) Procedures must be established for use in the event that the loss of RAIM capability is predicted to occur. In situations where RAIM is predicted to be unavailable, the flight must rely on other approved navigation equipment, re-route to where RAIM is available, delay departure, or cancel the flight.

d) The GPS operation must be conducted in accordance with the FAA−approved aircraft flight manual (AFM) or flight manual supplement. Flight crew members must be thoroughly familiar with the particular GPS equipment installed in the aircraft, the receiver operation manual, and the AFM or flight manual supplement. Operation, receiver presentation and capabilities of GPS equipment vary. Due to these differences, operation of GPS receivers of different brands, or even models of the same brand, under IFR should not be attempted without thorough operational knowledge. Most receivers have a built−in simulator mode, which allows the pilot to become familiar with operation prior to attempting operation in the aircraft.

e) Aircraft navigating by IFR−approved GPS are considered to be performance−based navigation (PBN) aircraft and have special equipment suffixes. File the appropriate equipment suffix in accordance with TBL ENR 1.10−3 on the ATC flight plan. If GPS avionics become inoperative, the pilot should advise ATC and amend the equipment suffix.

f) Prior to any GPS IFR operation, the pilot must review appropriate NOTAMs and aeronautical information. (See GPS NOTAMs/Aeronautical Information).

16.2.2.2 Database Requirements. The onboard navigation data must be current and appropriate for the region of intended operation and should include the navigation aids, waypoints, and relevant coded terminal airspace procedures for the departure, arrival, and alternate airfields.

a) Further database guidance for terminal and en route requirements may be found in AC 90-100, U.S. Terminal and En Route Area Navigation (RNAV) Operations.

b) Further database guidance on Required Navigation Performance (RNP) instrument approach operations, RNP terminal, and RNP en route requirements may be found in AC 90-105, Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System.

c) All approach procedures to be flown must be retrievable from the current airborne navigation database supplied by the equipment manufacturer or other FAA−approved source. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints. Manual entry of waypoints using latitude/longitude or place/bearing is not permitted for approach procedures.

d) Prior to using a procedure or waypoint retrieved from the airborne navigation database, the pilot should verify the validity of the database. This verification should include the following preflight and inflight steps:

1) Preflight:

(a) Determine the date of database issuance, and verify that the date/time of proposed use is before the expiration date/time.

(b) Verify that the database provider has not published a notice limiting the use of the specific waypoint or procedure.

2) Inflight:

(a) Determine that the waypoints and transition names coincide with names found on the procedure chart. Do not use waypoints which do not exactly match the spelling shown on published procedure charts.

(b) Determine that the waypoints are logical in location, in the correct order, and their orientation to each other is as found on the procedure chart, both laterally and vertically.

NOTE−
There is no specific requirement to check each waypoint latitude and longitude, type of waypoint and/or altitude constraint, only the general relationship of waypoints in the procedure, or the logic of an individual waypoint's location.

(c) If the cursory check of procedure logic or individual waypoint location, specified in [b] above, indicates a potential error, do not use the retrieved procedure or waypoint until a verification of latitude and longitude, waypoint type, and altitude constraints indicate full conformity with the published data.

e) Air carrier and commercial operators must meet the appropriate provisions of their approved operations specifications.

1) During domestic operations for commerce or for hire, operators must have a second navigation system capable of reversion or contingency operations.

2) Operators must have two independent navigation systems appropriate to the route to be flown, or one system that is suitable and a second, independent backup capability that allows the operator to proceed safely and land at a different airport, and the aircraft must have sufficient fuel (reference 14 CFR 121.349, 125.203, 129.17, and 135.165). These rules ensure the safety of the operation by preventing a single point of failure.

NOTE−
An aircraft approved for multi-sensor navigation and equipped with a single navigation system must maintain an ability to navigate or proceed safely in the event that any one component of the navigation system fails, including the flight management system (FMS). Retaining a FMS-independent VOR capability would satisfy this requirement.

3) The requirements for a second system apply to the entire set of equipment needed to achieve the navigation capability, not just the individual components of the system such as the radio navigation receiver. For example, to use two RNAV systems (e.g., GPS and DME/DME/IRU) to comply with the requirements, the aircraft must be equipped with two independent radio navigation receivers and two independent navigation computers (e.g., flight management systems (FMS)). Alternatively, to comply with the requirements using a single RNAV system with an installed and operable VOR capability, the VOR capability must be independent of the FMS.

4) To satisfy the requirement for two independent navigation systems, if the primary navigation system is GPS−based, the second system must be independent of GPS (for example, VOR or DME/DME/IRU). This allows continued navigation in case of failure of the GPS or WAAS services. Recognizing that GPS interference and test events resulting in the loss of GPS services have become more common, the FAA requires operators conducting IFR operations under 14 CFR 121.349, 125.203, 129.17 and 135.65 to retain a non-GPS navigation capability consisting of either DME/DME, IRU, or VOR for en route and terminal operations, and VOR and ILS for final approach. Since this system is to be used as a reversionary capability, single equipage is sufficient.

16.2.3 Oceanic, Domestic, En Route, and Terminal Area Operations

16.2.3.1 Conduct GPS IFR operations in oceanic areas only when approved avionics systems are installed. TSO−C196 users and TSO−C129 GPS users authorized for Class A1, A2, B1, B2, C1, or C2 operations may use GPS in place of another approved means of long−range navigation, such as dual INS. (See TBL ENR 4.1−4 and TBL ENR 4.1−5.) Aircraft with a single installation GPS, meeting the above specifications, are authorized to operate on short oceanic routes requiring one means of long−range navigation (reference AC 20-138, Appendix 1).

16.2.3.2 Conduct GPS domestic, en route, and terminal IFR operations only when approved avionics systems are installed. Pilots may use GPS via TSO−C129 authorized for Class A1, B1, B3, C1, or C3 operations GPS via TSO-C196; or GPS/WAAS with either TSO-C145 or TSO-C146. When using TSO-C129 or TSO-C196 receivers, the avionics necessary to receive all of the ground−based facilities appropriate for the route to the destination airport and any required alternate airport must be installed and operational. Ground−based facilities necessary for these routes must be operational.

a) GPS en route IFR operations may be conducted in Alaska outside the operational service volume of ground−based navigation aids when a TSO−C145 or TSO−C146 GPS/wide area augmentation system (WAAS) system is installed and operating. WAAS is the U.S. version of a satellite-based augmentation system (SBAS).

1) In Alaska, aircraft may operate on GNSS Q-routes with GPS (TSO-C129 or TSO-C196) equipment while the aircraft remains in Air Traffic Control (ATC) radar surveillance or with GPS/WAAS (TSO-C145 or TSO-C146) which does not require ATC radar surveillance.

2) In Alaska, aircraft may only operate on GNSS T-routes with GPS/WAAS (TSO-C145 or TSO-C146) equipment.

b) Ground−based navigation equipment is not required to be installed and operating for en route IFR operations when using GPS/WAAS navigation systems. All operators should ensure that an alternate means of navigation is available in the unlikely event the GPS/WAAS navigation system becomes inoperative.

c) Q-routes and T-routes outside Alaska. Q-routes require system performance currently met by GPS, GPS/WAAS, or DME/DME/IRU RNAV systems that satisfy the criteria discussed in AC 90−100, U.S. Terminal and En Route Area Navigation (RNAV) Operations. T-routes require GPS or GPS/WAAS equipment.

REFERENCE−
ENR 3.5, Paragraph 1. Airways and Route Systems

16.2.3.3 GPS IFR approach/departure operations can be conducted when approved avionics systems are installed and the following requirements are met:

a) The aircraft is TSO−C145 or TSO−C146 or TSO−C196 or TSO−C129 in Class A1, B1, B3, C1, or C3; and

b) The approach/departure must be retrievable from the current airborne navigation database in the navigation computer. The system must be able to retrieve the procedure by name from the aircraft navigation database. Manual entry of waypoints using latitude/longitude or place/bearing is not permitted for approach procedures.

c) The authorization to fly instrument approaches/departures with GPS is limited to U.S. airspace.

d) The use of GPS in any other airspace must be expressly authorized by the FAA Administrator.

e) GPS instrument approach/departure operations outside the U.S. must be authorized by the appropriate sovereign authority.

16.2.4 Departures and Instrument Departure Procedures (DPs)

The GPS receiver must be set to terminal (±1 NM) CDI sensitivity and the navigation routes contained in the database in order to fly published IFR charted departures and DPs. Terminal RAIM should be automatically provided by the receiver. (Terminal RAIM for departure may not be available unless the waypoints are part of the active flight plan rather than proceeding direct to the first destination.) Certain segments of a DP may require some manual intervention by the pilot, especially when radar vectored to a course or required to intercept a specific course to a waypoint. The database may not contain all of the transitions or departures from all runways and some GPS receivers do not contain DPs in the database. It is necessary that helicopter procedures be flown at 70 knots or less since helicopter departure procedures and missed approaches use a 20:1 obstacle clearance surface (OCS), which is double the fixed−wing OCS, and turning areas are based on this speed as well.

16.2.5 GPS Instrument Approach Procedures

16.2.5.1 GPS overlay approaches are designated non−precision instrument approach procedures that pilots are authorized to fly using GPS avionics. Localizer (LOC), localizer type directional aid (LDA), and simplified directional facility (SDF) procedures are not authorized. Overlay procedures are identified by the "name of the procedure" and "or GPS" (e.g., VOR/DME or GPS RWY 15) in the title. Authorized procedures must be retrievable from a current onboard navigation database. The navigation database may also enhance position orientation by displaying a map containing information on conventional NAVAID approaches. This approach information should not be confused with a GPS overlay approach (see the receiver operating manual, AFM, or AFM Supplement for details on how to identify these approaches in the navigation database).

NOTE−
Overlay approaches do not adhere to the design criteria described in ENR 1.5 Paragraph 12.13, Area Navigation (RNAV) Instrument Approach Charts, for stand−alone GPS approaches. Overlay approach criteria is based on the design criteria used for ground−based NAVAID approaches.

16.2.5.2 Stand−alone approach procedures specifically designed for GPS systems have replaced many of the original overlay approaches. All approaches that contain "GPS" in the title (e.g., "VOR or GPS RWY 24," "GPS RWY 24," or "RNAV (GPS) RWY 24") can be flown using GPS. GPS−equipped aircraft do not need underlying ground−based NAVAIDs or associated aircraft avionics to fly the approach. Monitoring the underlying approach with ground−based NAVAIDs is suggested when able. Existing overlay approaches may be requested using the GPS title; for example, the VOR or GPS RWY 24 may be requested as "GPS RWY 24." Some GPS procedures have a Terminal Arrival Area (TAA) with an underlining RNAV approach.

16.2.5.3 For flight planning purposes, TSO-C129 and TSO-C196−equipped users (GPS users) whose navigation systems have fault detection and exclusion (FDE) capability, who perform a preflight RAIM prediction for the approach integrity at the airport where the RNAV (GPS) approach will be flown, and have proper knowledge and any required training and/or approval to conduct a GPS-based IAP, may file based on a GPS−based IAP at either the destination or the alternate airport, but not at both locations. At the alternate airport, pilots may plan for:

a) Lateral navigation (LNAV) or circling minimum descent altitude (MDA);

b) LNAV/vertical navigation (LNAV/VNAV) DA, if equipped with and using approved barometric vertical navigation (baro-VNAV) equipment;

c) RNP 0.3 DA on an RNAV (RNP) IAP, if they are specifically authorized users using approved baro-VNAV equipment and the pilot has verified required navigation performance (RNP) availability through an approved prediction program.

16.2.5.4 If the above conditions cannot be met, any required alternate airport must have an approved instrument approach procedure other than GPS−based that is anticipated to be operational and available at the estimated time of arrival, and which the aircraft is equipped to fly.

16.2.5.5 Procedures for Accomplishing GPS Approaches

a) An RNAV (GPS) procedure may be associated with a Terminal Arrival Area (TAA). The basic design of the RNAV procedure is the "T" design or a modification of the "T" (See ENR 1.5, Paragraph 12.4, Terminal Arrival Area (TAA), for complete information).

b) Pilots cleared by ATC for an RNAV (GPS) approach should fly the full approach from an Initial Approach Waypoint (IAWP) or feeder fix. Randomly joining an approach at an intermediate fix does not assure terrain clearance.

c) When an approach has been loaded in the navigation system, GPS receivers will give an "arm" annunciation 30 NM straight line distance from the airport/heliport reference point. Pilots should arm the approach mode at this time if not already armed (some receivers arm automatically). Without arming, the receiver will not change from en route CDI and RAIM sensitivity of ±5 NM either side of centerline to ±1 NM terminal sensitivity. Where the IAWP is inside this 30 mile point, a CDI sensitivity change will occur once the approach mode is armed and the aircraft is inside 30 NM. Where the IAWP is beyond 30 NM from the airport/heliport reference point and the approach is armed, the CDI sensitivity will not change until the aircraft is within 30 miles of the airport/heliport reference point. Feeder route obstacle clearance is predicated on the receiver being in terminal (±1 NM) CDI sensitivity and RAIM within 30 NM of the airport/heliport reference point; therefore, the receiver should always be armed (if required) not later than the 30 NM annunciation.

d) The pilot must be aware of what bank angle/turn rate the particular receiver uses to compute turn anticipation, and whether wind and airspeed are included in the receiver's calculations. This information should be in the receiver operating manual. Over or under banking the turn onto the final approach course may significantly delay getting on course and may result in high descent rates to achieve the next segment altitude.

e) When within 2 NM of the Final Approach Waypoint (FAWP) with the approach mode armed, the approach mode will switch to active, which results in RAIM and CDI changing to approach sensitivity. Beginning 2 NM prior to the FAWP, the full scale CDI sensitivity will smoothly change from ±1 NM to ±0.3 NM at the FAWP. As sensitivity changes from ±1 NM to ±0.3 NM approaching the FAWP, with the CDI not centered, the corresponding increase in CDI displacement may give the impression that the aircraft is moving further away from the intended course even though it is on an acceptable intercept heading. Referencing the digital track displacement information (cross track error), if it is available in the approach mode, may help the pilot remain position oriented in this situation. Being established on the final approach course prior to the beginning of the sensitivity change at 2 NM will help prevent problems in interpreting the CDI display during ramp down. Therefore, requesting or accepting vectors which will cause the aircraft to intercept the final approach course within 2 NM of the FAWP is not recommended.

f) When receiving vectors to final, most receiver operating manuals suggest placing the receiver in the non−sequencing mode on the FAWP and manually setting the course. This provides an extended final approach course in cases where the aircraft is vectored onto the final approach course outside of any existing segment which is aligned with the runway. Assigned altitudes must be maintained until established on a published segment of the approach. Required altitudes at waypoints outside the FAWP or stepdown fixes must be considered. Calculating the distance to the FAWP may be required in order to descend at the proper location.

g) Overriding an automatically selected sensitivity during an approach will cancel the approach mode annunciation. If the approach mode is not armed by 2 NM prior to the FAWP, the approach mode will not become active at 2 NM prior to the FAWP, and the equipment will flag. In these conditions, the RAIM and CDI sensitivity will not ramp down, and the pilot should not descend to MDA, but fly to the MAWP and execute a missed approach. The approach active annunciator and/or the receiver should be checked to ensure the approach mode is active prior to the FAWP.

h) Do not attempt to fly an approach unless the procedure in the onboard database is current and identified as "GPS" on the approach chart. The navigation database may contain information about non−overlay approach procedures that enhances position orientation generally by providing a map, while flying these approaches using conventional NAVAIDs. This approach information should not be confused with a GPS overlay approach (see the receiver operating manual, AFM, or AFM Supplement for details on how to identify these procedures in the navigation database). Flying point to point on the approach does not assure compliance with the published approach procedure. The proper RAIM sensitivity will not be available and the CDI sensitivity will not automatically change to ±0.3 NM. Manually setting CDI sensitivity does not automatically change the RAIM sensitivity on some receivers. Some existing non−precision approach procedures cannot be coded for use with GPS and will not be available as overlays.

i) Pilots should pay particular attention to the exact operation of their GPS receivers for performing holding patterns and in the case of overlay approaches, operations such as procedure turns. These procedures may require manual intervention by the pilot to stop the sequencing of waypoints by the receiver and to resume automatic GPS navigation sequencing once the maneuver is complete. The same waypoint may appear in the route of flight more than once consecutively (for example, IAWP, FAWP, MAHWP on a procedure turn). Care must be exercised to ensure that the receiver is sequenced to the appropriate waypoint for the segment of the procedure being flown, especially if one or more fly−overs are skipped (for example, FAWP rather than IAWP if the procedure turn is not flown). The pilot may have to sequence past one or more fly−overs of the same waypoint in order to start GPS automatic sequencing at the proper place in the sequence of waypoints.

j) Incorrect inputs into the GPS receiver are especially critical during approaches. In some cases, an incorrect entry can cause the receiver to leave the approach mode.

k) A fix on an overlay approach identified by a DME fix will not be in the waypoint sequence on the GPS receiver unless there is a published name assigned to it. When a name is assigned, the along track distance (ATD) to the waypoint may be zero rather than the DME stated on the approach chart. The pilot should be alert for this on any overlay procedure where the original approach used DME.

l) If a visual descent point (VDP) is published, it will not be included in the sequence of waypoints. Pilots are expected to use normal piloting techniques for beginning the visual descent, such as ATD.

m) Unnamed stepdown fixes in the final approach segment may or may not be coded in the waypoint sequence of the aircraft's navigation database and must be identified using ATD. Stepdown fixes in the final approach segment of RNAV (GPS) approaches are being named, in addition to being identified by ATD. However, GPS avionics may or may not accommodate waypoints between the FAF and MAP. Pilots must know the capabilities of their GPS equipment and continue to identify stepdown fixes using ATD when necessary.

16.2.5.6 Missed Approach

a) A GPS missed approach requires pilot action to sequence the receiver past the MAWP to the missed approach portion of the procedure. The pilot must be thoroughly familiar with the activation procedure for the particular GPS receiver installed in the aircraft and must initiate appropriate action after the MAWP. Activating the missed approach prior to the MAWP will cause CDI sensitivity to immediately change to terminal (±1NM) sensitivity and the receiver will continue to navigate to the MAWP. The receiver will not sequence past the MAWP. Turns should not begin prior to the MAWP. If the missed approach is not activated, the GPS receiver will display an extension of the inbound final approach course and the ATD will increase from the MAWP until it is manually sequenced after crossing the MAWP.

b) Missed approach routings in which the first track is via a course rather than direct to the next waypoint require additional action by the pilot to set the course. Being familiar with all of the inputs required is especially critical during this phase of flight.

16.2.5.7 GPS NOTAMs/Aeronautical Information

a) GPS satellite outages are issued as GPS NOTAMs both domestically and internationally. However, the effect of an outage on the intended operation cannot be determined unless the pilot has a RAIM availability prediction program which allows excluding a satellite which is predicted to be out of service based on the NOTAM information.

b) The terms UNRELIABLE and MAY NOT BE AVAILABLE are used in conjunction with GPS NOTAMs. Both UNRELIABLE and MAY NOT BE AVAILABLE are advisories to pilots indicating the expected level of service may not be available. UNRELIABLE does not mean there is a problem with GPS signal integrity. If GPS service is available, pilots may continue operations. If the LNAV or LNAV/VNAV service is available, pilots may use the displayed level of service to fly the approach. GPS operation may be NOTAMed UNRELIABLE or MAY NOT BE AVAILABLE due to testing or anomalies. (Pilots are encouraged to report GPS anomalies, including degraded operation and/or loss of service, as soon as possible, reference ENR 4.1 paragraph 22.) When GPS testing NOTAMS are published and testing is actually occurring, Air Traffic Control will advise pilots requesting or cleared for a GPS or RNAV (GPS) approach that GPS may not be available and request intentions. If pilots have reported GPS anomalies, Air Traffic Control will request the pilot's intentions and/or clear the pilot for an alternate approach, if available and operational.

EXAMPLE−
The following is an example of a GPS testing NOTAM:
*!GPS **06/001** ZAB NAV GPS (INCLUDING WAAS, GBAS, AND ADS-B) MAY NOT BE AVAILABLE WITHIN A 468NM RADIUS CENTERED AT 330702N1062540W (TCS 093044) FL400-UNL DECREASING IN AREA WITH A DECREASE IN ALTITUDE DEFINED AS: 425NM RADIUS AT FL250, 360NM RADIUS AT 10000FT, 354NM RADIUS AT 4000FT AGL, 327NM RADIUS AT 50FT AGL. 1406070300-1406071200.*

c) Civilian pilots may obtain GPS RAIM availability information for non−precision approach procedures by using a manufacturer-supplied RAIM prediction tool, or using the Service Availability Prediction Tool (SAPT) on the FAA en route and terminal RAIM prediction website. Pilots can also request GPS RAIM aeronautical information from a flight service station during preflight briefings. GPS RAIM aeronautical information can be obtained for a period of 3 hours (for example, if you are scheduled to arrive at 1215 hours, then the GPS RAIM information is available from 1100 to 1400 hours) or a 24−hour timeframe at a particular airport. FAA briefers will provide RAIM information for a period of 1 hour before to 1 hour after the ETA hour, unless a specific timeframe is requested by the pilot. If flying a published GPS departure, a RAIM prediction should also be requested for the departure airport.

d) The military provides airfield specific GPS RAIM NOTAMs for non−precision approach procedures at military airfields. The RAIM outages are issued as M−series NOTAMs and may be obtained for up to 24 hours from the time of request.

e) Receiver manufacturers and/or database suppliers may supply "NOTAM" type information concerning database errors. Pilots should check these sources, when available, to ensure that they have the most current information concerning their electronic database.

16.2.5.8 Receiver Autonomous Integrity Monitoring (RAIM)

a) RAIM outages may occur due to an insufficient number of satellites or due to unsuitable satellite geometry which causes the error in the position solution to become too large. Loss of satellite reception and RAIM warnings may occur due to aircraft dynamics (changes in pitch or bank angle). Antenna location on the aircraft, satellite position relative to the horizon, and aircraft attitude may affect reception of one or more satellites. Since the relative positions of the satellites are constantly changing, prior experience with the airport does not guarantee reception at all times, and RAIM availability should always be checked.

b) If RAIM is not available, use another type of navigation and approach system, select another route or destination, or delay the trip until RAIM is predicted to be available on arrival. On longer flights, pilots should consider rechecking the RAIM prediction for the destination during the flight. This may provide an early indication that an unscheduled satellite outage has occurred since takeoff.

c) If a RAIM failure/status annunciation occurs prior to the final approach waypoint (FAWP), the approach should not be completed since GPS no longer provides the required integrity. The receiver performs a RAIM prediction by 2 NM prior to the FAWP to ensure that RAIM is available as a condition for entering the approach mode. The pilot should ensure the receiver has sequenced from "Armed" to "Approach" prior to the FAWP (normally occurs 2 NM prior). Failure to sequence may be an indication of the detection of a satellite anomaly, failure to arm the receiver (if required), or other problems which preclude flying the approach.

d) If the receiver does not sequence into the approach mode or a RAIM failure/status annunciation occurs prior to the FAWP, the pilot must not initiate the approach or descend, but instead proceed to the missed approach waypoint (MAWP) via the

FAWP, perform a missed approach, and contact ATC as soon as practical. The GPS receiver may continue to operate after a RAIM flag/status annunciation appears, but the navigation information should be considered advisory only. Refer to the receiver operating manual for specific indications and instructions associated with loss of RAIM prior to the FAF.

e) If the RAIM flag/status annunciation appears after the FAWP, the pilot should initiate a climb and execute the missed approach. The GPS receiver may continue to operate after a RAIM flag/status annunciation appears, but the navigation information should be considered advisory only. Refer to the receiver operating manual for operating mode information during a RAIM annunciation.

16.2.5.9 Waypoints

a) GPS receivers navigate from one defined point to another retrieved from the aircraft's onboard navigational database. These points are waypoints (5-letter pronounceable name), existing VHF intersections, DME fixes with 5−letter pronounceable names and 3-letter NAVAID IDs. Each waypoint is a geographical location defined by a latitude/longitude geographic coordinate. These 5−letter waypoints, VHF intersections, 5−letter pronounceable DME fixes and 3−letter NAVAID IDs are published on various FAA aeronautical navigation products (IFR En Route Charts, VFR Charts, Terminal Procedures Publications, etc.).

b) A Computer Navigation Fix (CNF) is also a point defined by a latitude/longitude coordinate and is required to support Performance−Based Navigation (PBN) operations. The GPS receiver uses CNFs in conjunction with waypoints to navigate from point to point. However, CNFs are not recognized by ATC. ATC does not maintain CNFs in their database and they do not use CNFs for any air traffic control purpose. CNFs may or may not be charted on FAA aeronautical navigation products, are listed in the chart legends, and are for advisory purposes only. Pilots are not to use CNFs for point to point navigation (proceed direct), filing a flight plan, or in aircraft/ATC communications. CNFs that do appear on aeronautical charts allow pilots increased situational awareness by identifying points in the aircraft database route of flight with points on the aeronautical chart. CNFs are random five-letter identifiers, not pronounceable like waypoints and placed in parenthesis. Eventually, all CNFs will begin with the letters "CF" followed by three consonants (for example, CFWBG). This five-letter identifier will be found next to an "x" on en route charts and possibly on an approach chart. On instrument approach procedures (charts) in the terminal procedures publication, CNFs may represent unnamed DME fixes, beginning and ending points of DME arcs, and sensor (ground-based signal i.e., VOR, NDB, ILS) final approach fixes on GPS overlay approaches. These CNFs provide the GPS with points on the procedure that allow the overlay approach to mirror the ground-based sensor approach. These points should only be used by the GPS system for navigation and should not be used by pilots for any other purpose on the approach. The CNF concept has not been adopted or recognized by the International Civil Aviation Organization (ICAO).

c) GPS approaches use fly−over and fly−by waypoints to join route segments on an approach. Fly−by waypoints connect the two segments by allowing the aircraft to turn prior to the current waypoint in order to roll out on course to the next waypoint. This is known as turn anticipation and is compensated for in the airspace and terrain clearances. The MAWP and the missed approach holding waypoint (MAHWP) are normally the only two waypoints on the approach that are not fly−by waypoints. Fly−over waypoints are used when the aircraft must overfly the waypoint prior to starting a turn to the new course. The symbol for a fly-over waypoint is a circled waypoint. Some waypoints may have dual use; for example, as a fly−by waypoint when used as an IF for a NoPT route and as a fly-over waypoint when the same waypoint is also used as an IAF/IF hold-in-lieu of PT. When this occurs, the less restrictive (fly-by) symbology will be charted. Overlay approach charts and some early stand−alone GPS approach charts may not reflect this convention.

d) Unnamed waypoints for each airport will be uniquely identified in the database. Although the identifier may be used at different airports (for example, RW36 will be the identifier at each airport with a runway 36), the actual point, at each airport, is defined by a specific latitude/longitude coordinate.

e) The runway threshold waypoint, normally the MAWP, may have a five−letter identifier (for example, SNEEZ) or be coded as RW## (for example, RW36, RW36L). MAWPs located at the runway threshold are being changed to the RW## identifier, while MAWPs not located at the threshold will have a five−letter identifier. This may cause the approach chart to differ from the aircraft database until all changes are complete. The runway threshold waypoint is also used as the center of the Minimum Safe Altitude (MSA) on most GPS approaches.

16.2.5.10 Position Orientation

Pilots should pay particular attention to position orientation while using GPS. Distance and track information are provided to the next active waypoint, not to a fixed navigation aid. Receivers may sequence when the pilot is not flying along an active route, such as when being vectored or deviating for weather, due to the proximity to another waypoint in the route. This can be prevented by placing the receiver in the non-sequencing mode. When the receiver is in the non-sequencing mode, bearing and distance are provided to the selected waypoint and the receiver will not sequence to the next waypoint in the route until placed back in the auto sequence mode or the pilot selects a different waypoint. The pilot may have to compute the ATD to stepdown fixes and other points on overlay approaches, due to the receiver showing ATD to the next waypoint rather than DME to the VOR or ILS ground station.

16.2.5.11 Impact of Magnetic Variation on PBN Systems

a) Differences may exist between PBN systems and the charted magnetic courses on ground−based NAVAID instrument flight procedures (IFP), en route charts, approach charts, and Standard Instrument Departure/Standard Terminal Arrival (SID/STAR) charts. These differences are due to the magnetic variance used to calculate the magnetic course. Every leg of an instrument procedure is first computed along a desired ground track with reference to true north. A magnetic variation correction is then applied to the true course in order to calculate a magnetic course for publication. The type of procedure will determine what magnetic variation value is added to the true course. A ground−based NAVAID IFP applies the facility magnetic variation of record to the true course to get the charted magnetic course. Magnetic courses on PBN procedures are calculated two different ways. SID/STAR procedures use the airport magnetic variation of record, while IFR en route charts use magnetic reference bearing. PBN systems make a correction to true north by adding a magnetic variation calculated with an algorithm based on aircraft position, or by adding the magnetic variation coded in their navigational database. This may result in the PBN system and the procedure designer using a different magnetic variation, which causes the magnetic course ***displayed*** by the PBN system and the magnetic course ***charted*** on the IFP plate to be different. It is important to understand, however, that PBN systems, (with the exception of VOR/DME RNAV equipment) navigate by reference to true north and display magnetic course only for pilot reference. As such, a ***properly functioning*** PBN system, containing a ***current and accurate navigational database***, should fly the correct ground track for any loaded instrument procedure, despite differences in displayed magnetic course that may be attributed to magnetic variation application. Should significant differences between the approach chart and the PBN system avionics' application of the navigation database arise, the published approach chart, supplemented by NOTAMs, holds precedence.

b) The course into a waypoint may not always be 180 degrees different from the course leaving the previous waypoint, due to the PBN system avionics' computation of geodesic paths, distance between waypoints, and differences in magnetic variation application. Variations in distances may also occur since PBN system distance−to−waypoint values are ATDs computed to the next waypoint and the DME values published on underlying procedures are slant−range distances measured to the station. This difference increases with aircraft altitude and proximity to the NAVAID.

16.2.5.12 GPS Familiarization

Pilots should practice GPS approaches in visual meteorological conditions (VMC) until thoroughly proficient with all aspects of their equipment (receiver and installation) prior to attempting flight in instrument meteorological conditions (IMC). Pilots should be proficient in the following areas:

a) Using the receiver autonomous integrity monitoring (RAIM) prediction function;

b) Inserting a DP into the flight plan, including setting terminal CDI sensitivity, if required, and the conditions under which terminal RAIM is available for departure;

c) Programming the destination airport;

d) Programming and flying the approaches (especially procedure turns and arcs);

e) Changing to another approach after selecting an approach;

f) Programming and flying "direct" missed approaches;

g) Programming and flying "routed" missed approaches;

h) Entering, flying, and exiting holding patterns, particularly on approaches with a second waypoint in the holding pattern;

i) Programming and flying a "route" from a holding pattern;

j) Programming and flying an approach with radar vectors to the intermediate segment;

k) Indication of the actions required for RAIM failure both before and after the FAWP; and

l) Programming a radial and distance from a VOR (often used in departure instructions).

TBL ENR 4.1−4

GPS IFR Equipment Classes/Categories

TSO−C129						
Equipment Class	**RAIM**	**Int. Nav Sys. to Prov. RAIM Equiv.**	**Oceanic**	**En Route**	**Terminal**	**Nonprecision Approach Capable**
Class A − GPS sensor and navigation capability.						
A1	yes		yes	yes	yes	yes
A2	yes		yes	yes	yes	no
Class B − GPS sensor data to an integrated navigation system (i.e. FMS, multi−sensor navigation system, etc.).						
B1	yes		yes	yes	yes	yes
B2	yes		yes	yes	yes	no
B3		yes	yes	yes	yes	yes
B4		yes	yes	yes	yes	no
Class C − GPS sensor data to an integrated navigation system (as in Class B) which provides enhanced guidance to an autopilot, or flight director, to reduce flight tech. errors. Limited to 14 CFR Part 121 or equivalent criteria.						
C1	yes		yes	yes	yes	yes
C2	yes		yes	yes	yes	no
C3		yes	yes	yes	yes	yes
C4		yes	yes	yes	yes	no

TBL ENR 4.1−5
GPS Approval Required/Authorized Use

Equipment Type[1]	Installation Approval Required	Operational Approval Required	IFR En Route[2]	IFR Terminal[2]	IFR Approach[3]	Oceanic Remote	In Lieu of ADF and/or DME[3]
Hand held[4]	X[5]						
VFR Panel Mount[4]	X						
IFR En Route and Terminal	X	X	X	X			X
IFR Oceanic/ Remote	X	X	X	X		X	X
IFR En Route, Terminal, and Approach	X	X	X	X	X		X

NOTE−
[1]*To determine equipment approvals and limitations, refer to the AFM, AFM supplements, or pilot guides.*
[2]*Requires verification of data for correctness if database is expired.*
[3]*Requires current database or verification that the procedure has not been amended since the expiration of the database.*
[4]*VFR and hand−held GPS systems are not authorized for IFR navigation, instrument approaches, or as a primary instrument flight reference. During IFR operations they may be considered only an aid to situational awareness.*
[5]*Hand−held receivers require no approval. However, any aircraft modification to support the hand−held receiver; i.e., installation of an external antenna or a permanent mounting bracket, does require approval.*

17. Wide Area Augmentation System (WAAS)

17.1 General

17.1.1 The FAA developed the WAAS to improve the accuracy, integrity and availability of GPS signals. WAAS will allow GPS to be used, as the aviation navigation system, from takeoff through approach when it is complete. WAAS is a critical component of the FAA's strategic objective for a seamless satellite navigation system for civil aviation, improving capacity and safety.

17.1.2 The International Civil Aviation Organization (ICAO) has defined Standards and Recommended Practices (SARPs) for satellite−based augmentation systems (SBAS) such as WAAS. Japan, India, and Europe are building similar systems: EGNOS, the European Geostationary Navigation Overlay System; India's GPS and Geo-Augmented Navigation (GAGAN) system; and Japan's Multi-functional Transport Satellite (MT-SAT)-based Satellite Augmentation System (MSAS). The merging of these systems will create an expansive navigation capability similar to GPS, but with greater accuracy, availability, and integrity.

17.1.3 Unlike traditional ground−based navigation aids, WAAS will cover a more extensive service area. Precisely surveyed wide−area reference stations (WRS) are linked to form the U.S. WAAS network. Signals from the GPS satellites are monitored by these WRSs to determine satellite clock and ephemeris corrections and to model the propagation effects of the ionosphere. Each station in the network relays the data to a wide−area master station (WMS) where the correction information is computed. A correction message is prepared and uplinked to a geostationary earth orbit satellite (GEO) via a GEO uplink subsystem (GUS) which is located at the ground earth station (GES). The message is then broadcast on the same frequency as GPS (L1, 1575.42 MHz) to WAAS receivers within the broadcast coverage area of the WAAS GEO.

17.1.4 In addition to providing the correction signal, the WAAS GEO provides an additional pseudorange measurement to the aircraft receiver, improving the availability of GPS by providing, in effect, an additional GPS satellite in view. The integrity of GPS is improved through real−time monitoring, and the accuracy is improved by providing differential corrections to reduce errors. The performance improvement is sufficient to enable approach procedures with GPS/WAAS glide paths (vertical guidance).

17.1.5 The FAA has completed installation of 3 GEO satellite links, 38 WRSs, 3 WMSs, 6 GES, and the required terrestrial communications to support the WAAS network including 2 operational control centers. Prior to the commissioning of the WAAS for public use, the FAA conducted a series of test and validation activities. Future dual frequency operations are planned.

17.1.6 GNSS navigation, including GPS and WAAS, is referenced to the WGS−84 coordinate system. It should only be used where the Aeronautical Information Publications (including electronic data and aeronautical charts) conform to WGS−84 or equivalent. Other countries civil aviation authorities may impose additional limitations on the use of their SBAS systems.

17.2 Instrument Approach Capabilities

17.2.1 A class of approach procedures which provide vertical guidance, but which do not meet the ICAO Annex 10 requirements for precision approaches has been developed to support satellite navigation use for aviation applications worldwide. These procedures are not precision and are referred to as Approach with Vertical Guidance (APV), are defined in ICAO Annex 6, and include approaches such as the LNAV/VNAV and localizer performance with vertical guidance (LPV). These approaches provide vertical guidance, but do not meet the more stringent standards of a precision approach. Properly certified WAAS receivers will be able to fly to LPV minima and LNAV/VNAV minima, using a WAAS electronic glide path, which eliminates the errors that can be introduced by using Barometric altimetry.

17.2.2 LPV minima takes advantage of the high accuracy guidance and increased integrity provided by WAAS. This WAAS generated angular guidance allows the use of the same TERPS approach criteria used for ILS approaches. LPV minima may have a decision altitude as low as 200 feet height above touchdown with visibility minimums as low as $^1/_2$ mile, when the terrain and airport infrastructure support the lowest minima. LPV minima is published on the RNAV (GPS) approach charts (see Paragraph 12., Instrument Approach Procedure Charts).

17.2.3 A different WAAS-based line of minima, called Localizer Performance (LP) is being added in locations where the terrain or obstructions do not allow publication of vertically guided LPV minima. LP takes advantage of the angular lateral guidance and smaller position errors provided by WAAS to provide a lateral only procedure similar to an ILS Localizer. LP procedures may provide lower minima than a LNAV procedure due to the narrower obstacle clearance surface.

NOTE−
WAAS receivers certified prior to TSO−C145b and TSO−C146b, even if they have LPV capability, do not contain LP capability unless the receiver has been upgraded. Receivers capable of flying LP procedures must contain a statement in the Aircraft Flight Manual (AFM), AFM Supplement, or Approved Supplemental Flight Manual stating that the receiver has LP capability, as well as the capability for the other WAAS and GPS approach procedure types.

17.2.4 WAAS provides a level of service that supports all phases of flight, including RNAV (GPS) approaches to LNAV, LP, LNAV/VNAV and LPV lines of minima, within system coverage. Some locations close to the edge of the coverage may have a lower availability of vertical guidance.

17.3 General Requirements

17.3.1 WAAS avionics must be certified in accordance with Technical Standard Order (TSO) TSO−C145, Airborne Navigation Sensors Using the (GPS) Augmented by the Wide Area Augmentation System (WAAS); or TSO−C146, Stand−Alone Airborne Navigation Equipment Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS), and installed in accordance with Advisory Circular (AC) 20−138, *Airworthiness Approval of Positioning and Navigation Systems*.

17.3.2 GPS/WAAS operation must be conducted in accordance with the FAA−approved aircraft flight manual (AFM) and flight manual supplements. Flight manual supplements will state the level of approach procedure that the receiver supports. IFR approved WAAS receivers support all GPS only operations as long as lateral capability at the appropriate level is functional. WAAS monitors both GPS and WAAS satellites and provides integrity.

17.3.3 GPS/WAAS equipment is inherently capable of supporting oceanic and remote operations if the operator obtains a fault detection and exclusion (FDE) prediction program.

17.3.4 Air carrier and commercial operators must meet the appropriate provisions of their approved operations specifications.

17.3.5 Prior to GPS/WAAS IFR operation, the pilot must review appropriate Notices to Airmen (NOTAMs) and aeronautical information. This information is available on request from an Automated Flight Service Station. The FAA will provide NOTAMs to advise pilots of the status of the WAAS and level of service available.

17.3.5.1 The term MAY NOT BE AVBL is used in conjunction with WAAS NOTAMs and indicates that due to ionospheric conditions, lateral guidance may still be available when vertical guidance is unavailable. Under certain conditions, both lateral and vertical guidance may be unavailable. This NOTAM language is an advisory to pilots indicating the expected level of WAAS service (LNAV/VNAV, LPV, LP) may not be available.

EXAMPLE−
!FDC FDC NAV WAAS VNAV/LPV/LP MINIMA MAY NOT BE AVBL 1306111330-1306141930EST
or
!FDC FDC NAV WAAS VNAV/LPV MINIMA NOT AVBL, WAAS LP MINIMA MAY NOT BE AVBL 1306021200-1306031200EST

WAAS MAY NOT BE AVBL NOTAMs are predictive in nature and published for flight planning purposes. Upon commencing an approach at locations NOTAMed WAAS MAY NOT BE AVBL, if the WAAS avionics indicate LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the approach, reversion to LNAV minima or an alternate instrument approach procedure may be required. When GPS testing NOTAMS are published and testing is actually occurring, Air Traffic Control will advise pilots requesting or cleared for a GPS or RNAV (GPS) approach that GPS may not be available and request intentions. If pilots have reported GPS anomalies, Air Traffic Control will request the pilot's intentions and/or clear the pilot for an alternate approach, if available and operational.

17.3.5.2 WAAS area-wide NOTAMs are originated when WAAS assets are out of service and impact the service area. Area−wide WAAS NOT AVAILABLE (AVBL) NOTAMs indicate loss or malfunction of the WAAS system. In flight, Air Traffic Control will advise pilots requesting a GPS or RNAV (GPS) approach of WAAS NOT AVBL NOTAMs if not contained in the ATIS broadcast.

EXAMPLE−
For unscheduled loss of signal or service, an example NOTAM is: !FDC FDC NAV WAAS NOT AVBL 1311160600− 1311191200EST.
For scheduled loss of signal or service, an example NOTAM is: !FDC FDC NAV WAAS NOT AVBL 1312041015- 1312082000EST

17.3.5.3 Site−specific WAAS MAY NOT BE AVBL NOTAMs indicate an expected level of service; for example, LNAV/VNAV, LP, or LPV may not be available. Pilots must request site−specific WAAS NOTAMs during flight planning. In flight, Air Traffic Control will not advise pilots of WAAS MAY NOT BE AVBL NOTAMs.

NOTE−
Though currently unavailable, the FAA is updating its prediction tool software to provide this site-service in the future.

17.3.5.4 Most of North America has redundant coverage by two or more geostationary satellites. One exception is the northern slope of Alaska. If there is a problem with the satellite providing coverage to this area, a NOTAM similar to the following example will be issued:

EXAMPLE−
*!FDC **4/3406** (PAZA A0173/14) ZAN NAV WAAS SIGNAL MAY NOT BE AVBL NORTH OF LINE FROM 7000N150000W TO 6400N16400W. RMK WAAS USERS SHOULD CONFIRM RAIM AVAILABILITY FOR IFR OPERATIONS IN THIS AREA. T-ROUTES IN THIS SECTOR NOT AVBL. ANY REQUIRED ALTERNATE AIRPORT IN THIS AREA MUST HAVE AN APPROVED INSTRUMENT APPROACH PROCEDURE OTHER THAN GPS THAT IS ANTICIPATED TO BE OPERATIONAL AND AVAILABLE AT THE ESTIMATED TIME OF ARRIVAL AND WHICH THE AIRCRAFT IS EQUIPPED TO FLY. 1406030812-1406050812EST .*

17.3.6 When GPS−testing NOTAMS are published and testing is actually occurring, Air Traffic Control will advise pilots requesting or cleared for a GPS or RNAV (GPS) approach that GPS may not be available and request intentions. If pilots have reported GPS anomalies, Air Traffic Control will request the pilot's intentions and/or clear the pilot for an alternate approach, if available and operational.

EXAMPLE−
Here is an example of a GPS testing NOTAM:
*!GPS **06/001** ZAB NAV GPS (INCLUDING WAAS, GBAS,*

AND ADS-B) MAY NOT BE AVAILABLE WITHIN A 468NM RADIUS CENTERED AT 330702N1062540W (TCS 093044) FL400-UNL DECREASING IN AREA WITH A DECREASE IN ALTITUDE DEFINED AS: 425NM RADIUS AT FL250, 360NM RADIUS AT 10000FT, 354NM RADIUS AT 4000FT AGL, 327NM RADIUS AT 50FT AGL. 1406070300-1406071200.

17.3.7 When the approach chart is annotated with the W symbol, site−specific WAAS MAY NOT BE AVBL NOTAMs or Air Traffic advisories are not provided for outages in WAAS LNAV/VNAV and LPV vertical service. Vertical outages may occur daily at these locations due to being close to the edge of WAAS system coverage. Use LNAV or circling minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then the vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required.

NOTE−
Area−wide WAAS NOT AVBL NOTAMs apply to all airports in the WAAS NOT AVBL area designated in the NOTAM, including approaches at airports where an approach chart is annotated with the W symbol.

17.3.8 GPS/WAAS was developed to be used within GEO coverage over North America without the need for other radio navigation equipment appropriate to the route of flight to be flown. Outside the WAAS coverage or in the event of a WAAS failure, GPS/WAAS equipment reverts to GPS−only operation and satisfies the requirements for basic GPS equipment. (See ENR 4.1 paragraph 17. for these requirements).

17.3.9 Unlike TSO−C129 avionics, which were certified as a supplement to other means of navigation, WAAS avionics are evaluated without reliance on other navigation systems. As such, installation of WAAS avionics does not require the aircraft to have other equipment appropriate to the route to be flown. (See ENR 4.1 paragraph 17. for more information on equipment requirements.)

17.3.9.1 Pilots with WAAS receivers may flight plan to use any instrument approach procedure authorized for use with their WAAS avionics as the planned approach at a required alternate, with the following restrictions. When using WAAS at an alternate airport, flight planning must be based on flying the RNAV (GPS) LNAV or circling minima line, or minima on a GPS approach procedure, or conventional approach procedure with "or GPS" in the title. Code of Federal Regulation (CFR) Part 91 nonprecision weather requirements must be used for planning. Upon arrival at an alternate, when the WAAS navigation system indicates that LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. The FAA has begun removing the ▲ **NA** (Alternate Minimums Not Authorized) symbol from select RNAV (GPS) and GPS approach procedures so they may be used by approach approved WAAS receivers at alternate airports. Some approach procedures will still require the ▲ **NA** for other reasons, such as no weather reporting, so it cannot be removed from all procedures. Since every procedure must be individually evaluated, removal of the ▲ **NA** from RNAV (GPS) and GPS procedures will take some time.

NOTE−
Properly trained and approved, as required, TSO-C145 and TSO-C146 equipped users (WAAS users) with and using approved baro-VNAV equipment may plan for LNAV/VNAV DA at an alternate airport. Specifically authorized WAAS users with and using approved baro-VNAV equipment may also plan for RNP 0.3 DA at the alternate airport as long as the pilot has verified RNP availability through an approved prediction program.

17.4 Flying procedures with WAAS

17.4.1 WAAS receivers support all basic GPS approach functions and provide additional capabilities. One of the major improvements is the ability to generate glide path guidance, independent of ground equipment or barometric aiding. This eliminates several problems such as hot and cold temperature effects, incorrect altimeter setting or lack of a local altimeter source. It also allows approach procedures to be built without the cost of installing ground stations at each airport or runway. Some approach certified receivers may only generate a glide path with performance similar to Baro−VNAV and are only approved to fly the LNAV/VNAV line of minima on the RNAV (GPS) approach charts. Receivers with additional capability (including faster update rates and smaller integrity limits) are approved to fly the LPV line of minima. The lateral integrity changes dramatically from the 0.3 NM (556 meter) limit for GPS, LNAV and LNAV/VNAV approach mode, to 40 meters for LPV. It also provides vertical integrity monitoring, which bounds the vertical error to 50 meters for LNAV/VNAV and LPVs with minima of 250' or above, and bounds the vertical error to 35 meters for LPVs with minima below 250'.

17.4.2 When an approach procedure is selected and active, the receiver will notify the pilot of the most accurate level of service supported by the combination of the WAAS signal, the receiver, and the selected approach, using the naming conventions on the minima lines of the selected approach procedure. For example, if an approach is published with LPV minima and the receiver is only certified for LNAV/VNAV, the equipment would indicate "LNAV/VNAV available," even though the WAAS signal would support LPV. If flying an existing LNAV/VNAV procedure with no LPV minima, the receiver will notify the pilot "LNAV/VNAV available," even if the receiver is certified for LPV and the signal supports LPV. If the signal does not support vertical guidance on procedures with LPV and/or LNAV/VNAV minima, the receiver annunciation will read "LNAV available." On lateral only procedures with LP and LNAV minima the receiver will indicate "LP available" or "LNAV available" based on the level of lateral service available. Once the level of service notification has been given, the receiver will operate in this mode for the duration of the approach procedure, unless that level of service becomes unavailable. The receiver cannot change back to a more accurate level of service until the next time an approach is activated.

NOTE−
Receivers do not "fail down" to lower levels of service once the approach has been activated. If only the vertical off flag appears, the pilot may elect to use the LNAV minima if the rules under which the flight is operating allow changing the type of approach being flown after commencing the procedure. If the lateral integrity limit is exceeded on an LP approach, a missed approach will be necessary since there is no way to reset the lateral alarm limit while the approach is active.

17.4.3 Another additional feature of WAAS receivers is the ability to exclude a bad GPS signal and continue operating normally. This is normally accomplished by the WAAS correction information. Outside WAAS coverage or when WAAS is not available, it is accomplished through a receiver algorithm called FDE. In most cases this operation will be invisible to the pilot since the receiver will continue to operate with other available satellites after excluding the "bad" signal. This capability increases the reliability of navigation.

17.4.4 Both lateral and vertical scaling for the LNAV/VNAV and LPV approach procedures are different than the linear scaling of basic GPS. When the complete published procedure is flown, ±1 NM linear scaling is provided until two (2) NM prior to the FAF, where the sensitivity increases to be similar to the angular scaling of an ILS. There are two differences in the WAAS scaling and ILS: 1) on long final approach segments, the initial scaling will be ±0.3 NM to achieve equivalent performance to GPS (and better than ILS, which is less sensitive far from the runway); 2) close to the runway threshold, the scaling changes to linear instead of continuing to become more sensitive. The width of the final approach course is tailored so that the total width is usually 700 feet at the runway threshold. Since the origin point of the lateral splay for the angular portion of the final is not fixed due to antenna placement like localizer, the splay angle can remain fixed, making a consistent width of final for aircraft being vectored onto the final approach course on different length runways. When the complete published procedure is not flown, and instead the aircraft needs to capture the extended final approach course similar to ILS, the vector to final (VTF) mode is used. Under VTF, the scaling is linear at ±1 NM until the point where the ILS angular splay reaches a width of ±1 NM regardless of the distance from the FAWP.

17.4.5 The WAAS scaling is also different than GPS TSO−C129 in the initial portion of the missed approach. Two differences occur here. First, the scaling abruptly changes from the approach scaling to the missed approach scaling, at approximately the departure end of the runway or when the pilot selects missed approach guidance rather than ramping as GPS does. Second, when the first leg of the missed approach is a Track to Fix (TF) leg aligned within 3 degrees of the inbound course, the receiver will change to 0.3 NM linear sensitivity until the turn initiation point for the first waypoint in the missed approach procedure, at which time it will abruptly change to terminal (±1 NM) sensitivity. This allows the elimination of close in obstacles in the early part of the missed approach that may otherwise cause the DA to be raised.

17.4.6 There are two ways to select the final approach segment of an instrument approach. Most receivers use menus where the pilot selects the airport, the runway, the specific approach procedure and finally the IAF, there is also a channel number selection method. The pilot enters a unique 5−digit number provided on the approach chart, and the receiver recalls the matching final approach segment from the aircraft database. A list of information including the available IAFs is displayed and the pilot selects the appropriate IAF. The pilot should confirm that the correct final approach segment was loaded by cross checking the Approach ID, which is also provided on the approach chart.

17.4.7 The Along−Track Distance (ATD) during the final approach segment of an LNAV procedure (with a minimum descent altitude) will be to the MAWP. On LNAV/VNAV and LPV approaches to a decision altitude, there is no missed approach waypoint so the along−track distance is displayed to a point normally located at the runway threshold. In most cases, the MAWP for the LNAV approach is located on the runway threshold at the centerline, so these distances will be the same. This distance will always vary slightly from any ILS DME that may be present, since the ILS DME is located further down the runway. Initiation of the missed approach on the LNAV/ VNAV and LPV approaches is still based on reaching the decision altitude without any of the items listed in 14 CFR Section 91.175 being visible, and must not be delayed while waiting for the ATD to reach zero. The WAAS receiver, unlike a GPS receiver, will automatically sequence past the MAWP if the missed approach procedure has been designed for RNAV. The pilot may also select missed approach prior to the MAWP; however, navigation will continue to the MAWP prior to waypoint sequencing taking place.

18. Ground Based Augmentation System (GBAS) Landing System (GLS)

18.1 General

18.1.1 The GLS provides precision navigation guidance for exact alignment and descent of aircraft on approach to a runway. GBAS equipment provides localized differential augmentation to the Global Positioning System (GPS).

NOTE−
To remain consistent with international terminology, the FAA will use the term GBAS in place of the former term Local Area Augmentation System (LAAS).

18.1.2 GLS displays three−dimension vertical and horizontal navigation guidance to the pilot much like ILS. GLS navigation is based on GPS signals augmented by position correction, integrity parameters, and approach path definition information transmitted over VHF from the local GBAS ground station. One GBAS station can support multiple GLS precision approaches to nearby runways within the GBAS's maximum use distance.

18.1.3 GLS provides guidance similar to ILS approaches for the final approach segment, though the approach service volume has different dimensions (see FIG ENR 4.1−3). The GLS approach is constructed using the RNP approach (RNP APCH) navigation specification, and may include vertically−guided turn(s) after the IAF or on the missed approach procedure. Portions of the approach prior to an IAF and after the final approach segment may also require Area Navigation (RNAV) typically using the Required Navigation Performance 1 (RNP 1) navigation specification. See AIP Section ENR 1.17 paragraph 1.1 for more information on navigation specifications.

18.1.4 GLS consists of a GBAS Ground Facility (GGF), at least four ground reference stations, a corrections processor, a VHF Data Broadcast (VDB) uplink antenna, an aircraft GBAS receiver, and a charted instrument approach procedure.

18.2 Procedure

18.2.1 Pilots will select the five digit GBAS channel number of the associated GLS approach within the Flight Management System (FMS) menu or manually select the five digits (system dependent). Selection of the GBAS channel number also tunes the VDB.

18.2.2 Following procedure selection, confirmation that the correct GLS procedure is loaded can be accomplished by cross checking the charted Reference Path Indicator (RPI) or approach ID with the cockpit displayed RPI or audio identification of the RPI with Morse Code (for some systems). Distance to the runway threshold will be displayed to the pilot once the aircraft is inside the approach service volume.

18.2.3 The pilot will fly the GLS approach using many of the same techniques as ILS including using a heading or lateral steering mode to intercept the GLS final approach course and then switching to the appropriate approach navigation mode once the aircraft is within the approach service volume and prior to the glide path intercept point. See also the

Instrument Procedures Handbook for more information on GLS.

19. Precision Approach Systems Other than ILS and GLS

19.1 General

Approval and use of precision approach systems other than ILS and GLS require the issuance of special instrument approach procedures.

19.2 Special Instrument Approach Procedure

19.2.1 Special instrument approach procedures must be issued to the aircraft operator if pilot training, aircraft equipment, and/or aircraft performance is different than published procedures. Special instrument approach procedures are not distributed for general public use. These procedures are issued to an aircraft operator when the conditions for operations approval are satisfied.

19.2.2 General aviation operators requesting approval for special procedures should contact the local Flight Standards District Office to obtain a letter of authorization. Air carrier operators requesting approval for use of special procedures should contact their Certificate Holding District Office for authorization through their Operations Specification.

19.3 Transponder Landing System (TLS)

19.3.1 The TLS is designed to provide approach guidance utilizing existing airborne ILS localizer, glide slope, and transponder equipment.

19.3.2 Ground equipment consists of a transponder interrogator, sensor arrays to detect lateral and vertical position, and ILS frequency transmitters. The TLS detects the aircraft's position by interrogating its transponder. It then broadcasts ILS frequency signals to guide the aircraft along the desired approach path.

19.3.3 TLS instrument approach procedures are designated Special Instrument Approach Procedures. Special aircrew training is required. TLS ground equipment provides approach guidance for only one aircraft at a time. Even though the TLS signal is received using the ILS receiver, no fixed course or glidepath is generated. The concept of operation is very similar to an air traffic controller providing radar vectors, and just as with radar vectors, the guidance is valid only for the intended aircraft. The TLS ground equipment tracks one aircraft, based on its transponder code, and provides correction signals to course and glidepath based on the position of the tracked aircraft. Flying the TLS corrections computed for another aircraft will not provide guidance relative to the approach; therefore, aircrews must not use the TLS signal for navigation unless they have received approach clearance and completed the required coordination with the TLS ground equipment operator. Navigation fixes based on conventional NAVAIDs or GPS are provided in the special instrument approach procedure to allow aircrews to verify the TLS guidance.

19.4 Special Category I Differential GPS (SCAT−I DGPS)

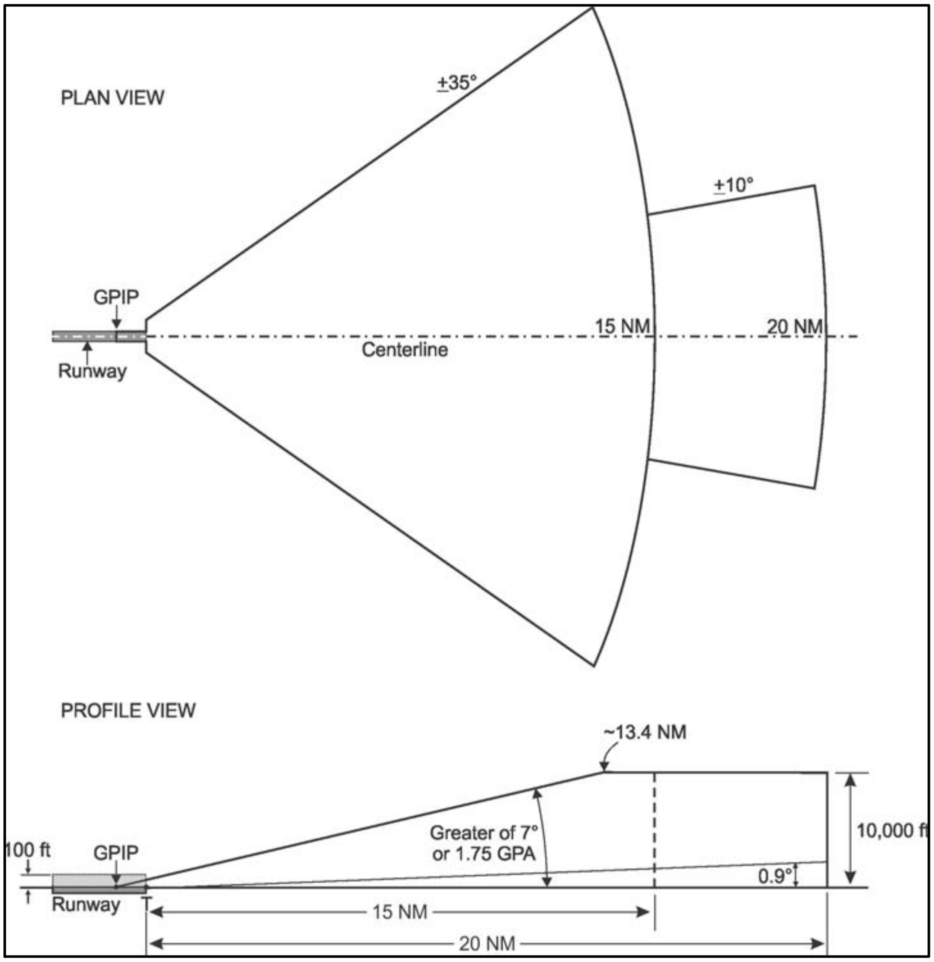
19.4.1 The SCAT−I DGPS is designed to provide approach guidance by broadcasting differential correction to GPS.

19.4.2 SCAT−I DGPS procedures require aircraft equipment and pilot training.

19.4.3 Ground equipment consists of GPS receivers and a VHF digital radio transmitter. The SCAT−I DGPS detects the position of GPS satellites relative to GPS receiver equipment and broadcasts differential corrections over the VHF digital radio.

19.4.4 Category I Ground Based Augmentation System (GBAS) will displace SCAT−I DGPS as the public−use service.

FIG ENR 4.1−3
GLS Standard Approach Service Volume



20. Area Navigation

20.1 General

20.1.1 Area Navigation (RNAV) provides enhanced navigational capability to the pilot. RNAV equipment can compute the airplane position, actual track and ground speed and then provide meaningful information relative to a route of flight selected by the pilot. Typical equipment will provide the pilot with distance, time, bearing and crosstrack error relative to the selected "TO" or "active" waypoint and the selected route. Several navigational systems with different navigational performance characteristics are capable of providing area navigational functions. Present day RNAV includes INS, VOR/DME, and GPS systems. Modern multi−sensor systems can integrate one or more of the above systems to provide a more accurate and reliable navigational system. Due to the different levels of performance, area navigational capabilities can satisfy different levels of required navigation performance (RNP).

20.2 RNAV Operations Incorporating RNP

20.2.1 During the past four decades, domestic and international air navigation have been conducted using a system of airways and instrument procedures based upon ground−based navigational systems such as NDB, VOR, and ILS. Reliance on ground−based navigational systems has served the aviation community well, but often results in less than optimal routes or instrument procedures and an inefficient use of airspace. With the widespread deployment of RNAV systems and the advent of GPS−based navigation, greater flexibility in defining routes, procedures, and airspace design is now possible with an associated increase in flight safety. To capitalize on the potential of RNAV systems, both the FAA and International Civil Aviation Organization (ICAO) are affecting a shift toward a new standard of navigation and airspace management called RNP.

20.2.2 Navigational systems are typically described as being sensor specific, such as a VOR or ILS system. By specifying airspace requirements as RNP, various navigation systems or combination of systems may be used as long as the aircraft can achieve the RNP. RNP is intended to provide a single performance standard that can be used and applied by aircraft and aircraft equipment manufacturers, airspace planners, aircraft certification and operations, pilots and controllers, and international aviation authorities. RNP can be applied to obstacle clearance or aircraft separation requirements to ensure a consistent application level.

20.2.3 ICAO has defined RNP values for the four typical navigation phases of flight: oceanic, en route, terminal, and approach. The RNP applicable to a selected airspace, route, or procedure is designated by it's RNP Level or Type. As defined in the Pilot/Controller Glossary, the RNP Level or Type is a value typically expressed as a distance, in nautical miles, from the procedure, route or path within which an aircraft would typically operate. RNP applications also provide performance to protect against larger errors at some multiple of RNP level (e.g., twice the RNP level).

20.3 Standard RNP Levels

20.3.1 U.S. standard values supporting typical RNP airspace are as specified in TBL ENR 4.1−6 below. Other RNP levels as identified by ICAO, other states and the FAA may also be used.

TBL ENR 4.1−6

U.S. Standard RNP Levels

RNP Level	Typical Application
.3	Approach
1	Departure, Terminal
2	En Route

20.3.1.1 Application of Standard RNP Levels. U.S. standard levels of RNP typically used for various routes and procedures supporting RNAV operations may be based on use of a specific navigational system or sensor such as GPS, or on multi−sensor RNAV systems having suitable performance. New RNAV routes and procedures will be FAA's first public use procedures to include a specified RNP level. These procedures are being developed based on earth referenced navigation and do not rely on conventional ground−based navigational aids. Unless otherwise noted on affected charts or procedures, depiction of a specified RNP level will not preclude the use of other airborne RNAV navigational systems.

20.3.1.2 Depiction of Standard RNP Levels. The applicable RNP level will be depicted on affected charts and procedures. For example, an RNAV departure procedure may contain a notation referring to eligible aircraft by equipment suffix and a phrase "or RNP−1.0." A typical RNAV approach procedure may include a notation referring to eligible aircraft by specific navigation sensor(s), equipment suffix, and a phrase "or RNP−0.3." Specific guidelines for the depiction of RNP levels will be provided through chart bulletins and accompany affected charting changes.

20.4 Aircraft and Airborne Equipment Eligibility for RNP Operations. Aircraft meeting RNP criteria will have an appropriate entry including special conditions and limitations, if any, in its Aircraft/Rotorcraft Flight Manual (AFM), or supplement. RNAV installations with AFM−RNP certification based on GPS or systems integrating GPS are considered to meet U.S. standard RNP levels for all phases of flight. Aircraft with AFM−RNP certification without GPS may be limited to certain RNP levels, or phases of flight. For example, RNP based on DME/DME without other augmentation may not be appropriate for phases of flight outside the certified DME service volume. Operators of aircraft not having specific AFM−RNP certification may be issued operational approval including special conditions and limitations, if any, for specific RNP levels. Aircraft navigation systems eligible for RNP airspace will be indicated on charts, or announced through other FAA media such as NOTAMs and chart bulletins.

20.5 Understanding RNP Operations. Pilots should have a clear understanding of the aircraft requirements for operation in a given RNP environment, and advise ATC if an equipment failure or other malfunction causes the aircraft to lose its ability to continue operating in the designated RNP airspace. When a pilot determines a specified RNP level cannot be achieved, he/she should be prepared to revise the route, or delay the operation until an appropriate RNP level can be ensured. Some airborne systems use terms other than RNP to indicate the current level of performance. Depending on the airborne system implementation, this may be displayed, and referred to, as actual navigation performance (ANP), estimate of position error (EPE), or other.

20.6 Other RNP Applications Outside the U.S. The FAA, in cooperation with ICAO member states has led initiatives in implementing the RNP concept to oceanic operations. For example, RNP−10 routes have been established in the Northern Pacific (NOPAC) which has increased capacity and efficiency by reducing the distance between tracks to 50 NM. Additionally, the FAA has assisted those U.S. air carriers operating in Europe where the routes have been designated as RNP−5. TBL ENR 4.1−7 below, shows examples of current and future RNP levels of airspace.

TBL ENR 4.1−7

RNP Levels Supported for International Operations

RNP Level	Typical Application
4	Projected for oceanic/remote areas where 30 NM horizontal separation is applied
5	European Basic RNAV (B−RNAV)
10	Oceanic/remote areas where 50 NM horizontal separation is applied

20.7 RNAV and RNP Operations

20.7.1 Pilot

20.7.1.1 If unable to comply with the requirements of an RNAV or RNP procedure, pilots must advise air traffic control as soon as possible. For example, "N1234, failure of GPS system, unable RNAV, request amended clearance."

20.7.1.2 Pilots are not authorized to fly a published RNAV or RNP procedure (instrument approach, departure, or arrival procedure) unless it is retrievable by the procedure name from the current aircraft navigation database and conforms to the charted procedure. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

20.7.1.3 Whenever possible, RNAV routes (Q− or T−route) should be extracted from the database in their entirety, rather than loading RNAV route waypoints from the database into the flight plan individually. However, selecting and inserting individual, named fixes from the database is permitted, provided all fixes along the published route to be flown are inserted.

20.7.1.4 Pilots must not change any database waypoint type from a fly−by to fly−over, or vice versa. No other modification of database waypoints or the creation of user−defined waypoints on published RNAV or RNP procedures is permitted, except to:

a) Change altitude and/or airspeed waypoint constraints to comply with an ATC clearance/ instruction.

b) Insert a waypoint along the published route to assist in complying with ATC instruction, example, "Descend via the WILMS arrival except cross 30 north of BRUCE at/or below FL 210." This is limited only to systems that allow along−track waypoint construction.

20.7.1.5 Pilots of FMS−equipped aircraft, who are assigned an RNAV DP or STAR procedure and subsequently receive a change of runway, transition or procedure, must verify that the appropriate changes are loaded and available for navigation.

20.7.1.6 For RNAV 1 DPs and STARs, pilots must use a CDI, flight director and/or autopilot, in lateral navigation mode. Other methods providing an equivalent level of performance may also be acceptable.

20.7.1.7 For RNAV 1 DPs and STARs, pilots of aircraft without GPS, using DME/DME/IRU, must ensure the aircraft navigation system position is confirmed, within 1,000 feet, at the start point of take−off roll. The use of an automatic or manual runway update is an acceptable means of compliance with this requirement. Other methods providing an equivalent level of performance may also be acceptable.

20.7.1.8 For procedures or routes requiring the use of GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.

20.7.1.9 RNAV terminal procedures (DP and STAR) may be amended by ATC issuing radar vectors and/or clearances direct to a waypoint. Pilots should avoid premature manual deletion of waypoints from their active "legs" page to allow for rejoining procedures.

20.7.1.10 RAIM Prediction: If TSO−C129 equipment is used to solely satisfy the RNAV and RNP requirement, GPS RAIM availability must be confirmed for the intended route of flight (route and time). If RAIM is not available, pilots need an approved alternate means of navigation.

REFERENCE−
AIP, RNAV and RNP Operations, ENR 1.10 Para 11.3.

20.7.1.11 Definition of "established" for RNAV and RNP operations: An aircraft is considered to be established on-course during RNAV and RNP operations anytime it is within 1 times the required accuracy for the segment being flown. For example, while operating on a Q-Route (RNAV 2), the aircraft is considered to be established on-course when it is within 2 nm of the course centerline.

NOTE−
Pilots must be aware of how their navigation system operates, along with any AFM limitations, and confirm that the aircraft's lateral deviation display (or map display if being used as an allowed alternate means) is suitable for the accuracy of the segment being flown. Automatic scaling and alerting changes are appropriate for some operations. For example, TSO-C129 systems change within 30 miles of destination and within 2 miles of FAF to support approach operations. For some navigation systems and operations, manual selection of scaling will be necessary.
(a) *Pilots flying FMS equipped aircraft with barometric vertical navigation (Baro-VNAV) may descend when the aircraft is established on-course following FMS leg transition to the next segment. Leg transition normally occurs at the turn bisector for a fly-by waypoint (reference paragraph 1-2-1 for more on waypoints). When using full automation, pilots should monitor the aircraft to ensure the aircraft is turning at appropriate lead times and descending once established on-course.*

(b) *Pilots flying TSO-C129 navigation system equipped aircraft without full automation should use normal lead points to begin the turn. Pilots may descend when established on-course on the next segment of the approach.*

21. NAVAID Identifier Removal During Maintenance

21.1 During periods of routine or emergency maintenance, coded identification (or code and voice, where applicable) is removed from certain FAA NAVAIDs. Removal of the identification serves as warning to pilots that the facility is officially off the air for tune−up or repair and may be unreliable even though intermittent or constant signals are received.

NOTE−
During periods of maintenance, VHF ranges may radiate a T−E−S−T code (− ● ●●● −).

NOTE−
DO NOT attempt to fly a procedure that is NOTAMed out of service even if the identification is present. In certain cases, the identification may be transmitted for short periods as part of the testing.

22. User Reports Requested on NAVAID or Global Navigation Satellite System (GNSS) Performance or Interference

22.1 Users of the National Airspace System (NAS) can render valuable assistance in the early correction of NAVAID malfunctions or GNSS problems and are encouraged to report their observations of undesirable avionics performance. Although NAVAIDs are monitored by electronic detectors, adverse effects of electronic interference, new obstructions or changes in terrain near the NAVAID can exist without detection by the ground monitors. Some of the characteristics of malfunction or deteriorating performance which should be reported are: erratic course or bearing indications; intermittent, or full, flag alarm; garbled, missing or obviously improper coded identification; poor quality communications reception; or, in the case of frequency interference, an audible hum or tone accompanying radio communications or NAVAID identification. GNSS problems are often characterized by navigation degradation or service loss indications. For instance, pilots conducting operations in areas where there is GNSS interference may be unable to use GPS for navigation, and ADS−B may be unavailable for surveillance. Radio frequency interference may affect both navigation for the pilot and surveillance by the air traffic controller. Depending on the equipment and integration, either an advisory light or message may alert the pilot. Air traffic controllers monitoring ADS−B reports may stop receiving ADS−B position messages and associated aircraft tracks.

In addition, malfunctioning, faulty, inappropriately installed, operated, or modified GPS re−radiator systems, intended to be used for aircraft maintenance activities, have resulted in unintentional disruption of aviation GNSS receivers. This type of disruption could result in un−flagged, erroneous position information output to primary flight displays/indicators and to other aircraft and air traffic control systems. Since receiver autonomous integrity monitoring (RAIM) is only partially effective against this type of disruption (effectively a "signal spoofing"), the pilot may not be aware of any erroneous navigation indications; ATC may be the only means available for identification of these disruptions and detect unexpected aircraft position while monitoring aircraft for IFR separation.

22.2 Pilots reporting potential interference should identify the NAVAID (for example, VOR) malfunction or GNSS problem, location of the aircraft (that is, latitude, longitude or bearing/distance from a reference NAVAID), magnetic heading, altitude, date and time of the observation, type of aircraft (make/model/call sign), and description of the condition observed, and the type of receivers in use (that is, make/model/software revision). Reports should be made in any of the following ways:

22.2.1 Immediately, by voice radio communication to the controlling ATC facility or FSS.

22.2.2 By telephone to the nearest ATC facility controlling the airspace where the disruption was experienced.

22.2.3 Additionally, GNSS problems should be reported by Internet via the GPS Anomaly Reporting Form at **http://www.faa.gov/air_traffic/nas/gps_reports/**.

22.3 In aircraft equipped with more than one avionics receiver, there are many combinations of potential interference between units that could cause erroneous navigation indications, or complete or partial blanking out of the display.

NOTE−
GPS interference or outages associated with known testing NOTAMs should not be reported to ATC.

23. Radio Communications and Navigation Facilities

23.1 A complete listing of air traffic radio communications facilities and frequencies and radio navigation facilities and frequencies are contained in the Chart Supplement U.S. Similar information for the Pacific and Alaskan areas is contained in the Chart Supplements Pacific and Alaska.

1.6 Drilling Rig Perforating Operations: Helideck/Heliport Operational Hazard Warning(s)/Procedure(s)

1.6.1 Background. A critical step in the oil well completion process is perforation, which involves the use of explosive charges in the drill pipe to open the pipe to oil or gas deposits. Explosive charges used in conjunction with perforation operations offshore can potentially be prematurely detonated by radio transmissions, including those from helicopters. The following practices are recommended.

1.6.2 Recommended Practices

1.6.2.1 Personnel Conducting Perforating Operations. Whenever perforating operations are scheduled and operators are concerned that radio transmissions from helicopters in the vicinity may jeopardize the operation, personnel conducting perforating operations should take the following precautionary measures:

a) Notify company aviation departments, helicopter operators or bases, and nearby manned platforms of the pending perforation operation so the Notice to Airmen (NOTAM) system can be activated for the perforation operation and the temporary helideck closure.

b) Close the deck and make the radio warning clearly visible to passing pilots, install a temporary marking (described in subparagraph 1.9.1.2 with the words "NO RADIO" stenciled in red on the legs of the diagonals. The letters should be 24 inches high and 12 inches wide. (See FIG ENR 6.2−1.)

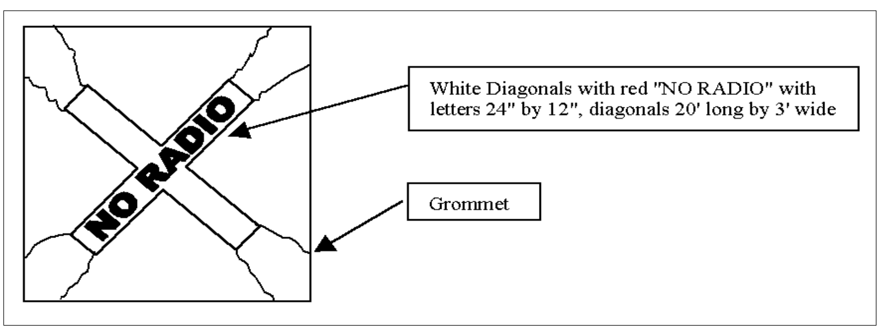
c) The marker should be installed during the time that charges may be affected by radio transmissions.

1.6.2.2 Pilots

a) When operating within 1,000 feet of a known perforation operation or observing the white X with red "NO RADIO" warning indicating perforation operations are underway, pilots will avoid radio transmissions from or near the helideck (within 1,000 feet) and will not land on the deck if the X is present. In addition to communications radios, radio transmissions are also emitted by aircraft radar, transponders, ADS−B equipment, radar altimeters, and DME equipment, and ELTs.

b) Whenever possible, make radio calls to the platform being approached or to the Flight Following Communications Center at least one mile out on approach. Ensure all communications are complete outside the 1,000 foot hazard distance. If no response is received, or if the platform is not radio equipped, further radio transmissions should not be made until visual contact with the deck indicates it is open for operation (no white "X").

FIG ENR 6.2−1
Closed Helideck Marking − No Radio



1.7 Hydrogen Sulfide Gas Helideck/Heliport Operational Hazard Warning(s)/Procedures

1.7.1 Background. Hydrogen sulfide (H_2S) gas: Hydrogen sulfide gas in higher concentrations (300−500 ppm) can cause loss of consciousness within a few seconds and presents a hazard to pilots on/near offshore helidecks. When operating in offshore areas that have been identified to have concentrations of hydrogen sulfide gas, the following practices are recommended.

1.7.2 Recommended Practices

1.7.2.1 Pilots

a) Ensure approved protective air packs are available for emergency use by the crew on the helicopter.

b) If shutdown on a helideck, request the supervisor in charge provide a briefing on location of protective equipment and safety procedures.

c) If while flying near a helideck and the visual red beacon alarm is observed or an unusually strong odor of "rotten eggs" is detected, immediately don the protective air pack, exit to an area upwind, and notify the suspected source field of the hazard.

1.7.2.2 Oil Field Supervisors

a) If presence of hydrogen sulfide is detected, a red rotating beacon or red high intensity strobe light adjacent to the primary helideck stairwell or wind indicator on the structure should be turned on to provide visual warning of hazard. If the beacon is to be located near the stairwell, the State of Louisiana "Offshore Heliport Design Guide" and FAA Advisory Circular AC 150/5390−2A, "Heliport Design Guide," should be reviewed to ensure proper clearance on the helideck.

b) Notify nearby helicopter operators and bases of the hazard and advise when hazard is cleared.

c) Provide a safety briefing to include location of protective equipment to all arriving personnel.

d) Wind socks or indicator should be clearly visible to provide upwind indication for the pilot.

1.8 Gas Venting Helideck/Heliport Operational Hazard Warning(s)/Procedures − Operations Near Gas Vent Booms

1.8.1 Background. Ignited flare booms can release a large volume of natural gas and create a hot fire and intense heat with little time for the pilot to react. Likewise, unignited gas vents can release reasonably large volumes of methane gas under certain conditions. Thus, operations conducted very near unignited gas vents require precautions to prevent inadvertent ingestion of combustible gases by the helicopter engine(s). The following practices are recommended.

1.8.2 Pilots

1.8.2.1 Gas will drift upwards and downwind of the vent. Plan the approach and takeoff to observe and avoid the area downwind of the vent, remaining as far away as practicable from the open end of the vent boom.

1.8.2.2 Do not attempt to start or land on an offshore helideck when the deck is downwind of a gas vent unless properly trained personnel verify conditions are safe.

1.8.3 Oil Field Supervisors

1.8.3.1 During venting of large amounts of unignited raw gas, a red rotating beacon or red high intensity strobe light adjacent to the primary helideck stairwell or wind indicator should be turned on to provide visible warning of hazard. If the beacon is to be located near the stairwell, the State of Louisiana "Offshore Heliport Design Guide" and FAA Advisory Circular AC 150/ 5390−2A, Heliport Design Guide, should be reviewed to ensure proper clearance from the helideck.

1.8.3.2 Notify nearby helicopter operators and bases of the hazard for planned operations.

1.8.3.3 Wind socks or indicator should be clearly visible to provide upward indication for the pilot.

1.9 Helideck/Heliport Operational Warning(s)/ Procedure(s) − Closed Helidecks or Heliports

1.9.1 Background. A white "X" marked diagonally from corner to corner across a helideck or heliport touchdown area is the universally accepted visual indicator that the landing area is closed for safety of other reasons and that helicopter operations are not permitted. The following practices are recommended.

1.13 Helicopter Rapid Refueling Procedures (HRR)

1.13.1 Background. Helicopter Rapid Refueling (HRR), engine(s)/rotors operating, can be conducted safely when utilizing trained personnel and observing safe practices. This recommended practice provides minimum guidance for HRR as outlined in National Fire Protection Association (NFPA) and industry practices. For detailed guidance, please refer to National Fire Protection Association (NFPA) Document 407, "Standard for Aircraft Fuel Servicing," 1990 edition, including 1993 HRR Amendment.

NOTE−
Certain operators prohibit HRR, or "hot refueling," or may have specific procedures for certain aircraft or refueling locations. See the General Operations Manual and/or Operations Specifications to determine the applicable procedures or limitations.

1.13.2 Recommended Practices

1.13.2.1 Only turbine−engine helicopters fueled with JET A or JET A−1 with fueling ports located below any engine exhausts may be fueled while an onboard engine(s) is (are) operating.

1.13.2.2 Helicopter fueling while an onboard engine(s) is (are) operating should only be conducted under the following conditions:

a) A properly certificated and current pilot is at the controls and a trained refueler attending the fuel nozzle during the entire fuel servicing process. The pilot monitors the fuel quantity and signals the refueler when quantity is reached.

b) No electrical storms (thunderstorms) are present within 10 nautical miles. Lightning can travel great distances beyond the actual thunderstorm.

c) Passengers disembark the helicopter and move to a safe location prior to HRR operations. When the pilot−in−command deems it necessary for passenger safety that they remain onboard, passengers should be briefed on the evacuation route to follow to clear the area.

d) Passengers not board or disembark during HRR operations nor should cargo be loaded or unloaded.

e) Only designated personnel, trained in HRR operations should conduct HRR written authorization to include safe handling of the fuel and equipment. (See your Company Operations/Safety Manual for detailed instructions.)

f) All doors, windows, and access points allowing entry to the interior of the helicopter that are adjacent to or in the immediate vicinity of the fuel inlet ports kept closed during HRR operations.

g) Pilots ensure that appropriate electrical/electronic equipment is placed in standby−off position, to preclude the possibility of electrical discharge or other fire hazard, such as [i.e., weather radar is on standby and no radio transmissions are made (keying of the microphone/transmitter)]. Remember, in addition to communications radios, radio transmissions are also emitted by aircraft radar, transponders, ADS−B equipment, radar altimeters, DME equipment, and ELTs.

h) Smoking be prohibited in and around the helicopter during all HRR operations.

The HRR procedures are critical and present associated hazards requiring attention to detail regarding quality control, weather conditions, static electricity, bonding, and spill/fires potential.

Any activity associated with rotors turning (i.e., refueling embarking/disembarking, loading/unloading baggage/freight, etc.) personnel should only approach the aircraft when authorized to do so. Approach should be made via safe approach path/walkway or "arc"− **remain clear of all rotors**.

NOTE−
1. *Marine vessels, barges etc.: Vessel motion presents additional potential hazards to helicopter operations (blade flex, aircraft movement).*

2. *See National Fire Protection Association (NFPA) Document 407, "Standard for Aircraft Fuel Servicing" for specifics regarding non−HRR (routine refueling operations).*

2. Helicopter Night VFR Operations

2.1 Effect of Lighting on Seeing Conditions in Night VFR Helicopter Operations

NOTE−
This guidance was developed to support safe night VFR helicopter emergency medical services (HEMS) operations. The principles of lighting and seeing conditions are useful in any night VFR operation.

While ceiling and visibility significantly affect safety in night VFR operations, lighting conditions also have a profound effect on safety. Even in conditions in which visibility and ceiling are determined to be visual meteorological conditions, the ability to discern unlighted or low contrast objects and terrain at night may be compromised. The ability to discern these objects and terrain is the seeing condition, and is related to the amount of natural and man made lighting available, and the contrast, reflectivity, and texture of surface terrain and obstruction features. In order to conduct operations safely, seeing conditions must be accounted for in the planning and execution of night VFR operations.

Night VFR seeing conditions can be described by identifying "high lighting conditions" and "low lighting conditions."

2.1.1 High lighting conditions exist when one of two sets of conditions are present:

2.1.1.1 The sky cover is less than broken (less than 5/8 cloud cover), the time is between the local Moon rise and Moon set, and the lunar disk is at least 50% illuminated; or

2.1.1.2 The aircraft is operated over surface lighting which, at least, provides for the lighting of prominent obstacles, the identification of terrain features (shorelines, valleys, hills, mountains, slopes) and a horizontal reference by which the pilot may control the helicopter. For example, this surface lighting may be the result of:

a) Extensive cultural lighting (man−made, such as a built−up area of a city),

b) Significant reflected cultural lighting (such as the illumination caused by the reflection of a major metropolitan area's lighting reflecting off a cloud ceiling), or

c) Limited cultural lighting combined with a high level of natural reflectivity of celestial illumination, such as that provided by a surface covered by snow or a desert surface.

2.1.2 Low lighting conditions are those that do not meet the high lighting conditions requirements.

2.1.3 Some areas may be considered a high lighting environment only in specific circumstances. For example, some surfaces, such as a forest with limited cultural lighting, normally have little reflectivity, requiring dependence on significant moonlight to achieve a high lighting condition. However, when that same forest is covered with snow, its reflectivity may support a high lighting condition based only on starlight. Similarly, a desolate area, with little cultural lighting, such as a desert, may have such inherent natural reflectivity that it may be considered a high lighting conditions area regardless of season, provided the cloud cover does not prevent starlight from being reflected from the surface. Other surfaces, such as areas of open water, may never have enough reflectivity or cultural lighting to ever be characterized as a high lighting area.

2.1.4 Through the accumulation of night flying experience in a particular area, the operator will develop the ability to determine, prior to departure, which areas can be considered supporting high or low lighting conditions. Without that operational experience, low lighting considerations should be applied by operators for both pre−flight planning and operations until high lighting conditions are observed or determined to be regularly available.

2.2 Astronomical Definitions and Background Information for Night Operations

2.2.1 Definitions

2.2.1.1 Horizon. Wherever one is located on or near the Earth's surface, the Earth is perceived as essentially flat and, therefore, as a plane. If there are no visual obstructions, the apparent intersection of the sky with the Earth's (plane) surface is the horizon, which appears as a circle centered at the observer. For rise/set computations, the observer's eye is considered to be on the surface of the Earth, so that the horizon is geometrically exactly 90 degrees from the local vertical direction.

5.7.1.2 Maintaining a continuous listening watch on the appropriate radio frequency; and

5.7.1.3 Reporting of mandatory points.

5.7.2 The following describes an area in the Houston CTA/FIR where reliable VHF air−to−ground communications below FL180 are not available:

5.7.2.1 26 30 00N 86 00 00W TO 26 30 00N 92 00 00W;

5.7.2.2 TO 24 30 00N 93 00 00W TO 24 30 00N 88 00 00W to;

5.7.2.3 TO 24 00 00N 86 00 00W TO BEGINNING POINT.

5.7.2.4 Communications within this area are available for all oceanic flights via HF.

NOTE−
The attention of pilots planning flights within the Houston CTA/FIR is directed to the communications and position reports requirements specified in the following ICAO Documents: Annex 2, Paragraphs 3.6.3 and 3.6.5; Annex 11, Paragraph 6.1.2; DOC 4444 Part 2 Paragraph 14; and DOC 7030 CAR Paragraph 3.

6. Satellite Voice (SATVOICE) Communication Services for Air Traffic Control (ATC)

6.1 The FAA provides Inmarsat and Iridium SATVOICE services for air−to−ground and ground−to−air calls directly with Oakland, New York, and Anchorage Air Route Traffic Control Centers (ARTCC) and New York and San Francisco RADIO. The FAA's SATVOICE services are supplemental to HF voice communication services.

NOTE−
The FAA does not provide Multi−Function Transport Satellite (MTSAT) SATVOICE services. Neither the ARTCCs nor the RADIO facilities can contact flights logged onto the MTSAT. However, the pilot on these flights could contact the ARTCC or RADIO facility, if necessary.

6.2 The pilot must limit direct SATVOICE contact with ATC to distress and urgency situations, or when other means are not available, and communication is essential.

6.3 When unable to communicate on HF, the pilot may conduct normal and routine communications with ATC via New York RADIO or San Francisco RADIO on SATVOICE.

6.4 The aircraft SATVOICE equipment must be approved in accordance with Advisory Circular 20−150, Airworthiness Approval of Satellite Voice (SATVOICE) Equipment Supporting Air Traffic Service (ATS) Communication.

NOTE−
Portable satellite phones are NOT approved for normal and routine ATC communications.

6.5 The operator must use the SATVOICE equipment in accordance with ICAO Doc 10038, Satellite Voice Operations Manual (SVOM), with emphasis on the following:

6.5.1 If the flight intends to use SATVOICE capability, the operator must file the appropriate designator (that is, M1, M2, or M3) in Item 10, and the ICAO aircraft address (that is, hexadecimal code) in Item 18 of the flight plan.

REFERENCE−
Aeronautical Information Manual, Chapter 5, Air Traffic Procedures

6.5.2 The operator must establish procedures to ensure the flight maintains voice communications (that may include SATVOICE and any required HF SELCAL checks) with every ATS unit along the route of flight.

6.5.3 When using SATVOICE, the pilot must follow RTF conventions identical to HF/VHF communications in accordance with applicable standards and regulations pertaining to aeronautical communications.

6.5.4 Satellite service providers have assigned ICAO priority level 2/HGH/Q12 Operational high (second highest) to calls between aircraft and Air Navigation Service Providers. The pilot must verify the priority of the call and act only on ATC clearances/instructions from SATVOICE calls with priority level 2/HGH/Q12, and if in doubt terminate the call and initiate a new call for confirmation.

6.5.5 The pilot must answer SATVOICE calls when contacted either by the ARTCC or RADIO facility.

6.6 The SATVOICE short codes for ARTCCs and RADIO are in accordance with TBL ENR 7.1−2.

TBL ENR 7.1−2
SATVOICE Short Codes for ARTCCs and RADIO Facilities

Oceanic Control Area (OCA)	ATC Direct (only for distress, urgency, other means not available)		ATC via RADIO Facility (when unable to communicate on HF)	
	ARTCC	SATVOICE Short Code	RADIO Facility	SATVOICE Short Code
New York East	New York ARTCC	436695	New York RADIO	436623
New York West	New York ARTCC	436696		
Oakland	Oakland ARTCC	436697	San Francisco RADIO	436625
Anchorage	Anchorage ARTCC	436602		

7. Air−to−Air Frequency

7.1 Houston, San Juan and Miami FIRs

7.1.1 Frequency 123.45 MHz is the approved air−to−air VHF channel within the above FIRs. This frequency will be used for flights operating over remote and oceanic areas out of range of VHF ground stations to exchange necessary operational information and to facilitate the resolution of operational problems.

7.1.2 Frequency 123.45 MHz replaces the previously published frequencies used within the Houston, San Juan, and Miami FIRs. This change is necessary to comply with Amendment 74 to ICAO Annex 10, Volume II, which designated 123.45 as the global standard VHF air−to−air frequency.

8. Strategic Lateral Offset Procedure (SLOP) While Within Oceanic Airspace

8.1 These procedures have been developed in accordance with the ICAO PANS − ATM, 16.5.

8.2 It has been determined that allowing aircraft conducting oceanic flight to fly lateral offsets, in increments of .1 nautical mile (NM) up to a maximum of 2 NM right of centerline, will provide an additional safety margin and mitigate the risk of conflict when non−normal events, such as aircraft navigation errors, altitude deviation errors, and turbulence−induced altitude−keeping errors occur.

8.3 These procedures are authorized in U.S.−controlled Oceanic Airspace and also the airspace surrounding the island of Bermuda, the airspace controlled by Honolulu Control Facility (HCF) and the airspace controlled by Guam Combined Center Radar Approach Control (CERAP).

8.4 These procedures provide for offsets within the following guidelines: Along a route or track there will be 21 positions that an aircraft may fly: on centerline or at increments of .1 NM (for example, .1, .2, .3, .4 ….. 1.8, 1.9, 2.0) right of centerline out to a maximum offset of 2 NM. Offsets must not exceed 2 NM right of centerline. The intent of this procedure is to reduce risk (add safety margin) by distributing aircraft laterally across the 21 available positions.

8.4.1 Pilots must fly the track centerline if their aircraft does not have automatic offset programming capability. Pilots of aircraft unable to offset at .1 NM increments should fly on the track centerline, or at the 1.0 NM or 2.0 NM positions right of centerline when using SLOP.

8.4.2 An aircraft overtaking another aircraft should offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken.

8.4.3 Pilots should also fly one of the available offset positions shown above to avoid wake turbulence.

8.4.4 Pilots should use whatever means available to determine the best flight path to fly.

8.4.5 Aircraft should not offset to the left of center line nor offset more than 2 NM right of center line. Pilots may contact other aircraft on VHF frequency 123.45, as necessary, to coordinate the best wake turbulence offset option.

NOTE−
It is recognized that pilots will use their judgment to determine the action most appropriate to any given situation and have the final authority and responsibility for the safe operations of the aircraft.

8.4.6 Pilots may apply an offset outbound after the oceanic entry point. Aircraft transiting Bermuda airspace, Honolulu CF airspace, or Guam CERAP airspace may remain on their established offset.

8.4.7 There is no ATC clearance required for this procedure and it is not necessary that ATC be advised.

ENR 7.3 Special Procedures for In−Flight Contingencies in Oceanic Airspace

1. Introduction

1.1 Although all possible contingencies cannot be covered, these procedures provide for the more frequent cases such as:

1.1.1 Inability to comply with assigned clearance due to meteorological conditions, aircraft performance, or pressurization failure;

1.1.2 En route diversion across the prevailing traffic flow; and

1.1.3 Loss of, or significant reduction in, the required navigation capability when operating in airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations.

1.2 The procedures are applicable primarily when descent and/or turn back or diversion is required. The pilot must take action as necessary to ensure the safety of the aircraft, and the pilot's judgment must determine the sequence of actions to be taken, having regard to the prevailing circumstances. Air traffic control must render all possible assistance.

1.3 Contingency procedures applicable only to the New York Oceanic CTA/FIR are detailed below in Paragraph 6, New York Contingency Procedures Including Turn−Backs.

2. General Procedures

2.1 If an aircraft is unable to continue the flight in accordance with its ATC clearance, and/or an aircraft is unable to maintain the navigation performance accuracy specified for the airspace, a revised clearance must be obtained, whenever possible, prior to initiating any action.

2.2 The radiotelephony distress signal (MAYDAY) or urgency signal (PAN PAN) preferably spoken three times must be used as appropriate. Subsequent ATC action with respect to that aircraft must be based on the intentions of the pilot and the overall air traffic situation.

2.3 If prior clearance cannot be obtained, until a revised clearance is received the following contingency procedures should be employed and the pilot must advise air traffic control as soon as practicable, reminding them of the type of aircraft involved and the nature of the problem. In general terms, the aircraft should be flown at a flight level and on an offset track where other aircraft are least likely to be encountered. Specifically, the pilot must:

2.3.1 Leave the assigned route or track by initially turning at least 45 degrees to the right or to the left, in order to acquire a same or opposite direction track offset 15 NM (28 km) from the assigned track centerline. When possible, the direction of the turn should be determined by the position of the aircraft relative to any organized route or track system. Other factors which may affect the direction of the turn are:

2.3.1.1 The direction to an alternate airport;

2.3.1.2 Terrain clearance;

2.3.1.3 Any strategic lateral offset being flown, and:

2.3.1.4 The flight levels allocated on adjacent routes or tracks;

2.3.2 Having initiated the turn:

2.3.2.1 If unable to maintain the assigned flight level, initially minimize the rate of descent to the extent that is operationally feasible. Pilots should take into account the possibility that aircraft below on the same track may be flying a 1 or 2 NM strategic lateral offset procedure (SLOP) and select a final altitude which differs from those normally used by 500 ft (150 m) if at or below FL 410, or by 1,000 ft (300 m) if above FL 410; or

2.3.2.2 If able to maintain the assigned flight level, once the aircraft has deviated 10 NM (19 km) from the assigned track centerline, climb or descend to select a flight level which differs from those normally used by 500 ft (150 m), if at or below FL 410, or by 1,000 ft (300m) if above FL 410.

2.3.3 Establish communications with and alert nearby aircraft by broadcasting, at suitable intervals on 121.5 MHz (or, as a backup, on the inter−pilot air−to−air frequency 123.45 MHz) and where appropriate on the frequency in use: aircraft identification, flight level, position (including the

ATS route designator or the track code, as appropriate) and intentions;

2.3.4 Maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped);

2.3.5 Turn on all aircraft exterior lights (commensurate with appropriate operating limitations); and

2.3.6 Keep the SSR transponder on at all times.

2.4 When leaving the assigned track:

2.4.1 If the intention is to acquire a same direction offset track, the pilot should consider limiting the turn to a 45 degree heading change, in order not to overshoot the offset contingency track; or

2.4.2 If the intention is to acquire and maintain an opposite direction offset track, then:

2.4.2.1 Operational limitations on bank angles at cruising altitudes will normally result in overshooting the track to be acquired. In such cases a continuous turn should be extended beyond 180 degrees heading change, in order to re−intercept the offset contingency track as soon as operationally feasible; and

2.4.2.2 Furthermore, if executing such a turn back in a 30 NM (56km) lateral separation route structure, extreme caution pertaining to opposite direction traffic on adjacent routes must be exercised and any climb or descent, as specified in 2.3.2.2 above, should be completed preferably before approaching within 10 NM (19km) of any adjacent ATS route.

3. Extended Range Operations by Airplanes with Two−Turbine Power−Units (ETOPS)

3.1 If the contingency procedures are employed by a twin−engine aircraft as a result of an engine shutdown or failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation, reminding ATC of the type of aircraft involved, and request expeditious handling.

4. General Weather Deviation Procedures

NOTE−
The following procedures are intended for deviations around adverse meteorological conditions.

4.1 When the pilot initiates communications with ATC, a rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response. When necessary, the pilot should initiate the communications using the urgency call "PAN PAN" (preferably spoken three times).

4.2 The pilot should notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected.

4.3 ATC should take one of the following actions:

4.3.1 When appropriate separation can be applied, issue clearance to deviate from track; or

4.3.2 If there is conflicting traffic and ATC is unable to establish appropriate separation, ATC must:

4.3.2.1 Advise the pilot of inability to issue clearance for the requested deviation;

4.3.2.2 Advise the pilot of conflicting traffic; and

4.3.2.3 Request the pilot's intentions.

4.4 The pilot should take one of the following actions:

4.4.1 Comply with the ATC clearance issued; or

4.4.2 Advise ATC of intentions and execute the procedures detailed in the section below on "Actions to be taken if a revised ATC clearance cannot be obtained."

4.5 Actions to be taken if a revised ATC clearance cannot be obtained:

NOTE−
These provisions apply to situations where a pilot needs to exercise the authority of a pilot−in−command under the provisions of ICAO Annex 2,2.3.1.

4.5.1 If the aircraft is required to deviate from track to avoid adverse meteorological conditions and prior clearance cannot be obtained, an ATC clearance must be obtained at the earliest possible time. Until an ATC clearance is received, the pilot must take the following actions:

4.5.1.1 If possible, deviate away from an organized track or route system;

4.5.1.2 Establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including ATS route designator or the track code) and intentions, on the frequency in use and on 121.5 MHz (or, as a backup, on the inter−pilot air−to−air frequency 123.45 MHz);

4.5.1.3 Watch for conflicting traffic both visually and by reference to ACAS (if equipped);

NOTE−
If, as a result of actions taken under the provisions of items 4.5.1.2 and 4.5.1.3 above, the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

4.5.1.4 Turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

4.5.1.5 Deviations of less than 10 NM (19 km) should REMAIN at ASSIGNED altitude. Otherwise, when the aircraft is approximately 10 NM (19 km) from track, initiate an altitude change in accordance with TBL ENR 7.3−1.

4.5.1.6 When returning to track, be at its assigned flight level when the aircraft is within approximately 10 NM (19 km) of the centerline; and

4.5.1.7 If contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

4.6 The pilot must inform ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to its cleared route.

TBL ENR 7.3−1

Route Centerline Track	Deviations > 10 NM (19 km)	Altitude Change
EAST (000° − 179° magnetic)	LEFT	DESCEND 300 ft (90 m)
	RIGHT	CLIMB 300 ft (90 m)
WEST (180° − 359° magnetic)	LEFT	CLIMB 300 ft (90 m)
	RIGHT	DESCEND 300 ft (90 m)
Pilot Memory Slogan: "East right up, West right down."		

5. Houston/Miami/New York Oceanic CTA/FIR National Winter Storm Operations

5.1 During the winter season, the U.S. Air Force Reserves (AFRES), 53rd Weather Squadron has responsibility for flying winter storm reconnaissance missions. Mission aircraft will fly at altitudes between FL290 and FL350. At designated points, the aircraft will release dropsondes, 16−inch cardboard weather cylinders weighing one pound, each with an attached parachute. When in areas with no direct pilot−controller VHF/UHF communications, at five minutes prior to dropsonde release, the mission aircraft commander will broadcast on 121.5 and 243 the time and position of the intended drop. The dropsonde falls at a rate of approximately 2500 feet per minute.

5.2 Aircraft commanders are directly responsible for or the release of any objects from the aircraft. ATC must provide traffic advisories, when feasible, to the aircraft. ATC will provide separation between the mission aircraft and any nonparticipating aircraft. ATC cannot provide separation between aircraft and the dropsonde.

5.3 NOTAMs will be issued as early as possible prior to each mission. Airspace operators should consider any national winter storm operations during flight planning in the affected area(s) and nonparticipating aircrews should be especially alert to pertinent broadcasts on 121.5 or 243.0 during national winter storm operations.

6. New York Contingency Procedures Including Turnbacks

6.1 Introduction

6.1.1 The procedures contained herein for operations in the New York Center Oceanic CTA/FIR are to be used in place of the procedures contained in ENR 7.3, paragraphs 2 and 4.

6.1.2 Although all possible contingencies cannot be covered, the procedures in paragraphs 6.2, 6.3, and 6.4 provide for the more frequent cases, such as:

6.1.2.1 Inability to comply with assigned clearance due to meteorological conditions (see paragraph 6.4);

6.1.2.2 En route diversion across the prevailing traffic flow (for example, due to medical emergencies (see paragraphs 6.2 and 6.3); and

6.1.2.3 A loss, or significant reduction of, the required navigation capability when operating in airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations; or in the event of pressurization failure (see paragraphs 6.2 and 6.3)

NOTE−
Guidance on procedures to follow when an aircraft experiences a degradation in navigation capabilities can be found in ICAO Doc 4444, Procedures for Air Navigation Services – Air Traffic Management, Chapter 5, section 5.2.2.

6.1.3 The pilot shall take action as necessary to ensure the safety of the aircraft. The pilot's judgement shall determine the sequence of actions to be taken in regard to the prevailing circumstances. Air traffic control shall render all possible assistance.

6.2 General Procedures

NOTE−
Figure ENR 7.3−1 provides an aid for understanding and applying the contingency procedures contained in paragraphs 6.2 and 6.3.

6.2.1 If an aircraft is unable to continue the flight in accordance with its ATC clearance, a revised clearance shall be obtained, whenever possible, prior to initiating any action.

6.2.2 If prior clearance cannot be obtained, the following contingency procedures should be employed until a revised clearance is received:

6.2.2.1 Leave the cleared route or track by initially turning at least 30 degrees to the right or to the left in order to intercept and maintain a parallel, same direction track or route offset 9.3 km (5.0 NM). The direction of the turn should be based on one or more of the following:

a) Aircraft position relative to any organized track or route system;

b) The direction of flights and flight levels allocated on adjacent tracks;

c) The direction to an alternate airport;

d) Any strategic lateral offset being flown; and

e) Terrain clearance;

6.2.2.2 The aircraft should be flown at a flight level and an offset track where other aircraft are less likely to be encountered;

6.2.2.3 Watch for conflicting traffic both visually and by ACAS (if equipped), leaving ACAS in RA mode at all times unless aircraft operating limits dictate otherwise;

6.2.2.4 Turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

6.2.2.5 Keep the SSR transponder on at all times and, when able, squawk 7700, as appropriate;

6.2.2.6 As soon as practicable, the pilot shall advise air traffic control of any deviation from assigned clearance;

6.2.2.7 Use whatever means is appropriate (i.e., voice and/or CPDLC) to communicate during a contingency or emergency;

6.2.2.8 If voice communication is used, the radiotelephony distress signal (MAYDAY) or urgency signal (PAN PAN), preferably spoken three times, shall be used as appropriate;

6.2.2.9 When emergency situations are communicated via CPDLC, the controller may respond via CPDLC. However, the controller may also attempt to make voice communication contact with the aircraft;

NOTE−
Additional guidance on emergency procedures for controllers, radio operators, and flight crew, in data link operations can be found in the Global Operational Data Link (GOLD) Manual (Doc10037).

6.2.2.10 Establish communications with nearby aircraft by broadcasting at suitable intervals on 121.5 MHz (or as a backup on the inter−pilot air−to−air frequency 123.45 MHz). Also broadcast where appropriate on the frequency in use: aircraft identification, the nature of the distress condition, intention of the person in command, position (including the ATS route designator or the track code, as appropriate), and flight level; and

6.2.2.11 The controller should attempt to determine the nature of the emergency and ascertain any assistance that may be required. Subsequent ATC action with respect to that aircraft must be based on the intentions of the pilot and overall traffic situation.

6.3 Actions to be Taken Once Offset from Track

NOTE−
The pilot's judgement of the situation and the need to ensure the safety of the aircraft will determine whether the actions outlined in 6.3.2.1 or 6.3.2.2 will be taken. Factors for the pilot to consider when diverting from the cleared route or track without an ATC clearance include, but are not limited to: operation within a parallel track system; the potential for User Preferred Routes (UPR) parallel to the aircraft's track or route; the nature of the contingency (for example, aircraft system malfunction); and weather factors (for example, convective weather at lower flight levels).

6.3.1 If possible, maintain the assigned flight level until established on the 9.3 km (5.0 NM) parallel, same direction track or route offset. If unable, initially minimize the rate of descent to the extent that is operationally feasible.

6.3.2 Once established on a parallel, same direction track or route offset by 9.3 km (5.0 NM), either:

6.3.2.1 Descend below FL 290, establish a 150 m (500 ft) vertical offset from those flight levels normally used, and proceed as required by the operational situation or, if an ATC clearance has been obtained, proceed in accordance with the clearance, or

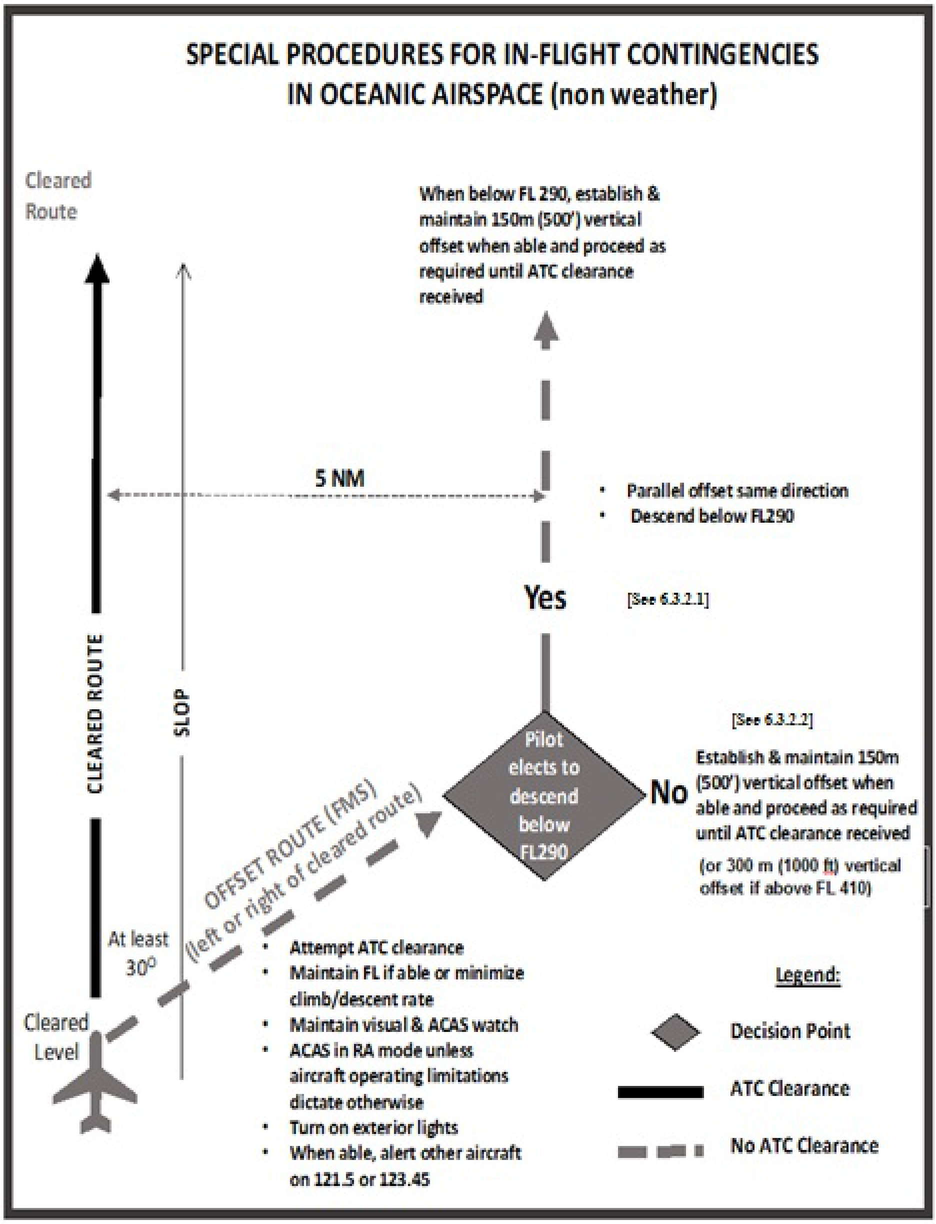
NOTE−
Descent below FL 290 is considered particularly applicable to operations where there is a predominant traffic flow (for example, east−west) or parallel track system where the aircraft's diversion path will likely cross adjacent tracks or routes. A descent below FL 290 can decrease the likelihood of conflict with other aircraft, ACAS RA events, and delays in obtaining a revised ATC clearance.

6.3.2.2 Establish a 150 m (500 ft) vertical offset (or 300 m (1000 ft) vertical offset if above FL 410) from those flight levels normally used, and proceed as required by the operational situation, or if an ATC clearance has been obtained, proceed in accordance with the clearance.

NOTE−
Altimetry system error may lead to less than actual 150 m (500 ft) vertical separation when the procedure above is applied. In addition, with the 150 m (500 ft) vertical offset applied, ACAS RAs may occur.

FIG ENR 7.3−1

Visual Aid for Understanding and Applying the Contingency Procedures Guidance



6.4 Weather Deviation Procedures

6.4.1 General

NOTE−
The following procedures are intended for deviations around adverse meteorological conditions.

6.4.1.1 When weather deviation is required, the pilot should contact ATC via CPDLC or voice. A rapid response may be obtained by either:

a) Stating, "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response; or

b) Requesting a weather deviation using a CPDLC lateral downlink message.

6.4.1.2 When necessary, the pilot should initiate the communications using the urgency call "PAN PAN" (preferably spoken three times) or by using a CPDLC urgency downlink message.

6.4.1.3 The pilot shall inform ATC when a weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to its cleared route.

6.4.2 Actions to be Taken When Controller−Pilot Communications Are Established

6.4.2.1 The pilot should notify ATC and request clearance to deviate from track or route, advising when possible the extent of the deviation requested. The flight crew will use whatever means are appropriate (i.e., CPDLC and/or voice) to communicate during a weather deviation.

NOTE−
Pilots are advised to contact ATC as soon as possible with requests for clearance in order to provide time for the request to be assessed and acted upon.

6.4.2.2 ATC should take one of the following actions:

a) When appropriate separation can be applied, issue clearance to deviate from track; or

b) If there is conflicting traffic and ATC is unable to establish appropriate separation, ATC should:

1) Advise the pilot of inability to issue clearance for the requested deviation;

2) Advise the pilot of conflicting traffic; and

3) Request the pilot's intentions.

6.4.2.3 The pilot should take one of the following actions:

a) Comply with the ATC clearance issued; or

b) Advise ATC of intentions and execute the procedures provided in paragraph 6.4.3.

6.4.3 Actions to be Taken if a Revised ATC Clearance Cannot Be Obtained:

NOTE−
The provisions of this paragraph apply to situations where a pilot needs to exercise the authority of a pilot−in−command under the provisions of ICAO Annex 2, 2.3.1.

6.4.3.1 If the aircraft is required to deviate from track or route to avoid adverse meteorological conditions, and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. Until an ATC clearance is received, the pilot shall take the following actions:

a) If possible, deviate away from an organized track or route system;

b) Establish communications with and alert nearby aircraft by broadcasting at suitable intervals: aircraft identification, flight level, position (including ATS route designator or the track code) and intentions, on the frequency in use and on 121.5 MHz (or as a backup, on the inter−pilot air−to−air frequency 123.45 MHz);

c) Watch for conflicting traffic both visually and by reference to ACAS, if equipped;

d) Turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

e) For deviations less than 9.3 km (5.0 NM) from the originally cleared track or route, remain at a level assigned by ATC;

f) For deviations greater than or equal to 9.3 km (5.0 NM) from the originally cleared track or route, when the aircraft is approximately 9.3 km (5.0 NM) from track, initiate a level change in accordance with TBL ENR 7.3−2.

g) If the pilot receives clearance to deviate from the cleared track or route for a specified distance and subsequently requests but is denied clearance to deviate beyond that distance, the pilot should apply an altitude offset in accordance with TBL ENR 7.3−2 immediately;

h) When returning to track or route, be at the assigned flight level when the aircraft is within approximately 9.3 km (5.0 NM) of the centerline.

6.4.3.2 If contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

NOTE−
If, as a result of actions taken under the provisions of 6.4.3.1 above, the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft as necessary to avoid conflict.

TBL ENR 7.3−2
Altitude Offset When Denied Clearance to Deviate 9.3 km (5.0 NM) or More

Originally Cleared Track or Route Center Line	Deviations > 9.3 km (5 NM)	Level Change
EAST (000° - 179° magnetic)	LEFT	DESCEND 90 m (300 ft)
	RIGHT	CLIMB 90 m (300 ft)
WEST (180° - 359° magnetic)	LEFT	CLIMB 90 m (300 ft)
	RIGHT	DESCEND 90 m (300 ft)

ENR 7.5 Operational Policy ADS−C Distance−Based Separation

1. Introduction

1.1 Distance−based longitudinal separation minima using Automatic Dependent Surveillance−Contract (ADS−C) is implemented in Oakland Oceanic airspace as specified in TBL ENR 7.5−1.

TBL ENR 7.5−1
Minima

Minima				
Standard	**RNP**	**RCP**	**RSP**	**Maximum ADS−C Periodic Reporting Interval**
50 NM	10	240	180	27 minutes
50 NM	4	240	180	32 minutes
30 NM	4	240	180	14 minutes

1.2 Distance−based longitudinal separation minima using ADS−C is implemented in the Anchorage Oceanic and New York Oceanic airspace as specified in TBL ENR 7.5−2.

TBL ENR 7.5−2
Minima

Minima				
Standard	**RNP**	**RCP**	**RSP**	**Maximum ADS−C Periodic Reporting Interval**
50 NM	10	240	180	27 minutes
50 NM	4	240	180	32 minutes
30 NM	4	240	180	10 minutes

1.3 Aircraft Future Air Navigation System (FANS) 1/A communications, navigation and surveillance (CNS) capabilities, interfaced with Advanced Technology and Oceanic Procedures (ATOP), are required for ADS−C distance based separation to be applied.

NOTE−
1. *ADS−C distance based separation standards may not be applied to aircraft utilizing High Frequency Data Link (HFDL).*

2. *ADS−C distance based separation is not currently authorized in the Anchorage Arctic FIR.*

2. Application

2.1 Oakland, New York and Anchorage ARTCCs will apply the following policies to the use of ADS−C distance based separation:

2.1.1 The separation will be applied to pairs of suitably equipped pairs of aircraft;

2.1.2 Published ATS routes and other tracks (e.g. PACOTS) will continue to be laterally separated by a minimum of 50 NM;

2.1.3 Minimum ADS−C based lateral and longitudinal separation between 30 NM eligible aircraft and 50 NM eligible aircraft is 50 NM; and

2.1.4 Lateral and longitudinal separation standards applied between RNP 10 and non−RNP 10 aircraft remains unchanged.

3. Aircraft and Operator Eligibility for Performance−Based Separation

3.1 The aircraft and operator must be authorized by the State of the Operator or the State of Registry, as appropriate, for 50 NM: at a minimum, RNP 4 or RNAV 10, RCP 240, and RSP 180; and for 30 NM: at a minimum, RNP 4, RCP 240, and RSP 180 operations;

3.2 The aircraft must be equipped with a minimum of two approved long range navigation systems that will enable the aircraft to maintain RNP 4 for the duration of flight in the applicable airspace;

3.3 The aircraft must be equipped with a FANS1/A package (or equivalent) that includes satellite Controller Pilot Data Link Communication (CPDLC) and ADS−C that meet the standards of RTCA Document 258, Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications;

3.4 Satellite CPDLC communications and ADS−C surveillance must be conducted in accordance with the ICAO Global Operational Data Link Document (GOLD), as amended, and maintained for the

3.5 Pilots and, if applicable, dispatchers must be trained on policies and procedures applicable to ADS−C distance based separation, including the use of Satellite CPDLC and ADS−C in Pacific oceanic airspace.

3.6 Operators should use the ICAO GOLD to develop policy and procedures for CPDLC and ADS−C operations.

3.6.1 Operators must use one of the following documents to develop policy and procedures for RNP 4 operations:

3.6.1.1 FAA Advisory Circular (AC) 90-105, Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace;

3.6.1.2 Australian Civil Aviation Safety Authority (CASA) Advisory Circular 91U3(0); or

3.6.1.3 ICAO Performance−Based Navigation (PBN) Manual (ICAO Document 9613), Volume II, Part C, Chapter 1.

3.6.1.4 ICAO Performance−Based Communication and Surveillance (PBCS) Manual (ICAO Doc 9869).

4. Flight Planning Requirements

See ENR 7.1, Paragraph 2, Flight Plan Filing Requirements.

NOTE−
Other than the flight plan requirements discussed in ENR 7.1, Paragraph 2, Flight Plan Filing Requirements, application of distance based separation does not affect operator planning processes or procedures for filing flight plans. Operators that have filed and flown User Preferred Routes (UPRs) may continue to do so.

5. In−Flight Contingency Actions/ Procedures and Emphasis on Situational Awareness

5.1 Pilots should be aware that ADS−C distance based separation can be applied to their aircraft. They should use all available tools to maintain an awareness of other aircraft in their proximity in case an inflight contingency occurs (e.g., aircraft or ATC system malfunction).

5.2 Pilots must advise ATC of a loss of CPDLC and/or ADS−C capability or an inability to continue to meet RNP 4. ATC will transition the aircraft to another form of separation as expeditiously as possible.

5.3 If there is a known malfunction of the CPDLC or ADS−C system, ATC will contact aircraft and transition the aircraft to another form of separation as expeditiously as possible.

5.4 Pilots should use the guidance in ENR 7.3, Special Procedures for In−Flight Contingencies in Oceanic Airspace. This reflects current ICAO guidance calling for a 15 NM track offset when unable to obtain ATC clearance prior to executing maneuvers for contingencies such as rapid descent, turn back, or diversion. This is of particular importance for aircraft to which 30 NM separation can be applied.

5.5 Pilots are required to maneuver (deviate) around convective weather on a regular basis in the course of Pacific operations. The enhanced CNS requirements and capabilities aid pilots and controllers in situations where aircraft are required to maneuver around convective weather. For weather avoidance maneuvers in areas where ADS−C distance based separation is applied, operators should emphasize the following items in pilot training programs:

5.5.1 Pilots should not assume the ATOP system will automatically quickly detect significant changes to the aircraft flight path. Unlike radar, the ATOP system does not receive aircraft position updates in real−time. Aircraft position is updated to the ATOP system at intervals of up to 27 minutes. Controllers may change the update intervals as the situation warrants.

5.5.2 It is imperative that pilots keep ATC advised via CPDLC (or HF voice, if necessary) of their intentions (including significant airspeed changes) during the initial weather avoidance maneuver and any subsequent maneuvers to avoid convective weather.

5.5.3 Pilots must be aware that other aircraft could be approximately 30 NM ahead or behind on the same track, and inform ATC expeditiously of changes to flight path or airspeed that could erode longitudinal separation.

5.5.4 Pilots must be familiar with ENR 7.3, Special Procedures for In−Flight Contingencies in Oceanic Airspace.

NOTE−
In particular, pilots should be aware of the provision to climb or descend 300 feet (depending on the direction of flight and direction of deviation from track) to mitigate the chance of conflict with other aircraft when forced to deviate without a clearance.

5.5.5 It is recommended that ACAS be operational for aircraft to which 30 NM separation can be applied. ACAS provides a valuable tool to alert the pilot to the presence and proximity of nearby aircraft in weather deviation situations.

5.5.6 In accordance with ICAO Document 4444, pilots are reminded that, regardless of the magnitude of a deviation from assigned route, whenever possible, clearance should be requested in advance from ATC. Prior coordination with ATC will help prevent the aircraft generating unnecessary alerts to ATC for lateral deviation events.

NOTE−
This does not apply to SLOP.

5.5.7 Operators should consider adopting guidance for pilots to use heading mode to maneuver around areas of convective weather. Use of heading mode will prevent transmission of unnecessary lateral deviation event alerts that some flight management systems (FMS) automatically transmit to ATC when the FMS automatic lateral offset feature is used for weather avoidance. It should be emphasized that, when using heading mode, pilots should monitor cross track and heading and return to track when weather avoidance maneuvering is complete.

5.5.8 Aircraft navigation errors and system malfunctions will be monitored and documented. Operators should cooperate in follow up investigation of these events.

ENR 7.10 Y−Routes

1. Introduction

1.1 The FAA has established a network of area navigation (RNAV) routes to enhance efficiency of air traffic flow and control over the West Atlantic, Gulf of Mexico, the Bahamas, and Puerto Rico. These RNAV routes, charted as "Y" routes, exist largely, but not exclusively, within U.S. "offshore airspace." Operators may find U.S. offshore airspace labeled as "Atlantic High," "Atlantic Low," "Gulf of Mexico High," etc., on FAA IFR en route charts. In accordance with 14 CFR Part 71, § 71.1, § 71.33, and § 71.71, offshore airspace at and above 18,000 feet MSL is Class A airspace, while that offshore airspace below 18,000 feet MSL is Class E. The FAA normally uses domestic air traffic control procedures, vice oceanic procedures, in offshore airspace. Aircraft flying Y−routes will typically be within signal coverage of U.S. ground navigation facilities and ATC radar. Actual signal reception and radar detection are a function of aircraft altitude. The majority of Y−routes exist only in the upper altitude structure, i.e., Class A offshore airspace.

2. General Requirements

2.1 The Y−routes are designated RNAV 2 with GNSS required. Aircraft flying the Y−routes must be equipped with GNSS and able to meet RNAV 2 performance requirements. RNAV systems relying solely on DME/DME or inertial navigation are not suitable (and therefore not authorized) for use on any Y−route.

2.2 Pilots must indicate on their ATC flight plan at least the minimum equipment and capability required for RNAV 2 with GNSS. Item 10 of the flight plan must indicate G and R. Item 18 must indicate PBN/C2.

3. Operational Requirements

3.1 Pilots are expected to fly the route centerline, as defined by the aircraft RNAV system. Pilots must not use strategic lateral offset procedures (SLOP) while on the Y−routes.

3.2 Operators must check predicted RAIM availability for the expected duration of their flight on a Y−route. Five (5) minutes is the maximum predicted continuous loss of RAIM allowed for flight on a Y−route.

4. Pilot Knowledge

4.1 Advisory Circular (AC) 90−100, U.S. Terminal and En Route Area Navigation (RNAV) Operations, contains pilot knowledge subject matter that is generally applicable to any RNAV operation. General aviation pilots in particular should use the RNAV subject matter contained in AC 90−100 in preparation for any flight on an RNAV route, including Y−routes.

PART 3 − AERODROMES (AD)

AD 0.

AD 0.1 Preface − Not applicable
AD 0.2 Record of AIP Amendments − See GEN 0.2−1
AD 0.3 Record of AIP Supplements − Not applicable

AD 0.4 Checklist of Pages

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AD 0.5 List of Hand Amendments to the AIP − Not applicable

enters the runway and there is an aircraft on approach and within 1.5 nautical miles of the landing threshold.

b) What a pilot would observe: A pilot on approach to the runway will observe the PAPI flash if there is traffic on the runway and will notice the PAPI ceases to flash when the traffic moves outside the hold short lines for the runway.

c) When a pilot observes a flashing PAPI at 500 feet above ground level (AGL), the contact height, the pilot must look for and acquire the traffic on the runway. At 300 feet AGL, the pilot must contact ATC for resolution if the FAROS indication is in conflict with the clearance. If the PAPI continues to flash, the pilot must execute an immediate "go around" and contact ATC at the earliest possible opportunity.

12.6.5 Pilot Actions

12.6.5.1 When operating at airports with RWSL, pilots will operate with the transponder/ADS−B "On" when departing the gate or parking area until it is shut down upon arrival at the gate or parking area. This ensures interaction with the FAA surveillance systems such as ASDE-X/Airport Surface Surveillance Capability (ASSC) which provide information to the RWSL system.

12.6.5.2 Pilots must always inform the ATCT when they have either stopped, are verifying a landing clearance, or are executing a go-around due to RWSL or FAROS indication that are in conflict with ATC instructions. Pilots must request clarification of the taxi, takeoff, or landing clearance.

12.6.5.3 Never cross over illuminated red lights. Under normal circumstances, RWSL will confirm the pilot's taxi or takeoff clearance previously issued by ATC. If RWSL indicates that it is unsafe to takeoff from, land on, cross, or enter a runway, immediately notify ATC of the conflict and re-confirm the clearance.

12.6.5.4 Do not proceed when lights have extinguished without an ATC clearance. RWSL verifies an ATC clearance, it does not substitute for an ATC clearance.

12.6.5.5 Never land if PAPI continues to flash. Execute a go around and notify ATC.

12.6.6 ATC Control of RWSL System:

12.6.6.1 Controllers can set in−pavement lights to one of five (5) brightness levels to assure maximum conspicuity under all visibility and lighting conditions. REL, THL, and RIL subsystems may be independently set.

12.6.6.2 System lights can be disabled should RWSL operations impact the efficient movement of air traffic or contribute, in the opinion of the assigned ATC Manager, to unsafe operations. REL, THL, RIL, and FAROS light fixtures may be disabled separately. Disabling of the FAROS subsystem does not extinguish PAPI lights or impact its glide path function. Whenever the system or a component is disabled, a NOTAM must be issued, and the Automatic Terminal Information System (ATIS) must be updated.

12.7 Stand-Alone Final Approach Runway Occupancy Signal (FAROS)

12.7.1 Introduction:

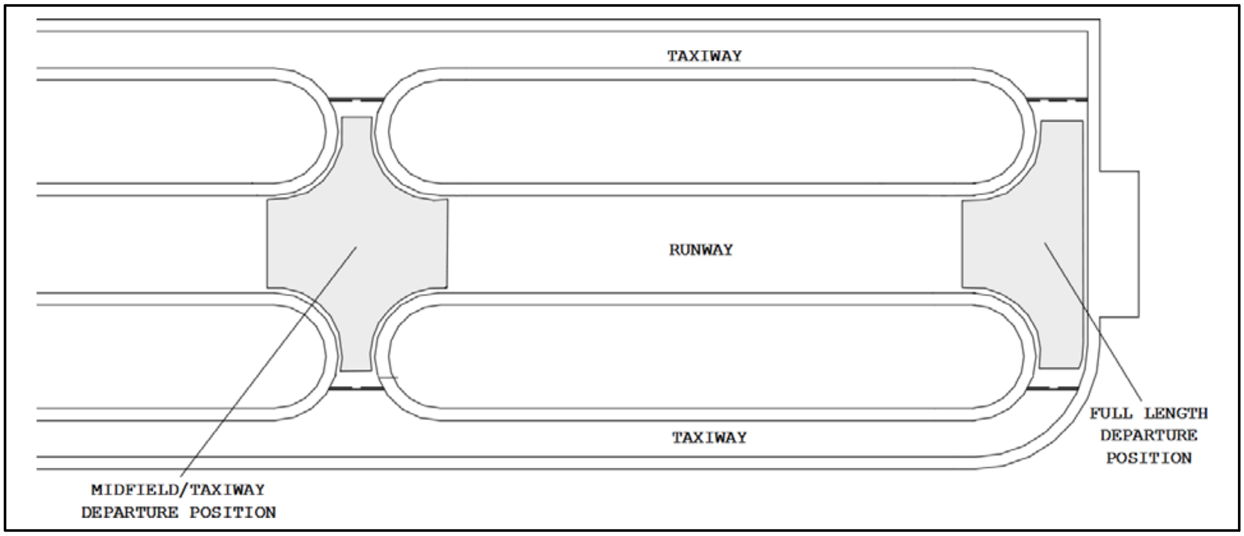
The stand-alone FAROS system is a fully automated system that provides runway occupancy status to pilots on final approach to indicate whether it may be unsafe to land. When an aircraft or vehicle is detected on the runway, the Precision Approach Path Indicator (PAPI) light fixtures flash as a signal to indicate that the runway is occupied and that it may be unsafe to land. The stand-alone FAROS system is activated by localized or comprehensive sensors detecting aircraft or ground vehicles occupying activation zones.

The stand-alone FAROS system monitors specific areas of the runway, called activation zones, to determine the presence of aircraft or ground vehicles in the zone (see FIG AD 1.1−10). These activation zones are defined as areas on the runway that are frequently occupied by ground traffic during normal airport operations and could present a hazard to landing aircraft. Activation zones may include the full-length departure position, the midfield departure position, a frequently crossed intersection, or the entire runway.

Pilots can refer to the airport specific FAROS pilot information sheet for activation zone configuration.

Clearance to land on a runway must be issued by Air Traffic Control (ATC). ATC personnel have limited control over the system and may not be able to view the FAROS signal.

FIG AD 1.1−10
FAROS Activation Zones



12.7.2 Operating Characteristics:

If an aircraft or ground vehicle occupies an activation zone on the runway, the PAPI light fixtures on that runway will flash. The glide path indication is not affected, i.e. the configuration of red and white PAPI lights observed by the pilot on approach does not change. The stand-alone FAROS system flashes the PAPI lights when traffic occupies an activation zone whether or not there is an aircraft on approach.

12.7.3 Pilot Observations:

A pilot on approach to the runway observes the PAPI lights flashing if there is traffic on the runway activation zones and notices the PAPI lights cease to flash when the traffic moves outside the activation zones.

A pilot on departure from the runway should disregard any observations of flashing PAPI lights.

12.7.4 Pilot Actions:

When a pilot observes a flashing PAPI at 500 feet above ground level (AGL), the pilot must look for and attempt to acquire the traffic on the runway. At 300 feet AGL, the pilot must contact ATC for resolution if the FAROS indication is in conflict with the clearance (see FIG AD 1.1−11). If the PAPI lights continue to flash and the pilot cannot visually determine that it is safe to land, the pilot must execute an immediate "go around". As with operations at non-FAROS airports, it is always the pilot's responsibility to determine whether or not it is safe to continue with the approach and to land on the runway.

Pilots should inform the ATCT when they have executed a go around due to a FAROS indication that is in conflict with ATC instructions.

NOTE−
At this time, the stand-alone FAROS system is not widely implemented and is used for evaluation purposes.

AD 2. AERODROMES

1. The following is a partial list of U.S. airports designated to serve international operations. This list contains U.S. airports with scheduled passenger service in large aircraft and certain airports designated as alternate service airports. Omitted from this list are designated general aviation airports, airports with scheduled cargo but no scheduled passenger service, and certain airports having international service in commuter−type aircraft.

ICAO ID	Location	Airport Name	Designation
Alaska			
PANC	Anchorage	Ted Stevens Anchorage International	Regular
PAED	Anchorage	Elmendorf AFB	Alternate
PACD	Cold Bay	Cold Bay	Alternate
PAEI	Fairbanks	Eielson AFB	Alternate
PAFA	Fairbanks	Fairbanks International	Regular
PAJN	Juneau	Juneau International	Regular
PAKN	King Salmon	King Salmon	Alternate
American Samoa			
NSTU	Pago Pago	Pago Pago International	Regular
Arizona			
KPHX	Phoenix	Phoenix Sky Harbor International	Regular
KTUS	Tucson	Tucson International	Regular
California			
KFAT	Fresno	Fresno Yosemite International	Alternate
KLAX	Los Angeles	Los Angeles International	Regular
KOAK	Oakland	Metropolitan Oakland International	Regular
KONT	Ontario	Ontario International	Alternate
KPMD	Palmdale	Palmdale Regional/ USAF Plant 42	Alternate
KSMF	Sacramento	Sacramento International	Alternate
KSAN	San Diego	San Diego International	Regular
KSFO	San Francisco	San Francisco International	Regular
KSJC	San Jose	San Jose Norman Y. Mineta International	Regular
KSCK	Stockton	Stockton Metropolitan	Alternate
Colorado			
KDEN	Denver	Denver International	Regular
KPUB	Pueblo	Pueblo Memorial	Alternate
Connecticut			
KBDL	Windsor Locks	Bradley International	Regular
District of Columbia			
KIAD	Washington	Washington Dulles International	Regular
Florida			
KFLL	Fort Lauderdale	Fort Lauderdale−Hollywood International	Regular
KRSW	Fort Myers	Southwest Florida International	Regular
KMIA	Miami	Miami International	Regular
KMCO	Orlando	Orlando International	Regular
KTPA	Tampa	Tampa International	Regular
KPBI	West Palm Beach	Palm Beach International	Regular
Georgia			
KATL	Atlanta	Hartsfield − Jackson Atlanta International	Regular
Guam			
PGUM	Agana	Guam International	Regular
PGUA	Guam Island	Andersen AFB	Alternate
Hawaii			
PHTO	Hilo	Hilo International	Alternate
PHNL	Honolulu	Honolulu International	Regular
PHOG	Kahului	Kahului	Regular

ICAO ID	Location	Airport Name	Designation
Illinois			
KORD	Chicago	Chicago−O'Hare International	Regular
Indiana			
KIND	Indianapolis	Indianapolis International	Regular
Kansas			
KICT	Wichita	Wichita Mid−Continent	Alternate
Kentucky			
KCVG	Covington	Cincinnati/ Northern Kentucky International	Regular
Louisiana			
KMSY	New Orleans	Louis Armstrong New Orleans International	Regular
Maine			
KBGR	Bangor	Bangor International	Alternate
Maryland			
KBWI	Baltimore	Baltimore−Washington International Thurgood Marshall	Regular
Massachusetts			
KBOS	Boston	General Edward Lawrence Logan International	Regular
Michigan			
KDTW	Detroit	Detroit Metropolitan Wayne County	Regular
Minnesota			
KMSP	Minneapolis	Minneapolis−St. Paul International (Wold−Chamberlain)	Regular
Missouri			
KMCI	Kansas City	Kansas City International	Regular
KSTL	St. Louis	Lambert−St. Louis International	Regular
Nevada			
KLAS	Las Vegas	McCarran International	Regular
KRNO	Reno	Reno/Tahoe International	Regular

ICAO ID	Location	Airport Name	Designation
New Jersey			
KEWR	Newark	Newark Liberty International	Regular
New York			
KJFK	New York	John F. Kennedy International	Regular
KIAG	Niagara Falls	Niagara Falls International	Alternate
KSYR	Syracuse	Syracuse Hancock International	Regular
North Carolina			
KCLT	Charlotte	Charlotte/ Douglas International	Regular
KRDU	Raleigh−Durham	Raleigh−Durham International	Regular
Northern Mariana Islands			
PGSN	Saipan Island	Francisco C. Ada/Saipan International	Regular
Ohio			
KCLE	Cleveland	Cleveland−Hopkins International	Regular
KCMH	Columbus	Port Columbus International	Regular
Oregon			
KPDX	Portland	Portland International	Regular
Palau Island			
PTRO	Babelthuap Island	Babelthuap/ Koror	Regular
Pennsylvania			
KPHL	Philadelphia	Philadelphia International	Regular
KPIT	Pittsburgh	Pittsburgh International	Regular
Puerto Rico			
TJMZ	Mayaguez	Eugenio Maria De Hostos	Regular
TJSJ	San Juan	Luis Munoz Marin International	Regular
Tennessee			
KMEM	Memphis	Memphis International	Regular
KBNA	Nashville	Nashville International	Regular

ICAO ID	Location	Airport Name	Designation
Texas			
KDFW	Dallas	Dallas−Fort Worth International	Regular
KELP	El Paso	El Paso International	Regular
KIAH	Houston	George Bush Intercontinental/ Houston	Regular
KLRD	Laredo	Laredo International	Regular
KSAT	San Antonio	San Antonio International	Regular
Utah			
KSLC	Salt Lake City	Salt Lake City International	Regular
Virgin Islands			
TIST	Charlotte Amalie St. Thomas	Cyril E King	Regular
TISX	Christiansted St. Croix	Henry E Rohlsen	Regular
Washington			
KPAE	Everett	Snohomish County (Paine Field)	Alternate
KSEA	Seattle	Seattle−Tacoma International	Regular
KGEG	Spokane	Spokane International	Alternate
Wisconsin			
KMKE	Milwaukee	General Mitchell International	Regular

1.1 Diagrams of these airports, arranged alphabetically by state and in the order listed above, are on the pages following. The most up−to−date diagrams of these and other U.S. airports are in the Terminal Procedures Publication (TPP). For additional information on these airports, see the Chart Supplement U.S.

1.2 Public sales of the Chart Supplement U.S. and TPP are available through a network of FAA approved print providers. A listing of products, dates of latest editions, and print providers is available on the AIS website at: **http://www.faa.gov/air_traffic/flight_info/aeronav**.

Instrument Approach Procedures (Charts)
Airport Diagram/Airport Sketch

12096

LEGEND

INSTRUMENT APPROACH PROCEDURES (CHARTS)

31 MAY 2012 to 28 JUN 2012

AIRPORT DIAGRAM/AIRPORT SKETCH

Runways

Hard Surface | Other Than Hard Surface | Stopways, Taxiways, Parking Areas, Water Runways | Displaced Threshold

Closed Runway | Closed Taxiway | Under Construction | Metal Surface

ARRESTING GEAR: Specific arresting gear systems; e.g., BAK12, MA-1A etc., shown on airport diagrams, not applicable to Civil Pilots. Military Pilots refer to appropriate DOD publications.

uni-directional | bi-directional | Jet Barrier

ARRESTING SYSTEM

REFERENCE FEATURES

Buildings..

Tanks...

Obstructions...

Airport Beacon #...

Runway Radar Reflectors...

Hot Spot ....

Control Tower #...TWR

When Control Tower and Rotating Beacon are co-located, Beacon symbol will be used and further identified as TWR.

Runway length depicted is the physical length of the runway (end-to-end, including displaced thresholds if any) but excluding areas designated as stopways.

A D symbol is shown to indicate runway declared distance information available, see appropriate A/FD, Alaska or Pacific Supplement for distance information.

Helicopter Alighting Areas

Negative Symbols used to identify Copter Procedures landing point......................

Runway Threshold elevation............THRE 123

Runway TDZ elevation....................TDZE 123

0.3% DOWN

Runway Slope.................................0.8% UP

(shown when runway slope is greater than or equal to 0.3%)

NOTE:
Runway Slope measured to midpoint on runways 8000 feet or longer.

U.S. Navy Optical Landing System (OLS) "OLS" location is shown because of its height of approximately 7 feet and proximity to edge of runway may create an obstruction for some types of aircraft.

Approach light symbols are shown in the Flight Information Handbook.

Airport diagram scales are variable.

True/magnetic North orientation may vary from diagram to diagram

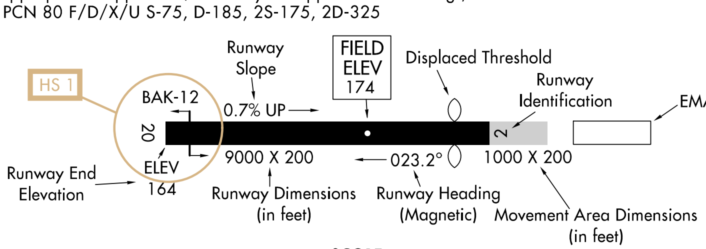
Coordinate values are shown in 1 or ½ minute increments. They are further broken down into 6 second ticks, within each 1 minute increments.

Positional accuracy within ±600 feet unless otherwise noted on the chart.

NOTE:
All new and revised airport diagrams are shown referenced to the World Geodetic System (WGS) (noted on appropriate diagram), and may not be compatible with local coordinates published in FLIP. (Foreign Only)

31 MAY 2012 to 28 JUN 2012

Runway Weight Bearing Capacity/or PCN Pavement Classification Number is shown as a codified expression.
Refer to the appropriate Supplement/Directory for applicable codes e.g., RWY 14-32 PCN 80 F/D/X/U S-75, D-185, 2S-175, 2D-325

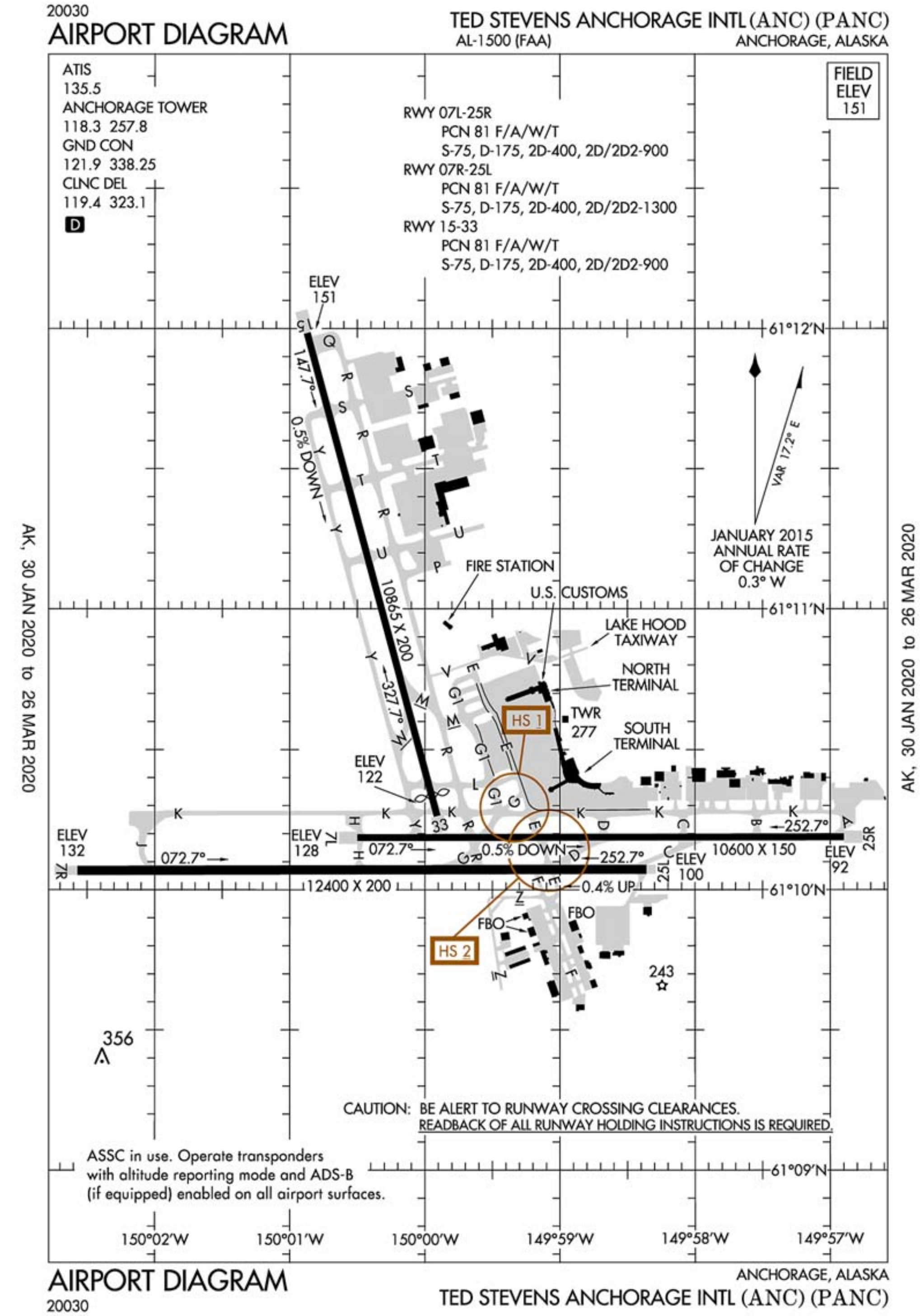


SCOPE

Airport diagrams are specifically designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations. Airport diagrams are not intended to be used for approach and landing or departure operations. For revisions to Airport Diagrams: Consult FAA Order 7910.4.

LEGEND

Anchorage, Alaska
Ted Stevens Anchorage International
ICAO Identifier PANC



Anchorage, AK
Ted Stevens Anchorage Intl
ICAO Identifier PANC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 61−10−26.705N / 149−59−53.295W
2.2.2 From City: 4 miles SW of ANCHORAGE, AK
2.2.3 Elevation: 151.4 ft
2.2.5 Magnetic Variation: 16E (2020)
2.2.6 Airport Contact: JIM SZCZESNIAK
BOX 196960
ANCHORAGE, AK 99519
(907−266−2525)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,100LL,A,A1
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 4/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10600 ft x 150 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−10−11.1539N / 150−0−29.9998W
2.12.6 Threshold Elevation: 127.6 ft
2.12.6 Touchdown Zone Elevation: 128.2 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10600 ft x 150 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−10−11.3202N / 149−56−53.8826W
2.12.6 Threshold Elevation: 91.5 ft
2.12.6 Touchdown Zone Elevation: 91.8 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12400 ft x 200 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−10−4.1216N / 150−2−34.3367W
2.12.6 Threshold Elevation: 131.7 ft
2.12.6 Touchdown Zone Elevation: 131.7 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12400 ft x 200 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−10−4.3722N / 149−58−21.535W
2.12.6 Threshold Elevation: 100.4 ft
2.12.6 Touchdown Zone Elevation: 114.6 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 165
2.12.3 Dimensions: 10865 ft x 200 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−11−59.0295N / 150−0−52.3097W
2.12.6 Threshold Elevation: 151.3 ft
2.12.6 Touchdown Zone Elevation: 150.7 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 345
2.12.3 Dimensions: 10865 ft x 200 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−10−15.7472N / 149−59−54.4877W
2.12.6 Threshold Elevation: 121.7 ft
2.12.6 Touchdown Zone Elevation: 121.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 07L
2.13.2 Take−off Run Available: 10600
2.13.3 Take−off Distance Available: 10600
2.13.4 Accelerate−Stop Distance Available: 10600
2.13.5 Landing Distance Available: 10600

2.13.1 Designation: 25R
2.13.2 Take−off Run Available: 10600
2.13.3 Take−off Distance Available: 10600
2.13.4 Accelerate−Stop Distance Available: 10600
2.13.5 Landing Distance Available: 10600

2.13.1 Designation: 07R
2.13.2 Take−off Run Available: 10900
2.13.3 Take−off Distance Available: 10900
2.13.4 Accelerate−Stop Distance Available: 10900
2.13.5 Landing Distance Available: 12400

2.13.1 Designation: 25L
2.13.2 Take−off Run Available: 12400
2.13.3 Take−off Distance Available: 12400
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 15
2.13.2 Take−off Run Available: 10865
2.13.3 Take−off Distance Available: 10865
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 33
2.13.2 Take−off Run Available: 10865
2.13.3 Take−off Distance Available: 11965
2.13.4 Accelerate−Stop Distance Available: 10865
2.13.5 Landing Distance Available: 10400

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 07L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 25R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 25L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 119.4
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 323.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/S
2.18.3 Channel: 128.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 135.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 338.25
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 257.8
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 07L. Magnetic variation: 16E
2.19.2 ILS Identification: TGN
2.19.5 Coordinates: 61−10−14.0636N / 149−56−33.0327W
2.19.6 Site Elevation: 105.5 ft

2.19.1 ILS Type: Glide Slope for runway 07L. Magnetic variation: 16E
2.19.2 ILS Identification: TGN
2.19.5 Coordinates: 61−10−13.93N / 150−0−9.62W
2.19.6 Site Elevation: 122.8 ft

2.19.1 ILS Type: Localizer for runway 07L. Magnetic variation: 16E
2.19.2 ILS Identification: TGN
2.19.5 Coordinates: 61−10−11.3329N / 149−56−32.6534W
2.19.6 Site Elevation: 84.7 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.5 Coordinates: 61−10−2.0211N / 149−57−58.3996W
2.19.6 Site Elevation: 112 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.5 Coordinates: 61−10−8.1823N / 150−2−12.4572W
2.19.6 Site Elevation: 124.9 ft

2.19.1 ILS Type: Inner Marker for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.5 Coordinates: 61−10−4.6834N / 150−2−51.6656W
2.19.6 Site Elevation: 126.7 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.5 Coordinates: 61−10−4.3906N / 149−57−55.495W
2.19.6 Site Elevation: 97.7 ft

2.19.1 ILS Type: DME for runway 15. Magnetic variation: 16E
2.19.2 ILS Identification: BSC
2.19.5 Coordinates: 61−10−0.0069N / 149−59−40.3379W
2.19.6 Site Elevation: 134.7 ft

2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 16E
2.19.2 ILS Identification: BSC
2.19.5 Coordinates: 61−11−46.76N / 150−0−54.42W
2.19.6 Site Elevation: 151.3 ft

2.19.1 ILS Type: Localizer for runway 15. Magnetic variation: 16E
2.19.2 ILS Identification: BSC
2.19.5 Coordinates: 61−9−59.9158N / 149−59−45.6352W
2.19.6 Site Elevation: 120.9 ft

General Remarks:

RIGHT TURN OUT OF RAMP PARKING AREA R−2 THROUGH R−4 PROHIBITED.

UNLGTD 489 FT TWR 2 1/2 MILES NORTHEAST.

NOISE SENSITIVE AREA IN EFFECT; CTC AMGR AT 907−266−2525 OR APRT OPNS 907−266−2600 FOR

FURTHER INFO.

MIGRATORY BIRDS INVOF ARPT SPRING THROUGH FALL.

FAA RAMP PPR − CTC ANC FIFO FREQ 135.85, 907−271−2414 OR AVN 405−954−9780 MON−FRI 0600−1430L.

RY 07R: BACK TXG FM TWY J FOR DEP PROHIBITED.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NO COMPASS CALIBRATION PAD.

TO COORDINATE NON−TRANSPONDER OR NON−RADIO OPNS CTC ANC ATCT AT 907−271−2700 DURG ADMIN HRS (0730−1600 WKDAYS). DURG NON−ADMIN HRS & HOLIDAYS CTC FAA AT 907−271−5936.

TWY S, EAST OF TWY R NOT LIGHTED.

TWY V SECURITY GATE EAST OF TWY E; KEY 121.75 5 TIMES TO ACTVT.TWY V RESTRICTED TO ACFT WEIGHING 12500 LBS OR LESS. SUBJECT TO JET BLAST WEST OF TWY E.

FOR WSO PHONE 907−266−5105.

ALL TURBOJET/TURBOFAN ACFT DEPARTING RWYS 7R/7L DURING A RWY 15/33 CLOSURE WILL EMPLOY THE FAA CLOSE−IN NADP OR ICAO PROCEDURE B NADP WHEN SAFETY PERMITS.

USE FREQ 122.55 (RCO) FOR FILING, ACTIVATING & CANCELING FLIGHT PLANS IN THE ANCHORAGE BOWL AREA.

RWY END 25L HAS 200 FT BLAST PAD.

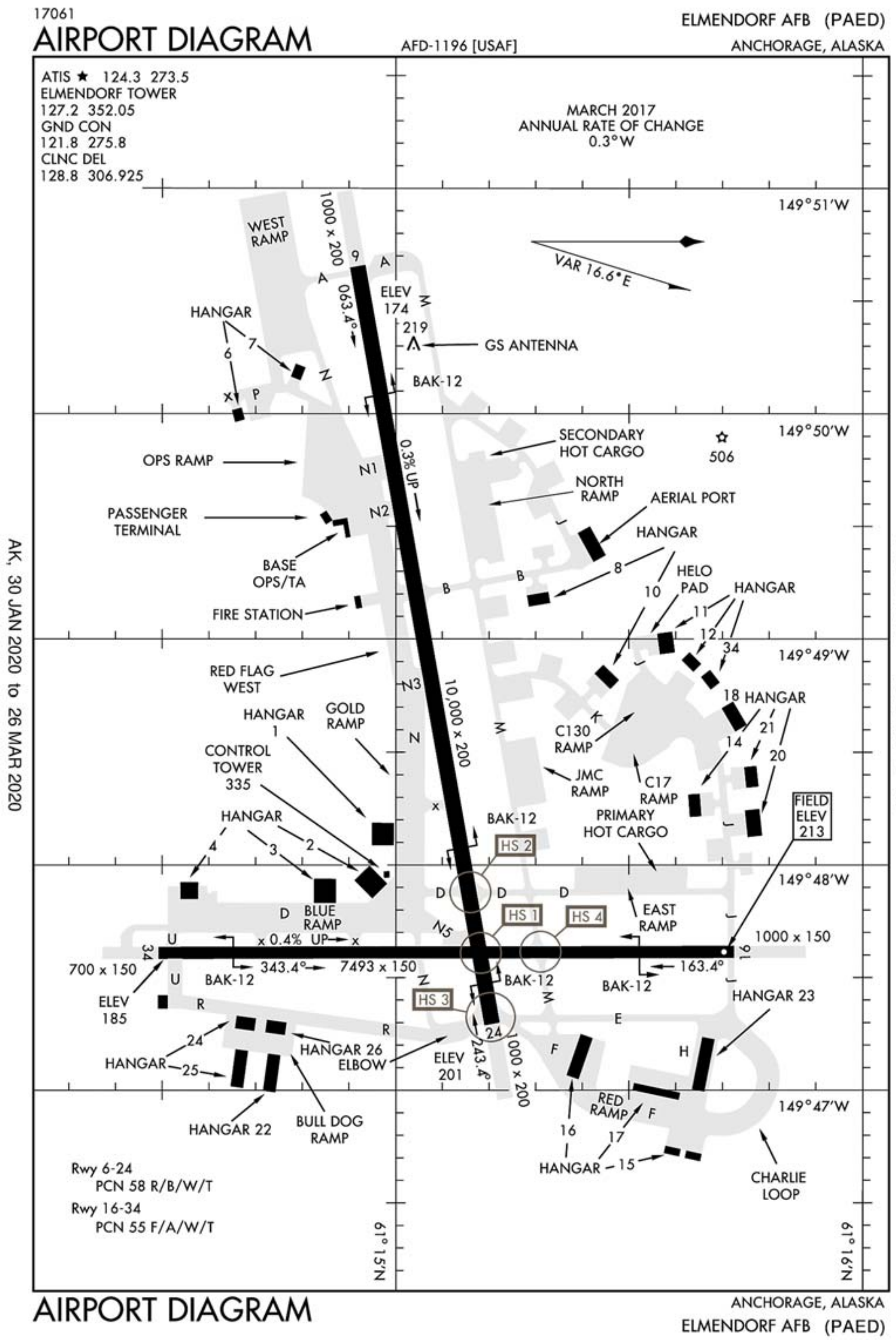
PORTIONS OF TWY K BTN TWY H & TWY J NOT VIS FROM ATCT.

ONE HR PPR FOR NON−TRANSPONDER ACFT OPNS. PPR FOR NON−RADIO ACFT OPNS. NO NIGHTTIME NON−RADIO ACFT OPNS PERMITTED. PILOTS MUST PROVIDE AN ETA & REMAIN WITHIN PLUS OR MINUS 15 MINUTES OF ETA.

ANCHORAGE WX CAMERA AVBL ON INTERNET AT HTTP://AVCAMS.FAA.GOV

TRANSIENT MILITARY ACFT PPR.

Anchorage, Alaska
Elmendorf AFB
ICAO Identifier PAED



Anchorage, AK
Elmendorf AFB
ICAO Identifier PAED

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 61−15−4.8715N / 149−48−23.4924W
2.2.2 From City: 3 miles NE of ANCHORAGE, AK
2.2.3 Elevation: 213 ft
2.2.5 Magnetic Variation: 18E (2015)
2.2.6 Airport Contact: AIRFIELD MGR
300SS/DOFJ
ELMENDORF AFB, AK 99506
(907−552−2444)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types:
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 80
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 58 R/B/W/T
2.12.5 Coordinates: 61−14−55.08N / 149−50−39.34W
2.12.6 Threshold Elevation: 174.5 ft
2.12.6 Touchdown Zone Elevation: 174.5 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 260
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 58 R/B/W/T
2.12.5 Coordinates: 61−15−12.16N / 149−47−18.02W
2.12.6 Threshold Elevation: 201.3 ft
2.12.6 Touchdown Zone Elevation: 201.3 ft

2.12.1 Designation: 16
2.12.2 True Bearing: 180
2.12.3 Dimensions: 7493 ft x 150 ft
2.12.4 PCN: 55 F/A/W/T
2.12.5 Coordinates: 61−15−43.43N / 149−47−36.52W
2.12.6 Threshold Elevation: 212.5 ft
2.12.6 Touchdown Zone Elevation: 212.4 ft

2.12.1 Designation: 34
2.12.2 True Bearing: 360
2.12.3 Dimensions: 7493 ft x 150 ft
2.12.4 PCN: 55 F/A/W/T
2.12.5 Coordinates: 61−14−29.64N / 149−47−36.57W
2.12.6 Threshold Elevation: 184.9 ft
2.12.6 Touchdown Zone Elevation: 194.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 24
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 16
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 34
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06
2.14.2 Approach Lighting System: ALSF1
2.14.4 Visual Approach Slope Indicator System: P2L

2.14.1 Designation: 24
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ATIS
2.18.3 Channel: 124.3
2.18.5 Hours of Operation: 0700−2300

2.18.1 Service Designation: ATIS
2.18.3 Channel: 273.5
2.18.5 Hours of Operation: 0700−2300

2.18.1 Service Designation: CD/P
2.18.3 Channel: 128.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 306.925
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 275.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 127.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 352.05
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: OPS (11AF RESCUE CO-ORD CNTR)
2.18.3 Channel: 123.1
2.18.5 Hours of Operation:

2.18.1 Service Designation: OPS (11AF RESCUE CO-ORD CNTR)
2.18.3 Channel: 282.8
2.18.5 Hours of Operation:

2.18.1 Service Designation: OPS (11AF COMD CEN)
2.18.3 Channel: 381
2.18.5 Hours of Operation:

2.18.1 Service Designation: OPS (ARTIC WARRIOR OPS)
2.18.3 Channel: 381
2.18.5 Hours of Operation:

2.18.1 Service Designation: PMSV METRO
2.18.3 Channel: 346.6
2.18.5 Hours of Operation:

2.18.1 Service Designation: PTD
2.18.3 Channel: 134.8
2.18.5 Hours of Operation:

2.18.1 Service Designation: PTD
2.18.3 Channel: 372.2
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 18E
2.19.2 ILS Identification: EDF
2.19.5 Coordinates: 61−15−1.2N / 149−50−17W
2.19.6 Site Elevation: 169.2 ft

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 18E
2.19.2 ILS Identification: EDF
2.19.5 Coordinates: 61−15−14.33N / 149−46−52.29W
2.19.6 Site Elevation: 212.3 ft

2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 18E
2.19.2 Navigation Aid Identification: EDF
2.19.5 Coordinates: 61−15−18.03N / 149−46−9.03W
2.19.6 Site Elevation: 226.2 ft

General Remarks:

DURING VMC DEPS/MISSED APCHS/GO AROUNDS; ACFT SHALL MAINTAIN AT OR BLW 1200 FT MLS UNTIL DEP END OF RWY 06.

EXTENSIVE SVC DELAY FOR FUEL.

RWY 16/34 RUBBER ACCUM NORTH & SOUTH 1000 FT.

RWY 34 DEPARTURES FOR ACFT WITH WINGSPANS GREATER THAN 98 FT RQR PRIOR COORD WITH AMC, ATC TWR, OR ALD MGT.

CAUTION: UNLIT TERRAIN 0 FT AGL/341 FT MSL, 1909 FT PRIOR TO THLD, 1914 FT RIGHT OF COURSE.

TRAN ALERT ACFT SVC LTD TO POL SERVICING, INTAKE INSPECTIONS, MAGNETIC CHIP DETECTOR INSPECTIONS AND EOR INSPECTIONS.

QUIET HR 0630−1400Z WKDAYS; 0630−1600Z WKEND & HOLS, AMC ACFT EXEMPT.

PREVENTIVE MAINT: TACAN WED AND FRI 1600−1700Z; ILS TUE AND THR 1500−1700Z; PAR SAT−SUN 1800−2000Z; ASR SAT−SUN 2000−2200.

LIMITED MAINTENANCE CAPABILITIES ON WKEND.

JOAP & LOW & HIGH PRESURE NITROGEN SERVICING FURNISHED DURING NORMAL DUTY HOURS, OTR TIMES ON REQUEST.

TWYS D1, D2, N4 & N5 PERM CLOSED.

CAUTION: HEAVY RAINFALL MAY CAUSE HIGH POTENTIAL FOR HYDROPLANING FOR CONC ENDS OF RWY 06 AND RWY 24.

OIL: O−123, O−128, O−133, O−148, O−156, JOAP.

PPR REQUIRED FOR ALL NON−JBER ASSIGNED ACFT EXCEPT NON−EXPLOSIVE LADEN AMCC ACFT.

C17/C130 OVERT LIGHTS AVBL ON RWY 16/34. C17/C130 COVERT LIGHTS AVBL ON RWY 16.

HGR SPACE & WARM STORAGE EXTREMELY LMTD OCT−MAY.

FOR CURRENT RCR/RSC'S ON RWY 06/24 AND RWY 16/34, AND AFLD RCRS CTC TWR.

CHANGE JET AIRCRAFT STARTING UNITS (JASU) TO, (A/M32A−86), MC−1A), (MC−2A), (AM32A−60A). (AM32−95)150 +/−5 LBS/MIN (2055 +/−68CFM) AT 51 +/−02 PSIA. LASS 150 +/−5 LBS/MIN @ 49 +/−2 PSIA.

IF EXP TO USE RWY 16 FOR DEP OR RWY 34 FOR LDG SEE JBER CARTEE AIRSPACE DESCRIPTION IN NOTICES SEC OF THIS SUPPLEMENT.

ACFT REQUIRING CABLES DE−RIGGED MUST CTC BASE OPS 24 HR PRIOR TO ARR OR MAKE REQ PRIOR TO PPR BEING ISSUED.

ALL FTR ACFT ON ARR EXPECT REDUCED SEPARATION; SAME TYPE ACFT AND DAY 3000 FT; DISSIMILAR ACFT AND/OR NIGHT 6000 FT; AHEAD/BEHIND FORMATION LDG−6000 FT.

ALL NON−AMC ACFT RQR 732 AMS MAINT/SVC MAY EXPERIENCE LOGISTICAL DELAYS DUE TO MISSION NECESSITIES.

FREQUENT ACTIVITY IN R2203. WHEN UNABLE TO AVOID CTC ATCT.

SPECIAL AIR TRAFFIC RULES FAR PART 93, SEE REGULATORY NOTICES IN THE SUPPLEMENT.

FLUID: PRESAIR, DE−ICE, NITROGEN−LHNIT.

NORMAL BARRIER CONFIGURATION DUR FTR FLY WINDOW LEAVES 5675 FT BTN CABLES ON RWY 06/24, OUTSIDE OF FTR FLY WINDOWS THERE IS 7658 FT BTN CABLES.

DV SPOTS 1 AND 3 LTD TO ACFT WITH WINGSPANS OF 136 FT OR LESS.

ALL VIP ACFT CTC BASE OPS 30 MIN PRIOR TO ARR ON PTD 372.2 OR 134.1 OR C907−552−2107.

ALL TRAN AIRCREWS OPERATING AT ELMENDORF AIRFIELD MUST DROP OFF A COPY OF THEIR CREW ORDERS TO AFLD MGMT UPON ARR.

UNITS DEPLOYING TO, STAGING OUT OF, OR FLYING LCL SORTIES AT ELMENDORF AFB MUST DEPLOY WITH MAINT PERS REQUIRED TO COMPLETE OPS TO INCLUDE DE−ICE QUALIFIED CREWMEMBERS DUR COLD WX OPS.

ANY DEPLOYED OR STAGED ACFT WILL NOT RCV TA SUPPORT BYD INITIAL BLOCK IN.

UNLESS PARTICIPATING IN MAJCOM SPONSORED EXER AT ELMENDORF; DEPLOYED OR STAGED UNITS MUST CTC 3 WG SCHEDULING AT DSN 317−552−2406 OR C907−552−2406 AS EARLY AS POSSIBLE TO COORD LOCAL AREA ORIENTATION BRIEFING, MAINT SPONSORSHIP IF APPLICABLE, AND 3 OG/CC APVL PRIOR TO LCL AREA OPS.

NO SIGNS OR PAINTED HOLD SHORT LINES ON INTERSECTING RYS.

CAUTION: MOOSE ON & INVOF RWY.

LNDG RWY 16 NOT RCMND FOR JET ACFT EXCPT DURG DAY VFR DUE OBSTRN 337 FT MSL LCTD 1950 FT FM THR & 574 FT W OF CNGRLN.

WX OPR H24; DSN 317−552−4903/4397, C907−552−4903/4397. AUGMENTED SFC VIS RSTD E−SW BY BLDG.

EAST RAMP HOT SPOT 19 LTD, EXPLOSIVES CATS 1.1 AND 1.2 GREATER THAN OR EQUAL TO 450 LBS N.E.W. RQR EVAC OF BLDGS 16521 & 16519 FOR DURATION OF HOT ON HS19. FOR BLDG EVAC CTC 907−552−2577.

IFF SVC AVBL.

CAUTION: NUMEROUS ACFT WILL BE OPR IFR BETWEEN 1500−2000 MSL FROM BGQ 092/10 INTO R2203 TO EDF 320/07 INVOF BIG LAKE, PALMER, BIRCHWOOD, GOOSEBAY AND WASILLA, AK., MON−SAT 0300−0800Z++, AND TUES AND THU 1800−2200Z++.

CAUTION: WHEN RWY 16 VGSI INOP, STR−IN TO RWY 16 ONLY AUTHORIZED AT NIGHT WITH MAJCOM A3 APVL.

NOTICE: A RIDGE EXTENDING FROM APPROXIMATELY 260−020 DEGS ONE TO TWO MILES FROM THE TOWER PREVENTS OBSERVATION OF FOG OVER KNIK ARM. VISIBILITY MAY DROP RAPIDLY AS FOG POURS OVER RIDGE.

JOAP, JOINT OIL ANALYSIS PROGRAM AVBL. LHNIT, LOW & HIGH PRESSURE NITROGEN SERVICING AVBL.

FUEL: J8

AFLD MGMT DOES NOT HAVE COMSEC STORAGE AVBL, FOR COMSEC STORAGE CTC COMMAND POST DSN 317−552−3000.

AMC ACFT ON AN AMC ASGN MSN CAN EXP TO HAVE MAINT SVC ACCOMPLISHED BY 732 AMS.
ALL ACFT MAINTAIN IDLE POWER ON OUTBOARD ENG WHILE TAXIING.

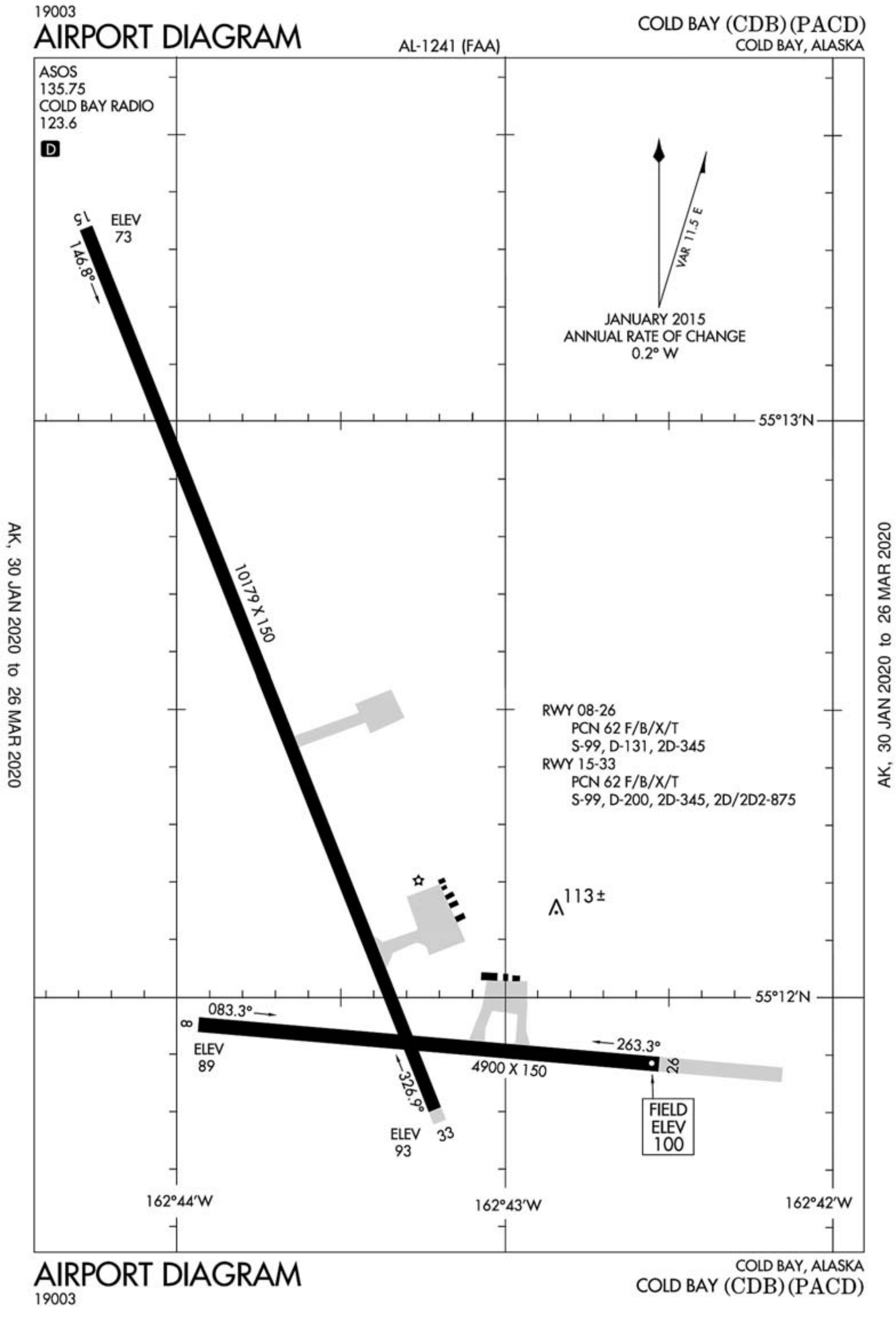
NVD OPS ON RWY 16/34 & RWY 06/24 MON−FRI FROM 0400−1000Z++.

PPRS WILL BE ISSUED NO EARLIER THAN 7 DAYS PRIOR TO ARR.

ACFT REQUIRING CUSTOMS AND AG INSPECTIONS ARE RQR TO CTC BASE OPS NO LATER THAN 90 MIN PRIOR TO ARR.

SUBMIT ALL PPR REQUESTS UTILIZING THE PAED PPR REQUEST FORM LOCATED IN THE PAED GIANT REPORT STIF TO BASEOPS3@US.AF.MIL NO EARLIER THAN 30 DAYS PRIOR AND NO LATER THAN 48 HOURS PRIOR TO ARRIVAL TO BEGIN COORDINATION FOR PPR.

Cold Bay, Alaska
Cold Bay
ICAO Identifier PACD



Cold Bay, AK
Cold Bay
ICAO Identifier PACD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 55−12−21.3N / 162−43−34.5W
2.2.2 From City: 0 miles N of COLD BAY, AK
2.2.3 Elevation: 99.5 ft
2.2.5 Magnetic Variation: 12E (2015)
2.2.6 Airport Contact: HAROLD KREMER
BOX 97
COLD BAY, AK 99571
(907−532−5000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, MON − SAT Days, 0700 − 1800 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 4/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 95
2.12.3 Dimensions: 4900 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55−11−57.1589N / 162−43−56.7308W
2.12.6 Threshold Elevation: 88.9 ft
2.12.6 Touchdown Zone Elevation: 95.2 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 275
2.12.3 Dimensions: 4900 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55−11−53.1425N / 162−42−32.588W
2.12.6 Threshold Elevation: 99.5 ft
2.12.6 Touchdown Zone Elevation: 99.5 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 158
2.12.3 Dimensions: 10179 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55−13−20.4998N / 162−44−16.4235W
2.12.6 Threshold Elevation: 72.5 ft
2.12.6 Touchdown Zone Elevation: 75 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 338
2.12.3 Dimensions: 10179 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55−11−47.2428N / 162−43−11.707W
2.12.6 Threshold Elevation: 93.3 ft
2.12.6 Touchdown Zone Elevation: 93.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take−off Run Available: 4900
2.13.3 Take−off Distance Available: 4900
2.13.4 Accelerate−Stop Distance Available: 4900
2.13.5 Landing Distance Available: 4900

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 4900
2.13.3 Take−off Distance Available: 4900
2.13.4 Accelerate−Stop Distance Available: 4900
2.13.5 Landing Distance Available: 4900

2.13.1 Designation: 15
2.13.2 Take−off Run Available: 10180
2.13.3 Take−off Distance Available: 10180
2.13.4 Accelerate−Stop Distance Available: 10180
2.13.5 Landing Distance Available: 10180

2.13.1 Designation: 33
2.13.2 Take−off Run Available: 10180
2.13.3 Take−off Distance Available: 10180
2.13.4 Accelerate−Stop Distance Available: 10180
2.13.5 Landing Distance Available: 10180

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15
2.14.2 Approach Lighting System: MALSR

2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 33
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 12E
2.19.2 ILS Identification: CDB
2.19.5 Coordinates: 55−13−12.7692N / 162−44−3.6464W
2.19.6 Site Elevation: 71 ft

2.19.1 ILS Type: Localizer for runway 15. Magnetic variation: 12E
2.19.2 ILS Identification: CDB
2.19.5 Coordinates: 55−11−40.9813N / 162−43−7.3592W
2.19.6 Site Elevation: 95.9 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 14E
2.19.2 Navigation Aid Identification: CDB
2.19.5 Coordinates: 55−16−2.2606N / 162−46−26.3866W
2.19.6 Site Elevation: 98.5 ft

General Remarks:
TWR 4.8 NM NW OF ARPT UNLGTD, TWR 0.9 NM S OF ARPT UNLGTD AND TWR 0.4 NM N OF ARPT UNLGTD.

ARPT SAND LARGER GRADATION THAN FAA RECOMMENDED/SEE AC150/5200−30.

WX CAMERA AVBL ON INTERNET AT HTTP://AVCAMS.FAA.GOV

BRAKELOCK TURNS NOT ALLOWED ON RYS.

NO CUSTOMS AVBL; WRITTEN PERMISSION REQUIRED FOR REFUELING STOPS 24−48 HRS IN ADVANCE IF ARRIVING FROM A FOREIGN COUNTY; FAX 907−271−2684 OR 907−271−2686.

ROTG BCN OPS UNMONITORED WHEN CDB FSS UNMANNED.

REMARK: NWS WEATHER BALLOON LAUNCH FACILITY LOCATED ON AIRPORT,SEE INSIDE BACK COVER FOR OPERATIONS DETAILS.

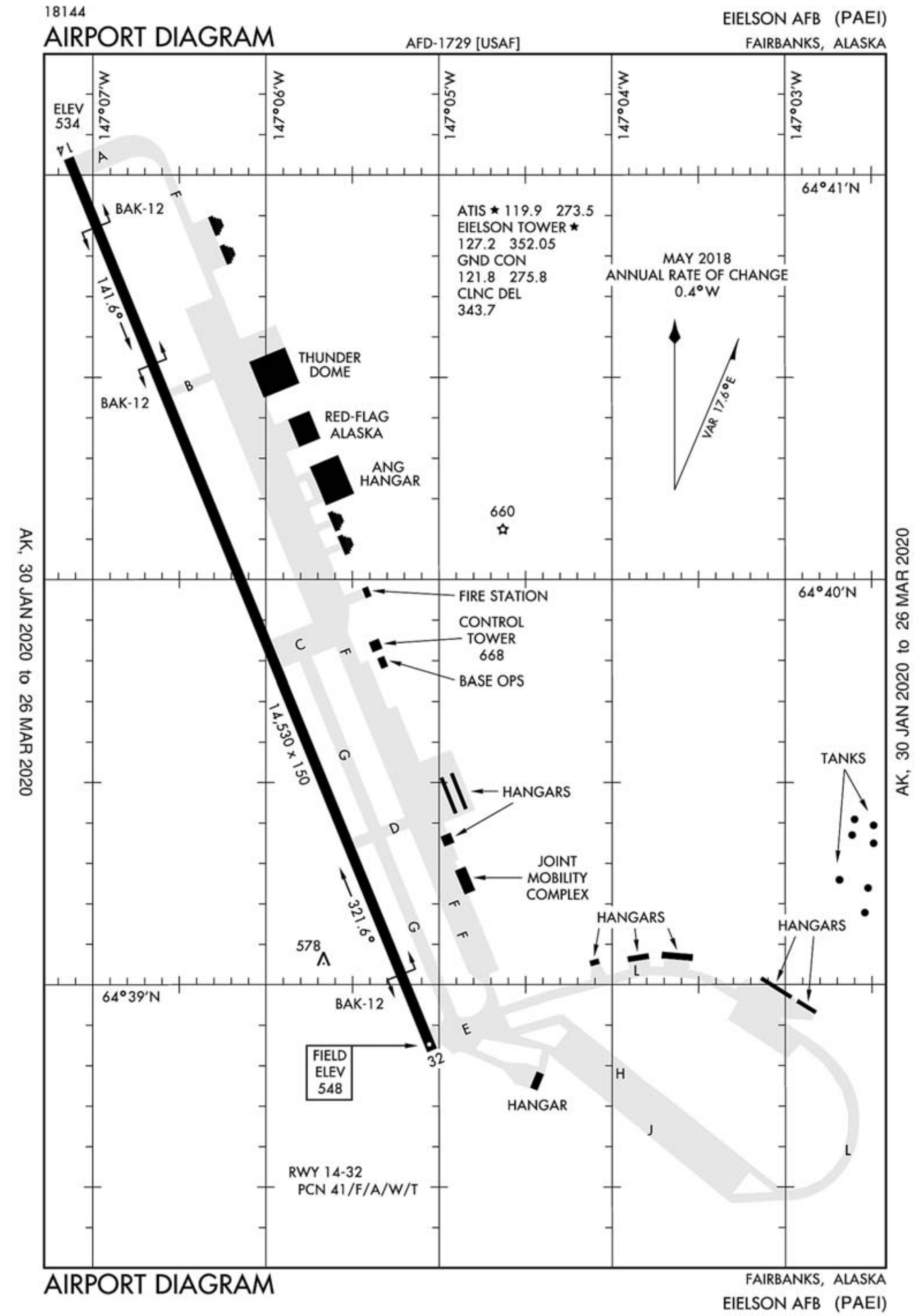
PERSONNEL AND EQUIPMENT MAY BE WORKING ON THE RY AT ANY TIME.

LARGE BIRDS NEAR APCH ENDS OF ALL RYS.

CFR INDEX B. INDEX MAY BE REDUCED FOR ACFT LESS THAN 90’.

SNOW & ICE REMOVAL AND ARPT HAZ RPRTG ONLY PERFORMED DURG DUTY HRS UNLESS BY PRIOR ARNGMT IN WRITING WITH AMGR.

Fairbanks, Alaska
Eielson AFB
ICAO Identifier PAEI



Fairbanks, AK
Eielson AFB
ICAO Identifier PAEI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 64−39−56.32N / 147−6−5.18W
2.2.2 From City: 17 miles SE of FAIRBANKS, AK
2.2.3 Elevation: 547.5 ft
2.2.5 Magnetic Variation: 19E (2015)
2.2.6 Airport Contact:
CHIEF AIRFIELD MANAGEMENT
343 CSG/OTM
EIELSON AFB, AK 99702 (907−377−3201)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 1600−0800Z++ Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types:
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 32
2.12.2 True Bearing: 339
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 41 F/A/W/T
2.12.5 Coordinates: 64−38−49.48N / 147−5−5.85W
2.12.6 Threshold Elevation: 547.5 ft
2.12.6 Touchdown Zone Elevation: 547.5 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 159
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 41 F/A/W/T
2.12.5 Coordinates: 64−41−3.14N / 147−7−4.52W
2.12.6 Threshold Elevation: 533.9 ft
2.12.6 Touchdown Zone Elevation: 536.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 32
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 14
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 32
2.14.2 Approach Lighting System: ALSF1
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 14
2.14.2 Approach Lighting System: ALSF1
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ATIS
2.18.3 Channel: 119.9
2.18.5 Hours of Operation: 1600−0800Z++

2.18.1 Service Designation: ATIS
2.18.3 Channel: 273.5
2.18.5 Hours of Operation: 1600−0800Z++

2.18.1 Service Designation: CD/P
2.18.3 Channel: 343.7
2.18.5 Hours of Operation: 1600−0800Z++

2.18.1 Service Designation: COMD POST (IGLOO OPS)
2.18.3 Channel: 259.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: COMD POST (IGLOO OPS, HAVE QUICK)
2.18.3 Channel: 289.4
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.8
2.18.5 Hours of Operation: 1600−0800Z++

2.18.1 Service Designation: GND/P
2.18.3 Channel: 275.8
2.18.5 Hours of Operation: 1600−0800Z++

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 127.2
2.18.5 Hours of Operation: 1600−0800Z++
2.18.1 Service Designation: LCL/P

2.18.3 Channel: 352.05
2.18.5 Hours of Operation: 1600−0800Z++

2.18.1 Service Designation: OPS (SOURDOUGH)
2.18.3 Channel: 139.6
2.18.5 Hours of Operation:

2.18.1 Service Designation: OPS (168 ANG OPS)
2.18.3 Channel: 238.3
2.18.5 Hours of Operation:

2.18.1 Service Designation: OPS (168 ANG OPS)
2.18.3 Channel: 293.6
2.18.5 Hours of Operation:

2.18.1 Service Designation: OPS (SOURDOUGH)
2.18.3 Channel: 359.15
2.18.5 Hours of Operation:

2.18.1 Service Designation: PMSV METRO
2.18.3 Channel: 346.6
2.18.5 Hours of Operation:

2.18.1 Service Designation: PTD
2.18.3 Channel: 139.3
2.18.5 Hours of Operation:

2.18.1 Service Designation: PTD
2.18.3 Channel: 372.2
2.18.5 Hours of Operation:

2.18.1 Service Designation: RANGE CTL (SUAIS RADIO)
2.18.3 Channel: 125.3
2.18.5 Hours of Operation:

2.18.1 Service Designation: SFA
2.18.3 Channel: 118.6
2.18.5 Hours of Operation:

2.18.1 Service Designation: SFA
2.18.3 Channel: 259.1
2.18.5 Hours of Operation:

2.18.1 Service Designation: SFA
2.18.3 Channel: 318.2
2.18.5 Hours of Operation:

2.18.1 Service Designation: SFA
2.18.3 Channel: 320.1
2.18.5 Hours of Operation:

2.18.1 Service Designation: SFA
2.18.3 Channel: 324.3
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 14. Magnetic variation: 19E
2.19.2 ILS Identification: EIL
2.19.5 Coordinates: 64−40−51.59N / 147−7−6.54W
2.19.6 Site Elevation: 532 ft

2.19.1 ILS Type: Localizer for runway 14. Magnetic variation: 19E
2.19.2 ILS Identification: EIL
2.19.5 Coordinates: 64−38−33.05N / 147−4−51.27W
2.19.6 Site Elevation: 548 ft

2.19.1 ILS Type: Glide Slope for runway 32. Magnetic variation: 19E
2.19.2 ILS Identification: EAF
2.19.5 Coordinates: 64−38−58.93N / 147−5−25.28W
2.19.6 Site Elevation: 540 ft

2.19.1 ILS Type: Localizer for runway 32. Magnetic variation: 19E
2.19.2 ILS Identification: EAF
2.19.5 Coordinates: 64−41−22.13N / 147−7−21.41W
2.19.6 Site Elevation: 528 ft

2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 19E
2.19.2 Navigation Aid Identification: EIL
2.19.5 Coordinates: 64−39−13.67N / 147−5−38.21W
2.19.6 Site Elevation: 542.4 ft

General Remarks:
ALASKA ANG 168TH AREFS OPS DSN (317−377−8800, C 907−377−8800) ANG OPR 24 HRS. AIRFIELD MANAGEMENT DSN 317−377−1861/3201.

DEP ACFT REMAIN AT OR BLW 1500 FT TIL DEP END OF RWY.

OVERHEAD TFC PAT ALT 2000 FT MSL; RECTANGULAR TFC PAT ALT 1500 FT MSL.

QUIET HRS DLY 0700−1500Z−, NO TKOF, LDG, LO APCH, OR TGL, EXCEPTIONS RQR OPS GROUP COMMANDER APPROVAL. UNCONTROLLED TKOF/LDG NOT AUTH.

RY 14/32 BAK−12 DEP END CABLES IN RAISED POSITION; BAK−12 AER 14/32 AVBL WITH 20 MIN PRIOR NOTICE. NORTH BARRIER RUNOUT REDUCED TO 950 FT, HOOK EQUIPPPED ACFT BE ALERT.

DURING BIRD WATCH CONDITION MODERATE LCL PATTERN WORK LIMITED TO MIN RQR WITH OG/CC APPROVAL, NO TGL, FORMATION TKOF/LNDG PROHIBITED AND LOW APCH LIMITED TO 300 FT AGL. DURING BIRD WATCH CONDITION SEVERE; TKOF, PATTERN, AND LNDG PROHIBITED WITHOUT OG/CC APPROVAL, EXCP FOR EMERG.

ALL CONTINGENCY OPER CTC AMGR FOR COORDINATION.

TRAN ALERT: TRANSIENT MAINT LMTD TO F16 SVCG UPON AIRCREW REQ. THRU FLIGHT/BPO/PRE-FLIGHT ISNP OF F16 NOT AVBL.

NO ENGINE RUNNING ON−LOADS/OFF−LOADS (ERO) SERVICES AVAILABLE FOR AMC AIRCRAFT.

NSTD RWY EDGE LGTS.

FOR FLT ADVISORIES OR STATUS OF RESTRICTED & MOAS CTC EIELSON RANGE CTL ON SAUIS RADIO 125.3 OR CALL 1−800−758−8723.

AIR TERMINAL AND GROUND HANDLING SVC OPRS 1630−0030Z++ WEEKDAYS. ACFT REQUIRING TERMINAL AND GROUND HANDLING SVC ARE REQUIRED TO PROVIDE ADVANCE NOTICE OR DELAYS IN SVC MAY BE EXPERIENCED. ACFT REQUIRING SVC SHOULD MAKE PRIOR COORDINATION WITH AIRFIELD MANAGEMENT.

N & S BARRIER RUNOUT REDUCED TO 950 FT.

MOOSE HAVE BEEN SPOTTED ON OR NEAR THE RWY ENVIRONMENT ALL HRS OF THE DAY.

PRE−COORDINATE WITH MAINT OPS CENTER DSN 317−377−1205 NO LATER THAN 48 HRS FROM ETA. ANY DEPLOYED OR STAGED ACFT WILL NOT RECEIVE TA SUPPORT BYD INITIAL BLOCK IN/FINAL BLOCK OUT, UNLESS PARTICIPATING IN MAJCOM SPONSORED EXER AT EIELSON. UHF IS THE PREF PATTERN FREQ.

VHF PTD FREQUENCY IS UNMONITORED.

CTC AIRFIELD MANAGEMENT DSN 317−377−1861, C907−377−1861 FOR PPR NUMBER NO EARLIER THAN 5 DAYS AND NO LATER THAN 24 HR PRIOR TO ARR. PPR GOOD FOR +/− 30 MIN OF PPR TIME. COORD OF PPR OUTSIDE OF TIME BY FONE IS REQ OR PPR NR WILL BE CONSIDERED CNL. EXP ARR TIME RESTRICTION FOR ALL ACFT EXC AIR EVAC AND DV CODE 7 OR HIGHER.

BASH PHASE II MONTHS ARE APR, MAY, AUG AND SEPT. DURING PERIODS OF STANDING WATER ON THE AIRFIELD, GULLS, DUCKS, GEESE AND OTHER BIRDS POSE A SIGNIFICANT HAZARD TO ACFT. REPORT ALL BIRD AND ANIMAL STRIKES ON & INVOF EILSON TO AIRFIELD MANAGEMENT, DSN 317−377−186, PTD OR 354 FW/SE DSN 317−377−4110.

TRANS ALERT SVC AVBL 0700−0000 MON−FRI EXCP HOL; OTHER TIMES PPR THROUGH BASOPS.

CAUTION: NSTD LGT, 2000 FT OF RWY EDGE LGT BTN DELTA−CHARLIE TWYS LCTD 12 FT FR RWY EDGE.

PAEW ON RWY 14−32 WHEN TWR UNMANNED.

AUGMENTATION CAPABLE 1600−0800Z−. DUR EVAC OF WX STN CTC OP WX SQDN AT NR ABV. ALT WX

LCTN VIS SEVERELY LTD DUE TO BLDG AND PRK ACFT.

TRANS BILLETING EXTREMELY LTD/EXTENSIVE FUEL DELAYS DUR RED FLAG ALASKA EXERCISE (APR−OCT).

ALL PACAF FTR ACFT ON ARR EXPECT REDUCED RY SEPARATION; SIMILAR FTR TYPE/DAY − 3000 FT; DISSIMILAR FTR TYPE AND/OR NGT WET RY OR RCR RPT LESS THAN 17 − 6000 FT; BEHIND FORMATION LNDG − 6000 FT; FTR TYPE LDG BEHIND NON−FTR TYPE − 9000 FT; RCR VALIDATED AS CONDITIONS WARRANT.

AVOID SMALL ARMS RANGE LCTD 2.5 NM E OF APCH END RY 32. SMALL ARM RANGE ACTIVE WKD 1700−0100Z++, SFC TO 3500 FT AGL.

AIRPORT RMKS: RWY 300 FT WIDE ENTIRE LENGTH, CENTER 150 FT USABLE.

UNMONITORED WHEN PAEI TWR CLSD. WX SUPPORT OPR H24, DSN 317−377−3140/1160 FR 1600−0800Z−; FR 0800−1600Z− PLEASE CALL COMD POST FOR AFTERHOURS DSN 317−377−1500. SVC PRIORITY GIVEN TO LCL FLYING SCHEDULE. WX BRIEFING AVBL DSN 317−377−3140/1160.

PORTIONS OF APRON 'O' ROW AND SOUTH RAMP NOT VISIBLE FROM TWR.

LOOP TWY EAST OF CORROSION/ HANGAR 1348 THROUGH THE 4/8 BAY AREA RESTRICTED TO ACFT W/WINGSPAN OF 45 FT OR SMALLER.

EDGE LGT NSTD RWY 32/14 AT TWY A RWY EDGE LGT AT TWY A ENTRANCE ON THE EAST SIDE OF THE RWY; RESULTING GAP BTN LGT IS 446 FT.

BASE OPS DOES NOT HAVE COMSEC RESPONSIBILITIES. BASE OPS WILL NOT ISSUE COMSEC.

CARGO & PSGR CARRYING ACFT CALL COMMAND POST 3 HRS PROIR TO LNDG AND 30 MIN PROIR TO LNDG AND STATE NUMBER OF PASSENGERS.

PMSV: METRO BELOW 3000 FT RECEPTION FROM 300−090 IS LIMITED BEYOND 15NM BY TERRAIN, BELOW 15000 FT LIMITED BEYOND 75NM, NO LIMITATIONS WITHIN 100NM AT 20000 FT.

EDGE LGT NSTD RWY 32/14 AT TWY C RWY EDGE LGT AT TWY C ENTRANCE ON THE EAST SIDE OF THE RWY; RESULTING GAP BTN LGT IS 400 FT.

AIRCREW BE ADVISED FLD COND NOTAM (FICON) AND RWY COND CODE (RWYCC) NOT REPORTED BY AMOPS.

CRYPTO MATERIALS NOT AVBL TRAN CREW. ALL ACFT WITH VIP CTC AIRFIELD MANAGEMENT 20−30 MINUTES PRIOR TO ETA WITH FIRM CHOCK TIME. LTD FLEET SVC AVBL, NO POTABLE WATER.

RWY 14 & 32 PAPI GS NOT COINCIDENTAL WITH ILS GS.

ALL TRANSIENT AIRCREWS MUST REGISTER WITH AIRFIELD MANAGEMENT UPON ARRIVAL. SEE AP1 SUPPLEMENTARY ARPT RMKS. LIMITED SECRET AND COMSEC STORAGE AVBL AT AIRFIELD MANAGEMENT.

LIMITED SECRET AND COMSEC STORAGE AVBL AT BASE OPS. AIRFIELD MANAGEMENT DOES NOT HAVE COMSEC RESPONSIBILITIES. FOR TOP SECRET AND COMSEC ISSUE/STORAGE CTC COMMAND COMMAND POST DSN 317−377−1500.

PHONE PATCH CAPABILITY THROUGH 354 FW/CP AT 907−377−1500. FMQ19 907−377−5846.

FAIRBANKS FSS LC 474−0137. FOR FLIGHT ADVISORIES OR STATUS OF RESTRICTED AND MILITARY OPERATING AREAS, CTC EIELSON RANGE CONTROL ON SUAIS RADIO 125.3 OR TELEPHONE 1−800−758−8723.

MILITARY−FLUID DE−ICE, ANTI−ICE UNAVBL.

TO AVOID DELAY FILE FLIGHT PLAN AT LEAST 2 HRS PRIOR TO ESTIMATED TIME OF DEPARTURE. ARRIVALS REQUIRING CUSTOMS MUST NOTIFY AIRFIELD MANAGEMENT 1.5 HRS PRIOR TO LANDING. U.S. IMMIGRATION SVC NOT AVBL. AIR TERMINAL AND GROUND HANDLING SVC OPRS 1630−0030Z++ WEEKDAYS.

ARFF STATUS CRITICAL LVL OF SVC (CLS) 62% FOR USAF CAT 10; AND REDUCED LVL OF SVC (RLS) 81% FOR USAF CAT 9.

BRIEFING FOR TRANSIENT AIRCREWS BEYOND NORMAL OPERATING HRS VIA 17TH OWS AT JOINT BASE PEARL HARBOR−HICKAM DSN 315−449−8333/7950 C808−449−8333/7950 OR DSN 315−448−3809, C808−448−3809.

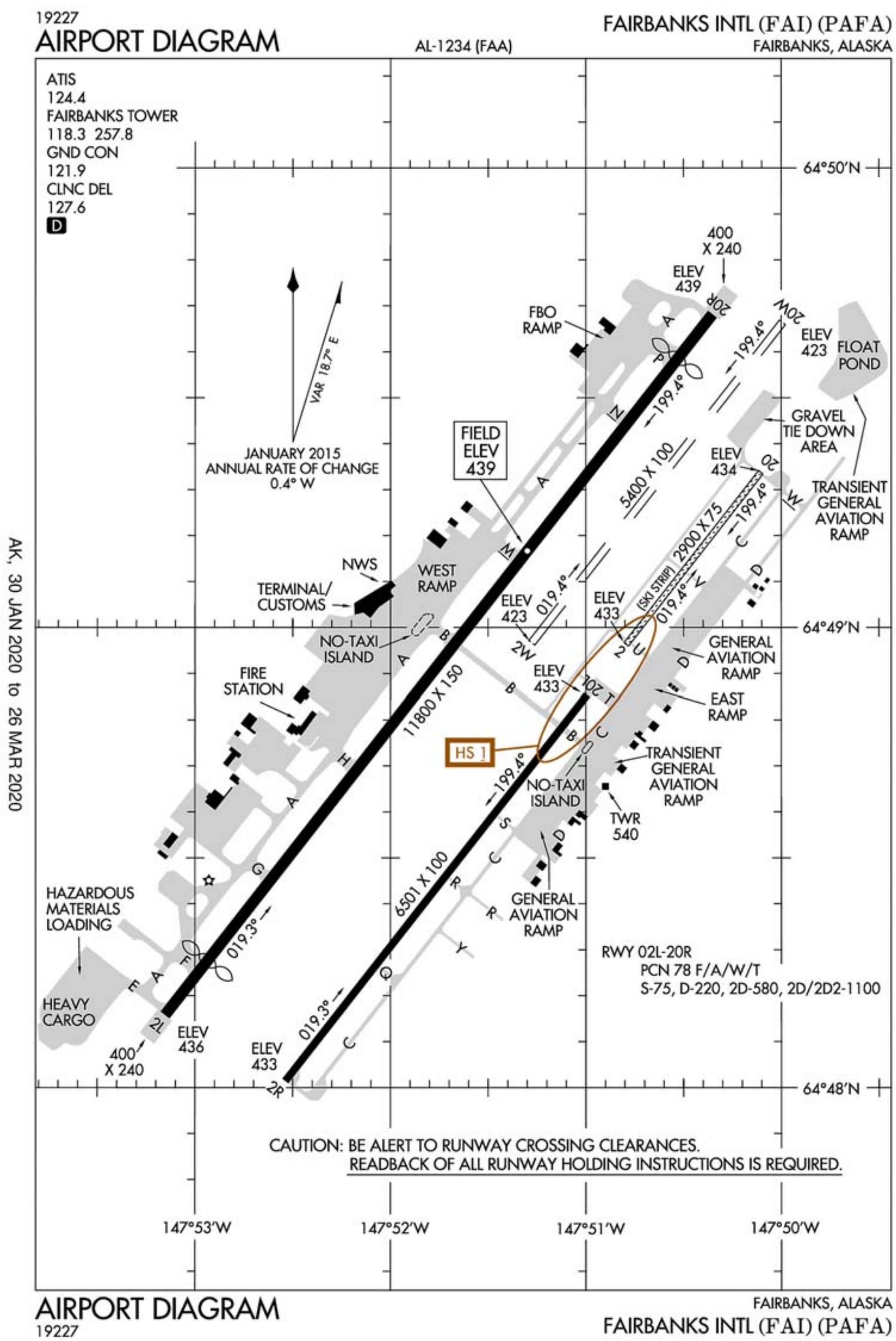
CAUTION: FIRE HYDRANTS LCTD 64 FT NE OF TWY H CNTLN.

AIRPORT RMKS: PRIME KNGHT NOT AVBL.

ARPT OPR 1600−0800Z++.

RADIO/NAV/WEATHER REMARKS − (F) 1500−0700Z ++ DAILY.

Fairbanks, Alaska
Fairbanks International
ICAO Identifier PAFA



Fairbanks, AK
Fairbanks Intl
ICAO Identifier PAFA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 64−48−54.4N / 147−51−23.2W
2.2.2 From City: 3 miles SW of FAIRBANKS, AK
2.2.3 Elevation: 439 ft
2.2.5 Magnetic Variation: 18E (2020)
2.2.6 Airport Contact: ANGIE SPEAR
6450 AIRPORT WAY − SUITE 1
FAIRBANKS, AK 99709
(907−474−2500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 3/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 38
2.12.3 Dimensions: 2900 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 64−48−57.8002N / 147−50−47.5998W
2.12.6 Threshold Elevation: 433 ft
2.12.6 Touchdown Zone Elevation: 434.6 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 218
2.12.3 Dimensions: 2900 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 64−49−20.2644N / 147−50−6.2715W
2.12.6 Threshold Elevation: 433.6 ft
2.12.6 Touchdown Zone Elevation: 434.6 ft

2.12.1 Designation: 02L
2.12.2 True Bearing: 38
2.12.3 Dimensions: 11800 ft x 150 ft
2.12.4 PCN: 78 F/A/W/T
2.12.5 Coordinates: 64−48−9.4756N / 147−53−9.1838W
2.12.6 Threshold Elevation: 435.6 ft
2.12.6 Touchdown Zone Elevation: 438.6 ft

2.12.1 Designation: 20R
2.12.2 True Bearing: 218
2.12.3 Dimensions: 11800 ft x 150 ft
2.12.4 PCN: 78 F/A/W/T
2.12.5 Coordinates: 64−49−40.9108N / 147−50−21.1293W
2.12.6 Threshold Elevation: 438.9 ft
2.12.6 Touchdown Zone Elevation: 439 ft

2.12.1 Designation: 02R
2.12.2 True Bearing: 38
2.12.3 Dimensions: 6501 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: 64−48−0.8635N / 147−52−32.2371W
2.12.6 Threshold Elevation: 433.2 ft
2.12.6 Touchdown Zone Elevation: 433.2 ft

2.12.1 Designation: 20L
2.12.2 True Bearing: 218
2.12.3 Dimensions: 6501 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: 64−48−51.2387N / 147−50−59.6666W
2.12.6 Threshold Elevation: 433.1 ft
2.12.6 Touchdown Zone Elevation: 434.2 ft

2.12.1 Designation: 20W
2.12.2 True Bearing: 218
2.12.3 Dimensions: 5400 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: 64−49−39.8349N / 147−49−59.6293W
2.12.6 Threshold Elevation: 423.4 ft
2.12.6 Touchdown Zone Elevation: 423 ft

2.12.1 Designation: 02W
2.12.2 True Bearing: 38
2.12.3 Dimensions: 5400 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: 64−48−58.0039N / 147−51−16.5892W
2.12.6 Threshold Elevation: 423.4 ft
2.12.6 Touchdown Zone Elevation: 423 ft

AD 2.13 Declared Distances
2.13.1 Designation: 02
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 20
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 02L
2.13.2 Take−off Run Available: 11800
2.13.3 Take−off Distance Available: 12800
2.13.4 Accelerate−Stop Distance Available: 11800
2.13.5 Landing Distance Available: 11050

2.13.1 Designation: 20R
2.13.2 Take−off Run Available: 11800
2.13.3 Take−off Distance Available: 12800
2.13.4 Accelerate−Stop Distance Available: 11800
2.13.5 Landing Distance Available: 11050

2.13.1 Designation: 02R
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 20L
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 20W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 02W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 20
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 02L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 20R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 02R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 20L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 20W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 02W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P DEP/P (360−179)
2.18.3 Channel: 127.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P (360−179)
2.18.3 Channel: 251.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (180−359)
2.18.3 Channel: 125.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (180−359)
2.18.3 Channel: 363.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/S
2.18.3 Channel: 119.85
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ATIS
2.18.3 Channel: 124.4
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 127.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: DEP/S
2.18.3 Channel: 327.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 257.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: RADAR
2.18.3 Channel: 253.525
2.18.5 Hours of Operation:

2.18.1 Service Designation: RADAR
2.18.3 Channel: 338.275
2.18.5 Hours of Operation:

2.18.1 Service Designation: RADAR
2.18.3 Channel: 353.525
2.18.5 Hours of Operation:

2.18.1 Service Designation: TRSA (180−359)
2.18.3 Channel: 125.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: TRSA (360−179)
2.18.3 Channel: 127.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: TRSA (360−179)
2.18.3 Channel: 251.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: TRSA (180−359)
2.18.3 Channel: 363.2
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 02L. Magnetic variation: 18E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64−49−50.7376N / 147−50−15.0194W
2.19.6 Site Elevation: 434.8 ft

2.19.1 ILS Type: Glide Slope for runway 02L. Magnetic variation: 18E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64−48−21.0041N / 147−52−36.2974W
2.19.6 Site Elevation: 431.4 ft

2.19.1 ILS Type: Inner Marker for runway 02L. Magnetic variation: 18E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64−48−7.6611N / 147−53−12.5267W
2.19.6 Site Elevation: 429.8 ft

2.19.1 ILS Type: Localizer for runway 02L. Magnetic variation: 18E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64−49−49.8419N / 147−50−4.688W
2.19.6 Site Elevation: 438.1 ft

2.19.1 ILS Type: DME for runway 20R. Magnetic variation: 18E
2.19.2 ILS Identification: FAI
2.19.5 Coordinates: 64−48−1.3387N / 147−53−28.1554W
2.19.6 Site Elevation: 430 ft

2.19.1 ILS Type: Glide Slope for runway 20R. Magnetic variation: 18E
2.19.2 ILS Identification: FAI
2.19.5 Coordinates: 64−49−24.4215N /

147−50−39.7123W
2.19.6 Site Elevation: 434.3 ft

2.19.1 ILS Type: Localizer for runway 20R. Magnetic variation: 18E
2.19.2 ILS Identification: FAI
2.19.5 Coordinates: 64−48−1.4733N / 147−53−23.8771W
2.19.6 Site Elevation: 429.1 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 21E
2.19.2 Navigation Aid Identification: FAI
2.19.5 Coordinates: 64−48−0.2537N / 148−0−43.1132W
2.19.6 Site Elevation: 1526.4 ft

General Remarks:

FOR AVBLTY OF SUMMER GRAVEL STRIP RY 02/20 AND WINTER SKI STRIP RY 02/20 CONSULT LOCAL NOTAMS AND CTC TWR PRIOR TO ARRIVAL /DEPARTURE.

MILITARY CONTRACT FUEL AVBL.

FOR TRANSIENT HELICOPTER PARKING CALL ARPT OPS 907−451−2300.

WX CAMERA AVBL ON INTERNET AT HTTP://AVCAMS.FAA.GOV

SPB CONTROLLED BY FAIRBANKS INTL ATCT. CTC ATCT ON FREQ 118.3 AS SOON AS PRACTICAL AFTER START UP FOR TAXI ON THE POND. FLOAT POND TFC AS ASSIGNED BY FAIRBANKS ATCT. LIMITED TRANSIENT FLOAT PLANE PARKING AVBL, CTC REPUBLIC PARKING SYSTEM, LLC 907−455−4571 FOR INFORMATION. SFC FROZEN IN WINTER, NOT MONITORED.

RWY 02R/20L CLSD TO JET ACFT.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −45C.

ATCT LOCATED AT 64−48−39.438N 147−50−55.722W, ELEVATION 538 FT MSL.

NWS WX BALLOON LAUNCH SITE 2000 FT WEST OF MIDFIELD RWY 2R/20L.

BE ALERT FOR SNOW REMOVAL EQUIPMENT OPNS FM 1 OCT TO 15 MAY.

FOR FLIGHTS IN MOA'S EAST OF FAIRBANKS RECOMMEND CONTACTING EIELSON RANGR CONTROL ON 125.3 OR CALL 1−800−758−8723 FOR INFORMATION ON MILITARY ACTIVITES.

TRANSIENT PARKING EAST RAMP FOR ACFT WITH WINGSPAN LESS THAN 79 FT. NO TRANSIENT ACFT PARKING ON WEST RAMP, CTC APT OPS 907−451−2300 FOR INFO & MEDIVAC PARKING.

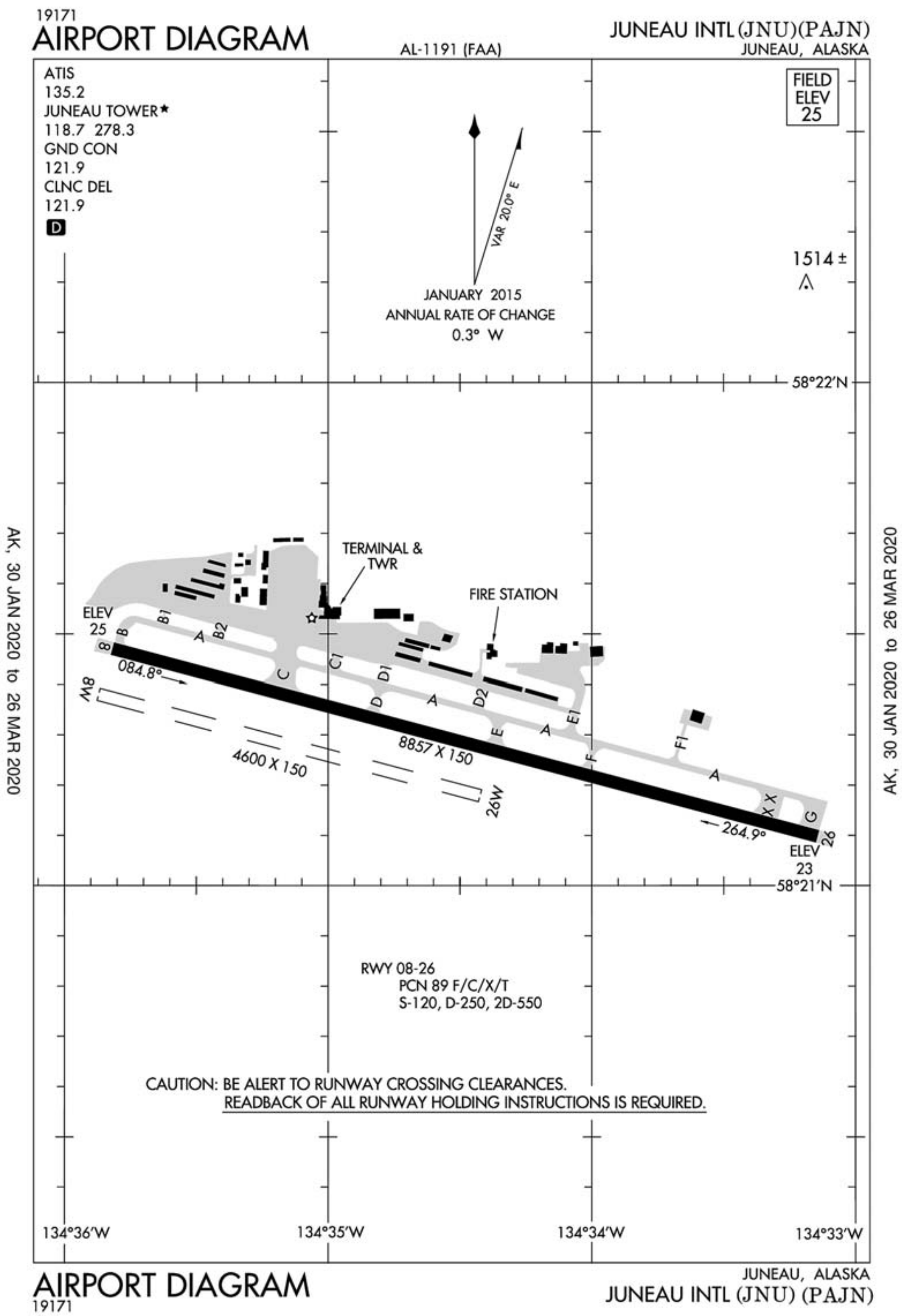
ALL RWY HOLD LINES AND COMPASS ROSE AT TWY W OBSCURED OCTOBER 1 THRU APRIL 1.

NOISE ABATEMENT PROCEDURES IN EFECT FM 2200−0800 ALL LARGE ACFT, TURBINE ENGINE, AND HEAVY ACFT UTILIZE RWY 02L FOR ARRS AND RWY 20R FOR DEPS WHEN WIND IS NOT AN OPERATIOINAL FACTOR. CTC APRT OPNS FOR ENGINE RUN−UP LOCATIONS.

N/S TAXIWAY (TWY A) IS WEST AND PARALLEL TO RWY 02L/20R. BE ALERT TO AVOID LANDING ON TAXIWAY.

NE COMPASS ROSE CLSD TO HELICOPTERS OVER 12500 LBS. FROST HEAVES SOUTH 2600 FT RWY 02R/20L CONTACT ARPT OPS 907−451−2300 WITH SAFETY CONCERNS.
SEE ADDITIONAL PAGES UNDER NOTICES FOR TRSA AND FAIRBANKS AREA INFORMATION.

Juneau, Alaska
Juneau International
ICAO Identifier PAJN



Juneau, AK
Juneau Intl
ICAO Identifier PAJN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 58−21−16.9625N / 134−34−42.4939W
2.2.2 From City: 7 miles NW of JUNEAU, AK
2.2.3 Elevation: 25.3 ft
2.2.5 Magnetic Variation: 20E (2015)
2.2.6 Airport Contact: PATTY WAHTO
1873 SHELL SIMMONS DR, SUITE 200
JUNEAU, AK 99801 (907−789−7821)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 4/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 105
2.12.3 Dimensions: 8857 ft x 150 ft
2.12.4 PCN: 89 F/C/X/T
2.12.5 Coordinates: 58−21−28.25N / 134−35−49.09W
2.12.6 Threshold Elevation: 25 ft
2.12.6 Touchdown Zone Elevation: 25.3 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 285
2.12.3 Dimensions: 8857 ft x 150 ft
2.12.4 PCN: 89 F/C/X/T
2.12.5 Coordinates: 58−21−5.88N / 134−33−8.63W
2.12.6 Threshold Elevation: 23.4 ft
2.12.6 Touchdown Zone Elevation: 23.4 ft

2.12.1 Designation: 08W
2.12.2 True Bearing:
2.12.3 Dimensions: 4600 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 58−21−22.82N / 134−35−52.23W
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 26W
2.12.2 True Bearing:
2.12.3 Dimensions: 4600 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 58−21−10.71N / 134−34−25.26W
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take−off Run Available: 8857
2.13.3 Take−off Distance Available: 8857
2.13.4 Accelerate−Stop Distance Available: 8457
2.13.5 Landing Distance Available: 8457

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 8857
2.13.3 Take−off Distance Available: 8857
2.13.4 Accelerate−Stop Distance Available: 8457
2.13.5 Landing Distance Available: 8457

2.13.1 Designation: 08W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 26W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: V2L

2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 26W

2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

2.18.1 Service Designation: ATIS
2.18.3 Channel: 135.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 1 APR − SEP 30 0600 − 2300, 1 OCT − MAR 31, 0700 − 2000.

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 1 APR − SEP 30 0600 − 2300, 1 OCT − MAR 31, 0700 − 2000.

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.7
2.18.5 Hours of Operation: 1 APR − SEP 30 0600 − 2300, 1 OCT − MAR 31, 0700 − 2000.

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 278.3
2.18.5 Hours of Operation: 1 APR − SEP 30 0600 − 2300, 1 OCT − MAR 31, 0700 − 2000.

2.18.1 Service Designation: LCL/S (SEASONAL USE ONLY)
2.18.3 Channel: 120.7
2.18.5 Hours of Operation: 1 APR − SEP 30 0600 − 2300, 1 OCT − MAR 31, 0700 − 2000.

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 64.7
2.18.5 Hours of Operation:

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 124.65
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 08. Magnetic variation: 20E
2.19.2 ILS Identification: JDL
2.19.5 Coordinates: 58−21−31.0221N / 134−38−10.216W
2.19.6 Site Elevation: 179.8 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 20E
2.19.2 ILS Identification: JDL
2.19.5 Coordinates: 58−21−32.035N / 134−38−10.3944W
2.19.6 Site Elevation: 165 ft

2.19.1 ILS Type: Outer Marker for runway 08. Magnetic variation: 20E
2.19.2 ILS Identification: JDL
2.19.5 Coordinates: 58−21−33.5717N / 134−41−58.0236W
2.19.6 Site Elevation: 57.9 ft

General Remarks:
TRANSIENT DOCK AVBL FOR PUBLIC USE FOR UP TO SIX ACFT, SW CORNER.

RY 08/26 SAND USED TO ENHANCE RY FRICTION MAY NOT MEET FAA SPECS.

TPA 1500 AGL FOR LARGE TURBINE ACFT; 1000 FT AGL FOR FIXED WING ACFT; 500 FT AGL FOR HELICOPTERS.

APRON TERMINAL RAMP CLSD TO ROTORCRAFT. APRON US CUSTOMS RAMP CLSD TO ACFT WITH WINGSPAN MORE THAN 79 FT INTL ACFT WITH WINGSPAN MORE THAN 79 FT AND ALL INTL ROTORCRAFT USE E−1 RAMP (NTL GUARD RAMP).

WILDLIFE & BIRDS ON & INVOF ARPT.

BATTLESHIP ISLAND RLLS GROUPING; CENTER LIGHT 582132.88N 1344012.22W. IJDL−LOCALIZER RLLS GROUPING; CENTER LIGHT 582132.02N 1343810.39W.

FOR A LOCAL CALL TO JNU AFSS CALL 907−789−7380.

PARAGLIDING ACTIVITY 3 MILES N OF ARPT INVOF THUNDER MOUNTAIN & OVER GASTINEAU

CHANNEL NEARS DOWNTOWN APR 15−OCT 1 6000 FT & BLO.

INCREASED HELICOPTER/LIGH ACFT ACTIVITY APR 15−OCT 1 ENTIRE LENGTH ON GASTINEAU CHANNEL & WITHIN 5 MILES OF ARPT.

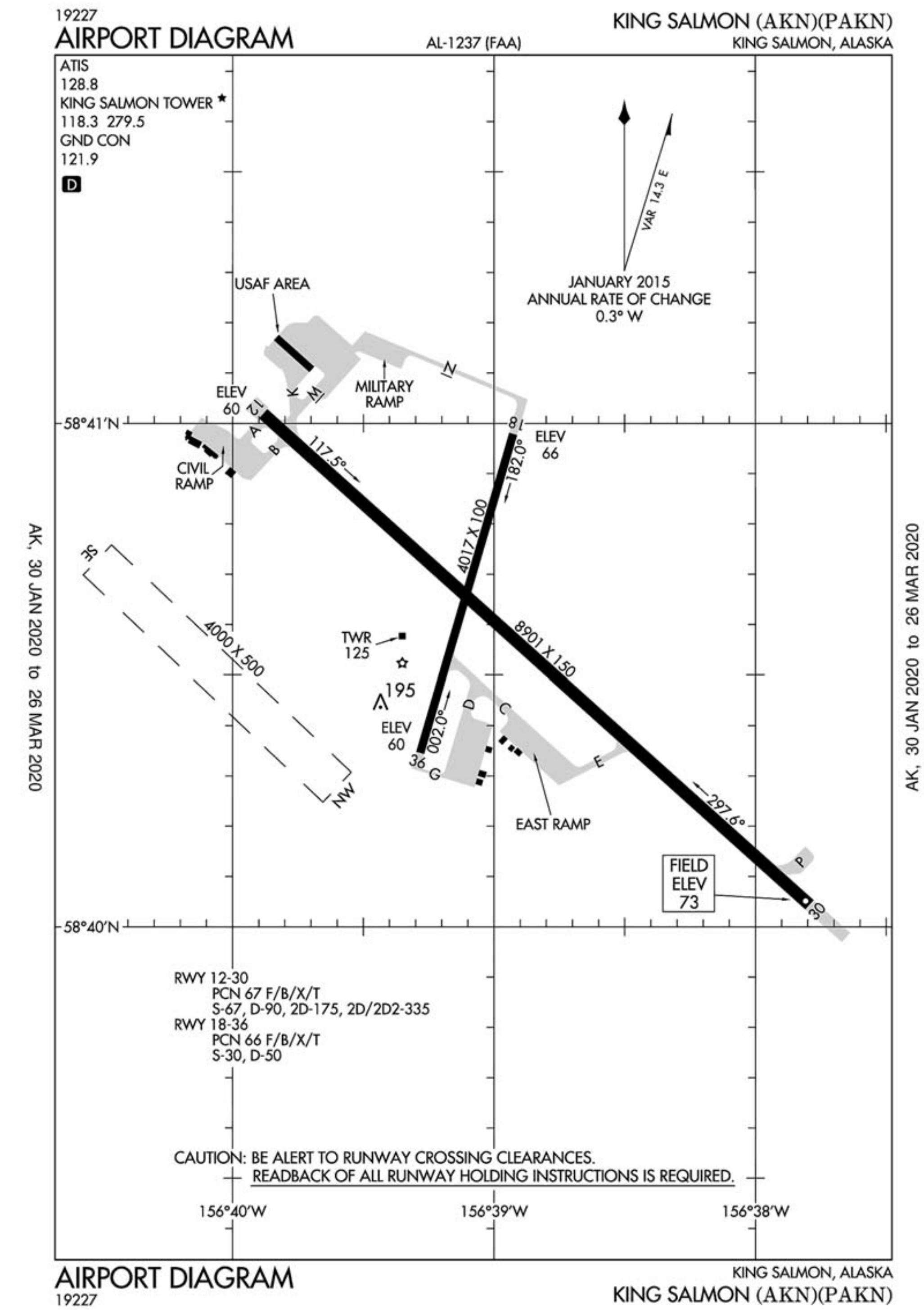
NATIONAL GUARD 24 HR PPR DUE TO LIMITED PARKING C907−789−3366. 0730−1600 WEEKDAYS CONTACT GUARD OPS 10 MIN PRIOR TO LANDING ON 124.65.

SEE SPECIAL NOTICES AND GENERAL NOTICES FOR ADDITIONAL INFORMATION ON OPNS IN JUNEAU AREA.

LENA POINT, PEDERSON HILL AND SISTERS ISLAND WX CAMERAS AVBL ON INTERNET AT HTTP://AVCAMS.FAA.GOV

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −15C.

King Salmon, Alaska
King Salmon
ICAO Identifier PAKN



King Salmon, AK
King Salmon
ICAO Identifier PAKN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 58−40−35.3765N / 156−38−55.2876W
2.2.2 From City: 0 miles SE of KING SALMON, AK
2.2.3 Elevation: 73.4 ft
2.2.5 Magnetic Variation: 16E (2010)
2.2.6 Airport Contact: PAUL HANSEN
PO BOX 65
KING SALMON, AK 99613
(907−246−3325)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0800−1800 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 3/21/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 12
2.12.2 True Bearing: 132
2.12.3 Dimensions: 8901 ft x 150 ft
2.12.4 PCN: 67 F/B/X/T
2.12.5 Coordinates: 58−41−2.184N / 156−39−53.0154W
2.12.6 Threshold Elevation: 59.9 ft
2.12.6 Touchdown Zone Elevation: 61.8 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 312
2.12.3 Dimensions: 8901 ft x 150 ft
2.12.4 PCN: 67 F/B/X/T
2.12.5 Coordinates: 58−40−3.68N / 156−37−47.63W
2.12.6 Threshold Elevation: 73.4 ft
2.12.6 Touchdown Zone Elevation: 73.4 ft

2.12.1 Designation: 18
2.12.2 True Bearing: 196
2.12.3 Dimensions: 4017 ft x 100 ft
2.12.4 PCN: 66 F/B/X/T
2.12.5 Coordinates: 58−40−59.7835N / 156−38−55.6139W
2.12.6 Threshold Elevation: 66.1 ft
2.12.6 Touchdown Zone Elevation: 66.1 ft

2.12.1 Designation: 36
2.12.2 True Bearing: 16
2.12.3 Dimensions: 4017 ft x 100 ft
2.12.4 PCN: 66 F/B/X/T
2.12.5 Coordinates: 58−40−21.7997N / 156−39−16.9583W
2.12.6 Threshold Elevation: 59.9 ft
2.12.6 Touchdown Zone Elevation: 65.2 ft

2.12.1 Designation: NW
2.12.2 True Bearing:
2.12.3 Dimensions: 4000 ft x 500 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: SE
2.12.2 True Bearing:
2.12.3 Dimensions: 4000 ft x 500 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 12
2.13.2 Take−off Run Available: 8901
2.13.3 Take−off Distance Available: 8901
2.13.4 Accelerate−Stop Distance Available: 8501
2.13.5 Landing Distance Available: 8501

2.13.1 Designation: 30
2.13.2 Take−off Run Available: 8901
2.13.3 Take−off Distance Available: 8901
2.13.4 Accelerate−Stop Distance Available: 8501
2.13.5 Landing Distance Available: 8501

2.13.1 Designation: 18
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 36

2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: NW
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: SE
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 12
2.14.2 Approach Lighting System: SSALR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 36
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: NW
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: SE
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ATIS
2.18.3 Channel: 128.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 0800−2000 1 AUG−14 JUN. 0800−2200 15 JUN− 31 JUL.

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 0800−2000 1 AUG−14 JUN. 0800−2200 15 JUN− 31 JUL.

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 279.5
2.18.5 Hours of Operation: 0800−2000 1 AUG−14 JUN. 0800−2200 15 JUN− 31 JUL.

2.18.1 Service Designation: PTD
2.18.3 Channel: 372.2
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 12. Magnetic variation: 16E
2.19.2 ILS Identification: AKN
2.19.5 Coordinates: 58−39−59.6N / 156−37−31.7W
2.19.6 Site Elevation: 78 ft

2.19.1 ILS Type: Glide Slope for runway 12. Magnetic variation: 16E
2.19.2 ILS Identification: AKN
2.19.5 Coordinates: 58−40−57.3435N / 156−39−29.887W
2.19.6 Site Elevation: 64 ft

2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 16E
2.19.2 ILS Identification: AKN
2.19.5 Coordinates: 58−39−56.5549N / 156−37−32.3734W
2.19.6 Site Elevation: 78 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 16E
2.19.2 Navigation Aid Identification: AKN
2.19.5 Coordinates: 58−43−28.9653N / 156−45−8.4483W
2.19.6 Site Elevation: 94.6 ft

General Remarks:
FLOCKS OF LARGE MIGRATORY BIRDS IN VCNTY DURG SEASON.

LANDING AREA RWY NW/SE ALSO USED BY BOATS.

PRIVATE JETS MAY PARK ON THE SE SECTION OF E RAMP; CALL AMGR AT 907−246−3325 FOR INFO.

WX CAMERA AVBL ON INTERNET AT HTTP://AVCAMS.FAA.GOV

MILITARY FTRS/EMERGENCY DIVERTS CALL WARRIOR SOF/ELMENDORF SOF ON UHF AT 395.15.NON−EMERG/NON−FTR ACFT CALL KING SALMON OPS; 24 HR POINT NORMALLY MONITORS CTAF DURING OPR HRS.

RCR UPDATED AS REQUIRED DURING 11TH AF FTR FLYING WINDOW. AIRCREWS COORD RCR CHECKS WITH KING SALMON OPS − 907−439−3001 OR 907−439−6000. ACFT OPNS RSTRD TO LOW APCH/FULL STOP LNDG ONLY.

600 FT SAFETY AREA APCH END RWY 12.

ONE INCH DIP ON CNTRLN 1850 FT FM AER 36 EXTDS TO THREE INCH DIP 25 FT WIDE ON WEST EDGE.

ALL FTR ACFT ON ARR EXP REDUCED SEPARATION; SIMILAR APCH CHARACTERISTICS AND DAY − 3000 FT; DISSIMILAR APCH CHARACTERISTICS AND/OR NIGHT − 6000 FT; AHEAD/BEHIND FORMATION LANDING − 6000 FT.

APRON SPOTS 4, 5, 6, 7 NORTH OF MILITARY HANGARS CLSD EXC PROP ACFT. TWY P CLSD.

NWS WEATHER BALLOON LAUNCH FACILITY LOCATED ON AIRPORT, SEE INSIDE BACK COVER FOR OPERATION DETAILS.

OFF PAVEMENT OPERATIONS BY ACFT; INCLUDING HELICOPTERS; NOT AUTHORIZED AT THE ACR APRON. NO LANDING; PARKING OR TKOFS PERMITTED FROM DIRT OR GRASS.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −31C.

LOCKED WHEEL TURNS PROHIBITED ON ANY SURFACE.

ARFF EQUIPMENT STAFFED DURING PERIODS OF ACR ACTIVITY ONLY.

RWY 18/36 NOT INSPECTED FOR MIL OPERATIONS.

SNOW, ICE REMOVAL & ARPT HAZ COND PERFORMED & RPRTD DURING MAINT DUTY HRS.

ARPT MAINT DUTY HRS 0800−1700.

FLIGHTS ORIG OUTSIDE ALASKA REFER TO USAF FCG. NO CSTMS AVBL.

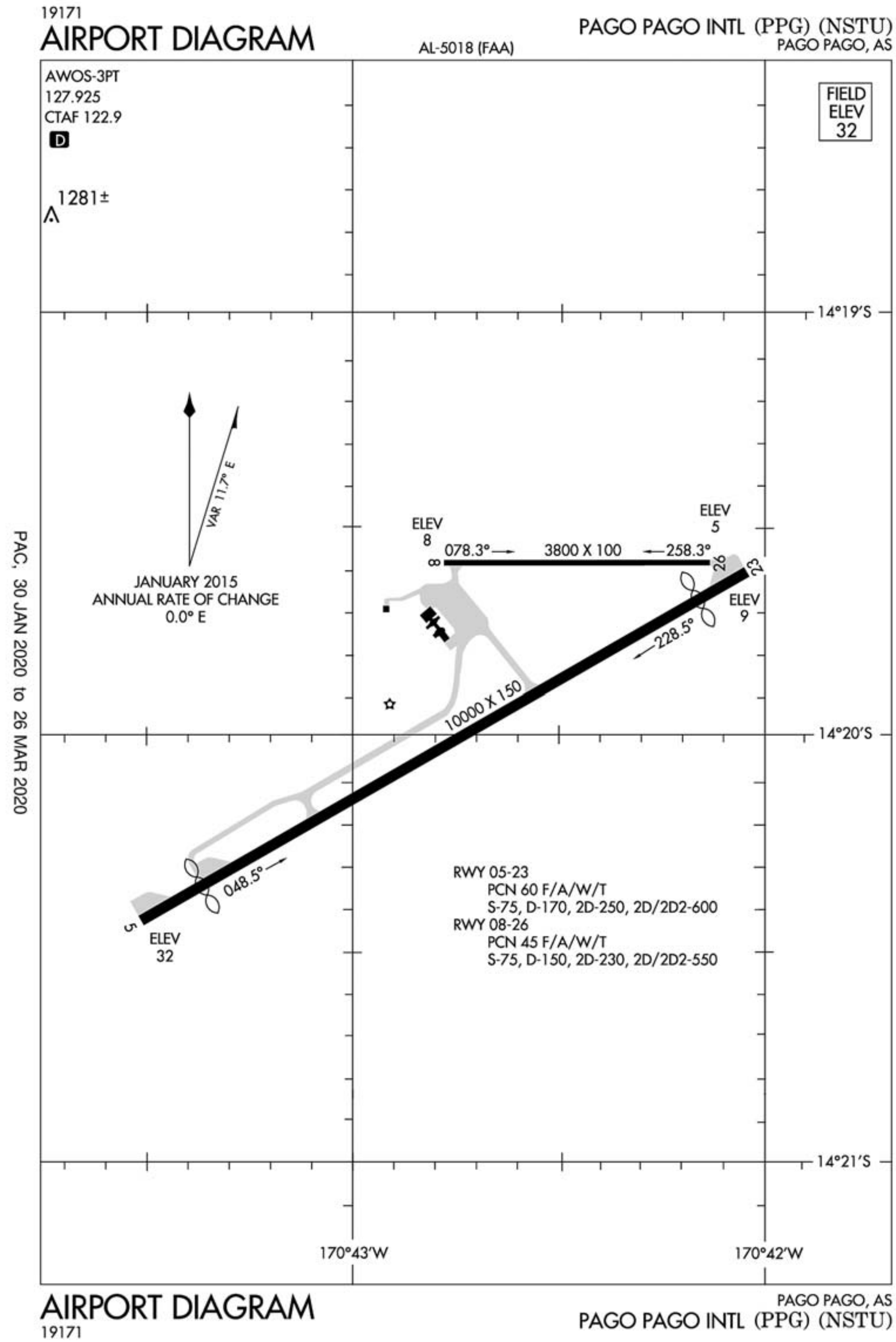
CIVILIAN TRANSIENT PARKING ON SE RAMP ONLY; OTHER PARKING LONGER THAN 48 HRS REQUIRES PERMIT.

GENERAL AVIATION APRON,PAVEMENT CRUMBLING, POSSIBLE FOD HAZARD. JET AIRCRAFT BE ALERT DURING RUN−UP TO AVOID DAMAGE WITH JET WASH.

USAF FACILITIES MINIMALLY OPR BY CIVILIAN CONTRACTORS WITH LIMITED SUPPORT CAPABILITY. CALL TO CONFIRM OPR HRS NOT LATER THAN 24 HRS IN ADVANCE OF EXPECTED ARRIVAL. MIL AIRCRAFT NEED TO CONFIRM FUEL REQUIREMENTS 24−48 HOURS IN ADVANCE.

ARFF IS AVBL FOR PART 121 CARRIERS INVOLVED IN ETOPS OPERATIONS WITH 30 MINUTES NOTICE.

Pago Pago, American Samoa
Pago Pago/International
ICAO Identifier NSTU



Pago Pago, AS
Pago Pago Intl
ICAO Identifier NSTU

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 14−19−53.976S / 170−42−41.411W
2.2.2 From City: 3 miles SW of PAGO PAGO, AS
2.2.3 Elevation: 32 ft
2.2.5 Magnetic Variation: 12E (1990)
2.2.6 Airport Contact: DR. CLAIRE POUMELE
1539 AIRPORT WAY P.O. BOX 1539
PAGO PAGO, AS 96799
((684) 733−3076)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 05
2.12.2 True Bearing: 60
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 60 F/A/W/T
2.12.5 Coordinates: 14−20−25.817S / 170−43−30.843W
2.12.6 Threshold Elevation: 31.9 ft
2.12.6 Touchdown Zone Elevation: 31.9 ft

2.12.1 Designation: 23
2.12.2 True Bearing: 240
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 60 F/A/W/T
2.12.5 Coordinates: 14−19−36.47S / 170−42−2.613W
2.12.6 Threshold Elevation: 9.3 ft
2.12.6 Touchdown Zone Elevation: 9 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 3800 ft x 100 ft
2.12.4 PCN: 45 F/A/W/T
2.12.5 Coordinates: 14−19−35.128S / 170−42−46.745W
2.12.6 Threshold Elevation: 8.3 ft
2.12.6 Touchdown Zone Elevation: 6.1 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 3800 ft x 100 ft
2.12.4 PCN: 45 F/A/W/T
2.12.5 Coordinates: 14−19−35.104S / 170−42−8.094W
2.12.6 Threshold Elevation: 5.3 ft
2.12.6 Touchdown Zone Elevation: 6.2 ft

AD 2.13 Declared Distances
2.13.1 Designation: 05
2.13.2 Take−off Run Available: 9200
2.13.3 Take−off Distance Available: 10200
2.13.4 Accelerate−Stop Distance Available: 9200
2.13.5 Landing Distance Available: 8200

2.13.1 Designation: 23
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 9200

2.13.1 Designation: 08
2.13.2 Take−off Run Available: 3800
2.13.3 Take−off Distance Available: 3800
2.13.4 Accelerate−Stop Distance Available: 3800
2.13.5 Landing Distance Available: 3800

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 3800
2.13.3 Take−off Distance Available: 3800
2.13.4 Accelerate−Stop Distance Available: 3800
2.13.5 Landing Distance Available: 3800

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 05
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 23
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 26

2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 05. Magnetic variation: 12E
2.19.2 ILS Identification: TUT
2.19.5 Coordinates: 14−19−37.63S / 170−42−14.71W
2.19.6 Site Elevation: 22 ft

2.19.1 ILS Type: Glide Slope for runway 05. Magnetic variation: 12E
2.19.2 ILS Identification: TUT
2.19.5 Coordinates: 14−20−13.06S / 170−43−15.19W
2.19.6 Site Elevation: 25.4 ft

2.19.1 ILS Type: Localizer for runway 05. Magnetic variation: 12E
2.19.2 ILS Identification: TUT
2.19.5 Coordinates: 14−19−38.78S / 170−42−12.9W
2.19.6 Site Elevation: 5.7 ft

General Remarks:
OLOTELE MT 1617 FT MSL 3.5 MILES WEST OF THLD RY 08.

ALL ACFT EXCDG 100000 GWT UPON TD TAXI TO THR TURN− ARND BFR TXG TO APRON. ACFT UNDER 100000 MAKE TURN−ARND WHERE FEASIBLE.

ALL ACFT TRANSITING PAGO PAGO (EXCP COMMERCIAL CARRIERS) MUST MAKE FUEL ARRANGEMENTS WITH PPG AT 684−733−3158.

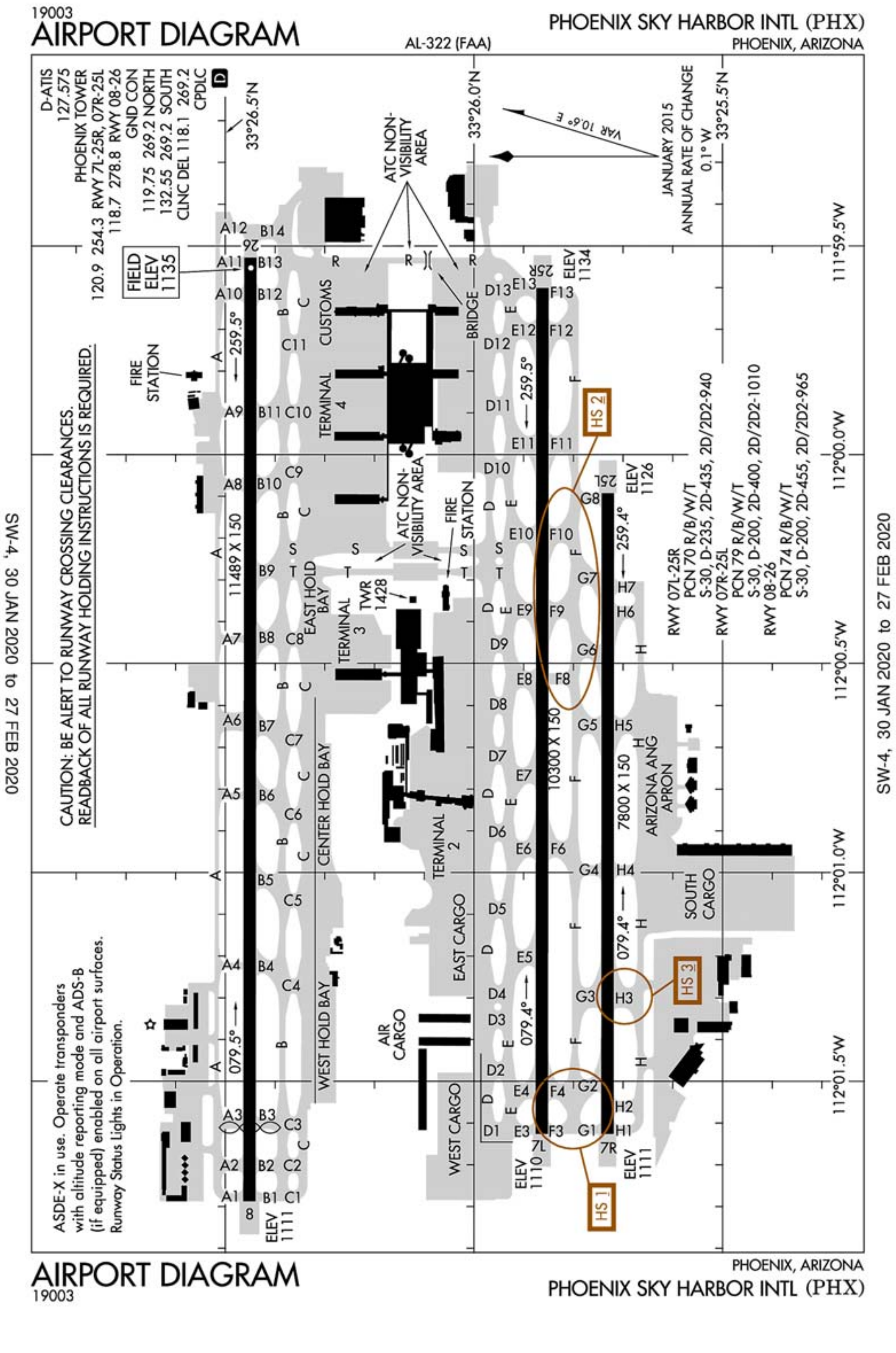
ALL FLTS (EXCP SKED) PRIOR PMSN FROM AMGR WITH 24 HRS PRIOR NOTICE.

FOR NOTAM CONTACT NEW ZEALAND (643) 358−1688FSS: NEW ZEALAND

SEA SPRAY FM SURF & BLOW HOLES MAY DRIFT ACRS RWY 05/23 UNDER ROUGH SEA CONDS.

PERMLY LGTD & MKD 226’ TWR ATOP MT ALAVA 4.3SM NNE ARPT.

Phoenix, Arizona
Phoenix Sky Harbor International
ICAO Identifier KPHX



Phoenix, AZ
Phoenix Sky Harbor Intl
ICAO Identifier KPHX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33−26−3.4N / 112−0−41.7W
2.2.2 From City: 3 miles E of PHOENIX, AZ
2.2.3 Elevation: 1134.8 ft
2.2.5 Magnetic Variation: 12E (2000)
2.2.6 Airport Contact: JAMES E BENNETT
2485 E BUCKEYE RD
PHOENIX, AZ 85034
(602−306−2500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10300 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 33−25−51.8081N / 112−1−37.5659W
2.12.6 Threshold Elevation: 1110.2 ft
2.12.6 Touchdown Zone Elevation: 1116.5 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10300 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 33−25−51.7284N / 111−59−36.0429W
2.12.6 Threshold Elevation: 1134 ft
2.12.6 Touchdown Zone Elevation: 1134.1 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7800 ft x 150 ft
2.12.4 PCN: 79 R/B/W/T
2.12.5 Coordinates: 33−25−43.8354N / 112−0−5.5412W
2.12.6 Threshold Elevation: 1126.3 ft
2.12.6 Touchdown Zone Elevation: 1126.4 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7800 ft x 150 ft
2.12.4 PCN: 79 R/B/W/T
2.12.5 Coordinates: 33−25−43.8923N / 112−1−37.5686W
2.12.6 Threshold Elevation: 1111 ft
2.12.6 Touchdown Zone Elevation: 1115.9 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 11489 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 33−26−26.9643N / 111−59−31.6884W
2.12.6 Threshold Elevation: 1134.7 ft
2.12.6 Touchdown Zone Elevation: 1134.8 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 11489 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 33−26−27.0993N / 112−1−47.257W
2.12.6 Threshold Elevation: 1111.1 ft
2.12.6 Touchdown Zone Elevation: 1118 ft

AD 2.13 Declared Distances
2.13.1 Designation: 07L
2.13.2 Take−off Run Available: 10300
2.13.3 Take−off Distance Available: 10300
2.13.4 Accelerate−Stop Distance Available: 10300
2.13.5 Landing Distance Available: 10300

2.13.1 Designation: 25R
2.13.2 Take−off Run Available: 10300
2.13.3 Take−off Distance Available: 10300
2.13.4 Accelerate−Stop Distance Available: 10300
2.13.5 Landing Distance Available: 10300

2.13.1 Designation: 25L
2.13.2 Take−off Run Available: 7800
2.13.3 Take−off Distance Available: 7800
2.13.4 Accelerate−Stop Distance Available: 7800
2.13.5 Landing Distance Available: 7800

2.13.1 Designation: 07R

2.13.2 Take−off Run Available: 7800
2.13.3 Take−off Distance Available: 7800
2.13.4 Accelerate−Stop Distance Available: 7800
2.13.5 Landing Distance Available: 7800

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 11489
2.13.3 Take−off Distance Available: 11489
2.13.4 Accelerate−Stop Distance Available: 11489
2.13.5 Landing Distance Available: 11489

2.13.1 Designation: 08
2.13.2 Take−off Run Available: 11489
2.13.3 Take−off Distance Available: 11489
2.13.4 Accelerate−Stop Distance Available: 11489
2.13.5 Landing Distance Available: 10591

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 07L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 25R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 25L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 118.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 269.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 127.575
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P (NORTH)
2.18.3 Channel: 119.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (SOUTH)
2.18.3 Channel: 132.55
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 269.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 08/26)
2.18.3 Channel: 118.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 07L/25R, 07R/25L)
2.18.3 Channel: 120.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 07L/25R, 07R/25L)
2.18.3 Channel: 254.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 08/26)
2.18.3 Channel: 278.8
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: PHX
2.19.5 Coordinates: 33−25−54.0771N / 111−59−19.1054W
2.19.6 Site Elevation: 1143 ft

2.19.1 ILS Type: Glide Slope for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: PHX
2.19.5 Coordinates: 33−25−49.0529N / 112−1−25.2134W

2.19.6 Site Elevation: 1106.5 ft

2.19.1 ILS Type: Localizer for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: PHX
2.19.5 Coordinates: 33−25−51.7152N / 111−59−20.367W
2.19.6 Site Elevation: 1133.5 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: AHA
2.19.5 Coordinates: 33−25−41.1847N / 111−59−52.1833W
2.19.6 Site Elevation: 1135.8 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: AHA
2.19.5 Coordinates: 33−25−46.628N / 112−1−25.0931W
2.19.6 Site Elevation: 1107.4 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: AHA
2.19.5 Coordinates: 33−25−43.8252N / 111−59−52.2902W
2.19.6 Site Elevation: 1124.2 ft

2.19.1 ILS Type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: RJG
2.19.5 Coordinates: 33−25−41.1847N / 111−59−52.1833W
2.19.6 Site Elevation: 1117.1 ft

2.19.1 ILS Type: Glide Slope for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: RJG
2.19.5 Coordinates: 33−25−40.9318N / 112−0−16.8722W
2.19.6 Site Elevation: 1120.3 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: RJG
2.19.5 Coordinates: 33−25−43.8995N / 112−1−49.6368W
2.19.6 Site Elevation: 1103.2 ft

2.19.1 ILS Type: DME for runway 08. Magnetic variation: 12E
2.19.2 ILS Identification: SYQ
2.19.5 Coordinates: 33−26−24.3207N / 111−59−19.7057W
2.19.6 Site Elevation: 1149.2 ft

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 12E
2.19.2 ILS Identification: SYQ
2.19.5 Coordinates: 33−26−29.6544N / 112−1−24.6276W
2.19.6 Site Elevation: 1111.7 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 12E
2.19.2 ILS Identification: SYQ
2.19.5 Coordinates: 33−26−26.9483N / 111−59−19.7443W
2.19.6 Site Elevation: 1134.1 ft

2.19.1 ILS Type: DME for runway 26. Magnetic variation: 12E
2.19.2 ILS Identification: CWJ
2.19.5 Coordinates: 33−26−24.3207N / 111−59−19.7057W
2.19.6 Site Elevation: 1149.2 ft

2.19.1 ILS Type: Glide Slope for runway 26. Magnetic variation: 12E
2.19.2 ILS Identification: CWJ
2.19.5 Coordinates: 33−26−29.603N / 111−59−44.4331W
2.19.6 Site Elevation: 1129.1 ft

2.19.1 ILS Type: Localizer for runway 26. Magnetic variation: 12E
2.19.2 ILS Identification: CWJ
2.19.5 Coordinates: 33−26−27.1078N / 112−1−59.2267W
2.19.6 Site Elevation: 1105.1 ft

General Remarks:
TWYS A, A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, F BTN G2 AND G3, D BTN D8 AND T, D BTN S AND R, RESTRICTED TO A WINGSPAN OF LESS THAN 135 FT.

NO EXPERIMENTAL FLT OR GND DMSTRN ON ARPT WO PRIOR WRITTEN CONSENT FM THE AIRSIDE OPS. NO ENG RUNS ON ARPT WO PRIOR COORDN WITH AIRSIDE OPS. NO ENG RUNS ON ARPT BETWEEN 2300L

− 0500L.

RWY STATUS LGTS ARE IN OPN.

FOR GENERAL QUESTIONS CALL AIRPORT COMMUNICATIONS CENTER (602) 273−3302

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY R OVERHEAD TRAIN BRIDGE AT MIDPOINT PROVIDES 82FT−4 IN. CLEARANCE.

TWY H5, H6, H7, TWY H BTN TWY H4 AND TWY H7 CLSD TO ACFT WINGSPAN MORE THAN 171 FT.

TWY F BTW TWY INT G2 AND G3 CLSD TO ACFT WITH WINGSPAN GREATER THAN 135 FT DUE TO FAA NAV EQUIPMENT.

NO TOUCH AND GO OR STOP AND GO OPNS ALLOWED WO PRIOR WRITTEN CONSENT FM THE AIRSIDE OPS.

REVIEW HOT SPOT INFO ON AIRPORT DIAGRAM. ADDITIONAL SAFETY VIDEO @ HTTP://SKYHARBOR.-COM/BUSINESS/FORPILOTS/SAFETYVIDEOFORPILOTS

FEE FOR ALL CHARTERS; TRAVEL CLUBS AND CERTAIN REVENUE PRODUCING ACFT.

AIRCRAFT DESIGN GROUP VI OPNS WITH PPR.

TWYS C BTN S AND R, D BTN D2 AND D7, D3, D6, H BTN H4 AND H7, H7 RESTRICTED TO WINGSPAN OF LESS THAN 171 FT.

TWY R AND PORTIONS OF TWYS S AND T DIRECTLY BELOW THE ATCT ARE NON VISIBLE AREAS FROM THE ATCT.

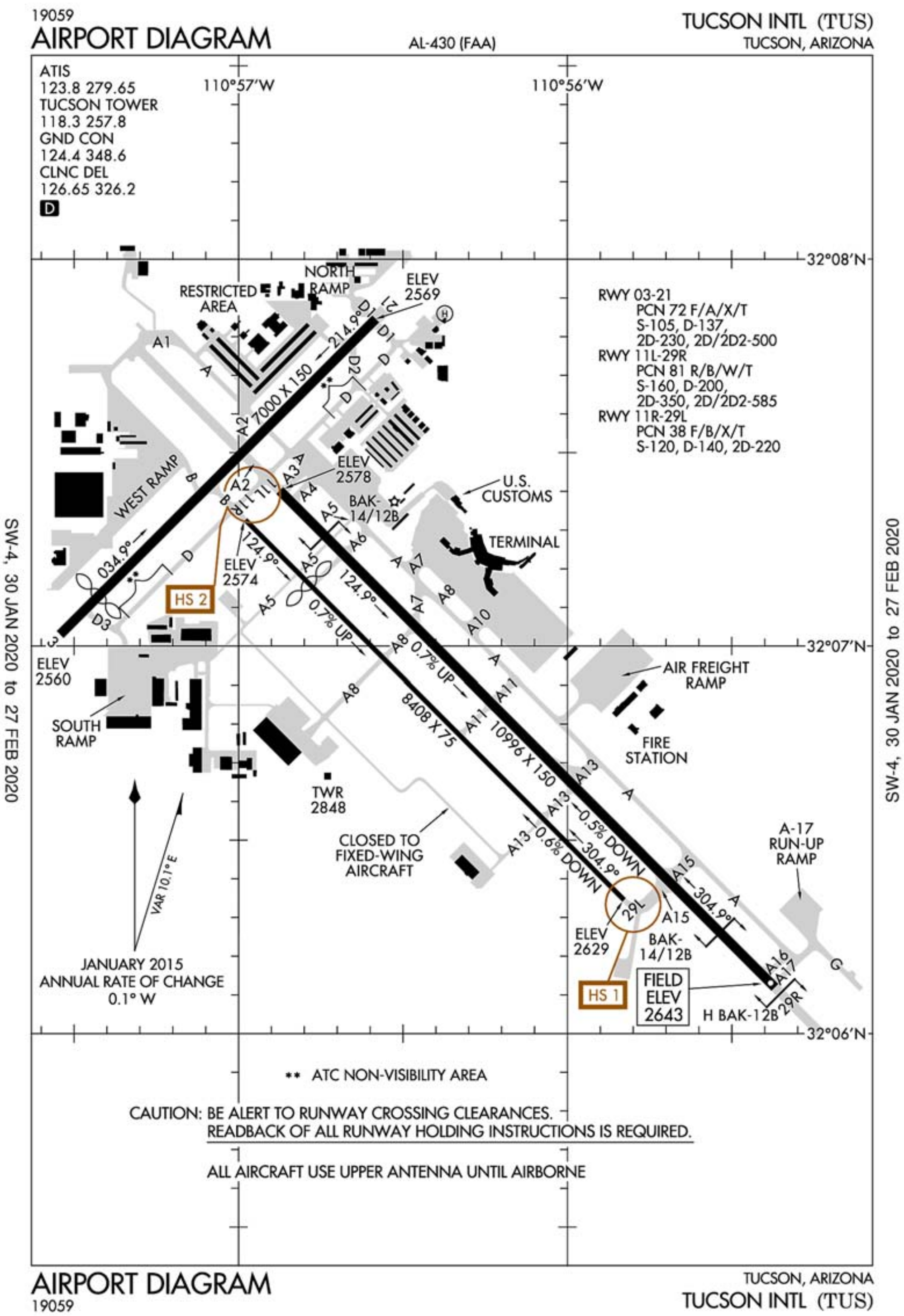
NATL GUARD HAS LMTD TSNT MAINTENANCE AND PARKING RON BY PPR (602)302−9119.

INTERNATIONAL GATE USE RQS COORDN WITH ARPT OPS 48 HOURS PRIOR TO ARRIVAL.

NOISE ABATEMENT PROCEDURES ARE IN AFFECT AT ALL TIMES.

INTERNATIONAL LANDING RIGHTS RQRS US CUSTOMS AND BORDER PROTECTION NOTIFICATION 48 HOURS PRIOR TO LANDING.

Tucson, Arizona
Tucson International
ICAO Identifier KTUS



Tucson, AZ
Tucson Intl
ICAO Identifier KTUS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32−6−57.849N / 110−56−27.65W
2.2.2 From City: 6 miles S of TUCSON, AZ
2.2.3 Elevation: 2643 ft
2.2.5 Magnetic Variation: 12E (1995)
2.2.6 Airport Contact: DANETTE BEWLEY
TUCSON APT AUTH 7250 S TUCSON BLVD
TUCSON, AZ 85756 (520−573−8100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.4 PCN: 72 F/A/X/T
2.12.5 Coordinates: 32−7−1.7975N / 110−57−32.5438W
2.12.6 Threshold Elevation: 2560.2 ft
2.12.6 Touchdown Zone Elevation: 2572.1 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.4 PCN: 72 F/A/X/T
2.12.5 Coordinates: 32−7−50.7361N / 110−56−34.9535W
2.12.6 Threshold Elevation: 2568.8 ft
2.12.6 Touchdown Zone Elevation: 2572.4 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 10996 ft x 150 ft
2.12.4 PCN: 81 R/B/W/T
2.12.5 Coordinates: 32−7−24.1289N / 110−56−52.4852W
2.12.6 Threshold Elevation: 2577.7 ft
2.12.6 Touchdown Zone Elevation: 2598.5 ft

2.12.1 Designation: 29R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 10996 ft x 150 ft
2.12.4 PCN: 81 R/B/W/T
2.12.5 Coordinates: 32−6−7.1598N / 110−55−22.1441W
2.12.6 Threshold Elevation: 2643 ft
2.12.6 Touchdown Zone Elevation: 2643 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 135
2.12.3 Dimensions: 8408 ft x 75 ft
2.12.4 PCN: 38 F/B/X/T
2.12.5 Coordinates: 32−7−19.5659N / 110−56−58.741W
2.12.6 Threshold Elevation: 2573.5 ft
2.12.6 Touchdown Zone Elevation: 2605 ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 315
2.12.3 Dimensions: 8408 ft x 75 ft
2.12.4 PCN: 38 F/B/X/T
2.12.5 Coordinates: 32−6−20.7186N / 110−55−49.6599W
2.12.6 Threshold Elevation: 2628.6 ft
2.12.6 Touchdown Zone Elevation: 2628.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take−off Run Available: 7000
2.13.3 Take−off Distance Available: 7000
2.13.4 Accelerate−Stop Distance Available: 7000
2.13.5 Landing Distance Available: 6150

2.13.1 Designation: 21
2.13.2 Take−off Run Available: 6000
2.13.3 Take−off Distance Available: 7000
2.13.4 Accelerate−Stop Distance Available: 6000
2.13.5 Landing Distance Available: 6000

2.13.1 Designation: 11L
2.13.2 Take−off Run Available: 10996
2.13.3 Take−off Distance Available: 10996
2.13.4 Accelerate−Stop Distance Available: 10996
2.13.5 Landing Distance Available: 10996

2.13.1 Designation: 29R
2.13.2 Take−off Run Available: 10996

2.13.3 Take−off Distance Available: 10996
2.13.4 Accelerate−Stop Distance Available: 10996
2.13.5 Landing Distance Available: 10996

2.13.1 Designation: 11R
2.13.2 Take−off Run Available: 6998
2.13.3 Take−off Distance Available: 6998
2.13.4 Accelerate−Stop Distance Available: 6998
2.13.5 Landing Distance Available: 6998

2.13.1 Designation: 29L
2.13.2 Take−off Run Available: 6998
2.13.3 Take−off Distance Available: 6998
2.13.4 Accelerate−Stop Distance Available: 6998
2.13.5 Landing Distance Available: 6998

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 21
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 11L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 29R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 11R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 29L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ANG COMD POST
2.18.3 Channel: 138.525
2.18.5 Hours of Operation:

2.18.1 Service Designation: ATIS
2.18.3 Channel: 123.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ATIS
2.18.3 Channel: 279.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 126.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 326.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 124.4
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 348.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 257.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/S
2.18.3 Channel: 119
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 11L. Magnetic variation: 12E
2.19.2 ILS Identification: TUS
2.19.5 Coordinates: 32−5−54.9712N / 110−55−3.2284W
2.19.6 Site Elevation: 2676.1 ft

2.19.1 ILS Type: Glide Slope for runway 11L. Magnetic variation: 12E
2.19.2 ILS Identification: TUS
2.19.5 Coordinates: 32−7−14.7604N /

110−56−48.0571W
2.19.6 Site Elevation: 2580.1 ft

2.19.1 ILS Type: Localizer for runway 11L. Magnetic variation: 12E
2.19.2 ILS Identification: TUS
2.19.5 Coordinates: 32−5−53.5044N / 110−55−6.1189W
2.19.6 Site Elevation: 2659.9 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 12E
2.19.2 Navigation Aid Identification: TUS
2.19.5 Coordinates: 32−5−42.7296N / 110−54−53.4781W
2.19.6 Site Elevation: 2670.5 ft

General Remarks:
MILITARY: ANG RAMP RSTD TO ACFT WITH WINGSPAN LESS THAN 59 FT.

B747 ACFT TAXI WITH INBOARD ENGINES ONLY.

SERVICE−A−GEAR: BAK−14/BAK−12B APCH END RWY 11L AND BAK−14/BAK−12B APCH END RWY 29R, ENGAGEMENTS AVBL ONLY DUR ANG DUTY HR AND 15 MIN PN RQR. BAK−12B OVRN RWY 29R AND BAK−12B OVRN RWY 11L SERVICEABLE BUT NOT CERTIFIED. BAK−12B IN RWY 11L OVERRUN HAS 850 FT RUN OUT.

RWY 11L/29R HAS DSTC REMAINING MKS ON NE SIDE. RWY 03/21 HAS DSTC REMAINING MKRS ON SE SIDE.

CALL OPERATIONS OFFICE AT 520−573−8190.

ALL ACFT USE UPPER ANTENNA UNTIL AIRBORNE.

ACFT DEPG RWY 11R REQD TO ATTAIN AT LEAST 400 FT AGL PRIOR TO STARTING TURN. DO NOT MISTAKE TWY A FOR A LANDING SURFACE. TWY A IS NORTH AND PARALLEL TO RWY 11L. ENSURE CORRECT LINEUP. RWY 29L IS THE SHORTER RWY SOUTH OF RWY 29R.

MILTARY/COMM/BASE−OPS: UPON ARR CTC TITAN OR PUMA ON ANG BASE OPS/COMD POST FREQ.

HELICOPTER OPNS LCTD SOUTH OF RWY 11R/29L & WEST OF TWY A13.

RWY 11R/29L RESTRICTED TO TKOF/LAND ACFT WITH WING SPAN LESS THAN 73 FT & LNDG SPEED LESS THAN 120 KNOTS.

SERVICE−FUEL: A++(MIL)

PPR REQUIRED FOR ALL CHARTER, SPORTS TEAM, CARGO AND MILITARY AIRCRAFT. CONTACT AIRSIDE OPERATIONS FOR PPR NUMBER AT 520−573−8190. LANDING AND PARKING FEES MAY APPLY FOR ACFT 12500 LBS AND UP.

PORTIONS OF TWY D NOT VISIBLE FROM ATCT DUE TO HANGARS.

TWY A5 LMTD TO 70000 LBS OR LESS.

NO B−747 TRNG EXCP PPR; NO FLT TRNG 2200−0600 EXCP PPR; CALL AIRSIDE OPERATIONS DEPT 520−573−8190.

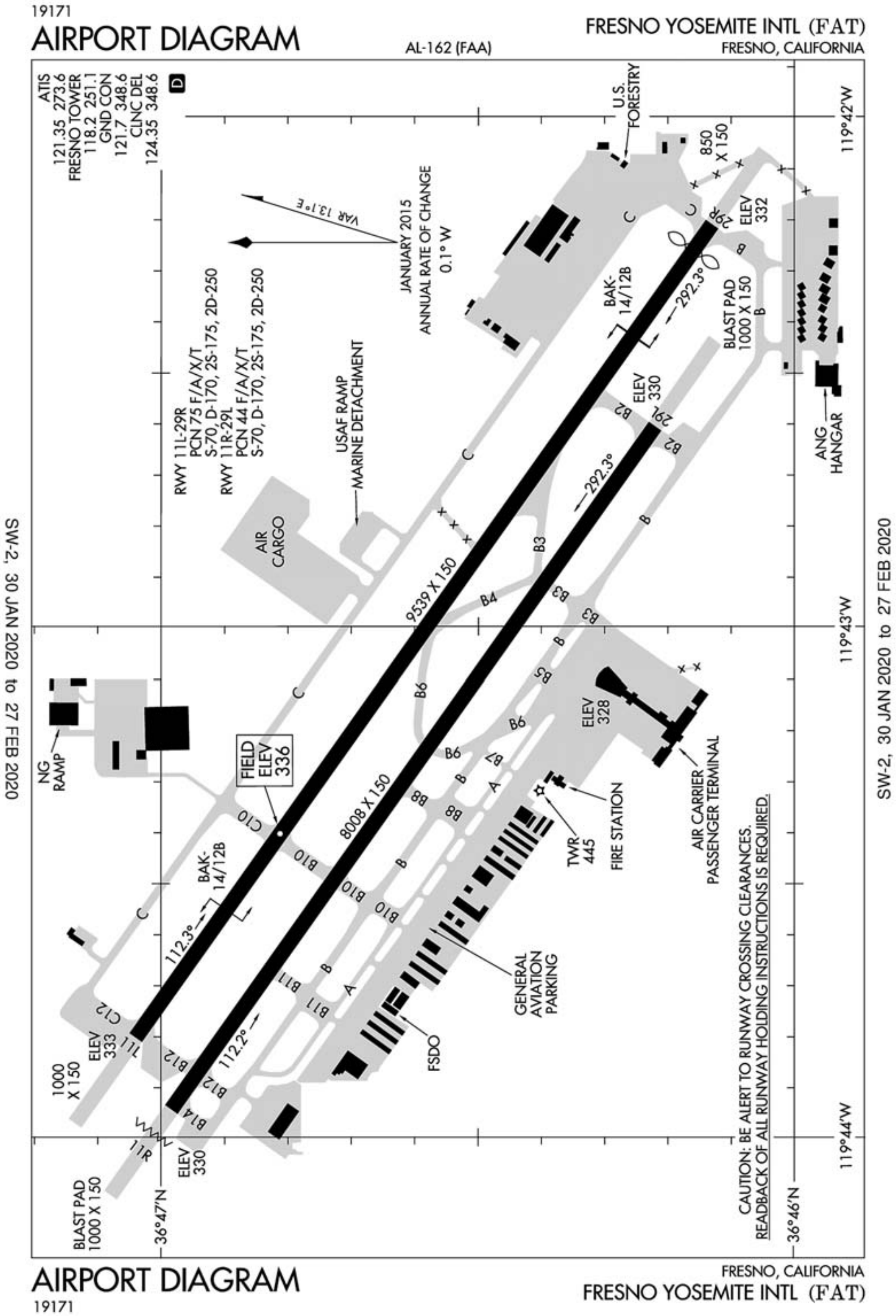
AIR CARRIERS USE RWY 11L/29R & RWY 03/21

NO PUBLIC SERVICES AVAILABLE AT THE TUS EXECUTIVE TERMINAL.

MILITARY: ANG − OFFL BUS ONLY. PPR DSN 844−6731, C520−295−6731, FAX EXTN 6732. 72 HR PRIOR NOTICE

REQ FOR ALL PPR'S. BASE OPS OPR 1300−2200Z++ MON−FRI EXC HOL. NO TRAN ALERT MAINT AVBL. NO CONTRACT FUEL AVBL. TRAN ACFT EXP STR−IN FULL STOP ONLY.

Fresno, California
Fresno Yosemite International
ICAO Identifier KFAT



Fresno, CA
Fresno Yosemite Intl
ICAO Identifier KFAT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36−46−35.6N / 119−43−7.8W
2.2.2 From City: 5 miles NE of FRESNO, CA
2.2.3 Elevation: 335.5 ft
2.2.5 Magnetic Variation: 13E (2020)
2.2.6 Airport Contact: KEVIN R. MEIKLE
4995 E CLINTON WAY
FRESNO, CA 93727
(559−621−4500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A,A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 11L
2.12.2 True Bearing: 125
2.12.3 Dimensions: 9539 ft x 150 ft
2.12.4 PCN: 75 F/A/X/T
2.12.5 Coordinates: 36−47−2.406N / 119−43−48.3081W
2.12.6 Threshold Elevation: 333 ft
2.12.6 Touchdown Zone Elevation: 335.5 ft

2.12.1 Designation: 29R
2.12.2 True Bearing: 305
2.12.3 Dimensions: 9539 ft x 150 ft
2.12.4 PCN: 75 F/A/X/T
2.12.5 Coordinates: 36−46−7.8228N / 119−42−12.6898W
2.12.6 Threshold Elevation: 332 ft
2.12.6 Touchdown Zone Elevation: 332.6 ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 305
2.12.3 Dimensions: 8008 ft x 150 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 36−46−13.2042N / 119−42−36.4402W
2.12.6 Threshold Elevation: 329.9 ft
2.12.6 Touchdown Zone Elevation: 330.7 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 125
2.12.3 Dimensions: 8008 ft x 150 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 36−46−59.0217N / 119−43−56.7171W
2.12.6 Threshold Elevation: 330 ft
2.12.6 Touchdown Zone Elevation: 332.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 11L
2.13.2 Take−off Run Available: 9539
2.13.3 Take−off Distance Available: 9539
2.13.4 Accelerate−Stop Distance Available: 9279
2.13.5 Landing Distance Available: 9279

2.13.1 Designation: 29R
2.13.2 Take−off Run Available: 9539
2.13.3 Take−off Distance Available: 9539
2.13.4 Accelerate−Stop Distance Available: 9539
2.13.5 Landing Distance Available: 9227

2.13.1 Designation: 29L
2.13.2 Take−off Run Available: 8008
2.13.3 Take−off Distance Available: 8008
2.13.4 Accelerate−Stop Distance Available: 8008
2.13.5 Landing Distance Available: 8008

2.13.1 Designation: 11R
2.13.2 Take−off Run Available: 8008
2.13.3 Take−off Distance Available: 8008
2.13.4 Accelerate−Stop Distance Available: 8008
2.13.5 Landing Distance Available: 8008

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 11L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 29R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 29L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 11R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ANG OPS
2.18.3 Channel: 140
2.18.5 Hours of Operation:

2.18.1 Service Designation: ANG OPS
2.18.3 Channel: 298.3
2.18.5 Hours of Operation:

2.18.1 Service Designation: APCH/P DEP/P (091−239)
2.18.3 Channel: 132.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P (091−239)
2.18.3 Channel: 323.25
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (240−090)
2.18.3 Channel: 119.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (240−090)
2.18.3 Channel: 351.95
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/S DEP/S (S/SE VISALIA AREA)
2.18.3 Channel: 118.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/S DEP/S (S/SE VISALIA AREA)
2.18.3 Channel: 268.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ATIS
2.18.3 Channel: 121.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ATIS
2.18.3 Channel: 273.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 124.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 348.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CLASS C (240−090)
2.18.3 Channel: 119.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CLASS C (091−239)
2.18.3 Channel: 132.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CLASS C (091−239)
2.18.3 Channel: 323.25
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CLASS C (240−090)
2.18.3 Channel: 351.95
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 348.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 251.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 40.95
2.18.5 Hours of Operation:

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 132
2.18.5 Hours of Operation:

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 255.8
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 11L. Magnetic variation: 13E
2.19.2 ILS Identification: RPW
2.19.5 Coordinates: 36−47−10.81N / 119−43−56.63W
2.19.6 Site Elevation: 347.1 ft

2.19.1 ILS Type: Localizer for runway 11L. Magnetic variation: 13E
2.19.2 ILS Identification: RPW
2.19.5 Coordinates: 36−46−2.54N / 119−42−3.44W
2.19.6 Site Elevation: 331.3 ft

2.19.1 ILS Type: DME for runway 29R. Magnetic variation: 13E
2.19.2 ILS Identification: FAT
2.19.5 Coordinates: 36−47−10.81N / 119−43−56.63W
2.19.6 Site Elevation: 347.1 ft

2.19.1 ILS Type: Glide Slope for runway 29R. Magnetic variation: 13E
2.19.2 ILS Identification: FAT
2.19.5 Coordinates: 36−46−18.84N / 119−42−23.4799W
2.19.6 Site Elevation: 332 ft

2.19.1 ILS Type: Inner Marker for runway 29R. Magnetic variation: 13E
2.19.2 ILS Identification: FAT
2.19.5 Coordinates: 36−46−4.81N / 119−42−7.41W
2.19.6 Site Elevation: 330.7 ft

2.19.1 ILS Type: Localizer for runway 29R. Magnetic variation: 13E
2.19.2 ILS Identification: FAT
2.19.5 Coordinates: 36−47−8.2801N / 119−43−58.6W
2.19.6 Site Elevation: 333.7 ft

General Remarks:
MILITARY: SVC: RWY 29R AND 11L A−GEAR CABLE AVBL UPON REQ ONLY; DEFAULT POSN DOWN.

MILITARY: ANG: CTC ANG OPS FOR LCL BIRD WATCH COND (BWC).

SERVICE− JET AIR START UNIT (JASU): (AM32A−60) 2(AGPU)

FRESNO YOSEMITE INTL IS NOISE SENSITIVE; NOISE ABATEMENT PROCEDURES IN EFFECT.

SERVICE − FUEL: ROSS AVIATION, C559−251−1555

RETRACTABLE BAK−12/14 AVBL ON RY 11L AND RY 29R ARE KEPT IN RECESSED POSITION UNTIL REQ FOR USE; TWR MUST BE NOTIFIED AT LEAST 5 SECONDS PRIOR TO ENGAGEMENT SO THAT THE AG CABLE MAY BE RAISED.

POSSIBLE WAKE TURBULENCE OR WIND SHEAR ARR TO RY 29L OR DEP FM RY 11R. JET TESTING CONDUCTED AT AIR NATIONAL GUARD RAMP LCTD AT SE CORNER OF ARPT.

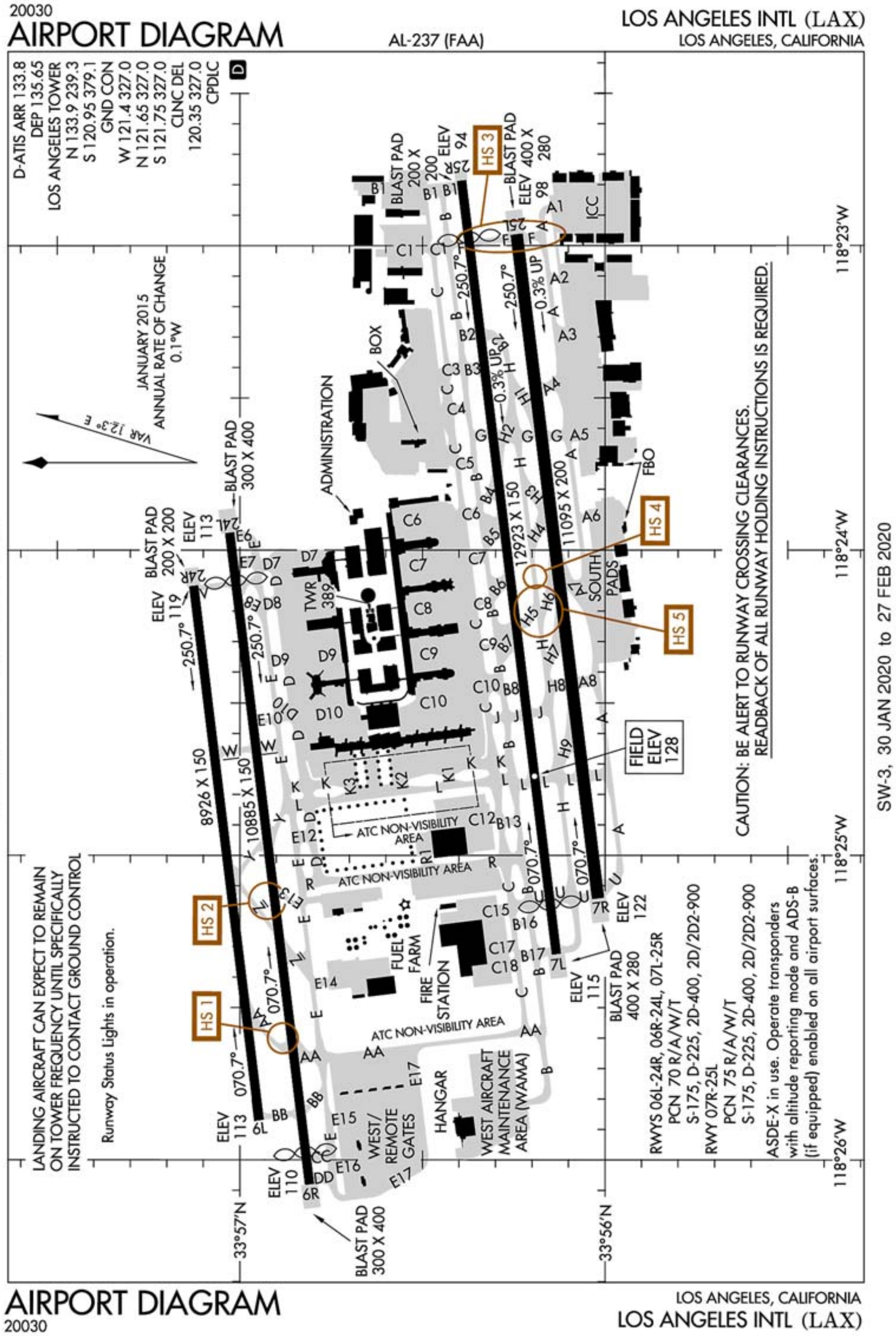
SERVICE−FUEL: SIGNATURE FLIGHT SUPPORT, C559−981−2490

NO MULT APCHS AND LNDGS MON−SAT 2200−0700 AND SUN 1800−1000.

LGTD RY DISTANCE REMAINING MARKERS ON SOUTH SIDE OF RY 11R/29L; LGTD RY DISTANCE REMAINING MARKERS BOTH SIDES OF RY 11L/29R− 11L DRM ON NORTH SIDE; 29R DRM ON SOUTH SIDE.

NUMEROUS BIRDS INVOF ARPT.

Los Angeles, California
Los Angeles International
ICAO Identifier KLAX



Los Angeles, CA
Los Angeles Intl
ICAO Identifier KLAX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33−56−32.987N / 118−24−28.975W
2.2.2 From City: 9 miles SW of LOS ANGELES, CA
2.2.3 Elevation: 127.8 ft
2.2.5 Magnetic Variation: 12E (2020)
2.2.6 Airport Contact: KEITH WILSCHETZ
ONE WORLD WAY
LOS ANGELES, CA 90009
(424−646−5060)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 8926 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−56−56.8049N / 118−25−52.1755W
2.12.6 Threshold Elevation: 113.1 ft
2.12.6 Touchdown Zone Elevation: 118.8 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 8926 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−57−7.5741N / 118−24−7.0161W
2.12.6 Threshold Elevation: 118.9 ft
2.12.6 Touchdown Zone Elevation: 122.4 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 83
2.12.3 Dimensions: 10885 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−56−48.5368N / 118−26−4.8042W
2.12.6 Threshold Elevation: 109.9 ft
2.12.6 Touchdown Zone Elevation: 116.2 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 10885 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−57−1.6678N / 118−23−56.5656W
2.12.6 Threshold Elevation: 112.9 ft
2.12.6 Touchdown Zone Elevation: 122.5 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 12923 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−56−23.5604N / 118−22−47.2005W
2.12.6 Threshold Elevation: 94.3 ft
2.12.6 Touchdown Zone Elevation: 103.8 ft

2.12.1 Designation: 07L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 12923 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33−56−7.9864N / 118−25−19.4335W
2.12.6 Threshold Elevation: 114.8 ft
2.12.6 Touchdown Zone Elevation: 127.8 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 83
2.12.3 Dimensions: 11095 ft x 200 ft
2.12.4 PCN: 75 R/A/W/T
2.12.5 Coordinates: 33−56−1.1378N / 118−25−8.466W
2.12.6 Threshold Elevation: 121.7 ft
2.12.6 Touchdown Zone Elevation: 127.6 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 11095 ft x 200 ft
2.12.4 PCN: 75 R/A/W/T
2.12.5 Coordinates: 33−56−14.5069N / 118−22−57.7701W
2.12.6 Threshold Elevation: 97.8 ft
2.12.6 Touchdown Zone Elevation: 103.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take−off Run Available: 8925
2.13.3 Take−off Distance Available: 8925
2.13.4 Accelerate−Stop Distance Available: 8566
2.13.5 Landing Distance Available: 8566

2.13.1 Designation: 24R
2.13.2 Take−off Run Available: 8925
2.13.3 Take−off Distance Available: 8925
2.13.4 Accelerate−Stop Distance Available: 8925
2.13.5 Landing Distance Available: 8925

2.13.1 Designation: 06R
2.13.2 Take−off Run Available: 10285
2.13.3 Take−off Distance Available: 10285
2.13.4 Accelerate−Stop Distance Available: 10285
2.13.5 Landing Distance Available: 9748

2.13.1 Designation: 24L
2.13.2 Take−off Run Available: 10285
2.13.3 Take−off Distance Available: 10285
2.13.4 Accelerate−Stop Distance Available: 10285
2.13.5 Landing Distance Available: 9483

2.13.1 Designation: 25R
2.13.2 Take−off Run Available: 12091
2.13.3 Take−off Distance Available: 12091
2.13.4 Accelerate−Stop Distance Available: 12091
2.13.5 Landing Distance Available: 11134

2.13.1 Designation: 07L
2.13.2 Take−off Run Available: 12091
2.13.3 Take−off Distance Available: 12091
2.13.4 Accelerate−Stop Distance Available: 12091
2.13.5 Landing Distance Available: 11259

2.13.1 Designation: 07R
2.13.2 Take−off Run Available: 11095
2.13.3 Take−off Distance Available: 11095
2.13.4 Accelerate−Stop Distance Available: 11095
2.13.5 Landing Distance Available: 11095

2.13.1 Designation: 25L
2.13.2 Take−off Run Available: 11095
2.13.3 Take−off Distance Available: 11095
2.13.4 Accelerate−Stop Distance Available: 11095
2.13.5 Landing Distance Available: 11095

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 06R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 25R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 25L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 120.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 327
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (ARR)
2.18.3 Channel: 133.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (DEP)
2.18.3 Channel: 135.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5

2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P (WEST)
2.18.3 Channel: 121.4
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (NORTH−CMPLX)
2.18.3 Channel: 121.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (SOUTH CMPLX)
2.18.3 Channel: 121.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 327
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (HELICOPTERS)
2.18.3 Channel: 119.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P IC (SOUTH CMPLX)
2.18.3 Channel: 120.95
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P IC (NORTH CMPLX)
2.18.3 Channel: 133.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P IC (NORTH CMPLX & HELI)
2.18.3 Channel: 239.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P IC (SOUTH CMPLX)
2.18.3 Channel: 379.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: OPS (SAMSO FLT OPS)
2.18.3 Channel: 372.2
2.18.5 Hours of Operation:

2.18.1 Service Designation: RAMP CTL (TXL C10 0630L−2330L)
2.18.3 Channel: 129.325
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: RAMP CTL (TXL C7 0600L−2300L)
2.18.3 Channel: 129.4
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: RAMP CTL (TXL C6 0600L−2300L)
2.18.3 Channel: 129.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: RAMP CTL (TXL C9 0530L−2230L)
2.18.3 Channel: 130.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: RAMP CTL (TXL C8 0500L−2359L)
2.18.3 Channel: 130.85
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: RAMP CTL (TXL D9)
2.18.3 Channel: 131.45
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: SFRA
2.18.3 Channel: 128.55
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 06L. Magnetic variation: 12E
2.19.2 ILS Identification: UWU
2.19.5 Coordinates: 33−56−50.7522N / 118−26−26.6221W
2.19.6 Site Elevation: 139.3 ft

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 12E
2.19.2 ILS Identification: UWU
2.19.5 Coordinates: 33−56−54.5859N / 118−25−39.8249W
2.19.6 Site Elevation: 110.5 ft

2.19.1 ILS Type: Localizer for runway 06L. Magnetic variation: 12E
2.19.2 ILS Identification: UWU
2.19.5 Coordinates: 33−57−8.5767N /

118−23−57.1965W
2.19.6 Site Elevation: 108.5 ft

2.19.1 ILS Type: DME for runway 24R. Magnetic variation: 12E
2.19.2 ILS Identification: OSS
2.19.5 Coordinates: 33−56−50.7522N / 118−26−26.6221W
2.19.6 Site Elevation: 139.3 ft

2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 12E
2.19.2 ILS Identification: OSS
2.19.5 Coordinates: 33−57−2.4082N / 118−24−18.522W
2.19.6 Site Elevation: 116.7 ft

2.19.1 ILS Type: Localizer for runway 24R. Magnetic variation: 12E
2.19.2 ILS Identification: OSS
2.19.5 Coordinates: 33−56−53.1648N / 118−26−27.6839W
2.19.6 Site Elevation: 125.5 ft

2.19.1 ILS Type: DME for runway 06R. Magnetic variation: 12E
2.19.2 ILS Identification: GPE
2.19.5 Coordinates: 33−56−49.9191N / 118−26−22.7714W
2.19.6 Site Elevation: 134.3 ft

2.19.1 ILS Type: Glide Slope for runway 06R. Magnetic variation: 12E
2.19.2 ILS Identification: GPE
2.19.5 Coordinates: 33−56−53.3646N / 118−25−47.3623W
2.19.6 Site Elevation: 108 ft

2.19.1 ILS Type: Localizer for runway 06R. Magnetic variation: 12E
2.19.2 ILS Identification: GPE
2.19.5 Coordinates: 33−57−2.4125N / 118−23−49.2874W
2.19.6 Site Elevation: 106.3 ft

2.19.1 ILS Type: DME for runway 24L. Magnetic variation: 12E
2.19.2 ILS Identification: HQB
2.19.5 Coordinates: 33−56−49.9191N / 118−26−22.7714W
2.19.6 Site Elevation: 134.3 ft

2.19.1 ILS Type: Glide Slope for runway 24L. Magnetic variation: 12E
2.19.2 ILS Identification: HQB
2.19.5 Coordinates: 33−57−2.31N / 118−24−18.51W
2.19.6 Site Elevation: 116.7 ft

2.19.1 ILS Type: Localizer for runway 24L. Magnetic variation: 12E
2.19.2 ILS Identification: HQB
2.19.5 Coordinates: 33−56−46.746N / 118−26−22.2482W
2.19.6 Site Elevation: 123.4 ft

2.19.1 ILS Type: DME for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: IAS
2.19.5 Coordinates: 33−56−4.8698N / 118−25−24.8206W
2.19.6 Site Elevation: 104.3 ft

2.19.1 ILS Type: Glide Slope for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: IAS
2.19.5 Coordinates: 33−56−7.743N / 118−24−56.7237W
2.19.6 Site Elevation: 119.8 ft

2.19.1 ILS Type: Localizer for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: IAS
2.19.5 Coordinates: 33−56−24.7529N / 118−22−35.5432W
2.19.6 Site Elevation: 90 ft

2.19.1 ILS Type: DME for runway 25R. Magnetic variation: 12E
2.19.2 ILS Identification: CFN
2.19.5 Coordinates: 33−56−4.8698N / 118−25−24.8206W
2.19.6 Site Elevation: 104.3 ft

2.19.1 ILS Type: Glide Slope for runway 25R. Magnetic variation: 12E
2.19.2 ILS Identification: CFN
2.19.5 Coordinates: 33−56−17.8773N / 118−23−10.1796W
2.19.6 Site Elevation: 97.5 ft

2.19.1 ILS Type: Localizer for runway 25R. Magnetic variation: 12E
2.19.2 ILS Identification: CFN
2.19.5 Coordinates: 33−56−7.2503N /

118−25−26.6262W
2.19.6 Site Elevation: 119.3 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.5 Coordinates: 33−56−3.1899N / 118−25−20.7882W
2.19.6 Site Elevation: 126 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.5 Coordinates: 33−55−59.9253N / 118−24−55.0492W
2.19.6 Site Elevation: 118.2 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.5 Coordinates: 33−56−15.7853N / 118−22−45.2443W
2.19.6 Site Elevation: 92.5 ft

2.19.1 ILS Type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: LAX
2.19.5 Coordinates: 33−56−3.1899N / 118−25−20.7882W
2.19.6 Site Elevation: 126 ft

2.19.1 ILS Type: Glide Slope for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: LAX
2.19.5 Coordinates: 33−56−17.7739N / 118−23−10.2139W
2.19.6 Site Elevation: 97.3 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: LAX
2.19.5 Coordinates: 33−55−59.8649N / 118−25−20.8676W
2.19.6 Site Elevation: 118.4 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 15E
2.19.2 Navigation Aid Identification: LAX
2.19.5 Coordinates: 33−55−59.3368N / 118−25−55.246W
2.19.6 Site Elevation: 185 ft

General Remarks:
TWY E13 S OF TWY E CLSD TO ACFT WITH WINGSPAN OVER 125 FT.

TWY D BTN TWY D7 AND D8 (N OF TRML ONE) CLSD TO ACFT WITH WINGSPAN GTR THAN 157 FT.

SIMUL ACFT OPNS PROHIBITED ON TWYS T AND H9 BTWN RWYS 07L/25R AND 07R/25L.

MILITARY AF: ALL MIL AIRCREWS MUST CTC 61 ABW/CP FLT OPS FOR PRK LCTN/INSTR. NO GOVT TRANSPORTATION, QTRS OR SECURITY AVBL. VIP NOTIFICATION PRO APPLY. USER FEES ASSESSED USING AVCARD CREDIT. CTC ATLANTIC AVIATION FBO 131.6 INBD. INBD RELAY ETA, VIP CODE, SVC RQ 30 MIN PRIOR TO ARR.

RWY STATUS LGTS IN OPN.

AMERICAN EAGLE TRML SOUTHBOUND TAXING ACFT USE MNM PWR DUE TO BLAST HAZ.

ANY ACFT THAT COMES TO A STOP OR HAS ITS MOMENTUM INTRPD WHILE TURNING AND TAXING INTO ITS PRKG PSN, MUST STOP AND BE TOWED.

TURB MAY BE DEFLECTED UPWARD FM THE BLAST FENCE 180 FT E OF RWY 25R.

WEST REMOTE GATES: ACFT USE OF OPEN GATES AS TAXI PATH IS PROHIBITED (GATES 206, 207,208,209).

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF

EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PRACTICE INSTRUMENT APPROACHES & TOUCH AND GO LANDINGS ARE PROHIBITED.

NMRS BIRDS ON AND IN VCNTY OF ARPT.

SBND TURN NOT AVBL FROM WEST REMOTE GATE 208 AND WEST REMOTE GATE 209

NOISE SENS ARPT ON WESTERLY TAKEOFFS NO TURNS BEFORE CROSSING SHORELINE OVER−OCEAN APCHS UTILIZED 0000−0630.

ACFT USE MINIMAL PWR WHEN TXG VCNTY TRMLS DUE BLAST HAZ.

MILITARY RSTD: ALL MIL ACFT OFFL BUS ONLY, MIN 24 HR PPR, CTC 61 ABW/CP FLT OPS DSN 633−3779/4014,C310−653−3779/4014.

ACFT WITH LEN GTR THAN 240 FT ARE PROHIBITED ON TXLS C7, C8 AND C9 BTN TXL C AND TWY B. RWY 25L PREFERRED EMERG RWY.

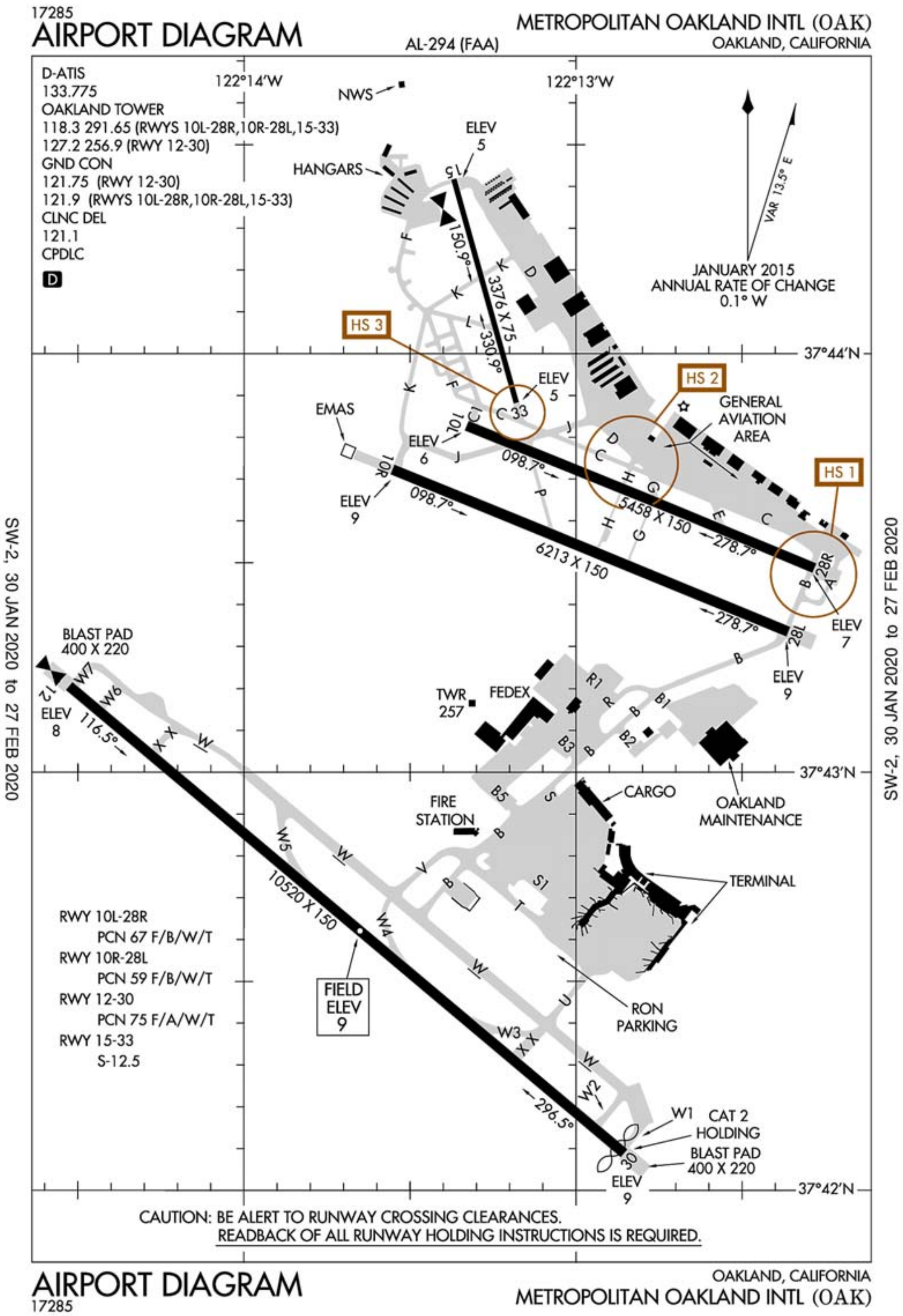
FOR ACFT WITH WINGSPAN GTR THAN 214 FT CTC LAX AIRSIDE OPS (424)−646−5292 FOR ARPT RESTRICTIONS.

MAJOR CONSTRUCTION ON AIRPORT, DAILY.

SIMUL ACFT OPNS PROHIBITED ON TWY H2 AND G BTN RWYS 07L/25R AND 07R/25L.

B772 ACFT AND GTR OBND FM TXL D8 MAY NOT TURN WBND ONTO TXL D UNDER POWER.

Oakland, California
Metropolitan Oakland International
ICAO Identifier KOAK



Oakland, CA
Metropolitan Oakland Intl
ICAO Identifier KOAK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−43−16.5N / 122−13−16.1W
2.2.2 From City: 4 miles S of OAKLAND, CA
2.2.3 Elevation: 9 ft
2.2.5 Magnetic Variation: 14E (2015)
2.2.6 Airport Contact: MATT DAVIS
METROPOLITAN OAKLAND INTL ARPT
OAKLAND, CA 94621 (510−563−6436)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 28R
2.12.2 True Bearing: 292
2.12.3 Dimensions: 5458 ft x 150 ft
2.12.4 PCN: 67 F/B/W/T
2.12.5 Coordinates: 37−43−29.3247N / 122−12−16.9329W
2.12.6 Threshold Elevation: 5.8 ft
2.12.6 Touchdown Zone Elevation: 6.8 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 112
2.12.3 Dimensions: 5458 ft x 150 ft
2.12.4 PCN: 67 F/B/W/T
2.12.5 Coordinates: 37−43−49.6865N / 122−13−19.8481W
2.12.6 Threshold Elevation: 5.5 ft
2.12.6 Touchdown Zone Elevation: 6.3 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 292
2.12.3 Dimensions: 6213 ft x 150 ft
2.12.4 PCN: 59 F/B/W/T
2.12.5 Coordinates: 37−43−20.178N / 122−12−21.6341W
2.12.6 Threshold Elevation: 8.2 ft
2.12.6 Touchdown Zone Elevation: 8.7 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 112
2.12.3 Dimensions: 6213 ft x 150 ft
2.12.4 PCN: 59 F/B/W/T
2.12.5 Coordinates: 37−43−43.345N / 122−13−33.2509W
2.12.6 Threshold Elevation: 8.1 ft
2.12.6 Touchdown Zone Elevation: 9 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 310
2.12.3 Dimensions: 10520 ft x 150 ft
2.12.4 PCN: 75 F/A/W/T
2.12.5 Coordinates: 37−42−5.3735N / 122−12−51.3251W
2.12.6 Threshold Elevation: 9 ft
2.12.6 Touchdown Zone Elevation: 9 ft

2.12.1 Designation: 12
2.12.2 True Bearing: 130
2.12.3 Dimensions: 10520 ft x 150 ft
2.12.4 PCN: 75 F/A/W/T
2.12.5 Coordinates: 37−43−12.2256N / 122−14−31.6133W
2.12.6 Threshold Elevation: 8.3 ft
2.12.6 Touchdown Zone Elevation: 8.6 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 164
2.12.3 Dimensions: 3376 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 37−44−25.0497N / 122−13−22.1076W
2.12.6 Threshold Elevation: 1.5 ft
2.12.6 Touchdown Zone Elevation: 4.6 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 344
2.12.3 Dimensions: 3376 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 37−43−52.9005N / 122−13−10.826W
2.12.6 Threshold Elevation: 3.9 ft
2.12.6 Touchdown Zone Elevation: 4.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 5458
2.13.3 Take−off Distance Available: 5458
2.13.4 Accelerate−Stop Distance Available: 5458
2.13.5 Landing Distance Available: 5458

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 5458
2.13.3 Take−off Distance Available: 5458
2.13.4 Accelerate−Stop Distance Available: 5336
2.13.5 Landing Distance Available: 5336

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 6213
2.13.3 Take−off Distance Available: 6213
2.13.4 Accelerate−Stop Distance Available: 6213
2.13.5 Landing Distance Available: 6213

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 6213
2.13.3 Take−off Distance Available: 6213
2.13.4 Accelerate−Stop Distance Available: 6213
2.13.5 Landing Distance Available: 6213

2.13.1 Designation: 30
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 12
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 15
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 33
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 28L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 12
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 15
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 33
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 121.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 133.775
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P (RWY 12/30)
2.18.3 Channel: 121.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 10L/28R, 10R/28L, 15/33)

2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 10L/28R, 10R/28L, 15/33)
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 12/30)
2.18.3 Channel: 127.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 12/30)
2.18.3 Channel: 256.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 10L/28R, 10R/28L, 15/33)
2.18.3 Channel: 291.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/S
2.18.3 Channel: 124.9
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: OAK
2.19.5 Coordinates: 37−43−28.5955N / 122−12−30.6206W
2.19.6 Site Elevation: 3.3 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: OAK
2.19.5 Coordinates: 37−43−54.55N / 122−13−34.86W
2.19.6 Site Elevation: 5.2 ft

2.19.1 ILS Type: Glide Slope for runway 12. Magnetic variation: 14E
2.19.2 ILS Identification: AAZ
2.19.5 Coordinates: 37−43−2.9276N / 122−14−22.8383W
2.19.6 Site Elevation: 3.3 ft

2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 14E
2.19.2 ILS Identification: AAZ
2.19.5 Coordinates: 37−42−2.2539N / 122−12−46.6503W
2.19.6 Site Elevation: 7.2 ft

2.19.1 ILS Type: DME for runway 30. Magnetic variation: 14E
2.19.2 ILS Identification: INB
2.19.5 Coordinates: 37−43−29.85N / 122−14−58.1W
2.19.6 Site Elevation: 18 ft

2.19.1 ILS Type: Glide Slope for runway 30. Magnetic variation: 14E
2.19.2 ILS Identification: INB
2.19.5 Coordinates: 37−42−9.7514N / 122−13−5.6277W
2.19.6 Site Elevation: 4.3 ft

2.19.1 ILS Type: Localizer for runway 30. Magnetic variation: 14E
2.19.2 ILS Identification: INB
2.19.5 Coordinates: 37−43−29.8732N / 122−14−58.1043W
2.19.6 Site Elevation: 9.3 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 17E
2.19.2 Navigation Aid Identification: OAK
2.19.5 Coordinates: 37−43−33.3223N / 122−13−24.9086W
2.19.6 Site Elevation: 13.4 ft

General Remarks:
100 FT LGTD MICROWAVE ANT TWR LCTD 1320 FT WSW OF OAK VORTAC; S OF UPWIND END OF RWY 28L.

TWY A, E, G, H BTN RWY 28R AND TWY C MAX ACFT WT 150,000 LBS.

PREFERENTIAL RWY USE PROGRAM IN EFFECT 2200−0600. NORTH FLD PREF ARR RWY 28L, NORTH FLD PREF DEP RWYS 10R OR 28R. IF THESE RWYS UNACCEPTABLE FOR SAFETY OR ATC INSTRN THEN RWY 12/30 MUST BE USED.

TWY C BTN TWY G & J MAX ACFT WEIGHT 90,000 LBS SINGLE; 144,000 LBS DUAL; 257,000 LBS TANDEM.

1000 FT CWY RWY 12 & RWY 30.

400 FT BY 220 FT BLAST PAD RWY 12 AND RWY 30.

TWY P MAX ACFT WT 116,000 LBS SINGLE; 190,000 LBS DUAL; 305,000 LBS DUAL TANDEM; 735,000 LBS DOUBLE DUAL TANDEM.

NOISE ABATEMENT PROCS N/A IN EMERGS OR WHENEVER RWY 12/30 IS CLSD DUE TO MAINT, SAFETY, WINDS OR WX.

RWY 15/33 CLSD TO ACR ACFT.

FOR NOISE ABATEMENT INFO CTC NOISE ABATEMENT OFC AT (510) 563−6463.

TWY C BTN RWY 28R & TWY G AND TWYS B, J, AND D MAX ACFT WT 861,000 LBS.

TWY K BTN RWY 10R AND INT TWYS F, L, K MAX ACFT WEIGHT 33,000 LBS SINGLE; 45,000 LBS DUAL; TANDEM NA.

24 HR NOISE ABATEMENT PROCEDURE − TBJT AND TURBOFAN PWRD ACFT, TURBOROPS OVER 17,000 LBS, FOUR−ENGINE RECIPROCATING PWRD ACFT, AND SURPLUS MIL ACFT OVER 12,500 POUNDS SHOULD NOT DEP RWYS 28L & 28R OR LAND ON RWYS 10R & 10L.

TWY C BTN TWY J & F MAX ACFT WEIGHT 76,000 LBS SINGLE; 115,000 LBS DUAL; 257,000 LBS TANDEM (DUAL TANDEM NA).

RWYS 30, 28R AND RWY 28L DIST RMNG SIGNS L SIDE.

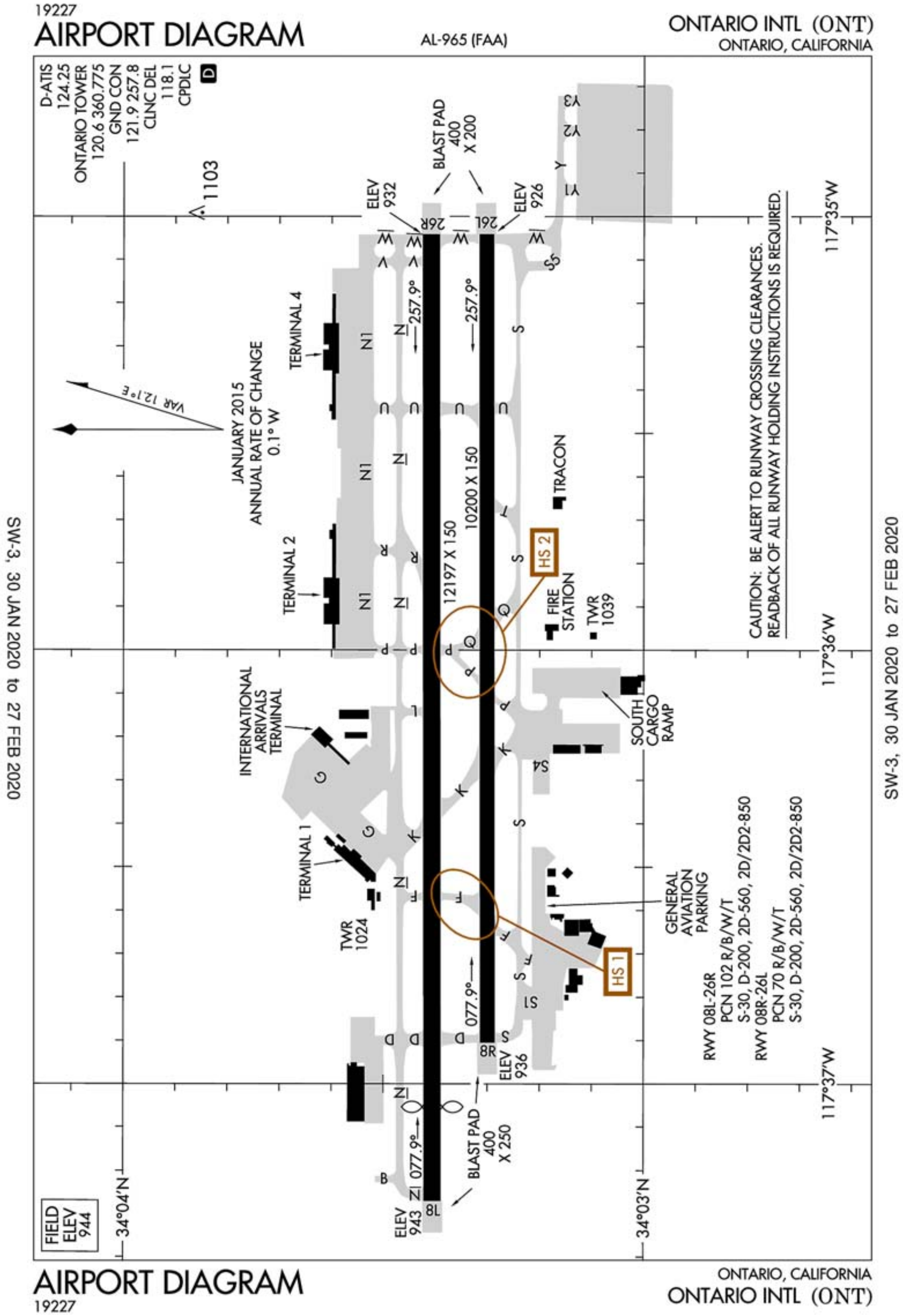
ACFT WITH EXPERIMENTAL OR LTD CERTIF HAVING OVER 1000 HORSEPOWER OR 4000 LBS ARE RSTRD TO RWY 12/30.

BIRDS ON & INVOF ARPT.

TWY G & H BTN RWY 28L & 28R: MAX ACFT WT 12,500 LBS.

TWY K BTN TWY D & INT TWYS F, L, K MAX ACFT WEIGHT 56,000 LBS SINGLE; 70,000 LBS DUAL; 130,000 LBS TANDEM.

Ontario, California
Ontario International
ICAO Identifier KONT



Ontario, CA
Ontario Intl
ICAO Identifier KONT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 34−3−21.6N / 117−36−4.3W
2.2.2 From City: 2 miles E of ONTARIO, CA
2.2.3 Elevation: 944 ft
2.2.5 Magnetic Variation: 12E (2020)
2.2.6 Airport Contact: MARK THORPE
1923 EAST AVION STREET
ONTARIO, CA 91761
(909−544−5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12197 ft x 150 ft
2.12.4 PCN: 102 R/B/W/T
2.12.5 Coordinates: 34−3−24.7542N / 117−37−22.1464W
2.12.6 Threshold Elevation: 943.2 ft
2.12.6 Touchdown Zone Elevation: 944 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12197 ft x 150 ft
2.12.4 PCN: 102 R/B/W/T
2.12.5 Coordinates: 34−3−24.8152N / 117−34−57.1903W
2.12.6 Threshold Elevation: 931.7 ft
2.12.6 Touchdown Zone Elevation: 931.7 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10200 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 34−3−17.8467N / 117−36−58.4095W
2.12.6 Threshold Elevation: 936 ft
2.12.6 Touchdown Zone Elevation: 936 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10200 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 34−3−17.8904N / 117−34−57.1886W
2.12.6 Threshold Elevation: 926.2 ft
2.12.6 Touchdown Zone Elevation: 926.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 12197
2.13.3 Take−off Distance Available: 12197
2.13.4 Accelerate−Stop Distance Available: 12197
2.13.5 Landing Distance Available: 11200

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 12197
2.13.3 Take−off Distance Available: 12197
2.13.4 Accelerate−Stop Distance Available: 12197
2.13.5 Landing Distance Available: 12197

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 10200
2.13.3 Take−off Distance Available: 10200
2.13.4 Accelerate−Stop Distance Available: 10200
2.13.5 Landing Distance Available: 10200

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 10200
2.13.3 Take−off Distance Available: 10200
2.13.4 Accelerate−Stop Distance Available: 10200
2.13.5 Landing Distance Available: 10200

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:

2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 118.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 124.25
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 257.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 120.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 360.775
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 12E
2.19.2 ILS Identification: AOD
2.19.5 Coordinates: 34−3−21.2052N / 117−36−59.8991W
2.19.6 Site Elevation: 936 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 12E
2.19.2 ILS Identification: AOD
2.19.5 Coordinates: 34−3−24.8181N / 117−34−45.0673W
2.19.6 Site Elevation: 926.1 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 12E
2.19.2 ILS Identification: ONT
2.19.5 Coordinates: 34−3−22.0269N / 117−37−33.6608W
2.19.6 Site Elevation: 955 ft

2.19.1 ILS Type: Glide Slope for runway 26R. Magnetic variation: 12E
2.19.2 ILS Identification: ONT
2.19.5 Coordinates: 34−3−22.0075N / 117−35−10.9749W
2.19.6 Site Elevation: 925.8 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 12E
2.19.2 ILS Identification: ONT
2.19.5 Coordinates: 34−3−24.7467N / 117−37−34.626W
2.19.6 Site Elevation: 943 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 12E
2.19.2 ILS Identification: TWO
2.19.5 Coordinates: 34−3−20.4698N / 117−37−8.8491W
2.19.6 Site Elevation: 947.9 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 12E
2.19.2 ILS Identification: TWO
2.19.5 Coordinates: 34−3−21.8933N / 117−35−10.9713W
2.19.6 Site Elevation: 925.3 ft

2.19.1 ILS Type: Inner Marker for runway 26L. Magnetic variation: 12E
2.19.2 ILS Identification: TWO
2.19.5 Coordinates: 34−3−17.8914N / 117−34−47.8499W
2.19.6 Site Elevation: 921 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 12E
2.19.2 ILS Identification: TWO
2.19.5 Coordinates: 34−3−17.8409N / 117−37−10.2948W
2.19.6 Site Elevation: 931.3 ft

2.19.1 ILS Type: Outer Marker for runway 26L. Magnetic variation: 12E
2.19.2 ILS Identification: TWO
2.19.5 Coordinates: 34−3−22.3291N / 117−28−17.7232W
2.19.6 Site Elevation: 1010 ft

General Remarks:
ALL MILITARY AND GENERAL AVIATION (FIXED OR ROTOR WING) ACFT OPS ARE RESTRICTED TO FBO FACILITIES WITH ADVANCE COORDINATION; OVERNIGHT TIEDOWN AND PARKING FEE.

EASTBOUND B747, B777, A330, A340 OR LARGER ACFT ON TWY S PROHIBITED FROM NORTHBOUND TURNS ONTO TWY K.

TWY S−4 RSTD TO ACFT WITH WINGSPAN 117 FT OR SMALLER.

PILOTS SHOULD USE JUDGEMENTAL OVERSTEER ON TWY H AND TWY S−4.

FBO ON FREQ 130.75.

B747, B777, A330, A340 OR LARGER ACFT ON TWY S PROHIBITED FROM NORTHBOUND TURNS ONTO TWY P.

NOISE ABATEMENT PROCEDURES IN EFFECT; FULL−LENGTH TURBOJET DEP ENCOURAGED, NIGHTLY PREFERENTIAL RWY USAGE, 2200−0700.

TWY Y EAST OF TWY W IS A NON−MOVEMENT AREA; ALL ACFT CTC RAMP CTL 131.325 FOR ACCESS.

PTNS OF TWY S IN THE VCY OF TWY F ARE NOT VSB FM ATCT; PILOTS USE CTN ENTERING TWY F SOUTH OF TWY S.

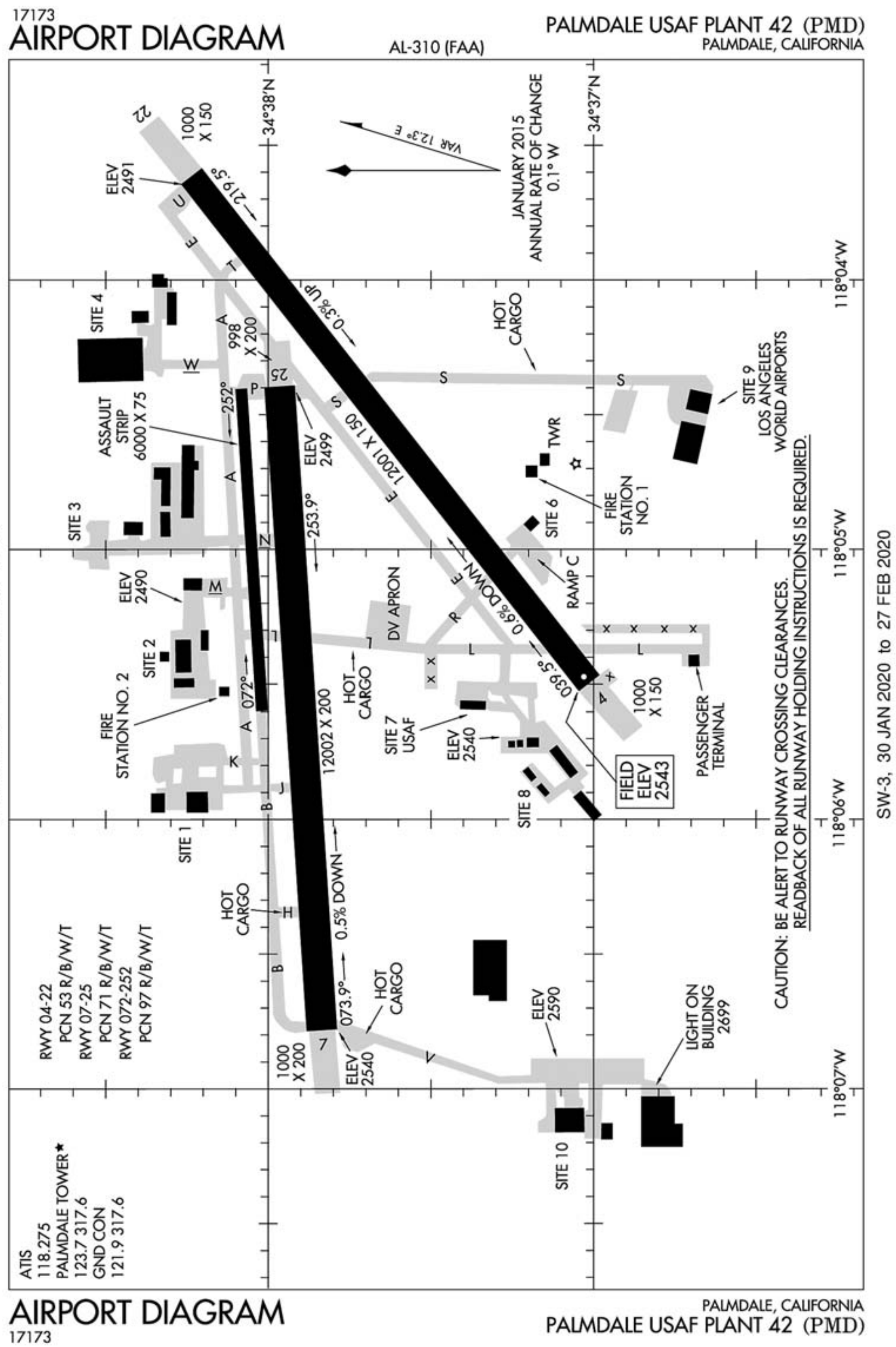
WILDLIFE HAZARD MGT PLAN IN EFFECT; POTENTIAL BIRD HAZARDS MAY EXIST ON AND INVOF ARPT; BE ALERT TO LARGE NUMBERS OF STARLINGS AND CROWS POSSIBLE ON APCH TO RY 26L AND RY 26R, HAWKS, EAGLES, FALCONS AND OWLS SPOTTED ON OCCASION.

ACFT PARKING AND CONTRACT GROUND SERVICES ARE LIMITED FOR NON−SCHEDULED OPERATIONS. FOR SCHEDULING INFORMATION CALL AIRFIELD OPERATIONS (909) 544−5344.

ACFT ACCESS TO TWY R FROM RWY 26R PROHIBITED

TWY F SOUTH OF TWY S RSTRD TO ACFT WITH 117 FT WINGSPAN AND SMALLER. TWY F SOUTH OF RWY 26L RSTRD TO ACFT WITH 180 FT WINGSPAN.

Palmdale, California
Palmdale Regional/USAF Plant 42
ICAO Identifier KPMD



Palmdale, CA
Palmdale Rgnl/USAF Plant 42
ICAO Identifier KPMD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 34−37−45.8N / 118−5−4.39W
2.2.2 From City: 3 miles NE of PALMDALE, CA
2.2.3 Elevation: 2542.5 ft
2.2.5 Magnetic Variation: 12E (2020)
2.2.6 Airport Contact: KEN NEITZEL
2503 E AVE P
PALMDALE, CA 93550
(661−272−6715)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 1330−0600Z++ Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types:
2.4.5 Hangar Space:
2.4.6 Repair Facilities: None

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 52
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 53 R/B/W/T
2.12.5 Coordinates: 34−37−0.842N / 118−5−29.802W
2.12.6 Threshold Elevation: 2542.5 ft
2.12.6 Touchdown Zone Elevation: 2542.5 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 232
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 53 R/B/W/T
2.12.5 Coordinates: 34−38−14.236N / 118−3−36.966W
2.12.6 Threshold Elevation: 2491.1 ft
2.12.6 Touchdown Zone Elevation: 2497.9 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 266
2.12.3 Dimensions: 12002 ft x 200 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 34−37−57.991N / 118−4−23.743W
2.12.6 Threshold Elevation: 2498.7 ft
2.12.6 Touchdown Zone Elevation: 2503.4 ft

2.12.1 Designation: 07
2.12.2 True Bearing: 86
2.12.3 Dimensions: 12002 ft x 200 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 34−37−50.106N / 118−6−47.029W
2.12.6 Threshold Elevation: 2540.2 ft
2.12.6 Touchdown Zone Elevation: 2540.2 ft

2.12.1 Designation: 252
2.12.2 True Bearing:
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 072
2.12.2 True Bearing:
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 04
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 22
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 25
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 07
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 252
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 072
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 25
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 252
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 072
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ATIS
2.18.3 Channel: 118.275
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: EMERG
2.18.3 Channel: 243
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: OPR 1330−0600Z++.

2.18.1 Service Designation: GND/P
2.18.3 Channel: 317.6
2.18.5 Hours of Operation: OPR 1330−0600Z++.

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 123.7
2.18.5 Hours of Operation: OPR 1330−0600Z++.

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 317.6
2.18.5 Hours of Operation: OPR 1330−0600Z++.

2.18.1 Service Designation: LCL/S
2.18.3 Channel: 236.6
2.18.5 Hours of Operation: OPR 1330−0600Z++.

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 25. Magnetic variation: 12E
2.19.2 ILS Identification: PMD
2.19.5 Coordinates: 34−38−1.256N / 118−4−40.078W
2.19.6 Site Elevation: 2491.8 ft

2.19.1 ILS Type: Localizer for runway 25. Magnetic variation: 12E
2.19.2 ILS Identification: PMD
2.19.5 Coordinates: 34−37−48.786N / 118−7−10.911W
2.19.6 Site Elevation: 2552.2 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 15E
2.19.2 Navigation Aid Identification: PMD
2.19.5 Coordinates: 34−37−53.0341N / 118−3−49.7607W
2.19.6 Site Elevation: 2498 ft

General Remarks:
PRKG RAMP LCTD S OF RWY 22 & TWY V NOT VSB FM ATCT.

MISC: COMSEC STORAGE UNAVBL.

MISC: WINDS ARE EST DUE TO FMQ−13 WIND SENSORS BEING ACCURATE TO WITHIN ONLY +/− 2 KT. ATC/WX WILL NOT INCL/RELAY WIND CORR INTO FCST/PHRASEOLOGY. THEREFORE, AIRCREWS WILL INCORPORATE A +/− 2 KT ACCURACY INTO THEIR DECISION MAKING PROCESS FOR FLYING OPR.

CAUTION: RWY 25 NSTD MRK: SPOT LDG ZONE MRK LCTD AT 6000 FT REMAINING MRK. RWY 07−25 DECEPTIVE SFC MRK EXCEED STANDARD BY APPROX 50 FT.

ALL DEPT ACFT MUST FILE FPL WITH P42 AFLD MGMT OPS.

CAUTION: FOD HAZ ON TWY S; ALL LARGE BODY ACFT MUST TAXI WITH OUTBOARD MOTORS SHUT OFF.

CAUTION: USE EXTREME CAUTION FOR UNMANNED AERIAL SYSTEMS (UAS) OPS IN VCNTY.

MILITARY USE: ASSAULT LDG ZONE LCTD 1ST 6,000 EAST END OF TWY B. RWY 252 MRK ONLY FOR C−130 ASSAULT OPR; ONE−WAY LDG ONLY.

RSTD − OFFL BUS ONLY. MIL ARPT. CIVIL USE RQR USAF APVL AND DD FORM 2400/01/02. PPR RQR FOR FULL STOP LDG ONLY. CALL C661−272−6619/6614.

RSTD: OVERNIGHT PRK UNAUTHD ON C−RAMP.

TRAN ALERT (2 OF 2): UNABLE TO SVC ACFT WITH ORDNANCE. LTD GRD SUPPORT EQUIPMENT AVBL. NO POTABLE WATER SVC. NO TRAN MAINT AVBL. GND SVC UNAVBL WHEN LIGHTNING WITHIN 5 NM.

MISC: BASE OPS OPR 1330−0600Z++, MON−SAT, CLSD SUN AND FEDERAL HOL.

CAUTION: CONTRACTOR LEASED SITES ARE INTENDED FOR ACFT BASED THEREIN; ENTRY GATES AND APRONS MAY NOT MEET AF OBST STDS.

BIRD HAZ POTENTIAL EXISTS. MIGRATORY SEASON PHASE II 1 OCT − 31 MAR. DURG BWC MODERATE, TKOF AND LNDG PERMITTED. DURG BWC SEVERE, TKOF AND LNDG PROHIBITED.

FUEL: A++ AVBL. NO TRANS ACFT FUEL SVC AVBL. LTD FUELING AVBL; GOVT ACFT ONLY 1600−2300Z++ MON−FRI. 24 HR PN WITH AFLD MGR RQR; NO SAME DAY REQ; GAS AND GO UNAVBL. EXPECT 2+ HR DELAY FOR FUEL.

RSTD: RWY RESERVED FOR ACFT BASED THEREIN ON SAT AND SUN. GRD CREWS MUST INSPECT ALL ANTICIPATED AFLD PAVEMENTS RQR FOR THEIR MSN PRIOR TO EACH ACFT ARR OR DEP

SERVICE−JASU: POWER CARS UNAVBL.

DRAINAGE DITCHES PARL RWY 22 FM TWY S TO TWY U.

CAUTION: VARIOUS ACFT TEST OPS MARKINGS PAINTED IN WHITE ON TAXIWAY UNIFORM.

TRAN ALERT (1 OF 2): NO FLEET SVC AVBL. NO FLW ME SVC AVBL. EXP PROGRESSIVE TAXI TO PRK. AIRCREW RESPONSIBLE FOR ACFT PINNING/SAFING.

UNLGT OBSTN SURROUND AFLD.

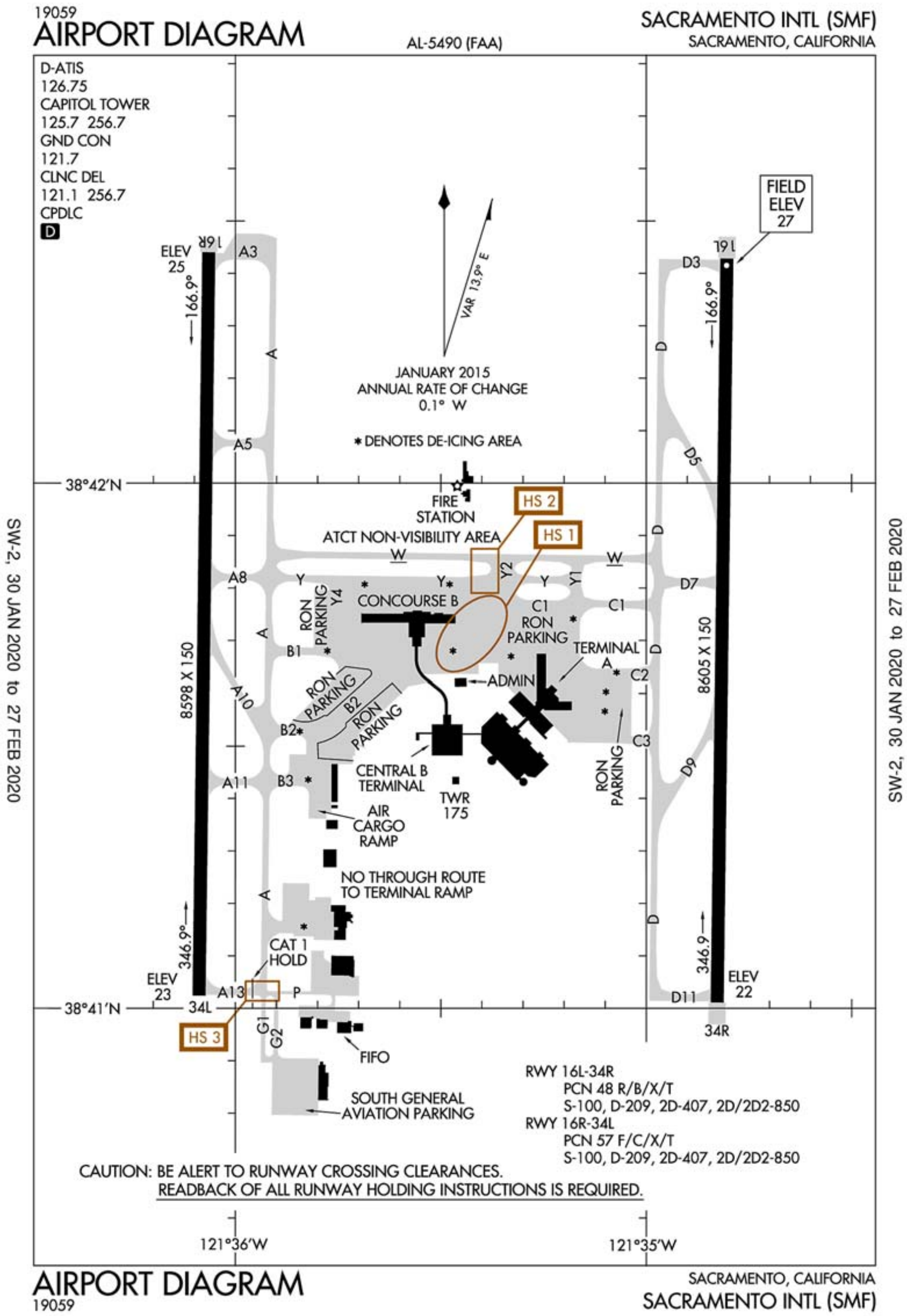
SERVICE−LGT: GATED THLD LGT RWY 07−25 AND RWY 04−22.

MISC: INDUS INSTLN − NO TRNSPN, LODGING OR NML SVC AVBL ON SITE.

RSTD: TWY L BTN RWY 04/22 AND PAX TRML UNLGTD AND USABLE FOR DAYLT VFR ONLY.

MISC: FLT PLANS MUST BE FILED AND ACTIVATED WITH P42 AFLD MGMT. USE PRESCOTT FSS WHEN P42 AFLD MGMT CLSD.

Sacramento, California
Sacramento International
ICAO Identifier KSMF



Sacramento, CA
Sacramento Intl
ICAO Identifier KSMF

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−41−43.6N / 121−35−26.8W
2.2.2 From City: 10 miles NW of SACRAMENTO, CA
2.2.3 Elevation: 26.9 ft
2.2.5 Magnetic Variation: 13E (2020)
2.2.6 Airport Contact: SHERI THOMPSON−DUARTE
6900 AIRPORT BLVD
SACRAMENTO, CA 95837
((916) 874−0560)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 16L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 8605 ft x 150 ft
2.12.4 PCN: 48 R/B/X/T
2.12.5 Coordinates: 38−42−25.6973N / 121−34−48.2125W
2.12.6 Threshold Elevation: 26.9 ft
2.12.6 Touchdown Zone Elevation: 26.9 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8605 ft x 150 ft
2.12.4 PCN: 48 R/B/X/T
2.12.5 Coordinates: 38−41−0.6506N / 121−34−49.642W
2.12.6 Threshold Elevation: 22.1 ft
2.12.6 Touchdown Zone Elevation: 23.8 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.4 PCN: 57 F/C/X/T
2.12.5 Coordinates: 38−42−26.4236N / 121−36−3.8961W
2.12.6 Threshold Elevation: 24.8 ft
2.12.6 Touchdown Zone Elevation: 25.3 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.4 PCN: 57 F/C/X/T
2.12.5 Coordinates: 38−41−1.439N / 121−36−5.3075W
2.12.6 Threshold Elevation: 22.5 ft
2.12.6 Touchdown Zone Elevation: 23.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 16L
2.13.2 Take−off Run Available: 8605
2.13.3 Take−off Distance Available: 8605
2.13.4 Accelerate−Stop Distance Available: 8605
2.13.5 Landing Distance Available: 8605

2.13.1 Designation: 34R
2.13.2 Take−off Run Available: 8605
2.13.3 Take−off Distance Available: 8605
2.13.4 Accelerate−Stop Distance Available: 8605
2.13.5 Landing Distance Available: 8605

2.13.1 Designation: 16R
2.13.2 Take−off Run Available: 8598
2.13.3 Take−off Distance Available: 8598
2.13.4 Accelerate−Stop Distance Available: 8598
2.13.5 Landing Distance Available: 8598

2.13.1 Designation: 34L
2.13.2 Take−off Run Available: 8598
2.13.3 Take−off Distance Available: 8598
2.13.4 Accelerate−Stop Distance Available: 8598
2.13.5 Landing Distance Available: 8598

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 16L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 121.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 256.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 126.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 256.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 125.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 256.7
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 16L. Magnetic variation: 13E
2.19.2 ILS Identification: MDK
2.19.5 Coordinates: 38−40−50.2189N / 121−34−46.3009W
2.19.6 Site Elevation: 30.9 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 13E
2.19.2 ILS Identification: MDK
2.19.5 Coordinates: 38−42−15.18N / 121−34−43.22W
2.19.6 Site Elevation: 21.7 ft

2.19.1 ILS Type: Localizer for runway 16L. Magnetic variation: 13E
2.19.2 ILS Identification: MDK
2.19.5 Coordinates: 38−40−50.67N / 121−34−49.81W
2.19.6 Site Elevation: 17.4 ft

2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38−40−34.7038N / 121−36−3.046W
2.19.6 Site Elevation: 34 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38−42−15.8608N / 121−36−9.106W
2.19.6 Site Elevation: 22.9 ft

2.19.1 ILS Type: Inner Marker for runway 16R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38−42−34.0974N / 121−36−3.7746W
2.19.6 Site Elevation: 23 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38−40−35.7492N / 121−36−5.7322W
2.19.6 Site Elevation: 19.6 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 13E
2.19.2 ILS Identification: HUX
2.19.5 Coordinates: 38−40−34.7038N / 121−36−3.046W
2.19.6 Site Elevation: 34 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 13E
2.19.2 ILS Identification: HUX
2.19.5 Coordinates: 38−41−12.5012N / 121−36−0.0807W
2.19.6 Site Elevation: 21.7 ft

2.19.1 ILS Type: Localizer for runway 34L. Magnetic variation: 13E
2.19.2 ILS Identification: HUX
2.19.5 Coordinates: 38−42−36.65N / 121−36−3.72W
2.19.6 Site Elevation: 22 ft

General Remarks:
WEST RAMP SPOTS 56−60 & F1 RSTRD TO TOW IN AND TOW OUT ONLY FROM TXL B2. WHEN PUSHING BACK FOR DEP FROM WEST RAMP SPOTS 56−60 & F1 EACH ACFT IS TO PUSH BACK ON TO TXL B2 AND PULL FWD TO THE "ENGINE START LINE" PRIOR TO STARTING ENGS.

CROP DUSTERS OPER INVOF ARPT AT OR BELOW 200 FT AGL.

MILITARY AIRCRAFT PARKING LIMITED. CONTACT ARPT OPNS IF PARKING IS REQUIRED (916) 806−5309.

NOISE SENSITIVE AREAS W OF ARPT ON SAC RIVER. LCL TURN DISCOURAGED FOR JET ACFT. WHEN CONDUCTING IFR APCH IN VFR CONDITIONS EXECUTE MISSED APCH AT DEP END OF RYS. PLAN VFR PATTERNS TO E. USE MIN POWER SETTINGS.

TWY B1 CLSD TO CARGO ACFT.

PORTION OF TWY W 500 FT EAST OF TWY A TO 2100 FT EAST OF TWY A IS NOT VISIBLE FROM ATCT.

TWY Y4 RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (GROUP III).

ALL ACFT CTC ATC GND CTL PRIOR TO MOVEMENT ON RAMP.

TWY RMK #2: THE MAXIMUM ALLOWABLE GROSS AIRCRAFT LOAD FOR TWYS G1, G2, AND THE GENERAL AVIATION PARKING APRON IS: 70,000 LBS FOR SINGLE GEAR AIRCRAFT; 170,000 LBS FOR DUAL GEAR AIRCRAFT; AND 250,000 LBS FOR DUAL TANDEM GEAR AIRCRAFT.

FAA GWT STRENGTH EVALUATION MD−11 = 590,000 LBS.

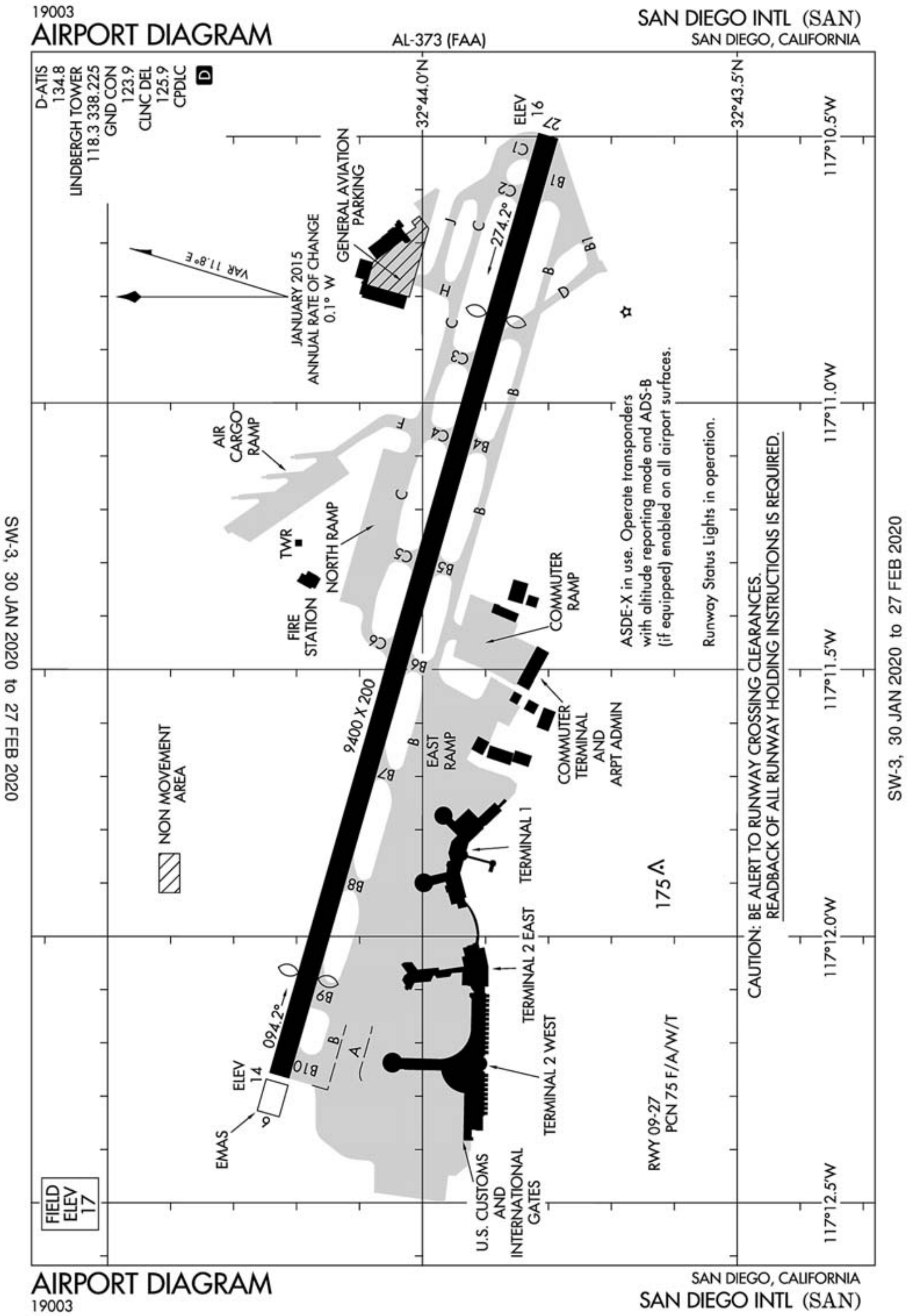
(A49A−16R) ALSF2 OPERS AS SSALR TILL WEATHER GOES BELOW VFR.

GND VEHICLE SURVEILLANCE SYS IN USE. OPR TRANSPONDERS WITH ALT RPRTG MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AP SFCS.

BIRDS ON AND IN VICINITY OF ARPT.

TWY RMK #2 CONT'D: AN AIRCRAFT CANNOT EXCEED THE AIRPLANE DESIGN GROUP III CRITERIA AND MUST HAVE A WHEEL BASE OF LESS THAN 60 FT.

San Diego, California
San Diego International
ICAO Identifier KSAN



San Diego, CA
San Diego Intl
ICAO Identifier KSAN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32−44−0.8N / 117−11−22.8W
2.2.2 From City: 2 miles W of SAN DIEGO, CA
2.2.3 Elevation: 16.8 ft
2.2.5 Magnetic Variation: 11E (2020)
2.2.6 Airport Contact: DEAN ROBBINS
3225 N HARBOR DRIVE
SAN DIEGO, CA 92101
((619) 400−2761)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 27
2.12.2 True Bearing: 286
2.12.3 Dimensions: 9400 ft x 200 ft
2.12.4 PCN: 75 F/A/W/T
2.12.5 Coordinates: 32−43−48.0086N / 117−10−29.9018W
2.12.6 Threshold Elevation: 16.4 ft
2.12.6 Touchdown Zone Elevation: 16.7 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 106
2.12.3 Dimensions: 9400 ft x 200 ft
2.12.4 PCN: 75 F/A/W/T
2.12.5 Coordinates: 32−44−13.6413N / 117−12−15.6841W
2.12.6 Threshold Elevation: 13.7 ft
2.12.6 Touchdown Zone Elevation: 16.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 27
2.13.2 Take−off Run Available: 9401
2.13.3 Take−off Distance Available: 9401
2.13.4 Accelerate−Stop Distance Available: 9401
2.13.5 Landing Distance Available: 7591

2.13.1 Designation: 09
2.13.2 Take−off Run Available: 8280
2.13.3 Take−off Distance Available: 9401
2.13.4 Accelerate−Stop Distance Available: 8280
2.13.5 Landing Distance Available: 7280

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 27
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 125.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 134.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 123.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 338.225
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 09. Magnetic variation: 11E
2.19.2 ILS Identification: SAN
2.19.5 Coordinates: 32−43−47.0838N / 117−10−28.4698W
2.19.6 Site Elevation: 27.4 ft

2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 11E

2.19.2 ILS Identification: SAN
2.19.5 Coordinates: 32−44−10.76N / 117−11−52.14W
2.19.6 Site Elevation: 16 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 11E
2.19.2 ILS Identification: SAN
2.19.5 Coordinates: 32−43−47.6019N / 117−10−28.237W
2.19.6 Site Elevation: 25.9 ft

2.19.1 ILS Type: DME for runway 27. Magnetic variation: 11E
2.19.2 ILS Identification: UBR
2.19.5 Coordinates: 32−44−11.4624N / 117−12−20.064W
2.19.6 Site Elevation: 22.7 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 11E
2.19.2 ILS Identification: UBR
2.19.5 Coordinates: 32−44−14.7891N / 117−12−20.4337W
2.19.6 Site Elevation: 10.9 ft

General Remarks:
CROSS−BLEED ENGINE STARTS PERMITTED ONLY ON PARALLEL TWY WITH ACFT ALIGNED ON TWY CNTRLN.

RWY STATUS LGTS IN OPN.

747 AND LARGER ACFT ARE PROHIBITED FM MAKING INTERSECTION TKOFS.

INTERMITTENT PRESENCE OF BIRDS ON AND INVOF OF ARPT.

ACFT WITH WINGSPANS GTR THAN 171 FT (52M) RSTD FROM USING TWY D SOUTH OF TWY B, AND WHEN EXITING RWY 09 WB ON TWY B.

DUE TO PAEW ON RY 09−27, 30 MINUTE PPR 0830−1230Z FOR ALL LANDINGS AND DEPARTURES CALL 619−400−2710.

IN THE EVENT OF A DIVERSION OR IRREGULAR OPERATIONS EVENTS, ACFT OPERATORS CONTACT THE APT DUTY MGR (619) 400−2710 FOR PPR DUE TO LIMITATIONS ASSOCIATED WITH HANDLING DIVERTED FLTS. LIMITATIONS INCLUDE RESTRICTED GATE SPACE, CUSTOMS SERVICES AS WELL AS ACFT SERVICING & PARKING.

MILITARY ACFT ON OFFICIAL BUSINESS ONLY CONTACT ARPT OPS AT 619−400−2710 FOR PPR.

TERRAIN & BLDGS TO 500' MSL N & E WITHIN 1 1/2 MI.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PILOTS REQUIRED TO CTC ATCT GROUND CONTROLLER PRIOR TO PUSHBACK, TOW OUT AND TAXI FOR TRAFFIC ADVISORIES.

30 MIN PPR (619−400−2710) FOR ACFT WITH OVER 171 FT WINGSPAN.

ACFT CROSSING RY 09/27 ON TWY C6, HOLD SHORT OF TWY C6 FACING WEST ON TWY C, PARALLEL TO RY.

FOR ACCESS TO/FR TERMINAL 2: GATES 23, 25, 27, 29, 31, 33−51 AND THE ISLAND AND WEST RON PARKING RAMPS, CTC RAMP CONTROL ON 129.775 FR 0600−2400. FR 0000−0600 CTC GROUND CONTROL ON 123.9.

ULTRALIGHT ACFT PROHIBITED ON AP.

TAXIING ACFT ARE PROHIBITED FROM PASSING TO THE SOUTH OF ACFT LCTD ON TWY B INTO ALLEY

LCTD BTWN GATES 7 AND 14.

TAXILANE A RSTRD TO ACFT WITH WINGSPANS OF 135 FT OR LESS.

TWY C EDGE LGTS OTS INDEFLY.

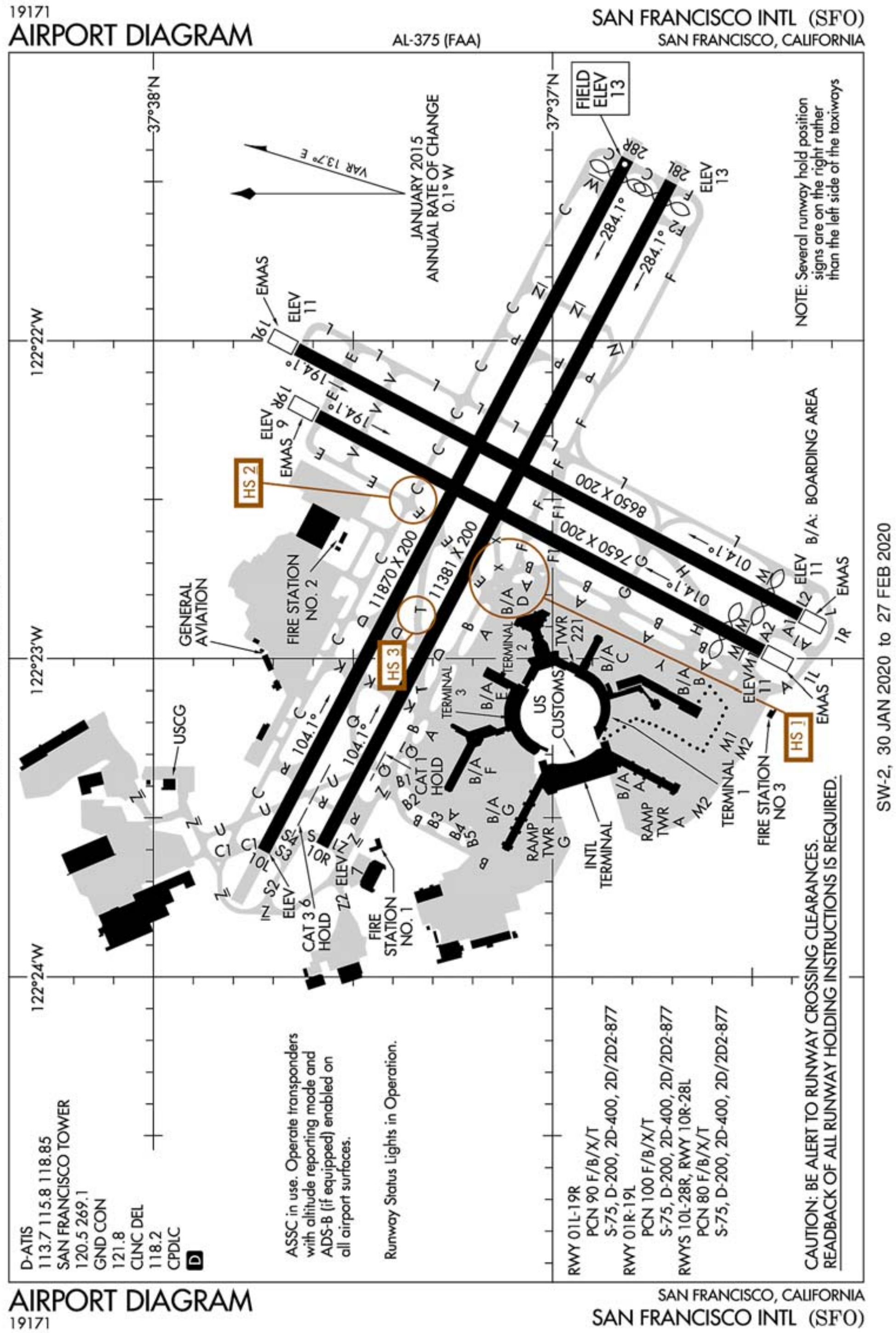
OUTBOARD ENGINES OF FOUR−ENGINE ACFT ARE TO BE KEPT AT IDLE POWER FOR ALL GND MANEUVERING.

TAXIING ACFT SHALL FOLLOW LEAD−IN LINES UNTIL THE NOSE WHEEL OF THE ACFT HAS ENTERED THE NON−MOVEMENT AREA OF THE ALLEY.

TO REDUCE JET BLAST IMPACT AT N END OF TWY F ACFT WILL NOT START ENG UNTIL 800 FT FM N END OF TWY F; ABEAM THE SECOND PARKING PAD.

PRACTICE APPROACHES AND TGL PROHIBITED.

San Francisco, California
San Francisco International
ICAO Identifier KSFO



San Francisco, CA
San Francisco Intl
ICAO Identifier KSFO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−37−7.7N / 122−22−31.5W
2.2.2 From City: 8 miles SE of SAN FRANCISCO, CA
2.2.3 Elevation: 13.1 ft
2.2.5 Magnetic Variation: 14E (2015)
2.2.6 Airport Contact: IVAR SATERO
PO BOX 8097
SAN FRANCISCO, CA 94128
((650) 821−3355)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 19R
2.12.2 True Bearing: 208
2.12.3 Dimensions: 7650 ft x 200 ft
2.12.4 PCN: 90 F/B/X/T
2.12.5 Coordinates: 37−37−35.3329N / 122−22−14.1939W
2.12.6 Threshold Elevation: 9.2 ft
2.12.6 Touchdown Zone Elevation: 11.2 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 28
2.12.3 Dimensions: 7650 ft x 200 ft
2.12.4 PCN: 90 F/B/X/T
2.12.5 Coordinates: 37−36−28.4323N / 122−22−58.5426W
2.12.6 Threshold Elevation: 10.7 ft
2.12.6 Touchdown Zone Elevation: 10.9 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 208
2.12.3 Dimensions: 8650 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37−37−38.4319N / 122−22−1.599W
2.12.6 Threshold Elevation: 10.5 ft
2.12.6 Touchdown Zone Elevation: 11 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 28
2.12.3 Dimensions: 8650 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37−36−22.7876N / 122−22−51.7467W
2.12.6 Threshold Elevation: 11.4 ft
2.12.6 Touchdown Zone Elevation: 11.2 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 118
2.12.3 Dimensions: 11870 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−37−43.4594N / 122−23−36.2107W
2.12.6 Threshold Elevation: 5.5 ft
2.12.6 Touchdown Zone Elevation: 7 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 298
2.12.3 Dimensions: 11870 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−36−48.721N / 122−21−25.708W
2.12.6 Threshold Elevation: 13 ft
2.12.6 Touchdown Zone Elevation: 12.9 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 298
2.12.3 Dimensions: 11381 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−36−42.163N / 122−21−30.057W
2.12.6 Threshold Elevation: 12.6 ft
2.12.6 Touchdown Zone Elevation: 12.6 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 118
2.12.3 Dimensions: 11381 ft x 200 ft
2.12.4 PCN: 80 F/B/X/T
2.12.5 Coordinates: 37−37−34.648N / 122−23−35.1796W
2.12.6 Threshold Elevation: 7.1 ft
2.12.6 Touchdown Zone Elevation: 8 ft

2.12.1 Designation: 28X
2.12.2 True Bearing:
2.12.3 Dimensions: 0 ft x 0 ft

2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 7650
2.13.3 Take−off Distance Available: 7650
2.13.4 Accelerate−Stop Distance Available: 7650
2.13.5 Landing Distance Available: 7650

2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 7650
2.13.3 Take−off Distance Available: 7650
2.13.4 Accelerate−Stop Distance Available: 7650
2.13.5 Landing Distance Available: 7010

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 8650
2.13.3 Take−off Distance Available: 8650
2.13.4 Accelerate−Stop Distance Available: 8650
2.13.5 Landing Distance Available: 8650

2.13.1 Designation: 01R
2.13.2 Take−off Run Available: 8650
2.13.3 Take−off Distance Available: 8650
2.13.4 Accelerate−Stop Distance Available: 8650
2.13.5 Landing Distance Available: 8090

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 11870
2.13.3 Take−off Distance Available: 11870
2.13.4 Accelerate−Stop Distance Available: 11193
2.13.5 Landing Distance Available: 11193

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 11870
2.13.3 Take−off Distance Available: 11870
2.13.4 Accelerate−Stop Distance Available: 11870
2.13.5 Landing Distance Available: 11236

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 11381
2.13.3 Take−off Distance Available: 11381
2.13.4 Accelerate−Stop Distance Available: 10981
2.13.5 Landing Distance Available: 10275

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 11381
2.13.3 Take−off Distance Available: 11381
2.13.4 Accelerate−Stop Distance Available: 10704
2.13.5 Landing Distance Available: 10704

2.13.1 Designation: 28X
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 19R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 10L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28X
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD PRE TAXI CLNC
2.18.3 Channel: 118.2
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 113.7
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 115.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 118.85
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: EMERG
2.18.3 Channel: 121.5
2.18.5 Hours of Operation:

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 120.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 269.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: PRM (RWY 28L)
2.18.3 Channel: 125.15
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: PRM (RWY 28R)
2.18.3 Channel: 127.675
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 14E
2.19.2 ILS Identification: SIA
2.19.5 Coordinates: 37−36−18.7188N / 122−22−59.4082W
2.19.6 Site Elevation: 20.6 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 14E
2.19.2 ILS Identification: SIA
2.19.5 Coordinates: 37−37−30.7381N / 122−22−11.0577W
2.19.6 Site Elevation: 6.3 ft
2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 14E
2.19.2 ILS Identification: SIA
2.19.5 Coordinates: 37−36−16.2796N / 122−22−56.0614W
2.19.6 Site Elevation: 19 ft

2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−37−48.1978N / 122−23−40.6085W
2.19.6 Site Elevation: 17.7 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−36−51.3989N / 122−21−43.1171W
2.19.6 Site Elevation: 8.2 ft

2.19.1 ILS Type: Inner Marker for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−36−46.1575N / 122−21−19.7418W
2.19.6 Site Elevation: 13 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−37−46.3566N / 122−23−43.1194W
2.19.6 Site Elevation: 5.3 ft

2.19.1 ILS Type: DME for runway 28L. Magnetic variation: 14E
2.19.2 ILS Identification: SFO
2.19.5 Coordinates: 37−37−39.5363N / 122−23−41.4575W
2.19.6 Site Elevation: 20.3 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 14E
2.19.2 ILS Identification: SFO
2.19.5 Coordinates: 37−36−51.2769N / 122−21−43.1999W
2.19.6 Site Elevation: 8.2 ft

2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 14E
2.19.2 ILS Identification: SFO

2.19.5 Coordinates: 37−37−37.471N / 122−23−41.9198W
2.19.6 Site Elevation: 9.3 ft

2.19.1 ILS Type: DME for runway 28X. Magnetic variation: 14E
2.19.2 ILS Identification: FNP
2.19.5 Coordinates: 37−37−14.906N / 122−22−6.9396W
2.19.6 Site Elevation: 22.4 ft

2.19.1 ILS Type: Glide Slope for runway 28X. Magnetic variation: 14E
2.19.2 ILS Identification: FNP
2.19.5 Coordinates: 37−36−51.5421N / 122−21−43.0484W
2.19.6 Site Elevation: 8.2 ft

2.19.1 ILS Type: Localizer for runway 28X. Magnetic variation: 14E
2.19.2 ILS Identification: FNP
2.19.5 Coordinates: 37−37−16.6754N / 122−22−6.2154W
2.19.6 Site Elevation: 15.5 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 17E
2.19.2 Navigation Aid Identification: SFO
2.19.5 Coordinates: 37−37−10.1465N / 122−22−26.0165W
2.19.6 Site Elevation: 6 ft

General Remarks:
NO GROOVING EXISTS AT ARPT RY INTERSECTIONS.

SEVERAL RY HOLD POSITION SIGNS ARE ON THE RIGHT RATHER THAN THE LEFT SIDE OF THE TWYS.

NOISE SENSITIVE ARPT; FOR NOISE ABATEMENT PROCEDURES CTC ARPT NOISE OFFICE MON−FRI 0800−1700 BY CALLING 650−821−5100.

RWY STATUS LGTS IN OPN.

PAEW APCH END RYS 28L, 28R, 19L INDEFLY.

RWY 1L CLSD TO DEPARTING TRIJET ACFT WITH WINGSPAN GREATER THAN 155 FT.

AIRLINE PILOTS SHALL STRICTLY FOLLOW THE PAINTED NOSE GEAR LINES AND NO OVERSTEERING ADJUSTMENT IS PERMITTED.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

FLOCKS OF BIRDS FEEDING ALONG SHORELINE ADJ TO ARPT; ON OCCASIONS FLY ACROSS VARIOUS PARTS OF THE ARPT.

ALL OUTBOUND TWY YANKEE HEAVY AIRCRAFT WITH A WINGSPAN OF 171 FT. OR GREATER UNDER POWER PROHIBITED FROM ENTERING WESTBOUND TWY ZULU.

TWY S2 BTN TWY Z AND TWY S3 CLSD TO ACFT WITH WINGSPAN OVER THAN 215 FT.

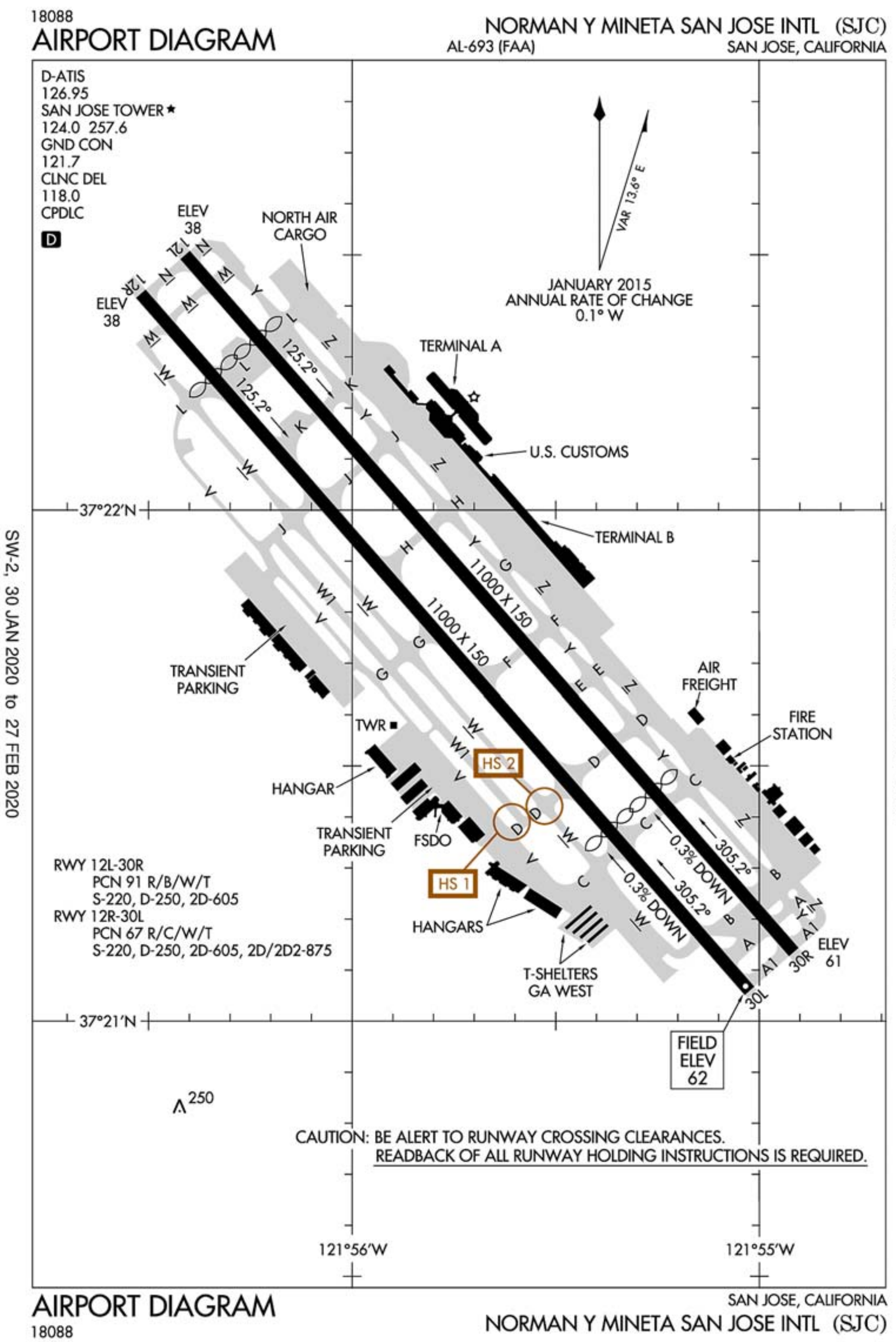
HIGH SPEED TWY (T) GRVD FULL WIDTH BTN RWY 28R AND 28L.

RY 10 PREFERRED RY BTWN 0100−0600 WEATHER AND FLIGHT CONDITIONS PERMITTING.

RYS 01L/19R, 01R/19L, 10R/28L, 10L/28R GROOVED FULL LENGTH EXCEPT AT RY INTERSECTIONS.

SIMULTANEOUS OPERATIONS IN EFFECT ALL RYS.

San Jose, California
Norman Y. Mineta San Jose International
ICAO Identifier KSJC



San Jose, CA
Norman Y. Mineta San Jose Intl
ICAO Identifier KSJC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−21−46.781N / 121−55−43.034W
2.2.2 From City: 2 miles NW of SAN JOSE, CA
2.2.3 Elevation: 62.2 ft
2.2.5 Magnetic Variation: 13E (2020)
2.2.6 Airport Contact: JOHN AITKEN
1701 AIRPORT BLVD., SUITE B−1130
SAN JOSE, CA 95110 ((408) 277−5100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 12L
2.12.2 True Bearing: 139
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 37−22−29.9801N / 121−56−24.6377W
2.12.6 Threshold Elevation: 37.7 ft
2.12.6 Touchdown Zone Elevation: 43.8 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 319
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 37−21−8.1324N / 121−54−54.9212W
2.12.6 Threshold Elevation: 61.1 ft
2.12.6 Touchdown Zone Elevation: 55.2 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 139
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 67 R/C/W/T
2.12.5 Coordinates: 37−22−25.4266N / 121−56−31.1597W
2.12.6 Threshold Elevation: 38.2 ft
2.12.6 Touchdown Zone Elevation: 45.6 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 319
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 67 R/C/W/T
2.12.5 Coordinates: 37−21−3.5766N / 121−55−1.4432W
2.12.6 Threshold Elevation: 62.1 ft
2.12.6 Touchdown Zone Elevation: 57 ft

AD 2.13 Declared Distances
2.13.1 Designation: 12L
2.13.2 Take−off Run Available: 10139
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 10139
2.13.5 Landing Distance Available: 8833

2.13.1 Designation: 30R
2.13.2 Take−off Run Available: 10134
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 10134
2.13.5 Landing Distance Available: 7597

2.13.1 Designation: 12R
2.13.2 Take−off Run Available: 9883
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 9883
2.13.5 Landing Distance Available: 8587

2.13.1 Designation: 30L
2.13.2 Take−off Run Available: 10152
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 10152
2.13.5 Landing Distance Available: 7614

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 12L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 30R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 12R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 30L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD PRE TAXI CLNC
2.18.3 Channel: 118
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: D−ATIS
2.18.3 Channel: 126.95
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.7
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 124
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: LCL/P IC
2.18.3 Channel: 257.6
2.18.5 Hours of Operation: 0600−0000

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 12R. Magnetic variation: 13E
2.19.2 ILS Identification: SLV
2.19.5 Coordinates: 37−21−2.6639N / 121−55−1.3459W
2.19.6 Site Elevation: 81.4 ft

2.19.1 ILS Type: Glide Slope for runway 12R. Magnetic variation: 13E
2.19.2 ILS Identification: SLV
2.19.5 Coordinates: 37−22−6.0334N / 121−56−14.5901W
2.19.6 Site Elevation: 36.8 ft

2.19.1 ILS Type: Localizer for runway 12R. Magnetic variation: 13E
2.19.2 ILS Identification: SLV
2.19.5 Coordinates: 37−21−3.0434N / 121−55−0.8585W
2.19.6 Site Elevation: 75.1 ft

2.19.1 ILS Type: DME for runway 30L. Magnetic variation: 13E
2.19.2 ILS Identification: SJC
2.19.5 Coordinates: 37−22−27.575N / 121−56−32.6145W
2.19.6 Site Elevation: 56 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 13E
2.19.2 ILS Identification: SJC
2.19.5 Coordinates: 37−21−33.0094N / 121−55−27.8798W
2.19.6 Site Elevation: 48.6 ft

2.19.1 ILS Type: Localizer for runway 30L. Magnetic variation: 13E
2.19.2 ILS Identification: SJC
2.19.5 Coordinates: 37−22−27.1917N / 121−56−33.1047W
2.19.6 Site Elevation: 49.6 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 16E
2.19.2 Navigation Aid Identification: SJC
2.19.5 Coordinates: 37−22−28.9638N / 121−56−40.8069W
2.19.6 Site Elevation: 34.5 ft

General Remarks:
UNSCHEDULED OPNS BY GROUP 5 ACFT (B747) AND LARGER NOT AUTH EXCEPT WITH PRIOR ARPT APPROVAL CTC AMGR (408) 392−3500.

CURFEW HRS 2300−0700 FAR 36 STAGE II, 2330−0630 FAR 36 STAGE III ACFT LISTED ON THE SCHEDULE OF AUTHORIZED AIRCRAFT ISSUED BY THE DIRECTOR OF AVIATION. DELAYED SCHEDULED FLIGHTS, AND ALTERNATE/EMERGENCY OPERATIONS MAY BE EXEMPT FROM CURFEW HOUR RESTRICTIONS.

PRIOR AIRPORT NOTIFICATION IS REQUIRED FOR ALL LATE/EARLY ARRIVALS. CONTACT MANAGER ON DUTY AT (408) 392−3500.

FIRST 400 FT RY 30R & RY 30L CLSD FOR TKOF DC10, MD11, L1011.

TWY V LTD TO ACFT WITH WINGSPAN OF LESS THAN 118 FT (B−737−900 OR SMALLER).

TWY W BETWEEN TWY J AND TWY L CAN SUPPORT GROUP IV ACFT.

RRP RQRD FM FBO FOR TSNT HEL OPS.

FOR CD WHEN ATCT IS CLSD CTC NORCAL APCH AT 916−361−3748.

TWY Z WILL BE PERIODICALLY RESTRICTED TO ACFT WITH A WINGSPAN OF LESS THAN 118 FT (B−737−900 OR SMALLER) DURING B−787 AND A−340 OPNS. TWY Z BTN 200 FT NW OF TWY H AND 200 FT NW OF TWY K LTD TO ACFT WITH WINGSPAN OF LESS THAN 135 FT (B−757−300 OR SMALLER).

TWY D BETWEEN TWY W AND TWY V LIMITED TO ACFT WITH A WINGSPAN OF LESS THAN 118 FT (B−737−900 OR SMALLER).

HIGH INTENSITY LIGHT ACTIVITY: HIGH INTENSITY LIGHTS (LASERS AND LARGE MEDIA SCREENS) MAY BE VISIBLE TO ARR AND DEP ACFT TO SAN JOSE INTERNATIONAL AIRPORT DURING EVENTS AT THE LEVI STADIUM COMPLEX (37−24−15N/121−58−14W, SJC VORTAC R−303/2.1 DME). FLIGHT CREWS SHOULD USE CAUTION WHEN OPERATING IN THIS AREA DURING STADIUM EVENTS. COCKPIT ILLUMINATION AND GLARE EFFECT REDUCING VIS MAY BE INTENSIFIED DURING ARR AND DEP OPS ESPECIALLY AT NIGHT.

BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

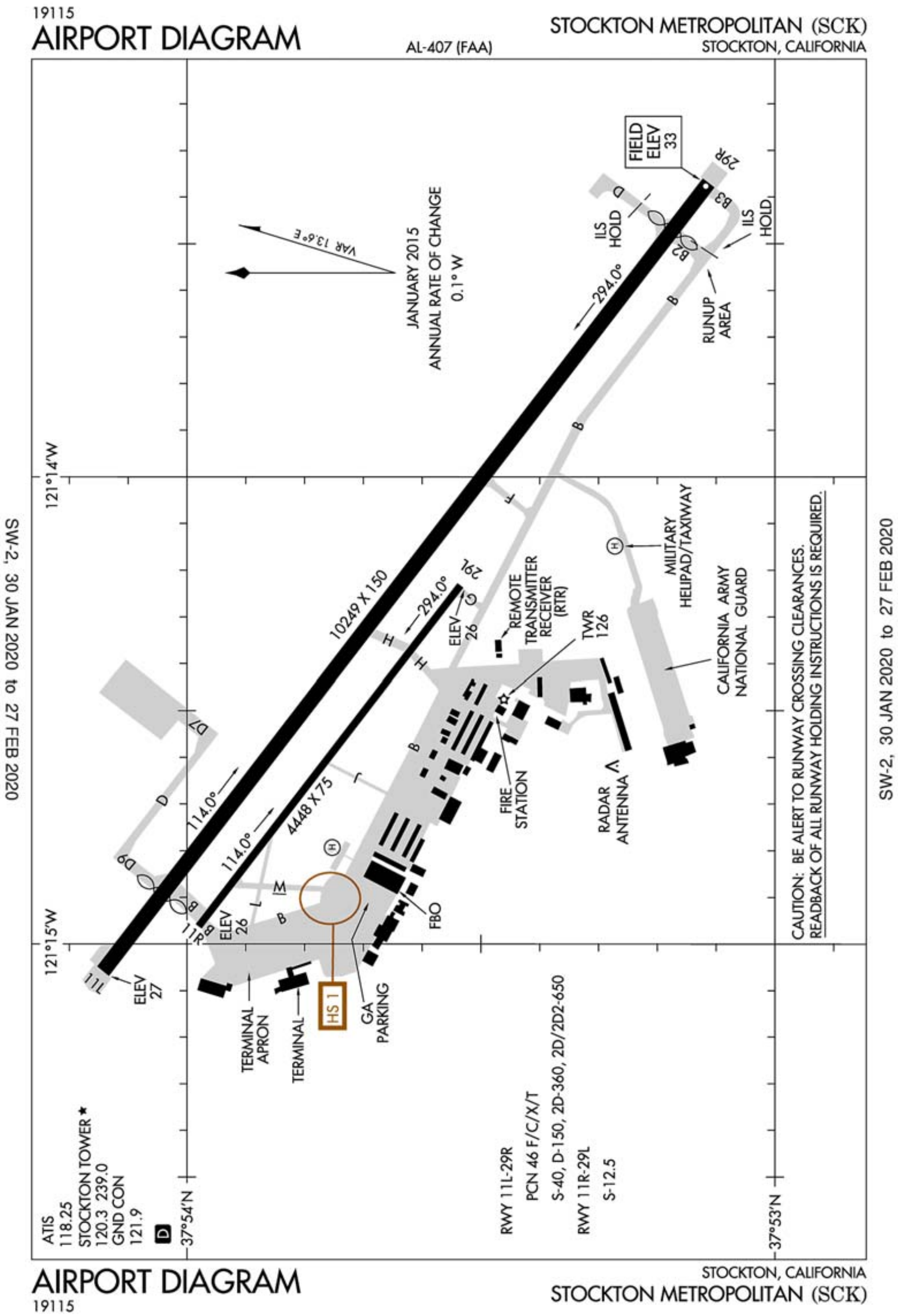
ALL TURBINE ENGINE RUN−UPS REQUIRE PRIOR AIRPORT APPROVAL, CONTACT MGR ON DUTY (408) 392−3500.

NOISE ABATEMENT PROCEDURE: RY 30L/12R IS PREFERRED ARRIVAL RY FOR JET ACFT AND RY 12L/30R IS THE PREFERRED DEP RY FOR JET ACFT. ALL JET ACFT TKOFS ARE TO BE INITIATED FM EOR UNLESS DIRECTED OTHERWISE BY ATCT.

HOT SPOT 3: RY 11−29 IS NOW TWY W1. SURFACE IS USABLE ONLY AS TAXIWAY AND IS MARKED AND SIGNED AS A TWY.

TWY Y WILL BE PERIODICALLY RESTRICTED TO ACFT WITH A WINGSPAN OF LESS THAN 171 FT (MD−11 OR SMALLER) DURING B−787 AND A−340 OPNS ON RY 12L/30R.

Stockton, California
Stockton Metropolitan
ICAO Identifier KSCK



Stockton, CA
Stockton Metropolitan
ICAO Identifier KSCK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−53−39.877N / 121−14−19.464W
2.2.2 From City: 3 miles SE of STOCKTON, CA
2.2.3 Elevation: 33.2 ft
2.2.5 Magnetic Variation: 14E (2010)
2.2.6 Airport Contact: RUSSELL STARK
5000 S. AIRPORT WAY ROOM 202
STOCKTON, CA 95206 (209−468−4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100,100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 29R
2.12.2 True Bearing: 308
2.12.3 Dimensions: 10249 ft x 150 ft
2.12.4 PCN: 46 F/C/X/T
2.12.5 Coordinates: 37−53−6.64N / 121−13−21.88W
2.12.6 Threshold Elevation: 33.2 ft
2.12.6 Touchdown Zone Elevation: 32.3 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 128
2.12.3 Dimensions: 10249 ft x 150 ft
2.12.4 PCN: 46 F/C/X/T
2.12.5 Coordinates: 37−54−8.4321N / 121−15−3.2005W
2.12.6 Threshold Elevation: 26.5 ft
2.12.6 Touchdown Zone Elevation: 29.1 ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 308
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 37−53−31.8561N / 121−14−13.4466W
2.12.6 Threshold Elevation: 25.9 ft
2.12.6 Touchdown Zone Elevation: 26.6 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 128
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 37−53−58.6715N / 121−14−57.4211W
2.12.6 Threshold Elevation: 26.2 ft
2.12.6 Touchdown Zone Elevation: 26.4 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 70 ft x 70 ft
2.12.4 PCN:
2.12.5 Coordinates: 37−53−45.27N / 121−14−47.57W
2.12.6 Threshold Elevation: 26 ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 29R
2.13.2 Take−off Run Available: 8856
2.13.3 Take−off Distance Available: 9856
2.13.4 Accelerate−Stop Distance Available: 9210
2.13.5 Landing Distance Available: 8650

2.13.1 Designation: 11L
2.13.2 Take−off Run Available: 8650
2.13.3 Take−off Distance Available: 8650
2.13.4 Accelerate−Stop Distance Available: 8650
2.13.5 Landing Distance Available: 8650

2.13.1 Designation: 29L
2.13.2 Take−off Run Available: 4448
2.13.3 Take−off Distance Available: 4448
2.13.4 Accelerate−Stop Distance Available: 4448
2.13.5 Landing Distance Available: 4448

2.13.1 Designation: 11R
2.13.2 Take−off Run Available: 4448
2.13.3 Take−off Distance Available: 4448
2.13.4 Accelerate−Stop Distance Available: 4448
2.13.5 Landing Distance Available: 4448

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 29R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 11L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 29L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 11R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: H1
2.14.2 Approach Lighting System: ODALS
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ANG OPS
2.18.3 Channel: 49
2.18.5 Hours of Operation:

2.18.1 Service Designation: ATIS
2.18.3 Channel: 118.25
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P
2.18.3 Channel: 121.9
2.18.5 Hours of Operation: 0700−2100

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 120.3
2.18.5 Hours of Operation: 0700−2100

2.18.1 Service Designation: LCL/P
2.18.3 Channel: 239
2.18.5 Hours of Operation: 0700−2100

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 139.4
2.18.5 Hours of Operation:

2.18.1 Service Designation: NG OPS
2.18.3 Channel: 356.9
2.18.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 29R. Magnetic variation: 14E
2.19.2 ILS Identification: SCK
2.19.5 Coordinates: 37−54−12.58N / 121−15−15.2W
2.19.6 Site Elevation: 22 ft

2.19.1 ILS Type: Glide Slope for runway 29R. Magnetic variation: 14E
2.19.2 ILS Identification: SCK
2.19.5 Coordinates: 37−53−19.8816N / 121−13−35.2049W
2.19.6 Site Elevation: 29.3 ft

2.19.1 ILS Type: Localizer for runway 29R. Magnetic variation: 14E
2.19.2 ILS Identification: SCK
2.19.5 Coordinates: 37−54−14.48N / 121−15−13.13W
2.19.6 Site Elevation: 23.5 ft

General Remarks:
PRACTICE CIRCLING APPROACHES TO RWYS 11L/11R NA FOR ANY TURBINE POWERED ACFT/PROP DRIVEN ACFT EXCEEDING 12500 LBS EXCP BY PPR FM AMGR.

TSNT PILOTS USE CTN; DO NOT ENTER THE TSA RSTRD AREA ADJ TO THE TSNT PRKG AREA.

BE ALERT TO ELEVD MALSR APCH END RWY 29R LCTD ON BLAST PAD.

PAVEMENT PRIOR TO THLD OF RWY 11L NOT AVBL FOR TAXI BACK OPS.

ARPT CLSD TO TGL & PLANNED LOW APCHS FOR TURBOJET ACFT 2200−0700 EXCEPT BY PPR FM AMGR PART 36 STAGE 3 ACFT.

TRANSIENT PARKING AVBL AT FBO.

THE FLWG AREAS NOT VISIBLE FM ATCT: TWY B FM TRML APN TO INT AT TWY M; TWY B FM 300 FT W OF TWY J TO 375 FT E OF TWY J; NON MOVEMENT AREA S OF TWY B FROM TRML APN TO 200 FT W OF TWY

H; SE HALF OF TRML APN; TSNT PRKG APN.

AVOID OVERFLYING SAN JOAQUIN GENERAL HOSPITAL & THE CITY OF MANTECA.

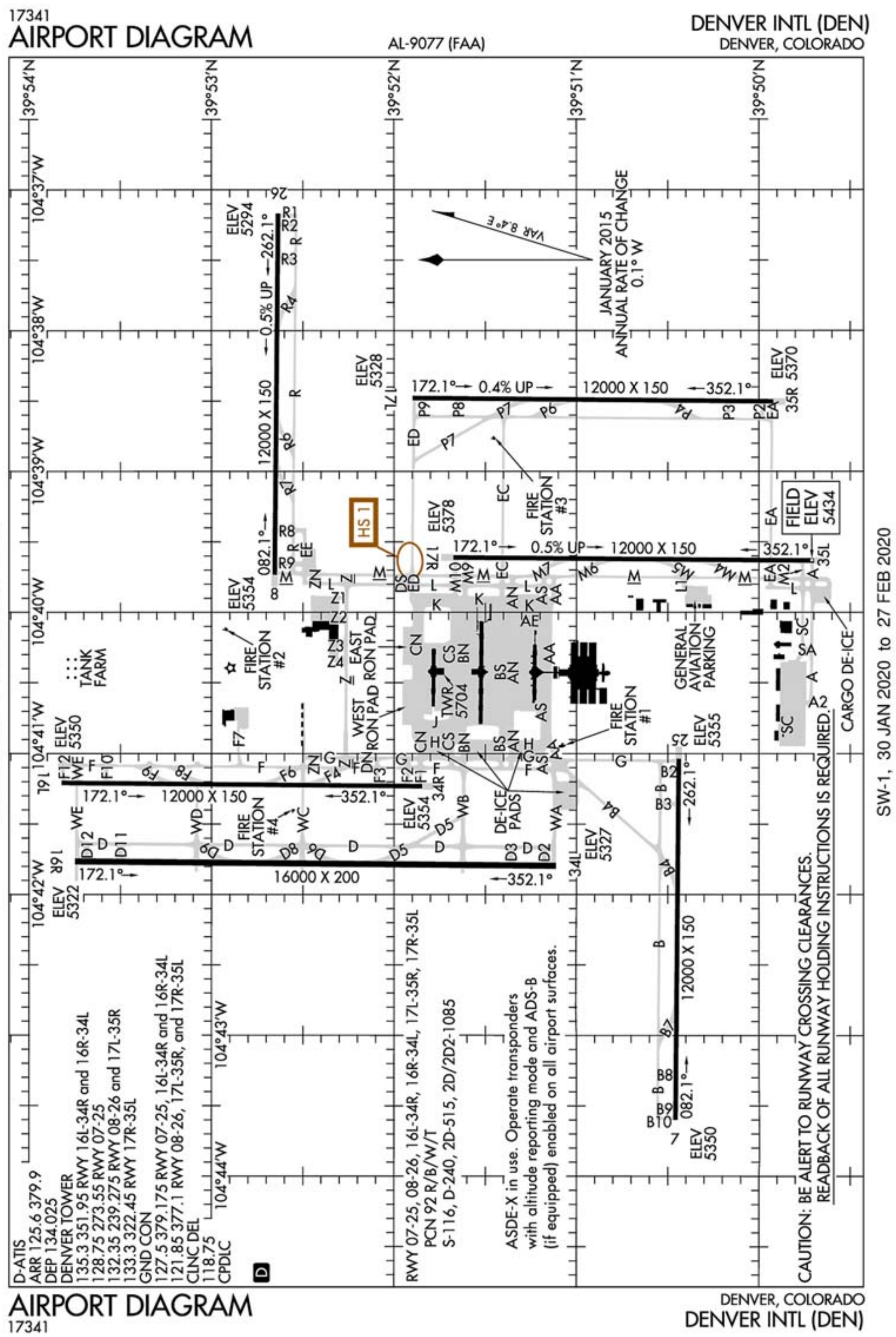
FOR CD WHEN ATCT CLSD CTC NORCAL APCH AT 916−361−0516.

MILITARY USE: ARNG OPR 1500−2330Z++ MON−FRI. DSN 466−5319, C209−983−5319, FAX 5391. PPR REQUIRED. LDTD TRAN SVC AND MAINT AVBL FOR CH47.

SEAGULLS ON AND IN VCNTY OF ARPT MOSTLY DURING RAINY WEATHER.

TRML APN, CARGO APN, TWYS B, B2, B3, F, D, D7, D9, AND H FOR ACFT OVER 12500 LBS. ALL OTR TWYS RSTRD TO ACFT LESS THAN 12500 LBS.

Denver, Colorado
Denver International
ICAO Identifier KDEN



Denver, CO
Denver Intl
ICAO Identifier KDEN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−51−42N / 104−40−23.4W
2.2.2 From City: 16 miles NE of DENVER, CO
2.2.3 Elevation: 5433.8 ft
2.2.5 Magnetic Variation: 8E (2015)
2.2.6 Airport Contact: KIM DAY
ADMIN BLDG, 8500 PENA BLVD
DENVER, CO 80249 ((303) 342−2206)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 2/1/1995

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 25
2.12.2 True Bearing: 271
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−50−26.3667N / 104−41−2.1712W
2.12.6 Threshold Elevation: 5355 ft
2.12.6 Touchdown Zone Elevation: 5355 ft

2.12.1 Designation: 07
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−50−27.4022N / 104−43−35.963W
2.12.6 Threshold Elevation: 5350.2 ft
2.12.6 Touchdown Zone Elevation: 5351.6 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 271
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−52−38.0769N / 104−37−10.1479W
2.12.6 Threshold Elevation: 5294.4 ft
2.12.6 Touchdown Zone Elevation: 5309.4 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 91
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−52−39.2009N / 104−39−44.0267W
2.12.6 Threshold Elevation: 5354.3 ft
2.12.6 Touchdown Zone Elevation: 5354.3 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−53−49.3301N / 104−41−12.4998W
2.12.6 Threshold Elevation: 5349.9 ft
2.12.6 Touchdown Zone Elevation: 5357.1 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−51−50.7743N / 104−41−13.8782W
2.12.6 Threshold Elevation: 5353.7 ft
2.12.6 Touchdown Zone Elevation: 5353.7 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 16000 ft x 200 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−53−44.869N / 104−41−45.9006W
2.12.6 Threshold Elevation: 5321.8 ft
2.12.6 Touchdown Zone Elevation: 5326.3 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 16000 ft x 200 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−51−6.7926N / 104−41−47.7166W
2.12.6 Threshold Elevation: 5327 ft
2.12.6 Touchdown Zone Elevation: 5327 ft

2.12.1 Designation: 17L

2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−51−53.8287N / 104−38−28.6959W
2.12.6 Threshold Elevation: 5328.1 ft
2.12.6 Touchdown Zone Elevation: 5338.5 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−49−55.2707N / 104−38−30.1554W
2.12.6 Threshold Elevation: 5370 ft
2.12.6 Touchdown Zone Elevation: 5370 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−51−40.4821N / 104−39−36.5561W
2.12.6 Threshold Elevation: 5377.9 ft
2.12.6 Touchdown Zone Elevation: 5391.9 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 39−49−41.9262N / 104−39−37.9841W
2.12.6 Threshold Elevation: 5433.8 ft
2.12.6 Touchdown Zone Elevation: 5433.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 25
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 13000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 07
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 08
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 13000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 16L
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 34R
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 13000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 16R
2.13.2 Take−off Run Available: 16000
2.13.3 Take−off Distance Available: 16000
2.13.4 Accelerate−Stop Distance Available: 16000
2.13.5 Landing Distance Available: 16000

2.13.1 Designation: 34L
2.13.2 Take−off Run Available: 16000
2.13.3 Take−off Distance Available: 16000
2.13.4 Accelerate−Stop Distance Available: 16000
2.13.5 Landing Distance Available: 16000

2.13.1 Designation: 17L
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 35R
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 17R
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 35L
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 25
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: CD/P
2.18.3 Channel: 118.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 118.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (ARR)
2.18.3 Channel: 125.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (ARR)
2.18.3 Channel: 125.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (DEP)
2.18.3 Channel: 134.025
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (DEP)
2.18.3 Channel: 134.025
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (ARR)
2.18.3 Channel: 379.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: D−ATIS (ARR)
2.18.3 Channel: 379.9
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 08/26, 17L/35R, 17R/35L)
2.18.3 Channel: 121.85
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 08/26, 17L/35R, 17R/35L)
2.18.3 Channel: 121.85
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 07/25, 16L/34R, 16R/34L)
2.18.3 Channel: 127.5

2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 07/25, 16L/34R, 16R/34L)
2.18.3 Channel: 127.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 08/26, 17L/35R, 17R/35L)
2.18.3 Channel: 377.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 08/26, 17L/35R, 17R/35L)
2.18.3 Channel: 377.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 07/25, 16L/34R, 16R/34L)
2.18.3 Channel: 379.175
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: GND/P (RWY 07/25, 16L/34R, 16R/34L)
2.18.3 Channel: 379.175
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 07/25)
2.18.3 Channel: 128.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 07/25)
2.18.3 Channel: 128.75
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 08/26, 17L/35R)
2.18.3 Channel: 132.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 08/26, 17L/35R)
2.18.3 Channel: 132.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 17R/35L)
2.18.3 Channel: 133.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 17R/35L)
2.18.3 Channel: 133.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 16L/34R, 16R/34L)
2.18.3 Channel: 135.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 16L/34R, 16R/34L)
2.18.3 Channel: 135.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 08/26, 17L/35R)
2.18.3 Channel: 239.275
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 08/26, 17L/35R)
2.18.3 Channel: 239.275
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 07/25)
2.18.3 Channel: 273.55
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 07/25)
2.18.3 Channel: 273.55
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 17R/35L)
2.18.3 Channel: 322.45
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 17R/35L)
2.18.3 Channel: 322.45
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 16L/34R, 16R/34L)
2.18.3 Channel: 351.95
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: LCL/P (RWY 16L/34R, 16R/34L)
2.18.3 Channel: 351.95
2.18.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 07. Magnetic variation: 8E

2.19.2 ILS Identification: DZG
2.19.5 Coordinates: 39−50−23.6632N / 104−40−48.6232W
2.19.6 Site Elevation: 5359.1 ft

2.19.1 ILS Type: Glide Slope for runway 07. Magnetic variation: 8E
2.19.2 ILS Identification: DZG
2.19.5 Coordinates: 39−50−23.2656N / 104−43−22.6558W
2.19.6 Site Elevation: 5340.5 ft

2.19.1 ILS Type: Localizer for runway 07. Magnetic variation: 8E
2.19.2 ILS Identification: DZG
2.19.5 Coordinates: 39−50−26.2755N / 104−40−49.0613W
2.19.6 Site Elevation: 5354.9 ft

2.19.1 ILS Type: DME for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP
2.19.5 Coordinates: 39−50−23.6632N / 104−40−48.6232W
2.19.6 Site Elevation: 5359.1 ft

2.19.1 ILS Type: Glide Slope for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP
2.19.5 Coordinates: 39−50−22.4098N / 104−41−15.7881W
2.19.6 Site Elevation: 5344.2 ft

2.19.1 ILS Type: Localizer for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP
2.19.5 Coordinates: 39−50−27.4883N / 104−43−49.0723W
2.19.6 Site Elevation: 5348.9 ft

2.19.1 ILS Type: DME for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: FUI
2.19.5 Coordinates: 39−52−41.8784N / 104−39−57.5078W
2.19.6 Site Elevation: 5360.2 ft

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: FUI
2.19.5 Coordinates: 39−52−43.1529N / 104−39−29.8599W
2.19.6 Site Elevation: 5342.2 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: FUI
2.19.5 Coordinates: 39−52−37.9791N / 104−36−57.0352W
2.19.6 Site Elevation: 5283.1 ft

2.19.1 ILS Type: DME for runway 26. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.5 Coordinates: 39−52−41.8784N / 104−39−57.5078W
2.19.6 Site Elevation: 5360.2 ft

2.19.1 ILS Type: Glide Slope for runway 26. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.5 Coordinates: 39−52−42.2239N / 104−37−22.3854W
2.19.6 Site Elevation: 5293.2 ft

2.19.1 ILS Type: Localizer for runway 26. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.5 Coordinates: 39−52−39.2968N / 104−39−57.142W
2.19.6 Site Elevation: 5347.6 ft

2.19.1 ILS Type: DME for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.5 Coordinates: 39−53−59.6091N / 104−41−15.7719W
2.19.6 Site Elevation: 5357 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.5 Coordinates: 39−53−39.5473N / 104−41−17.8695W
2.19.6 Site Elevation: 5346.5 ft

2.19.1 ILS Type: Localizer for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.5 Coordinates: 39−51−40.6701N / 104−41−13.996W
2.19.6 Site Elevation: 5343.2 ft

2.19.1 ILS Type: DME for runway 34R. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.5 Coordinates: 39−53−59.6091N / 104−41−15.7719W
2.19.6 Site Elevation: 5357 ft

2.19.1 ILS Type: Glide Slope for runway 34R. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.5 Coordinates: 39−52−1.3925N / 104−41−19.0115W
2.19.6 Site Elevation: 5346.4 ft

2.19.1 ILS Type: Inner Marker for runway 34R. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.5 Coordinates: 39−51−42.2879N / 104−41−13.9788W
2.19.6 Site Elevation: 5345 ft

2.19.1 ILS Type: Localizer for runway 34R. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.5 Coordinates: 39−53−59.4426N / 104−41−12.3812W
2.19.6 Site Elevation: 5349.7 ft

2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 8E
2.19.2 ILS Identification: DQQ
2.19.5 Coordinates: 39−53−55.7414N / 104−41−50.8967W
2.19.6 Site Elevation: 5323.5 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 8E
2.19.2 ILS Identification: DQQ
2.19.5 Coordinates: 39−53−34.8236N / 104−41−51.2764W
2.19.6 Site Elevation: 5316.8 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 8E
2.19.2 ILS Identification: DQQ
2.19.5 Coordinates: 39−50−56.7831N / 104−41−47.8336W
2.19.6 Site Elevation: 5320.8 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 8E
2.19.2 ILS Identification: DXU
2.19.5 Coordinates: 39−53−55.7414N / 104−41−50.8967W
2.19.6 Site Elevation: 5323.5 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 8E
2.19.2 ILS Identification: DXU
2.19.5 Coordinates: 39−51−17.5994N / 104−41−52.8493W
2.19.6 Site Elevation: 5317.6 ft

2.19.1 ILS Type: Inner Marker for runway 34L. Magnetic variation: 8E
2.19.2 ILS Identification: DXU
2.19.5 Coordinates: 39−50−58.2971N / 104−41−47.8092W
2.19.6 Site Elevation: 5321.4 ft

2.19.1 ILS Type: Localizer for runway 34L. Magnetic variation: 8E
2.19.2 ILS Identification: DXU
2.19.5 Coordinates: 39−53−54.875N / 104−41−45.7848W
2.19.6 Site Elevation: 5320.1 ft

2.19.1 ILS Type: DME for runway 17L. Magnetic variation: 8E
2.19.2 ILS Identification: BXP
2.19.5 Coordinates: 39−52−4.266N / 104−38−25.1893W
2.19.6 Site Elevation: 5345.1 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 8E
2.19.2 ILS Identification: BXP
2.19.5 Coordinates: 39−51−44.0596N / 104−38−23.5605W
2.19.6 Site Elevation: 5326 ft

2.19.1 ILS Type: Localizer for runway 17L. Magnetic variation: 8E
2.19.2 ILS Identification: BXP
2.19.5 Coordinates: 39−49−45.1652N / 104−38−30.282W
2.19.6 Site Elevation: 5362.9 ft

2.19.1 ILS Type: DME for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39−52−4.266N / 104−38−25.1893W
2.19.6 Site Elevation: 5345.1 ft

2.19.1 ILS Type: Glide Slope for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39−50−6.3585N / 104−38−24.7651W
2.19.6 Site Elevation: 5359.9 ft

2.19.1 ILS Type: Inner Marker for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39−49−46.7811N / 104−38−30.2697W
2.19.6 Site Elevation: 5364.5 ft

2.19.1 ILS Type: Localizer for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39−52−3.9404N / 104−38−28.572W
2.19.6 Site Elevation: 5335.5 ft

2.19.1 ILS Type: DME for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.5 Coordinates: 39−51−50.9244N / 104−39−33.0513W
2.19.6 Site Elevation: 5388 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.5 Coordinates: 39−51−30.9128N / 104−39−31.4164W
2.19.6 Site Elevation: 5378 ft

2.19.1 ILS Type: Localizer for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.5 Coordinates: 39−49−31.8218N / 104−39−38.1041W
2.19.6 Site Elevation: 5427.6 ft

2.19.1 ILS Type: DME for runway 35L. Magnetic variation: 8E
2.19.2 ILS Identification: AQD
2.19.5 Coordinates: 39−51−50.9244N / 104−39−33.0513W
2.19.6 Site Elevation: 5388 ft

2.19.1 ILS Type: Glide Slope for runway 35L. Magnetic variation: 8E
2.19.2 ILS Identification: AQD
2.19.5 Coordinates: 39−49−52.7648N / 104−39−32.5991W
2.19.6 Site Elevation: 5422.6 ft

2.19.1 ILS Type: Inner Marker for runway 35L. Magnetic variation: 8E
2.19.2 ILS Identification: AQD
2.19.5 Coordinates: 39−49−33.4386N / 104−39−38.091W
2.19.6 Site Elevation: 5428.6 ft

2.19.1 ILS Type: Localizer for runway 35L. Magnetic variation: 8E
2.19.2 ILS Identification: AQD
2.19.5 Coordinates: 39−51−50.5996N / 104−39−36.4352W
2.19.6 Site Elevation: 5377.3 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 8E
2.19.2 Navigation Aid Identification: DEN
2.19.5 Coordinates: 39−48−45.0506N / 104−39−38.6643W
2.19.6 Site Elevation: 5452.1 ft

General Remarks:
TWY F7 CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

OVERHEAD PSGR BRIDGE ON SOUTH SIDE OF CONCOURSE ’A’ PRVDS 42 FT TAIL & 118 FT WINGSPAN CLNC WHEN ON TWY CNTRLN.

WATERFOWL AND MIGRATORY BIRD ACTIVITY INVOF ARPT YEAR ROUND.

ARPT MAINTAINS CLEARWAYS (500 FT X 1,000 FT, 1.25% SLOPE) ON DEP RY 08, RY 25, & RY 34R.

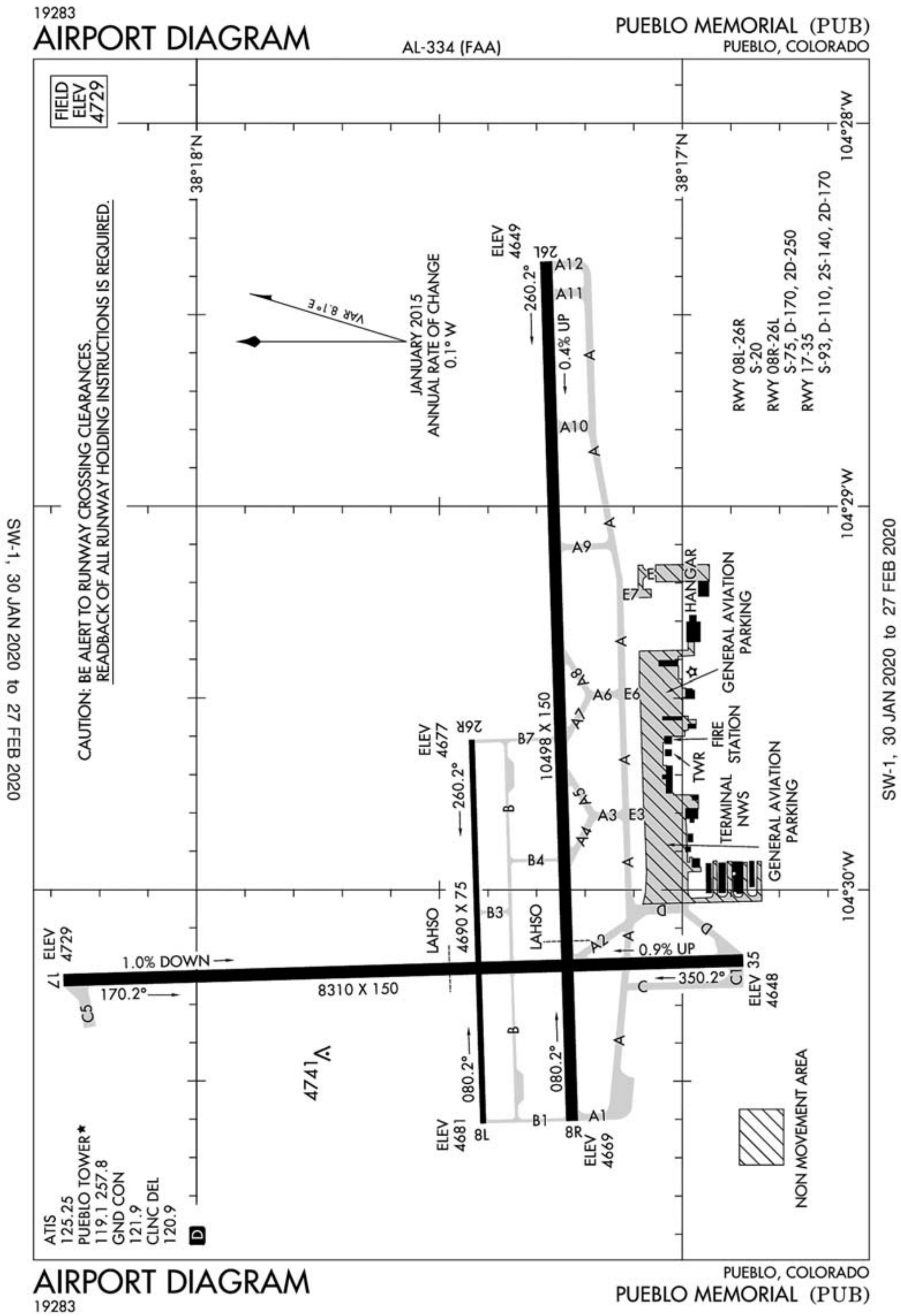
CUSTOMS AVBL WITH PRIOR PERMISSION.

INFORMAL RY USE PROGRAM IS IN EFFECT 24 HRS A DAY. FOR ADDITIONAL NOISE ABATEMENT

INFORMATION CONTACT AIRPORT MANAGEMENT AT 303−342−4200.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

Pueblo, Colorado
Pueblo Memorial
ICAO Identifier KPUB



Pueblo, CO
Pueblo Memorial
ICAO Identifier KPUB

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−17−23.811N / 104−29−52.901W
2.2.2 From City: 5 miles E of PUEBLO, CO
2.2.3 Elevation: 4729.3 ft
2.2.5 Magnetic Variation: 8E (2015)
2.2.6 Airport Contact: IAN TURNER
31201 BRYAN CIRCLE
PUEBLO, CO 81001
(719−553−2760)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0500−2200 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I A certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08L
2.12.2 True Bearing: 88
2.12.3 Dimensions: 4690 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 38−17−24.3081N / 104−30−36.6451W
2.12.6 Threshold Elevation: 4681.2 ft
2.12.6 Touchdown Zone Elevation: 4681.2 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 268
2.12.3 Dimensions: 4690 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 38−17−25.7014N / 104−29−37.865W
2.12.6 Threshold Elevation: 4677 ft
2.12.6 Touchdown Zone Elevation: 4678.1 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 88
2.12.3 Dimensions: 10498 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 38−17−13.6348N / 104−30−36.2409W
2.12.6 Threshold Elevation: 4669.4 ft
2.12.6 Touchdown Zone Elevation: 4671.4 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 268
2.12.3 Dimensions: 10498 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 38−17−16.7526N / 104−28−24.6616W
2.12.6 Threshold Elevation: 4648.8 ft
2.12.6 Touchdown Zone Elevation: 4658.9 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 178
2.12.3 Dimensions: 8310 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 38−18−15.0609N / 104−30−14.6942W
2.12.6 Threshold Elevation: 4729.3 ft
2.12.6 Touchdown Zone Elevation: 4729.3 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 358
2.12.3 Dimensions: 8310 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 38−16−52.9717N / 104−30−11.6348W
2.12.6 Threshold Elevation: 4648.1 ft
2.12.6 Touchdown Zone Elevation: 4676.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 4690
2.13.3 Take−off Distance Available: 4690
2.13.4 Accelerate−Stop Distance Available: 4690
2.13.5 Landing Distance Available: 4690

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 4690
2.13.3 Take−off Distance Available: 4690
2.13.4 Accelerate−Stop Distance Available: 4690
2.13.5 Landing Distance Available: 4690

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 10496
2.13.3 Take−off Distance Available: 10496
2.13.4 Accelerate−Stop Distance Available: 10496

2.13.5 Landing Distance Available: 10496

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 10496
2.13.3 Take−off Distance Available: 10496
2.13.4 Accelerate−Stop Distance Available: 10496
2.13.5 Landing Distance Available: 10496

2.13.1 Designation: 17
2.13.2 Take−off Run Available: 8308
2.13.3 Take−off Distance Available: 8308
2.13.4 Accelerate−Stop Distance Available: 8308
2.13.5 Landing Distance Available: 8308

2.13.1 Designation: 35
2.13.2 Take−off Run Available: 8308
2.13.3 Take−off Distance Available: 8308
2.13.4 Accelerate−Stop Distance Available: 8308
2.13.5 Landing Distance Available: 8308

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 8E
2.19.2 ILS Identification: PUB
2.19.5 Coordinates: 38−17−18.9334N / 104−30−21.5794W
2.19.6 Site Elevation: 4672.8 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 8E
2.19.2 ILS Identification: PUB
2.19.5 Coordinates: 38−17−17.2016N / 104−28−6.1097W
2.19.6 Site Elevation: 4653.1 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 8E
2.19.2 ILS Identification: TFR
2.19.5 Coordinates: 38−17−21.3596N / 104−28−39.1966W
2.19.6 Site Elevation: 4649.4 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 8E
2.19.2 ILS Identification: TFR
2.19.5 Coordinates: 38−17−13.2497N / 104−30−52.5582W
2.19.6 Site Elevation: 4668 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 8E
2.19.2 Navigation Aid Identification: PUB
2.19.5 Coordinates: 38−17−39.3132N / 104−25−46.0107W
2.19.6 Site Elevation: 4755.5 ft

General Remarks:
HIGH VOLUME TRNG DA−20 ACFT SR−SS MON−FRI. OVERHEAD PATTERN DURG TRNG. EXTENSIVE USE OF TRNG AREA 12−28 DME N−SW OF ARPT 500 FT AGL−8500 FT MSL.

BE ALERT; INTENSIVE USAF STUDENT TRAINING IN VICINITY OF COLORADO SPRINGS & PUEBLO COLORADO.

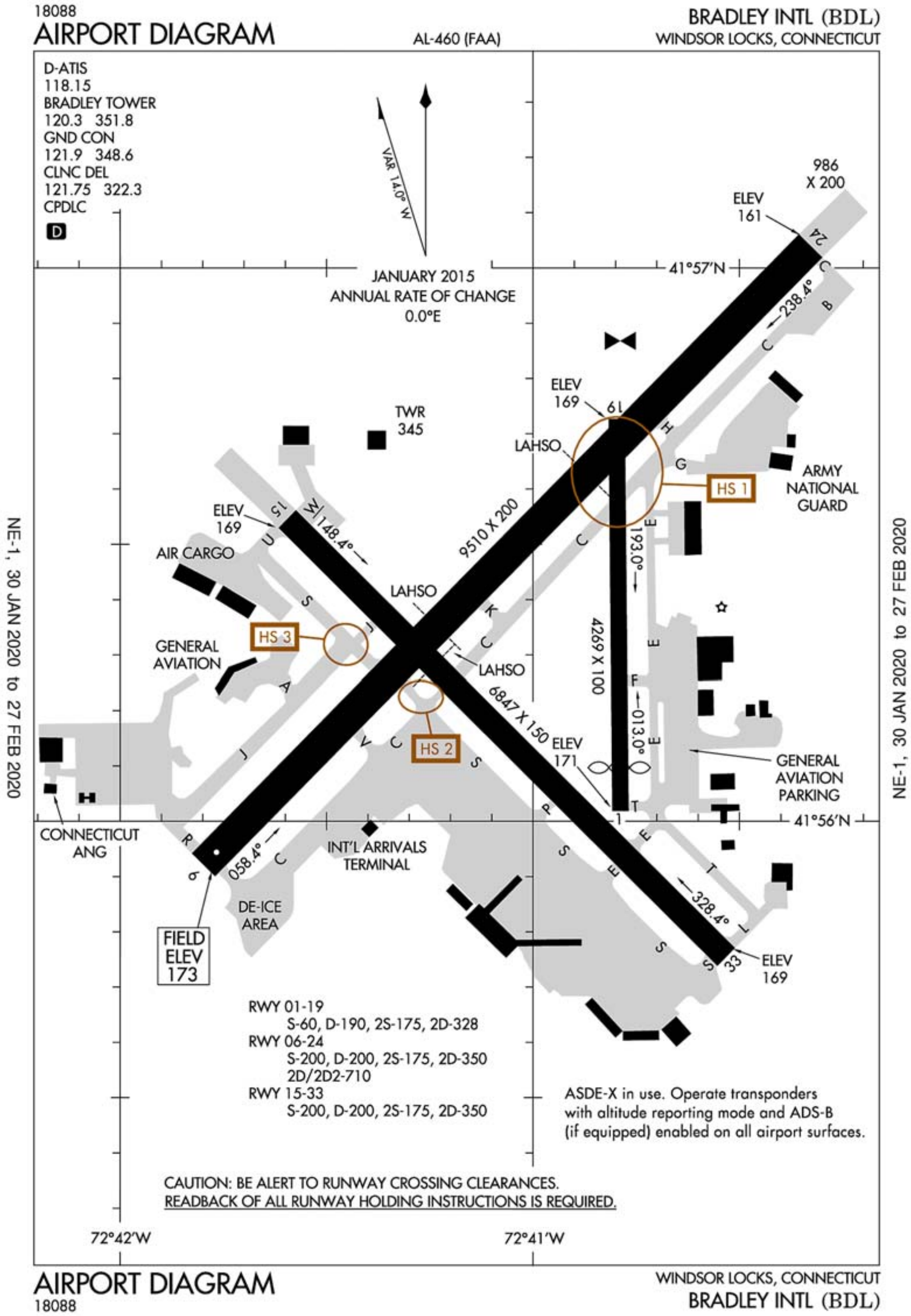
CONDITIONS NOT MONITORED 2200L−0500L.

SEE FLIP AP/1 SUPPLEMENTARY ARPT INFO.

TWY A BTN TWY A2 AND A6 50 FT WID.

FOR CD CTC PUEBLO APCH AT 303−342−1916, WHEN APCH CLSD CTC DENVER ARTCC AT 303−651−4257.

**Windsor Locks, Connecticut
Bradley International
ICAO Identifier KBDL**



Windsor Locks, CT
Bradley Intl
ICAO Identifier KBDL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41−56−20.9N / 72−41−0.1W
2.2.2 From City: 3 miles W of WINDSOR LOCKS, CT
2.2.3 Elevation: 173.3 ft
2.2.5 Magnetic Variation: 14W (1980)
2.2.6 Airport Contact: KEVIN DILLON, AAE
BRADLEY INTL AIRPORT
WINDSOR LOCKS, CT 6096
(860−292−2003)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01
2.12.2 True Bearing: 359
2.12.3 Dimensions: 4269 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: 41−56−1.4056N / 72−40−46.6234W
2.12.6 Threshold Elevation: 170.5 ft
2.12.6 Touchdown Zone Elevation: 170.4 ft

2.12.1 Designation: 19
2.12.2 True Bearing: 179
2.12.3 Dimensions: 4269 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: 41−56−43.5734N / 72−40−47.5714W
2.12.6 Threshold Elevation: 168.9 ft
2.12.6 Touchdown Zone Elevation: 170.2 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 44
2.12.3 Dimensions: 9510 ft x 200 ft
2.12.4 PCN:
2.12.5 Coordinates: 41−55−55.25N / 72−41−47.6885W
2.12.6 Threshold Elevation: 173 ft
2.12.6 Touchdown Zone Elevation: 173.3 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 224
2.12.3 Dimensions: 9510 ft x 200 ft
2.12.4 PCN:
2.12.5 Coordinates: 41−57−2.3952N / 72−40−19.6697W
2.12.6 Threshold Elevation: 160.9 ft
2.12.6 Touchdown Zone Elevation: 170 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 6847 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 41−56−32.6254N / 72−41−35.7104W
2.12.6 Threshold Elevation: 168.8 ft
2.12.6 Touchdown Zone Elevation: 170.8 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 6847 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 41−55−45.3238N / 72−40−30.9557W
2.12.6 Threshold Elevation: 168.5 ft
2.12.6 Touchdown Zone Elevation: 171.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01
2.13.2 Take−off Run Available: 4268
2.13.3 Take−off Distance Available: 4268
2.13.4 Accelerate−Stop Distance Available: 4268
2.13.5 Landing Distance Available:

2.13.1 Designation: 19
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available: 4268

2.13.1 Designation: 06
2.13.2 Take−off Run Available: 9509
2.13.3 Take−off Distance Available: 9509
2.13.4 Accelerate−Stop Distance Available: 9509
2.13.5 Landing Distance Available: 9509

2.13.1 Designation: 24
2.13.2 Take−off Run Available: 9509

2.13.3 Take−off Distance Available: 9509
2.13.4 Accelerate−Stop Distance Available: 9509
2.13.5 Landing Distance Available: 9509

2.13.1 Designation: 15
2.13.2 Take−off Run Available: 6847
2.13.3 Take−off Distance Available: 6847
2.13.4 Accelerate−Stop Distance Available: 6847
2.13.5 Landing Distance Available: 6847

2.13.1 Designation: 33
2.13.2 Take−off Run Available: 6847
2.13.3 Take−off Distance Available: 6847
2.13.4 Accelerate−Stop Distance Available: 6847
2.13.5 Landing Distance Available: 6847

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 01
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 19
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 06
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41−57−17.2894N / 72−39−56.5118W
2.19.6 Site Elevation: 163.8 ft

2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41−56−5.5448N / 72−41−41.8869W
2.19.6 Site Elevation: 169.3 ft

2.19.1 ILS Type: Inner Marker for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41−55−49.4746N / 72−41−56.067W
2.19.6 Site Elevation: 171.3 ft

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41−57−17.8499N / 72−39−59.4045W
2.19.6 Site Elevation: 149.5 ft

2.19.1 ILS Type: DME for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41−57−17.2894N / 72−39−56.5118W
2.19.6 Site Elevation: 163.8 ft

2.19.1 ILS Type: Glide Slope for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41−56−53.5757N / 72−40−25.9626W
2.19.6 Site Elevation: 156.7 ft

2.19.1 ILS Type: Inner Marker for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41−57−12.0728N / 72−40−6.9772W
2.19.6 Site Elevation: 139.9 ft

2.19.1 ILS Type: Localizer for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41−55−47.661N / 72−41−57.6296W
2.19.6 Site Elevation: 170.3 ft

2.19.1 ILS Type: DME for runway 33. Magnetic variation: 14W
2.19.2 ILS Identification: IKX
2.19.5 Coordinates: 41−56−37.9724N / 72−41−47.432W
2.19.6 Site Elevation: 181.8 ft

2.19.1 ILS Type: Glide Slope for runway 33. Magnetic variation: 14W
2.19.2 ILS Identification: IKX
2.19.5 Coordinates: 41−55−54.7672N / 72−40−38.5896W
2.19.6 Site Elevation: 167.6 ft

2.19.1 ILS Type: Localizer for runway 33. Magnetic variation: 14W
2.19.2 ILS Identification: IKX
2.19.5 Coordinates: 41−56−40.2961N / 72−41−46.2065W
2.19.6 Site Elevation: 168.3 ft

General Remarks:
TWY J CLOSED BTN S & R TO ACFT WITH WING SPANS IN EXCESS OF 170 FT.

ASDE−X IN USE. OPR TRANSPONDERS WITH ALT RPRTG MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL ARPT SFCS.

OPS CTC AUTOVON 636−8385; COML 860−627−3001.

NMRS BIRDS FQTLY ON OR INVOF ARPT.

ANG − OPR 0700−1530 TUES/FRI/SAT; 0700−2300 WED/THUR.

FUEL: A++ (MIL).

EXCP FOR TAX, RWY 01/19 OPEN FOR ACFT WITH WINGSPAN LESS THAN 79 FT.

RWY 01 CLSD FOR ARRS TO ALL FIXED WING ACFT.

PARL TWY OPNS ON TWY C AND TWY B RSTD TO ACFT W/ WINGSPANS OF 171 FT OR LESS.

NO DE−ICING AVBL AT ANG.

NO TRNG FLTS, NO PLAS, NO TGLS BTN: 2300 − 0700 MON THRU SAT & 2300 − 1200 SUN.

CAUTION: ANG RAMP MRK MAY NOT BE APPROPRIATE FOR LARGE ACFT: FLW MARSHALLERS INSTR. KC35 ACFT USE CAUTION, FIRE HYDRANTS ARE 33” AND ARE LESS THAN 84 FT FM TAXILANE CNTRLN.

RWY 19 CLSD FOR DEPS TO ALL FIXED WING ACFT.

ANG: NSTD YELLOW AEROSPACE GND EQPT AND FIRE BOTTLE BOXES PAINTED ON ANG RAMP.

FIXED WING ACFT USE LOW IDLE FOR TAXI, NO ENGINE CHECKS OR POWER RUNS ALLOWED ON THE ARNG RAMP DUE TO POSSIBLE FOD HAZARD.

ANG − PPR V220−2356.

ANG: AFLD MGR DOES NOT ISSUE OR STORE COMSEC FOR TRAN CREWS.

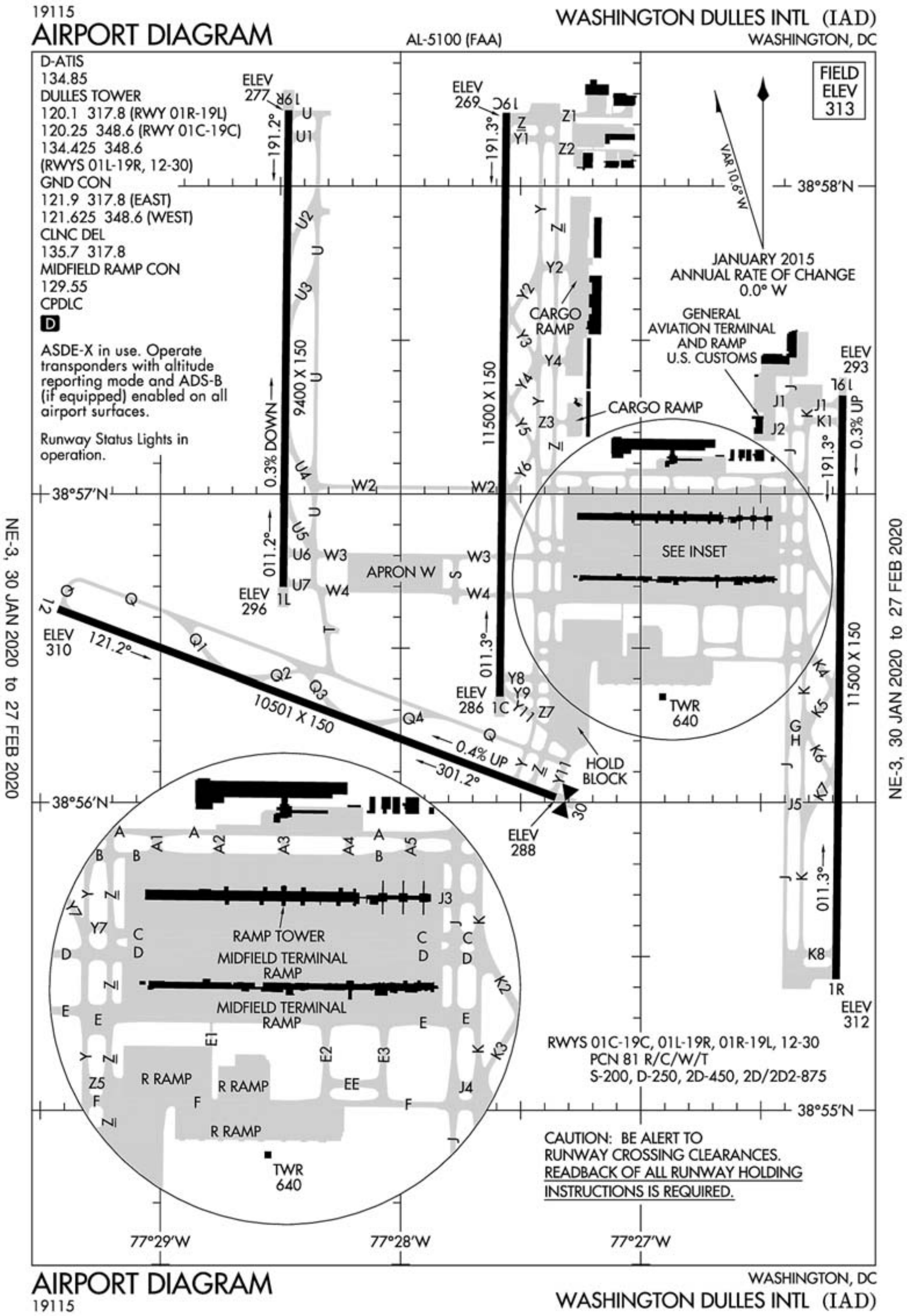
BASH PHASE II INCRD BIRD ACTVTY SEP−OCT AND MAR−APR.

ARNG − DSN 636−7519/7520. C860−292−4519/4520.

(E117) CT ANG AND U.S. ARMY NG.

ACFT REQG US CUST SVCS MUST PARK ON THE CUST SPOT W/ THE NOSE OF THE ACFT FACING SW. CTC CUST AT 860−292−1314 WHEN PARKED.

Washington, District of Columbia
Washington Dulles International
ICAO Identifier KIAD



Washington, DC
Washington Dulles Intl
ICAO Identifier KIAD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−56−50.8N / 77−27−35.8W
2.2.2 From City: 20 miles W of WASHINGTON, VA
2.2.3 Elevation: 313 ft
2.2.5 Magnetic Variation: 10W (2000)
2.2.6 Airport Contact: MIKE STEWART
1 SAARINEN CIRCLE
DULLES, VA 20166
(703−572−2730)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 19C
2.12.2 True Bearing: 181
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−58−14.3066N / 77−27−33.5452W
2.12.6 Threshold Elevation: 268.5 ft
2.12.6 Touchdown Zone Elevation: 271.3 ft

2.12.1 Designation: 01C
2.12.2 True Bearing: 1
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−20.6392N / 77−27−35.1991W
2.12.6 Threshold Elevation: 286.1 ft
2.12.6 Touchdown Zone Elevation: 286.3 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 9400 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−41.88N / 77−28−29.3151W
2.12.6 Threshold Elevation: 296 ft
2.12.6 Touchdown Zone Elevation: 296.1 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 9400 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−58−14.7845N / 77−28−27.9825W
2.12.6 Threshold Elevation: 276.9 ft
2.12.6 Touchdown Zone Elevation: 278.4 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−55−25.526N / 77−26−11.222W
2.12.6 Threshold Elevation: 311.7 ft
2.12.6 Touchdown Zone Elevation: 312.4 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−57−19.185N / 77−26−9.526W
2.12.6 Threshold Elevation: 293.2 ft
2.12.6 Touchdown Zone Elevation: 302.2 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 291
2.12.3 Dimensions: 10501 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−0.997N / 77−27−21.233W
2.12.6 Threshold Elevation: 287.8 ft
2.12.6 Touchdown Zone Elevation: 287.8 ft

2.12.1 Designation: 12
2.12.2 True Bearing: 111
2.12.3 Dimensions: 10501 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38−56−37.58N / 77−29−25.599W
2.12.6 Threshold Elevation: 309.8 ft
2.12.6 Touchdown Zone Elevation: 309.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 19C
2.13.2 Take−off Run Available: 11500
2.13.3 Take−off Distance Available: 11500
2.13.4 Accelerate−Stop Distance Available: 11500

2.13.5 Landing Distance Available: 11089

2.13.1 Designation: 01C
2.13.2 Take−off Run Available: 11500
2.13.3 Take−off Distance Available: 11500
2.13.4 Accelerate−Stop Distance Available: 11500
2.13.5 Landing Distance Available: 11500

2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 9400
2.13.3 Take−off Distance Available: 9400
2.13.4 Accelerate−Stop Distance Available: 9400
2.13.5 Landing Distance Available: 9400

2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 9400
2.13.3 Take−off Distance Available: 9400
2.13.4 Accelerate−Stop Distance Available: 9400
2.13.5 Landing Distance Available: 9400

2.13.1 Designation: 01R
2.13.2 Take−off Run Available: 11500
2.13.3 Take−off Distance Available: 11500
2.13.4 Accelerate−Stop Distance Available: 11500
2.13.5 Landing Distance Available: 11500

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 11500
2.13.3 Take−off Distance Available: 11500
2.13.4 Accelerate−Stop Distance Available: 11500
2.13.5 Landing Distance Available: 11500

2.13.1 Designation: 30
2.13.2 Take−off Run Available: 10501
2.13.3 Take−off Distance Available: 10501
2.13.4 Accelerate−Stop Distance Available: 10501
2.13.5 Landing Distance Available: 10501

2.13.1 Designation: 12
2.13.2 Take−off Run Available: 10501
2.13.3 Take−off Distance Available: 10501
2.13.4 Accelerate−Stop Distance Available: 10501
2.13.5 Landing Distance Available: 10501

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 19C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 01C
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 19R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 12
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 01C. Magnetic variation: 10W
2.19.2 ILS Identification: OSZ
2.19.5 Coordinates: 38−56−31.0615N / 77−27−40.7425W
2.19.6 Site Elevation: 283.3 ft

2.19.1 ILS Type: Localizer for runway 01C. Magnetic variation: 10W
2.19.2 ILS Identification: OSZ
2.19.5 Coordinates: 38−58−24.6686N / 77−27−33.3933W
2.19.6 Site Elevation: 263.2 ft

2.19.1 ILS Type: Glide Slope for runway 19C. Magnetic variation: 10W
2.19.2 ILS Identification: DLX
2.19.5 Coordinates: 38−58−4.1832N / 77−27−37.9999W
2.19.6 Site Elevation: 266.3 ft

2.19.1 ILS Type: Inner Marker for runway 19C. Magnet-

ic variation: 10W
2.19.2 ILS Identification: DLX
2.19.5 Coordinates: 38−58−22.9443N / 77−27−33.4218W
2.19.6 Site Elevation: 263.4 ft

2.19.1 ILS Type: Localizer for runway 19C. Magnetic variation: 10W
2.19.2 ILS Identification: DLX
2.19.5 Coordinates: 38−56−14.614N / 77−27−35.2866W
2.19.6 Site Elevation: 283.9 ft

2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38−58−25.0778N / 77−28−31.1627W
2.19.6 Site Elevation: 279.3 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38−56−52.8723N / 77−28−34.3495W
2.19.6 Site Elevation: 287.9 ft

2.19.1 ILS Type: Inner Marker for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38−56−33.3915N / 77−28−29.4465W
2.19.6 Site Elevation: 275 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38−58−24.7673N / 77−28−27.8426W
2.19.6 Site Elevation: 276.9 ft

2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38−58−25.0778N / 77−28−31.1627W
2.19.6 Site Elevation: 279.3 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38−58−4.4568N / 77−28−33.3233W
2.19.6 Site Elevation: 272 ft

2.19.1 ILS Type: Inner Marker for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38−58−23.5142N / 77−28−27.8585W
2.19.6 Site Elevation: 276 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38−56−31.8979N / 77−28−29.4605W
2.19.6 Site Elevation: 298.2 ft

2.19.1 ILS Type: DME for runway 01R. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38−55−11.0826N / 77−26−8.8302W
2.19.6 Site Elevation: 313.9 ft

2.19.1 ILS Type: Glide Slope for runway 01R. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38−55−35.845N / 77−26−4.749W
2.19.6 Site Elevation: 306.5 ft

2.19.1 ILS Type: Localizer for runway 01R. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38−57−30.868N / 77−26−9.357W
2.19.6 Site Elevation: 301.8 ft

2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38−55−11.0826N / 77−26−8.8302W
2.19.6 Site Elevation: 313.9 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38−57−9.268N / 77−26−4.613W
2.19.6 Site Elevation: 291.1 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38−55−11.807N / 77−26−11.427W
2.19.6 Site Elevation: 315.3 ft

2.19.1 ILS Type: Glide Slope for runway 12. Magnetic variation: 10W
2.19.2 ILS Identification: AJU
2.19.5 Coordinates: 38−56−30.399N / 77−29−15.535W
2.19.6 Site Elevation: 303.5 ft

2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 10W
2.19.2 ILS Identification: AJU
2.19.5 Coordinates: 38−55−57.27N / 77−27−8.47W
2.19.6 Site Elevation: 279.8 ft

General Remarks:
ITINERANT ACFT CTC FBO ON 122.95 FOR SERVICES.

ACR PUSH BACKS & PWR FM ALL APRON PSNS REQUIRE CLNC FM MWAA RAMP TWR.

LARGE FLOCKS OF BIRDS ON & INVOF ARPT/DEER INVOF ARPT.

DURING PERIODS OF ACFT SATURATION LONG TERM PARKING MAY NOT BE AVAILABLE. SERVICES FOR FUEL AND GO ONLY WILL BE AVAILABLE.

FLIGHT TRAINING BETWEEN 2200−0700 IS PROHIBITED.

TAXILANE 'C' ACTIVE; PUSHBACK CLNCS ON NORTH SIDE OF MIDFIELD TERMINAL ARE ONTO TAXILANE 'D' ONLY UNLESS OTHERWISE AUTH.

ALL AIRCRAFT WITH WINGSPAN EXCEEDING 118 FT ARE RESTRICTED FROM USING TAXILANE A BTN A1 & A5.

RUNUP BLOCKS FOR RY 30 DESIGNATED AS NON−MOVEMENT AREA.

ALL 180 DEG TURNS OUT OF APRON POSITIONS SHALL BE MADE USING MINIMUM POWER.

LDG FEE. FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL. NOTE: SEE SPECIAL NOTICES −−CONTINUOUS POWER FACILITIES.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY E1 RESTRICTED TO ACFT WITH A WINGSPAN LESS THAN 79 FT.

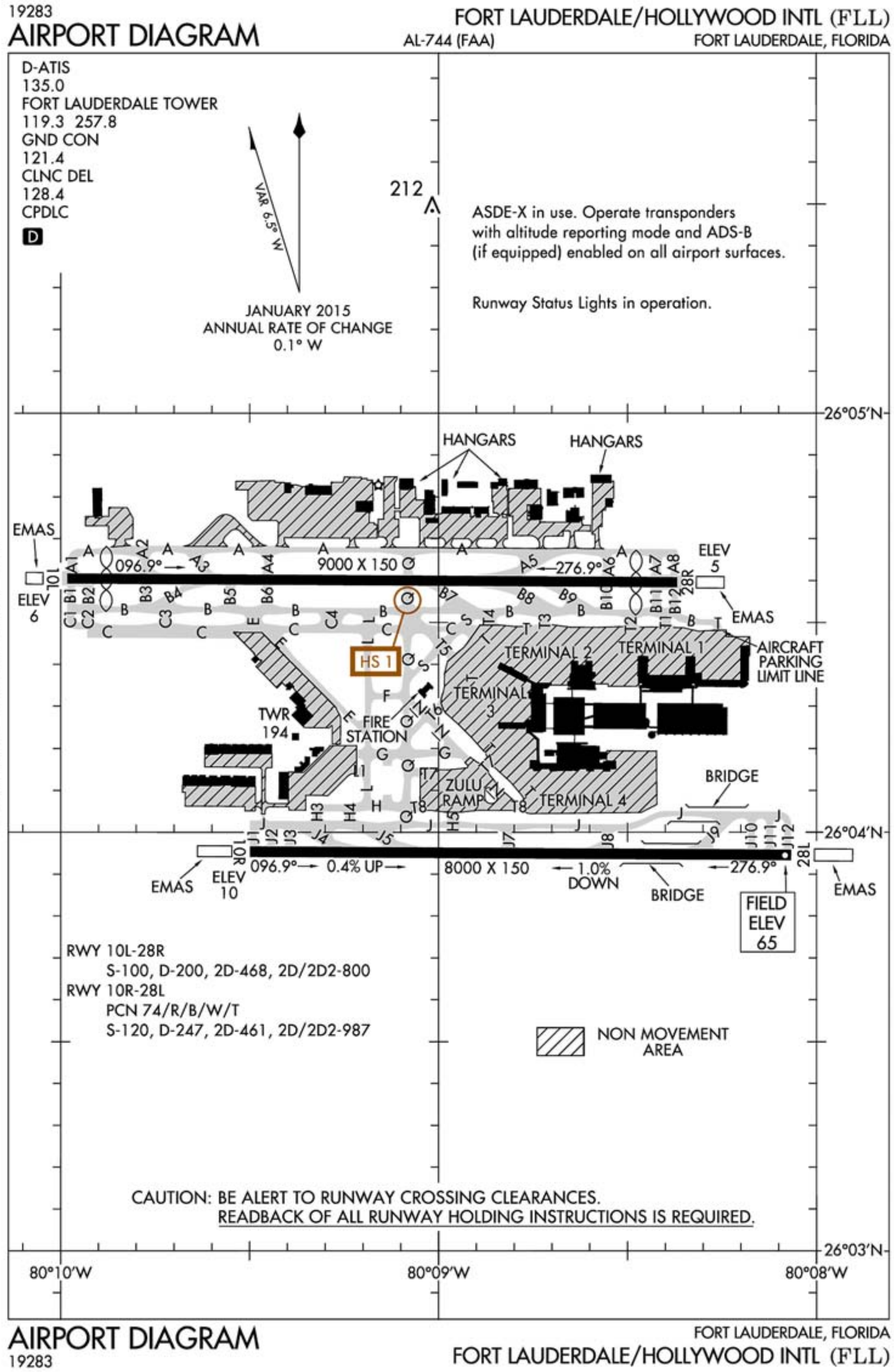
B747−8 RESTRICTED TO MAXIMUM TAXI SPEED 17 KTS (20 MPH) ON TWY J.

ENGINE RUN−UPS BTW 2200L & 0700L REQUIRE PRIOR APPROVAL FM ARPT OPS.

RY 30 DEPARTURES USE UPPER ANTENNA FOR ATC COMMUNICATIONS.

RY STATUS LGTS ARE IN OPN.

Fort Lauderdale, Florida
Fort Lauderdale−Hollywood International
ICAO Identifier KFLL



Fort Lauderdale, FL
Fort Lauderdale/Hollywood Intl
ICAO Identifier KFLL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26−4−18N / 80−8−58.9W
2.2.2 From City: 3 miles SW of FORT LAUDERDALE, FL
2.2.3 Elevation: 65 ft
2.2.5 Magnetic Variation: 6W (2015)
2.2.6 Airport Contact: MARK GALE
2200 SW 45TH STREET, SUITE 101
DANIA BEACH, FL 33312
(954−359−6100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 26−4−37.0166N / 80−9−59.5381W
2.12.6 Threshold Elevation: 5.6 ft
2.12.6 Touchdown Zone Elevation: 7.1 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 26−4−36.4507N / 80−8−20.835W
2.12.6 Threshold Elevation: 5.3 ft
2.12.6 Touchdown Zone Elevation: 6.7 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 26−3−57.1919N / 80−9−30.056W
2.12.6 Threshold Elevation: 10.1 ft
2.12.6 Touchdown Zone Elevation: 14.3 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 26−3−56.6718N / 80−8−2.3388W
2.12.6 Threshold Elevation: 65 ft
2.12.6 Touchdown Zone Elevation: 65 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 8424

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 8394

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 28L

2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: LHI
2.19.5 Coordinates: 26−4−40.1757N / 80−8−15.6721W
2.19.6 Site Elevation: 11.3 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: LHI
2.19.5 Coordinates: 26−4−39.6411N / 80−9−42.3329W
2.19.6 Site Elevation: 2.9 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: LHI
2.19.5 Coordinates: 26−4−36.4066N / 80−8−13.1434W
2.19.6 Site Elevation: 4.3 ft

2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: UDL
2.19.5 Coordinates: 26−4−34.5346N / 80−10−2.4136W
2.19.6 Site Elevation: 10.4 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: UDL
2.19.5 Coordinates: 26−4−39.627N / 80−8−39.0644W
2.19.6 Site Elevation: 5 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: UDL
2.19.5 Coordinates: 26−4−37.0351N / 80−10−2.8297W
2.19.6 Site Elevation: 4.6 ft

2.19.1 ILS Type: DME for runway 10R. Magnetic variation: 6W
2.19.2 ILS Identification: FLL
2.19.5 Coordinates: 26−3−58.8348N / 80−7−55.7162W
2.19.6 Site Elevation: 68.3 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 6W
2.19.2 ILS Identification: FLL
2.19.5 Coordinates: 26−3−53.1134N / 80−9−18.5896W
2.19.6 Site Elevation: 5.7 ft

2.19.1 ILS Type: Localizer for runway 10R. Magnetic variation: 6W
2.19.2 ILS Identification: FLL
2.19.5 Coordinates: 26−3−56.6314N / 80−7−55.5666W
2.19.6 Site Elevation: 64.4 ft

2.19.1 ILS Type: DME for runway 28L. Magnetic variation: 6W
2.19.2 ILS Identification: ADI
2.19.5 Coordinates: 26−3−59.4802N / 80−9−40.4489W
2.19.6 Site Elevation: 14.7 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 6W
2.19.2 ILS Identification: ADI
2.19.5 Coordinates: 26−3−52.7404N / 80−8−15.5298W
2.19.6 Site Elevation: 45 ft

2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 6W
2.19.2 ILS Identification: ADI
2.19.5 Coordinates: 26−3−57.2361N / 80−9−37.7655W
2.19.6 Site Elevation: 7.5 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 6W
2.19.2 Navigation Aid Identification: FLL
2.19.5 Coordinates: 26−4−26.1833N / 80−9−59.1921W
2.19.6 Site Elevation: 5.6 ft

General Remarks:
PPR FOR ACFT WITH EXPLOSIVES.

JET RUNUPS PROHIBITED 2300−0700.

ARR ACFT FM THE NORTH MAINTAIN 6000 FT UNTIL ABEAM RY 10L ON DOWNWIND.

ARR ACFT FROM ’N’ & ’W’ MAINTAIN 6000 FT UNTIL ABEAM RY 28R ON DOWNWIND.

NUMEROUS TREES SW QUADRANT OF ARPT.

ACFT WITH WINGSPANS GREATER THAN 118’ MAY UTILIZE TWY E BTN TWY C AND TWY L BY PPR ONLY.

NO VFR APCHS OR BASE LEGS UNTIL OFFSHORE.

NUMEROUS CRANES SE QUADRANT OF ARPT.

EAST SIDE OF CONCOURSE B AVBL ONLY TO ACFT WITH A WINGSPAN OF LESS THAN 124.9 FT.

AIR CARRIER ACFT USE RAMP PUSH BACK PROCEDURES AS PRESCRIBED BY AIRPORT OPS.

ACFT LDG RWY 10R AND EXITING AT J9 SHOULD FOLLOW TWY LEAD OFF LINE ONTO J9.

FLOCKS OF BIRDS ON AND IN THE VICINITY OF THE ARPT.

CLSD TO ACR TRAINING. CLSD TO LARGE ACFT TRAINING OVER 58000 LBS MAX CERTD GROSS TKOF WEIGHT. CLSD TO ALL TRAINING 2300−0700.

PREFERENTIAL RWY USE PROGRAM IN EFFECT. CTC NOISE ABATEMENT OFICE FOR DETAILS

CONCENTRATION OF BIRDS BELOW 500 FT, 2.0 NM WEST OF THE APPROACH ENDS OF RY 10L AND 10R.

TWY J BEGINS TO ELEV 900’ EAST OF TWY Q. DUE TO ELEV ALL ACFT SHOULD REMAIN ON TWY CNTRLN. TWY T8 AND TAXILANE T ARE NOT ACCESSIBLE FROM TWY J.

ACFT OPERATING FROM TRML 1, 2, 3, 4 MUST CTC RAMP CTL. RAMP CTL EFF 0545−2245.

TWY B EAST OF TWY T1 CLSD TO ACFT WITH WINGSPAN GTR THAN 126 FT AND TAIL HGT GTR THAN 46 FT.

TURBULENCE BELOW 1000 FT OVER LANDFILL LOCATED 2NM WEST.

NOISE ABATEMENT IN EFFECT CTC AIRPORT NOISE ABATEMENT OFFICE−954−359−6181 FOR DETAILS. ALL RYS ARE NOISE SENSITIVE.

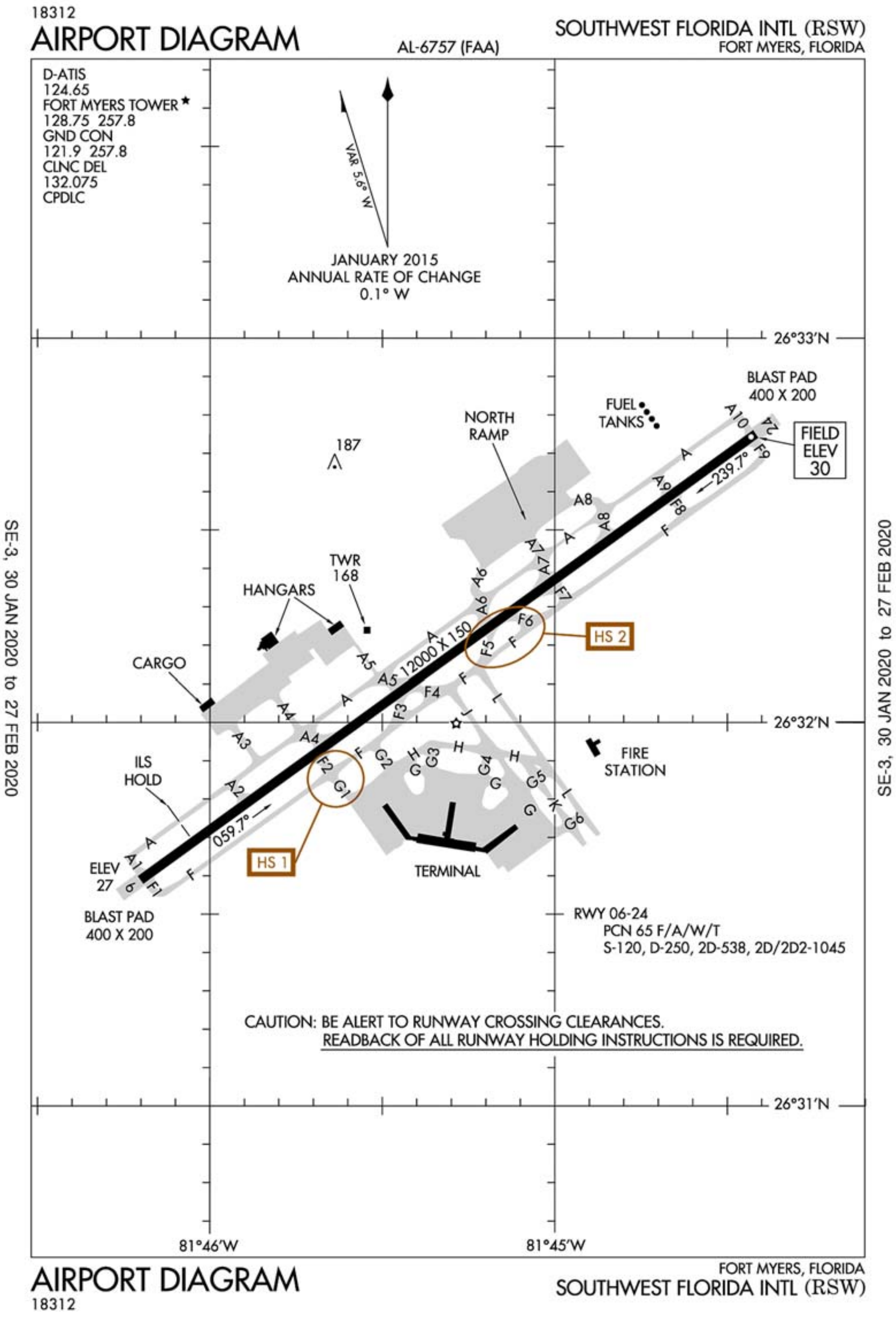
ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RUNWAY STATUS LIGHTS IN OPERATION

APN TWY T EAST OF TWY T8 CLSD TO ACFT WINGSPAN MORE THAN 118 FT AND TAIL HEIGHT MORE THAN 45FT EXC ACFT UNDER TOW. TWY N BTN TWY Q AND TWY T6 CLSD TO ACFT WINGSPAN MORE THAN 171 FT AND TAIL HEIGHT MORE THAN 60FT.

HIGH LIGHT MASTS WNW APCH END RWY 28L.

Fort Myers, Florida
Southwest Florida International
ICAO Identifier KRSW



Fort Myers, FL
Southwest Florida Intl
ICAO Identifier KRSW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26−32−10.2N / 81−45−18.6W
2.2.2 From City: 10 miles SE of FORT MYERS, FL
2.2.3 Elevation: 29.7 ft
2.2.5 Magnetic Variation: 4W (2000)
2.2.6 Airport Contact: JEFF MULDER
11000 TERMINAL ACCESS RD.
FORT MYERS, FL 33913
(239−590−4800)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1983

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 24
2.12.2 True Bearing: 234
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 65 F/A/W/T
2.12.5 Coordinates: 26−32−45.0236N / 81−44−25.0345W
2.12.6 Threshold Elevation: 29.7 ft
2.12.6 Touchdown Zone Elevation: 29.7 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 54
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 65 F/A/W/T
2.12.5 Coordinates: 26−31−35.3468N / 81−46−12.0693W
2.12.6 Threshold Elevation: 26.5 ft
2.12.6 Touchdown Zone Elevation: 26.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 24
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 06
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 24
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 06
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALICO DP (RWY 24)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: ALICO DP (RWY 06)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: ALICO DP (RWY 06/24)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P (121−240)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P (241−300)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P (001−120)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P (301−360)
2.14.3 Channel: 127.05
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P (241−120)
2.14.3 Channel: 306.2

2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P (121−240)
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CD/P
2.14.3 Channel: 132.075
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CLASS C (121−240)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CLASS C (241−300)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CLASS C (001−120)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CLASS C (301−360)
2.14.3 Channel: 127.05
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CLASS C (241−120)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CLASS C (121−240)
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CSHEL DP (RWY 24)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CSHEL DP (RWY 06)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: CSHEL DP (RWY 06/24)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 124.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: GND/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: MOOKY DP (RWY 06)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: MOOKY DP (RWY 24)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: MOOKY DP (RWY 24)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: MOOKY DP (RWY 06)
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: SCUBY DP
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600−0000

2.14.1 Service Designation: SCUBY DP
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600−0000

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 06. Magnetic variation: 4W
2.19.2 ILS Identification: RSW

2.19.5 Coordinates: 26−32−53.21N / 81−44−17.42W
2.19.6 Site Elevation: 26 ft

2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 4W
2.19.2 ILS Identification: RSW
2.19.5 Coordinates: 26−31−43.49N / 81−46−4.32W
2.19.6 Site Elevation: 26 ft

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 4W
2.19.2 ILS Identification: RSW
2.19.5 Coordinates: 26−32−51.1216N / 81−44−15.6633W
2.19.6 Site Elevation: 27.6 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 2W
2.19.2 Navigation Aid Identification: RSW
2.19.5 Coordinates: 26−31−47.5508N / 81−46−32.7643W
2.19.6 Site Elevation: 25 ft

General Remarks:
ARPT HAS RY USE PROGRAM. USE DISTANT NOISE ABATEMENT DEP PROFILE. VISUAL APCHS TO RY 06 W OF FORT MYERS BEACH ARE REQUESTED TO MAINTAIN 3000 FT UNTIL CROSSING FORT MYERS BEACH SHORELINE 12 NM SW OF ARPT. RY 24 PREFERRED BTN 2200−0600. FOR NOISE ABATEMENT PROCEDURES CTC AMGR 239−590−4810

GND CLNC RQRD PRIOR TO ENTERING TWY G.

TWY F6 EXIT SIGN IS LOCATED IMMEDIATELY BEFORE TWY F5.

ARR − INBOUND TFC FOR ALL GATES, PROCEED DIRECTLY TO THE GATE UNLESS OTHERWISE DIRECTED BY ATC. ADVISE ATC IF GATE IS NOT AVBL.

DEP − ACFT MUST OBTAIN APPROVAL FM GND CTL PRIOR TO PUSHBACK FM GATES B7, B9, C8, C9 & D10A. PILOTS ADVISE TUG OPERATORS THAT YOU HAVE OBTAINED CLNC FM GND CTL PRIOR TO ENTERING TWY G. DEPARTURES CTC GND CTL PRIOR TO LEAVING THE COMMUTER RAMP FROM GATES D9A AND D9B.

GATES B7, & B9 EXPECT CALL SPOT #7. GATES C8 & C9 EXPECT CALL SPOT #4. GATE D10A EXPECT CALL SPOT #2.

LGTS ON PARALLEL ROAD & PARKING LOT NW OF RY 06/24 CAN BE MISTAKEN FOR THE RY & APCH ENVIRONMENT.

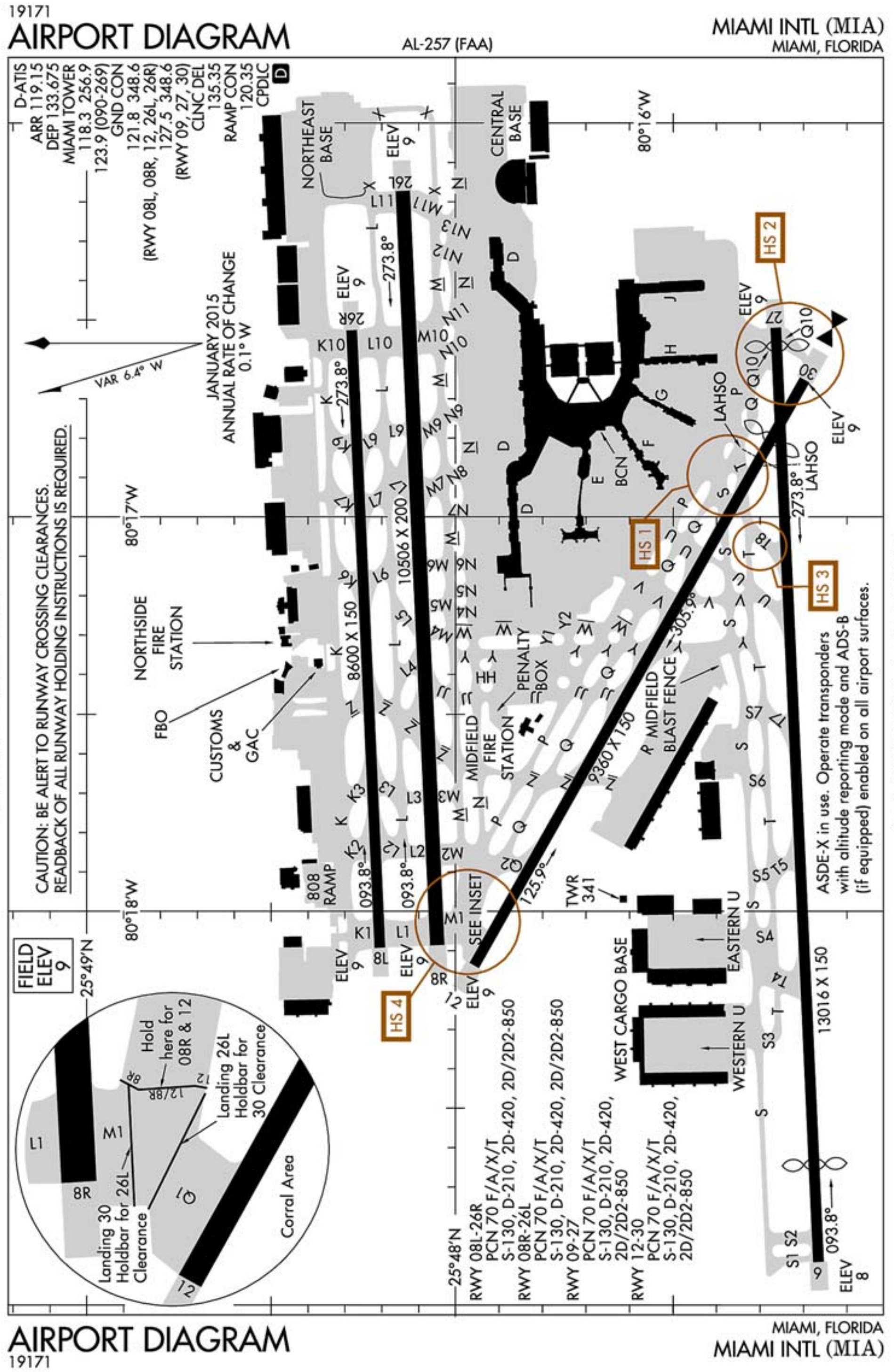
ACR PILOTS USE RAMP PROC AS PRESCRIBED BY ARPT OPNS.

CAUTION: OPEN BAGGAGE BAYS AND CONSTRUCTION WITHIN THE TERMINAL RAMP AREA. AIRCREWS SHOULD USE MINIMUM THRUST SETTINGS IN THESE AREAS, SPCLY DURG SINGLE ENG TAXI. CROSS−BLEED STARTS ONLY ALLOWED AFT REACHING THE TUG RELEASE POINT.

ALL ACFT TRAFFIC ON THE RAMP SHOULD EXPECT A CLOCKWISE FLOW. OUTBOUND TRAFFIC FROM GATES D2, D4, D6, D8 AND D10 PROCEED TO CALL SPOT 1. OUTBOUND TRAFFIC FROM GATES C2, C4, C6, D1, D3, D5 & D7 PROCEED TO CALL SPOT # 3. OUTBOUND TRAFFIC FROM GATES B2, B4, B6, B8, C1, C3, C5 & C7 PROCEED TO CALL SPOT # 5. OUTBOUND TRAFFIC FROM GATES B1, B3 & B5 PROCEED TO CALL SPOT # 9. ALL OUTBOUND TRAFFIC REQUEST TAXI INSTRUCTIONS.

NO HELICOPTER OPNS PERMITTED ON TRML APRON.

Miami, Florida
Miami International
ICAO Identifier KMIA



Miami, FL
Miami Intl
ICAO Identifier KMIA

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 25−47−43.3N / 80−17−24.417W
2.2.2 From City: 8 miles NW of MIAMI, FL
2.2.3 Elevation: 9.3 ft
2.2.5 Magnetic Variation: 5W (2000)
2.2.6 Airport Contact: LESTER SOLA
MIAMI−DADE AVIATION DEPARTMENT
MIAMI, FL 33102 (305−876−7077)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 26R
2.12.2 True Bearing: 267
2.12.3 Dimensions: 8600 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−48−14.3204N / 80−16−31.5499W
2.12.6 Threshold Elevation: 8.8 ft
2.12.6 Touchdown Zone Elevation: 9 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 87
2.12.3 Dimensions: 8600 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−48−10.432N / 80−18−5.5508W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 87
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−48−2.5177N / 80−18−5.1588W
2.12.6 Threshold Elevation: 8.5 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 267
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−48−7.2652N / 80−16−10.3282W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 9 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 87
2.12.3 Dimensions: 13016 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−47−9.9421N / 80−18−53.4173W
2.12.6 Threshold Elevation: 8.1 ft
2.12.6 Touchdown Zone Elevation: 8.2 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 267
2.12.3 Dimensions: 13016 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−47−15.8328N / 80−16−31.1711W
2.12.6 Threshold Elevation: 9 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9360 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−47−11.8224N / 80−16−39.0805W
2.12.6 Threshold Elevation: 8.7 ft
2.12.6 Touchdown Zone Elevation: 9.3 ft

2.12.1 Designation: 12
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9360 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−47−57.4262N / 80−18−8.2439W
2.12.6 Threshold Elevation: 9.1 ft
2.12.6 Touchdown Zone Elevation: 9.2 ft

AD 2.13 Declared Distances

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 8600
2.13.3 Take−off Distance Available: 8600
2.13.4 Accelerate−Stop Distance Available: 8600
2.13.5 Landing Distance Available: 8600

2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 8600
2.13.3 Take−off Distance Available: 8600
2.13.4 Accelerate−Stop Distance Available: 8600
2.13.5 Landing Distance Available: 8600

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 10506
2.13.3 Take−off Distance Available: 10506
2.13.4 Accelerate−Stop Distance Available: 10506
2.13.5 Landing Distance Available: 10506

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 10506
2.13.3 Take−off Distance Available: 10506
2.13.4 Accelerate−Stop Distance Available: 10220
2.13.5 Landing Distance Available: 10220

2.13.1 Designation: 09
2.13.2 Take−off Run Available: 13016
2.13.3 Take−off Distance Available: 13016
2.13.4 Accelerate−Stop Distance Available: 12755
2.13.5 Landing Distance Available: 11397

2.13.1 Designation: 27
2.13.2 Take−off Run Available: 13016
2.13.3 Take−off Distance Available: 13016
2.13.4 Accelerate−Stop Distance Available: 13016
2.13.5 Landing Distance Available: 12755

2.13.1 Designation: 30
2.13.2 Take−off Run Available: 9355
2.13.3 Take−off Distance Available: 9355
2.13.4 Accelerate−Stop Distance Available: 8853
2.13.5 Landing Distance Available: 7913

2.13.1 Designation: 12
2.13.2 Take−off Run Available: 9360
2.13.3 Take−off Distance Available: 9360
2.13.4 Accelerate−Stop Distance Available: 8579
2.13.5 Landing Distance Available: 8579

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 27
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 12
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (090−269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (090−269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (270−089)

2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (270−089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (090−269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (090−269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (270−089)
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (270−089)
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (270−089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (270−089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S (270−089)
2.14.3 Channel: 263.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S (270−089)
2.14.3 Channel: 263.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CURSO STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CURSO STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CURSO STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CURSO STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CYPRESS STAR (WEST)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CYPRESS STAR (WEST)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CYPRESS STAR (EAST)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CYPRESS STAR (EAST)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CYPRESS STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CYPRESS STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARRIVAL)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARRIVAL)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEPART)
2.14.3 Channel: 133.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEPART)
2.14.3 Channel: 133.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (270−089)
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (270−089)
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P IC (270−089)
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P IC (270−089)
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DVALL STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DVALL STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DVALL STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DVALL STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: FLIPR STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FLIPR STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FLIPR STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FLIPR STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 08L/26R, 08R/26L, 12)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 08L/26R, 08R/26L, 12)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 09/27, 30)
2.14.3 Channel: 127.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 09/27, 30)
2.14.3 Channel: 127.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HILEY STAR
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HILEY STAR
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HILEY STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HILEY STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (090−269)
2.14.3 Channel: 123.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (090−269)
2.14.3 Channel: 123.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P IC (270−089)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P IC (270−089)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P IC
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P IC
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RAMP CTL
2.14.3 Channel: 120.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RAMP CTL
2.14.3 Channel: 120.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RTIS (120−300 WITHIN 25 NM)
2.14.3 Channel: 125.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RTIS (120−300 WITHIN 25 NM)
2.14.3 Channel: 125.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SSCOT STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SSCOT STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SSCOT STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SSCOT STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: ROY
2.19.5 Coordinates: 25−48−16.3597N / 80−16−18.3104W
2.19.6 Site Elevation: 20.1 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: ROY
2.19.5 Coordinates: 25−48−14.865N / 80−16−18.3941W
2.19.6 Site Elevation: 6.8 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: CNV
2.19.5 Coordinates: 25−48−7.1241N / 80−18−16.4684W
2.19.6 Site Elevation: 20.3 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: CNV
2.19.5 Coordinates: 25−48−9.969N / 80−18−16.6983W
2.19.6 Site Elevation: 7.4 ft

2.19.1 ILS Type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: MFA
2.19.5 Coordinates: 25−48−5.0878N / 80−16−0.575W
2.19.6 Site Elevation: 15.6 ft

2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: MFA
2.19.5 Coordinates: 25−48−6.1715N / 80−17−54.807W
2.19.6 Site Elevation: 5 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: MFA
2.19.5 Coordinates: 25−48−7.688N / 80−16−0.0426W
2.19.6 Site Elevation: 6.3 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: VIN
2.19.5 Coordinates: 25−48−5.8074N / 80−18−14.9415W
2.19.6 Site Elevation: 14.3 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: VIN
2.19.5 Coordinates: 25−48−9.7347N / 80−16−22.5043W
2.19.6 Site Elevation: 5.9 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: VIN
2.19.5 Coordinates: 25−48−2.1576N / 80−18−13.7966W
2.19.6 Site Elevation: 7.6 ft

2.19.1 ILS Type: DME for runway 09. Magnetic variation: 5W
2.19.2 ILS Identification: BUL

2.19.5 Coordinates: 25−47−15.8249N / 80−16−17.2451W
2.19.6 Site Elevation: 20.1 ft

2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 5W
2.19.2 ILS Identification: BUL
2.19.5 Coordinates: 25−47−7.8388N / 80−18−26.7053W
2.19.6 Site Elevation: 7.5 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 5W
2.19.2 ILS Identification: BUL
2.19.5 Coordinates: 25−47−16.4165N / 80−16−17.1006W
2.19.6 Site Elevation: 18.4 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 5W
2.19.2 ILS Identification: MIA
2.19.5 Coordinates: 25−47−11.7269N / 80−16−45.3981W
2.19.6 Site Elevation: 4.7 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 5W
2.19.2 ILS Identification: MIA
2.19.5 Coordinates: 25−47−9.3891N / 80−19−6.6406W
2.19.6 Site Elevation: 7.1 ft

2.19.1 ILS Type: DME for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−11.2767N / 80−16−32.4152W
2.19.6 Site Elevation: 15.9 ft

2.19.1 ILS Type: Glide Slope for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−49.349N / 80−17−59.8989W
2.19.6 Site Elevation: 6.8 ft

2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−9.6403N / 80−16−34.8108W
2.19.6 Site Elevation: 8.3 ft

2.19.1 ILS Type: DME for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−57.7789N / 80−18−14.5127W
2.19.6 Site Elevation: 14.7 ft

2.19.1 ILS Type: Glide Slope for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−17.643N / 80−16−59.572W
2.19.6 Site Elevation: 7.1 ft

2.19.1 ILS Type: Localizer for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−59.8764N / 80−18−13.0372W
2.19.6 Site Elevation: 8.9 ft

General Remarks:
ACFT WITH A WINGSPAN GTR THAN 171 FT ARE PROHIBITED FM TXG ON TWY P EAST OF TWY U.

ALL MEDICAL EMERGENCIES ARRIVALS, WITH THE EXCEPTION OF AIR AMBULANCE FLIGHTS, MUST SECURE DOORS UNTIL ARFF IS ON SCENE.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

ALL DIVERSION CTC FREQ 130.5 UPON ARR.

ALL TURBOJET ACFT USE DSNT NOISE ABATEMENT DEP PROFILE FROM ALL RYS EXC A320, B727, B737−800, B767−400, AND DC9 WHICH SHOULD USE CLOSE−IN NOISE ABATEMENT ABATEMENT PROFILE.

B757, HEAVY AND SUPER ACFT ARE NOT AUTH INT DEP FOR ANY RWY UNLESS A PTN IS CLSD OR UNUNSL.
PPR 3 HRS PRIOR TO ALL ARRIVALS ON THE GENERAL AVIATION CENTER (GAC) RAMP 305−876−7550 CTC

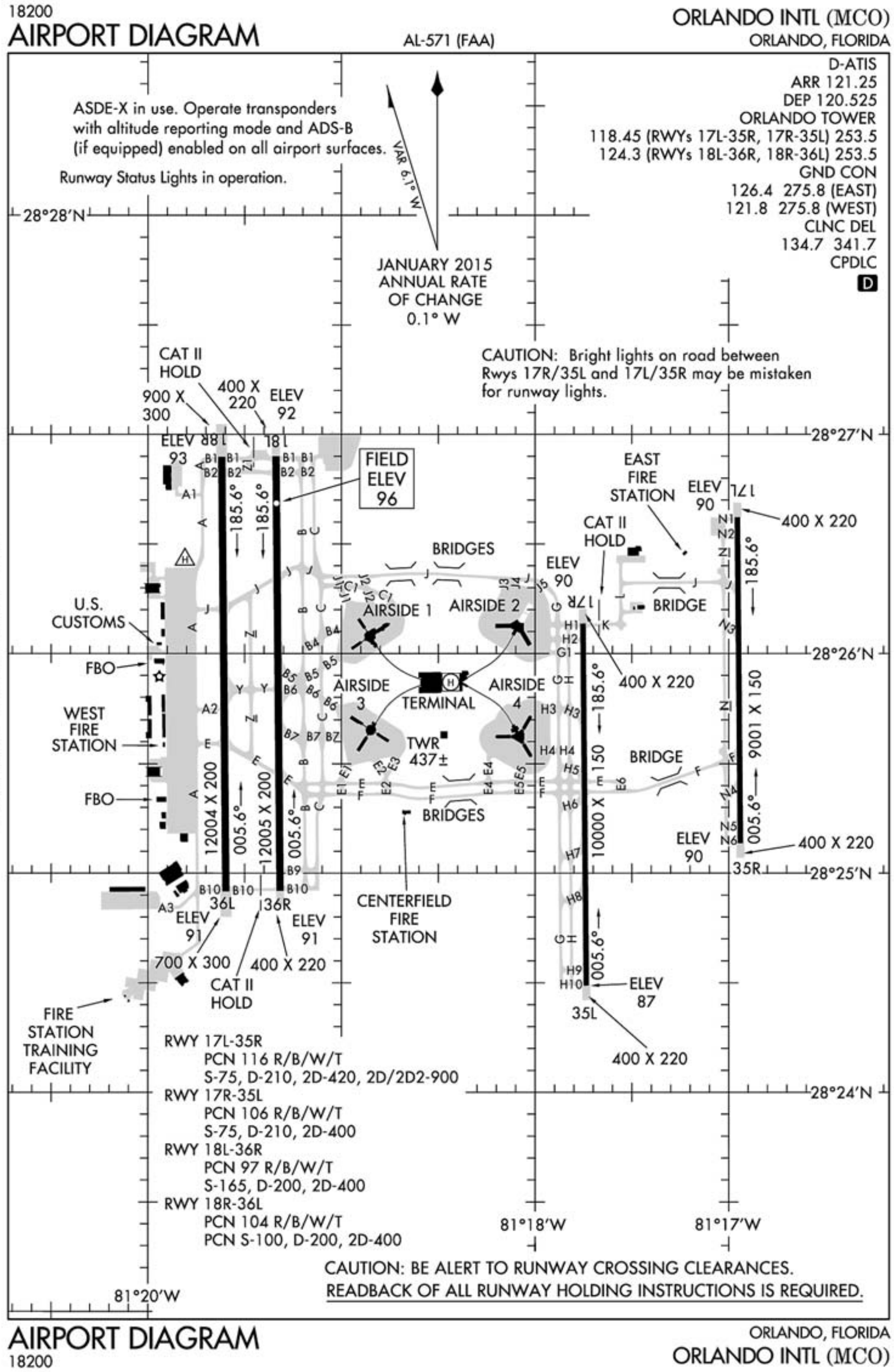
RAMP CONTROL UPON ARRIVAL ON FREQUENCY 131.600. ACFT WITH WINGSPAN GREATER THAN 78 FT ARE PROHIBITED FROM ENTERING THE GAC RAMP.

CLSD NON ENG ACFT.

BIRDS ON & INVOF ARPT.

PPR FOR INBOUND MILITARY FLIGHTS 100 NM ON FREQ 130.5.

Orlando, Florida
Orlando International
ICAO Identifier KMCO



Orlando, FL
Orlando Intl
ICAO Identifier KMCO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 28−25−45.8N / 81−18−32.4W
2.2.2 From City: 6 miles SE of ORLANDO, FL
2.2.3 Elevation: 96.4 ft
2.2.5 Magnetic Variation: 6W (2015)
2.2.6 Airport Contact: PHILLIP N. BROWN, A.A.E.
1 JEFF FUQUA BLVD
ORLANDO, FL 32827
(407−825−7445)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 35R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9001 ft x 150 ft
2.12.4 PCN: 116 R/B/W/T
2.12.5 Coordinates: 28−25−8.1974N / 81−16−56.3802W
2.12.6 Threshold Elevation: 89.7 ft
2.12.6 Touchdown Zone Elevation: 89.8 ft

2.12.1 Designation: 17L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9001 ft x 150 ft
2.12.4 PCN: 116 R/B/W/T
2.12.5 Coordinates: 28−26−37.308N / 81−16−57.2924W
2.12.6 Threshold Elevation: 89.7 ft
2.12.6 Touchdown Zone Elevation: 89.9 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 106 R/B/W/T
2.12.5 Coordinates: 28−26−8.2029N / 81−17−45.1656W
2.12.6 Threshold Elevation: 90.1 ft
2.12.6 Touchdown Zone Elevation: 90.2 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 106 R/B/W/T
2.12.5 Coordinates: 28−24−29.1952N / 81−17−44.1335W
2.12.6 Threshold Elevation: 86.7 ft
2.12.6 Touchdown Zone Elevation: 88.3 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 12005 ft x 200 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: 28−26−54.0038N / 81−19−20.3022W
2.12.6 Threshold Elevation: 92.4 ft
2.12.6 Touchdown Zone Elevation: 96.4 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 12005 ft x 200 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: 28−24−55.1469N / 81−19−19.0358W
2.12.6 Threshold Elevation: 91 ft
2.12.6 Touchdown Zone Elevation: 92.3 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 12004 ft x 200 ft
2.12.4 PCN: 104 R/B/W/T
2.12.5 Coordinates: 28−24−55.007N / 81−19−35.8294W
2.12.6 Threshold Elevation: 91.1 ft
2.12.6 Touchdown Zone Elevation: 92.6 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 12004 ft x 200 ft
2.12.4 PCN: 104 R/B/W/T
2.12.5 Coordinates: 28−26−53.8569N / 81−19−37.1091W
2.12.6 Threshold Elevation: 92.5 ft
2.12.6 Touchdown Zone Elevation: 93.5 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 44 ft x 44 ft
2.12.4 PCN:

2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 35R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 17L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 17R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 35L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 18L
2.13.2 Take−off Run Available: 12005
2.13.3 Take−off Distance Available: 12005
2.13.4 Accelerate−Stop Distance Available: 12005
2.13.5 Landing Distance Available: 12005

2.13.1 Designation: 36R
2.13.2 Take−off Run Available: 12005
2.13.3 Take−off Distance Available: 12005
2.13.4 Accelerate−Stop Distance Available: 11601
2.13.5 Landing Distance Available: 11601

2.13.1 Designation: 36L
2.13.2 Take−off Run Available: 12004
2.13.3 Take−off Distance Available: 12004
2.13.4 Accelerate−Stop Distance Available: 11621
2.13.5 Landing Distance Available: 11621

2.13.1 Designation: 18R
2.13.2 Take−off Run Available: 12004
2.13.3 Take−off Distance Available: 12004
2.13.4 Accelerate−Stop Distance Available: 12004
2.13.5 Landing Distance Available: 12004

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 35R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 17L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 18L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 17L. Magnetic variation: 6W

2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28−24−57.9921N / 81−16−51.737W
2.19.6 Site Elevation: 97 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28−26−27.0479N / 81−16−52.5933W
2.19.6 Site Elevation: 94.4 ft

2.19.1 ILS Type: Inner Marker for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28−26−45.819N / 81−16−57.3985W
2.19.6 Site Elevation: 89.6 ft

2.19.1 ILS Type: Localizer for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28−24−57.8892N / 81−16−56.2728W
2.19.6 Site Elevation: 89.1 ft

2.19.1 ILS Type: DME for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: CER
2.19.5 Coordinates: 28−26−48.2377N / 81−16−52.8447W
2.19.6 Site Elevation: 98.3 ft

2.19.1 ILS Type: Glide Slope for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: CER
2.19.5 Coordinates: 28−25−18.6301N / 81−16−51.8726W
2.19.6 Site Elevation: 87.3 ft

2.19.1 ILS Type: Inner Marker for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: CER
2.19.5 Coordinates: 28−24−59.6772N / 81−16−56.2924W
2.19.6 Site Elevation: 89.2 ft

2.19.1 ILS Type: Localizer for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: CER
2.19.5 Coordinates: 28−26−47.6103N / 81−16−57.3979W
2.19.6 Site Elevation: 89.6 ft

2.19.1 ILS Type: Middle Marker for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: CER
2.19.5 Coordinates: 28−24−45.6652N / 81−16−56.1546W
2.19.6 Site Elevation: 81.1 ft

2.19.1 ILS Type: DME for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: DIZ
2.19.5 Coordinates: 28−24−18.9549N / 81−17−47.0755W
2.19.6 Site Elevation: 86.4 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: DIZ
2.19.5 Coordinates: 28−25−57.8375N / 81−17−40.5783W
2.19.6 Site Elevation: 92.7 ft

2.19.1 ILS Type: Inner Marker for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: DIZ
2.19.5 Coordinates: 28−26−16.6991N / 81−17−45.2569W
2.19.6 Site Elevation: 84.9 ft

2.19.1 ILS Type: Localizer for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: DIZ
2.19.5 Coordinates: 28−24−18.7729N / 81−17−44.0255W
2.19.6 Site Elevation: 81.6 ft

2.19.1 ILS Type: Middle Marker for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: DIZ
2.19.5 Coordinates: 28−26−34.2471N / 81−17−45.4369W
2.19.6 Site Elevation: 87.8 ft

2.19.1 ILS Type: DME for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: DDO
2.19.5 Coordinates: 28−26−18.3948N / 81−17−48.1528W
2.19.6 Site Elevation: 95.5 ft

2.19.1 ILS Type: Glide Slope for runway 35L. Magnetic variation: 6W

2.19.2 ILS Identification: DDO
2.19.5 Coordinates: 28−24−39.5307N / 81−17−39.7618W
2.19.6 Site Elevation: 83.7 ft

2.19.1 ILS Type: Inner Marker for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: DDO
2.19.5 Coordinates: 28−24−20.5349N / 81−17−44.0395W
2.19.6 Site Elevation: 82.1 ft

2.19.1 ILS Type: Localizer for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: DDO
2.19.5 Coordinates: 28−26−18.5959N / 81−17−45.2712W
2.19.6 Site Elevation: 87.7 ft

2.19.1 ILS Type: Middle Marker for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: DDO
2.19.5 Coordinates: 28−24−1.5295N / 81−17−43.8604W
2.19.6 Site Elevation: 82.4 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28−27−0.7626N / 81−19−18.0064W
2.19.6 Site Elevation: 96.2 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28−25−5.5139N / 81−19−23.6289W
2.19.6 Site Elevation: 87.7 ft

2.19.1 ILS Type: Inner Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28−24−46.6452N / 81−19−18.9395W
2.19.6 Site Elevation: 86.6 ft

2.19.1 ILS Type: Localizer for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28−27−1.4488N / 81−19−20.3839W
2.19.6 Site Elevation: 90.8 ft

2.19.1 ILS Type: Middle Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28−24−31.8917N / 81−19−18.7794W
2.19.6 Site Elevation: 84.5 ft

2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: TFE
2.19.5 Coordinates: 28−24−42.2043N / 81−19−38.5819W
2.19.6 Site Elevation: 94.7 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: TFE
2.19.5 Coordinates: 28−26−43.5N / 81−19−32.21W
2.19.6 Site Elevation: 89 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: TFE
2.19.5 Coordinates: 28−24−41.97N / 81−19−35.69W
2.19.6 Site Elevation: 86 ft

2.19.1 ILS Type: Middle Marker for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: TFE
2.19.5 Coordinates: 28−27−20.0402N / 81−19−37.3925W
2.19.6 Site Elevation: 87.4 ft

General Remarks:
WHEN ORL ILS RY 7 AND MCO ILS RYS 17 & 18R SIMULTANEOUS OPERATIONS ARE CONDUCTED, ATC RADAR REQUIRED.

UNLESS ADV BY ATIS, DEP FLTS ON INITIAL CTC WITH GND CTL: ACFT ON WEST RAMP, AIRSIDE 1 & 3 (GATES 1−59) USE GND CTL 121.8. ACFT AT AIRSIDE 2 & 4 (GATES 60 AND HIGHER), USE GND CTL 126.4.

WEST RAMP CUSTOMS INSPECTION PRKG AREA RSTD TO ACFT WINGSPAN LESS THAN 118’

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY A, BTN W RAMP S END AND TWY B10, RSTRD TO ACFT WINGSPAN LESS THAN 171 FT. PPR FOR ACFT WINGSPAN 171 FT OR GTR.

TWY J3 AND TWY J4 RSTD TO WINGSPAN OF LESS THAN 118 FT.

RUNWAY STATUS LIGHTS ARE IN OPERATION.

BRIGHT LGTS ON ROAD BTN RY 17R/35L AND RY 17L/35R MAY BE MISTAKEN FOR RY LGTS.

AVOID CONTACT WITH TAXIWAY EDGE LIGHTS; ALL AIRCRAFT DETERMINED TO BE FAA DESIGN GROUP IV AND ABOVE MUST PERFORM JUDGEMENTAL OVERSTEERING INSTEAD OF COCKPIT CENTERLINE STEERING WHEN TAXIING.

TWY A, SOUTH OF TWY A3 RSTD TO WINGSPAN OF LESS THAN 118 FT. PPR REQUIRED FOR WINGSPAN 118 FT OR GREATER.

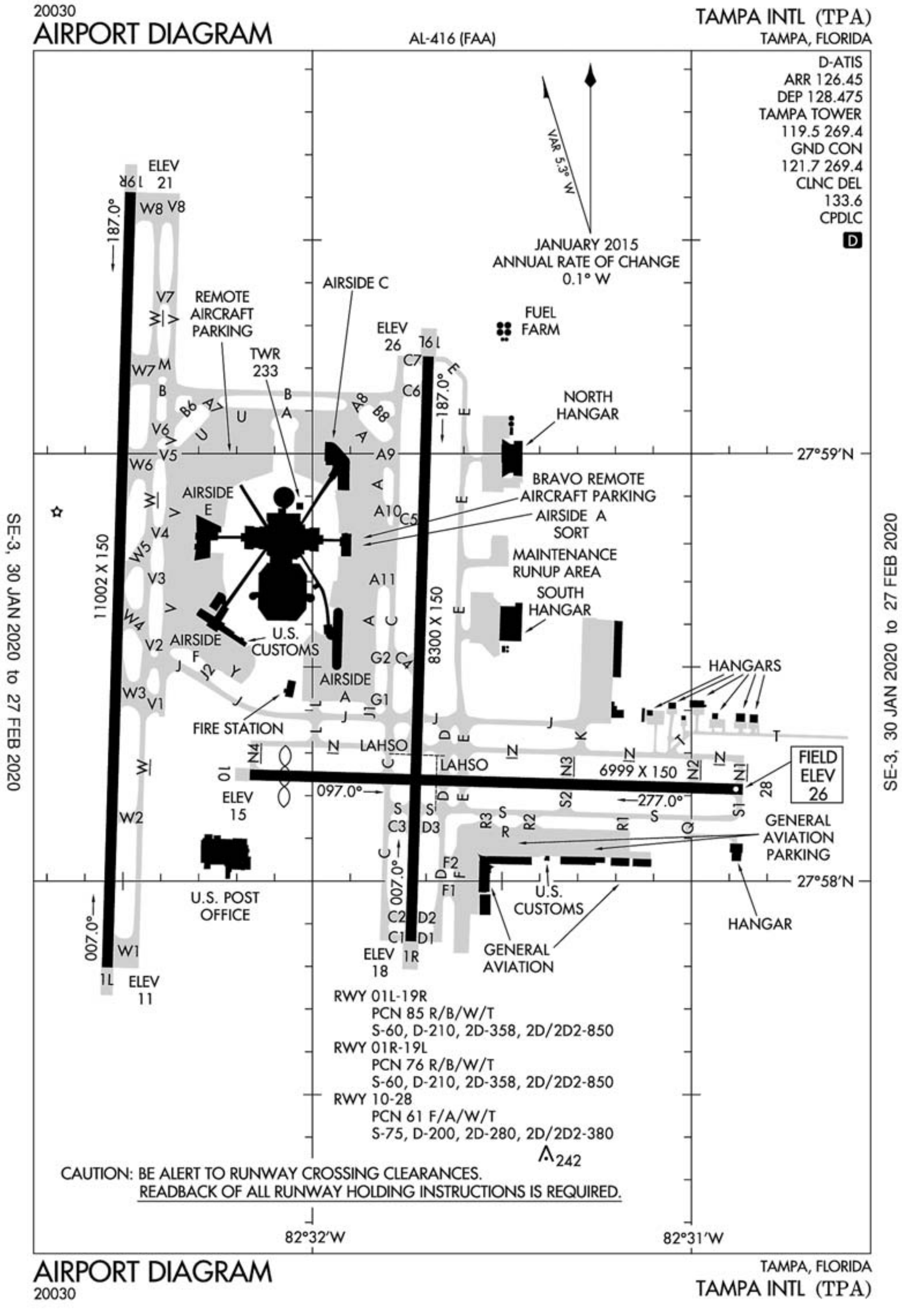
RY 17L−35R UNLIT 0400−1100Z.

USE CAUTION IN VCNTY OF TWY ”A” ALONG WEST RAMP.

BIRDS & DEER ON & INVOF ARPT.

ACFT WITH WINGSPAN GREATER THAN 214 FT MUST ADHERE TO SPECIFIC RY AND TAXI ROUTES. CONTACT AIRFIELD OPS AT 407−825−2036 FOR DETAILS.

Tampa, Florida
Tampa International
ICAO Identifier KTPA



Tampa, FL
Tampa Intl
ICAO Identifier KTPA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 27−58−31.7N / 82−31−59.7W
2.2.2 From City: 6 miles W of TAMPA, FL
2.2.3 Elevation: 26.4 ft
2.2.5 Magnetic Variation: 5W (2010)
2.2.6 Airport Contact: JOHN TILIACOS
PO BOX 22287
TAMPA, FL 33622
(813−870−8700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 19R
2.12.2 True Bearing: 182
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 27−59−36.7423N / 82−32−28.7801W
2.12.6 Threshold Elevation: 21 ft
2.12.6 Touchdown Zone Elevation: 21 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 2
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 27−57−47.8596N / 82−32−32.4793W
2.12.6 Threshold Elevation: 10.7 ft
2.12.6 Touchdown Zone Elevation: 10.8 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 182
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.4 PCN: 76 R/B/W/T
2.12.5 Coordinates: 27−59−13.6607N / 82−31−41.5739W
2.12.6 Threshold Elevation: 26 ft
2.12.6 Touchdown Zone Elevation: 26.1 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 2
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.4 PCN: 76 R/B/W/T
2.12.5 Coordinates: 27−57−51.5169N / 82−31−44.3687W
2.12.6 Threshold Elevation: 17.7 ft
2.12.6 Touchdown Zone Elevation: 20.5 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 92
2.12.3 Dimensions: 6999 ft x 150 ft
2.12.4 PCN: 61 F/A/W/T
2.12.5 Coordinates: 27−58−14.9917N / 82−32−9.9027W
2.12.6 Threshold Elevation: 14.5 ft
2.12.6 Touchdown Zone Elevation: 21.8 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 272
2.12.3 Dimensions: 6999 ft x 150 ft
2.12.4 PCN: 61 F/A/W/T
2.12.5 Coordinates: 27−58−12.8902N / 82−30−51.8781W
2.12.6 Threshold Elevation: 26.4 ft
2.12.6 Touchdown Zone Elevation: 26.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 11002
2.13.3 Take−off Distance Available: 11002
2.13.4 Accelerate−Stop Distance Available: 11002
2.13.5 Landing Distance Available: 11002

2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 11002
2.13.3 Take−off Distance Available: 11002
2.13.4 Accelerate−Stop Distance Available: 10800
2.13.5 Landing Distance Available: 10800

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 8300
2.13.3 Take−off Distance Available: 8300
2.13.4 Accelerate−Stop Distance Available: 8300
2.13.5 Landing Distance Available: 8300

2.13.1 Designation: 01R
2.13.2 Take−off Run Available: 8300
2.13.3 Take−off Distance Available: 8300
2.13.4 Accelerate−Stop Distance Available: 8300
2.13.5 Landing Distance Available: 8300

2.13.1 Designation: 10
2.13.2 Take−off Run Available: 6999
2.13.3 Take−off Distance Available: 6999
2.13.4 Accelerate−Stop Distance Available: 6999
2.13.5 Landing Distance Available: 6501

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 6999
2.13.3 Take−off Distance Available: 6999
2.13.4 Accelerate−Stop Distance Available: 6501
2.13.5 Landing Distance Available: 6501

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 19R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P (001−150)
2.14.3 Channel: 118.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (220−360)
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (151−219)
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (220−360)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (001−150)
2.14.3 Channel: 285.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (151−219)
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 118.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 307.175
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 353.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BAYPO DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BAYPO DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLOND STAR
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLOND STAR
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BRDGE STAR
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BRDGE STAR

2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 133.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (151−219)
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001−150)
2.14.3 Channel: 119.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (220−360)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001−150)
2.14.3 Channel: 290.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (220−360)
2.14.3 Channel: 316.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (151−219)
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CROWD DP
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CROWD DP
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 126.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 128.475
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DADES STAR
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DADES STAR
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DARBS STAR
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DARBS STAR
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEAKK STAR
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEAKK STAR
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: ENDED DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ENDED DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOOXX STAR
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOOXX STAR
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GANDY DP
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GANDY DP
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 269.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 119.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 269.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 119.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LGTNG DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LGTNG DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LZARD STAR
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LZARD STAR
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SYKES DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SYKES DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TAMPA DP
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TAMPA DP
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.5 Coordinates: 27−59−43.4N / 82−32−25.65W
2.19.6 Site Elevation: 20 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.5 Coordinates: 27−57−58.2392N / 82−32−36.5897W
2.19.6 Site Elevation: 7.6 ft

2.19.1 ILS Type: Inner Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.5 Coordinates: 27−57−39.6244N / 82−32−32.7564W
2.19.6 Site Elevation: 6.4 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.5 Coordinates: 27−59−44.7869N / 82−32−28.5048W
2.19.6 Site Elevation: 20.6 ft

2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 5W
2.19.2 ILS Identification: JRT
2.19.5 Coordinates: 27−57−37.34N / 82−32−31.94W
2.19.6 Site Elevation: 5 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 5W
2.19.2 ILS Identification: JRT
2.19.5 Coordinates: 27−59−26.4582N / 82−32−33.5927W
2.19.6 Site Elevation: 17.2 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 5W
2.19.2 ILS Identification: JRT
2.19.5 Coordinates: 27−57−37.46N / 82−32−32.84W
2.19.6 Site Elevation: 5 ft
2.19.1 ILS Type: DME for runway 01R. Magnetic varia-

tion: 5W
2.19.2 ILS Identification: TWJ
2.19.5 Coordinates: 27−59−22.9831N / 82−31−38.4291W
2.19.6 Site Elevation: 35.9 ft

2.19.1 ILS Type: Localizer for runway 01R. Magnetic variation: 5W
2.19.2 ILS Identification: TWJ
2.19.5 Coordinates: 27−59−23.9328N / 82−31−41.2197W
2.19.6 Site Elevation: 25.6 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 27−59−3.1644N / 82−31−37.4636W
2.19.6 Site Elevation: 23.8 ft

2.19.1 ILS Type: Inner Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 27−59−23.6601N / 82−31−41.2251W
2.19.6 Site Elevation: 25.7 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 27−57−40.972N / 82−31−44.7284W
2.19.6 Site Elevation: 13.7 ft

2.19.1 ILS Type: Outer Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 28−5−7.2047N / 82−31−30.8942W
2.19.6 Site Elevation: 42.5 ft

General Remarks:

TWY RSTRS: AIRPLANE DESIGN GRP V OR LGR – TWY N WEST OF TWY L UNAVBL. TWY E NORTH OF TWY J ALSO UNUSBL FOR WINGSPAN GREATER THAN 171 FT UNLESS PPR FROM ARPT OPS.

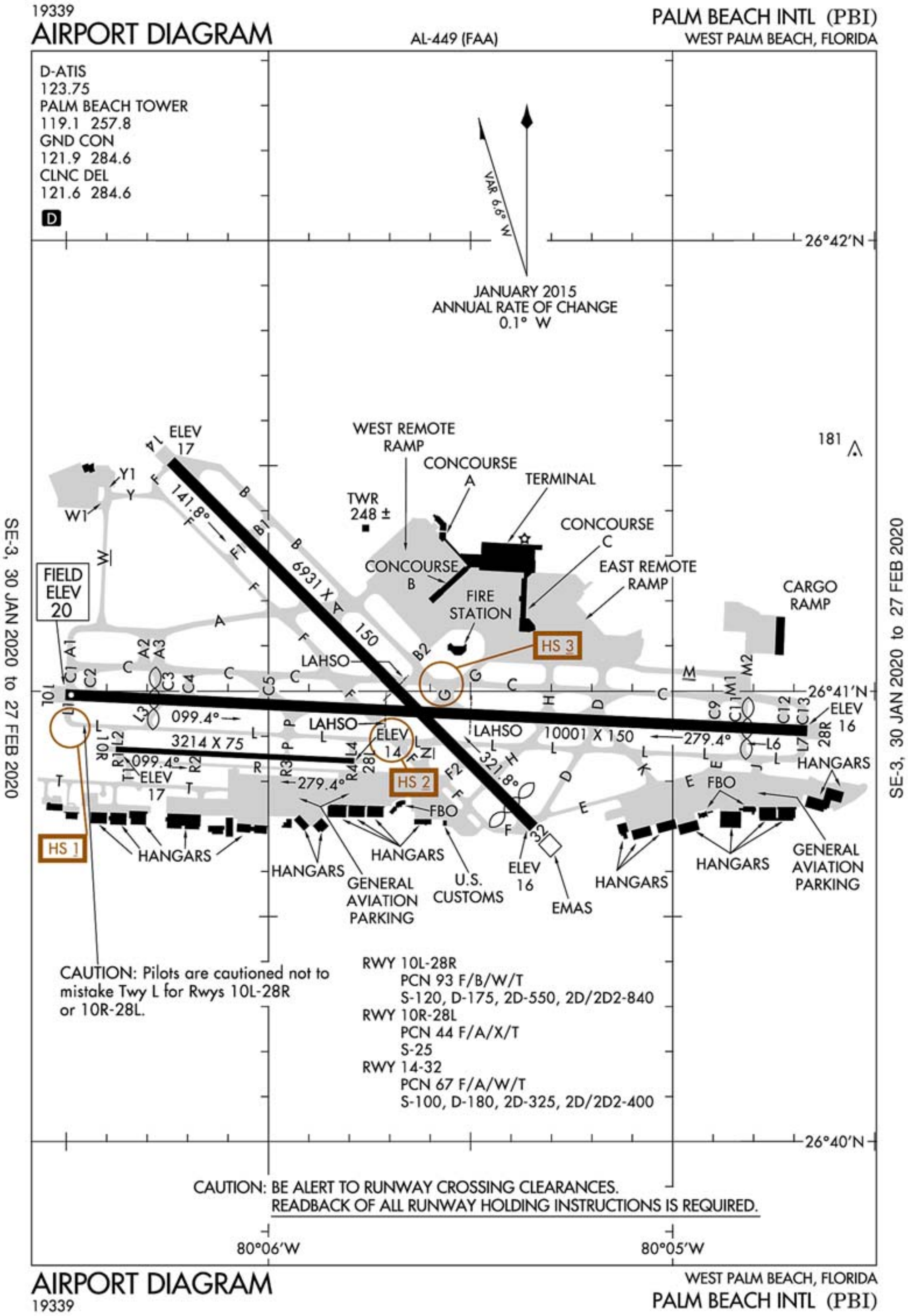
RY 19L IS NOISE SENSITIVE TO TURBOJET DEPARTURES. RY 01R IS NOISE SENSITIVE TO TURBOJET ARRIVALS. PUBLISHED NOISE ABATEMENT PROCEDURES IN EFFECT.

TAXILANE F AND TAXILANE R ARE NON−MOVEMENT AREAS. BOTH LCTNS ARE UNAVBL FOR GROUP IV ACFT WITH A WINGSPAN GTR THAN 117 FT WO PPR FROM ARPT OPS. TAXILANE T PPR FROM ARPT OPS RQRD FOR ACFT WITH A WINGSPAN GTR THAN 90 FT.

ONLY ACFT WITH PRIOR PERMISSION MAY USE TERMINAL APRON; ALL OTHERS USE GA APRON.

BIRD ACTIVITY ON AND IN VCNTY OF ARPT.

West Palm Beach, Florida
Palm Beach International
ICAO Identifier KPBI



West Palm Beach, FL
Palm Beach Intl
ICAO Identifier KPBI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26−40−59.382N / 80−5−44.131W
2.2.2 From City: 3 miles W of WEST PALM BEACH, FL
2.2.3 Elevation: 19.6 ft
2.2.5 Magnetic Variation: 6W (2010)
2.2.6 Airport Contact: LAURA BEEBE
846 PALM BEACH INTL AIRPORT
WEST PALM BEACH, FL 33406
(561−471−7420)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10L
2.12.2 True Bearing: 93
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 93 F/B/W/T
2.12.5 Coordinates: 26−40−59.5493N / 80−6−30.1296W
2.12.6 Threshold Elevation: 19.6 ft
2.12.6 Touchdown Zone Elevation: 16.3 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 273
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 93 F/B/W/T
2.12.5 Coordinates: 26−40−54.7438N / 80−4−40.0137W
2.12.6 Threshold Elevation: 16.4 ft
2.12.6 Touchdown Zone Elevation: 18.3 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 93
2.12.3 Dimensions: 3214 ft x 75 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 26−40−52.282N / 80−6−22.6416W
2.12.6 Threshold Elevation: 17.1 ft
2.12.6 Touchdown Zone Elevation: 17.2 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 3214 ft x 75 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 26−40−50.7327N / 80−5−47.2501W
2.12.6 Threshold Elevation: 13.6 ft
2.12.6 Touchdown Zone Elevation: 16.9 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 6931 ft x 150 ft
2.12.4 PCN: 67 F/A/W/T
2.12.5 Coordinates: 26−41−30.596N / 80−6−14.482W
2.12.6 Threshold Elevation: 17 ft
2.12.6 Touchdown Zone Elevation: 17.3 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 6931 ft x 150 ft
2.12.4 PCN: 67 F/A/W/T
2.12.5 Coordinates: 26−40−41.913N / 80−5−20.622W
2.12.6 Threshold Elevation: 15.8 ft
2.12.6 Touchdown Zone Elevation: 15.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 10001
2.13.3 Take−off Distance Available: 10001
2.13.4 Accelerate−Stop Distance Available: 10001
2.13.5 Landing Distance Available: 8800

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 10001
2.13.3 Take−off Distance Available: 10001
2.13.4 Accelerate−Stop Distance Available: 10001
2.13.5 Landing Distance Available: 9189

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 3214
2.13.3 Take−off Distance Available: 3214
2.13.4 Accelerate−Stop Distance Available: 3214
2.13.5 Landing Distance Available: 3214

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 3214
2.13.3 Take−off Distance Available: 3214
2.13.4 Accelerate−Stop Distance Available: 3214

2.13.5 Landing Distance Available: 3214

2.13.1 Designation: 14
2.13.2 Take−off Run Available: 6926
2.13.3 Take−off Distance Available: 6926
2.13.4 Accelerate−Stop Distance Available: 6000
2.13.5 Landing Distance Available: 6000

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 6926
2.13.3 Take−off Distance Available: 6926
2.13.4 Accelerate−Stop Distance Available: 6926
2.13.5 Landing Distance Available: 6513

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 28R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 28L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 32
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (SOUTH)
2.14.3 Channel: 125.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (SOUTH)
2.14.3 Channel: 343.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 125.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (NORTH)
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (NORTH)
2.14.3 Channel: 317.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 121.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 284.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (SOUTH)
2.14.3 Channel: 125.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH)
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH)
2.14.3 Channel: 317.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (SOUTH)
2.14.3 Channel: 343.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C/S (SOUTH)
2.14.3 Channel: 127.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 123.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 125.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (NORTH)
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (SOUTH)

2.14.3 Channel: 343.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: FINAL APCH
2.14.3 Channel: 125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 284.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 119.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 118.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 384.6
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: PBI
2.19.5 Coordinates: 26−40−51.4319N / 80−4−29.0092W
2.19.6 Site Elevation: 23.3 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: PBI
2.19.5 Coordinates: 26−40−55.9795N / 80−6−6.0748W
2.19.6 Site Elevation: 14.5 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: PBI
2.19.5 Coordinates: 26−40−54.2434N / 80−4−28.6079W
2.19.6 Site Elevation: 13 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: PWB
2.19.5 Coordinates: 26−40−53.0853N / 80−5−1.7298W
2.19.6 Site Elevation: 13.5 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: PWB
2.19.5 Coordinates: 26−40−59.9773N / 80−6−39.9822W
2.19.6 Site Elevation: 18.5 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 3W
2.19.2 Navigation Aid Identification: PBI
2.19.5 Coordinates: 26−40−48.198N / 80−5−11.3586W
2.19.6 Site Elevation: 15.7 ft

General Remarks:
RY 10R/28L NON−AIR CARRIER ACFT ONLY.

BE ALERT: TWY L IS LCTD BTWN RYS 10L/28R & 10R/28L. TWY L IS WIDER AND LONGER THAN RY 10R/28L − DO NOT CONFUSE TWY L FOR RY. AIRCRAFT WITH WINGSPAN OF 118 FT OR GREATER IS PROHIBITED ON TWY L.

24 HR PPR FOR ACFT WITH WINGSPANS GTR THAN 171 FT.

NO ACFT WILL CROSS HOLD LINE WITHOUT AUTHORIZATION.

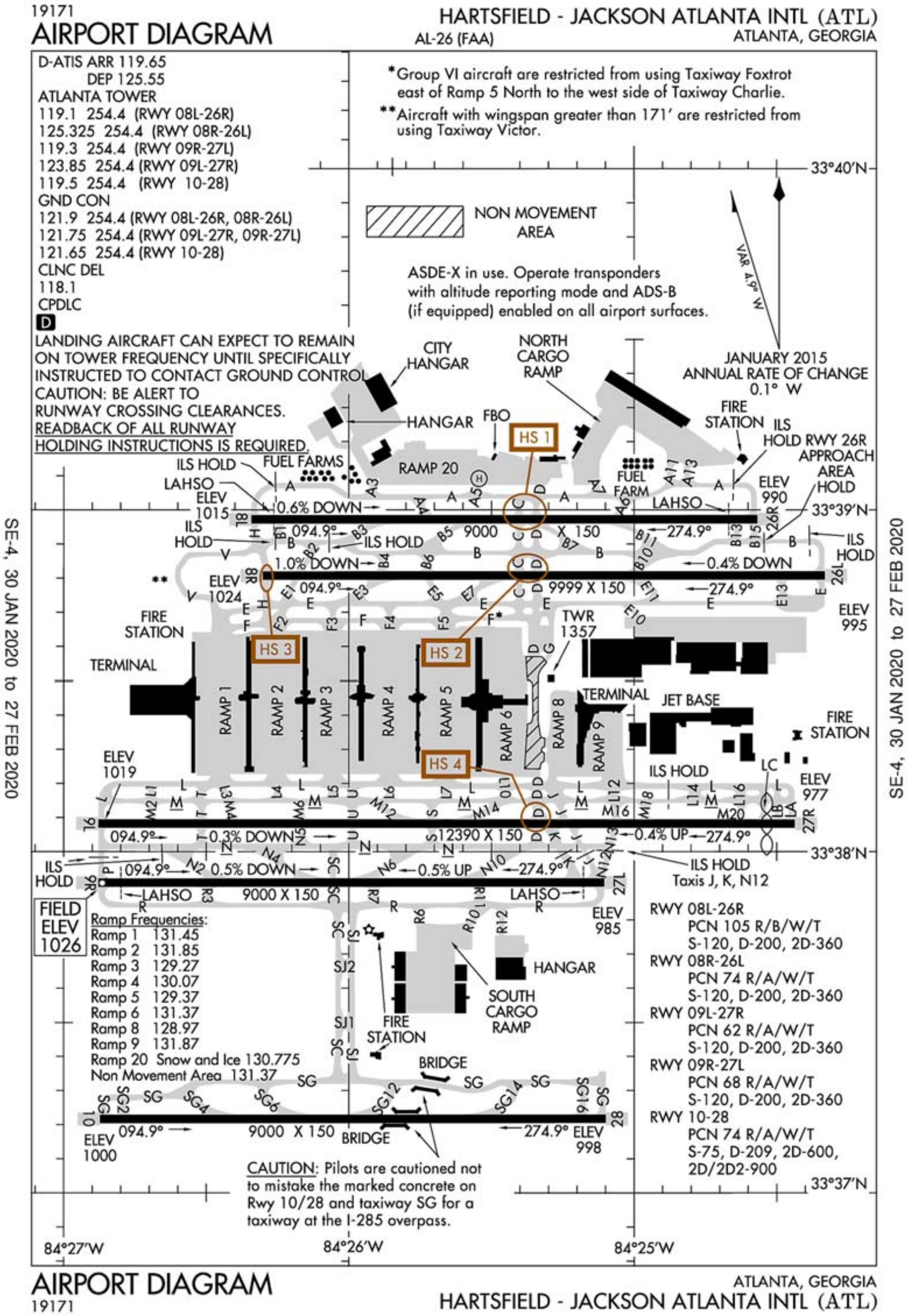
NOISE ABATEMENT PROCEDURES IN EFFECT. MULTIENGINE FLIGHT TRAINING PROHIBITED SS TO SR SUN AND HOLIDAY; STRICT ENVIRONMENTAL OPERATING STAGE 2 ACFT 0300−1200Z CALL NOISE

ABATEMENT OFFICER 561−471−7467.

BE ALERT; RYS 28L & 28R THLDS STAGGERED BY 5400 FT.

MIGRATORY BIRDS ON AND INVOF ARPT.

Atlanta, Georgia
Hartsfield−Jackson Atlanta International
ICAO Identifier KATL



Atlanta, GA
Hartsfield − Jackson Atlanta Intl
ICAO Identifier KATL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33−38−12.1186N / 84−25−40.3104W
2.2.2 From City: 7 miles S of ATLANTA, GA
2.2.3 Elevation: 1026.2 ft
2.2.5 Magnetic Variation: 5W (2015)
2.2.6 Airport Contact: JOHN SELDEN
PO BOX 20509
ATLANTA, GA 30320
(404−530−6600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 105 R/B/W/T
2.12.5 Coordinates: 33−38−58.3515N / 84−24−34.0341W
2.12.6 Threshold Elevation: 990 ft
2.12.6 Touchdown Zone Elevation: 990 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 105 R/B/W/T
2.12.5 Coordinates: 33−38−58.3238N / 84−26−20.4923W
2.12.6 Threshold Elevation: 1014.6 ft
2.12.6 Touchdown Zone Elevation: 1014.6 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9999 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−38−48.432N / 84−26−18.1035W
2.12.6 Threshold Elevation: 1023.7 ft
2.12.6 Touchdown Zone Elevation: 1023.8 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9999 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−38−48.4612N / 84−24−19.8313W
2.12.6 Threshold Elevation: 995.4 ft
2.12.6 Touchdown Zone Elevation: 995.5 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12390 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33−38−4.929N / 84−24−26.158W
2.12.6 Threshold Elevation: 977.2 ft
2.12.6 Touchdown Zone Elevation: 984.6 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12390 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33−38−4.936N / 84−26−52.6807W
2.12.6 Threshold Elevation: 1018.7 ft
2.12.6 Touchdown Zone Elevation: 1018.7 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 68 R/A/W/T
2.12.5 Coordinates: 33−37−54.5282N / 84−26−52.6768W
2.12.6 Threshold Elevation: 1026.1 ft

2.12.6 Touchdown Zone Elevation: 1026.2 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 68 R/A/W/T
2.12.5 Coordinates: 33−37−54.5649N / 84−25−6.243W
2.12.6 Threshold Elevation: 984.7 ft
2.12.6 Touchdown Zone Elevation: 998.9 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−37−13.0275N / 84−25−5.9358W
2.12.6 Threshold Elevation: 997.5 ft
2.12.6 Touchdown Zone Elevation: 997.5 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33−37−12.9808N / 84−26−52.3574W
2.12.6 Threshold Elevation: 1000.3 ft
2.12.6 Touchdown Zone Elevation: 1000.3 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 52 ft x 52 ft
2.12.4 PCN:
2.12.5 Coordinates: 33−39−5.52N / 84−25−32.6W
2.12.6 Threshold Elevation: 988 ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 8800
2.13.5 Landing Distance Available: 8800

2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 8800
2.13.5 Landing Distance Available: 8800

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 9999
2.13.3 Take−off Distance Available: 10999
2.13.4 Accelerate−Stop Distance Available: 9999
2.13.5 Landing Distance Available: 9999

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 9999
2.13.3 Take−off Distance Available: 9999
2.13.4 Accelerate−Stop Distance Available: 9999
2.13.5 Landing Distance Available: 9999

2.13.1 Designation: 27R
2.13.2 Take−off Run Available: 12390
2.13.3 Take−off Distance Available: 12390
2.13.4 Accelerate−Stop Distance Available: 12190
2.13.5 Landing Distance Available: 11690

2.13.1 Designation: 09L
2.13.2 Take−off Run Available: 12390
2.13.3 Take−off Distance Available: 12390
2.13.4 Accelerate−Stop Distance Available: 11730
2.13.5 Landing Distance Available: 11730

2.13.1 Designation: 09R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 8925
2.13.5 Landing Distance Available: 8925

2.13.1 Designation: 27L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 8865
2.13.5 Landing Distance Available: 8865

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000

2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 10
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 26R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 27R
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 09L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 09R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 27L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 28
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33−39−1.782N / 84−24−24.7032W
2.19.6 Site Elevation: 977.2 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33−39−2.288N / 84−26−6.3042W
2.19.6 Site Elevation: 1001.7 ft

2.19.1 ILS Type: Inner Marker for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33−38−58.3145N / 84−26−30.5173W
2.19.6 Site Elevation: 1017.7 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33−38−58.3506N / 84−24−23.3901W
2.19.6 Site Elevation: 985.2 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: GXZ
2.19.5 Coordinates: 33−38−53.87N / 84−26−32.61W
2.19.6 Site Elevation: 1008 ft

2.19.1 ILS Type: Glide Slope for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: GXZ
2.19.5 Coordinates: 33−39−2.3139N / 84−24−47.6304W
2.19.6 Site Elevation: 983.8 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: GXZ
2.19.5 Coordinates: 33−38−58.32N / 84−26−30.19W
2.19.6 Site Elevation: 1016 ft

2.19.1 ILS Type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: ATL
2.19.5 Coordinates: 33−38−45.7727N / 84−24−7.5608W
2.19.6 Site Elevation: 992.1 ft

2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: ATL
2.19.5 Coordinates: 33−38−52.4042N / 84−26−3.334W
2.19.6 Site Elevation: 1005 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: ATL
2.19.5 Coordinates: 33−38−48.4575N / 84−24−7.5394W
2.19.6 Site Elevation: 986.8 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: BRU
2.19.5 Coordinates: 33−38−49.0988N / 84−26−30.1749W
2.19.6 Site Elevation: 1030.3 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: BRU
2.19.5 Coordinates: 33−38−52.4111N / 84−24−32.8404W
2.19.6 Site Elevation: 993.7 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: BRU
2.19.5 Coordinates: 33−38−48.4526N / 84−26−30.1664W
2.19.6 Site Elevation: 1021 ft

2.19.1 ILS Type: DME for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.5 Coordinates: 33−38−7.48N / 84−24−44.38W
2.19.6 Site Elevation: 978 ft

2.19.1 ILS Type: Glide Slope for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.5 Coordinates: 33−38−2.4639N / 84−26−39.6677W
2.19.6 Site Elevation: 1016.6 ft

2.19.1 ILS Type: Localizer for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.5 Coordinates: 33−38−4.94N / 84−24−19.08W
2.19.6 Site Elevation: 949.5 ft

2.19.1 ILS Type: Outer Marker for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.5 Coordinates: 33−37−57.073N / 84−32−3.073W
2.19.6 Site Elevation:

2.19.1 ILS Type: Glide Slope for runway 27R. Magnetic variation: 5W
2.19.2 ILS Identification: AFA
2.19.5 Coordinates: 33−38−7.45N / 84−24−44.13W
2.19.6 Site Elevation: 977.7 ft

2.19.1 ILS Type: Localizer for runway 27R. Magnetic variation: 5W

2.19.2 ILS Identification: AFA
2.19.5 Coordinates: 33−38−4.931N / 84−27−2.2719W
2.19.6 Site Elevation: 1019.5 ft

2.19.1 ILS Type: DME for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.5 Coordinates: 33−37−56.6292N / 84−24−54.2376W
2.19.6 Site Elevation: 995.5 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.5 Coordinates: 33−37−58.482N / 84−26−39.0507W
2.19.6 Site Elevation: 1019.1 ft

2.19.1 ILS Type: Inner Marker for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.5 Coordinates: 33−37−54.5222N / 84−27−2.5364W
2.19.6 Site Elevation: 1029.2 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.5 Coordinates: 33−37−54.5664N / 84−24−52.6064W
2.19.6 Site Elevation: 976.2 ft

2.19.1 ILS Type: DME for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33−37−53.7N / 84−27−3.53W
2.19.6 Site Elevation: 1003.8 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33−37−58.5048N / 84−25−18.9643W
2.19.6 Site Elevation: 986.7 ft

2.19.1 ILS Type: Inner Marker for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33−37−54.59N / 84−24−52.99W
2.19.6 Site Elevation: 983 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33−37−54.53N / 84−27−3.03W
2.19.6 Site Elevation: 1015.7 ft

2.19.1 ILS Type: DME for runway 10. Magnetic variation: 5W
2.19.2 ILS Identification: OMO
2.19.5 Coordinates: 33−37−12.4476N / 84−24−53.9549W
2.19.6 Site Elevation: 999.7 ft

2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 5W
2.19.2 ILS Identification: OMO
2.19.5 Coordinates: 33−37−8.9408N / 84−26−38.7669W
2.19.6 Site Elevation: 985.4 ft

2.19.1 ILS Type: Inner Marker for runway 10. Magnetic variation: 5W
2.19.2 ILS Identification: OMO
2.19.5 Coordinates: 33−37−12.9816N / 84−27−2.5224W
2.19.6 Site Elevation: 1001 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 5W
2.19.2 ILS Identification: OMO
2.19.5 Coordinates: 33−37−13.0192N / 84−24−53.9594W
2.19.6 Site Elevation: 991.1 ft

2.19.1 ILS Type: DME for runway 28. Magnetic variation: 5W
2.19.2 ILS Identification: PKU
2.19.5 Coordinates: 33−37−12.4016N / 84−27−5.3143W
2.19.6 Site Elevation: 1003.5 ft

2.19.1 ILS Type: Glide Slope for runway 28. Magnetic

variation: 5W
2.19.2 ILS Identification: PKU
2.19.5 Coordinates: 33−37−17.0569N / 84−25−18.9449W
2.19.6 Site Elevation: 989.2 ft

2.19.1 ILS Type: Inner Marker for runway 28. Magnetic variation: 5W
2.19.2 ILS Identification: PKU
2.19.5 Coordinates: 33−37−13.0151N / 84−24−55.769W
2.19.6 Site Elevation: 982.2 ft

2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 5W
2.19.2 ILS Identification: PKU
2.19.5 Coordinates: 33−37−12.9761N / 84−27−5.3149W
2.19.6 Site Elevation: 994.5 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 5W
2.19.2 Navigation Aid Identification: ATL
2.19.5 Coordinates: 33−37−44.6758N / 84−26−6.2343W
2.19.6 Site Elevation: 1040.3 ft

General Remarks:
BE ALERT TO RY CROSSING CLEARANCES. READBACK OF ALL RY HOLDING INSTRUCTIONS IS REQUIRED.

ACFT WITH WINGSPAN GREATER THAN 214 FT SHOULD EXPECT TO USE RWYS 09L/27R AND 9R/27L.

RUNUPS ARE PERMITTED AT VARIOUS SITES; COORDINATE USE OF CITY FACILITIES, MOVEMENT AREAS, ALLOWABLE NON−MOVEMENT AREAS WITH DEPT OF AVIATION OPNS, 404−530−6620; AND COORDINATE THE USE OF THE AIRLINES' FACILITIES WITH THEM.

NO ACFT WITH WINGSPAN GEATER THAN OR EQUAL TO 225 FT MAY TAXI ON TWY M BETWEEN L14 AND L16, TWY N BETWEEN P AND SC, AND TWY N BETWEEN U AND K.

ALL ACFT WITH WINGSPANS GREATER THAN 214 FT ARE REQUIRED TO USE TAXI SPEEDS NOT GREATER THAN 15 MPH ON TWYS A, L, M, AND SJ.

RY 9L DEPARTURES CAN EXPECT INTERSECTION DEPARTURE FM M2 WITH RY REMAINING 11,440 FT (TORA/TODA) AND 10,780 (ASDA).

ALL RYS, TOUCH AND GO OPERATIONS, LOW APPROACHES, AND PRACTICE INSTRUMENT APPROACHES NOT PERMITTED.

WHEN ACFT WITH WINGSPANS GREATER THAN 214 FT ARE PRESENT ON THE FIELD, ALL OTHER ACFT MUST ADHERE TO THE TWY CENTERLINE ON TWYS L AND M, TWYS E AND F, AND TWYS SC AND SJ BETWEEN SG AND R DUE TO SEPARATION BETWEEN THE PARALLEL TWYS.

NOISE & OPNS MONITORING SYSTEM (NOMS) PROGRAM IN EFFECT; CALL THE ATLANTA DEPT OF AVIATION 770−43−NOISE OR 770−436−6473 FOR MORE INFO.

PREFERENTIAL RY USE IN EFFECT, EXPECT TO USE RYS 08R/26L, 09L/27R FOR DEPS; RYS 08L/26R, 09R/27L ARE USED PRIMARILY FOR ARRIVALS.

TAXIWAY D IS REFERRED TO AS "DIXIE".

GROUP VI ACFT (LOCKHEED GALAXY C−5; ANTONOV AN−124 & AN−125) WITH A WINGSPAN OF GREATER THAN 214 FT ARE RESTRICTED FM USING TWY F EAST OF RAMP 5 NORTH AND WEST OF TWY DIXIE.

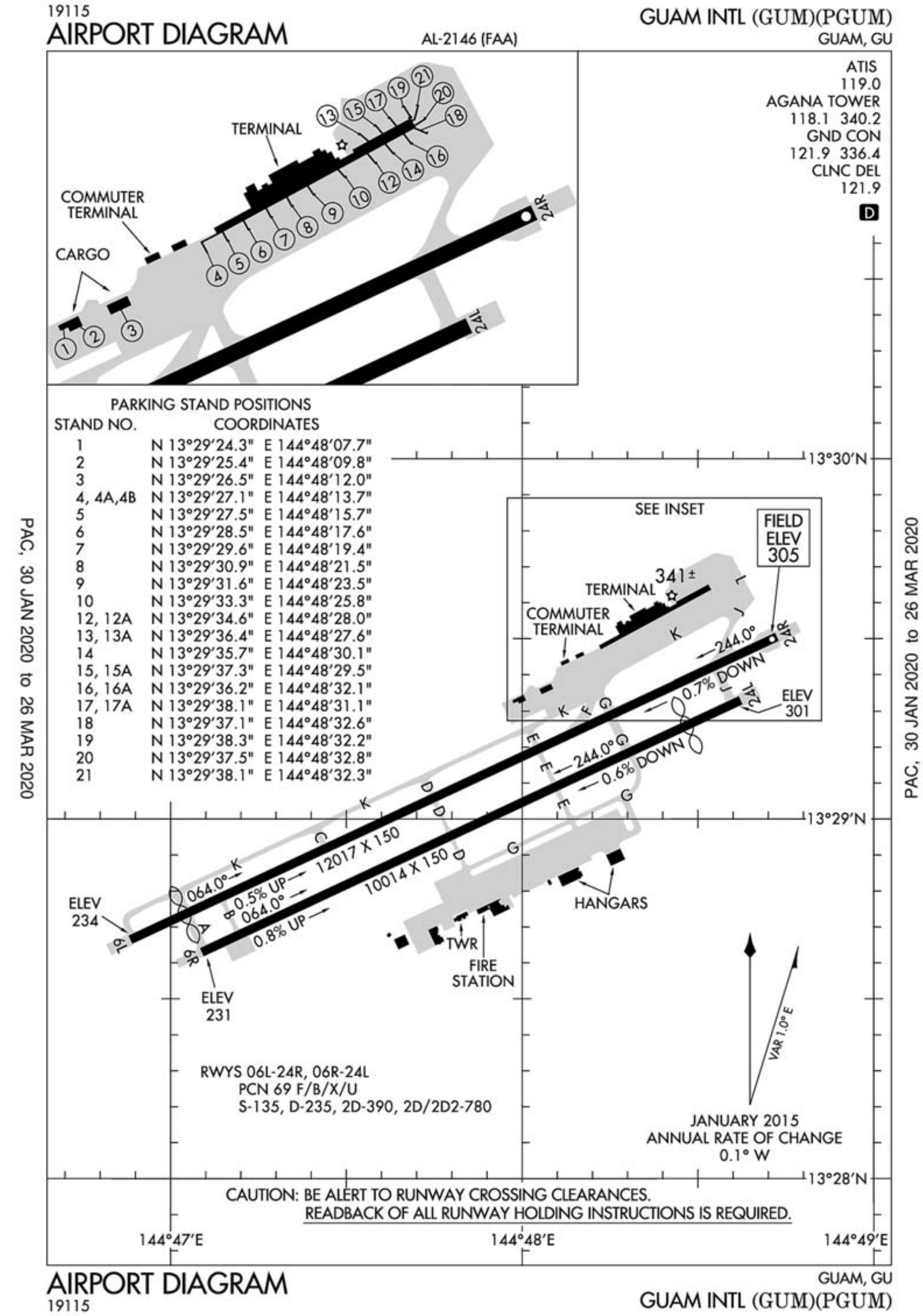
TWO ACFT WITH WINGSPANS GREATER THAN OR EQUAL TO 225 FT MAY NOT TAXISIMULTANEOUSLY ON ADJACENT PARALLEL TWYS L/M EXCEPT WEST OF L7 AT SPEEDS LESS THAN 15 MPH.

NO ACFT WITH WINGSPAN GREATER THAN 213 FT MAY PASS ANOTHER ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 225 FT ON TWY L/M EAST OF L7.

ACFT WITH WINGSPAN GREATER THAN 171 FT ARE RSTRD FROM USING TWY V. ACFT WITH WINGSPAN GREATER THAN 171 FT ARE REQUIRED TO USE TAXI SPEEDS LESS THAN 15 MPH WHEN PASSING ACFT WITH WINGSPAN GREATER THAN 214FT ON TXWY L/M (EAST OF L7).

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

Agana, Guam
Guam International
ICAO Identifier PGUM



Agana, GU
Guam Intl
ICAO Identifier PGUM

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 13−29−2.2224N / 144−47−49.6576E
2.2.2 From City: 3 miles NE of GUAM, GU
2.2.3 Elevation: 304.5 ft
2.2.5 Magnetic Variation: 2E (2000)
2.2.6 Airport Contact: TOM ADA
P.O. BOX 8770
TAMUNING, GU 96931
(671−646−0300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 4/1/1995

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 65
2.12.3 Dimensions: 12017 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−28−39.8522N / 144−46−53.1231E
2.12.6 Threshold Elevation: 233.6 ft
2.12.6 Touchdown Zone Elevation: 256.3 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 245
2.12.3 Dimensions: 12017 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−29−30.3057N / 144−48−43.4525E
2.12.6 Threshold Elevation: 304.5 ft
2.12.6 Touchdown Zone Elevation: 304.5 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 65
2.12.3 Dimensions: 10014 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−28−37.7713N / 144−47−5.3307E
2.12.6 Threshold Elevation: 231.1 ft
2.12.6 Touchdown Zone Elevation: 258 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 245
2.12.3 Dimensions: 10014 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−29−19.8177N / 144−48−37.2722E
2.12.6 Threshold Elevation: 300.7 ft
2.12.6 Touchdown Zone Elevation: 293.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take−off Run Available: 12015
2.13.3 Take−off Distance Available: 12015
2.13.4 Accelerate−Stop Distance Available: 12015
2.13.5 Landing Distance Available: 11015

2.13.1 Designation: 24R
2.13.2 Take−off Run Available: 12015
2.13.3 Take−off Distance Available: 12015
2.13.4 Accelerate−Stop Distance Available: 12015
2.13.5 Landing Distance Available: 12015

2.13.1 Designation: 06R
2.13.2 Take−off Run Available: 10014
2.13.3 Take−off Distance Available: 10014
2.13.4 Accelerate−Stop Distance Available: 10014
2.13.5 Landing Distance Available: 10014

2.13.1 Designation: 24L
2.13.2 Take−off Run Available: 10014
2.13.3 Take−off Distance Available: 10014
2.13.4 Accelerate−Stop Distance Available: 10014
2.13.5 Landing Distance Available: 9014

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 06R
2.14.2 Approach Lighting System: MALSR

2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 24L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 06L. Magnetic variation: 2E
2.19.2 ILS Identification: GUM
2.19.5 Coordinates: 13−29−38.0674N / 144−48−51.4932E
2.19.6 Site Elevation: 346.1 ft

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 2E
2.19.2 ILS Identification: GUM
2.19.5 Coordinates: 13−28−53.073N / 144−47−8.508E
2.19.6 Site Elevation: 246.1 ft

2.19.1 ILS Type: Localizer for runway 06L. Magnetic variation: 2E
2.19.2 ILS Identification: GUM
2.19.5 Coordinates: 13−29−34.7116N / 144−48−53.0934E
2.19.6 Site Elevation: 312.6 ft

2.19.1 ILS Type: DME for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: AWD
2.19.5 Coordinates: 13−29−21.74N / 144−48−48.12E
2.19.6 Site Elevation: 315.9 ft

2.19.1 ILS Type: Glide Slope for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: AWD
2.19.5 Coordinates: 13−28−38N / 144−47−15.4E
2.19.6 Site Elevation: 236.5 ft

2.19.1 ILS Type: Localizer for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: AWD
2.19.5 Coordinates: 13−29−24.23N / 144−48−46.93E
2.19.6 Site Elevation: 310.6 ft

General Remarks:
<1000’ OVRN S END & 450’ OVRN N END RWY 6L−24R.

CLASS III ACFT ARE PROHIBITED FROM MAKING ANY TURNS ONTO OR OFF TWY GOLF (SOUTH) WHILE UTILIZING TWY ECHO.

THE FIRST 500 FT OF THE LEFT SHOULDER OF RWY 24L IS NOT VISIBLE FROM THE TWR. PILOTS ARE ADVISED TO CAUTION FOR ANY PRESENCE OF WILDLIFE IN THAT AREA.

TRANSIENT ACFT PROVIDE 24 HRS ADVANCE INFORMATION TO EXEC MGR GUAM INTL ARPT AUTHORITY; 1−671−642−4455 MON−FRI 0800−1700 OR FAX 1−671−646−8823.

FOR PARKING INFORMATION ALL ACFT CTC RAMP CTL. ALL ACFT DEP TERMINAL PARKING CTC RAMP CTL FOR ENGINE START AND PUSHBACK.

ADG−VI AIRPLANES MAY DEPART ON RWY 6L AND RWY 24R WITH ACFT ON PARL TWY K AS LONG AS NO ADG−VI ACFT OCCUPIES THE PARL TWY BYD 1500 FT OF THE POINT OF TKOF ROLL.

FOR TAXG B747−8 ACFT ON TWY K FRONTING THE ACFT PRKG APN FROM GATES 5 − 16 AT THE MAIN TRML, MAX TAXG SPEED SHALL BE NO MORE THAN 15 MPH.

DRG TAXG OF THE B747−8 BTN GATES 5 − 16, ALL VEHICLES SHALL YIELD AND RMN CLEAR OF THE VEHICLE TFC PAT AND ARE RSTRD TO A MAX HGT OF 14 FT.

EFFECTIVE RY GRADIENT RY 06L 0.46% UP NE; RY 24R 0.70% DOWN SW; RY 06R 0.80 % UP NE; RY 24L 0.52% DOWN SW.

RISING TERRAIN 75 FT FM RY 24L THLD 140 FT EAST OF CNTRLN EXTENDED +8 FT.

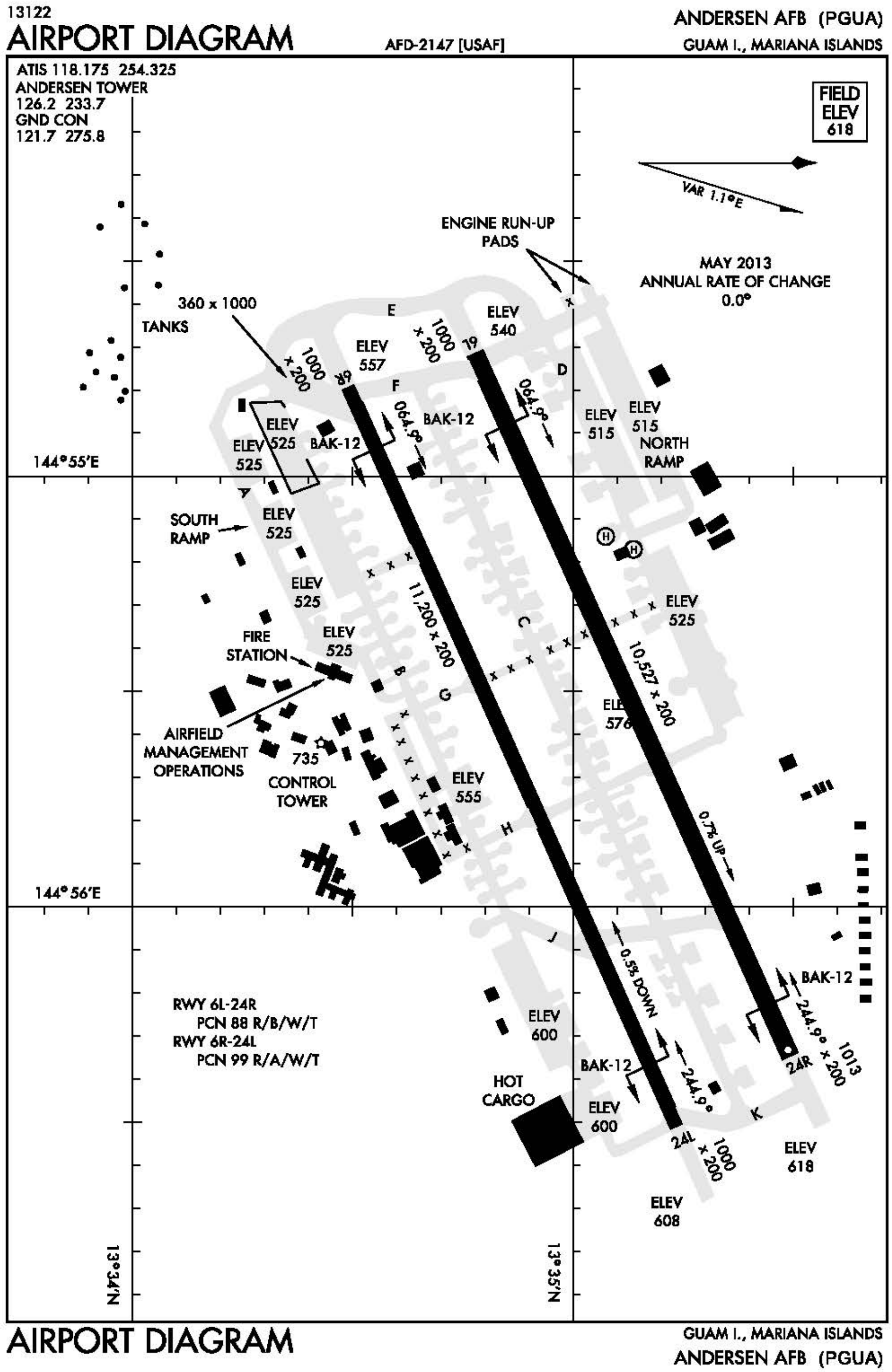
DEP VFR ACFT MAINT RY HDG TIL PAST DEP END OF RY AND REACHING 1000 FT AGL; RGT PAT 24L/R DO NOT EXCEED 1500 FT AGL IN TFC PAT.

FOR ALL ARRS, THE B747−8 AIRLINE WILL TOW THE ACFT INTO GATES 4 OR 18 FROM TWY K AND AIRLINE TO PRVD WING−WALKERS AS THE ACFT IS BEING TOWED INTO GATES 4 OR 18.

LGTD TWR 780 FT 1.3 NM ENE OF RY 24L THLD .

FOR THE B747−8, DRG RWY 24L & 24R OPS AND DUE TO JET BLAST EFCTS AT GATES 14, 16 & 18, THE B747−8 WILL BE TOWED FROM GATE 4 ON TWY K TO TWY J WITH THE ACFT PSND ON TWY J FACING TWD RWY 24R.

Andersen, Mariana Island, GU
Andersen AFB
ICAO Identifier PGUA



Andersen,Mariana Island, GU
Andersen AFB
ICAO Identifier PGUA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 13−35−1.983N / 144−55−48.205E
2.2.2 From City: 0 miles N of YIGO, GU
2.2.3 Elevation: 618 ft
2.2.5 Magnetic Variation: 2E (1980)
2.2.6 Airport Contact: MAJOR BILLY G TOWLES
3 AD
ANDERSEN AFB, GUAM, 69912
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types:
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing:
2.12.3 Dimensions: 10527 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.5 Coordinates: 13−34−49.281N / 144−54−56.32E
2.12.6 Threshold Elevation: 539.5 ft
2.12.6 Touchdown Zone Elevation: 540 ft

2.12.1 Designation: 24R
2.12.2 True Bearing:
2.12.3 Dimensions: 10527 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.5 Coordinates: 13−35−31.931N / 144−56−33.739E
2.12.6 Threshold Elevation: 617.9 ft
2.12.6 Touchdown Zone Elevation: 618 ft

2.12.1 Designation: 06R
2.12.2 True Bearing:
2.12.3 Dimensions: 11200 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.5 Coordinates: 13−34−31.17N / 144−54−59.38E
2.12.6 Threshold Elevation: 557.1 ft
2.12.6 Touchdown Zone Elevation: 557.1 ft

2.12.1 Designation: 24L
2.12.2 True Bearing:
2.12.3 Dimensions: 11200 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.5 Coordinates: 13−35−16.58N / 144−56−43E
2.12.6 Threshold Elevation: 607.5 ft
2.12.6 Touchdown Zone Elevation: 608 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 24R
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 06R
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 24L
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: SALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24R
2.14.2 Approach Lighting System: ALSF1
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 06R
2.14.2 Approach Lighting System: ALSF1
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24L
2.14.2 Approach Lighting System: SALS
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 2E
2.19.2 ILS Identification: YIG
2.19.5 Coordinates: 13−35−30.26N / 144−56−17.53E
2.19.6 Site Elevation: 593.6 ft

2.19.1 ILS Type: Localizer for runway 24R. Magnetic variation: 2E
2.19.2 ILS Identification: YIG
2.19.5 Coordinates: 13−34−43.23N / 144−54−42.5E
2.19.6 Site Elevation: 533.6 ft

2.19.1 ILS Type: Glide Slope for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: UAM
2.19.5 Coordinates: 13−34−40.04N / 144−55−7.21E
2.19.6 Site Elevation: 544.6 ft

2.19.1 ILS Type: Localizer for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: UAM
2.19.5 Coordinates: 13−35−21.67N / 144−56−54.64E
2.19.6 Site Elevation: 606.6 ft

2.19.1 ILS Type: Glide Slope for runway 24L. Magnetic variation: 2E
2.19.2 ILS Identification: PMY
2.19.5 Coordinates: 13−35−15.55N / 144−56−29.18E
2.19.6 Site Elevation: 596.1 ft

2.19.1 ILS Type: Localizer for runway 24L. Magnetic variation: 2E
2.19.2 ILS Identification: PMY
2.19.5 Coordinates: 13−34−25.7N / 144−54−46.9E
2.19.6 Site Elevation: 568.8 ft

2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 2E
2.19.2 Navigation Aid Identification: UAM
2.19.5 Coordinates: 13−35−28.39N / 144−56−47.69E
2.19.6 Site Elevation: 615.9 ft

General Remarks:
FREQUENT RAIN SHOWERS OF SHORT DURATION, EXPECT WET RWY BRAKEING ACTION.

RSTD: ALL ACFT CTC 36 WG COMD POST 90 MIN OUT AND AT 30 MIN OUT PRIOR TO ARR.

CAUTION: NSTD DSPLCD THLD MARKINGS FOR RYS 06R, 06L, AND 24R.

MISC: AIRCRAFT EXCEEDING AFLD WEIGHTS MUST REQUEST WEIGHT BEARING CAPACITY WAIVER WITH 24 HR NOTICE TO AIRFIELD OPS TO PROCESS ANY APPROVALS NEEDED. IF REQUESTS ARE NOT MADE WITHIN 24 HRS EXPECT DELAYS.

RSTD: ACFT MUST ADHERE TO PPR ARR +/− 30 MIN. ACFT WITH WINGSPANS GREATER THAN 261’ NOT AUTHORIZED.

HAZUS AIR TURB FINAL APCH RWYS 24L/24R. NO VSBY REF AVBL ON NGT TKOF BYD END RWY 6.

RSTD: PPR NR NOT RQRD FOR GDSS LOADED MSN. ALL AEROMEDICAL EVAC MSN ARE RQRD TO CTC COMD POST (DSN 366−2961, C671−366−2961) BY ANY MEANS AVAIL 3 HRS PRIOR TO ARR. ALL ACFT RQRD TO MAKE CALL 30 MIN PRIOR TO ARR.

MISC: ANDERSEN AFB DOES NOT HAVE CAPABILITY TO STORE REFRIGERATED CARGO.

RSTD: RESTRICTIONS TO FLT OPNS DUR EA BWC. MOD: NO TOUCH AND GO LDG. RSTD LOW APPCH NO LOWER THAN 200’ OR AS DETERMINED BY SOF. SEVERE: RSTD LOW APPCH NO LOWER THAN 200’ OR AS DETERMINED BY SOF. EMERG LDG AND 36 OG/CC APV DEP ONLY. PHASE I: PHASE I:1 APR − 31 JUL. PHASE II: 1 AUG − 31 MAR.

SERVICE−LGT: ARPT BCN 763 FT MSL LCTD 1.4 NM SSW OF AFLD.

MISC: ”NO VHF CAPABILITIES WITH AFLD MGMT.”

A−GEAR BAK−12 RWYS 06L & 06R 30 MIN NTC RQR.

MISC: NORTHWEST FLD−CLSD.

TWY B AND C BTN TWY J AND K CLSD DUE TO CONSTRUCTION.

RSTD: ALL OPR MUST OBTAIN APVL FR GND AND AMOPS PRIOR TO ENG START/RUN.

MISC: RWY 06L AND 06R UNDERRUNS 1000' AVBL FOR TWY/TKOF. RWY 24R UNDERRUN AVBL 500' FOR TAXI/TKOF.

BASE OPS V366−4188; FAX V366−6217.

CAUTION: USE EXTREME CAUTION FOR EXTV UAS OPS IN VCNTY OF ANDERSEN AFB.

SERVICE−FLUID: C−5 NITROGEN SVC CAPABILITY UNAVBL.

CAUTION: POTENTIAL FOR REDUCED BRAKING CAPABILITY AND/OR DIREC CTL EXISTS, PARTICULARLY DURING WET RSC FOR RWY 06L.

MAINT AVBL 0100−0400 WEEKDAY ONLY; CLOSED WEEKEND & HOL.

NO ARRESTING GEAR MARKERS LOCATED ON THE LEFT SIDE OF ALL APPROACH END BARRIERS.

MISC: ALL AIRCREWS TO RON MUST CK INTO AFLD MGT OPS AND PROVIDE POC INFO UPON ARR.

MISC: PAVEMENT PRIOR TO RY 06R AND RY 06L THLDS AVBL FOR TKOF RUN WHEN NECESSARY FOR MSN ACCOMPLISHMENT.

MISC: ATTN: ALL DRY ICE REQ MUST BE MADE THRU 734TH MS/ATOC DSN 315−366−3125/3137/3162 OR C671−366−3125/3137/3162. REQ MUST BE MADE AT LEAST 24 HR IN ADVANCE FOR ACFT LDG TUE−FRI AND 72 HR IN ADVANCE FOR ACFT LDG SAT−MON. DUR HOL, ADD 2 HR TO COORD TIME.

RSTD: PPR DSN 366−4188/1010.

PRK SPOT C40, C54, C70, N2, AND S74 CLSD.

NS ABTMT: QUIET HR 1200−2000Z (2200−0600L) DLY. NO AFTERBURNER, OR OVR FLT OF BASE AND LCL POPULATED AREAS. OTHER RESTRICTIONS BY NOTAM.

CAUTION: 47' TACAN ANTENNAE LCTD 1,300 FT NE OF RY 24L & 1,300 FT SE OF RY 24R THLDS.

MISC: AFLD MGT HAS NO COMSEC STORAGE AVBL FOR TRAN AIRCREWS. TRANS AIRCREWS CAN STORE COMSEC UP TO TOP−SECRET AT 36 WG CP.

SERVICE−A−GEAR: CONTACT CONTROL TOWER 30 MIN PRIOR FOR DEPARTURE END BAK12 CABLE CONFIGURATION. 30 MIN PRIOR NOTICE REQ FOR CHANGE CONFIGURATION. BAK12 HOUSING LCTD 317' FROM RY CENTERLINE, 217' FROM RY EDGE, MAX HEIGHT 8'. NO ARRESTING−GEAR MARKER LCTD ON LEFT SIDE OF ALL APPROACH END BARRIERS.

MISC: WX OPR H24, DSN 315−366−5230. AUTOMATED SENSOR PRVDS OBSN; AUGMENTED DUR HAZ WX & SENSOR OUTAGES. HUMAN WX OBSN VIEW OBSTD BY BLDG N−SSE. WX STN PRVDS LTD WX BRIEF SUPPORT. REMOTE WX BRIEF AVBL H24 FR 17 OWS AT DSN 315−449−8333/7950, C808−448−3809; 2 HR NTC RQRD FOR TIMELY BRIEF.

RSTD 1 OF 2: THERE WILL BE NO OVFT OF MARIANA CROW TERRITORIES BLW 1,000 FT AGL FROM

SEP−MAY. OVFT BLW 1,000 FT AGL IS ALLOWED BTN JUNE AND AUG, THE CROW NON−BREEDING SEASON.

RSTD: PPR REQ MUST BE MADE 24 HR PRIOR EXC FOR WX−EVAC OPS.

AREA BTN 1000' ROLL BAR AND THU LGT RWY 06R AND 06L UNLGTD. LAST 642' PRIOR TO THU LGT 24R UNLGTD.

ANY CREW RQRG ASSISTANCE FR AGENCIES OUTSIDE OF AFLD SUPPORT, CTC WING RECEPTIONS DSN 315−366−3464, C671−366−3464.

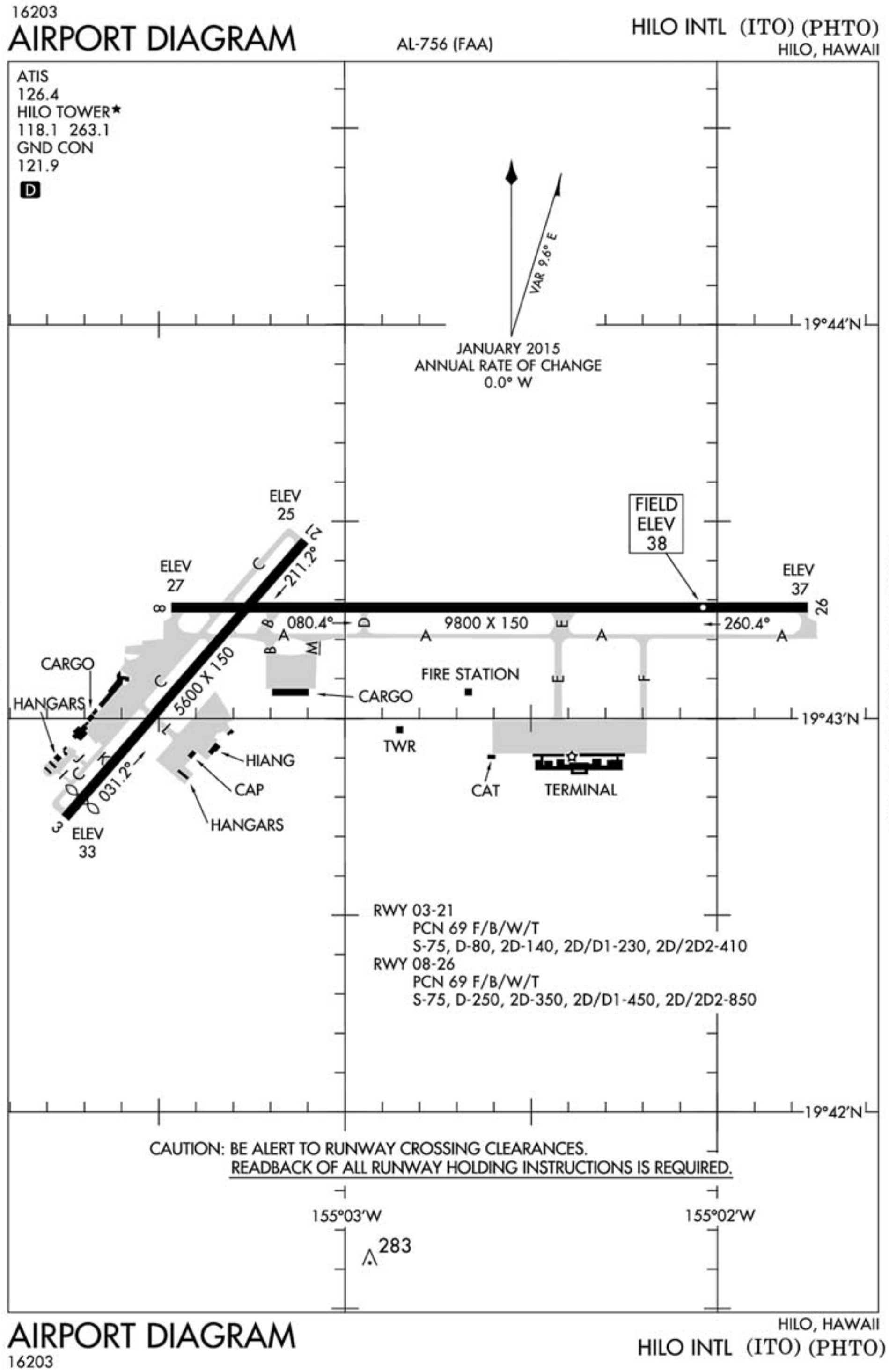
CAUTION: FAA SIZE 3 SIGNS LCTD GREATER THAN 60 FT FROM TWY EDGES TO ACCOM B−52 ACFT.

RSTD: BA ON BOTH RWYS MAY BE LESS THAN EXP DUE TO RUBBER BUILD−UP; PROBABILITY OF HYDROPLANING EXISTS.

RSTD: PPR NOT ISSUED MORE THAN 14 DAYS PRIOR TO ARR/DEP.

AFLD SIGNS ARE NOT FRANGIBLE.

Hilo, Hawaii
Hilo International
ICAO Identifier PHTO



Hilo, HI
Hilo Intl
ICAO Identifier PHTO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 19−43−12.9468N / 155−2−54.4925W
2.2.2 From City: 2 miles E of HILO, HI
2.2.3 Elevation: 37.6 ft
2.2.5 Magnetic Variation: 11E (1985)
2.2.6 Airport Contact: STEVEN J. SANTIAGO
ASSISTANT AIRPORT DISTRICT MANAGER
HILO, HI 96720 (808−961−9300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0700−2030 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 41
2.12.3 Dimensions: 5600 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 19−42−44.9639N / 155−3−44.7803W
2.12.6 Threshold Elevation: 33.3 ft
2.12.6 Touchdown Zone Elevation: 33.7 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 221
2.12.3 Dimensions: 5600 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 19−43−26.9946N / 155−3−6.4865W
2.12.6 Threshold Elevation: 25.4 ft
2.12.6 Touchdown Zone Elevation: 31.4 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9800 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 19−43−16.9328N / 155−3−27.9882W
2.12.6 Threshold Elevation: 27.3 ft
2.12.6 Touchdown Zone Elevation: 30.1 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9800 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 19−43−16.9196N / 155−1−45.4051W
2.12.6 Threshold Elevation: 37 ft
2.12.6 Touchdown Zone Elevation: 37.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take−off Run Available: 5600
2.13.3 Take−off Distance Available: 5600
2.13.4 Accelerate−Stop Distance Available: 5600
2.13.5 Landing Distance Available: 5251

2.13.1 Designation: 21
2.13.2 Take−off Run Available: 5251
2.13.3 Take−off Distance Available: 5251
2.13.4 Accelerate−Stop Distance Available: 5510
2.13.5 Landing Distance Available: 5510

2.13.1 Designation: 08
2.13.2 Take−off Run Available: 9800
2.13.3 Take−off Distance Available: 9800
2.13.4 Accelerate−Stop Distance Available: 9800
2.13.5 Landing Distance Available: 9800

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 9800
2.13.3 Take−off Distance Available: 9800
2.13.4 Accelerate−Stop Distance Available: 9800
2.13.5 Landing Distance Available: 9800

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: 21
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 08
2.14.2 Approach Lighting System: ODALS
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 119.7
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 120.25
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 323
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: ATIS
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.1
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 263.1
2.14.5 Hours of Operation: 0600−2200

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 26. Magnetic variation: 11E
2.19.2 ILS Identification: ITO
2.19.5 Coordinates: 19−43−13.742N / 155−3−39.505W
2.19.6 Site Elevation: 39 ft

2.19.1 ILS Type: Glide Slope for runway 26. Magnetic variation: 11E
2.19.2 ILS Identification: ITO
2.19.5 Coordinates: 19−43−20.887N / 155−1−58.099W
2.19.6 Site Elevation: 32.5 ft

2.19.1 ILS Type: Localizer for runway 26. Magnetic variation: 11E
2.19.2 ILS Identification: ITO
2.19.5 Coordinates: 19−43−16.933N / 155−3−38.784W
2.19.6 Site Elevation: 25.8 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 11E
2.19.2 Navigation Aid Identification: ITO
2.19.5 Coordinates: 19−43−16.862N / 155−0−39.435W
2.19.6 Site Elevation: 23 ft

General Remarks:

ATCT CTLS ENTRY/EXIT TFC ON TWYS F&E TO EAST TRML RAMP.

BE ALERT OCNL BIRD FLOCKS ON ARPT AND IN FLT ACROSS RWY 08/26 AND 03/21.

PPR FROM ARPT MGR FOR TRANSIENT PARKING.

FOR CD IF UNA TO CTC ON FSS FREQ, CTC HONOLULU CONTROL FACILITY AT 808−840−6262.

181’ LGTD SMOKE STACK 1/2 SM SOUTH OF FLD.

RY 08/26 SINGLE−BELLY TWIN TANDEM (SBTT) GWT 450,000 LBS.

RY 03/21 SINGLE−BELLY TWIN TANDEM (SBTT) GWT 230,000 LBS.

NOISE ABATEMENT: AVOID OVERFLIGHT OF NOISE SENSITIVE RESIDENTIAL AREAS N, W AND SW OF AIRPORT.

RY 3/21 CLSD TO TURBINE ACFT 1800−0600.

RWY 08 PVD 1325’ MKD BY CHEVRONS, UNUSBL FOR LNDG/TKOF/OVRN/STY; CANNOT BE USED IN COMPUTING TKOF DATA.

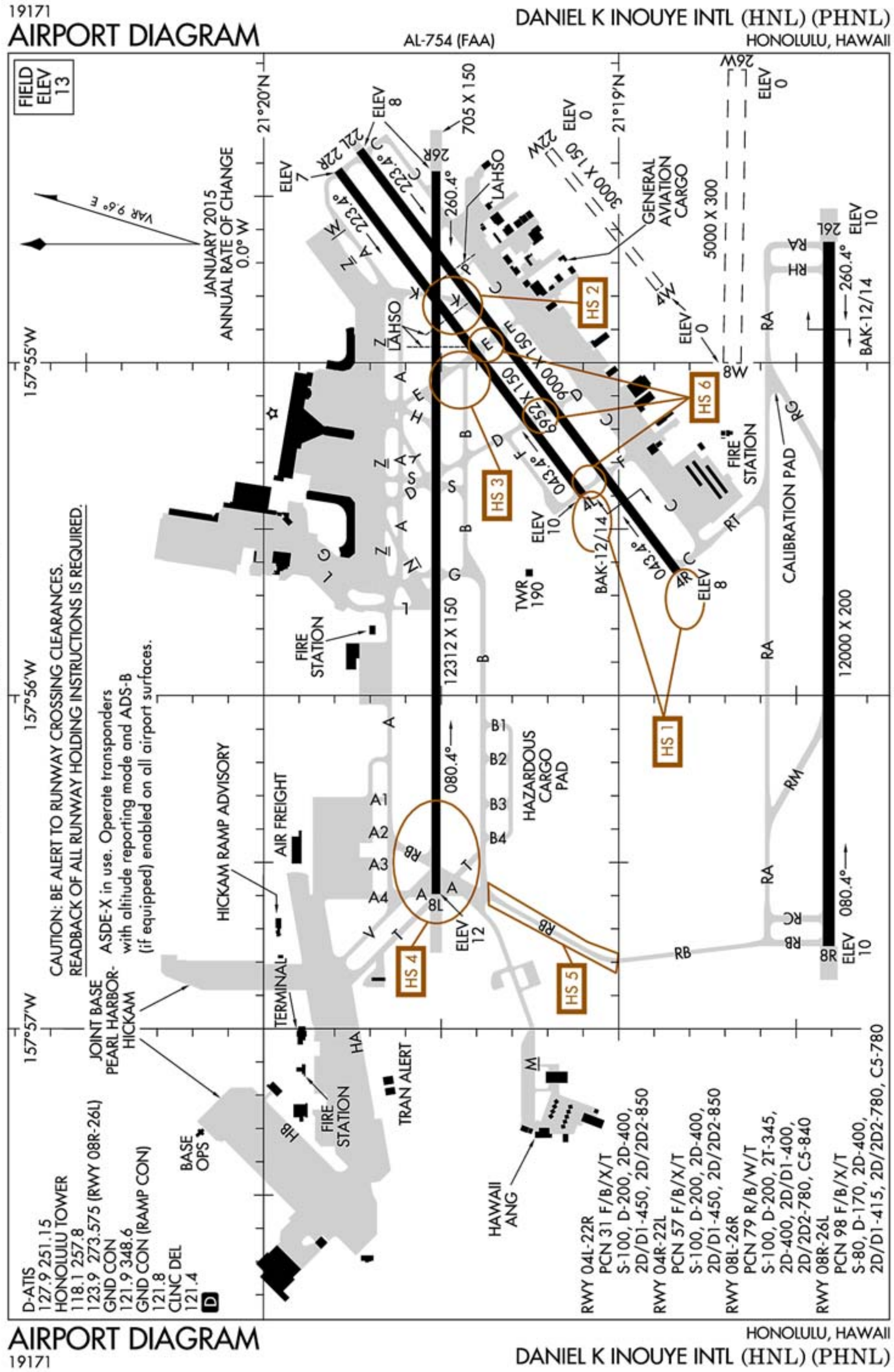
DIVISION 1.1, 1.2, 1.3 EXPLOSIVES PROHIBITED.

(A70A) JET FUEL AVBL MON−SAT 0800−1700 CALL (808) 935−6881/6122 OR 961−6601.

(E93) NO MKD PAD, HEL OPER FM FBO HANGER AREA.

PPR FROM AIRPORT MANAGER FOR TRANSPORTATION OF DIVISION 1.4 EXPLOSIVES AND HAZARDOUS MATERIAL IN OR OUT OF AIRPORT.

Honolulu, Hawaii
Honolulu International
ICAO Identifier PHNL



Honolulu, HI
Honolulu Intl
ICAO Identifier PHNL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 21−19−4.179N / 157−55−12.9458W
2.2.2 From City: 3 miles NW of HONOLULU, HI
2.2.3 Elevation: 12.9 ft
2.2.5 Magnetic Variation: 11E (1990)
2.2.6 Airport Contact: ROY SAKATA
300 RODGERS BLVD. #12
HONOLULU, HI 96819
(808−836−6533)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A,A1+,B
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 53
2.12.3 Dimensions: 6952 ft x 150 ft
2.12.4 PCN: 31 F/B/X/T
2.12.5 Coordinates: 21−19−5.9941N / 157−55−23.9494W
2.12.6 Threshold Elevation: 9.8 ft
2.12.6 Touchdown Zone Elevation: 10.3 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 233
2.12.3 Dimensions: 6952 ft x 150 ft
2.12.4 PCN: 31 F/B/X/T
2.12.5 Coordinates: 21−19−47.4515N / 157−54−25.2248W
2.12.6 Threshold Elevation: 7.4 ft
2.12.6 Touchdown Zone Elevation: 9.7 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 53
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 57 F/B/X/T
2.12.5 Coordinates: 21−18−50.1032N / 157−55−37.6841W
2.12.6 Threshold Elevation: 8 ft
2.12.6 Touchdown Zone Elevation: 8.6 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 233
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 57 F/B/X/T
2.12.5 Coordinates: 21−19−43.7628N / 157−54−21.6483W
2.12.6 Threshold Elevation: 8.3 ft
2.12.6 Touchdown Zone Elevation: 8.6 ft

2.12.1 Designation: 04W
2.12.2 True Bearing: 51
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 21−18−53.09N / 157−54−46.44W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 22W
2.12.2 True Bearing: 231
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 21−19−11.8N / 157−54−21.78W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 89
2.12.3 Dimensions: 12312 ft x 150 ft
2.12.4 PCN: 79 R/B/W/T
2.12.5 Coordinates: 21−19−30.8825N / 157−56−35.6551W
2.12.6 Threshold Elevation: 11.6 ft
2.12.6 Touchdown Zone Elevation: 12.9 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12312 ft x 150 ft
2.12.4 PCN: 79 R/B/W/T
2.12.5 Coordinates: 21−19−30.8832N / 157−54−25.4307W
2.12.6 Threshold Elevation: 8.4 ft
2.12.6 Touchdown Zone Elevation: 8.6 ft

2.12.1 Designation: 08R

2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.4 PCN: 98 F/B/X/T
2.12.5 Coordinates: 21−18−24.4935N / 157−56−45.059W
2.12.6 Threshold Elevation: 10 ft
2.12.6 Touchdown Zone Elevation: 10 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.4 PCN: 98 F/B/X/T
2.12.5 Coordinates: 21−18−24.4868N / 157−54−38.15W
2.12.6 Threshold Elevation: 10 ft
2.12.6 Touchdown Zone Elevation: 10 ft

2.12.1 Designation: 08W
2.12.2 True Bearing: 91
2.12.3 Dimensions: 5000 ft x 300 ft
2.12.4 PCN:
2.12.5 Coordinates: 21−18−40.85N / 157−55−0W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 26W
2.12.2 True Bearing: 271
2.12.3 Dimensions: 5000 ft x 300 ft
2.12.4 PCN:
2.12.5 Coordinates: 21−18−39.98N / 157−54−7.13W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 6952
2.13.3 Take−off Distance Available: 6952
2.13.4 Accelerate−Stop Distance Available: 6952
2.13.5 Landing Distance Available: 6952

2.13.1 Designation: 22R
2.13.2 Take−off Run Available: 6952
2.13.3 Take−off Distance Available: 6952
2.13.4 Accelerate−Stop Distance Available: 6952
2.13.5 Landing Distance Available: 6952

2.13.1 Designation: 04R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 8950
2.13.5 Landing Distance Available: 8950

2.13.1 Designation: 22L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 8937
2.13.5 Landing Distance Available: 8937

2.13.1 Designation: 04W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 22W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 12300
2.13.3 Take−off Distance Available: 12300
2.13.4 Accelerate−Stop Distance Available: 12300
2.13.5 Landing Distance Available: 12300

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 12300
2.13.3 Take−off Distance Available: 12300
2.13.4 Accelerate−Stop Distance Available: 12300
2.13.5 Landing Distance Available: 12300

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 08W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 26W
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:

2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 04W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 08L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V6L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 26W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ADZY (HONOLULU RAMP ADZY)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation:

2.14.1 Service Designation: ADZY (HICKAM RAMP ADZY)
2.14.3 Channel: 133.6
2.14.5 Hours of Operation:

2.14.1 Service Designation: ADZY (HICKAM RAMP ADZY)
2.14.3 Channel: 254.4
2.14.5 Hours of Operation:

2.14.1 Service Designation: ANG OPS
2.14.3 Channel: 293.7
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (WEST)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (WEST)
2.14.3 Channel: 269
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 121.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 281.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (ARR E/NW DEP NW)
2.14.3 Channel: 119.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (EAST)
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (ARR E/NW DEP

NW)
2.14.3 Channel: 239.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (EAST)
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: COMD POST
2.14.3 Channel: 141.8
2.14.5 Hours of Operation:

2.14.1 Service Designation: COMD POST
2.14.3 Channel: 292.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 127.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 251.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KEAHI DP
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 08R/26L)
2.14.3 Channel: 123.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 08R/26L)
2.14.3 Channel: 273.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MOLOKAI DP
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MOLOKAI DP
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS (SHAKA OPS)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation:

2.14.1 Service Designation: OPS (SAC OPS)
2.14.3 Channel: 311
2.14.5 Hours of Operation:

2.14.1 Service Designation: OPS (SHAKA OPS)
2.14.3 Channel: 349.4
2.14.5 Hours of Operation:

2.14.1 Service Designation: PALAY DP
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PALAY DP
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PTD (HICKAM)
2.14.3 Channel: 133.6
2.14.5 Hours of Operation:

2.14.1 Service Designation: PTD
2.14.3 Channel: 372.2
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 11E
2.19.2 ILS Identification: IUM
2.19.5 Coordinates: 21−19−47.8614N / 157−54−11.0785W
2.19.6 Site Elevation: 20 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 11E
2.19.2 ILS Identification: IUM
2.19.5 Coordinates: 21−18−53.99N / 157−55−26.9W
2.19.6 Site Elevation: 5.9 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 11E
2.19.2 ILS Identification: IUM
2.19.5 Coordinates: 21−19−49.82N / 157−54−13.05W
2.19.6 Site Elevation: 5.3 ft

2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.5 Coordinates: 21−19−27.8772N / 157−54−17.1739W
2.19.6 Site Elevation: 20 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.5 Coordinates: 21−19−26.6745N / 157−56−24.533W
2.19.6 Site Elevation: 6.7 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.5 Coordinates: 21−19−30.8778N / 157−54−14.7503W
2.19.6 Site Elevation: 5.6 ft

2.19.1 ILS Type: Outer Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.5 Coordinates: 21−19−29.7N / 158−2−55.9W
2.19.6 Site Elevation: 42 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 11E
2.19.2 ILS Identification: EPC
2.19.5 Coordinates: 21−19−36.957N / 157−54−25.903W
2.19.6 Site Elevation: 21 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 11E
2.19.2 ILS Identification: EPC
2.19.5 Coordinates: 21−19−35.0651N / 157−54−28.2922W
2.19.6 Site Elevation: 6.7 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 11E
2.19.2 Navigation Aid Identification: HNL
2.19.5 Coordinates: 21−18−29.9555N / 157−55−49.4786W
2.19.6 Site Elevation: 10 ft

General Remarks:

MILITARY RSTD: JBPH−H IS PPR TO ALL NON−TFWC MSN, AMC TRNG MSN AND KC−135 8 UN & 8 EN MSN CALL 735TH MOC AT DSN (315) 499−6970 FOR PPR. ALL AMC PPR WILL BE COORD MON−FRI 1700−0400Z ONLY. ALL NON−AMC ACFT SUCH AS FOREIGN, SISTER SVC, TRAN ACFT OR KC−135 AND, QDN, QEN, PEN, KEN, CJZ, DV1, DV7, DC5, AND C−130 MSN MUST CTC 15 OSS/OSA (AMOPS) AT DSN (315) 449−0046 FOR PPR. ALL PPR WILL BE APVD NO EARLIER THAN 72 HR BUT NO LATER THAN 24 HR PRIOR.

CAUTION: DURING PERIODS OF REPEATED PRECIPITATION ANTICIPATE WET RY CONDTIONS, IF CURRENT CONDITIONS RQR CONFIRMATION CTC HONOLULU TWR ON INITIAL CONTACT.

CAUTION: RECREATIONAL BOATING ACTIVITIES ON AND INVOF WATERWAYS.

MILITARY: ALL MIL ACFT RQR CSTMS/AG/IMG INSPECTION MUST CTC 15WG COMMAND POST OR IF AMC CTC HICKAM AMCC, NLT 3 HRS PRIOR TO ARR WITH DEPARTURE LOCATION, EST BLOCK TIME, NR OF AIRCREW, CIV/MIL PAX, FOREIGN NATIONALS, AND DV CODES.*

ALL JET ACFT CTC RAMP CONTROL PRIOR TO ENGINE START AT GATE OR HARD STAND.

MILITARY CAUTION: NO FIGHTER TRANSIENT SUPPORT AVAILABLE IN ACCORDANCE WITH ACC LSET FLASH SAFETY 06–02. TRANSIENT FIGHTER UNITS SHOULD PROVIDE THEIR OWN MAINTENANCE SUPPORT.

BIRD STRIKE HAZARD ALL RUNWAYS.

MILITARY/COMMUNICATIONS: BEDTIME (ALL CORONET W TANKERS USE 311.0 FOR TANKER−FTR INTER−PLANE ON LAUNCH DAY. AFT DUTY HR DSN 448−8888 613AOC/AMD, FLT MGMT).

MILITARY RSTD: TWR APVL REQUIRED TO USE TWY KILO FROM RY 4R. TWY RA HOLD SHORT APCH ZONE RWY 04L/R AT HOLD LINE. TWY P CLSD TO ACFT OVER 12,500 LB.

PPR FM AMGR FOR TRANSPORATION OF CLASS A OR B EXPLOS IN AND/OR OUT OF HNL.

TFC PAT OVHD ALT 2000 FT, RESTRICTED TO HIANG AND SENTRY ALOHA ACFT.

APRON TAXILANE 2 EAST END 360 FT CLSD.

MILITARY MISC: HICKAM BASE WX STN OPR 1400−0800Z MON−FRI, FLEXING TO H24 FOR SGFNT WX EVENTS; FOR BRIEFING SUPPORT AFTER DUTY HRS/WKEND/HOL CTC STBY FONE C808−658−9961.

MILITARY CAUTION: FOD HAZARD EXISTS ON ALL MOVEMENT AREAS E OF TWY S. FIGHTER AIRCRAFT EXERCISE EXTREME CTN WHEN TAXIING.

MILITARY MISC 2 OF 2: WAIVERS WILL BE GRANTED ON EXTREME NEC. IF SHORT NOTICE MSN ESSENTIAL WAIVERS ARE NEC, CTC 15OG/CC BY FONE THRU 15 WG COMD POST(15 WG/CP) OR 154 OG/CC FOR HIANG AIRCRAFT. 15 WG COMMAND POST WILL PASS APVL TO HICKAM FLT SVC AND HICKAM RAMP ADZY.

MILITARY RSTD: MIL ACFT OPR DUR BIRD WATCH COND MODERATE (INITIAL TKOF OR FULL STOP LDG ONLY, NO MULTIPLE IFR/VFR APCH) AND SEVERE (TKOF AND LDG PROH WO 15 OG/CC APVL OR 154 OG/CC APVL FOR HIANG ACFT) CTC HIK RAMP, PTD, 15 WG COMD POST, 735 AMC COMD POST, 154 WG COMD POST FOR CURRENT COND.

MILITARY A−GEAR: HOOK MB100(B) LCTD 200 FT FM THLD RY 26R.

MILITARY TRAN ALERT: 15 WG CAN PROVIDE EQPT BUT CREWS MUST PROVIDE OWN PERS WHEN NEEDED.

MILITARY: TO MINIMIZE FOD POTENTIAL, ALL AIRCRAFT SHOULD USE MINIMUM THRUST, SPCLY OUTBOARD ENGINES, WHEN TAXIING PAST THE F−22 ALERT FAC ON TWY T.

TWYS G ADG V AND BELOW POWER IN W/PPR.

MILITARY: ALL ACFT INBD TO HICKAM SHOULD ADDRESS FLT PLAN TO PHIKYXYX.

MILITARY CAUTION: A FOD HAZARD EXISTS ON ALL TAXIWAYS AND RUNWAYS BUT ESPECIALLY ON RUNWAY 4L/22R AND TAXIWAYS NORTH OF RUNWAY 8L/26R.

MILITARY MISC: AFLD OPS DSN 449−0046/0048 FAX DSN 449−7624.

RYS 04W/22W AND 08W/26W RECREATIONAL BOATING ACTIVITIESON AND INVOF WATERWAYS.

RWYS CLSD EVERY MONTH AS FOLLOWS: RWY 04R/22L 1730−2030Z FIRST TUE; RWY 08R/26L 1645−1845Z SECOND TUE; RWY 08L/26R 1730−2030Z THIRD TUE.
MILITARY RSTD: UPON ARRIVAL, CREWS WILL PROCEED DIRECTLY TO COMMAND POST (BLDG 2050)

AND COMPLETE AN OUTBOUND SETUP SHEET TO FACILITATE DEPARTURE REQUIREMENTS.

MILITARY MISC 1 OF 2: DUE TO SENSITIVITIES OF CITIZENS, FTR ACFT DEP ONLY AUTHORIZED FR 1700−0700Z MON−SAT, AND 1800−0700Z SUN AND HOL. ALL REQ FOR WAIVERS WILL BE SENT TO THE 15/OG/CC OR 154 OG/CC FOR HIANG AIRCRAFT AT LEAST 5 WORKING DAYS IN ADVANCE.

MILITARY MISC: NO COMSEC MATERIAL AVBL THRU HICKAM AIRFIELD OPS.

DUE TO NON−VISIBILITY TWR UNABLE TO DETERMINE IF THE FLWG AREAS ARE CLEAR OF OBSTRUCTIONS AND/OR TFC: PORTIONS OF TWY RB BTN TWY B & RY 08R; PORTIONS OF INTER−ISLAND ACFT PARKING RAMP.

RMN AT LEAST 1 MILE OFF SHORE OF WAIKIKI DIAMOND HEAD KOKO HEAD & EWA BEACH. ARR RWY 08L; FLY ILS APCH PROC OR A CLOSE−IN BASE LEG RMNG OVER CNTR OF PEARL HARBOR CHNL. ARR 26L/R; RNM AT TFC PAT ALTS AS LONG AS PSBL BFR BGNG DSCNT FOR LNDG.

MILITARY RSTD: ALL TRAN ACFT NOT ON AN AMC/TWCF MSN AND HOME STN ACFT TERMINATING AT JBPH−H, WILL PROVIDE A 3 HR OUT CALL (COMM 808−448−6900) AS WELL AS A 20−30 MIN OUT CALL ON 292.5 TO THE 15 WG/CP (KOA CONTROL).

DUE TO LOCATION OF ATCT, CONTROLLERS UNABLE TO DETERMINE WHETHER ACFT ARE ON CORRECT FINAL APCH TO RYS 04L−04R AND 22L−22R.

MILITARY SERVICE−A−GEAR: RWY 4R/22L AND 8R/26L SFC GROOVED WITHIN 10 FT OF A−G SYSTEM. POTENTIAL FOR FTR ACFT TAIL HOOK SKIP EXISTS.

MILITARY SERVICE−FUEL: A++ (MIL; AVBL H24).

WIDE BODY AND 4 ENGINE TBJTS LDG ON RY 04R ROLL TO END OF RY, NO LEFT TURN AT TWY K WO APVL.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

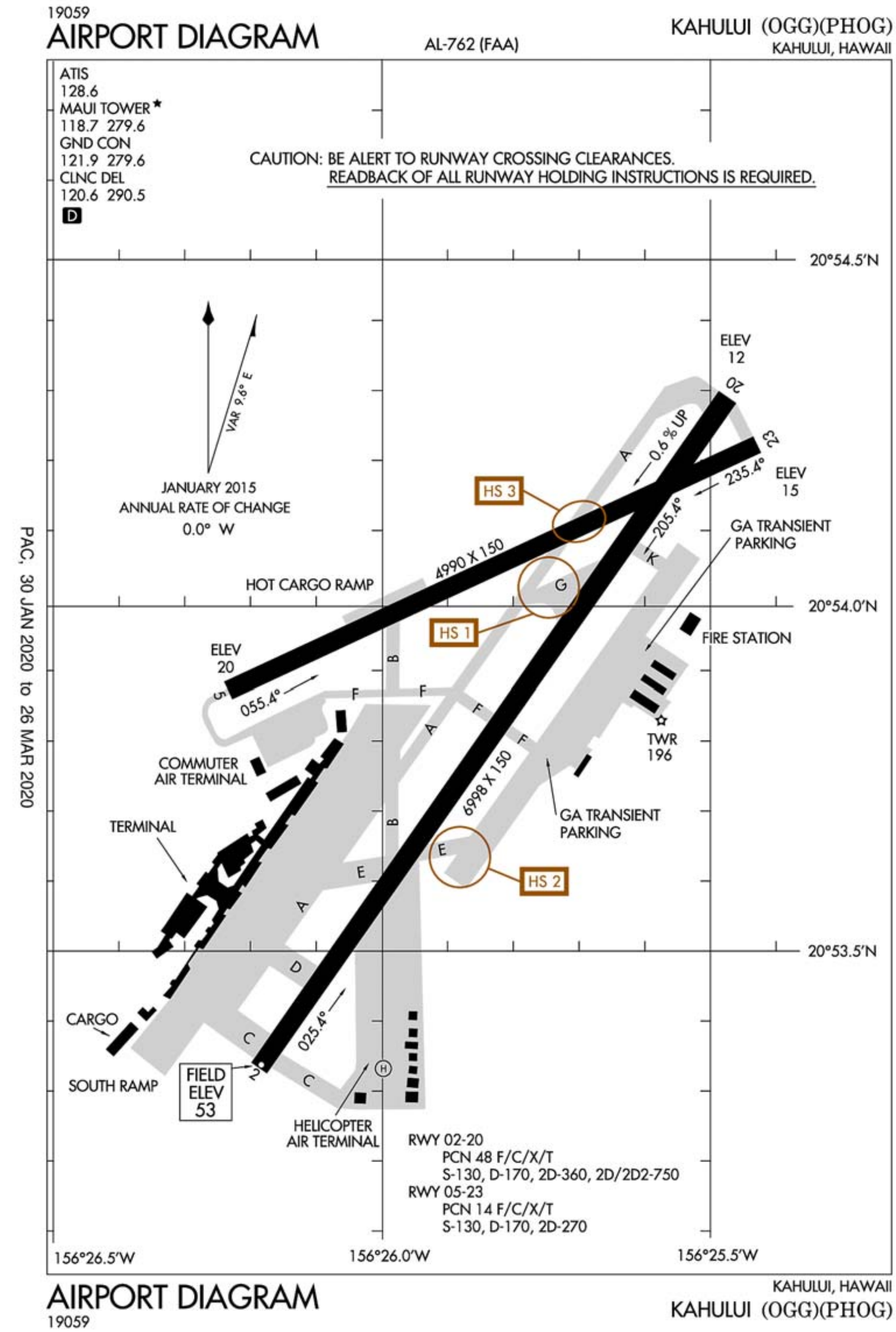
MILITARY: ALL MIL ACFT WITH VIP CODE 7 OR ABV CTC 15WG COMMAND POST OR RELAY THRU HF/SSB AWY 1 HR OUT TO CFM BLOCKTIME.

MILITARY REMARKS: SEE FLIP AP/3 SUPPLEMENTARY APRT INFO, RTE AND AREA RSTD, AND OAKLAND FIR FLT HAZ.

MILITARY MISC (2 OF 2 CONT'D): LTD WX BRIEF SUPPORT.REMOTE FLT WX BRIEFINGS CTC 17TH WX SQ H24, DSN 315−449−7950/8333, FAX DSN 315−449−8336; 2 HR PN RQR FOR TIMELY BRIEF.OFFICIAL OBSN TAKEN BY FAA. COOPERATIVE WX WATCH PROCEDURES DO NOT EXIST BTW WX AND ATC.

APRON TAXILANE 6 BTWN TWY C AND SOUTH RAMP CLSD EXCEPT GA/FIXED WING LOADING/UNLOADING ONLY.

Kahului, Hawaii
Kahului
ICAO Identifier PHOG



Kahului, HI
Kahului
ICAO Identifier PHOG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 20−53−55.151N / 156−25−49.636W
2.2.2 From City: 3 miles E of KAHULUI, HI
2.2.3 Elevation: 53.3 ft
2.2.5 Magnetic Variation: 11E (1990)
2.2.6 Airport Contact: MARVIN MONIZ
1 KAHULUI AIRPORT ROAD, UNIT 5
KAHULUI, HI 96732 (808−872−3808)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 35
2.12.3 Dimensions: 6998 ft x 150 ft
2.12.4 PCN: 48 F/C/X/T
2.12.5 Coordinates: 20−53−20.9052N / 156−26−10.7511W
2.12.6 Threshold Elevation: 53.2 ft
2.12.6 Touchdown Zone Elevation: 53.3 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 215
2.12.3 Dimensions: 6998 ft x 150 ft
2.12.4 PCN: 48 F/C/X/T
2.12.5 Coordinates: 20−54−17.7394N / 156−25−28.4459W
2.12.6 Threshold Elevation: 12.2 ft
2.12.6 Touchdown Zone Elevation: 25 ft

2.12.1 Designation: 05
2.12.2 True Bearing: 65
2.12.3 Dimensions: 4990 ft x 150 ft
2.12.4 PCN: 14 F/C/X/T
2.12.5 Coordinates: 20−53−52.889N / 156−26−13.5412W
2.12.6 Threshold Elevation: 20.1 ft
2.12.6 Touchdown Zone Elevation: 20.1 ft

2.12.1 Designation: 23
2.12.2 True Bearing: 245
2.12.3 Dimensions: 4990 ft x 150 ft
2.12.4 PCN: 14 F/C/X/T
2.12.5 Coordinates: 20−54−13.7618N / 156−25−25.8339W
2.12.6 Threshold Elevation: 15.4 ft
2.12.6 Touchdown Zone Elevation: 16.8 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 125 ft x 125 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 02
2.13.2 Take−off Run Available: 6995
2.13.3 Take−off Distance Available: 6995
2.13.4 Accelerate−Stop Distance Available: 6995
2.13.5 Landing Distance Available: 6995

2.13.1 Designation: 20
2.13.2 Take−off Run Available: 6995
2.13.3 Take−off Distance Available: 6995
2.13.4 Accelerate−Stop Distance Available: 6995
2.13.5 Landing Distance Available: 6995

2.13.1 Designation: 05
2.13.2 Take−off Run Available: 4990
2.13.3 Take−off Distance Available: 4990
2.13.4 Accelerate−Stop Distance Available: 4990
2.13.5 Landing Distance Available: 4990

2.13.1 Designation: 23
2.13.2 Take−off Run Available: 4990
2.13.3 Take−off Distance Available: 4990
2.13.4 Accelerate−Stop Distance Available: 4990
2.13.5 Landing Distance Available: 4990

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:

2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 20
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 05
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 23
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P IC (SOUTH)
2.14.3 Channel: 119.5
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: APCH/P DEP/P IC (NORTH)
2.14.3 Channel: 120.2
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: APCH/P DEP/P IC (SOUTH)
2.14.3 Channel: 225.4
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: APCH/P DEP/P IC (NORTH)
2.14.3 Channel: 322.4
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: ATIS
2.14.3 Channel: 128.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 120.6
2.14.5 Hours of Operation: 0600−2300 (MAR−NOV) 0600−2400 (NOV−MAR)

2.14.1 Service Designation: CD/P
2.14.3 Channel: 290.5
2.14.5 Hours of Operation: 0600−2300 (MAR−NOV) 0600−2400 (NOV−MAR)

2.14.1 Service Designation: CLASS C (SOUTH)
2.14.3 Channel: 119.5
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: CLASS C (NORTH)
2.14.3 Channel: 120.2
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: CLASS C (SOUTH)
2.14.3 Channel: 225.4
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: CLASS C (NORTH)
2.14.3 Channel: 322.4
2.14.5 Hours of Operation: 0600−2300

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 0600−2300 (MAR−NOV) 0600−2400 (NOV−MAR)

2.14.1 Service Designation: GND/P
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 0600−2300 (MAR−NOV) 0600−2400 (NOV−MAR)

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.7
2.14.5 Hours of Operation: 0600−2300 (MAR−NOV) 0600−2400 (NOV−MAR)

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 0600−2300 (MAR−NOV)

0600−2400 (NOV−MAR)

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 02. Magnetic variation: 11E
2.19.2 ILS Identification: OGG
2.19.5 Coordinates: 20−54−27.3738N / 156−25−23.8089W
2.19.6 Site Elevation: 5.4 ft

2.19.1 ILS Type: Glide Slope for runway 02. Magnetic variation: 11E
2.19.2 ILS Identification: OGG
2.19.5 Coordinates: 20−53−29.55N / 156−25−59.225W
2.19.6 Site Elevation: 47.7 ft

2.19.1 ILS Type: Localizer for runway 02. Magnetic variation: 11E
2.19.2 ILS Identification: OGG
2.19.5 Coordinates: 20−54−25.9158N / 156−25−22.362W
2.19.6 Site Elevation: 8.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 11E
2.19.2 Navigation Aid Identification: OGG
2.19.5 Coordinates: 20−54−23.3011N / 156−25−15.4215W
2.19.6 Site Elevation: 22.4 ft

General Remarks:
ACCESS TO HELIPAD FM TWY C ONLY.

ACFT OVR 30,000 LB LDG ON RY 02/20 UNA TO TURN OFF ONTO RY 05/23 DUE TO PAVEMENT COND.

MILITARY HELICOPTER OPS RESTRICTED TO THE SW CORNER OF HOT CARGO APRON (HAZMAT) N OF RWY 05−23.

MIGRATORY BIRD ACTIVITY BLO 1500 FT WI 5 NM RADIUS OF ARPT DURG AUG−MAY.

570’ LGTD TWR APRX 3 MI. W.

RY 02/20 SINGLE−BELLY TWIN TANDEM (SBTT) GWT 460,000 LBS.

TSNT PARKING LCTD ON NE SECTION OF E RAMP.

PPR FOR FIXED WING ACFT OPNS ON HELIPAD DURG NON−OPERATIONAL HRS CALL (808) 872−3880 5:15A−10:00P.

COMMUTER TERMINAL RAMP RESTRICTED TO ACFT 140000 LBS OR LESS.

DUE TO NONVISIBILITY ATCT UNABLE TO DETERMINE IF FLWG AREA IS CLEAR OF OBSTNS AND/OR TFC: PORTION OF TWY F BTN THE COMMUTER AIR TERMINAL & APCH END RY 05.

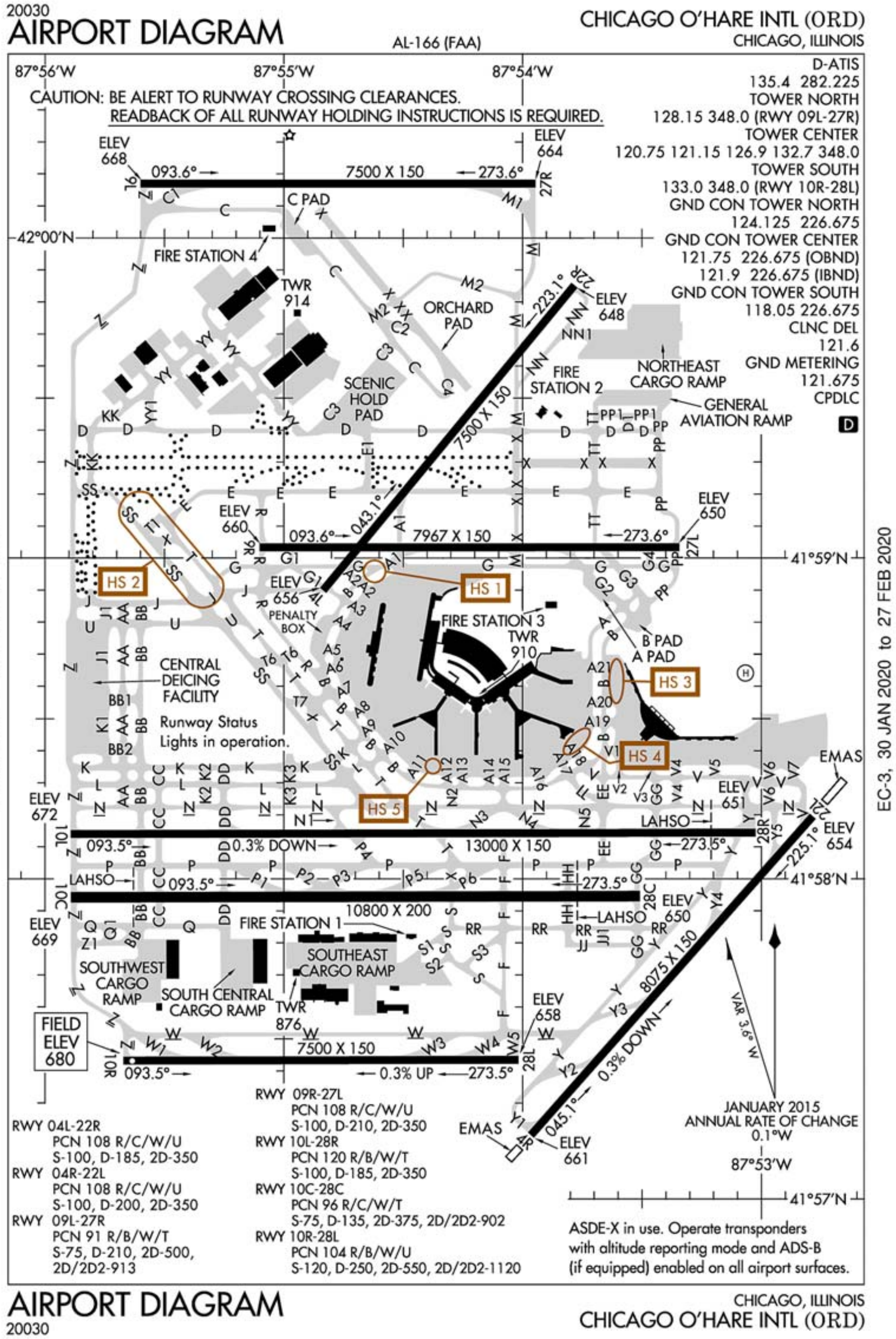
DUE TO NONVISIBILITY ATCT UNABLE TO PROVIDE ATC SVC BTN ACFT & GROUND VEHICLES ON THE COMMUTER AIR TERMINAL S OF TWY F AND THE HELICOPTER AIR TERMINAL E OF APCH END RY 02.

AREA E OF APCH END RY 02 DESIGNATED AS HELICOPTER OPER AREA. NO FIXED WING ACFT MAY OPER ON HELIPAD DURG OPNL HRS SR−SS.

RAMP AREA E SIDE RY 02 UNDER STATE AUTHORITY. FAA NOT RESPONSIBLE FOR DIRECTION & CTL GND TFC IN AREA.

24 HRS PPR FOR DIVISION 1.1,1.2,1.3 EXPLOSIVES AND 4 HRS PPR FOR OTHER HAZARDOUS CARGO IN/OUT OF ARPT; CTC (808) 872−3830 0745−1630 OTHER TIMES (808) 872−3888.

Chicago, Illinois
Chicago−O'Hare International
ICAO Identifier KORD



Chicago, IL
Chicago O'Hare Intl
ICAO Identifier KORD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41−58−28.279N / 87−54−23.75W
2.2.2 From City: 14 miles NW of CHICAGO, IL
2.2.3 Elevation: 680 ft
2.2.5 Magnetic Variation: 3W (2010)
2.2.6 Airport Contact: JAMIE RHEE
P.O. BOX 66142, 10510 WEST ZEMKE RO
CHICAGO, IL 60666 (773−686−8060)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 39
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−58−53.9601N / 87−54−50.1039W
2.12.6 Threshold Elevation: 655.7 ft
2.12.6 Touchdown Zone Elevation: 658.2 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 219
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−51.1336N / 87−53−46.9364W
2.12.6 Threshold Elevation: 647.7 ft
2.12.6 Touchdown Zone Elevation: 651.5 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 222
2.12.3 Dimensions: 8075 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−58−11.718N / 87−52−47.0759W
2.12.6 Threshold Elevation: 654.4 ft
2.12.6 Touchdown Zone Elevation: 654.4 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 42
2.12.3 Dimensions: 8075 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−57−11.9778N / 87−53−57.9066W
2.12.6 Threshold Elevation: 661.4 ft
2.12.6 Touchdown Zone Elevation: 661.4 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 42−0−10.1954N / 87−55−36.0339W
2.12.6 Threshold Elevation: 668 ft
2.12.6 Touchdown Zone Elevation: 668 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 42−0−10.1909N / 87−53−56.6997W
2.12.6 Threshold Elevation: 663.6 ft
2.12.6 Touchdown Zone Elevation: 663.6 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7967 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−2.0302N / 87−55−6.0672W
2.12.6 Threshold Elevation: 659.8 ft
2.12.6 Touchdown Zone Elevation: 659.8 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7967 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41−59−2.0405N / 87−53−20.5834W
2.12.6 Threshold Elevation: 650.1 ft
2.12.6 Touchdown Zone Elevation: 653.6 ft

2.12.1 Designation: 10C
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10800 ft x 200 ft
2.12.4 PCN: 96 R/C/W/T
2.12.5 Coordinates: 41−57−56.5251N / 87−55−53.4778W

2.12.6 Threshold Elevation: 669.4 ft
2.12.6 Touchdown Zone Elevation: 669.4 ft

2.12.1 Designation: 28C
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10800 ft x 200 ft
2.12.4 PCN: 96 R/C/W/T
2.12.5 Coordinates: 41−57−56.7568N / 87−53−30.5171W
2.12.6 Threshold Elevation: 650.1 ft
2.12.6 Touchdown Zone Elevation: 651.1 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 13000 ft x 150 ft
2.12.4 PCN: 120 R/B/W/T
2.12.5 Coordinates: 41−58−8.3816N / 87−55−53.5142W
2.12.6 Threshold Elevation: 672.1 ft
2.12.6 Touchdown Zone Elevation: 672.1 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 13000 ft x 150 ft
2.12.4 PCN: 120 R/B/W/T
2.12.5 Coordinates: 41−58−8.6529N / 87−53−1.4244W
2.12.6 Threshold Elevation: 651.4 ft
2.12.6 Touchdown Zone Elevation: 651.4 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 104 R/B/W/U
2.12.5 Coordinates: 41−57−25.924N / 87−55−40.3004W
2.12.6 Threshold Elevation: 680 ft
2.12.6 Touchdown Zone Elevation: 680 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 104 R/B/W/U
2.12.5 Coordinates: 41−57−26.0865N / 87−54−1.0355W
2.12.6 Threshold Elevation: 658 ft
2.12.6 Touchdown Zone Elevation: 666.8 ft

2.12.1 Designation: 10X
2.12.2 True Bearing:
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 200 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 22R
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7375

2.13.1 Designation: 22L
2.13.2 Take−off Run Available: 8075
2.13.3 Take−off Distance Available: 8075
2.13.4 Accelerate−Stop Distance Available: 8075
2.13.5 Landing Distance Available: 8075

2.13.1 Designation: 04R
2.13.2 Take−off Run Available: 8075
2.13.3 Take−off Distance Available: 8075
2.13.4 Accelerate−Stop Distance Available: 8075
2.13.5 Landing Distance Available: 8075

2.13.1 Designation: 09L
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 27R
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 09R
2.13.2 Take−off Run Available: 7967
2.13.3 Take−off Distance Available: 7967
2.13.4 Accelerate−Stop Distance Available: 7709
2.13.5 Landing Distance Available: 7709
2.13.1 Designation: 27L

2.13.2 Take−off Run Available: 7967
2.13.3 Take−off Distance Available: 7967
2.13.4 Accelerate−Stop Distance Available: 7782
2.13.5 Landing Distance Available: 7782

2.13.1 Designation: 10C
2.13.2 Take−off Run Available: 10801
2.13.3 Take−off Distance Available: 10801
2.13.4 Accelerate−Stop Distance Available: 10540
2.13.5 Landing Distance Available: 10540

2.13.1 Designation: 28C
2.13.2 Take−off Run Available: 10801
2.13.3 Take−off Distance Available: 10801
2.13.4 Accelerate−Stop Distance Available: 10801
2.13.5 Landing Distance Available: 10801

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 13000
2.13.3 Take−off Distance Available: 13000
2.13.4 Accelerate−Stop Distance Available: 13000
2.13.5 Landing Distance Available: 12246

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 13000
2.13.3 Take−off Distance Available: 13000
2.13.4 Accelerate−Stop Distance Available: 13000
2.13.5 Landing Distance Available: 13000

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 10X
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 09L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 27R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 09R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 27L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 10X
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALCP
2.14.3 Channel: 252.1
2.14.5 Hours of Operation:

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 121.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 121.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/S
2.14.3 Channel: 119.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 135.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 282.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND METERING
2.14.3 Channel: 121.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (TWR SOUTH)
2.14.3 Channel: 118.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (TWR CENTER OUTBOUND)
2.14.3 Channel: 121.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (TWR CENTER INBOUND)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (TWR NORTH)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 226.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S (TWR CENTER)
2.14.3 Channel: 134.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 120.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 121.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 126.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR NORTH RWY 09L/27R)
2.14.3 Channel: 128.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 132.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR SOUTH

RWY 10R/28L)
2.14.3 Channel: 133
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 348
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S (TWR CENTER)
2.14.3 Channel: 127.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR CENTER RWY 10C)
2.14.3 Channel: 119.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR CENTER RWY 28C)
2.14.3 Channel: 119.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR SOUTH RWY 10R)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR SOUTH RWY 28L)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VFR ADZY
2.14.3 Channel: 126.8
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 3W
2.19.2 ILS Identification: RXZ
2.19.5 Coordinates: 41−59−46.5114N / 87−53−59.027W
2.19.6 Site Elevation: 645.1 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 3W
2.19.2 ILS Identification: RXZ
2.19.5 Coordinates: 41−58−46.4888N / 87−54−58.3524W
2.19.6 Site Elevation: 655.5 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 3W
2.19.2 ILS Identification: FJU
2.19.5 Coordinates: 41−57−16.8552N / 87−53−44.3489W
2.19.6 Site Elevation: 654.1 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 3W
2.19.2 ILS Identification: FJU
2.19.5 Coordinates: 41−58−16.1967N / 87−52−41.7631W
2.19.6 Site Elevation: 646.6 ft

2.19.1 ILS Type: Outer Marker for runway 04R. Magnetic variation: 3W
2.19.2 ILS Identification: FJU
2.19.5 Coordinates: 41−53−54.5534N / 87−57−51.4319W
2.19.6 Site Elevation: 675.5 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 3W
2.19.2 ILS Identification: LQQ
2.19.5 Coordinates: 41−58−0.7989N / 87−52−52.6077W
2.19.6 Site Elevation: 645.9 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 3W
2.19.2 ILS Identification: LQQ
2.19.5 Coordinates: 41−57−5.6133N / 87−54−5.4506W
2.19.6 Site Elevation: 653 ft

2.19.1 ILS Type: DME for runway 09L. Magnetic variation: 3W
2.19.2 ILS Identification: SAJ
2.19.5 Coordinates: 42−0−14.0985N / 87−55−48.2323W
2.19.6 Site Elevation: 669.5 ft

2.19.1 ILS Type: Glide Slope for runway 09L. Magnetic variation: 3W
2.19.2 ILS Identification: SAJ
2.19.5 Coordinates: 42−0−14.2182N / 87−55−20.6714W
2.19.6 Site Elevation: 651.3 ft

2.19.1 ILS Type: Inner Marker for runway 09L. Magnetic variation: 3W
2.19.2 ILS Identification: SAJ
2.19.5 Coordinates: 42−0−10.1934N / 87−55−47.4231W
2.19.6 Site Elevation: 668.8 ft

2.19.1 ILS Type: Localizer for runway 09L. Magnetic

variation: 3W
2.19.2 ILS Identification: SAJ
2.19.5 Coordinates: 42−0−10.1874N / 87−53−43.3254W
2.19.6 Site Elevation: 660.9 ft

2.19.1 ILS Type: DME for runway 27R. Magnetic variation: 3W
2.19.2 ILS Identification: ABU
2.19.5 Coordinates: 42−0−14.0985N / 87−55−48.2323W
2.19.6 Site Elevation: 669.5 ft

2.19.1 ILS Type: Glide Slope for runway 27R. Magnetic variation: 3W
2.19.2 ILS Identification: ABU
2.19.5 Coordinates: 42−0−14.2137N / 87−54−11.7412W
2.19.6 Site Elevation: 648.4 ft

2.19.1 ILS Type: Inner Marker for runway 27R. Magnetic variation: 3W
2.19.2 ILS Identification: ABU
2.19.5 Coordinates: 42−0−9.9864N / 87−53−45.3008W
2.19.6 Site Elevation: 663.1 ft

2.19.1 ILS Type: Localizer for runway 27R. Magnetic variation: 3W
2.19.2 ILS Identification: ABU
2.19.5 Coordinates: 42−0−10.1939N / 87−55−50.1994W
2.19.6 Site Elevation: 668.1 ft

2.19.1 ILS Type: DME for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.5 Coordinates: 41−59−4.7161N / 87−53−10.2316W
2.19.6 Site Elevation: 653.7 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.5 Coordinates: 41−59−7.8117N / 87−54−51.2862W
2.19.6 Site Elevation: 658.2 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.5 Coordinates: 41−59−2.0448N / 87−53−10.493W
2.19.6 Site Elevation: 642.8 ft

2.19.1 ILS Type: DME for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41−59−4.7161N / 87−53−10.2316W
2.19.6 Site Elevation: 653.7 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41−59−6.8111N / 87−53−34.3515W
2.19.6 Site Elevation: 646.5 ft

2.19.1 ILS Type: Inner Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41−59−1.8506N / 87−53−9.1944W
2.19.6 Site Elevation: 641.5 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41−59−2.0278N / 87−55−17.975W
2.19.6 Site Elevation: 665 ft

2.19.1 ILS Type: DME for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.5 Coordinates: 41−58−0.9714N / 87−56−9.15W
2.19.6 Site Elevation: 689.3 ft

2.19.1 ILS Type: Glide Slope for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.5 Coordinates: 41−57−52.8465N / 87−55−39.0226W
2.19.6 Site Elevation: 663 ft

2.19.1 ILS Type: Inner Marker for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.5 Coordinates: 41−57−56.5015N / 87−56−4.8681W
2.19.6 Site Elevation: 674.3 ft

2.19.1 ILS Type: Localizer for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.5 Coordinates: 41−57−56.803N / 87−52−57.2925W
2.19.6 Site Elevation: 646.3 ft

2.19.1 ILS Type: DME for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41−58−0.9714N / 87−56−9.15W
2.19.6 Site Elevation: 689.3 ft

2.19.1 ILS Type: Glide Slope for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41−57−53.0321N / 87−53−44.3196W
2.19.6 Site Elevation: 642.4 ft

2.19.1 ILS Type: Inner Marker for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41−57−58.7451N / 87−53−19.1677W
2.19.6 Site Elevation: 648 ft

2.19.1 ILS Type: Localizer for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41−57−56.5013N / 87−56−6.8848W
2.19.6 Site Elevation: 676.4 ft

2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 3W
2.19.2 ILS Identification: MED
2.19.5 Coordinates: 41−58−5.6721N / 87−52−41.6845W
2.19.6 Site Elevation: 656 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 3W
2.19.2 ILS Identification: MED
2.19.5 Coordinates: 41−58−4.3877N / 87−55−38.7659W
2.19.6 Site Elevation: 665.3 ft

2.19.1 ILS Type: Inner Marker for runway 10L. Magnetic variation: 3W
2.19.2 ILS Identification: MED
2.19.5 Coordinates: 41−58−8.5523N / 87−56−4.8866W
2.19.6 Site Elevation: 676.8 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 3W
2.19.2 ILS Identification: MED
2.19.5 Coordinates: 41−58−8.6818N / 87−52−39.6951W
2.19.6 Site Elevation: 644.9 ft

2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 3W
2.19.2 ILS Identification: TSL
2.19.5 Coordinates: 41−58−5.6721N / 87−52−41.6845W
2.19.6 Site Elevation: 656 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 3W
2.19.2 ILS Identification: TSL
2.19.5 Coordinates: 41−58−4.4701N / 87−53−15.0487W
2.19.6 Site Elevation: 648.2 ft

2.19.1 ILS Type: Inner Marker for runway 28R. Magnetic variation: 3W
2.19.2 ILS Identification: TSL
2.19.5 Coordinates: 41−58−6.1128N / 87−52−49.1235W
2.19.6 Site Elevation: 649.5 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 3W
2.19.2 ILS Identification: TSL
2.19.5 Coordinates: 41−58−8.356N / 87−56−6.8801W
2.19.6 Site Elevation: 679.1 ft

2.19.1 ILS Type: DME for runway 10R. Magnetic variation: 4W
2.19.2 ILS Identification: BYW
2.19.5 Coordinates: 41−57−28.3399N / 87−53−27.4609W
2.19.6 Site Elevation: 669.6 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 4W
2.19.2 ILS Identification: BYW
2.19.5 Coordinates: 41−57−21.909N / 87−55−25.5702W
2.19.6 Site Elevation: 671.7 ft

2.19.1 ILS Type: Localizer for runway 10R. Magnetic variation: 4W
2.19.2 ILS Identification: BYW
2.19.5 Coordinates: 41−57−31.6045N / 87−53−26.3741W
2.19.6 Site Elevation: 649.9 ft

2.19.1 ILS Type: DME for runway 28L. Magnetic variation: 4W
2.19.2 ILS Identification: VQX
2.19.5 Coordinates: 41−57−22.2251N / 87−53−34.2417W
2.19.6 Site Elevation: 656.1 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 4W
2.19.2 ILS Identification: VQX
2.19.5 Coordinates: 41−57−22.0258N / 87−54−14.1801W
2.19.6 Site Elevation: 654 ft

2.19.1 ILS Type: Inner Marker for runway 28L. Magnetic variation: 4W
2.19.2 ILS Identification: VQX
2.19.5 Coordinates: 41−57−26.9517N / 87−53−47.4584W
2.19.6 Site Elevation: 650.4 ft

2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 4W
2.19.2 ILS Identification: VQX
2.19.5 Coordinates: 41−57−25.8994N / 87−55−53.7065W
2.19.6 Site Elevation: 680.2 ft

2.19.1 ILS Type: DME for runway 10X. Magnetic variation: 4W
2.19.2 ILS Identification: IZJ
2.19.5 Coordinates: 41−57−22.2251N / 87−53−34.2417W
2.19.6 Site Elevation: 656.1 ft

2.19.1 ILS Type: Glide Slope for runway 10X. Magnetic variation: 4W
2.19.2 ILS Identification: IZJ
2.19.5 Coordinates: 41−57−22.1087N / 87−55−25.5572W
2.19.6 Site Elevation: 671.8 ft

2.19.1 ILS Type: Inner Marker for runway 10X. Magnetic variation: 4W
2.19.2 ILS Identification: IZJ
2.19.5 Coordinates: 41−57−25.9088N / 87−55−51.6695W
2.19.6 Site Elevation: 680 ft

2.19.1 ILS Type: Localizer for runway 10X. Magnetic variation: 4W
2.19.2 ILS Identification: IZJ
2.19.5 Coordinates: 41−57−26.1287N / 87−53−32.5409W
2.19.6 Site Elevation: 652.2 ft

General Remarks:
PRIM RUN−UP LOCATION GROUND RUN UP ENCLOSURE; SECONDARY RUN UP LOCATIONS AVBL UPON REQ CONTACT CITY OPNS 773−686−2255.

TWY YY BTWN UAL MAIN SVC CNTR HNGR SOUTH RAMP AND TWY C2 CLSD TO WINGSPAN MORE THAN 211 FT. TXL BB2 CLSD TO WINGSPAN MORE THAN 118 FT.

BE ALERT: TWY S−1 OUTBOUND OR EASTBOUND ONLY, TWY S−2 INBOUND OR WESTBOUND ONLY, TWY Y5 NORTHBOUND ONLY EXITING RWY, TWYS P1, P2, P3, P5, AND P6 NORTHBOUND ONLY, TWY A1 SOUTHBOUND ONLY FROM RWY 09R−27L.

MAGNETIC DEVIATION POSSIBLE IMMEDIATELY WEST OF TWY Y & RY 22L APCH ON TWY N.

BE ALERT: THE NORTHEAST/SOUTHWEST PORTION OF TWY YY IS NOT VSBL FM THE CENTER ATCT.

RWY STATUS LGTS ARE IN OPN.

BIRDS ON & INVOF ARPT. PYROTECHNICS & BIRD CANNONS IN USE FOR BIRD CONTROL.

EAST AND WEST GATES ARE MANNED 24 HRS A DAY.

ACFT ARE NOT PMTD TO STOP ON EITHER TWY A OR B BRIDGES.

A380−800 OPNL CONSTRAINTS EXIST ON RYS, TWYS, AND RAMPS. CTC ARPT OPNS FOR ADDNL INFO 773−686−2255.

BE ALERT: DUPE ALPHA−NUMERIC TWY DESIGNATORS & TRML GATE DESIGNATIONS INVOLVING THE LTRS B, C, G, H, K, L & M.

ACFT WITH WINGSPAN GREATER THAN 214 FT RQR 48 HRS PPR − CALL 773−686−2255.

ARPT NIGHTTIME NOISE ABATEMENT PROCEDURES ARE IN EFFECT FM 2200 TO 0700; CONTACT AMGR

ON 773−686−2255.

ATCT IS AUZD TO CONDUCT SIMUL DEPS FM RWY 4L/4R, RWY 22R/22L, RWY 9R WITH RWY 9L OR RWY 10L, RWY 27L WITH 28R OR RWY 27R, RWY 10C WITH RWY 9R AND RWY 28C WITH RWY 27L WITH COURSE DIVERGENCE BEGINNING NO LATER THAN 4 MILES FM RY END.

PAEW NEAR VARIOUS TWYS.

LINE UP AND WAIT AUTHORIZATION IN EFF BTWN SS AND SR AT THE FLWG INTS: RWY 28R AT TWY GG, TWY EE AND TWY N5; RWY 10L AT TWY DD AND TWY CC. THESE RWYS WILL BE USED FOR DEPS ONLY WHEN EXERCISING THE PROVISIONS OF THIS AUTHORIZATION.

PERIODIC FIRE DEPT TRNG AT N SECTOR OF THE ARPT.

SEE LAND AND HOLD SHORT OPERATIONS SECTION.

DVRSN ACRS WO A PRESENCE AT ORD SHOULD CTC ARPT OPNS 773−686−2255 PRIOR TO DIVERTING TO THE EXTENT PRACTICAL AND PRVD: CO, FLIGHT OPS CTC INFO, ACFT TYPE, PERSONS OB, INTL OR DOMESTIC, ANY GND HANDLER AGRMTS IN PLACE.

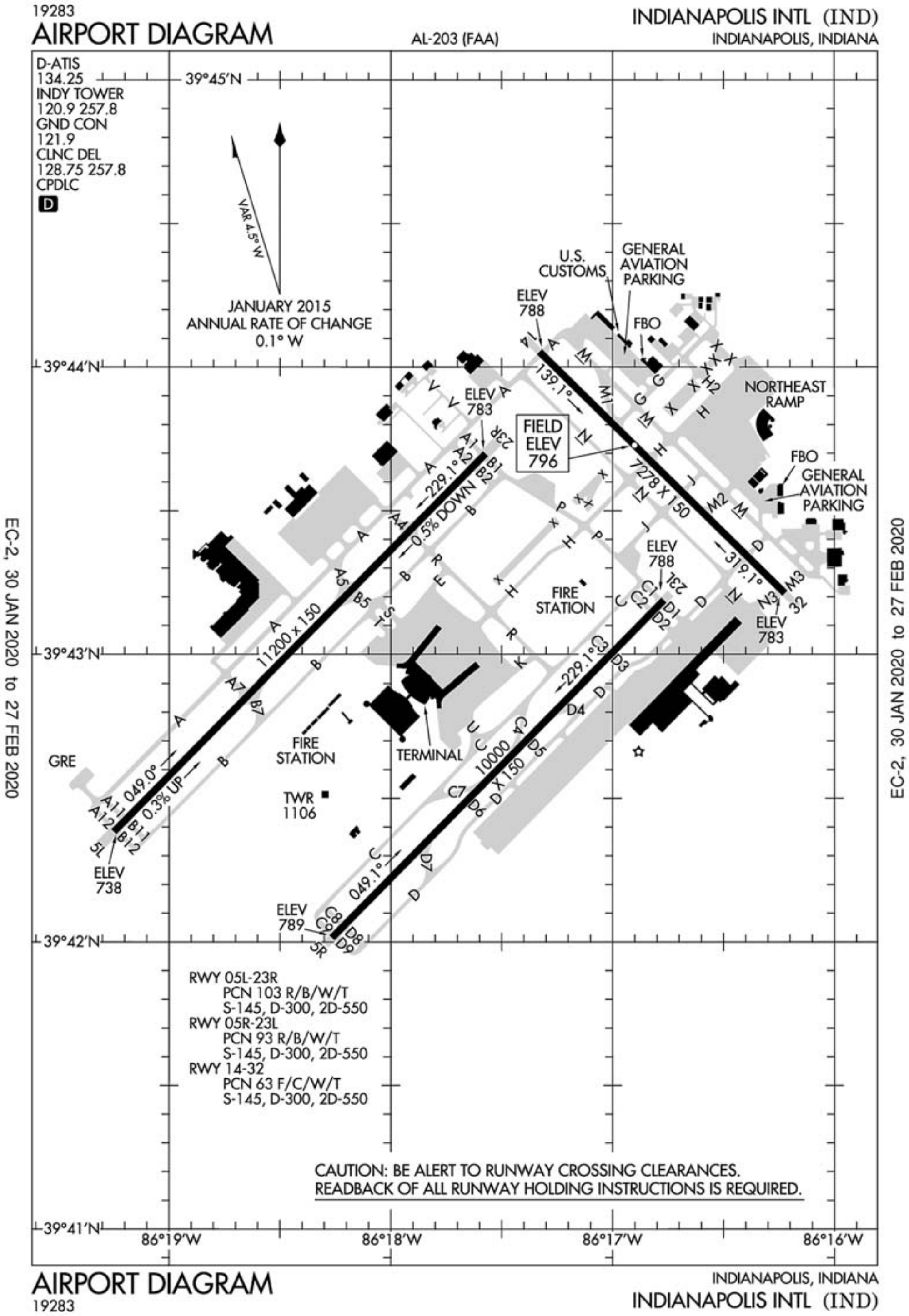
B747−400, B747−8, B777−300ER, B777−200LR(F), A350−900, A340−600, A340−500 AND A330−900 CANNOT PASS ON TWYS ’A’ & ’B’ INSUFFICIENT WINGTIP CLNC.

ALL PART 91 & UNSKED PART 125, 133 & 135 CHARTER OPERATORS CTC SIGNATURE FLIGHT SUPPORT AT 773−686−7000 REGARDING NEW SECURITY REGULATIONS PRIOR TO DEP.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

B747−8 OPS NOT AUZD ON RYS 09R/27L, 09L/27R AND 10R/28L.

Indianapolis, Indiana
Indianapolis International
ICAO Identifier KIND



Indianapolis, IN
Indianapolis Intl
ICAO Identifier KIND

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−43−2.3N / 86−17−40.7W
2.2.2 From City: 7 miles SW of INDIANAPOLIS, IN
2.2.3 Elevation: 796.2 ft
2.2.5 Magnetic Variation: 5W (2015)
2.2.6 Airport Contact: MARIO RODRIGUEZ
7800 COL. H. WEIR COOK MEMORIAL DR.
INDIANAPOLIS, IN 46241 (317−487−9594)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11200 ft x 150 ft
2.12.4 PCN: 103 R/B/W/T
2.12.5 Coordinates: 39−42−23.0337N / 86−19−14.9025W
2.12.6 Threshold Elevation: 738 ft
2.12.6 Touchdown Zone Elevation: 747.3 ft

2.12.1 Designation: 23R
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11200 ft x 150 ft
2.12.4 PCN: 103 R/B/W/T
2.12.5 Coordinates: 39−43−41.9101N / 86−17−34.3591W
2.12.6 Threshold Elevation: 782.9 ft
2.12.6 Touchdown Zone Elevation: 782.9 ft

2.12.1 Designation: 05R
2.12.2 True Bearing: 45
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 93 R/B/W/T
2.12.5 Coordinates: 39−42−0.873N / 86−18−15.906W
2.12.6 Threshold Elevation: 788.8 ft
2.12.6 Touchdown Zone Elevation: 790.7 ft

2.12.1 Designation: 23L
2.12.2 True Bearing: 225
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 93 R/B/W/T
2.12.5 Coordinates: 39−43−11.2875N / 86−16−46.1248W
2.12.6 Threshold Elevation: 787.6 ft
2.12.6 Touchdown Zone Elevation: 790.1 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 7278 ft x 150 ft
2.12.4 PCN: 63 F/C/W/T
2.12.5 Coordinates: 39−44−3.2059N / 86−17−19.7638W
2.12.6 Threshold Elevation: 787.5 ft
2.12.6 Touchdown Zone Elevation: 796.2 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 7278 ft x 150 ft
2.12.4 PCN: 63 F/C/W/T
2.12.5 Coordinates: 39−43−12.7458N / 86−16−13.3895W
2.12.6 Threshold Elevation: 782.6 ft
2.12.6 Touchdown Zone Elevation: 792.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 05L
2.13.2 Take−off Run Available: 11200
2.13.3 Take−off Distance Available: 11200
2.13.4 Accelerate−Stop Distance Available: 11200
2.13.5 Landing Distance Available: 11200

2.13.1 Designation: 23R
2.13.2 Take−off Run Available: 11200
2.13.3 Take−off Distance Available: 11200
2.13.4 Accelerate−Stop Distance Available: 11200
2.13.5 Landing Distance Available: 11200

2.13.1 Designation: 05R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 23L
2.13.2 Take−off Run Available: 10000

2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 14
2.13.2 Take−off Run Available: 7278
2.13.3 Take−off Distance Available: 7278
2.13.4 Accelerate−Stop Distance Available: 7278
2.13.5 Landing Distance Available: 7278

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 7278
2.13.3 Take−off Distance Available: 7278
2.13.4 Accelerate−Stop Distance Available: 7278
2.13.5 Landing Distance Available: 7278

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 05L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 23R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 05R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 23L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 14
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 32
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (WEST OF ACTIVE RWY)
2.14.3 Channel: 124.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (EAST OF ACTIVE RWY)
2.14.3 Channel: 127.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 317.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC
2.14.3 Channel: 128.175
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST OF ACTIVE RWY)
2.14.3 Channel: 124.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (EAST)
2.14.3 Channel: 124.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (EAST OF ACTIVE RWY)
2.14.3 Channel: 127.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C
2.14.3 Channel: 317.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 134.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (WEST)
2.14.3 Channel: 119.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 124.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 120.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39−43−51.3513N / 86−17−27.5671W
2.19.6 Site Elevation: 797.6 ft

2.19.1 ILS Type: Glide Slope for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39−42−32.7741N / 86−19−9.6768W
2.19.6 Site Elevation: 735.4 ft

2.19.1 ILS Type: Inner Marker for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39−42−15.7098N / 86−19−24.4367W
2.19.6 Site Elevation: 735.9 ft

2.19.1 ILS Type: Localizer for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39−43−49.0283N / 86−17−25.2797W
2.19.6 Site Elevation: 787.8 ft

2.19.1 ILS Type: DME for runway 23R. Magnetic variation: 5W
2.19.2 ILS Identification: UZK
2.19.5 Coordinates: 39−43−51.3513N / 86−17−27.5671W
2.19.6 Site Elevation: 797.6 ft

2.19.1 ILS Type: Glide Slope for runway 23R. Magnetic variation: 5W
2.19.2 ILS Identification: UZK
2.19.5 Coordinates: 39−43−36.5113N / 86−17−48.4342W
2.19.6 Site Elevation: 772.4 ft

2.19.1 ILS Type: Localizer for runway 23R. Magnetic variation: 5W
2.19.2 ILS Identification: UZK
2.19.5 Coordinates: 39−42−15.9186N / 86−19−23.9666W
2.19.6 Site Elevation: 736.6 ft

2.19.1 ILS Type: DME for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39−43−20.1868N / 86−16−39.5353W
2.19.6 Site Elevation: 802 ft

2.19.1 ILS Type: Glide Slope for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39−42−5.3627N / 86−18−2.9983W
2.19.6 Site Elevation: 788.5 ft

2.19.1 ILS Type: Inner Marker for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39−41−52.0586N / 86−18−27.1359W
2.19.6 Site Elevation: 776.4 ft

2.19.1 ILS Type: Localizer for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39−43−18.3778N / 86−16−37.0825W
2.19.6 Site Elevation: 785.5 ft

2.19.1 ILS Type: DME for runway 23L. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.5 Coordinates: 39−43−20.1868N / 86−16−39.5353W
2.19.6 Site Elevation: 802 ft

2.19.1 ILS Type: Glide Slope for runway 23L. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.5 Coordinates: 39−43−2.4585N / 86−16−54.2858W
2.19.6 Site Elevation: 785 ft

2.19.1 ILS Type: Localizer for runway 23L. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.5 Coordinates: 39−41−53.5322N / 86−18−25.2565W
2.19.6 Site Elevation: 777.3 ft

2.19.1 ILS Type: Glide Slope for runway 14. Magnetic variation: 5W
2.19.2 ILS Identification: BJP
2.19.5 Coordinates: 39−43−59.3065N / 86−17−7.3342W
2.19.6 Site Elevation: 790 ft

2.19.1 ILS Type: Localizer for runway 14. Magnetic variation: 5W
2.19.2 ILS Identification: BJP
2.19.5 Coordinates: 39−43−3.8771N / 86−16−1.7277W
2.19.6 Site Elevation: 763.6 ft

2.19.1 ILS Type: Glide Slope for runway 32. Magnetic variation: 5W
2.19.2 ILS Identification: COA
2.19.5 Coordinates: 39−43−16.2751N / 86−16−25.5096W
2.19.6 Site Elevation: 781.7 ft

2.19.1 ILS Type: Localizer for runway 32. Magnetic variation: 5W
2.19.2 ILS Identification: COA
2.19.5 Coordinates: 39−44−10.3487N / 86−17−29.1696W
2.19.6 Site Elevation: 782.3 ft

General Remarks:
TWY V IS NOT AVBL FOR ACR OPS.

TWY H RUNS CONTIGUOUS AT NORTHEAST RAMP.

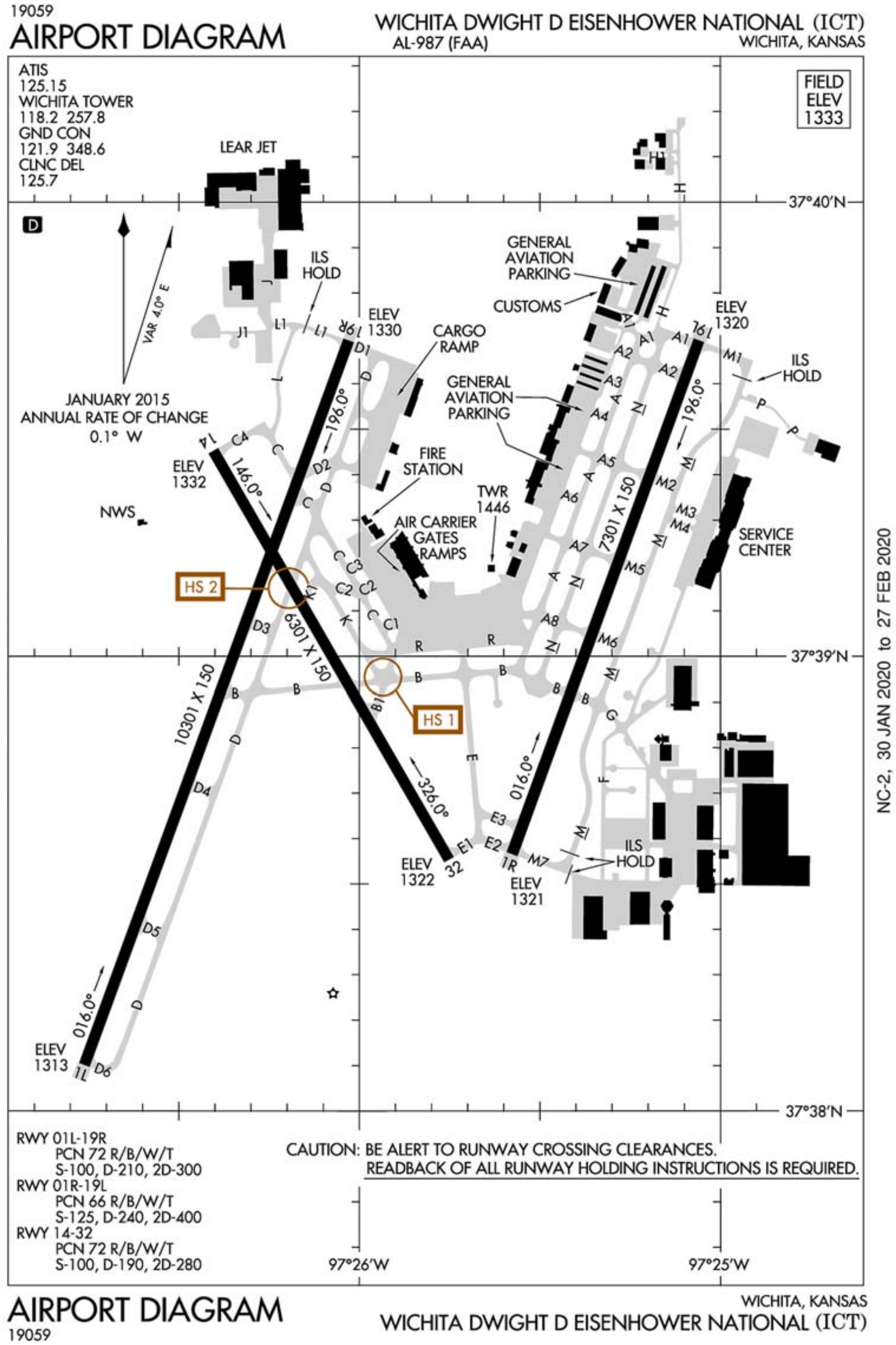
LARGE FLOCKS OF BIRDS ON & INVOF ARPT.

NOISE ABATEMENT PROCEDURES IN EFFECT CTC ARPT MGR.

PRIM STUDENT TGL NOT PMTD.

BE ALERT TO CLOSE PROXIMITY OF RWY 14/32 TO NORTHEAST RAMP.

Wichita, Kansas
Wichita Mid−Continent
ICAO Identifier KICT



Wichita, KS
Wichita Mid−Continent
ICAO Identifier KICT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37−38−59.8N / 97−25−59W
2.2.2 From City: 5 miles SW of WICHITA, KS
2.2.3 Elevation: 1332.5 ft
2.2.5 Magnetic Variation: 4E (2015)
2.2.6 Airport Contact: MR. VICTOR WHITE, A.A.E.
2173 AIR CARGO ROAD
WICHITA, KS 67209
(316−946−4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 10301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 37−38−6.0674N / 97−26−45.5905W
2.12.6 Threshold Elevation: 1312.6 ft
2.12.6 Touchdown Zone Elevation: 1314.2 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 200
2.12.3 Dimensions: 10301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 37−39−41.763N / 97−26−1.7928W
2.12.6 Threshold Elevation: 1329.7 ft
2.12.6 Touchdown Zone Elevation: 1329.7 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 200
2.12.3 Dimensions: 7301 ft x 150 ft
2.12.4 PCN: 66 R/B/W/T
2.12.5 Coordinates: 37−39−41.7681N / 97−25−3.5639W
2.12.6 Threshold Elevation: 1319.8 ft
2.12.6 Touchdown Zone Elevation: 1319.9 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 20
2.12.3 Dimensions: 7301 ft x 150 ft
2.12.4 PCN: 66 R/B/W/T
2.12.5 Coordinates: 37−38−33.9452N / 97−25−34.6273W
2.12.6 Threshold Elevation: 1320.9 ft
2.12.6 Touchdown Zone Elevation: 1320.9 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 330
2.12.3 Dimensions: 6301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 37−38−33.2158N / 97−25−45.1013W
2.12.6 Threshold Elevation: 1321.6 ft
2.12.6 Touchdown Zone Elevation: 1321.7 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 150
2.12.3 Dimensions: 6301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 37−39−27.1616N / 97−26−24.2724W
2.12.6 Threshold Elevation: 1332.1 ft
2.12.6 Touchdown Zone Elevation: 1332.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 10301
2.13.3 Take−off Distance Available: 10301
2.13.4 Accelerate−Stop Distance Available: 10301
2.13.5 Landing Distance Available: 10301

2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 10301
2.13.3 Take−off Distance Available: 10301
2.13.4 Accelerate−Stop Distance Available: 10301
2.13.5 Landing Distance Available: 10301

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 7301
2.13.3 Take−off Distance Available: 7301
2.13.4 Accelerate−Stop Distance Available: 7301
2.13.5 Landing Distance Available: 7301

2.13.1 Designation: 01R
2.13.2 Take−off Run Available: 7301

2.13.3 Take−off Distance Available: 7301
2.13.4 Accelerate−Stop Distance Available: 7301
2.13.5 Landing Distance Available: 7301

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 6301
2.13.3 Take−off Distance Available: 6301
2.13.4 Accelerate−Stop Distance Available: 6301
2.13.5 Landing Distance Available: 6301

2.13.1 Designation: 14
2.13.2 Take−off Run Available: 6301
2.13.3 Take−off Distance Available: 6301
2.13.4 Accelerate−Stop Distance Available: 6301
2.13.5 Landing Distance Available: 6301

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 19R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (270−009 BLW 5000 FT & BYD 20 NM)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (E IAB BLW 5000 FT)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−009 BLW 5000 FT & BYD 20 NM)
2.14.3 Channel: 325.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (010−190)
2.14.3 Channel: 134.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (010−190)
2.14.3 Channel: 290.275
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (191−009)
2.14.3 Channel: 126.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (191−009)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 327.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (191−009)
2.14.3 Channel: 126.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (010−190 4000 FT & BLW)
2.14.3 Channel: 134.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (010−190 ABV 4000 FT)
2.14.3 Channel: 134.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (010−190 ABV 4000 FT)
2.14.3 Channel: 290.275
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (191−009)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 4E
2.19.2 ILS Identification: TWI
2.19.5 Coordinates: 37−38−16.7093N / 97−26−46.0112W
2.19.6 Site Elevation: 1310.4 ft

2.19.1 ILS Type: Inner Marker for runway 01L. Magnetic variation: 4E
2.19.2 ILS Identification: TWI
2.19.5 Coordinates: 37−37−57.1412N / 97−26−49.6885W
2.19.6 Site Elevation: 1317 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 4E
2.19.2 ILS Identification: TWI
2.19.5 Coordinates: 37−39−51.3419N / 97−25−57.4083W
2.19.6 Site Elevation: 1319.9 ft

2.19.1 ILS Type: Outer Marker for runway 01L. Magnetic variation: 4E
2.19.2 ILS Identification: TWI
2.19.5 Coordinates: 37−33−33.9515N / 97−28−51.777W
2.19.6 Site Elevation: 1310 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 4E
2.19.2 ILS Identification: HOV
2.19.5 Coordinates: 37−39−33.86N / 97−26−10.83W
2.19.6 Site Elevation: 1325.7 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 4E
2.19.2 ILS Identification: HOV
2.19.5 Coordinates: 37−37−54.74N / 97−26−50.78W
2.19.6 Site Elevation: 1319.4 ft

2.19.1 ILS Type: Outer Marker for runway 19R. Magnetic variation: 4E
2.19.2 ILS Identification: HOV
2.19.5 Coordinates: 37−44−16.6132N / 97−24−0.9938W
2.19.6 Site Elevation: 1325.7 ft

2.19.1 ILS Type: DME for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.5 Coordinates: 37−39−52.0396N / 97−25−2.8177W
2.19.6 Site Elevation: 1326.6 ft

2.19.1 ILS Type: Glide Slope for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.5 Coordinates: 37−38−42.6371N / 97−25−24.6964W
2.19.6 Site Elevation: 1314.7 ft

2.19.1 ILS Type: Localizer for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.5 Coordinates: 37−39−51.99N / 97−24−58.88W
2.19.6 Site Elevation: 1307 ft

2.19.1 ILS Type: Outer Marker for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.5 Coordinates: 37−34−41.4971N /

97−27−21.0931W
2.19.6 Site Elevation:

2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 4E
2.19.2 ILS Identification: MVP
2.19.5 Coordinates: 37−38−21.53N / 97−25−43.26W
2.19.6 Site Elevation: 1320 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 4E
2.19.2 ILS Identification: MVP
2.19.5 Coordinates: 37−39−30.78N / 97−25−3.17W
2.19.6 Site Elevation: 1312.1 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 4E
2.19.2 ILS Identification: MVP
2.19.5 Coordinates: 37−38−21.32N / 97−25−40.42W
2.19.6 Site Elevation: 1318.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 7E
2.19.2 Navigation Aid Identification: ICT
2.19.5 Coordinates: 37−44−42.9245N / 97−35−1.79W
2.19.6 Site Elevation: 1470.5 ft

General Remarks:
CALL FOR PUSHBACK NOT REQUIRED.

TWY L AND L1 CLSD TO ACFT WITH WINGSPAN MORE THAN 118FT.

TWY H CLSD TO ACFT WITH WINGSPAN MORE THAN 75 FT.TWY H CONGESTED AND NOT VISIBLE FROM ATCT; USE CAUTION.

NOTE: SEE SPECIAL NOTICES−CONTINUOUS POWER FACILITIES.

ACFT ENG RUNS ABV IDLE NOT APPROVED ON ACFT PRKG RAMPS.

TWYS F, G, H, J, P AND ALL PARKING RAMPS ARE NON−MOVEMENT AREAS.

PPR REQUIRED FOR ACFT CARRYING CLASS 1 − DIVISION 1.1; 1.2 OR 1.3 EXPLOSIVES AS DEFINED BY 49 CFR 173.50 OR AS AMENDED.

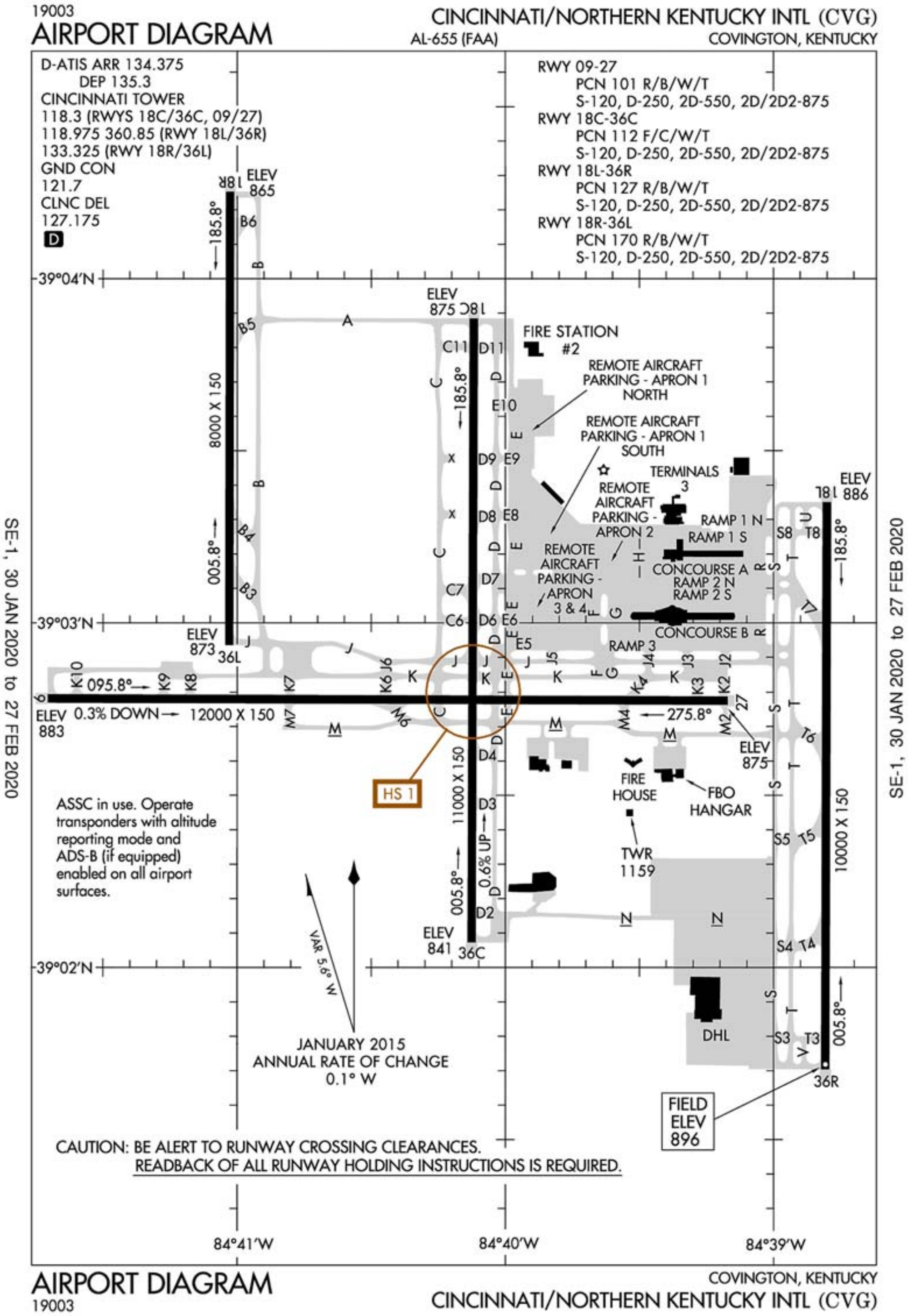
TWY P CLSD TO ACFT WITH WINGSPAN MORE THAN 79FT.

MIGRATORY BIRDS ON AND INVOF ARPT.

ATCT HAS LIMITED VISIBILITY OF TERMINAL GATES 1−8.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL.

Covington, Kentucky
Cincinnati/Northern Kentucky International
ICAO Identifier KCVG



Covington, KY
Cincinnati/Northern Kentucky Intl
ICAO Identifier KCVG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−2−55.812N / 84−40−4.16W
2.2.2 From City: 8 miles SW of COVINGTON, KY
2.2.3 Elevation: 896.2 ft
2.2.5 Magnetic Variation: 6W (2020)
2.2.6 Airport Contact: CANDACE MCGRAW
PO BOX 752000
CINCINNATI, OH 45275
(859−767−3151)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 101 R/B/W/T
2.12.5 Coordinates: 39−2−46.9081N / 84−41−42.355W
2.12.6 Threshold Elevation: 883.3 ft
2.12.6 Touchdown Zone Elevation: 883.3 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 101 R/B/W/T
2.12.5 Coordinates: 39−2−46.5432N / 84−39−10.2575W
2.12.6 Threshold Elevation: 874.9 ft
2.12.6 Touchdown Zone Elevation: 874.9 ft

2.12.1 Designation: 36C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 112 F/C/W/T
2.12.5 Coordinates: 39−2−4.355N / 84−40−7.4726W
2.12.6 Threshold Elevation: 840.9 ft
2.12.6 Touchdown Zone Elevation: 850.6 ft

2.12.1 Designation: 18C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 112 F/C/W/T
2.12.5 Coordinates: 39−3−53.0727N / 84−40−7.0232W
2.12.6 Threshold Elevation: 874.6 ft
2.12.6 Touchdown Zone Elevation: 874.6 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 127 R/B/W/T
2.12.5 Coordinates: 39−3−21.078N / 84−38−48.002W
2.12.6 Threshold Elevation: 886.2 ft
2.12.6 Touchdown Zone Elevation: 889.2 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 127 R/B/W/T
2.12.5 Coordinates: 39−1−42.243N / 84−38−48.4558W
2.12.6 Threshold Elevation: 896.2 ft
2.12.6 Touchdown Zone Elevation: 896.2 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 170 R/B/W/T
2.12.5 Coordinates: 39−2−56.1061N / 84−41−1.7599W
2.12.6 Threshold Elevation: 873.4 ft
2.12.6 Touchdown Zone Elevation: 873.4 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 170 R/B/W/T
2.12.5 Coordinates: 39−4−15.1761N / 84−41−1.4563W
2.12.6 Threshold Elevation: 865.4 ft
2.12.6 Touchdown Zone Elevation: 868.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 09
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 11640
2.13.5 Landing Distance Available: 11640

2.13.1 Designation: 27

2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 36C
2.13.2 Take−off Run Available: 11000
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 11000
2.13.5 Landing Distance Available: 11000

2.13.1 Designation: 18C
2.13.2 Take−off Run Available: 11000
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 11000
2.13.5 Landing Distance Available: 11000

2.13.1 Designation: 18L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 36R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 36L
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 18R
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 27
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18C
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (090−269)
2.14.3 Channel: 119.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−089)
2.14.3 Channel: 123.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 363.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 127.175
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001−180)
2.14.3 Channel: 121
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (181−360)
2.14.3 Channel: 128.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B
2.14.3 Channel: 254.25

2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 134.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 135.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (001−180)
2.14.3 Channel: 126.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (181−360)
2.14.3 Channel: 128.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JAKIE STAR
2.14.3 Channel: 119.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JAKIE STAR
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 09/27, 18C/36C)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 118.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18R/36L)
2.14.3 Channel: 133.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 360.85
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 09. Magnetic variation: 4W
2.19.2 ILS Identification: URN
2.19.5 Coordinates: 39−2−43.95N / 84−39−1.77W
2.19.6 Site Elevation: 872 ft

2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 4W
2.19.2 ILS Identification: URN
2.19.5 Coordinates: 39−2−42.9214N / 84−41−28.2651W
2.19.6 Site Elevation: 873.6 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 4W
2.19.2 ILS Identification: URN
2.19.5 Coordinates: 39−2−46.51N / 84−39−2.15W
2.19.6 Site Elevation: 873.7 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 6W
2.19.2 ILS Identification: JDP
2.19.5 Coordinates: 39−2−42.6285N / 84−39−25.1641W
2.19.6 Site Elevation: 866.8 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 6W
2.19.2 ILS Identification: JDP
2.19.5 Coordinates: 39−2−46.94N / 84−41−55.34W
2.19.6 Site Elevation: 884 ft

2.19.1 ILS Type: DME for runway 18C. Magnetic variation: 6W
2.19.2 ILS Identification: SIC
2.19.5 Coordinates: 39−1−54.15N / 84−40−8.21W
2.19.6 Site Elevation: 819 ft

2.19.1 ILS Type: Glide Slope for runway 18C. Magnetic variation: 6W
2.19.2 ILS Identification: SIC
2.19.5 Coordinates: 39−3−42.6502N / 84−40−12.1375W
2.19.6 Site Elevation: 868 ft

2.19.1 ILS Type: Localizer for runway 18C. Magnetic variation: 6W
2.19.2 ILS Identification: SIC
2.19.5 Coordinates: 39−1−54.18N / 84−40−7.51W
2.19.6 Site Elevation: 819 ft

2.19.1 ILS Type: DME for runway 36C. Magnetic variation: 6W
2.19.2 ILS Identification: CVG
2.19.5 Coordinates: 39−4−3.9116N / 84−40−10.1714W
2.19.6 Site Elevation: 886 ft

2.19.1 ILS Type: Glide Slope for runway 36C. Magnetic variation: 6W
2.19.2 ILS Identification: CVG
2.19.5 Coordinates: 39−2−15.4818N / 84−40−12.4941W
2.19.6 Site Elevation: 834.3 ft

2.19.1 ILS Type: Inner Marker for runway 36C. Magnetic variation: 6W
2.19.2 ILS Identification: CVG
2.19.5 Coordinates: 39−1−54.0493N / 84−40−7.51W
2.19.6 Site Elevation: 818 ft

2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 6W
2.19.2 ILS Identification: CVG
2.19.5 Coordinates: 39−4−3.6988N / 84−40−6.98W
2.19.6 Site Elevation: 882.2 ft

2.19.1 ILS Type: DME for runway 18L. Magnetic variation: 4W
2.19.2 ILS Identification: CIZ
2.19.5 Coordinates: 39−1−31.5754N / 84−38−45.4055W
2.19.6 Site Elevation: 915 ft

2.19.1 ILS Type: Glide Slope for runway 18L. Magnetic variation: 4W
2.19.2 ILS Identification: CIZ
2.19.5 Coordinates: 39−3−10.8816N / 84−38−42.9759W
2.19.6 Site Elevation: 881.3 ft

2.19.1 ILS Type: Localizer for runway 18L. Magnetic variation: 4W
2.19.2 ILS Identification: CIZ
2.19.5 Coordinates: 39−1−31.7864N / 84−38−48.5034W
2.19.6 Site Elevation: 899.1 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39−3−30.8783N / 84−38−51.1801W
2.19.6 Site Elevation: 905 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39−1−52.8046N / 84−38−43.3389W
2.19.6 Site Elevation: 889.9 ft

2.19.1 ILS Type: Inner Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39−1−33.5638N / 84−38−48.4956W
2.19.6 Site Elevation: 899 ft

2.19.1 ILS Type: Localizer for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39−3−31.4852N / 84−38−47.9546W
2.19.6 Site Elevation: 892.1 ft

2.19.1 ILS Type: Middle Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39−1−16.5412N / 84−38−48.5766W
2.19.6 Site Elevation: 915 ft

2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39−2−41.52N / 84−41−5.2W
2.19.6 Site Elevation: 869 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39−4−3.91N / 84−41−6.57W
2.19.6 Site Elevation: 860.5 ft

2.19.1 ILS Type: Inner Marker for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39−4−23.57N / 84−41−1.42W
2.19.6 Site Elevation: 856 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39−2−41.27N / 84−41−1.83W
2.19.6 Site Elevation: 871 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 6W
2.19.2 ILS Identification: VAC
2.19.5 Coordinates: 39−4−25.03N / 84−41−4.79W
2.19.6 Site Elevation: 848 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 6W
2.19.2 ILS Identification: VAC
2.19.5 Coordinates: 39−3−6.56N / 84−41−6.79W
2.19.6 Site Elevation: 866.5 ft

2.19.1 ILS Type: Inner Marker for runway 36L. Magnetic variation: 6W
2.19.2 ILS Identification: VAC
2.19.5 Coordinates: 39−2−44.31N / 84−41−1.8W
2.19.6 Site Elevation:

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 6W
2.19.2 ILS Identification: VAC
2.19.5 Coordinates: 39−4−25.49N / 84−41−1.4W
2.19.6 Site Elevation: 854.7 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 4W
2.19.2 Navigation Aid Identification: CVG
2.19.5 Coordinates: 39−0−57.5317N / 84−42−12.0454W
2.19.6 Site Elevation: 879 ft

General Remarks:
CVG TWY'S, ALL TWY'S RESTRICTED TO 15 MPH OR LESS WITH WINGSPAN 214 FT AND GREATER.

LARGE FLOCKS OF BIRDS ON AND INVOF THE ARPT.

RAMP CTL EFFECTIVE 0800−0400Z. RAMP CTL 130.375 130.900 DHL RAMP CTL 129.475

RY 09/27 WEST 4200 FT CONC; EAST 750 FT CONC; REMAINDER ASPHALT OVERLAY .

SUCCESSIVE OR SIMULTANEOUS DEPARTURES FROM RWY 36L AND RWY 36R ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FROM EOR DUE TO NOISE ABATEMENT RESTRICTIONS.

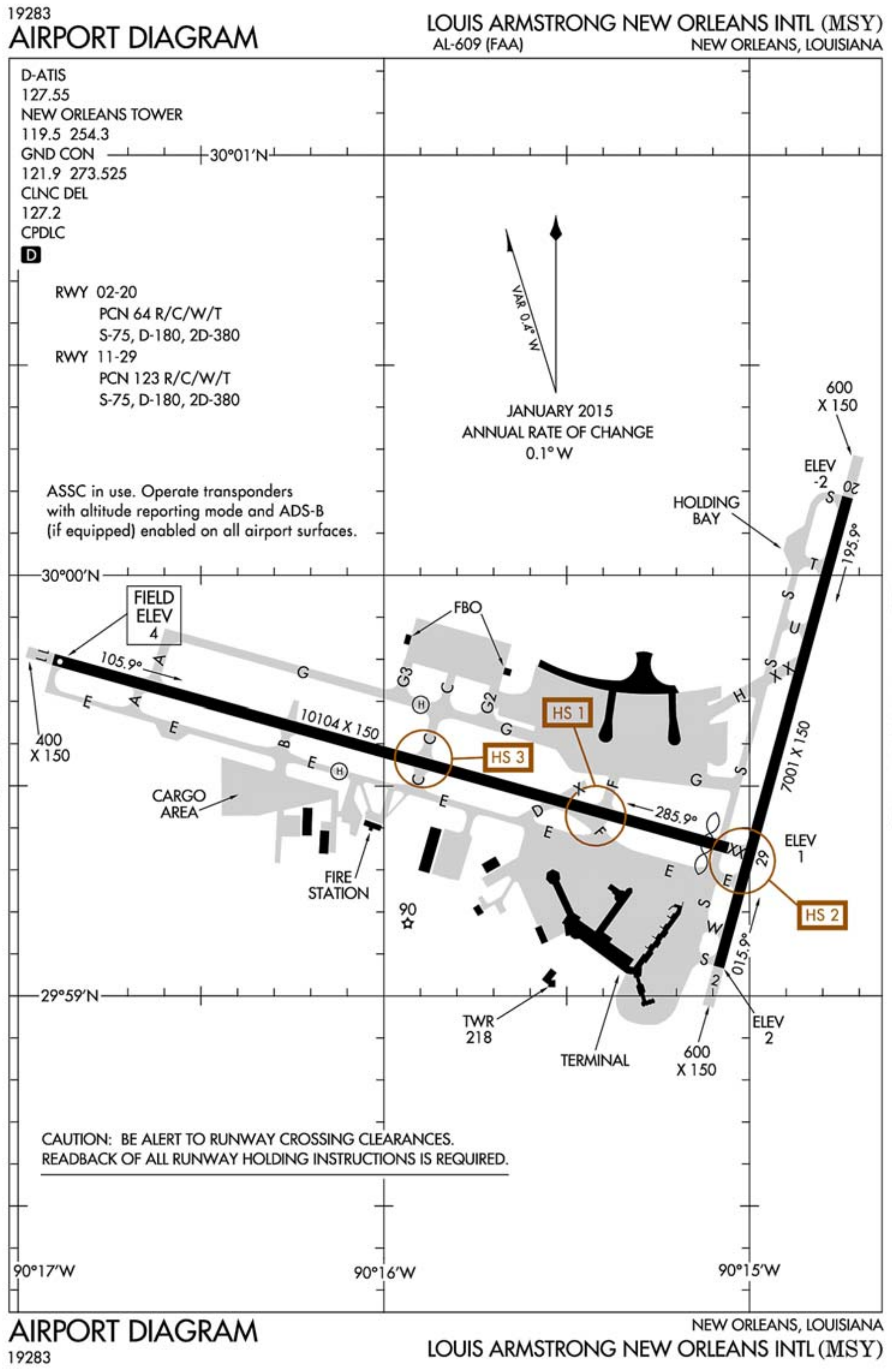
ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

SUCCESSIVE OR SIMULTANEOUS DEPS FM RY 36C & RY 36R ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FM EOR DUE TO NOISE ABATEMENT RESTRICTIONS.

NOISE SENSITIVE AREAS NORTH & SOUTH OF ARPT. RY ASSIGNMENTS BETWEEN 2200−0700 WILL BE PREDICATED ON NOISE ABATEMENT CONSIDERATIONS.

SUCCESSIVE OR SIMULTANEOUS DEPS FM RYS 18L AND RY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FM EOR DUE TO NOISE ABATEMENT RESTRICTIONS.

New Orleans, Louisiana
Louis Armstrong New Orleans International
ICAO Identifier KMSY



New Orleans, LA
Louis Armstrong New Orleans Intl
ICAO Identifier KMSY

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 29−59−35.8N / 90−15−32.5W
2.2.2 From City: 10 miles W of NEW ORLEANS, LA
2.2.3 Elevation: 3.7 ft
2.2.5 Magnetic Variation: 1W (2020)
2.2.6 Airport Contact: KEVIN DOLLIOLE
PO BOX 20007
NEW ORLEANS, LA 70141
((504) 303−7652)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 15
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 64 R/C/W/T
2.12.5 Coordinates: 29−59−4.2055N / 90−15−5.094W
2.12.6 Threshold Elevation: 1.8 ft
2.12.6 Touchdown Zone Elevation: 2.1 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 195
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 64 R/C/W/T
2.12.5 Coordinates: 30−0−10.9924N / 90−14−43.8363W
2.12.6 Threshold Elevation: −2.4 ft
2.12.6 Touchdown Zone Elevation: −0.6 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 105
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.4 PCN: 123 R/C/W/T
2.12.5 Coordinates: 29−59−47.8556N / 90−16−54.2241W
2.12.6 Threshold Elevation: 3.7 ft
2.12.6 Touchdown Zone Elevation: 3.7 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 285
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.4 PCN: 123 R/C/W/T
2.12.5 Coordinates: 29−59−21.1654N / 90−15−3.4894W
2.12.6 Threshold Elevation: 1.3 ft
2.12.6 Touchdown Zone Elevation: 2 ft

AD 2.13 Declared Distances
2.13.1 Designation: 02
2.13.2 Take−off Run Available: 7001
2.13.3 Take−off Distance Available: 7001
2.13.4 Accelerate−Stop Distance Available: 7001
2.13.5 Landing Distance Available: 7001

2.13.1 Designation: 20
2.13.2 Take−off Run Available: 7001
2.13.3 Take−off Distance Available: 7001
2.13.4 Accelerate−Stop Distance Available: 7001
2.13.5 Landing Distance Available: 7001

2.13.1 Designation: 11
2.13.2 Take−off Run Available: 10104
2.13.3 Take−off Distance Available: 10104
2.13.4 Accelerate−Stop Distance Available: 9800
2.13.5 Landing Distance Available: 9800

2.13.1 Designation: 29
2.13.2 Take−off Run Available: 10104
2.13.3 Take−off Distance Available: 10104
2.13.4 Accelerate−Stop Distance Available: 10104
2.13.5 Landing Distance Available: 9800

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02
2.14.2 Approach Lighting System: RLLS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 20
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 11
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 29

2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: APCH/P DEP/P (WEST)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (EAST)
2.14.3 Channel: 133.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (EAST)
2.14.3 Channel: 290.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (WEST)
2.14.3 Channel: 350.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 127.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE & SOUTH)
2.14.3 Channel: 123.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NORTH & EAST)
2.14.3 Channel: 133.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE & SOUTH)
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NORTH & EAST)
2.14.3 Channel: 290.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST)
2.14.3 Channel: 350.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 127.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 273.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 119.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 254.3
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 02. Magnetic variation: 1W
2.19.2 ILS Identification: JFI
2.19.5 Coordinates: 30−0−21.6577N / 90−14−43.2465W
2.19.6 Site Elevation: 1.3 ft

2.19.1 ILS Type: Glide Slope for runway 02. Magnetic variation: 1W
2.19.2 ILS Identification: JFI
2.19.5 Coordinates: 29−59−13.6093N / 90−14−58.5588W
2.19.6 Site Elevation: −0.9 ft

2.19.1 ILS Type: Localizer for runway 02. Magnetic variation: 1W
2.19.2 ILS Identification: JFI
2.19.5 Coordinates: 30−0−20.5102N / 90−14−40.8078W
2.19.6 Site Elevation: −4.2 ft

2.19.1 ILS Type: DME for runway 20. Magnetic variation: 1W
2.19.2 ILS Identification: ONW
2.19.5 Coordinates: 30−0−21.6577N / 90−14−43.2465W
2.19.6 Site Elevation: 1.3 ft

2.19.1 ILS Type: Localizer for runway 20. Magnetic variation: 1W
2.19.2 ILS Identification: ONW
2.19.5 Coordinates: 29−58−55.148N / 90−15−7.973W
2.19.6 Site Elevation: 2.3 ft

2.19.1 ILS Type: DME for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: MSY
2.19.5 Coordinates: 29−59−17.2127N / 90−14−55.7209W
2.19.6 Site Elevation: 12.4 ft

2.19.1 ILS Type: Glide Slope for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: MSY
2.19.5 Coordinates: 29−59−48.6197N / 90−16−39.2497W
2.19.6 Site Elevation: −3.1 ft

2.19.1 ILS Type: Inner Marker for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: MSY
2.19.5 Coordinates: 29−59−50.256N / 90−17−4.1742W
2.19.6 Site Elevation: 4.4 ft

2.19.1 ILS Type: Localizer for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: MSY
2.19.5 Coordinates: 29−59−19.3211N / 90−14−55.8537W
2.19.6 Site Elevation: −0.5 ft

2.19.1 ILS Type: DME for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: HOX
2.19.5 Coordinates: 29−59−17.2127N / 90−14−55.7209W
2.19.6 Site Elevation: 12.4 ft

2.19.1 ILS Type: Glide Slope for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: HOX
2.19.5 Coordinates: 29−59−27.9656N / 90−15−16.7865W
2.19.6 Site Elevation: 0.1 ft

2.19.1 ILS Type: Localizer for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: HOX
2.19.5 Coordinates: 29−59−50.5168N / 90−17−5.2703W
2.19.6 Site Elevation: 4.4 ft

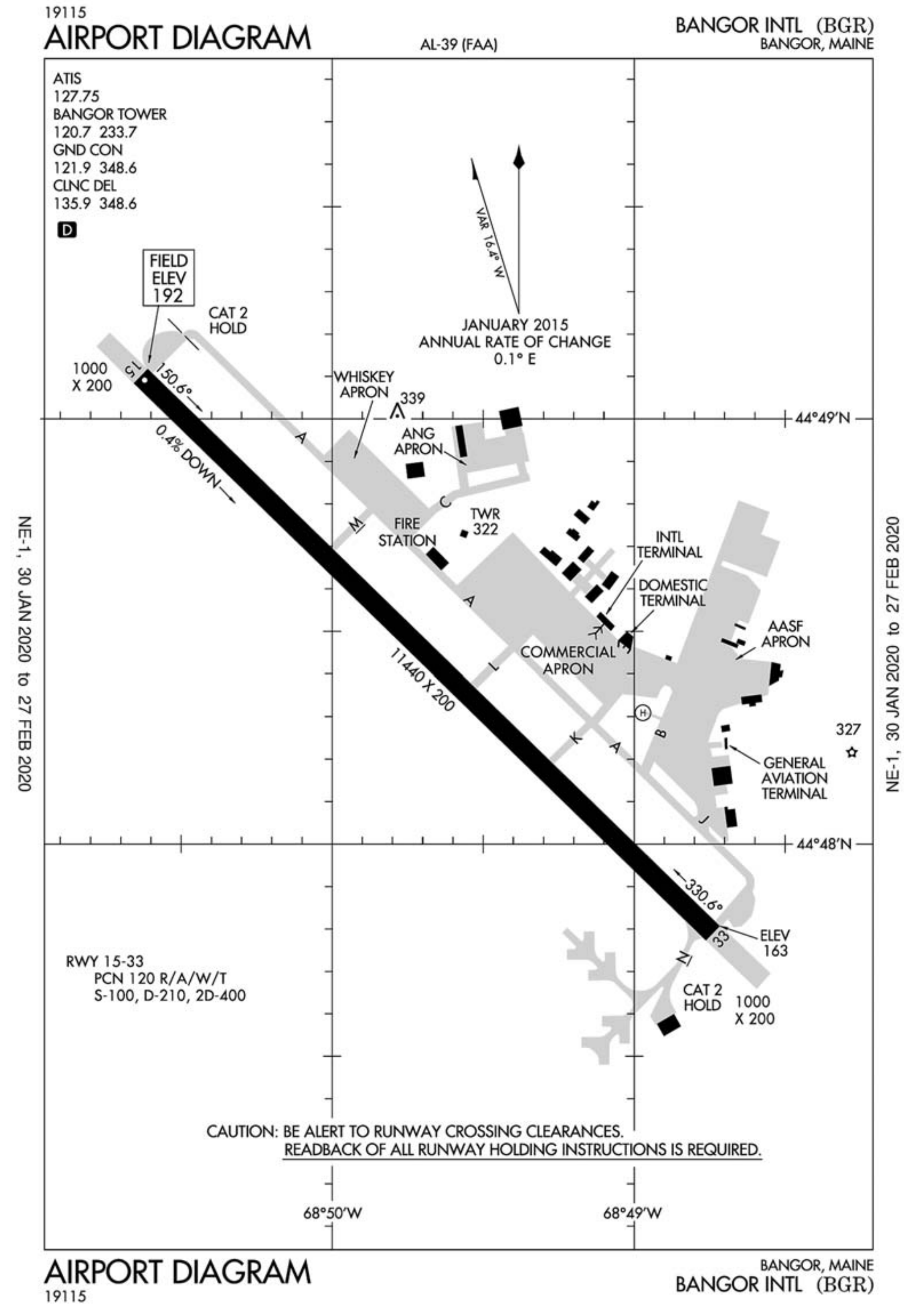
General Remarks:
180 DEG & LOCKED WHEEL TURNS PROHIBITED ON ASPH SFC ACFT 12500 LBS & OVER.

FLOCKS OF BIRDS ON & IN VICINITY OF ARPT.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RY 11 NOISE SENSITIVE FOR DEP; AVBL FOR OPNL NECESSITY. ALL RYS NOISE SENSITIVE FOR ARR. ARRIVING TURBOJETS MUST MAKE 5 MILE FINAL APCH TO MINIMIZE NOISE.

Bangor, Maine
Bangor International
ICAO Identifier KBGR



Bangor, ME
Bangor Intl
ICAO Identifier KBGR

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 44−48−26.8N / 68−49−41.3W
2.2.2 From City: 3 miles W of BANGOR, ME
2.2.3 Elevation: 192.1 ft
2.2.5 Magnetic Variation: 16W (2020)
2.2.6 Airport Contact: TONY CARUSO
BANGOR INTERNATIONAL ARPT
BANGOR, ME 4401 (207−992−4600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 11440 ft x 200 ft
2.12.4 PCN: 120 R/A/W/T
2.12.5 Coordinates: 44−49−6.1369N / 68−50−38.1522W
2.12.6 Threshold Elevation: 192.1 ft
2.12.6 Touchdown Zone Elevation: 192.1 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 11440 ft x 200 ft
2.12.4 PCN: 120 R/A/W/T
2.12.5 Coordinates: 44−47−47.4136N / 68−48−44.3618W
2.12.6 Threshold Elevation: 162.9 ft
2.12.6 Touchdown Zone Elevation: 162.9 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 100 ft x 100 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 15
2.13.2 Take−off Run Available: 11440
2.13.3 Take−off Distance Available: 11440
2.13.4 Accelerate−Stop Distance Available: 11440
2.13.5 Landing Distance Available: 11440

2.13.1 Designation: 33
2.13.2 Take−off Run Available: 11440
2.13.3 Take−off Distance Available: 11440
2.13.4 Accelerate−Stop Distance Available: 11440
2.13.5 Landing Distance Available: 11440

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 15
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 118.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 124.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 127.75

2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C
2.14.3 Channel: 118.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C/S
2.14.3 Channel: 124.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 120.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 233.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: NG OPS
2.14.3 Channel: 41.2
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44−47−42.4986N / 68−48−31.8082W
2.19.6 Site Elevation: 166.2 ft

2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44−49−2.1756N / 68−50−22.4761W
2.19.6 Site Elevation: 187.7 ft

2.19.1 ILS Type: Inner Marker for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44−49−12.0633N / 68−50−46.7197W
2.19.6 Site Elevation: 184 ft

2.19.1 ILS Type: Localizer for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44−47−40.3704N / 68−48−34.1931W
2.19.6 Site Elevation: 161.7 ft

2.19.1 ILS Type: Middle Marker for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44−49−23.6858N / 68−51−3.4639W
2.19.6 Site Elevation: 158 ft

2.19.1 ILS Type: DME for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44−47−42.4986N / 68−48−31.8082W
2.19.6 Site Elevation: 166.2 ft

2.19.1 ILS Type: Glide Slope for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44−47−53.7039N / 68−48−59.7081W
2.19.6 Site Elevation: 148.8 ft

2.19.1 ILS Type: Localizer for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44−49−13.6222N /

68−50−48.9786W
2.19.6 Site Elevation: 181.7 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 19W

2.19.2 Navigation Aid Identification: BGR
2.19.5 Coordinates: 44−50−30.4619N / 68−52−26.2752W
2.19.6 Site Elevation: 360.1 ft

General Remarks:
TRANSIENT ACFT MAY BE DIVERTED TO CIVILIAN SIDE DURING NON−DUTY HRS & WEEKENDS. FEE REQUIRED; NO ANG TRANSIENT ALERT.

ANG: PPR VALID +/− 1 HR UNLESS PRIOR CDN. 3 HR OUT CALL, 30 MIN OUT CALL 311.0 TO CFM CSTMS/AG AND TRAN SVC. COMMAND POST C207−404−7788 H24.

FUEL: A++ (MIL).

CAUTION: BASH PHASE II PERIOD SEP−NOV, APR−MAY. EXPECT INCREASED BIRD ACTIVITY. CONTACT BASE OPS/COMMAND POST/SOF FOR CURRENT BIRDWATCH COND.

ANG: OPR 1100−1930Z++ MON−FRI, CLSD WKEND AND HOL. PPR RQRD FOR ANG RAMP. CTC AFLD MGMT DSN 698−7232, C207−404−7232 FOR PPR DURG OPR HRS. PRE−COORD ALL TRNSPN RQMNTS AND HAZ CARGO WITH PPR REQ.

SVC TRAN ALERT: OPR 1130−0200Z++ MON−THU, 1130−1900Z++ FRI, CLSD WKEND AND HOL. UNAVBL OUTSIDE OF ANG TRAN ALERT OPR HRS WITHOUT PRIOR CDN.

SERVICE−FLUID: RMKS: FOREIGN MILITARY ONLY: ON BASE LOX SVC UNAVBL.

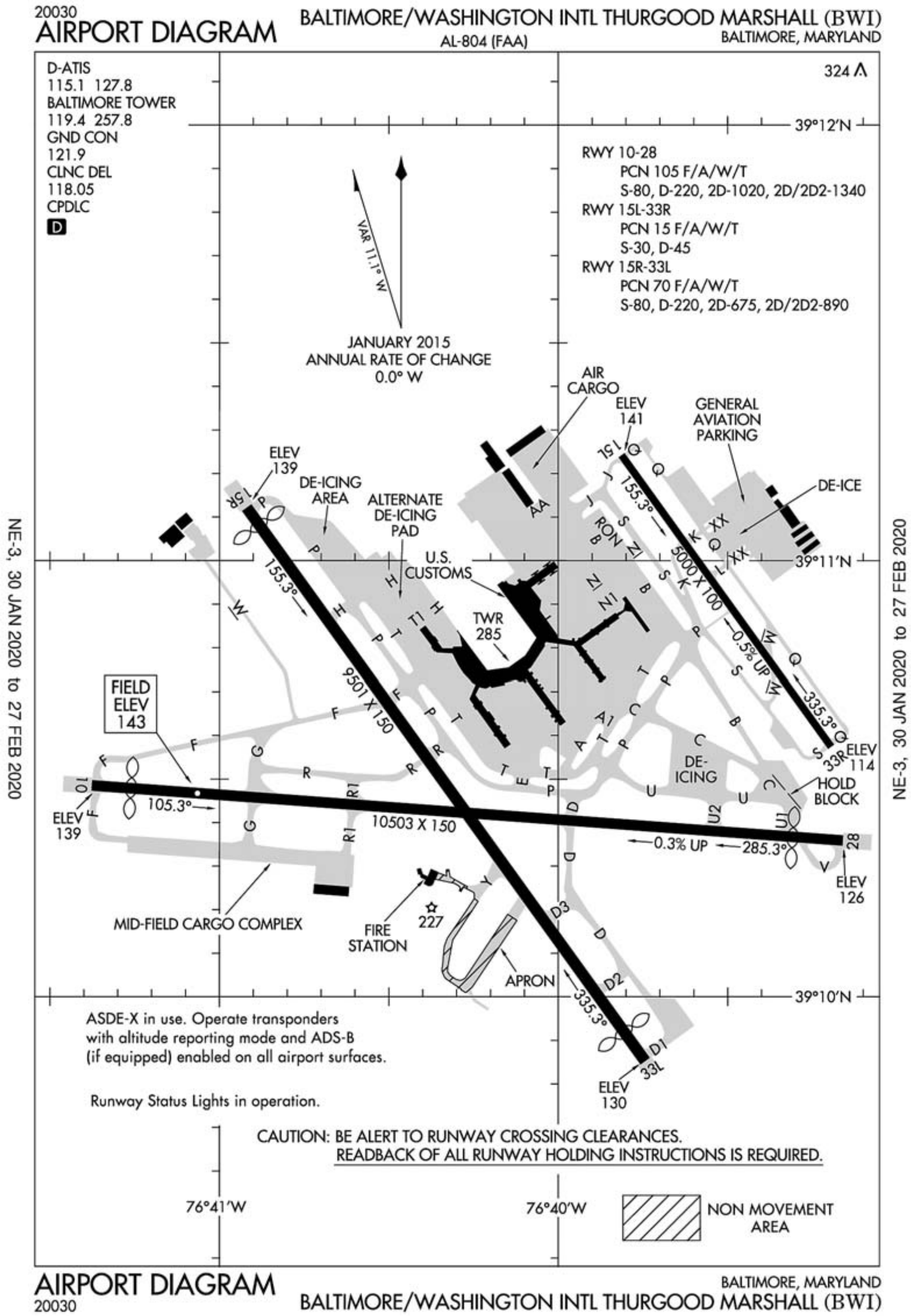
MISC: RWY 15−33 GROOVED.

SVC MIL−FLUID: OFF−BASE CONTRACTED LOX AVBL H24−RQR 24 HR NOTICE.

TFC PAT: RWY 33 LEFT TFC, TURBO JET TFC 2000’ MSL UNLESS OTHERWISE INSTR.

ARNG: OPR 1230−2100Z++ MON−FRI EXC HOL. LTDMAINT. J8. PPR MAY−OCT SVC DSN 626−1100.

Baltimore, Maryland
Baltimore−Washington International Thurgood Marshall
ICAO Identifier KBWI



Baltimore, MD
Baltimore/Washington Intl Thurgood Marshal
ICAO Identifier KBWI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−10−32.622N / 76−40−8.368W
2.2.2 From City: 9 miles S of BALTIMORE, MD
2.2.3 Elevation: 143.4 ft
2.2.5 Magnetic Variation: 11W (2000)
2.2.6 Airport Contact: JOHN STEWART
PO BOX 8766
BWI AIRPORT, MD 21240
(410−859−7018)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 94
2.12.3 Dimensions: 10503 ft x 150 ft
2.12.4 PCN: 105 F/A/W/T
2.12.5 Coordinates: 39−10−29.0895N / 76−41−22.6248W
2.12.6 Threshold Elevation: 139 ft
2.12.6 Touchdown Zone Elevation: 143.4 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 274
2.12.3 Dimensions: 10503 ft x 150 ft
2.12.4 PCN: 105 F/A/W/T
2.12.5 Coordinates: 39−10−21.4754N / 76−39−9.6234W
2.12.6 Threshold Elevation: 126.4 ft
2.12.6 Touchdown Zone Elevation: 142.7 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 324
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 15 F/A/W/T
2.12.5 Coordinates: 39−10−34.4468N / 76−39−11.6307W
2.12.6 Threshold Elevation: 114 ft
2.12.6 Touchdown Zone Elevation: 124.4 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 144
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 15 F/A/W/T
2.12.5 Coordinates: 39−11−14.5431N / 76−39−48.7441W
2.12.6 Threshold Elevation: 141.4 ft
2.12.6 Touchdown Zone Elevation: 141.5 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 324
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39−9−51.1311N / 76−39−44.6134W
2.12.6 Threshold Elevation: 129.6 ft
2.12.6 Touchdown Zone Elevation: 142.7 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 144
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39−11−7.3007N / 76−40−55.1704W
2.12.6 Threshold Elevation: 139 ft
2.12.6 Touchdown Zone Elevation: 138.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10
2.13.2 Take−off Run Available: 10503
2.13.3 Take−off Distance Available: 10503
2.13.4 Accelerate−Stop Distance Available: 10503
2.13.5 Landing Distance Available: 9953

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 10503
2.13.3 Take−off Distance Available: 10503
2.13.4 Accelerate−Stop Distance Available: 10503
2.13.5 Landing Distance Available: 9803

2.13.1 Designation: 33R
2.13.2 Take−off Run Available: 5000
2.13.3 Take−off Distance Available: 5000
2.13.4 Accelerate−Stop Distance Available: 5000
2.13.5 Landing Distance Available: 5000

2.13.1 Designation: 15L
2.13.2 Take−off Run Available: 5000

2.13.3 Take−off Distance Available: 5000
2.13.4 Accelerate−Stop Distance Available: 5000
2.13.5 Landing Distance Available: 5000

2.13.1 Designation: 33L
2.13.2 Take−off Run Available: 9501
2.13.3 Take−off Distance Available: 9501
2.13.4 Accelerate−Stop Distance Available: 8801
2.13.5 Landing Distance Available: 8301

2.13.1 Designation: 15R
2.13.2 Take−off Run Available: 9501
2.13.3 Take−off Distance Available: 9501
2.13.4 Accelerate−Stop Distance Available: 8601
2.13.5 Landing Distance Available: 8301

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 28
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 11W
2.19.2 ILS Identification: BAL
2.19.5 Coordinates: 39−10−23.557N / 76−41−3.233W
2.19.6 Site Elevation: 137.6 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 11W
2.19.2 ILS Identification: BAL
2.19.5 Coordinates: 39−10−20.5919N / 76−38−54.2857W
2.19.6 Site Elevation: 137.5 ft

2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 11W
2.19.2 ILS Identification: OEH
2.19.5 Coordinates: 39−10−18.64N / 76−39−31.024W
2.19.6 Site Elevation: 129.2 ft

2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 11W
2.19.2 ILS Identification: OEH
2.19.5 Coordinates: 39−10−29.82N / 76−41−35.417W
2.19.6 Site Elevation: 134 ft

2.19.1 ILS Type: Glide Slope for runway 15L. Magnetic variation: 11W
2.19.2 ILS Identification: UQC
2.19.5 Coordinates: 39−11−3.6746N / 76−39−44.2376W
2.19.6 Site Elevation: 138.1 ft

2.19.1 ILS Type: Localizer for runway 15L. Magnetic variation: 11W
2.19.2 ILS Identification: UQC
2.19.5 Coordinates: 39−10−29.3978N / 76−39−6.9539W
2.19.6 Site Elevation: 94 ft

2.19.1 ILS Type: DME for runway 33R. Magnetic variation: 11W
2.19.2 ILS Identification: BWI
2.19.5 Coordinates: 39−11−18.9N / 76−39−48.5W
2.19.6 Site Elevation: 128.7 ft

2.19.1 ILS Type: Glide Slope for runway 33R. Magnetic variation: 11W
2.19.2 ILS Identification: BWI
2.19.5 Coordinates: 39−10−40.0486N / 76−39−21.1916W
2.19.6 Site Elevation: 110.3 ft

2.19.1 ILS Type: Localizer for runway 33R. Magnetic variation: 11W
2.19.2 ILS Identification: BWI
2.19.5 Coordinates: 39−11−19.7555N / 76−39−53.5728W
2.19.6 Site Elevation: 133 ft

2.19.1 ILS Type: Glide Slope for runway 15R. Magnetic variation: 11W
2.19.2 ILS Identification: FND
2.19.5 Coordinates: 39−10−53.6N / 76−40−48.9W
2.19.6 Site Elevation: 130 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 11W
2.19.2 ILS Identification: FND
2.19.5 Coordinates: 39−9−39.11N / 76−39−33.48W
2.19.6 Site Elevation: 116 ft

2.19.1 ILS Type: Glide Slope for runway 33L. Magnetic variation: 11W
2.19.2 ILS Identification: RUX
2.19.5 Coordinates: 39−10−0.53N / 76−39−59.72W
2.19.6 Site Elevation: 125 ft

2.19.1 ILS Type: Localizer for runway 33L. Magnetic variation: 11W
2.19.2 ILS Identification: RUX
2.19.5 Coordinates: 39−11−10.51N / 76−40−58.14W
2.19.6 Site Elevation: 133 ft

General Remarks:
ACFT ON VISUAL APCHS EXPECT TO MAINTAIN 3,000 FT UNTIL 10 DME FM BAL VORTAC; DEPART ACFT SHOULD EXPECT TURNS BASED ON BALTIMORE DME.

NO APRON PARKING FOR UNSKED ACR.

GENERAL AVIATION ACFT CTC UNICOM PRIOR TO ARRIVING AT GENERAL AVIATION RAMP FOR SECURITY PURPOSES.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RWY STATUS LGTS IN OPN.

MAJOR CONSTRUCTION ON ARPT DLY; ACFT MOVEMENT & PARKING AREAS SUBJECT TO SHORT NOTICE CHANGE/CLOSURE. FOR CURRENT INFORMATION PHONE BWI OPNS CENTER 410−859−7018.

TWY ”S”, SOUTH OF TWY ”P”, RESTRICTED TO AIRCRAFT 60,000 LBS. & LESS.

RY 28 DE−ICE PAD LANE 1 RSTD TO ACFT WITH WINGSPAN 171 FT OR LESS, LANE 2 RSTD TO ACFT WITH WINGSPAN 135 FT OR LESS, LANE 3 IS USED BY LARGE ACFT MAX WINGSPAN 215 FT AND WHEN IN USE− LANES 2 AND 4 ARE UNAVBL. LANES 4, 5 & 6 ARE RSTD TO ACFT WINGSPAN 135 FT OR LESS.

ACFT DEPARTING RWY 28 EXP DEP FM TWY U1.

DEER & BIRDS OCNLLY ON & INVOF ARPT.

PRACTICE LNDG & APCH BY TURBO−PWRD ACFT PROHIBITED 2200−0600; PRACTICE LNDG & TKOF BY B−747 ACFT PROHIBITED RY 15R/33L.

TWY T BTN TWY H AND TWY E RSTD TO GROUP IV ACFT WITH WINGSPAN LESS THAN 171’. TWY T BTN TWY E AND TWY B RSTD TO GROUP V ACFT WITH WINGSPAN LESS THAN 214’; WHEN GROUP V ACFT ARE ON TWY T, TWY A IS RSTD TO MAX WINGSPANS OF 110’.

TAXILANES ’T−1’ & ”H” RESTRICTED TO GROUP III ACFT WITH MAX WINGSPAN OF 118 FEET.

RWY LEN AVBL FOR RWY 28 DEPS FM TWY U1 IS 9802 FT.

CONCOURSE A − ALTN DEICING AREA IS RSTRD TO B737−800 SIZE ACFT WITH WINGLETS OR SMLR ON SPOTS 6B, 7A, AND 8A. B737−700 SIZE ACFT WITH WINGLETS OR SMLR ARE RSTRD TO SPOTS 6A, 7B, AND 8B.

TAXIING PROHIBITED BTN CONCOURSE C & ADJ BLDG STRUCTURE SW OF CONCOURSE C. ACCESS TO GATE C12 MUST BE VIA TWY A.

RY 15R DEICE PAD, POSITION # 1, RESTRICTED TO ACFT WITH WINGSPAN OF 156 FT 1 INCH OR LESS & LENGTH OF 180 FT 3 INCHES OR LESS. PSN'S #2 & #3 ARE RSTD TO ACFT WITH A WINGSPAN OF 156 FT 1 INCH OR LESS, POSITION #3 IS RSTD TO ACFT WITH A WINGSPAN OF 156 FT 1 INCH OR LESS & LENGTH OF 180 FT 3 INCHES OR LESS; POSITION 4 RESTRICTED TO ACFT WITH WINGSPAN OF 213 FT OR LESS & LENGTH OF 229 FT 2 INCHES OR LESS.

TWY 'A' IS RSTD TO GROUP IV ACFT WINGSPAN 171 FT OR LESS.

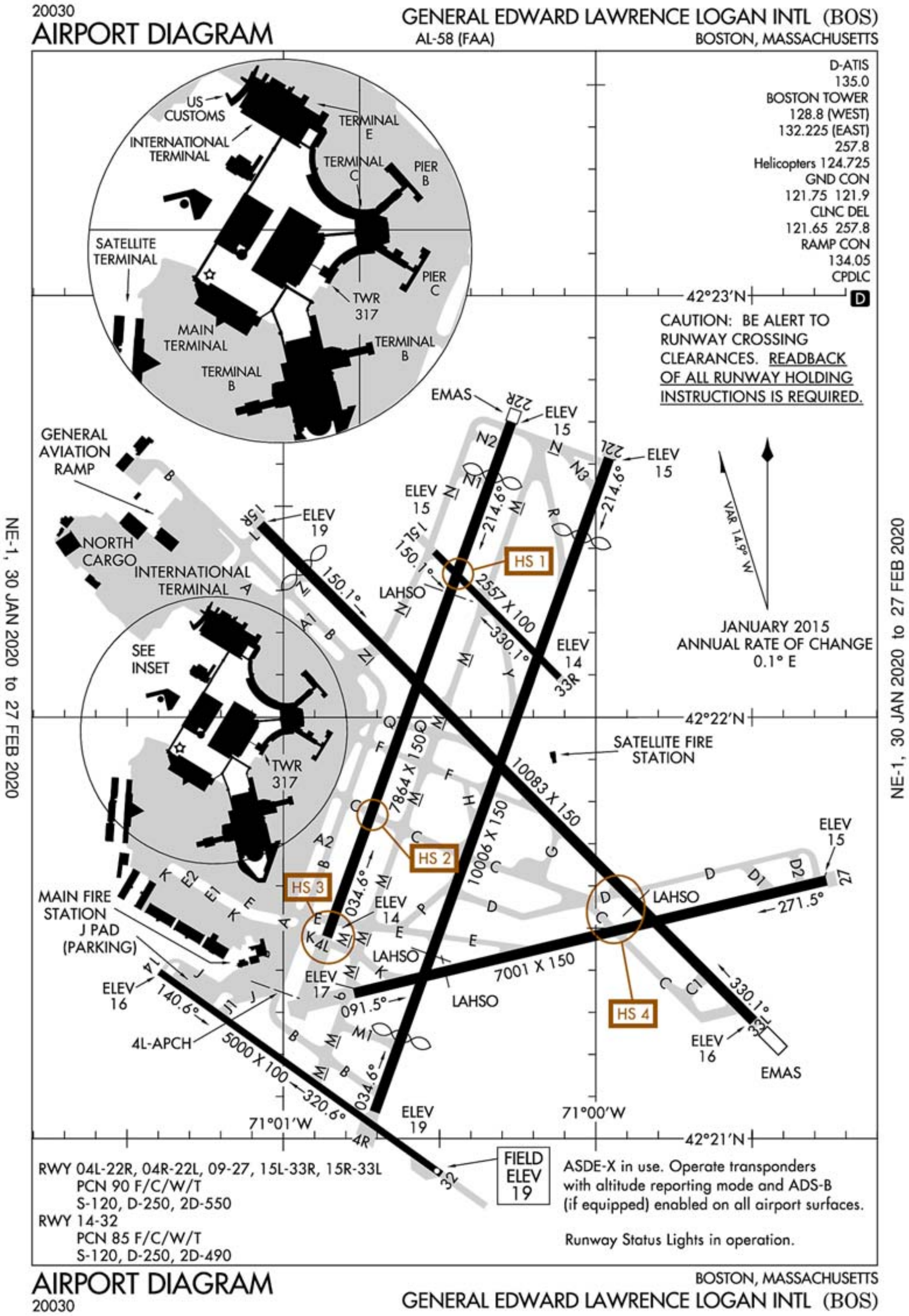
NOISE ABATEMENT PROCEDURES IN EFFECT − RESTRICTION FOR RY 15L/33R EXCEPT FOR EMERGENCIES OR MERCY FLIGHTS CTC AMGR FOR INFORMATION.

DISTRACTING LGTS (GOLF DRIVING RANGE) RIGHT SIDE EXTDD CNTRLN RY 33L FM AER TO 1/4 MI FINAL.

CONT MOWING OPERATIONS ADJ ALL RYS & TXYS − APR THRU NOV.

DUAL PARALLEL TAXILANES HAVE BEEN ADDED TO THE 'D'/'E' ALLEYWAY; TAXILANE 'N' AND TAXILANE 'N1'. TAXILANE 'N' IS DESIGNATED A "GROUP V" TAXILANE WITH MAX WINGSPAN OF 213 FT. TAXILANE 'N1' IS DESIGNATED A "GROUP IV" TAXILANE WITH MAX WINGSPAN OF 170 FT.

Boston, Massachusetts
General Edward Lawrence Logan International
ICAO Identifier KBOS



Boston, MA
General Edward Lawrence Logan Intl
ICAO Identifier KBOS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42−21−46.6N / 71−0−23W
2.2.2 From City: 1 miles E of BOSTON, MA
2.2.3 Elevation: 19.1 ft
2.2.5 Magnetic Variation: 15W (2020)
2.2.6 Airport Contact: EDWARD FRENI
LOGAN INTERNATIONAL AIRPORT
EAST BOSTON, MA 2128 (617−567−5400)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 9/1/1972

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 7864 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−21−28.7577N / 71−0−51.6187W
2.12.6 Threshold Elevation: 13.9 ft
2.12.6 Touchdown Zone Elevation: 13.9 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 200
2.12.3 Dimensions: 7864 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−22−41.8759N / 71−0−16.2499W
2.12.6 Threshold Elevation: 14.9 ft
2.12.6 Touchdown Zone Elevation: 15.2 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 20
2.12.3 Dimensions: 10006 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−21−3.8094N / 71−0−42.458W
2.12.6 Threshold Elevation: 18.8 ft
2.12.6 Touchdown Zone Elevation: 17.6 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 200
2.12.3 Dimensions: 10006 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−22−36.8399N / 70−59−57.4473W
2.12.6 Threshold Elevation: 14.5 ft
2.12.6 Touchdown Zone Elevation: 15.6 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 77
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−21−20.715N / 71−0−46.4187W
2.12.6 Threshold Elevation: 16.7 ft
2.12.6 Touchdown Zone Elevation: 16.8 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 257
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−21−36.7767N / 70−59−15.7276W
2.12.6 Threshold Elevation: 14.8 ft
2.12.6 Touchdown Zone Elevation: 17.2 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 125
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 85 F/C/W/T
2.12.5 Coordinates: 42−21−23.7521N / 71−1−23.7886W
2.12.6 Threshold Elevation: 16 ft
2.12.6 Touchdown Zone Elevation: 19.1 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 305
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 85 F/C/W/T
2.12.5 Coordinates: 42−20−54.9565N / 71−0−29.6841W
2.12.6 Threshold Elevation: 19.1 ft
2.12.6 Touchdown Zone Elevation: 19.1 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 2557 ft x 100 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−22−23.5008N / 71−0−31.0047W
2.12.6 Threshold Elevation: 14.8 ft
2.12.6 Touchdown Zone Elevation: 15.8 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 2557 ft x 100 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−22−5.5791N / 71−0−7.0008W
2.12.6 Threshold Elevation: 14 ft
2.12.6 Touchdown Zone Elevation: 15.8 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 135
2.12.3 Dimensions: 10083 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−22−27.3749N / 71−1−4.4117W
2.12.6 Threshold Elevation: 18.9 ft
2.12.6 Touchdown Zone Elevation: 17 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 315
2.12.3 Dimensions: 10083 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42−21−16.7428N / 70−59−29.7098W
2.12.6 Threshold Elevation: 15.7 ft
2.12.6 Touchdown Zone Elevation: 16.2 ft

AD 2.13 Declared Distances
2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 7864
2.13.3 Take−off Distance Available: 7864
2.13.4 Accelerate−Stop Distance Available: 7864
2.13.5 Landing Distance Available: 7864

2.13.1 Designation: 22R
2.13.2 Take−off Run Available: 7864
2.13.3 Take−off Distance Available: 7864
2.13.4 Accelerate−Stop Distance Available: 7864
2.13.5 Landing Distance Available: 7046

2.13.1 Designation: 04R
2.13.2 Take−off Run Available: 10006
2.13.3 Take−off Distance Available: 10006
2.13.4 Accelerate−Stop Distance Available: 10006
2.13.5 Landing Distance Available: 8851

2.13.1 Designation: 22L
2.13.2 Take−off Run Available: 10006
2.13.3 Take−off Distance Available: 10006
2.13.4 Accelerate−Stop Distance Available: 10006
2.13.5 Landing Distance Available: 8806

2.13.1 Designation: 09
2.13.2 Take−off Run Available: 7001
2.13.3 Take−off Distance Available: 7001
2.13.4 Accelerate−Stop Distance Available: 7001
2.13.5 Landing Distance Available: 7001

2.13.1 Designation: 27
2.13.2 Take−off Run Available: 7001
2.13.3 Take−off Distance Available: 7001
2.13.4 Accelerate−Stop Distance Available: 7001
2.13.5 Landing Distance Available: 7001

2.13.1 Designation: 14
2.13.2 Take−off Run Available: 5000
2.13.3 Take−off Distance Available: 5000
2.13.4 Accelerate−Stop Distance Available: 5000
2.13.5 Landing Distance Available: 5000

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 5000
2.13.3 Take−off Distance Available: 5000
2.13.4 Accelerate−Stop Distance Available: 5000
2.13.5 Landing Distance Available: 5000

2.13.1 Designation: 15L
2.13.2 Take−off Run Available: 2557
2.13.3 Take−off Distance Available: 2557
2.13.4 Accelerate−Stop Distance Available: 2557
2.13.5 Landing Distance Available: 2557

2.13.1 Designation: 33R
2.13.2 Take−off Run Available: 2557
2.13.3 Take−off Distance Available: 2557
2.13.4 Accelerate−Stop Distance Available: 2557
2.13.5 Landing Distance Available: 2557

2.13.1 Designation: 15R
2.13.2 Take−off Run Available: 10083
2.13.3 Take−off Distance Available: 10083
2.13.4 Accelerate−Stop Distance Available: 10083
2.13.5 Landing Distance Available: 9202

2.13.1 Designation: 33L
2.13.2 Take−off Run Available: 10083
2.13.3 Take−off Distance Available: 10083
2.13.4 Accelerate−Stop Distance Available: 10083
2.13.5 Landing Distance Available: 10083

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 09
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 27
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 33R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 15R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 15W
2.19.2 ILS Identification: BOS
2.19.5 Coordinates: 42−22−57.4695N / 70−59−50.8873W
2.19.6 Site Elevation: 34.5 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 15W
2.19.2 ILS Identification: BOS
2.19.5 Coordinates: 42−21−21.8231N / 71−0−24.5483W
2.19.6 Site Elevation: 10.1 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 15W
2.19.2 ILS Identification: BOS
2.19.5 Coordinates: 42−22−55.9736N / 70−59−48.1884W
2.19.6 Site Elevation: 17.6 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic variation: 15W
2.19.2 ILS Identification: LQN
2.19.5 Coordinates: 42−22−57.4695N / 70−59−50.8873W
2.19.6 Site Elevation: 34.5 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 15W
2.19.2 ILS Identification: LQN
2.19.5 Coordinates: 42−22−17.0026N / 71−0−11.9878W
2.19.6 Site Elevation: 11.1 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 15W
2.19.2 ILS Identification: LQN
2.19.5 Coordinates: 42−21−0.0409N / 71−0−44.2844W
2.19.6 Site Elevation: 14.6 ft

2.19.1 ILS Type: DME for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42−21−15.6955N / 71−0−55.7791W
2.19.6 Site Elevation: 30.5 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42−21−31.2953N / 70−59−28.3545W
2.19.6 Site Elevation: 12.3 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 15W

2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42−21−18.4751N / 71−0−59.0489W
2.19.6 Site Elevation: 16.5 ft

2.19.1 ILS Type: DME for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42−21−26.5111N / 70−59−35.0574W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: Glide Slope for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42−22−14.6947N / 71−0−42.4209W
2.19.6 Site Elevation: 11.2 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42−21−26.3592N / 70−59−37.052W
2.19.6 Site Elevation: 11.1 ft

2.19.1 ILS Type: DME for runway 33L. Magnetic variation: 15W
2.19.2 ILS Identification: LIP
2.19.5 Coordinates: 42−21−26.5111N / 70−59−35.0574W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: Glide Slope for runway 33L. Magnetic variation: 15W
2.19.2 ILS Identification: LIP
2.19.5 Coordinates: 42−21−26.6446N / 70−59−34.7132W
2.19.6 Site Elevation: 11.3 ft

2.19.1 ILS Type: Localizer for runway 33L. Magnetic variation: 15W
2.19.2 ILS Identification: LIP
2.19.5 Coordinates: 42−22−37.5624N / 71−1−18.0895W
2.19.6 Site Elevation: 15.9 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 16W
2.19.2 Navigation Aid Identification: BOS
2.19.5 Coordinates: 42−21−26.8197N / 70−59−22.3742W
2.19.6 Site Elevation: 18.4 ft

General Remarks:
RWY STATUS LGTS IN OPN.

NOISE SENSITIVE AREA − HELS OPNG WITHIN THE CTZL ARE REQD TO MAINT THE HIGHEST POSSIBLE ALT.

NO RON PARKING FOR NON−TENANT CHARTER AIRCRAFT WITHOUT PRIOR MASSPORT PERMISSION.

PILOTS SHOULD COMPLETE ALL CALCULATIONS PRIOR TO PUSHBACK FROM GATE.

BTN 0000−0600 LCL − RY 15R IS PREFERENTIAL NGT RY FOR TKOF & RY 33L IS PREFERENTIAL NGT RY FOR LNDG.

RWY 14/32 UNIDIRECTIONAL; NO LDGS RWY 14; NO TKOFS RWY 32.

NMRS CRANES ON AND INVOF ARPT.

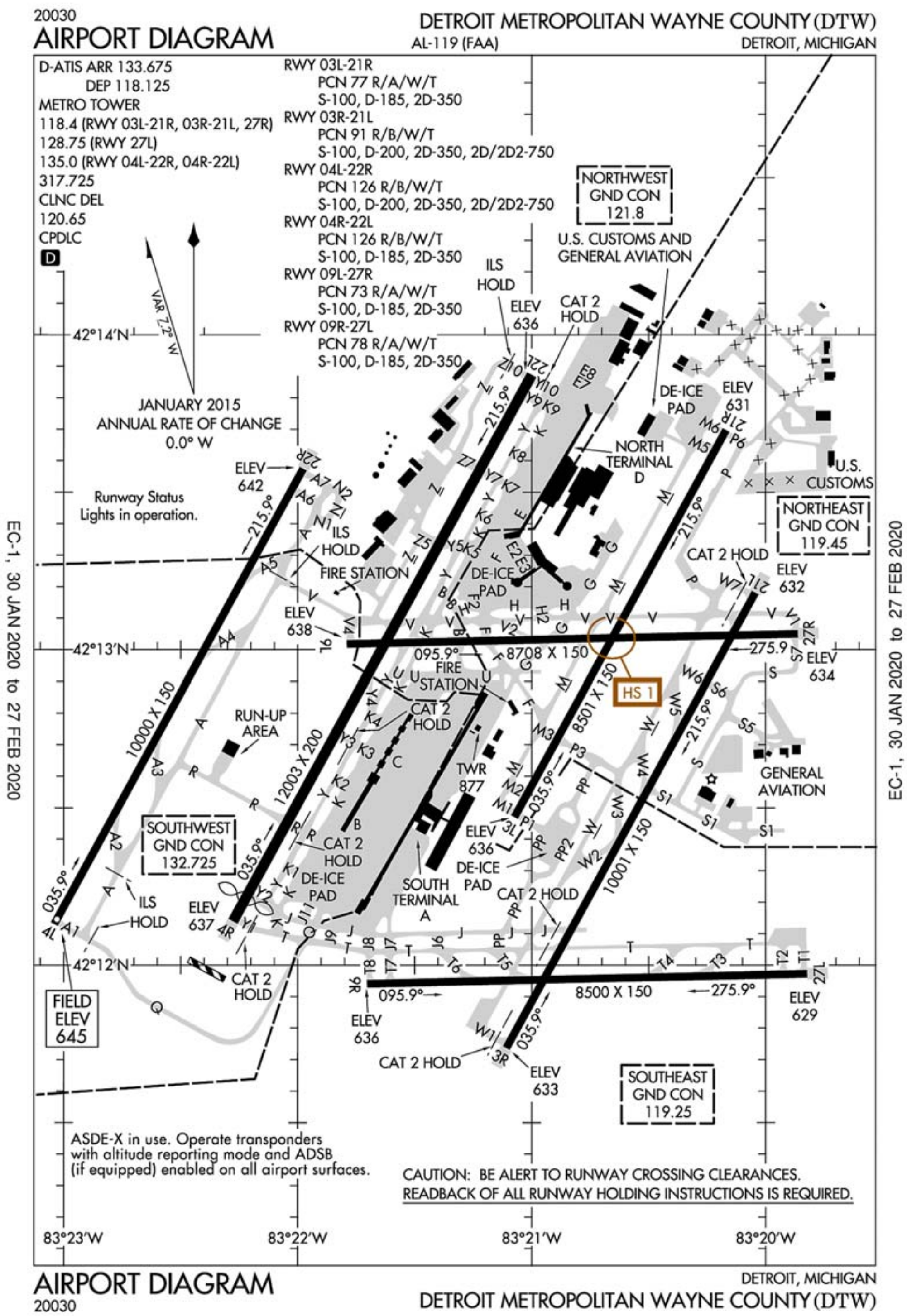
TERMINAL E; NORTH & SOUTH CARGO ARRIVALS CTC MASSPORT GATE CONTROL ON FREQ 131.1 BEFORE ENTERING/DEPARTING RAMP AREA.

FOR NOISE ABATEMENT PROCEDURES CALL 617−561−1636 0900−1700 MON−FRI.

BIRDS ON & INVOF ARPT.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

Detroit, Michigan
Detroit Metropolitan Wayne County
ICAO Identifier KDTW



Detroit, MI
Detroit Metropolitan Wayne County
ICAO Identifier KDTW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42−12−44.8N / 83−21−12.2W
2.2.2 From City: 15 miles S of DETROIT, MI
2.2.3 Elevation: 645.2 ft
2.2.5 Magnetic Variation: 7W (2020)
2.2.6 Airport Contact: CHAD NEWTON
1050 ROGELL DRIVE, #602
DETROIT, MI 48242
(734−942−3550)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 8501 ft x 150 ft
2.12.4 PCN: 77 R/A/W/T
2.12.5 Coordinates: 42−12−28.207N / 83−21−4.3869W
2.12.6 Threshold Elevation: 635.7 ft
2.12.6 Touchdown Zone Elevation: 636.8 ft

2.12.1 Designation: 21R
2.12.2 True Bearing: 209
2.12.3 Dimensions: 8501 ft x 150 ft
2.12.4 PCN: 77 R/A/W/T
2.12.5 Coordinates: 42−13−41.852N / 83−20−10.1125W
2.12.6 Threshold Elevation: 631.4 ft
2.12.6 Touchdown Zone Elevation: 634.4 ft

2.12.1 Designation: 03R
2.12.2 True Bearing: 29
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 42−11−44.2115N / 83−21−6.4868W
2.12.6 Threshold Elevation: 632.8 ft
2.12.6 Touchdown Zone Elevation: 633.1 ft

2.12.1 Designation: 21L
2.12.2 True Bearing: 209
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 42−13−10.8552N / 83−20−2.6517W
2.12.6 Threshold Elevation: 631.8 ft
2.12.6 Touchdown Zone Elevation: 632.3 ft

2.12.1 Designation: 04L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42−12−7.8216N / 83−23−2.4003W
2.12.6 Threshold Elevation: 645.2 ft
2.12.6 Touchdown Zone Elevation: 645.2 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 209
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42−13−34.4821N / 83−21−58.6115W
2.12.6 Threshold Elevation: 642.1 ft
2.12.6 Touchdown Zone Elevation: 642.1 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 209
2.12.3 Dimensions: 12003 ft x 200 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42−13−52.3644N / 83−20−59.9655W
2.12.6 Threshold Elevation: 635.8 ft
2.12.6 Touchdown Zone Elevation: 637.4 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 29
2.12.3 Dimensions: 12003 ft x 200 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42−12−8.3656N / 83−22−16.5697W
2.12.6 Threshold Elevation: 637 ft
2.12.6 Touchdown Zone Elevation: 639.5 ft

2.12.1 Designation: 22X
2.12.2 True Bearing: 209
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft

2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 04X
2.12.2 True Bearing: 29
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 89
2.12.3 Dimensions: 8708 ft x 150 ft
2.12.4 PCN: 73 R/A/W/T
2.12.5 Coordinates: 42−13−1.0821N / 83−21−47.4044W
2.12.6 Threshold Elevation: 638 ft
2.12.6 Touchdown Zone Elevation: 639.6 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8708 ft x 150 ft
2.12.4 PCN: 73 R/A/W/T
2.12.5 Coordinates: 42−13−3.0219N / 83−19−51.7146W
2.12.6 Threshold Elevation: 634.3 ft
2.12.6 Touchdown Zone Elevation: 634.7 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 89
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 78 R/A/W/T
2.12.5 Coordinates: 42−11−56.4542N / 83−21−42.2248W
2.12.6 Threshold Elevation: 636 ft
2.12.6 Touchdown Zone Elevation: 636.1 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 78 R/A/W/T
2.12.5 Coordinates: 42−11−58.3372N / 83−19−49.3276W
2.12.6 Threshold Elevation: 629 ft
2.12.6 Touchdown Zone Elevation: 630.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03L
2.13.2 Take−off Run Available: 8501
2.13.3 Take−off Distance Available: 8501
2.13.4 Accelerate−Stop Distance Available: 8501
2.13.5 Landing Distance Available: 8501
2.13.1 Designation: 21R
2.13.2 Take−off Run Available: 8501
2.13.3 Take−off Distance Available: 8501
2.13.4 Accelerate−Stop Distance Available: 8501
2.13.5 Landing Distance Available: 8501

2.13.1 Designation: 03R
2.13.2 Take−off Run Available: 10001
2.13.3 Take−off Distance Available: 10001
2.13.4 Accelerate−Stop Distance Available: 10001
2.13.5 Landing Distance Available: 10001

2.13.1 Designation: 21L
2.13.2 Take−off Run Available: 10001
2.13.3 Take−off Distance Available: 10001
2.13.4 Accelerate−Stop Distance Available: 10001
2.13.5 Landing Distance Available: 10001

2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 22R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 22L
2.13.2 Take−off Run Available: 12003
2.13.3 Take−off Distance Available: 12003
2.13.4 Accelerate−Stop Distance Available: 12003
2.13.5 Landing Distance Available: 12003

2.13.1 Designation: 04R
2.13.2 Take−off Run Available: 12003
2.13.3 Take−off Distance Available: 12003
2.13.4 Accelerate−Stop Distance Available: 12003
2.13.5 Landing Distance Available: 11494

2.13.1 Designation: 22X
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 04X
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:

2.13.5 Landing Distance Available:

2.13.1 Designation: 09L
2.13.2 Take−off Run Available: 8708
2.13.3 Take−off Distance Available: 8708
2.13.4 Accelerate−Stop Distance Available: 8618
2.13.5 Landing Distance Available: 8618

2.13.1 Designation: 27R
2.13.2 Take−off Run Available: 8708
2.13.3 Take−off Distance Available: 8708
2.13.4 Accelerate−Stop Distance Available: 8708
2.13.5 Landing Distance Available: 8708

2.13.1 Designation: 09R
2.13.2 Take−off Run Available: 8500
2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8500
2.13.5 Landing Distance Available: 8500

2.13.1 Designation: 27L
2.13.2 Take−off Run Available: 8500
2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8500
2.13.5 Landing Distance Available: 8500

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 21R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 03R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 21L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 04L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R
2.14.1 Designation: 22L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22X
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 04X
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 09L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 27R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 09R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 27L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (RWY 04L/22R, 04R/22L, 27L)
2.14.3 Channel: 124.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (RWY 03R, 21L, 27R)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 284
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARII DP (RWY 04L/22R, 04R/22L)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARII DP (RWY 03L/21R, 03R/21L, 27L, 27R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BONZZ STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CCOBB DP (RWY 03L, 03R, 04L, 04R, 21L, 21R, 22L, 22R)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CCOBB DP (RWY 27L, 27R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 120.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SW)
2.14.3 Channel: 118.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NW/NE)
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE)
2.14.3 Channel: 134.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLVIN DP (RWY 04L/22R, 04R/22L)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLVIN DP (RWY 03L/21R, 03R/21L, 27L, 27R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CRAKN STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CUUGR STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 118.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 133.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (PROPS/TURBO-PROPS−WEST)
2.14.3 Channel: 118.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (TURBOJETS−WEST)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (TURBOJETS−EAST)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (PROPS/TURBO-PROPS−EAST)
2.14.3 Channel: 134.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: FERRL STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GEMNI STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (SOUTHEAST)
2.14.3 Channel: 119.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (NORTHEAST)

2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (NORTHWEST)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (SOUTHWEST)
2.14.3 Channel: 132.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GRAYT STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HANBLSTAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HAYLL STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 27L, 27R)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 03L/21R, 03R/21L, 04L/22R, 04R/22L)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HTROD STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KAYLN DP
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KKISS STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLYNK STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LAYKS STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 03L/21R, 03R/21L, 27R)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 03R/21L, 27R)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 04R/22L)
2.14.3 Channel: 128.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 27L)
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 03L/21R, 27L)
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 04L/22R)
2.14.3 Channel: 135
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 04L/22R, 04R/22L)
2.14.3 Channel: 135
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 317.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LECTR STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LIDDS DP
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MEDEVAC
2.14.3 Channel: 259.6

2.14.5 Hours of Operation:

2.14.1 Service Designation: METRO DP (WESTBOUND)
2.14.3 Channel: 118.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: METRO DP (EASTBOUND)
2.14.3 Channel: 134.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MIGGY DP
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MIZAR STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PAVYL DP
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: POLAR STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 04L/22R)
2.14.3 Channel: 127.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 04R/22L)
2.14.3 Channel: 135.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RKCTY STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SNDRS DP (RWY 04L/22R, 04R/22L)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SNDRS DP (RWY 03L/21R, 03R/21L, 27L, 27R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SPICA STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TPGUN STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TRMML DP (RWY 22L, 22R, 27L, 27R)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TRMML DP (RWY 03L, 03R, 04L, 04R, 21L, 21R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VCTRZ STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WEEDA STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WNGNT STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ZETTR DP (RWY 22L, 22R, 27L, 27R)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ZETTR DP (RWY 03L, 03R, 04L, 04R, 21L, 21R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42−11−34.2185N / 83−21−9.5792W
2.19.6 Site Elevation: 638.7 ft

2.19.1 ILS Type: Glide Slope for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42−11−51.1266N / 83−20−54.979W
2.19.6 Site Elevation: 630.1 ft

2.19.1 ILS Type: Inner Marker for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42−11−36.5551N / 83−21−12.137W
2.19.6 Site Elevation: 631.1 ft

2.19.1 ILS Type: Localizer for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42−13−20.4082N / 83−19−55.609W
2.19.6 Site Elevation: 634 ft

2.19.1 ILS Type: DME for runway 21L. Magnetic variation: 7W
2.19.2 ILS Identification: EJR
2.19.5 Coordinates: 42−11−34.2185N / 83−21−9.5792W
2.19.6 Site Elevation: 638.7 ft

2.19.1 ILS Type: Glide Slope for runway 21L. Magnetic variation: 7W
2.19.2 ILS Identification: EJR
2.19.5 Coordinates: 42−12−58.4945N / 83−20−5.1867W
2.19.6 Site Elevation: 628.9 ft

2.19.1 ILS Type: Localizer for runway 21L. Magnetic variation: 7W
2.19.2 ILS Identification: EJR
2.19.5 Coordinates: 42−11−34.9459N / 83−21−13.3158W
2.19.6 Site Elevation: 631.1 ft

2.19.1 ILS Type: DME for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42−13−41.8988N / 83−21−48.7254W
2.19.6 Site Elevation: 649.7 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42−12−18.9498N / 83−23−0.2665W
2.19.6 Site Elevation: 640.6 ft

2.19.1 ILS Type: Inner Marker for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42−12−0.3838N / 83−23−7.8811W
2.19.6 Site Elevation: 645.2 ft

2.19.1 ILS Type: Localizer for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42−13−43.2279N / 83−21−52.161W
2.19.6 Site Elevation: 642 ft

2.19.1 ILS Type: DME for runway 22R. Magnetic variation: 7W
2.19.2 ILS Identification: JKI
2.19.5 Coordinates: 42−13−41.8988N / 83−21−48.7254W
2.19.6 Site Elevation: 649.7 ft

2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 7W
2.19.2 ILS Identification: JKI
2.19.5 Coordinates: 42−13−27.2272N / 83−22−10.0062W
2.19.6 Site Elevation: 636.7 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 7W
2.19.2 ILS Identification: JKI
2.19.5 Coordinates: 42−11−59.0707N / 83−23−8.842W
2.19.6 Site Elevation: 644.6 ft

2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42−13−59.7252N / 83−20−50.3339W
2.19.6 Site Elevation: 645.3 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42−12−23.21N / 83−22−11.85W
2.19.6 Site Elevation: 633.1 ft

2.19.1 ILS Type: Inner Marker for runway 04R. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42−12−4.547N / 83−22−19.3737W
2.19.6 Site Elevation: 637.1 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42−14−1.3028N / 83−20−53.3772W
2.19.6 Site Elevation: 636.5 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic varia-

tion: 7W
2.19.2 ILS Identification: DWC
2.19.5 Coordinates: 42−13−59.7252N / 83−20−50.3339W
2.19.6 Site Elevation: 645.3 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 7W
2.19.2 ILS Identification: DWC
2.19.5 Coordinates: 42−13−43.8552N / 83−21−12.2894W
2.19.6 Site Elevation: 635.6 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 7W
2.19.2 ILS Identification: DWC
2.19.5 Coordinates: 42−11−59.5406N / 83−22−23.0644W
2.19.6 Site Elevation: 636.1 ft

2.19.1 ILS Type: DME for runway 04X. Magnetic variation: 7W
2.19.2 ILS Identification: ALA
2.19.5 Coordinates: 42−11−57.1056N / 83−23−6.1821W
2.19.6 Site Elevation: 656.5 ft

2.19.1 ILS Type: Glide Slope for runway 04X. Magnetic variation: 7W
2.19.2 ILS Identification: ALA
2.19.5 Coordinates: 42−12−19.0378N / 83−23−0.5079W
2.19.6 Site Elevation: 640.7 ft

2.19.1 ILS Type: Localizer for runway 04X. Magnetic variation: 7W
2.19.2 ILS Identification: ALA
2.19.5 Coordinates: 42−13−33.4002N / 83−21−50.9401W
2.19.6 Site Elevation: 638.5 ft

2.19.1 ILS Type: DME for runway 22X. Magnetic variation: 7W
2.19.2 ILS Identification: BZB
2.19.5 Coordinates: 42−11−57.1056N / 83−23−6.1821W
2.19.6 Site Elevation: 656.6 ft

2.19.1 ILS Type: Glide Slope for runway 22X. Magnetic variation: 7W
2.19.2 ILS Identification: BZB
2.19.5 Coordinates: 42−13−27.3517N / 83−22−10.3013W
2.19.6 Site Elevation: 636.8 ft

2.19.1 ILS Type: Localizer for runway 22X. Magnetic variation: 7W
2.19.2 ILS Identification: BZB
2.19.5 Coordinates: 42−11−56.2259N / 83−23−1.9618W
2.19.6 Site Elevation: 646.3 ft

2.19.1 ILS Type: DME for runway 27R. Magnetic variation: 7W
2.19.2 ILS Identification: DMI
2.19.5 Coordinates: 42−12−47.2915N / 83−21−59.9856W
2.19.6 Site Elevation: 636.5 ft

2.19.1 ILS Type: Glide Slope for runway 27R. Magnetic variation: 7W
2.19.2 ILS Identification: DMI
2.19.5 Coordinates: 42−12−58.3552N / 83−20−4.8574W
2.19.6 Site Elevation: 629 ft

2.19.1 ILS Type: Localizer for runway 27R. Magnetic variation: 7W
2.19.2 ILS Identification: DMI
2.19.5 Coordinates: 42−13−0.7158N / 83−22−9.2988W
2.19.6 Site Elevation: 639.3 ft

2.19.1 ILS Type: DME for runway 27L. Magnetic variation: 7W
2.19.2 ILS Identification: EPA
2.19.5 Coordinates: 42−11−53.6723N / 83−21−55.0763W
2.19.6 Site Elevation: 634.8 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 7W
2.19.2 ILS Identification: EPA
2.19.5 Coordinates: 42−11−54.6653N / 83−20−2.5117W
2.19.6 Site Elevation: 625.9 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 7W
2.19.2 ILS Identification: EPA
2.19.5 Coordinates: 42−11−56.2294N / 83−21−55.6348W
2.19.6 Site Elevation: 634.1 ft

General Remarks:
BRIGHTLY LIGHTED PARKING LOT 2.6 NM SW OF ARPT.

AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT ARE RESTRICTED FM USING TWY H BETWEEN TWY H2 AND TWY G.

RWY VISUAL SCREEN 20 FT AGL 1150 FT S. AER 04R

TURNING RESTRICTION TWY B TO TWY K RESTRICTED TO AIRCRAFT WITH WINGSPAN 171 FT OR LESS.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PPR FOR B747−8 OPRS DUE TO CONSTRAINTS ON RWYS, TWYS AND RAMPS CTC AIRFIELD OPRS AT 734−942−3685.

TWY M−1 EDGE LTS BTN APCH END RWY 3L AND TWY M NON STD.

BE ALERT BIRDS, WATERFOWL, ON & INVOF ARPT.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FROM USING TWY PP.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FM USING TWY H BETWEEN K AND H2.

RY STATUS LGTS ARE IN OPN.

RWY 9L/27R DUAL USE RWY/TWY, EDGE AVAILABLE FOR RWY OPS, GREEN CL AVAIL AND UNIDIRECTIONAL STOPBARS AVAIL TAXI OPS BTN RWYS 3L AND 4R.

TWY ’G’ N OF TWY ’H’ IS A NON−MOVEMENT AREA.

AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT ARE RESTRICTED FM USING TWY G BETWEEN 27R AND TWY V.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FM USING TWY M NORTHBOUND TO TWY V WESTBOUND.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT CANNOT PASS EACH OTHER ON TWYS Y AND K BETWEEN TWYS U AND K6 INSUFFICIENT WINGTIP CLEARANCE.

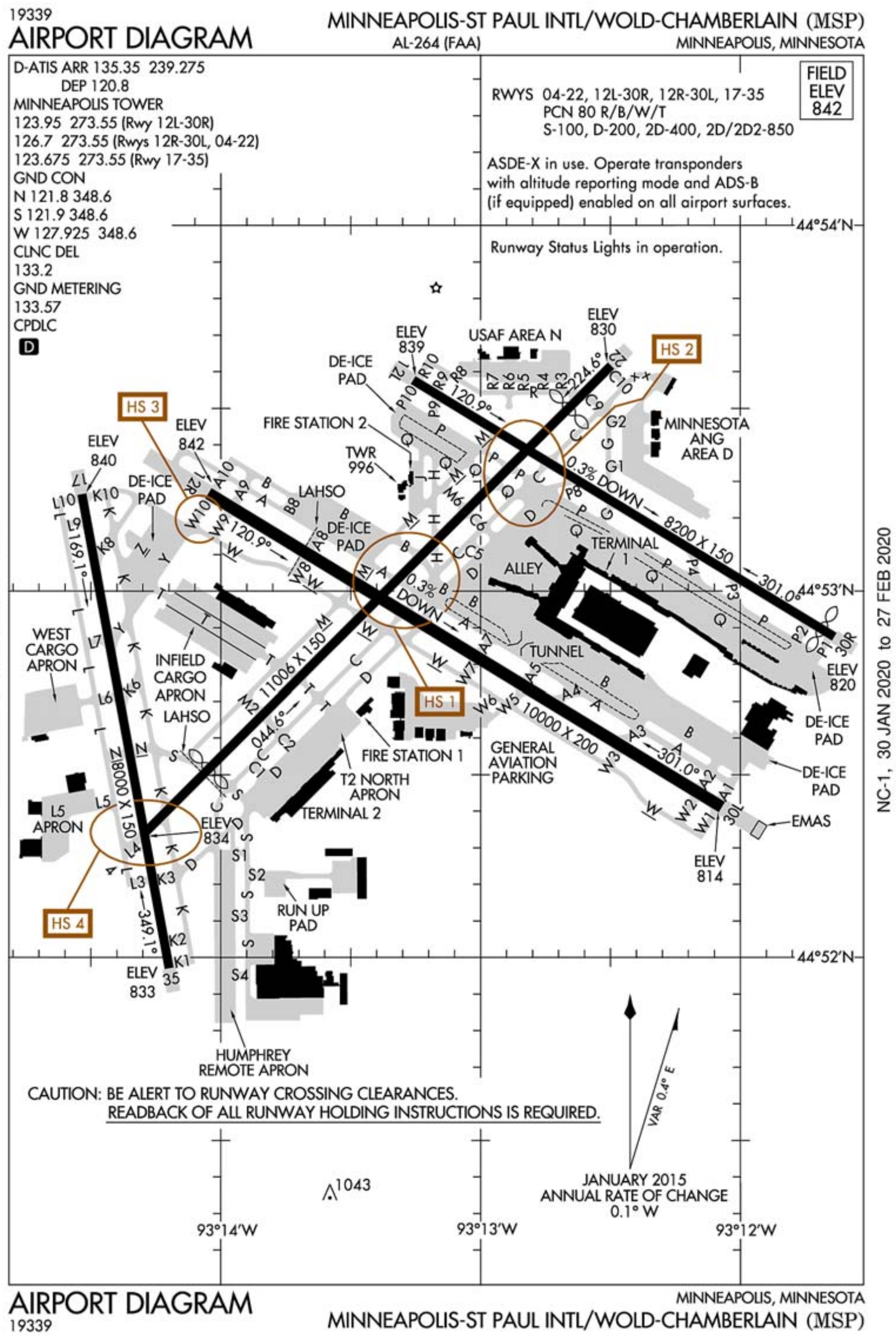
AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT CANNOT USE TWY G NORTH OF TWY V EXCEPT FOR AIRCRAFT UNDER TOW TO RON SPOT 2H.

ACFT ON TWY ’F’ AND TWY ’V’ DO NOT BLOCK FIRE STATION EXITS.

DIVERSIONAIR CARRIERS WITHOUT A PRESENCE AT DTW SHOULD CTC AIRFIELD OPRS 734−942−3685 PRIOR TO DIVERTING TO THE EXTENT PRACTICAL AND PROVIDE COMPANY, FLT OPRS, CTC INFO, AIRCRAFT TYPE, PERSONS ONBOARD, INTERNATIONAL OR DOMESTIC, ANY GRND HANDLER AGGREEMENTS IN PLACE.

RY 21R DEPS BE ALERT FOR ’OPTICAL ILLUSION’, ACFT TAXIING ON TWY ’T’ MAY APPEAR AS THOUGH CROSSING RY 21R CNTRLN.

Minneapolis, Minnesota
Minneapolis−St. Paul International (Wold−Chamberlain)
ICAO Identifier KMSP



Minneapolis, MN
Minneapolis−St Paul Intl/Wold−Chamberlain
ICAO Identifier KMSP

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 44−52−55.1N / 93−13−18.4W
2.2.2 From City: 6 miles SW of MINNEAPOLIS, MN
2.2.3 Elevation: 841.8 ft
2.2.5 Magnetic Variation: 0E (2015)
2.2.6 Airport Contact: CHAD LEQVE
6040 28TH AVE SOUTH
MINNEAPOLIS, MN 55450
((612) 726−8100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11006 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−52−20.158N / 93−14−17.9427W
2.12.6 Threshold Elevation: 833.5 ft
2.12.6 Touchdown Zone Elevation: 831.7 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11006 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−53−36.9917N / 93−12−29.8434W
2.12.6 Threshold Elevation: 830.3 ft
2.12.6 Touchdown Zone Elevation: 828.3 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 301
2.12.3 Dimensions: 8200 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−52−52.5152N / 93−11−38.296W
2.12.6 Threshold Elevation: 819.5 ft
2.12.6 Touchdown Zone Elevation: 822.4 ft

2.12.1 Designation: 12L
2.12.2 True Bearing: 121
2.12.3 Dimensions: 8200 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−53−34.6287N / 93−13−15.5666W
2.12.6 Threshold Elevation: 838.6 ft
2.12.6 Touchdown Zone Elevation: 840.7 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 121
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−53−16.0438N / 93−14−2.8731W
2.12.6 Threshold Elevation: 841.8 ft
2.12.6 Touchdown Zone Elevation: 841.8 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 301
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−52−24.68N / 93−12−4.2689W
2.12.6 Threshold Elevation: 814.4 ft
2.12.6 Touchdown Zone Elevation: 823 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 170
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−53−15.9127N / 93−14−32.1137W
2.12.6 Threshold Elevation: 840.4 ft
2.12.6 Touchdown Zone Elevation: 840.4 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 350
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 44−51−58.2366N / 93−14−11.9205W
2.12.6 Threshold Elevation: 833.3 ft
2.12.6 Touchdown Zone Elevation: 834.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 04
2.13.2 Take−off Run Available: 11006
2.13.3 Take−off Distance Available: 11006

2.13.4 Accelerate−Stop Distance Available: 11006
2.13.5 Landing Distance Available: 9456

2.13.1 Designation: 22
2.13.2 Take−off Run Available: 11006
2.13.3 Take−off Distance Available: 11006
2.13.4 Accelerate−Stop Distance Available: 11006
2.13.5 Landing Distance Available: 10006

2.13.1 Designation: 30R
2.13.2 Take−off Run Available: 8200
2.13.3 Take−off Distance Available: 8200
2.13.4 Accelerate−Stop Distance Available: 8200
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 12L
2.13.2 Take−off Run Available: 8200
2.13.3 Take−off Distance Available: 8200
2.13.4 Accelerate−Stop Distance Available: 7620
2.13.5 Landing Distance Available: 7620

2.13.1 Designation: 12R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 30L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 17
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 35
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30R
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 12L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 12R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 35
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Localizer for runway 04. Magnetic variation: 0E
2.19.2 ILS Identification: APL
2.19.5 Coordinates: 44−53−44.0038N / 93−12−19.9688W
2.19.6 Site Elevation: 832.1 ft

2.19.1 ILS Type: Localizer for runway 22. Magnetic variation: 0E
2.19.2 ILS Identification: SIJ
2.19.5 Coordinates: 44−52−12.792N / 93−14−28.3006W
2.19.6 Site Elevation: 831.4 ft

2.19.1 ILS Type: Outer Marker for runway 22. Magnetic variation: 0E
2.19.2 ILS Identification: SIJ
2.19.5 Coordinates: 44−57−9.6998N / 93−7−23.0143W
2.19.6 Site Elevation: 1021.9 ft

2.19.1 ILS Type: DME for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44−53−3.674N / 93−11−48.8687W
2.19.6 Site Elevation: 824 ft

2.19.1 ILS Type: Glide Slope for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44−53−31.1153N / 93−12−56.6941W
2.19.6 Site Elevation: 831 ft

2.19.1 ILS Type: Inner Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44−53−39.694N / 93−13−25.8963W
2.19.6 Site Elevation: 845.3 ft

2.19.1 ILS Type: Localizer for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44−52−50.3312N / 93−11−33.2418W
2.19.6 Site Elevation: 813 ft

2.19.1 ILS Type: DME for runway 30R. Magnetic variation: 0E
2.19.2 ILS Identification: INN
2.19.5 Coordinates: 44−53−3.674N / 93−11−48.8687W
2.19.6 Site Elevation: 824 ft

2.19.1 ILS Type: Glide Slope for runway 30R. Magnetic variation: 0E
2.19.2 ILS Identification: INN
2.19.5 Coordinates: 44−53−3.4471N / 93−11−48.8472W
2.19.6 Site Elevation: 813.2 ft

2.19.1 ILS Type: Localizer for runway 30R. Magnetic variation: 0E
2.19.2 ILS Identification: INN
2.19.5 Coordinates: 44−53−40.841N / 93−13−29.92W
2.19.6 Site Elevation: 843.1 ft

2.19.1 ILS Type: DME for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44−52−26.9244N / 93−12−20.5476W
2.19.6 Site Elevation: 825.4 ft

2.19.1 ILS Type: Glide Slope for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44−53−7.28N / 93−13−53.62W
2.19.6 Site Elevation: 835.1 ft

2.19.1 ILS Type: Inner Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44−53−20.8698N / 93−14−12.7019W
2.19.6 Site Elevation: 840 ft

2.19.1 ILS Type: Localizer for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44−52−20.3796N / 93−11−54.3455W
2.19.6 Site Elevation: 812.8 ft

2.19.1 ILS Type: DME for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44−52−26.9244N / 93−12−20.5476W
2.19.6 Site Elevation: 825.4 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44−52−27.0021N / 93−12−20.2067W
2.19.6 Site Elevation: 812.1 ft

2.19.1 ILS Type: Inner Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44−52−19.4377N / 93−11−52.1826W
2.19.6 Site Elevation: 808.1 ft

2.19.1 ILS Type: Localizer for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44−53−22.4589N / 93−14−17.688W
2.19.6 Site Elevation: 840 ft

2.19.1 ILS Type: DME for runway 17. Magnetic variation: 0E
2.19.2 ILS Identification: TJZ
2.19.5 Coordinates: 44−53−24.6166N /

93−14−38.0356W
2.19.6 Site Elevation: 832.5 ft

2.19.1 ILS Type: Localizer for runway 17. Magnetic variation: 0E
2.19.2 ILS Identification: TJZ
2.19.5 Coordinates: 44−51−48.4327N / 93−14−9.3727W
2.19.6 Site Elevation: 830.4 ft

2.19.1 ILS Type: DME for runway 35. Magnetic variation: 0E
2.19.2 ILS Identification: BMA
2.19.5 Coordinates: 44−53−24.6166N / 93−14−38.0356W
2.19.6 Site Elevation: 832.5 ft

2.19.1 ILS Type: Glide Slope for runway 35. Magnetic variation: 0E
2.19.2 ILS Identification: BMA
2.19.5 Coordinates: 44−52−7.7086N / 93−14−20.1127W
2.19.6 Site Elevation: 829.9 ft

2.19.1 ILS Type: Inner Marker for runway 35. Magnetic variation: 0E
2.19.2 ILS Identification: BMA
2.19.5 Coordinates: 44−51−49.9075N / 93−14−9.7433W
2.19.6 Site Elevation: 832.6 ft

2.19.1 ILS Type: Localizer for runway 35. Magnetic variation: 0E
2.19.2 ILS Identification: BMA
2.19.5 Coordinates: 44−53−25.7158N / 93−14−34.6512W
2.19.6 Site Elevation: 845.3 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 2E
2.19.2 Navigation Aid Identification: MSP
2.19.5 Coordinates: 44−53−47.3958N / 93−14−11.5137W
2.19.6 Site Elevation: 831.6 ft

General Remarks:
TRNG FLTS PROHIBITED. GA FLTS MUST TRMT AT THE FBO OR US CUSTOMS UNLESS APVD BY AMGR.

MILITARY RSTD: NO HAZ CL/DIV1.1 OR 1.2 EXPLOSIVES PERMITTED. LOADING OR UNLOADING OF HAZ CL/DIV 1.3, 1.4, 1.5 0R 1.6 MUST BE APV BY ARPT DRCT PRIOR TO FLT.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

MILITARY REMARKS: ARFC 934 AW: OPR 1300−−400Z++ MON−THU, 1300−2230Z++ FRI, CLSD WKEND AND HOL, CTC AFLD MGMT FOR OPR HRS DURING UNIT TRAINING ASSEMBLY WKEND. TRANS ACFT MUST OPR 1300−2145Z++ MON−FRI, EXC HOL UNLESS DIRECTLY SUPPORTING 934 AW OR OTHER SPECIAL CIRCUMSTANCES.

REMARKS: AFRC 934 AW: CTC PTD (VIKING OPS) 20 MIN PRIOR LDG.

934 AW AFLD MGMT − PTD 282.675 REMARKS: (CALL VIKING OPS).

SIGNATURE FLIGHT SUPPORT 128.95

ALL GA ACFT WITH LESS THAN 20 PSGRS THAT NEED TO CLEAR US CUSTOMS SHOULD CTC SIGNATURE FLT SUPPORT AT 128.95 OR 612−726−5700 PRIOR TO ARR.

133 AW AFLD MGMT − 324.1 REMARKS: (CALL LIGHTHOUSE).

ALL GROUP VI AIRCRAFT, WINGSPAN GREATER THAN 214 FEET, NEED TO CONTACT AIRSIDE OPERATIONS AT (612) 726−5111 PRIOR TO ARRIVAL TO OBTAIN (PRIOR PERMISSION REQUIRED) PPR.

RY STATUS LGTS ARE IN OPN.

FOR NOISE ABATEMENT PROCEDURES CALL (612) 726−9411; NO STAGE 1 CATEGORY CIVIL ACFT; NIGHTTIME HRS ARE 2230−0600.

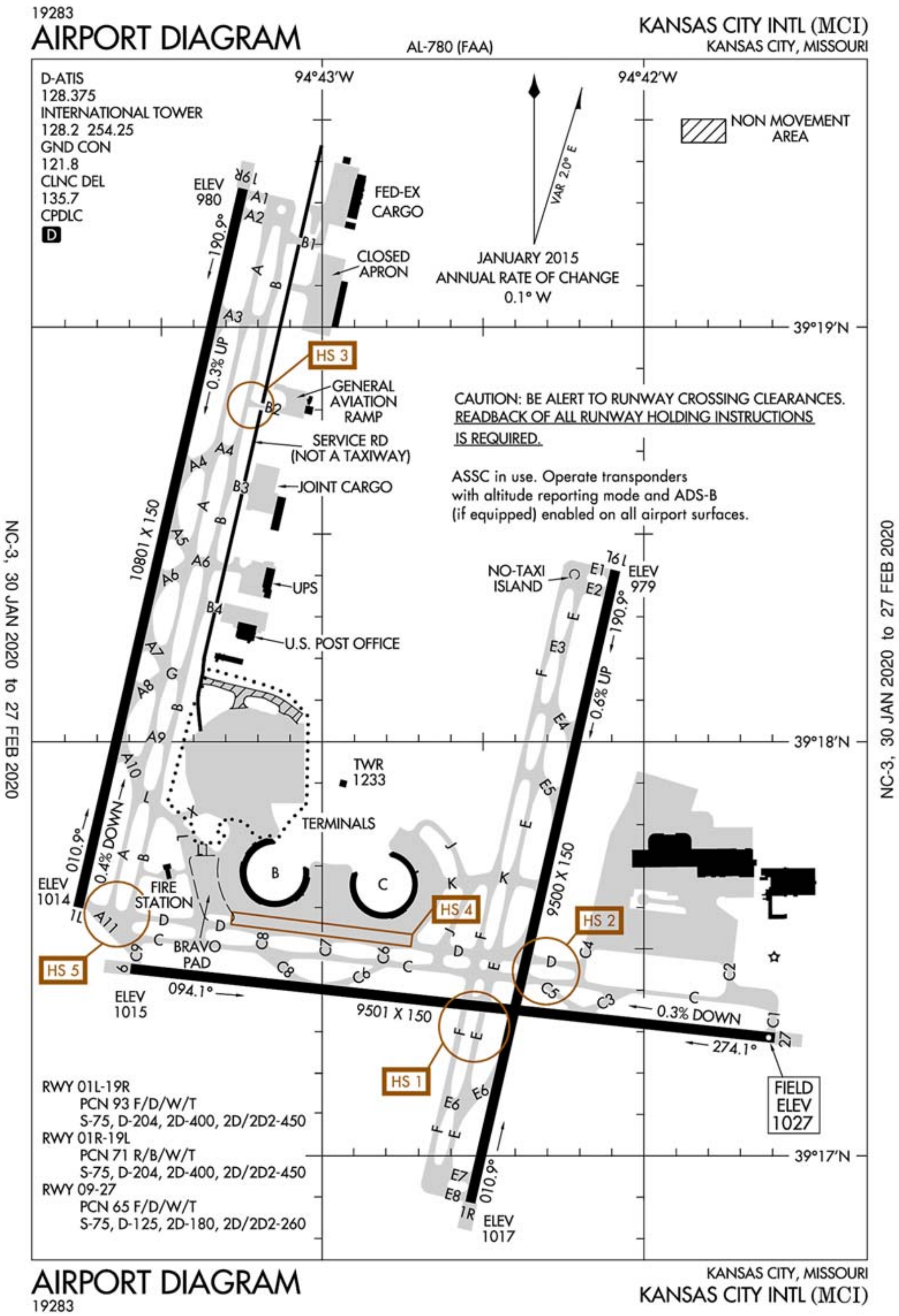
COMMUNICATIONS: MINNEAPOLIS AIR RESERVE STATION JOINT COMD POST − 252.1 REMARKS: CALL NORTHSTAR.

COMPLEX GEOMETRY AT RY 04 APPROACH END. RY 04 DEPARTURES CHECK COMPASS TO VERIFY CORRECT RY HEADING.

ALL UNSCHEDULED ACFT AT TERMINAL 2−HUMPHREY ARE REQUIRED TO CTC TERMINAL 2 GATE CONTROL ON 122.95 OR CALL 612−726−5742 PRIOR TO ARR.

BIRDS ON & INVOF ARPT.

Kansas City, Missouri
Kansas City International
ICAO Identifier KMCI



Kansas City, MO
Kansas City Intl
ICAO Identifier KMCI

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−17−51.4N / 94−42−50W
2.2.2 From City: 15 miles NW of KANSAS CITY, MO
2.2.3 Elevation: 1026.9 ft
2.2.5 Magnetic Variation: 2E (2015)
2.2.6 Airport Contact: MR. BOB JOHNSON
P.O. BOX 20047
KANSAS CITY, MO 64195
(816−243−5248)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01L
2.12.2 True Bearing: 13
2.12.3 Dimensions: 10801 ft x 150 ft
2.12.4 PCN: 93 F/D/W/T
2.12.5 Coordinates: 39−17−36.0029N / 94−43−45.5433W
2.12.6 Threshold Elevation: 1014.4 ft
2.12.6 Touchdown Zone Elevation: 1014.4 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 193
2.12.3 Dimensions: 10801 ft x 150 ft
2.12.4 PCN: 93 F/D/W/T
2.12.5 Coordinates: 39−19−20.0396N / 94−43−14.7835W
2.12.6 Threshold Elevation: 979.6 ft
2.12.6 Touchdown Zone Elevation: 990.5 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 193
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 39−18−24.7369N / 94−42−5.3226W
2.12.6 Threshold Elevation: 978.5 ft
2.12.6 Touchdown Zone Elevation: 995.2 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 13
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 39−16−53.2341N / 94−42−32.3935W
2.12.6 Threshold Elevation: 1017.2 ft
2.12.6 Touchdown Zone Elevation: 1017.4 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 276
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 65 F/D/W/T
2.12.5 Coordinates: 39−17−17.0716N / 94−41−35.5978W
2.12.6 Threshold Elevation: 1026.9 ft
2.12.6 Touchdown Zone Elevation: 1026.9 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 96
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 65 F/D/W/T
2.12.5 Coordinates: 39−17−27.099N / 94−43−35.7371W
2.12.6 Threshold Elevation: 1015.3 ft
2.12.6 Touchdown Zone Elevation: 1015.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 10801
2.13.3 Take−off Distance Available: 10801
2.13.4 Accelerate−Stop Distance Available: 10801
2.13.5 Landing Distance Available: 10801

2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 10801
2.13.3 Take−off Distance Available: 10801
2.13.4 Accelerate−Stop Distance Available: 10801
2.13.5 Landing Distance Available: 10801

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 9500
2.13.3 Take−off Distance Available: 9500
2.13.4 Accelerate−Stop Distance Available: 9500
2.13.5 Landing Distance Available: 9500

2.13.1 Designation: 01R

2.13.2 Take−off Run Available: 9500
2.13.3 Take−off Distance Available: 9500
2.13.4 Accelerate−Stop Distance Available: 9500
2.13.5 Landing Distance Available: 9500

2.13.1 Designation: 27
2.13.2 Take−off Run Available: 9501
2.13.3 Take−off Distance Available: 9501
2.13.4 Accelerate−Stop Distance Available: 9501
2.13.5 Landing Distance Available: 9501

2.13.1 Designation: 09
2.13.2 Take−off Run Available: 9501
2.13.3 Take−off Distance Available: 9501
2.13.4 Accelerate−Stop Distance Available: 9501
2.13.5 Landing Distance Available: 9501

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 01L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 19R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 01R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 27
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P
2.14.3 Channel: 120.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (191−009)
2.14.3 Channel: 284.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (010−190)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (EAST OF RWY 01/19)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (S OF A LINE FROM LWC ARPT TO 3GV ARPT)
2.14.3 Channel: 118.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST OF RWY 01/19)
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (S OF A LINE FROM LWC ARPT TO 3GV ARPT)
2.14.3 Channel: 294.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (EAST OF RWY 01−19)
2.14.3 Channel: 294.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST OF RWY 01/19)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 128.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (191−009)
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P IC (010−190)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG

2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 128.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 2E
2.19.2 ILS Identification: DOT
2.19.5 Coordinates: 39−19−30.0746N / 94−43−8.2388W
2.19.6 Site Elevation: 988.8 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 2E
2.19.2 ILS Identification: DOT
2.19.5 Coordinates: 39−17−48.2654N / 94−43−47.1321W
2.19.6 Site Elevation: 1002.8 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 2E
2.19.2 ILS Identification: DOT
2.19.5 Coordinates: 39−19−31.1181N / 94−43−11.5232W
2.19.6 Site Elevation: 972.3 ft

2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39−17−25.7846N / 94−43−51.9618W
2.19.6 Site Elevation: 1026 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39−19−11.0536N / 94−43−22.6772W
2.19.6 Site Elevation: 976.8 ft

2.19.1 ILS Type: Inner Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39−19−30.1157N / 94−43−11.8201W
2.19.6 Site Elevation: 972.4 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39−17−23.1222N / 94−43−49.3464W
2.19.6 Site Elevation: 1017.6 ft

2.19.1 ILS Type: Middle Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39−19−49.2587N / 94−43−6.2032W
2.19.6 Site Elevation: 965.1 ft

2.19.1 ILS Type: DME for runway 01R. Magnetic variation: 2E
2.19.2 ILS Identification: PVL
2.19.5 Coordinates: 39−18−35.6272N / 94−42−5.4664W
2.19.6 Site Elevation: 960 ft

2.19.1 ILS Type: Glide Slope for runway 01R. Magnetic variation: 2E
2.19.2 ILS Identification: PVL
2.19.5 Coordinates: 39−17−3.1905N / 94−42−24.2292W
2.19.6 Site Elevation: 1010.8 ft

2.19.1 ILS Type: Inner Marker for runway 01R. Magnetic variation: 2E
2.19.2 ILS Identification: PVL
2.19.5 Coordinates: 39−16−45.0995N / 94−42−34.8009W
2.19.6 Site Elevation: 1011.1 ft

2.19.1 ILS Type: Localizer for runway 01R. Magnetic variation: 2E
2.19.2 ILS Identification: PVL

2.19.5 Coordinates: 39−18−34.4013N / 94−42−2.4648W
2.19.6 Site Elevation: 963.3 ft

2.19.1 ILS Type: Middle Marker for runway 01R. Magnetic variation: 2E
2.19.2 ILS Identification: PVL
2.19.5 Coordinates: 39−16−27.6318N / 94−42−39.9693W
2.19.6 Site Elevation: 994.9 ft

2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 2E
2.19.2 ILS Identification: DYH
2.19.5 Coordinates: 39−16−43.6236N / 94−42−38.5532W
2.19.6 Site Elevation: 1017.5 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 2E
2.19.2 ILS Identification: DYH
2.19.5 Coordinates: 39−18−13.9534N / 94−42−3.2934W
2.19.6 Site Elevation: 977.9 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 2E
2.19.2 ILS Identification: DYH
2.19.5 Coordinates: 39−16−43.575N / 94−42−35.2495W
2.19.6 Site Elevation: 1011.8 ft

2.19.1 ILS Type: DME for runway 09. Magnetic variation: 2E
2.19.2 ILS Identification: RNI
2.19.5 Coordinates: 39−17−18.904N / 94−41−21.7047W
2.19.6 Site Elevation: 1032.1 ft

2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 2E
2.19.2 ILS Identification: RNI
2.19.5 Coordinates: 39−17−21.0763N / 94−43−22.949W
2.19.6 Site Elevation: 1010.7 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 2E
2.19.2 ILS Identification: RNI
2.19.5 Coordinates: 39−17−16.0109N / 94−41−22.9272W
2.19.6 Site Elevation: 1020.2 ft

2.19.1 ILS Type: DME for runway 27. Magnetic variation: 2E
2.19.2 ILS Identification: UQY
2.19.5 Coordinates: 39−17−25.6745N / 94−43−54.5943W
2.19.6 Site Elevation: 1024.3 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 2E
2.19.2 ILS Identification: UQY
2.19.5 Coordinates: 39−17−15.7129N / 94−41−50.2717W
2.19.6 Site Elevation: 1021.4 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 2E
2.19.2 ILS Identification: UQY
2.19.5 Coordinates: 39−17−28.6283N / 94−43−54.0717W
2.19.6 Site Elevation: 1015.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 5E
2.19.2 Navigation Aid Identification: MCI
2.19.5 Coordinates: 39−17−7.02N / 94−44−13.42W
2.19.6 Site Elevation: 1017 ft

General Remarks:
PPR TO PARK AT AIRLINE GATES CTC RESPECTIVE AIRLINE.

WHEN USING HIGH−SPEED EXITS C5 & C6 CONTINUE UNTIL FIRST PARALLEL TWY, THEN USE EXTREME CARE WHEN TURNING IN EXCESS OF 90 DEGREES.

NOISE ABATEMENT PROCEDURES IN EFFECT 2200−0600 WITH LANDING ON RYS 01L & 19L; TAKEOFFS ON RYS 01R & 19R.

PUSHBACK CLNC RQRD AT GATES 43 THRU 57 IN TRML B AND GATES 68 THRU 77 IN TRML C, PUSHBACK FROM THESE GATES ENTERS TWY D.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
DESIGN GROUP V AND VI ACFT RQR AN ARPT ESCORT ON TWY DELTA BTN TWYS JULIET AND LIMA.

NO ACFT PARKING ON POSTAL APRON.

MIL ACFT MAY BE CHARGED RAMP/PARKING FEES.

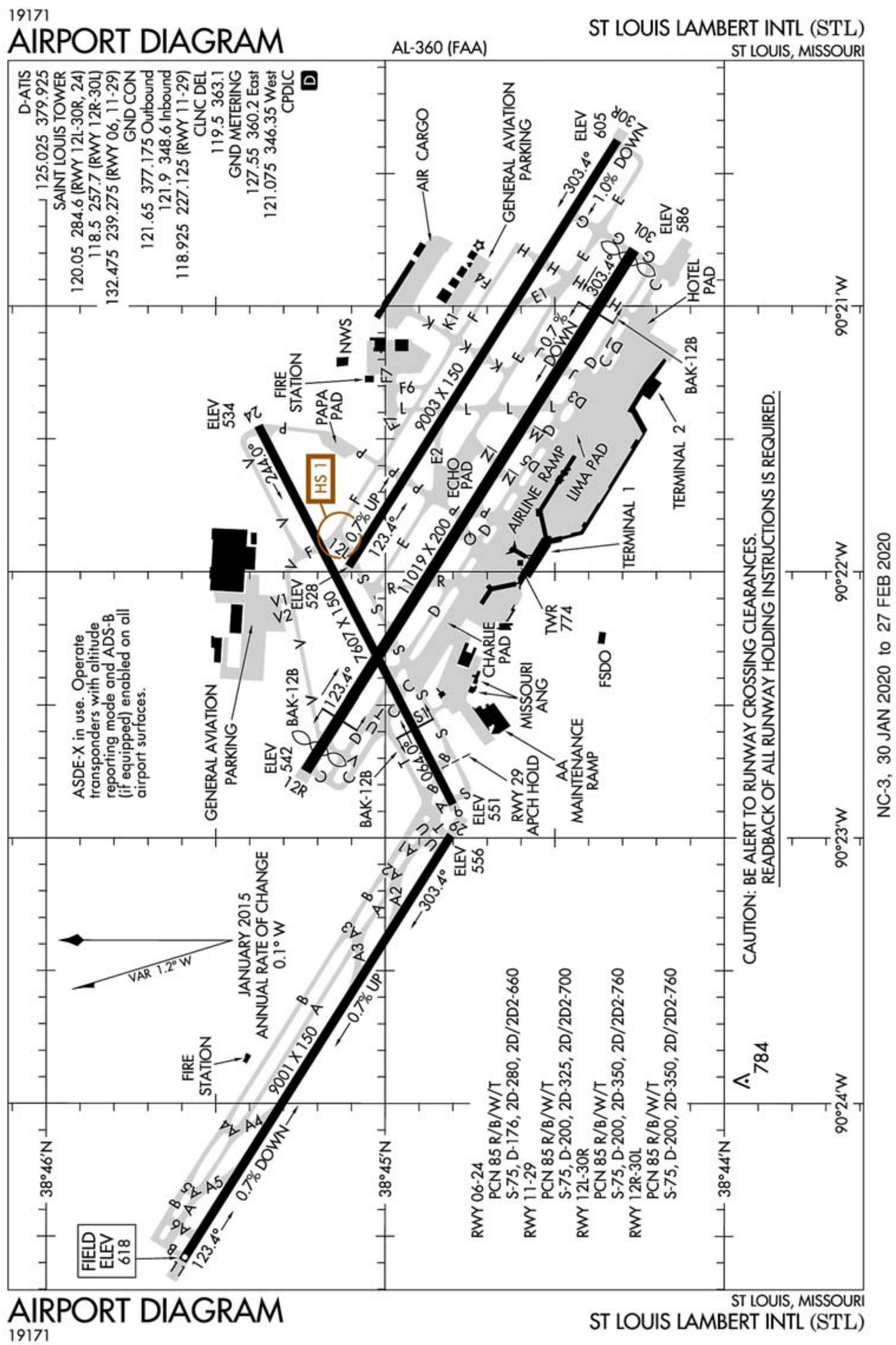
TWY B1 BTN TWY B AND FEDEX APN COCKPIT OVER CNTRLN STEERING RQRD

WINDSHEAR ALERT SYSTEM ON ARPT.

WATERFOWL ON AND INVOF ARPT.

FLIGHT NOTIFICATION SVC (ADCUS) AVBL AT GATE 90.

St. Louis, Missouri
Lambert−St. Louis International
ICAO Identifier KSTL



St Louis, MO
Lambert−St Louis Intl
ICAO Identifier KSTL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38−44−55.31N / 90−22−12.104W
2.2.2 From City: 10 miles NW of ST LOUIS, MO
2.2.3 Elevation: 618 ft
2.2.5 Magnetic Variation: 1W (2020)
2.2.6 Airport Contact: MS. RHONDA HAMM−NIEBRUEGGE
BOX 10212
ST LOUIS, MO 63145
(314−426−8000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 63
2.12.3 Dimensions: 7607 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−44−48.041N / 90−22−52.4335W
2.12.6 Threshold Elevation: 550.9 ft
2.12.6 Touchdown Zone Elevation: 550.9 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 243
2.12.3 Dimensions: 7607 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−45−22.3823N / 90−21−27.0159W
2.12.6 Threshold Elevation: 533.7 ft
2.12.6 Touchdown Zone Elevation: 533.7 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 122
2.12.3 Dimensions: 9001 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−45−35.8293N / 90−24−35.549W
2.12.6 Threshold Elevation: 618 ft
2.12.6 Touchdown Zone Elevation: 618 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 302
2.12.3 Dimensions: 9001 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−44−48.456N / 90−22−59.3881W
2.12.6 Threshold Elevation: 556 ft
2.12.6 Touchdown Zone Elevation: 580 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 302
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−44−18.9854N / 90−20−22.5072W
2.12.6 Threshold Elevation: 604.5 ft
2.12.6 Touchdown Zone Elevation: 604.5 ft

2.12.1 Designation: 12L
2.12.2 True Bearing: 122
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−45−6.4062N / 90−21−58.6574W
2.12.6 Threshold Elevation: 528.3 ft
2.12.6 Touchdown Zone Elevation: 540.6 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 122
2.12.3 Dimensions: 11019 ft x 200 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−45−14.0486N / 90−22−44.9667W
2.12.6 Threshold Elevation: 541.6 ft
2.12.6 Touchdown Zone Elevation: 539.8 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 302
2.12.3 Dimensions: 11019 ft x 200 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38−44−16.0148N / 90−20−47.2732W
2.12.6 Threshold Elevation: 585.8 ft
2.12.6 Touchdown Zone Elevation: 582.8 ft

2.12.1 Designation: 30X
2.12.2 True Bearing:
2.12.3 Dimensions: 0 ft x 0 ft

2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
2.13.2 Take−off Run Available: 7602
2.13.3 Take−off Distance Available: 7602
2.13.4 Accelerate−Stop Distance Available: 7352
2.13.5 Landing Distance Available: 7352

2.13.1 Designation: 24
2.13.2 Take−off Run Available: 7602
2.13.3 Take−off Distance Available: 7602
2.13.4 Accelerate−Stop Distance Available: 7602
2.13.5 Landing Distance Available: 7602

2.13.1 Designation: 11
2.13.2 Take−off Run Available: 9001
2.13.3 Take−off Distance Available: 9001
2.13.4 Accelerate−Stop Distance Available: 9001
2.13.5 Landing Distance Available: 9001

2.13.1 Designation: 29
2.13.2 Take−off Run Available: 9001
2.13.3 Take−off Distance Available: 9001
2.13.4 Accelerate−Stop Distance Available: 9001
2.13.5 Landing Distance Available: 9001

2.13.1 Designation: 30R
2.13.2 Take−off Run Available: 9003
2.13.3 Take−off Distance Available: 9003
2.13.4 Accelerate−Stop Distance Available: 9003
2.13.5 Landing Distance Available: 9003

2.13.1 Designation: 12L
2.13.2 Take−off Run Available: 9003
2.13.3 Take−off Distance Available: 9003
2.13.4 Accelerate−Stop Distance Available: 9003
2.13.5 Landing Distance Available: 9003

2.13.1 Designation: 12R
2.13.2 Take−off Run Available: 11019
2.13.3 Take−off Distance Available: 11019
2.13.4 Accelerate−Stop Distance Available: 11019
2.13.5 Landing Distance Available: 10552

2.13.1 Designation: 30L
2.13.2 Take−off Run Available: 11019
2.13.3 Take−off Distance Available: 11019
2.13.4 Accelerate−Stop Distance Available: 11019
2.13.5 Landing Distance Available: 10819

2.13.1 Designation: 30X
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 24
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 11
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 29
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 12L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 12R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 30L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 30X
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 06. Magnetic varia-

tion: 1W
2.19.2 ILS Identification: JAK
2.19.5 Coordinates: 38−44−39.67N / 90−23−0.61W
2.19.6 Site Elevation: 556.2 ft

2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 1W
2.19.2 ILS Identification: JAK
2.19.5 Coordinates: 38−44−54.72N / 90−22−40.02W
2.19.6 Site Elevation: 536.2 ft

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 1W
2.19.2 ILS Identification: JAK
2.19.5 Coordinates: 38−45−27.26N / 90−21−14.89W
2.19.6 Site Elevation: 541 ft

2.19.1 ILS Type: DME for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38−44−39.67N / 90−23−0.61W
2.19.6 Site Elevation: 556.2 ft

2.19.1 ILS Type: Glide Slope for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38−45−13.621N / 90−21−37.587W
2.19.6 Site Elevation: 527.9 ft

2.19.1 ILS Type: Localizer for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38−44−43.52N / 90−23−3.73W
2.19.6 Site Elevation: 545 ft

2.19.1 ILS Type: Outer Marker for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38−47−16.98N / 90−16−43.906W
2.19.6 Site Elevation: 580 ft

2.19.1 ILS Type: DME for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38−44−36.71N / 90−22−41.69W
2.19.6 Site Elevation: 548 ft

2.19.1 ILS Type: Glide Slope for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38−45−26.0354N / 90−24−25.3798W
2.19.6 Site Elevation: 598.2 ft

2.19.1 ILS Type: Inner Marker for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38−45−40.3454N / 90−24−44.7433W
2.19.6 Site Elevation: 614 ft

2.19.1 ILS Type: Localizer for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38−44−38.7157N / 90−22−39.6272W
2.19.6 Site Elevation: 544.7 ft

2.19.1 ILS Type: DME for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: RQN
2.19.5 Coordinates: 38−45−43.83N / 90−24−44.64W
2.19.6 Site Elevation: 608 ft

2.19.1 ILS Type: Glide Slope for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: RQN
2.19.5 Coordinates: 38−44−49.83N / 90−23−11.86W
2.19.6 Site Elevation: 556 ft

2.19.1 ILS Type: Localizer for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: RQN
2.19.5 Coordinates: 38−45−41.3541N / 90−24−46.7698W
2.19.6 Site Elevation: 612.7 ft

2.19.1 ILS Type: DME for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38−44−10.39N / 90−20−12.05W
2.19.6 Site Elevation: 616.4 ft

2.19.1 ILS Type: Glide Slope for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38−44−58.2177N / 90−21−50.3421W
2.19.6 Site Elevation: 533.6 ft

2.19.1 ILS Type: Inner Marker for runway 12L. Magnetic variation: 1W

2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38−45−11.9285N / 90−22−9.896W
2.19.6 Site Elevation: 530 ft

2.19.1 ILS Type: Localizer for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38−44−13.67N / 90−20−11.72W
2.19.6 Site Elevation: 602 ft

2.19.1 ILS Type: DME for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−45−14.124N / 90−22−7.9128W
2.19.6 Site Elevation: 545.7 ft

2.19.1 ILS Type: Glide Slope for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−44−21.9628N / 90−20−38.0158W
2.19.6 Site Elevation: 592.4 ft

2.19.1 ILS Type: Inner Marker for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−44−14.6593N / 90−20−13.73W
2.19.6 Site Elevation: 602 ft

2.19.1 ILS Type: Localizer for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−45−12.1N / 90−22−10.2W
2.19.6 Site Elevation: 533 ft

2.19.1 ILS Type: DME for runway 12R. Magnetic variation: 1W
2.19.2 ILS Identification: LMR
2.19.5 Coordinates: 38−44−7.69N / 90−20−39.9W
2.19.6 Site Elevation: 592 ft

2.19.1 ILS Type: Glide Slope for runway 12R. Magnetic variation: 1W
2.19.2 ILS Identification: LMR
2.19.5 Coordinates: 38−45−8.96N / 90−22−24.9W
2.19.6 Site Elevation: 531.6 ft

2.19.1 ILS Type: Localizer for runway 12R. Magnetic variation: 1W
2.19.2 ILS Identification: LMR
2.19.5 Coordinates: 38−44−10.22N / 90−20−35.52W
2.19.6 Site Elevation: 595 ft

2.19.1 ILS Type: Outer Marker for runway 12R. Magnetic variation: 1W
2.19.2 ILS Identification: LMR
2.19.5 Coordinates: 38−48−1.185N / 90−28−29.097W
2.19.6 Site Elevation: 446 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 1W
2.19.2 ILS Identification: BKY
2.19.5 Coordinates: 38−44−28.1N / 90−21−1.81W
2.19.6 Site Elevation: 563.9 ft

2.19.1 ILS Type: Localizer for runway 30L. Magnetic variation: 1W
2.19.2 ILS Identification: BKY
2.19.5 Coordinates: 38−45−19.34N / 90−22−55.7W
2.19.6 Site Elevation: 551 ft

2.19.1 ILS Type: Outer Marker for runway 30L. Magnetic variation: 1W
2.19.2 ILS Identification: BKY
2.19.5 Coordinates: 38−41−45.984N / 90−15−44.206W
2.19.6 Site Elevation: 530 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 1E
2.19.2 Navigation Aid Identification: STL
2.19.5 Coordinates: 38−51−38.4802N / 90−28−56.5247W
2.19.6 Site Elevation: 450 ft

General Remarks:
TWY DELTA OR TAXILANE CHARLIE FM TWY SIERRA TO TWY GOLF, B−747S ARE NOT AUTH TO PASS OR BE PASSED BY B767 OR OTR LRGR ACFT OPRG ON THE PARL TWY/TAXILANE.

TWY ALPHA EAST OF TWY TANGO, TWY SIERRA AND RWY 6/24 SOUTH OF TWY BRAVO, NO ACFT OR VEHICLE OPNS WHEN ARRIVING OR DEPG RWY 11 OR ARRIVING RWY 29.

TWY LIMA, NORTH OF RWY 12L/30R, ACFT LRGR THAN A GULFSTREAM VI TAX NBND ARE PROHIBITED FM MAKING A RIGHT TURN EBND ON TWY FOXTROT.

TWY KILO 1 IS UNAVBL TO B−767 OR LRGR ACFT (WINGSPAN 118 FT OR GTR).

WG TIP CLNC WITH GND VEH NOT ADEQUATE ALONG N SIDE OF MAIN TRML APN.

TWY VICTOR 2 IS UNAVBL TO B−767 OR LRGR ACFT (WINGSPAN 118 FT OR GTR).

WAIVER TO CONDUCT SIMULTANEOUS APCHS TO PARALLEL RYS SEPARATED BY 1,300 FT IN EFFECT.

TAXILANE CHARLIE, FM TWY SIERRA TO TWY ROMEO, RSTRD TO B−767 OR SMLR ACFT (156 FT AVBL) WHEN ACFT ARE PARKED IN THE CHARLIE PAD. RSTRN IS FOR TAX ACFT, LRGR ACFT MAY BE TOWED THRU THE AREA.

MISC: MIL ACFT PLANNING TO ARR WHEN WX IS ANTICIPATED TO BE LESS THAN 1200'/5 MUST FILE F;T PLAN BEFORE 0900Z++.

TWY VICTOR, UNDERLYING THE RWY 12L FNA CRS, IS RSTRD TO ACFT WITH A TAIL HGT OF 25 FT OR LESS (CRJ−700 OR SMLR) WHEN ACFT ARE LNDG ON RWY 12L.

TWY ECHO, BTN TWY PAPA AND TWY NOVEMBER, RSTRD TO B−767 OR SMLR ACFT (WINGSPAN LESS THAN 171 FT) WHEN ACFT ARE PARKED ON THE ECHO PAD.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

A−GEAR: A−G ARE KEPT IN RECESSED POSN TIL REQ FOR USE. TWR MUST BE NOTIFIED AT LEAST 5 SEC PRIOR TO ENGAGEMENT SO THAT CABLE MAY BE RAISED.

TWY PAPA, EAST OF THE PAPA PAD TO TWY FOXTROT, RSTRD TO ACFT WITH A WINGSPAN OF LESS THAN 79 FT (CRJ−900 OR SMLR), WHEN ACFT ARE PARKED ON THE PAPA PAD. THIS AREA IS RSTRD TO ALL OPNS WHEN ACFT ARE PERFORMING ENG RUN−UPS IN THE PAPA PAD

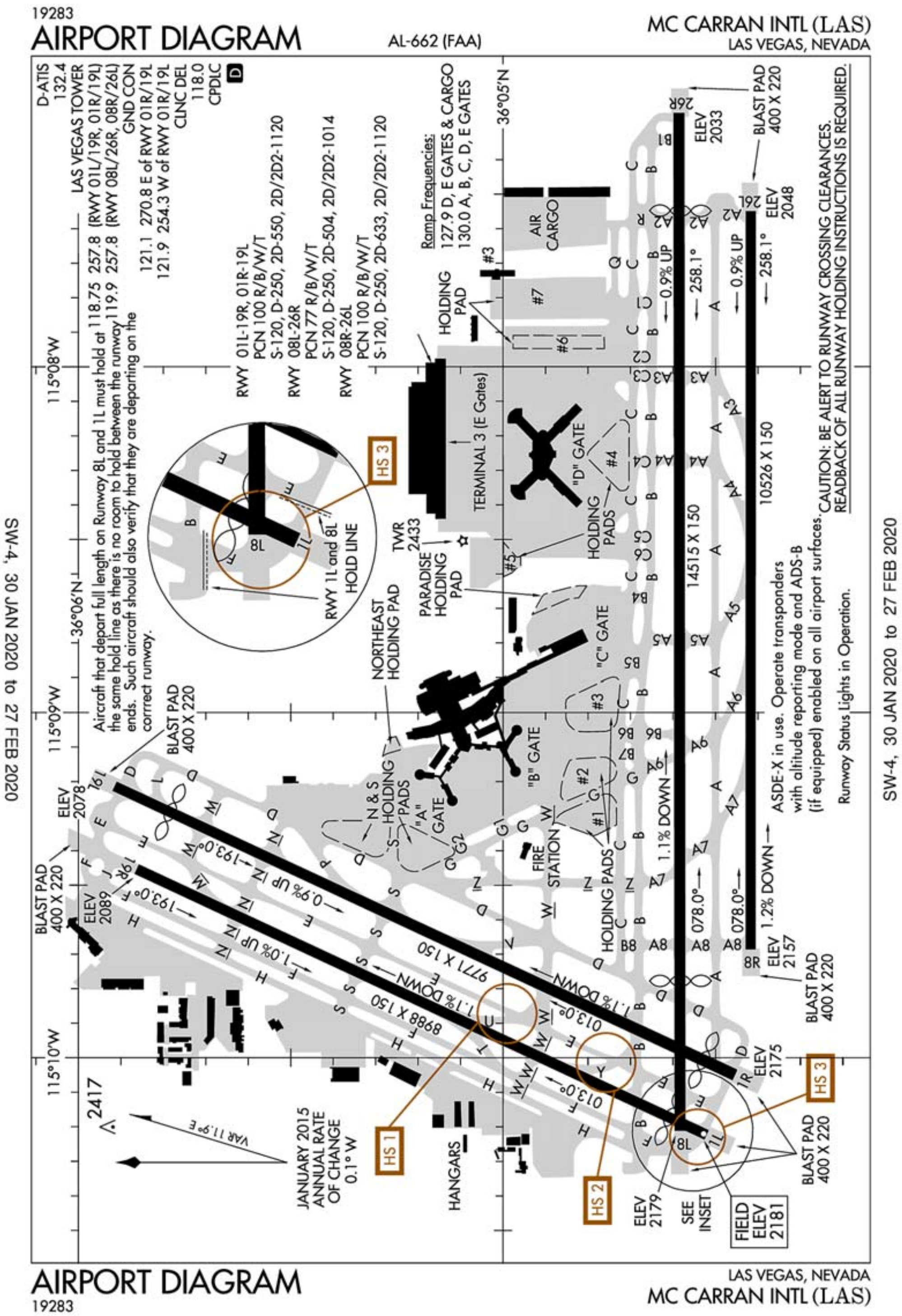
TAXILANE/TWY CHARLIE, EAST OF TWY DELTA ONE TO THE AER 30L, RSTRD TO B−737 OR SMLR ACFT (WINGSPAN LESS THAN 118 FT) WHEN ACFT ARE PARKED ON THE HOTEL PAD.

TAXILANE CHARLIE, FROM TWY PAPA TO TWY QUEBEC, RSTRD TO A B757−300 SERIES OR SMLR.

TAXILANE CHARLIE, FROM TWY PAPA TO TWY DELTA FOUR, RSTRD TO B757−300 SERIES OR SMLR WHEN PASSING BHND ACFT THAT HAVE MADE THE INITIAL 10 FT PUSHBACK.

TWY VICTOR 2, B−737 (WINGSPAN GTR THAN 79 FT BUT LESS THAN 118 FT) MUST PERFORM JUDGMENTAL OVERSTEERING INSTEAD OF COCKPIT OVR CNTRLN STEERING WHEN TAX.

Las Vegas, Nevada
McCarren International
ICAO Identifier KLAS



Las Vegas, NV
Mc Carran Intl
ICAO Identifier KLAS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36−4−48.158N / 115−9−8.045W
2.2.2 From City: 5 miles S of LAS VEGAS, NV
2.2.3 Elevation: 2181.2 ft
2.2.5 Magnetic Variation: 11E (2020)
2.2.6 Airport Contact: ROSEMARY A. VASSILIADIS
5757 WAYNE NEWTON BLVD
LAS VEGAS, NV 89119
((702) 261−4525)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,100LL,A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01L
2.12.2 True Bearing: 25
2.12.3 Dimensions: 8988 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36−4−31.1684N / 115−10−13.3148W
2.12.6 Threshold Elevation: 2181.2 ft
2.12.6 Touchdown Zone Elevation: 2176.1 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 205
2.12.3 Dimensions: 8988 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36−5−51.7658N / 115−9−27.1851W
2.12.6 Threshold Elevation: 2088.5 ft
2.12.6 Touchdown Zone Elevation: 2116.6 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 25
2.12.3 Dimensions: 9771 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36−4−27.264N / 115−10−2.9581W
2.12.6 Threshold Elevation: 2175.1 ft
2.12.6 Touchdown Zone Elevation: 2169.8 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 205
2.12.3 Dimensions: 9771 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36−5−54.8814N / 115−9−12.8055W
2.12.6 Threshold Elevation: 2077.6 ft
2.12.6 Touchdown Zone Elevation: 2112.1 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 14515 ft x 150 ft
2.12.4 PCN: 77 R/B/W/T
2.12.5 Coordinates: 36−4−34.9211N / 115−10−12.6889W
2.12.6 Threshold Elevation: 2179.2 ft
2.12.6 Touchdown Zone Elevation: 2154.9 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 14515 ft x 150 ft
2.12.4 PCN: 77 R/B/W/T
2.12.5 Coordinates: 36−4−35.0633N / 115−7−15.8989W
2.12.6 Threshold Elevation: 2033 ft
2.12.6 Touchdown Zone Elevation: 2067.1 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36−4−25.0637N / 115−9−41.1617W
2.12.6 Threshold Elevation: 2156.9 ft
2.12.6 Touchdown Zone Elevation: 2156.9 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36−4−25.1671N / 115−7−32.9665W
2.12.6 Threshold Elevation: 2048.4 ft
2.12.6 Touchdown Zone Elevation: 2069 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 8988
2.13.3 Take−off Distance Available: 8988
2.13.4 Accelerate−Stop Distance Available: 8988
2.13.5 Landing Distance Available: 8401

2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 8988
2.13.3 Take−off Distance Available: 9400
2.13.4 Accelerate−Stop Distance Available: 8400
2.13.5 Landing Distance Available: 8400

2.13.1 Designation: 01R
2.13.2 Take−off Run Available: 9771
2.13.3 Take−off Distance Available: 10168
2.13.4 Accelerate−Stop Distance Available: 9273
2.13.5 Landing Distance Available: 8782

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 9771
2.13.3 Take−off Distance Available: 10171
2.13.4 Accelerate−Stop Distance Available: 9681
2.13.5 Landing Distance Available: 8803

2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 14512
2.13.3 Take−off Distance Available: 15098
2.13.4 Accelerate−Stop Distance Available: 14098
2.13.5 Landing Distance Available: 11960

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 14512
2.13.3 Take−off Distance Available: 15035
2.13.4 Accelerate−Stop Distance Available: 14035
2.13.5 Landing Distance Available: 12639

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 10525
2.13.3 Take−off Distance Available: 10525
2.13.4 Accelerate−Stop Distance Available: 10525
2.13.5 Landing Distance Available: 10525

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 10525
2.13.3 Take−off Distance Available: 10525
2.13.4 Accelerate−Stop Distance Available: 10525
2.13.5 Landing Distance Available: 10525

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 19R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 01R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 19L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26R
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 11E
2.19.2 ILS Identification: CUA
2.19.5 Coordinates: 36−6−1.7244N / 115−9−25.0625W
2.19.6 Site Elevation: 2089.4 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 11E
2.19.2 ILS Identification: CUA
2.19.5 Coordinates: 36−4−49.142N / 115−10−6.5151W
2.19.6 Site Elevation: 2158.4 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 11E
2.19.2 ILS Identification: CUA
2.19.5 Coordinates: 36−6−0.8259N / 115−9−22W
2.19.6 Site Elevation: 2078.9 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 11E
2.19.2 ILS Identification: LAS
2.19.5 Coordinates: 36−4−30.5228N / 115−10−19.1659W

2.19.6 Site Elevation: 2201.5 ft

2.19.1 ILS Type: Glide Slope for runway 26R. Magnetic variation: 11E
2.19.2 ILS Identification: LAS
2.19.5 Coordinates: 36−4−32.0826N / 115−7−46.6759W
2.19.6 Site Elevation: 2046.5 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 11E
2.19.2 ILS Identification: LAS
2.19.5 Coordinates: 36−4−34.9114N / 115−10−19.1797W
2.19.6 Site Elevation: 2186.3 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 11E
2.19.2 ILS Identification: RLE
2.19.5 Coordinates: 36−4−22.2517N / 115−9−53.2672W
2.19.6 Site Elevation: 2182.2 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 11E
2.19.2 ILS Identification: RLE
2.19.5 Coordinates: 36−4−21.996N / 115−7−46.6672W
2.19.6 Site Elevation: 2050.4 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 11E
2.19.2 ILS Identification: RLE
2.19.5 Coordinates: 36−4−25.0515N / 115−9−53.3413W
2.19.6 Site Elevation: 2168.2 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 15E
2.19.2 Navigation Aid Identification: LAS
2.19.5 Coordinates: 36−4−46.9253N / 115−9−35.2725W
2.19.6 Site Elevation: 2136 ft

General Remarks:
ACFT OPER NEAR THE INT OF TWYS S, D, G AND THE N END OF TWY Z SHOULD BE ALERT AS THERE ARE CLOSELY ALIGNED TWY CNTRLN AND RADIUS TURNS.

ACFT THAT DEP FULL LENGTH OF RWYS 01L AND 08L MUST HOLD AT THE SAME HOLD LINE AS THERE IS NO ROOM TO HOLD BTN THE RWY ENDS AND SUCH ACFT SHOULD VERIFY THAT THEY ARE ON THE CORRECT RWY.

GA CUST AND IMG LCTD WEST SIDE OF AFLD BTWN FBO'S.

ACFT TAX WB ON TWY B NEAR TWY E USE CARE NOT TO ENTER THE RWY ON TWY Y, ACFT TAX WB ON TWY W NEAR TWY E USE CARE NOT TO ENTER THE RWY ON TWY U.

ACFT MAY EXPERIENCE REFLECTION OF SUN FM GLASS HOTELS LCTD NW OF ARPT. REFLECTION MAY OCCUR AT VARIOUS ALTS, HDGS, & DSTCS FM ARPT.

ALL NON−STD RWY OPNS PPR FM DEPT OF AVN.

RWY STS LGTS ARE IN OPN.

ACFT DEPG RWY 19R USE MINIMAL PWR UNTIL PASSING THE RWY THLD. RWY 19R THLD HAS STD RWY MARKINGS AND IS 780 FT S OF THE BLAST PAD.

LGTD GOLF RANGE 1400 FT S OF RWYS 01L/19R AND 01R/19L.

RWY 08L 589 FT CWY; RWY 26R 645 FT CWY.

ALL ACFT CTC RAMP CTL ON FREQ 124.4 FOR OPNS AT A,B, AND C GATES; CTC RAMP CTL ON 127.9 FOR OPNS AT D AND E GATES AND CARGO RAMP PRIOR TO ENTERING RAMP OR PUSHING BACK FROM GATE OR PRKG SPOT.

ACFT LRGR THAN B757 PPR FM DEPT OF AVN TO USE TWY H.

LRG NR OF BIRDS AND BATS INVOF OF ARPT BTWN SS AND SR.

TBJT DEPS NOT PMTD ON RWY 01R/19L OR RWY 01L/19R 2000−0800. XCPNS FOR WX OR OPNL NECESSITY.

EXTSV GLDR/SOARING OPNS WKENDS & HOLS; SR−SS; LAS R187/020; ALTS UP TO BUT NOT INCLG FL180. GLDRS RMN CLEAR OF THE TCA BUT OTHERWISE OPR WI THE ENTIRE SW QUAD OF THE TCA VEIL.

(E98) PLUS 64 SHELTERS & 24 SHEDS.

GA CBP RSVNS ARE RQRD TO BE SMTD A MIN OF 12 HOURS IN ADVN (OTHER CONDS APPLY). RSVNS MUST BE MADE ONLINE AT WWW.MCCARRAN.COM/GACBP . QNS CAN BE DCTD TO CBP559@MCCARRAN.COM. GA ACFT USING THE WEST SIDE CUST FAC MUST CTC RAMP CONTROL 124.4.

TIEDOWN FEE.

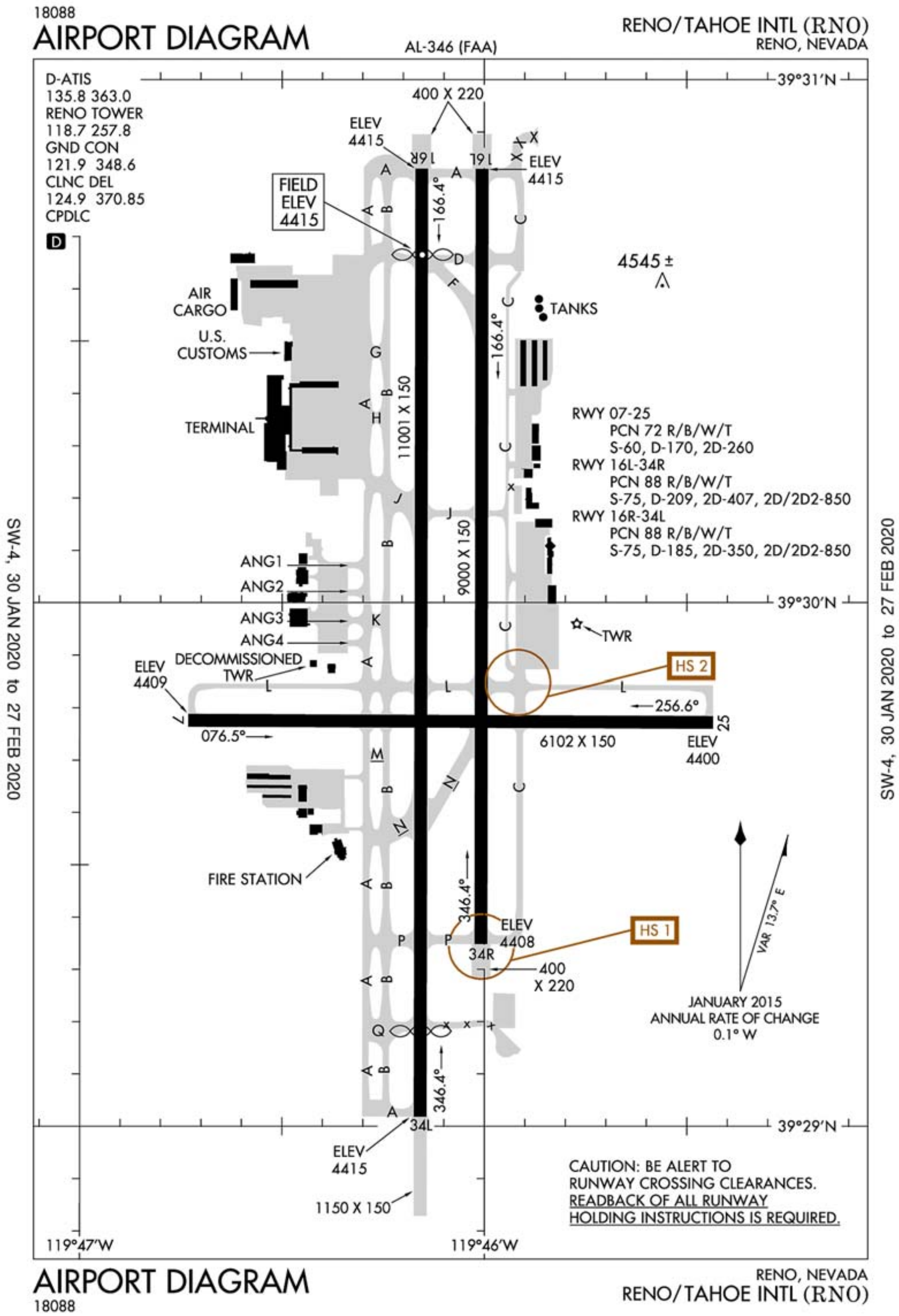
GA PRKG VERY LTD. FOR PRKG AVAILABILITY CTC EITHER FBO (702) 736−1830 OR (702) 739−1100.

ACFT USING FULL LEN DEP ON RWY 08L USE MINIMAL PWR TIL PASSING THE PWR−UP POINT ON RWY. PWR−UP POINT IS 348 FT EAST OF BLAST PAD AND MKD WITH SIGN AND STD MARKINGS FOR BGNG OF RWY.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NMRS HOP ON WEST SIDE OF ARPT.

Reno, Nevada
Reno/Tahoe International
ICAO Identifier KRNO



Reno, NV
Reno/Tahoe Intl
ICAO Identifier KRNO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−29−56.8N / 119−46−5.2W
2.2.2 From City: 3 miles SE of RENO, NV
2.2.3 Elevation: 4414.9 ft
2.2.5 Magnetic Variation: 16E (1985)
2.2.6 Airport Contact: MARILY M. MORA
P O BOX 12490
RENO, NV 89510
(775−328−6400)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 90
2.12.3 Dimensions: 6102 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 39−29−46.6299N / 119−46−43.822W
2.12.6 Threshold Elevation: 4409.2 ft
2.12.6 Touchdown Zone Elevation: 4409.3 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 270
2.12.3 Dimensions: 6102 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 39−29−46.3739N / 119−45−25.9978W
2.12.6 Threshold Elevation: 4399.6 ft
2.12.6 Touchdown Zone Elevation: 4401.8 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−30−49.8258N / 119−46−0.266W
2.12.6 Threshold Elevation: 4414.8 ft
2.12.6 Touchdown Zone Elevation: 4414.8 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−29−20.8949N / 119−46−0.4971W
2.12.6 Threshold Elevation: 4408.3 ft
2.12.6 Touchdown Zone Elevation: 4408.3 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11001 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−30−49.8381N / 119−46−9.1937W
2.12.6 Threshold Elevation: 4414.8 ft
2.12.6 Touchdown Zone Elevation: 4414.8 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11001 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39−29−1.1337N / 119−46−9.475W
2.12.6 Threshold Elevation: 4414.5 ft
2.12.6 Touchdown Zone Elevation: 4410.2 ft

AD 2.13 Declared Distances
2.13.1 Designation: 07
2.13.2 Take−off Run Available: 5854
2.13.3 Take−off Distance Available: 5854
2.13.4 Accelerate−Stop Distance Available: 6102
2.13.5 Landing Distance Available: 5854

2.13.1 Designation: 25
2.13.2 Take−off Run Available: 6102
2.13.3 Take−off Distance Available: 6102
2.13.4 Accelerate−Stop Distance Available: 6102
2.13.5 Landing Distance Available: 6102

2.13.1 Designation: 16L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 34R

2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 16R
2.13.2 Take−off Run Available: 11001
2.13.3 Take−off Distance Available: 11001
2.13.4 Accelerate−Stop Distance Available: 11001
2.13.5 Landing Distance Available: 10001

2.13.1 Designation: 34L
2.13.2 Take−off Run Available: 11001
2.13.3 Take−off Distance Available: 11001
2.13.4 Accelerate−Stop Distance Available: 11001
2.13.5 Landing Distance Available: 10011

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 07
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 25
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: RNO
2.19.5 Coordinates: 39−28−48.3183N / 119−46−6.1675W
2.19.6 Site Elevation: 4433.4 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: RNO
2.19.5 Coordinates: 39−30−28.0958N / 119−46−5.6655W
2.19.6 Site Elevation: 4408.4 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: RNO
2.19.5 Coordinates: 39−28−49.5342N / 119−46−9.505W
2.19.6 Site Elevation: 4419.7 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: AGY
2.19.5 Coordinates: 39−31−0.2724N / 119−46−12.5676W
2.19.6 Site Elevation: 4434.8 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: AGY
2.19.5 Coordinates: 39−29−19.6039N / 119−46−5.3446W
2.19.6 Site Elevation: 4403.3 ft

2.19.1 ILS Type: Localizer for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: AGY
2.19.5 Coordinates: 39−30−59.9826N / 119−46−9.1647W
2.19.6 Site Elevation: 4433.1 ft

General Remarks:
INTENSIVE GLIDER ACTIVITY INVOF ARPT AND SURROUNDING AREAS UP TO 18000 FT.

MIL ACFT: TSNT ACFT EXECUTE STRAIGHT−IN FULL STOP APCH. OVERHEAD PAT NOT AUTH FOR TSNT ACFT.

MILITARY: ANG OPS 1500−0100Z++ MON−FRI EXC HOL, OTHER TIMES BY NOTAM; DSN 830−4709.

NOISE SENSITIVE AREA ALL QUADS. PILOTS OF TBJT ACFT USE RCMDD NOISE ABATEMENT PROCS; AVBL ON REQ.

TWY C BTN TWY L & TWY D RESTRICTED TO ACFT 100000 LBS OR LESS.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −15C.

WATERFOWL ALL QUADRANTS ALL SEASONS. CONCENTRATED NW OF RWY 16R AND E OF RWY 16L.

TWY A BETWEEN NORTH TWY B AND TWY D CLSD TO ACFT WITH WINGSPAN GREATER THAN 149 FT.

MIL ACFT: NOISE ABTMT CRITICAL TERMINATE AFTERBURNER ASAP THEN CLIMB TO 6500 FT MSL ASAP.

TWY M CLSD TO AIR CARRIER ACFT.

ALL COMMERCIAL AIRCRAFT CONTACT GROUND CONTROL FOR ADVISORIES PRIOR TO PUSH BACK ON THE TERMINAL RAMP.

NOISE NOTE CONT: PILOTS OF NON−TBJT ACFT USE BEST ABATEMENT PROCS AND SETTINGS. AVOID AS MUCH AS FEASIBLE FLYING OVER POPULATED AREAS.

TWY J EAST OF RY 16L/34R CLSD TO AIR CARRIER ACFT.

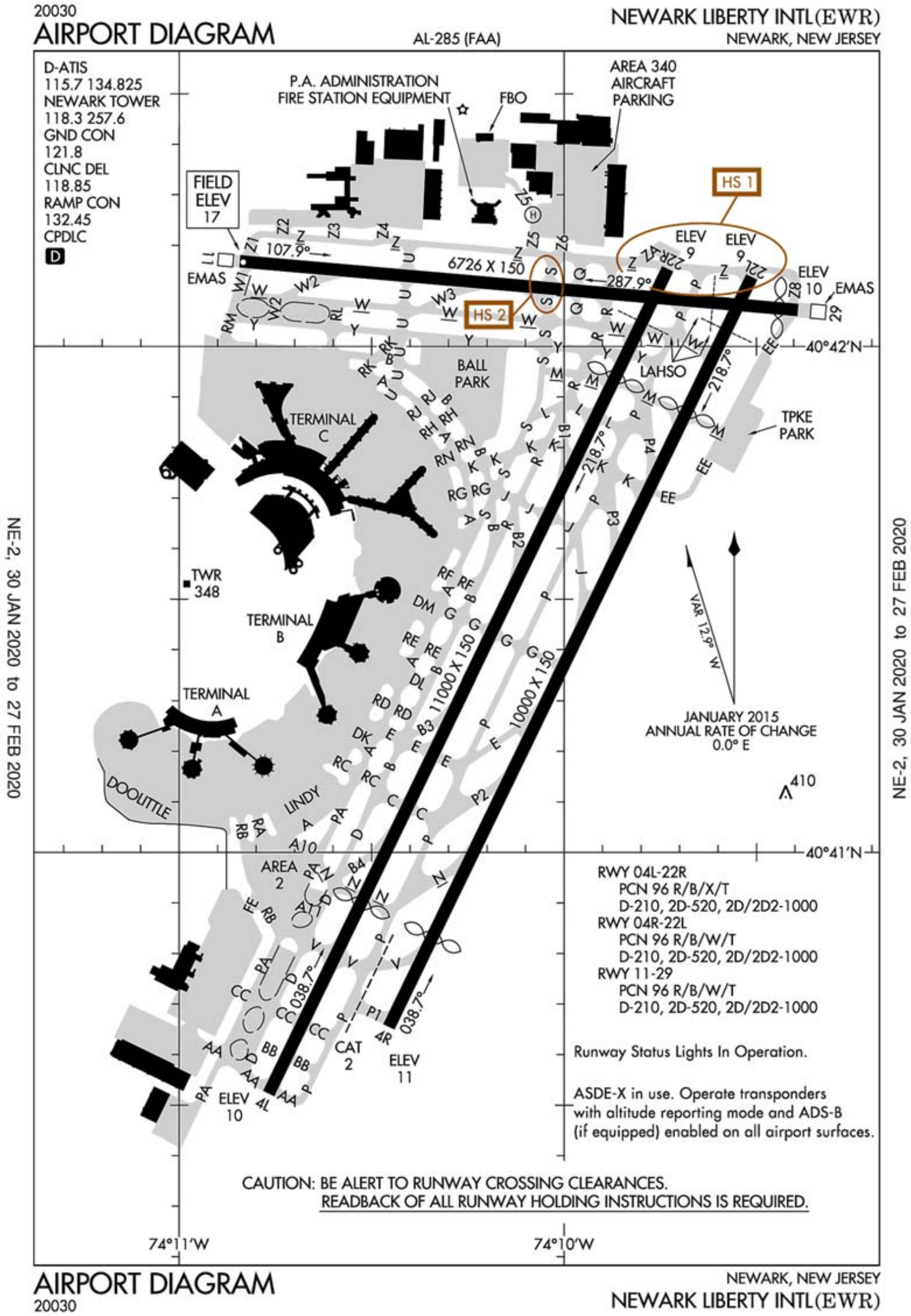
ACFT OVR 12500 LBS: WRITTEN PPR FOR TRG FLIGHTS; FOR FTHR INFO CTC ARPT OPS 1−877−736−6359.

TWY C BETWEEN TWY L AND TWY D CLSD TO AIR CARRIER ACFT.

24 HRS PPR FOR TSNT ACFT PARKING WITH WINGSPANS GREATER THAN 75 FT.

GLIDER/SOARING OPER 30−50 MILES SOUTH OF ARPT DURING VFR WEATHER & MOUNTAIN WAVE WIND CONDITIONS 1100 TO SS.

Newark, New Jersey
Newark Liberty International
ICAO Identifier KEWR



Newark, NJ
Newark Liberty Intl
ICAO Identifier KEWR

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 40−41−32.9274N / 74−10−7.2724W
2.2.2 From City: 3 miles S of NEWARK, NJ
2.2.3 Elevation: 17.4 ft
2.2.5 Magnetic Variation: 13W (1985)
2.2.6 Airport Contact: DOUG STEARNS − ACTING
BUILDING #1− CONRAD ROAD
NEWARK, NJ 7114 (973−961−6161)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 04L
2.12.2 True Bearing: 26
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 96 R/B/X/T
2.12.5 Coordinates: 40−40−31.3716N / 74−10−46.0209W
2.12.6 Threshold Elevation: 10.1 ft
2.12.6 Touchdown Zone Elevation: 10.4 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 206
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 96 R/B/X/T
2.12.5 Coordinates: 40−42−9.2091N / 74−9−43.8255W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 10.4 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 206
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 40−42−8.2438N / 74−9−30.7308W
2.12.6 Threshold Elevation: 9.4 ft
2.12.6 Touchdown Zone Elevation: 10.7 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 26
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 40−40−39.2984N / 74−10−27.2835W
2.12.6 Threshold Elevation: 11.1 ft
2.12.6 Touchdown Zone Elevation: 11.3 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 275
2.12.3 Dimensions: 6726 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 40−42−4.3181N / 74−9−23.5515W
2.12.6 Threshold Elevation: 9.7 ft
2.12.6 Touchdown Zone Elevation: 9.8 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 95
2.12.3 Dimensions: 6726 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 40−42−10.0955N / 74−10−50.5467W
2.12.6 Threshold Elevation: 17.4 ft
2.12.6 Touchdown Zone Elevation: 17.4 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 54 ft x 54 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−42−15.85N / 74−10−5W
2.12.6 Threshold Elevation: 8 ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances

2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 11000
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 11000
2.13.5 Landing Distance Available: 8460

2.13.1 Designation: 22R
2.13.2 Take−off Run Available: 11000
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 11000
2.13.5 Landing Distance Available: 9560

2.13.1 Designation: 22L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 8207

2.13.1 Designation: 04R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 8810

2.13.1 Designation: 29
2.13.2 Take−off Run Available: 6726
2.13.3 Take−off Distance Available: 6726
2.13.4 Accelerate−Stop Distance Available: 6726
2.13.5 Landing Distance Available: 6502

2.13.1 Designation: 11
2.13.2 Take−off Run Available: 6726
2.13.3 Take−off Distance Available: 6726
2.13.4 Accelerate−Stop Distance Available: 6726
2.13.5 Landing Distance Available: 6726

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 04L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 29
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 11
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: EWR
2.19.5 Coordinates: 40−42−15.686N / 74−9−33.736W
2.19.6 Site Elevation: 34.3 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: EWR
2.19.5 Coordinates: 40−41−2.167N / 74−10−22.759W
2.19.6 Site Elevation: 7.4 ft

2.19.1 ILS Type: Localizer for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: EWR
2.19.5 Coordinates: 40−42−18.192N / 74−9−38.112W
2.19.6 Site Elevation: 8.7 ft

2.19.1 ILS Type: DME for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JNN
2.19.5 Coordinates: 40−42−15.686N / 74−9−33.736W
2.19.6 Site Elevation: 34.3 ft

2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JNN
2.19.5 Coordinates: 40−41−47.5592N / 74−9−53.883W
2.19.6 Site Elevation: 8 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JNN
2.19.5 Coordinates: 40−40−22.392N / 74−10−51.726W
2.19.6 Site Elevation: 9.1 ft

2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.5 Coordinates: 40−41−43.5471N / 74−9−41.6275W
2.19.6 Site Elevation: 33.5 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.5 Coordinates: 40−40−57.598N / 74−10−9.8776W
2.19.6 Site Elevation: 6 ft

2.19.1 ILS Type: Inner Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.5 Coordinates: 40−40−41.4774N / 74−10−23.1671W
2.19.6 Site Elevation: 9 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.5 Coordinates: 40−42−15.9432N / 74−9−25.8352W
2.19.6 Site Elevation: 8.1 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40−41−43.5471N / 74−9−41.6275W
2.19.6 Site Elevation: 33.5 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40−41−43.6732N / 74−9−41.7368W
2.19.6 Site Elevation: 7.4 ft

2.19.1 ILS Type: Inner Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40−42−1.3147N / 74−9−32.1813W
2.19.6 Site Elevation: 9.4 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40−40−28.9529N / 74−10−33.8654W
2.19.6 Site Elevation: 9.4 ft

2.19.1 ILS Type: DME for runway 11. Magnetic variation: 13W
2.19.2 ILS Identification: GPR
2.19.5 Coordinates: 40−42−9.5406N / 74−10−4.0694W
2.19.6 Site Elevation: 7.1 ft

2.19.1 ILS Type: Glide Slope for runway 11. Magnetic variation: 13W
2.19.2 ILS Identification: GPR
2.19.5 Coordinates: 40−42−10.837N / 74−10−35.03W
2.19.6 Site Elevation: 9.5 ft

2.19.1 ILS Type: Localizer for runway 11. Magnetic variation: 13W

2.19.2 ILS Identification: GPR

2.19.5 Coordinates: 40−42−9.2938N / 74−10−4.9852W

2.19.6 Site Elevation: 7 ft

2.19.1 Navigation Aid Type: FAN MARKER. Magnetic variation: 11W

2.19.2 Navigation Aid Identification: EWR

2.19.5 Coordinates: 40−42−12.1824N / 74−11−14.7211W

2.19.6 Site Elevation: 9.5 ft

General Remarks:
HIGH VOLUME OF LOW LEVEL HEL TFC ARR AND DEP HELO KEARNY HELI (65NJ) LCTD 3.5 MILES NE OF ARPT.

TWY Z BTN TWY Z2 & Z4 CLSD TO ACFT WITH WINGSPANS IN EXCESS OF 171 FT.

ADG IV ACFT RSTR FM PSG TWY Z3 ON Z

TWY EE BTN RWY 4R−22L AND TWY M CLSD TO AFCT WITH WINGSPANS IN EXCESS OF 171 FT.

NOISE RSTR CALL 212−435−3784 DRG NML BUS HRS.

FLOCKS OF BIRDS ON & INVOF ARPT.

RWY STATUS LIGHTS IN OPR

TWY Y BTN RM AND TWY U, SPEED RESTRICTION OF 17KT (20MPH).

TWY EE BTN RWY 11−29 AND TWY M CLOSED TO AFCT WITH WINGSPANS IN EXCESS OF 171 FT.

PARA−SAIL & BANNER TOWING OPS 1000 FT & BLO IN UPPER & LOWER NY BAYS INCLUDING ROCKAWAY INLET INDEF.

CPDLC DEPARTURE CLEARANCE SERVICE AVAILABLE.

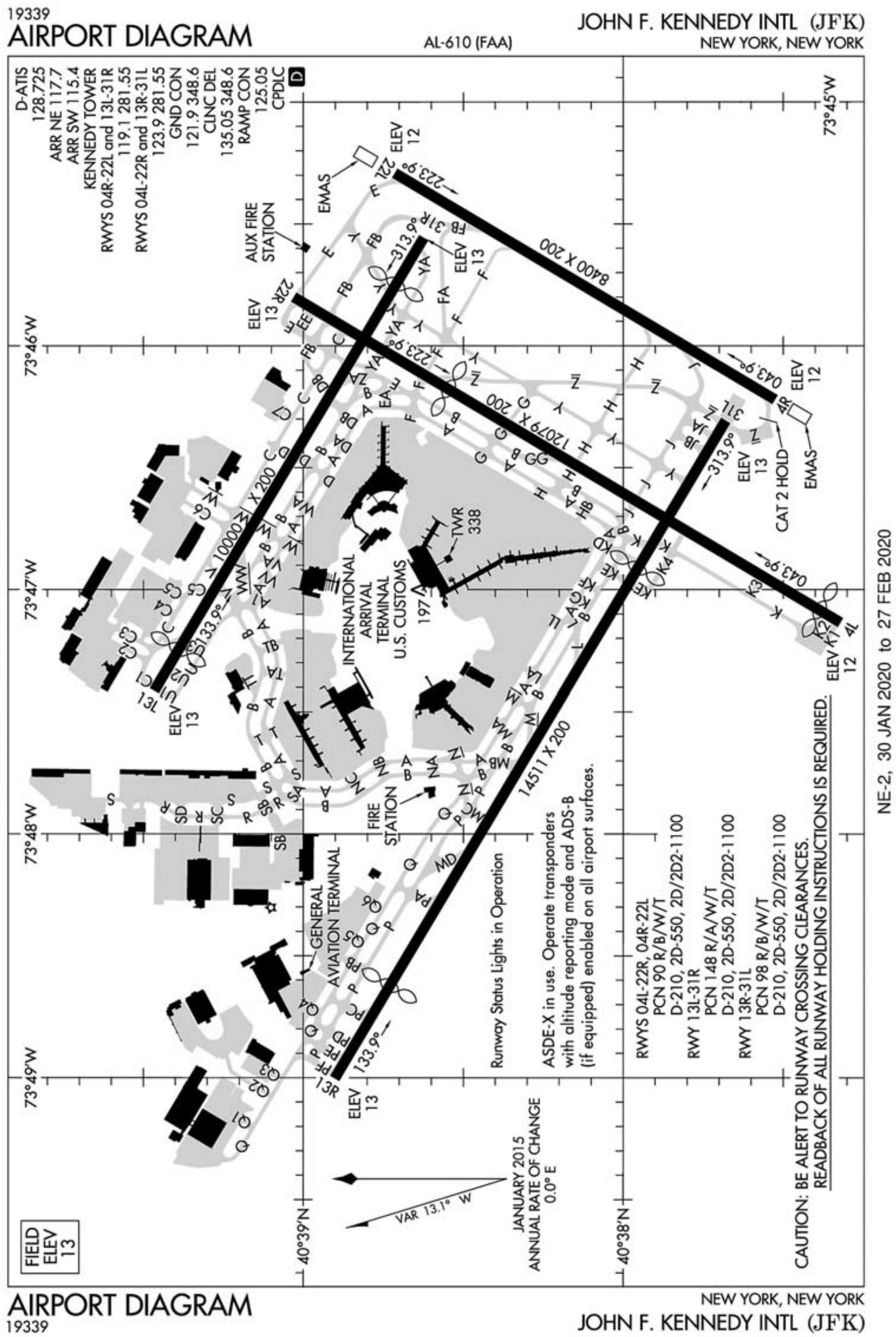
ALL TWYS SURROUNDING ”BALLPARK” PRKG AREA (TWY Y BTN TWY S AND TWY U, TWY S BTN TWY Y AND TWY K, TWAY K BTN TWY S AND TWY B, TWY B BTN TWY K AND TWY U, AND TWY U BTN TWY B AND TWY Y) ACFT SPEED RSTR OF 17KTS/20MPH FOR ALL AFCT WITH WINGSPANS IN EXCESS OF 171 FT.

RWY 4R & 4L DEP USE UPPER ANT FOR ATC COM.

ASDE−X IN USE. OPER TRANSPONDER WITH ALT REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL ARPT SFCS.

TWY Z EAST OF TWY U ACFT SPEED RSTR OF 17 KTS/20 MPH MAX FOR ALL ACFT WITH WINGSPANS IN EXCESS OF 171 FT.

New York, New York
John F. Kennedy International
ICAO Identifier KJFK



New York, NY
John F Kennedy Intl
ICAO Identifier KJFK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−38−23.74N / 73−46−43.293W
2.2.2 From City: 13 miles SE of NEW YORK, NY
2.2.3 Elevation: 13 ft
2.2.5 Magnetic Variation: 13W (2020)
2.2.6 Airport Contact: CHARLES EVERETT
BLDG 14
JAMAICA, NY 11430
((718) 244−3501)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 31
2.12.3 Dimensions: 12079 ft x 200 ft
2.12.4 PCN: 90 R/B/W/T
2.12.5 Coordinates: 40−37−19.2759N / 73−47−8.1038W
2.12.6 Threshold Elevation: 11.9 ft
2.12.6 Touchdown Zone Elevation: 12.7 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 211
2.12.3 Dimensions: 12079 ft x 200 ft
2.12.4 PCN: 90 R/B/W/T
2.12.5 Coordinates: 40−39−1.8337N / 73−45−47.9596W
2.12.6 Threshold Elevation: 12.7 ft
2.12.6 Touchdown Zone Elevation: 12.7 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 31
2.12.3 Dimensions: 8400 ft x 200 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40−37−31.532N / 73−46−13.25W
2.12.6 Threshold Elevation: 11.8 ft
2.12.6 Touchdown Zone Elevation: 11.9 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 211
2.12.3 Dimensions: 8400 ft x 200 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40−38−42.849N / 73−45−17.509W
2.12.6 Threshold Elevation: 11.8 ft
2.12.6 Touchdown Zone Elevation: 11.9 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 121
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 148 R/A/W/T
2.12.5 Coordinates: 40−39−27.9533N / 73−47−24.86W
2.12.6 Threshold Elevation: 13 ft
2.12.6 Touchdown Zone Elevation: 13 ft

2.12.1 Designation: 31R
2.12.2 True Bearing: 301
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 148 R/A/W/T
2.12.5 Coordinates: 40−38−37.4079N / 73−45−33.3832W
2.12.6 Threshold Elevation: 12.7 ft
2.12.6 Touchdown Zone Elevation: 13 ft

2.12.1 Designation: 13R
2.12.2 True Bearing: 121
2.12.3 Dimensions: 14511 ft x 200 ft
2.12.4 PCN: 98 R/B/W/T
2.12.5 Coordinates: 40−38−54.102N / 73−49−0.173W
2.12.6 Threshold Elevation: 12.5 ft
2.12.6 Touchdown Zone Elevation: 12.6 ft

2.12.1 Designation: 31L
2.12.2 True Bearing: 301
2.12.3 Dimensions: 14511 ft x 200 ft
2.12.4 PCN: 98 R/B/W/T
2.12.5 Coordinates: 40−37−40.781N / 73−46−18.413W
2.12.6 Threshold Elevation: 12.5 ft
2.12.6 Touchdown Zone Elevation: 12.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 11351
2.13.3 Take−off Distance Available: 11351
2.13.4 Accelerate−Stop Distance Available: 11470
2.13.5 Landing Distance Available: 11010

2.13.1 Designation: 22R
2.13.2 Take−off Run Available: 12079
2.13.3 Take−off Distance Available: 12079
2.13.4 Accelerate−Stop Distance Available: 11219
2.13.5 Landing Distance Available: 7795

2.13.1 Designation: 04R
2.13.2 Take−off Run Available: 8400
2.13.3 Take−off Distance Available: 8400
2.13.4 Accelerate−Stop Distance Available: 8400
2.13.5 Landing Distance Available: 8400

2.13.1 Designation: 22L
2.13.2 Take−off Run Available: 8400
2.13.3 Take−off Distance Available: 8400
2.13.4 Accelerate−Stop Distance Available: 8400
2.13.5 Landing Distance Available: 8400

2.13.1 Designation: 13L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 9093

2.13.1 Designation: 31R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 9513
2.13.5 Landing Distance Available: 8486

2.13.1 Designation: 13R
2.13.2 Take−off Run Available: 14511
2.13.3 Take−off Distance Available: 14511
2.13.4 Accelerate−Stop Distance Available: 14511
2.13.5 Landing Distance Available: 12468

2.13.1 Designation: 31L
2.13.2 Take−off Run Available: 14511
2.13.3 Take−off Distance Available: 14511
2.13.4 Accelerate−Stop Distance Available: 14511
2.13.5 Landing Distance Available: 11248

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 13L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 31R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 13R
2.14.2 Approach Lighting System: RLLS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 31L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: HIQ
2.19.5 Coordinates: 40−37−43.82N / 73−46−40.578W
2.19.6 Site Elevation: 24 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: HIQ
2.19.5 Coordinates: 40−37−31.0826N / 73−46−54.9123W
2.19.6 Site Elevation: 9.3 ft

2.19.1 ILS Type: Localizer for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: HIQ
2.19.5 Coordinates: 40−39−6.9659N / 73−45−43.9469W
2.19.6 Site Elevation: 10.5 ft

2.19.1 ILS Type: DME for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JOC
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W

2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JOC
2.19.5 Coordinates: 40−38−21.2797N / 73−46−13.9085W
2.19.6 Site Elevation: 8.6 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JOC
2.19.5 Coordinates: 40−37−44.5024N / 73−46−43.0851W
2.19.6 Site Elevation: 9.5 ft

2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W
2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−37−42.1007N / 73−46−11.0535W
2.19.6 Site Elevation: 12.2 ft

2.19.1 ILS Type: Inner Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−37−23.9N / 73−46−19.1W
2.19.6 Site Elevation: 12 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−38−51.57N / 73−45−10.684W
2.19.6 Site Elevation: 12.7 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−37−43.82N / 73−46−40.578W
2.19.6 Site Elevation: 24 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−38−32.9529N / 73−45−19.9899W
2.19.6 Site Elevation: 13.1 ft

2.19.1 ILS Type: Inner Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−38−51.13N / 73−45−11.04W
2.19.6 Site Elevation: 12 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−37−27.513N / 73−46−16.387W
2.19.6 Site Elevation: 10.5 ft

2.19.1 ILS Type: DME for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−33.543N / 73−45−18.237W
2.19.6 Site Elevation: 31 ft

2.19.1 ILS Type: Glide Slope for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−39−14.7571N / 73−47−4.857W
2.19.6 Site Elevation: 10.5 ft

2.19.1 ILS Type: Localizer for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−18.566W
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: DME for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−38−33.543N / 73−45−18.237W
2.19.6 Site Elevation: 31 ft

2.19.1 ILS Type: Glide Slope for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−38−50.3237N / 73−45−51.0237W
2.19.6 Site Elevation: 9.5 ft

2.19.1 ILS Type: Localizer for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−39−30.778N / 73−47−31.088W
2.19.6 Site Elevation: 11.9 ft

2.19.1 ILS Type: Glide Slope for runway 31L. Magnetic variation: 13W
2.19.2 ILS Identification: MOH
2.19.5 Coordinates: 40−37−59.8702N / 73−47−9.4213W
2.19.6 Site Elevation: 8.7 ft

2.19.1 ILS Type: Localizer for runway 31L. Magnetic variation: 13W
2.19.2 ILS Identification: MOH
2.19.5 Coordinates: 40−38−59.645N / 73−49−12.422W
2.19.6 Site Elevation: 13.7 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 12W
2.19.2 Navigation Aid Identification: JFK
2.19.5 Coordinates: 40−37−58.4N / 73−46−17W
2.19.6 Site Elevation: 11 ft

General Remarks:
PERIODIC FIRE DEPT TRNG ADJACENT APCH END OF RWYS 22L & 22R.

CONTINUOUS TAXIWAY MAINTENANCE ACTIVITIES AT NUMEROUS LOCATIONS

RY 13R HAS TWO (2) PAPI − P4L SYSTEMS. (RY 13R) OFFSET PAPI SUPPORTS VOR OR GPS RWY 13R & PARKWAY VISUAL RY 13R.

METERING PROCEDURES IN EFFECT− CONTACT RAMP CONTROL PRIOR TO PUSHBACK 1200Z−1500Z DAILY/1900Z−0300Z DAILY.

TWY ’H’ CL LGTS BTN TWY ’A’ & RY 4L/22R OTS.

FOR NOISE ABATEMENT RESTRICTIONS CALL 212−435−3747 DURING NORMAL BUSINESS HOURS.

TWY Q3 CNTRLN LGTS OTS.

ACFT ARE NOT PMTD TO STOP ON EITHER TWY A OR B BRIDGES.

CONVERGING OPNS ON RYS 13R AND 22L CONDUCTED VIA ARRIVAL DISTANCE WINDOW.

PARA−SAIL & BANNER TOWING OPNS 1000 FT & BLO IN UPPER & LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET INDEFLY.

FLOCKS OF BIRDS ON & INVOF ARPT.

NON−STANDARD ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 393 FT IN LENGTH BY 226 FT IN WIDTH LCTD AT THE DER 4R.

NON−STANDARD ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 405 FT IN LENGTH BY 226 FT IN WIDTH LCTD AT THE DER 22L.

GAT HELIPAD NON−STANDARD MARKINGS & LIGHTING.

HIGH VOLUME OF LOW LEVEL VFR TRAFFIC, 500 FT AND BLO, ALONG SHORELINE SOUTH OF JFK.

SPECIAL AIR TFC RULES−PART 93 HIGH DENSITY ARPT. PROR RESERVATION REQUIRED. SEE AERONAUTICAL INFORMATION MANUAL.

TWY ’H’ CL LGTS BTN TERMINAL 4 RAMP AND TWY A OTS.

RY 31R HOLDING POSITION MARKINGS AT RY 4L/22R ’SE’ SIDE OBSC.

TWY NB CLSD TO SB TURNS AT TWY A.

UFN TWY ’D’ BTN TWY ’C’ AND HANGAR 7 CLOSED.

OBST BLDG LGT OTS 6.3 NM ESE JFK 222 FT MSL (220 FT AGL).

RWY STATUS LGTS IN OPS.

RLLS RY 13L USES 1000 FT LGT STN OF THE ALS ONLY WITH CRI VOR APCHS & IS ANGLED TOWARD AQUEDUCT; ALSO 5 SFL FM 1200−2000 FT & A 5 SFL GROUPING APROXLY 1 MI FM RY +1 ADJ FORMING APCH. APCH GATE ANGLED 35 DEGS S OF RY 13L CNTRLN DESIGNED TO PRVD EARLIER IDENT OF RY ENVI.

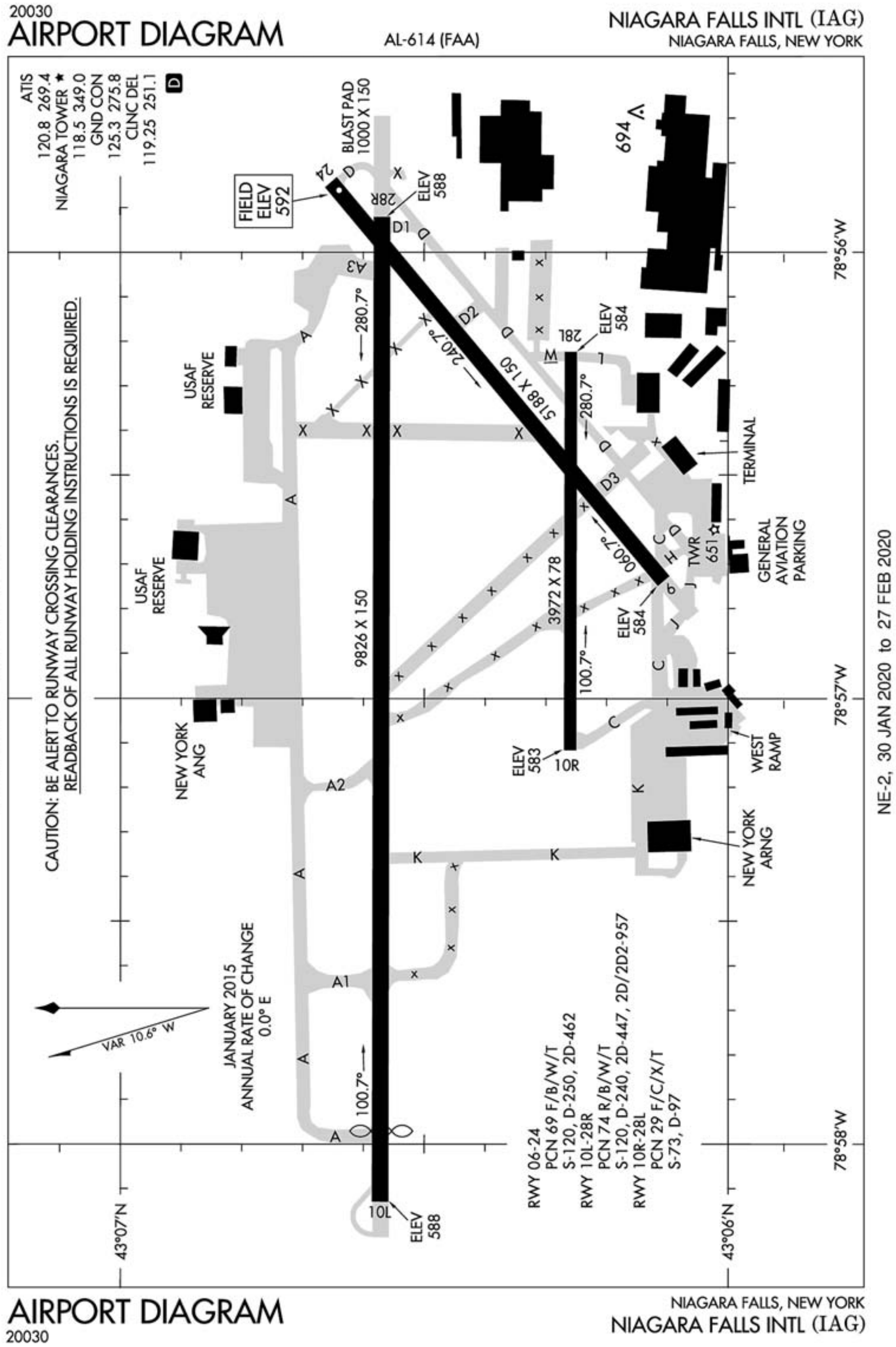
ACFT OPS & TWY RESTRICTIONS EXIST FOR A380, B747−800, B777−300ER, A340−600 AND A350−1000. PLEASE CTC JFK ARPT OPS FOR MORE INFO.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY ’A’ BTN TWY ’NA’ & TWY ’NB’ ARCFT SPEED RESTRICTION OF 17KTS/20MPH MAXIMUM FOR A380, B747−800, B747−400, B777−300ER, B777−200, A340,A330, B787, AND A350

RY 13L HOLDING POSITION MARKINGS AT RY 4L/22R ’NW’ SIDE OBSC.

Niagara Falls, New York
Niagara Falls International
ICAO Identifier KIAG



Niagara Falls, NY
Niagara Falls Intl
ICAO Identifier KIAG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 43−6−27.2065N / 78−56−45.048W
2.2.2 From City: 4 miles E of NIAGARA FALLS, NY
2.2.3 Elevation: 592.3 ft
2.2.5 Magnetic Variation: 10W (1985)
2.2.6 Airport Contact: MR. ROBERT STONE
2035 NIAGARA FALLS BLVD
NIAGARA FALLS, NY 14304
((716) 297−4494)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 7/1/1974

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 50
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 43−6−6.3587N / 78−56−44.2955W
2.12.6 Threshold Elevation: 584.3 ft
2.12.6 Touchdown Zone Elevation: 585.8 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 230
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 43−6−39.1997N / 78−55−50.6072W
2.12.6 Threshold Elevation: 592.2 ft
2.12.6 Touchdown Zone Elevation: 592.3 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9826 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 43−6−34.3453N / 78−58−7.7703W
2.12.6 Threshold Elevation: 588.2 ft
2.12.6 Touchdown Zone Elevation: 588.8 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9826 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 43−6−34.1594N / 78−55−55.3156W
2.12.6 Threshold Elevation: 587.9 ft
2.12.6 Touchdown Zone Elevation: 588.3 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 3972 ft x 78 ft
2.12.4 PCN: 29 F/C/X/T
2.12.5 Coordinates: 43−6−15.6025N / 78−57−7.0063W
2.12.6 Threshold Elevation: 582.6 ft
2.12.6 Touchdown Zone Elevation: 584.1 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 3972 ft x 78 ft
2.12.4 PCN: 29 F/C/X/T
2.12.5 Coordinates: 43−6−15.507N / 78−56−13.4609W
2.12.6 Threshold Elevation: 584.2 ft
2.12.6 Touchdown Zone Elevation: 584.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
2.13.2 Take−off Run Available: 5188
2.13.3 Take−off Distance Available: 5188
2.13.4 Accelerate−Stop Distance Available: 5188
2.13.5 Landing Distance Available: 5188

2.13.1 Designation: 24
2.13.2 Take−off Run Available: 5188
2.13.3 Take−off Distance Available: 5188

2.13.4 Accelerate−Stop Distance Available: 5108
2.13.5 Landing Distance Available: 5108

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 9829
2.13.3 Take−off Distance Available: 10829
2.13.4 Accelerate−Stop Distance Available: 9829
2.13.5 Landing Distance Available: 9129

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 9829
2.13.3 Take−off Distance Available: 10529
2.13.4 Accelerate−Stop Distance Available: 9129
2.13.5 Landing Distance Available: 9129

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 3973
2.13.3 Take−off Distance Available: 3973
2.13.4 Accelerate−Stop Distance Available: 3973
2.13.5 Landing Distance Available: 3973

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 3973
2.13.3 Take−off Distance Available: 3973
2.13.4 Accelerate−Stop Distance Available: 3973
2.13.5 Landing Distance Available: 3973

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P2L

2.14.1 Designation: 28L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P2L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 10W
2.19.2 ILS Identification: IAG
2.19.5 Coordinates: 43−6−30.0921N / 78−56−16.6451W
2.19.6 Site Elevation: 582.8 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 10W
2.19.2 ILS Identification: IAG
2.19.5 Coordinates: 43−6−34.3589N / 78−58−18.8146W
2.19.6 Site Elevation: 585.1 ft

2.19.1 ILS Type: Outer Marker for runway 28R. Magnetic variation: 10W
2.19.2 ILS Identification: IAG
2.19.5 Coordinates: 43−6−32.5184N / 78−50−18.2195W
2.19.6 Site Elevation: 614.9 ft

2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 10W
2.19.2 Navigation Aid Identification: IAG
2.19.5 Coordinates: 43−6−45.1638N / 78−57−36.8623W
2.19.6 Site Elevation: 591.5 ft

General Remarks:
CAUTION: HEAVY CONCENTRATIONS OF GULLS−BLACKBIRDS−STARLINGS UP TO 5000 AGL ON & INVOF ARPT. BASH PHASE II OPERATIONS AT KIAG MAR−MAY AND SEP−NOV.

FLUID: SP.

JASU: 2(A/M32A−86) 1(AM32A−60) 1(MA−1A).

FUEL: J8, A++ (MIL).

MISC: LOCAL MISSION AIRCRAFT HAVE PRIORITY FOR DEICING; FULL AIRCRAFT DEICING FOR C−17 AND C−5 AIRCRAFT NOT AVAILABLE.

ALL MIL ACFT ONLY MINIMAL CLASSIFIED MATERIALS AVBL; AIRCREWS SHOULD ARRIVE WITH APPROPRIATE AMOUNT TO COMPLETE THEIR MISSION.

EXTSV ACFT ACTIVITY OPERATING INVOF US/CANADIAN FALLS ALL ALTS.

RWY 28R 1000 FT BY 150 FT BLAST PAD

AFLD MGMT DOES NOT ISSUE OR STORE COMSEC, FOR COMSEC STORAGE CTC COMMAND POST DSN 238−2150, C716−236−2150.

TWY ”E” CLSD INDEFLY FM RY 10L/28R TO RY 06/24.

OIL: O−148(MIL).

BEARING STRENGTH RWY 06/24: ST110 TT145 SBTT281TDT415 TRT252.

REMARKS − MISC: FOR CURRENT MIL RY CONDITION READING (RCR) CALL OR CTC 914 AW COMD POST OR 914TH AW AFLD MGMT.

REMARKS: SEE FLIP AP/1 SUPPLEMENTARY ARPT RMK.

ALL MIL ACFT ONLY OPNS RESTRICTED DURING BIRD WATCH CONDITIONS. MODERATE − TKOF & LDG PERMISSION ONLY WNEN DEP/ARR RTE AVOIDS IDENTIFIED BIRD ACTIVITY; NO LCL IFR/VFR TFC PAT ACTIVITY. SEVERE − TKOF & LDG PHOHIBITED WO OG/CC APPROVAL; CTC COMMAND POST FOR CURRENT BIRD WATCH CONDITIONS.

TWY D3 RSTRD TO 12500 LBS OR LESS.

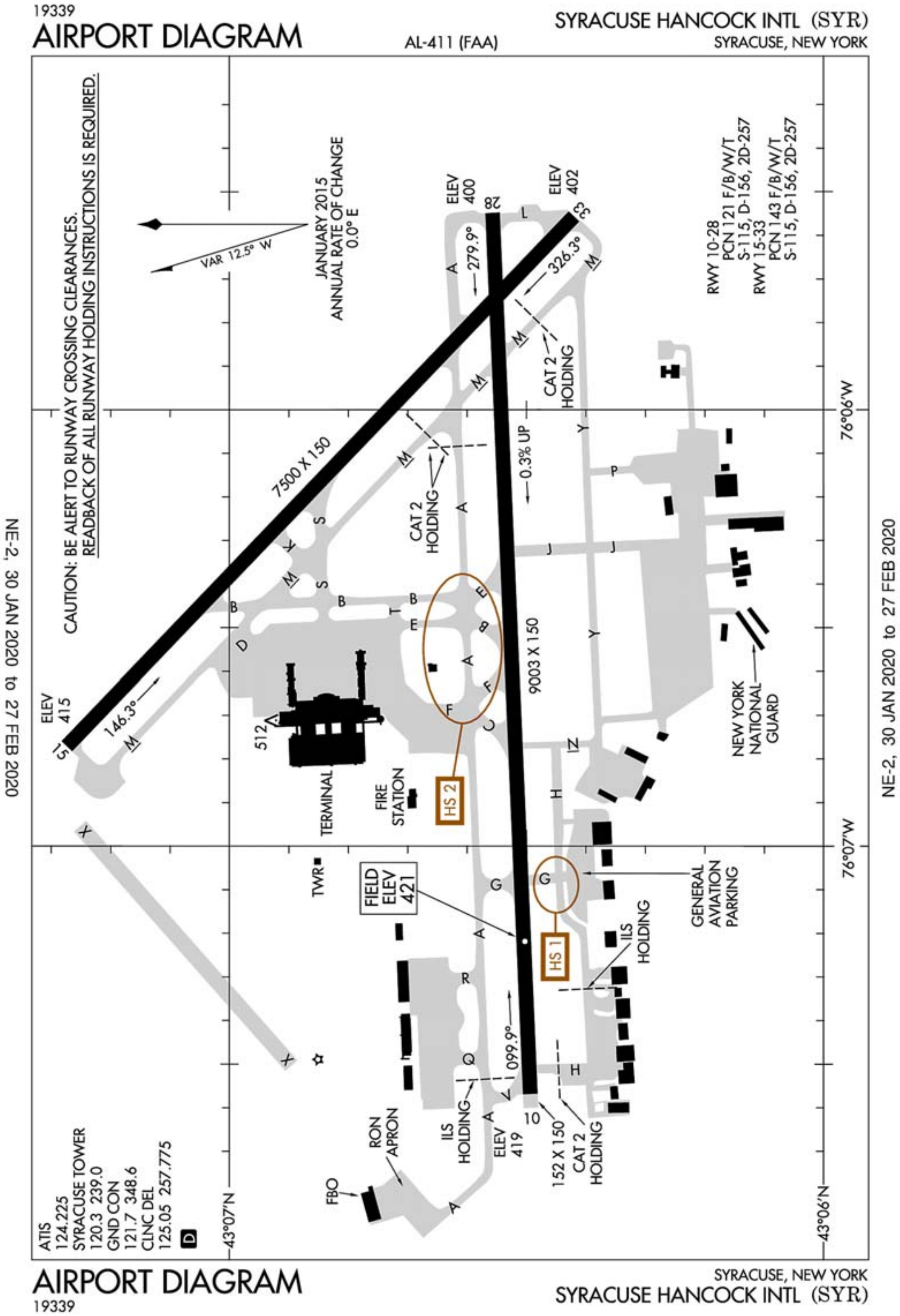
AFRC/ANG: CSTMS/AG/IMG SVC NOT LCTD ON NIAGARA FALLS ARS. RQR COORD 72 HR ADVANCE NTC TO ARRANGE U.S. CSTMS PERS FM ONE OF CROSSING BRIDGES TO PROVIDE SVC. SVC AVBL H24.

TWY ”E” CLSD PERMLY BETWEEN TWY’S ”C” AND ”D”.

PPR CTC AFLD MGT DSN: 238−2175, C716−236−2175.

AFRC/ANG: NSTD APRON MRKS IDENTIFYING PRK ROWS & PRK LCTNS.

Syracuse, New York
Syracuse Hancock International
ICAO Identifier KSYR



Syracuse, NY
Syracuse Hancock Intl
ICAO Identifier KSYR

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 43−6−40.3N / 76−6−22.7W
2.2.2 From City: 4 miles NE of SYRACUSE, NY
2.2.3 Elevation: 421.4 ft
2.2.5 Magnetic Variation: 13W (2000)
2.2.6 Airport Contact: JASON TERRERI
1000 COL EILEEN COLLINS BLVD
SYRACUSE, NY 13212
(315−454−3263)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 87
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 121 F/B/W/T
2.12.5 Coordinates: 43−6−29.5196N / 76−7−34.1499W
2.12.6 Threshold Elevation: 419.2 ft
2.12.6 Touchdown Zone Elevation: 421.4 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 267
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 121 F/B/W/T
2.12.5 Coordinates: 43−6−33.5075N / 76−5−32.9118W
2.12.6 Threshold Elevation: 400.4 ft
2.12.6 Touchdown Zone Elevation: 412.7 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 143 F/B/W/T
2.12.5 Coordinates: 43−7−16.4186N / 76−6−46.2014W
2.12.6 Threshold Elevation: 415.4 ft
2.12.6 Touchdown Zone Elevation: 416.8 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 143 F/B/W/T
2.12.5 Coordinates: 43−6−25.1093N / 76−5−33.2759W
2.12.6 Threshold Elevation: 401.7 ft
2.12.6 Touchdown Zone Elevation: 409.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10
2.13.2 Take−off Run Available: 9003
2.13.3 Take−off Distance Available: 9003
2.13.4 Accelerate−Stop Distance Available: 9003
2.13.5 Landing Distance Available: 9003

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 9003
2.13.3 Take−off Distance Available: 9003
2.13.4 Accelerate−Stop Distance Available: 9003
2.13.5 Landing Distance Available: 9003

2.13.1 Designation: 15
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 33
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: 28
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 15
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: 33
2.14.2 Approach Lighting System:

2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: ANG OPS
2.14.3 Channel: 379.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P DEP/P (100−278)
2.14.3 Channel: 126.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (100−278)
2.14.3 Channel: 269.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (279−099)
2.14.3 Channel: 134.275
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (279−099)
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: AR OPS
2.14.3 Channel: 245.3
2.14.5 Hours of Operation:

2.14.1 Service Designation: ATIS
2.14.3 Channel: 124.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 125.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 257.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (100−278)
2.14.3 Channel: 126.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (279−099)
2.14.3 Channel: 134.275
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (100−278)
2.14.3 Channel: 269.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (279−099)
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 120.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 239
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: MRZ
2.19.5 Coordinates: 43−6−31.27N / 76−5−20.92W
2.19.6 Site Elevation: 390.5 ft

2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: MRZ
2.19.5 Coordinates: 43−6−26.02N / 76−7−20.146W
2.19.6 Site Elevation: 422.6 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: MRZ
2.19.5 Coordinates: 43−6−33.96N / 76−5−19.01W
2.19.6 Site Elevation: 395.6 ft

2.19.1 ILS Type: DME for runway 28. Magnetic varia-

tion: 13W
2.19.2 ILS Identification: SYR
2.19.5 Coordinates: 43−6−31.27N / 76−5−20.92W
2.19.6 Site Elevation: 390.5 ft

2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 13W
2.19.2 ILS Identification: SYR
2.19.5 Coordinates: 43−6−39.474N / 76−5−46.433W
2.19.6 Site Elevation: 404.1 ft

2.19.1 ILS Type: Inner Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS Identification: SYR
2.19.5 Coordinates: 43−6−34.1N / 76−5−18.52W
2.19.6 Site Elevation: 395 ft

2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 13W
2.19.2 ILS Identification: SYR
2.19.5 Coordinates: 43−6−28.943N / 76−7−51.655W
2.19.6 Site Elevation: 416.8 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 11W
2.19.2 Navigation Aid Identification: SYR
2.19.5 Coordinates: 43−9−37.8684N / 76−12−16.4106W
2.19.6 Site Elevation: 453.2 ft

General Remarks:
DEER/COYOTE/BIRDS ON INVOF ARPT.

NON−STD MKG ON MIL RAMP.

ANG: HVY ACFT CTC ARPT COMMISSIONER FOR PRK AVBL AT C315−455−3666. ALL TRAN ACFT RQR NS ABTMT BRIEFING.

UAS OPS IN SYRACUSE APCH/DEP AIRSPACE WILL BE CONTROLLED BY SYR ATC AT ALL TIMES.

NO TSNT ACFT PARKING ON MAIN TERMINAL RAMP.

DIRECT CUSTOM NOTIFICATION IS REQUIRED. HOURS OF NOTIFICATION ARE MON−SAT 0800−1700. ARRIVALS OUTSIDE OF THESE HRS MUST MAKE ARRANGEMENTS DURING REGULAR WORK HRS; CALL 315−455−2271.

HVY ACFT CTC ARPT COMMISSIONER FOR PRK AVBL AT C315−455−3263. LIMITED METRO AVAIL AT DSN 243−2185. C315−233−2185 OR CTC OWS DSN 576−9755/9702. ALL TRAN ACFT REQ NOISE ABATEMENT BRIEFING.

NO CHARTER OPER THRU PASSENGER TERMINAL BLDG WITHOUT PRIOR PERMISSION.

ANG: OPR 1030−2100Z++ MON−THUR EXC HOL. PPR TRANS ACFT OFFL BUS ONLY. AFLD MGR DSN 243−2208, AFT DUTY HR CTC C315−530−2520. PPR REQ FOR ALL TRAN ACFT DUE LTD TRANS SVC. NTFY AFLD MGR OF ETA DELAY OVER 30 MIN OR MSN CNL IS RQR.

RSTD: TWY J AND P SOUTH OF TWY Y CLSD TO CIV OPS.

COMMUNICATIONS − ANG − OPS − 139.625 379.5 REMARKS: (COBRA OPS) CTC ANG OPS 15 MIN PRIOR TO ARR.

NOISE ABATEMENT PROCEDURES IN EFFECT.

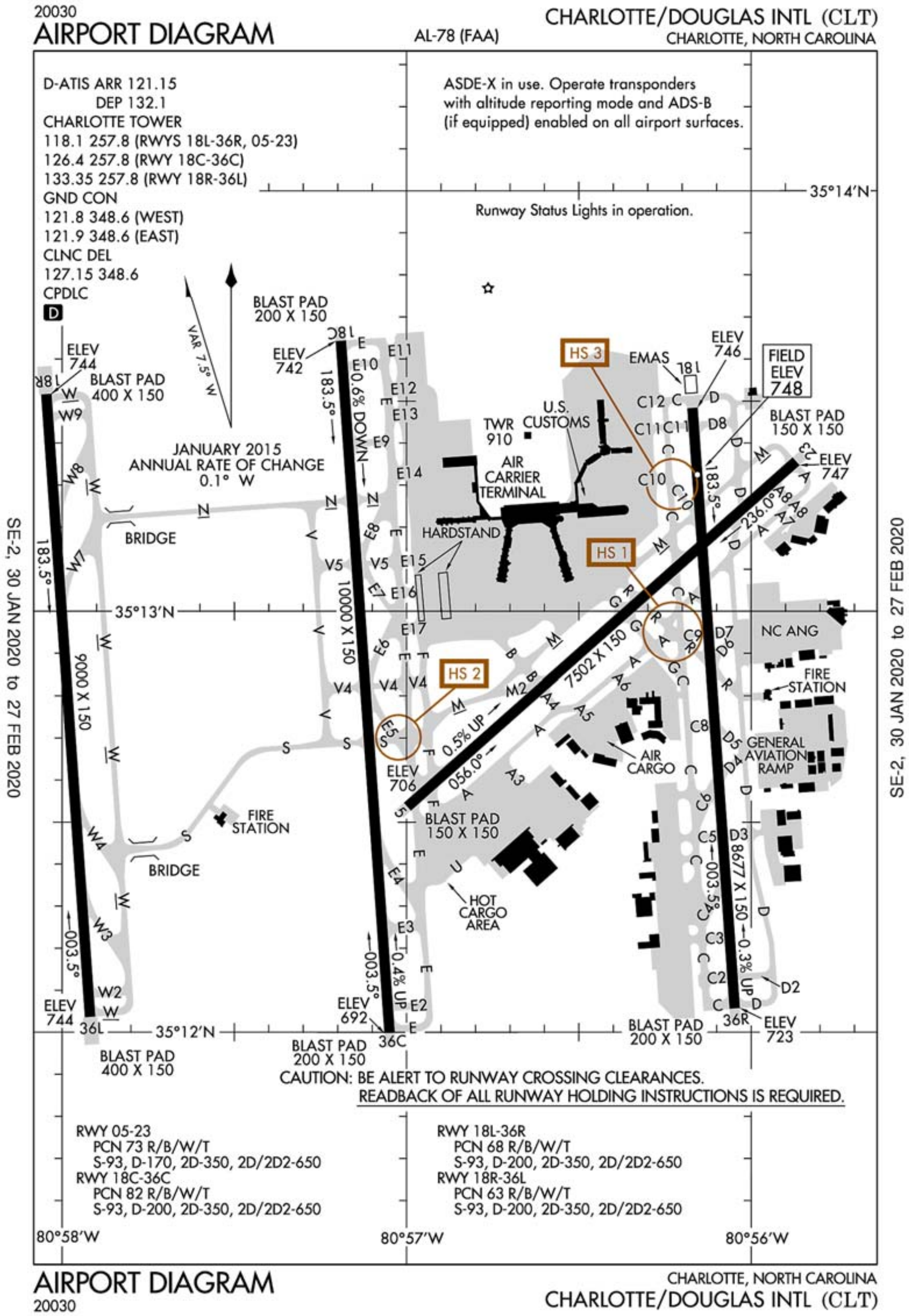
FIELD CONDITION REPORTS RECORDING AVAILABLE CALL 315−455−3444.

NO JET ENGINE MAINT RUNS ABOVE IDLE BTWN 2300−0600.

CAUTION: TWY J AND P SOUTH OF TWY Y AND ANG RAMP HAVE UNCTL VEH AND EQPT TFC.

UAS OPERATE WITHIN THE CONFINES OF THE SYRACUSE CLASS C, TIMES VARY.

Charlotte, North Carolina
Charlotte/Douglas International
ICAO Identifier KCLT



Charlotte, NC
Charlotte/Douglas Intl
ICAO Identifier KCLT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35−12−49.5N / 80−56−56.6W
2.2.2 From City: 4 miles W of CHARLOTTE, NC
2.2.3 Elevation: 747.9 ft
2.2.5 Magnetic Variation: 7W (2000)
2.2.6 Airport Contact: BRENT CAGLE
PO BOX 19066
CHARLOTTE, NC 28219
(704−359−4000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 23
2.12.2 True Bearing: 228
2.12.3 Dimensions: 7502 ft x 150 ft
2.12.4 PCN: 73 R/B/W/T
2.12.5 Coordinates: 35−13−21.4183N / 80−55−52.1235W
2.12.6 Threshold Elevation: 746.7 ft
2.12.6 Touchdown Zone Elevation: 746.7 ft

2.12.1 Designation: 05
2.12.2 True Bearing: 48
2.12.3 Dimensions: 7502 ft x 150 ft
2.12.4 PCN: 73 R/B/W/T
2.12.5 Coordinates: 35−12−32.2287N / 80−56−59.8045W
2.12.6 Threshold Elevation: 705.9 ft
2.12.6 Touchdown Zone Elevation: 715.6 ft

2.12.1 Designation: 18C
2.12.2 True Bearing: 176
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 82 R/B/W/T
2.12.5 Coordinates: 35−13−38.6269N / 80−57−11.4094W
2.12.6 Threshold Elevation: 742 ft
2.12.6 Touchdown Zone Elevation: 742 ft

2.12.1 Designation: 36C
2.12.2 True Bearing: 356
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 82 R/B/W/T
2.12.5 Coordinates: 35−11−59.9721N / 80−57−2.9217W
2.12.6 Threshold Elevation: 692.2 ft
2.12.6 Touchdown Zone Elevation: 706.7 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 176
2.12.3 Dimensions: 8677 ft x 150 ft
2.12.4 PCN: 68 R/B/W/T
2.12.5 Coordinates: 35−13−29.0474N / 80−56−10.1652W
2.12.6 Threshold Elevation: 746 ft
2.12.6 Touchdown Zone Elevation: 747.9 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 356
2.12.3 Dimensions: 8677 ft x 150 ft
2.12.4 PCN: 68 R/B/W/T
2.12.5 Coordinates: 35−12−3.4456N / 80−56−2.822W
2.12.6 Threshold Elevation: 723.4 ft
2.12.6 Touchdown Zone Elevation: 726.9 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 176
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 63 R/B/W/T
2.12.5 Coordinates: 35−13−31.0182N / 80−58−2.707W
2.12.6 Threshold Elevation: 744 ft
2.12.6 Touchdown Zone Elevation: 744 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 356
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 63 R/B/W/T
2.12.5 Coordinates: 35−12−2.2277N / 80−57−55.0671W
2.12.6 Threshold Elevation: 743.9 ft
2.12.6 Touchdown Zone Elevation: 743.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 23
2.13.2 Take−off Run Available: 7502
2.13.3 Take−off Distance Available: 7502

2.13.4 Accelerate−Stop Distance Available: 7502
2.13.5 Landing Distance Available: 7502

2.13.1 Designation: 05
2.13.2 Take−off Run Available: 7502
2.13.3 Take−off Distance Available: 7502
2.13.4 Accelerate−Stop Distance Available: 7092
2.13.5 Landing Distance Available: 7092

2.13.1 Designation: 18C
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 36C
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 18L
2.13.2 Take−off Run Available: 8676
2.13.3 Take−off Distance Available: 8676
2.13.4 Accelerate−Stop Distance Available: 8676
2.13.5 Landing Distance Available: 8676

2.13.1 Designation: 36R
2.13.2 Take−off Run Available: 8676
2.13.3 Take−off Distance Available: 8676
2.13.4 Accelerate−Stop Distance Available: 8390
2.13.5 Landing Distance Available: 8390

2.13.1 Designation: 18R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 36L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 23
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 05
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18C
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 36C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALCP
2.14.3 Channel: 292.25
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (120−295 8000 FT & BLW)
2.14.3 Channel: 120.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (246−074 ABV 8000 FT)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (075−245 ABV 8000 FT)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (001−119 8000 FT & BLW)
2.14.3 Channel: 128.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (296−360 8000 FT & BLW)
2.14.3 Channel: 134.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (180−359)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (360−179)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BANKR STAR
2.14.3 Channel: 135.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BANKR STAR
2.14.3 Channel: 377.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARMY DP
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARMY DP
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 36L, 36C)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 36L, 36C)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 05, 18R, 18L, 18C, 23, 36R)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOBZY DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOBZY DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BTSEY STAR
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 127.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (BUCKL, HARAY & PITTY TRANSITIONS. RWY 36L, 36C)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (RWY 05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (BUCKL, GANTS, LILLS & RUNIE TRANSITIONS.)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (BUCKL, HARAY & PITTY TRANSITION. RWY 36L, 36C)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (GANTS, LILLS & RUNIE TRANSITIONS)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (BUCKL TRANSITION, RWY 05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHPTR STAR
2.14.3 Channel: 135.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHPTR STAR
2.14.3 Channel: 377.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHSLY STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHSLY STAR
2.14.3 Channel: 282.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (120−295 8000 FT & BLW)
2.14.3 Channel: 120.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (246−074 ABV 8000 FT)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (075−245 ABV 8000 FT)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001−119 8000 FT & BLW)
2.14.3 Channel: 128.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (296−360 8000 FT & BLW)
2.14.3 Channel: 134.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (180−359)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (360−179)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 121.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 132.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: ESTRR DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ESTRR DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FILPZ STAR
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FILPZ STAR
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (WEST)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (EAST)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 36L, 36C)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 36L, 36C)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 05, 18R, 18L, 18C, 23, 36R)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JOJJO DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JOJJO DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JONZE STAR
2.14.3 Channel: 135.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JONZE STAR
2.14.3 Channel: 377.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KABEE STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KABEE STAR
2.14.3 Channel: 282.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KERMIT DP (235−055)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KERMIT DP (055−235)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KERMIT DP (235−055)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KERMIT DP (055−235)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KILNS DP
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KILNS DP
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (DEBIE, NEANO TRANSITIONS)
2.14.3 Channel: 120.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (FLYYN, CEGAL TRANSITIONS, RWY 23, 18L, 18C, 18R)
2.14.3 Channel: 120.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (FLYYN, CEGAL TRANSITIONS RWY 05, 36L, 36C, 36R)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (055−235)
2.14.3 Channel: 128.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (PEKNN, LILLS, HAMLN, ANDYS TRANSITIONS)
2.14.3 Channel: 128.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (235−055)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (055−235)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KRITR DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KRITR DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KWEEN DP (RWY 36L, 36C)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KWEEN DP (RWY 05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KWEEN DP (RWY 36L, 36C)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KWEEN DP (RWY 05, 18R, 18L, 18C, 23, 36R)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 05/23, 18L/36R)
2.14.3 Channel: 118.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18C/36C)
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18R/36L)
2.14.3 Channel: 133.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LIILS DP
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LIINN STAR
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LIINN STAR
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LILLS DP
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MAJIC STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MAJIC STAR
2.14.3 Channel: 282.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MLLET STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MLLET STAR
2.14.3 Channel: 282.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PARQR STAR
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PARQR STAR
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RASLN STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: STOCR STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: STOCR STAR
2.14.3 Channel: 282.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: UNARM STAR
2.14.3 Channel: 135.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: UNARM STAR
2.14.3 Channel: 377.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WEAZL DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WEAZL DP

2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 05. Magnetic variation: 7W
2.19.2 ILS Identification: CLT
2.19.5 Coordinates: 35−12−43.05N / 80−56−52.18W
2.19.6 Site Elevation: 695.1 ft

2.19.1 ILS Type: Localizer for runway 05. Magnetic variation: 7W
2.19.2 ILS Identification: CLT
2.19.5 Coordinates: 35−13−26.34N / 80−55−45.36W
2.19.6 Site Elevation: 738.2 ft

2.19.1 ILS Type: DME for runway 23. Magnetic variation: 7W
2.19.2 ILS Identification: APU
2.19.5 Coordinates: 35−12−21.2833N / 80−57−10.052W
2.19.6 Site Elevation: 699.4 ft

2.19.1 ILS Type: Glide Slope for runway 23. Magnetic variation: 7W
2.19.2 ILS Identification: APU
2.19.5 Coordinates: 35−13−12.1531N / 80−56−0.0758W
2.19.6 Site Elevation: 737.7 ft

2.19.1 ILS Type: Localizer for runway 23. Magnetic variation: 7W
2.19.2 ILS Identification: APU
2.19.5 Coordinates: 35−12−23.38N / 80−57−11.99W
2.19.6 Site Elevation: 704 ft

2.19.1 ILS Type: DME for runway 18C. Magnetic variation: 7W
2.19.2 ILS Identification: PEP
2.19.5 Coordinates: 35−11−50.2369N / 80−56−58.6363W
2.19.6 Site Elevation: 684.4 ft

2.19.1 ILS Type: Glide Slope for runway 18C. Magnetic variation: 7W
2.19.2 ILS Identification: PEP
2.19.5 Coordinates: 35−13−26.9102N / 80−57−15.2356W
2.19.6 Site Elevation: 731.4 ft

2.19.1 ILS Type: Localizer for runway 18C. Magnetic variation: 7W
2.19.2 ILS Identification: PEP
2.19.5 Coordinates: 35−11−48.5979N / 80−57−1.9439W
2.19.6 Site Elevation: 683.3 ft

2.19.1 ILS Type: Glide Slope for runway 36C. Magnetic variation: 7W
2.19.2 ILS Identification: DQG
2.19.5 Coordinates: 35−12−9.1687N / 80−57−8.5431W
2.19.6 Site Elevation: 691.1 ft

2.19.1 ILS Type: Inner Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS Identification: DQG
2.19.5 Coordinates: 35−11−48.7253N / 80−57−1.9507W
2.19.6 Site Elevation: 682.9 ft

2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 7W
2.19.2 ILS Identification: DQG
2.19.5 Coordinates: 35−13−53.9477N / 80−57−12.7316W
2.19.6 Site Elevation: 749.4 ft

2.19.1 ILS Type: DME for runway 18L. Magnetic variation: 7W
2.19.2 ILS Identification: VKQ
2.19.5 Coordinates: 35−11−50.25N / 80−56−4.63W
2.19.6 Site Elevation: 710 ft

2.19.1 ILS Type: Glide Slope for runway 18L. Magnetic variation: 7W
2.19.2 ILS Identification: VKQ
2.19.5 Coordinates: 35−13−19.2609N / 80−56−5.097W
2.19.6 Site Elevation: 743.5 ft

2.19.1 ILS Type: Localizer for runway 18L. Magnetic variation: 7W
2.19.2 ILS Identification: VKQ
2.19.5 Coordinates: 35−11−50.5994N / 80−56−1.7186W
2.19.6 Site Elevation: 719.2 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 7W
2.19.2 ILS Identification: BQC
2.19.5 Coordinates: 35−13−33.1089N / 80−56−6.903W
2.19.6 Site Elevation: 752.3 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 7W
2.19.2 ILS Identification: BQC
2.19.5 Coordinates: 35−12−14.0034N / 80−55−58.8923W

2.19.6 Site Elevation: 717.3 ft

2.19.1 ILS Type: Localizer for runway 36R. Magnetic variation: 7W
2.19.2 ILS Identification: BQC
2.19.5 Coordinates: 35−13−33.7034N / 80−56−10.5664W
2.19.6 Site Elevation: 741.2 ft

2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35−12−13.2565N / 80−58−1.0908W
2.19.6 Site Elevation: 743.8 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35−13−20.0955N / 80−58−6.7207W
2.19.6 Site Elevation: 733.9 ft

2.19.1 ILS Type: Inner Marker for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35−13−38.8124N / 80−58−3.3825W
2.19.6 Site Elevation: 738.6 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35−11−51.8431N / 80−57−54.1735W
2.19.6 Site Elevation: 738.1 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35−13−19.8318N / 80−58−6.8193W
2.19.6 Site Elevation: 738.9 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35−12−12.9817N / 80−58−0.9403W
2.19.6 Site Elevation: 732.3 ft

2.19.1 ILS Type: Inner Marker for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35−11−54.4339N / 80−57−54.3965W
2.19.6 Site Elevation: 738.8 ft

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35−13−41.4048N / 80−58−3.6016W
2.19.6 Site Elevation: 737.3 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 5W
2.19.2 Navigation Aid Identification: CLT
2.19.5 Coordinates: 35−11−25.0392N / 80−57−6.3124W
2.19.6 Site Elevation: 731.7 ft

General Remarks:
TWY C10 RSTRD TO ACFT WITH WINGSPAN LESS THAN 171 FT WHEN EXITING RWY.

CLT RAMP, NON−MOVMT AREA, IS CTLD RAMP; CTC RAMP CTL PRIOR TO ENTERING.

TWY C10 UNUSBL FOR TXG ONTO RWY 18L/36R.

SUCCESSIVE OR SIMULTANEOUS DEPARTURES FROM RWY 18L AND RWY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 4 MILES FROM END OF RWY.

TWY C4 WHEN TAXIING AIRCRAFT WITH COCKPIT TO MAIN GEAR DISTANCE GREATER THAN 90 FT, PILOT MUST PERFORM JUDGEMENTAL OVERSTEERING INSTEAD OF COCKPIT OVER CENTERLINE STEERING.

DUAL TAXI BTN DEP CALL SPOTS 11/12 AND 13N/13S RSTRD TO ONE ACFT LESS THAN 214 FT AND ONE ACFT LESS THAN 118 FT OR TWO ACFT LESS THAN 171 FT.

NOISE ABATEMENT PROCEDURE IN EFFECT 2300−0700; LAND ON RY 05 TKOF RY 23.

DUAL TAXI BTN DEP CALL SPOTS 22/23 AND 24N/24S RSTRD TO ACFT WITH WINGSPANS LESS THAN 118

FT.

RY SFC COND INFO DURG DUTY HRS PHONE ANG OPS V583−9177/9144 OR AIRBORNE 292.2.

GROUP V ACFT WITH A WINGSPAN GTR THAN 171 FT ARE PROHIBITED FM EXITING RWY 18L/36R AT TWY C10.

RWY STATUS LGTS IN OPR.

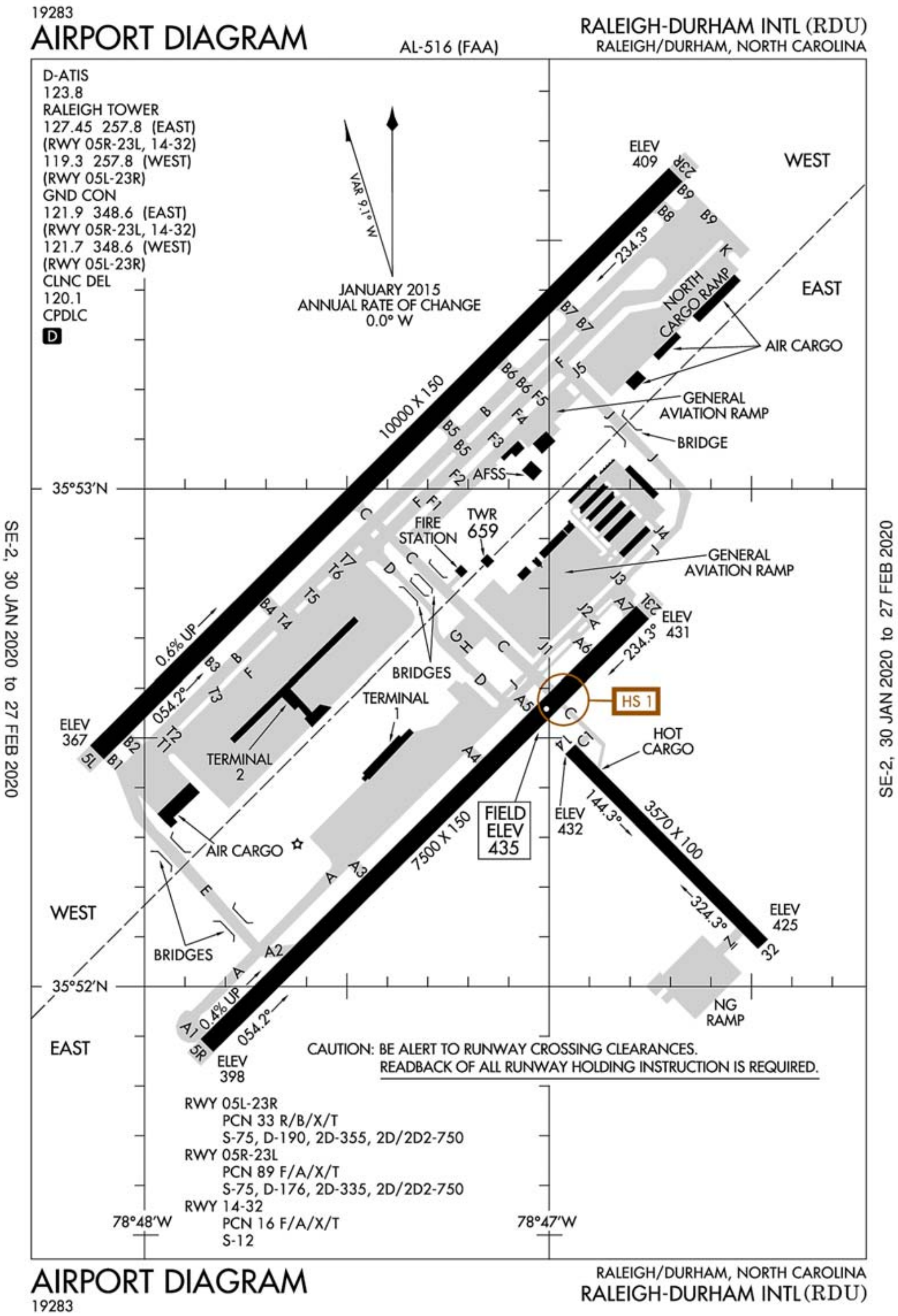
ANG: CTC NEWSREEL 292.25 30 MIN PRIOR LDG. AMOPS/COMD POST − 292.25 (CALL NEWSREEL).

GROUP III ACFT WITH A WINGSPAN GTR THAN 79 FT ARE PROHIBITED FM MAKING A NBND TURN ONTO TWY C WHEN TAXIING WB ON TWY A.

BE ALERT FOR FLOCKS OF MIGRATORY BIRDS ON & INVOF ARPT.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

Raleigh−Durham, North Carolina
Raleigh−Durham International
ICAO Identifier KRDU



Raleigh/Durham, NC
Raleigh−Durham Intl
ICAO Identifier KRDU

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35−52−39.5N / 78−47−14.9W
2.2.2 From City: 9 miles NW of RALEIGH/DURHAM, NC
2.2.3 Elevation: 435.2 ft
2.2.5 Magnetic Variation: 9W (2020)
2.2.6 Airport Contact: MICHAEL LANDGUTH
RALEIGH−DURHAM ARPT AUTH
RDU AIRPORT, NC 27623
((919) 840−7701)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 33 R/B/X/T
2.12.5 Coordinates: 35−52−28.016N / 78−48−7.069W
2.12.6 Threshold Elevation: 366.8 ft
2.12.6 Touchdown Zone Elevation: 384.3 ft

2.12.1 Designation: 23R
2.12.2 True Bearing: 225
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 33 R/B/X/T
2.12.5 Coordinates: 35−53−37.7657N / 78−46−40.9198W
2.12.6 Threshold Elevation: 408.6 ft
2.12.6 Touchdown Zone Elevation: 408.6 ft

2.12.1 Designation: 05R
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 89 F/A/X/T
2.12.5 Coordinates: 35−51−52.6684N / 78−47−50.4174W
2.12.6 Threshold Elevation: 397.5 ft
2.12.6 Touchdown Zone Elevation: 419.8 ft

2.12.1 Designation: 23L
2.12.2 True Bearing: 225
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 89 F/A/X/T
2.12.5 Coordinates: 35−52−44.9832N / 78−46−45.8171W
2.12.6 Threshold Elevation: 430.7 ft
2.12.6 Touchdown Zone Elevation: 435.2 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.4 PCN: 16 F/A/X/T
2.12.5 Coordinates: 35−52−30.1119N / 78−46−57.6427W
2.12.6 Threshold Elevation: 432.1 ft
2.12.6 Touchdown Zone Elevation: 432.1 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.4 PCN: 16 F/A/X/T
2.12.5 Coordinates: 35−52−5.0792N / 78−46−27.0499W
2.12.6 Threshold Elevation: 424.7 ft
2.12.6 Touchdown Zone Elevation: 428.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 05L
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 23R
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 05R
2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 23L

2.13.2 Take−off Run Available: 7500
2.13.3 Take−off Distance Available: 7500
2.13.4 Accelerate−Stop Distance Available: 7500
2.13.5 Landing Distance Available: 7500

2.13.1 Designation: 14
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 32
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 05L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 23R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 05R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 23L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (025−229)
2.14.3 Channel: 124.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (025−229)
2.14.3 Channel: 318.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (230−024)
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (230−024)
2.14.3 Channel: 307.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLOGS STAR
2.14.3 Channel: 124.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BLOGS STAR
2.14.3 Channel: 318.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 120.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (025−229)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (230−024)
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (230−024)
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (025−229)
2.14.3 Channel: 353.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 123.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (025−229)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (230−024)
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (230−024)
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (025−229)
2.14.3 Channel: 353.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (SOUTH)
2.14.3 Channel: 353.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: FINAL (EAST)
2.14.3 Channel: 385.425
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FINAL CTL
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FINAL CTL
2.14.3 Channel: 395
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (WEST, RWY 05L/23R)
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (EAST, RWY 05R/23L, 14/32)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KAROO STAR
2.14.3 Channel: 124.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KAROO STAR
2.14.3 Channel: 318.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (WEST, RWY 05L/23R)
2.14.3 Channel: 119.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (EAST, RWY 05R/23L, 14/32)
2.14.3 Channel: 127.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MALNR STAR
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MALNR STAR
2.14.3 Channel: 307.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RADAR
2.14.3 Channel: 134.3
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 403 ft

2.19.1 ILS Type: Glide Slope for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−52−37.7972N / 78−48−1.884W
2.19.6 Site Elevation: 365.5 ft

2.19.1 ILS Type: Localizer for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−48.0693N / 78−46−28.1855W
2.19.6 Site Elevation: 408.6 ft

2.19.1 ILS Type: DME for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35−52−20.25N / 78−48−15.21W
2.19.6 Site Elevation: 358 ft

2.19.1 ILS Type: Glide Slope for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35−53−32.4744N /

78−46−54.3483W
2.19.6 Site Elevation: 396.2 ft

2.19.1 ILS Type: Inner Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35−53−43.7552N / 78−46−33.5065W
2.19.6 Site Elevation: 402.1 ft

2.19.1 ILS Type: Localizer for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35−52−20.84N / 78−48−15.93W
2.19.6 Site Elevation: 358.8 ft

2.19.1 ILS Type: Middle Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35−53−54.7234N / 78−46−19.9522W
2.19.6 Site Elevation: 410 ft

2.19.1 ILS Type: DME for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: RDU
2.19.5 Coordinates: 35−52−54.38N / 78−46−41.19W
2.19.6 Site Elevation: 412 ft

2.19.1 ILS Type: Glide Slope for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: RDU
2.19.5 Coordinates: 35−51−57.0189N / 78−47−38.1689W
2.19.6 Site Elevation: 400.1 ft

2.19.1 ILS Type: Localizer for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: RDU
2.19.5 Coordinates: 35−52−52.1055N / 78−46−37.0152W
2.19.6 Site Elevation: 423.6 ft

2.19.1 ILS Type: DME for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35−51−43.52N / 78−47−54.49W
2.19.6 Site Elevation: 386 ft

2.19.1 ILS Type: Glide Slope for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35−52−36.18N / 78−46−52.21W
2.19.6 Site Elevation: 430.2 ft

2.19.1 ILS Type: Localizer for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35−51−45.6108N / 78−47−59.1266W
2.19.6 Site Elevation: 381 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 9W
2.19.2 Navigation Aid Identification: RDU
2.19.5 Coordinates: 35−52−21.0761N / 78−47−0.0316W
2.19.6 Site Elevation: 429.2 ft

General Remarks:

NO APPROVAL REQUIRED FOR PUSHBACK AT TERMINAL GATES UNLESS ACFT REQUIRES USE OF TWY. CTC ATC PRIOR TO PUSHING ONTO TWY.

ALL TDG V AIRCRAFT TXG ON TWY A ARE RSTD TO TAXI SPD OF 15 MPH

NG 24 HR PPR FOR JET ACFT & TRANS MIL ACFT − 919−840−7510.

TWY E BEHIND SOUTH CARGO 4 & TWY J BEHIND CORPORATE HANGARS NOT VSBL FM ATCT.

RSTD: PPR FOR ALL MILITARY AIRCRAFT F/W − R/W & UNSCHEDULED CHARTER FLIGHTS WITH 30 OR MORE PASSENGERS. 24 HR PN RQR FOR MIL PRACTICE APCH. CTC ARPT OPS 919−840−7510 OR RDU APP C919−380−3125. 24 HR PPR FOR ALL F/W AND R/W MIL ACFT GOING TO ARNG RAMP. POC DSN 582−9000, EXTN 16200, C919−804−5300, EXTN 16200. OSACOM FLT DET DSN 582−9000, EXTN 16202, C919−804−5300, EXTN 16202.

NO JET ENGINE MAINTENANCE RUNS BETWEEN 0000−0600.

ARPT CLSD TO AIRSHIPS.

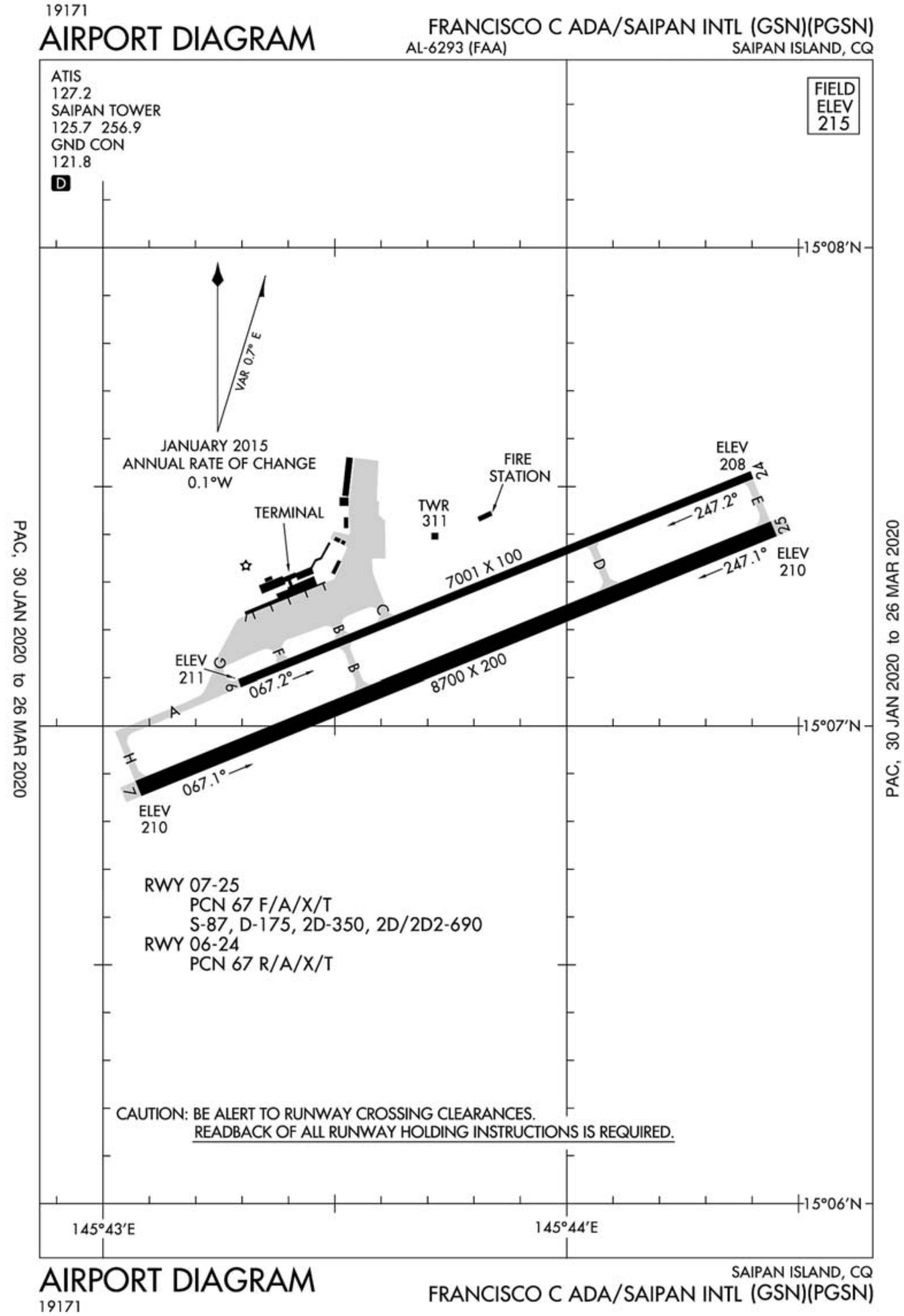
NG PPR FOR LDG CTC V582−9181 C(919)664−9181.

TAXIWAY F1 IS CLOSED UNTIL FURTHER NOTICE.

ARNG: LTD PRK. ARNG OPS DSN 582−9000, EXTN 16200, C919−804−5300 EXTN 16200, DSN 582−9000,X16200, C919−804−5300,X16200 CTC FORECAST BASE 10 MIN PRIOR LDG. RAMP CLSD TO ALL F/W EXCEPT ARMY & MIL TRANSPORT WITH PPR, FACILITY HRS 1300−2130Z++ MON−FRI EXC HOL. MAKE APPT FOR AFTER DUTY HRS. NO FUEL EXCARNG FERRY ACFT. OSACOM FLT DET DSN 582−9248, C919−664−6248.

CRAN 75 FT AGL .76 NM FM AER 05R.

North Mariana Islands, Saipan Island
Francisco C. Ada/Saipan International
ICAO Identifier PGSN



Saipan Island, CQ
Francisco C. Ada/Saipan Intl
ICAO Identifier PGSN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 15−7−12.918N / 145−43−47.9427E
2.2.2 From City: 4 miles SW of SAIPAN ISLAND, MP
2.2.3 Elevation: 215.1 ft
2.2.5 Magnetic Variation: 2E (1985)
2.2.6 Airport Contact: CHRISTOPHER S. TENORIO
PO BOX 501055
SAIPAN, MP 96950 ((670) 483−2447)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,100LL,A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 1/1/1978

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 68
2.12.3 Dimensions: 7001 ft x 100 ft
2.12.4 PCN: 67 R/A/X/T
2.12.5 Coordinates: 15−7−5.4841N / 145−43−17.6384E
2.12.6 Threshold Elevation: 210.9 ft
2.12.6 Touchdown Zone Elevation: 210.9 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 248
2.12.3 Dimensions: 7001 ft x 100 ft
2.12.4 PCN: 67 R/A/X/T
2.12.5 Coordinates: 15−7−31.5709N / 145−44−23.8646E
2.12.6 Threshold Elevation: 207.6 ft
2.12.6 Touchdown Zone Elevation: 207.8 ft

2.12.1 Designation: 07
2.12.2 True Bearing: 68
2.12.3 Dimensions: 8700 ft x 200 ft
2.12.4 PCN: 67 F/A/X/T
2.12.5 Coordinates: 15−6−52.106N / 145−43−4.571E
2.12.6 Threshold Elevation: 210 ft
2.12.6 Touchdown Zone Elevation: 215.1 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 248
2.12.3 Dimensions: 8700 ft x 200 ft
2.12.4 PCN: 67 F/A/X/T
2.12.5 Coordinates: 15−7−24.702N / 145−44−26.794E
2.12.6 Threshold Elevation: 210 ft
2.12.6 Touchdown Zone Elevation: 210.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
2.13.2 Take−off Run Available: 7000
2.13.3 Take−off Distance Available: 6800
2.13.4 Accelerate−Stop Distance Available: 6645
2.13.5 Landing Distance Available:

2.13.1 Designation: 24
2.13.2 Take−off Run Available: 6400
2.13.3 Take−off Distance Available: 7000
2.13.4 Accelerate−Stop Distance Available: 6302
2.13.5 Landing Distance Available:

2.13.1 Designation: 07
2.13.2 Take−off Run Available: 8700
2.13.3 Take−off Distance Available: 8700
2.13.4 Accelerate−Stop Distance Available: 8520
2.13.5 Landing Distance Available: 8700

2.13.1 Designation: 25
2.13.2 Take−off Run Available: 8500

2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8250
2.13.5 Landing Distance Available: 8700

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: PSIL

2.14.1 Designation: 24
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: PSIL

2.14.1 Designation: 07
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: PSIL

2.14.1 Designation: 25
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 07. Magnetic variation: 2E
2.19.2 ILS Identification: GSN
2.19.5 Coordinates: 15−7−30.4928N / 145−44−34.108E
2.19.6 Site Elevation: 220 ft

2.19.1 ILS Type: Glide Slope for runway 07. Magnetic variation: 2E
2.19.2 ILS Identification: GSN
2.19.5 Coordinates: 15−6−58.69N / 145−43−13.05E
2.19.6 Site Elevation: 207.6 ft

2.19.1 ILS Type: Localizer for runway 07. Magnetic variation: 2E
2.19.2 ILS Identification: GSN
2.19.5 Coordinates: 15−7−28.4671N / 145−44−36.2932E
2.19.6 Site Elevation: 207 ft

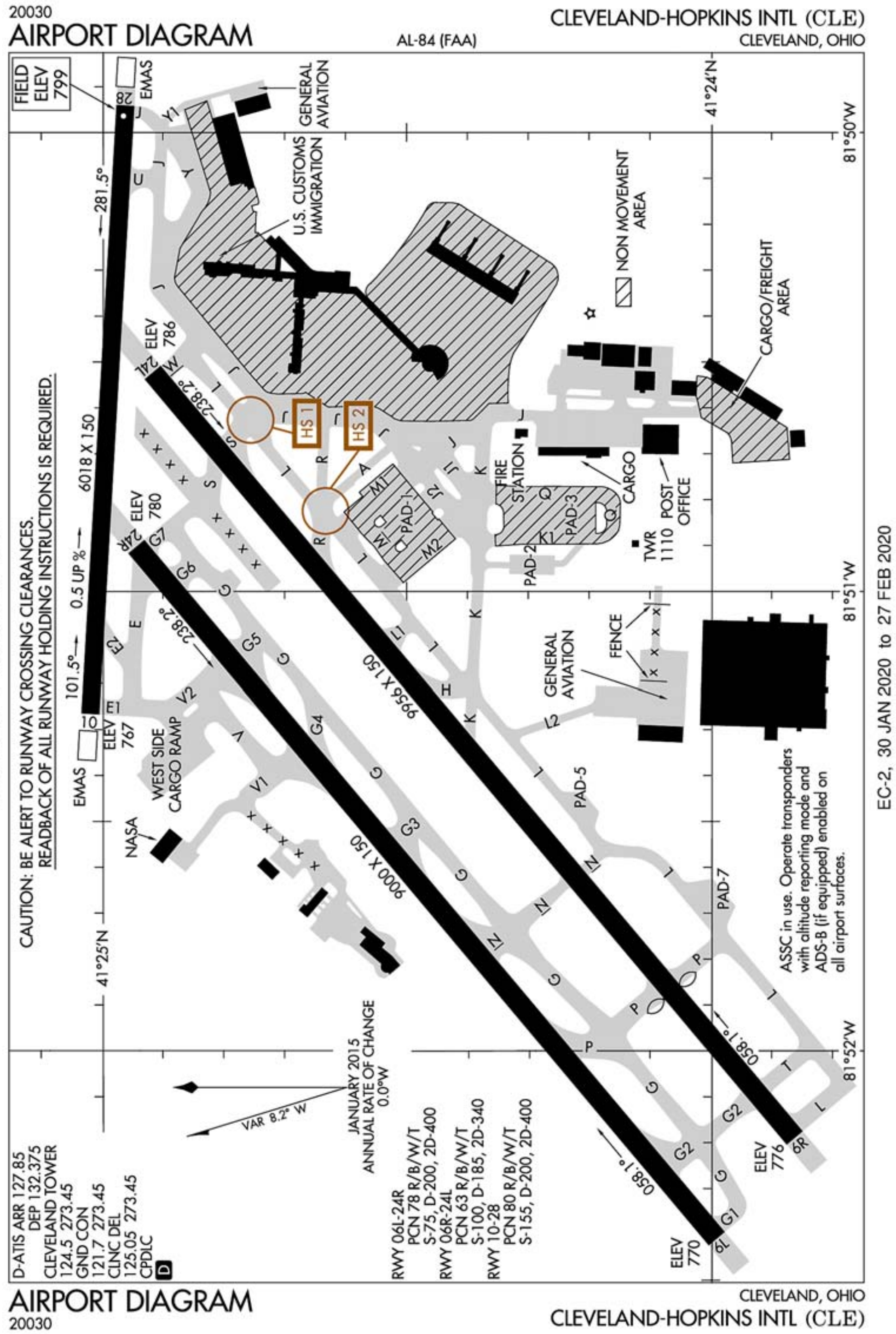
General Remarks:
FOR ARPT SECURITY CALL (670) 237−6529.

RWY 06/24 OPEN FOR TAXIING ONLY (NOT AVBL FOR LDG AND TKOF). OPEN FOR LDG AND TKOF WHEN RWY 7/25 CLSD.

PPR FM EXECUTIVE DIRECTOR COMMONWEALTH PORTS AUTHORITY SAIPAN CALL (670) 237−6500 MON−FRI 0730−1630 OTHER TIMES CALL (670) 237−6535.

IMMIGRATION & CUSTOMS AVBL DURG SCHEDULED OPNS. OTHER TIMES PRIOR ARRANGEMENTS MUST BE MADE WITH CBP PORT DIRECTOR CALL (670)288−0025/26.

Cleveland, Ohio
Cleveland−Hopkins International
ICAO Identifier KCLE



Cleveland, OH
Cleveland−Hopkins Intl
ICAO Identifier KCLE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41−24−33.9N / 81−51−16.9W
2.2.2 From City: 9 miles SW of CLEVELAND, OH
2.2.3 Elevation: 799.4 ft
2.2.5 Magnetic Variation: 8W (2020)
2.2.6 Airport Contact: KHALID BAHHUR
P.O.B. 81009, 5300 RIVERSIDE DR
CLEVELAND, OH 44181
((216) 265−5030)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 50
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 78 R/B/W/T
2.12.5 Coordinates: 41−23−59.5339N / 81−52−24.5521W
2.12.6 Threshold Elevation: 770.4 ft
2.12.6 Touchdown Zone Elevation: 772.5 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 230
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 78 R/B/W/T
2.12.5 Coordinates: 41−24−56.7482N / 81−50−54.1465W
2.12.6 Threshold Elevation: 780.3 ft
2.12.6 Touchdown Zone Elevation: 780.3 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 50
2.12.3 Dimensions: 9956 ft x 150 ft
2.12.4 PCN: 63 R/B/W/T
2.12.5 Coordinates: 41−23−51.8543N / 81−52−11.3818W
2.12.6 Threshold Elevation: 775.6 ft
2.12.6 Touchdown Zone Elevation: 776.5 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 230
2.12.3 Dimensions: 9956 ft x 150 ft
2.12.4 PCN: 63 R/B/W/T
2.12.5 Coordinates: 41−24−55.14N / 81−50−31.3701W
2.12.6 Threshold Elevation: 785.7 ft
2.12.6 Touchdown Zone Elevation: 785.7 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 93
2.12.3 Dimensions: 6018 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 41−25−1.255N / 81−51−15.2844W
2.12.6 Threshold Elevation: 767.2 ft
2.12.6 Touchdown Zone Elevation: 782.8 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 273
2.12.3 Dimensions: 6018 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 41−24−57.8201N / 81−49−56.4404W
2.12.6 Threshold Elevation: 799.4 ft
2.12.6 Touchdown Zone Elevation: 799.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 24R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 06R
2.13.2 Take−off Run Available: 9956
2.13.3 Take−off Distance Available: 9956
2.13.4 Accelerate−Stop Distance Available: 9956
2.13.5 Landing Distance Available: 8029

2.13.1 Designation: 24L

2.13.2 Take−off Run Available: 9956
2.13.3 Take−off Distance Available: 9956
2.13.4 Accelerate−Stop Distance Available: 9956
2.13.5 Landing Distance Available: 9956

2.13.1 Designation: 10
2.13.2 Take−off Run Available: 6018
2.13.3 Take−off Distance Available: 6018
2.13.4 Accelerate−Stop Distance Available: 6018
2.13.5 Landing Distance Available: 6018

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 6018
2.13.3 Take−off Distance Available: 6018
2.13.4 Accelerate−Stop Distance Available: 6018
2.13.5 Landing Distance Available: 6018

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 06R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 354.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CAVVS DP
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 125.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 273.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (340−200)
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (201−339)
2.14.3 Channel: 126.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 127.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 132.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 346.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 273.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GTLKE DP
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KKIDS DP
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 124.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 273.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PFLYD DP
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ZAAPA DP
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41−25−11.9439N / 81−50−35.6806W
2.19.6 Site Elevation: 783.3 ft

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41−24−9.1462N / 81−52−17.5196W
2.19.6 Site Elevation: 764.3 ft

2.19.1 ILS Type: Inner Marker for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41−23−53.9364N / 81−52−33.3978W
2.19.6 Site Elevation: 761.3 ft

2.19.1 ILS Type: Localizer for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41−25−10.1936N / 81−50−32.895W
2.19.6 Site Elevation: 778.7 ft

2.19.1 ILS Type: DME for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41−25−11.9439N / 81−50−35.6806W
2.19.6 Site Elevation: 783.3 ft

2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41−24−53.0115N / 81−51−8.2151W
2.19.6 Site Elevation: 768.4 ft

2.19.1 ILS Type: Inner Marker for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41−25−3.7892N / 81−50−47.3101W
2.19.6 Site Elevation: 778.7 ft

2.19.1 ILS Type: Localizer for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41−23−53.0818N / 81−52−34.7484W
2.19.6 Site Elevation: 760.5 ft

2.19.1 ILS Type: DME for runway 06R. Magnetic variation: 8W
2.19.2 ILS Identification: CLE
2.19.5 Coordinates: 41−25−4.0599N / 81−50−11.0995W
2.19.6 Site Elevation: 794.2 ft

2.19.1 ILS Type: Glide Slope for runway 06R. Magnetic variation: 8W
2.19.2 ILS Identification: CLE
2.19.5 Coordinates: 41−24−13.7198N / 81−51−45.2828W
2.19.6 Site Elevation: 766 ft

2.19.1 ILS Type: Localizer for runway 06R. Magnetic variation: 8W
2.19.2 ILS Identification: CLE
2.19.5 Coordinates: 41−25−5.1757N / 81−50−15.5054W
2.19.6 Site Elevation: 785.7 ft

2.19.1 ILS Type: DME for runway 24L. Magnetic variation: 8W

2.19.2 ILS Identification: HPI
2.19.5 Coordinates: 41−23−44.3409N / 81−52−18.0761W
2.19.6 Site Elevation: 778.9 ft

2.19.1 ILS Type: Glide Slope for runway 24L. Magnetic variation: 8W
2.19.2 ILS Identification: HPI
2.19.5 Coordinates: 41−24−51.9514N / 81−50−45.3137W
2.19.6 Site Elevation: 782.2 ft

2.19.1 ILS Type: Localizer for runway 24L. Magnetic variation: 8W
2.19.2 ILS Identification: HPI
2.19.5 Coordinates: 41−23−45.4326N / 81−52−21.5235W
2.19.6 Site Elevation: 771.9 ft

2.19.1 ILS Type: DME for runway 28. Magnetic variation: 8W
2.19.2 ILS Identification: PXP
2.19.5 Coordinates: 41−24−58.7198N / 81−51−23.8369W
2.19.6 Site Elevation: 766.2 ft

2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 8W
2.19.2 ILS Identification: PXP
2.19.5 Coordinates: 41−25−3.4332N / 81−50−9.4179W
2.19.6 Site Elevation: 786 ft

2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 8W
2.19.2 ILS Identification: PXP
2.19.5 Coordinates: 41−25−1.52N / 81−51−21.25W
2.19.6 Site Elevation: 756.2 ft

General Remarks:
NASA GLENN RESEARCH CENTER; NASA RAMP PPR CALL 216−433−2031; 0800−1730 MON−FRI. CONTACT NASA OPNS ON FREQ 122.925 WITHIN 50 NM.

RAMP AREA CONCOURSE D BTN GATES D1, D28 CLSD EXC ACFT WINGSPAN LESS THAN 86 FT.

DEER & BIRDS INCLUDING WATERFOWL ON & INVOF ARPT.

PAD 3 BAYS 1−5 CLOSED TO ACFT WITH WINGSPAN OVER 134 FT.

PAD 2 AND TAXILANE Y1 RSTRD TO GROUP II ACFT LESS THAN 79 FT WINGSPAN.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

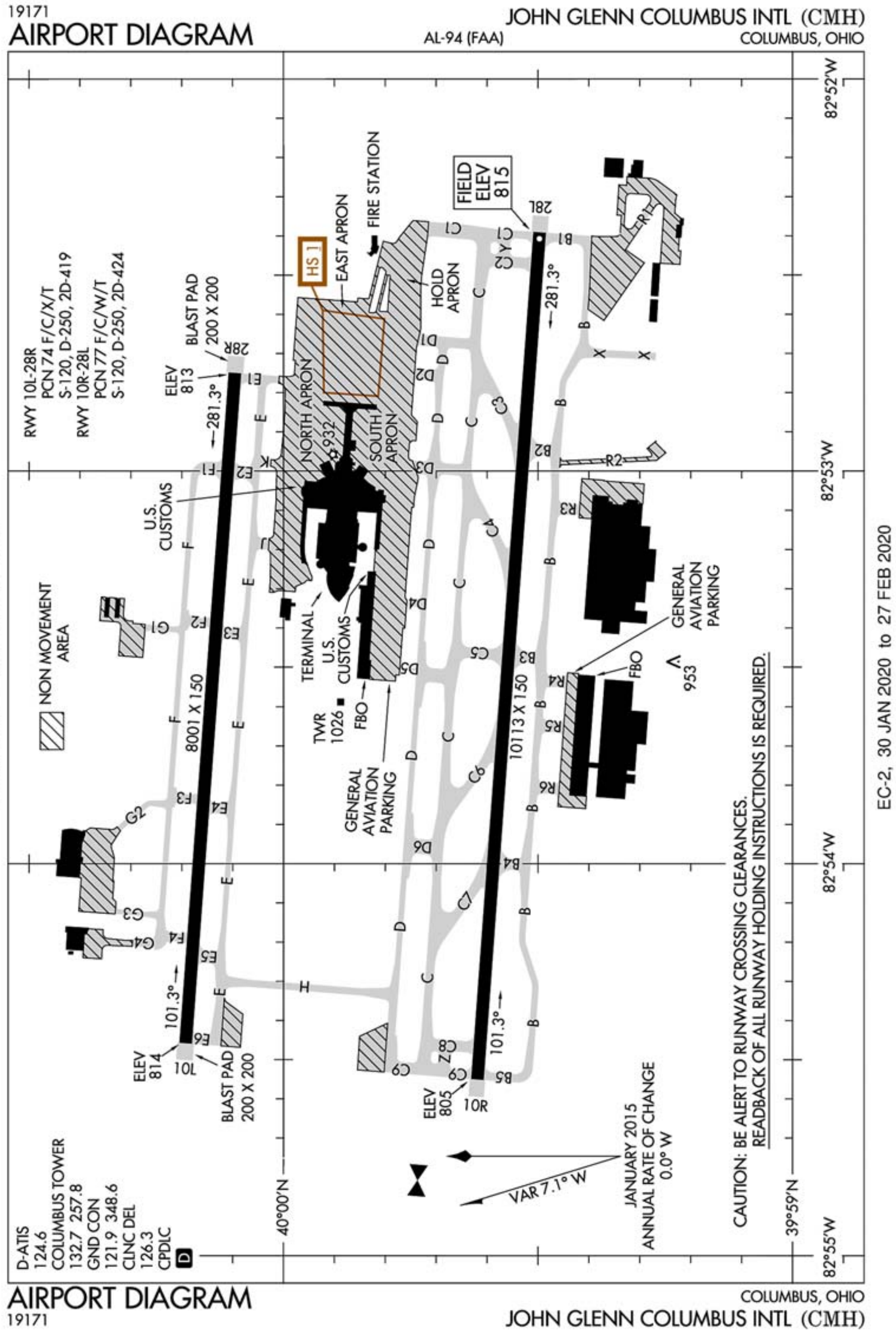
PAD 3 BAY 6 CLOSED TO ACFT WITH WINGSPAN OVER 94 FT.

ALL APCHS ARE OVR NOISE SENSITIVE AREAS. ARPT LATE NGT NOISE ABATEMENT PROCEDURES ARE IN EFFECT 2300−0600. ADDITIONAL NOISE ABATEMENT PROCEDURES ARE IN EFFECT CALL AMGR NORMAL BUSINESS HRS AT 216−265−6090.

ADCUS AVBL MON−SUN 0800−1800; ALL REQ FOR SVC MUST BE MADE WITH THE U.S. CUST SVC OFC LCTD AT GATE A−14 CALL (216) 267−3600 DURG LISTED HRS.

THE FOLLOWING TWYS ARE CLSD ANNUALLY FR 15 OCT THRU 15 APR TO SUPPORT DEICING OPNS AT CLE: TWY M; TWY M1 BTN TWY L & TWY J1; TWY M2 BTN TWY L & TWY J1; TWY J2 BTN TWY A & TWY K.

Columbus, Ohio
Port Columbus International
ICAO Identifier KCMH



Columbus, OH
Port Columbus Intl
ICAO Identifier KCMH

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−59−49.01N / 82−53−31.78W
2.2.2 From City: 6 miles E of COLUMBUS, OH
2.2.3 Elevation: 815 ft
2.2.5 Magnetic Variation: 7W (2015)
2.2.6 Airport Contact: JOE NARDONE
COLUMBUS REGIONAL AIRPORT AUTHORITY
COLUMBUS, OH 43219 (614−239−4000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10L
2.12.2 True Bearing: 94
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 74 F/C/X/T
2.12.5 Coordinates: 40−0−11.5322N / 82−54−27.4945W
2.12.6 Threshold Elevation: 814.3 ft
2.12.6 Touchdown Zone Elevation: 814.7 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 274
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 74 F/C/X/T
2.12.5 Coordinates: 40−0−5.7313N / 82−52−44.9679W
2.12.6 Threshold Elevation: 813.2 ft
2.12.6 Touchdown Zone Elevation: 813 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 94
2.12.3 Dimensions: 10113 ft x 150 ft
2.12.4 PCN: 77 F/C/W/T
2.12.5 Coordinates: 39−59−37.1446N / 82−54−33.0425W
2.12.6 Threshold Elevation: 805 ft
2.12.6 Touchdown Zone Elevation: 809.3 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 274
2.12.3 Dimensions: 10113 ft x 150 ft
2.12.4 PCN: 77 F/C/W/T
2.12.5 Coordinates: 39−59−29.812N / 82−52−23.457W
2.12.6 Threshold Elevation: 815 ft
2.12.6 Touchdown Zone Elevation: 815 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 10113
2.13.3 Take−off Distance Available: 10113
2.13.4 Accelerate−Stop Distance Available: 10113
2.13.5 Landing Distance Available: 10113

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 10113
2.13.3 Take−off Distance Available: 10113
2.13.4 Accelerate−Stop Distance Available: 10113
2.13.5 Landing Distance Available: 10113

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR

2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 129.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (100−279)
2.14.3 Channel: 134
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (100−279)
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (280−099)
2.14.3 Channel: 317.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (100−279)
2.14.3 Channel: 338.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (280−099)
2.14.3 Channel: 125.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (280−099)
2.14.3 Channel: 371.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 118.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 353.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 118
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S (100−279)
2.14.3 Channel: 132.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 324.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 353.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 126.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (280−099)
2.14.3 Channel: 125.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (100−279)
2.14.3 Channel: 134
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (100−279)
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (280−099)
2.14.3 Channel: 317.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 124.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: FINAL
2.14.3 Channel: 327.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 132.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS (DEICE PAD CONTROL)
2.14.3 Channel: 122.775
2.14.5 Hours of Operation:

2.14.1 Service Designation: RADAR
2.14.3 Channel: 294.7
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 7W
2.19.2 ILS Identification: CBP
2.19.5 Coordinates: 40−0−9.6925N / 82−54−41.0275W
2.19.6 Site Elevation: 822.3 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 7W
2.19.2 ILS Identification: CBP
2.19.5 Coordinates: 40−0−14.2836N / 82−54−14.8654W
2.19.6 Site Elevation: 809.9 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 7W
2.19.2 ILS Identification: CBP
2.19.5 Coordinates: 40−0−4.9989N / 82−52−32.0266W
2.19.6 Site Elevation: 799.4 ft

2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 7W
2.19.2 ILS Identification: ONB
2.19.5 Coordinates: 40−0−9.6925N / 82−54−41.0275W
2.19.6 Site Elevation: 822.3 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 7W
2.19.2 ILS Identification: ONB
2.19.5 Coordinates: 40−0−9.1368N / 82−52−56.9873W
2.19.6 Site Elevation: 808.4 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 7W
2.19.2 ILS Identification: ONB
2.19.5 Coordinates: 40−0−12.2667N / 82−54−40.5593W
2.19.6 Site Elevation: 811.6 ft

2.19.1 ILS Type: DME for runway 10R. Magnetic variation: 7W
2.19.2 ILS Identification: AQI
2.19.5 Coordinates: 39−59−33.7394N / 82−54−45.9308W
2.19.6 Site Elevation: 815.1 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 7W
2.19.2 ILS Identification: AQI
2.19.5 Coordinates: 39−59−32.38N / 82−54−20.61W
2.19.6 Site Elevation: 802.5 ft

2.19.1 ILS Type: Localizer for runway 10R. Magnetic variation: 7W
2.19.2 ILS Identification: AQI
2.19.5 Coordinates: 39−59−29.0711N / 82−52−10.4148W
2.19.6 Site Elevation: 814.2 ft

2.19.1 ILS Type: DME for runway 28L. Magnetic variation: 7W
2.19.2 ILS Identification: CMH
2.19.5 Coordinates: 39−59−33.7394N / 82−54−45.9308W
2.19.6 Site Elevation: 815.1 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 7W
2.19.2 ILS Identification: CMH
2.19.5 Coordinates: 39−59−26.5N / 82−52−36.66W
2.19.6 Site Elevation: 810.7 ft

2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 7W
2.19.2 ILS Identification: CMH
2.19.5 Coordinates: 39−59−37.8813N / 82−54−46.0859W
2.19.6 Site Elevation: 805.9 ft

General Remarks:
TWY D−5 PAVEMENT (NORTH OF TWY D) IS RSTRD TO ACFT WITH WINGSPAN LESS THAN 79 FT.

TAXILANE CONCOURSE A BTN TWY D3 AND TWY D4 CLSD TO ACFT WINGSPAN MORE THAN 130 FT.

ALL SURFACES AROUND TERMINAL; NORTH OF TWY 'D' & SOUTH OF TWY 'E' ARE NON−MOVEMENT AREAS.

TO REQ LDG RIGHTS CTC US CUSTOMS BETWEEN 1230−0300Z, MON−FRI AT 614−497−1865.
BIRDS INVOF ARPT.

TWYS R2, R3, R4, R5 AND R6 RSTRD TO WINGSPAN LESS THAN 118 FT.
TWY F1 RSTRD TO AIRCRAFT WITH WINGSPAN LESS THAN 120 FT.

HOLD PAD FOR RWY 28L RSTRD TO ACFT WITH WINGSPAN LESS THAN 118 FT.

NOISE BARRIER LOCATED AT SE SIDE OF AIRFIELD RESTRICTED TO ACFT WITH WINGSPAN LESS THAN 79 FT.

BE ALERT: RY 10L/28R RESTRICTIONS ON STAGE I & II TURBOJET ACFT 2200−0800 & ON STAGE III TURBOJET ACFT 2200−0700. PRACTICE APCHS FOR HIGH NOISE LEVEL TYPE ACFT INCLUDING NON−STAGE III MIL JET ACFT SHALL NOT BE APPROVED UNLESS RY 10R/28L IS IN USE & THE APCH TERMINATES IN A FULL STOP TAXI−BACK OPN.

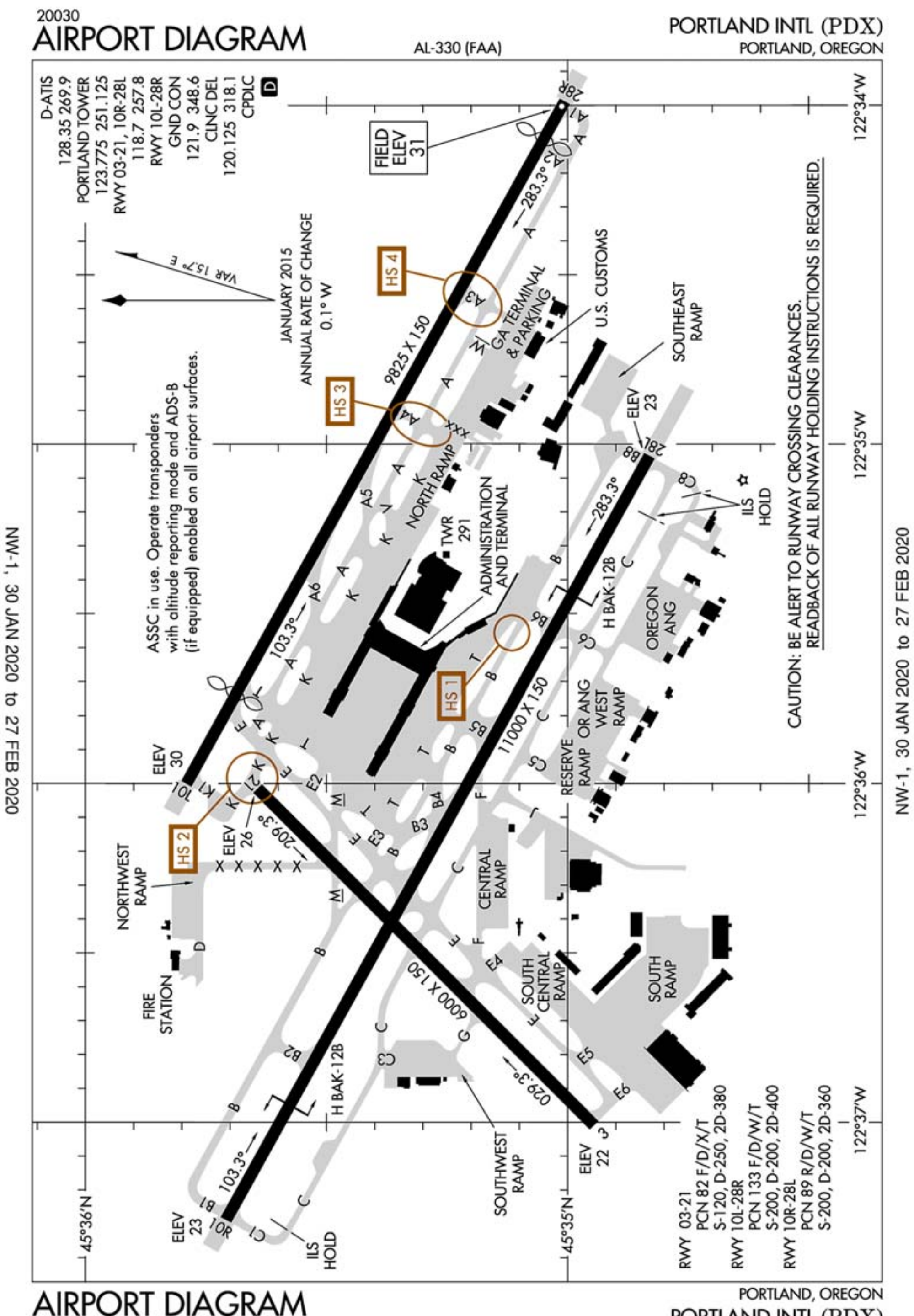
MODEL ACFT TFC WITHIN A 1 NM RDS OF A POINT 8 NM ON A 010 DEG BRG FM THE ARPT; SFC − 5000 FT AGL; SR−SS DLY.

TAXILANE CONCOURSE C BTN TWY J AND TWY K CLSD TO ACFT WINGSPAN MORE THAN 135 FT.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL.

TWY R1 RSTRD TO ACFT WITH WINGSPAN LESS THAN 79 FT.

Portland, Oregon
Portland International
ICAO Identifier KPDX



Portland, OR
Portland Intl
ICAO Identifier KPDX

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 45−35−19.3519N / 122−35−48.7299W
2.2.2 From City: 4 miles NE of PORTLAND, OR
2.2.3 Elevation: 30.8 ft
2.2.5 Magnetic Variation: 16E (2010)
2.2.6 Airport Contact: DAREN GRIFFIN
7200 NE AIRPORT WAY
PORTLAND, OR 97218
(503−415−6195)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 82 F/D/X/T
2.12.5 Coordinates: 45−34−56.73N / 122−37−0.5188W
2.12.6 Threshold Elevation: 22.2 ft
2.12.6 Touchdown Zone Elevation: 22.9 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 82 F/D/X/T
2.12.5 Coordinates: 45−35−38.605N / 122−36−0.8463W
2.12.6 Threshold Elevation: 26.4 ft
2.12.6 Touchdown Zone Elevation: 26.4 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9825 ft x 150 ft
2.12.4 PCN: 133 F/D/W/T
2.12.5 Coordinates: 45−35−47.454N / 122−36−0.0581W
2.12.6 Threshold Elevation: 29.5 ft
2.12.6 Touchdown Zone Elevation: 30.2 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9825 ft x 150 ft
2.12.4 PCN: 133 F/D/W/T
2.12.5 Coordinates: 45−35−0.3785N / 122−33−59.2636W
2.12.6 Threshold Elevation: 30.8 ft
2.12.6 Touchdown Zone Elevation: 30.8 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 119
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 89 R/D/W/T
2.12.5 Coordinates: 45−35−42.5347N / 122−37−17.3022W
2.12.6 Threshold Elevation: 22.7 ft
2.12.6 Touchdown Zone Elevation: 23.7 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 299
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 89 R/D/W/T
2.12.5 Coordinates: 45−34−49.8531N / 122−35−2.0463W
2.12.6 Threshold Elevation: 22.7 ft
2.12.6 Touchdown Zone Elevation: 22.7 ft

AD 2.13 Declared Distances

2.13.1 Designation: 03
2.13.2 Take−off Run Available: 6000
2.13.3 Take−off Distance Available: 6000
2.13.4 Accelerate−Stop Distance Available: 6000
2.13.5 Landing Distance Available: 6000

2.13.1 Designation: 21
2.13.2 Take−off Run Available: 6000
2.13.3 Take−off Distance Available: 6000
2.13.4 Accelerate−Stop Distance Available: 6000
2.13.5 Landing Distance Available: 6000

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 9825
2.13.3 Take−off Distance Available: 9825
2.13.4 Accelerate−Stop Distance Available: 9825
2.13.5 Landing Distance Available: 8535

2.13.1 Designation: 28R

2.13.2 Take−off Run Available: 9825
2.13.3 Take−off Distance Available: 9825
2.13.4 Accelerate−Stop Distance Available: 9825
2.13.5 Landing Distance Available: 9290

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 11000
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 11000
2.13.5 Landing Distance Available: 11000

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 11000
2.13.3 Take−off Distance Available: 11000
2.13.4 Accelerate−Stop Distance Available: 11000
2.13.5 Landing Distance Available: 11000

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 21
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 21. Magnetic variation: 16E
2.19.2 ILS Identification: GPO
2.19.5 Coordinates: 45−34−47.97N / 122−37−7.94W
2.19.6 Site Elevation: 31 ft

2.19.1 ILS Type: Localizer for runway 21. Magnetic variation: 16E
2.19.2 ILS Identification: GPO
2.19.5 Coordinates: 45−34−49.75N / 122−37−10.47W
2.19.6 Site Elevation: 11.4 ft

2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 16E
2.19.2 ILS Identification: VDG
2.19.5 Coordinates: 45−35−47.9502N / 122−36−13.551W
2.19.6 Site Elevation: 25.5 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 16E
2.19.2 ILS Identification: VDG
2.19.5 Coordinates: 45−35−39.7602N / 122−35−30.1707W
2.19.6 Site Elevation: 30.8 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 16E
2.19.2 ILS Identification: VDG
2.19.5 Coordinates: 45−34−55.53N / 122−33−46.85W
2.19.6 Site Elevation: 28.9 ft

2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 16E
2.19.2 ILS Identification: IAP
2.19.5 Coordinates: 45−35−47.95N / 122−36−13.551W
2.19.6 Site Elevation: 25.5 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 16E
2.19.2 ILS Identification: IAP
2.19.5 Coordinates: 45−35−10.93N / 122−34−16.4W
2.19.6 Site Elevation: 30.1 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 16E
2.19.2 ILS Identification: IAP
2.19.5 Coordinates: 45−35−52.3N / 122−36−12.47W
2.19.6 Site Elevation: 25.6 ft

2.19.1 ILS Type: DME for runway 10R. Magnetic variation: 16E
2.19.2 ILS Identification: PDX
2.19.5 Coordinates: 45−34−46.7386N / 122−34−45.2294W
2.19.6 Site Elevation: 36 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 16E
2.19.2 ILS Identification: PDX
2.19.5 Coordinates: 45−35−33.9026N / 122−37−7.2471W
2.19.6 Site Elevation: 16.1 ft

2.19.1 ILS Type: Inner Marker for runway 10R. Magnetic variation: 16E
2.19.2 ILS Identification: PDX
2.19.5 Coordinates: 45−35−46.7091N / 122−37−28.0266W
2.19.6 Site Elevation: 17 ft

2.19.1 ILS Type: Localizer for runway 10R. Magnetic variation: 16E
2.19.2 ILS Identification: PDX
2.19.5 Coordinates: 45−34−43.5268N / 122−34−45.8188W
2.19.6 Site Elevation: 19.5 ft

2.19.1 ILS Type: DME for runway 28L. Magnetic variation: 16E
2.19.2 ILS Identification: JMJ
2.19.5 Coordinates: 45−34−46.7386N / 122−34−45.2294W
2.19.6 Site Elevation: 36 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 16E
2.19.2 ILS Identification: JMJ
2.19.5 Coordinates: 45−34−52.6331N / 122−35−16.7121W
2.19.6 Site Elevation: 19.9 ft

2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 16E
2.19.2 ILS Identification: JMJ
2.19.5 Coordinates: 45−35−50.5155N / 122−37−37.8096W
2.19.6 Site Elevation: 24.8 ft

General Remarks:
FUEL − A (AIR BP − ATLANTIC AVIATION SVCS. C503−331−4220) J8(MIL) (NC−100LL, A)

BEARING STRENGTH: RWY 03−21 ST 175, RY 10L−28R ST175, RY 10R−28L ST175.

ACFT WITH WINGSPAN GREATER THAN 118 FEET ARE PROHIBITED FROM TURNING EASTBOUND ON TWY C FROM SOUTHWESTBOUND ON TWY F UNLESS UNDER TOW.

NOISE ABATEMENT PROCEDURES IN EFFECT; CALL NOISE OFFICE AT 503−460−4100. RY 28L ARRIVALS ARE NOISE SENSITIVE, EXPECT APCH TO 28R WITH TRANSITION TO 28L.

TWY T BTN EXITS B5 & B6 CLSD TO ACFT WITH WINGSPAN GTR THAN 118 FT.

OIL − O−128−133−148(MIL).

MISC: FLT NOTIFICATION SVC, ADCUS, AVBL.

PDX HAS FAC CONSTRAINTS THAT LMT ITS ABILITY TO ACCOMMODATE DIVD FLTS AND MNTN THE ARPT SAFE OPN DUR IREG OPS. ACFT OPS SHUD CTC THE ON−DUTY ARPT OPS SUPVR (AOS) FOR AIRSIDE AT (503) 460−4236 TO COORD DIVD FLTS EXC IN THE CASE OF A DECLARED IN−FLT EMERG.

AREA OF TWY T BTN M & E3 NOT VSB FM TWR.

MIGRATORY & WINTERING FLOCKS OF LRG WATERFOWL ON & INVOF APRT. HEAVY SEAGULL ACTIVITY SEP THRU APR; EXPECT HIGH NMBR OF BIRDS YEAR AROUND; CK LCL ADVISORIES.

ANG: SEE FLIP AP/1 FOR SUPPLEMENTARY ARPT INFO. HAZARDOUS BIRD COND EXIST. PHASE 1 MAY−OCT, PHASE II NOV−APR. CURRENT BIRD WATCH CONDITIONS ARE NOT REPORTED ON ATIS.

ACFT AUTHORIZED TO UTILIZE THE NORTHWEST RAMP WILL BE TOWED TO/FROM THIS RAMP.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED)

ENABLED ON ALL AIRPORT SURFACES.

180 DEGREE TURNS BY ACFT WEIGHING IN EXCESS OF 12500 LBS PROHIBITED ON RY 10L/28R, RY 03/21 AND ALL TWYS.

ANG : PPR/OFFL BUS ONLY. BASE OPS OPR 1500−2300Z++ MON−FRI EXC HOL.; DSN 638−4390, C503−335−4390. CTC BASE OPS 15 MIN PRIOR TO LDG AND AFTER DEP ON 281.2. TRAN QUARTERS NOT AVBL. CAUTION: OBST LIGHTING IS NOT NVD COMPATIBLE. NVD NOT AUTHORIZED WHILE AIRBORNE IN VCNTY OF AFLD.

TWY K BTN TWY A5 & TWY V CLSD TO ACFT WINGSPAN MORE THAN 168 FT.

JASU − 4(A/M32A−86) (MC−11) 1(MA−1A).

FLUID − LHOXRB.

(E94) WSFO/WSO/FW/RFC.

TWY V CLSD TO ACFT WITH WINGSPAN GREATER THAN 168 FT. ACFT WITH WINGSPAN GREATER THAN 118 FT PROHIBITED FM TURNING WB ONTO TWY A FM TWY V UNLESS UNDER TOW.

TWY M BTN TWY E & TWY T CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

TWY C BTN TWY C6 AND TWY C8 CLSD TO ACFT WITH WINGSPAN GTR THAN 180 FEET.

TWY A3 BTN TWY A & THE GA RAMP CLSD TO ACFT WITH WINGSPAN GTR THAN 135 FEET UNLESS UNDER TOW.

UNCONTROLLED TFC AT PEARSON FIELD VANCOUVER WA 3 NM W OF RY 10L THLD ON EXTDD CNTRLN. ARPT CLSD TO NON−POWERED ACFT EXCP IN EMERG.

AT THE WEST END ARM/DEARM AREA ON TWY C NO ACFT OF ANY TYPE MAY TAXI PAST THE ARM/DEARM AREA WHILE IT IS BEING USED.

TWY T BTN TWY E3 & TWY B5 CLSD TO ACFT WITH WINGSPAN GTR THAN 118 FT.

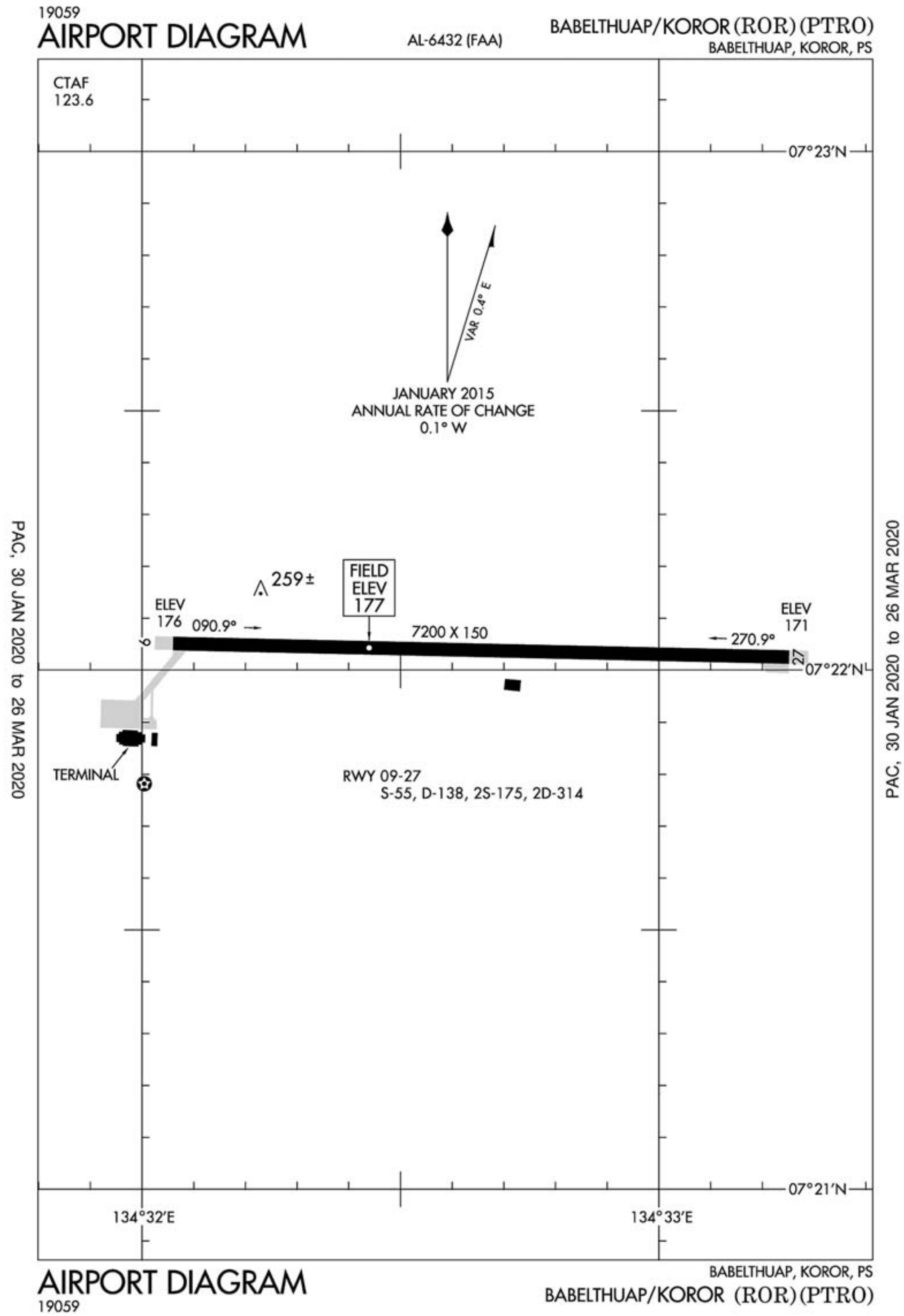
TWY C3 CLSD TO ACFT WITH WINGSPAN EQUAL TO OR GTR THAN 79 FT.

TWY W CLSD TO ACFT WITH WINGSPAN GTR THAN 118 FT UNLESS UNDER TOW.

TWY E3 CLSD TO ACFT WITH WINGSPAN GTR THAN 198 FEET.

NSTD YELLOW PRK SPOT DESIGNATORS AND EQPT TOOL BOX LCTN PAINTED ON RAMP. PLEASE CTC BASE OPS OR REQ FOLLOW ME IF NOT FAMILIAR WITH PANGB PRK PROCEDURES.

Babelthuap Island
Babelthuap/Koror
ICAO Identifier PTRO



Babelthuap Island, PW
Babelthuap/Koror
ICAO Identifier PTRO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 7−22−2.3N / 134−32−39.3E
2.2.2 From City: 4 miles NE of BABELTHUAP ISLAND, PW
2.2.3 Elevation: 176.5 ft
2.2.5 Magnetic Variation: 1E (1990)
2.2.6 Airport Contact: CALEB KOSHIBA
MINISTRY OF COMMERCE & TRADE
REPUBLIC OF PALAU, (680−488−2111)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 115,A1
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 27
2.12.2 True Bearing: 271
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 7−22−1.4713N / 134−33−15.1186E
2.12.6 Threshold Elevation: 171.3 ft
2.12.6 Touchdown Zone Elevation: 175.9 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 91
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 7−22−3.11N / 134−32−3.581E
2.12.6 Threshold Elevation: 176.2 ft
2.12.6 Touchdown Zone Elevation: 176.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 27
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 09
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 27
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 09
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 Navigation Aid Type: NDB/DME. Magnetic variation: 1E
2.19.2 Navigation Aid Identification: ROR
2.19.5 Coordinates: 7−22−7.5431N / 134−33−1.2945E
2.19.6 Site Elevation: 183.4 ft

General Remarks:
(E94) WX STN 5 MI FM ARPT.

ALL UNSKED FLTS MUST FILE A FLT PLAN AT LEAST 7 DAYS PRIOR TO ARRIVAL AND ALL FLTS MUST

CTC KOROR COMMUNICATIONS ON 123.6 AT LEAST 20 MINUTES PRIOR TO ARRIVAL.

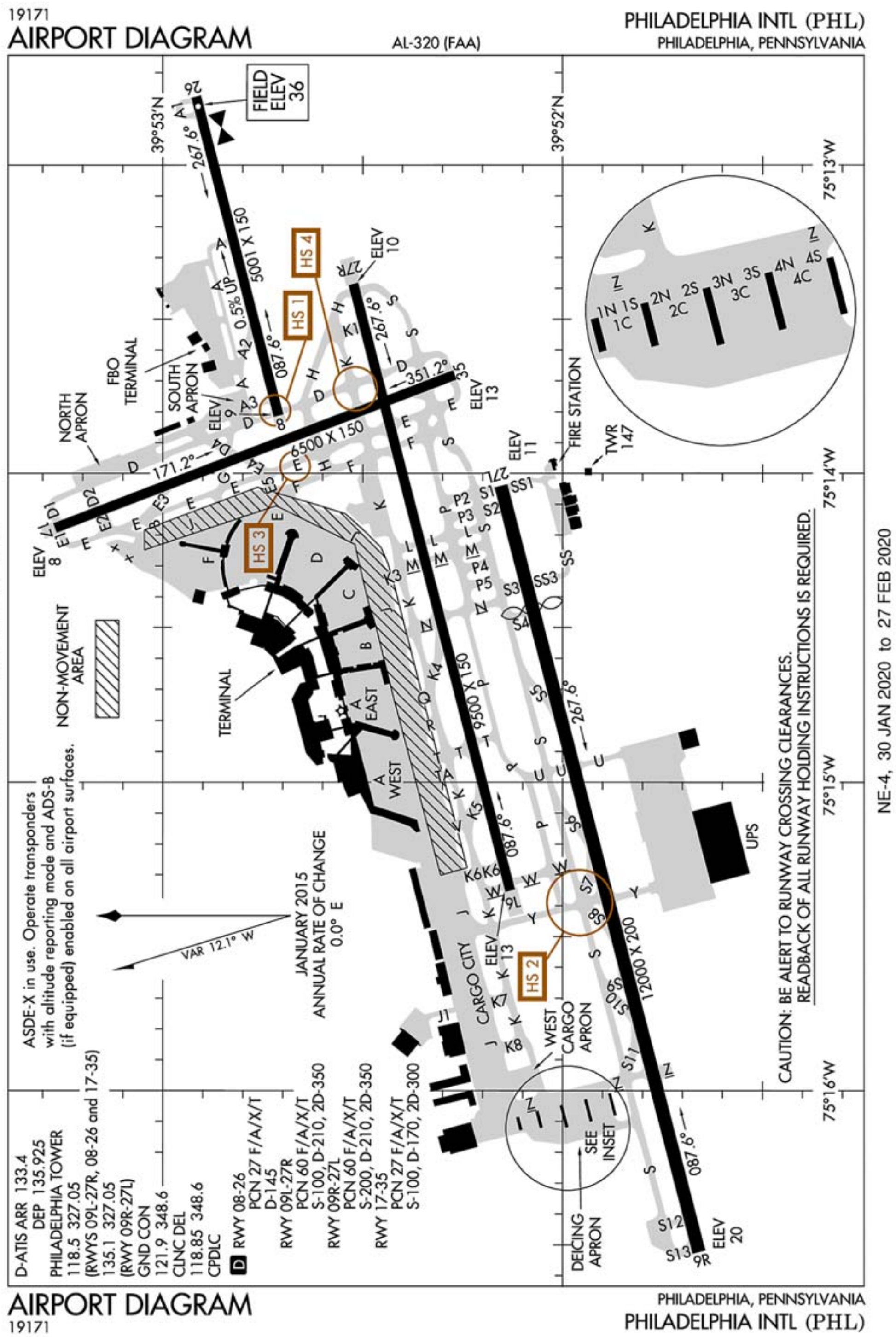
BE ALERT TO LARGE NUMBER OF BIRDS ON RY AT NIGHT.

ALL ACFT EXCEEDING 100000 LBS GWT TAXI TO THR TURN AROUND BEFORE TAXING TO APRON. ACFT UNDER 100000 LBS GWT MAY MAKE A TURN AROUND WHERE FEASIBLE.

ARFF AVBL 2 HRS PRIOR TO SKED ACFT ARR AND UNTIL 1 HR AFT DEP.

ENTRY PERMIT RQRD CALL 011−680−488−2498 FAX 011−680−488−4385; LANDING PERMIT RQRD MUST GIVE SEVEN DAYS NOTICE CALL 011−680−488−2111 FAX 011−680−488−3207.

Philadelphia, Pennsylvania
Philadelphia International
ICAO Identifier KPHL



Philadelphia, PA
Philadelphia Intl
ICAO Identifier KPHL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39−52−19.502N / 75−14−26.387W
2.2.2 From City: 5 miles SW of PHILADELPHIA, PA
2.2.3 Elevation: 35.9 ft
2.2.5 Magnetic Variation: 12W (2020)
2.2.6 Airport Contact: ROCHELLE CAMERON
DIV OF AVIATION TERMINAL E
PHILADELPHIA, PA 19153
(215−937−6914)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 75
2.12.3 Dimensions: 5001 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−42.0147N / 75−13−48.05W
2.12.6 Threshold Elevation: 9.3 ft
2.12.6 Touchdown Zone Elevation: 20.3 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 256
2.12.3 Dimensions: 5001 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−54.3825N / 75−12−45.9478W
2.12.6 Threshold Elevation: 35.9 ft
2.12.6 Touchdown Zone Elevation: 35.9 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 255
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−52−30.7933N / 75−13−22.4291W
2.12.6 Threshold Elevation: 10.4 ft
2.12.6 Touchdown Zone Elevation: 10.5 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 75
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−52−7.2582N / 75−15−20.3809W
2.12.6 Threshold Elevation: 13.2 ft
2.12.6 Touchdown Zone Elevation: 13.3 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 75
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−51−38.9141N / 75−16−30.7061W
2.12.6 Threshold Elevation: 20.3 ft
2.12.6 Touchdown Zone Elevation: 20.6 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 255
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39−52−8.65N / 75−14−1.72W
2.12.6 Threshold Elevation: 10.6 ft
2.12.6 Touchdown Zone Elevation: 10.2 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 159
2.12.3 Dimensions: 6500 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−53−15.5714N / 75−14−9.9268W
2.12.6 Threshold Elevation: 8.2 ft
2.12.6 Touchdown Zone Elevation: 10.5 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 339
2.12.3 Dimensions: 6500 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−15.5777N / 75−13−40.1314W
2.12.6 Threshold Elevation: 12.9 ft
2.12.6 Touchdown Zone Elevation: 12.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take−off Run Available: 5001

2.13.3 Take−off Distance Available: 5001
2.13.4 Accelerate−Stop Distance Available: 5001
2.13.5 Landing Distance Available: 5001

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 5001
2.13.3 Take−off Distance Available: 5001
2.13.4 Accelerate−Stop Distance Available: 5001
2.13.5 Landing Distance Available: 5001

2.13.1 Designation: 27R
2.13.2 Take−off Run Available: 9500
2.13.3 Take−off Distance Available: 9500
2.13.4 Accelerate−Stop Distance Available: 9500
2.13.5 Landing Distance Available: 8864

2.13.1 Designation: 09L
2.13.2 Take−off Run Available: 9500
2.13.3 Take−off Distance Available: 9500
2.13.4 Accelerate−Stop Distance Available: 9500
2.13.5 Landing Distance Available: 9500

2.13.1 Designation: 09R
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 27L
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 11825
2.13.5 Landing Distance Available: 9912

2.13.1 Designation: 17
2.13.2 Take−off Run Available: 6500
2.13.3 Take−off Distance Available: 6500
2.13.4 Accelerate−Stop Distance Available: 6500
2.13.5 Landing Distance Available: 6500

2.13.1 Designation: 35
2.13.2 Take−off Run Available: 6500
2.13.3 Take−off Distance Available: 6500
2.13.4 Accelerate−Stop Distance Available: 6500
2.13.5 Landing Distance Available: 6500

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 27R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 09L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 09R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 27L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: 5500 & BLO (NORTH)
2.14.3 Channel: 123.8
2.14.5 Hours of Operation:

2.14.1 Service Designation: 5500 & BLO (NORTH)
2.14.3 Channel: 291.7
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P (001−089, 5000 FT & BLW)
2.14.3 Channel: 123.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−360, 5000 FT & BLW)
2.14.3 Channel: 126.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090−269, 5000 FT & BLW)
2.14.3 Channel: 127.35

2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−089, ABV 5000 FT)
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090−269, 6000−8000 FT)
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−360, 5000 FT & BLW)
2.14.3 Channel: 263.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−089, ABV 5000 FT)
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−089, ABV 5000 FT)
2.14.3 Channel: 273.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (001−089, 5000 FT & BLW)
2.14.3 Channel: 291.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090−269 6000−8000 FT)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090−269, 5000 FT & BLW)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BUNTS STAR
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BUNTS STAR
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 118.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CEDAR LAKE STAR
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CEDAR LAKE STAR
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SW 6000 FT & BLW)
2.14.3 Channel: 118.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE RWY 09 ACTIVE 10000 FT & BLW)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE RWY 27 ACTIVE 8500−10000 FT)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SOUTH/ SOUTHWEST RWY 27 8500−10000 FT)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NE 6500 FT & BLW)
2.14.3 Channel: 123.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (W RWY 09 ACTIVE 8500−10000 FT)
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (W RWY 27 ACTIVE 10000 FT & BLW)
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NW 8000−10000 FT)
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NE 7000−10000 FT)
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (5500 FT & BLW)
2.14.3 Channel: 126.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE−SW 5000 FT & BLW)
2.14.3 Channel: 127.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NORTH 6500−7500)
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST RWY 09 ACTIVE 8000 FT & BLW)
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (6000−8000 FT)
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SOUTHEAST RWY 27 5500−7500)
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (5500 FT & BLW)
2.14.3 Channel: 263.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE RWY 27 ACTIVE 8500−10000 FT)
2.14.3 Channel: 269.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE RWY 09 ACTIVE 10000 FT & BLW)
2.14.3 Channel: 269.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SOUTH/SOUTHWEST RWY 27 8500−10000 FT)
2.14.3 Channel: 269.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST RWY 09 ACTIVE 8000 FT & BLW)
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NORTH 6500−7500)
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (N NE 6500−7500)
2.14.3 Channel: 273.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (W RWY 09 ACTIVE 8000 FT & BLW)
2.14.3 Channel: 273.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NE RWY 27 ACTIVE 5000 FT & BLW)
2.14.3 Channel: 291.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (RWY 27, 5500−7500 FT)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE−SW 5000 FT & BLW)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (6000−8000 FT)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NE 7000−10000 FT)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST RWY 09 ACTIVE 8500−10000 FT)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NW 8000−10000 FT)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SW 6000 FT & BLW)
2.14.3 Channel: 323.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 133.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 135.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (270−089)
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 269.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (270−089)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: FINAL APCH
2.14.3 Channel: 125.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JIIMS STAR
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JIIMS STAR
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 08/26, 09L/27R, 17/35)
2.14.3 Channel: 118.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 09R/27L)
2.14.3 Channel: 135.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 327.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PAATS STAR
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PAATS STAR
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PHL ONE DP
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PHL ONE DP
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 27L)
2.14.3 Channel: 120.425
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 26)
2.14.3 Channel: 123.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RADAR
2.14.3 Channel: 126.6
2.14.5 Hours of Operation:

2.14.1 Service Designation: SPUDS STAR
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SPUDS STAR
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 26. Magnetic variation: 12W
2.19.2 ILS Identification: LLH
2.19.5 Coordinates: 39−52−42.2207N / 75−13−32.3765W
2.19.6 Site Elevation: 28.9 ft

2.19.1 ILS Type: Glide Slope for runway 26. Magnetic variation: 12W
2.19.2 ILS Identification: LLH
2.19.5 Coordinates: 39−52−49.3706N / 75−12−58.3473W
2.19.6 Site Elevation: 21.3 ft

2.19.1 ILS Type: Localizer for runway 26. Magnetic variation: 12W
2.19.2 ILS Identification: LLH
2.19.5 Coordinates: 39−52−42.383N / 75−13−31.8279W
2.19.6 Site Elevation: 5.4 ft

2.19.1 ILS Type: DME for runway 09L. Magnetic variation: 12W
2.19.2 ILS Identification: VII
2.19.5 Coordinates: 39−52−35.4715N / 75−13−11.5053W
2.19.6 Site Elevation: 19.4 ft

2.19.1 ILS Type: Glide Slope for runway 09L. Magnetic variation: 12W
2.19.2 ILS Identification: VII
2.19.5 Coordinates: 39−52−6.03N / 75−15−6.06W
2.19.6 Site Elevation: 8.9 ft

2.19.1 ILS Type: Localizer for runway 09L. Magnetic variation: 12W
2.19.2 ILS Identification: VII
2.19.5 Coordinates: 39−52−33.52N / 75−13−8.777W
2.19.6 Site Elevation: 7.2 ft

2.19.1 ILS Type: DME for runway 27R. Magnetic variation: 12W
2.19.2 ILS Identification: PDP
2.19.5 Coordinates: 39−52−35.4715N / 75−13−11.5053W
2.19.6 Site Elevation: 19.4 ft

2.19.1 ILS Type: Glide Slope for runway 27R. Magnetic variation: 12W
2.19.2 ILS Identification: PDP
2.19.5 Coordinates: 39−52−24.0466N / 75−13−35.8144W
2.19.6 Site Elevation: 7.5 ft

2.19.1 ILS Type: Localizer for runway 27R. Magnetic variation: 12W
2.19.2 ILS Identification: PDP
2.19.5 Coordinates: 39−52−4.7498N / 75−15−32.9263W
2.19.6 Site Elevation: 8.8 ft

2.19.1 ILS Type: DME for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL
2.19.5 Coordinates: 39−52−7.3027N / 75−13−47.0541W
2.19.6 Site Elevation: 23.5 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL
2.19.5 Coordinates: 39−51−37.8234N / 75−16−15.7274W
2.19.6 Site Elevation: 13.3 ft

2.19.1 ILS Type: Inner Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL
2.19.5 Coordinates: 39−51−36.7356N / 75−16−41.589W
2.19.6 Site Elevation: 7.2 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL

2.19.5 Coordinates: 39−52−11.1563N / 75−13−49.1425W
2.19.6 Site Elevation: 9 ft

2.19.1 ILS Type: DME for runway 27L. Magnetic variation: 12W
2.19.2 ILS Identification: GLC
2.19.5 Coordinates: 39−52−7.3027N / 75−13−47.0541W
2.19.6 Site Elevation: 23.5 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 12W
2.19.2 ILS Identification: GLC
2.19.5 Coordinates: 39−51−57.2838N / 75−14−37.7318W
2.19.6 Site Elevation: 8.4 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 12W
2.19.2 ILS Identification: GLC
2.19.5 Coordinates: 39−51−36.2572N / 75−16−43.9517W
2.19.6 Site Elevation: 6.8 ft

2.19.1 ILS Type: DME for runway 17. Magnetic variation: 12W
2.19.2 ILS Identification: MYY
2.19.5 Coordinates: 39−52−6.7468N / 75−13−39.3372W
2.19.6 Site Elevation: 24.5 ft

2.19.1 ILS Type: Glide Slope for runway 17. Magnetic variation: 12W
2.19.2 ILS Identification: MYY
2.19.5 Coordinates: 39−53−5.9004N / 75−14−8.6899W
2.19.6 Site Elevation: 6.2 ft

2.19.1 ILS Type: Localizer for runway 17. Magnetic variation: 12W
2.19.2 ILS Identification: MYY
2.19.5 Coordinates: 39−52−6.3204N / 75−13−35.5323W
2.19.6 Site Elevation: 12 ft

General Remarks:
ARPT IS LCTD IN A NOISE SENSITIVE AREA. AIRPORT NOISE ABATEMENT TAKEOFF PROCEDURES ARE TO BE USED.

ONLY NOSE−IN PRKG PERMITTED ON NORTH REMOTE APNS. PPR FM ARPT OPS FOR ALL ACFT PRKG ON REMOTE APNS; CTC 215−937−6914/6800.

RY 09R ROLLOUT RVR USED FOR RY 09L MIDPOINT RVR.

RYS 27L, 27R & 35 SHIP CHNL (DELAWARE RIVER) MAX HEIGHT OF SHIPS 189 FT. RY 26 SHIP CHNL (SCHUYLKILL) MAX HEIGHT OF SHIPS 149 FT.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

ALL ACFT TRAVELING ON TWY J MUST USE MINIMUM POWER WHEN TURNING SOUTH DUE TO JETBLAST CONCERNS.

UNLGTD STACK 288 FT MSL (271 FT AGL) 2.3 NM SW OF ARPT.

TCAS EQUIPPED ACFT−TCAS ALERT MAY BE CAUSED BY TRANSPONDER EQUIPPED SHIPS LCTD PHL NAVAL BASE 3 NM E.

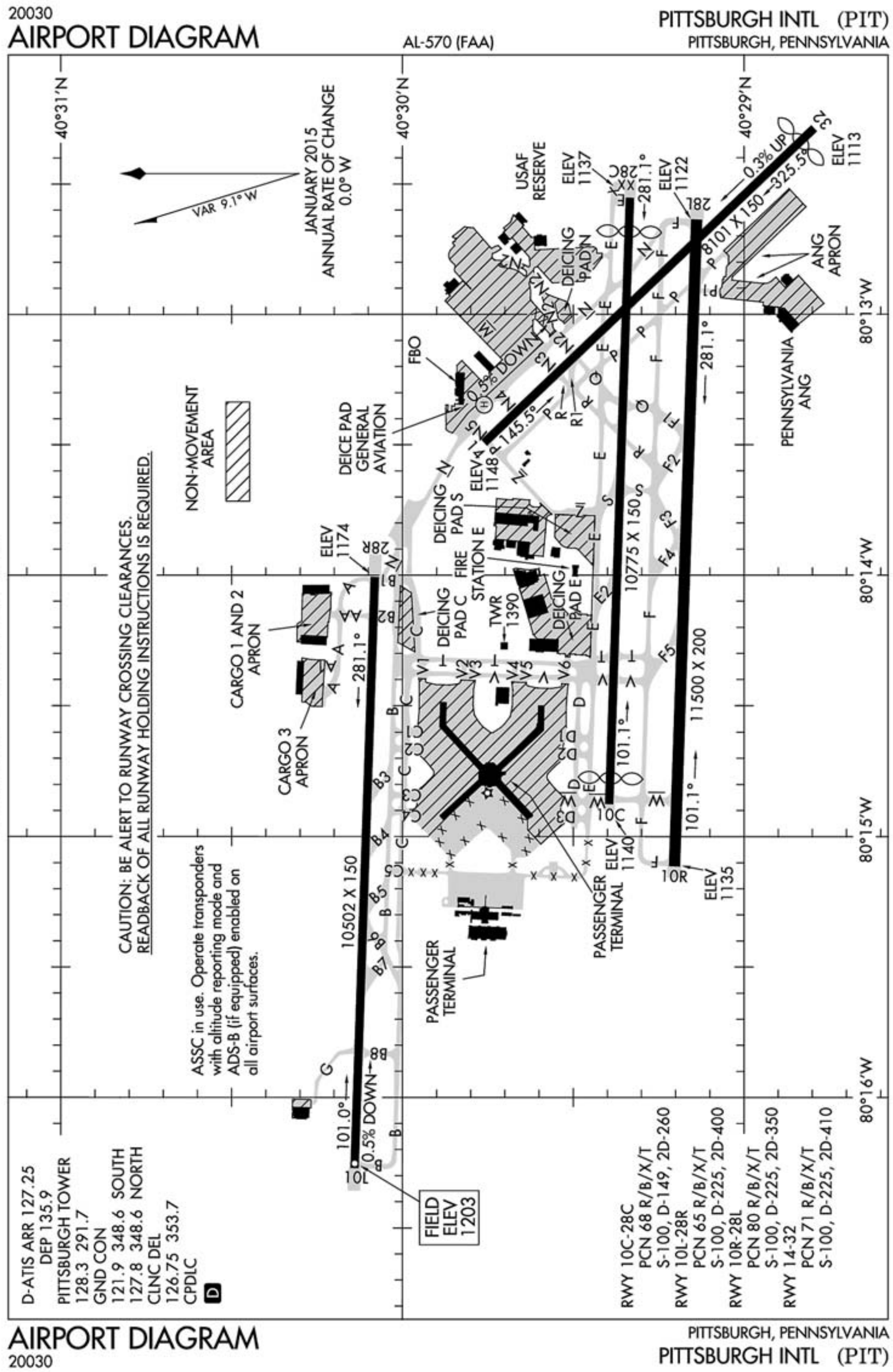
TWY J BTN TWYS K3 AND Q RESTRICTED TO ACFT WITH WINGSPANS 171 FT AND LESS.

ALL ENGINE RUNUPS REQUIRE PPR FM DUTY OPNS OFFICER AT 937−6914/6800; RUNUPS 20 MIN MAXIMUM.

POSSIBLE UNMARKED SHIP OBSTRUCTION TRANSITING EAST OR WESTBOUND ALONG THE DELAWARE RIVER REACHING HEIGHTS OF 189' − BE ALERT WHEN APPROACHING PHL RUNWAY 35 AND WHENEVER CIRCLING OR VISUALLY APPROACHING ALL OTHER RUNWAYS.

BIRDS ON & INVOF ARPT.

Pittsburgh, Pennsylvania
Pittsburgh International
ICAO Identifier KPIT



Pittsburgh, PA
Pittsburgh Intl
ICAO Identifier KPIT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−29−29.1N / 80−13−57.7W
2.2.2 From City: 12 miles NW of PITTSBURGH, PA
2.2.3 Elevation: 1202.9 ft
2.2.5 Magnetic Variation: 9W (2020)
2.2.6 Airport Contact: CHRISTINA A. CASSOTIS
PO BOX 12370, SUITE 4000
PITTSBURGH, PA 15231
((412) 472−3509)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 28C
2.12.2 True Bearing: 272
2.12.3 Dimensions: 10775 ft x 150 ft
2.12.4 PCN: 68 R/B/X/T
2.12.5 Coordinates: 40−29−20.0419N / 80−12−33.1754W
2.12.6 Threshold Elevation: 1136.6 ft
2.12.6 Touchdown Zone Elevation: 1133.5 ft

2.12.1 Designation: 10C
2.12.2 True Bearing: 92
2.12.3 Dimensions: 10775 ft x 150 ft
2.12.4 PCN: 68 R/B/X/T
2.12.5 Coordinates: 40−29−23.6989N / 80−14−52.5475W
2.12.6 Threshold Elevation: 1140.2 ft
2.12.6 Touchdown Zone Elevation: 1141.4 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 92
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 65 R/B/X/T
2.12.5 Coordinates: 40−30−8.4012N / 80−16−16.2687W
2.12.6 Threshold Elevation: 1202.9 ft
2.12.6 Touchdown Zone Elevation: 1202.9 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 272
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 65 R/B/X/T
2.12.5 Coordinates: 40−30−4.8667N / 80−14−0.4048W
2.12.6 Threshold Elevation: 1174.1 ft
2.12.6 Touchdown Zone Elevation: 1174.1 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 272
2.12.3 Dimensions: 11500 ft x 200 ft
2.12.4 PCN: 80 R/B/X/T
2.12.5 Coordinates: 40−29−8.3238N / 80−12−38.1249W
2.12.6 Threshold Elevation: 1121.9 ft
2.12.6 Touchdown Zone Elevation: 1125 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 92
2.12.3 Dimensions: 11500 ft x 200 ft
2.12.4 PCN: 80 R/B/X/T
2.12.5 Coordinates: 40−29−12.2249N / 80−15−6.8568W
2.12.6 Threshold Elevation: 1134.8 ft
2.12.6 Touchdown Zone Elevation: 1134.8 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 136
2.12.3 Dimensions: 8101 ft x 150 ft
2.12.4 PCN: 71 R/B/X/T
2.12.5 Coordinates: 40−29−45.6544N / 80−13−29.5187W
2.12.6 Threshold Elevation: 1147.6 ft
2.12.6 Touchdown Zone Elevation: 1147.6 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 316
2.12.3 Dimensions: 8101 ft x 150 ft
2.12.4 PCN: 71 R/B/X/T
2.12.5 Coordinates: 40−28−47.69N / 80−12−17.2183W
2.12.6 Threshold Elevation: 1113.4 ft
2.12.6 Touchdown Zone Elevation: 1123.6 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 60 ft x 60 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−

2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 28C
2.13.2 Take−off Run Available: 10775
2.13.3 Take−off Distance Available: 10775
2.13.4 Accelerate−Stop Distance Available: 10310
2.13.5 Landing Distance Available: 9708

2.13.1 Designation: 10C
2.13.2 Take−off Run Available: 10775
2.13.3 Take−off Distance Available: 10775
2.13.4 Accelerate−Stop Distance Available: 10173
2.13.5 Landing Distance Available: 9708

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 10502
2.13.3 Take−off Distance Available: 10502
2.13.4 Accelerate−Stop Distance Available: 10502
2.13.5 Landing Distance Available: 10502

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 10502
2.13.3 Take−off Distance Available: 10502
2.13.4 Accelerate−Stop Distance Available: 10102
2.13.5 Landing Distance Available: 10102

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 11500
2.13.3 Take−off Distance Available: 11500
2.13.4 Accelerate−Stop Distance Available: 11500
2.13.5 Landing Distance Available: 11500

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 11500
2.13.3 Take−off Distance Available: 11500
2.13.4 Accelerate−Stop Distance Available: 11492
2.13.5 Landing Distance Available: 11492

2.13.1 Designation: 14
2.13.2 Take−off Run Available: 8101
2.13.3 Take−off Distance Available: 8101
2.13.4 Accelerate−Stop Distance Available: 7366
2.13.5 Landing Distance Available: 7366

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 8101
2.13.3 Take−off Distance Available: 8101
2.13.4 Accelerate−Stop Distance Available: 7801
2.13.5 Landing Distance Available: 7466

2.13.1 Designation: H1
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 28C
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10C
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 32
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ANG OPS
2.14.3 Channel: 311
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P (271−360)

2.14.3 Channel: 121.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (001−090)
2.14.3 Channel: 124.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (181−270)
2.14.3 Channel: 133.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270−089)
2.14.3 Channel: 279.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090−269)
2.14.3 Channel: 360.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 336.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (091−180)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 126.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 353.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (271−360)
2.14.3 Channel: 121.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (091−180)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001−090)
2.14.3 Channel: 124.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (181−270)
2.14.3 Channel: 133.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 279.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 360.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: COMD POST
2.14.3 Channel: 252.1
2.14.5 Hours of Operation:

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 127.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 135.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (SOUTH)
2.14.3 Channel: 119.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (NORTH)
2.14.3 Channel: 124.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 285.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (NORTH)
2.14.3 Channel: 338.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/S
2.14.3 Channel: 125.275
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P (SOUTH)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (NORTH)
2.14.3 Channel: 127.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 291.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS
2.14.3 Channel: 36.35
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 9W
2.19.2 ILS Identification: LXB
2.19.5 Coordinates: 40−30−11.9236N / 80−15−59.9044W
2.19.6 Site Elevation: 1195 ft

2.19.1 ILS Type: Inner Marker for runway 10L. Magnetic variation: 9W
2.19.2 ILS Identification: LXB
2.19.5 Coordinates: 40−30−8.7927N / 80−16−27.004W
2.19.6 Site Elevation: 1175.5 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 9W
2.19.2 ILS Identification: LXB
2.19.5 Coordinates: 40−30−4.5231N / 80−13−47.1428W
2.19.6 Site Elevation: 1160.8 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 9W
2.19.2 ILS Identification: HFE
2.19.5 Coordinates: 40−30−8.7192N / 80−14−14.6252W
2.19.6 Site Elevation: 1170.6 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 9W
2.19.2 ILS Identification: HFE
2.19.5 Coordinates: 40−30−8.7888N / 80−16−31.3335W
2.19.6 Site Elevation: 1214.2 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 9W
2.19.2 ILS Identification: GUT
2.19.5 Coordinates: 40−29−15.3464N / 80−14−53.775W
2.19.6 Site Elevation: 1129.2 ft

2.19.1 ILS Type: Inner Marker for runway 10R. Magnetic variation: 9W
2.19.2 ILS Identification: GUT
2.19.5 Coordinates: 40−29−12.5381N / 80−15−18.8824W
2.19.6 Site Elevation: 1144.8 ft

2.19.1 ILS Type: Localizer for runway 10R. Magnetic variation: 9W
2.19.2 ILS Identification: GUT
2.19.5 Coordinates: 40−29−8.2188N / 80−12−34.1165W
2.19.6 Site Elevation: 1116.6 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 9W
2.19.2 ILS Identification: PFS
2.19.5 Coordinates: 40−29−4.7301N / 80−12−51.2688W
2.19.6 Site Elevation: 1120.3 ft

2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 9W
2.19.2 ILS Identification: PFS
2.19.5 Coordinates: 40−29−12.6437N / 80−15−23.0275W
2.19.6 Site Elevation: 1141.2 ft

2.19.1 ILS Type: DME for runway 32. Magnetic variation: 9W
2.19.2 ILS Identification: TQW
2.19.5 Coordinates: 40−29−48.847N / 80−13−37.583W
2.19.6 Site Elevation: 1134 ft

2.19.1 ILS Type: Glide Slope for runway 32. Magnetic variation: 9W
2.19.2 ILS Identification: TQW
2.19.5 Coordinates: 40−28−52.663N / 80−12−29.1403W
2.19.6 Site Elevation: 1112.2 ft

2.19.1 ILS Type: Localizer for runway 32. Magnetic variation: 9W
2.19.2 ILS Identification: TQW
2.19.5 Coordinates: 40−29−50.4118N / 80−13−35.4629W
2.19.6 Site Elevation: 1139.1 ft

General Remarks:
TWY AA NO TURN−OFF ONTO TWY A FOR ACFT WINGSPAN 171 FT OR GREATER EXC PPR (412) 472−5630. SERVICE−OIL: O−156.

TERML TAXILANES E OF CONCOURSES A & B RESTRD TO GROUP 3 ACFT & SMALLER.

ACFT USING TWY 'N' PROHIBITED TO STOP ON OVERPASS AREA DUE TO POSSIBLE EMERGENCY EVACUATION HAZARD.

ALL JETS DEPARTING RY 28R MUST BE ALIGNED WI RY PRIOR TO APPLYING TKOF POWER.

DEER & BIRDS ON & INVOF ARPT.

TERMINAL APRON CONTROL FREQS ARE 130.77 FOR NORTH APRON; 131.37 FOR SOUTH APRON.

ANG: OPR 1130−2030Z++MON−FRI EXCP HOL. (CLSD EV OTH MON.)

ANG ACFT MUST CTC TANKER 303.0/FTR OPNS 293.7 BEFORE CROSSING RWY 28L TO OBTAIN CLNC TO ENTER.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

SERVICE−TRAN ALERT: NO PRIORITY BASIS.

FUEL: A++ PROVIDED BY ANG AND AFRC.(MIL).

SERVICE−JASU: (ANG) (A/M32A−86) (AM 32−95; (AFRC − 2(A/M32−86 (AM32−95).

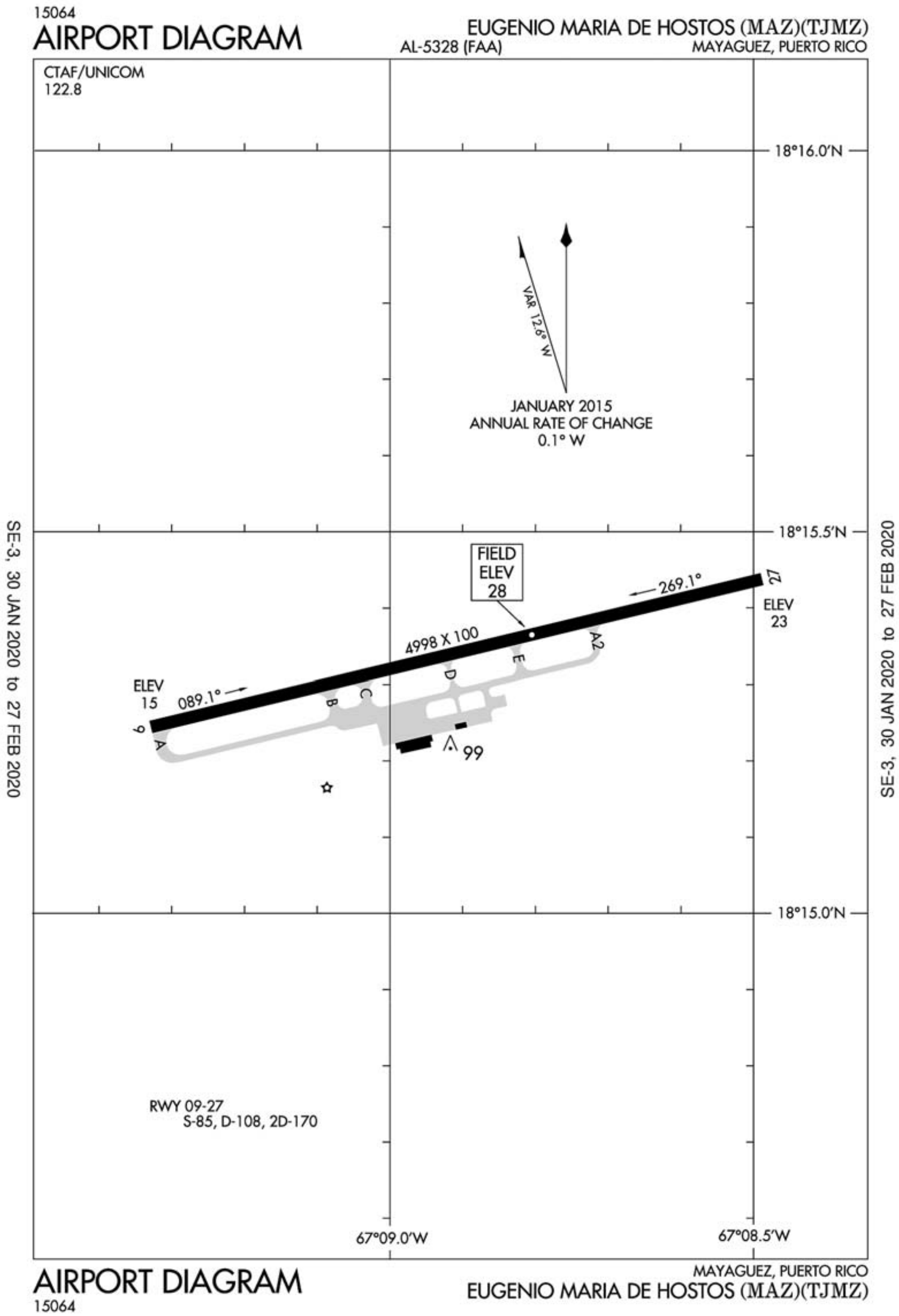
SERVICE−FLUID: LPOX LHNIT.

ATCT IS AUTHORIZED TO HAVE ACFT LINE−UP & WAIT ON RYS 28L AT TWY 'P' DURG HRS OF DARKNESS. THE SPECIFIC RY SHALL BE USED ONLY FOR DEPARTURES & THE INTXN MUST BE VSB FM ATCT.

TWY G INTXN AT RY 10L/28R RIGHT TURN NA.

PPR/OFFL BUS MIN 48 HR CTC AFLD MGMT DSN 277 8163, C412 474 8163. NO TRAN SVC. AFLD MGT NML DUTY HRS 1230 0400++MON FRI, EXC HOL. UNIT TRAINING ASSEMBLY 1300 2100Z++SAT SUN.TRAN ACFT MUST HAVE APPVL OF 911OG/CC FOR PPR DUR OFF DUTY HR. NO SVC AVBL FOR SPACE AVBL PAX DUR OFF DUTY HR. CALL PITT COMD POST (IRON CITY) BY RDO PRIOR TO ENTRY TO AFRC RAMP. NON STD RAMP MARKINGS DUE TO CONSTR. ALFD MGMT DOES NOT ISSUE OR STOR COMSEC. COMSEC STOR CTC COMD POST DSN 277 8146.

Mayaguez, Puerto Rico
Eugenio Maria De Hostos
ICAO Identifier TJMZ



Mayaguez, PR
Eugenio Maria De Hostos
ICAO Identifier TJMZ

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 18−15−20.5N / 67−8−54.5W

2.2.2 From City: 3 miles N of MAYAGUEZ, PR

2.2.3 Elevation: 27.7 ft

2.2.5 Magnetic Variation: 10W (1985)

2.2.6 Airport Contact: EDGAR SIERRA
BOX 710
MAYAGUEZ, PR 709
(787−832−3390)

2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, MON−FRI Days, 0730−1600 Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: NO

2.4.2 Fuel Types:

2.4.5 Hangar Space: NO

2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 27

2.12.2 True Bearing: 256

2.12.3 Dimensions: 4998 ft x 100 ft

2.12.4 PCN:

2.12.5 Coordinates: 18−15−26.2517N / 67−8−29.2981W

2.12.6 Threshold Elevation: 23.2 ft

2.12.6 Touchdown Zone Elevation: 27.7 ft

2.12.1 Designation: 09

2.12.2 True Bearing: 76

2.12.3 Dimensions: 4998 ft x 100 ft

2.12.4 PCN:

2.12.5 Coordinates: 18−15−14.6817N / 67−9−19.728W

2.12.6 Threshold Elevation: 15.3 ft

2.12.6 Touchdown Zone Elevation: 27.6 ft

AD 2.13 Declared Distances

2.13.1 Designation: 27

2.13.2 Take−off Run Available:

2.13.3 Take−off Distance Available:

2.13.4 Accelerate−Stop Distance Available:

2.13.5 Landing Distance Available:

2.13.1 Designation: 09

2.13.2 Take−off Run Available:

2.13.3 Take−off Distance Available:

2.13.4 Accelerate−Stop Distance Available:

2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 27

2.14.2 Approach Lighting System:

2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 09

2.14.2 Approach Lighting System:

2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 Navigation Aid Type: NDB. Magnetic variation: 10W

2.19.2 Navigation Aid Identification: MAZ

2.19.5 Coordinates: 18−15−13.529N / 67−9−8.947W

2.19.6 Site Elevation:

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 10W

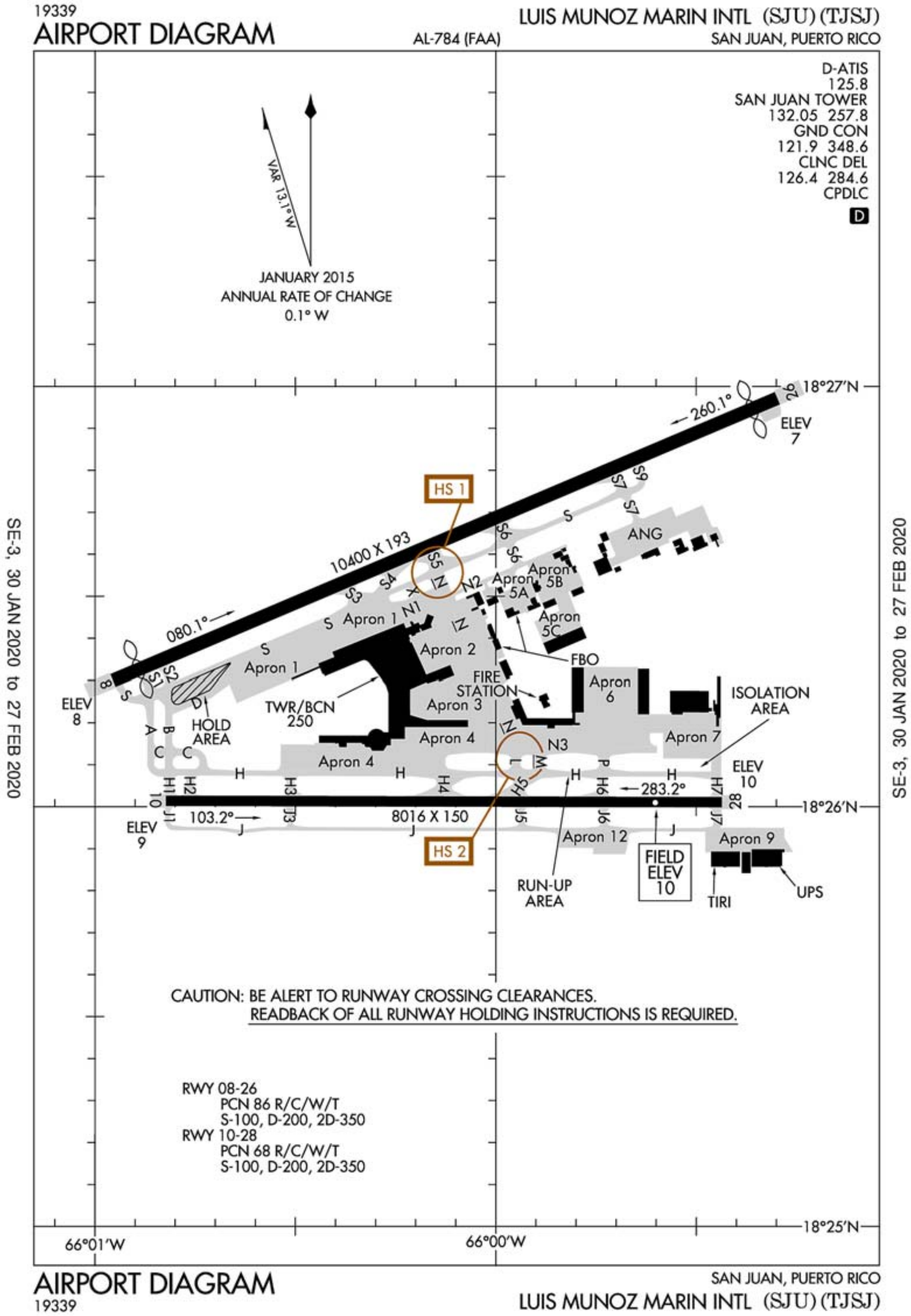
2.19.2 Navigation Aid Identification: MAZ

2.19.5 Coordinates: 18−15−23.2293N / 67−9−3.7215W

2.19.6 Site Elevation: 18 ft

General Remarks:
1200’ TWR /1207’ MSL/ 9 NM NNW.
FOR CD IF FREQ ARE OTS CTC SAN JUAN CERAP AT 787−253−8664/8667
BIRDS ON AND INVOF ARPT.

San Juan, Puerto Rico
Luis Munoz Marin International
ICAO Identifier TJSJ



San Juan, PR
Luis Munoz Marin Intl
ICAO Identifier TJSJ

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 18−26−21.837N / 66−0−7.68W
2.2.2 From City: 3 miles SE of SAN JUAN, PR
2.2.3 Elevation: 9.6 ft
2.2.5 Magnetic Variation: 11W (1985)
2.2.6 Airport Contact: MR. JORGE HERNANDEZ
P. O. BOX 38085
SAN JUAN, PR 937
((787) 289−7240)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,115,A+,A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/2005

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 08
2.12.2 True Bearing: 67
2.12.3 Dimensions: 10400 ft x 193 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18−26−17.9673N / 66−0−57.3115W
2.12.6 Threshold Elevation: 8.2 ft
2.12.6 Touchdown Zone Elevation: 9.3 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 247
2.12.3 Dimensions: 10400 ft x 193 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18−26−58.2684N / 65−59−17.8783W
2.12.6 Threshold Elevation: 6.9 ft
2.12.6 Touchdown Zone Elevation: 7.4 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 90
2.12.3 Dimensions: 8016 ft x 150 ft
2.12.4 PCN: 68 R/C/W/T
2.12.5 Coordinates: 18−26−0.8092N / 66−0−49.4179W
2.12.6 Threshold Elevation: 9.3 ft
2.12.6 Touchdown Zone Elevation: 9.3 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8016 ft x 150 ft
2.12.4 PCN: 68 R/C/W/T
2.12.5 Coordinates: 18−26−0.6107N / 65−59−26.159W
2.12.6 Threshold Elevation: 9.5 ft
2.12.6 Touchdown Zone Elevation: 9.6 ft

AD 2.13 Declared Distances

2.13.1 Designation: 08
2.13.2 Take−off Run Available: 9784
2.13.3 Take−off Distance Available: 10400
2.13.4 Accelerate−Stop Distance Available: 9784
2.13.5 Landing Distance Available: 9384

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 8128
2.13.3 Take−off Distance Available: 10400
2.13.4 Accelerate−Stop Distance Available: 9600
2.13.5 Landing Distance Available: 9600

2.13.1 Designation: 10
2.13.2 Take−off Run Available: 8016
2.13.3 Take−off Distance Available: 8016
2.13.4 Accelerate−Stop Distance Available: 8016
2.13.5 Landing Distance Available: 8016

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 8016
2.13.3 Take−off Distance Available: 8016
2.13.4 Accelerate−Stop Distance Available: 8016
2.13.5 Landing Distance Available: 8016

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 10
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 28
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: APCH/P DEP/P (WEST & SW)
2.14.3 Channel: 119.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (NORTH & EAST)
2.14.3 Channel: 120.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (WEST & SW)
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (NORTH & EAST)
2.14.3 Channel: 290.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 284.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST & SW)
2.14.3 Channel: 119.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH & EAST)
2.14.3 Channel: 120.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST & SW)
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH & EAST)
2.14.3 Channel: 290.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 125.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 132.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 11W
2.19.2 ILS Identification: SJU
2.19.5 Coordinates: 18−26−27.0397N / 66−0−45.5699W
2.19.6 Site Elevation: 4.2 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 11W
2.19.2 ILS Identification: SJU
2.19.5 Coordinates: 18−26−59.7947N / 65−59−14.1228W
2.19.6 Site Elevation: 5.6 ft

2.19.1 ILS Type: Outer Marker for runway 08. Magnetic variation: 11W
2.19.2 ILS Identification: SJU
2.19.5 Coordinates: 18−24−31.8227N / 66−5−21.8301W
2.19.6 Site Elevation: 66.5 ft

2.19.1 ILS Type: DME for runway 10. Magnetic variation: 11W
2.19.2 ILS Identification: CLA
2.19.5 Coordinates: 18−26−2.5352N / 65−59−15.6282W
2.19.6 Site Elevation: 18.2 ft

2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 11W
2.19.2 ILS Identification: CLA
2.19.5 Coordinates: 18−25−57.5628N / 66−0−39.041W
2.19.6 Site Elevation: 4.5 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 11W
2.19.2 ILS Identification: CLA
2.19.5 Coordinates: 18−26−0.5899N / 65−59−15.5192W
2.19.6 Site Elevation: 9 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 11W
2.19.2 Navigation Aid Identification: SJU
2.19.5 Coordinates: 18−26−46.6101N / 65−59−22.2272W
2.19.6 Site Elevation: 5.7 ft

General Remarks:
MILITARY: ANG: CAUTION − MUNIZ ANG APN HGR OBST LGTS PARTIALLY OTS.

TWY J BTN J1 AND J5 (NOT INCLUDING J5) CLSD TO ACFT WITH GREATER THAN 118 FT WINGSPAN.

ACFT 180 TURNS ON TWYS REQUIRES OPS COORDINATIONS.

FBO/GROUND HANDLER MUST SUBMIT 72 HRS PPR FOR ALL MIL ACFT TO: CCO@AEROSTARAIRPORTS.-COM OR BY PHONE TO: 787−253−0979

MILITARY: ANG: RSTD − RDCD WINGTIP CLNC FOR WIDE BODY ACFT SW SIDE OF MUNIZ ANGB APN DUE TO TEMPO MOBILE OBST.

MILITARY: ANG: INBD ACFT ORIGINATING FR OCONUS WITH A PPR FOR MUNIZ ANGB APN MUST CLEAR CUSTOMS AND BORDER PROTECTION AT CIV SIDE. PRIOR COORD MUST BE MADE WITH ANG AMOPS, FONE 740−9629 AT LEAST ONE BUS DAY PRIOR TO ARRIVAL.

ALL PVT AND CORPORATE AIRCRAFT MUST CONTACT ARPT OPS, BEFORE ARRIVAL, FOR FBOS & GROUND HANDLING INFO AT 787−253−0979.

MILITARY: ANG: CAUTION − UNLGTD ROLLING GATE AT ENTRANCE OF MUNIZ ANGB APN; GATE MUST BE FULLY EXTDD PRIOR TO ACFT TRSN INTO ANG APN.

ENGINE RUNUPS PROHIBITED ON GATES AREA.

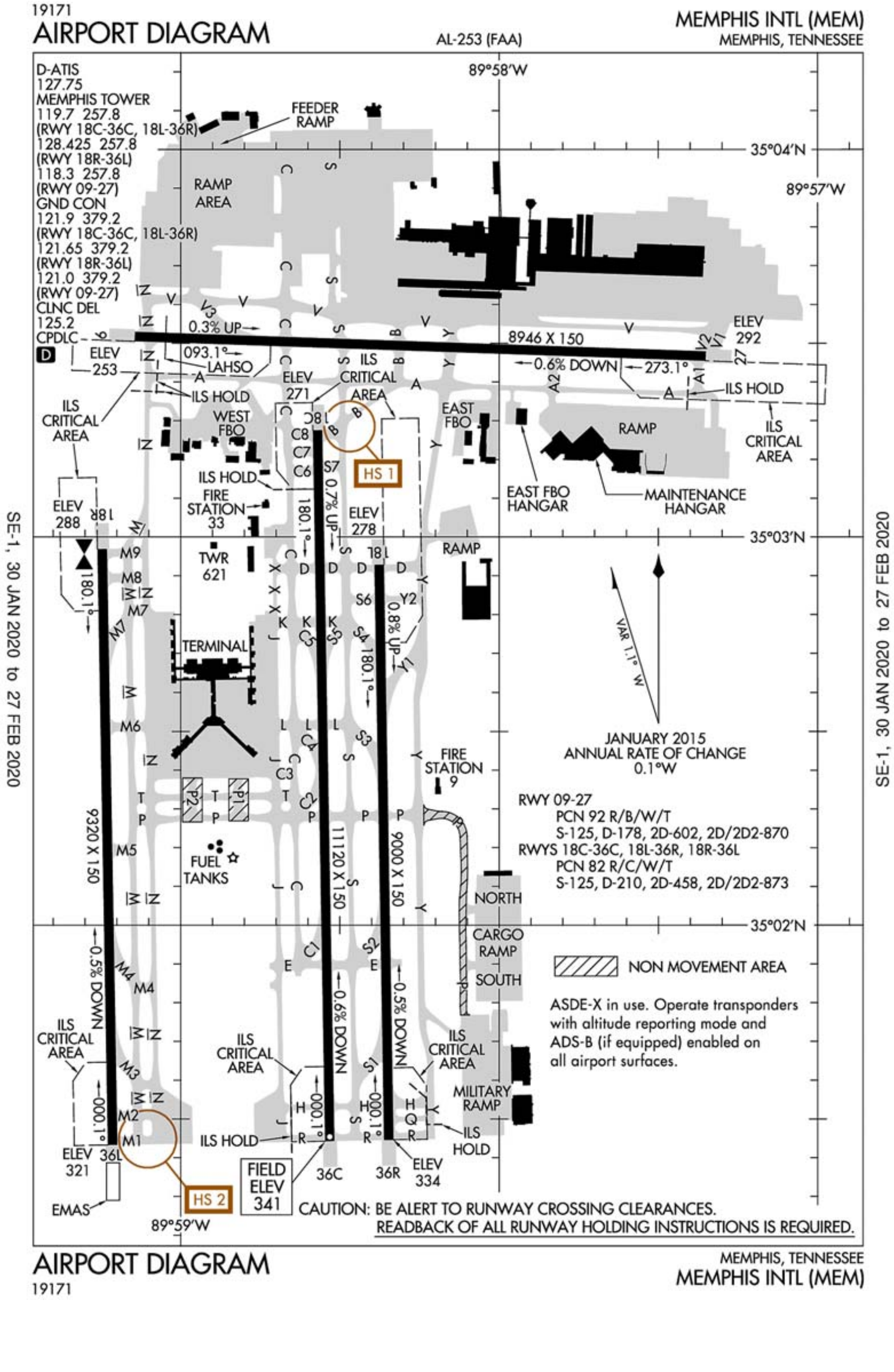
APRON 12 AVBL FOR GA ACFT ONLY.

BASE OPS 1130−2000Z MON−FRI, CLSD WKEND AND HOL.

TWY N IS UNDER CONSTRUCTION. PLEASE, CONTACT ARPT OPS AT 787−253−0979 FOR FURTHER DETAILS AND RESTRICTIONS.

TWY S BTN TWY S2 AND TWY S5 CLSD LGTD AND BARRICADED.

Memphis, Tennessee
Memphis International
ICAO Identifier KMEM



Memphis, TN
Memphis Intl
ICAO Identifier KMEM

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35−2−32.681N / 89−58−36.045W
2.2.2 From City: 3 miles S of MEMPHIS, TN
2.2.3 Elevation: 340.9 ft
2.2.5 Magnetic Variation: 1W (2020)
2.2.6 Airport Contact: SCOTT A BROCKMAN
2491 WINCHESTER RD.
MEMPHIS, TN 38116
(901−922−8000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A+,A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 92
2.12.3 Dimensions: 8946 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 35−3−31.046N / 89−59−8.6536W
2.12.6 Threshold Elevation: 253.2 ft
2.12.6 Touchdown Zone Elevation: 258.7 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 272
2.12.3 Dimensions: 8946 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 35−3−28.0128N / 89−57−21.0816W
2.12.6 Threshold Elevation: 292 ft
2.12.6 Touchdown Zone Elevation: 292 ft

2.12.1 Designation: 18C
2.12.2 True Bearing: 179
2.12.3 Dimensions: 11120 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−3−16.5411N / 89−58−34.2156W
2.12.6 Threshold Elevation: 270.6 ft
2.12.6 Touchdown Zone Elevation: 290.1 ft

2.12.1 Designation: 36C
2.12.2 True Bearing: 359
2.12.3 Dimensions: 11120 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−1−26.5803N / 89−58−31.8977W
2.12.6 Threshold Elevation: 340.9 ft
2.12.6 Touchdown Zone Elevation: 340.9 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−1−26.7376N / 89−58−20.7544W
2.12.6 Threshold Elevation: 334.3 ft
2.12.6 Touchdown Zone Elevation: 334.7 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−2−55.7402N / 89−58−22.6229W
2.12.6 Threshold Elevation: 277.6 ft
2.12.6 Touchdown Zone Elevation: 300.9 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9320 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−2−58.1489N / 89−59−14.7913W
2.12.6 Threshold Elevation: 288.4 ft
2.12.6 Touchdown Zone Elevation: 294.7 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9320 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35−1−25.9852N / 89−59−12.8121W
2.12.6 Threshold Elevation: 320.8 ft
2.12.6 Touchdown Zone Elevation: 320.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 09
2.13.2 Take−off Run Available: 8946
2.13.3 Take−off Distance Available: 8946
2.13.4 Accelerate−Stop Distance Available: 8946
2.13.5 Landing Distance Available: 8946

2.13.1 Designation: 27

2.13.2 Take−off Run Available: 8946
2.13.3 Take−off Distance Available: 8946
2.13.4 Accelerate−Stop Distance Available: 8946
2.13.5 Landing Distance Available: 8946

2.13.1 Designation: 18C
2.13.2 Take−off Run Available: 11120
2.13.3 Take−off Distance Available: 11120
2.13.4 Accelerate−Stop Distance Available: 11120
2.13.5 Landing Distance Available: 11120

2.13.1 Designation: 36C
2.13.2 Take−off Run Available: 11120
2.13.3 Take−off Distance Available: 11120
2.13.4 Accelerate−Stop Distance Available: 10715
2.13.5 Landing Distance Available: 10715

2.13.1 Designation: 36R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 18L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 18R
2.13.2 Take−off Run Available: 9320
2.13.3 Take−off Distance Available: 9320
2.13.4 Accelerate−Stop Distance Available: 9320
2.13.5 Landing Distance Available: 9320

2.13.1 Designation: 36L
2.13.2 Take−off Run Available: 9320
2.13.3 Take−off Distance Available: 9320
2.13.4 Accelerate−Stop Distance Available: 9320
2.13.5 Landing Distance Available: 9320

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 27
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18C
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 36C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 1W
2.19.2 ILS Identification: MEM
2.19.5 Coordinates: 35−3−27.2174N / 89−58−56.2128W
2.19.6 Site Elevation: 252.5 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 1W
2.19.2 ILS Identification: MEM
2.19.5 Coordinates: 35−3−27.6511N / 89−57−7.9461W
2.19.6 Site Elevation: 296.5 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 1W
2.19.2 ILS Identification: JIM
2.19.5 Coordinates: 35−3−24.4908N / 89−57−36.2529W
2.19.6 Site Elevation: 277.2 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 1W
2.19.2 ILS Identification: JIM
2.19.5 Coordinates: 35−3−31.3982N / 89−59−20.811W
2.19.6 Site Elevation: 252.2 ft

2.19.1 ILS Type: Glide Slope for runway 18C. Magnetic variation: 1W
2.19.2 ILS Identification: SDU
2.19.5 Coordinates: 35−3−7.6024N / 89−58−37.5142W
2.19.6 Site Elevation: 273.1 ft

2.19.1 ILS Type: Localizer for runway 18C. Magnetic variation: 1W
2.19.2 ILS Identification: SDU
2.19.5 Coordinates: 35−1−10.2462N / 89−58−31.5613W
2.19.6 Site Elevation: 345.5 ft

2.19.1 ILS Type: DME for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.5 Coordinates: 35−3−22.0479N / 89−58−37.3452W
2.19.6 Site Elevation: 268.9 ft

2.19.1 ILS Type: Glide Slope for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.5 Coordinates: 35−1−38.095N / 89−58−36.9423W
2.19.6 Site Elevation: 329.5 ft

2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.5 Coordinates: 35−3−22.514N / 89−58−34.3391W
2.19.6 Site Elevation: 261.2 ft

2.19.1 ILS Type: DME for runway 18L. Magnetic variation: 1W
2.19.2 ILS Identification: EXS
2.19.5 Coordinates: 35−1−16.8761N / 89−58−19.3033W
2.19.6 Site Elevation: 328.2 ft

2.19.1 ILS Type: Glide Slope for runway 18L. Magnetic variation: 1W
2.19.2 ILS Identification: EXS
2.19.5 Coordinates: 35−2−46.7849N / 89−58−17.6254W
2.19.6 Site Elevation: 278.6 ft

2.19.1 ILS Type: Localizer for runway 18L. Magnetic variation: 1W
2.19.2 ILS Identification: EXS
2.19.5 Coordinates: 35−1−16.6952N / 89−58−20.5424W
2.19.6 Site Elevation: 344.5 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 1W
2.19.2 ILS Identification: MYO
2.19.5 Coordinates: 35−3−5.9229N / 89−58−19.6804W
2.19.6 Site Elevation: 282.5 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 1W
2.19.2 ILS Identification: MYO
2.19.5 Coordinates: 35−1−38.0016N / 89−58−16.1795W
2.19.6 Site Elevation: 324.2 ft

2.19.1 ILS Type: Localizer for runway 36R. Magnetic variation: 1W
2.19.2 ILS Identification: MYO
2.19.5 Coordinates: 35−3−6.1649N / 89−58−22.8431W
2.19.6 Site Elevation: 278.7 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 1W
2.19.2 ILS Identification: OOI
2.19.5 Coordinates: 35−2−48.6497N / 89−59−18.4713W
2.19.6 Site Elevation: 287.1 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 1W
2.19.2 ILS Identification: OOI
2.19.5 Coordinates: 35−1−17.2969N / 89−59−12.6028W
2.19.6 Site Elevation: 321.4 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 1W
2.19.2 ILS Identification: OHN
2.19.5 Coordinates: 35−3−6.901N / 89−59−10.0928W
2.19.6 Site Elevation: 285.7 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 1W
2.19.2 ILS Identification: OHN
2.19.5 Coordinates: 35−1−38.7288N / 89−59−17.8741W
2.19.6 Site Elevation: 308.9 ft

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 1W
2.19.2 ILS Identification: OHN
2.19.5 Coordinates: 35−3−8.5885N / 89−59−14.9936W
2.19.6 Site Elevation: 277.6 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 1E
2.19.2 Navigation Aid Identification: MEM
2.19.5 Coordinates: 35−0−54.3808N / 89−58−59.5258W
2.19.6 Site Elevation: 363.4 ft

General Remarks:
TWY V BETWEEN SPOT 7W AND AER 27 RESTRICTED TO ACFT WITH WINGSPANS OF 171 FT 6 INCHES OR LESS.

PPR FOR TAXI CLNC FROM NORTH AND SOUTH CARGO RAMP PRKG ON FREQ 121.9.

AIRCRAFT WITH WINGSPANS GREATER THAN 118 FEET RESTRICTED FROM TAXIING ON TWY J NORTH OF TWY C3.

LARGE & HEAVY EASTBOUND ACFT ON TWY V FOR RY 27 HOLD SHORT AT MINIMUM THRUST AREA SIGN.

NOISE ABATEMENT PROCEDURES IN EFFECT. SUCCESSIVE AND/OR SIMULTANEOUS DEPARTURES APPROVED ON RY 36L−18R AND RY 36C−18C OR RY 36L−18R AND RY 36R−18L WITH COURSE DIVERGENCE NO LATER THAN 2.27 NM FROM RY END.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

BASH PHASE II APR−MAY & AUG−OCT; CURRENT BIRD WATCH COND ARE NOT RPT ON ATIS.

IF POSSIBLE ALL ACFT CONDUCT GROUND OPNS WITH TRANSPONDERS ON.

MILITARY: MIL RAMP OPS AT REDUCED ARFF, DOWNGRADED TO YELLOW.

PPR FOR TAXI CLNC ON TWY 'N' NORTH OF TWY 'V', TWY 'S' NORTH TWY 'V', AND TWY 'C' NORTH OF TWY 'V' CTC FEDEX RAMP ATCT ON FREQ 131.5.

TWY P2 IS A NON−MOVMT AREA INDEFLY.

TWY P1 BTN TWY T AND TRML RAMP CLSD INDEFLY.

TWY P2 BTN TWY T AND TRML RAMP CLSD INDEFLY.

HELICOPTER OPERATIONS PROHIBITED TO/FROM TERMINAL BUILDING.

COMMUNICATIONS−ANG COMD POST: RADIO CALL− "GRACELAND OPS".

ANG−PPR DSN 726−7131/7505, C901−291−7131/7505. MIL RAMP OPR 1230−0430Z++ MON−FRI, CLSD ALTN MON AND HOL DUE ALTN WORK SKED. MIL RAMP CLSD OUTSIDE OF PUBL HR WITHOUT OG/CC APVL DSN 726−7557, C901−291−7557. TSNT ACFT MAINT NOT AVBL. REFUEL SVC FOR OTR THAN C17 ACFT RQR QUALIFIED CREW CHIEF OR CREWMEMBERS. NON−C17 ACFT SUPPORT PRVDD BY CONTRACT FBO ON FLD. SECURITY AVBL 24 HRS, DSN 726−7101, C901−291−7101. COMD POST DSN 726−7148/7311/7312, C901−291−7148/7311/7312. OPR 1230−0430Z++ MON−FRI, CLSD ALTN MON AND HOL DUE TO ALTN WORK SCHED. AFLD MGR DOES NOT ISSUE OR STORE COMSEC FOR TRAN CRES. TMPRY STOR OF CLASSIFIED MATERIALS UP TO TOP SECRET AT COMD POST.

ANG: PPR 24 HR PN RQR, LTD TO OFFL BUS ONLY.

CTC RAMP CONTROL ON 121.8 FOR ENTRY ON TO ANG RAMP. ANG FREQS 138.95 353.45. AFTER HRS CTC COMMAND POST AT DSN 726−7148, C901−291−7311/7312 OR SECURITY FORCES AT DSN 726−7101, C901−291−7101/7133.

TWY P1 IS DESIGNATED AS A NON−MOVEMENT AREA.

READ BACK ALL HOLD SHORT INSTRUCTIONS REQURED.

TWY N BTN APCH END RWY 09 AND TXL N CLSD TO ACFT WINGSPAN MORE THAN 171 FT INDEFLY.

ANG−ATIS INFO REPORTS BIRD ACT H24 IN AREA

TWY N NORTH OF TWY V, TWY C NORTH OF TWY V AND TWY S NORTH OF TWY V DESIGNATED AS NON−MOVEMENT AREAS.

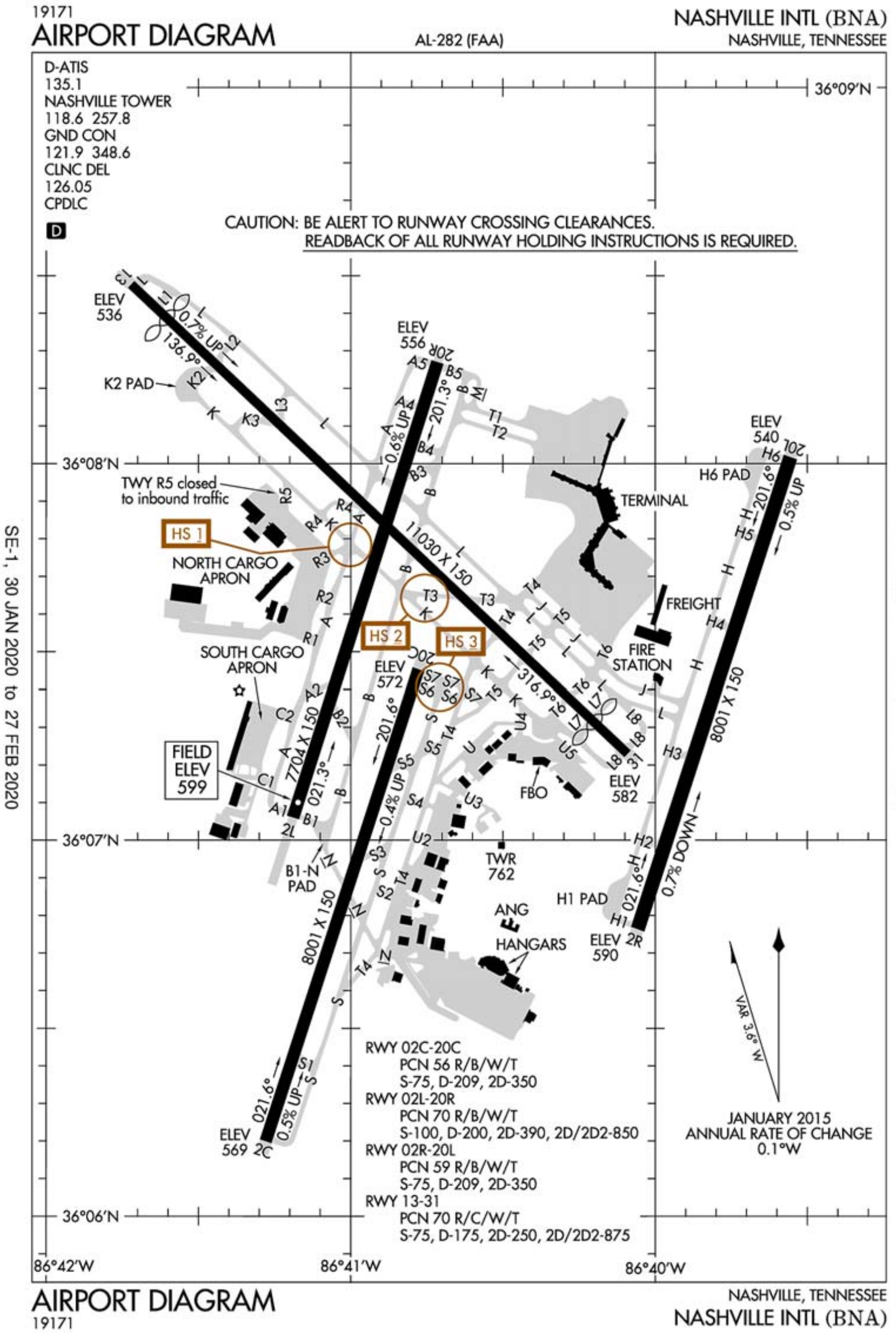
LARGE FLOCKS OF BIRDS INVOF ARPT.

ALL TRANSIENT ACFT RQR −FOLLOW ME− ASSIST ENTERING ANG RAMP. USE OF ANG RAMP RQRS PPR V966−8131 −FOR OFFICIAL BUSINESS ONLY−.

TWY V BTN TWY S TWY Y RESTRICTED TO ACFT WITH TAIL HEIGHTS LESS THAN 65 FT 10 INCHES.

ACFT WITH WINGSPANS GREATER THAN 171 FT 6” RSTD FM TAXI ON TWY ’N’ BTWN TWY ’M7’ & TWY ’T’.

Nashville, Tennessee
Nashville International
ICAO Identifier KBNA



Nashville, TN
Nashville Intl
ICAO Identifier KBNA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36−7−28.1N / 86−40−41.4W
2.2.2 From City: 5 miles SE of NASHVILLE, TN
2.2.3 Elevation: 599 ft
2.2.5 Magnetic Variation: 3W (2010)
2.2.6 Airport Contact: DOUG KREULEN
ONE TERMINAL DR. SUITE 501
NASHVILLE, TN 37214
(615−275−1703)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 02C
2.12.2 True Bearing: 18
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 56 R/B/W/T
2.12.5 Coordinates: 36−6−11.9905N / 86−41−16.6587W
2.12.6 Threshold Elevation: 569.1 ft
2.12.6 Touchdown Zone Elevation: 586.7 ft

2.12.1 Designation: 20C
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 56 R/B/W/T
2.12.5 Coordinates: 36−7−27.2404N / 86−40−46.5498W
2.12.6 Threshold Elevation: 571.9 ft
2.12.6 Touchdown Zone Elevation: 587.6 ft

2.12.1 Designation: 02L
2.12.2 True Bearing: 18
2.12.3 Dimensions: 7704 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 36−7−3.6337N / 86−41−11.3102W
2.12.6 Threshold Elevation: 598.7 ft
2.12.6 Touchdown Zone Elevation: 599 ft

2.12.1 Designation: 20R
2.12.2 True Bearing: 198
2.12.3 Dimensions: 7704 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 36−8−16.2327N / 86−40−42.8381W
2.12.6 Threshold Elevation: 555.5 ft
2.12.6 Touchdown Zone Elevation: 578 ft

2.12.1 Designation: 02R
2.12.2 True Bearing: 18
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 59 R/B/W/T
2.12.5 Coordinates: 36−6−45.7669N / 86−40−3.5139W
2.12.6 Threshold Elevation: 589.8 ft
2.12.6 Touchdown Zone Elevation: 589.8 ft

2.12.1 Designation: 20L
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 59 R/B/W/T
2.12.5 Coordinates: 36−8−1.0115N / 86−39−33.3955W
2.12.6 Threshold Elevation: 539.9 ft
2.12.6 Touchdown Zone Elevation: 550.5 ft

2.12.1 Designation: 13
2.12.2 True Bearing: 133
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.4 PCN: 70 R/C/W/T
2.12.5 Coordinates: 36−8−28.5987N / 86−41−43.278W
2.12.6 Threshold Elevation: 535.9 ft
2.12.6 Touchdown Zone Elevation: 565.8 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 313
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.4 PCN: 70 R/C/W/T
2.12.5 Coordinates: 36−7−13.7846N / 86−40−5.438W
2.12.6 Threshold Elevation: 582.3 ft
2.12.6 Touchdown Zone Elevation: 577.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 02C
2.13.2 Take−off Run Available: 8001
2.13.3 Take−off Distance Available: 8001
2.13.4 Accelerate−Stop Distance Available: 7601
2.13.5 Landing Distance Available: 7601

2.13.1 Designation: 20C

2.13.2 Take−off Run Available: 8001
2.13.3 Take−off Distance Available: 8001
2.13.4 Accelerate−Stop Distance Available: 8001
2.13.5 Landing Distance Available: 8001

2.13.1 Designation: 02L
2.13.2 Take−off Run Available: 7702
2.13.3 Take−off Distance Available: 7702
2.13.4 Accelerate−Stop Distance Available: 7702
2.13.5 Landing Distance Available: 7702

2.13.1 Designation: 20R
2.13.2 Take−off Run Available: 7702
2.13.3 Take−off Distance Available: 7702
2.13.4 Accelerate−Stop Distance Available: 7702
2.13.5 Landing Distance Available: 7702

2.13.1 Designation: 02R
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 20L
2.13.2 Take−off Run Available: 8000
2.13.3 Take−off Distance Available: 8000
2.13.4 Accelerate−Stop Distance Available: 8000
2.13.5 Landing Distance Available: 8000

2.13.1 Designation: 13
2.13.2 Take−off Run Available: 10288
2.13.3 Take−off Distance Available: 11029
2.13.4 Accelerate−Stop Distance Available: 10288
2.13.5 Landing Distance Available: 9487

2.13.1 Designation: 31
2.13.2 Take−off Run Available: 10228
2.13.3 Take−off Distance Available: 11029
2.13.4 Accelerate−Stop Distance Available: 10228
2.13.5 Landing Distance Available: 9487

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02C
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 20C
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 02L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 20R
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 02R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 20L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 13
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V6L

2.14.1 Designation: 31
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALCP
2.14.3 Channel: 314.4
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P (WEST)
2.14.3 Channel: 372
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (EAST)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 126.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (EAST)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST)
2.14.3 Channel: 119.35

2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST)
2.14.3 Channel: 372
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 135.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (WEST)
2.14.3 Channel: 119.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (WEST)
2.14.3 Channel: 372
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: Glide Slope for runway 02C. Magnetic variation: 3W
2.19.2 ILS Identification: EZN
2.19.5 Coordinates: 36−6−22.6383N / 86−41−16.8862W
2.19.6 Site Elevation: 570.5 ft

2.19.1 ILS Type: Localizer for runway 02C. Magnetic variation: 3W
2.19.2 ILS Identification: EZN
2.19.5 Coordinates: 36−7−32.95N / 86−40−44.27W
2.19.6 Site Elevation: 574.1 ft

2.19.1 ILS Type: DME for runway 02L. Magnetic variation: 3W
2.19.2 ILS Identification: BNA
2.19.5 Coordinates: 36−8−26.4813N / 86−40−42.363W
2.19.6 Site Elevation: 554.3 ft

2.19.1 ILS Type: Glide Slope for runway 02L. Magnetic variation: 3W
2.19.2 ILS Identification: BNA
2.19.5 Coordinates: 36−7−12.9488N / 86−41−2.5412W
2.19.6 Site Elevation: 590.9 ft

2.19.1 ILS Type: Inner Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS Identification: BNA
2.19.5 Coordinates: 36−6−54.8265N / 86−41−14.7677W
2.19.6 Site Elevation: 594.6 ft

2.19.1 ILS Type: Localizer for runway 02L. Magnetic variation: 3W
2.19.2 ILS Identification: BNA
2.19.5 Coordinates: 36−8−25.7749N / 86−40−39.0921W
2.19.6 Site Elevation: 545.3 ft

2.19.1 ILS Type: Glide Slope for runway 20R. Magnetic variation: 3W
2.19.2 ILS Identification: VIY
2.19.5 Coordinates: 36−8−5.8205N / 86−40−42.7611W
2.19.6 Site Elevation: 554.7 ft

2.19.1 ILS Type: Localizer for runway 20R. Magnetic variation: 3W
2.19.2 ILS Identification: VIY
2.19.5 Coordinates: 36−6−49.6794N / 86−41−16.78W
2.19.6 Site Elevation: 598.2 ft

2.19.1 ILS Type: DME for runway 02R. Magnetic variation: 3W
2.19.2 ILS Identification: UQU
2.19.5 Coordinates: 36−8−9.8908N / 86−39−35.7775W
2.19.6 Site Elevation: 536.9 ft

2.19.1 ILS Type: Glide Slope for runway 02R. Magnetic variation: 3W
2.19.2 ILS Identification: UQU
2.19.5 Coordinates: 36−6−56.0107N / 86−39−54.7386W
2.19.6 Site Elevation: 576.7 ft

2.19.1 ILS Type: Inner Marker for runway 02R. Magnetic variation: 3W
2.19.2 ILS Identification: UQU
2.19.5 Coordinates: 36−6−37.6894N / 86−40−6.7445W
2.19.6 Site Elevation: 569 ft

2.19.1 ILS Type: Localizer for runway 02R. Magnetic variation: 3W
2.19.2 ILS Identification: UQU
2.19.5 Coordinates: 36−8−10.5384N / 86−39−29.5817W
2.19.6 Site Elevation: 531 ft

2.19.1 ILS Type: DME for runway 20L. Magnetic variation: 3W
2.19.2 ILS Identification: SSX
2.19.5 Coordinates: 36−6−30.955N / 86−40−12.8874W
2.19.6 Site Elevation: 621.2 ft

2.19.1 ILS Type: Glide Slope for runway 20L. Magnetic variation: 3W
2.19.2 ILS Identification: SSX
2.19.5 Coordinates: 36−7−50.032N / 86−39−33.1119W
2.19.6 Site Elevation: 534.3 ft

2.19.1 ILS Type: Localizer for runway 20L. Magnetic variation: 3W
2.19.2 ILS Identification: SSX
2.19.5 Coordinates: 36−6−30.0255N / 86−40−9.8118W
2.19.6 Site Elevation: 613.6 ft

2.19.1 ILS Type: Glide Slope for runway 31. Magnetic variation: 3W
2.19.2 ILS Identification: PNO
2.19.5 Coordinates: 36−7−28.2732N / 86−40−18.597W
2.19.6 Site Elevation: 566.4 ft

2.19.1 ILS Type: Localizer for runway 31. Magnetic variation: 3W
2.19.2 ILS Identification: PNO
2.19.5 Coordinates: 36−8−30.6521N / 86−41−45.9623W
2.19.6 Site Elevation: 540 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 2W
2.19.2 Navigation Aid Identification: BNA
2.19.5 Coordinates: 36−8−13.0594N / 86−41−5.1778W
2.19.6 Site Elevation: 566 ft

General Remarks:
DO NOT CONFUSE 150 FT WIDE TWY S FOR RWY 20C.

BIRD ACTIVITY ON & INVOF ARPT.

READ BACK OF ALL RWY HLDG INSTRUCTIONS RQR.

NO FLIGHT OVER MAIN TERMINAL BLDG PERMITTED.

ARNG: PPR CTC 615−367−5579.

NO UNAUTHORIZED 180 DEG TURNS FOR ACFT OVR 12500 LBS ON ASPH SFCS.

ALL TURBOJET RWYS HAVE NOISE ABATEMENT PROC. MIL FIGHTER/ATTACK/TRAINER TURBOJETS USE RWY 13/31 FOR ARR & DEP.

ANG: CALL SIGN MUSIC CITY OPS.

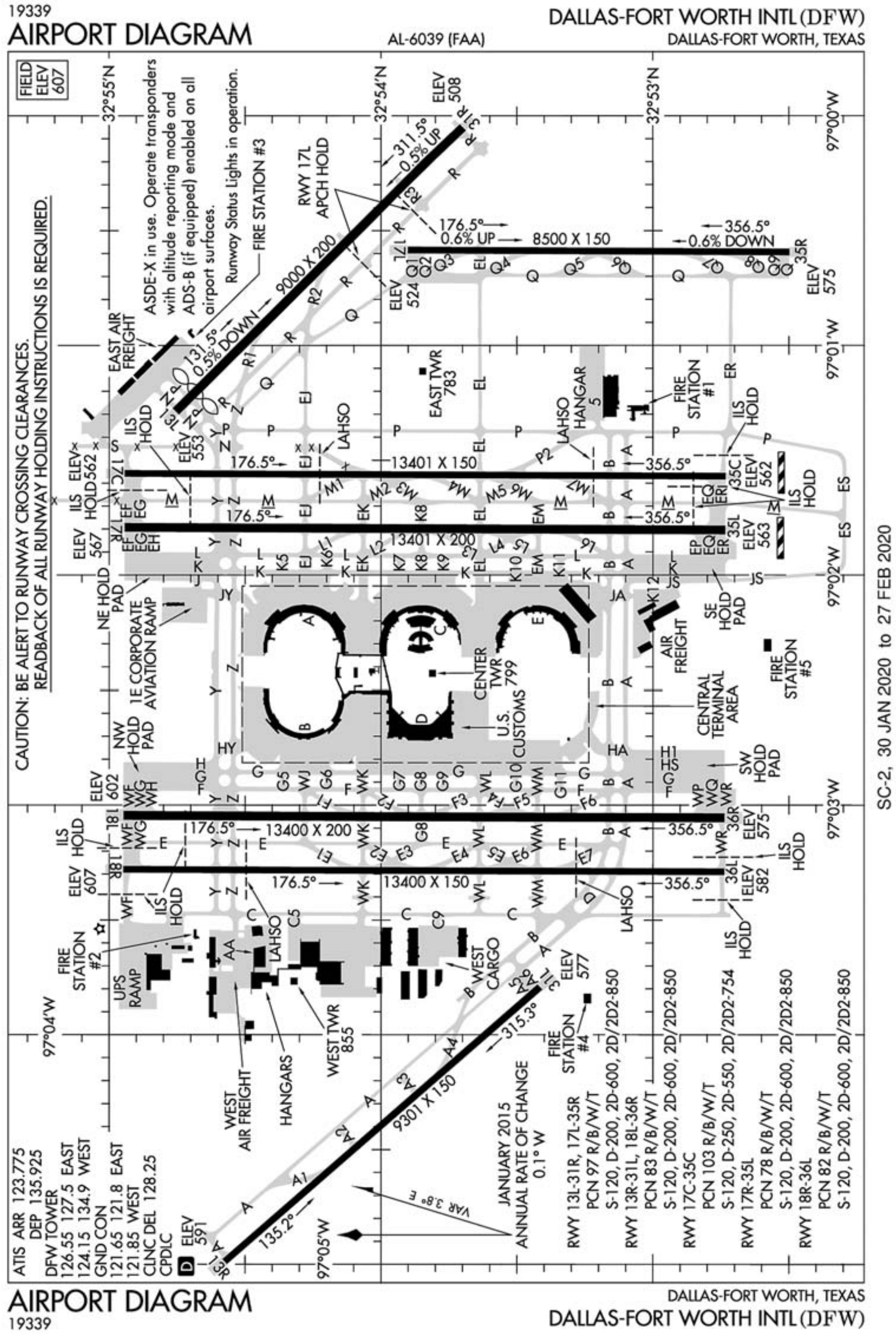
C CONCOURSE TAXILANES ARE INNER TAXILANE FOR OUBD TFC & OUTER TAXILANE FOR INBD TFC.

PILOTS COMPLY WITH ALL HOLD SHORT INSTRUCTIONS PARTICULARLY AT TWY K & RWY 20 C APCH; TWY L AT RWY 13 APCH; AND TWY H AT RWY 31 APCH.

LGTD JET BLAST FENCE 568 FT MSL 1167 FT NW RWY 13 THR; 598 MSL 1100 FT SE OF RWY 31 THR.

FLT NOTIFICATION SVC (ADCUS) AVBL.

Dallas, Texas
Dallas−Fort Worth International
ICAO Identifier KDFW



Dallas−Fort Worth, TX
Dallas/Fort Worth Intl
ICAO Identifier KDFW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32−53−50.0336N / 97−2−15.7018W
2.2.2 From City: 12 miles NW of DALLAS−FORT WORTH, TX
2.2.3 Elevation: 607 ft
2.2.5 Magnetic Variation: 4E (2015)
2.2.6 Airport Contact: SEAN DONOHUE
PO BOX 619428
DALLAS−FT WORTH, TX 75261
(972−973−3112)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: None

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 7/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 31R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 9000 ft x 200 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: 32−53−41.933N / 97−0−3.039W
2.12.6 Threshold Elevation: 508.1 ft
2.12.6 Touchdown Zone Elevation: 523.3 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 9000 ft x 200 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: 32−54−45.195N / 97−1−17.321W
2.12.6 Threshold Elevation: 552.9 ft
2.12.6 Touchdown Zone Elevation: 552.9 ft

2.12.1 Designation: 13R
2.12.2 True Bearing: 139
2.12.3 Dimensions: 9301 ft x 150 ft
2.12.4 PCN: 83 R/B/W/T
2.12.5 Coordinates: 32−54−34.472N / 97−4−59.278W
2.12.6 Threshold Elevation: 590.9 ft
2.12.6 Touchdown Zone Elevation: 590.9 ft

2.12.1 Designation: 31L
2.12.2 True Bearing: 319
2.12.3 Dimensions: 9301 ft x 150 ft
2.12.4 PCN: 83 R/B/W/T
2.12.5 Coordinates: 32−53−24.97N / 97−3−47.794W
2.12.6 Threshold Elevation: 577.1 ft
2.12.6 Touchdown Zone Elevation: 581.3 ft

2.12.1 Designation: 17C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 150 ft
2.12.4 PCN: 103 R/B/W/T
2.12.5 Coordinates: 32−54−56.548N / 97−1−33.494W
2.12.6 Threshold Elevation: 561.9 ft
2.12.6 Touchdown Zone Elevation: 562.4 ft

2.12.1 Designation: 35C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 150 ft
2.12.4 PCN: 103 R/B/W/T
2.12.5 Coordinates: 32−52−43.962N / 97−1−34.218W
2.12.6 Threshold Elevation: 562.2 ft
2.12.6 Touchdown Zone Elevation: 562.5 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: 32−52−29.854N / 97−0−35.671W
2.12.6 Threshold Elevation: 575.2 ft
2.12.6 Touchdown Zone Elevation: 575.2 ft

2.12.1 Designation: 17L

2.12.2 True Bearing: 180
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 97 R/B/W/T
2.12.5 Coordinates: 32−53−53.954N / 97−0−35.204W
2.12.6 Threshold Elevation: 524.1 ft
2.12.6 Touchdown Zone Elevation: 544.9 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.4 PCN: 78 R/B/W/T
2.12.5 Coordinates: 32−52−44.018N / 97−1−48.292W
2.12.6 Threshold Elevation: 563.3 ft
2.12.6 Touchdown Zone Elevation: 563.9 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.4 PCN: 78 R/B/W/T
2.12.5 Coordinates: 32−54−56.6N / 97−1−47.58W
2.12.6 Threshold Elevation: 566.5 ft
2.12.6 Touchdown Zone Elevation: 566.5 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.4 PCN: 83 R/B/W/T
2.12.5 Coordinates: 32−54−56.877N / 97−3−2.6484W
2.12.6 Threshold Elevation: 601.7 ft
2.12.6 Touchdown Zone Elevation: 601.7 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.4 PCN: 83 R/B/W/T
2.12.5 Coordinates: 32−52−44.298N / 97−3−3.334W
2.12.6 Threshold Elevation: 575.3 ft
2.12.6 Touchdown Zone Elevation: 580.5 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.4 PCN: 82 R/B/W/T
2.12.5 Coordinates: 32−52−44.35N / 97−3−17.401W
2.12.6 Threshold Elevation: 582.2 ft
2.12.6 Touchdown Zone Elevation: 587.5 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.4 PCN: 82 R/B/W/T
2.12.5 Coordinates: 32−54−56.933N / 97−3−16.7108W
2.12.6 Threshold Elevation: 606.7 ft
2.12.6 Touchdown Zone Elevation: 606.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 31R
2.13.2 Take−off Run Available: 8375
2.13.3 Take−off Distance Available: 8375
2.13.4 Accelerate−Stop Distance Available: 8375
2.13.5 Landing Distance Available: 8375

2.13.1 Designation: 13L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 8375

2.13.1 Designation: 13R
2.13.2 Take−off Run Available: 9301
2.13.3 Take−off Distance Available: 9301
2.13.4 Accelerate−Stop Distance Available: 9301
2.13.5 Landing Distance Available: 9301

2.13.1 Designation: 31L
2.13.2 Take−off Run Available: 9301
2.13.3 Take−off Distance Available: 9301
2.13.4 Accelerate−Stop Distance Available: 9301
2.13.5 Landing Distance Available: 9301

2.13.1 Designation: 17C
2.13.2 Take−off Run Available: 13401
2.13.3 Take−off Distance Available: 13401
2.13.4 Accelerate−Stop Distance Available: 13401
2.13.5 Landing Distance Available: 13401

2.13.1 Designation: 35C
2.13.2 Take−off Run Available: 13401

2.13.3 Take−off Distance Available: 13401
2.13.4 Accelerate−Stop Distance Available: 13401
2.13.5 Landing Distance Available: 13401

2.13.1 Designation: 35R
2.13.2 Take−off Run Available: 8500
2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8500
2.13.5 Landing Distance Available: 8500

2.13.1 Designation: 17L
2.13.2 Take−off Run Available: 8500
2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8500
2.13.5 Landing Distance Available: 8500

2.13.1 Designation: 35L
2.13.2 Take−off Run Available: 13401
2.13.3 Take−off Distance Available: 13401
2.13.4 Accelerate−Stop Distance Available: 13401
2.13.5 Landing Distance Available: 13401

2.13.1 Designation: 17R
2.13.2 Take−off Run Available: 13401
2.13.3 Take−off Distance Available: 13401
2.13.4 Accelerate−Stop Distance Available: 13401
2.13.5 Landing Distance Available: 13401

2.13.1 Designation: 18L
2.13.2 Take−off Run Available: 13400
2.13.3 Take−off Distance Available: 13400
2.13.4 Accelerate−Stop Distance Available: 13400
2.13.5 Landing Distance Available: 13400

2.13.1 Designation: 36R
2.13.2 Take−off Run Available: 13400
2.13.3 Take−off Distance Available: 13400
2.13.4 Accelerate−Stop Distance Available: 13400
2.13.5 Landing Distance Available: 13400

2.13.1 Designation: 36L
2.13.2 Take−off Run Available: 13400
2.13.3 Take−off Distance Available: 13400
2.13.4 Accelerate−Stop Distance Available: 13400
2.13.5 Landing Distance Available: 13400

2.13.1 Designation: 18R
2.13.2 Take−off Run Available: 13400
2.13.3 Take−off Distance Available: 13400
2.13.4 Accelerate−Stop Distance Available: 13400
2.13.5 Landing Distance Available: 13400

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 31R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 13L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 13R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 31L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 17L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 31R. Magnetic variation: 4E
2.19.2 ILS Identification: RRA
2.19.5 Coordinates: 32−54−50N / 97−1−18.01W
2.19.6 Site Elevation: 548 ft

2.19.1 ILS Type: Glide Slope for runway 31R. Magnetic variation: 4E
2.19.2 ILS Identification: RRA
2.19.5 Coordinates: 32−53−51.7442N / 97−0−7.9545W
2.19.6 Site Elevation: 508.5 ft

2.19.1 ILS Type: Localizer for runway 31R. Magnetic variation: 4E
2.19.2 ILS Identification: RRA
2.19.5 Coordinates: 32−54−48.11N / 97−1−20.75W
2.19.6 Site Elevation: 552 ft

2.19.1 ILS Type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: LWN
2.19.5 Coordinates: 32−53−16.073N / 97−3−42.772W
2.19.6 Site Elevation: 589.5 ft

2.19.1 ILS Type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: LWN
2.19.5 Coordinates: 32−54−24.131N / 97−4−54.081W
2.19.6 Site Elevation: 587.5 ft

2.19.1 ILS Type: Localizer for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: LWN
2.19.5 Coordinates: 32−53−17.46N / 97−3−40.07W
2.19.6 Site Elevation: 576.7 ft

2.19.1 ILS Type: DME for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32−52−34.1301N / 97−1−39.6501W
2.19.6 Site Elevation: 575.1 ft

2.19.1 ILS Type: Glide Slope for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32−54−45.64N / 97−1−28.77W
2.19.6 Site Elevation: 555.8 ft

2.19.1 ILS Type: Inner Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32−55−4.09N / 97−1−33.46W
2.19.6 Site Elevation: 562 ft

2.19.1 ILS Type: Localizer for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32−52−33.151N / 97−1−34.278W
2.19.6 Site Elevation: 562.7 ft

2.19.1 ILS Type: DME for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: PKQ
2.19.5 Coordinates: 32−52−34.1301N / 97−1−39.6501W

2.19.6 Site Elevation: 575.1 ft

2.19.1 ILS Type: Glide Slope for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: PKQ
2.19.5 Coordinates: 32−52−54.331N / 97−1−29.472W
2.19.6 Site Elevation: 556.9 ft

2.19.1 ILS Type: Inner Marker for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: PKQ
2.19.5 Coordinates: 32−52−35.3N / 97−1−34.26W
2.19.6 Site Elevation: 875 ft

2.19.1 ILS Type: Localizer for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: PKQ
2.19.5 Coordinates: 32−55−7.04N / 97−1−33.45W
2.19.6 Site Elevation: 558 ft

2.19.1 ILS Type: DME for runway 17L. Magnetic variation: 4E
2.19.2 ILS Identification: PPZ
2.19.5 Coordinates: 32−52−18.74N / 97−0−40.18W
2.19.6 Site Elevation: 577.3 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 4E
2.19.2 ILS Identification: PPZ
2.19.5 Coordinates: 32−53−45.23N / 97−0−31.14W
2.19.6 Site Elevation: 526.1 ft

2.19.1 ILS Type: Inner Marker for runway 17L. Magnetic variation: 4E
2.19.2 ILS Identification: PPZ
2.19.5 Coordinates: 32−54−5.334N / 97−0−35.261W
2.19.6 Site Elevation:

2.19.1 ILS Type: Localizer for runway 17L. Magnetic variation: 4E
2.19.2 ILS Identification: PPZ
2.19.5 Coordinates: 32−52−19.437N / 97−0−35.727W
2.19.6 Site Elevation: 583.9 ft

2.19.1 ILS Type: DME for runway 35R. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32−52−18.74N / 97−0−40.18W
2.19.6 Site Elevation: 577.3 ft

2.19.1 ILS Type: Glide Slope for runway 35R. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32−52−43.44N / 97−0−30.904W
2.19.6 Site Elevation: 558.8 ft

2.19.1 ILS Type: Inner Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32−52−22.613N / 97−0−35.708W
2.19.6 Site Elevation:

2.19.1 ILS Type: Localizer for runway 35R. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32−54−4.194N / 97−0−35.15W
2.19.6 Site Elevation: 519.3 ft

2.19.1 ILS Type: DME for runway 17R. Magnetic variation: 4E
2.19.2 ILS Identification: JHZ
2.19.5 Coordinates: 32−52−33.67N / 97−1−53.66W
2.19.6 Site Elevation: 550 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 4E
2.19.2 ILS Identification: JHZ
2.19.5 Coordinates: 32−54−45.82N / 97−1−43.064W
2.19.6 Site Elevation: 561.3 ft

2.19.1 ILS Type: Localizer for runway 17R. Magnetic variation: 4E
2.19.2 ILS Identification: JHZ
2.19.5 Coordinates: 32−52−33.24N / 97−1−48.346W
2.19.6 Site Elevation: 558.1 ft

2.19.1 ILS Type: DME for runway 35L. Magnetic variation: 4E

2.19.2 ILS Identification: UWX
2.19.5 Coordinates: 32−52−33.67N / 97−1−53.66W
2.19.6 Site Elevation: 550 ft

2.19.1 ILS Type: Glide Slope for runway 35L. Magnetic variation: 4E
2.19.2 ILS Identification: UWX
2.19.5 Coordinates: 32−52−54.983N / 97−1−43.534W
2.19.6 Site Elevation: 558.7 ft

2.19.1 ILS Type: Localizer for runway 35L. Magnetic variation: 4E
2.19.2 ILS Identification: UWX
2.19.5 Coordinates: 32−55−7.29N / 97−1−47.522W
2.19.6 Site Elevation: 567 ft

2.19.1 ILS Type: DME for runway 18L. Magnetic variation: 4E
2.19.2 ILS Identification: CIX
2.19.5 Coordinates: 32−55−8.7N / 97−3−7.3W
2.19.6 Site Elevation: 594 ft

2.19.1 ILS Type: Glide Slope for runway 18L. Magnetic variation: 4E
2.19.2 ILS Identification: CIX
2.19.5 Coordinates: 32−54−45.22N / 97−3−6.82W
2.19.6 Site Elevation: 594.4 ft

2.19.1 ILS Type: Localizer for runway 18L. Magnetic variation: 4E
2.19.2 ILS Identification: CIX
2.19.5 Coordinates: 32−52−33.61N / 97−3−3.39W
2.19.6 Site Elevation: 569.8 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 4E
2.19.2 ILS Identification: FJN
2.19.5 Coordinates: 32−55−8.7N / 97−3−7.3W
2.19.6 Site Elevation: 594 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 4E
2.19.2 ILS Identification: FJN
2.19.5 Coordinates: 32−52−54.851N / 97−3−7.968W
2.19.6 Site Elevation: 577 ft

2.19.1 ILS Type: Localizer for runway 36R. Magnetic variation: 4E
2.19.2 ILS Identification: FJN
2.19.5 Coordinates: 32−55−6.82N / 97−3−2.59W
2.19.6 Site Elevation: 594.8 ft

2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 4E
2.19.2 ILS Identification: VYN
2.19.5 Coordinates: 32−52−34.088N / 97−3−12.598W
2.19.6 Site Elevation: 584 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 4E
2.19.2 ILS Identification: VYN
2.19.5 Coordinates: 32−54−45.47N / 97−3−21.57W
2.19.6 Site Elevation: 599.6 ft

2.19.1 ILS Type: Inner Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS Identification: VYN
2.19.5 Coordinates: 32−55−4.55N / 97−3−16.69W
2.19.6 Site Elevation: 604 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 4E
2.19.2 ILS Identification: VYN
2.19.5 Coordinates: 32−52−33.934N / 97−3−17.455W
2.19.6 Site Elevation: 580.3 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 4E
2.19.2 ILS Identification: BXN
2.19.5 Coordinates: 32−52−34.088N / 97−3−12.598W
2.19.6 Site Elevation: 584 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 4E
2.19.2 ILS Identification: BXN
2.19.5 Coordinates: 32−52−54.409N / 97−3−22.04W
2.19.6 Site Elevation: 579.8 ft

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 4E
2.19.2 ILS Identification: BXN
2.19.5 Coordinates: 32−55−6.87N / 97−3−16.69W
2.19.6 Site Elevation: 601.3 ft

General Remarks:
TKOF DSTC FOR RY 35L FM TWY EQ IS 13084 FT & FM TWY EP IS 12811 FT.

ARPT UNDER CONSTRUCTION; PAEW IN MOVEMENT AREAS.

PPR ACFT WITH WINGSPAN 215 FT OR GREATER (GROUP VI) CALL ARPT OPNS 972−973−3112 FOR FOLLOW−ME SERVICES WHILE TAXIING TO & FROM RAMP & RYS.

TKOF DSTC FOR RY 18R FM TWY WG IS 13,082 FT.

RY VISUAL SCREEN 20 FT AGL 1180 FT S AER 35C.

ACFT AT EAST AIR FREIGHT MUST CONTACT DFW TWR AT 127.5 PRIOR TO TAXI OUT.

TKOF DSTC FOR RY 17L FM TWY Q2 IS 8196 FT.

PPR GA OPERATIONS 0000−0500; CALL ARPT OPNS 972−973−3112.

APRON ENTRANCE/EXIT POINT 124 CLSD TO ACFT WITH WINGSPAN GREATER THAN 213 FT.
RY STATUS LGTS IN OPN.

TKOF DSTC FOR RY 35R FM TWY Q9 IS 8196 FT.

ACFT USING TERMINAL D GATES OR APRON ENTRANCE/EXIT POINTS 122 THRU 150 MUST OBTAIN APPROVAL FROM DFW RAMP TOWER 129.825 PRIOR TO ENTERING RAMP AND PRIOR TO PUSHBACK.

TERMINAL B APRON TAXILANE BTN APRON ENTRANCE/EXIT POINT TAXILANES 107 & 117 CLSD TO ACFT WITH WINGSPAN 94 FT AND GREATER.

TWY A5 CLSD TO ACFT WITH WINGSPAN 171 FT AND GREATER.

TKOF DSTC FOR RY 17C FM TWY EG IS 13,082 FT.

APRON ENTRANCE/EXIT POINTS 110, 111, 112, 113, 114, 115, AND 116 CLSD TO ACFT WITH WINGSPAN GREATER THAN 94 FT.

TKOF DSTC FOR RY 18L FM TWY WG IS 13,082; FM TWY WH IS 12,815.

UNLESS OTHERWISE SPECIFIED, ALL APRON ENTRANCE/EXIT POINTS CLSD TO ACFT WITH WINGSPAN GREATER THAN 214 FT EXCEPT PPR.

PPR FROM ARPT OPNS FOR GEN AVN ACFT TO PROCD TO AIRLINE TRML GATE EXCP GEN AVN FAC.

PPR FM THE PRIMARY TENANT AIRLINES TO OPERATE WITHIN THE CENTRAL TERMINAL AREA. PROPER MINIMUM OBJECT FREE AREA DISTANCES MAY NOT BE MAINTAINED FOR RAMP/APRON TAXILANES.

TWY EDGE REFLECTORS ALONG ALL TWYS.
APRON ENTRANCE/EXIT POINTS 1 AND 2 CLSD TO ACFT WITH WINGSPAN GREATER THAN 89’ EXCEPT PPR.

APRON ENTRANCE/EXIT POINTS 3 AND 4 CLSD TO ACFT WITH WINGSPAN GREATER THAN 118 FT EXCEPT PPR.

TKOF DSTC FOR RY 36R FM TWY WP IS 12,815 FT; FM TWY WQ IS 13,082 FT.

‘TKOF DSTC FOR RY 17R FM TWY EG IS 13082 FT & FM TWY EH IS 12816 FT.

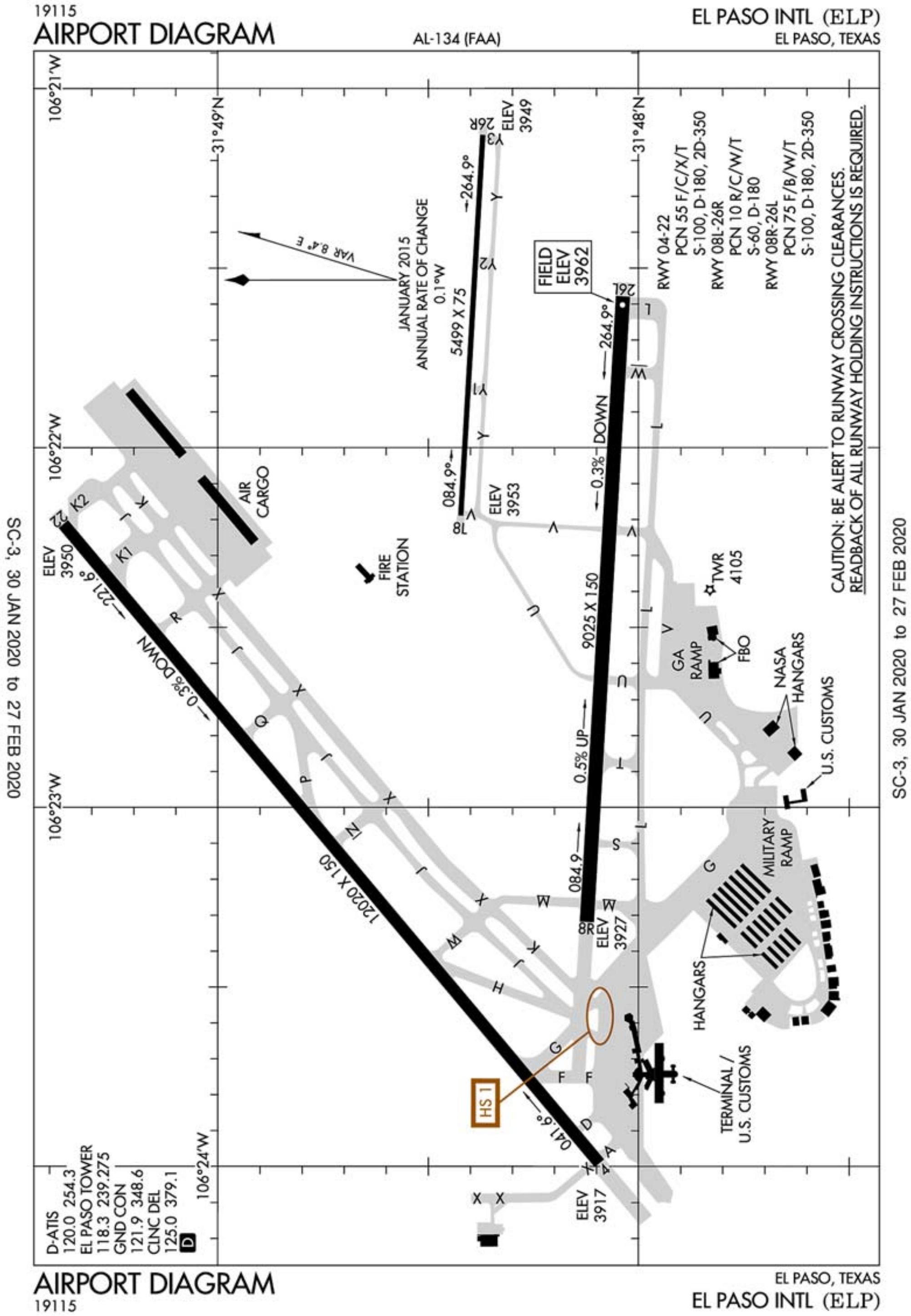
LAND & HOLD SHORT SIGNS ON RY 17C AT TWY ’B’ 10,460 FT S OF RY 17C THLD; RY 18R AT TWY ’B’ 10,100 FT S OF RY 18R THLD; RY 35C AT TWY ’EJ’ 9050 FT N OF RY 35C THLD; RY 36L AT TWY ’Z’ 10,650 FT N OF RY 36L THLD; LGTD & MKD WITH IN−PAVEMENT PULSATING WHITE LGTS.

APRON ENTRANCE/EXIT POINTS 9, 32, 33, 34, 35, 36, 37, 38, & 53 CLSD TO ACFT WITH WINGSPAN GREATER THAN 135 FT.

APRON ENTRANCE/EXIT POINTS 5, 7, 42, 44, 48, 49, 51, 52, 117, 118 AND 122 CLSD TO ACFT WITH WINGSPAN GREATER THAN 118 FT.

APRON ENTRANCE/EXIT POINTS 31 AND 39 CLSD TO ACFT WITH WINGSPAN GREATER THAN 167 FT.

El Paso, Texas
El Paso International
ICAO Identifier KELP



El Paso, TX
El Paso Intl
ICAO Identifier KELP

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 31−48−26.4N / 106−22−34.9W
2.2.2 From City: 4 miles NE of EL PASO, TX
2.2.3 Elevation: 3961.6 ft
2.2.5 Magnetic Variation: 8E (2015)
2.2.6 Airport Contact: MONICA LOMBRANA
6701 CONVAIR RD
EL PASO, TX 79925
(915−212−0333)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1+,B+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 04
2.12.2 True Bearing: 50
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.4 PCN: 55 F/C/X/T
2.12.5 Coordinates: 31−48−5.5605N / 106−23−59.4625W
2.12.6 Threshold Elevation: 3916.9 ft
2.12.6 Touchdown Zone Elevation: 3923.2 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 230
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.4 PCN: 55 F/C/X/T
2.12.5 Coordinates: 31−49−22.0112N / 106−22−12.7821W
2.12.6 Threshold Elevation: 3949.5 ft
2.12.6 Touchdown Zone Elevation: 3949.5 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 93
2.12.3 Dimensions: 5499 ft x 75 ft
2.12.4 PCN: 10 R/C/W/T
2.12.5 Coordinates: 31−48−25.3326N / 106−22−11.3796W
2.12.6 Threshold Elevation: 3952.6 ft
2.12.6 Touchdown Zone Elevation: 3952.7 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 273
2.12.3 Dimensions: 5499 ft x 75 ft
2.12.4 PCN: 10 R/C/W/T
2.12.5 Coordinates: 31−48−22.1849N / 106−21−7.7768W
2.12.6 Threshold Elevation: 3949.2 ft
2.12.6 Touchdown Zone Elevation: 3949.5 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 93
2.12.3 Dimensions: 9025 ft x 150 ft
2.12.4 PCN: 75 F/B/W/T
2.12.5 Coordinates: 31−48−7.3509N / 106−23−19.1333W
2.12.6 Threshold Elevation: 3927.1 ft
2.12.6 Touchdown Zone Elevation: 3940.3 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 9025 ft x 150 ft
2.12.4 PCN: 75 F/B/W/T
2.12.5 Coordinates: 31−48−2.195N / 106−21−34.7505W
2.12.6 Threshold Elevation: 3961.6 ft
2.12.6 Touchdown Zone Elevation: 3961.6 ft

AD 2.13 Declared Distances

2.13.1 Designation: 04
2.13.2 Take−off Run Available: 12020
2.13.3 Take−off Distance Available: 12020
2.13.4 Accelerate−Stop Distance Available: 12020
2.13.5 Landing Distance Available: 12020

2.13.1 Designation: 22
2.13.2 Take−off Run Available: 12020
2.13.3 Take−off Distance Available: 12020
2.13.4 Accelerate−Stop Distance Available: 12020
2.13.5 Landing Distance Available: 12020

2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 5499
2.13.3 Take−off Distance Available: 5499
2.13.4 Accelerate−Stop Distance Available: 5499
2.13.5 Landing Distance Available: 5499

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 5499
2.13.3 Take−off Distance Available: 5499
2.13.4 Accelerate−Stop Distance Available: 5499
2.13.5 Landing Distance Available: 5499

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 9025
2.13.3 Take−off Distance Available: 9025
2.13.4 Accelerate−Stop Distance Available: 9025
2.13.5 Landing Distance Available: 9025

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 9025
2.13.3 Take−off Distance Available: 9025
2.13.4 Accelerate−Stop Distance Available: 9025
2.13.5 Landing Distance Available: 9025

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 04
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 22
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 08L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: APCH/P (SOUTH−V16)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (SOUTH−V16)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (NORTH−V16)
2.14.3 Channel: 124.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (NORTH−V16)
2.14.3 Channel: 298.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 379.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (SOUTH−V16)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH−V16)
2.14.3 Channel: 124.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH−V16)
2.14.3 Channel: 298.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (SOUTH−V16)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 120
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 254.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 263
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 239.275
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 04. Magnetic variation: 8E
2.19.2 ILS Identification: ETF
2.19.5 Coordinates: 31−47−58.7232N / 106−24−13.5201W
2.19.6 Site Elevation: 3926 ft

2.19.1 ILS Type: Localizer for runway 04. Magnetic variation: 8E
2.19.2 ILS Identification: ETF
2.19.5 Coordinates: 31−49−28.4448N / 106−22−3.7979W
2.19.6 Site Elevation: 3950.4 ft

2.19.1 ILS Type: DME for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31−47−58.7232N / 106−24−13.5201W
2.19.6 Site Elevation: 3926 ft

2.19.1 ILS Type: Glide Slope for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31−49−17.2839N / 106−22−26.5917W
2.19.6 Site Elevation: 3940.3 ft

2.19.1 ILS Type: Localizer for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31−47−55.923N / 106−24−12.9005W
2.19.6 Site Elevation: 3910.9 ft

2.19.1 ILS Type: Outer Marker for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31−51−37.0342N / 106−19−4.2497W
2.19.6 Site Elevation: 3992.8 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 12E
2.19.2 Navigation Aid Identification: ELP
2.19.5 Coordinates: 31−48−57.277N / 106−16−54.7782W
2.19.6 Site Elevation: 4023 ft

General Remarks:
COMPASS ROSE CLSD INDEFLY.

ENGINE POWER IS RSTRD TO IDLE POWER ON ONE ENGINE AT A TIME FOR MAX 5 MIN ON ANY TERMINAL OR PARKING APRONS, CROSS−BLEED STARTS OR OTHER PRE DEP ACTIVITY ON MOVEMENT AREAS ONLY, MAINT OR OTR RQRMT NEEDING LONGER OR HIGHER POWER CTC TWR FOR DIRECTIONS TO DESIGNATED RUNUP AREAS.

CTN: BIGGS AAF 2NM NW RWY 21 CAN BE MISTAKEN FOR ELP RWY 22.

TWY J NE OF TWY K1; TWY K NE OF TWY K1 BTN TWY J & NORTH CARGO RAMP; TWYS U & V SOUTH OF TWY L; & TWY K2 NOT VISIBLE FM ATCT.

NOISE ABATEMENT PROCEDURES IN EFFECT, CTC ATCT FOR DETAILS.

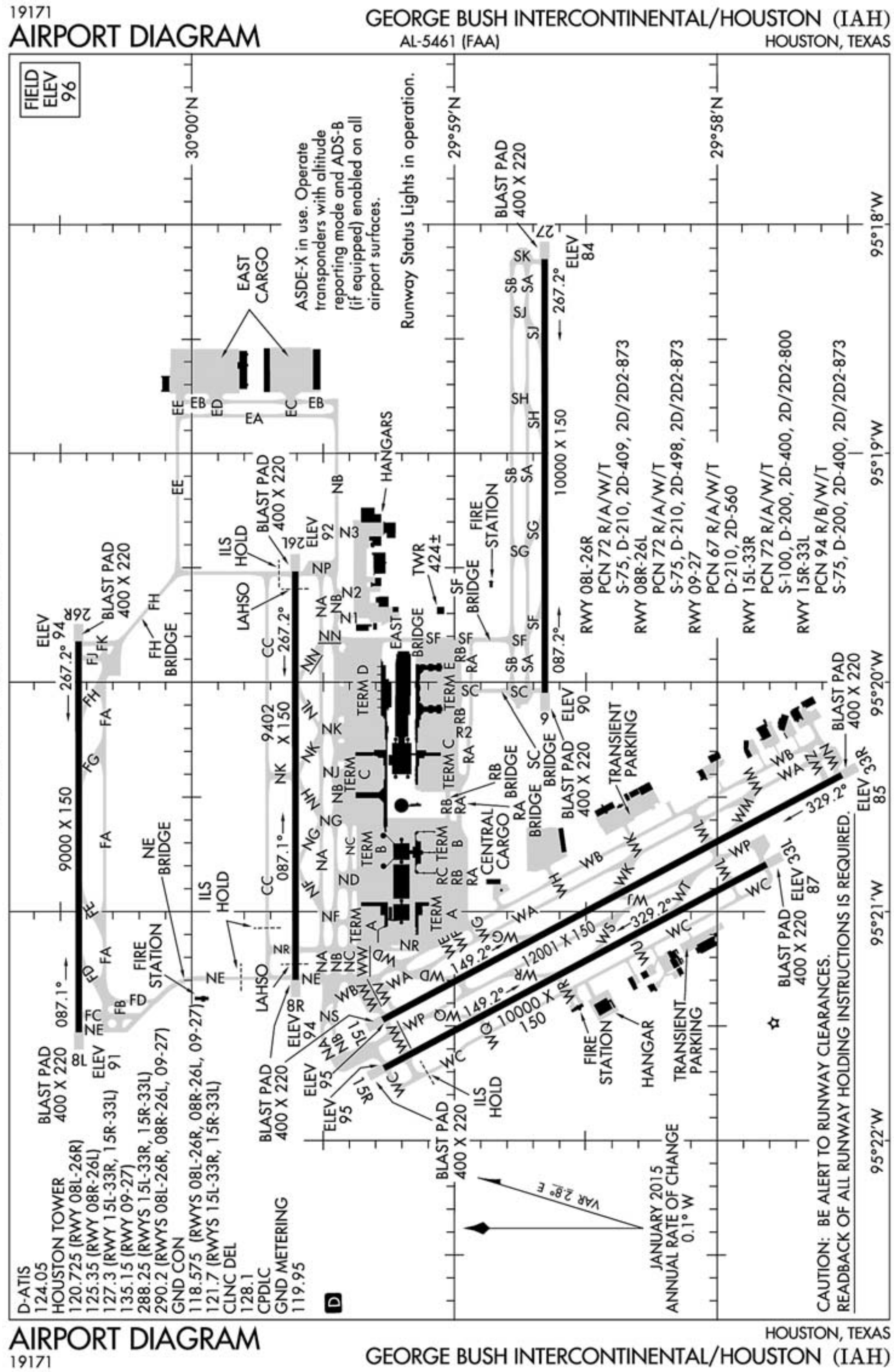
HOLDING POSITION MARKINGS FOR RUNWAY 8R APPROACH AND RUNWAY 4/22 ARE IN CLOSE PROXIMITY TO THE TERMINAL APRON; REVIEW AIRPORT DIAGRAM PRIOR TO PUSHBACK FROM THE GATE.

MILITARY USERS SHOULD REVIEW NOISE ABATEMENT PROCEDURES LISTED FOR BIGGS AAF.

NORTH BOUND TFC PROHIBITED ON TWY F SOUTH OF APCH END RWY 08R.

24 HR PPR CLASS A EXPLOSIVES CTC 915−212−0333.

Houston, Texas
George Bush Intercontinental/Houston
ICAO Identifier KIAH



Houston, TX
George Bush Intercontinental/Houston
ICAO Identifier KIAH

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 29−59−3.967N / 95−20−29.193W
2.2.2 From City: 15 miles N of HOUSTON, TX
2.2.3 Elevation: 95.8 ft
2.2.5 Magnetic Variation: 3E (2015)
2.2.6 Airport Contact: KELLY WOODWARD
PO BOX 60106
HOUSTON, TX 77205
(281−230−3100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 30−0−25.7816N / 95−21−31.6473W
2.12.6 Threshold Elevation: 90.6 ft
2.12.6 Touchdown Zone Elevation: 94 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 30−0−25.8612N / 95−19−49.2891W
2.12.6 Threshold Elevation: 94.2 ft
2.12.6 Touchdown Zone Elevation: 95.3 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9402 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29−59−36.3028N / 95−21−17.8703W
2.12.6 Threshold Elevation: 94.3 ft
2.12.6 Touchdown Zone Elevation: 95.3 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9402 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29−59−36.3817N / 95−19−30.9539W
2.12.6 Threshold Elevation: 92.3 ft
2.12.6 Touchdown Zone Elevation: 94.6 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 67 R/A/W/T
2.12.5 Coordinates: 29−58−39.3363N / 95−20−2.7891W
2.12.6 Threshold Elevation: 89.9 ft
2.12.6 Touchdown Zone Elevation: 90.1 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 67 R/A/W/T
2.12.5 Coordinates: 29−58−39.4071N / 95−18−9.0948W
2.12.6 Threshold Elevation: 84.3 ft
2.12.6 Touchdown Zone Elevation: 86.2 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 332
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29−57−31.5505N / 95−20−24.189W
2.12.6 Threshold Elevation: 84.9 ft
2.12.6 Touchdown Zone Elevation: 88 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 152
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29−59−16.4026N / 95−21−28.3335W
2.12.6 Threshold Elevation: 94.6 ft
2.12.6 Touchdown Zone Elevation: 95.2 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 332
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 94 R/B/W/T
2.12.5 Coordinates: 29−57−48.7474N /

95−20−47.5811W
2.12.6 Threshold Elevation: 86.5 ft
2.12.6 Touchdown Zone Elevation: 89.3 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 152
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 94 R/B/W/T
2.12.5 Coordinates: 29−59−16.1082N / 95−21−41.0384W
2.12.6 Threshold Elevation: 94.8 ft
2.12.6 Touchdown Zone Elevation: 94.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 26R
2.13.2 Take−off Run Available: 9000
2.13.3 Take−off Distance Available: 9000
2.13.4 Accelerate−Stop Distance Available: 9000
2.13.5 Landing Distance Available: 9000

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 9402
2.13.3 Take−off Distance Available: 9402
2.13.4 Accelerate−Stop Distance Available: 9402
2.13.5 Landing Distance Available: 9402

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 9402
2.13.3 Take−off Distance Available: 9402
2.13.4 Accelerate−Stop Distance Available: 9402
2.13.5 Landing Distance Available: 9402

2.13.1 Designation: 09
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 27
2.13.2 Take−off Run Available: 10000
2.13.3 Take−off Distance Available: 10000
2.13.4 Accelerate−Stop Distance Available: 10000
2.13.5 Landing Distance Available: 10000

2.13.1 Designation: 33R
2.13.2 Take−off Run Available: 12001
2.13.3 Take−off Distance Available: 12001
2.13.4 Accelerate−Stop Distance Available: 12001
2.13.5 Landing Distance Available: 12001

2.13.1 Designation: 15L
2.13.2 Take−off Run Available: 12001
2.13.3 Take−off Distance Available: 12001
2.13.4 Accelerate−Stop Distance Available: 12001
2.13.5 Landing Distance Available: 12001

2.13.1 Designation: 33L
2.13.2 Take−off Run Available: 9999
2.13.3 Take−off Distance Available: 9999
2.13.4 Accelerate−Stop Distance Available: 9999
2.13.5 Landing Distance Available: 9999

2.13.1 Designation: 15R
2.13.2 Take−off Run Available: 9999
2.13.3 Take−off Distance Available: 9999
2.13.4 Accelerate−Stop Distance Available: 9999
2.13.5 Landing Distance Available: 9999

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 26R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 08R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 27
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 33R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 15L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 33L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 15R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30−0−21.9187N / 95−21−44.0405W
2.19.6 Site Elevation: 87.5 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30−0−29.7528N / 95−21−18.6875W
2.19.6 Site Elevation: 86 ft

2.19.1 ILS Type: Inner Marker for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30−0−25.764N / 95−21−40.8592W
2.19.6 Site Elevation: 90.8 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30−0−25.8701N / 95−19−36.9727W
2.19.6 Site Elevation: 94.4 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 3E
2.19.2 ILS Identification: OND
2.19.5 Coordinates: 30−0−21.9187N / 95−21−44.0405W
2.19.6 Site Elevation: 87.5 ft

2.19.1 ILS Type: Glide Slope for runway 26R. Magnetic variation: 3E
2.19.2 ILS Identification: OND
2.19.5 Coordinates: 30−0−29.8117N / 95−20−2.26W
2.19.6 Site Elevation: 89.7 ft

2.19.1 ILS Type: Inner Marker for runway 26R. Magnetic variation: 3E
2.19.2 ILS Identification: OND
2.19.5 Coordinates: 30−0−25.8755N / 95−19−40.4195W
2.19.6 Site Elevation: 94.4 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 3E
2.19.2 ILS Identification: OND
2.19.5 Coordinates: 30−0−25.7696N / 95−21−43.9647W
2.19.6 Site Elevation: 90.8 ft

2.19.1 ILS Type: DME for runway 08R. Magnetic variation: 3E
2.19.2 ILS Identification: IAH
2.19.5 Coordinates: 29−59−38.9211N / 95−21−31.3127W
2.19.6 Site Elevation: 92.5 ft

2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 3E
2.19.2 ILS Identification: IAH
2.19.5 Coordinates: 29−59−40.3184N / 95−21−6.0476W
2.19.6 Site Elevation: 88.8 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 3E
2.19.2 ILS Identification: IAH
2.19.5 Coordinates: 29−59−36.3913N / 95−19−19.5749W
2.19.6 Site Elevation: 89.6 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: JYV
2.19.5 Coordinates: 29−59−38.9211N / 95−21−31.3127W
2.19.6 Site Elevation: 92.5 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: JYV
2.19.5 Coordinates: 29−59−39.5388N / 95−19−42.8056W
2.19.6 Site Elevation: 86.8 ft

2.19.1 ILS Type: Inner Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: JYV
2.19.5 Coordinates: 29−59−36.3841N / 95−19−20.5992W

2.19.6 Site Elevation: 89.2 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: JYV
2.19.5 Coordinates: 29−59−36.2865N / 95−21−31.2791W
2.19.6 Site Elevation: 92.2 ft

2.19.1 ILS Type: DME for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: UYO
2.19.5 Coordinates: 29−58−35.3774N / 95−20−13.5882W
2.19.6 Site Elevation: 87.3 ft

2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: UYO
2.19.5 Coordinates: 29−58−35.3875N / 95−19−50.679W
2.19.6 Site Elevation: 85.3 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: UYO
2.19.5 Coordinates: 29−58−39.4132N / 95−17−57.578W
2.19.6 Site Elevation: 81 ft

2.19.1 ILS Type: DME for runway 27. Magnetic variation: 3E
2.19.2 ILS Identification: GHI
2.19.5 Coordinates: 29−58−35.3774N / 95−20−13.5882W
2.19.6 Site Elevation: 87.3 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 3E
2.19.2 ILS Identification: GHI
2.19.5 Coordinates: 29−58−35.4434N / 95−18−20.8578W
2.19.6 Site Elevation: 80 ft

2.19.1 ILS Type: Inner Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS Identification: GHI
2.19.5 Coordinates: 29−58−39.4166N / 95−17−59.1664W
2.19.6 Site Elevation: 81.1 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 3E
2.19.2 ILS Identification: GHI
2.19.5 Coordinates: 29−58−39.3268N / 95−20−15.3338W
2.19.6 Site Elevation: 87.4 ft

2.19.1 ILS Type: Glide Slope for runway 33R. Magnetic variation: 3E
2.19.2 ILS Identification: CDG
2.19.5 Coordinates: 29−57−38.8144N / 95−20−33.4594W
2.19.6 Site Elevation: 80.4 ft

2.19.1 ILS Type: Localizer for runway 33R. Magnetic variation: 3E
2.19.2 ILS Identification: CDG
2.19.5 Coordinates: 29−59−31.6238N / 95−21−37.6444W
2.19.6 Site Elevation: 91.9 ft

2.19.1 ILS Type: Glide Slope for runway 15R. Magnetic variation: 3E
2.19.2 ILS Identification: LKM
2.19.5 Coordinates: 29−59−4.4118N / 95−21−39.0331W
2.19.6 Site Elevation: 89.9 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 3E
2.19.2 ILS Identification: LKM
2.19.5 Coordinates: 29−57−39.3739N / 95−20−41.8496W
2.19.6 Site Elevation: 82.7 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 5E
2.19.2 Navigation Aid Identification: IAH
2.19.5 Coordinates: 29−57−24.9013N / 95−20−44.5885W
2.19.6 Site Elevation: 80.6 ft

General Remarks:
TWY WC WEST OF RY 15R/33L RSTRD TO ACFT WITH 118 FT WING SPAN AND BLO.

RY 09/27 CLSD TO ACFT WITH WINGSPAN 215 FT & ABOVE.

TXLN 'RA', 'RB', 'RC', 'R2', AND TWY 'SC' NORTH OF TWY 'SB' ARE DSGND NON−MOVEMENT AREAS

OPERD BY UAL RAMP CTL.

DUAL TWY OPNS TWY NK BTN TWY NB & NORTH RAMP; WEST CNTRLN RSTRD TO ACFT MAX WING SPANS 125 FT & EAST CNTRLN MAX WING SPANS 214 FT.

NORTH RAMP TAXILANE BTN TWYS NF & NR RSTRD TO ACFT WITH WING SPAN 125 FT & BLO.

TWY WW BTN TWY NR AND TWY WB CLSD TO ACFT WINGSPAN MORE THAN 214 FT.

BIRDS ON & IN VCNTY OF ARPT.

GBAS APCH SVC VOL 20NM FR THLD, ALL GLS APCHS.

TWY 'NR' CLSD TO ACFT WITH WING SPANS GREATER THAN 125 FT BTN TWY 'WD' & TWY 'WB'.

RY 15L/33R MAGNETIC ANOMALIES MAY AFFECT COMPASS HDG FOR TKOF.

HELICOPTER HOVER/TAXI RSTRD TO HARD SFC MOVEMENT AREAS ONLY.

TWY SF BTN RY 09/27 UP TO AND INCLUDING THE EAST BRIDGE CLSD TO ACFT WITH WINGSPAN 215 FT & OVER.

TWY NR BTN TWY NC AND TWY WW CLSD TO ACFT WINGSPAN MORE THAN 214 FT.

TWY NR BTN WW AND TWY WB DSGND NON−MOVEMENT AREA.

HEL HOVER/TAXI RSTRD TO HARD SFC MOVEMENT AREAS ONLY.

TWY NA LGT ALL BTN TWY WP AND TWY NP NOT STD

TWY 'SF' BTN TWY 'NB' AND TXLN 'RA' IS DSGND NON−MOVEMENT AREA.

9 FT AGL UNMKD SECURITY FENCE ADJ TO FBO & CORPORATE BASE OPERATOR RAMPS AND NONMOVEMENT AREA TAXILANES.

PILOTS & CREWS SHOULD BE AWARE OF DEP TURNS ON CRS IN EXCESS OF 180 DEGS. PILOT READ BACK OF DRCTN OF TURN IS HIGHLY ENCOURAGED.

TWYS WA & WB MAGNETIC ANOMALIES MAY AFFECT COMPASS HDG.

RY STATUS LGTS ARE IN OPN.

THE FLWG MOVEMENT AREAS ARE NOT VSB FM THE ATCT: PORTIONS OF TWYS 'WA' & 'WB' FM TWY 'WH' TO THE AER 33R; TWYS 'WA' & 'WB' FM TWY 'WD' NORTH FOR 400 FT; TWY 'WD' FM TWY 'WA' TO TWY 'NR'; TWY 'NR'; TWY 'WL' FM RY 15L TO TWY 'WB' & TWY 'WM'.

NORTH RAMP NORTH & SOUTH TAXI LANES CLSD TO ACFT WITH WING SPANS GREATER THAN 125 FT. TXLN RC CLSD TO ACFT WITH WINGSPAN GREATER THAN 135 FT.

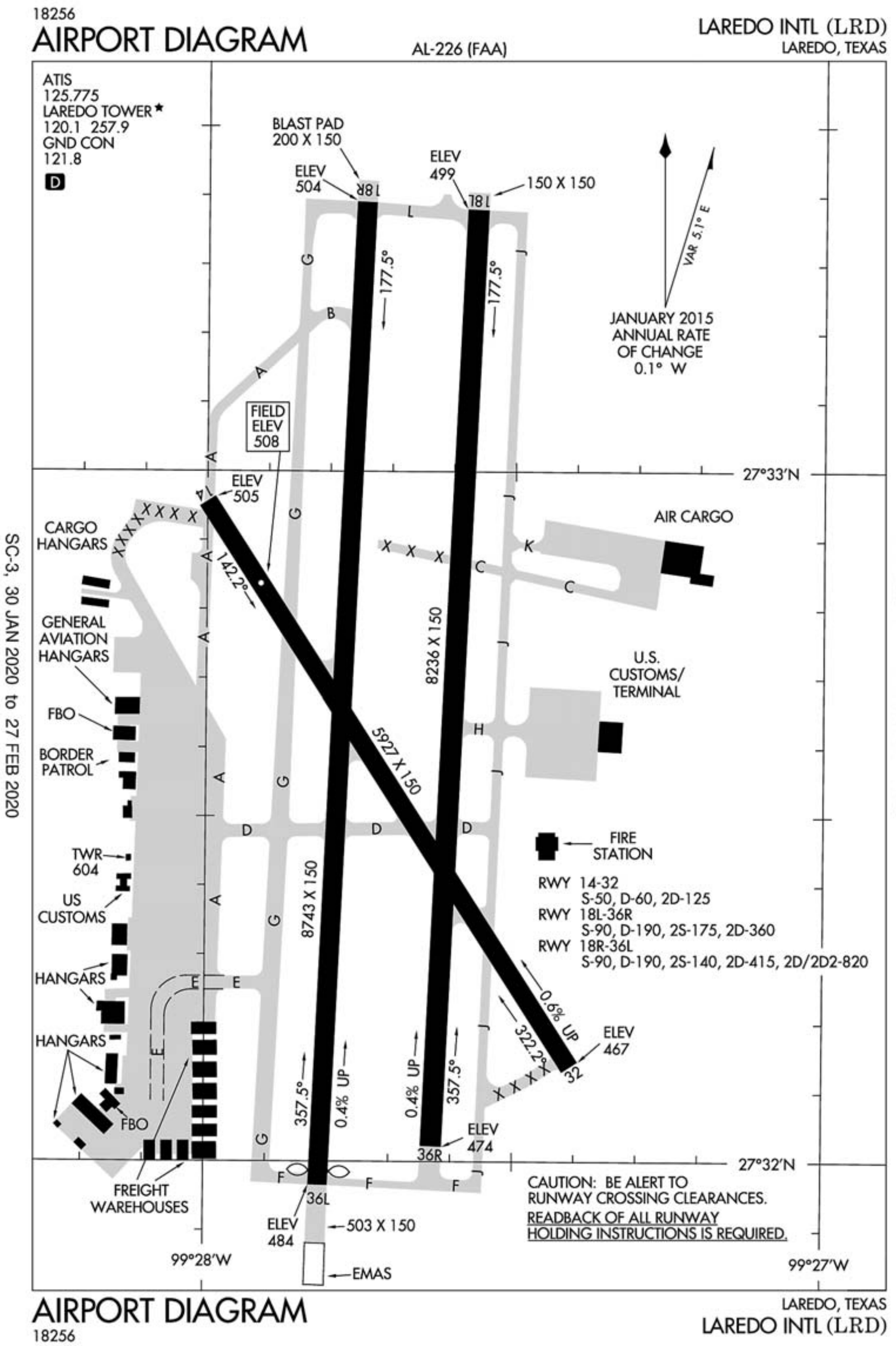
ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NOISE SENSITIVE AREA N, E AND W OF ARPT.

TWY WW RUN UP PAD FOR RY 15L CLSD TO ACFT WITH WINGSPAN 135 FT & OVER.

TWY NK BTN TWY NB AND TERMINAL D RAMP SIMULTANEOUS ACFT OPS PROHIBITED WHEN MIDDLE TAXILANE IN USE.

Laredo, Texas
Laredo International
ICAO Identifier KLRD



Laredo, TX
Laredo Intl
ICAO Identifier KLRD

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 27−32−39.1N / 99−27−41.7W

2.2.2 From City: 3 miles NE of LAREDO, TX

2.2.3 Elevation: 508 ft

2.2.5 Magnetic Variation: 5E (2020)

2.2.6 Airport Contact: JEFF MILLER
5210 BOB BULLOCK LOOP
LAREDO, TX 78041
(956−795−2000)

2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES

2.4.2 Fuel Types: 100LL,A

2.4.5 Hangar Space: YES

2.4.6 Repair Facilities: None

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 7/1/1975

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 32
2.12.2 True Bearing: 327
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 27−32−8.635N / 99−27−24.668W
2.12.6 Threshold Elevation: 467.4 ft
2.12.6 Touchdown Zone Elevation: 493.6 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 147
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 27−32−58.0248N / 99−28−0.2242W
2.12.6 Threshold Elevation: 505.4 ft
2.12.6 Touchdown Zone Elevation: 508 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 27−33−22.9267N / 99−27−33.5988W
2.12.6 Threshold Elevation: 499.2 ft
2.12.6 Touchdown Zone Elevation: 499.2 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 27−32−1.4547N / 99−27−37.6934W
2.12.6 Threshold Elevation: 474.2 ft
2.12.6 Touchdown Zone Elevation: 486.7 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 27−31−56.8817N / 99−27−49.0449W
2.12.6 Threshold Elevation: 483.7 ft
2.12.6 Touchdown Zone Elevation: 497 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 27−33−23.3681N / 99−27−44.7128W
2.12.6 Threshold Elevation: 503.7 ft
2.12.6 Touchdown Zone Elevation: 503.7 ft

AD 2.13 Declared Distances

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 5927
2.13.3 Take−off Distance Available: 5927
2.13.4 Accelerate−Stop Distance Available: 5927
2.13.5 Landing Distance Available: 5927

2.13.1 Designation: 14
2.13.2 Take−off Run Available: 5927
2.13.3 Take−off Distance Available: 5927
2.13.4 Accelerate−Stop Distance Available: 5927

2.13.5 Landing Distance Available: 5927
2.13.1 Designation: 18L
2.13.2 Take−off Run Available: 8236
2.13.3 Take−off Distance Available: 8236
2.13.4 Accelerate−Stop Distance Available: 8236
2.13.5 Landing Distance Available: 8236

2.13.1 Designation: 36R
2.13.2 Take−off Run Available: 8236
2.13.3 Take−off Distance Available: 8236
2.13.4 Accelerate−Stop Distance Available: 8236
2.13.5 Landing Distance Available: 8236

2.13.1 Designation: 36L
2.13.2 Take−off Run Available: 8743
2.13.3 Take−off Distance Available: 8743
2.13.4 Accelerate−Stop Distance Available: 8743
2.13.5 Landing Distance Available: 8623

2.13.1 Designation: 18R
2.13.2 Take−off Run Available: 8743
2.13.3 Take−off Distance Available: 8743
2.13.4 Accelerate−Stop Distance Available: 8743
2.13.5 Landing Distance Available: 8743

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 32
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V4L

2.14.1 Designation: 18L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L
2.14.1 Designation: 36R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 36L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 5E
2.19.2 ILS Identification: LRD
2.19.5 Coordinates: 27−31−50.8814N / 99−27−46.6673W
2.19.6 Site Elevation: 477 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 5E
2.19.2 ILS Identification: LRD
2.19.5 Coordinates: 27−33−12.4993N / 99−27−40.6967W
2.19.6 Site Elevation: 497 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 5E
2.19.2 ILS Identification: LRD
2.19.5 Coordinates: 27−31−51.7421N / 99−27−49.3028W
2.19.6 Site Elevation: 477 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 9E
2.19.2 Navigation Aid Identification: LRD
2.19.5 Coordinates: 27−28−43.4544N / 99−25−3.6441W
2.19.6 Site Elevation: 583 ft

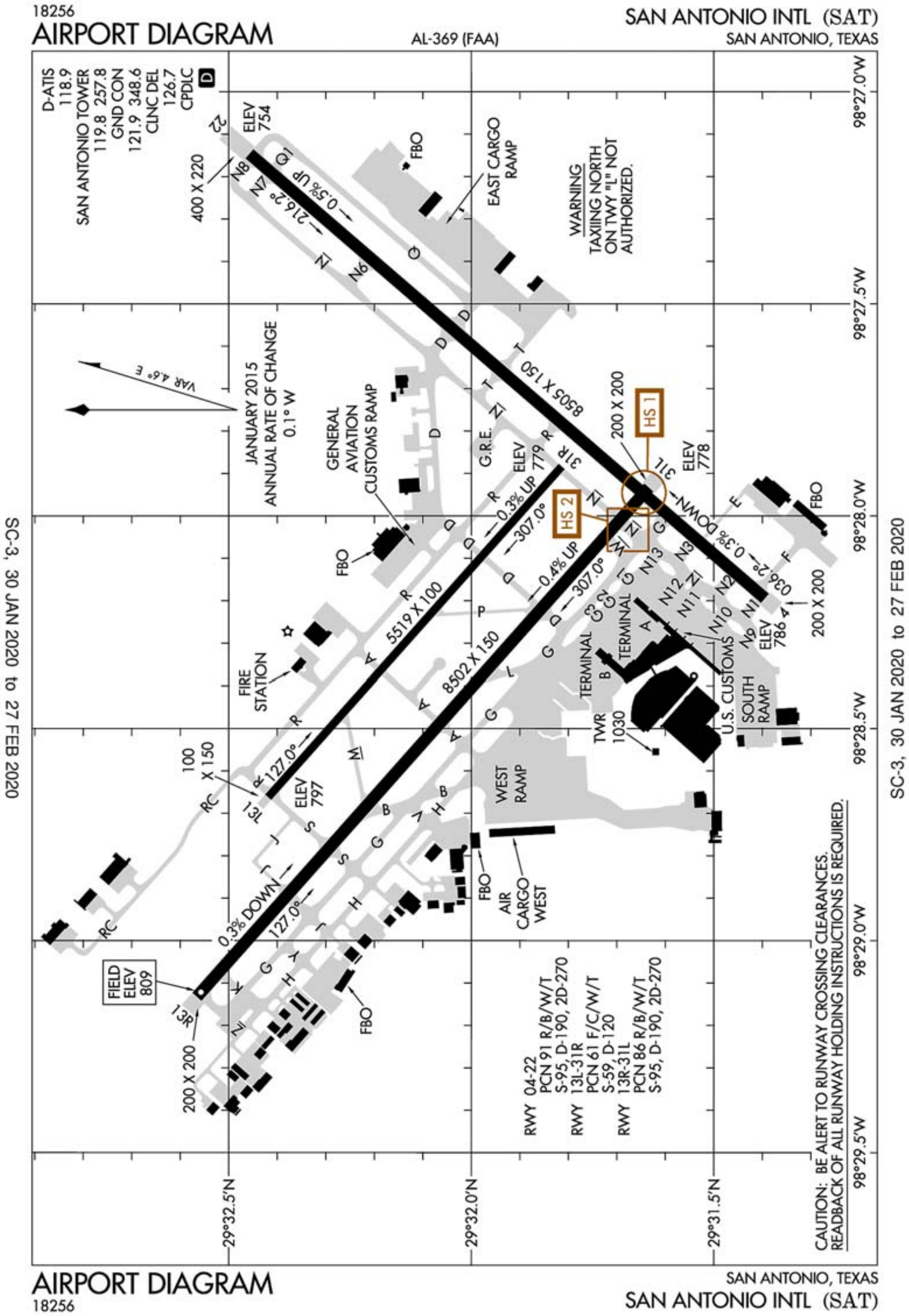
General Remarks:
TWY C CLSD BTN RY 18L/36R & RY 18R INDEFLY.

FOR CD IF UNA TO CTC ON FSS FREQ, CTC HOUSTON ARTCC AT 281−230−5622.

RY 14/32 RESTRICTED TO ACFT LESS THAN 60,000 LBS DTW.

FEDERAL INSPECTION STATION IS LCTD ON THE WEST GENERAL AVIATION/CARGO APRON.

San Antonio, Texas
San Antonio International
ICAO Identifier KSAT



San Antonio, TX
San Antonio Intl
ICAO Identifier KSAT

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 29−32−2.2488N / 98−28−8.6054W
2.2.2 From City: 7 miles N of SAN ANTONIO, TX
2.2.3 Elevation: 809.1 ft
2.2.5 Magnetic Variation: 4E (2020)
2.2.6 Airport Contact: RUSS HANDY
9800 AIRPORT BLVD
SAN ANTONIO, TX 78216
(210−207−3450)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 04
2.12.2 True Bearing: 41
2.12.3 Dimensions: 8505 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 29−31−23.642N / 98−28−11.6565W
2.12.6 Threshold Elevation: 786 ft
2.12.6 Touchdown Zone Elevation: 786 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 221
2.12.3 Dimensions: 8505 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 29−32−27.392N / 98−27−8.771W
2.12.6 Threshold Elevation: 754.2 ft
2.12.6 Touchdown Zone Elevation: 770.1 ft

2.12.1 Designation: 31R
2.12.2 True Bearing: 312
2.12.3 Dimensions: 5519 ft x 100 ft
2.12.4 PCN: 61 F/C/W/T
2.12.5 Coordinates: 29−31−48.7836N / 98−27−53.0159W
2.12.6 Threshold Elevation: 779.2 ft
2.12.6 Touchdown Zone Elevation: 787.8 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 132
2.12.3 Dimensions: 5519 ft x 100 ft
2.12.4 PCN: 61 F/C/W/T
2.12.5 Coordinates: 29−32−25.0745N / 98−28−39.713W
2.12.6 Threshold Elevation: 797.2 ft
2.12.6 Touchdown Zone Elevation: 797.2 ft

2.12.1 Designation: 31L
2.12.2 True Bearing: 312
2.12.3 Dimensions: 8502 ft x 150 ft
2.12.4 PCN: 86 R/B/W/T
2.12.5 Coordinates: 29−31−38.0044N / 98−27−55.9929W
2.12.6 Threshold Elevation: 778.4 ft
2.12.6 Touchdown Zone Elevation: 790 ft

2.12.1 Designation: 13R
2.12.2 True Bearing: 132
2.12.3 Dimensions: 8502 ft x 150 ft
2.12.4 PCN: 86 R/B/W/T
2.12.5 Coordinates: 29−32−33.8851N / 98−29−7.9476W
2.12.6 Threshold Elevation: 809.1 ft
2.12.6 Touchdown Zone Elevation: 809.1 ft

AD 2.13 Declared Distances

2.13.1 Designation: 04
2.13.2 Take−off Run Available: 8505
2.13.3 Take−off Distance Available: 8505
2.13.4 Accelerate−Stop Distance Available: 8505
2.13.5 Landing Distance Available: 8505

2.13.1 Designation: 22

2.13.2 Take−off Run Available: 8505
2.13.3 Take−off Distance Available: 8505
2.13.4 Accelerate−Stop Distance Available: 8505
2.13.5 Landing Distance Available: 8505

2.13.1 Designation: 31R
2.13.2 Take−off Run Available: 5519
2.13.3 Take−off Distance Available: 5519
2.13.4 Accelerate−Stop Distance Available: 5519
2.13.5 Landing Distance Available: 5519

2.13.1 Designation: 13L
2.13.2 Take−off Run Available: 5519
2.13.3 Take−off Distance Available: 5519
2.13.4 Accelerate−Stop Distance Available: 5519
2.13.5 Landing Distance Available: 5519

2.13.1 Designation: 31L
2.13.2 Take−off Run Available: 8502
2.13.3 Take−off Distance Available: 8502
2.13.4 Accelerate−Stop Distance Available: 8502
2.13.5 Landing Distance Available: 8502

2.13.1 Designation: 13R
2.13.2 Take−off Run Available: 8502
2.13.3 Take−off Distance Available: 8502
2.13.4 Accelerate−Stop Distance Available: 8502
2.13.5 Landing Distance Available: 8502

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 04
2.14.2 Approach Lighting System: MALS
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 22
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 31R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 13L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 31L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 13R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: ALAMO DP (RWY 04, 22, 31)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ALAMO DP (RWY 13)
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ALAMO DP (RWY 13)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ALAMO DP (RWY 04, 22, 31)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ALISS DP (RWY 04, 22, 31)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ALISS DP (RWY 13)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ALISS DP (RWY 13)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P

2.14.3 Channel: 121.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (SAT 115R−154R 35−56 DME)
2.14.3 Channel: 257.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (141−270)
2.14.3 Channel: 118.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (360−090)
2.14.3 Channel: 124.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (091−140)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (091−140)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (360−090)
2.14.3 Channel: 335.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (141−270)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (271−359)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (271−359)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 251.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 LRD TRANSITION)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 13, 22, 31)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 CRP TRANSITION)
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 CRP TRANSITION)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04, 13, 31)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 LRD TRANSITION)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BRAUN STAR
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BRAUN STAR
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 126.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (141−270)
2.14.3 Channel: 118.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (360−090)
2.14.3 Channel: 124.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (271−359)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (091−140)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (271−359)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (091−140)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (360−090)
2.14.3 Channel: 335.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (141−270)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 118.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 119.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LEJON DP (RWY 04, 22, 31)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LEJON DP (RWY 13)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LEJON DP (RWY 12)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LEJON DP (RWY 13)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LEJON DP (RWY 04, 22, 31)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MILET DP (RWY 04)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MILET DP (RWY 13, 22, 31)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MILET DP (RWY 13, 22, 31)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MILET DP (RWY 04)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: THREE RIVERS DP (RWY 13, 22, 31)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: THREE RIVERS DP (RWY 04)
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: THREE RIVERS DP (RWY 04)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: THREE RIVERS DP (RWY 13, 22, 31)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: SAT
2.19.5 Coordinates: 29−32−33.077N / 98−26−58.856W
2.19.6 Site Elevation: 757.2 ft

2.19.1 ILS Type: Glide Slope for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: SAT
2.19.5 Coordinates: 29−31−30.203N / 98−27−58.057W
2.19.6 Site Elevation: 775 ft

2.19.1 ILS Type: Localizer for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: SAT
2.19.5 Coordinates: 29−32−35.073N / 98−27−1.192W
2.19.6 Site Elevation: 748 ft

2.19.1 ILS Type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29−31−29.1054N / 98−27−49.9448W
2.19.6 Site Elevation: 791 ft

2.19.1 ILS Type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29−32−28.9919N / 98−28−54.8191W
2.19.6 Site Elevation: 801.4 ft

2.19.1 ILS Type: Inner Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29−32−38.9879N / 98−29−14.5111W
2.19.6 Site Elevation: 803 ft

2.19.1 ILS Type: Localizer for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29−31−31.3113N / 98−27−47.3806W
2.19.6 Site Elevation: 770.9 ft

2.19.1 ILS Type: Outer Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29−36−27.4538N / 98−34−10.9206W
2.19.6 Site Elevation: 960 ft

2.19.1 ILS Type: DME for runway 31L. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.5 Coordinates: 29−31−29.1054N / 98−27−49.9448W
2.19.6 Site Elevation: 791 ft

2.19.1 ILS Type: Glide Slope for runway 31L. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.5 Coordinates: 29−31−47.9N / 98−28−1.92W
2.19.6 Site Elevation: 777.6 ft

2.19.1 ILS Type: Localizer for runway 31L. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.5 Coordinates: 29−32−43.12N / 98−29−19.83W
2.19.6 Site Elevation: 813 ft

2.19.1 ILS Type: Outer Marker for runway 31L. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.5 Coordinates: 29−28−6.2944N / 98−23−19.3174W
2.19.6 Site Elevation: 692 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 8E
2.19.2 Navigation Aid Identification: SAT
2.19.5 Coordinates: 29−38−38.5137N / 98−27−40.732W
2.19.6 Site Elevation: 1160 ft

General Remarks:
TWY L CLSD NORTHBOUND.

FREQUENT RUBBER ACCUMULATION NW 2500 RY 13R/31L.

GLIDER/SOARING OPNS APRXLY 17 MILES NW OF ARPT DURG VFR.

ARPT RSTD TO ACFT WITH WINGSPAN GTR THAN 171 FT, PPR WITH 24HR OPS 210−207−3433. RQRD FOR AUTH.

ALL INTL GENERAL AVIATION CLEAR U.S. CSTMS AT NORTH FIXED BASE OPERATOR RAMP EAST SIDE, CALL U.S. CSTMS 210−821−6965 UPON ARR.

TWY S BTN APCH END RWY 13L AND RWY 13R/31L CLSD TO ACFT WITH WINGSPAN MORE THAN 100 FT. TWY R BTN APCH END RWY 13L AND TWY D CLSD TO ACFT WINGSPAN MORE THAN 100 FT.

NOISE SENSITIVE AREAS EXIST ON ALL SIDES OF ARPT, AT PILOTS DISCRETION CLIMB AS QUICKLY AND QUIETLY AS SAFELY POSSIBLE ON DEPARTURE AND USE CONSIDERATION WHEN FLYING OVER POPULATED AREAS BY MINIMIZING FLT AND HIGH PWR SETTINGS. MILITARY AIRCRAFT: DEPARTING AND ARRIVING AIRCRAFT WILL USE MINIMUM POWER SETTINGS CONSISTENT WITH AIRCRAFT FLIGHT MANUALS, AFTERBURNER TAKEOFF IS PROHIBITED UNLESS REQUIRED FOR SAFETY OF FLIGHT. ENGINE−UPS ARE PERMITTED BTN 0600−2300.

ACFT TAXIING ON RY 04 NE BOUND LOOK FOR HOLD SHORT TO RY 31L.

INNER RAMP TAXILANE NORTH OF TRML A AND B IS CLSD TO ACFT WITH WINGSPAN GTR THAN 135 FT.

TWY D NON−MOVEMENT AREA FM TWY N TO 500 FT W OF TWY N.

PPR WITH ARPT OPNS FOR ACFT POWERING BACK FM TERMINAL GATES.

COMPASS DEVIATION MAY OCCUR AT THE NW PORTION OF TWY R DUE TO REBAR RE−ENFORCED CONC BRIDGE LCTD UNDER THE TWY.

WORK IN PROGRESS SCHEDULED MAINTENANCE ON & ALONG TWYS AND RAMPS AREAS AT VARIOUS TIMES.

GROUND RUN−UP ENCLOSURE AVBL 24 HRS.

A BARRICADED PAVEMENT ELEVATION CHANGE EXISTS ALONG THE EASTERN SIDE OF THE WEST RAMP.

NUMEROUS FLOCKS OF BIRDS INVOF ARPT.

FOREIGN MIL ACFT WITH WINGSPAN LESS THAN 100 FT MUST REP TO GA RAMP FED INSPECTION STATION FOR CUST PROCESSING, CTC AP MANAGEMENT AT 210−207−3433.

RY 13L/31R NOT AVBL FOR PART 121 ACR OPNS.

TERMINAL GATES A1, A5, A6, A7 & A8 USE ONLY WITH PPR CALL OPNS 210−207−3433.

C130 AND C17 TYPE ACFT MUST PARK ON WEST RAMP TO CLR CUST.

ACFT TAXIING ON TWY N SW BOUND LOOK FOR HOLD SHORT TO RY 31R.

TWY Z CLSD TO ACFT WITH WINGSPAN GREATER THAN 118 FT.

AERODROME ALL SFC WIP CONST FOR CURRENT INFO CTC OPS. 210−207−3433.

APRON EAST CARGO RAMP INT OF RWY 04/22 AND TWY DELTA ACFT ARE REQ TO APPLY THE MNM THRUST WHEN XNG THE RWY TO AVOID DMG DUE TO JET BLAST.

THE FOLLOWING TWYS ARE NOT AVBL FOR ACFT 59,000 LBS OR OVER: TWY A & TWY J NORTH OF RY 13R−31L, TWY M & TWY P, TWY H NORTHWEST OF TWY Z AND TWY E EAST OF RY 04/22.

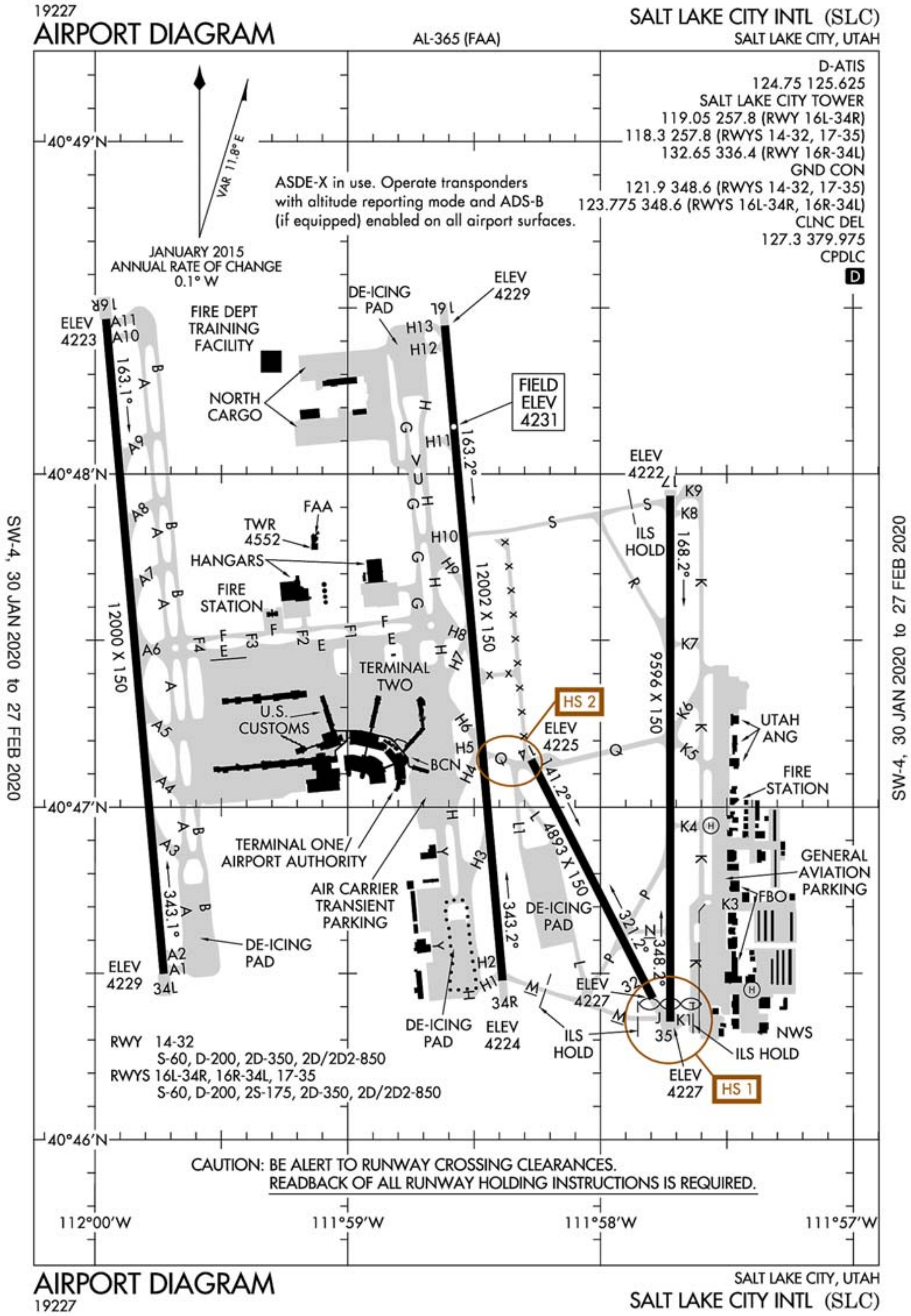
SAT TWY R BTN APCH END RWY 13L AND TWY D CLSD TO ACFT MORE THAN 99600 LB.

TWYS L & B CLSD TO ACFT WITH WINGSPANS GREATER THAN 118 FT EXITING RY 31L.

ALL ACFT AFTER LDG ON RWY 13R/31L EXITING SOUTHWEST BOUND ON TWY DELTA TO MAKE 90 DEG TURN ON TWY GOLF TO AVOID NEWLY LAID UNUSBL SFC.

ACFT AT TERMINAL A & B ADVISE GND CTL PRIOR TO PUSH.

Salt Lake City, Utah
Salt Lake City International
ICAO Identifier KSLC



Salt Lake City, UT
Salt Lake City Intl
ICAO Identifier KSLC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40−47−18.216N / 111−58−39.984W
2.2.2 From City: 3 miles W of SALT LAKE CITY, UT
2.2.3 Elevation: 4230.9 ft
2.2.5 Magnetic Variation: 11E (2020)
2.2.6 Airport Contact: BILL WYATT
P.O. BOX 145550
SALT LAKE CITY, UT 84114
((801) 575−2408)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 14
2.12.2 True Bearing: 153
2.12.3 Dimensions: 4893 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−47−8.5848N / 111−58−16.4661W
2.12.6 Threshold Elevation: 4224.7 ft
2.12.6 Touchdown Zone Elevation: 4224.8 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 333
2.12.3 Dimensions: 4893 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−46−25.5192N / 111−57−47.5915W
2.12.6 Threshold Elevation: 4226.8 ft
2.12.6 Touchdown Zone Elevation: 4226.8 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12002 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−46−28.7185N / 111−58−23.2566W
2.12.6 Threshold Elevation: 4224.3 ft
2.12.6 Touchdown Zone Elevation: 4224.7 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12002 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−48−26.8298N / 111−58−36.9557W
2.12.6 Threshold Elevation: 4229.1 ft
2.12.6 Touchdown Zone Elevation: 4230.9 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−48−28.0035N / 111−59−57.4282W
2.12.6 Threshold Elevation: 4223.4 ft
2.12.6 Touchdown Zone Elevation: 4225.8 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−46−29.9171N / 111−59−43.6913W
2.12.6 Threshold Elevation: 4228.8 ft
2.12.6 Touchdown Zone Elevation: 4228.8 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 360
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−46−21.3022N / 111−57−43.4496W
2.12.6 Threshold Elevation: 4226.8 ft
2.12.6 Touchdown Zone Elevation: 4226.9 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−47−56.1043N / 111−57−43.4552W
2.12.6 Threshold Elevation: 4221.7 ft
2.12.6 Touchdown Zone Elevation: 4222.2 ft

2.12.1 Designation: HB
2.12.2 True Bearing:
2.12.3 Dimensions: 60 ft x 60 ft
2.12.4 PCN:
2.12.5 Coordinates: 40−46−27.0827N / 111−57−24.0562W
2.12.6 Threshold Elevation: 4220.4 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: HF
2.12.2 True Bearing:
2.12.3 Dimensions: 60 ft x 60 ft
2.12.4 PCN:
2.12.5 Coordinates: −− / −−
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 14
2.13.2 Take−off Run Available: 4892
2.13.3 Take−off Distance Available: 4892
2.13.4 Accelerate−Stop Distance Available: 4892
2.13.5 Landing Distance Available: 4892

2.13.1 Designation: 32
2.13.2 Take−off Run Available: 4892
2.13.3 Take−off Distance Available: 4892
2.13.4 Accelerate−Stop Distance Available: 4892
2.13.5 Landing Distance Available: 4892

2.13.1 Designation: 34R
2.13.2 Take−off Run Available: 12002
2.13.3 Take−off Distance Available: 12002
2.13.4 Accelerate−Stop Distance Available: 12002
2.13.5 Landing Distance Available: 12002

2.13.1 Designation: 16L
2.13.2 Take−off Run Available: 12002
2.13.3 Take−off Distance Available: 12002
2.13.4 Accelerate−Stop Distance Available: 12002
2.13.5 Landing Distance Available: 12002

2.13.1 Designation: 16R
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 34L
2.13.2 Take−off Run Available: 12000
2.13.3 Take−off Distance Available: 12000
2.13.4 Accelerate−Stop Distance Available: 12000
2.13.5 Landing Distance Available: 12000

2.13.1 Designation: 35
2.13.2 Take−off Run Available: 9597
2.13.3 Take−off Distance Available: 9597
2.13.4 Accelerate−Stop Distance Available: 9597
2.13.5 Landing Distance Available: 9273

2.13.1 Designation: 17
2.13.2 Take−off Run Available: 9597
2.13.3 Take−off Distance Available: 9597
2.13.4 Accelerate−Stop Distance Available: 9597
2.13.5 Landing Distance Available: 9597

2.13.1 Designation: HB
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: HF
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 32
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 35
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 17
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: HB
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: HF
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.5 Coordinates: 40−46−18.724N / 111−58−18.1254W
2.19.6 Site Elevation: 4239.9 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.5 Coordinates: 40−48−17.0756N / 111−58−30.6172W
2.19.6 Site Elevation: 4225 ft

2.19.1 ILS Type: Inner Marker for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.5 Coordinates: 40−48−35.7038N / 111−58−38.0115W
2.19.6 Site Elevation: 4222.8 ft

2.19.1 ILS Type: Localizer for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.5 Coordinates: 40−46−18.5061N / 111−58−22.0717W
2.19.6 Site Elevation: 4226.5 ft

2.19.1 ILS Type: DME for runway 34R. Magnetic variation: 11E
2.19.2 ILS Identification: SLC
2.19.5 Coordinates: 40−46−18.71N / 111−58−18.112W
2.19.6 Site Elevation: 4236 ft

2.19.1 ILS Type: Glide Slope for runway 34R. Magnetic variation: 11E
2.19.2 ILS Identification: SLC
2.19.5 Coordinates: 40−46−39.3436N / 111−58−19.2908W
2.19.6 Site Elevation: 4220 ft

2.19.1 ILS Type: Inner Marker for runway 34R. Magnetic variation: 11E
2.19.2 ILS Identification: SLC
2.19.5 Coordinates: 40−46−20.3855N / 111−58−22.2947W
2.19.6 Site Elevation: 4225.1 ft

2.19.1 ILS Type: Localizer for runway 34R. Magnetic variation: 11E
2.19.2 ILS Identification: SLC
2.19.5 Coordinates: 40−48−37.6811N / 111−58−38.2145W
2.19.6 Site Elevation: 4224.5 ft
2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 11E
2.19.2 ILS Identification: UAT
2.19.5 Coordinates: 40−46−19.627N / 111−59−46.3581W
2.19.6 Site Elevation: 4233.6 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 11E
2.19.2 ILS Identification: UAT
2.19.5 Coordinates: 40−48−17.3028N / 112−0−1.6005W
2.19.6 Site Elevation: 4218.7 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 11E
2.19.2 ILS Identification: UAT
2.19.5 Coordinates: 40−46−19.9476N / 111−59−42.5324W
2.19.6 Site Elevation: 4227.2 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 11E
2.19.2 ILS Identification: UUH
2.19.5 Coordinates: 40−46−19.627N / 111−59−46.3581W
2.19.6 Site Elevation: 4233.6 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 11E
2.19.2 ILS Identification: UUH
2.19.5 Coordinates: 40−46−39.8998N /

111−59−50.2673W
2.19.6 Site Elevation: 4222.6 ft

2.19.1 ILS Type: Localizer for runway 34L. Magnetic variation: 11E
2.19.2 ILS Identification: UUH
2.19.5 Coordinates: 40−48−37.9731N / 111−59−58.5893W
2.19.6 Site Elevation: 4220 ft

2.19.1 ILS Type: DME for runway 17. Magnetic variation: 11E
2.19.2 ILS Identification: BNT
2.19.5 Coordinates: 40−46−9.7838N / 111−57−47.5356W
2.19.6 Site Elevation: 4242.7 ft

2.19.1 ILS Type: Glide Slope for runway 17. Magnetic variation: 11E
2.19.2 ILS Identification: BNT
2.19.5 Coordinates: 40−47−45.7497N / 111−57−50.0372W
2.19.6 Site Elevation: 4216.4 ft

2.19.1 ILS Type: Localizer for runway 17. Magnetic variation: 11E
2.19.2 ILS Identification: BNT
2.19.5 Coordinates: 40−46−10.0541N / 111−57−43.4502W
2.19.6 Site Elevation: 4227.9 ft

2.19.1 ILS Type: DME for runway 35. Magnetic variation: 11E
2.19.2 ILS Identification: UTJ
2.19.5 Coordinates: 40−46−9.7838N / 111−57−47.5356W
2.19.6 Site Elevation: 4242.7 ft

2.19.1 ILS Type: Glide Slope for runway 35. Magnetic variation: 11E
2.19.2 ILS Identification: UTJ
2.19.5 Coordinates: 40−46−35.1583N / 111−57−48.6413W
2.19.6 Site Elevation: 4229.2 ft

2.19.1 ILS Type: Localizer for runway 35. Magnetic variation: 11E
2.19.2 ILS Identification: UTJ
2.19.5 Coordinates: 40−47−8.3329N / 111−57−51.5557W
2.19.6 Site Elevation: 4220.8 ft

General Remarks:
SEE CURRENT NOTAMS FOR DATES AND ADDITIONAL INFO.

ANG RAMP − ALL ACFT CTC UTAH CONTROL WITH LDG & DEP TIMES. COMD POST DSN: 245−2416/2417; C801−245−2416/2417. PHASE II WILDLIFE ACT DURING MIGRATION/MORNING/EVENING HRS FR OCT−APR. CTC UTAH CTL FOR CURRENT BIRD−WATCH COND.

SVFR IS NOT RCMD AT THE ARPT, IF REQD, EXPT DLAS.

TWY Y RSTD TO WINGSPANS LESS THAN 171 FT BTWN TWY H3 AND H4.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RWY 34R DE−ICE PAD 129.975

ACCESS TO D CONCOURSE EVEN NUMBERED GATES AND E CONCOURSE, THROUGH SPOTS 20 AND 21 ONLY.

SURFACE MOVEMENT GUIDANCE CONTROL SYSTEM & LOW VISIBILITY TAXI PROCEDURES.

HELIPADS B AND F LOCATED ON GENERAL AVIATION APRONS.

USE CAUTION FOR EXTENSIVE PARAGLIDING OPS INVOF POINT OF THE MOUNTAIN.

SEE FLIP AP/1 SUPPLEMENTARY ARPT INFO.

RWY 34L DE−ICE PAD 128.975

RWY 16L RUNUP AREA CLOSED PERMANENTLY.

USE MINIMUM THRUST IN CONSTRUCTION AREAS.

CONTACT GROUND ON 123.775 BEFORE TAXIING OUT OF NORTH CARGO.

DUE TO TFC VOL, LCL DEPARTURE AND ARR OPNS ARE DISCOURAGED AND DLAS CAN BE EXPCD BTN 1500−1730Z++ AND 0130−0300Z++.

ANG SERVICE−FUEL: A++.

COMMUNICATIONS−ANG COMD POST: CALL UTAH CONTROL.

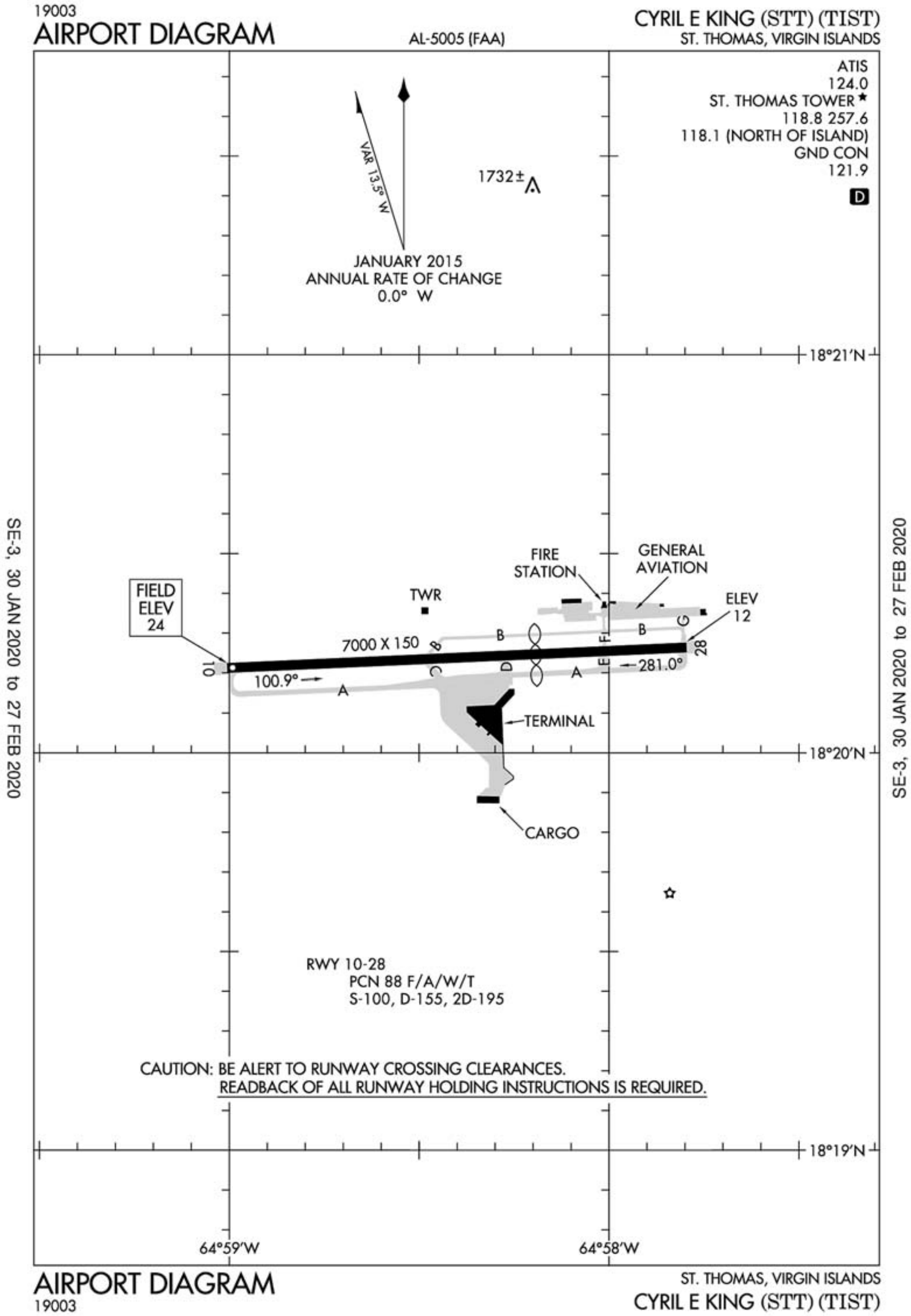
TWY L DE−ICE PAD 131.975

FLOCK OF BIRDS ON AND IN VICINITY OF ARPT.

ANG RAMP − OPR 1430−2230Z++ MON−THU. CLSD FRI−SUN AND HOL. OFFL BUS ONLY. PPR REQ 48 HR ALL ACFT, VALID 1 HR +/− ETA. TRAN PRK/SVC EXTREMELY LTD. BASE OPS DSN 245−2274, C801−245−2274. MIL

ALT HILL AFB (KHIF) 25 NM N. ALL ACFT CTC UTAH CTL (COMD POST) 20 MIN OUT WITH ETA AND REQ. RWY 16L DE−ICE PAD 131.975.

Charlotte Amalie St. Thomas, Virgin Islands
Cyril E King
ICAO Identifier TIST



Charlotte Amalie, VI
Cyril E King
ICAO Identifier TIST

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 18−20−14.3N / 64−58−24W
2.2.2 From City: 2 miles W of CHARLOTTE AMALIE, VI
2.2.3 Elevation: 23.6 ft
2.2.5 Magnetic Variation: 13W (2000)
2.2.6 Airport Contact: JEROME SHERIDAN
CYRIL E. KING AIRPORT
ST THOMAS, VI 802
((340) 774−6660)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, 0700−2300 Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 28
2.12.2 True Bearing: 267
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.4 PCN: 88 F/A/W/T
2.12.5 Coordinates: 18−20−15.8124N / 64−57−47.7382W
2.12.6 Threshold Elevation: 11.7 ft
2.12.6 Touchdown Zone Elevation: 16.5 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 87
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.4 PCN: 88 F/A/W/T
2.12.5 Coordinates: 18−20−12.7247N / 64−59−0.3371W
2.12.6 Threshold Elevation: 23.5 ft
2.12.6 Touchdown Zone Elevation: 23.6 ft

AD 2.13 Declared Distances

2.13.1 Designation: 28
2.13.2 Take−off Run Available: 7000
2.13.3 Take−off Distance Available: 7000
2.13.4 Accelerate−Stop Distance Available: 6000
2.13.5 Landing Distance Available: 3700

2.13.1 Designation: 10
2.13.2 Take−off Run Available: 7000
2.13.3 Take−off Distance Available: 7000
2.13.4 Accelerate−Stop Distance Available: 7000
2.13.5 Landing Distance Available: 7000

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 28
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 10
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: TMN
2.19.5 Coordinates: 18−20−18.78N / 64−57−39.88W
2.19.6 Site Elevation: 22.6 ft

2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: TMN
2.19.5 Coordinates: 18−20−10.62N / 64−58−48.29W
2.19.6 Site Elevation: 15.1 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 13W

2.19.2 ILS Identification: TMN

2.19.5 Coordinates: 18−20−16.26N / 64−57−37.22W

2.19.6 Site Elevation: 17 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 10W

2.19.2 Navigation Aid Identification: STT

2.19.5 Coordinates: 18−21−20.9431N / 65−1−28.3968W

2.19.6 Site Elevation: 679.2 ft

General Remarks:
LGTS ON HILL 4 NM SE OF ARPT MAY BE MISTAKEN FOR RY 10/28 WHEN MAKING A VISUAL APCH FROM THE SOUTH.

ACFT THAT BACK TAXI FOR DEP ON RY 28 SHALL MAKE THEIR 180 DEG TURN CCLKWS.

NOISE SENSITIVE AREA: AVOID OVERFLIGHTS OF WATER ISLAND LOCATED 2 MI SE OF ARPT.

ARFF UNAVBL 2300−0630.

RY 10 DEPS MAINTAIN RY HDG UNTIL REACHING DEP END OF RY BFR TURNING ON COURSE OR ASSIGNED HDG UNLESS OTRW AUZD BY ATCT.

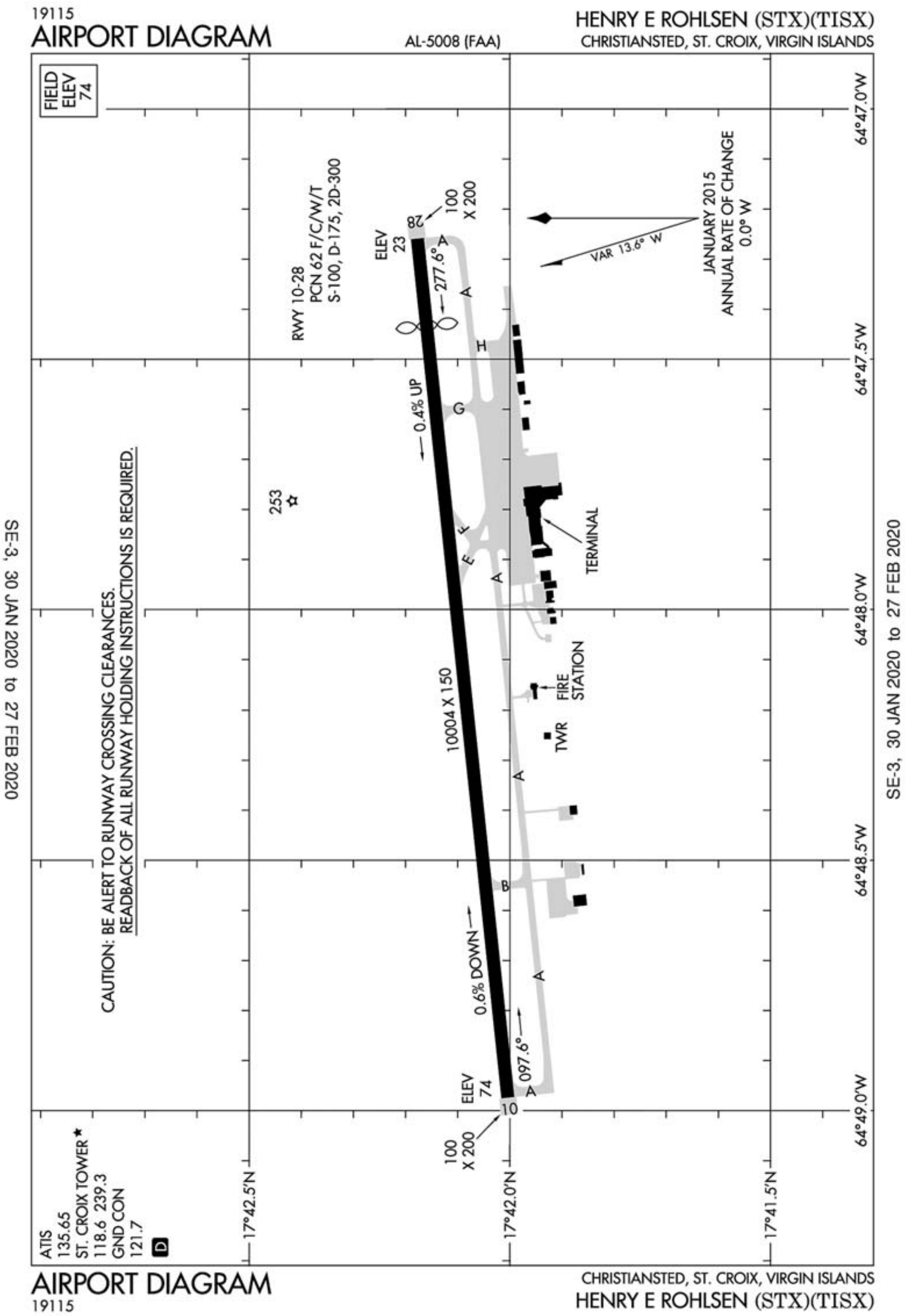
WHEN TWR CLSD CTC SAN JUAN CERAP AT 787−253−8664/8665

PILOTS CTC GND CTL PRIOR TO PUSHBACK.

PILOTS MAY ENCTR FALSE ILLUSORY INDICATIONS DURG NGT VISUAL APCHS TO RY 10 WHEN USING VISUAL CUES FOR VERTICAL GUIDANCE; RCMD USE OF THE ILS GS & FQT CROSS REF WITH THE ACFT ALTM TO MAINT THE PROPER APCH PROFILE.

OBSTRUCTION SAILBOAT MAST 100FT WEST OF APPROACH END OF RWY 10 50FT AGL.

Christiansted St. Croix
Henry E Rohlsen
ICAO Identifier TISX



Christiansted, VI
Henry E Rohlsen
ICAO Identifier TISX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 17−42−5.416N / 64−48−6.9945W
2.2.2 From City: 6 miles SW of CHRISTIANSTED, VI
2.2.3 Elevation: 74.1 ft
2.2.5 Magnetic Variation: 13W (2000)
2.2.6 Airport Contact: JEROME SHERIDAN
P.O. BOX 1134
ST CROIX, VI 821
((340) 719−6207)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0500−2300 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 28
2.12.2 True Bearing: 264
2.12.3 Dimensions: 10004 ft x 150 ft
2.12.4 PCN: 62 F/C/W/T
2.12.5 Coordinates: 17−42−10.62N / 64−47−15.544W
2.12.6 Threshold Elevation: 22.5 ft
2.12.6 Touchdown Zone Elevation: 40 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 84
2.12.3 Dimensions: 10004 ft x 150 ft
2.12.4 PCN: 62 F/C/W/T
2.12.5 Coordinates: 17−42−0.212N / 64−48−58.445W
2.12.6 Threshold Elevation: 73.7 ft
2.12.6 Touchdown Zone Elevation: 74.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 28
2.13.2 Take−off Run Available: 10004
2.13.3 Take−off Distance Available: 10004
2.13.4 Accelerate−Stop Distance Available: 10004
2.13.5 Landing Distance Available: 9003

2.13.1 Designation: 10
2.13.2 Take−off Run Available: 10004
2.13.3 Take−off Distance Available: 10004
2.13.4 Accelerate−Stop Distance Available: 9003
2.13.5 Landing Distance Available: 9003

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 28
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 10
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: STX
2.19.5 Coordinates: 17−41−58.77N / 64−48−45.5W
2.19.6 Site Elevation: 63.5 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: STX
2.19.5 Coordinates: 17−42−11.36N / 64−47−8.28W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: Outer Marker for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: STX
2.19.5 Coordinates: 17−41−30.92N / 64−53−4.74W
2.19.6 Site Elevation: 40 ft

General Remarks:
APCH TO RY 28 SMTMS OBSCD BY SMOKE FM LANDFILL LCTD E OF ARPT.

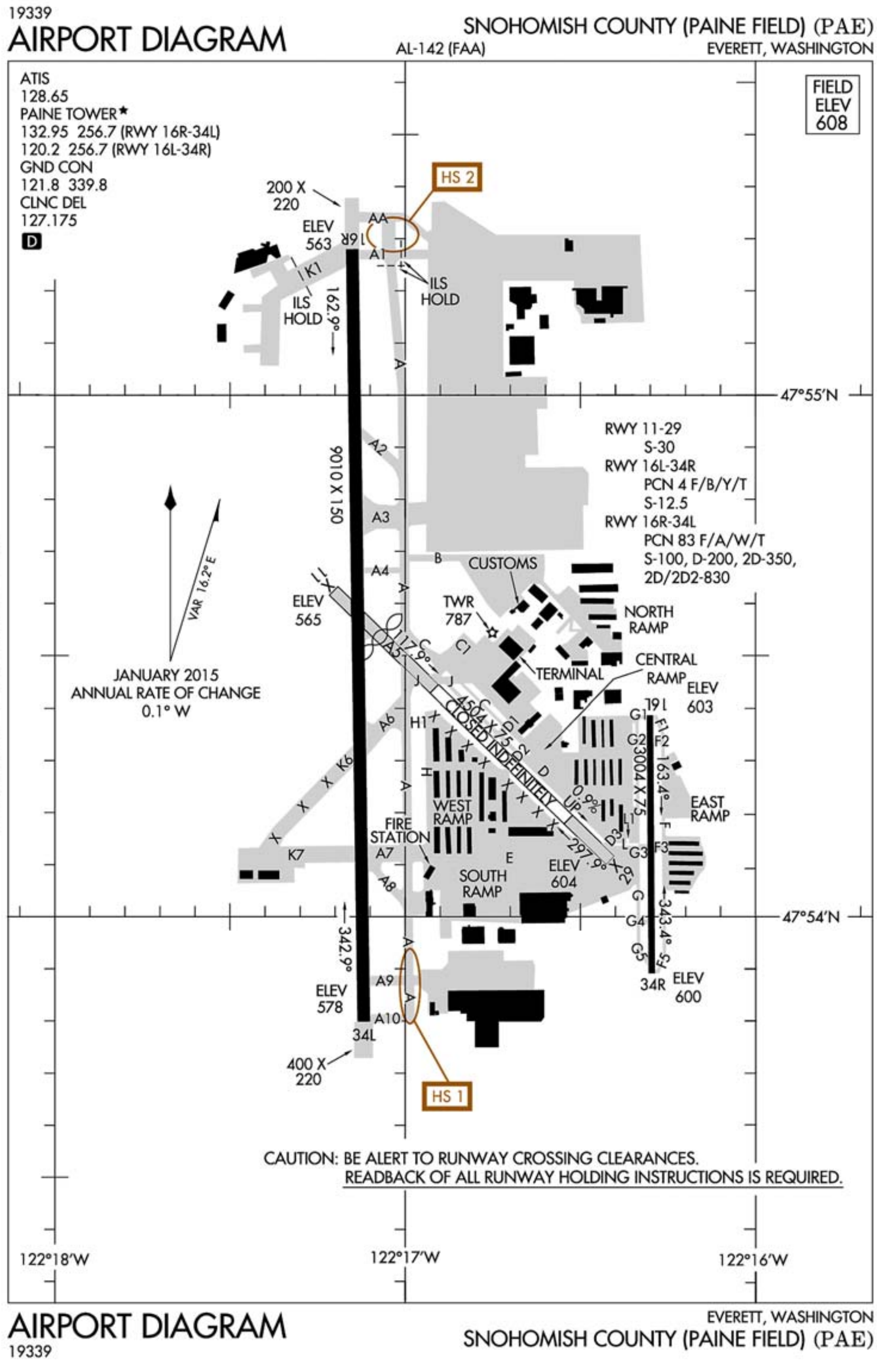
TAXI INTO POSITION AND HOLD PROCEDURES NO LONGER IN EFFECT.

BIRDS & WILDLIFE ON & INVOF ARPT.

WHEN TWR CLSD CTC SAN JUAN CERAP AT 787−253−8664/8665

RY 10 AND 28 100’ X 200’ BLAST PAD.

Everett, Washington
Snohomish County (Paine Field)
ICAO Identifier KPAE



Everett, WA
Snohomish County (Paine Fld)
ICAO Identifier KPAE

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 47−54−25.2N / 122−16−53.7W
2.2.2 From City: 6 miles SW of EVERETT, WA
2.2.3 Elevation: 607.5 ft
2.2.5 Magnetic Variation: 16E (2020)
2.2.6 Airport Contact: ARIF GHOUSE
3220 100TH ST SW
EVERETT, WA 98204
((425) 388−5100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 NOV−APR Months, All Days, 0700−2100 Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I B certified on 11/1/1974

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 11
2.12.2 True Bearing: 134
2.12.3 Dimensions: 4504 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 47−54−37.4797N / 122−17−12.3513W
2.12.6 Threshold Elevation: 565 ft
2.12.6 Touchdown Zone Elevation: 607.5 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 314
2.12.3 Dimensions: 4504 ft x 75 ft
2.12.4 PCN:
2.12.5 Coordinates: 47−54−6.5309N / 122−16−24.9135W
2.12.6 Threshold Elevation: 604 ft
2.12.6 Touchdown Zone Elevation: 607.5 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 3004 ft x 75 ft
2.12.4 PCN: 4 F/B/Y/T
2.12.5 Coordinates: 47−54−23.1294N / 122−16−18.0937W
2.12.6 Threshold Elevation: 602.8 ft
2.12.6 Touchdown Zone Elevation: 606.9 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 360
2.12.3 Dimensions: 3004 ft x 75 ft
2.12.4 PCN: 4 F/B/Y/T
2.12.5 Coordinates: 47−53−53.4884N / 122−16−17.7654W
2.12.6 Threshold Elevation: 599.7 ft
2.12.6 Touchdown Zone Elevation: 606.9 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9010 ft x 150 ft
2.12.4 PCN: 83 F/A/W/T
2.12.5 Coordinates: 47−55−16.8075N / 122−17−9.0638W
2.12.6 Threshold Elevation: 562.6 ft
2.12.6 Touchdown Zone Elevation: 570 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9010 ft x 150 ft
2.12.4 PCN: 83 F/A/W/T
2.12.5 Coordinates: 47−53−47.9027N / 122−17−7.0912W
2.12.6 Threshold Elevation: 577.7 ft
2.12.6 Touchdown Zone Elevation: 583.6 ft

AD 2.13 Declared Distances

2.13.1 Designation: 11
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:

2.13.5 Landing Distance Available:

2.13.1 Designation: 29
2.13.2 Take−off Run Available:
2.13.3 Take−off Distance Available:
2.13.4 Accelerate−Stop Distance Available:
2.13.5 Landing Distance Available:

2.13.1 Designation: 16L
2.13.2 Take−off Run Available: 3004
2.13.3 Take−off Distance Available: 3004
2.13.4 Accelerate−Stop Distance Available: 3004
2.13.5 Landing Distance Available: 3004

2.13.1 Designation: 34R
2.13.2 Take−off Run Available: 3004
2.13.3 Take−off Distance Available: 3004
2.13.4 Accelerate−Stop Distance Available: 3004
2.13.5 Landing Distance Available: 3004

2.13.1 Designation: 16R
2.13.2 Take−off Run Available: 9010
2.13.3 Take−off Distance Available: 9010
2.13.4 Accelerate−Stop Distance Available: 9010
2.13.5 Landing Distance Available: 9010

2.13.1 Designation: 34L
2.13.2 Take−off Run Available: 9010
2.13.3 Take−off Distance Available: 9010
2.13.4 Accelerate−Stop Distance Available: 9010
2.13.5 Landing Distance Available: 9010

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 11
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V2L

2.14.1 Designation: 29
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: V2R

2.14.1 Designation: 16L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 34R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALSF
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: PAE
2.19.5 Coordinates: 47−55−7.3457N / 122−17−13.6176W
2.19.6 Site Elevation: 566.6 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: PAE
2.19.5 Coordinates: 47−53−34.0274N / 122−17−6.7862W
2.19.6 Site Elevation: 569.6 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 20E
2.19.2 Navigation Aid Identification: PAE
2.19.5 Coordinates: 47−55−11.4015N / 122−16−40.0844W
2.19.6 Site Elevation: 669.2 ft

General Remarks:
AVOID INTXN DEPS FM RYS 16L/34R

AREAS NOT VSB FM ATCT INCL EAST EDGE OF SOUTH 1200 FT OF TWY A, TWY E FM SE CORNER OF WEST HNGRS TO TWY A, TWY H FROM NW EDGE OF WEST HNGRS TO TWY E.

TWY A−2 RESTRICTED TO 30,000 LBS.

TWY W CLSD INDEF.

FOR NOISE ABATEMENT FROM 0500−1500Z++ IF ACFT PERFORMANCE/WIND ALLOWS, USE RY 16R FOR ARRIVALS AND RY 34L FOR DEPARTURES.

PPR REQUIRED FOR ACCESS ON BOEING RAMP. CTC BOEING FLIGHT DISPATCH 206−544−5900 FOR APPROVAL. PRIOR TO TAXI ONTO BOEING RAMP CTC BOEING RADIO TWR 123.475 OR CALL 425−342−5900.

TRAINING FLIGHTS DISCOURAGED AFTER 2200. RY 16R−34L TGL PROHIBITED MON−FRI FRM 0700−0900.

NOISE SENSITIVE ARPT; FOR NOISE ABATEMENT PROCEDURES & TFC PROCEDURES CALL ARPT OPS 425−388−5125.

TWY K1 CLSD TO ACFT UNDER 30,000 LBS.

TWY C BTN TRML RAMP AND CNTRL RAMP RSTRD TO WINGSPAN OF 68 FT OR LESS. TWY D BTN D1 AND TWY GOLF RSTRD TO WINGSPAN OF 49 FT OR LESS. TWYY A4, A5, K7 & B RSTRD TO WINGSPAN OF 118 FT OR LESS. TAXILANE H RSTRD TO WINGSPAN OF 49 FT OR LESS.

TRANSIENT HELICOPTERS EXPECT LANDING/TAKEOFF ON TWY B

BE ALERT TO CNVG TFC ON BASE TO FINAL LEGS RYS 16R/34L 2100−0700.

RWY 16L−34R CLSD BTN 0500−1500Z−; LARGE ACFT FLY W PATTERN OVER WATER; SMALL ACFT FLY E PATTERN OVER ARPT.

FOR CD WHEN ATCT IS CLSD CTC SEATTLE APCH AT 206−214−4722.

TKOF CLNC RWY 16R FULL LEN − ENTER RWY VIA TWY A1 UNLESS TWY AA SPECIFIED.

FLOCKS OF LARGE & SMALL BIRDS INVOF ARPT.

AVOID OVERFLIGHT OF BOEING RAMP − NE CORNER OF ARPT DUE TO JET BLAST.

PAE HAS FAC CONSTRAINTS THAT LIMIT ITS ABILITY TO ACCOMMODATE DIVERTED FLIGHTS AND MAINTAIN THE ARPTS SAFE OPERATION DURING IRREGULAR OPS. ACFT OPERATORS SHOULD CTCT THE ON−DUTY ARPT OPS PERSONNEL (425−610−8411) TO COORDINATE DIVERTED FLIGHTS EXCEPT IN THE CASE OF A DECLARED IN−FLIGHT EMERGENCY.

IT IS REQUESTED THAT PILOTS ADHERE TO THE FOLLOWING NOISE ABATEMENT PROCEDURES UNLESS OTHERWISE INSTRUCTED BY ATCT, ITINERANT ARRIVAL AND LOW APCH OF SMALL ACFT OVER 250 HORSEPOWER AUTHORIZED ON RYS 16L AND 34R.

AIRFIELD CONDITIONS NOT MONITORED AFTER BUSINESS HOURS OF 5:30 AM−12 AM.

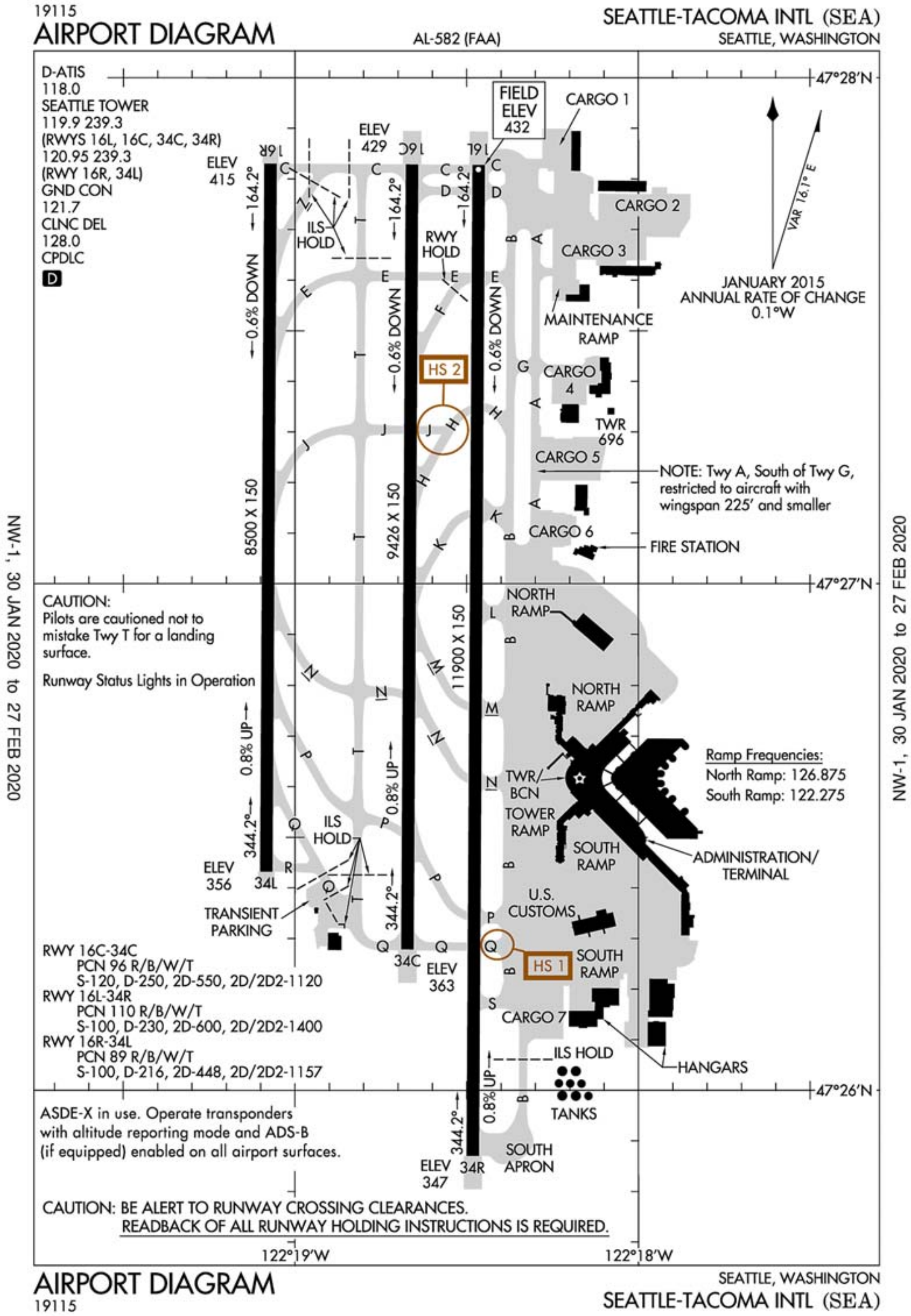
ITINERANT DEP OF SMALL ACFT OVER 250 HORSEPOWER ON RY 34R.

TWY E LTD TO ACFT WITH A WINGSPAN OF 171 FT AND LESS. ACFT OVER A WINGSPAN OF 171 FT, TUG OPS ONLY.

RYS 16L/34R LTD TO HELI 8,000 LBS OR LESS.

EMERG FREQ 121.5 NOT MNT AT TWR. SEATTLE APP CON−TRACON MONITORS 121.5 FOR EVERETT (PAE). TWY INTS D1, AND D2 CLOSED INDEFLY.

Seattle, Washington
Seattle−Tacoma International
ICAO Identifier KSEA



Seattle, WA
Seattle−Tacoma Intl
ICAO Identifier KSEA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47−26−59.6N / 122−18−42.4W
2.2.2 From City: 10 miles S of SEATTLE, WA
2.2.3 Elevation: 432.3 ft
2.2.5 Magnetic Variation: 16E (2020)
2.2.6 Airport Contact: LANCE LYTTLE
BOX 68727
SEATTLE, WA 98168
((206) 787−5229)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: A,A1
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 16C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9426 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 47−27−49.7155N / 122−18−39.5415W
2.12.6 Threshold Elevation: 429.4 ft
2.12.6 Touchdown Zone Elevation: 429.5 ft

2.12.1 Designation: 34C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 9426 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 47−26−16.6966N / 122−18−40.3554W
2.12.6 Threshold Elevation: 362.9 ft
2.12.6 Touchdown Zone Elevation: 387 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11900 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47−27−49.6628N / 122−18−27.9008W
2.12.6 Threshold Elevation: 432.3 ft
2.12.6 Touchdown Zone Elevation: 432.3 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11900 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47−25−52.2202N / 122−18−28.9377W
2.12.6 Threshold Elevation: 346.7 ft
2.12.6 Touchdown Zone Elevation: 371.5 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 89 R/B/W/T
2.12.5 Coordinates: 47−27−49.8109N / 122−19−4.2846W
2.12.6 Threshold Elevation: 414.8 ft
2.12.6 Touchdown Zone Elevation: 414.8 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 89 R/B/W/T
2.12.5 Coordinates: 47−26−25.9217N / 122−19−5.009W
2.12.6 Threshold Elevation: 356.2 ft
2.12.6 Touchdown Zone Elevation: 379.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 16C
2.13.2 Take−off Run Available: 9426
2.13.3 Take−off Distance Available: 9426
2.13.4 Accelerate−Stop Distance Available: 9426
2.13.5 Landing Distance Available: 9426

2.13.1 Designation: 34C
2.13.2 Take−off Run Available: 9426
2.13.3 Take−off Distance Available: 9426
2.13.4 Accelerate−Stop Distance Available: 9426
2.13.5 Landing Distance Available: 9426

2.13.1 Designation: 16L
2.13.2 Take−off Run Available: 11901
2.13.3 Take−off Distance Available: 11901
2.13.4 Accelerate−Stop Distance Available: 11901
2.13.5 Landing Distance Available: 11901

2.13.1 Designation: 34R
2.13.2 Take−off Run Available: 11901
2.13.3 Take−off Distance Available: 11901
2.13.4 Accelerate−Stop Distance Available: 11901
2.13.5 Landing Distance Available: 11901

2.13.1 Designation: 16R
2.13.2 Take−off Run Available: 8500
2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8500
2.13.5 Landing Distance Available: 8500

2.13.1 Designation: 34L
2.13.2 Take−off Run Available: 8500
2.13.3 Take−off Distance Available: 8500
2.13.4 Accelerate−Stop Distance Available: 8500
2.13.5 Landing Distance Available: 8500

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 16C
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34C
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: SZI
2.19.5 Coordinates: 47−26−6.28N / 122−18−39.51W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: Glide Slope for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: SZI
2.19.5 Coordinates: 47−27−38.687N / 122−18−45.462W
2.19.6 Site Elevation: 417.6 ft

2.19.1 ILS Type: Inner Marker for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: SZI
2.19.5 Coordinates: 47−27−58.663N / 122−18−39.3237W
2.19.6 Site Elevation: 403.1 ft

2.19.1 ILS Type: Localizer for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: SZI
2.19.5 Coordinates: 47−26−6.703N / 122−18−40.4438W
2.19.6 Site Elevation: 355.7 ft

2.19.1 ILS Type: DME for runway 34C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47−26−6.28N / 122−18−39.51W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: Glide Slope for runway 34C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47−26−25.6028N / 122−18−46.1679W
2.19.6 Site Elevation: 366.8 ft

2.19.1 ILS Type: Localizer for runway 34C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47−27−54.3525N / 122−18−39.5018W
2.19.6 Site Elevation: 421.8 ft

2.19.1 ILS Type: DME for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47−26−3.5974N / 122−18−22.6779W
2.19.6 Site Elevation: 369.4 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ

2.19.5 Coordinates: 47−27−38.9362N / 122−18−33.8193W
2.19.6 Site Elevation: 425.2 ft

2.19.1 ILS Type: Inner Marker for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47−27−58.063N / 122−18−27.8191W
2.19.6 Site Elevation:

2.19.1 ILS Type: Localizer for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47−25−42.224N / 122−18−29.0263W
2.19.6 Site Elevation: 335.5 ft

2.19.1 ILS Type: DME for runway 34R. Magnetic variation: 16E
2.19.2 ILS Identification: SEA
2.19.5 Coordinates: 47−26−3.5974N / 122−18−22.6779W
2.19.6 Site Elevation: 369.4 ft

2.19.1 ILS Type: Glide Slope for runway 34R. Magnetic variation: 16E
2.19.2 ILS Identification: SEA
2.19.5 Coordinates: 47−26−3.3996N / 122−18−23.0248W
2.19.6 Site Elevation: 355.1 ft

2.19.1 ILS Type: Localizer for runway 34R. Magnetic variation: 16E
2.19.2 ILS Identification: SEA
2.19.5 Coordinates: 47−27−54.2762N / 122−18−27.8613W
2.19.6 Site Elevation: 428.1 ft

2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−26−15.6195N / 122−18−59.9408W
2.19.6 Site Elevation: 344.8 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−27−38.4647N / 122−19−0.5973W
2.19.6 Site Elevation: 405.5 ft

2.19.1 ILS Type: Inner Marker for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−27−58.2279N / 122−19−4.1978W
2.19.6 Site Elevation: 379.9 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−26−15.9249N / 122−19−5.0962W
2.19.6 Site Elevation: 343.7 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: BEJ
2.19.5 Coordinates: 47−26−15.6195N / 122−18−59.9408W
2.19.6 Site Elevation: 344.8 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: BEJ
2.19.5 Coordinates: 47−26−34.9351N / 122−18−59.9836W
2.19.6 Site Elevation: 358.5 ft

2.19.1 ILS Type: Localizer for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: BEJ
2.19.5 Coordinates: 47−27−59.7764N / 122−19−4.1986W
2.19.6 Site Elevation: 409.5 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 19E
2.19.2 Navigation Aid Identification: SEA
2.19.5 Coordinates: 47−26−7.3434N / 122−18−34.618W
2.19.6 Site Elevation: 348.4 ft

General Remarks:
(E94) WSO/WSFO.

TAXILANE W RSTRD TO WINGSPAN OF 135 FT OR LESS NORTH OF TWY N AND 167 FT OR LESS SOUTH TO

TWX N . SEATTLE RAMP TWR PRVDS ADVSY CTL ONLY.

BTN THE HRS OF 2200−0700 THE USE OF EXTDD REVERSE THRUST IS DISCOURAGED BYD WHAT IS NECCESSARY FOR OPNL OR SAFETY REASONS. NOISE ABATEMENT PROCEDURES IN EFFECT BTN 2200−0600. FOR FURTHER INFO CONTACT SEA NOISE ABATEMENT OFFICE AT 206−787−7496.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

HELICOPTERS LANDING & DEPARTING AVOID OVERFLYING FUEL FARM LCTD AT THE SE CORNER OF THE ARPT.

DO NOT MISTAKE TWY T FOR LNDG SFC.

(E110) CONTINUOUS POWER ARPT.

TWY A SOUTH OF TWY G RSTRD TO ACFT WITH WINGSPAN 225 FT AND SMALLER.

TWY FOR CORPORATE HANGAR RAMP LTD TO ACFT WITH 62 FT OR LESS WINGSPAN FOR TAXI OPS. GA CUSTOMS PARKING IS VERY LIMITED.

TAXILANE ON NORTH SIDE OF NORTH SATELLITE RESTRICTED TO WINGSPAN OF LESS THAN 118 FT. TRI−TAXILANES AT NORTH SATELLITE: CENTER (GREEN) TAXILANE RESTRICTED TO WINGSPAN OF 135 FT. OR LESS. WHEN AN AIRCRAFT IS ON THE CENTER (GREEN) OR OTHER (ORANGE/BLUE) TAXILANES, NO OTHER AIRCRAFT CAN SIMUL USE THE ADJACENT TAXILANE(S). ORANGE AND BLUE TAXILANES ARE RESTRICTED TO WINGSPANS LESS THAN 118 FT. TWO AIRCRAFT CAN SIMUL USE THE OUTER TAXILANES.

ONLY AFCT WITH LESS THAN 150 FT WINGSPAN MAY EXIT RWY 34R EB ONTWY H.

RY STATUS LGTS ARE IN OPN.

ACCESS TO AIR CARGO 4 PARKING AND CARGO AREAS RSTD TO ACFT WITH WINGSPANS OF 170 FT OR LESS.

BIRD FLOCKS WITHIN ARPT VCNTY − CHECK LCL ADZYS.

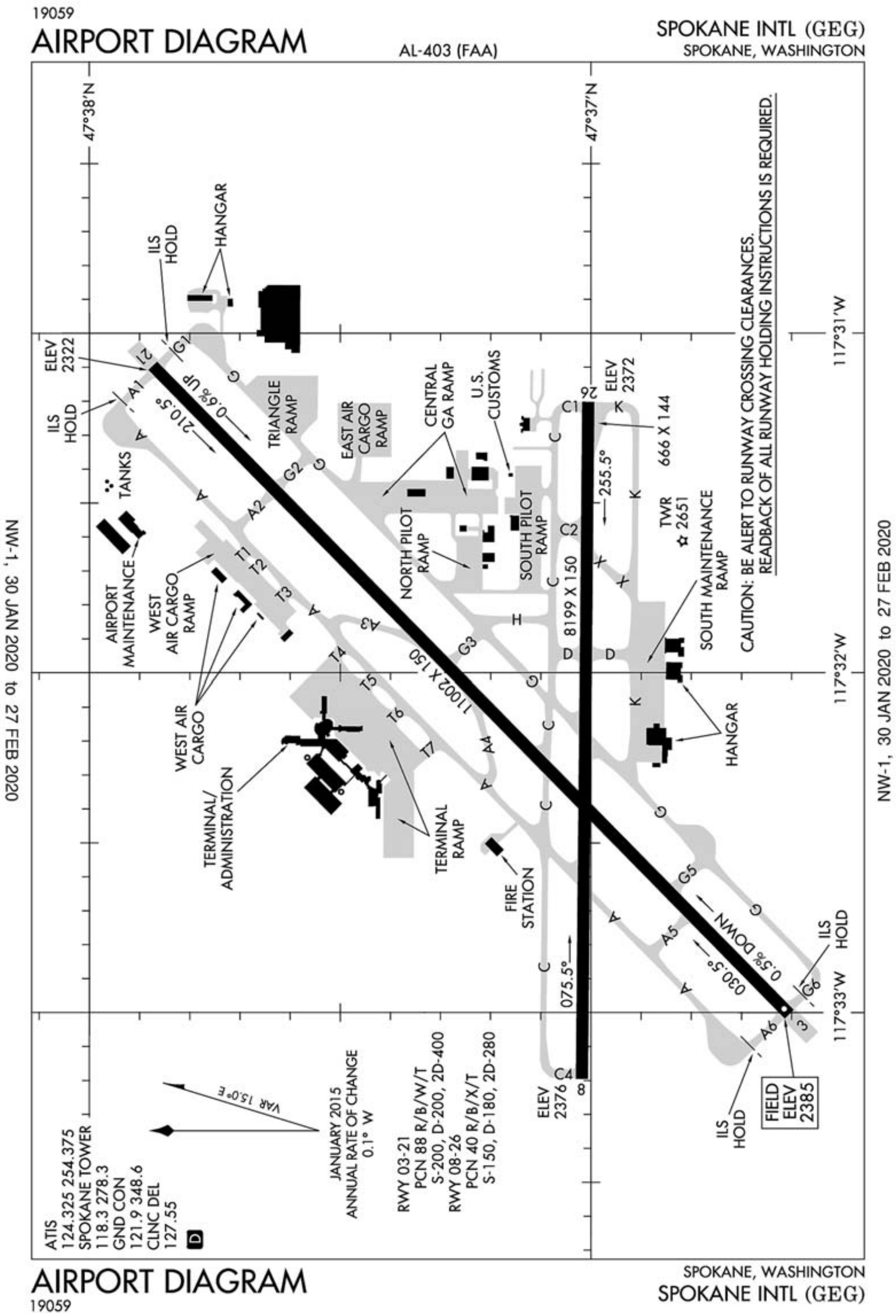
GA LANDING FEES PAYABLE BY MAJOR CREDIT CARDS ONLY.

ACFT WITH WINGSPANS OF 171 FT. OR MORE PARKED AT PAX GATES OR CARGO 7 MUST PROVIDE 30 MIN PPR PRIOR TO PUSHBACK TO SEATTLE RAMP TWR WHEN VSBY LESS THAN 2400 RVR

FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL.

PPR FOR ALL GA PRKG AND SVC. CTC 206−433−5481. OPR HRS 0530L − 2300L, WITH A CALL OUT AVBL UPON REQ.

Spokane, Washington
Spokane International
ICAO Identifier KGEG



Spokane, WA
Spokane Intl
ICAO Identifier KGEG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47−37−8.5N / 117−32−6.8W
2.2.2 From City: 5 miles SW of SPOKANE, WA
2.2.3 Elevation: 2385 ft
2.2.5 Magnetic Variation: 14E (2020)
2.2.6 Airport Contact: LAWRENCE J KRAUTER
9000 W AIRPORT DR.
SPOKANE, WA 99224
((509) 455−6418)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 47−36−36.2909N / 117−33−0.2876W
2.12.6 Threshold Elevation: 2385 ft
2.12.6 Touchdown Zone Elevation: 2385 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 47−37−52.3811N / 117−31−5.7573W
2.12.6 Threshold Elevation: 2322.4 ft
2.12.6 Touchdown Zone Elevation: 2346.1 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 8199 ft x 150 ft
2.12.4 PCN: 40 R/B/X/T
2.12.5 Coordinates: 47−37−1.0687N / 117−33−11.7639W
2.12.6 Threshold Elevation: 2376.2 ft
2.12.6 Touchdown Zone Elevation: 2376.2 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8199 ft x 150 ft
2.12.4 PCN: 40 R/B/X/T
2.12.5 Coordinates: 47−37−0.3642N / 117−31−12.1045W
2.12.6 Threshold Elevation: 2371.5 ft
2.12.6 Touchdown Zone Elevation: 2371.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take−off Run Available: 11002
2.13.3 Take−off Distance Available: 11002
2.13.4 Accelerate−Stop Distance Available: 11002
2.13.5 Landing Distance Available: 11002

2.13.1 Designation: 21
2.13.2 Take−off Run Available: 11002
2.13.3 Take−off Distance Available: 11002
2.13.4 Accelerate−Stop Distance Available: 11002
2.13.5 Landing Distance Available: 11002

2.13.1 Designation: 08
2.13.2 Take−off Run Available: 8199
2.13.3 Take−off Distance Available: 8199
2.13.4 Accelerate−Stop Distance Available: 8199
2.13.5 Landing Distance Available: 8199

2.13.1 Designation: 26
2.13.2 Take−off Run Available: 8199
2.13.3 Take−off Distance Available: 8199
2.13.4 Accelerate−Stop Distance Available: 8199
2.13.5 Landing Distance Available: 8199

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 21
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 26
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P IC (205−025)
2.14.3 Channel: 123.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (026−204)
2.14.3 Channel: 133.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (026−204)
2.14.3 Channel: 263
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (205−025)
2.14.3 Channel: 282.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 372.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 124.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 254.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 127.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (205−025)
2.14.3 Channel: 123.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (026−204)
2.14.3 Channel: 133.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (026−204)
2.14.3 Channel: 263
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (205−025)
2.14.3 Channel: 282.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 278.3
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47−36−32.05N / 117−33−15.1W
2.19.6 Site Elevation: 2380.2 ft

2.19.1 ILS Type: Glide Slope for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47−36−47.5569N / 117−32−51.8755W
2.19.6 Site Elevation: 2372 ft

2.19.1 ILS Type: Inner Marker for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47−36−30.0643N / 117−33−9.6536W
2.19.6 Site Elevation: 2380.5 ft

2.19.1 ILS Type: Localizer for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47−37−59.6757N / 117−30−54.7682W
2.19.6 Site Elevation: 2315.7 ft

2.19.1 ILS Type: DME for runway 21. Magnetic variation: 14E
2.19.2 ILS Identification: GEG
2.19.5 Coordinates: 47−36−32.05N / 117−33−15.1W
2.19.6 Site Elevation: 2380.2 ft

2.19.1 ILS Type: Glide Slope for runway 21. Magnetic variation: 14E
2.19.2 ILS Identification: GEG
2.19.5 Coordinates: 47−37−48.959N / 117−31−19.4519W
2.19.6 Site Elevation: 2324.3 ft

2.19.1 ILS Type: Localizer for runway 21. Magnetic variation: 14E
2.19.2 ILS Identification: GEG
2.19.5 Coordinates: 47−36−29.2008N / 117−33−10.9524W
2.19.6 Site Elevation: 2380.1 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 21E
2.19.2 Navigation Aid Identification: GEG
2.19.5 Coordinates: 47−33−53.805N / 117−37−36.789W
2.19.6 Site Elevation: 2756.3 ft

General Remarks:

PORTIONS OF TWY K NOT VISIBLE FM ATCT.

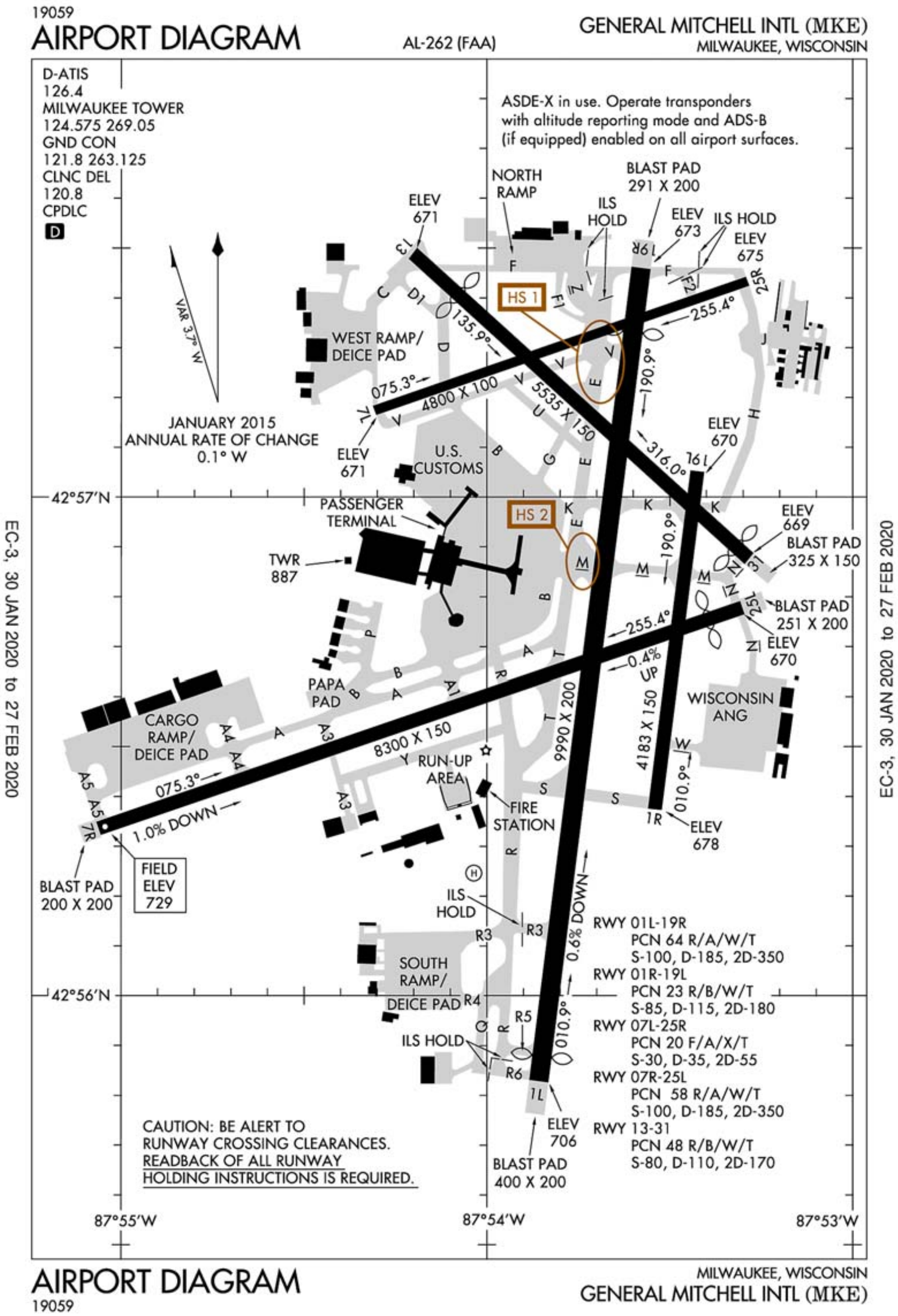
TWY K UNLGTD ON RAMP SIDE ALONG MAINTENANCE RAMP AND IS UNAVBL BELOW 1200 RVR UNLESS

UNDER ESCORT BY ”FOLLOW ME”.

BE ALERT TO TURBULENCE OVER SMOKE STACKS 1 MILE EAST OF ARPT.

WATERFOWL & BIRDS ON & INVOF ARPT.

Milwaukee, Wisconsin
General Mitchell International
ICAO Identifier KMKE



Milwaukee, WI
General Mitchell Intl
ICAO Identifier KMKE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42−56−49N / 87−53−49.4W
2.2.2 From City: 5 miles S of MILWAUKEE, WI
2.2.3 Elevation: 728.5 ft
2.2.5 Magnetic Variation: 4W (2020)
2.2.6 Airport Contact: BRIAN DRANZIK
5300 S HOWELL AVE
MILWAUKEE, WI 53207
(414−747−5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 19R
2.12.2 True Bearing: 187
2.12.3 Dimensions: 9990 ft x 200 ft
2.12.4 PCN: 64 R/A/W/T
2.12.5 Coordinates: 42−57−27.703N / 87−53−34.7734W
2.12.6 Threshold Elevation: 672.8 ft
2.12.6 Touchdown Zone Elevation: 671.8 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 7
2.12.3 Dimensions: 9990 ft x 200 ft
2.12.4 PCN: 64 R/A/W/T
2.12.5 Coordinates: 42−55−49.801N / 87−53−51.5134W
2.12.6 Threshold Elevation: 705.8 ft
2.12.6 Touchdown Zone Elevation: 703.5 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 7
2.12.3 Dimensions: 4183 ft x 150 ft
2.12.4 PCN: 23 R/B/W/T
2.12.5 Coordinates: 42−56−21.7668N / 87−53−32.5021W
2.12.6 Threshold Elevation: 677.6 ft
2.12.6 Touchdown Zone Elevation: 677.8 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 187
2.12.3 Dimensions: 4183 ft x 150 ft
2.12.4 PCN: 23 R/B/W/T
2.12.5 Coordinates: 42−57−2.7455N / 87−53−25.4882W
2.12.6 Threshold Elevation: 669.6 ft
2.12.6 Touchdown Zone Elevation: 674.5 ft

2.12.1 Designation: 07L
2.12.2 True Bearing: 72
2.12.3 Dimensions: 4800 ft x 100 ft
2.12.4 PCN: 20 F/A/X/T
2.12.5 Coordinates: 42−57−9.8842N / 87−54−19.1359W
2.12.6 Threshold Elevation: 671.4 ft
2.12.6 Touchdown Zone Elevation: 672 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 252
2.12.3 Dimensions: 4800 ft x 100 ft
2.12.4 PCN: 20 F/A/X/T
2.12.5 Coordinates: 42−57−24.81N / 87−53−17.873W
2.12.6 Threshold Elevation: 674.5 ft
2.12.6 Touchdown Zone Elevation: 674.5 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 252
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.4 PCN: 58 R/A/W/T
2.12.5 Coordinates: 42−56−46.473N / 87−53−18.0009W
2.12.6 Threshold Elevation: 670 ft
2.12.6 Touchdown Zone Elevation: 683.1 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 72
2.12.3 Dimensions: 8300 ft x 150 ft
2.12.4 PCN: 58 R/A/W/T
2.12.5 Coordinates: 42−56−20.6656N / 87−55−3.9119W
2.12.6 Threshold Elevation: 728.5 ft
2.12.6 Touchdown Zone Elevation: 728.5 ft

2.12.1 Designation: 13
2.12.2 True Bearing: 132
2.12.3 Dimensions: 5535 ft x 150 ft
2.12.4 PCN: 48 R/B/W/T
2.12.5 Coordinates: 42−57−29.2631N / 87−54−12.272W
2.12.6 Threshold Elevation: 671.4 ft
2.12.6 Touchdown Zone Elevation: 670.5 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 312
2.12.3 Dimensions: 5535 ft x 150 ft
2.12.4 PCN: 48 R/B/W/T
2.12.5 Coordinates: 42−56−52.508N / 87−53−17.1843W
2.12.6 Threshold Elevation: 668.7 ft
2.12.6 Touchdown Zone Elevation: 670.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 9990
2.13.3 Take−off Distance Available: 9990
2.13.4 Accelerate−Stop Distance Available: 9990
2.13.5 Landing Distance Available: 9205

2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 9990
2.13.3 Take−off Distance Available: 9990
2.13.4 Accelerate−Stop Distance Available: 9380
2.13.5 Landing Distance Available: 9080

2.13.1 Designation: 01R
2.13.2 Take−off Run Available: 4183
2.13.3 Take−off Distance Available: 4183
2.13.4 Accelerate−Stop Distance Available: 4183
2.13.5 Landing Distance Available: 4183

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 4183
2.13.3 Take−off Distance Available: 4183
2.13.4 Accelerate−Stop Distance Available: 4183
2.13.5 Landing Distance Available: 4183

2.13.1 Designation: 07L
2.13.2 Take−off Run Available: 4800
2.13.3 Take−off Distance Available: 4800
2.13.4 Accelerate−Stop Distance Available: 4800
2.13.5 Landing Distance Available: 4800

2.13.1 Designation: 25R
2.13.2 Take−off Run Available: 4800
2.13.3 Take−off Distance Available: 4800
2.13.4 Accelerate−Stop Distance Available: 4800
2.13.5 Landing Distance Available: 4800

2.13.1 Designation: 25L
2.13.2 Take−off Run Available: 8300
2.13.3 Take−off Distance Available: 8300
2.13.4 Accelerate−Stop Distance Available: 8300
2.13.5 Landing Distance Available: 7868

2.13.1 Designation: 07R
2.13.2 Take−off Run Available: 8300
2.13.3 Take−off Distance Available: 8300
2.13.4 Accelerate−Stop Distance Available: 8012
2.13.5 Landing Distance Available: 8012

2.13.1 Designation: 13
2.13.2 Take−off Run Available: 5538
2.13.3 Take−off Distance Available: 5538
2.13.4 Accelerate−Stop Distance Available: 5538
2.13.5 Landing Distance Available: 4797

2.13.1 Designation: 31
2.13.2 Take−off Run Available: 5538
2.13.3 Take−off Distance Available: 5538
2.13.4 Accelerate−Stop Distance Available: 5538
2.13.5 Landing Distance Available: 5334

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 19R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 01R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 19L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 07L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 25R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

2.14.1 Designation: 25L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 07R
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 13
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 31
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P4R

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (B SE)
2.14.3 Channel: 118
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (B SE)
2.14.3 Channel: 317.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (A NW)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (A NW)
2.14.3 Channel: 126.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 120.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (B SE)
2.14.3 Channel: 118
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (A NW)
2.14.3 Channel: 126.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (A NW)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (B SE)
2.14.3 Channel: 317.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: COMD POST (128 ARW ANG UPSET CTL)
2.14.3 Channel: 321
2.14.5 Hours of Operation:

2.14.1 Service Designation: COMD POST (28 ARW ANG UPSET CON)
2.14.3 Channel: 6761
2.14.5 Hours of Operation:

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (A NW)
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (B SE)
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 263.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 124.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 269.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS
2.14.3 Channel: 139.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: OPS
2.14.3 Channel: 311
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 01L. Magnetic

variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42−57−50.9387N / 87−53−27.4457W
2.19.6 Site Elevation: 715.2 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42−56−4.4535N / 87−53−43.0457W
2.19.6 Site Elevation: 691.2 ft

2.19.1 ILS Type: Inner Marker for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42−55−44.6571N / 87−53−52.4019W
2.19.6 Site Elevation: 705.8 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42−57−49.955N / 87−53−30.9671W
2.19.6 Site Elevation: 712.9 ft

2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 4W
2.19.2 ILS Identification: BLY
2.19.5 Coordinates: 42−57−50.9387N / 87−53−27.4457W
2.19.6 Site Elevation: 715.2 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 4W
2.19.2 ILS Identification: BLY
2.19.5 Coordinates: 42−57−9.1785N / 87−53−32.5227W
2.19.6 Site Elevation: 666.3 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 4W
2.19.2 ILS Identification: BLY
2.19.5 Coordinates: 42−55−38.3024N / 87−53−53.4803W
2.19.6 Site Elevation: 709 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 4W
2.19.2 ILS Identification: GMF
2.19.5 Coordinates: 42−56−18.506N / 87−55−23.661W
2.19.6 Site Elevation: 729.8 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 4W
2.19.2 ILS Identification: GMF
2.19.5 Coordinates: 42−56−20.4936N / 87−54−47.1205W
2.19.6 Site Elevation: 707.3 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 4W
2.19.2 ILS Identification: GMF
2.19.5 Coordinates: 42−56−49.0937N / 87−53−7.2381W
2.19.6 Site Elevation: 668.3 ft

2.19.1 ILS Type: DME for runway 25L. Magnetic variation: 4W
2.19.2 ILS Identification: PXY
2.19.5 Coordinates: 42−56−18.506N / 87−55−23.661W
2.19.6 Site Elevation: 729.8 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 4W
2.19.2 ILS Identification: PXY
2.19.5 Coordinates: 42−56−16.0653N / 87−55−22.7821W
2.19.6 Site Elevation: 727.9 ft

General Remarks:
TWY B BTN TWY V AND TWY P CLSD TO AFCT WITH WINGSPAN GREATER THAN 170 FT.

ANG: PPR ALL ACFT, 48HR PN, CTC AFLD OPS DSN 580−8241, C414−944−8241. 128 ARW IS A FULLY OPERATIONAL KC−135R BASE WITH HRS OF OPERATION MON−FRI 1200Z−1930Z++ TUE−FRI, CLSD HOL, SAT−SUN EXC UNIT TMG, CALL FOR AVBL.

RY 19R TODA 8,750 FT FROM INT TWY V.

RY 07L/25R NO ACFT 65,000 LBS OR GREATER ALLOWED TO TAXI BTN TWY D & RY 13/31 AND EAST OF RY 19R.

TWY C CLSD BTWN APCH END OF RWY 7L AND TWY D1 TO ACFT WITH WINGSPAN GTR THAN OR EQUAL

TO 118 FT UNLESS PMSN FM ARPT MGR 414−747−5325.

ANG: END OF RUNWAY FACILITIES, AIRCRAFT SHELTERS/REVETMENTS, AND ALERT FACILITIES ARE NOT AVAILABLE. AFLD/ACFT PARKING CONCERNS INCLUDE: LIMITED STATIC GROUNDING POINTS AND NO AIRCRAFT TIE DOWN POINTS.

TWY A CLSD BTN TWY A4 AND TWY A5 TO ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 214' UNLESS PERMISSION FROM ARPT MGR 414−747−5325

ALL AIRCRAFT PUSHBACKS FROM GATES C20, C21, C22, C23, D39 D41 D43, D45, D48, D51, D53, D54, D55, E65, E66, & E67 REQUIRE CLEARANCE FROM GROUND CONTROL. PUSHBACKS FROM ALL OTHER GATES ARE AT RAMP/ PILOT DISCRETION; CONTACT GROUND CONTROL WHEN READY TO TAXI.

TWY S & TWY T BTN TWY R & RY 07R/25L AND RY 07R/25L BTN RY 1R/19L & TWY R CLSD DURG CAT II & III OPNS.

ANG: ANY MDS'S (OTHER THAN KC−135) IS LIMITED TO STANDARD TRANSIENT MARSHALLING AND PARKING. NO TECHNICAL DATA AVAILABLE FOR TRANSIENT MAINTENANCE. FUEL AND AGE EQUIPMENT SUPPORT AVAILABLE FOR SELF−SERVICE. THERE ARE NO ADDITIONAL CONFIGURATION ITEMS SUPPORTED SUCH AS LANTIRN PODS, EDM PODS, ETC.

HOLDING BAY AT RY 01L CLSD EXCP ACFT WITH WINGSPAN LESS THAN 118 FT.

PREFERRED USAGE BY ACFT BTN 2200−0600 IS TKOF RY 19R & LNDG RY 01L.

RY 07L/25R CLSD TO ALL JET ACFT.

DEICE PAD FOR RWY 07R NOT AUTH FOR THRU TAXI.

TRNG FLGTS INVOLVING SUCCESSIVE USE OF ANY RY PROHIBITED 2200−0600.

ANG: NSTD MRK ON PRK APRON FOR WINGTIP CLNC; SEE AFLD MGT FOR DETAILED MAP.

ACFT WITH WINGSPAN GREATER THAN 175 FT CANNOT PASS SIMULTANEOUSLY ON TWY 'E' & TWY 'Z'.

HOLDING BAY AT RY 19R WHEN IN USE, TWY Z ADJACENT TO BAY IS LIMITED TO ACFT WITH WINGSPAN UP TO 170 FT.

RY 13/31 CLSD JET ACFT, UNLESS PMSN FROM TWR OR AMGR 414−747−5325.

TWY A CLSD FROM TWY R TO TWY E AND TWY E CLSD FROM TWY T TO TWY M AND TWY T NORTH OF RWY 07R−25L CLSD TO ACFT WITH TAIL HEIGHT GREATER THAN 54.5 FT DURING CAT II AND CAT III OPS. RY 01R−19L AVAILABLE TO AIR CARRIERS FOR TAXI ONLY.

TWYS D1, F2, H, J, F1, P AND F (EAST OF RWY 19R) AND TWY K (EAST OF RWY 19L) CLSD TO ACFT WTIH WINGSPAN GREATER THAN 78 FT.

TWY F (WEST OF TWY Z) CLSD TO ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 118 FT UNLESS PERMISSION FROM ARPT DIR AT 414−747−5325.

ANG: NO FLEET SVC/HOT CARGO PARKING AVAILABLE. CTC UPSET CTRL 20 MIN PRIOR TO ARR TO RCV CURRENT BIRD WATCH COND AND PARKING INFO.

ALL APCHS ARE OVER NOISE SENSITIVE AREAS; ALL TURBOJET ACFT SHOULD REFRAIN FM CONDUCTING MULTI VFR TFC PATTERN APCHS & DEPS WO PRIOR APVL FM AMGR CALL C414−747−5325.

BIRDS ON & INVOF ARPT.

RYS 13/31 & 01R/19L & 07L/25R CLSD EXCP LGT WT SINGLE ENG ACFT 0400−1200Z DLY.

TWY V BTN TWY D AND RY 7L/25R CLSD TO ACFT WITH WINGSPAN GREATER THAN 170 FT WHEN RY 7L/25R IN USE.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RUNWAY 7L/25R NOT AVAILABLE FOR SCHEDULED AIR CARRIER OPERATIONS INVOLVING AIRCRAFT DESIGNED FOR 10 OR MORE PASSENGER SEATS & UNSCHEDULED AIR CARRIER OPERATIONS INVOLVING AIRCRAFT DESIGNED FOR 31 OR MORE SEATS.

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Appendix 1. ATS Routes

MINIMUM ENROUTE IFR ALTITUDES OVER PARTICULAR ROUTES AND INTERSECTIONS

1. This is an annual consolidation of all data in Subparts C and D of Part 95 − Subchapter F, which were in effect January 30, 2020, Amendment 550 included.

2. It is not an amendment to Part 95; therefore, it will not appear in the Federal Register.

For updates to these routes and access to additional data products, please visit http://nfdc.faa.gov/.

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95.0040 COLORED FEDERAL AIRWAYS

95.101 AMBER FEDERAL AIRWAY A1

FROM	TO	MEA
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	2800
U.S. CANADIAN BORDER *2300 - MOCA	SITKA, AK NDB	*5200
SITKA, AK NDB	SPARL, AK FIX	5200
SPARL, AK FIX *2200 - MOCA	OCEAN CAPE, AK NDB	*6000
OCEAN CAPE, AK NDB *2000 - MOCA	CAPEM, AK FIX	*6000
CAPEM, AK FIX *4400 - MOCA	CORVA, AK FIX	*6000
CORVA, AK FIX	EGGER, AK FIX	2000
EGGER, AK FIX	ORCA BAY, AK NDB	5000
ORCA BAY, AK NDB *8300 - MOCA	CAMPBELL LAKE, AK NDB	*9000
CAMPBELL LAKE, AK NDB *9500 - MOCA	TAKOTNA RIVER, AK NDB	*10000
TAKOTNA RIVER, AK NDB *6000 - MOCA	NORTH RIVER, AK NDB	*7000
NORTH RIVER, AK NDB	FORT DAVIS, AK NDB	3000

95.102 AMBER FEDERAL AIRWAY A2

FROM	TO	MEA
U.S. CANADIAN BORDER *9000 - MOCA	NABESNA, AK NDB	*9600
NABESNA, AK NDB	DELTA JUNCTION, AK NDB	8000

95.103 AMBER FEDERAL AIRWAY A3

FROM	TO	MEA
EVANSVILLE, AK NDB	PUT RIVER, AK NDB	10000

95.104 AMBER FEDERAL AIRWAY A4

FROM	TO	MEA
EVANSVILLE, AK NDB *8300 - MOCA	ANAKTUVUK PASS, AK NDB	*10000

95.105 AMBER FEDERAL AIRWAY A5

FROM	TO	MEA
AMBLER, AK NDB *6600 - MOCA	EVANSVILLE, AK NDB	*7500

95.106 AMBER FEDERAL AIRWAY A6

FROM	TO	MEA
ST MARYS, AK NDB	NORTH RIVER, AK NDB	5000

95.107 AMBER FEDERAL AIRWAY A7

FROM	TO	MEA
CAMPBELL LAKE, AK NDB	MINERAL CREEK, AK NDB COP 069 CMQ	12000

95.109 AMBER FEDERAL AIRWAY A9

CHENA, AK NDB	EVANSVILLE, AK NDB	5500
EVANSVILLE, AK NDB	BROWERVILLE, AK NDB	*10000
*9100 - MOCA		

95.115AMBER FEDERAL AIRWAY A15

US CANADIAN BORDER	NICHOLS, AK NDB	5000

95.115AMBER FEDERAL AIRWAY A15 - CONTINUED

NICHOLS, AK NDB	SUMNER STRAIT, AK NDB	*7000
*5100 - MOCA		
*6000 - GNSS MEA		
SUMNER STRAIT, AK NDB	COGHLAN ISLAND, AK NDB	7000
COGHLAN ISLAND, AK NDB	HAINES, AK NDB	*9000
*8300 - MOCA		
HAINES, AK NDB	U.S. CANADIAN BORDER	#11000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
U.S. CANADIAN BORDER	NABESNA, AK NDB	*9600
*9000 - MOCA		
NABESNA, AK NDB	DELTA JUNCTION, AK NDB	8000

95.116AMBER FEDERAL AIRWAY A16

ACTIVE PASS, CANADA NDB	WHITE ROCK, CANADA NDB	#*3000
*2100 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.117AMBER FEDERAL AIRWAY A17

CHENA, AK NDB	CHANDALAR LAKE, AK NDB	7000
*CHANDALAR LAKE, AK NDB	PUT RIVER, AK NDB	10000
*10000 - MCA CHANDALAR LAKE, AK NDB , NW BND		

95.201 RED FEDERAL AIRWAY R1

ST PAUL ISLAND, AK NDB/DME	GARRS, AK FIX	*4600
*2700 - MOCA		
GARRS, AK FIX	CHINOOK, AK NDB	4600

95.202 RED FEDERAL AIRWAY R2

ELFEE, AK NDB	PORT HEIDEN, AK NDB/DME	6000

95.204 RED FEDERAL AIRWAY R4

CHENA, AK NDB	BEAR CREEK, AK NDB	5000

FROM	TO	MEA

95.239 RED FEDERAL AIRWAY R39

OSCARVILLE, AK NDB	*ANIAK, AK NDB	**2000
*3500 - MCA ANIAK, AK NDB , NE BND		
**1400 - MOCA		
ANIAK, AK NDB	TAKOTNA RIVER, AK NDB	*6000
*5400 - MOCA		
TAKOTNA RIVER, AK NDB	MINCHUMINA, AK NDB	5000
MINCHUMINA, AK NDB	ICE POOL, AK NDB	4000

95.250 RED FEDERAL AIRWAY R50

NANWAK, AK NDB/DME	OSCARVILLE, AK NDB	3000
OSCARVILLE, AK NDB	ANVIK, AK NDB	4100

95.251 RED FEDERAL AIRWAY R51

SUMNER STRAIT, AK NDB	SITKA, AK NDB	7000

95.299 RED FEDERAL AIRWAY R99

ST PAUL ISLAND, AK NDB/DME	DUTCH HARBOR, AK NDB/DME	#4800
#HF COMMS REQUIRED BELOW 8000 MSL.		
DUTCH HARBOR, AK NDB/DME	CHINOOK, AK NDB	*9000
*6300 - MOCA		
CHINOOK, AK NDB	ILIAMNA, AK NDB/DME	*5000
*4400 - MOCA		
ILIAMNA, AK NDB/DME	KACHEMAK, AK NDB	6100

95.41 GREEN FEDERAL AIRWAY G1

MOUNT MOFFETT, AK NDB/DME	HORTH, AK FIX	8000
HORTH, AK FIX	MORDI, AK FIX	*8000
*2500 - MOCA		
*5000 - GNSS MEA		
MORDI, AK FIX	ELFEE, AK NDB	*8000
*5300 - MOCA		
*7000 - GNSS MEA		

95.42 GREEN FEDERAL AIRWAY G2

BORLAND, AK NDB/DME	WOODY ISLAND, AK NDB	*10000
*6600 - MOCA		

95.44 GREEN FEDERAL AIRWAY G4

WOOD RIVER, AK NDB	ILIAMNA, AK NDB/DME	*4500
*3000 - MOCA		

FROM	TO	MEA

95.46 GREEN FEDERAL AIRWAY G6

ST MARYS, AK NDB	ANIAK, AK NDB	4000

95.47 GREEN FEDERAL AIRWAY G7

GAMBELL, AK NDB/DME	FORT DAVIS, AK NDB	3000
FORT DAVIS, AK NDB	NORTON BAY, AK NDB	*5000
*4200 - MOCA		

95.48 GREEN FEDERAL AIRWAY G8

SHEMYA, AK NDB	MOUNT MOFFETT, AK NDB/DME	#*8000
*6300 - MOCA		
#HF COMMS REQUIRED.		
MOUNT MOFFETT, AK NDB/DME	DUTCH HARBOR, AK NDB/DME	#*9000
*8000 - MOCA		
#HF COMMUNICATIONS REQUIRED		
DUTCH HARBOR, AK NDB/DME	MORDI, AK FIX	*9000
*5700 - MOCA		
*6000 - GNSS MEA		
MORDI, AK FIX	ELFEE, AK NDB	*8000
*5300 - MOCA		
*7000 - GNSS MEA		
ELFEE, AK NDB	CRACK, AK FIX	#*5000
*4100 - MOCA		
#VHF COMMS AVBL 5000 MSL AND ABOVE.		
#HF COMMS ONLY BELOW 5000 MSL		
CRACK, AK FIX	CHINOOK, AK NDB	#*3000
*2300 - MOCA		
#VHF/UHF COMMS AVBL 9000 MSL AND ABOVE		
#HF COMMS ONLY BELOW 9000 MSL		
CHINOOK, AK NDB	NOSKY, AK FIX	*6000
*4900 - MOCA		
NOSKY, AK FIX	KACHEMAK, AK NDB	6100

95.49 GREEN FEDERAL AIRWAY G9

OSCARVILLE, AK NDB	ZEKEG, AK FIX	
	NE BND	*6000
	SW BND	*3000
*2100 - MOCA		
ZEKEG, AK FIX	CAIRN MOUNTAIN, AK NDB	6000

95.50GREEN FEDERAL AIRWAY G10

CAPE NEWENHAM, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	4600
ST PAUL ISLAND, AK NDB/DME	BILBE, AK FIX	3000
BILBE, AK FIX	ELFEE, AK NDB	*6000
*3800 – MOCA		
ELFEE, AK NDB	PORT HEIDEN, AK NDB/DME	*5000
*4100 – MOCA		

FROM	TO	MEA

95.50GREEN FEDERAL AIRWAY G10 - CONTINUED

PORT HEIDEN, AK NDB/DME	WIDTH, AK FIX COP 090 PDN	9000
WIDTH, AK FIX *6300 - MOCA	WOODY ISLAND, AK NDB	*9000
WOODY ISLAND, AK NDB	KACHEMAK, AK NDB	6000

95.51GREEN FEDERAL AIRWAY G11

CAMPBELL LAKE, AK NDB	GLENNALLEN, AK NDB	10000
GLENNALLEN, AK NDB	NABESNA, AK NDB	10000

95.52GREEN FEDERAL AIRWAY G12

ELFEE, AK NDB	BORLAND, AK NDB/DME	10000
BORLAND, AK NDB/DME	PORT HEIDEN, AK NDB/DME	10000
PORT HEIDEN, AK NDB/DME	CHINOOK, AK NDB	2500

95.53GREEN FEDERAL AIRWAY G13

ZOLMN, NC FIX	MANTEO, NC NDB	2000

95.55GREEN FEDERAL AIRWAY G15

ST MARYS, AK NDB	ANVIK, AK NDB	4000
ANVIK, AK NDB *6000 - MOCA *7000 - GNSS MEA	TAKOTNA RIVER, AK NDB	*9000

95.56GREEN FEDERAL AIRWAY G16

POINT LAY, AK NDB *1200 - MOCA	WAINWRIGHT VILLAGE, AK NDB	*1700
WAINWRIGHT VILLAGE, AK NDB *1100 - MOCA	BROWERVILLE, AK NDB	*1600
BROWERVILLE, AK NDB	NUIQSUT VILLAGE, AK NDB COP 050 VIR	1600
NUIQSUT VILLAGE, AK NDB *1200 - MOCA	PUT RIVER, AK NDB	*1700

95.57GREEN FEDERAL AIRWAY G17

WAINWRIGHT VILLAGE, AK NDB *1100 – MOCA	ATQASUK, AK NDB	*1600

95.58GREEN FEDERAL AIRWAY G18

HOTHAM, AK NDB *6000 - MOCA	POINT LAY, AK NDB COP 096 HHM	*10000
POINT LAY, AK NDB	ATQASUK, AK NDB COP 050 PIZ	2300

FROM	TO	MEA

95.602 BLUE FEDERAL AIRWAY B2

POINT LAY, AK NDB	CAPE LISBURNE, AK NDB/DME	4000
CAPE LISBURNE, AK NDB/DME	HOTHAM, AK NDB	*8000
*4100 - MOCA		
	COP 057 LUR	
HOTHAM, AK NDB	TIN CITY, AK NDB/DME	*5000
*4300 - MOCA		
TIN CITY, AK NDB/DME	FORT DAVIS, AK NDB	*7000
*5900 - MOCA		
*6000 - GNSS MEA		

95.603 BLUE FEDERAL AIRWAY B3

ANIAK, AK NDB	ANVIK, AK NDB	3700
ANVIK, AK NDB	NORTH RIVER, AK NDB	4600
NORTH RIVER, AK NDB	NORTON BAY, AK NDB	3000
NORTON BAY, AK NDB	HOTHAM, AK NDB	4500
HOTHAM, AK NDB	NOATAK, AK NDB/DME	3300

95.604 BLUE FEDERAL AIRWAY B4

UTOPIA CREEK, AK NDB/DME	EVANSVILLE, AK NDB	*8000
*6200 - MOCA		
EVANSVILLE, AK NDB	YUKON RIVER, AK NDB	*8000
*6600 - MOCA		

95.605 BLUE FEDERAL AIRWAY B5

CAPE LISBURNE, AK NDB/DME	POINT HOPE, AK NDB	4000

95.607 BLUE FEDERAL AIRWAY B7

CAPE NEWENHAM, AK NDB/DME	OSCARVILLE, AK NDB	4600

95.608 BLUE FEDERAL AIRWAY B8

TIN CITY, AK NDB/DME	SHISHMAREF, AK NDB	4000

95.609 BLUE FEDERAL AIRWAY B9

*DEEDS, FL FIX	MARATHON, FL NDB	**2000
*4000 - MRA		
**1500 – MOCA		

95.6112 BLUE FEDERAL AIRWAY B12

WOODY ISLAND, AK NDB	ILIAMNA, AK NDB/DME	*10000
*9300 - MOCA		

95.6125 BLUE FEDERAL AIRWAY B25

ORCA BAY, AK NDB	*SHOPE, AK FIX	4900
*6600 - MCA SHOPE, AK FIX , N BND		
SHOPE, AK FIX	GLENNALLEN, AK NDB	10000

95.6125 BLUE FEDERAL AIRWAY B25 – CONTINUED

FROM	TO	MEA
GLENNALLEN, AK NDB	*DELTA JUNCTION, AK NDB	**12000
*8000 - MCA DELTA JUNCTION, AK NDB , SE BND		
**11500 - MOCA		

95.6126 BLUE FEDERAL AIRWAY B26

FROM	TO	MEA
CHENA, AK NDB	YUKON RIVER, AK NDB	7000

95.6127 BLUE FEDERAL AIRWAY B27

FROM	TO	MEA
WOODY ISLAND, AK NDB	CHINOOK, AK NDB	10000
CHINOOK, AK NDB	WANIX, AK FIX	*8000
*7500 - MOCA		
WANIX, AK FIX	OSCARVILLE, AK NDB	
	NW BND	4000
	SE BND	8000
OSCARVILLE, AK NDB	ST MARYS, AK NDB	3000
ST MARYS, AK NDB	FORT DAVIS, AK NDB	3000
FORT DAVIS, AK NDB	HOTHAM, AK NDB	6000

95.6128 BLUE FEDERAL AIRWAY B28

FROM	TO	MEA
U.S. CANADIAN BORDER	NICHOLS, AK NDB	5000
NICHOLS, AK NDB	SITKA, AK NDB	*6900
*6000 - MOCA		
*6000 - GNSS MEA		

95.6137 BLUE FEDERAL AIRWAY B37

FROM	TO	MEA
SUMNER STRAIT, AK NDB	ELEPHANT, AK NDB	*7000
*6400 - MOCA		
ELEPHANT, AK NDB	SPARL, AK FIX	*6000
*5000 - MOCA		
*5000 - GNSS MEA		

95.6138 BLUE FEDERAL AIRWAY B38

FROM	TO	MEA
ELEPHANT, AK NDB	CHILL, AK FIX	7300
CHILL, AK FIX	HAINES, AK NDB	9000

95.6140 BLUE FEDERAL AIRWAY B40

FROM	TO	MEA
HAINES, AK NDB	U.S. CANADIAN BORDER	*10000
*9800 - MOCA		

95.6179 BLUE FEDERAL AIRWAY B79

FROM	TO	MEA
U.S. CANADIAN BORDER	NICHOLS, AK NDB	5000

95.1001 DIRECT ROUTES-U.S

FROM	TO	MEA
ABILENE, TX VORTAC	WACO, TX VORTAC	*6500
*3300 - MOCA		
ABILENE, TX VORTAC	LLANO, TX VORTAC	7000
	COP 75 ABI	
ALEXANDRIA, MN VOR/DME	JAMESTOWN, ND VOR/DME	18000
		MAA - 22000
ALLENTOWN, PA VORTAC	POTTSTOWN, PA VORTAC	*2700
*2500 - MOCA		
ALLENTOWN, PA VORTAC	STILLWATER, NJ VOR/DME	*3300
*3000 - MOCA		
APPIN, TX FIX	LAKE CHARLES, LA VORTAC	*8000
*1500 - MOCA		
BATTLE MOUNTAIN, NV VORTAC	CLOVIS, CA VORTAC	24000
		MAA - 45000
BATTLE MOUNTAIN, NV VORTAC	TWIN FALLS, ID VORTAC	#18000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
BIG SUR, CA VORTAC	AVENAL, CA VOR/DME	*11000
VIA BSR VORTAC 85		
& AVE VOR/DME 304		
*7900 - MOCA		MAA - 35000
BISMARCK, ND VOR/DME	HUMBOLDT, MN VORTAC	18000
BISMARCK, ND VOR/DME	DICKINSON, ND VORTAC	18000
		MAA - 24000
BOZEMAN, MT VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	19000
		MAA - 35000
BOZEMAN, MT VOR/DME	DUBOIS, ID VORTAC	18000
		MAA - 25000
BRADFORD, IL VORTAC	DES MOINES, IA VORTAC	18000
		MAA - 41000
BRILO, CA FIX	YAGER, CA FIX	7000
BROOKLEY, AL VORTAC	SEMMES, AL VORTAC	2000
		MAA - 17500
BULLION, NV VOR/DME	BOISE, ID VORTAC	18000
CAJON, CA FIX	HITOP, CA FIX	8000
CALBE, CA FIX	PALMDALE, CA VORTAC	10000
VIA PDZ VORTAC 306		
& PMD VORTAC 142 MAA - 17500		
*CAMARILLO, CA VOR/DME	SANTA MONICA, CA VOR/DME	5000
*3600 - MCA CAMARILLO, CA VOR/DME , E BND		
*CHARM, CO FIX	**PUEBLO, CO VORTAC	8000
*10000 - MCA CHARM, CO FIX , S BND		
**7200 - MCA PUEBLO, CO VORTAC , S BND		
		MAA - 45000
CHICO, CA VOR/DME	RED BLUFF, CA VORTAC	3000
		MAA - 12000
COALDALE, NV VORTAC	SQUAW VALLEY, CA VOR/DME	15000
		MAA - 39000
COALDALE, NV VORTAC	WOODSIDE, CA VOR/DME	*18000
	COP 68 OAL	
*15100 - MOCA		MAA - 45000
COLLI, CA FIX	SCAGGS ISLAND, CA VORTAC	3500
COLOM, CA FIX	MINA, NV VORTAC	28000
COLOM, CA FIX	FRIANT, CA VORTAC	18000
		MAA - 45000
COLUMBIA, SC VORTAC	CHARLESTON, WV VOR/DME	18000
		MAA - 45000
CORTEZ, CO VOR/DME	PUEBLO, CO VORTAC	#22000
	COP 80 CEZ	
		MAA - 45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

FROM	TO	MEA
COVEX, LA FIX	APPIN, TX FIX	*8000
*1800 - MOCA		
COVEX, LA FIX	BELCHER, LA VORTAC	*3500
*1900 - MOCA		
CUNEY, TX FIX	NACOGDOCHES, TX NDB	*4000
*3000 - MOCA		
DAGGETT, CA VORTAC	PALMDALE, CA VORTAC	7000
DAYTON, OH VOR/DME	APPLETON, OH VORTAC	18000 MAA - 45000
DAYTON, OH VOR/DME	GUNNE, OH FIX	18000 MAA - 39000
DAYTON, OH VOR/DME	FORT WAYNE, IN VORTAC	18000 MAA - 43000
DELLS, WI VORTAC	EAU CLAIRE, WI VORTAC	18000 MAA - 29000
DES MOINES, IA VORTAC	IOWA CITY, IA VOR/DME	2700 MAA - 35000
DETROIT LAKES, MN VOR/DME	THIEF RIVER FALLS, MN VOR/DME	*3300
*2700 - MOCA		
DICKINSON, ND VORTAC	MINOT, ND VORTAC	18000 MAA - 35000
DICKINSON, ND VORTAC VIA DIK VORTAC 31	U.S. CANADIAN BORDER	18000
DILLON, MT VOR/DME	SHERIDAN, WY VOR/DME	#33000 MAA - 45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
DUBOIS, ID VORTAC	BOZEMAN, MT VOR/DME	18000 MAA - 35000
DULUTH, MN VORTAC	U.S. CANADIAN BORDER	#*18000
*3100 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
DULUTH, MN VORTAC	TRAVERSE CITY, MI VOR/DME	24000
*DUNOIR, WY VOR/DME	WORLAND, WY VOR/DME COP 40 DNW	**16000
*12200 - MCA DUNOIR, WY VOR/DME , E BND		
**15200 - MOCA		
DUNOIR, WY VOR/DME	BILLINGS, MT VORTAC	18000 MAA - 45000
DUPREE, SD VOR/DME	BISMARCK, ND VOR/DME	18000 MAA - 35000
EAU CLAIRE, WI VORTAC	DULUTH, MN VORTAC	18000 MAA - 29000
EEDEN, AK FIX	FRIED, AK FIX	10000 MAA - 45000
EVELETH, MN VOR/DME	ELY, MN VOR/DME	3400
FARGO, ND VOR/DME	WILLISTON, ND VOR/DME	23000
FELLOWS, CA VOR/DME	SAN MARCUS, CA VORTAC	9000
FELLOWS, CA VOR/DME	GUADALUPE, CA VOR	7000
FELLOWS, CA VOR/DME	GAVIOTA, CA VORTAC	8000
FELLOWS, CA VOR/DME	FILLMORE, CA VORTAC COP 42 FLW	9500
FELLOWS, CA VOR/DME	GORMAN, CA VORTAC	11000
FELLOWS, CA VOR/DME	SHAFTER, CA VORTAC	6400
FILLMORE, CA VORTAC	CLOVIS, CA VORTAC COP 60 FIM	18000
FILLMORE, CA VORTAC	FELLOWS, CA VOR/DME	9500
FLYING CLOUD, MN VOR/DME	SIOUX FALLS, SD VORTAC	17000 MAA - 25000
FORT DODGE, IA VORTAC	BRADFORD, IL VORTAC	18000 MAA - 45000
FORT WAYNE, IN VORTAC	KALAMAZOO, MI VOR/DME	18000 MAA - 43000
GINNA, CA FIX	CAMARILLO, CA VOR/DME	4000
GIPPER, MI VORTAC	LITCHFIELD, MI VOR/DME COP 49 GIJ	#18000 MAA - 41000
#MAXIMUM CROSSING ALT SBN 075/49 33000.		

FROM	TO	MEA
GLINA, NM FIX	BOLES, NM VOR/DME	#*13000
*9900 - MOCA		MAA - 24000
#RADAR REQUIRED WHEN IN HOLLOMAN APCH CTL ARSPC.		
GOOCH SPRINGS, TX VORTAC	COLLEGE STATION, TX VORTAC	*4000
*3000 - MOCA		
GOPHER, MN VORTAC	MOLINE, IL VOR/DME	13000
		MAA - 35000
GOPHER, MN VORTAC	CEDAR RAPIDS, IA VOR/DME	14500
		MAA - 35000
GRAND ISLAND, NE VOR/DME	SALINA, KS VORTAC	*7000
*3800 - MOCA		MAA - 17500
GRAND ISLAND, NE VOR/DME	LINCOLN, NE VORTAC	*4000
*2900 - MOCA		MAA - 35000
GROTON, CT VOR/DME	FLIBB, CT FIX	*2000
*1500 - MOCA		MAA - 17500
GUADALUPE, CA VOR	HABUT, CA FIX	5000
GULFPORT, MS VORTAC	*PLUGG, MS FIX	**2000
*5000 - MRA		
**1700 - MOCA		
HOMEE, PA FIX	REVLOC, PA VOR/DME	4000
HOMEE, PA FIX	JOHNSTOWN, PA VOR/DME	4000
HONEZ, CA FIX	MODESTO, CA VOR/DME	2200
HOVEL, ID FIX	ONTARIO, OR NDB	
	SE BND	7000
	NW BND	9000
HUMBLE, TX VORTAC	QUITMAN, TX VOR/DME	*9000
*2200 - MOCA		MAA - 41000
HURON, SD VORTAC	REDWOOD FALLS, MN VOR/DME COP 40 HON	31000
		MAA - 37000
JAMESTOWN, ND VOR/DME	GRAND FORKS, ND VOR/DME	18000
		MAA - 35000
JAMESTOWN, ND VOR/DME	BISMARCK, ND VOR/DME	18000
		MAA - 24000
JULIAN, CA VORTAC	PARADISE, CA VORTAC	8000
		MAA - 41000
KALAMAZOO, MI VOR/DME	VICTORY, MI VOR/DME	18000
		MAA - 43000
KALISPELL, MT VOR/DME	U.S. CANADIAN BORDER COP 82 FCA	18000
		MAA - 45000
KALISPELL, MT VOR/DME	HELENA, MT VORTAC COP 50 FCA	*15500
*11400 - MOCA		
KEARNEY, NE VOR	MANKATO, KS VORTAC	4200
LAFAYETTE, LA VORTAC	ORICH, LA FIX	1600
LAKE CHARLES, LA VORTAC	LUFKIN, TX VORTAC	*3000
*1600 - MOCA		MAA - 1700
LAKE CHARLES, LA VORTAC	APPIN, TX FIX	*8000
*1600 - MOCA		
LAKE HUGHES, CA VORTAC	FILLMORE, CA VORTAC	8000
LAMONI, IA VOR/DME	IOWA CITY, IA VOR/DME	18000
		MAA - 42000
LAUGHLIN, TX VORTAC	SAN ANTONIO, TX VORTAC	*5000
*3000 - MOCA		
LAWTON, OK VOR/DME VIA LAW VOR/DME 71 & MLC VORTAC 254	MC ALESTER, OK VORTAC	*6000
*2700 - MOCA		MAA - 24000
LEONA, TX VORTAC	GREGG COUNTY, TX VORTAC	*2500
*1900 - MOCA		
LINCOLN, NE VORTAC	DES MOINES, IA VORTAC	*5000
*2700 - MOCA		MAA - 45000
LINCOLN, NE VORTAC	OMAHA, IA VORTAC	3700
		MAA - 35000
LONDON, KY VOR/DME	HOLSTON MOUNTAIN, TN VORTAC	18000
		MAA - 43000
LUFKIN, TX VORTAC	MONROE, LA VORTAC COP 82 LFK	*8000
*2000 - MOCA		

FROM	TO	MEA
LUFKIN, TX VORTAC	PALESTINE, TX NDB COP 53 LFK	*3200
*2100 - MOCA		
MADISON, WI VORTAC	DELLS, WI VORTAC	18000
		MAA - 29000
MANKATO, KS VORTAC	SALINA, KS VORTAC	*3400
*3100 - MOCA		
*MARIC, CA FIX VIA AVE VOR/DME 109 & LHS VORTAC 305	LAKE HUGHES, CA VORTAC	7800
*3400 - MCA MARIC, CA FIX , E BND		
MARYSVILLE, CA VOR/DME	CHICO, CA VOR/DME	3000
		MAA - 12000
MC ALESTER, OK VORTAC	TULSA, OK VORTAC	*3000
*2700 - MOCA		
MEEKER, CO VOR/DME	*FUNDS, CO FIX	**24000
*16500 - MRA		
**15500 - MOCA		MAA - 37000
MENDOCINO, CA VORTAC	POINT REYES, CA VOR/DME	5000
		MAA - 39000
MENDOCINO, CA VORTAC	BRILO, CA FIX	*11000
*7500 - MOCA		MAA - 24000
MINA, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	18000
MINOT, ND VORTAC	U.S. CANADIAN BORDER	18000
		MAA - 45000
MISSOULA, MT VOR/DME	GREAT FALLS, MT VORTAC	18000
		MAA - 24000
MISSOULA, MT VOR/DME	BOZEMAN, MT VOR/DME	20000
		MAA - 35000
MISSOULA, MT VOR/DME	KALISPELL, MT VOR/DME	18000
		MAA - 45000
MISSOULA, MT VOR/DME	DILLON, MT VOR/DME	16500
		MAA - 35000
MORMON MESA, NV VORTAC	WILSON CREEK, NV VORTAC	18000
MORRO BAY, CA VORTAC	FILLMORE, CA VORTAC	9500
MORRO BAY, CA VORTAC VIA OTO VOR 168	FELLOWS, CA VOR/DME	6400
MORRO BAY, CA VORTAC	SHAFTER, CA VORTAC	6000
MUDDY MOUNTAIN, WY VOR/DME	DICKINSON, ND VORTAC	18000
		MAA - 35000
MUSTANG, NV VORTAC	TROSE, CA FIX	22000
NORTH BEND, OR VOR/DME	NEWPORT, OR VORTAC	18000
		MAA - 45000
NORTH BEND, OR VOR/DME	EUGENE, OR VORTAC	18000
		MAA - 41000
NORTH PLATTE, NE VOR/DME	KEARNEY, NE VOR	*5000
*4200 - MOCA		
NORTHBROOK, IL VOR/DME	DES MOINES, IA VORTAC	18000
		MAA - 41000
O'NEILL, NE VORTAC VIA ONL VORTAC 68 & MCW VOR/DME 257	MASON CITY, IA VOR/DME	24000
		MAA - 41000
OAKLAND, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	4000
OMAHA, IA VORTAC	HILL CITY, KS VORTAC	18000
		MAA - 45000
ONTARIO, OR NDB	PARMO, ID FIX	5000
PACIF, CA FIX	SEAL BEACH, CA VORTAC	3000
PANOCHE, CA VORTAC	GORMAN, CA VORTAC	24000
PANOCHE, CA VORTAC	*HENCE, CA FIX	**9000
*9000 - MCA HENCE, CA FIX , E BND		
**5800 - MOCA		
PANOCHE, CA VORTAC	SUNOL, CA FIX	18000
		MAA - 31000
PARADISE, CA VORTAC	*CALBE, CA FIX	6000
*8500 - MCA CALBE, CA FIX , NW BND		
		MAA – 17500

FROM	TO	MEA
PAWNEE CITY, NE VORTAC	KIRKSVILLE, MO VORTAC	18000
VIA PWE VORTAC 81		
& IRK VORTAC 266 MAA - 41000		
PAWNEE CITY, NE VORTAC	KANSAS CITY, MO VORTAC	18000
		MAA - 45000
PEACH SPRINGS, AZ VOR/DME	DOVE CREEK, CO VORTAC	18000
	COP 100 PGS	
VIA PGS VOR/DME 43		
& DVC VORTAC 226 MAA - 41000		
PENDLETON, OR VORTAC	DILLON, MT VOR/DME	#24000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
POINT REYES, CA VOR/DME	WOODSIDE, CA VOR/DME	*5000
*4400 - MOCA		MAA - 17000
PUEBLO, CO VORTAC	HAYES CENTER, NE VORTAC	18000
VIA PUB VORTAC 37		
& HCT VORTAC 221 MAA - 41000		
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	18000
		MAA - 45000
PYNON, CO FIX	BLACK FOREST, CO VOR/DME	9400
QUITMAN, TX VOR/DME	TULSA, OK VORTAC	*9000
*3000 - MOCA		
RAPID CITY, SD VORTAC	HURON, SD VORTAC	31000
	COP 165 RAP	
		MAA - 37000
RAPID CITY, SD VORTAC	MINOT, ND VORTAC	#18000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
RAPID CITY, SD VORTAC	DUPREE, SD VOR/DME	18000
		MAA - 35000
RAPID CITY, SD VORTAC	FARGO, ND VOR/DME	24000
RED BLUFF, CA VORTAC	REDDING, CA VOR/DME	3000
RED BLUFF, CA VORTAC	SCAGGS ISLAND, CA VORTAC	*6000
	COP 60 RBL	
*9000 - MOCA		
REDDING, CA VOR/DME	CHICO, CA VOR/DME	5000
		MAA - 12000
*REDDING, CA VOR/DME	**TOMAD, CA FIX	
	NE BND	6000
	SW BND	9000
**7000 - MRA		
*5000 - MCA REDDING, CA VOR/DME , SW BND		
RICHY, CA FIX	MARRI, CA FIX	13000
RIVERTON, WY VOR/DME	LARAMIE, WY VOR/DME	18000
		MAA - 35000
RIVERTON, WY VOR/DME	GREAT FALLS, MT VORTAC	#*35000
*14800 - MOCA		
#35000 MRA AT COP.		
ROCK SPRINGS, WY VOR/DME	LARAMIE, WY VOR/DME	*18000
*14000 - MOCA		MAA - 45000
ROCK SPRINGS, WY VOR/DME	JACKSON, WY VOR/DME	*18000
	COP 118 OCS	
*13200 - MOCA		MAA - 45000
ROGUE VALLEY, OR VORTAC	*ROOTY, OR FIX	11000
*11000 - MRA		
ROLLS, OK FIX	INT GAG VORTAC 143 & SYO VORTAC 079	*6000
*3300 - MOCA		MAA - 17500
ROME, OR VOR/DME	DUBOIS, ID VORTAC	31000
	COP 144 REO	
		MAA - 45000
ROME, OR VOR/DME	DONNELLY, ID VOR/DME	24000
		MAA - 45000
SACRAMENTO, CA VORTAC	KLAMATH FALLS, OR VORTAC	18000
	COP 130 SAC	
SALINAS, CA VORTAC	GILRO, CA FIX	5000
SALINAS, CA VORTAC	LICKE, CA FIX	6000
		MAA - 17500
SALMON, ID VOR/DME	MISSOULA, MT VOR/DME	18000
		MAA - 45000

FROM	TO	MEA
SAN ANGELO, TX VORTAC	GOOCH SPRINGS, TX VORTAC	5000
SAN ANGELO, TX VORTAC	ROCKSPRINGS, TX VORTAC	4200
SAN ANGELO, TX VORTAC	BROWNWOOD, TX VOR/DME	4500
VIA SJT VORTAC 73		
& BWD VOR/DME 224		
SAN ANGELO, TX VORTAC	BROWNWOOD, TX VOR/DME	3500
SAN JOSE, CA VOR/DME	COLLI, CA FIX	4000
SAN MARCUS, CA VORTAC	MORRO BAY, CA VORTAC	6800
SAN MARCUS, CA VORTAC	GUADALUPE, CA VOR	6700
SANTA CATALINA, CA VORTAC	GAVIOTA, CA VORTAC	6400
SANTY, CA FIX	*TAILS, CA FIX	5000
*7000 - MRA		
SCAPA, PR WP	CRSTL, PR FIX	6000
SCOTTSBLUFF, NE VORTAC	ABERDEEN, SD VOR/DME	26000
		MAA - 45000
SCOTTSBLUFF, NE VORTAC	WOLBACH, NE VORTAC	18000
VIA BFF VORTAC 83		
& OBH VORTAC 269		
		MAA - 45000
SEAL BEACH, CA VORTAC	ELMOO, CA FIX	*5000
*2400 - MOCA		
SEMMES, AL VORTAC	GREENE COUNTY, MS VORTAC	2000
		MAA - 17500
*SHAFTER, CA VORTAC	**WRING, CA FIX	5000
*3300 - MCA SHAFTER, CA VORTAC , NE BND		
**5400 - MCA WRING, CA FIX , SE BND		
SHERIDAN, WY VOR/DME	RAPID CITY, SD VORTAC	18000
		MAA - 45000
SIDNEY, NE VOR/DME	ABERDEEN, SD VOR/DME	29000
		MAA - 45000
SIOUX FALLS, SD VORTAC	FARGO, ND VOR/DME	15000
SNOUT, AK FIX	EEDEN, AK FIX	10000
		MAA - 45000
SNOWBIRD, TN VORTAC	LONDON, KY VOR/DME	18000
		MAA - 45000
SPOKANE, WA VORTAC	U.S. CANADIAN BORDER	#18000
		MAA - 45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
SPOKANE, WA VORTAC	MISSOULA, MT VOR/DME	18000
		MAA - 35000
SPOKANE, WA VORTAC	DONNELLY, ID VOR/DME	18000
VIA GEG VORTAC 139		
& DNJ VOR/DME 322		
		MAA - 41000
SQUAW VALLEY, CA VOR/DME	KLAMATH FALLS, OR VORTAC	28000
		MAA - 45000
SQUAW VALLEY, CA VOR/DME	*RICHY, CA FIX	11000
*12000 - MCA RICHY, CA FIX , SE BND		
TONOPAH, NV VORTAC	BRYCE CANYON, UT VORTAC	23000
VIA TPH VORTAC 77		
& BCE VORTAC 262		
		MAA - 45000
TROSE, CA FIX	MODESTO, CA VOR/DME	
	SW BND	5000
	NE BND	22000
		MAA - 39000
TUSCOLA, TX VOR/DME	LLANO, TX VORTAC	*4500
*3900 - MOCA		
TWENTYNINE PALMS, CA VORTAC	GOFFS, CA VORTAC	18000
	COP 17 TNP	
VIA TNP VORTAC 28		
& GFS VORTAC 185		
		MAA - 45000
UNBAR, MI FIX	SALEM, MI VORTAC	18000
		MAA - 45000
VAN NUYS, CA VOR/DME	STABO, CA FIX	4000
	COP 18 VNY	

FROM	TO	MEA
*VAN NUYS, CA VOR/DME	**PALMDALE, CA VORTAC	7800
*6000 - MCA VAN NUYS, CA VOR/DME , NE BND		
**5800 - MCA PALMDALE, CA VORTAC , SW BND		
		MAA - 17500
WAKER, CA FIX	FILLMORE, CA VORTAC	4800
*WESLA, CA FIX	FILLMORE, CA VORTAC	4800
*4100 - MCA WESLA, CA FIX , N BND		
WICHITA FALLS, TX VORTAC	ARDMORE, OK VORTAC	*4000
*2500 - MOCA		
WILKES-BARRE, PA VORTAC	LATTY, NY FIX	4000
		MAA - 10000
WILL ROGERS, OK VORTAC	WICHITA, KS VORTAC	*6000
*3600 - MOCA		MAA - 17500
WILLISTON, ND VOR/DME VIA ISN VOR/DME 340	U.S. CANADIAN BORDER	*8000
*3400 - MOCA		MAA - 17500
WILSON CREEK, NV VORTAC	BULLION, NV VOR/DME	20000
WOLBACH, NE VORTAC	OMAHA, IA VORTAC	3800
		MAA - 35000
WOLBACH, NE VORTAC	PAWNEE CITY, NE VORTAC	18000
		MAA - 45000
WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	10000
		MAA - 17500
WOODSIDE, CA VOR/DME	*EUGEN, CA FIX	**6000
*7000 - MRA		
**4400 - MOCA		
WRAPS, CA FIX	SACRAMENTO, CA VORTAC	*3000
*2600 - MOCA		

PUERTO RICO ROUTES

ROUTE 1

UTAHS, PR FIX	BORINQUEN, PR VORTAC	*4000
*1300 - MOCA		
BORINQUEN, PR VORTAC	MAYAGUEZ, PR VOR/DME	2500

ROUTE 2

FAJAR, PR FIX	TOURO, PR FIX	2000
TOURO, PR FIX	MALIE, VI FIX	2000

ROUTE 3

UTAHS, PR FIX	*JAAWS, PR FIX	12000
*7000 - MRA		
JAAWS, PR FIX	SAN JUAN, PR VORTAC	3000

ROUTE 4

*IDAHO, PR FIX	BORINQUEN, PR VORTAC	**2500
*15000 - MRA		
**1800 - MOCA		
BORINQUEN, PR VORTAC	JOSHE, PR FIX	6000
JOSHE, PR FIX	MIGHT, PR FIX	6000
MIGHT, PR FIX	TUUNA, PR FIX	6000
TUUNA, PR FIX	VEDAS, PR FIX	5000
VEDAS, PR FIX	SNOOZ, VI FIX	4000
SNOOZ, VI FIX	ST CROIX, VI VOR/DME	2400

ROUTE 5

BORINQUEN, PR VORTAC	ROBLL, PR FIX	*3000
*1800 - MOCA		
ROBLL, PR FIX	PLING, PR FIX	*6000
*1300 – MOCA		

ROUTE 6

*IDAHO, PR FIX	ROBLL, PR FIX	15000
*15000 - MRA		
ROBLL, PR FIX	BEANO, PR FIX	6000
BEANO, PR FIX	CORAF, PR FIX	*3000
*1300 - MOCA		
CORAF, PR FIX	SAN JUAN, PR VORTAC	1500
SAN JUAN, PR VORTAC	CHAKA, PR FIX	2500
CHAKA, PR FIX	PALCO, PR FIX	3000
PALCO, PR FIX	ST THOMAS, VI VOR/DME	2700
		MAA - 45000

ROUTE 7

PLING, PR FIX	SAALR, PR FIX	12000
SAALR, PR FIX	DONKE, PR FIX	3000
DONKE, PR FIX	SAN JUAN, PR VORTAC	3000
SAN JUAN, PR VORTAC	SANLO, PR FIX	4000
SANLO, PR FIX	TUUNA, PR FIX	4000
TUUNA, PR FIX	GESSO, PR FIX	9000

FROM	TO	MEA

ROUTE 9

FROM	TO	MEA
BEWIK, PR FIX	*WIGUM, PR FIX	6000
*8500 - MRA		
		MAA - 18000
WIGUM, PR FIX	CLAYO, PR FIX	5500
		MAA - 18000
CLAYO, PR FIX	MIGHT, PR FIX	5500
		MAA - 18000
MIGHT, PR FIX	GANBO, PR FIX	6000
		MAA - 18000
GANBO, PR FIX	SAN JUAN, PR VORTAC	3800
		MAA - 18000
SAN JUAN, PR VORTAC	WALNA, PR FIX	1500
		MAA - 18000
WALNA, PR FIX	*DEEDY, PR FIX	1500
*2500 - MRA		
		MAA - 18000
DEEDY, PR FIX	VERMO, PR FIX	12000
		MAA - 18000

ROUTE 12

FROM	TO	MEA
MAYAGUEZ, PR VOR/DME	JOSHE, PR FIX	7000
JOSHE, PR FIX	*VARNA, PR FIX	6000
*6000 - MRA		
*5000 - MCA VARNA, PR FIX , SW BND		
VARNA, PR FIX	SAN JUAN, PR VORTAC	3700
SAN JUAN, PR VORTAC	JETSS, PR FIX	2000
JETSS, PR FIX	ST THOMAS, VI VOR/DME	2800

BAHAMA ROUTES

BR10L

FROM	TO	MEA
FREEPORT, BS VOR/DME	FLINY, BS FIX	3000
FLINY, BS FIX	HAANA, BS FIX	3000
HAANA, BS FIX	MRRSH, BS FIX	3000
MRRSH, BS FIX	BNTTZ, BS FIX	3000

BR1L

FROM	TO	MEA
JOLTS, BS FIX	FREEPORT, BS VOR/DME	*2000
*1500 - MOCA		MAA - 45000
FREEPORT, BS VOR/DME	BARTS, BS FIX	*2000
*1300 - MOCA		
BARTS, BS FIX	MAMML, BS FIX	*2000
*1200 - MOCA		
MAMML, BS FIX	DIAZZ, OA FIX	*2000
*1200 - MOCA		
DIAZZ, OA FIX	COBBL, BS FIX	2000
COBBL, BS FIX	LOGVN, OA WP	*2000
*1200 - MOCA		
LOGVN, OA WP	BRRGO, BS FIX	2000
BRRGO, BS FIX	AVNEY, OA WP	*2000
*1200 - MOCA		
AVNEY, OA WP	BENIE, IB FIX	*2000
*1200 - MOCA		
BENIE, IB FIX	OREDE, BS WP	*2000
*1200 - MOCA		MAA – 41000

FROM	TO	MEA

BR1L - CONTINUED

FROM	TO	MEA
OREDE, BS WP *1200 - MOCA	RAHAM, IB FIX	*2000
RAHAM, IB FIX *1300 - MOCA	STRUD, OA FIX	*2000
STRUD, OA FIX	BIKIN, IB FIX	2000
BIKIN, IB FIX *1300 - MOCA	GRAND TURK, TC VORTAC	*2000

BR21V

FROM	TO	MEA
FREEPORT, BS VOR/DME	ULAMA, BS FIX	2000
ULAMA, BS FIX	KIXAL, OA FIX	2000 MAA - 45000
KIXAL, OA FIX	WALIK, FL FIX	2000
WALIK, FL FIX	PALM BEACH, FL VORTAC	2000

BR22V

FROM	TO	MEA
FORT LAUDERDALE, FL VOR/DME	DEKAL, OA FIX	6000
DEKAL, OA FIX	WIERS, BS FIX	6000 MAA - 45000
WIERS, BS FIX	OYSTA, BS FIX	10000 MAA - 45000
OYSTA, BS FIX	CAREY, BS FIX	6000
CAREY, BS FIX	MAJUR, OA FIX	3000
MAJUR, OA FIX *1500 - MOCA	NASSAU, BS VOR/DME	*2000

BR2L

FROM	TO	MEA
SAN SALVADOR, BS NDB	DUKKY, BS FIX	5500
DUKKY, BS FIX	WRECK, OA FIX	5500
WRECK, OA FIX	SOLEI, OA FIX	5500
SOLEI, OA FIX	TROTR, OA FIX	5500
TROTR, OA FIX	PROVIDENCIALES, TC VOR/DME	5500
PROVIDENCIALES, TC VOR/DME	TOMAZ, IB FIX	5500
TOMAZ, IB FIX	BURTZ, OA FIX	5500
BURTZ, OA FIX	GOVET, OA FIX	5500
GOVET, OA FIX	JUELE, OA FIX	5500 MAA - 60000

BR49V

FROM	TO	MEA
DOLPHIN, FL VORTAC	LUVLY, FL FIX	2000
LUVLY, FL FIX	JUNUR, FL FIX	2000
JUNUR, FL FIX	FOWEE, OA FIX	6000
FOWEE, OA FIX *1400 - MOCA	LUCSS, BS FIX	*7000 MAA - 45000
LUCSS, BS FIX *1400 - MOCA	JERRE, OA FIX	*4000 MAA - 45000
JERRE, OA FIX *8000 - MRA **1400 - MOCA	*TINKY, OA FIX	**4000 MAA - 45000
TINKY, OA FIX *1500 - MOCA	NICKO, BS FIX	*4000 MAA - 45000
NICKO, BS FIX *1500 - MOCA	NASSAU, BS VOR/DME	*2000 MAA - 45000

FROM	TO	MEA

BR53V

FROM	TO	MEA
VIRGINIA KEY, FL VOR/DME	SKIPS, BS FIX	4000
SKIPS, BS FIX	LEEVI, BS FIX	5000
		MAA - 45000
LEEVI, BS FIX	SWIMM, BS FIX	5000
		MAA - 45000
SWIMM, BS FIX	WOOZE, BS FIX	9000
		MAA - 45000
WOOZE, BS FIX	*RAJAY, BS FIX	11000
*11000 - MRA		
RAJAY, BS FIX	PRUNE, BS FIX	4000
PRUNE, BS FIX	HINZY, BS FIX	2000
HINZY, BS FIX	NASSAU, BS VOR/DME	2000
NASSAU, BS VOR/DME	GUAVA, BS FIX	3000
GUAVA, BS FIX	BNTTZ, BS FIX	3000

BR54V

FROM	TO	MEA
PALM BEACH, FL VORTAC	MRLIN, FL FIX	2000
MRLIN, FL FIX	PREDA, FL FIX	4000
		MAA - 45000
PREDA, FL FIX	ISAAC, BS FIX	6000
		MAA - 45000
ISAAC, BS FIX	OYSTA, BS FIX	8000
OYSTA, BS FIX	CAREY, BS FIX	6000
CAREY, BS FIX	MAJUR, OA FIX	3000
MAJUR, OA FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		

BR55V

FROM	TO	MEA
PALM BEACH, FL VORTAC	MRLIN, FL FIX	2000
MRLIN, FL FIX	PREDA, FL FIX	4000
		MAA - 45000
PREDA, FL FIX	BEECH, BS FIX	4000
		MAA - 45000
BEECH, BS FIX	BIMINI, BS VORTAC	4000
		MAA - 45000
BIMINI, BS VORTAC	*RAJAY, BS FIX	4000
*11000 - MRA		
RAJAY, BS FIX	PRUNE, BS FIX	4000
PRUNE, BS FIX	HINZY, BS FIX	2000
HINZY, BS FIX	NASSAU, BS VOR/DME	2000
NASSAU, BS VOR/DME	BURRL, BS FIX	*3000
*1500 - MOCA		
BURRL, BS FIX	SEAAN, BS FIX	*3000
*1300 - MOCA		
SEAAN, BS FIX	MUVOD, BS FIX	*10000
*1300 - MOCA		
MUVOD, BS FIX	BRRGO, BS FIX	*16000
*1300 – MOCA		

BR57V

FROM	TO	MEA
FORT LAUDERDALE, FL VOR/DME	DEKAL, OA FIX	6000
DEKAL, OA FIX	WIERS, BS FIX	6000
WIERS, BS FIX	BIMINI, BS VORTAC	3000
		MAA - 45000
BIMINI, BS VORTAC	CAREY, BS FIX	*3000
*1300 - MOCA		MAA - 45000
CAREY, BS FIX	MAJUR, OA FIX	3000
MAJUR, OA FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		

FROM	TO	MEA

BR58V

FROM	TO	MEA
NASSAU, BS VOR/DME	KURAY, BS FIX	*2000
*1500 - MOCA		MAA - 45000
KURAY, BS FIX	*MELON, BS FIX	**2000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
MELON, BS FIX	HANKX, BS FIX	*2000
*1400 - MOCA		MAA - 45000
HANKX, BS FIX	BARTS, BS FIX	*4000
*1400 - MOCA		MAA - 45000
BARTS, BS FIX	ANGLL, BS FIX	*10000
*1400 - MOCA		MAA - 45000

BR62V

FROM	TO	MEA
TREASURE, FL VORTAC	ANGEE, FL FIX	2000
ANGEE, FL FIX	FORNL, FL FIX	2000
FORNL, FL FIX	SURFN, FL FIX	2000
SURFN, FL FIX	BERTH, BS FIX	*4000
*1300 - MOCA		
BERTH, BS FIX	JAKEL, BS FIX	*4000
*1400 - MOCA		MAA - 45000
JAKEL, BS FIX	FREEPORT, BS VOR/DME	*4000
*1400 - MOCA		

BR63V

FROM	TO	MEA
PALM BEACH, FL VORTAC	TURPS, FL FIX	2000
TURPS, FL FIX	MIXAE, BS FIX	3000
		MAA - 45000
MIXAE, BS FIX	HALBI, BS FIX	4000
		MAA - 45000
HALBI, BS FIX	ULAMA, BS FIX	2000
ULAMA, BS FIX	FREEPORT, BS VOR/DME	2000
FREEPORT, BS VOR/DME	CEGUR, BS FIX	*2000
*1400 - MOCA		
CEGUR, BS FIX	BURBO, BS FIX	*2000
*1300 - MOCA		
BURBO, BS FIX	BAYRU, BS FIX	*10000
*1300 - MOCA		
BAYRU, BS FIX	HANKX, BS FIX	*10000
*1300 - MOCA		
HANKX, BS FIX	*MELON, BS FIX	**2000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
MELON, BS FIX	KURAY, BS FIX	*2000
*1400 - MOCA		MAA - 45000
KURAY, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		MAA - 45000

BR64V

FROM	TO	MEA
VIRGINIA KEY, FL VOR/DME	QEPRO, FL FIX	5000
QEPRO, FL FIX	KUCEP, FL WP	5000
KUCEP, FL WP	HEATT, FL FIX	5000
HEATT, FL FIX	MRLIN, FL FIX	5000
MRLIN, FL FIX	MUNRO, BS FIX	5000
		MAA - 45000
MUNRO, BS FIX	FREEPORT, BS VOR/DME	2000

FROM	TO	MEA

BR65V

FROM	TO	MEA
NASSAU, BS VOR/DME *1500 - MOCA	PEACH, BS FIX	*2000
PEACH, BS FIX *5000 - MRA **1300 - MOCA	*SYDNY, BS FIX	**2000
SYDNY, BS FIX *1300 - MOCA	LAUTH, BS FIX	*5000
LAUTH, BS FIX *1400 - MOCA	FREEPORT, BS VOR/DME	*2000
FREEPORT, BS VOR/DME	RAPPS, BS FIX	3000 MAA - 45000
RAPPS, BS FIX	STIFF, BS FIX	8000 MAA - 45000
STIFF, BS FIX	ELDER, FL FIX	8000 MAA - 45000
ELDER, FL FIX	ADOOR, FL FIX	25000 MAA - 45000

BR66V

FROM	TO	MEA
VIRGINIA KEY, FL VOR/DME	JANUS, OA FIX	2000
JANUS, OA FIX	PADUS, BS FIX	4000 MAA - 45000
PADUS, BS FIX	FREEPORT, BS VOR/DME	2000 MAA - 45000

BR68V

FROM	TO	MEA
FORT LAUDERDALE, FL VOR/DME	MRLIN, FL FIX	6000
MRLIN, FL FIX	MUNRO, BS FIX	5000 MAA - 45000
MUNRO, BS FIX	FREEPORT, BS VOR/DME	2000

BR69V

FROM	TO	MEA
BIMINI, BS VORTAC	BAHMA, BS FIX	3000 MAA - 45000
BAHMA, BS FIX	MAYKO, OA FIX	3000 MAA - 45000
MAYKO, OA FIX	FREEPORT, BS VOR/DME	3000 MAA - 45000
FREEPORT, BS VOR/DME *1400 - MOCA	JAMAX, BS FIX	*2000 MAA - 45000
JAMAX, BS FIX *1200 - MOCA	BENZI, BS FIX	*3000 MAA - 45000
BENZI, BS FIX	JOLTS, BS FIX	4000 MAA - 45000
JOLTS, BS FIX	BERTH, BS FIX	4000 MAA - 45000
BERTH, BS FIX	KIXAL, OA FIX	4000 MAA - 45000
KIXAL, OA FIX	WALIK, FL FIX	4000 MAA - 45000
WALIK, FL FIX	PALM BEACH, FL VORTAC	2000 MAA - 45000

BR70V

FROM	TO	MEA
FORT LAUDERDALE, FL VOR/DME	TURBO, OA FIX	2000
TURBO, OA FIX	PADUS, BS FIX	7000 MAA - 45000

BR70V - CONTINUED

PADUS, BS FIX	FREEPORT, BS VOR/DME	2000 MAA - 45000
FREEPORT, BS VOR/DME	GRREG, BS FIX	3500 MAA - 45000
GRREG, BS FIX	MRRSH, BS FIX	3500 MAA - 45000
MRRSH, BS FIX	NASSAU, BS VOR/DME	6000 MAA - 45000

BR71V

FREEPORT, BS VOR/DME *1400 - MOCA	WOPOP, BS FIX	*2000 MAA - 45000
WOPOP, BS FIX *1200 - MOCA	WLKER, BS FIX	*3000 MAA - 45000

BR9L

GRAND TURK, TC VORTAC	TOMAZ, IB FIX	
TOMAZ, IB FIX *1300 - MOCA	CARAH, OA FIX	*2000
CARAH, OA FIX *1300 - MOCA	SKHOT, OA WP	*2000

ATLANTIC ROUTES

A301

*URSUS, OA FIX *16000 - MRA	ZOLLA, OA FIX	10000
ZOLLA, OA FIX	FOWEE, OA FIX	10000
FOWEE, OA FIX	SKIPS, BS FIX	5000
SKIPS, BS FIX	BIMINI, BS VORTAC	4000

A315

BIMINI, BS VORTAC	SWIMM, BS FIX	5000
SWIMM, BS FIX *8000 - MRA	*TINKY, OA FIX	8000
TINKY, OA FIX *12500 - MRA	*PEKRE, BS FIX	12500
PEKRE, BS FIX *14000 - MRA	*JAYEE, BS FIX	14000
JAYEE, BS FIX *16500 - MRA	*HODGY, BS FIX	7000
HODGY, BS FIX *16500 - MRA	*AMBIS, BS FIX	7000
AMBIS, BS FIX	JOSES, OA WP	7000

A509

*URSUS, OA FIX *16000 - MRA	ELLEE, BS FIX	16000
ELLEE, BS FIX	EONNS, FL FIX	5000
EONNS, FL FIX	JURER, FL FIX	3000
JURER, FL FIX	DOLPHIN, FL VORTAC	3000
DOLPHIN, FL VORTAC	MARCI, FL FIX	8000

FROM	TO	MEA
A517		
ZPATA, PR FIX	SAINT MAARTEN, AN VOR/DME	6000 MAA - 45000
A555		
ILURI, OA FIX	PORQE, VI FIX	12000
PORQE, VI FIX	DORADO, PR NDB	6000
DORADO, PR NDB *15000 - MRA	*IDAHO, PR FIX	2000
IDAHO, PR FIX *1300 - MOCA	HARDE, PR FIX	*2000
HARDE, PR FIX *1300 - MOCA	GRADI, IB FIX	*2000
GRADI, IB FIX *1300 - MOCA	COCBU, IB FIX	*2000
COCBU, IB FIX *1500 - MOCA	GRAND TURK, TC VORTAC	*2000
GRAND TURK, TC VORTAC	BTLER, OA FIX	2000
BTLER, OA FIX	GUANA, OA FIX	2000
GUANA, OA FIX	INDEE, BS FIX	2000
INDEE, BS FIX	DUKKY, BS FIX	2000
DUKKY, BS FIX	EVETS, BS FIX	3000
EVETS, BS FIX	GEROT, OA FIX	3000
GEROT, OA FIX	DONEZ, OA FIX	3000
DONEZ, OA FIX	BOSAR, BS FIX	3000
BOSAR, BS FIX *1300 - MOCA	LEPAS, BS FIX	*3000
LEPAS, BS FIX *1500 - MOCA	NASSAU, BS VOR/DME	*1500
NASSAU, BS VOR/DME	HINZY, BS FIX	2000
HINZY, BS FIX	PRUNE, BS FIX	2000
PRUNE, BS FIX *11000 - MRA	*RAJAY, BS FIX	4000
RAJAY, BS FIX	BIMINI, BS VORTAC	4000
A636		
BORINQUEN, PR VORTAC	ALBBE, BS FIX	2000 MAA - 45000
ALBBE, BS FIX	GREAT INAGUA, BS NDB	4000
A638		
ST THOMAS, VI VOR/DME	GUYRO, VI FIX	4000
GUYRO, VI FIX	SLUGO, VI FIX	4000
SLUGO, VI FIX	SAINT MAARTEN, AN VOR/DME	3000
A699		
NUCAR, BS FIX	STIFF, BS FIX	8000
STIFF, BS FIX	RAMJT, OA WP	8000
PERMT, FL FIX	PALM BEACH, FL VORTAC	6000
A756		
BODLO, OA WP	GREAT INAGUA, BS NDB	3000
GREAT INAGUA, BS NDB	ROSEA, OA WP	3000
ROSEA, OA WP	DUKKY, BS FIX	3000

FROM	TO	MEA
A770		
LEEVILLE, LA VORTAC	DOLPH, OG FIX	4000 MAA - 45000
DOLPH, OG FIX	ALGAE, OG WP	4000 MAA - 45000
ALGAE, OG WP	KEHLI, OG FIX	4000 MAA - 45000
AR10		
DOLPHIN, FL VORTAC	TURBO, OA FIX	6000
TURBO, OA FIX	PREDA, FL FIX	6000
PREDA, FL FIX	ZAPPA, BS FIX	10000
AR11		
VIRGINIA KEY, FL VOR/DME	JANUS, OA FIX	#2000
#VIRGINIA KEY R-058 UNUSABLE JANUS TO VALLY		
JANUS, OA FIX	VALLY, OA FIX	*5000
AR12		
CHARLESTON, SC VORTAC	PITRW, SC WP	18000 MAA - 60000
PITRW, SC WP	SPIKY, OA WP	18000 MAA - 60000
SPIKY, OA WP	LURKS, OA WP	24000 MAA - 60000
LURKS, OA WP	JAINS, OA WP	24000 MAA - 60000
AR15		
WILMINGTON, NC VORTAC	METTA, OA FIX	24000 MAA - 60000
METTA, OA FIX	SPIKY, OA WP	24000 MAA - 60000
SPIKY, OA WP	BAHAA, OA WP	24000 MAA - 60000
BAHAA, OA WP	HIBAC, OA WP	24000 MAA - 60000
HIBAC, OA WP	PETEE, OA WP	24000 MAA - 60000
PETEE, OA WP *4000 - MRA	*APOLO, FL FIX	24000 MAA - 60000
APOLO, FL FIX	MALET, FL FIX	4000 MAA - 60000
MALET, FL FIX	ORLANDO, FL VORTAC	2700 MAA - 60000
AR16		
PERMT, FL FIX	LENDS, OA WP N BND	24000 MAA - 60000
LENDS, OA WP	SNABS, OA WP N BND	24000 MAA - 60000
SNABS, OA WP	EMCEE, OA WP N BND	24000 MAA - 60000

FROM	TO	MEA
AR16 - CONTINUED		
EMCEE, OA WP	SELO, OA WP	
	N BND	24000
		MAA - 60000
SEELO, OA WP	WILMINGTON, NC VORTAC	
	N BND	24000
		MAA - 60000
AR17		
WILMINGTON, NC VORTAC	METTA, OA FIX	24000
		MAA - 60000
METTA, OA FIX	SPIKY, OA WP	24000
		MAA - 60000
SPIKY, OA WP	BAHAA, OA WP	24000
		MAA - 60000
BAHAA, OA WP	HIBAC, OA WP	24000
		MAA - 60000
HIBAC, OA WP	VIRGINIA KEY, FL VOR/DME	24000
		MAA - 60000
AR18		
WOLFO, OA WP	RAMJT, OA WP	24000
		MAA - 60000
RAMJT, OA WP	ETECK, OA WP	24000
		MAA - 60000
ETECK, OA WP	OZENA, OA WP	24000
		MAA - 60000
OZENA, OA WP	LANIE, OA WP	24000
		MAA - 60000
LANIE, OA WP	LURKS, OA WP	24000
		MAA - 60000
LURKS, OA WP	MILOE, OA FIX	24000
		MAA - 60000
MILOE, OA FIX	PANAL, OA FIX	24000
		MAA - 60000
PANAL, OA FIX	DIXON, NC NDB/DME	24000
		MAA - 60000
AR19		
AYBID, OA WP	INDRO, OA WP	
	S BND	24000
		MAA - 60000
INDRO, OA WP	MAJIK, OA WP	
	S BND	24000
		MAA - 60000
MAJIK, OA WP	JENKS, OA WP	
	S BND	24000
		MAA - 60000
JENKS, OA WP	SEELO, OA WP	
	S BND	24000
		MAA - 60000
SEELO, OA WP	DIXON, NC NDB/DME	
	S BND	24000
		MAA - 60000

FROM	TO	MEA
AR21		
WILMINGTON, NC VORTAC	METTA, OA FIX	24000 MAA - 60000
METTA, OA FIX	SPIKY, OA WP	24000 MAA - 60000
SPIKY, OA WP	BAHAA, OA WP	24000 MAA - 60000
BAHAA, OA WP	DULEE, OA WP	24000 MAA - 60000
DULEE, OA WP	HALSS, OA WP	24000 MAA - 60000
HALSS, OA WP	CRANS, OA WP	24000 MAA - 60000
AR22		
JORAY, OA WP	BGDOG, OA WP S BND	24000 MAA - 60000
BGDOG, OA WP	HOAGG, OA WP S BND	24000 MAA - 60000
HOAGG, OA WP	JENKS, OA WP S BND	24000 MAA - 60000
JENKS, OA WP	SEELO, OA WP S BND	24000 MAA - 60000
SEELO, OA WP	DIXON, NC NDB/DME S BND	24000 MAA - 60000
AR23		
*URSUS, OA FIX *16000 - MRA	FREEPORT, BS VOR/DME	24000 MAA - 60000
FREEPORT, BS VOR/DME	CANIT, OA WP	24000 MAA - 60000
CANIT, OA WP	OZENA, OA WP	24000 MAA - 60000
OZENA, OA WP	LANIE, OA WP	24000 MAA - 60000
LANIE, OA WP	LURKS, OA WP	24000 MAA - 60000
LURKS, OA WP	MILOE, OA FIX	24000 MAA - 60000
MILOE, OA FIX	PANAL, OA FIX	24000 MAA - 60000
PANAL, OA FIX	DIXON, NC NDB/DME	24000 MAA - 60000
AR24		
*URSUS, OA FIX *16000 - MRA	FREEPORT, BS VOR/DME	24000 MAA - 60000
FREEPORT, BS VOR/DME	OHLAA, OA WP	24000 MAA - 60000
OHLAA, OA WP	DIXON, NC NDB/DME	24000 MAA – 60000

FROM	TO	MEA
AR25		
CHARLESTON, SC VORTAC	PITRW, SC WP	18000
		MAA - 60000
PITRW, SC WP	SPIKY, OA WP	18000
		MAA - 60000
SPIKY, OA WP	LURKS, OA WP	24000
		MAA - 60000
AR3		
NASSAU, BS VOR/DME	KURAY, BS FIX	*2000
*1500 - MOCA		MAA - 45000
KURAY, BS FIX	*MELON, BS FIX	**2000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
MELON, BS FIX	HANKX, BS FIX	*2000
*1400 - MOCA		MAA - 45000
HANKX, BS FIX	BARTS, BS FIX	*4000
*1400 - MOCA		MAA - 45000
BARTS, BS FIX	ANGLL, BS FIX	*10000
*1400 - MOCA		MAA - 45000
ANGLL, BS FIX	NUCAR, BS FIX	*8000
*1400 - MOCA		MAA - 45000
CARPX, OA WP	PERIE, OA WP	2500
		MAA - 45000
PERIE, OA WP	OLDEY, SC FIX	2500
		MAA - 45000
OLDEY, SC FIX	PANAL, OA FIX	2500
		MAA - 45000
PANAL, OA FIX	CAROLINA BEACH, NC NDB	2500
		MAA - 45000
AR5		
DINNS, FL NDB	JAWSS, FL FIX	2500
		MAA - 45000
AR6		
ORLANDO, FL VORTAC	BITHO, FL FIX	2700
		MAA - 45000
BITHO, FL FIX	MALET, FL FIX	2700
		MAA - 45000
MALET, FL FIX	*APOLO, FL FIX	4000
*4000 - MRA		
		MAA - 45000
APOLO, FL FIX	HOBEE, FL FIX	24000
		MAA - 45000
AR7		
CHARLESTON, SC VORTAC	PITRW, SC WP	18000
		MAA - 60000
PITRW, SC WP	SPIKY, OA WP	18000
		MAA - 60000
SPIKY, OA WP	LURKS, OA WP	24000
		MAA - 60000
LURKS, OA WP	PERIE, OA WP	24000
		MAA - 60000

FROM	TO	MEA
AR8		
ELIZABETH CITY, NC VOR/DME	OHPEA, NC FIX	21000
		MAA - 41000
OHPEA, NC FIX	TOMMZ, OA FIX	21000
		MAA - 41000
TOMMZ, OA FIX	OXANA, OA FIX	21000
		MAA - 41000
B24		
SEA ISLE, NJ VORTAC	FISSH, NJ FIX	15000
		MAA - 45000
FISSH, NJ FIX	DASHA, OA WP	15000
		MAA - 45000
B503		
ENAMO, OA FIX	RYDEL, BS FIX	6000
RYDEL, BS FIX	*HODGY, BS FIX	6000
*16500 - MRA		
HODGY, BS FIX	NASSAU, BS VOR/DME	7000
B646		
CANOA, FL WP	FISH HOOK, FL NDB	2000
		MAA - 45000
FISH HOOK, FL NDB	MARATHON, FL NDB	2000
		MAA - 45000
MARATHON, FL NDB	AVION, FL FIX	*6000
*1400 - MOCA		MAA - 45000
AVION, FL FIX	ELLEE, BS FIX	6000
		MAA - 45000
ELLEE, BS FIX	FOWEE, OA FIX	*6000
*1400 - MOCA		MAA - 45000
FOWEE, OA FIX	LUCSS, BS FIX	*7000
VIA CHANGE OVER PT FOWEE		
*1400 - MOCA		MAA - 45000
LUCSS, BS FIX	JERRE, OA FIX	*4000
*1400 - MOCA		MAA - 45000
JERRE, OA FIX	*TINKY, OA FIX	**4000
*8000 - MRA		
**1400 - MOCA		MAA - 45000
TINKY, OA FIX	NICKO, BS FIX	*4000
*1500 - MOCA		MAA - 45000
NICKO, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		MAA - 45000
NASSAU, BS VOR/DME	OHBEE, BS FIX	*2000
*1500 - MOCA		MAA - 45000
OHBEE, BS FIX	MAMML, BS FIX	*4000
*1400 - MOCA		MAA - 45000
MAMML, BS FIX	GRATX, OA WP	*5000
*1400 - MOCA		MAA - 45000
B760		
BIMINI, BS VORTAC	LEEVI, BS FIX	4000
LEEVI, BS FIX	MENDL, BS FIX	8000
MENDL, BS FIX	BORDO, BS FIX	12000

FROM	TO	MEA
B891		
POKEG, IB FIX	GRADI, IB FIX	4000
GRADI, IB FIX	WATRS, OA FIX	10000
B892		
ANTEX, PR FIX	MAYAGUEZ, PR VOR/DME	4000
G430		
VIRGINIA KEY, FL VOR/DME	EONNS, FL FIX	3000
EONNS, FL FIX	AVION, FL FIX	4000
G437		
*DYNAH, OA FIX	**JAYEE, BS FIX	6000
*14000 - MRA		
**14000 - MRA		
		MAA - 45000
JAYEE, BS FIX	JEFRY, BS FIX	*4000
*1400 - MOCA		MAA - 45000
JEFRY, BS FIX	BRONO, BS FIX	*4000
*1500 - MOCA		MAA - 45000
BRONO, BS FIX	WELKS, BS FIX	*2000
*1500 - MOCA		MAA - 45000
WELKS, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		
NASSAU, BS VOR/DME	INGRA, BS FIX	2000
INGRA, BS FIX	MAPYL, OA WP	8000
G439		
DOLPHIN, FL VORTAC	MNATE, FL FIX	3000
MNATE, FL FIX	TWNNS, FL FIX	5000
TWNNS, FL FIX	DROWN, FL FIX	5000
G446		
OLDEY, SC FIX	PERIE, OA WP	2500
PERIE, OA WP	CARPX, OA WP	2500
CARPX, OA WP	SCOBY, OA WP	2500
SCOBY, OA WP	CASPR, OA FIX	2500
CASPR, OA FIX	NUCAR, BS FIX	2500
NUCAR, BS FIX	OMALY, OA FIX	5500
OMALY, OA FIX	LASEE, OA WP	5500
LASEE, OA WP	ALUTE, OA WP	5500
ALUTE, OA WP	GRAND TURK, TC VORTAC	5500
GRAND TURK, TC VORTAC	PAMMS, IB FIX	2000
PAMMS, IB FIX	BESAS, IB FIX	6000
G629		
GREAT INAGUA, BS NDB	RAPPR, OA FIX	3000
CATHI, OA FIX	PROVIDENCIALES, TC VOR/DME	1500
PROVIDENCIALES, TC VOR/DME	EGANN, IB FIX	1500
EGANN, IB FIX	RAHAM, IB FIX	2000
RAHAM, IB FIX	LYMIN, OA FIX	2000

FROM	TO	MEA

G633

GABAR, VI FIX *3500 - MRA	*DANDE, VI FIX	3500
DANDE, VI FIX	TANZY, VI FIX	3100
TANZY, VI FIX	ST CROIX, VI VOR/DME	2400
ST CROIX, VI VOR/DME	SNOOZ, VI FIX	3300
SNOOZ, VI FIX	TUUNA, PR FIX	3300
TUUNA, PR FIX	DORADO, PR NDB	5000
DORADO, PR NDB	MAYAGUEZ, PR VOR/DME	5000
MAYAGUEZ, PR VOR/DME	ZADAV, PR FIX	6000
ZADAV, PR FIX	MELLA, PR WP	6000

G648

GRAND TURK, TC VORTAC	PROVIDENCIALES, TC VOR/DME	1500
PROVIDENCIALES, TC VOR/DME	MICAS, IB FIX	2000

G765

MAXIM, FL WP *1300 - MOCA	FISH HOOK, FL NDB	*3000 MAA - 45000

L207

SCHOLES, TX VOR/DME	MUSYL, OG FIX	4000 MAA - 45000
MUSYL, OG FIX	CATFS, OG WP	4000 MAA - 45000
CATFS, OG WP	SEAGL, OG WP	4000 MAA - 45000
SEAGL, OG WP	IPSEV, OG WP	4000 MAA - 45000

L208

SABINE PASS, TX VOR/DME	ANKRR, OG WP	4000 MAA - 45000
ANKRR, OG WP	RUMMM, OG WP	4000 MAA - 45000
RUMMM, OG WP	PEGLG, OG WP	4000 MAA - 45000
PEGLG, OG WP	DUTNA, OG WP	4000 MAA - 45000

L214

LEEVILLE, LA VORTAC	PLNDR, OG WP	4000 MAA - 45000
PLNDR, OG WP	DAGGR, OG WP	4000 MAA - 45000
DAGGR, OG WP	IRDOV, OG WP	4000 MAA - 45000

L216

LERED, OA FIX	GRAND TURK, TC VORTAC	2000 MAA - 45000

L221

SATOE, OA WP	TAYOG, PR WP	7000 MAA - 60000
TAYOG, PR WP	JOSHE, PR FIX	7000 MAA - 60000

FROM	TO	MEA
L325		
SCAPA, PR WP	DAKES, PR WP	*7000 MAA - 60000
DAKES, PR WP	GABYY, PR WP	*7000 MAA - 60000
GABYY, PR WP	JOSHE, PR FIX	*7000 MAA - 60000
L327		
SCAPA, PR WP	SAULT, PR WP	*18000 MAA - 45000
SAULT, PR WP	OPAUL, OA WP	*18000 MAA - 45000
L329		
ZPATA, PR FIX	SAINT MAARTEN, AN VOR/DME	*18000 MAA - 45000
SAINT MAARTEN, AN VOR/DME	SAULT, PR WP	*18000 MAA - 45000
SAULT, PR WP	KEEKA, OA WP	*18000 MAA - 45000
L333		
HARVEY, LA VORTAC	HOOCK, OG WP	4000 MAA - 45000
HOOCK, OG WP	TRESR, OG WP	4000 MAA - 45000
TRESR, OG WP	CCUDA, OG WP	4000 MAA - 45000
CCUDA, OG WP	PISAD, OG WP	4000 MAA - 45000
L335		
SCAPA, PR WP	TRNKY, OA WP	*18000 MAA - 45000
TRNKY, OA WP	OBIKE, OA WP	*18000 MAA - 45000
L349		
GABAR, VI FIX	GESSO, PR FIX	5500 MAA - 60000
GESSO, PR FIX	SATOE, OA WP	5500 MAA - 60000
L452		
OXANA, OA FIX	ZZTOP, OA WP	5500 MAA - 60000
ZZTOP, OA WP	OMALA, OA WP	5500 MAA - 60000
OMALA, OA WP	WILYY, OA WP	5500 MAA - 60000
WILYY, OA WP	KANUX, OA WP	5500 MAA - 60000
KANUX, OA WP	GALVN, OA WP	5500 MAA - 60000
GALVN, OA WP	KASAR, OA WP	5500 MAA - 60000
KASAR, OA WP	LNHOM, OA WP	5500 MAA - 60000
LNHOM, OA WP	SLUKA, OA WP	5500

FROM	TO	MEA
L452 - CONTINUED		
		MAA - 60000
SLUKA, OA WP	JORGG, OA WP	5500 MAA - 60000
JORGG, OA WP	NELSR, OA WP	5500 MAA - 60000
NELSR, OA WP	GRAND TURK, TC VORTAC	5500 MAA - 60000
GRAND TURK, TC VORTAC	RNTRY, OA FIX	5500 MAA - 60000
RNTRY, OA FIX	MACKI, OA FIX	5500 MAA - 60000
MACKI, OA FIX	HARBG, OA FIX	5500 MAA - 60000
HARBG, OA FIX	MUNOZ, OA WP	5500 MAA - 60000
MUNOZ, OA WP	BORINQUEN, PR VORTAC	5500 MAA - 60000
BORINQUEN, PR VORTAC	ETEEE, OA WP	5500 MAA - 60000
ETEEE, OA WP	RAFEE, OA WP	5500 MAA - 60000
RAFEE, OA WP	ANADA, OA WP	5500 MAA - 60000
L453		
AZEZU, OA WP	LEXAD, OA WP	5500 MAA - 60000
LEXAD, OA WP	PAEPR, OA WP	5500 MAA - 60000
PAEPR, OA WP	SAUCR, OA WP	5500 MAA - 60000
SAUCR, OA WP	ONGOT, OA WP	5500 MAA - 60000
ONGOT, OA WP	LSIER, OA WP	5500 MAA - 60000
LSIER, OA WP	ALOBI, OA WP	5500 MAA - 60000
ALOBI, OA WP	BOREX, OA WP	5500 MAA - 60000
BOREX, OA WP	LAMER, OA WP	5500 MAA - 60000
LAMER, OA WP	RODRK, OA WP	5500 MAA - 60000
RODRK, OA WP	CERDA, OA WP	5500 MAA - 60000
CERDA, OA WP	FARMN, OA WP	5500 MAA - 60000
FARMN, OA WP	JSTIN, OA WP	5500 MAA - 60000
JSTIN, OA WP	ANTOX, OA FIX	5500 MAA - 60000
ANTOX, OA FIX	KARRN, OA FIX	5500 MAA - 60000
KARRN, OA FIX	MACKI, OA FIX	5500 MAA - 60000
MACKI, OA FIX	ASIVO, DO WP	5500 MAA – 60000

FROM	TO	MEA

L454

FROM	TO	MEA
KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA WP	6000
TAAPS, OA WP	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA WP	6000
VOGEL, OA WP	GEENE, OA WP	6000
GEENE, OA WP	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA WP	6000
FONDE, OA WP	ELCAM, OA WP	21000
ELCAM, OA WP	WUZYU, OA WP	21000
WUZYU, OA WP	ANNGO, OA WP	21000
ANNGO, OA WP	BERGH, OA WP	21000
BERGH, OA WP	WEBBB, OA WP	21000
WEBBB, OA WP	OKONU, OA WP	
OKONU, OA WP	ATUGI, OA WP	
ATUGI, OA WP	GOUGH, OA WP	
GOUGH, OA WP	PERDO, OA WP	
PERDO, OA WP	SAVON, OA WP	
SAVON, OA WP	GRAMN, OA WP	
GRAMN, OA WP	SEBIS, OA WP	
SEBIS, OA WP	RABAL, OA WP	
RABAL, OA WP	LUCTI, OA WP	
LUCTI, OA WP	SINGL, OA WP	
SINGL, OA WP	MNDEZ, OA WP	
MNDEZ, OA WP	ALERI, OA WP	
ALERI, OA WP	WOODZ, OA WP	
WOODZ, OA WP	KNDLL, OA WP	
KNDLL, OA WP	DONQU, OA WP	
DONQU, OA WP	PANMO, OA WP	
PANMO, OA WP	LEEOO, OA WP	
LEEOO, OA WP	ILURI, OA FIX	

L455

FROM	TO	MEA
KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA WP	6000
TAAPS, OA WP	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA WP	6000
VOGEL, OA WP	GEENE, OA WP	6000
GEENE, OA WP	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA WP	6000
FONDE, OA WP	ELCAM, OA WP	21000
ELCAM, OA WP	WUZYU, OA WP	21000
WUZYU, OA WP	ANNGO, OA WP	21000
ANNGO, OA WP	BERGH, OA WP	21000
BERGH, OA WP	VACHI, OA WP	21000
VACHI, OA WP	KBEZA, OA WP	21000
KBEZA, OA WP	SCAPA, PR WP	21000

L456

FROM	TO	MEA
KENNEDY, NY VOR/DME	SHERL, NY FIX	15000
SHERL, NY FIX	FATON, OA WP	15000
FATON, OA WP	THROP, OA WP	15000

FROM	TO	MEA

L456 - CONTINUED

THROP, OA WP	GRAPT, OA WP	15000
GRAPT, OA WP	LEOES, OA FIX	15000
LEOES, OA FIX	FINIT, OA WP	15000

L457

KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA WP	6000
TAAPS, OA WP	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA WP	6000
VOGEL, OA WP	GEENE, OA WP	6000
GEENE, OA WP	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA WP	6000
FONDE, OA WP	ELCAM, OA WP	21000
ELCAM, OA WP	WUZYU, OA WP	21000
WUZYU, OA WP	ANNGO, OA WP	21000
ANNGO, OA WP	BERGH, OA WP	21000
BERGH, OA WP	WEBBB, OA WP	21000

L459

KENNEDY, NY VOR/DME	BOUNO, NY FIX	6000
BOUNO, NY FIX	GEDIC, NJ FIX	6000
GEDIC, NJ FIX	TAAPS, OA WP	6000
TAAPS, OA WP	GLINN, OA FIX	6000
GLINN, OA FIX	VOGEL, OA WP	6000
VOGEL, OA WP	GEENE, OA WP	6000
GEENE, OA WP	OWENZ, OA FIX	6000
OWENZ, OA FIX	FONDE, OA WP	6000
FONDE, OA WP	ELCAM, OA WP	21000
ELCAM, OA WP	WUZYU, OA WP	21000
WUZYU, OA WP	ANNGO, OA WP	21000
ANNGO, OA WP	BERGH, OA WP	21000
BERGH, OA WP	SAVIK, OA WP	21000

L461

KENNEDY, NY VOR/DME	SHERL, NY FIX	15000
SHERL, NY FIX	FATON, OA WP	15000
FATON, OA WP	THROP, OA WP	15000
THROP, OA WP	GRAPT, OA WP	15000
GRAPT, OA WP	LEOES, OA FIX	15000
LEOES, OA FIX	FINIT, OA WP	15000

L464

RNTRY, OA FIX	LERED, OA FIX	4000 MAA - 45000

L466

MEEGL, PR WP	GEECE, OA WP	*7000 MAA - 60000

L467

ANADA, OA WP	ANNER, OA WP	*7000 MAA - 60000
ANNER, OA WP	GESSO, PR FIX	*7000 MAA - 60000

FROM	TO	MEA
L576		
BERMUDA, BM VOR/DME	SEAVR, OA WP	5500 MAA - 60000
SEAVR, OA WP	RKDIA, OA WP	5500 MAA - 60000
RKDIA, OA WP	CITRS, OA WP	5500 MAA - 60000
L577		
ELOPO, PR FIX	SAINT MAARTEN, AN VOR/DME	6000 MAA - 60000
SAINT MAARTEN, AN VOR/DME	ST THOMAS, VI VOR/DME	6000 MAA - 60000
ST THOMAS, VI VOR/DME	ANTEX, PR FIX	6000 MAA - 60000
L776		
MACOR, OA WP	FERNA, OA WP	*18000 MAA - 60000
FERNA, OA WP	GEECE, OA WP	*18000 MAA - 60000
M201		
VIRST, OA WP	VEGAA, OA WP	5500 MAA - 60000
VEGAA, OA WP	ATUGI, OA WP	5500 MAA - 60000
ATUGI, OA WP	TILED, OA WP	5500 MAA - 60000
TILED, OA WP	DRYED, OA WP	5500 MAA - 60000
DRYED, OA WP	NOVOK, OA WP	5500 MAA - 60000
NOVOK, OA WP	CARAC, OA WP	5500 MAA - 60000
M204		
SUMRS, OA WP	FLUPS, OA WP	5500 MAA - 60000
FLUPS, OA WP	ALOBI, OA WP	5500 MAA - 60000
ALOBI, OA WP	BEXUM, OA WP	5500 MAA - 60000
BEXUM, OA WP	LUNKR, OA WP	5500 MAA - 60000
LUNKR, OA WP	SOORY, OA WP	5500 MAA - 60000
M215		
PISAD, OG WP	MINOW, OG FIX	4000 MAA - 45000
MINOW, OG FIX	SNOMN, OG WP	4000 MAA - 45000
SNOMN, OG WP	CIGAR, OG WP	4000 MAA - 45000
CIGAR, OG WP	KNOST, OG WP	4000 MAA - 45000

FROM	TO	MEA
M219		
MYDIA, OG WP	SNAKR, OG WP	4000 MAA - 45000
SNAKR, OG WP	BUUOY, OG WP	4000 MAA - 45000
BUUOY, OG WP	CULLY, OG WP	4000 MAA - 45000
CULLY, OG WP	CIGAR, OG WP	4000 MAA - 45000
CIGAR, OG WP	KNOST, OG WP	4000 MAA - 45000
M325		
OXANA, OA FIX	NETSS, OA WP	5500 MAA - 60000
NETSS, OA WP	ONGOT, OA WP	5500 MAA - 60000
ONGOT, OA WP	PERDO, OA WP	5500 MAA - 60000
PERDO, OA WP	ENAPI, OA WP	5500 MAA - 60000
ENAPI, OA WP	AWSOM, OA WP	6000
AWSOM, OA WP	GUICE, OA WP	6000
GUICE, OA WP	BERMUDA, BM VOR/DME	6000
M345		
AXEXO, OG WP	SEAGL, OG WP	4000 MAA - 45000
SEAGL, OG WP	RUMMM, OG WP	4000 MAA - 45000
RUMMM, OG WP	KENGS, OG WP	4000 MAA - 45000
KENGS, OG WP	WAHOO, OG FIX	4000 MAA - 45000
WAHOO, OG FIX	TIBBY, LA VOR/DME	4000 MAA - 45000
M423		
KIKER, OA WP	RAYAS, OA WP	*18000 MAA - 60000
RAYAS, OA WP	PLING, PR FIX	*18000 MAA - 60000
PLING, PR FIX	LENNT, OA WP	*18000 MAA - 60000
M575		
CLONN, OG FIX	CATFS, OG WP	4000 MAA - 45000
CATFS, OG WP	ANKRR, OG WP	4000 MAA - 45000
ANKRR, OG WP	KENGS, OG WP	4000 MAA - 45000
KENGS, OG WP	WAHOO, OG FIX	4000 MAA - 45000
WAHOO, OG FIX	TIBBY, LA VOR/DME	4000 MAA - 45000

FROM	TO	MEA

M576

FROM	TO	MEA
MILOK, OA WP	RAYAS, OA WP	*9000 MAA - 60000
RAYAS, OA WP	RAFEE, OA WP	*9000 MAA - 60000
RAFEE, OA WP	ANNER, OA WP	*9000 MAA - 60000
ANNER, OA WP	PORQE, VI FIX	*9000 MAA - 60000
PORQE, VI FIX *3500 - MRA	*DANDE, VI FIX	 MAA - 60000
DANDE, VI FIX	SAINT MAARTEN, AN VOR/DME	*6000 MAA - 60000
SAINT MAARTEN, AN VOR/DME	MNOLO, OA WP	*6000 MAA - 60000
MNOLO, OA WP	NEYDU, OA WP	*6000 MAA - 60000
NEYDU, OA WP	OBIKE, OA WP	*18000 MAA - 60000
OBIKE, OA WP	RKDIA, OA WP	*18000 MAA - 60000

M580

FROM	TO	MEA
IRDOV, OG WP	CCUDA, OG WP	4000 MAA - 45000
CCUDA, OG WP	MINOW, OG FIX	4000 MAA - 45000
MINOW, OG FIX	BUUOY, OG WP	4000 MAA - 45000
BUUOY, OG WP	NATLE, OG WP	4000 MAA - 45000
NATLE, OG WP	SHAQQ, FL WP	4000 MAA - 45000
SHAQQ, FL WP	MARCI, FL FIX	4000 MAA - 45000

N779

FROM	TO	MEA
ARMUR, PR WP	CRSTL, PR WP	*7000 MAA - 60000
CRSTL, PR WP	ALASK, PR WP	*7000 MAA - 60000
ALASK, PR WP	JOSHE, PR FIX	*7000 MAA - 60000

Q100

FROM	TO	MEA
LEEVILLE, LA VORTAC *1500 - MOCA	REDFN, OG WP	*6000
REDFN, OG WP *1500 - MOCA	NAITE, OG WP	*6000
NAITE, OG WP *1500 - MOCA	ROZZI, OG WP	*6000
ROZZI, OG WP *1500 - MOCA	REMIS, OG WP	*6000
REMIS, OG WP *1500 - MOCA	SARASOTA, FL VOR/DME	*6000

FROM	TO	MEA
Q102		
LEEVILLE, LA VORTAC	BLVNS, OG WP	*6000
*1500 - MOCA		
BLVNS, OG WP	BUNNZ, OG WP	*6000
*1500 - MOCA		
BUNNZ, OG WP	BACCA, OG WP	*6000
*1500 - MOCA		
BACCA, OG WP	CIGAR, OG WP	*6000
*1500 - MOCA		
CIGAR, OG WP	BAGGS, OG WP	*6000
*1500 - MOCA		
BAGGS, OG WP	CYPRESS, FL VOR/DME	*6000
*1500 - MOCA		
Q105		
HARVEY, LA VORTAC	FATSO, OG WP	*6000
*1500 - MOCA		
FATSO, OG WP	REDFN, OG WP	*6000
*1500 - MOCA		
REDFN, OG WP	BLVNS, OG WP	*6000
*1500 - MOCA		
R507		
SAPPO, OA WP	*CONCH, OA FIX	#24000
*24000 - MRA		
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
CONCH, OA FIX	UTAHS, PR FIX	24000
R56		
LINND, OA FIX	KENDA, OA WP	18000
		MAA - 60000
KENDA, OA WP	LARGE, OA WP	18000
		MAA - 60000
LARGE, OA WP	PENYT, OA WP	18000
		MAA - 60000
PENYT, OA WP	SLATN, OA FIX	18000
		MAA - 60000
R628		
TANIA, OA FIX	ZOLLA, OA FIX	12000
ZOLLA, OA FIX	MENDL, BS FIX	10000
MENDL, BS FIX	*PEKRE, BS FIX	**6000
*12500 - MRA		
**1400 - MOCA		MAA - 45000
PEKRE, BS FIX	SANNS, BS FIX	*2000
*1500 - MOCA		MAA - 45000
SANNS, BS FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		MAA - 45000
R760		
ST CROIX, VI VOR/DME	GOUDA, VI FIX	5000
GOUDA, VI FIX	SAINT MAARTEN, AN VOR/DME	3000

FROM	TO	MEA
R763		
GRAND TURK, TC VORTAC	RNTRY, OA FIX	*14000
*1200 - MOCA		MAA - 45000
RNTRY, OA FIX	MACKI, OA FIX	14000
MACKI, OA FIX	HARBG, OA FIX	14000
HARBG, OA FIX	MUNOZ, OA WP	14000
MUNOZ, OA WP	BORINQUEN, PR VORTAC	14000
R888		
ST CROIX, VI VOR/DME	MODUX, VI FIX	14000
Y183		
IKBIX, OA WP	PEAKY, FL WP	6000
		MAA - 45000
Y185		
ILURI, OA FIX	ACONY, OA WP	*18000
*4900 - MOCA		MAA - 60000
ACONY, OA WP	DOZGO, OA WP	*18000
*4900 - MOCA		MAA - 60000
DOZGO, OA WP	DONQU, OA WP	*18000
*4900 - MOCA		MAA - 60000
DONQU, OA WP	NELSR, OA WP	*18000
		MAA - 60000
NELSR, OA WP	COUKY, OA FIX	*18000
		MAA - 60000
COUKY, OA FIX	RENAH, OA WP	*18000
		MAA - 60000
RENAH, OA WP	CVIKK, BS WP	*18000
		MAA - 60000
CVIKK, BS WP	VENDS, OA WP	*18000
		MAA - 60000
VENDS, OA WP	BEERD, OA WP	*18000
		MAA - 60000
BEERD, OA WP	MANLE, FL WP	*18000
*1200 - MOCA		MAA - 60000
Y196		
CANOA, FL WP	LULLS, FL WP	*18000
*1200 - MOCA		MAA - 60000
LULLS, FL WP	TUNSL, FL WP	*18000
*1200 - MOCA		MAA - 60000
Y217		
ZEUSS, OA WP	OCTAL, FL WP	*18000
*1300 - MOCA		MAA - 45000
Y240		
MYDIA, OG WP	SNAKR, OG WP	4000
		MAA - 45000
SNAKR, OG WP	YENNE, OG WP	4000
		MAA - 45000
YENNE, OG WP	SHAQQ, FL WP	4000
		MAA - 45000
SHAQQ, FL WP	MARCI, FL FIX	4000
		MAA - 45000

FROM	TO	MEA
Y259		
BORDO, BS FIX	OCTAL, FL WP	*18000
*1300 - MOCA		MAA - 60000
Y260		
ACONY, OA WP	LEEOO, OA WP	*18000 MAA - 60000
LEEOO, OA WP	MODUX, VI FIX	*18000 MAA - 60000
Y261		
MALVN, OA FIX	BOOZY, OA WP	*18000 MAA - 60000
BOOZY, OA WP	MADIZ, OA WP	*18000 MAA - 60000
MADIZ, OA WP	FOXID, OA WP	*18000 MAA - 60000
FOXID, OA WP	FOWEE, OA FIX	*18000 MAA - 60000
Y262		
MAXIM, FL WP	LULLS, FL WP	*18000 MAA - 45000
LULLS, FL WP	TUNSL, FL WP	*18000 MAA - 60000
TUNSL, FL WP	BRIES, FL WP	*18000 MAA - 60000
BRIES, FL WP	GOPEY, FL WP	*18000 MAA - 60000
GOPEY, FL WP	LINEY, FL WP	*18000 MAA - 60000
LINEY, FL WP	SAXXN, FL WP	*18000 MAA - 60000
SAXXN, FL WP	FREEPORT, BS VOR/DME	*18000 MAA - 60000
Y280		
LEEVILLE, LA VORTAC	REDFN, OG WP	*18000 MAA - 60000
REDFN, OG WP	NAITE, OG WP	*18000 MAA - 60000
NAITE, OG WP	ROZZI, OG WP	*18000 MAA - 60000
ROZZI, OG WP	REMIS, OG WP	*18000 MAA - 60000
REMIS, OG WP	CHRGE, OG WP	*18000 MAA - 60000
CHRGE, OG WP	SARASOTA, FL VOR/DME	*18000 MAA - 60000
SARASOTA, FL VOR/DME	DOLIE, FL WP	*18000 MAA - 60000
DOLIE, FL WP	JAYMC, FL WP	*18000 MAA - 60000
JAYMC, FL WP	WOPOK, FL WP	*18000 MAA - 60000
WOPOK, FL WP	OCTAL, FL WP	*18000 MAA – 60000

FROM	TO	MEA
Y280 – CONTINUED		
OCTAL, FL WP	CANVI, OA WP	*18000 MAA - 60000
CANVI, OA WP	PEACH, BS FIX	*18000 MAA - 60000
PEACH, BS FIX	SUMAC, OA WP	*18000 MAA - 60000
SUMAC, OA WP	RUTOC, OA WP	*18000 MAA - 60000
RUTOC, OA WP	CHASO, OA WP	*18000 MAA - 60000
CHASO, OA WP	SAPPO, OA WP	*18000 MAA - 60000
SAPPO, OA WP	ACONY, OA WP	*18000 MAA - 60000
ACONY, OA WP *3500 - MRA	*DANDE, VI FIX	MAA - 60000
DANDE, VI FIX	GABAR, VI FIX	*18000 MAA - 60000
Y289		
DULEE, OA WP	BAHAA, OA WP	*18000 MAA - 45000
BAHAA, OA WP	NRRSE, OA WP	*18000 MAA - 60000
NRRSE, OA WP	OSTNN, OA WP	*18000 MAA - 60000
OSTNN, OA WP *1300 – MOCA MAA - 60000	ZILLS, NC WP	*18000
Y290		
LEEVILLE, LA VORTAC	BLVNS, OG WP	*18000 MAA - 60000
BLVNS, OG WP	BUNNZ, OG WP	*18000 MAA - 60000
BUNNZ, OG WP	BACCA, OG WP	*18000 MAA - 60000
BACCA, OG WP	CIGAR, OG WP	*18000 MAA - 60000
CIGAR, OG WP	GAWKS, OA WP	*18000 MAA - 60000
GAWKS, OA WP	BAGGS, OG WP	*18000 MAA - 60000
BAGGS, OG WP	THMPR, FL WP	*18000 MAA - 60000
THMPR, FL WP	FEMID, FL WP	*18000 MAA - 60000
FEMID, FL WP	SAXXN, FL WP	*18000 MAA - 60000
SAXXN, FL WP	UCRAZ, OA WP	*18000 MAA - 60000
UCRAZ, OA WP	SKIPS, BS FIX	*18000 MAA – 60000

FROM	TO	MEA
Y290 – CONTINUED		
SKIPS, BS FIX	BITAC, OA WP	*18000 MAA - 60000
BITAC, OA WP	HAGIT, OA WP	*18000 MAA - 60000
HAGIT, OA WP	CALTO, OA WP	*18000 MAA - 60000
CALTO, OA WP	ZIBER, OA WP	*18000 MAA - 60000
ZIBER, OA WP	SAYER, OA WP	*18000 MAA - 60000
SAYER, OA WP	BEANO, PR FIX	*18000 MAA - 60000
BEANO, PR FIX	JETSS, PR FIX	*18000 MAA - 60000
JETSS, PR FIX	SLUGO, VI FIX	*18000 MAA - 60000
SLUGO, VI FIX	ELOPO, PR FIX	*18000 MAA - 60000
Y291		
HOAGG, OA WP	JENKS, OA WP	*18000 MAA - 45000
JENKS, OA WP	RAZZL, OA WP	*18000 MAA - 60000
RAZZL, OA WP	JRDAN, OA WP	*18000 MAA - 60000
JRDAN, OA WP	SAGGY, OA WP	*18000 MAA - 60000
Y292		
MNDEZ, OA WP	FIPEK, OA WP	*18000 MAA - 60000
FIPEK, OA WP	PANMO, OA WP	*18000 MAA - 60000
Y294		
FIPEK, OA WP	GESSO, PR FIX	*18000 MAA - 60000
Y297		
*URSUS, OA FIX *16000 - MRA	UCRAZ, OA WP	*18000 MAA - 45000
UCRAZ, OA WP *1300 - MOCA	TOVAR, FL WP	*18000 MAA - 60000
Y298		
VENDS, OA WP	WISET, OA WP	*18000 MAA - 60000
WISET, OA WP	RUMFO, OA WP	*18000 MAA - 60000
RUMFO, OA WP	GREAT INAGUA, BS NDB	*18000 MAA - 60000
GREAT INAGUA, BS NDB	BODLO, OA WP	*18000 MAA – 60000

FROM	TO	MEA
Y299		
GRUBR, OA WP	SNABS, OA WP	*18000 MAA - 45000
SNABS, OA WP	AYCHB, OA WP	*18000 MAA - 60000
AYCHB, OA WP	DUUNK, OA WP	*18000 MAA - 60000
DUUNK, OA WP	RBRHD, OA WP	*18000 MAA - 60000
RBRHD, OA WP	JRDAN, OA WP	*18000 MAA - 60000
Y304		
VENDS, OA WP	RUTOC, OA WP	*18000 MAA - 60000
RUTOC, OA WP	SEKAR, DO FIX	*18000 MAA - 60000
Y306		
VENDS, OA WP	CHASO, OA WP	*18000 MAA - 45000
CHASO, OA WP	HAGIT, OA WP	*18000 MAA - 60000
HAGIT, OA WP	POKEG, IB FIX	*18000 MAA - 60000
Y307		
ENAMO, OA FIX	NASSAU, BS VOR/DME	*18000 MAA - 45000
NASSAU, BS VOR/DME	HANKX, BS FIX	*18000 MAA - 60000
HANKX, BS FIX	NUCAR, BS FIX	*18000 MAA - 60000
NUCAR, BS FIX	PAAZZ, OA WP	*18000 MAA - 60000
PAAZZ, OA WP	HOVAX, OA WP	*18000 MAA - 60000
HOVAX, OA WP	CASPR, OA FIX	*18000 MAA - 60000
CASPR, OA FIX	CARPX, OA WP	*18000 MAA - 60000
CARPX, OA WP	ADUCI, OA WP	*18000 MAA - 60000
ADUCI, OA WP	JAZZI, OA WP	*18000 MAA - 60000
JAZZI, OA WP	FRRAM, OA WP	*18000 MAA - 60000
FRRAM, OA WP	JRDAN, OA WP	*18000 MAA - 60000
JRDAN, OA WP	OSTNN, OA WP	*18000 MAA - 60000
OSTNN, OA WP	GARIC, NC WP	*18000 MAA - 60000

FROM	TO	MEA
Y308		
FOWEE, OA FIX	FOXID, OA WP	*18000 MAA – 60000
FOXID, OA WP	MADIZ, OA WP	*18000 MAA - 60000
MADIZ, OA WP	FODED, OA WP	*18000 MAA - 60000
FODED, OA WP	HAGIT, OA WP	*18000 MAA - 60000
HAGIT, OA WP	FEKKO, OA WP	*18000 MAA - 60000
FEKKO, OA WP	ACONY, OA WP	*18000 MAA - 60000
Y309		
PELCN, OA WP	OZENA, OA WP	*18000 MAA - 45000
OZENA, OA WP	ROWSY, OA WP	*18000 MAA - 60000
ROWSY, OA WP	FLRDA, OA WP	*18000 MAA - 60000
FLRDA, OA WP	FRRAM, OA WP	*18000 MAA - 60000
FRRAM, OA WP	GFFFT, OA WP	*18000 MAA - 60000
GFFFT, OA WP	IDOLS, OA WP	*18000 MAA - 60000
Y315		
CHUMA, OA WP	DOZGO, OA WP	*18000 MAA - 45000
DOZGO, OA WP	GEROA, OA WP	*18000 MAA - 45000
GEROA, OA WP	KEEKA, OA WP	*18000 MAA - 60000
Y318		
RODRK, OA WP	DONQU, OA WP	*18000 MAA - 60000
DONQU, OA WP	WEXET, PR WP	*18000 MAA - 60000
WEXET, PR WP	LARPP, VI FIX	*18000 MAA - 60000
LARPP, VI FIX	ELOPO, PR FIX	*18000 MAA - 60000
Y319		
*URSUS, OA FIX *16000 - MRA **1400 - MOCA	FREEPORT, BS VOR/DME	*18000 MAA - 45000
FREEPORT, BS VOR/DME *1400 - MOCA	BRATZ, OA WP	*18000 MAA - 60000
BRATZ, OA WP	OHLAA, OA WP	*18000 MAA - 60000
OHLAA, OA WP	COACH, OA WP	*18000 MAA - 60000
COACH, OA WP	TYCAL, OA WP	*18000

FROM	TO	MEA
Y319 - CONTINUED		
		MAA - 60000
TYCAL, OA WP	JAZZI, OA WP	*18000 MAA - 60000
JAZZI, OA WP *1200 - MOCA	IDOLS, OA WP	*18000 MAA – 60000
Y323		
CARPX, OA WP	WEAKK, OA WP	*18000 MAA - 45000
WEAKK, OA WP	PRTHR, OA WP	*18000 MAA - 60000
PRTHR, OA WP	IDOLS, OA WP	*18000 MAA - 60000
Y325		
ZEUSS, OA WP	FOWEE, OA FIX	*18000 MAA - 60000
Y329		
ZEUSS, OA WP	FREEPORT, BS VOR/DME	*18000 MAA - 60000
Y330		
FODED, OA WP	PURPE, OA WP	*18000 MAA - 60000
PURPE, OA WP	HARBG, OA FIX	*18000 MAA - 60000
Y350		
BIMINI, BS VORTAC	SOMEE, OA WP	*18000 MAA - 60000
SOMEE, OA WP	NASSAU, BS VOR/DME	*18000 MAA - 60000
NASSAU, BS VOR/DME	CILEX, OA WP	*18000 MAA - 60000
CILEX, OA WP	GREAT INAGUA, BS NDB	*18000 MAA - 60000
Y352		
NASSAU, BS VOR/DME	HAGIT, OA WP	*18000 MAA - 60000
Y353		
ALBBE, BS FIX	GREAT INAGUA, BS NDB	*18000 MAA - 60000
GREAT INAGUA, BS NDB	SUMAC, OA WP	*18000 MAA - 60000
SUMAC, OA WP	UPOKE, OA WP	*18000 MAA - 60000
UPOKE, OA WP	BAHMA, BS FIX	*18000 MAA - 60000
Y354		
DONQU, OA WP	GESSO, PR FIX	*18000 MAA - 60000
Y355		
ELOPO, PR FIX	SLUGO, VI FIX	*18000 MAA - 60000
SLUGO, VI FIX	KOLAO, OA WP	*18000 MAA - 60000

FROM	TO	MEA
Y355 – CONTINUED		
KOLAO, OA WP	PLING, PR FIX	*18000 MAA - 60000
PLING, PR FIX	PUYYA, OA WP	*18000 MAA - 60000
PUYYA, OA WP	FIPEK, OA WP	*18000 MAA – 60000
FIPEK, OA WP	HELAX, OA WP	*18000 MAA - 60000
HELAX, OA WP	FOSAS, OA WP	*18000 MAA - 60000
FOSAS, OA WP	RENAH, OA WP	*18000 MAA - 60000
RENAH, OA WP	NUCAR, BS FIX	*18000 MAA - 60000
Y356		
IORIO, OA WP	CERDA, OA WP	*18000 MAA - 60000
CERDA, OA WP	DONQU, OA WP	*18000 MAA - 60000
DONQU, OA WP	MEEGL, PR WP	*18000 MAA - 60000
Y374		
NUCAR, BS FIX	WEDER, BS WP	*18000 MAA - 60000
WEDER, BS WP	RUMFO, OA WP	*18000 MAA - 60000
RUMFO, OA WP	ALBBE, BS FIX	*18000 MAA - 60000
Y396		
BITAC, OA WP	RUMFO, OA WP	*18000 MAA - 60000
RUMFO, OA WP	MALVN, OA FIX	*18000 MAA - 60000
Y397		
SEKAR, DO FIX	RENAH, OA WP	*18000 MAA - 60000
Y398		
SAXXN, FL WP	UCRAZ, OA WP	*18000 MAA - 60000
UCRAZ, OA WP	SKIPS, BS FIX	*18000 MAA - 60000
SKIPS, BS FIX *1300 - MOCA	JAGOR, OA WP	*18000 MAA - 60000
JAGOR, OA WP *2200 - MOCA	GREAT INAGUA, BS NDB	*18000 MAA - 60000
GREAT INAGUA, BS NDB	JOSES, OA WP	*18000 MAA - 60000
Y399		
SAPPO, OA WP	CADGE, OA WP	*18000 MAA - 45000
CADGE, OA WP *1500 - MOCA	NASSAU, BS VOR/DME	*18000 MAA – 60000

FROM	TO	MEA
Y399 – CONTINUED		
NASSAU, BS VOR/DME	SOMEE, OA WP	*18000
*1300 - MOCA		MAA - 60000
SOMEE, OA WP	BIMINI, BS VORTAC	*18000
*1300 - MOCA		MAA – 60000
Y421		
MEEGL, PR WP	HARBG, OA FIX	18000
		MAA - 60000
HARBG, OA FIX	HAGIT, OA WP	*18000
		MAA - 60000
HAGIT, OA WP	WISET, OA WP	*18000
		MAA - 60000
WISET, OA WP	SUMAC, OA WP	*18000
VIA .		
		MAA - 60000
SUMAC, OA WP	PEACH, BS FIX	*18000
		MAA - 60000
PEACH, BS FIX	KOUGH, OA WP	*18000
		MAA - 60000
KOUGH, OA WP	CANVI, OA WP	*18000
		MAA - 60000
CANVI, OA WP	OCTAL, FL WP	*18000
		MAA - 60000
Y436		
DEDDY, SC WP	PITRW, SC WP	*18000
		MAA - 60000
PITRW, SC WP	SNNTA, SC WP	*18000
		MAA - 60000
SNNTA, SC WP	SPIKY, OA WP	*18000
		MAA - 60000
SPIKY, OA WP	LURKS, OA WP	*18000
		MAA - 60000
LURKS, OA WP	HARON, OA WP	*18000
		MAA - 60000
HARON, OA WP	JAINS, OA WP	*18000
		MAA - 60000
Y438		
KOOKK, FL WP	FEMON, FL WP	*18000
		MAA - 60000
FEMON, FL WP	JAWSS, FL FIX	*18000
		MAA - 60000
JAWSS, FL FIX	BAHAA, OA WP	*18000
		MAA - 60000
BAHAA, OA WP	TROUT, FL WP	*18000
		MAA - 60000
Y439		
ARMUR, PR WP	MEEGL, PR WP	*18000
		MAA - 60000
MEEGL, PR WP	SAYER, OA WP	*18000
		MAA - 60000
SAYER, OA WP	FIPEK, OA WP	*18000
		MAA – 60000

FROM	TO	MEA
Y439 - CONTINUED		
FIPEK, OA WP	CERDA, OA WP	*18000 MAA - 60000
CERDA, OA WP	SLUKA, OA WP	*18000 MAA – 60000
Y441		
JUELE, OA FIX	RUMFO, OA WP	*18000 MAA - 60000
RUMFO, OA WP	NASSAU, BS VOR/DME	*18000 MAA - 60000
NASSAU, BS VOR/DME	SOMEE, OA WP	*18000 MAA - 60000
SOMEE, OA WP	BIMINI, BS VORTAC	*18000 MAA - 60000
Y442		
FUNDI, OA WP	MCLAW, FL WP	6000 MAA - 45000
MCLAW, FL WP	TAZER, FL WP	6000 MAA - 45000
TAZER, FL WP	MNATE, FL FIX	6000 MAA - 45000
Y443		
RUMFO, OA WP	SUMAC, OA WP	*18000 MAA - 60000
SUMAC, OA WP	UPOKE, OA WP	*18000 MAA - 60000
UPOKE, OA WP	BAHMA, BS FIX	*18000 MAA - 60000
Y481		
KINGG, OA WP	OHRYN, OA WP	*17000 MAA - 60000
OHRYN, OA WP	POPPN, OA WP	*17000 MAA - 60000
POPPN, OA WP	OWENZ, OA FIX	*17000 MAA - 60000
OWENZ, OA FIX	DIXIE, NJ FIX	*6000 MAA - 60000
Y482		
DIXIE, NJ FIX	OWENZ, OA FIX	*6000 MAA - 60000
OWENZ, OA FIX	POPPN, OA WP	*17000 MAA - 60000
POPPN, OA WP	OHRYN, OA WP	*17000 MAA - 60000
OHRYN, OA WP	SQUAD, OA WP	*17000 MAA - 60000
Y483		
MARIG, OA WP	ISLES, OA WP	*18000 MAA - 60000
ISLES, OA WP	DUMPR, OA WP	*18000 MAA - 60000
DUMPR, OA WP	BLUUU, OA WP	*18000 MAA - 60000
BLUUU, OA WP	DOGRS, OA WP	*18000

FROM	TO	MEA
Y483 – CONTINUED		
		MAA - 60000
DOGRS, OA WP	FATON, OA WP	*18000 MAA – 60000
FATON, OA WP	SHERL, NY FIX	*18000 MAA - 60000
SHERL, NY FIX	SHIPP, OA FIX	*18000 MAA - 60000
SHIPP, OA FIX	KENNEDY, NY VOR/DME	*18000 MAA - 60000
Y484		
KENNEDY, NY VOR/DME	CREEL, NY FIX	*18000 MAA - 60000
CREEL, NY FIX	BOUNO, NY FIX	*18000 MAA - 60000
BOUNO, NY FIX	GEDIC, NJ FIX	*18000 MAA - 60000
GEDIC, NJ FIX	OWENZ, OA FIX	*18000 MAA - 60000
OWENZ, OA FIX	MOUGH, OA WP	*18000 MAA - 60000
MOUGH, OA WP	YETTI, OA WP	*18000 MAA - 60000
YETTI, OA WP	YAALE, OA WP	*18000 MAA - 60000
YAALE, OA WP	WEBBB, OA WP	*18000 MAA - 60000
WEBBB, OA WP	OKONU, OA WP	*18000 MAA - 60000
Y485		
SAUCR, OA WP	STERN, OA WP	*31000 MAA - 60000
STERN, OA WP	CHUBY, OA WP	*31000 MAA - 60000
CHUBY, OA WP	HOBOH, OA WP	*31000 MAA - 60000
HOBOH, OA WP	SILLY, OA WP	*31000 MAA - 60000
SILLY, OA WP	STINK, OA WP	*17000 MAA - 60000
STINK, OA WP	YAALE, OA WP	*17000 MAA - 60000
Y486		
KENNEDY, NY VOR/DME	CREEL, NY FIX	*18000 MAA - 60000
CREEL, NY FIX	BOUNO, NY FIX	*18000 MAA - 60000
BOUNO, NY FIX	GEDIC, NJ FIX	*18000 MAA - 60000
GEDIC, NJ FIX	OWENZ, OA FIX	*18000 MAA - 60000
OWENZ, OA FIX	MOUGH, OA WP	*18000 MAA - 60000
MOUGH, OA WP	SAVIK, OA WP	*18000 MAA - 60000

FROM	TO	MEA
Y487		
KINGG, OA WP VIA OTO VOR 168	ISLES, OA WP	*17000 MAA - 60000
ISLES, OA WP	DUMPR, OA WP	*17000 MAA - 60000
DUMPR, OA WP	BLUUU, OA WP	*17000 MAA - 60000
BLUUU, OA WP	DOGRS, OA WP	*11000 MAA - 60000
DOGRS, OA WP	SPDEY, OA WP	*6000 MAA - 60000
SPDEY, OA WP	SHIPP, OA FIX	*6000 MAA - 60000
Y488		
SHIPP, OA FIX	SPDEY, OA WP	*6000 MAA - 60000
SPDEY, OA WP	DOGRS, OA WP	*6000 MAA - 60000
DOGRS, OA WP	BLUUU, OA WP	*11000 MAA - 60000
BLUUU, OA WP	DUMPR, OA WP	*17000 MAA - 60000
DUMPR, OA WP	ICCEY, OA WP	*17000 MAA - 60000
ICCEY, OA WP	OHRYN, OA WP	*17000 MAA - 60000
OHRYN, OA WP	BEHHR, OA WP	*17000 MAA - 60000
BEHHR, OA WP	WEBBB, OA WP	*17000 MAA - 60000
WEBBB, OA WP	HOBOH, OA WP	*31000 MAA - 60000
HOBOH, OA WP	CHUBY, OA WP	*31000 MAA - 60000
CHUBY, OA WP	STERN, OA WP	*31000 MAA - 60000
STERN, OA WP	SAUCR, OA WP	*31000 MAA - 60000
Y489		
RESQU, OA WP	BEHHR, OA WP	*17000 MAA - 60000
BEHHR, OA WP	OHRYN, OA WP	*17000 MAA - 60000
OHRYN, OA WP	ICCEY, OA WP	*17000 MAA - 60000
ICCEY, OA WP	DUMPR, OA WP	*17000 MAA - 60000
DUMPR, OA WP	BLUUU, OA WP	*17000 MAA - 60000
BLUUU, OA WP	DOGRS, OA WP	*11000 MAA - 60000
DOGRS, OA WP	SPDEY, OA WP	*6000 MAA - 60000
SPDEY, OA WP	SHIPP, OA FIX	*6000 MAA - 60000

FROM	TO	MEA
Y490		
SHIPP, OA FIX	SPDEY, OA WP	*6000 MAA - 60000
SPDEY, OA WP	DOGRS, OA WP	*6000 MAA - 60000
DOGRS, OA WP	BLUUU, OA WP	*11000 MAA - 60000
BLUUU, OA WP	DUMPR, OA WP	*17000 MAA - 60000
DUMPR, OA WP	ICCEY, OA WP	*17000 MAA - 60000
ICCEY, OA WP	OHRYN, OA WP	*17000 MAA - 60000
OHRYN, OA WP	BEHHR, OA WP	*17000 MAA - 60000
BEHHR, OA WP	ROLLE, OA WP	*17000 MAA - 60000
Y492		
SHIPP, OA FIX	SPDEY, OA WP	*6000 MAA - 60000
SPDEY, OA WP	DOGRS, OA WP	*6000 MAA - 60000
DOGRS, OA WP	BLUUU, OA WP	*11000 MAA - 60000
BLUUU, OA WP	DUMPR, OA WP	*17000 MAA - 60000
DUMPR, OA WP	ISLES, OA WP	*17000 MAA - 60000
ISLES, OA WP	SQUAD, OA WP	*17000 MAA - 60000
Y493		
BAHAA, OA WP	JENKS, OA WP	*24000 MAA - 60000
JENKS, OA WP	AYCHB, OA WP	*24000 MAA - 60000
AYCHB, OA WP	ROWSY, OA WP	*24000 MAA - 60000
ROWSY, OA WP	COACH, OA WP	*24000 MAA - 60000
COACH, OA WP	WEAKK, OA WP	*24000 MAA - 60000
WEAKK, OA WP	TUBBS, OA WP	*24000 MAA - 60000
TUBBS, OA WP	ROBBB, OA WP	*31000 MAA - 60000
ROBBB, OA WP	STERN, OA WP	*31000 MAA - 60000
STERN, OA WP	VEGAA, OA WP	*31000 MAA - 60000
Y494		
AYCHB, OA WP	ROWSY, OA WP	*24000 MAA - 60000
ROWSY, OA WP	COACH, OA WP	*24000 MAA – 60000

FROM	TO	MEA

Y494 - CONTINUED

COACH, OA WP	WEAKK, OA WP	*24000 MAA - 60000
WEAKK, OA WP	HARON, OA WP	*24000 MAA - 60000
HARON, OA WP	WHOOS, OA WP	*24000 MAA - 60000
WHOOS, OA WP	OOONN, OA WP	*31000 MAA - 60000
OOONN, OA WP	VIRST, OA WP	*31000 MAA - 60000
VIRST, OA WP	HOBOH, OA WP	*31000 MAA - 60000
HOBOH, OA WP	SILLY, OA WP	*31000 MAA - 60000
SILLY, OA WP	STINK, OA WP	*17000 MAA - 60000
STINK, OA WP	YAALE, OA WP	*17000 MAA - 60000

Y495

YAALE, OA WP	YETTI, OA WP	*17000 MAA - 60000
YETTI, OA WP	MOUGH, OA WP	*17000 MAA - 60000
MOUGH, OA WP	OWENZ, OA FIX	*17000 MAA - 60000
OWENZ, OA FIX *8000 – MRA	*PREPI, OA FIX	*6000 MAA - 60000
PREPI, OA FIX	LEECY, NJ WP	*6000 MAA - 60000
LEECY, NJ WP	CAMRN, NJ FIX	*6000 MAA - 60000

Y497

YAALE, OA WP	YETTI, OA WP	*17000 MAA - 60000
YETTI, OA WP	MOUGH, OA WP	*17000 MAA - 60000
MOUGH, OA WP	OWENZ, OA FIX	*17000 MAA - 60000
OWENZ, OA FIX *6000 - MRA	*DRIFT, NJ FIX	*6000 MAA - 60000
DRIFT, NJ FIX	SUBBS, NJ WP	*6000 MAA – 60000

Y578

BRUWN, MA FIX	BORQE, OA WP	*17000 MAA - 60000
BORQE, OA WP	JENYY, OA WP	*17000 MAA - 60000
JENYY, OA WP	KAYYT, OA WP	*17000 MAA – 60000

FROM	TO	MEA
Y585		
ORMOND BEACH, FL VORTAC	ATTIK, OA WP	18000 MAA - 60000
ATTIK, OA WP	BEERD, OA WP	18000 MAA - 60000
BEERD, OA WP	CVIKK, BS WP	18000 MAA - 60000
CVIKK, BS WP	NATHY, OA WP	18000 MAA - 60000
NATHY, OA WP	DAAST, BS WP	18000 MAA - 60000
DAAST, BS WP	WITOB, OA WP	18000 MAA - 60000
WITOB, OA WP	RENAH, OA WP	18000 MAA - 60000
RENAH, OA WP	COUKY, OA FIX	18000 MAA - 60000
COUKY, OA FIX	NELSR, OA WP	18000 MAA - 60000
NELSR, OA WP	EYSEL, OA WP	18000 MAA - 60000
EYSEL, OA WP	FARMN, OA WP	18000 MAA - 60000
FARMN, OA WP	FDLEE, OA WP	18000 MAA - 60000
FDLEE, OA WP	ELMUC, OA WP	18000 MAA - 60000
ELMUC, OA WP	TILDI, PR WP	18000 MAA - 60000
TILDI, PR WP	UTAHS, PR FIX	18000 MAA - 60000
UTAHS, PR FIX	VEDAS, PR FIX	18000 MAA - 60000
Y586		
FOWEE, OA FIX	FOXID, OA WP	*18000 MAA - 60000
FOXID, OA WP	MADIZ, OA WP	*18000 MAA - 60000
MADIZ, OA WP	BELAC, OA WP	*18000 MAA - 60000
BELAC, OA WP	FORST, BS WP	*18000 MAA - 60000
FORST, BS WP	JOSES, OA WP	*18000 MAA - 60000
Y587		
SKIPS, BS FIX *11000 - MRA	*RAJAY, BS FIX	18000 MAA - 60000
RAJAY, BS FIX	COZIE, OA WP	18000 MAA - 60000
COZIE, OA WP	DONEZ, OA FIX	18000 MAA - 60000
DONEZ, OA FIX	PAARR, OA WP	18000 MAA - 60000
PAARR, OA WP	RNDLY, OA WP	18000

FROM	TO	MEA
		MAA – 60000

Y587 - CONTINUED

FROM	TO	MEA
RNDLY, OA WP	GRAND TURK, TC VORTAC	18000 MAA - 60000
GRAND TURK, TC VORTAC	COCBU, IB FIX	18000 MAA - 60000
COCBU, IB FIX	SEBUG, OA FIX	18000 MAA - 60000
SEBUG, OA FIX	GRADI, IB FIX	18000 MAA - 60000
GRADI, IB FIX	HARDE, PR FIX	18000 MAA - 60000
HARDE, PR FIX	GAGDD, OA WP	18000 MAA - 60000
GAGDD, OA WP	ROBLL, PR FIX	18000 MAA - 60000

Y588

FROM	TO	MEA
BROOM, OA WP	ROTHM, OA WP	18000 MAA - 60000
ROTHM, OA WP	CLETT, OA WP	18000 MAA - 60000
CLETT, OA WP	MLSAP, OA FIX	18000 MAA - 60000
MLSAP, OA FIX	RENAH, OA WP	18000 MAA - 60000

Y589

FROM	TO	MEA
ALBBE, BS FIX	MADIZ, OA WP	*18000 MAA - 60000
MADIZ, OA WP	FOXID, OA WP	*18000 MAA - 60000
FOXID, OA WP	FOWEE, OA FIX	*18000 MAA - 60000

PACIFIC ROUTES

A216

FROM	TO	MEA
MONPI, OP WP	OATSS, OP WP	18000 MAA - 60000
OATSS, OP WP	RIDLL, OP WP	18000 MAA - 60000
RIDLL, OP WP	LOEBB, OP WP	18000 MAA - 60000
LOEBB, OP WP	HOOVR, OP WP	18000 MAA - 60000
HOOVR, OP WP	GALEE, OP WP	18000 MAA - 60000
GALEE, OP WP	FACED, OP WP	18000 MAA - 60000

A220

FROM	TO	MEA
MAEVA, OP FIX	CRONN, OP FIX	5500
CRONN, OP FIX	BINGE, OP FIX	5500
BINGE, OP FIX	AHNDO, OP FIX	5500
AHNDO, OP FIX	MANEY, OP WP	5500 MAA – 60000

FROM	TO	MEA
A220 – CONTINUED		
MANEY, OP WP	MAFIC, OP FIX	5500 MAA - 60000
MAFIC, OP FIX	CINNY, OP WP	5500 MAA - 60000
A221		
NIMITZ, GU VORTAC	CULPS, CQ FIX	3000 MAA - 60000
CULPS, CQ FIX	ERTTS, GU FIX	1500 MAA - 60000
ERTTS, GU FIX	MONIE, CQ FIX	1500 MAA - 60000
MONIE, CQ FIX	LULJY, GU FIX	6000 MAA - 60000
LULJY, GU FIX	HEXUG, OP FIX	6000 MAA - 60000
HEXUG, OP FIX	WILLE, GU FIX	6000 MAA - 60000
A222		
NIMITZ, GU VORTAC	CLANS, OP WP	20000 MAA - 60000
CLANS, OP WP	AXIDE, OP WP	20000 MAA - 60000
AXIDE, OP WP	FIBSS, OP WP	20000 MAA - 60000
FIBSS, OP WP	KRONK, OP FIX	20000 MAA - 60000
KRONK, OP FIX	ADUFO, FM FIX	20000 MAA - 60000
ADUFO, FM FIX	POHNPEI, FM NDB/DME	20000 MAA - 60000
POHNPEI, FM NDB/DME	AXTEN, FM WP	20000 MAA - 60000
AXTEN, FM WP	KOSRAE, FM NDB/DME	20000 MAA - 60000
KOSRAE, FM NDB/DME	STEFF, OP FIX	20000 MAA - 60000
STEFF, OP FIX	BUCHOLZ, MH NDB	18000 MAA - 60000
A331		
ZIGIE, OP FIX	ZOULU, OP WP	5500 MAA - 60000
ZOULU, OP WP	ZEMOM, OP WP	5500 MAA - 60000
ZEMOM, OP WP	ZINNO, OP WP	5500 MAA - 60000
ZINNO, OP WP	ZAGER, OP WP	5500 MAA - 60000
ZAGER, OP WP	ZANNG, OP FIX	5500 MAA - 60000
ZANNG, OP FIX	SEDAR, OP FIX	5500 MAA – 60000

FROM	TO	MEA
A332		
AUNTI, OP WP	HALLI, OP WP	5500 MAA - 60000
HALLI, OP WP	HELOP, OP WP	5500 MAA - 60000
HELOP, OP WP	HEKAB, OP WP	5500 MAA - 60000
HEKAB, OP WP	HEMLO, OP WP	5500 MAA - 60000
A337		
JUNIE, GU FIX	AXIDE, OP WP	6000 MAA - 60000
AXIDE, OP WP	FONUG, OP WP	6000 MAA - 60000
FONUG, OP WP	SNAPP, GU FIX	6000 MAA - 60000
SNAPP, GU FIX	TEEDE, OP WP	6000 MAA - 60000
TEEDE, OP WP	TEGOD, OP WP	6000 MAA - 60000
A339		
SHREE, OP FIX	WRNNR, OP FIX	15000 MAA - 60000
WRNNR, OP FIX	TILLY, OP WP	15000 MAA - 60000
TILLY, OP WP	KEITH, OP FIX	15000 MAA - 60000
A342		
OLCOT, AK FIX	PINSO, OP WP	18000 MAA - 60000
PINSO, OP WP	AMOND, AK FIX	18000 MAA - 60000
AMOND, AK FIX	DRAPP, AK FIX	18000 MAA - 60000
DRAPP, AK FIX	CRYPT, AK FIX	18000 MAA - 60000
CRYPT, AK FIX	COLD BAY, AK VORTAC	18000 MAA - 60000
A450		
CAHYO, OP WP	TNUGE, OP WP	18000
TNUGE, OP WP	PIGFA, OP WP	18000
PIGFA, OP WP	LOEBB, OP WP	8000
LOEBB, OP WP	BUCAT, OP WP	8000
BUCAT, OP WP	NIMITZ, GU VORTAC	8000
NIMITZ, GU VORTAC	BAGBE, GU FIX	5000
BAGBE, GU FIX	HOPPY, GU FIX	5000
HOPPY, GU FIX	FONUG, OP WP	5000 MAA - 60000
FONUG, OP WP	STINE, GU FIX	5000 MAA - 60000
STINE, GU FIX	DEWSS, OP FIX	18000 MAA - 60000
DEWSS, OP FIX	JIMOS, OP WP	5500 MAA - 60000
JIMOS, OP WP	NGUEN, OP WP	5500

FROM	TO	MEA
		MAA - 60000

A450 – CONTINUED

FROM	TO	MEA
NGUEN, OP WP	NATIE, OP WP	5500
		MAA - 60000
NATIE, OP WP	RESEE, OP WP	5500
		MAA - 60000
RESEE, OP WP	SYSTA, OP WP	5500
		MAA - 60000
SYSTA, OP WP	BRIUN, OP WP	5500
		MAA - 60000
BRIUN, OP WP	HOOPA, OP FIX	5500
		MAA - 60000
HOOPA, OP FIX	*KATHS, HI FIX	5500
*29000 - MRA		
		MAA - 60000

A578

FROM	TO	MEA
POHNPEI, FM NDB/DME	AFOYU, FM WP	18000
		MAA - 60000
AFOYU, FM WP	FENSE, OP FIX	18000
		MAA - 60000

A590

FROM	TO	MEA
PASRO, OP FIX	POWAL, AK FIX	18000
		MAA - 60000
POWAL, AK FIX	PLADO, AK FIX	18000
		MAA - 60000
PLADO, AK FIX	PINSO, OP WP	18000
		MAA - 60000
PINSO, OP WP	POOFF, OP WP	18000
		MAA - 60000
POOFF, OP WP	PINTT, AK FIX	18000
		MAA - 60000
PINTT, AK FIX	PTZGR, AK WP	18000
		MAA - 60000
PTZGR, AK WP	PUGGY, AK FIX	18000
		MAA - 60000
PUGGY, AK FIX	POETT, OP FIX	18000
		MAA - 60000
POETT, OP FIX	SELDM, AK FIX	18000
		MAA - 60000
SELDM, AK FIX	PORGE, AK FIX	18000
		MAA - 60000
PORGE, AK FIX	HAMND, AK WP	18000
		MAA - 60000

A597

FROM	TO	MEA
ADBON, OP FIX	OKOLE, OP WP	18000
OKOLE, OP WP	GALSS, OP FIX	18000
GALSS, OP FIX	JUNIE, GU FIX	18000
JUNIE, GU FIX	OPLAR, GU FIX	5000
OPLAR, GU FIX	GUMGE, GU FIX	5000
GUMGE, GU FIX	NIMITZ, GU VORTAC	5000
NIMITZ, GU VORTAC	WUVEN, GU FIX	5000
WUVEN, GU FIX	REEDE, OP WP	5000
REEDE, OP WP	RICHH, OP WP	5000
RICHH, OP WP	MONPI, OP WP	5000

FROM	TO	MEA

A598

MARTI, OP FIX	MAJURO, MH NDB/DME	2300

B200

BISOX, OP FIX	ANJJE, OP FIX	5500
ANJJE, OP FIX	CARLS, OP FIX	5500
CARLS, OP FIX	BENTS, OP FIX	5500
BENTS, OP FIX	AMATT, OP FIX	5500
AMATT, OP FIX	TONYS, OP FIX	5500
TONYS, OP FIX	FICKY, OP WP	5500

B233

GALENA, AK VOR/DME	SANGL, AK WP	18000 MAA - 45000
SANGL, AK WP	KUTAL, RU WP	18000 MAA - 45000

B240

ERNIK, RU WP	IDROD, AK WP	18000 MAA - 45000
IDROD, AK WP	AVUBA, AK WP	18000 MAA - 45000
AVUBA, AK WP	EMMONAK, AK VOR/DME	18000 MAA - 45000

B241

EMMONAK, AK VOR/DME	ENEGU, AK WP	18000 MAA - 45000
ENEGU, AK WP	ROCET, AK WP	18000 MAA - 45000
ROCET, AK WP	RUSOR, RU WP	18000 MAA - 45000

B244

FRENK, OP WP	KOTZEBUE, AK VOR/DME	5000 MAA - 40000

B452

ATIGO, OP WP	KERRY, OP FIX	6000
KERRY, OP FIX	KRONK, OP FIX	6000
KRONK, OP FIX	KRASY, OP FIX	6000
KRASY, OP FIX	DOHRT, OP FIX	6000

B453

BOXER, OP WP	KYLLE, OP FIX	18000
KYLLE, OP FIX	KANUA, OP FIX	18000
KANUA, OP FIX	VIDKU, CANADA FIX	18000
VIDKU, CANADA FIX	TAMRU, CANADA FIX	18000
TAMRU, CANADA FIX	SIMLU, CANADA FIX	18000
SIMLU, CANADA FIX	KURTT, OP FIX	18000
KURTT, OP FIX	PETPA, CANADA FIX	18000
PETPA, CANADA FIX	NAKBI, CANADA FIX	18000
NAKBI, CANADA FIX	METPA, CANADA FIX	18000
METPA, CANADA FIX	KATCH, AK FIX	18000
KATCH, AK FIX	MIDDLETON ISLAND, AK VOR/DME	18000

FROM	TO	MEA

B454

UPNAR, OP FIX	COMIR, OP FIX	5500
COMIR, OP FIX	BORIC, OP FIX	5500
BORIC, OP FIX	ARENS, OP FIX	5500
ARENS, OP FIX	TONYS, OP FIX	5500

B577

PASSA, OP FIX	QUIGG, OP FIX	5500
QUIGG, OP FIX	SANTA, OP FIX	5500
SANTA, OP FIX	CANOL, OP FIX	5500
CANOL, OP FIX	BELAN, OP FIX	5500
BELAN, OP FIX	AHNDO, OP FIX	5500
AHNDO, OP FIX	LENNA, OP FIX	5500
LENNA, OP FIX	FICKY, OP WP	5500

B581

WOOBY, OP FIX	WACOS, OP FIX	5500
WACOS, OP FIX	WOSLU, OP FIX	5500
WOSLU, OP FIX	WAYSE, OP FIX	5500
WAYSE, OP FIX	WINTY, OP FIX	5500
WINTY, OP FIX	CAMOS, OP FIX	5500
CAMOS, OP FIX	BALKS, OP FIX	5500
BALKS, OP FIX	AFONE, OP FIX	5500
AFONE, OP FIX	WEDES, OP FIX	5500
WEDES, OP FIX	FICKY, OP WP	5500

B586

OMLET, OP FIX	TOESS, OP WP	18000
TOESS, OP WP	WINZR, OP WP	18000
WINZR, OP WP	NIMITZ, GU VORTAC	18000
NIMITZ, GU VORTAC	ASADE, GU FIX	5000
ASADE, GU FIX	KAPOK, GU FIX	5000
KAPOK, GU FIX	HUTEL, OP FIX	18000
HUTEL, OP FIX	NUTTI, OP FIX	18000
NUTTI, OP FIX	PIKOK, OP FIX	18000

B589

MAJURO, MH NDB/DME	ELNUR, OP FIX	18000

B932

BAMOK, OP FIX	MORLY, AK WP	18000 MAA - 45000
MORLY, AK WP	EPLOS, AK WP	18000 MAA - 45000
EPLOS, AK WP	KIVAK, AK WP	18000 MAA - 45000
KIVAK, AK WP	LESAD, AK WP	18000 MAA - 45000
LESAD, AK WP	ST MARYS, AK NDB	18000 MAA - 45000
ST MARYS, AK NDB	MC GRATH, AK VORTAC	18000 MAA - 45000

FROM	TO	MEA
B96		
LARSA, RU WP	GAMBELL, AK NDB/DME	5000 MAA - 18000
G205		
RUTUS, OP FIX	KISME, OP FIX	1500
KISME, OP FIX	GOOFI, OP WP	1500
GOOFI, OP WP	JUNIE, GU FIX	1500
JUNIE, GU FIX	OPLAR, GU FIX	5000
OPLAR, GU FIX	GUMGE, GU FIX	5000
GUMGE, GU FIX	NIMITZ, GU VORTAC	5000
NIMITZ, GU VORTAC	GUYES, OP WP	18000
GUYES, OP WP	TERYY, OP WP	18000
TERYY, OP WP	TEGOD, OP WP	18000
G212		
VALDA, OP WP	YUREE, OP WP	5000 MAA - 18000
YUREE, OP WP	FORT DAVIS, AK NDB	5000 MAA - 18000
G215		
OLCOT, AK FIX	PLADO, AK FIX	18000 MAA - 60000
PLADO, AK FIX	SHEMYA, AK VORTAC	18000 MAA - 60000
SHEMYA, AK VORTAC	CURVS, AK FIX	18000 MAA - 60000
CURVS, AK FIX	DUTCH HARBOR, AK NDB/DME	18000 MAA - 60000
G223		
MUBIT, OP FIX	OLGIS, OP FIX	18000
OLGIS, OP FIX	PHILY, OP FIX	18000
PHILY, OP FIX	RISBA, OP WP	6000
G339		
NIMITZ, GU VORTAC	SHAWS, OP WP	6000
SHAWS, OP WP	RIDLL, OP WP	6000
RIDLL, OP WP	NATSS, OP WP	6000
NATSS, OP WP	PAKDO, OP WP	6000
G344		
CUTEE, OP FIX	CARTO, AK FIX	18000 MAA - 60000
CARTO, AK FIX	CHIPT, OP WP	18000 MAA - 60000
CHIPT, OP WP	CHIKI, AK FIX	18000 MAA - 60000
CHIKI, AK FIX	CURVS, AK FIX	18000 MAA - 60000
CURVS, AK FIX	CRYPT, AK FIX	18000 MAA - 60000
CRYPT, AK FIX	CAMBO, AK FIX	18000 MAA - 60000
CAMBO, AK FIX *24000 - MRA	*CUDDA, AK WP	18000 MAA - 60000

FROM	TO	MEA

G349

FROM	TO	MEA
MARCC, AK WP	KIVAK, AK WP	18000 MAA - 60000
KIVAK, AK WP	PALIN, AK WP	18000 MAA - 60000
PALIN, AK WP	NEONN, AK WP	18000 MAA - 60000

G467

FROM	TO	MEA
YELLO, OP FIX	KITSS, OP FIX	18000
KITSS, OP FIX	ACRON, GU FIX	18000
ACRON, GU FIX	PULEE, GU FIX	18000
PULEE, GU FIX	NIMITZ, GU VORTAC	5000

G469

FROM	TO	MEA
NYMPH, OP FIX	ONEIL, OP WP	18000 MAA - 60000
ONEIL, OP WP	PINTT, AK FIX	18000 MAA - 60000
PINTT, AK FIX	CREMR, AK FIX	18000 MAA - 60000
CREMR, AK FIX	ST PAUL ISLAND, AK NDB/DME	18000 MAA - 60000
ST PAUL ISLAND, AK NDB/DME	PORT HEIDEN, AK NDB/DME	18000 MAA - 60000

G575

FROM	TO	MEA
CINTO, OP FIX	BIGBY, OP FIX	5500
BIGBY, OP FIX	APIDD, OP FIX	5500
APIDD, OP FIX	HILCO, OP FIX	5500
HILCO, OP FIX	FICKY, OP WP	5500

G583

FROM	TO	MEA
BESAT, OP FIX	MARCC, AK WP	18000 MAA - 60000
MARCC, AK WP	MUNRI, AK WP	18000 MAA - 45000
MUNRI, AK WP	EMMONAK, AK VOR/DME	18000 MAA - 60000

G7

FROM	TO	MEA
OLTON, RU WP	GAMBELL, AK NDB/DME	5000 MAA - 18000

H201

FROM	TO	MEA
NOME, AK VOR/DME	SLEDD, AK WP	18000 MAA - 45000
SLEDD, AK WP	AVUBA, AK WP	18000 MAA - 45000
AVUBA, AK WP	ENEGU, AK WP	18000 MAA - 45000
ENEGU, AK WP	MUNRI, AK WP	18000 MAA - 45000
MUNRI, AK WP	KIVAK, AK WP	18000 MAA - 45000
KIVAK, AK WP	NAYLD, AK FIX	18000 MAA - 45000

FROM	TO	MEA
H222		
VALDA, OP WP	ICEEE, AK WP	18000 MAA - 45000
ICEEE, AK WP	SLEDD, AK WP	18000 MAA - 45000
SLEDD, AK WP	MC GRATH, AK VORTAC	18000 MAA - 45000
M756		
OLBIE, OP WP	AIBIE, OP WP	6000
AIBIE, OP WP	KEONE, OP WP	6000
R204		
KYWEE, OP WP	KALIN, OP WP	#18000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
R220		
NODLE, AK FIX	NICHO, AK WP	18000 MAA - 60000
NICHO, AK WP	NOSHO, AK FIX	18000 MAA - 60000
NOSHO, AK FIX	NEONN, AK WP	18000 MAA - 60000
NEONN, AK WP	NANZA, AK FIX	18000 MAA - 60000
NANZA, AK FIX	NOLTI, OP WP	18000 MAA - 60000
NOLTI, OP WP	NAYLD, AK FIX	18000 MAA - 60000
NAYLD, AK FIX	NULUK, AK FIX	18000 MAA - 60000
NULUK, AK FIX	NANDY, AK FIX	18000 MAA - 60000
NANDY, AK FIX	NATES, OP WP	18000 MAA - 60000
NATES, OP WP	NIKLL, AK FIX	18000 MAA - 60000
NIKLL, AK FIX	NYMPH, OP FIX	18000 MAA - 60000
NYMPH, OP FIX	NUZAN, OP WP	18000 MAA - 60000
NUZAN, OP WP	NRKEY, OP WP	18000 MAA - 60000
NRKEY, OP WP	NIPPI, OP FIX	18000 MAA - 60000
R330		
POWAL, AK FIX	SHEMYA, AK VORTAC	18000 MAA - 60000
R332		
MAJURO, MH NDB/DME	VAVEE, OP FIX	6000
R336		
CARTO, AK FIX	LYYLE, AK FIX	18000 MAA - 60000
LYYLE, AK FIX	MOUNT MOFFETT, AK NDB/DME	18000 MAA - 60000

FROM	TO	MEA
R337		
ISGOG, OP FIX	KOROR, PW NDB/DME	6500
R341		
NATES, OP WP	OFORD, AK FIX	18000
		MAA - 60000
OFORD, AK FIX	HODDY, AK FIX	18000
		MAA - 60000
HODDY, AK FIX	PUGGY, AK FIX	18000
		MAA - 60000
PUGGY, AK FIX	CHUUK, AK FIX	18000
		MAA - 60000
CHUUK, AK FIX	KODIAK, AK VOR/DME	18000
		MAA - 60000
R451		
OGDEN, AK FIX	POWAL, AK FIX	18000
		MAA - 60000
POWAL, AK FIX	AAMYY, AK FIX	18000
		MAA - 60000
AAMYY, AK FIX	WALLT, AK FIX	18000
		MAA - 60000
WALLT, AK FIX	CHIKI, AK FIX	18000
		MAA - 60000
CHIKI, AK FIX	MOUNT MOFFETT, AK NDB/DME	18000
		MAA - 60000
R463		
MAGGI, HI FIX	TOADS, HI FIX	5000
TOADS, HI FIX	APACK, OP FIX	5000
APACK, OP FIX	AUNTI, OP WP	5500
AUNTI, OP WP	ADOPE, OP WP	5500
ADOPE, OP WP	AXELE, OP WP	5500
AXELE, OP WP	ADTIL, OP WP	5500
ADTIL, OP WP	ALLBE, OP WP	5500
ALLBE, OP WP	ALCOA, OP FIX	5500
R464		
MAGGI, HI FIX	BITTA, OP FIX	5500
BITTA, OP FIX	BOARD, OP WP	21000
BOARD, OP WP	BEKME, OP WP	5500
BEKME, OP WP	BILLO, OP WP	5500
BILLO, OP WP	BARAZ, OP WP	5500
BARAZ, OP WP	BAART, OP WP	5500
BAART, OP WP	BEBOP, OP FIX	5500
R465		
MAGGI, HI FIX *16000 - MRA	*SHARK, HI FIX	5500
SHARK, HI FIX	CLUTS, OP FIX	5500
CLUTS, OP FIX	CEBEN, OP WP	5500
CEBEN, OP WP	CIVIT, OP WP	5500
CIVIT, OP WP	CORTT, OP WP	5500
CORTT, OP WP	CUNDU, OP WP	5500
CUNDU, OP WP	CREAN, OP FIX	5500
CREAN, OP FIX	CINNY, OP WP	5500

FROM	TO	MEA

R576

MAUI, HI VORTAC	ALAFU, HI FIX	9000
ALAFU, HI FIX	WAPPO, HI FIX	14000
WAPPO, HI FIX	ONOVY, HI FIX	26000
ONOVY, HI FIX	DENNS, OP FIX	26000
DENNS, OP FIX	DRAYK, OP WP	24000
DRAYK, OP WP	DUSAC, OP WP	5500
DUSAC, OP WP	DIALO, OP WP	5500
DIALO, OP WP	DADIE, OP WP	5500
DADIE, OP WP	DUETS, OP WP	5500
DUETS, OP WP	DINTY, OP FIX	5500

R577

MAUI, HI VORTAC	AWAHI, HI FIX	9000
AWAHI, HI FIX	AZIBA, HI FIX	16000
AZIBA, HI FIX	TANFO, HI FIX	35000
TANFO, HI FIX	ALICA, HI FIX	35000
ALICA, HI FIX	EBBER, OP FIX	35000
EBBER, OP FIX	ELOYI, OP WP	21000
ELOYI, OP WP	ERROT, OP WP	5500
ERROT, OP WP	ETNIC, OP WP	5500
ETNIC, OP WP	ETECO, OP WP	5500
ETECO, OP WP	EDSEL, OP FIX	5500
EDSEL, OP FIX	EDTOO, OP FIX	5500
EDTOO, OP FIX	*ELKEY, CA FIX	5500
*26000 - MRA		

R578

DEREC, HI FIX	BYROW, HI FIX	14000
BYROW, HI FIX	FITES, OP FIX	14000
FITES, OP FIX	FAPIS, OP WP	21000
FAPIS, OP WP	FOMAS, OP WP	21000
FOMAS, OP WP	FIZEL, OP WP	5500
FIZEL, OP WP	FLITY, OP WP	5500
FLITY, OP WP	FOOTS, OP FIX	5500
FOOTS, OP FIX	FICKY, OP WP	5500

R580

OMOTO, OP FIX	OGDEN, AK FIX	18000 MAA - 60000
OGDEN, AK FIX	OPHET, AK FIX	18000 MAA - 60000
OPHET, AK FIX	OLCOT, AK FIX	18000 MAA - 60000
OLCOT, AK FIX	OPAKE, AK FIX	18000 MAA - 60000
OPAKE, AK FIX	ONEIL, OP WP	18000 MAA - 60000
ONEIL, OP WP	OBOYD, OP WP	18000 MAA - 60000
OBOYD, OP WP	OFORD, AK FIX	18000 MAA - 60000
OFORD, AK FIX	OGGOE, AK FIX	18000 MAA - 60000
OGGOE, AK FIX	ONEOX, OP WP	18000 MAA – 60000

FROM	TO	MEA
R580 -CONTINUED		
ONEOX, OP WP	ORVIL, AK FIX	18000
		MAA - 60000
ORVIL, AK FIX	ORCCA, AK FIX	18000
		MAA - 60000
ORCCA, AK FIX	NICHO, AK WP	18000
		MAA - 60000
R584		
CHOKO, OP WP	MCFLY, OP WP	5500
MCFLY, OP WP	MANRE, OP WP	5500
MANRE, OP WP	MAZZA, OP FIX	5500
MAZZA, OP FIX	MAJURO, MH NDB/DME	18000
MAJURO, MH NDB/DME	CURCH, OP WP	18000
CURCH, OP WP	BUCHOLZ, MH NDB	18000
BUCHOLZ, MH NDB	LOOIS, OP FIX	18000
LOOIS, OP FIX	HAVNU, FM FIX	18000
HAVNU, FM FIX	TRADD, FM FIX	18000
TRADD, FM FIX	POHNPEI, FM NDB/DME	18000
POHNPEI, FM NDB/DME	BIRUQ, FM FIX	18000
BIRUQ, FM FIX	TRUK, FM NDB/DME	18000
TRUK, FM NDB/DME	GUNSS, OP FIX	18000
GUNSS, OP FIX	JUNIE, GU FIX	18000
JUNIE, GU FIX	OPLAR, GU FIX	5000
OPLAR, GU FIX	GUMGE, GU FIX	5000
GUMGE, GU FIX	NIMITZ, GU VORTAC	5000
NIMITZ, GU VORTAC	OTTRE, OP WP	6000
OTTRE, OP WP	MIKYY, OP WP	18000
MIKYY, OP WP	KEITH, OP FIX	18000
R591		
AKISU, OP FIX	ASPIN, AK FIX	18000
		MAA - 60000
ASPIN, AK FIX	AAMYY, AK FIX	18000
		MAA - 60000
AAMYY, AK FIX	SHEMYA, AK VORTAC	18000
		MAA - 60000
SHEMYA, AK VORTAC	AMOND, AK FIX	18000
		MAA - 60000
AMOND, AK FIX	ALDOZ, AK FIX	18000
		MAA - 60000
ALDOZ, AK FIX	ALUFF, AK FIX	18000
		MAA - 60000
ALUFF, AK FIX	ST PAUL ISLAND, AK NDB/DME	18000
		MAA - 60000
ST PAUL ISLAND, AK NDB/DME	CHUUK, AK FIX	18000
		MAA - 60000
CHUUK, AK FIX	CAPE NEWENHAM, AK NDB/DME	18000
		MAA - 60000
CAPE NEWENHAM, AK NDB/DME	HAMND, AK WP	18000
		MAA - 60000

FROM	TO	MEA

R595

NIMITZ, GU VORTAC	OTTRE, OP WP	6000
OTTRE, OP WP	MIKYY, OP WP	18000
MIKYY, OP WP	KEITH, OP FIX	18000

W21

NIMITZ, GU VORTAC	KAQTU, CQ FIX	3000
KAQTU, CQ FIX	SANDO, GU FIX	3000
SANDO, GU FIX	NUJCO, MP FIX	9000
NUJCO, MP FIX	KATQO, GU FIX	9000
KATQO, GU FIX	HIRCH, CQ FIX	9000
HIRCH, CQ FIX	ANEVY, GU FIX	9000
ANEVY, GU FIX	SNAPP, GU FIX	9000
SNAPP, GU FIX	BESSS, OP WP	9000

§95.3000 LOW ALTITUDE RNAV ROUTES

95.3201 RNAV ROUTE T201

FROM	TO	MEA	MAA
MEVAE, SC WP	TRUEX, SC WP	2200	7000
TRUEX, SC WP	FEGNO, NC WP	2400	7000
FEGNO, NC WP	NUROE, NC WP	2700	7000
NUROE, NC WP	BORTZ, NC WP	3900	7000

95.3202 RNAV ROUTE T202

FROM	TO	MEA	MAA
GURSH, SC WP	AWRYT, SC WP	2400	8000
AWRYT, SC WP	RICHE, SC FIX	2400	8000
RICHE, SC FIX	HUSTN, NC FIX	2500	8000
HUSTN, NC FIX	FEGNO, NC WP	2500	8000
FEGNO, NC WP	GANTS, NC FIX	2600	8000
GANTS, NC FIX	ZADEL, NC WP	2700	8000

95.3203 RNAV ROUTE T203

FROM	TO	MEA	MAA
ANDYS, SC FIX	AWRYT, SC WP	2400	17500
AWRYT, SC WP	ROUTH, NC WP	2800	17500
ROUTH, NC WP	FADOS, NC WP	3400	17500
FADOS, NC WP	OREAD, NC WP	3500	17500

95.3204 RNAV ROUTE T204

FROM	TO	MEA	MAA
TAYLOR, FL VORTAC	BRUNSWICK, GA VORTAC	2100	15000

95.3205 RNAV ROUTE T205

FROM	TO	MEA	MAA
OCALA, FL VORTAC	VALDOSTA, GA VOR/DME	3000	15000
*2500 - MOCA			

95.3206 RNAV ROUTE T206

FROM	TO	MEA	MAA
ENADE, NC WP	FADOS, NC WP	3000	17500
FADOS, NC WP	GOTHS, NC WP	3400	17500
GOTHS, NC WP	NUROE, NC WP	3400	17500
NUROE, NC WP	ZADEL, NC WP	3000	17500

95.3207 RNAV ROUTE T207

FROM	TO	MEA	MAA
ORMOND BEACH, FL VORTAC	CARRA, FL FIX	2300	15000
CARRA, FL FIX	CECIL, FL VOR	1900	15000
CECIL, FL VOR	MONIA, GA FIX	1900	15000
MONIA, GA FIX	WAYCROSS, GA VORTAC	2300	15000

95.3208 RNAV ROUTE T208

FROM	TO	MEA	MAA
GATORS, FL VORTAC	CARRA, FL FIX	2100	15000
CARRA, FL FIX	ORMOND BEACH, FL VORTAC	2300	15000

95.3209 RNAV ROUTE T209

FROM	TO	MEA	MAA
EHEJO, GA FIX	NASDE, GA WP	2000	17500
NASDE, GA WP	YASLU, GA WP	2000	17500
YASLU, GA WP	JAMTA, GA WP	2000	17500
JAMTA, GA WP	COLLIERS, SC VORTAC	2500	17500

95.3210 RNAV ROUTE T210

FROM	TO	MEA	MAA
TAYLOR, FL VORTAC	OHLEE, FL WP	1900	9000
OHLEE, FL WP	BRADO, FL FIX	1900	9000

FROM	TO	MEA	MAA

95.3211 RNAV ROUTE T211

OCALA, FL VORTAC	JUTTS, FL WP	2500	15000
JUTTS, FL WP	CARRA, FL FIX	1900	15000
CARRA, FL FIX	CRAIG, FL VORTAC	2100	15000

95.3212 RNAV ROUTE T212

RASHE, PA FIX	SELINSGROVE, PA VOR/DME	4000	17500
SELINSGROVE, PA VOR/DME	DIANO, PA FIX	3700	17500
DIANO, PA FIX	WILKES-BARRE, PA VORTAC	5000	17500
WILKES-BARRE, PA VORTAC	LAAYK, PA FIX	4000	17500
LAAYK, PA FIX	WEETS, NY FIX	4700	17500
WEETS, NY FIX	NELIE, CT FIX	3500	17500
NELIE, CT FIX	PUTNAM, CT VOR/DME	3000	17500

95.3213 RNAV ROUTE T213

LOUISVILLE, KY VORTAC	GAMKE, IN WP	3600	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
GAMKE, IN WP	MILAN, IN FIX	2800	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
MILAN, IN FIX	RICHMOND, IN DME	2800	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			

95.3214 RNAV ROUTE T214

OREAD, NC WP	BORTZ, NC WP	3500	17500
BORTZ, NC WP	THMSN, NC WP	3400	17500
THMSN, NC WP	ZADEL, NC WP	2400	17500
ZADEL, NC WP	ORPEE, NC WP	2700	17500

95.3215 RNAV ROUTE T215

LEXINGTON, KY VOR/DME	GAMKE, IN WP	3000	8000
#NORTHBOUND EXPECT 6000 SOUTHBOUND EXPECT 5000			

95.3216 RNAV ROUTE T216

PHILIPSBURG, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4200	17500
WILLIAMSPORT, PA VOR/DME	ELEXY, PA WP	4500	17500
ELEXY, PA WP	LAAYK, PA FIX	4100	17500
LAAYK, PA FIX	HELON, NY FIX	4000	17500
HELON, NY FIX	KINGSTON, NY VOR/DME	4000	17500
KINGSTON, NY VOR/DME	MOONI, CT FIX	3200	17500
MOONI, CT FIX	HARTFORD, CT VOR/DME	3200	17500
HARTFORD, CT VOR/DME	GROTON, CT VOR/DME	2600	17500
GROTON, CT VOR/DME	SANDY POINT, RI VOR/DME	2000	17500
*1500 - MOCA			
SANDY POINT, RI VOR/DME	NANTUCKET, MA VOR/DME	2000	17500

95.3217 RNAV ROUTE T217

LEXINGTON, KY VOR/DME	BOSTR, OH FIX	3000	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
BOSTR, OH FIX	HEDEN, OH FIX	2700	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			

FROM	TO	MEA	MAA

95.3217 RNAV ROUTE T217 - CONTINUED

HEDEN, OH FIX	PRUDE, OH FIX	2800	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
PRUDE, OH FIX	SPRINGFIELD, OH VOR/DME	2800	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			
SPRINGFIELD, OH VOR/DME	BONEE, OH FIX	2900	8000
#NORTHBOUND EXPECT 7000 SOUTHBOUND EXPECT 6000			

95.3218 RNAV ROUTE T218

STONYFORK, PA VOR/DME	LAAYK, PA FIX	4200	17500
LAAYK, PA FIX	SPARTA, NJ VORTAC	4000	17500

95.3219 RNAV ROUTE T219

NANWAK, AK NDB/DME	RUFVY, AK WP	2300	17500
*1700 - MOCA			
RUFVY, AK WP	ACATE, AK WP	2000	17500
*1300 - MOCA			
ACATE, AK WP	NACIP, AK FIX	6000	17500
*5400 - MOCA			
NACIP, AK FIX	BROUS, AK WP	6000	17500
*5400 - MOCA			
BROUS, AK WP	DILLINGHAM, AK VOR/DME	6000	17500
*5000 - MOCA			

95.3221 RNAV ROUTE T221

MAZIE, PA FIX	ALLENTOWN, PA VORTAC	3000	17500
*2200 - MOCA			
ALLENTOWN, PA VORTAC	LAAYK, PA FIX	4000	17500
LAAYK, PA FIX	BINGHAMTON, NY VOR/DME	4000	17500

95.3222 RNAV ROUTE T222

BAERE, AK WP	ST PAUL ISLAND, AK NDB/DME	3600	17500
ST PAUL ISLAND, AK NDB/DME	RUFVY, AK WP	3000	17500
*1800 - MOCA			
RUFVY, AK WP	BETHEL, AK VORTAC	3000	17500
*1400 - MOCA			
BETHEL, AK VORTAC	MC GRATH, AK VORTAC	5000	17500
MC GRATH, AK VORTAC	NENANA, AK VORTAC	5000	17500
NENANA, AK VORTAC	FAIRBANKS, AK VORTAC	4000	17500
*3200 - MOCA			

95.3223 RNAV ROUTE T223

CAPE NEWENHAM, AK NDB/DME	DILLINGHAM, AK VOR/DME	4400	17500
DILLINGHAM, AK VOR/DME	FAGIN, AK FIX	4400	17500
FAGIN, AK FIX	NONDA, AK FIX	8400	17500
NONDA, AK FIX	BLUGA, AK FIX	12400	17500
*10000 - MCA BLUGA, AK FIX , SW BND			
BLUGA, AK FIX	AMOTT, AK FIX	3000	17500
*7400 - MCA AMOTT, AK FIX , SW BND			
AMOTT, AK FIX	ANCHORAGE, AK VOR/DME	3000	17500

FROM	TO	MEA	MAA

95.3225 RNAV ROUTE T225

HOOPER BAY, AK VOR/DME	AKELT, AK FIX	4600	17500
AKELT, AK FIX	ALMOT, AK FIX	4400	17500
ALMOT, AK FIX	UNALAKLEET, AK VOR/DME	3700	17500
UNALAKLEET, AK VOR/DME	EDMON, AK FIX	5000	17500
EDMON, AK FIX	VENCE, AK FIX	5900	17500
VENCE, AK FIX	GALENA, AK VOR/DME	3400	17500
GALENA, AK VOR/DME	KUHZE, AK FIX	4400	17500
KUHZE, AK FIX	CHOKK, AK FIX	6800	17500
CHOKK, AK FIX	TANANA, AK VOR/DME	4000	17500
TANANA, AK VOR/DME	REEBA, AK FIX	4000	17500
REEBA, AK FIX	FAIRBANKS, AK VORTAC	5000	17500
*4700 - MCA FAIRBANKS, AK VORTAC , W BND			

95.3226 RNAV ROUTE T226

JOHNSTONE POINT, AK VOR/DME	FIDAL, AK FIX	5000	17500
*7000 - MCA FIDAL, AK FIX , N BND			
FIDAL, AK FIX	ROBES, AK FIX	8000	17500
*8900 - MCA ROBES, AK FIX , N BND			
ROBES, AK FIX	KLUNG, AK FIX	10000	17500
*KLUNG, AK FIX	GULKANA, AK VOR/DME	7000	17500
*7100 - MCA KLUNG, AK FIX , S BND			
GULKANA, AK VOR/DME	DOZEY, AK FIX	5000	17500
DOZEY, AK FIX	PAXON, AK FIX	8000	17500
*9500 - MCA PAXON, AK FIX , N BND			
*7300 - MOCA			
PAXON, AK FIX	DONEL, AK FIX	12000	17500
*11500 - MOCA			
*DONEL, AK FIX	BIG DELTA, AK VORTAC	7000	17500
*10600 - MCA DONEL, AK FIX , S BND			
BIG DELTA, AK VORTAC	HEXAX, AK WP	7000	17500
HEXAX, AK WP	FORT YUKON, AK VORTAC	4000	17500
*3100 - MOCA			

95.3227 RNAV ROUTE T227

SHEMYA, AK VORTAC	JANNT, AK WP	3400	17500
JANNT, AK WP	BAERE, AK WP	7500	17500
*2900 - MOCA			
BAERE, AK WP	ALEUT, AK WP	7500	17500
*3300 - MOCA			
ALEUT, AK WP	MORDI, AK FIX	2500	17500
MORDI, AK FIX	BINAL, AK FIX	4900	17500
BINAL, AK FIX	PORT HEIDEN, AK NDB/DME	3800	17500
PORT HEIDEN, AK NDB/DME	CULTI, AK WP	3700	17500
*1900 - MOCA			
CULTI, AK WP	BATTY, AK FIX	6100	17500
*5600 - MOCA			
BATTY, AK FIX	AMOTT, AK FIX	13000	17500
*5200 - MCA AMOTT, AK FIX , SW BND			
*12300 - MOCA			
AMOTT, AK FIX	BIG LAKE, AK VORTAC	3400	17500
*2700 - MOCA			
BIG LAKE, AK VORTAC	SURES, AK FIX	7000	17500
SURES, AK FIX	CAWIN, AK FIX	9700	17500
*8600 - MOCA			
CAWIN, AK FIX	LIBER, AK FIX	9000	17500

95.3227 RNAV ROUTE T227 - CONTINUED

FROM	TO	MEA	MAA
LIBER, AK FIX	GLOWS, AK FIX	7100	17500
*4800 - MCA GLOWS, AK FIX , S BND			
GLOWS, AK FIX	FAIRBANKS, AK VORTAC	3400	17500
FAIRBANKS, AK VORTAC	PESGE, AK WP	5500	17500
PESGE, AK WP	FIPSU, AK WP	8400	17500
FIPSU, AK WP	CUGOB, AK WP	11000	17500
*7000 - MCA CUGOB, AK WP , S BND			
*10300 - MOCA			
CUGOB, AK WP	SIKLV, AK WP	4500	17500
SIKLV, AK WP	DEADHORSE, AK VOR/DME	2200	17500

95.3228 RNAV ROUTE T228

FROM	TO	MEA	MAA
CAPE NEWENHAM, AK NDB/DME	KUCYE, AK WP	4600	17500
KUCYE, AK WP	RUFVY, AK WP	2000	17500
RUFVY, AK WP	HOOPER BAY, AK VOR/DME	3000	17500
HOOPER BAY, AK VOR/DME	NOME, AK VOR/DME	5000	17500
*4400 - MOCA			
NOME, AK VOR/DME	HIKAX, AK WP	7000	17500
HIKAX, AK WP	SHISHMAREF, AK NDB	4000	17500
SHISHMAREF, AK NDB	ECIPI, AK FIX	10000	17500
*2000 - MOCA			
ECIPI, AK FIX	JAPKI, AK WP	8000	17500
*3800 - MOCA			
JAPKI, AK WP	PODKE, AK WP	13000	17500
*4200 - MOCA			
PODKE, AK WP	CIRSU, AK WP	3800	17500
CIRSU, AK WP	BARROW, AK VOR/DME	2000	17500
BARROW, AK VOR/DME	DEADHORSE, AK VOR/DME	2000	17500
*1500 - MOCA			
DEADHORSE, AK VOR/DME	ROCES, AK WP	2000	17500
*1300 - MOCA			

95.3229 RNAV ROUTE T229

FROM	TO	MEA	MAA
*FAIRBANKS, AK VORTAC	REEBA, AK FIX	5000	17500
*4700 - MCA FAIRBANKS, AK VORTAC , W BND			
REEBA, AK FIX	TANANA, AK VOR/DME	4000	17500
TANANA, AK VOR/DME	HUSLIA, AK VOR/DME	6000	17500
*5500 - MOCA			
HUSLIA, AK VOR/DME	SELAWIK, AK VOR/DME	4000	17500
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	3000	17500
*2500 - MOCA			
KOTZEBUE, AK VOR/DME	POINT HOPE, AK NDB	4000	17500

95.3230 RNAV ROUTE T230

FROM	TO	MEA	MAA
ST PAUL ISLAND, AK NDB/DME	CHINOOK, AK NDB	3000	17500
*2700 - MOCA			

95.3231 RNAV ROUTE T231

FROM	TO	MEA	MAA
*FAIRBANKS, AK VORTAC	HOBOM, AK WP	5100	17500
*4300 - MCA FAIRBANKS, AK VORTAC , W BND			
HOBOM, AK WP	MIPMY, AK WP	6300	17500
MIPMY, AK WP	SELAWIK, AK VOR/DME	3300	17500
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	3400	17500

FROM	TO	MEA	MAA

95.3232 RNAV ROUTE T232

NORTHWAY, AK VORTAC	BIG DELTA, AK VORTAC	8000	17500
BIG DELTA, AK VORTAC	FAIRBANKS, AK VORTAC	5000	17500
*4300 - MOCA			
FAIRBANKS, AK VORTAC	BETTLES, AK VOR/DME	6000	17500
*5200 - MOCA			
BETTLES, AK VOR/DME	BRONX, AK FIX	9000	17500
BRONX, AK FIX	BARROW, AK VOR/DME	4000	17500
*1200 - MOCA			

95.3233 RNAV ROUTE T233

AMBLER, AK NDB	KORKY, AK WP	5000	17500
KORKY, AK WP	ENCOR, AK WP	7000	17500
ENCOR, AK WP	EVANSVILLE, AK NDB	5000	17500

95.3234 RNAV ROUTE T234

*FAIRBANKS, AK VORTAC	TOLLO, AK FIX	5000	17500
*4300 - MCA FAIRBANKS, AK VORTAC , W BND			
TOLLO, AK FIX	RAMPA, AK FIX	7000	17500

95.3235 RNAV ROUTE T235

ATQASUK, AK NDB	NUIQSUT VILLAGE, AK NDB	3000	17500
*1300 - MOCA			

95.3236 RNAV ROUTE T236

NENANA, AK VORTAC	RAMPA, AK FIX	7000	17500

95.3237 RNAV ROUTE T237

*HOMER, AK VOR/DME	WUXAN, AK WP	9000	17500
*4800 - MCA HOMER, AK VOR/DME , E BND			
*8500 - MOCA			
WUXAN, AK WP	MIDDLETON ISLAND, AK VOR/DME	5000	17500
*4100 - MOCA			

95.3238 RNAV ROUTE T238

RAMPA, AK FIX	BETTLES, AK VOR/DME	7000	17500

95.3239 RNAV ROUTE T239

PECAN, GA VOR/DME	SHANY, GA FIX	2000	17500
SHANY, GA FIX	EUFAULA, AL VORTAC	2300	17500
EUFAULA, AL VORTAC	MILER, AL FIX	2000	17500
MILER, AL FIX	TUSKEGEE, AL VOR/DME	2300	17500
TUSKEGEE, AL VOR/DME	KENTT, AL FIX	2600	17500
*2100 - MOCA			
KENTT, AL FIX	VLKNN, AL WP	3200	17500
VLKNN, AL WP	FOGUM, AL FIX	2600	17500
FOGUM, AL FIX	SWIKI, AL WP	2600	17500
*2100 - MOCA			
SWIKI, AL WP	GANTT, MS WP	2500	17500
GANTT, MS WP	ICAVY, MS FIX	2300	17500
ICAVY, MS FIX	GOINS, MS WP	2400	17500

FROM	TO	MEA	MAA

95.3240 RNAV ROUTE T240

BETTLES, AK VOR/DME	TEGDE, AK FIX	7800	17500
TEGDE, AK FIX	DERIK, AK FIX	9700	17500
*4700 - MCA DERIK, AK FIX , S BND			
DERIK, AK FIX	SHELO, AK FIX	3600	17500
SHELO, AK FIX	DEADHORSE, AK VOR/DME	2000	17500

95.3241 RNAV ROUTE T241

LATCH, AK FIX	LEVEL ISLAND, AK VOR/DME	5000	17500

95.3242 RNAV ROUTE T242

*TALKEETNA, AK VOR/DME	JOKAP, AK WP	16000	17500
*12100 - MCA TALKEETNA, AK VOR/DME , N BND			
*15300 - MOCA			
*JOKAP, AK WP	KUTDE, AK WP	6000	17500
*11500 - MCA JOKAP, AK WP , S BND			
KUTDE, AK WP	LACIL, AK WP	15000	17500
*9400 - MOCA			
LACIL, AK WP	BARROW, AK VOR/DME	8000	17500
*1800 - MOCA			

95.3243 RNAV ROUTE T243

PUNGO, NC FIX	ZOLMN, NC FIX	4000	17000
*1500 - MOCA			

95.3244 RNAV ROUTE T244

NOME, AK VOR/DME	CONFI, AK WP	3000	17500
CONFI, AK WP	CHEFF, AK WP	5300	17500
CHEFF, AK WP	BETPE, AK WP	6400	17500
*7800 - MCA BETPE, AK WP , SE BND			
BETPE, AK WP	CEXIX, AK WP	10000	17500
CEXIX, AK WP	CAKAD, AK WP	6600	17500
*6400 - MCA CAKAD, AK WP , NW BND			
CAKAD, AK WP	ANCHORAGE, AK VOR/DME	3000	17500

95.3245 RNAV ROUTE T245

SEAL BEACH, CA VORTAC	POPPR, CA FIX	2500	17500
POPPR, CA FIX	SANTA MONICA, CA VOR/DME	2500	17500
*3200 - MCA SANTA MONICA, CA VOR/DME , NW BND			
SANTA MONICA, CA VOR/DME	SILEX, CA FIX	4600	17500

95.3246 RNAV ROUTE T246

BARROW, AK VOR/DME	GALENA, AK VOR/DME	9200	17500
GALENA, AK VOR/DME	MC GRATH, AK VORTAC	5800	17500
MC GRATH, AK VORTAC	WINOR, AK FIX	4900	17500
*7500 - MCA WINOR, AK FIX , SE BND			
WINOR, AK FIX	FFITZ, AK FIX	8200	17500
FFITZ, AK FIX	FRIDA, AK FIX	8800	17500
*7600 - MCA FRIDA, AK FIX , NW BND			
FRIDA, AK FIX	IVANN, AK FIX	6600	17500
*5900 - MCA IVANN, AK FIX , W BND			
IVANN, AK FIX	ANCHORAGE, AK VOR/DME	2200	17500

FROM	TO	MEA	MAA
95.3247 RNAV ROUTE T247			
SEAL BEACH, CA VORTAC	POPPR, CA FIX	2500	17500
POPPR, CA FIX	SANTA MONICA, CA VOR/DME	2500	17500
*3200 - MCA SANTA MONICA, CA VOR/DME , NW BND			
SANTA MONICA, CA VOR/DME	CANOG, CA FIX	5000	17500
95.3248 RNAV ROUTE T248			
GAMBELL, AK NDB/DME	QAYAQ, AK WP	3600	17500
QAYAQ, AK WP	EMMONAK, AK VOR/DME	3000	17500
95.3249 RNAV ROUTE T249			
VAN NUYS, CA VOR/DME	SANTA MONICA, CA VOR/DME	4700	17500
*3300 - MCA SANTA MONICA, CA VOR/DME , N BND			
SANTA MONICA, CA VOR/DME	POPPR, CA FIX	2500	17500
POPPR, CA FIX	SEAL BEACH, CA VORTAC	2500	17500
95.3250 RNAV ROUTE T250			
BETHEL, AK VORTAC	AKELT, AK FIX	3800	17500
AKELT, AK FIX	QAYAQ, AK WP	3000	17500
QAYAQ, AK WP	KUKULIAK, AK VOR/DME	3700	17500
95.3251 RNAV ROUTE T251			
FARMINGTON, MO VORTAC	FORISTELL, MO VORTAC	3000	6000
FORISTELL, MO VORTAC	RIVRS, IL FIX	2700	6000
95.3252 RNAV ROUTE T252			
NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	5900	17500
KOTZEBUE, AK VOR/DME	PERCI, AK WP	*3000	17500
*3500 - OPPOSITE GNSS MEA, NE BND			
PERCI, AK WP	WARRT, AK WP	7000	17500
WARRT, AK WP	DEADHORSE, AK VOR/DME	3000	17500
95.3254 RNAV ROUTE T254			
COLLEGE STATION, TX VORTAC	HIPPS, TX WP	3000	15000
HIPPS, TX WP	EAKES, TX WP	3000	15000
EAKES, TX WP	CREPO, TX WP	3100	15000
CREPO, TX WP	LAKE CHARLES, LA VORTAC	2200	15000
95.3255 RNAV ROUTE T255			
MARTHAS VINEYARD, MA VOR/DME	FALMA, RI FIX	2000	17500
FALMA, RI FIX	PROVIDENCE, RI VOR/DME	2000	17500
PROVIDENCE, RI VOR/DME	NOXSE, RI WP	2500	17500
NOXSE, RI WP	BLATT, CT FIX	2500	17500
BLATT, CT FIX	NELIE, CT FIX	2800	17500
95.3257 RNAV ROUTE T257			
VENTURA, CA VOR/DME	SAN MARCUS, CA VORTAC	6300	17500
SAN MARCUS, CA VORTAC	MORRO BAY, CA VORTAC	7300	17500
MORRO BAY, CA VORTAC	CALIS, CA FIX	4100	17500
CALIS, CA FIX	BLANC, CA FIX	3400	17500
BLANC, CA FIX	HNNTR, CA WP	6600	17500
HNNTR, CA WP	DUBSS, CA WP	7000	17500
DUBSS, CA WP	CAATE, CA WP	6900	17500
CAATE, CA WP	CHAWZ, CA WP	3900	17500
CHAWZ, CA WP	PORTE, CA FIX	4200	17500
PORTE, CA FIX	THHEO, CA WP	4200	17500

FROM	TO	MEA	MAA

95.3257 RNAV ROUTE T257 - CONTINUED

THHEO, CA WP	JAMIN, CA WP	4300	17500
JAMIN, CA WP	POINT REYES, CA VOR/DME	4300	17500
POINT REYES, CA VOR/DME	FREES, CA FIX	3500	17500
FREES, CA FIX	NACKI, CA WP	4900	17500
NACKI, CA WP	MENDOCINO, CA VORTAC	5600	17500
MENDOCINO, CA VORTAC	MERRI, CA FIX	5600	17500
MERRI, CA FIX	FLUEN, CA FIX	5700	17500
FLUEN, CA FIX	PLYAT, CA FIX	6800	17500
PLYAT, CA FIX	CCHUK, CA WP	6700	17500
CCHUK, CA WP	CICRO, CA WP	4800	17500
CICRO, CA WP	SEGVE, CA FIX	3800	17500
SEGVE, CA FIX	SCUPY, CA WP	2400	17500
SCUPY, CA WP	OLJEK, CA FIX	2200	17500
OLJEK, CA FIX	CIGCA, CA WP	1700	17500
CIGCA, CA WP	FURNS, CA WP	2200	17500
FURNS, CA WP	MITUE, OR FIX	4700	17500
MITUE, OR FIX	JANAS, OR FIX	4600	17500
JANAS, OR FIX	NEWPORT, OR VORTAC	4300	17500
NEWPORT, OR VORTAC	CUTEL, OR FIX	4100	17500
CUTEL, OR FIX	EYCEH, OR WP	4100	17500
EYCEH, OR WP	ILWAC, WA FIX	2300	17500
ILWAC, WA FIX	ZEDAT, WA FIX	2300	17500
ZEDAT, WA FIX	WAVLU, WA FIX	2900	17500
WAVLU, WA FIX	HOQUIAM, WA VORTAC	2900	17500
HOQUIAM, WA VORTAC	COPLS, WA WP	2600	17500
COPLS, WA WP	WAPTO, WA FIX	2900	17500
WAPTO, WA FIX	OZETT, WA WP	3700	17500
OZETT, WA WP	TATOOSH, WA VORTAC	4300	17500

95.3258 RNAV ROUTE T258

MINIM, AL FIX	CRMSN, AL WP	2300	17500
CRMSN, AL WP	BROOKWOOD, AL VORTAC	2500	17500
BROOKWOOD, AL VORTAC	HEENA, AL FIX	2600	17500
HEENA, AL FIX	KYLEE, AL FIX	2900	17500
KYLEE, AL FIX	CAMPP, AL FIX	3200	17500
CAMPP, AL FIX	LAGRANGE, GA VORTAC	2900	17500
LAGRANGE, GA VORTAC	LANGA, GA FIX	2600	17500
LANGA, GA FIX	CANER, GA FIX	3500	17500

95.3259 RNAV ROUTE T259

LAKE HUGHES, CA VORTAC	SHAFTER, CA VORTAC	8800	17500
SHAFTER, CA VORTAC	AVENAL, CA VOR/DME	4300	17500
*3600 - MOCA			
AVENAL, CA VOR/DME	MBARI, CA WP	6600	17500
MBARI, CA WP	LKHRN, CA WP	6200	17500
LKHRN, CA WP	SALINAS, CA VORTAC	6000	17500
SALINAS, CA VORTAC	CAATE, CA WP	4000	17500
CAATE, CA WP	SANTY, CA FIX	4000	17500
*3300 - MOCA			
SANTY, CA FIX	SAPID, CA FIX	5200	17500
SAPID, CA FIX	CRTER, CA WP	5500	17500
CRTER, CA WP	NORCL, CA WP	6000	17500
NORCL, CA WP	MOVDD, CA WP	6000	17500
*5000 - MCA MOVDD, CA WP , SW BND			
MOVDD, CA WP	OOWEN, CA WP	3500	17500
OOWEN, CA WP	OXJEF, CA WP	2300	17500

FROM	TO	MEA	MAA

95.3259 RNAV ROUTE T259 - CONTINUED

OXJEF, CA WP	SAAGO, CA WP	7000	17500
*9600 - MCA SAAGO, CA WP , E BND			
SAAGO, CA WP	BNAKI, CA WP	11500	17500
*13200 - MCA BNAKI, CA WP , E BND			
BNAKI, CA WP	WEXIM, CA WP	14700	17500
WEXIM, CA WP	NIKOL, CA FIX	14600	17500
*12200 - MCA NIKOL, CA FIX , W BND			
NIKOL, CA FIX	DAYMN, NV WP	13100	17500
DAYMN, NV WP	ELY, NV VOR/DME	12100	17500

95.3260 RNAV ROUTE T260

NOME, AK VOR/DME	TIN CITY, AK NDB/DME	6900	17500
TIN CITY, AK NDB/DME	COGNU, AK WP	5300	17500
COGNU, AK WP	POINT HOPE, AK NDB	3000	17500

95.3261 RNAV ROUTE T261

SANTA CATALINA, CA VORTAC	GAVIOTA, CA VORTAC	6500	17500
GAVIOTA, CA VORTAC	MORRO BAY, CA VORTAC	6200	17500
*5700 - MOCA			
MORRO BAY, CA VORTAC	CLMNS, CA FIX	4100	17500
CLMNS, CA FIX	HRRNG, CA WP	2300	17500
HRRNG, CA WP	HMPBK, CA WP	2300	17500
*4300 - MCA HMPBK, CA WP , N BND			
HMPBK, CA WP	WOZZZ, CA WP	5400	17500
*6600 - MCA WOZZZ, CA WP , N BND			
WOZZZ, CA WP	DUBSS, CA WP	6900	17500
DUBSS, CA WP	SALINAS, CA VORTAC	6900	17500
SALINAS, CA VORTAC	KARNN, CA FIX	5500	17500
KARNN, CA FIX	WINDY, CA FIX	4700	17500
WINDY, CA FIX	SMONE, CA WP	5700	17500
SMONE, CA WP	MOVDD, CA WP	5700	17500
*4700 - MCA MOVDD, CA WP , SE BND			
MOVDD, CA WP	RBLEW, CA WP	3600	17500
RBLEW, CA WP	GIFME, CA WP	2500	17500
GIFME, CA WP	HNNRY, CA WP	2500	17500
HNNRY, CA WP	GRIDD, CA FIX	3400	17500
*2600 - MCA GRIDD, CA FIX , S BND			
GRIDD, CA FIX	TALUM, CA FIX	1800	17500
TALUM, CA FIX	JINGO, CA FIX	1900	17500
JINGO, CA FIX	GONGS, CA FIX	1800	17500
GONGS, CA FIX	HOMAN, CA FIX	4800	17500
HOMAN, CA FIX	GARSA, CA FIX	5500	17500
GARSA, CA FIX	CCAPS, CA WP	9000	17500
CCAPS, CA WP	MUREX, CA FIX	9500	17500
MUREX, CA FIX	MIXUP, OR FIX	8600	17500
MIXUP, OR FIX	PIIKZ, OR WP	8600	17500
PIIKZ, OR WP	TUPSE, OR WP	9400	17500
TUPSE, OR WP	DESCHUTES, OR VORTAC	6800	17500
DESCHUTES, OR VORTAC	HERBS, OR FIX	6300	17500
HERBS, OR FIX	CUPRI, OR FIX	6100	17500
CUPRI, OR FIX	SUPOC, OR WP	5500	17500
SUPOC, OR WP	KUKTE, OR FIX	6000	17500
KUKTE, OR FIX	VECCU, WA FIX	5500	17500
VECCU, WA FIX	SUNSN, WA WP	7000	17500
SUNSN, WA WP	MUDLE, WA FIX	7100	17500

FROM	TO	MEA	MAA

95.3261 RNAV ROUTE T261 - CONTINUED

MUDLE, WA FIX	YAKIMA, WA VORTAC	5300	17500
*4800 - MOCA			
YAKIMA, WA VORTAC	SELAH, WA FIX	5400	17500
SELAH, WA FIX	GEBTE, WA FIX	6000	17500
GEBTE, WA FIX	LARDY, WA WP	6000	17500
LARDY, WA WP	QUINT, WA FIX	6400	17500
QUINT, WA FIX	KLSEY, WA WP	5200	17500
KLSEY, WA WP	PAWYO, WA WP	5100	17500
PAWYO, WA WP	HVARD, WA WP	5400	17500
HVARD, WA WP	SOFFE, WA WP	6500	17500
SOFFE, WA WP	JSTEN, WA WP	6900	17500

95.3262 RNAV ROUTE T262

KODIAK, AK VOR/DME	WUXAN, AK WP	6000	17500
*5200 - MCA WUXAN, AK WP , E BND			
*3800 - MOCA			
WUXAN, AK WP	JOHNSTONE POINT, AK VOR/DME	7000	17500

95.3263 RNAV ROUTE T263

FILLMORE, CA VORTAC	DERBB, CA FIX	11000	17500
*7200 - MCA DERBB, CA FIX , SE BND			
DERBB, CA FIX	AVENAL, CA VOR/DME	6600	17500
AVENAL, CA VOR/DME	PANOCHE, CA VORTAC	7100	17500
PANOCHE, CA VORTAC	WINDY, CA FIX	6400	17500
WINDY, CA FIX	SMONE, CA WP	5700	17500
SMONE, CA WP	MOVDD, CA WP	5700	17500
*4700 - MCA MOVDD, CA WP , SE BND			
MOVDD, CA WP	RBLEW, CA WP	3600	17500
RBLEW, CA WP	PITTS, CA FIX	3400	17500
PITTS, CA FIX	SCAGGS ISLAND, CA VORTAC	3400	17500
SCAGGS ISLAND, CA VORTAC	POPES, CA FIX	4800	17500
POPES, CA FIX	NAKPT, CA WP	5400	17500
NAKPT, CA WP	DIBLE, CA FIX	4800	17500
DIBLE, CA FIX	KENDL, CA FIX	4900	17500
*3200 - MOCA			
KENDL, CA FIX	FOLDS, CA FIX	6900	17500
FOLDS, CA FIX	HOMEG, CA WP	10400	17500
HOMEG, CA WP	ZUNAS, CA FIX	9900	17500
ZUNAS, CA FIX	TALEM, OR FIX	9500	17500
*9000 - MCA TALEM, OR FIX , S BND			
TALEM, OR FIX	OREGN, OR WP	7800	17500
*6100 - MCA OREGN, OR WP , SE BND			
OREGN, OR WP	EROWY, OR WP	6000	17500
EROWY, OR WP	NOTTI, OR FIX	5400	17500
NOTTI, OR FIX	CORVALLIS, OR VOR/DME	4200	17500
CORVALLIS, OR VOR/DME	ARTTY, OR FIX	4000	17500
ARTTY, OR FIX	NEWBERG, OR VOR/DME	3900	17500
NEWBERG, OR VOR/DME	LOATH, OR FIX	4400	17500
LOATH, OR FIX	KELNG, WA WP	5200	17500
WINLO, WA FIX	ULESS, WA FIX	5400	17500
ULESS, WA FIX	MTLOK, WA WP	5800	17500
*5200 - MOCA			
MTLOK, WA WP	QUIIN, WA WP	7200	17500
*8100 - MCA QUIIN, WA WP , N BND			
QUIIN, WA WP	ARRIE, WA FIX	9100	17500
ARRIE, WA FIX	ELWHA, WA WP	8900	17500

FROM	TO	MEA	MAA
95.3264 RNAV ROUTE T264			
KODIAK, AK VOR/DME	ZAXUM, AK WP	6000	17500
*4000 - MOCA			
ZAXUM, AK WP	MIDDLETON ISLAND, AK VOR/DME	3000	17500
*2200 - MOCA			
95.3265 RNAV ROUTE T265			
AHMED, IL FIX	START, IL FIX	4000	8000
*2500 - MOCA			
START, IL FIX	BULLZ, IL FIX	4000	8000
*2500 - MOCA			
BULLZ, IL FIX	VEENA, WI FIX	4000	8000
*2600 - MOCA			
95.3266 RNAV ROUTE T266			
RADKY, AK FIX	XADZY, AK WP	7000	17500
XADZY, AK WP	VULHO, AK WP	6000	17500
VULHO, AK WP	FOGID, AK WP	5200	17500
FOGID, AK WP	YICAX, AK WP	4500	17500
YICAX, AK WP	NEREE, AK WP	5000	17500
NEREE, AK WP	VAZPU, AK WP	5100	17500
VAZPU, AK WP	DOOZI, AK FIX	6200	17500
DOOZI, AK FIX	ANNETTE ISLAND, AK VOR/DME	5400	17500
95.3267 RNAV ROUTE T267			
NOME, AK VOR/DME	JIKSA, AK WP	6700	17500
*6000 - MOCA			
JIKSA, AK WP	BALIN, AK FIX	3400	17500
*2700 - MOCA			
BALIN, AK FIX	KOTZEBUE, AK VOR/DME	3300	17500
*2600 - MOCA			
95.3268 RNAV ROUTE T268			
TATOOSH, WA VORTAC	HEMER, WA WP	3800	17500
HEMER, WA WP	YUCSU, WA FIX	4500	17500
YUCSU, WA FIX	NOOEL, WA WP	4500	17500
NOOEL, WA WP	STVOH, WA WP	4400	17500
STVOH, WA WP	WATTR, WA FIX	2600	17500
WATTR, WA FIX	LEION, WA WP	3000	17500
*2400 - MOCA			
LEION, WA WP	AYURU, WA WP	2000	17500
*3500 - MCA AYURU, WA WP , E BND			
AYURU, WA WP	WOODI, WA FIX	5600	17500
WOODI, WA FIX	BANDR, WA FIX	7600	17500
BANDR, WA FIX	TMBOB, WA WP	7800	17500
*7200 - MCA TMBOB, WA WP , W BND			
TMBOB, WA WP	MERFF, WA WP	6600	17500
*6600 - MOCA			
MERFF, WA WP	DOFDO, WA FIX	6800	17500
*5400 - MCA DOFDO, WA FIX , SW BND			
DOFDO, WA FIX	UDECU, WA FIX	3400	17500
MOSES LAKE, WA VOR/DME	SUBDY, WA FIX	3700	17500
SUBDY, WA FIX	YICUB, WA FIX	4400	17500
YICUB, WA FIX	GANGS, WA FIX	4800	17500
*5300 - MCA GANGS, WA FIX , E BND			
SPOKANE, WA VORTAC	HIPRR, ID FIX	7400	17500

FROM	TO	MEA	MAA

95.3268 RNAV ROUTE T268 - CONTINUED

HILIE, ID FIX	MULLAN PASS, ID VOR/DME	9000	17500
MULLAN PASS, ID VOR/DME	ALTON, MT FIX	9400	17500
ALTON, MT FIX	MISSOULA, MT VOR/DME	8800	17500
MISSOULA, MT VOR/DME	BAMBE, MT FIX	9500	17500
BAMBE, MT FIX	PIXXI, MT FIX	10000	17500
PIXXI, MT FIX	RICHD, MT FIX	10600	17500
*10300 - MCA RICHD, MT FIX , W BND			
RICHD, MT FIX	HELENA, MT VORTAC	9700	17500
HELENA, MT VORTAC	SWEDD, MT FIX	10000	17500
SWEDD, MT FIX	CONNS, MT FIX	10800	17500
CONNS, MT FIX	NUKUW, MT FIX	10000	17500
NUKUW, MT FIX	SUBKY, MT FIX	11700	17500
*10000 - MCA SUBKY, MT FIX , W BND			
SUBKY, MT FIX	REEPO, MT FIX	8300	17500
*7200 - MCA REEPO, MT FIX , W BND			
REEPO, MT FIX	COLUS, MT FIX	6900	17500
COLUS, MT FIX	BILLINGS, MT VORTAC	6500	17500
BILLINGS, MT VORTAC	MILES CITY, MT VOR/DME	5800	17500
MILES CITY, MT VOR/DME	QATSA, ND FIX	5200	17500
QATSA, ND FIX	DICKINSON, ND VORTAC	4700	17500
*4200 - MOCA			
DICKINSON, ND VORTAC	BISMARCK, ND VOR/DME	4500	17500

95.3269 RNAV ROUTE T269

ANNETTE ISLAND, AK VOR/DME	TOKEE, AK FIX	5700	17500
TOKEE, AK FIX	FLIPS, AK FIX	6300	17500
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	6000	17500
BIORKA ISLAND, AK VORTAC	SALIS, AK FIX	5100	17500
SALIS, AK FIX	CENTA, AK FIX	6200	17500
*2000 - MOCA			
CENTA, AK FIX	YAKUTAT, AK VOR/DME	2000	17500
YAKUTAT, AK VOR/DME	MALAS, AK FIX	2400	17500
MALAS, AK FIX	KATAT, AK FIX	9000	17500
*5300 - MOCA			
KATAT, AK FIX	CASEL, AK FIX	7000	17500
*3400 - MOCA			
CASEL, AK FIX	JOHNSTONE POINT, AK VOR/DME	4800	17500
*4800 - MCA JOHNSTONE POINT, AK VOR/DME , E BND			
JOHNSTONE POINT, AK VOR/DME	FIMIB, AK WP	3200	17500
*5400 - MCA FIMIB, AK WP , W BND			
FIMIB, AK WP	ANCHORAGE, AK VOR/DME	8800	17500
*6300 - MCA ANCHORAGE, AK VOR/DME , E BND			
ANCHORAGE, AK VOR/DME	YONEK, AK FIX	3000	17500
YONEK, AK FIX	TORTE, AK FIX	5000	17500
*8400 - MCA TORTE, AK FIX , W BND			
TORTE, AK FIX	VEILL, AK FIX	10600	17500
*8000 - MCA VEILL, AK FIX , E BND			
VEILL, AK FIX	SPARREVOHN, AK VOR/DME	6600	17500
SPARREVOHN, AK VOR/DME	ACRAN, AK FIX	5200	17500
ACRAN, AK FIX	VIDDA, AK FIX	6000	17500
VIDDA, AK FIX	BETHEL, AK VORTAC	2100	17500

95.3270 RNAV ROUTE T270

NORTON BAY, AK NDB	HEXOG, AK WP	6000	17500
*5400 - MOCA			
HEXOG, AK WP	SHISHMAREF, AK NDB	5000	17500

95.3271 RNAV ROUTE T271

FROM	TO	MEA	MAA
COLD BAY, AK VORTAC	BINAL, AK FIX	4400	17500
BINAL, AK FIX	KING SALMON, AK VORTAC	2700	17500
KING SALMON, AK VORTAC	JIVCO, AK WP	3000	17500
JIVCO, AK WP	WOLCI, AK WP	4000	17500
WOLCI, AK WP	WIDVA, AK WP	7000	17500
*8000 - MCA WIDVA, AK WP , NE BND			
WIDVA, AK WP	ZINAM, AK WP	11800	17500
*10700 - MCA ZINAM, AK WP , SW BND			
ZINAM, AK WP	AMOTT, AK FIX	2500	17500

95.3272 RNAV ROUTE T272

FROM	TO	MEA	MAA
HALLSVILLE, MO VORTAC	VANDALIA, IL VORTAC	2700	6000

95.3273 RNAV ROUTE T273

FROM	TO	MEA	MAA
FAIRBANKS, AK VORTAC	AYKID, AK FIX	6700	17500
AYKID, AK FIX	TUVVO, AK FIX	6400	17500
TUVVO, AK FIX	SOTGE, AK WP	11300	17500
*8000 - MCA SOTGE, AK WP , S BND			
SOTGE, AK WP	ROCES, AK WP	4000	17500
*2800 - MOCA			

95.3274 RNAV ROUTE T274

FROM	TO	MEA	MAA
NEWPORT, OR VORTAC	WESHH, OR WP	4200	17500
WESHH, OR WP	CRAAF, OR FIX	4500	17500
CRAAF, OR FIX	JAIME, OR FIX	6100	17500
JAIME, OR FIX	DBLEY, OR WP	8000	17500
*8200 - MCA DBLEY, OR WP , E BND			
DBLEY, OR WP	MMDSN, OR WP	10000	17500
MMDSN, OR WP	MMASN, OR WP	9000	17500
MMASN, OR WP	POCIT, OR FIX	9000	17500
POCIT, OR FIX	GIFRD, OR WP	9000	17500
GIFRD, OR WP	FASAB, OR WP	10000	17500
FASAB, OR WP	NUSME, CA WP	10000	17500
NUSME, CA WP	RUFUS, CA WP	10100	17500
RUFUS, CA WP	DUCCS, NV WP	10100	17500
DUCCS, NV WP	SEDTO, NV FIX	10200	17500
*9200 - MOCA			
SEDTO, NV FIX	MUSTANG, NV VORTAC	11000	17500
MUSTANG, NV VORTAC	YERIN, NV FIX	10000	17500
*10400 - MCA YERIN, NV FIX , SE BND			
YERIN, NV FIX	SCOLA, NV WP	11400	17500
SCOLA, NV WP	BABIT, NV FIX	10800	17500
*10100 - MOCA			
BABIT, NV FIX	COALDALE, NV VORTAC	10500	17500
COALDALE, NV VORTAC	LIDAT, NV FIX	10000	17500

95.3275 RNAV ROUTE T275

FROM	TO	MEA	MAA
BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	5900	17500

95.3276 RNAV ROUTE T276

FROM	TO	MEA	MAA
WAVLU, WA FIX	WINLO, WA FIX	5400	17500
WINLO, WA FIX	COUGA, WA FIX	5100	17500
COUGA, WA FIX	CARBY, WA FIX	7000	17500
*6500 - MOCA			
CARBY, WA FIX	VECCU, WA FIX	7000	17500

FROM	TO	MEA	MAA

95.3276 RNAV ROUTE T276 – CONTINUED

FROM	TO	MEA	MAA
VECCU, WA FIX	HUNGR, WA WP	5600	17500
HUNGR, WA WP	LAYTN, WA WP	5000	17500
LAYTN, WA WP	WALLA WALLA, WA VOR/DME	4500	17500
WALLA WALLA, WA VOR/DME	RENGO, WA FIX	6400	17500
RENGO, WA FIX	SEVER, WA FIX	7200	17500
POTOR, WA FIX	CUPEV, ID FIX	6100	17500
*5600 - MOCA			
CUPEV, ID FIX	HENVO, ID WP	6300	17500
HENVO, ID WP	OFINO, ID FIX	6300	17500
OFINO, ID FIX	JIROS, MT FIX	9800	17500
JIROS, MT FIX	MISSOULA, MT VOR/DME	9500	17500
MISSOULA, MT VOR/DME	ARSHO, MT WP	10700	17500
*10200 - MOCA			
ARSHO, MT WP	BRCKN, MT WP	11600	17500
*10000 - MCA BRCKN, MT WP , SW BND			
BRCKN, MT WP	FRYMN, MT FIX	8300	17500
FRYMN, MT FIX	YOGOS, MT FIX	8000	17500
*6600 - MOCA			
YOGOS, MT FIX	EVBUJ, MT WP	8500	17500
EVBUJ, MT WP	ITEVE, MT WP	8000	17500
ITEVE, MT WP	WUDEY, MT WP	8000	17500
*5200 - MCA WUDEY, MT WP , W BND			
WUDEY, MT WP	GLASGOW, MT VOR/DME	5000	17500

95.3277 RNAV ROUTE T277

FROM	TO	MEA	MAA
BETTLES, AK VOR/DME	JIGTI, AK WP	6000	17500
*4000 - MOCA			
JIGTI, AK WP	NOKFE, AK WP	8000	17500
*7000 - MOCA			
NOKFE, AK WP	VOVUY, AK WP	10300	17500
*9400 - MOCA			
VOVUY, AK WP	EPEHO, AK WP	16000	17500
*9500 - MOCA			
EPEHO, AK WP	POINT LAY, AK NDB	6400	17500
*5500 - MOCA			

95.3278 RNAV ROUTE T278

FROM	TO	MEA	MAA
HAPIT, AK FIX	CSPER, AK FIX	4000	17500
CSPER, AK FIX	SISTERS ISLAND, AK VORTAC	5300	17500

95.3279 RNAV ROUTE T279

FROM	TO	MEA	MAA
ALEUT, AK WP	BETHEL, AK VORTAC	3200	17500

95.3280 RNAV ROUTE T280

FROM	TO	MEA	MAA
FLIPS, AK FIX	LEVEL ISLAND, AK VOR/DME	7000	17500
*6300 - MOCA			

95.3281 RNAV ROUTE T281

FROM	TO	MEA	MAA
YOZLE, NE FIX	BOKKI, NE FIX	4700	17500
BOKKI, NE FIX	AINSWORTH, NE VOR/DME	4600	17500
AINSWORTH, NE VOR/DME	LKOTA, SD WP	4400	17500
LKOTA, SD WP	PIERRE, SD VORTAC	4300	17500

FROM	TO	MEA	MAA
95.3282 RNAV ROUTE T282			
VENCE, AK FIX	HORSI, AK FIX	5000	17500
HORSI, AK FIX	PERZO, AK WP	4700	17500
PERZO, AK WP	FAIRBANKS, AK VORTAC	4300	17500
95.3283 RNAV ROUTE T283			
SCOTTSBLUFF, NE VORTAC	GORDON, NE NDB	6300	17500
GORDON, NE NDB	WNDED, SD WP	5500	17500
*5000 - MOCA			
WNDED, SD WP	PIERRE, SD VORTAC	5000	17500
95.3285 RNAV ROUTE T285			
NORTH PLATTE, NE VOR/DME	THEDFORD, NE VOR/DME	5000	17500
THEDFORD, NE VOR/DME	MARSS, NE FIX	4900	17500
MARSS, NE FIX	VALENTINE, NE NDB	4800	17500
VALENTINE, NE NDB	LKOTA, SD WP	4500	17500
LKOTA, SD WP	WINNER, SD VOR	4300	17500
WINNER, SD VOR	HURON, SD VORTAC	4000	17500
95.3286 RNAV ROUTE T286			
RAPID CITY, SD VORTAC	GORDON, NE NDB	5700	17500
GORDON, NE NDB	EFFEX, NE FIX	5600	17500
EFFEX, NE FIX	THEDFORD, NE VOR/DME	5400	17500
THEDFORD, NE VOR/DME	BOKKI, NE FIX	4900	17500
BOKKI, NE FIX	GRAND ISLAND, NE VOR/DME	4600	17500
95.3287 RNAV ROUTE T287			
DENNN, VA WP	CAARY, VA WP	5200	10000
*3400 - MOCA			
CAARY, VA WP	WILMY, VA WP	6900	10000
*6100 - MOCA			
WILMY, VA WP	KAIJE, VA WP	5400	10000
*4900 - MOCA			
KAIJE, VA WP	BAMMY, WV WP	5500	10000
BAMMY, WV WP	REEES, PA WP	5000	10000
*4300 - MOCA			
REEES, PA WP	TOMYD, MD WP	5000	10000
*3800 - MOCA			
95.3288 RNAV ROUTE T288			
GILLETTE, WY VOR/DME	TRTTL, WY WP	7000	17500
TRTTL, WY WP	KARAS, WY FIX	9000	17500
KARAS, WY FIX	PACTO, SD FIX	10000	17500
PACTO, SD FIX	RAPID CITY, SD VORTAC	7100	17500
RAPID CITY, SD VORTAC	WNDED, SD WP	5000	17500
WNDED, SD WP	VALENTINE, NE NDB	5000	17500
VALENTINE, NE NDB	AINSWORTH, NE VOR/DME	4700	17500
*4200 - MOCA			
AINSWORTH, NE VOR/DME	FESNT, NE WP	4500	17500
FESNT, NE WP	WOLBACH, NE VORTAC	4300	17500
95.3290 RNAV ROUTE T290			
HABJE, MS FIX	MERIDIAN, MS VORTAC	2300	17500
MERIDIAN, MS VORTAC	KWANE, MS WP	2400	17500
KWANE, MS WP	RABEC, AL WP	2300	17500
RABEC, AL WP	MONTGOMERY, AL VORTAC	2000	17500

FROM	TO	MEA	MAA

95.3290 RNAV ROUTE T290 - CONTINUED

MONTGOMERY, AL VORTAC	SCAIL, AL WP	2600	17500
*3400 - MCA SCAIL, AL WP , E BND			
SCAIL, AL WP	BBAIT, GA WP	4000	17500
BBAIT, GA WP	BBASS, GA WP	3500	17500
BBASS, GA WP	BBOAT, GA WP	2500	17500
BBOAT, GA WP	BOBBR, GA WP	2400	17500
BOBBR, GA WP	JACET, GA WP	2400	17500

95.3291 RNAV ROUTE T291

LOUIE, MD FIX	BAABS, MD WP	5000	11000
*1800 - MOCA			
BAABS, MD WP	HARRISBURG, PA VORTAC	5000	11000
*3000 - MOCA			
HARRISBURG, PA VORTAC	SELINSGROVE, PA VOR/DME	3300	17500
SELINSGROVE, PA VOR/DME	MILTON, PA VORTAC	3200	17500
MILTON, PA VORTAC	MEGSS, PA FIX	3500	17500
MEGSS, PA FIX	LAAYK, PA FIX	4000	17500
LAAYK, PA FIX	DELANCEY, NY VOR/DME	4400	17500
DELANCEY, NY VOR/DME	ALBANY, NY VORTAC	5600	17500

95.3292 RNAV ROUTE T292

SEMMES, AL VORTAC	ANTUH, AL WP	2000	17500
ANTUH, AL WP	JANES, AL FIX	2000	17500
JANES, AL FIX	KWANE, MS WP	2300	17500
KWANE, MS WP	EUTAW, AL FIX	2000	17500
EUTAW, AL FIX	MOVIL, AL FIX	2300	17500
MOVIL, AL FIX	BROOKWOOD, AL VORTAC	2500	17500
BROOKWOOD, AL VORTAC	VLKNN, AL WP	2500	17500
VLKNN, AL WP	HOKES, AL FIX	3200	17500
HOKES, AL FIX	MAYES, AL FIX	2900	17500
MAYES, AL FIX	RKMRT, GA WP	3600	17500
RKMRT, GA WP	POLLL, GA WP	2900	17500
POLLL, GA WP	CCATT, GA WP	3600	17500
CCATT, GA WP	REELL, GA WP	3700	17500
REELL, GA WP	TRREE, GA WP	2600	17500
TRREE, GA WP	JACET, GA WP	2400	17500

95.3293 RNAV ROUTE T293

CHUTT, AL WP	NFTRY, GA WP	2500	17500
NFTRY, GA WP	RTLRY, GA WP	3200	17500
RTLRY, GA WP	HONRR, GA WP	3300	17500
HONRR, GA WP	POLLL, GA WP	3300	17500
POLLL, GA WP	DAISI, GA WP	4700	17500

95.3294 RNAV ROUTE T294

HABJE, MS FIX	MERIDIAN, MS VORTAC	2300	17500
MERIDIAN, MS VORTAC	BOYDD, AL FIX	2300	17500
BOYDD, AL FIX	CRMSN, AL WP	2000	17500
CRMSN, AL WP	VLKNN, AL WP	2500	17500
VLKNN, AL WP	JOTAV, AL FIX	3300	17500
JOTAV, AL FIX	DEGAA, AL WP	2700	17500
DEGAA, AL WP	HEFIN, AL FIX	3400	17500
HEFIN, AL FIX	BBAIT, GA WP	4000	17500
BBAIT, GA WP	JMPPR, GA WP	3500	17500
JMPPR, GA WP	GRANT, GA FIX	3000	17500

FROM	TO	MEA	MAA

95.3295 RNAV ROUTE T295

FROM	TO	MEA	MAA
LOUIE, MD FIX	BAABS, MD WP	5000	11000
*1800 - MOCA			
BAABS, MD WP	LANCASTER, PA VOR/DME	5000	11000
*2400 - MOCA			
LANCASTER, PA VOR/DME	WILKES-BARRE, PA VORTAC	4000	17500
WILKES-BARRE, PA VORTAC	LAAYK, PA FIX	4000	17500
LAAYK, PA FIX	SAGES, NY FIX	6400	17500
SAGES, NY FIX	SASHA, MA FIX	6100	17500
SASHA, MA FIX	KEENE, NH VORTAC	3600	17500
KEENE, NH VORTAC	CONCORD, NH VOR/DME	5000	17500
CONCORD, NH VOR/DME	KENNEBUNK, ME VOR/DME	3000	17500
KENNEBUNK, ME VOR/DME	BRNNS, ME FIX	3000	17500
BRNNS, ME FIX	BANGOR, ME VORTAC	3000	17500

95.3296 RNAV ROUTE T296

FROM	TO	MEA	MAA
JMPPR, GA WP	BBASS, GA WP	3000	17500
BBASS, GA WP	TATRS, GA WP	2500	17500
TATRS, GA WP	TACKL, GA WP	2500	17500

95.3297 RNAV ROUTE T297

FROM	TO	MEA	MAA
PAIRA, GA WP	NFTRY, GA WP	3400	17500
NFTRY, GA WP	HEFIN, AL FIX	3400	17500
HEFIN, AL FIX	RKMRT, GA WP	3200	17500
RKMRT, GA WP	CHTTE, GA WP	2900	17500
CHTTE, GA WP	DAISI, GA WP	4000	17500
DAISI, GA WP	AWSON, GA FIX	5000	17500
AWSON, GA FIX	REELL, GA WP	3300	17500

95.3298 RNAV ROUTE T298

FROM	TO	MEA	MAA
OAKLAND, CA VOR/DME	SALAD, CA FIX	4300	17500
*4800 - MCA SALAD, CA FIX , E BND			
SALAD, CA FIX	ALTAM, CA FIX	5000	17500
*4600 - MCA ALTAM, CA FIX , W BND			
ALTAM, CA FIX	RBLEW, CA WP	4400	17500
*2700 - MCA RBLEW, CA WP , W BND			
RBLEW, CA WP	ORANG, CA FIX	1800	17500
ORANG, CA FIX	EVETT, CA WP	1800	17500
*2500 - MCA EVETT, CA WP , E BND			
EVETT, CA WP	ELKHN, CA WP	6300	17500
*7500 - MCA ELKHN, CA WP , E BND			
ELKHN, CA WP	SMURA, CA WP	9600	17500
*11700 - MCA SMURA, CA WP , E BND			
SMURA, CA WP	NIKOL, CA FIX	14600	17500
*12200 - MCA NIKOL, CA FIX , W BND			
NIKOL, CA FIX	COALDALE, NV VORTAC	11700	17500
COALDALE, NV VORTAC	KATTS, NV WP	11400	17500
KATTS, NV WP	KITTN, NV WP	13300	17500
KITTN, NV WP	WILSON CREEK, NV VORTAC	11600	17500
WILSON CREEK, NV VORTAC	WOOOP, UT WP	11900	17500
WOOOP, UT WP	MILFORD, UT VORTAC	11700	17500
MILFORD, UT VORTAC	DETAN, UT FIX	11900	17500
*12700 - MCA DETAN, UT FIX , NE BND			
DETAN, UT FIX	EBOVE, UT WP	13400	17500
EBOVE, UT WP	CARBON, UT VOR/DME	13200	17500
CARBON, UT VOR/DME	MYTON, UT VOR/DME	11700	17500

FROM	TO	MEA	MAA

95.3298 RNAV ROUTE T298 -CONTINUED

MYTON, UT VOR/DME	ROCK SPRINGS, WY VOR/DME	13700	17500
ROCK SPRINGS, WY VOR/DME	DORTN, WY WP	10500	17500
DORTN, WY WP	CRAZY WOMAN, WY VOR/DME	9300	17500

95.3299 RNAV ROUTE T299

UCREK, VA WP	KAIJE, VA WP	5000	10000
KAIJE, VA WP	BAMMY, WV WP	5500	10000
BAMMY, WV WP	REEES, PA WP	5000	10000
*4300 - MOCA			
REEES, PA WP	SCAPE, PA FIX	5000	10000
*3800 - MOCA			

95.3300 RNAV ROUTE T300

ALBANY, NY VORTAC	CANAN, NY FIX	3400	17500
CANAN, NY FIX	SHIGY, MA FIX	3900	17500
SHIGY, MA FIX	STELA, MA FIX	4000	17500
STELA, MA FIX	MOLDS, MA FIX	3900	17500
MOLDS, MA FIX	TOMES, MA FIX	3400	17500
TOMES, MA FIX	COBOL, MA FIX	3400	17500
COBOL, MA FIX	NELIE, CT FIX	3300	17500
NELIE, CT FIX	WIPOR, CT FIX	2600	17500
WIPOR, CT FIX	NORWICH, CT VOR/DME	2400	17500
NORWICH, CT VOR/DME	LAFAY, RI FIX	2300	17500
LAFAY, RI FIX	MINNK, RI FIX	2100	17500
MINNK, RI FIX	FALMA, RI FIX	1800	17500
FALMA, RI FIX	MARTHAS VINEYARD, MA VOR/DME	2000	17500

95.3302 RNAV ROUTE T302

CUKIS, OR WP	JJACE, OR WP	7300	17500
JJACE, OR WP	JJETT, OR WP	8000	17500
JJETT, OR WP	JERMM, OR WP	8000	17500
JERMM, OR WP	CUPRI, OR FIX	6600	17500
*5900 - MOCA			
CUPRI, OR FIX	ZUDMI, OR WP	9000	17500
*8200 - MOCA			
ZUDMI, OR WP	DRYLD, OR WP	9100	17500
DRYLD, OR WP	WILDHORSE, OR VOR/DME	9000	17500
WILDHORSE, OR VOR/DME	JOSTN, OR WP	8100	17500
JOSTN, OR WP	UKAYI, OR WP	8000	17500
*5500 - MCA UKAYI, OR WP , SW BND			
UKAYI, OR WP	PARMO, ID FIX	5000	17500
PARMO, ID FIX	ADEXE, ID WP	5000	17500
*5400 - MCA ADEXE, ID WP , E BND			
ADEXE, ID WP	ALKAL, ID FIX	7000	17500
*6200 - MCA ALKAL, ID FIX , W BND			
ALKAL, ID FIX	FEVDO, ID WP	6000	17500
FEVDO, ID WP	TOXEE, ID FIX	6100	17500
TOXEE, ID FIX	JADUP, ID WP	7000	17500
JADUP, ID WP	MRILE, ID WP	9100	17500
*10200 - MCA MRILE, ID WP , E BND			
MRILE, ID WP	RAMMM, ID WP	11000	17500
RAMMM, ID WP	SBINO, WY WP	11700	17500
MIKAE, WY WP	BXTER, WY WP	11700	17500
BXTER, WY WP	EEBEE, WY WP	10000	17500
*8700 - MOCA			

95.3302 RNAV ROUTE T302 - CONTINUED

FROM	TO	MEA	MAA
EEBEE, WY WP	REGVE, WY WP	10200	17500
REGVE, WY WP	ROCK SPRINGS, WY VOR/DME	10200	17500
ROCK SPRINGS, WY VOR/DME	FIKLA, WY WP	10000	17500
FIKLA, WY WP	MEDICINE BOW, WY VOR/DME	10000	17500
MEDICINE BOW, WY VOR/DME	ZIKRU, NE FIX	10000	17500
*7400 - MCA ZIKRU, NE FIX , W BND			
ZIKRU, NE FIX	SCOTTSBLUFF, NE VORTAC	6700	17500
SCOTTSBLUFF, NE VORTAC	WAKPA, NE WP	6000	17500
WAKPA, NE WP	ALLIANCE, NE VOR/DME	6000	17500
ALLIANCE, NE VOR/DME	EFFEX, NE FIX	6000	17500
EFFEX, NE FIX	MARSS, NE FIX	5400	17500
MARSS, NE FIX	PUKFA, NE WP	4800	17500
PUKFA, NE WP	GIYED, NE FIX	4600	17500
GIYED, NE FIX	LLUKY, NE WP	3900	17500

95.3306 RNAV ROUTE T306

FROM	TO	MEA	MAA
LOS ANGELES, CA VORTAC	PRADO, CA FIX	4000	17500
PRADO, CA FIX	PARADISE, CA VORTAC	5000	17500
PARADISE, CA VORTAC	SETER, CA FIX	5500	17500
*12100 - MCA SETER, CA FIX , E BND			
SETER, CA FIX	BANDS, CA FIX	9000	17500
BANDS, CA FIX	PALM SPRINGS, CA VORTAC	13000	17500
*11800 - MCA PALM SPRINGS, CA VORTAC , W BND			
PALM SPRINGS, CA VORTAC	BLYTHE, CA VORTAC	8000	17500
BLYTHE, CA VORTAC	BUCKEYE, AZ VORTAC	6000	17500
BUCKEYE, AZ VORTAC	PERKY, AZ FIX	5000	17500
PERKY, AZ FIX	PHOENIX, AZ VORTAC	4000	17500
PHOENIX, AZ VORTAC	TOTEC, AZ FIX	5000	17500
*5500 - MCA TOTEC, AZ FIX , E BND			
TOTEC, AZ FIX	TUCSON, AZ VORTAC	6500	17500
TUCSON, AZ VORTAC	NOCHI, AZ WP	10700	17500
NOCHI, AZ WP	ANIMA, NM FIX	10700	17500
ANIMA, NM FIX	DARCE, NM FIX	9000	17500
DARCE, NM FIX	COLUMBUS, NM VOR/DME	9000	17500
*8200 - MOCA			
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000	17500

95.3310 RNAV ROUTE T310

FROM	TO	MEA	MAA
TUCSON, AZ VORTAC	SULLI, AZ FIX	8000	17500
*9200 - MCA SULLI, AZ FIX , E BND			
*7200 - MOCA			
SULLI, AZ FIX	MESCA, AZ FIX	10000	17500
MESCA, AZ FIX	NOCHI, AZ WP	10000	17500
NOCHI, AZ WP	SAN SIMON, AZ VORTAC	10000	17500
SAN SIMON, AZ VORTAC	SILVER CITY, NM VOR/DME	10300	17500
SILVER CITY, NM VOR/DME	KEAPS, NM FIX	10300	17500
*11600 - MCA KEAPS, NM FIX , NE BND			
KEAPS, NM FIX	TRUTH OR CONSEQUENCES, NM VORTAC	12300	17500

95.3317 RNAV ROUTE T317

FROM	TO	MEA	MAA
NEWMAN, TX VORTAC	WATEX, TX FIX	8900	17500
*7700 - MCA WATEX, TX FIX , E BND			
MOLLY, NM FIX	FRIAN, NM FIX	6800	17500
*6300 - MOCA			

FROM	TO	MEA	MAA

95.3317 RNAV ROUTE T317 - CONTINUED

FROM	TO	MEA	MAA
FRIAN, NM FIX	CAGEV, NM FIX	7900	17500
*9200 - MCA CAGEV, NM FIX , NW BND			
DUCAS, NM FIX	TRUTH OR CONSEQUENCES, NM VORTAC	9700	17500
TRUTH OR CONSEQUENCES, NM VORTAC	SOCORRO, NM VORTAC	10100	17500
SOCORRO, NM VORTAC	YECUG, NM WP	7900	17500
YECUG, NM WP	AWASH, NM FIX	8600	17500
*8100 - MOCA			
AWASH, NM FIX	CABZO, NM FIX	10000	17500
CABZO, NM FIX	TANER, NM FIX	10300	17500
TANER, NM FIX	MISSY, NM FIX	9600	17500
MISSY, NM FIX	RATTLESNAKE, NM VORTAC	8900	17500
RATTLESNAKE, NM VORTAC	RIZAL, CO FIX	8900	17500
*10000 - MCA RIZAL, CO FIX , N BND			
RIZAL, CO FIX	MANCA, CO FIX	11200	17500
MANCA, CO FIX	SINSY, CO FIX	12200	17500
*10800 - MCA SINSY, CO FIX , SE BND			
GRAND JUNCTION, CO VOR/DME	LOMMA, CO FIX	10100	17500
*10700 - MCA LOMMA, CO FIX , N BND			
TESSY, CO FIX	RACER, CO FIX	11300	17500
RACER, CO FIX	RENAE, CO FIX	10800	17500
RENAE, CO FIX	ROCK SPRINGS, WY VOR/DME	11900	17500
*10200 - MCA ROCK SPRINGS, WY VOR/DME , S BND			
ROCK SPRINGS, WY VOR/DME	SWEAT, WY FIX	10000	17500
SWEAT, WY FIX	HONOX, WY FIX	10000	17500
HONOX, WY FIX	RIVERTON, WY VOR/DME	8300	17500
*7800 - MOCA			
RIVERTON, WY VOR/DME	FETIK, WY FIX	7500	17500
*8800 - MCA FETIK, WY FIX , N BND			
*7500 - MOCA			
FETIK, WY FIX	CRANY, WY FIX	9800	17500
CRANY, WY FIX	PECKK, WY FIX	7900	17500
PECKK, WY FIX	PRYER, MT FIX	11100	17500
*9900 - MCA PRYER, MT FIX , S BND			
PRYER, MT FIX	BILLINGS, MT VORTAC	7500	17500
BILLINGS, MT VORTAC	TASSE, MT FIX	6200	17500
TASSE, MT FIX	JUGAP, MT FIX	6800	17500
*8400 - MCA JUGAP, MT FIX , NW BND			
JUGAP, MT FIX	ZERZO, MT FIX	9700	17500
ZERZO, MT FIX	AUBBY, MT WP	10500	17500
*8300 - MCA AUBBY, MT WP , E BND			
AUBBY, MT WP	GREAT FALLS, MT VORTAC	6500	17500
GREAT FALLS, MT VORTAC	TUCKB, MT FIX	7000	17500
TUCKB, MT FIX	ROSOE, MT FIX	7600	17500
*7600 - MOCA			
ROSOE, MT FIX	PREEL, MT WP	8600	17500
*10200 - MCA PREEL, MT WP , SW BND			
PREEL, MT WP	KUNZY, MT WP	11200	17500
KUNZY, MT WP	OCEDA, MT FIX	9600	17500
*9100 - MOCA			
OCEDA, MT FIX	MISSOULA, MT VOR/DME	10100	17500
MISSOULA, MT VOR/DME	JIROS, MT FIX	9500	17500
JIROS, MT FIX	OFINO, ID FIX	9800	17500
OFINO, ID FIX	NEZ PERCE, ID VOR/DME	6100	17500

FROM	TO	MEA	MAA

95.3317 RNAV ROUTE T317 - CONTINUED

NEZ PERCE, ID VOR/DME	POTOR, WA FIX	6100	17500
*5600 - MOCA			
POTOR, WA FIX	RENGO, WA FIX	7200	17500
RENGO, WA FIX	BUTOC, WA FIX	6400	17500
BUTOC, WA FIX	BACUN, WA FIX	4500	17500
BACUN, WA FIX	PASCO, WA VOR/DME	3300	17500
PASCO, WA VOR/DME	NIALS, WA FIX	2900	17500
*3300 - MCA NIALS, WA FIX , NW BND			
NIALS, WA FIX	FEBUS, WA FIX	4900	17500
FEBUS, WA FIX	MERFF, WA WP	6200	17500
MERFF, WA WP	THICK, WA FIX	7900	17500
*7200 - MOCA			
THICK, WA FIX	RADDY, WA FIX	8700	17500
RADDY, WA FIX	MOUNT, WA FIX	8400	17500
MOUNT, WA FIX	COFAY, WA WP	7700	17500
*4600 - MCA COFAY, WA WP , E BND			
COFAY, WA WP	FESAS, WA WP	2000	17500
FESAS, WA WP	OZEYO, WA FIX	3000	17500
*3800 - MCA OZEYO, WA FIX , SW BND			
*2500 - MOCA			
OZEYO, WA FIX	CETUV, WA FIX	4700	17500
CETUV, WA FIX	HEVOL, WA FIX	5200	17500
HEVOL, WA FIX	ASTORIA, OR VOR/DME	4800	17500
*4300 - MOCA			

95.3319 RNAV ROUTE T319

CCLAY, GA WP	DUNCS, GA WP	2700	17500
DUNCS, GA WP	SHURT, GA WP	2700	17500
SHURT, GA WP	KLOWD, GA WP	3100	17500
KLOWD, GA WP	BLEWW, GA WP	3100	17500

95.3321 RNAV ROUTE T321

BBOAT, GA WP	TACKL, GA WP	2500	17500
TACKL, GA WP	REELL, GA WP	2600	17500
REELL, GA WP	BIGNN, GA WP	3700	17500

95.3323 RNAV ROUTE T323

CROCS, GA WP	BOBBR, GA WP	2300	17500
BOBBR, GA WP	BIGNN, GA WP	2700	17500
BIGNN, GA WP	ZPPLN, NC WP	7000	17500
ZPPLN, NC WP	HIGGI, NC WP	7400	17500

95.3325 RNAV ROUTE T325

BOWLING GREEN, KY VORTAC	RENRO, KY FIX	4500	17500
*2400 - MOCA			
RENRO, KY FIX	LOONE, KY WP	4500	17500
*2100 - MOCA			
LOONE, KY WP	APALO, IN FIX	4500	17500
*2100 - MOCA			
APALO, IN FIX	BUNKA, IN FIX	2500	17500
BUNKA, IN FIX	TERRE HAUTE, IN VORTAC	2400	17500

FROM	TO	MEA	MAA

95.3326 RNAV ROUTE T326

MISSION BAY, CA VORTAC	HAILE, CA FIX	3800	17500
HAILE, CA FIX	BLLYJ, CA WP	6400	17500
BLLYJ, CA WP	STAXS, CA WP	8000	17500
STAXS, CA WP	GILYY, CA WP	8600	17500
GILYY, CA WP	KUMBA, CA FIX	8600	17500
KUMBA, CA FIX	IMPERIAL, CA VORTAC	4700	17500

95.3328 RNAV ROUTE T328

ORCUS, WA FIX	MADEE, WA WP	2000	17500
*4800 - MCA MADEE, WA WP , E BND			
MADEE, WA WP	BOCAT, WA FIX	6000	17500
BOCAT, WA FIX	BJAAY, WA WP	6300	17500
*8100 - MCA BJAAY, WA WP , E BND			
BJAAY, WA WP	MMAGZ, WA WP	9000	17500
*10200 - MCA MMAGZ, WA WP , E BND			
CREEB, WA FIX	ROZSE, WA WP	11000	17500
*11300 - MCA ROZSE, WA WP , E BND			
ROZSE, WA WP	KRUZR, WA FIX	11700	17500
KRUZR, WA FIX	STRDP, WA WP	10800	17500
*8800 - MCA STRDP, WA WP , W BND			
STRDP, WA WP	KLSEY, WA WP	7600	17500
*6700 - MCA KLSEY, WA WP , W BND			
KLSEY, WA WP	SINGG, WA WP	5000	17500
*6200 - MCA SINGG, WA WP , E BND			
SINGG, WA WP	ROZTY, WA WP	7000	17500
ROZTY, WA WP	PRRKS, WA WP	7400	17500
PRRKS, WA WP	DAINA, WA WP	7500	17500
DAINA, WA WP	INOBE, ID FIX	7300	17500
INOBE, ID FIX	RNDDY, ID WP	7700	17500
*8600 - MCA RNDDY, ID WP , E BND			
RNDDY, ID WP	KAPPN, MT WP	11000	17500
*10200 - MCA KAPPN, MT WP , W BND			
KAPPN, MT WP	KARSH, MT WP	8800	17500

95.3329 RNAV ROUTE T329

MORRO BAY, CA VORTAC	PASO ROBLES, CA VORTAC	5000	17500
PASO ROBLES, CA VORTAC	LKHRN, CA WP	5900	17500
LKHRN, CA WP	PANOCHE, CA VORTAC	6900	17500
PANOCHE, CA VORTAC	MKNNA, CA WP	6400	17500
MKNNA, CA WP	OXJEF, CA WP	6400	17500
*1600 - MOCA			
OXJEF, CA WP	TIPRE, CA WP	2700	17500
TIPRE, CA WP	OLIPH, CA WP	2700	17500
OLIPH, CA WP	HNNRY, CA WP	2400	17500
HNNRY, CA WP	ROWWN, CA WP	1800	17500
*3200 - MCA ROWWN, CA WP , W BND			
ROWWN, CA WP	RAGGS, CA FIX	5100	17500
RAGGS, CA FIX	POPES, CA FIX	4900	17500
POPES, CA FIX	NACKI, CA WP	5900	17500

FROM	TO	MEA	MAA

95.3330 RNAV ROUTE T330

GRAND FORKS, ND VOR/DME	BYZIN, MN WP	3900	17500
*2500 - MOCA			
BYZIN, MN WP	TAMMR, MN WP	3900	17500
*3000 - MOCA			
TAMMR, MN WP	WATAM, MN WP	3900	17500
*2900 - MOCA			
WATAM, MN WP	MAFLN, MN WP	3900	17500
*2900 - MOCA			
MAFLN, MN WP	DAYLE, MN FIX	3900	17500
*3000 - MOCA			
DAYLE, MN FIX	GOPHER, MN VORTAC	4000	17500
*3500 - MOCA			

95.3331 RNAV ROUTE T331

FRAME, CA FIX	NTELL, CA WP	2000	17500
NTELL, CA WP	MKNNA, CA WP	2300	17500
MKNNA, CA WP	KARNN, CA FIX	4700	17500
KARNN, CA FIX	VINCO, CA FIX	6600	17500
VINCO, CA FIX	NORCL, CA WP	6300	17500
NORCL, CA WP	MOVDD, CA WP	6000	17500
*5000 - MCA MOVDD, CA WP , SW BND			
MOVDD, CA WP	EVETT, CA WP	3500	17500
EVETT, CA WP	TIPRE, CA WP	2700	17500
TIPRE, CA WP	ESSOH, CA WP	6300	17500
*7800 - MCA ESSOH, CA WP , NE BND			
ESSOH, CA WP	SQUAW VALLEY, CA VOR/DME	11200	17500
SQUAW VALLEY, CA VOR/DME	TRUCK, CA FIX	11200	17500
TRUCK, CA FIX	MUSTANG, NV VORTAC	11600	17500
MUSTANG, NV VORTAC	HIXUP, NV WP	10300	17500
HIXUP, NV WP	LOVELOCK, NV VORTAC	9300	17500
LOVELOCK, NV VORTAC	CUTVA, NV FIX	10500	17500
*11900 - MCA CUTVA, NV FIX , E BND			
CUTVA, NV FIX	BATTLE MOUNTAIN, NV VORTAC	11900	17500
BATTLE MOUNTAIN, NV VORTAC	PARZZ, NV WP	10900	17500
PARZZ, NV WP	DRYAD, ID FIX	10700	17500
DRYAD, ID FIX	TULIE, ID WP	11400	17500
TULIE, ID WP	AMFAL, ID WP	8300	17500
AMFAL, ID WP	POCATELLO, ID VOR/DME	8300	17500
POCATELLO, ID VOR/DME	VIPUC, ID FIX	7700	17500
VIPUC, ID FIX	IDAHO FALLS, ID VOR/DME	7100	17500
IDAHO FALLS, ID VOR/DME	PULTE, ID FIX	7100	17500
PULTE, ID FIX	SABAT, ID FIX	7600	17500
SABAT, ID FIX	WAHNZ, ID WP	9900	17500
WAHNZ, ID WP	BUFVO, WY WP	11700	17500
BUFVO, WY WP	SPECT, MT WP	14900	17500
*13400 - MCA SPECT, MT WP , SW BND			
SPECT, MT WP	BILLINGS, MT VORTAC	8300	17500
BILLINGS, MT VORTAC	TRUED, MT WP	6100	17500
TRUED, MT WP	EXADE, MT FIX	5900	17500
EXADE, MT FIX	JEKOK, ND WP	4400	17500
JEKOK, ND WP	FONIA, ND FIX	4000	17500

FROM	TO	MEA	MAA

95.3332 RNAV ROUTE T332

ZONUV, WA WP	CRNEL, WA WP	6100	17500
*4600 - MOCA			
CRNEL, WA WP	AALIX, WA WP	7200	17500
AALIX, WA WP	BAALE, WA WP	8500	17500
*9400 - MCA BAALE, WA WP , E BND			
BAALE, WA WP	SNNDY, WA WP	10000	17500
*9500 - MOCA			
SNNDY, WA WP	COADY, WA WP	10400	17500
COADY, WA WP	DYNGO, WA WP	10600	17500
DYNGO, WA WP	METOO, WA WP	10400	17500
*9500 - MCA METOO, WA WP , W BND			
METOO, WA WP	HVARD, WA WP	7900	17500
HVARD, WA WP	REPII, WA WP	7000	17500
REPII, WA WP	ROZTY, WA WP	7000	17500

95.3333 RNAV ROUTE T333

KLIDE, CA FIX	BORED, CA FIX	6200	17500
BORED, CA FIX	SMONE, CA WP	6100	17500
SMONE, CA WP	OOWEN, CA WP	5700	17500
*4200 - MCA OOWEN, CA WP , S BND			
OOWEN, CA WP	EVETT, CA WP	2300	17500
EVETT, CA WP	TIPRE, CA WP	2700	17500

95.3354 RNAV ROUTE T354

PARK RAPIDS, MN VOR/DME	BRNRD, MN WP	3800	17500
*3200 - MOCA			
BRNRD, MN WP	SIREN, WI VOR/DME	3500	17500
*2700 - MOCA			

95.3355 RNAV ROUTE T355

FOLDS, CA FIX	DIMGE, CA WP	11200	17500
*9600 - MCA DIMGE, CA WP , S BND			
DIMGE, CA WP	GRENA, CA FIX	7600	17500
*6300 - MOCA			
GRENA, CA FIX	ROMAE, CA FIX	9000	17500
ROMAE, CA FIX	TALEM, OR FIX	9700	17500
*9200 - MCA TALEM, OR FIX , SE BND			
TALEM, OR FIX	SAMIE, OR FIX	7800	17500
SAMIE, OR FIX	BROKN, OR FIX	6900	17500
BROKN, OR FIX	KINZY, OR WP	8900	17500
KINZY, OR WP	SSTRS, OR WP	9800	17500
SSTRS, OR WP	OCTAD, OR FIX	8300	17500
*7100 - MCA OCTAD, OR FIX , S BND			
*7700 - MOCA			
OCTAD, OR FIX	HERBS, OR FIX	6900	17500
HERBS, OR FIX	WISSL, OR WP	6400	17500
WISSL, OR WP	JJETT, OR WP	7700	17500
JJETT, OR WP	PUTZZ, OR WP	7700	17500
PUTZZ, OR WP	GLARA, OR FIX	7300	17500
*5100 - MCA GLARA, OR FIX , E BND			
GLARA, OR FIX	CANBY, OR FIX	3500	17500
*2800 - MOCA			
CANBY, OR FIX	KKARP, OR WP	5300	17500
KKARP, OR WP	CETUV, WA FIX	5300	17500
CETUV, WA FIX	ZOLGI, WA FIX	4900	17500

FROM	TO	MEA	MAA

95.3335 RNAV ROUTE T335 - CONTINUED

ZOLGI, WA FIX	WUMOX, WA FIX	3400	17500
*3100 - MCA WUMOX, WA FIX , S BND			
WUMOX, WA FIX	PENN COVE, WA VOR/DME	3000	17500
PENN COVE, WA VOR/DME	ZONUV, WA WP	3000	17500
ZONUV, WA WP	UCAKI, WA WP	3000	17500
UCAKI, WA WP	SECOG, WA FIX	2300	17500

95.3383 RNAV ROUTE T383

GOPHER, MN VORTAC	BRNRD, MN WP	3600	17500
*3100 - MOCA			
BRNRD, MN WP	BLUOX, MN FIX	3900	17500
*3400 - MOCA			

95.3608 RNAV ROUTE T608

WOZEE, NY WP	U.S. CANADIAN BORDER	3000	17500
*2400 - MOCA			
U.S. CANADIAN BORDER	HOCKE, MI WP	3500	17500
*2900 - MOCA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.3616 RNAV ROUTE T616

FLINT, MI VORTAC	URSSA, MI WP	2500	17500
URSSA, MI WP	HOCKE, MI WP	2800	17500
HOCKE, MI WP	U.S. CANADIAN BORDER	6000	17500
*2100 - MOCA			

95.3705 RNAV ROUTE T705

UTICA, NY VORTAC	USICI, NY FIX	3900	17500
USICI, NY FIX	GACKE, NY FIX	4100	17500
GACKE, NY FIX	BECKS, NY FIX	5200	17500
BECKS, NY FIX	SMAIR, NY FIX	5400	17500
SMAIR, NY FIX	FOSYU, NY FIX	5300	17500
FOSYU, NY FIX	SARANAC LAKE, NY VOR/DME	5400	17500
SARANAC LAKE, NY VOR/DME	RIGID, NY FIX	5400	17500
RIGID, NY FIX	PBERG, NY WP	4800	17500
PBERG, NY WP	LATTS, NY WP	3900	17500
*3700 - MCA LATTS, NY WP , S BND			
LATTS, NY WP	U.S. CANADIAN BORDER	3400	17500

95.3781 RNAV ROUTE T781

FLINT, MI VORTAC	KATTY, MI FIX	3000	17500
*2300 - MOCA			
KATTY, MI FIX	HANKY, MI WP	4000	17500
*2900 - MOCA			
HANKY, MI WP	ADRIE, MI WP	4000	17500
*2800 - MOCA			
ADRIE, MI WP	MARGN, MI FIX	4000	17500
*2800 - MOCA			
MARGN, MI FIX	BLUEZ, MI WP	4000	17500
*2800 - MOCA			
BLUEZ, MI WP	U.S. CANADIAN BORDER	4000	17500
*2800 - MOCA			

FROM	TO	MEA	MAA

TK502 RNAV ROUTE TK502

WESTMINSTER, MD VORTAC	TAYLO, MD WP	2700	17500
TAYLO, MD WP	WINGO, PA WP	2500	17500
*2000 - MOCA			
WINGO, PA WP	SINON, PA WP	2400	17500
SINON, PA WP	GRIBL, PA WP	2400	17500
GRIBL, PA WP	TOLAN, NJ WP	2100	17500
TOLAN, NJ WP	BALDE, NY WP	2100	17500
*1500 - MOCA			
BALDE, NY WP	SPATE, NY WP	2100	17500
*1400 - MOCA			
SPATE, NY WP	DECKR, NY WP	2100	17500

TK504 RNAV ROUTE TK504

RUSEY, MD WP	CIDOB, MD WP	1800	17500
*1500 - MOCA			
CIDOB, MD WP	HAMOR, PA WP	2300	17500
HAMOR, PA WP	ARCUM, PA WP	2300	17500
*2000 - MOCA			
ARCUM, PA WP	TULLY, PA WP	2600	17500
TULLY, PA WP	BORKE, NJ FIX	2000	17500
BORKE, NJ FIX	BANKA, NJ WP	2000	17500

§95.4000 HIGH ALTITUDE RNAV ROUTES

95.4001 RNAV ROUTE Q1

FROM	TO	MEA	MAA
POINT REYES, CA VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	ETCHY, CA WP	*24000	45000
ETCHY, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TOCOS, CA WP	*24000	45000
TOCOS, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ENVIE, CA WP	*24000	45000
ENVIE, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ELENN, CA WP	*24000	45000
ELENN, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	EBINY, OR WP	*24000	45000
EBINY, OR WP *18000 - GNSS MEA *DME/DME/IRU MEA	EASON, OR WP	*24000	45000
EASON, OR WP *18000 - GNSS MEA *DME/DME/IRU MEA	ERAVE, WA WP	*24000	45000
ERAVE, WA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ELMAA, WA FIX	*24000	45000

95.4002 RNAV ROUTE Q2

FROM	TO	MEA	MAA
BOILE, CA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	HEDVI, AZ WP	*24000	45000
HEDVI, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	HOBOL, AZ WP	*24000	45000
HOBOL, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	ITUCO, AZ WP	*24000	45000
ITUCO, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	NEWMAN, TX VORTAC	*26000	45000

95.4003 RNAV ROUTE Q3

FROM	TO	MEA	MAA
FEPOT, WA WP *18000 - GNSS MEA *DME/DME/IRU MEA	POINT REYES, CA VOR/DME	*24000	45000

95.4004 RNAV ROUTE Q4

FROM	TO	MEA	MAA
BOILE, CA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	SKTTR, AZ WP	*24000	45000
SKTTR, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	EL PASO, TX VORTAC	*26000	45000

FROM	TO	MEA	MAA
95.4005 RNAV ROUTE Q5			
HAROB, WA WP	STIKM, CA WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4006 RNAV ROUTE Q6			
TALKEETNA, AK VOR/DME	BARROW, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4007 RNAV ROUTE Q7			
JINMO, WA WP	JOGEN, OR WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JOGEN, OR WP	JUNEJ, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JUNEJ, CA WP	JAGWA, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAGWA, CA WP	AVENAL, CA VOR/DME	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4008 RNAV ROUTE Q8			
GALENA, AK VOR/DME	ANCHORAGE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4009 RNAV ROUTE Q9			
SUMMA, WA FIX	DERBB, CA FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4010 RNAV ROUTE Q10			
KUKULIAK, AK VOR/DME	EMMONAK, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4011 RNAV ROUTE Q11			
PAAGE, WA WP	LOS ANGELES, CA VORTAC	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4012 RNAV ROUTE Q12			
KOTZEBUE, AK VOR/DME	DEADHORSE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4013 RNAV ROUTE Q13			
PRFUM, AZ FIX	PAWLI, OR WP	*18000	45000
*GNSS REQUIRED			
95.4014 RNAV ROUTE Q14			
KODIAK, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	*18000	45000
*GNSS REQUIRED			

FROM	TO	MEA	MAA
95.4015 RNAV ROUTE Q15			
CHILY, AZ FIX	DOVEE, NV FIX	*18000	45000
*GNSS REQUIRED			
DOVEE, NV FIX	BIKKR, CA WP	*18000	45000
*GNSS REQUIRED			
BIKKR, CA WP	KENNO, NV WP	*18000	45000
*GNSS REQUIRED			
KENNO, NV WP	RUSME, NV WP	*18000	45000
*GNSS REQUIRED			
RUSME, NV WP	LOMIA, NV WP	*18000	45000
*GNSS REQUIRED			
95.4016 RNAV ROUTE Q16			
KODIAK, AK VOR/DME	MIDDLETON ISLAND, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
MIDDLETON ISLAND, AK VOR/DME	YAKUTAT, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4017 RNAV ROUTE Q17			
HOMER, AK VOR/DME	MIDDLETON ISLAND, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4018 RNAV ROUTE Q18			
GALENA, AK VOR/DME	BARROW, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4019 RNAV ROUTE Q19			
NASHVILLE, TN VORTAC	PLESS, IL FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PLESS, IL FIX	ST LOUIS, MO VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ST LOUIS, MO VORTAC	DES MOINES, IA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DES MOINES, IA VORTAC	SIOUX FALLS, SD VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SIOUX FALLS, SD VORTAC	ABERDEEN, SD VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4020 RNAV ROUTE Q20			
CORONA, NM VORTAC	HONDS, NM FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HONDS, NM FIX	UNNOS, NM WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
UNNOS, NM WP	FUSCO, TX FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FUSCO, TX FIX	JUNCTION, TX VORTAC	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4021 RNAV ROUTE Q21

JONEZ, OK WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAZORBACK, AR VORTAC	*18000	45000

95.4022 RNAV ROUTE Q22

GUSTI, LA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	OYSTY, LA FIX	*18000	45000
OYSTY, LA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	ACMES, AL WP	*18000	45000
ACMES, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	CATLN, AL FIX	*18000	45000
CATLN, AL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	TWOUP, GA WP	*18000	45000
TWOUP, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	SPARTANBURG, SC VORTAC	*18000	45000
SPARTANBURG, SC VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	NYBLK, NC WP	*18000	45000
NYBLK, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	MASHI, NC WP	*18000	45000
MASHI, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	KIDDO, NC WP	*18000	45000
KIDDO, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	OMENS, VA WP	*18000	45000
OMENS, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BEARI, VA WP	*18000	45000

95.4023 RNAV ROUTE Q23

FORT SMITH, AR VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	RAZORBACK, AR VORTAC	*18000	45000

95.4024 RNAV ROUTE Q24

LAKE CHARLES, LA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	FIGHTING TIGER, LA VORTAC	*20000	45000
FIGHTING TIGER, LA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	IRUBE, MS WP	*20000	45000
IRUBE, MS WP *18000 - GNSS MEA *DME/DME/IRU MEA	PAYTN, AL FIX	*20000	45000

FROM	TO	MEA	MAA

95.4025 RNAV ROUTE Q25

FROM	TO	MEA	MAA
MEEOW, AR FIX *18000 - GNSS MEA *DME/DME/IRU MEA	WALNUT RIDGE, AR VORTAC	*20000	45000
WALNUT RIDGE, AR VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	POCKET CITY, IN VORTAC	*20000	45000

95.4026 RNAV ROUTE Q26

FROM	TO	MEA	MAA
WALNUT RIDGE, AR VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	DEVAC, AL FIX	*20000	33000

95.4027 RNAV ROUTE Q27

FROM	TO	MEA	MAA
FORT SMITH, AR VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	ZALDA, AR WP	*18000	45000

95.4028 RNAV ROUTE Q28

FROM	TO	MEA	MAA
GRAZN, AR WP *18000 - GNSS MEA *DME/DME/IRU MEA	POCKET CITY, IN VORTAC	*20000	45000

95.4029 RNAV ROUTE Q29

FROM	TO	MEA	MAA
HARES, LA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BAKRE, MS WP	*20000	45000
BAKRE, MS WP *18000 - GNSS MEA *DME/DME/IRU MEA	MEMPHIS, TN VORTAC	*20000	45000
MEMPHIS, TN VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	OMDUE, TN WP	*20000	45000
OMDUE, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	SIDAE, KY WP	*20000	45000
SIDAE, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	CREEP, OH FIX	*18000	45000
CREEP, OH FIX *18000 - GNSS MEA *DME/DME/IRU MEA	KLYNE, OH WP	*18000	45000
KLYNE, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	DUTSH, OH WP	*18000	45000
DUTSH, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	WWSHR, OH WP	*18000	45000
WWSHR, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	DORET, OH FIX	*18000	45000
DORET, OH FIX *18000 - GNSS MEA *DME/DME/IRU MEA	JAMESTOWN, NY VOR/DME	*18000	45000
JAMESTOWN, NY VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	HANKK, NY FIX	*18000	45000

FROM	TO	MEA	MAA

95.4029 RNAV ROUTE Q29 - CONTINUED

FROM	TO	MEA	MAA
HANKK, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	GONZZ, NY WP	*18000	45000
GONZZ, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	KRAZZ, NY WP	*18000	45000
KRAZZ, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	NIPPY, NY FIX	*18000	45000
NIPPY, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	CABCI, VT WP	*18000	45000
CABCI, VT WP *18000 - GNSS MEA *DME/DME/IRU MEA	EBONY, ME FIX	*18000	45000
EBONY, ME FIX *18000 - GNSS MEA *DME/DME/IRU MEA	DUNOM, ME WP	*18000	45000
DUNOM, ME WP *18000 - GNSS MEA *DME/DME/IRU MEA	US CANADIAN BORDER	*18000	45000

95.4030 RNAV ROUTE Q30

FROM	TO	MEA	MAA
SIDON, MS VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	VULCAN, AL VORTAC	*18000	45000

95.4031 RNAV ROUTE Q31

FROM	TO	MEA	MAA
DHART, AR FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MARVELL, AR VOR/DME	*18000	45000
MARVELL, AR VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	POCKET CITY, IN VORTAC	*18000	45000

95.4032 RNAV ROUTE Q32

FROM	TO	MEA	MAA
EL DORADO, AR VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	GAGLE, MS WP	*20000	45000
GAGLE, MS WP *18000 - GNSS MEA *DME/DME/IRU MEA	CRAMM, MS FIX	*20000	45000
CRAMM, MS FIX *18000 - GNSS MEA *DME/DME/IRU MEA	NASHVILLE, TN VORTAC	*20000	45000
NASHVILLE, TN VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	SWAPP, TN FIX	*20000	45000

95.4033 RNAV ROUTE Q33

FROM	TO	MEA	MAA
DHART, AR FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LITTLE ROCK, AR VORTAC	*20000	45000
LITTLE ROCK, AR VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	PROWL, MO WP	*20000	45000

FROM	TO	MEA	MAA
95.4034 RNAV ROUTE Q34			
TEXARKANA, AR VORTAC	MEMPHIS, TN VORTAC	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MEMPHIS, TN VORTAC	SWAPP, TN FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4035 RNAV ROUTE Q35			
DRAKE, AZ VORTAC	CORKR, AZ FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CORKR, AZ FIX	WINEN, UT WP	*29000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WINEN, UT WP	NEERO, NV WP	*29000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NEERO, NV WP	KOATA, OR WP	*29000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KOATA, OR WP	KIMBERLY, OR VOR/DME	*29000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4036 RNAV ROUTE Q36			
RAZORBACK, AR VORTAC	NASHVILLE, TN VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NASHVILLE, TN VORTAC	SWAPP, TN FIX	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4037 RNAV ROUTE Q37			
FORT STOCKTON, TX VORTAC	CAVRN, TX FIX	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CAVRN, TX FIX	YORUB, NM WP	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YORUB, NM WP	IMMAS, NM WP	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IMMAS, NM WP	PUEBLO, CO VORTAC	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4038 RNAV ROUTE Q38			
ROKIT, TX WP	BESOM, AL FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4039 RNAV ROUTE Q39			
CLAWD, NC WP	TARCI, WV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4039 RNAV ROUTE Q39 – CONTINUED

FROM	TO	MEA	MAA
TARCI, WV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	ASERY, WV WP	*18000	45000

95.4040 RNAV ROUTE Q40

FROM	TO	MEA	MAA
ALEXANDRIA, LA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	DOOMS, MS WP	*18000	45000
DOOMS, MS WP *18000 - GNSS MEA *DME/DME/IRU MEA	WINAP, MS WP	*18000	45000
WINAP, MS WP *18000 - GNSS MEA *DME/DME/IRU MEA	MISLE, AL WP	*18000	45000
MISLE, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	BFOLO, AL WP	*18000	45000
BFOLO, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	NIOLA, GA WP	*18000	45000
NIOLA, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JAARE, TN WP	*18000	45000
JAARE, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	OJESS, TN WP	*18000	45000
OJESS, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	ALEAN, VA WP	*18000	45000
ALEAN, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	FEEDS, VA WP	*18000	45000
FEEDS, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	MAULS, VA WP	*18000	45000
MAULS, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	FANPO, VA WP	*18000	45000

95.4041 RNAV ROUTE Q41

FROM	TO	MEA	MAA
CAWIN, AK FIX *GNSS REQUIRED	DEADHORSE, AK VOR/DME	*18000	45000

95.4042 RNAV ROUTE Q42

FROM	TO	MEA	MAA
KIRKSVILLE, MO VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	DANVILLE, IL VORTAC	*34000	45000
DANVILLE, IL VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	MUNCIE, IN VOR/DME	*34000	45000
MUNCIE, IN VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	BRNAN, PA WP	*24000	45000
BRNAN, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	HOTEE, PA WP	*18000	45000

FROM	TO	MEA	MAA

95.4042 RNAV ROUTE Q42 – CONTINUED

HOTEE, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	MIKYG, PA WP	*18000	45000
MIKYG, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	SPOTZ, PA WP	*18000	45000
SPOTZ, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZIMMZ, PA FIX	*18000	45000

95.4043 RNAV ROUTE Q43

ANCHORAGE, AK VOR/DME *GNSS REQUIRED	BIG LAKE, AK VORTAC	*18000	45000
BIG LAKE, AK VORTAC *GNSS REQUIRED	FAIRBANKS, AK VORTAC	*18000	45000

95.4044 RNAV ROUTE Q44

NOME, AK VOR/DME *GNSS REQUIRED	HLBLY, AK WP	*18000	45000
HLBLY, AK WP *GNSS REQUIRED	ANCHORAGE, AK VOR/DME	*18000	45000

95.4045 RNAV ROUTE Q45

DILLINGHAM, AK VOR/DME *GNSS REQUIRED	NONDA, AK FIX	*18000	45000
NONDA, AK FIX *GNSS REQUIRED	AMOTT, AK FIX	*18000	45000

95.4046 RNAV ROUTE Q46

POINT HOPE, AK NDB *GNSS REQUIRED	BARROW, AK VOR/DME	*18000	45000

95.4047 RNAV ROUTE Q47

KING SALMON, AK VORTAC *GNSS REQUIRED	AMOTT, AK FIX	*18000	45000

95.4048 RNAV ROUTE Q48

BARROW, AK VOR/DME *GNSS REQUIRED	DEADHORSE, AK VOR/DME	*18000	45000
DEADHORSE, AK VOR/DME *GNSS REQUIRED	ROCES, AK WP	*18000	45000

95.4049 RNAV ROUTE Q49

KODIAK, AK VOR/DME *GNSS REQUIRED	AMOTT, AK FIX	*18000	45000

95.4050 RNAV ROUTE Q50

LOUISVILLE, KY VORTAC *18000 - GNSS MEA	HELUB, KY WP	*18000	45000
HELUB, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	ENGRA, KY WP	*18000	45000
ENGRA, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	IBATE, KY WP	*18000	45000
IBATE, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	CUBIM, KY WP	*18000	45000

FROM	TO	MEA	MAA
95.4051 RNAV ROUTE Q51			
KING SALMON, AK VORTAC *GNSS REQUIRED	SLIIM, AK WP	*18000	45000
SLIIM, AK WP *GNSS REQUIRED	HLBLY, AK WP	*18000	45000
HLBLY, AK WP *GNSS REQUIRED	KOTZEBUE, AK VOR/DME	*18000	45000
95.4052 RNAV ROUTE Q52			
CHOPZ, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	IPTAY, GA WP	*18000	45000
IPTAY, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	AWYAT, SC WP	*18000	45000
AWYAT, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	COLZI, NC WP	*18000	45000
95.4053 RNAV ROUTE Q53			
KODIAK, AK VOR/DME *GNSS REQUIRED	ILIAMNA, AK NDB/DME	*18000	45000
ILIAMNA, AK NDB/DME *GNSS REQUIRED	KOTZEBUE, AK VOR/DME	*18000	45000
95.4054 RNAV ROUTE Q54			
GREENWOOD, SC VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	NYLLA, SC WP	*18000	45000
NYLLA, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	CHYPS, NC WP	*18000	45000
CHYPS, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	AHOEY, NC WP	*18000	45000
AHOEY, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAANE, NC WP	*18000	45000
RAANE, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	NUTZE, NC WP	*18000	45000
95.4055 RNAV ROUTE Q55			
KODIAK, AK VOR/DME *GNSS REQUIRED	SLIIM, AK WP	*18000	45000
SLIIM, AK WP *GNSS REQUIRED	NOME, AK VOR/DME	*18000	45000
95.4056 RNAV ROUTE Q56			
CATLN, AL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	KBLER, GA WP	*18000	45000
KBLER, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	KELLN, SC WP	*18000	45000
KELLN, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	KTOWN, NC WP	*18000	45000

FROM	TO	MEA	MAA

95.4056 RNAV ROUTE Q56 – CONTINUED

KTOWN, NC WP	BYSCO, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BYSCO, NC WP	JOOLI, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JOOLI, NC WP	NUUMN, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NUUMN, NC WP	ORACL, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ORACL, NC WP	KIWII, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4057 RNAV ROUTE Q57

KING SALMON, AK VORTAC	MC GRATH, AK VORTAC	*18000	45000
*GNSS REQUIRED			

95.4058 RNAV ROUTE Q58

KELLN, SC WP	GLOVR, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GLOVR, NC WP	LUMAY, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LUMAY, NC WP	STUKI, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
STUKI, NC WP	PEETT, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4059 RNAV ROUTE Q59

COLD BAY, AK VORTAC	BETHEL, AK VORTAC	*18000	45000
*GNSS REQUIRED			

95.4060 RNAV ROUTE Q60

SPARTANBURG, SC VORTAC	BYJAC, NC FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BYJAC, NC FIX	EVING, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EVING, NC WP	LOOEY, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LOOEY, VA WP	JAXSN, VA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4061 RNAV ROUTE Q61

FAIRBANKS, AK VORTAC	BARROW, AK VOR/DME	*18000	45000
*GNSS REQUIRED			

FROM	TO	MEA	MAA

95.4062 RNAV ROUTE Q62

FROM	TO	MEA	MAA
WATSN, IN FIX *18000 - GNSS MEA *DME/DME/IRU MEA	DAIFE, IN WP	*18000	45000
DAIFE, IN WP *18000 - GNSS MEA *DME/DME/IRU MEA	NOLNN, OH WP	*18000	45000
NOLNN, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	WEEVR, OH WP	*18000	45000
WEEVR, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	PSKUR, OH WP	*18000	45000
PSKUR, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	FAALS, OH WP	*18000	45000
FAALS, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	ALEEE, OH WP	*18000	45000
ALEEE, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	QUARM, PA WP	*18000	45000
QUARM, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BURNI, PA FIX	*18000	45000
BURNI, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MCMAN, PA FIX	*18000	45000
MCMAN, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	VALLO, PA FIX	*18000	45000
VALLO, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	RAVINE, PA VORTAC	*18000	45000
RAVINE, PA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	SUZIE, PA FIX	*18000	45000
SUZIE, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	SARAA, PA FIX	*18000	45000

95.4063 RNAV ROUTE Q63

FROM	TO	MEA	MAA
DOOGE, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	HAPKI, KY WP	*18000	45000
HAPKI, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	TONIO, KY FIX	*18000	45000
TONIO, KY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	OCASE, KY WP	*18000	45000
OCASE, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	HEVAN, IN WP	*18000	45000

95.4064 RNAV ROUTE Q64

FROM	TO	MEA	MAA
CATLN, AL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	FIGEY, GA WP	*18000	45000

95.4064 RNAV ROUTE Q64 - CONTINUED

FROM	TO	MEA	MAA
FIGEY, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	GREENWOOD, SC VORTAC	*18000	45000
GREENWOOD, SC VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	DARRL, SC FIX	*18000	45000
DARRL, SC FIX *18000 - GNSS MEA *DME/DME/IRU MEA	IDDAA, NC WP	*18000	45000
IDDAA, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	TAR RIVER, NC VORTAC	*18000	45000

95.4065 RNAV ROUTE Q65

FROM	TO	MEA	MAA
KPASA, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	DOFFY, FL WP	*18000	45000
DOFFY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	FETAL, FL WP	*18000	45000
FETAL, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	ENEME, GA WP	*18000	45000
ENEME, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JEFOI, GA WP	*18000	45000
JEFOI, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TRASY, GA WP	*18000	45000
TRASY, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	CESKI, GA WP	*18000	45000
CESKI, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	DAREE, GA WP	*18000	45000
DAREE, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	LORNN, TN WP	*18000	45000
LORNN, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	SOGEE, TN WP	*18000	45000
SOGEE, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	ENGRA, KY WP	*18000	45000
ENGRA, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	OCASE, KY WP	*18000	45000
OCASE, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	ROSEWOOD, OH VORTAC	*18000	45000

FROM	TO	MEA	MAA
95.4066 RNAV ROUTE Q66			
LITTLE ROCK, AR VORTAC	CIVKI, AR WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CIVKI, AR WP	RICKX, AR WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RICKX, AR WP	TROVE, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TROVE, TN WP	BAZOO, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BAZOO, TN WP	METWO, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
METWO, TN WP	MXEEN, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MXEEN, TN WP	ALEAN, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4067 RNAV ROUTE Q67			
SMTTH, TN WP	CEMEX, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CEMEX, KY WP	IBATE, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IBATE, KY WP	TONIO, KY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TONIO, KY FIX	JONEN, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JONEN, KY WP	DARYN, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4068 RNAV ROUTE Q68			
CHARLESTON, WV VOR/DME	TOMCA, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TOMCA, WV WP	RONZZ, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RONZZ, WV WP	HHOLZ, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HHOLZ, WV WP	HAMME, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HAMME, WV WP	CAPOE, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4068 RNAV ROUTE Q68 - CONTINUED

FROM	TO	MEA	MAA
CAPOE, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	OTTTO, VA WP	*18000	45000

95.4069 RNAV ROUTE Q69

FROM	TO	MEA	MAA
VIYAP, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	OLBEC, GA WP	*18000	45000
OLBEC, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ISUZO, GA WP	*18000	45000
ISUZO, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	GURGE, SC WP	*18000	45000
GURGE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	BLAAN, SC WP	*18000	45000
BLAAN, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	EMCET, SC WP	*18000	45000
EMCET, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	RYCKI, NC WP	*18000	45000
RYCKI, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	LUNDD, VA WP	*18000	45000
LUNDD, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ILLSA, VA WP	*18000	45000
ILLSA, VA WP *18000 - GNSS MEA *DME/DME/IRU MEA	EWESS, WV WP	*18000	45000
EWESS, WV WP *18000 - GNSS MEA *DME/DME/IRU MEA	RICCS, WV WP	*18000	45000

95.4070 RNAV ROUTE Q70

FROM	TO	MEA	MAA
HAILO, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	LAS VEGAS, NV VORTAC	*18000	45000
LAS VEGAS, NV VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	IFEYE, NV WP	*20000	45000
IFEYE, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	BLIPP, NV WP	*20000	45000
BLIPP, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	EEVUN, UT WP	*20000	45000
EEVUN, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BLOBB, UT WP	*20000	45000
BLOBB, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BAWER, UT WP	*22000	45000

95.4070 RNAV ROUTE Q70 - CONTINUED

FROM	TO	MEA	MAA
BAWER, UT WP	SAKES, UT FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4071 RNAV ROUTE Q71

FROM	TO	MEA	MAA
BOBBD, TN WP	ATUME, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ATUME, KY WP	HAPKI, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HAPKI, KY WP	KONGO, KY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KONGO, KY FIX	WISTA, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WISTA, WV WP	GEFFS, WV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GEFFS, WV FIX	EMNEM, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EMNEM, WV WP	PSYKO, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PSYKO, PA WP	PHILIPSBURG, PA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4072 RNAV ROUTE Q72

FROM	TO	MEA	MAA
HACKS, WV FIX	GEQUE, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GEQUE, WV WP	BENSH, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BENSH, WV WP	RAMAY, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4073 RNAV ROUTE Q73

FROM	TO	MEA	MAA
MOMAR, CA FIX	CABIC, CA WP	*18000	45000
*GNSS REQUIRED			
CABIC, CA WP	CHADT, CA WP	*18000	45000
*GNSS REQUIRED			
CHADT, CA WP	LVELL, CA WP	*18000	45000
*GNSS REQUIRED			
LVELL, CA WP	HAKMN, NV WP	*18000	45000
*GNSS REQUIRED			
HAKMN, NV WP	ZZYZX, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4073 RNAV ROUTE Q73 - CONTINUED

FROM	TO	MEA	MAA
ZZYZX, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	LAKRR, NV WP	*18000	45000
LAKRR, NV WP *GNSS REQUIRED	GUNTR, AZ WP	*18000	45000
GUNTR, AZ WP *GNSS REQUIRED	ZAINY, AZ WP	*18000	45000
ZAINY, AZ WP *GNSS REQUIRED	EEVUN, UT WP	*18000	45000
EEVUN, UT WP *GNSS REQUIRED	WINEN, UT WP	*18000	45000
WINEN, UT WP *GNSS REQUIRED	CRITO, NV WP	*18000	45000
CRITO, NV WP *GNSS REQUIRED	BROPH, ID WP	*18000	45000
BROPH, ID WP *GNSS REQUIRED	DERSO, ID FIX	*18000	45000
DERSO, ID FIX *GNSS REQUIRED	SAWTT, ID WP	*18000	45000
SAWTT, ID WP *GNSS REQUIRED	ZATIP, ID FIX	*18000	45000
ZATIP, ID FIX *GNSS REQUIRED	CORDU, ID FIX	*18000	45000

95.4074 RNAV ROUTE Q74

FROM	TO	MEA	MAA
NATEE, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	BOULDER CITY, NV VORTAC	*18000	45000
BOULDER CITY, NV VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	ZAINY, AZ WP	*20000	45000
ZAINY, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	FIZZL, AZ WP	*20000	45000
FIZZL, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	GARDD, UT WP	*20000	45000
GARDD, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	DEANN, UT WP	*20000	45000

95.4075 RNAV ROUTE Q75

FROM	TO	MEA	MAA
ENEME, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TEUFL, GA WP	*18000	45000
TEUFL, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TEEEM, GA WP	*18000	45000
TEEEM, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	SHRIL, GA WP	*18000	45000
SHRIL, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	FISHO, SC WP	*18000	45000
FISHO, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	ILBEE, SC WP	*18000	45000

FROM	TO	MEA	MAA

95.4075 RNAV ROUTE Q75 – CONTINUED

FROM	TO	MEA	MAA
ILBEE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SLOJO, SC WP	*18000	45000
SLOJO, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	GREENSBORO, NC VORTAC	*18000	45000

95.4077 RNAV ROUTE Q77

FROM	TO	MEA	MAA
OCTAL, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	MATLK, FL WP	*18000	45000
MATLK, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	STYMY, FL WP	*18000	45000
STYMY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	WAKKO, FL WP	*18000	45000
WAKKO, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	WASUL, FL WP	*18000	45000
WASUL, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	MJAMS, FL WP	*18000	45000
MJAMS, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	ETORE, FL WP	*18000	45000
ETORE, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	SHRKS, FL WP	*18000	45000
SHRKS, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	TEUFL, GA WP	*18000	45000
TEUFL, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	WIGVO, GA WP	*18000	45000

95.4078 RNAV ROUTE Q78

FROM	TO	MEA	MAA
MARUE, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	DUGGN, AZ WP	*24000	45000
DUGGN, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	TOADD, AZ WP	*24000	45000

95.4079 RNAV ROUTE Q79

FROM	TO	MEA	MAA
MCLAW, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	VAULT, FL WP	*18000	45000
VAULT, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	FEMID, FL WP	*18000	45000
FEMID, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	WULFF, FL WP	*18000	45000

95.4079 RNAV ROUTE Q79 - CONTINUED

WULFF, FL WP	MOLIE, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MOLIE, FL WP	DOFFY, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DOFFY, FL WP	YUESS, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YUESS, GA WP	ATLANTA, GA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4080 RNAV ROUTE Q80

FAREV, KY WP	JEDER, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JEDER, KY WP	ENGRA, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ENGRA, KY WP	DEWAK, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DEWAK, KY WP	CEGMA, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CEGMA, KY WP	JONEN, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JONEN, KY WP	BULVE, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BULVE, WV WP	WISTA, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WISTA, WV WP	LEVII, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LEVII, WV WP	RONZZ, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RONZZ, WV WP	HHOLZ, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HHOLZ, WV WP	HAMME, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HAMME, WV WP	CAPOE, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CAPOE, VA WP	OTTTO, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4081 RNAV ROUTE Q81

FROM	TO	MEA	MAA
TUNSL, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	KARTR, FL FIX	*18000	45000
KARTR, FL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	FIPES, OG WP	*18000	45000
FIPES, OG WP *18000 - GNSS MEA *DME/DME/IRU MEA	THMPR, FL WP	*18000	45000
THMPR, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	LEEHI, FL WP	*18000	45000
LEEHI, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	FARLU, FL WP	*18000	45000
FARLU, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	ENDEW, FL WP	*18000	45000
ENDEW, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	BITNY, OG WP	*18000	45000
BITNY, OG WP *18000 - GNSS MEA *DME/DME/IRU MEA	NICKI, FL WP	*18000	45000
NICKI, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	HONID, GA WP	*18000	45000

95.4082 RNAV ROUTE Q82

FROM	TO	MEA	MAA
WWSHR, OH WP *18000 - GNSS MEA *DME/DME/IRU MEA	DORET, OH FIX	*18000	45000
DORET, OH FIX *18000 - GNSS MEA *DME/DME/IRU MEA	JAMESTOWN, NY VOR/DME	*18000	45000
JAMESTOWN, NY VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	WAYLA, NY WP	*18000	45000
WAYLA, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	VIEEW, NY FIX	*18000	45000
VIEEW, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MEMMS, NY FIX	*18000	45000
MEMMS, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LOXXE, NY FIX	*18000	45000
LOXXE, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	PONCT, NY WP	*18000	45000

FROM	TO	MEA	MAA

95.4083 RNAV ROUTE Q83

FROM	TO	MEA	MAA
JEVED, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ROYCO, GA WP	*18000	45000
ROYCO, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TAALN, GA WP	*18000	45000
TAALN, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	KONEY, SC WP	*18000	45000
KONEY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	WURFL, SC WP	*18000	45000
WURFL, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	JUSEE, SC WP	*18000	45000
JUSEE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	EFFAY, SC WP	*18000	45000
EFFAY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SLOJO, SC WP	*18000	45000

95.4084 RNAV ROUTE Q84

FROM	TO	MEA	MAA
JAMESTOWN, NY VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	AUDIL, NY FIX	*18000	45000
AUDIL, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	PUPPY, NY WP	*18000	45000
PUPPY, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	PAYGE, NY FIX	*18000	45000
PAYGE, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	CAMBRIDGE, NY VOR/DME	*18000	45000

95.4085 RNAV ROUTE Q85

FROM	TO	MEA	MAA
LPERD, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	GIPPL, GA WP	*18000	45000
GIPPL, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ROYCO, GA WP	*18000	45000
ROYCO, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	IGARY, SC WP	*18000	45000
IGARY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	PELIE, SC WP	*18000	45000
PELIE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	BUMMA, SC WP	*18000	45000
BUMMA, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	KAATT, NC WP	*18000	45000

FROM	TO	MEA	MAA

95.4085 RNAV ROUTE Q85 – CONTINUED

KAATT, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SMPRR, NC WP	*18000	45000

95.4086 RNAV ROUTE Q86

TTRUE, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	YORRK, AZ WP	*18000	45000
YORRK, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	SCHLS, AZ WP	*20000	45000
SCHLS, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	CUTRO, AZ WP	*20000	45000
CUTRO, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	VALEQ, AZ WP	*20000	45000
VALEQ, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	PLNDL, AZ WP	*20000	45000

95.4087 RNAV ROUTE Q87

PEAKY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	GOPEY, FL WP	*18000	45000
GOPEY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	GRIDS, FL WP	*18000	45000
GRIDS, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	TIRCO, FL WP	*18000	45000
TIRCO, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	MATLK, FL WP	*18000	45000
MATLK, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	ONEWY, FL WP	*18000	45000
ONEWY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZERBO, FL WP	*18000	45000
ZERBO, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	DUCEN, FL WP	*18000	45000
DUCEN, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	OVENP, FL WP	*18000	45000
OVENP, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	FEMON, FL WP	*18000	45000
FEMON, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	VIYAP, GA WP	*18000	45000
VIYAP, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	SUSYQ, GA WP	*18000	45000

95.4087 RNAV ROUTE Q87 – CONTINUED

FROM	TO	MEA	MAA
SUSYQ, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TAALN, GA WP	*18000	45000
TAALN, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JROSS, SC WP	*18000	45000
JROSS, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAYVO, SC WP	*18000	45000
RAYVO, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	HINTZ, SC WP	*18000	45000
HINTZ, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	REDFH, SC WP	*18000	45000
REDFH, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	LCAPE, SC WP	*18000	45000

95.4088 RNAV ROUTE Q88

FROM	TO	MEA	MAA
HAKMN, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZZYZX, NV WP	*18000	45000
ZZYZX, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	LAKRR, NV WP	*18000	45000
LAKRR, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	NOOTN, AZ FIX	*22000	45000
NOOTN, AZ FIX *18000 - GNSS MEA *DME/DME/IRU MEA	GARDD, UT WP	*22000	45000
GARDD, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	VERKN, UT WP	*22000	45000
VERKN, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	PROMT, UT WP	*22000	45000
PROMT, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	CHESZ, UT WP	*22000	45000
CHESZ, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	SINRY, CO WP	*22000	45000
SINRY, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZAKRY, CO WP	*22000	45000
ZAKRY, CO WP *22000 - GNSS MEA *DME/DME/IRU MEA	YAMPA, CO WP	*22000	45000
YAMPA, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	BICAR, NE WP	*22000	45000
BICAR, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	CHUWY, NE WP	*22000	45000

95.4088 RNAV ROUTE Q88 – CONTINUED

FROM	TO	MEA	MAA
CHUWY, NE WP	KEEFF, NE WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KEEFF, NE WP	GUDDY, SD WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GUDDY, SD WP	VIVID, SD FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VIVID, SD FIX	JOYCC, SD WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JOYCC, SD WP	DKOTA, SD WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4089 RNAV ROUTE Q89

FROM	TO	MEA	MAA
MANLE, FL WP	WAKUP, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WAKUP, FL WP	PRMUS, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PRMUS, FL WP	OVENP, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OVENP, FL WP	SHRKS, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SHRKS, FL WP	YANTI, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YANTI, GA WP	ATLANTA, GA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4090 RNAV ROUTE Q90

FROM	TO	MEA	MAA
DNERO, CA WP	ESGEE, NV WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ESGEE, NV WP	AREAF, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AREAF, AZ WP	JASSE, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JASSE, AZ WP	NAVJO, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NAVJO, AZ WP	YAMHA, CO WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YAMHA, CO WP	DAAYE, CO WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4090 RNAV ROUTE Q90 – CONTINUED

DAAYE, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	SKWYR, CO WP	*24000	45000
SKWYR, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	HUSQA, KS WP	*24000	45000
HUSQA, KS WP *18000 - GNSS MEA *DME/DME/IRU MEA	VARNE, KS WP	*24000	45000
VARNE, KS WP *18000 - GNSS MEA *DME/DME/IRU MEA	ATIJA, KS WP	*20000	45000
ATIJA, KS WP *18000 - GNSS MEA *DME/DME/IRU MEA	LEFAM, NE WP	*20000	45000
LEFAM, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	BOVEY, MO WP	*20000	45000
BOVEY, MO WP *18000 - GNSS MEA *DME/DME/IRU MEA	WELKY, IA WP	*20000	45000

95.4092 RNAV ROUTE Q92

CHUWY, NE WP *20000 - GNSS MEA *DME/DME/IRU MEA	KUTCH, NE WP	*22000	45000
KUTCH, NE WP *20000 - GNSS MEA *DME/DME/IRU MEA	WYYTE, NE WP	*22000	45000
WYYTE, NE WP *20000 - GNSS MEA *DME/DME/IRU MEA	MAASI, NE WP	*20000	45000
MAASI, NE WP *20000 - GNSS MEA *DME/DME/IRU MEA	HANKU, IA WP	*20000	45000
HANKU, IA WP *20000 - GNSS MEA *DME/DME/IRU MEA	JORDY, IA FIX	*20000	45000

95.4093 RNAV ROUTE Q93

MCLAW, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	VAULT, FL WP	*18000	45000
VAULT, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	LINEY, FL WP	*18000	45000
LINEY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	FOBIN, FL WP	*18000	45000
FOBIN, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	EBAYY, FL WP	*18000	45000
EBAYY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	MALET, FL FIX	*18000	45000

95.4093 RNAV ROUTE Q93 - CONTINUED

FROM	TO	MEA	MAA
MALET, FL FIX	DEBRL, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DEBRL, FL WP	KENLL, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KENLL, FL WP	PRMUS, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PRMUS, FL WP	WOPNR, OA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WOPNR, OA WP	GIPPL, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GIPPL, GA WP	ISUZO, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ISUZO, GA WP	FISHO, SC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FISHO, SC WP	QUIWE, SC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4094 RNAV ROUTE Q94

FROM	TO	MEA	MAA
WELUM, NV WP	MNGGO, AZ WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MNGGO, AZ WP	ROOLL, AZ WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4096 RNAV ROUTE Q96

FROM	TO	MEA	MAA
PURSE, NV WP	DODDL, NV WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DODDL, NV WP	BFUNE, AZ WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BFUNE, AZ WP	GUNTR, AZ WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GUNTR, AZ WP	PIIXR, AZ WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PIIXR, AZ WP	FIZZL, AZ WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FIZZL, AZ WP	BAWER, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BAWER, UT WP	ROCCY, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4096 RNAV ROUTE Q96 – CONTINUED

FROM	TO	MEA	MAA
ROCCY, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	SARAF, UT WP	*22000	45000
SARAF, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	KIMMR, UT WP	*22000	45000

95.4097 RNAV ROUTE Q97

FROM	TO	MEA	MAA
TOVAR, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	EBAYY, FL WP	*18000	45000
EBAYY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	MALET, FL FIX	*18000	45000
MALET, FL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	DEBRL, FL WP	*18000	45000
DEBRL, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	KENLL, FL WP	*18000	45000
KENLL, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	PRMUS, FL WP	*18000	45000
PRMUS, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	WOPNR, OA WP	*18000	45000
WOPNR, OA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JEVED, GA WP	*18000	45000
JEVED, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	CAKET, SC WP	*18000	45000
CAKET, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	ELMSZ, SC WP	*18000	45000
ELMSZ, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	YURCK, NC WP	*18000	45000
YURCK, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	ELLDE, NC WP	*18000	45000

95.4098 RNAV ROUTE Q98

FROM	TO	MEA	MAA
HAKMN, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZZYZX, NV WP	*18000	45000
ZZYZX, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	LAKRR, NV WP	*18000	45000
LAKRR, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	DUZIT, AZ WP	*20000	45000

95.4098 RNAV ROUTE Q98 – CONTINUED

DUZIT, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	EEEZY, AZ WP	*24000	45000
EEEZY, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	PEEWE, AZ WP	*24000	45000

95.4099 RNAV ROUTE Q99

DOFFY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	CAMJO, FL WP	*18000	45000
CAMJO, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	HEPAR, GA WP	*18000	45000
HEPAR, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TEEEM, GA WP	*18000	45000
TEEEM, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BLAAN, SC WP	*18000	45000
BLAAN, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	BWAGS, SC WP	*18000	45000
BWAGS, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	EFFAY, SC WP	*18000	45000
EFFAY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	WNGUD, SC WP	*18000	45000
WNGUD, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	POLYY, NC WP	*18000	45000

95.4103 RNAV ROUTE Q103

CYNTA, GA WP *30000 - GNSS MEA *DME/DME/IRU MEA	PUPYY, GA WP	*30000	45000
PUPYY, GA WP *30000 - GNSS MEA *DME/DME/IRU MEA	RIELE, SC WP	*30000	45000
RIELE, SC WP *30000 - GNSS MEA *DME/DME/IRU MEA	GRONK, SC WP	*30000	45000
GRONK, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	EMCET, SC WP	*18000	45000
EMCET, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SLOJO, SC WP	*18000	45000
SLOJO, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	PULASKI, VA VORTAC	*18000	45000

FROM	TO	MEA	MAA

95.4103 RNAV ROUTE Q103 – CONTINUED

FROM	TO	MEA	MAA
PULASKI, VA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	ASBUR, WV FIX	*18000	45000
ASBUR, WV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	OAKLE, WV FIX	*18000	45000
OAKLE, WV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	PERRI, WV FIX	*18000	45000
PERRI, WV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	PERKS, WV FIX	*18000	45000
PERKS, WV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	RICCS, WV WP	*18000	45000
RICCS, WV WP *18000 - GNSS MEA *DME/DME/IRU MEA	EMNEM, WV WP	*18000	45000
EMNEM, WV WP *18000 - GNSS MEA *DME/DME/IRU MEA	AIRRA, PA WP	*18000	45000

95.4104 RNAV ROUTE Q104

FROM	TO	MEA	MAA
ACORI, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	CABLO, GA WP	*18000	45000
CABLO, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	HEVVN, FL FIX	*18000	45000
HEVVN, FL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LEGGT, FL FIX	*18000	45000
LEGGT, FL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	PLYER, FL FIX	*18000	45000
PLYER, FL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	SWABE, FL FIX	*18000	45000
SWABE, FL FIX *18000 - GNSS MEA *DME/DME/IRU MEA	ENDEW, FL WP	*18000	45000
ENDEW, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	ST PETERSBURG, FL VORTAC	*18000	45000

95.4108 RNAV ROUTE Q108

FROM	TO	MEA	MAA
GADAY, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	HKUNA, FL WP	*18000	45000

95.4109 RNAV ROUTE Q109

FROM	TO	MEA	MAA
DOFFY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	CAMJO, FL WP	*18000	45000

FROM	TO	MEA	MAA

95.4109 RNAV ROUTE Q109 – CONTINUED

CAMJO, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	HEPAR, GA WP	*18000	45000
HEPAR, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TEEEM, GA WP	*18000	45000
TEEEM, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	RIELE, SC WP	*18000	45000
RIELE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	PANDY, SC WP	*18000	45000
PANDY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAYVO, SC WP	*18000	45000
RAYVO, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SESUE, SC WP	*18000	45000
SESUE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	BUMMA, SC WP	*18000	45000
BUMMA, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	YURCK, NC WP	*18000	45000
YURCK, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	LAANA, NC WP	*18000	45000

95.4110 RNAV ROUTE Q110

BLANS, IL WP *18000 - GNSS MEA *DME/DME/IRU MEA	BETIE, TN WP	*18000	45000
BETIE, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	SKIDO, AL WP	*18000	45000
SKIDO, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	BFOLO, AL WP	*18000	45000
BFOLO, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	JYROD, AL WP	*18000	45000
JYROD, AL WP *18000 - GNSS MEA *DME/DME/IRU MEA	DAWWN, GA WP	*18000	45000
DAWWN, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JOKKY, FL WP	*18000	45000
JOKKY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	AMORY, FL WP	*18000	45000
AMORY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	SMELZ, FL WP	*18000	45000

FROM	TO	MEA	MAA

95.4110 RNAV ROUTE Q110 - CONTINUED

SMELZ, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	SHEEK, FL WP	*18000	45000
SHEEK, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	JAYMC, FL WP	*18000	45000
JAYMC, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	OCTAL, FL WP	*18000	45000

95.4113 RNAV ROUTE Q113

RAYVO, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	CEELY, SC WP	*18000	45000
CEELY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SARKY, SC WP	*18000	45000

95.4114 RNAV ROUTE Q114

NATEE, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	BOULDER CITY, NV VORTAC	*18000	45000
BOULDER CITY, NV VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	ZAINY, AZ WP	*20000	45000
ZAINY, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	AHOWW, UT WP	*20000	45000
AHOWW, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BAWER, UT WP	*24000	45000
BAWER, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BUGGG, UT WP	*24000	45000
BUGGG, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZAKRY, CO WP	*24000	45000
ZAKRY, CO WP *20000 - GNSS MEA *DME/DME/IRU MEA	BULDG, CO WP	*20000	45000
BULDG, CO WP *20000 - GNSS MEA *DME/DME/IRU MEA	COUGH, CO WP	*20000	45000
COUGH, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	AVVVS, CO FIX	*20000	45000
AVVVS, CO FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BRAFF, CO WP	*20000	45000

FROM	TO	MEA	MAA

95.4114 RNAV ROUTE Q114 – CONTINUED

FROM	TO	MEA	MAA
BRAFF, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	GOORE, CO WP	*20000	45000
GOORE, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	AYOLE, NE WP	*20000	45000
AYOLE, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	PECKS, NE WP	*20000	45000
PECKS, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	LEONG, IA WP	*20000	45000

95.4116 RNAV ROUTE Q116

FROM	TO	MEA	MAA
VULCAN, AL VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	DEEDA, GA WP	*18000	45000
DEEDA, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JAWJA, FL WP	*18000	45000
JAWJA, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	MICES, FL WP	*18000	45000
MICES, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	PATOY, FL WP	*18000	45000
PATOY, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	SMELZ, FL WP	*18000	45000
SMELZ, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	SHEEK, FL WP	*18000	45000
SHEEK, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	JAYMC, FL WP	*18000	45000
JAYMC, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	OCTAL, FL WP	*18000	45000

95.4118 RNAV ROUTE Q118

FROM	TO	MEA	MAA
MARION, IN VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	HEVAN, IN WP	*18000	45000
HEVAN, IN WP *18000 - GNSS MEA *DME/DME/IRU MEA	VOSTK, KY WP	*18000	45000
VOSTK, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	HELUB, KY WP	*18000	45000
HELUB, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	JEDER, KY WP	*18000	45000
JEDER, KY WP *18000 - GNSS MEA *DME/DME/IRU MEA	GLAZR, TN WP	*18000	45000

FROM	TO	MEA	MAA

95.4118 RNAV ROUTE Q118 – CONTINUED

FROM	TO	MEA	MAA
GLAZR, TN WP *18000 - GNSS MEA *DME/DME/IRU MEA	KAILL, GA WP	*18000	45000
KAILL, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ATLANTA, GA VORTAC	*18000	45000
ATLANTA, GA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	JOHNN, GA FIX	*18000	45000
JOHNN, GA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	JAMIZ, FL WP	*18000	45000
JAMIZ, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	BRUTS, FL WP	*18000	45000
BRUTS, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	JINOS, FL WP	*18000	45000
JINOS, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	KPASA, FL WP	*18000	45000
KPASA, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	SHEEK, FL WP	*18000	45000
SHEEK, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	CHRRI, FL WP	*18000	45000
CHRRI, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	FEMID, FL WP	*18000	45000
FEMID, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	BRIES, FL WP	*18000	45000
BRIES, FL WP *18000 - GNSS MEA *DME/DME/IRU MEA	PEAKY, FL WP	*18000	45000

95.4120 RNAV ROUTE Q120

FROM	TO	MEA	MAA
ORRCA, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BETBE, NV WP	*24000	45000
BETBE, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZORUN, NV WP	*24000	45000
ZORUN, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	GALLI, NV WP	*31000	45000
GALLI, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	JAJAY, NV WP	*31000	45000
JAJAY, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	TRAKY, NV WP	*31000	45000
TRAKY, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	PROXI, UT WP	*29000	45000

FROM	TO	MEA	MAA

95.4120 RNAV ROUTE Q120 -CONTINUED

FROM	TO	MEA	MAA
PROXI, UT WP	BIG PINEY, WY VOR/DME	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BIG PINEY, WY VOR/DME	JUGIV, WY WP	*23000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JUGIV, WY WP	HIKOX, WY FIX	*23000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HIKOX, WY FIX	JASTI, SD WP	*23000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JASTI, SD WP	UFFDA, MN WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4121 RNAV ROUTE Q121

FROM	TO	MEA	MAA
PARZZ, NV WP	POCATELLO, ID VOR/DME	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
POCATELLO, ID VOR/DME	SWTHN, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4122 RNAV ROUTE Q122

FROM	TO	MEA	MAA
MOGEE, CA WP	MACUS, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MACUS, NV WP	MCORD, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MCORD, NV WP	LUCIN, UT VORTAC	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LUCIN, UT VORTAC	BEARR, UT FIX	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BEARR, UT FIX	KURSE, WY WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KURSE, WY WP	O'NEILL, NE VORTAC	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
O'NEILL, NE VORTAC	FORT DODGE, IA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4123 RNAV ROUTE Q123

FROM	TO	MEA	MAA
PARZZ, NV WP	COKEE, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4124 RNAV ROUTE Q124			
MOGEE, CA WP	MACUS, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MACUS, NV WP	MCORD, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MCORD, NV WP	SLOWN, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SLOWN, NV WP	FASTE, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FASTE, NV WP	BONNEVILLE, UT VORTAC	*23000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BONNEVILLE, UT VORTAC	WAATS, UT FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4125 RNAV ROUTE Q125			
PARZZ, NV WP	WLLES, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4126 RNAV ROUTE Q126			
TIPRE, CA WP	INSLO, NV WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
INSLO, NV WP	CHUKR, NV WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CHUKR, NV WP	TTOES, NV WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TTOES, NV WP	GAROT, UT WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GAROT, UT WP	KREYK, UT WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KREYK, UT WP	DRRSI, UT WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DRRSI, UT WP	LBATO, UT WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LBATO, UT WP	BASNN, CO WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4126 RNAV ROUTE Q126 – CONTINUED

BASNN, CO WP *19000 - GNSS MEA *DME/DME/IRU MEA	BRAFF, CO WP	*19000	45000

95.4128 RNAV ROUTE Q128

SYRAH, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JSICA, NV WP	*27000	45000
JSICA, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	TABLL, UT WP	*25000	45000
TABLL, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	EDLES, UT FIX	*25000	45000
EDLES, UT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	FLOOD, CO FIX	*24000	45000
FLOOD, CO FIX *18000 - GNSS MEA *DME/DME/IRU MEA	ZAROS, CO WP	*22000	45000
ZAROS, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	VEGUC, OK WP	*20000	45000
VEGUC, OK WP *18000 - GNSS MEA *DME/DME/IRU MEA	VLUST, AR WP	*18000	45000
VLUST, AR WP *18000 - GNSS MEA *DME/DME/IRU MEA	ECIGE, AR WP	*18000	45000
ECIGE, AR WP *18000 - GNSS MEA *DME/DME/IRU MEA	MUDHO, MS WP	*18000	45000
MUDHO, MS WP *18000 - GNSS MEA *DME/DME/IRU MEA	JILLS, AL WP	*18000	45000

95.4130 RNAV ROUTE Q130

SYRAH, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JSICA, NV WP	*27000	45000
JSICA, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	REANA, NV WP	*27000	45000
REANA, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ROCCY, UT WP	*27000	45000
ROCCY, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	HASSL, UT WP	*27000	45000
HASSL, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	TAHIB, CO WP	*22000	45000

FROM	TO	MEA	MAA

95.4130 RNAV ROUTE Q130 –CONTINUED

FROM	TO	MEA	MAA
TAHIB, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	DIXAN, NM FIX	*22000	45000
DIXAN, NM FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MIRME, NM WP	*22000	45000
MIRME, NM WP *18000 - GNSS MEA *DME/DME/IRU MEA	PANHANDLE, TX VORTAC	*18000	45000

95.4132 RNAV ROUTE Q132

FROM	TO	MEA	MAA
WEBGO, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ANAHO, NV FIX	*18000	45000
ANAHO, NV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MYBAD, NV WP	*18000	45000
MYBAD, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZERAM, NV WP	*18000	45000
ZERAM, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	MAGPY, NV WP	*26000	45000

95.4134 RNAV ROUTE Q134

FROM	TO	MEA	MAA
DUGLE, CA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	TATOO, NV WP	*20000	45000
TATOO, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	JULIK, UT FIX	*24000	45000
JULIK, UT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	HERSH, UT WP	*21000	45000
HERSH, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	VOAXA, CO FIX	*21000	45000

95.4135 RNAV ROUTE Q135

FROM	TO	MEA	MAA
JROSS, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	PELIE, SC WP	*18000	45000
PELIE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	ELMSZ, SC WP	*18000	45000
ELMSZ, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAPZZ, NC WP	*18000	45000

95.4136 RNAV ROUTE Q136

FROM	TO	MEA	MAA
COALDALE, NV VORTAC *GNSS REQUIRED	RUMPS, NV WP	*18000	45000
RUMPS, NV WP *GNSS REQUIRED	KATTS, NV WP	*18000	45000

95.4136 RNAV ROUTE Q136 - CONTINUED

FROM	TO	MEA	MAA
KATTS, NV WP *GNSS REQUIRED	CRLES, NV WP	*18000	45000
CRLES, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	GDGET, UT WP	*26000	45000
GDGET, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	TRALP, UT WP	*26000	45000
TRALP, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	MANRD, UT WP	*26000	45000
MANRD, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	WEEMN, UT WP	*26000	45000
WEEMN, UT WP *18000 - GNSS MEA *DME/DME/IRU MEA	ELLFF, CO WP	*26000	45000
ELLFF, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	VOAXA, CO FIX	*21000	45000
VOAXA, CO FIX *21000 - GNSS MEA *DME/DME/IRU MEA	COUGH, CO WP	*21000	45000
COUGH, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIIKE, CO WP	*21000	45000
BIIKE, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZIRKL, NE WP	*21000	45000
ZIRKL, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	KAWWA, NE WP	*21000	45000
KAWWA, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	SYTHH, NE WP	*21000	45000
SYTHH, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	AYEGI, NE WP	*19000	45000
AYEGI, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	TURCK, NE WP	*19000	45000
TURCK, NE WP *18000 - GNSS MEA *DME/DME/IRU MEA	WRNCH, IA WP	*19000	45000
WRNCH, IA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BVEEE, IA WP	*19000	45000
BVEEE, IA WP *18000 - GNSS MEA *DME/DME/IRU MEA	HIBAV, IA WP	*19000	45000

95.4136 RNAV ROUTE Q136 – CONTINUED

HIBAV, IA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BAACN, IA WP	*19000	45000

95.4138 RNAV ROUTE Q138

WILLIAMS, CA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	FIMUV, CA WP	*18000	45000
FIMUV, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	JENSA, NV WP	*22000	45000
JENSA, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	PUHGI, NV WP	*24000	45000
PUHGI, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ROOHZ, NV WP	*24000	45000
ROOHZ, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	PARZZ, NV WP	*24000	45000
PARZZ, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	UROCO, WY WP	*24000	45000
UROCO, WY WP *18000 - GNSS MEA *DME/DME/IRU MEA	RICCO, WY WP	*24000	45000
RICCO, WY WP *18000 - GNSS MEA *DME/DME/IRU MEA	MOTLY, SD WP	*24000	45000
MOTLY, SD WP *18000 - GNSS MEA *DME/DME/IRU MEA	DKOTA, SD WP	*24000	45000
DKOTA, SD WP *18000 - GNSS MEA *DME/DME/IRU MEA	WELOK, MN WP	*20000	45000
WELOK, MN WP *18000 - GNSS MEA *DME/DME/IRU MEA	CESNA, WI WP	*20000	45000
CESNA, WI WP *18000 - GNSS MEA *DME/DME/IRU MEA	GUUME, WI WP	*20000	45000
GUUME, WI WP *18000 - GNSS MEA *DME/DME/IRU MEA	SNARG, WI WP	*20000	45000
SNARG, WI WP *18000 - GNSS MEA *DME/DME/IRU MEA	SAULT STE MARIE, MI VOR/DME	*20000	45000

95.4140 RNAV ROUTE Q140

FROM	TO	MEA	MAA
WOBED, WA WP	GETNG, WA WP	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GETNG, WA WP	CORDU, ID FIX	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CORDU, ID FIX	PETIY, MT WP	*30000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PETIY, MT WP	CHOTE, MT FIX	*32000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CHOTE, MT FIX	LEWIT, MT WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LEWIT, MT WP	SAYOR, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SAYOR, MT WP	WILTN, ND FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WILTN, ND FIX	TTAIL, MN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TTAIL, MN WP	CESNA, WI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CESNA, WI WP	WISCN, WI WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WISCN, WI WP	EEGEE, WI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EEGEE, WI WP	DAYYY, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DAYYY, MI WP	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FOR THAT AIRSPACE OVER U.S. TERRITORY.			
US CANADIAN BORDER	AHPAH, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AHPAH, NY WP	HANKK, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HANKK, NY FIX	BEEPS, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BEEPS, NY FIX	EXTOL, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EXTOL, NY FIX	MEMMS, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4140 RNAV ROUTE Q140 - CONTINUED

FROM	TO	MEA	MAA
MEMMS, NY FIX	KODEY, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KODEY, NY FIX	ARKKK, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ARKKK, NY WP	RODYY, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RODYY, NY WP	YODAA, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4142 RNAV ROUTE Q142

FROM	TO	MEA	MAA
METOW, WA WP	MULLAN PASS, ID VOR/DME	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MULLAN PASS, ID VOR/DME	KEETA, MT WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KEETA, MT WP	OKVUJ, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OKVUJ, MT WP	KIXCO, MT FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4144 RNAV ROUTE Q144

FROM	TO	MEA	MAA
ZIRAN, WA WP	ZOOMR, WA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZOOMR, WA FIX	BLOWS, MT WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BLOWS, MT WP	KEETA, MT WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KEETA, MT WP	LEWIT, MT WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4145 RNAV ROUTE Q145

FROM	TO	MEA	MAA
KONGO, KY FIX	CHARLESTON, WV VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CHARLESTON, WV VOR/DME	CLNTN, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CLNTN, OH WP	FOXEE, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4146 RNAV ROUTE Q146

FROM	TO	MEA	MAA
CASHS, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BLUNT, WA FIX	*24000	45000
BLUNT, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	DIPHU, MT FIX	*24000	45000
DIPHU, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	CUSDA, MT FIX	*24000	45000
CUSDA, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	ZERZO, MT FIX	*24000	45000
ZERZO, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	KIXCO, MT FIX	*22000	45000
KIXCO, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	TIMMR, ND FIX	*20000	45000
TIMMR, ND FIX *18000 - GNSS MEA *DME/DME/IRU MEA	SMERF, SD WP	*20000	45000
SMERF, SD WP *18000 - GNSS MEA *DME/DME/IRU MEA	HUFFR, MN WP	*18000	45000

95.4148 RNAV ROUTE Q148

FROM	TO	MEA	MAA
STEVS, WA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZAXUL, WA FIX	*18000	45000
ZAXUL, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	FINUT, WA WP	*24000	45000
FINUT, WA WP *18000 - GNSS MEA *DME/DME/IRU MEA	WEDAK, MT FIX	*26000	45000
WEDAK, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	WAIDE, MT FIX	*26000	45000
WAIDE, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	JUGIV, WY WP	*26000	45000
JUGIV, WY WP *18000 - GNSS MEA *DME/DME/IRU MEA	MEDICINE BOW, WY VOR/DME	*26000	45000
MEDICINE BOW, WY VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	MOCTU, WY FIX	*26000	45000
MOCTU, WY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LEWOY, CO WP	*26000	45000
LEWOY, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	CUGGA, KS FIX	*26000	45000
CUGGA, KS FIX *18000 - GNSS MEA *DME/DME/IRU MEA	PENUT, KS WP	*26000	45000

95.4148 RNAV ROUTE Q148 – CONTINUED

FROM	TO	MEA	MAA
PENUT, KS WP *18000 - GNSS MEA *DME/DME/IRU MEA	KIRKE, KS FIX	*26000	45000
KIRKE, KS FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MORRR, KS WP	*26000	45000
MORRR, KS WP *18000 - GNSS MEA *DME/DME/IRU MEA	BARTLESVILLE, OK VOR/DME	*26000	45000

95.4150 RNAV ROUTE Q150

FROM	TO	MEA	MAA
STEVS, WA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZAXUL, WA FIX	*18000	45000
ZAXUL, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LEZLE, WA FIX	*24000	45000
LEZLE, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BAXGO, ID FIX	*24000	45000
BAXGO, ID FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LAMON, ID FIX	*24000	45000
LAMON, ID FIX *18000 - GNSS MEA *DME/DME/IRU MEA	GANNE, WY WP	*24000	45000
GANNE, WY WP *18000 - GNSS MEA *DME/DME/IRU MEA	OPPEE, WY WP	*24000	45000
OPPEE, WY WP *18000 - GNSS MEA *DME/DME/IRU MEA	YAMPA, CO WP	*24000	45000
YAMPA, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIIKE, CO WP	*24000	45000
BIIKE, CO WP *18000 - GNSS MEA *DME/DME/IRU MEA	DUUZE, KS WP	*24000	45000
DUUZE, KS WP *18000 - GNSS MEA *DME/DME/IRU MEA	EXHAS, KS WP	*24000	45000

95.4152 RNAV ROUTE Q152

FROM	TO	MEA	MAA
SUNED, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	LEZLE, WA FIX	*24000	45000
LEZLE, WA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	WEDAK, MT FIX	*24000	45000
WEDAK, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	IKFOM, WY WP	*24000	45000
IKFOM, WY WP *18000 - GNSS MEA *DME/DME/IRU MEA	WUVUT, WY FIX	*24000	45000
WUVUT, WY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	O'NEILL, NE VORTAC	*24000	45000

95.4154 RNAV ROUTE Q154

FROM	TO	MEA	MAA
WANTA, WA FIX	JELTI, OR FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JELTI, OR FIX	HOVEL, ID FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOVEL, ID FIX	VELUY, ID WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VELUY, ID WP	BURLEY, ID VOR/DME	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BURLEY, ID VOR/DME	PIMIE, UT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PIMIE, UT FIX	NAGNE, UT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NAGNE, UT FIX	BONGO, UT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BONGO, UT FIX	PITMN, CO FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PITMN, CO FIX	TAYLR, CO FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TAYLR, CO FIX	GOSIP, CO FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GOSIP, CO FIX	KENTO, NM FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KENTO, NM FIX	NOSEW, TX WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NOSEW, TX WP	BOWIE, TX VORTAC	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4156 RNAV ROUTE Q156

FROM	TO	MEA	MAA
STEVS, WA WP	ZAXUL, WA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZAXUL, WA FIX	FINUT, WA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FINUT, WA WP	TUFFY, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TUFFY, MT FIX	UPUGE, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4156 RNAV ROUTE Q156 - CONTINUED

FROM	TO	MEA	MAA
UPUGE, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	HEXOL, MT FIX	*24000	45000
HEXOL, MT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	SWTHN, MT WP	*24000	45000
SWTHN, MT WP *18000 - GNSS MEA *DME/DME/IRU MEA	JELRO, SD FIX	*28000	45000
JELRO, SD FIX *18000 - GNSS MEA *DME/DME/IRU MEA	KEKPE, SD WP	*28000	45000
KEKPE, SD WP *18000 - GNSS MEA *DME/DME/IRU MEA	UFFDA, MN WP	*28000	45000
UFFDA, MN WP *18000 - GNSS MEA *DME/DME/IRU MEA	HSTIN, MN WP	*28000	45000
HSTIN, MN WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZZIPR, IA WP	*18000	45000

95.4158 RNAV ROUTE Q158

FROM	TO	MEA	MAA
NTELL, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	PPARK, CA WP	*24000	45000
PPARK, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	TRTIS, CA WP	*24000	45000
TRTIS, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIKKR, CA WP	*24000	45000
BIKKR, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	MYCAL, NV FIX	*24000	45000
MYCAL, NV FIX *18000 - GNSS MEA *DME/DME/IRU MEA	JEDNA, NV WP	*24000	45000

95.4160 RNAV ROUTE Q160

FROM	TO	MEA	MAA
SHVVR, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	FAANG, CA FIX	*36000	45000
FAANG, CA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	RIVVO, CA WP	*36000	45000
RIVVO, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIKKR, CA WP	*25000	45000

FROM	TO	MEA	MAA

95.4162 RNAV ROUTE Q162

FROM	TO	MEA	MAA
NTELL, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	CABAB, CA WP	*26000	45000
CABAB, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	VIKSN, CA WP	*28000	45000
VIKSN, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	KENNO, NV WP	*28000	45000
KENNO, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ESSAA, NV WP	*28000	45000
ESSAA, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	TUMBE, NV WP	*28000	45000
TUMBE, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	MYCAL, NV FIX	*28000	45000

95.4164 RNAV ROUTE Q164

FROM	TO	MEA	MAA
NTELL, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	CABAB, CA WP	*26000	45000
CABAB, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	KICHI, NV WP	*26000	45000
KICHI, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	KATTS, NV WP	*26000	45000
KATTS, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	KITTN, NV WP	*27000	45000
KITTN, NV WP *18000 - GNSS MEA *DME/DME/IRU MEA	ROCCY, UT WP	*27000	45000

95.4166 RNAV ROUTE Q166

FROM	TO	MEA	MAA
VIKSN, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	UHILL, CA WP	*23000	45000
UHILL, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIKKR, CA WP	*23000	45000

95.4168 RNAV ROUTE Q168

FROM	TO	MEA	MAA
FNNDA, CA WP *18000 - GNSS MEA *DME/DME/IRU MEA	SHIVA, AZ WP	*21000	45000
SHIVA, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	KRINA, AZ WP	*21000	45000
KRINA, AZ WP *18000 - GNSS MEA *DME/DME/IRU MEA	JASSE, AZ WP	*21000	45000

FROM	TO	MEA	MAA

95.4172 RNAV ROUTE Q172

YUTEE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	BWAGS, SC WP	*18000	45000
BWAGS, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	HINTZ, SC WP	*18000	45000
HINTZ, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	CEELY, SC WP	*18000	45000
CEELY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	OKNEE, SC WP	*18000	45000
OKNEE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	KAATT, NC WP	*18000	45000
KAATT, NC WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAPZZ, NC WP	*18000	45000

95.4406 RNAV ROUTE Q406

BROADWAY, NJ VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	DBABE, NY WP	*18000	45000
DBABE, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	BASYE, NY FIX	*18000	45000
BASYE, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	TRIBS, CT WP	*18000	45000
TRIBS, CT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIGGO, CT FIX	*18000	45000
BIGGO, CT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BARNES, MA VORTAC	*18000	45000

95.4409 RNAV ROUTE Q409

ENEME, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	PUPYY, GA WP	*18000	45000
PUPYY, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	ISUZO, GA WP	*18000	45000
ISUZO, GA WP *18000 - GNSS MEA *DME/DME/IRU MEA	KONEY, SC WP	*18000	45000
KONEY, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	JROSS, SC WP	*18000	45000
JROSS, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	SESUE, SC WP	*18000	45000
SESUE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	OKNEE, SC WP	*18000	45000
OKNEE, SC WP *18000 - GNSS MEA *DME/DME/IRU MEA	MRPIT, NC WP	*18000	45000

FROM	TO	MEA	MAA

95.4436 RNAV ROUTE Q436

FROM	TO	MEA	MAA
EMMMA, MI FIX *18000 - GNSS MEA *DME/DME/IRU MEA	DIXSN, MI WP	*18000	45000
DIXSN, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	BOOTT, MI WP	*18000	45000
BOOTT, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	RRONS, MI WP	*18000	45000
RRONS, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	YARRK, CANADA WP	*18000	45000
YARRK, CANADA WP *18000 - GNSS MEA *DME/DME/IRU MEA	CHAAP, CANADA WP	*18000	45000
CHAAP, CANADA WP *18000 - GNSS MEA *DME/DME/IRU MEA	RAAKK, NY WP	*18000	45000
RAAKK, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	HERBA, NY WP	*18000	45000
HERBA, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	REXXY, NY WP	*18000	45000
REXXY, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	REBBL, PA FIX	*18000	45000
REBBL, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MTCAF, PA WP	*18000	45000
MTCAF, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	DGRAF, PA FIX	*18000	45000
DGRAF, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	YYOST, PA WP	*18000	45000
YYOST, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	LAAYK, PA FIX	*18000	45000
LAAYK, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	COATE, NJ FIX	*18000	45000

95.4438 RNAV ROUTE Q438

FROM	TO	MEA	MAA
RUBYY, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	BERYS, MI WP	*18000	45000
BERYS, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	TWIGS, MI WP	*18000	45000
TWIGS, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	JAAJA, CANADA WP	*18000	45000

FROM	TO	MEA	MAA
95.4438 RNAV ROUTE Q438 - CONTINUED			
JAAJA, CANADA WP	ICHOL, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ICHOL, CANADA WP	FARGN, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FARGN, CANADA WP	RAAKK, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4440 RNAV ROUTE Q440			
HUFFR, MN WP	IDIOM, WI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IDIOM, WI WP	DEANI, MI FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DEANI, MI FIX	SLLAP, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SLLAP, MI WP	BERYS, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BERYS, MI WP	TWIGS, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TWIGS, MI WP	JAAJA, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAAJA, CANADA WP	ICHOL, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ICHOL, CANADA WP	FARGN, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FARGN, CANADA WP	RAAKK, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4448 RNAV ROUTE Q448			
POTTSTOWN, PA VORTAC	LANNA, NJ FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LANNA, NJ FIX	DBABE, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DBABE, NY WP	BASYE, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BASYE, NY FIX	TRIBS, CT WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4448 RNAV ROUTE Q448 - CONTINUED

TRIBS, CT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BIGGO, CT FIX	*18000	45000
BIGGO, CT FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BARNES, MA VORTAC	*18000	45000

95.4480 RNAV ROUTE Q480

ZANDR, OH FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BELLAIRE, OH VOR/DME	*18000	45000
BELLAIRE, OH VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	LEJOY, PA FIX	*18000	45000
LEJOY, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	VINSE, PA FIX	*18000	45000
VINSE, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BEETS, PA FIX	*18000	45000
BEETS, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	HOTEE, PA WP	*18000	45000
HOTEE, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	MIKYG, PA WP	*18000	45000
MIKYG, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	SPOTZ, PA WP	*18000	45000
SPOTZ, PA WP *18000 - GNSS MEA *DME/DME/IRU MEA	CANDR, NJ FIX	*18000	45000
CANDR, NJ FIX *18000 - GNSS MEA *DME/DME/IRU MEA	JEFFF, NJ FIX	*18000	45000
JEFFF, NJ FIX *18000 - GNSS MEA *DME/DME/IRU MEA	KINGSTON, NY VOR/DME	*18000	45000
KINGSTON, NY VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	LESWL, CT WP	*18000	45000
LESWL, CT WP *18000 - GNSS MEA *DME/DME/IRU MEA	BARNES, MA VORTAC	*18000	45000
BARNES, MA VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	KENNEBUNK, ME VOR/DME	*18000	45000

95.4806 RNAV ROUTE Q806

U.S. CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	MILLINOCKET, ME VOR/DME	*18000	45000

FROM	TO	MEA	MAA

95.4806 RNAV ROUTE Q806 -CONTINUED

MILLINOCKET, ME VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	CANME, ME WP	*18000	45000
CANME, ME WP *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000

95.4812 RNAV ROUTE Q812

TIMMR, ND FIX *18000 - GNSS MEA *DME/DME/IRU MEA	WELOK, MN WP	*20000	45000
WELOK, MN WP *18000 - GNSS MEA *DME/DME/IRU MEA	CEWDA, WI WP	*20000	45000
CEWDA, WI WP *18000 - GNSS MEA *DME/DME/IRU MEA	ZOHAN, MI WP	*20000	45000
ZOHAN, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*20000	45000
U.S. CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	KELTI, NY WP	*20000	45000
KELTI, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	AHPAH, NY WP	*20000	45000
AHPAH, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	GOATR, NY WP	*20000	45000
GOATR, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	SYRACUSE, NY VORTAC	*18000	45000
SYRACUSE, NY VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	FABEN, NY WP	*18000	45000
FABEN, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	LOXXE, NY FIX	*18000	45000
LOXXE, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	ARKKK, NY WP	*18000	45000
ARKKK, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	STOMP, NY FIX	*18000	45000
STOMP, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MSLIN, NY FIX	*18000	45000
MSLIN, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	GAYEL, NY FIX	*18000	45000

FROM	TO	MEA	MAA

95.4816 RNAV ROUTE Q816

FROM	TO	MEA	MAA
HOCKE, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	US CANADIAN BORDER	*18000	45000
US CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	KELTI, NY WP	*18000	45000
KELTI, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	AHPAH, NY WP	*18000	45000
AHPAH, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	GOATR, NY WP	*18000	45000
GOATR, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	ARNII, NY FIX	*18000	45000
ARNII, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	HANAA, NY WP	*18000	45000

95.4818 RNAV ROUTE Q818

FROM	TO	MEA	MAA
FLINT, MI VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000
U.S. CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	US CANADIAN BORDER	*18000	
US CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	WOZEE, NY WP	*18000	45000
WOZEE, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	KELIE, NY FIX	*18000	45000
KELIE, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	VIEEW, NY FIX	*18000	45000
VIEEW, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	BINGHAMTON, NY VOR/DME	*18000	45000
BINGHAMTON, NY VOR/DME *18000 - GNSS MEA *DME/DME/IRU MEA	BUFFY, PA FIX	*18000	45000
BUFFY, PA FIX *18000 - GNSS MEA *DME/DME/IRU MEA	STOMP, NY FIX	*18000	45000
STOMP, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	MSLIN, NY FIX	*18000	45000
MSLIN, NY FIX *18000 - GNSS MEA *DME/DME/IRU MEA	GAYEL, NY FIX	*18000	45000

FROM	TO	MEA	MAA

95.4822 RNAV ROUTE Q822

FLINT, MI VORTAC	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
U.S. CANADIAN BORDER	HOZIR, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOZIR, NY WP	GONZZ, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GONZZ, NY WP	PUPPY, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PUPPY, NY WP	PAYGE, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PAYGE, NY FIX	CAMBRIDGE, NY VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CAMBRIDGE, NY VOR/DME	KENNEBUNK, ME VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KENNEBUNK, ME VOR/DME	AJJAY, ME WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AJJAY, ME WP	ALLEX, OA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4824 RNAV ROUTE Q824

FLINT, MI VORTAC	HOCKE, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOCKE, MI WP	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4842 RNAV ROUTE Q842

BEALE, NV FIX	BLIPP, NV WP	*18000	45000
*GNSS REQUIRED			
BLIPP, NV WP	WINEN, UT WP	*18000	45000
*GNSS REQUIRED			
WINEN, UT WP	TABLL, UT WP	*18000	45000
*GNSS REQUIRED			
TABLL, UT WP	PICHO, UT WP	*18000	45000
*GNSS REQUIRED			
PICHO, UT WP	PATIO, UT WP	*18000	45000
*GNSS REQUIRED			
PATIO, UT WP	PROXI, UT WP	*18000	45000
*GNSS REQUIRED			
PROXI, UT WP	VAANE, MT WP	*18000	45000
*GNSS REQUIRED			

FROM	TO	MEA	MAA

95.4842 RNAV ROUTE Q842 – CONTINUED

FROM	TO	MEA	MAA
VAANE, MT WP *GNSS REQUIRED	KEETA, MT WP	*18000	45000
KEETA, MT WP *GNSS REQUIRED	US CANADIAN BORDER	*18000	45000

95.4844 RNAV ROUTE Q844

FROM	TO	MEA	MAA
SYRACUSE, NY VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	US CANADIAN BORDER	*18000	45000

95.4848 RNAV ROUTE Q848

FROM	TO	MEA	MAA
SLLAP, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	HHIPP, MI WP	*18000	45000
HHIPP, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	KARIT, CANADA WP	*18000	45000
KARIT, CANADA WP *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000

95.4905 RNAV ROUTE Q905

FROM	TO	MEA	MAA
HOCKE, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000

95.4907 RNAV ROUTE Q907

FROM	TO	MEA	MAA
POSTS, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	PADDE, MI WP	*18000	45000
PADDE, MI WP *18000 - GNSS MEA *DME/DME/IRU MEA	SALEM, MI VORTAC	*18000	45000
SALEM, MI VORTAC *18000 - GNSS MEA *DME/DME/IRU MEA	US CANADIAN BORDER	*18000	45000
US CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA FOR THAT AIRSPACE OVER U.S. TERRITORY.	US CANADIAN BORDER	*18000	45000
US CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	US CANADIAN BORDER	*18000	45000
US CANADIAN BORDER *GNSS REQUIRED	MIILS, CANADA WP	*18000	45000

95.4913 RNAV ROUTE Q913

FROM	TO	MEA	MAA
U.S. CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	CABCI, VT WP	*18000	45000
CABCI, VT WP *18000 - GNSS MEA *DME/DME/IRU MEA	TOPPS, ME FIX	*18000	45000

95.4917 RNAV ROUTE Q917

SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	HOZIR, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOZIR, NY WP	WOZEE, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4923 RNAV ROUTE Q923

HOCKE, MI WP	KARIT, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KARIT, CANADA WP	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4935 RNAV ROUTE Q935

MONEE, MI FIX	HOCKE, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOCKE, MI WP	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	*18000	45000
*GNSS REQUIRED			
U.S. CANADIAN BORDER	WOZEE, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WOZEE, NY WP	HANKK, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HANKK, NY FIX	JOSSY, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JOSSY, NY WP	AUDIL, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AUDIL, NY FIX	FABEN, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4935 RNAV ROUTE Q935 – CONTINUED

FABEN, NY WP	PONCT, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PONCT, NY WP	GARDNER, MA VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GARDNER, MA VOR/DME	BOSTON, MA VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.4937 RNAV ROUTE Q937

U.S. CANADIAN BORDER	WAYGO, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WAYGO, NY WP	KRAZZ, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4947 RNAV ROUTE Q947

US CANADIAN BORDER	REVEN, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
REVEN, CANADA WP	TOPPS, ME FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TOPPS, ME FIX	CUZWA, ME WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CUZWA, ME WP	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4951 RNAV ROUTE Q951

POSTS, MI WP	PADDE, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PADDE, MI WP	SALEM, MI VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SALEM, MI VORTAC	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	DAVDA, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4951 RNAV ROUTE Q951 – CONTINUED

FROM	TO	MEA	MAA
DAVDA, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	SAVAL, NY WP	*18000	45000
SAVAL, NY WP *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000
U.S. CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000
U.S. CANADIAN BORDER *18000 - GNSS MEA *DME/DME/IRU MEA	U.S. CANADIAN BORDER	*18000	45000

§95.5000 GROUND-BASED HIGH ALTITUDE RNAV ROUTES

FROM/TO	TOTAL DISTANCE	CHANGEOVER DISTANCE	POINT FROM	TRACK ANGLE	MEA	MAA
J804R						
ANCHORAGE, AK VOR/DME	60.0				18000	45000
NOWEL, AK RP				133/314 TO NOWEL		
NOWEL, AK RP	90.5				18000	45000
MIDDLETON ISLAND, AK VOR/DME				134/316 TO MIDDLETON ISLAND		
MIDDLETON ISLAND, AK VOR/DME	170.9	121	MIDDLETON ISLAND	095/275 TO COP	24000	45000
SNOUT, AK RP				120/300 TO SNOUT		
SNOUT, AK RP	196.9	197	SNOUT	096/276 TO COP	24000	45000
EEDEN, AK RP				125/305 TO EEDEN		
EEDEN, AK RP	153.9	112	EEDEN	102/282 TO COP	24000	45000
FRIED, AK RP				129/309 TO FRIED		
J889R						
NOWEL, AK RP	75.0	10	NOWEL	112/294 TO COP	18000	45000
ARISE, AK RP				112/294 TO ARISE		
ARISE, AK RP	71.0			112/293 TO KONKS	18000	45000
KONKS, AK WP				293/113 TO KONKS		
KONKS, AK WP	116.0	40	KONKS	111/294 TO COP	18000	45000
LAIRE, AK RP				294/114 TO LAIRE		

§95.6001 VOR FEDERAL AIRWAYS

95.6001 VOR FEDERAL AIRWAY V1

FROM	TO	MEA
CRAIG, FL VORTAC	STARY, GA FIX	*4000
*2100 - MOCA		
STARY, GA FIX	RUBYS, SC FIX	*11000
*1200 - MOCA		
RUBYS, SC FIX	*BASSO, SC FIX	**11000
*3000 - MRA		
**2300 - MOCA		
BASSO, SC FIX	CHARLESTON, SC VORTAC	2000
CHARLESTON, SC VORTAC	*KIMMY, SC FIX	**5000
*6000 - MRA		
**2000 - GNSS MEA		
KIMMY, SC FIX	INLET, SC FIX	*5000
*2100 - GNSS MEA		
INLET, SC FIX	GRAND STRAND, SC VORTAC	
	NE BND	*2100
	SW BND	*5000
*2100 - GNSS MEA		
GRAND STRAND, SC VORTAC	ASHES, NC FIX	
	NE BND	5000
	SW BND	2000
ASHES, NC FIX	YOAST, NC FIX	*5000
*2100 - MOCA		
YOAST, NC FIX	WALLO, NC FIX	*7000
*1700 - MOCA		
WALLO, NC FIX	KINSTON, NC VORTAC	
	NE BND	#2000
	SW BND	7000
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		
KINSTON, NC VORTAC	ZAGGY, NC FIX	#2000
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		
ZAGGY, NC FIX	COFIELD, NC VORTAC	*3000
*1500 - MOCA		
COFIELD, NC VORTAC	DRONE, NC FIX	2000
DRONE, NC FIX	NORFOLK, VA VORTAC	*2500
*1600 - MOCA		
NORFOLK, VA VORTAC	CAPE CHARLES, VA VORTAC	*2500
*1800 - MOCA		
CAPE CHARLES, VA VORTAC	SALISBURY, MD VORTAC	2000
SALISBURY, MD VORTAC	WATERLOO, DE VOR/DME	#*2000
*1500 - MOCA		
#SALISBURY R-039 UNUSABLE BELOW 5000 MSL		
WATERLOO, DE VOR/DME	COYLE, NJ VORTAC	1800
COYLE, NJ VORTAC	DIXIE, NJ FIX	*2500
*1600 - MOCA		
DIXIE, NJ FIX	KENNEDY, NY VOR/DME	*2500
*1600 - MOCA		
KENNEDY, NY VOR/DME	DEER PARK, NY VOR/DME	1800
DEER PARK, NY VOR/DME	MADISON, CT VOR/DME	2000
MADISON, CT VOR/DME	HARTFORD, CT VOR/DME	2500
HARTFORD, CT VOR/DME	DVANY, CT FIX	3000
DVANY, CT FIX	GRAYM, MA FIX	*4000
*2500 - MOCA		
GRAYM, MA FIX	BOSTON, MA VOR/DME	*4000
*2500 - MOCA		
*3000 - GNSS MEA		

FROM	TO	MEA

95.6002 VOR FEDERAL AIRWAY V2

*SEATTLE, WA VORTAC	VAMPS, WA FIX	
	E BND	**8400
	W BND	**4000
*4300 - MCA SEATTLE, WA VORTAC , E BND		
**3100 - MOCA		
**5300 - GNSS MEA		
VAMPS, WA FIX	BANDR, WA FIX	
	E BND	*8400
	W BND	*7700
*7700 - GNSS MEA		
BANDR, WA FIX	*BEEZR, WA FIX	8400
*9000 - MRA		
BEEZR, WA FIX	ELLENSBURG, WA VOR/DME	*8000
*7200 - MOCA		
ELLENSBURG, WA VOR/DME	PLUSS, WA FIX	7000
PLUSS, WA FIX	MOSES LAKE, WA VOR/DME	4000
MOSES LAKE, WA VOR/DME	BATUM, WA FIX	4000
BATUM, WA FIX	SUBDY, WA FIX	5000
SUBDY, WA FIX	*SPOKANE, WA VORTAC	5000
*5200 - MCA SPOKANE, WA VORTAC , E BND		
SPOKANE, WA VORTAC	ROPES, WA FIX	7100
ROPES, WA FIX	MULLAN PASS, ID VOR/DME	9100
MULLAN PASS, ID VOR/DME	ALTON, MT FIX	9600
ALTON, MT FIX	MISSOULA, MT VOR/DME	
	SE BND	*9000
	NW BND	*9600
*8500 - MOCA		
MISSOULA, MT VOR/DME	HELENA, MT VORTAC	*13000
*10300 - MOCA		
HELENA, MT VORTAC	SWEDD, MT FIX	10000
SWEDD, MT FIX	CONNS, MT FIX	10800
CONNS, MT FIX	LIVINGSTON, MT VOR/DME	10000
LIVINGSTON, MT VOR/DME	REEPO, MT FIX	9700
REEPO, MT FIX	COLUS, MT FIX	
	W BND	9700
	E BND	7000
COLUS, MT FIX	BILLINGS, MT VORTAC	
	W BND	9700
	E BND	6400
BILLINGS, MT VORTAC	MILES CITY, MT VOR/DME	6000
MILES CITY, MT VOR/DME	DICKINSON, ND VORTAC	6000
DICKINSON, ND VORTAC	BISMARCK, ND VOR/DME	4600
BISMARCK, ND VOR/DME	JAMESTOWN, ND VOR/DME	4000
JAMESTOWN, ND VOR/DME	*CHAFE, ND FIX	3300
*6000 - MRA		
CHAFE, ND FIX	FARGO, ND VOR/DME	
	W BND	3300
	E BND	2700
FARGO, ND VOR/DME	ALEXANDRIA, MN VOR/DME	*3500
*3000 - MOCA		
ALEXANDRIA, MN VOR/DME	GOPHER, MN VORTAC	3400
GOPHER, MN VORTAC	PEGGS, MN FIX	3400
PEGGS, MN FIX	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	WEBYE, WI FIX	3100
BUFFALO, NY VOR/DME	ROCHESTER, NY VOR/DME	#2800
#BUFFALO R-083 UNUSABLE BELOW 11000 USE ROCHESTER R-268		
ROCHESTER, NY VOR/DME	MAGEN, NY FIX	2300
MAGEN, NY FIX	*KONDO, NY FIX	2300
*4800 - MRA		
KONDO, NY FIX	*WIFFY, NY FIX	2300
*3000 – MRA		

FROM	TO	MEA

95.6002 VOR FEDERAL AIRWAY V2 - CONTINUED

FROM	TO	MEA
WIFFY, NY FIX	SYRACUSE, NY VORTAC	2300
SYRACUSE, NY VORTAC	STODA, NY FIX	2400
STODA, NY FIX	VASTS, NY FIX	3000
VASTS, NY FIX	UTICA, NY VORTAC	3400
UTICA, NY VORTAC	MARIA, NY FIX	3500
MARIA, NY FIX	ALBANY, NY VORTAC	3000
ALBANY, NY VORTAC	WARIC, MA FIX	5000
WARIC, MA FIX	GARDNER, MA VOR/DME	*4000
*3500 - MOCA		

95.6003 VOR FEDERAL AIRWAY V3

FROM	TO	MEA
DROWN, FL FIX	MNATE, FL FIX	5000
MNATE, FL FIX	DOLPHIN, FL VORTAC	*5000
*2800 - MOCA		
DOLPHIN, FL VORTAC	FORT LAUDERDALE, FL VOR/DME	2100
FORT LAUDERDALE, FL VOR/DME	PALM BEACH, FL VORTAC	2000
PALM BEACH, FL VORTAC	TREASURE, FL VORTAC	*3000
*2100 - MOCA		
TREASURE, FL VORTAC	MELBOURNE, FL VOR/DME	2000
MELBOURNE, FL VOR/DME	MALET, FL FIX	2000
MALET, FL FIX	ORMOND BEACH, FL VORTAC	*4000
*1600 - MOCA		
ORMOND BEACH, FL VORTAC	*SEBAG, FL FIX	**2000
*3000 - MRA		
**1400 - MOCA		
SEBAG, FL FIX	BRUNSWICK, GA VORTAC	*2000
*1400 - MOCA		
BRUNSWICK, GA VORTAC	*BROUN, GA FIX	**3000
*11000 - MRA		
**2200 - MOCA		
BROUN, GA FIX	*HARPS, GA FIX	**3000
*3800 - MRA		
**2200 - MOCA		
HARPS, GA FIX	KELER, GA FIX	*3000
*2200 - MOCA		
KELER, GA FIX	SAVANNAH, GA VORTAC	*3000
*1900 - MOCA		
SAVANNAH, GA VORTAC	OWENS, SC FIX	*3000
*1500 - MOCA		
OWENS, SC FIX	VANCE, SC VORTAC	2000
VANCE, SC VORTAC	FLORENCE, SC VORTAC	#*2000
*2000 - GNSS MEA		
#VANCE R-047 TO COP UNUSABLE BLO FL180 EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV.		
FLORENCE, SC VORTAC	TOWEY, SC FIX	2000
TOWEY, SC FIX	SANDHILLS, NC VORTAC	*8000
*1900 - MOCA		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	2500
RALEIGH/DURHAM, NC VORTAC	HARVY, VA FIX	3000
HARVY, VA FIX	*NUTTS, VA FIX	**6000
*9000 - MRA		
**4000 - GNSS MEA		
NUTTS, VA FIX	FLAT ROCK, VA VORTAC	*6000
*4000 - GNSS MEA		
FLAT ROCK, VA VORTAC	GORDONSVILLE, VA VORTAC	2500
GORDONSVILLE, VA VORTAC	LURAY, VA FIX	6100
LURAY, VA FIX	*KERRE, VA FIX	**6000
*7000 - MRA		
**5000 – MOCA		

95.6003 VOR FEDERAL AIRWAY V3 - CONTINUED

FROM	TO	MEA
KERRE, VA FIX	MARTINSBURG, WV VORTAC	*6000
*5000 - MOCA		
MARTINSBURG, WV VORTAC	WESTMINSTER, MD VORTAC	*4000
*3300 - MOCA		
WESTMINSTER, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	MODENA, PA VORTAC	3500
MODENA, PA VORTAC	*MAZIE, PA FIX	3000
*5000 - MRA		
MAZIE, PA FIX	*HARRS, PA FIX	2500
*5000 - MRA		
HARRS, PA FIX	*BIGGY, NJ FIX	2500
*5000 - MRA		
BIGGY, NJ FIX	SOLBERG, NJ VOR/DME	2500
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	*3000
*2500 - MOCA		
CARMEL, NY VOR/DME	RACEY, CT FIX	2100
RACEY, CT FIX	HARTFORD, CT VOR/DME	3000
HARTFORD, CT VOR/DME	JEWIT, CT FIX	*2600
*2100 - MOCA		
JEWIT, CT FIX	WOONS, RI FIX	2500
WOONS, RI FIX	BOSTON, MA VOR/DME	2000
BOSTON, MA VOR/DME	PEASE, NH VOR/DME	3000
PEASE, NH VOR/DME	*YUKES, NH FIX	**3500
*5500 - MRA		
**2400 - MOCA		
YUKES, NH FIX	PARSO, ME FIX	*3500
*2400 - MOCA		
PARSO, ME FIX	AUGUSTA, ME VOR/DME	3500
AUGUSTA, ME VOR/DME	BANGOR, ME VORTAC	3000
BANGOR, ME VORTAC	HOULTON, ME VOR/DME	*2800
*2300 - MOCA		
HOULTON, ME VOR/DME	PRESQUE ISLE, ME VOR/DME	*3400
*2700 - MOCA		
PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	*6000
*3500 - MOCA		

95.6004 VOR FEDERAL AIRWAY V4

FROM	TO	MEA
#TATOOSH, WA VORTAC	JAWBN, WA FIX	5800
#MTA V495 SE TO V4 W 8000		
JAWBN, WA FIX	LOFAL, WA FIX	*5400
*4300 - MOCA		
LOFAL, WA FIX	*SEATTLE, WA VORTAC	**4000
*6200 - MCA SEATTLE, WA VORTAC , E BND		
**2800 - MOCA		
SEATTLE, WA VORTAC	BLAKO, WA FIX	
	E BND	*10000
	W BND	*4000
*3100 - MOCA		
BLAKO, WA FIX	HUMPP, WA FIX	
	E BND	*10000
	W BND	*6600
*6600 - MOCA		
HUMPP, WA FIX	CHINS, WA FIX	*10000
*9000 - MOCA		
CHINS, WA FIX	TITON, WA FIX	
	E BND	*7000
	W BND	*10000
*7000 - MOCA		

FROM	TO	MEA

95.6004 VOR FEDERAL AIRWAY V4 - CONTINUED

TITON, WA FIX	GLEED, WA FIX	
	W BND	*7000
	E BND	*5500
*5000 - MOCA		
GLEED, WA FIX	YAKIMA, WA VORTAC	
	E BND	5000
	W BND	5500
YAKIMA, WA VORTAC	AMPLE, WA FIX	5000
AMPLE, WA FIX	PENDLETON, OR VORTAC	4000
PENDLETON, OR VORTAC	PIANO, OR FIX	
	SE BND	7000
	NW BND	6000
PIANO, OR FIX	LACED, OR FIX	
	NW BND	7000
	SE BND	10000
LACED, OR FIX	BAKER CITY, OR VOR/DME	10000
BAKER CITY, OR VOR/DME	PAYET, ID FIX	9000
PAYET, ID FIX	*EMETT, ID FIX	
	SE BND	5600
	NW BND	9000
*9400 - MRA		
EMETT, ID FIX	BOISE, ID VORTAC	5600
BOISE, ID VORTAC	CANEK, ID FIX	7000
CANEK, ID FIX	ALKAL, ID FIX	*9500
*8500 - MOCA		
ALKAL, ID FIX	GOODE, ID FIX	
	E BND	*8000
	W BND	*9500
*6200 - MOCA		
GOODE, ID FIX	JEROT, ID FIX	*8000
*6500 - MOCA		
JEROT, ID FIX	BURLEY, ID VOR/DME	6500
BURLEY, ID VOR/DME	MEDEA, ID FIX	*8400
*7800 - MOCA		
MEDEA, ID FIX	MALAD CITY, ID VOR/DME	9400
MALAD CITY, ID VOR/DME	FILOB, ID FIX	10900
FILOB, ID FIX	HODNI, ID FIX	*12000
*10800 - MOCA		
*10800 - GNSS MEA		
HODNI, ID FIX	GRIPS, WY FIX	*16000
*11700 - MOCA		
*11700 - GNSS MEA		
GRIPS, WY FIX	ROCK SPRINGS, WY VOR/DME	*11000
*10000 - MOCA		
*10000 - GNSS MEA		
ROCK SPRINGS, WY VOR/DME	CHEROKEE, WY VOR/DME	10000
CHEROKEE, WY VOR/DME	KLASH, WY FIX	
	E BND	13000
	W BND	11000
KLASH, WY FIX	*LARAMIE, WY VOR/DME	13000
*10600 - MCA LARAMIE, WY VOR/DME , W BND		
LARAMIE, WY VOR/DME	FLEMS, WY FIX	11000
FLEMS, WY FIX	BARGR, CO FIX	*11000
*10000 - MOCA		
BARGR, CO FIX	WISER, CO FIX	8400
WISER, CO FIX	GILL, CO VOR/DME	8000
GILL, CO VOR/DME	THURMAN, CO VORTAC	7000
THURMAN, CO VORTAC	GOODLAND, KS VORTAC	*7000
*6300 - MOCA		
GOODLAND, KS VORTAC	HILL CITY, KS VORTAC	5500
HILL CITY, KS VORTAC	*WESAL, KS FIX	**5500
*4500 - MRA		
**4100 - MOCA		

95.6004 VOR FEDERAL AIRWAY V4 - CONTINUED

FROM	TO	MEA
WESAL, KS FIX	SALINA, KS VORTAC	
	E BND	*4000
	W BND	*4500
*2900 - MOCA		
SALINA, KS VORTAC	*VASCO, KS FIX	3000
*5000 - MRA		
VASCO, KS FIX	ALMAS, KS FIX	3000
ALMAS, KS FIX	TOPEKA, KS VORTAC	3600
TOPEKA, KS VORTAC	KANSAS CITY, MO VORTAC	2700
KANSAS CITY, MO VORTAC	LEXIN, MO FIX	2600
LEXIN, MO FIX	HALLSVILLE, MO VORTAC	*6000
*3000 - GNSS MEA		
HALLSVILLE, MO VORTAC	SADEN, MO FIX	2600
SADEN, MO FIX	ST LOUIS, MO VORTAC	*2400
*1700 - MOCA		
ST LOUIS, MO VORTAC	TROY, IL VORTAC	2400
TROY, IL VORTAC	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	POCKET CITY, IN VORTAC	3000
*POCKET CITY, IN VORTAC	LAMBS, IN FIX	
	W BND	2500
	E BND	10000
*3600 - MCA POCKET CITY, IN VORTAC , E BND		
LAMBS, IN FIX	*LOUISVILLE, KY VORTAC	**10000
*10000 - MCA LOUISVILLE, KY VORTAC , W BND		
**3000 - GNSS MEA		
LOUISVILLE, KY VORTAC	LEXINGTON, KY VOR/DME	2800
LEXINGTON, KY VOR/DME	NEWCOMBE, KY VORTAC	3100
NEWCOMBE, KY VORTAC	CHARLESTON, WV VOR/DME	3000
CHARLESTON, WV VOR/DME	REACH, WV FIX	4000
REACH, WV FIX	ELKINS, WV VORTAC	4400
ELKINS, WV VORTAC	KESSEL, WV VOR/DME	6400
KESSEL, WV VOR/DME	ARMEL, VA VOR/DME	5000

95.6005 VOR FEDERAL AIRWAY V5

FROM	TO	MEA
PECAN, GA VOR/DME	VIENNA, GA VORTAC	*2000
*1900 - MOCA		
VIENNA, GA VORTAC	DUBLIN, GA VORTAC	2100
DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	*3000
*2200 - MOCA		
ATHENS, GA VOR/DME	IRMOS, GA FIX	3100
IRMOS, GA FIX	CORCE, GA FIX	3800
CORCE, GA FIX	*AWSON, GA FIX	4600
*5000 - MRA		
AWSON, GA FIX	NELLO, GA FIX	*7000
*5500 - MOCA		
NELLO, GA FIX	*HOCHE, GA FIX	5400
*4000 - MCA HOCHE, GA FIX , SE BND		
HOCHE, GA FIX	CHOO CHOO, TN VORTAC	3000
CHOO CHOO, TN VORTAC	MCMIN, TN FIX	4000
MCMIN, TN FIX	HARME, TN FIX	*6000
*3700 - MOCA		
HARME, TN FIX	BOWLING GREEN, KY VORTAC	*2800
*2300 - MOCA		
BOWLING GREEN, KY VORTAC	NEW HOPE, KY VOR/DME	#2900
#BOWLING GREEN R-039 UNUSABLE USE NEW HOPE R-220		
NEW HOPE, KY VOR/DME	*LOUISVILLE, KY VORTAC	2700
*10000 - MCA LOUISVILLE, KY VORTAC , NE BND		
LOUISVILLE, KY VORTAC	*NERVE, KY FIX	#**10000
*10000 - MCA NERVE, KY FIX , SW BND		
**2700 - GNSS MEA		
#LOUISVILLE R-036 UNUSABLE BELOW 10000		

95.6005 VOR FEDERAL AIRWAY V5 - CONTINUED

NERVE, KY FIX	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	PRUDE, OH FIX	3000
PRUDE, OH FIX	SHIRT, OH FIX	*4000
*2500 - MOCA		
SHIRT, OH FIX	*GLOOM, OH FIX	3000
*4000 - MRA		
GLOOM, OH FIX	APPLETON, OH VORTAC	3000

95.6006 VOR FEDERAL AIRWAY V6

OAKLAND, CA VOR/DME	COLLI, CA FIX	4000
COLLI, CA FIX	*PITTS, CA FIX	5000
*3800 - MCA PITTS, CA FIX , S BND		
PITTS, CA FIX	REJOY, CA FIX	*4000
*2400 - MOCA		
REJOY, CA FIX	SACRAMENTO, CA VORTAC	2000
SACRAMENTO, CA VORTAC	FOLLY, CA FIX	3000
FOLLY, CA FIX	*COLOM, CA FIX	5000
*9500 - MCA COLOM, CA FIX , NE BND		
COLOM, CA FIX	SQUAW VALLEY, CA VOR/DME	11000
SQUAW VALLEY, CA VOR/DME	*MUSTANG, NV VORTAC	13000
*12000 - MCA MUSTANG, NV VORTAC , SW BND		
MUSTANG, NV VORTAC	WADDS, NV FIX	10300
WADDS, NV FIX	*LOVELOCK, NV VORTAC	**10000
*8500 - MCA LOVELOCK, NV VORTAC , NE BND		
**9500 - MOCA		
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	12000
BATTLE MOUNTAIN, NV VORTAC	WELLS, NV VOR/DME	*11000
*10100 - MOCA		
WELLS, NV VOR/DME	LUCIN, UT VORTAC	10300
LUCIN, UT VORTAC	OGDEN, UT VORTAC	9000
*OGDEN, UT VORTAC	EVIEW, UT FIX	
	E BND	12000
	W BND	7000
*10700 - MCA OGDEN, UT VORTAC , E BND		
EVIEW, UT FIX	FORT BRIDGER, WY VOR/DME	12000
FORT BRIDGER, WY VOR/DME	ROCK SPRINGS, WY VOR/DME	10000
ROCK SPRINGS, WY VOR/DME	CHEROKEE, WY VOR/DME	10000
CHEROKEE, WY VOR/DME	MEDICINE BOW, WY VOR/DME	10000
MEDICINE BOW, WY VOR/DME	MOIST, WY FIX	9500
MOIST, WY FIX	*LITER, WY FIX	**10500
*10500 - MCA LITER, WY FIX , W BND		
**9500 - MOCA		
LITER, WY FIX	SIDNEY, NE VOR/DME	*9500
*7600 - MOCA		
SIDNEY, NE VOR/DME	NORTH PLATTE, NE VOR/DME	*6000
*5700 - MOCA		
NORTH PLATTE, NE VOR/DME	RAGAR, NE FIX	*5000
*4300 - MOCA		
RAGAR, NE FIX	GRAND ISLAND, NE VOR/DME	*5000
*3600 - MOCA		
GRAND ISLAND, NE VOR/DME	HUSKR, NE FIX	*4000
*3200 - MOCA		
HUSKR, NE FIX	OMAHA, IA VORTAC	4000
OMAHA, IA VORTAC	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	IOWA CITY, IA VOR/DME	2700
IOWA CITY, IA VOR/DME	DAVENPORT, IA VORTAC	2700
DAVENPORT, IA VORTAC	LEECS, IL FIX	2500
LEECS, IL FIX	DUPAGE, IL VOR/DME	*4000
*2700 - GNSS MEA		

95.6006 VOR FEDERAL AIRWAY V6 - CONTINUED

FROM	TO	MEA
NILES, IL FIX	CHETT, MI FIX	*3500
*2500 - MOCA		
CHETT, MI FIX	GIPPER, MI VORTAC	*3000
*2200 - MOCA		
GIPPER, MI VORTAC	MODEM, IN FIX	*4000
*2600 - MOCA		
CLARION, PA VOR/DME	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	SELINSGROVE, PA VOR/DME	4100
SELINSGROVE, PA VOR/DME	SNOWY, PA FIX	*5000
*4000 - GNSS MEA		
SNOWY, PA FIX	ALLENTOWN, PA VORTAC	*4000
*3300 - MOCA		
ALLENTOWN, PA VORTAC	SOLBERG, NJ VOR/DME	#*3000
*2200 - MOCA		
#ALLENTOWN R-115 UNUSABLE. USE SOLBERG R-295.		
SOLBERG, NJ VOR/DME	EMPYR, NY FIX	2300
EMPYR, NY FIX	NANCI, NY FIX	2700
NANCI, NY FIX	LA GUARDIA, NY VOR/DME	2900

95.6007 VOR FEDERAL AIRWAY V7

FROM	TO	MEA
DOLPHIN, FL VORTAC	LEE COUNTY, FL VORTAC	2300
LEE COUNTY, FL VORTAC	JOCKS, FL FIX	2600
JOCKS, FL FIX	*CROWD, FL FIX	**2300
*5000 - MRA		
**1600 - MOCA		
CROWD, FL FIX	LAKELAND, FL VORTAC	2300
LAKELAND, FL VORTAC	*DADES, FL FIX	**2300
*5000 - MRA		
**1800 - MOCA		
DADES, FL FIX	NITTS, FL FIX	*2300
*1800 - MOCA		
NITTS, FL FIX	*ORATE, FL FIX	**3000
*3000 - MRA		
**1700 - MOCA		
ORATE, FL FIX	CROSS CITY, FL VORTAC	*2000
*1500 - MOCA		
CROSS CITY, FL VORTAC	SEMINOLE, FL VORTAC	2000
SEMINOLE, FL VORTAC	OALDY, AL FIX	2000
OALDY, AL FIX	WIREGRASS, AL VORTAC	2500
WIREGRASS, AL VORTAC	SKIPO, AL FIX	2300
SKIPO, AL FIX	*BANBI, AL FIX	**4000
*4000 - MCA BANBI, AL FIX , SE BND		
**1900 - MOCA		
**2300 - GNSS MEA		
BANBI, AL FIX	MONTGOMERY, AL VORTAC	2400
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	3100
VULCAN, AL VORTAC	MUSCLE SHOALS, AL VORTAC	*2800
*2200 - MOCA		
CENTRAL CITY, KY VORTAC	POCKET CITY, IN VORTAC	2300
POCKET CITY, IN VORTAC	PRINC, IN FIX	2300
PRINC, IN FIX	LISLE, IN FIX	4500
LISLE, IN FIX	TERRE HAUTE, IN VORTAC	3000
TERRE HAUTE, IN VORTAC	*POTES, IN FIX	2500
*4000 - MRA		
POTES, IN FIX	BOILER, IN VORTAC	2500
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2800
CHICAGO HEIGHTS, IL VORTAC	*LAIRD, IL FIX	3500
*2700 - MCA LAIRD, IL FIX , S BND		

FROM	TO	MEA

95.6007 VOR FEDERAL AIRWAY V7 - CONTINUED

FROM	TO	MEA
LAIRD, IL FIX	*THORR, IL FIX	2500
*2600 - MCA THORR, IL FIX , S BND		
THORR, IL FIX	PAPPI, IL FIX	*2500
*1800 - MOCA		
PAPPI, IL FIX	*TALOR, WI FIX	**4000
*5300 - MCA TALOR, WI FIX , N BND		
**1800 - MOCA		
TALOR, WI FIX	PETTY, WI FIX	*6000
*1900 - MOCA		
PETTY, WI FIX	PROOT, WI FIX	#000
#UNUSABLE		
PROOT, WI FIX	FALLS, WI VOR/DME	#000
#UNUSABLE		
FALLS, WI VOR/DME	GREEN BAY, WI VORTAC	3000
GREEN BAY, WI VORTAC	MENOMINEE, MI VOR/DME	2600
MENOMINEE, MI VOR/DME	SAWYER, MI VOR/DME	2900

95.6008 VOR FEDERAL AIRWAY V8

FROM	TO	MEA
DOYLE, CA FIX	LIMBO, CA FIX	3000
LIMBO, CA FIX	*WILMA, CA FIX	3200
*2800 - MCA WILMA, CA FIX , W BND		
WILMA, CA FIX	SEAL BEACH, CA VORTAC	2300
SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*OLLIE, CA FIX	3000
*3000 - MRA		
*4100 - MCA OLLIE, CA FIX , NE BND		
OLLIE, CA FIX	PARADISE, CA VORTAC	5000
PARADISE, CA VORTAC	*RAVON, CA FIX	4500
*8800 - MCA RAVON, CA FIX , NE BND		
RAVON, CA FIX	GAREY, CA FIX	
	SW BND	8000
	NE BND	10500
GAREY, CA FIX	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	HECTOR, CA VORTAC	*9000
*7000 - MOCA		
HECTOR, CA VORTAC	GOFFS, CA VORTAC	*9000
*8200 - MOCA		
GOFFS, CA VORTAC	LYNSY, NV FIX	7600
LYNSY, NV FIX	MEADS, NV FIX	7500
MEADS, NV FIX	MORMON MESA, NV VORTAC	6000
MORMON MESA, NV VORTAC	MATZO, UT FIX	
	NE BND	12000
	SW BND	9000
MATZO, UT FIX	BRYCE CANYON, UT VORTAC	12300
BRYCE CANYON, UT VORTAC	HANKSVILLE, UT VORTAC	13300
HANKSVILLE, UT VORTAC	GRAND JUNCTION, CO VOR/DME	10000
GRAND JUNCTION, CO VOR/DME	*SQUAT, CO FIX	**10500
*12000 - MCA SQUAT, CO FIX , NE BND		
**9600 - MOCA		
SQUAT, CO FIX	RIFLE, CO VOR/DME	13200
RIFLE, CO VOR/DME	KREMMLING, CO VOR/DME	13400
KREMMLING, CO VOR/DME	*MILE HIGH, CO VORTAC	15500
*10300 - MCA MILE HIGH, CO VORTAC , W BND		
MILE HIGH, CO VORTAC	HOYTT, CO FIX	7600
HOYTT, CO FIX	AKRON, CO VOR/DME	7000

FROM	TO	MEA

95.6008 VOR FEDERAL AIRWAY V8 - CONTINUED

FROM	TO	MEA
AKRON, CO VOR/DME	HAYES CENTER, NE VORTAC	6500
HAYES CENTER, NE VORTAC	GRAND ISLAND, NE VOR/DME	*5500
*4900 - MOCA		
GRAND ISLAND, NE VOR/DME	HUSKR, NE FIX	*4000
*3200 - MOCA		
HUSKR, NE FIX	OMAHA, IA VORTAC	4000
OMAHA, IA VORTAC	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	IOWA CITY, IA VOR/DME	2700
IOWA CITY, IA VOR/DME	MOLINE, IL VOR/DME	2700
MOLINE, IL VOR/DME	TRIDE, IL FIX	3300
TRIDE, IL FIX	JOLIET, IL VOR/DME	2600
JOLIET, IL VOR/DME	CHICAGO HEIGHTS, IL VORTAC	2500
CHICAGO HEIGHTS, IL VORTAC	HALIE, IN FIX	2600
HALIE, IN FIX	INKEN, IN FIX	*4000
*2300 - MOCA		
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	GAREN, IN FIX	3000
GAREN, IN FIX	*GRABI, IN FIX	**4000
*4000 - MRA		
**2200 - MOCA		
GRABI, IN FIX	TWERP, OH FIX	*4000
*2200 - MOCA		
TWERP, OH FIX	FLAG CITY, OH VORTAC	2600
MARTINSBURG, WV VORTAC	WASHINGTON, DC VOR/DME	3300

95.6009 VOR FEDERAL AIRWAY V9

FROM	TO	MEA
LEEVILLE, LA VORTAC	SAFES, LA FIX	*2000
*1400 - MOCA		
SAFES, LA FIX	WAVEZ, LA FIX	*4000
*1600 - MOCA		
WAVEZ, LA FIX	OYSTY, LA FIX	*3000
*1800 - MOCA		
OYSTY, LA FIX	MC COMB, MS VORTAC	2000
MC COMB, MS VORTAC	*ROMAR, MS FIX	**3000
*4000 - MRA		
**1900 - MOCA		
ROMAR, MS FIX	MAGNOLIA, MS VORTAC	*3000
*1900 - MOCA		
MAGNOLIA, MS VORTAC	SIDON, MS VORTAC	2000
SIDON, MS VORTAC	MARVELL, AR VOR/DME	2100
MARVELL, AR VOR/DME	GILMORE, AR VOR/DME	1900
GILMORE, AR VOR/DME	MALDEN, MO VORTAC	*3000
*2300 - MOCA		
MALDEN, MO VORTAC	FARMINGTON, MO VORTAC	*3000
*2300 - MOCA		
FARMINGTON, MO VORTAC	ARNOL, IL FIX	*3000
*2500 - MOCA		
ARNOL, IL FIX	ST LOUIS, MO VORTAC	2800
ST LOUIS, MO VORTAC	SPINNER, IL VORTAC	*2700
*2100 - MOCA		
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	*3000
*2300 - MOCA		
PONTIAC, IL VOR/DME	KELSI, IL FIX	3000
KELSI, IL FIX	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	JANESVILLE, WI VOR/DME	2700
JANESVILLE, WI VOR/DME	MADISON, WI VORTAC	3000
MADISON, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	GREEN BAY, WI VORTAC	*3000
*2300 - MOCA		
GREEN BAY, WI VORTAC	IRON MOUNTAIN, MI VOR/DME	2900

95.6010 VOR FEDERAL AIRWAY V9 - CONTINUED

IRON MOUNTAIN, MI VOR/DME	HOUGHTON, MI VOR/DME	*3800
*3300 - MOCA		

95.6010 VOR FEDERAL AIRWAY V10

PUEBLO, CO VORTAC	LAMAR, CO VOR/DME	7000
LAMAR, CO VOR/DME	ADEER, KS FIX	*5700
*5200 - MOCA		
ADEER, KS FIX	GARDEN CITY, KS VORTAC	*5000
*4400 - MOCA		
GARDEN CITY, KS VORTAC	DODGE CITY, KS VORTAC	4600
DODGE CITY, KS VORTAC	*STAFF, KS FIX	4300
*4200 - MRA		
STAFF, KS FIX	HUTCHINSON, KS VOR/DME	3700
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
FLOSS, KS FIX	EMPORIA, KS VORTAC	3300
EMPORIA, KS VORTAC	WETZL, KS FIX	*5000
*2600 - MOCA		
*3000 - GNSS MEA		
WETZL, KS FIX	NAPOLEON, MO VORTAC	3100
NAPOLEON, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	LOAMY, MO FIX	3000
LOAMY, MO FIX	BURLINGTON, IA VOR/DME	*2700
*2200 - MOCA		
BURLINGTON, IA VOR/DME	BRADFORD, IL VORTAC	2600
BRADFORD, IL VORTAC	PLANO, IL FIX	3000
NILES, IL FIX	CHETT, MI FIX	*3500
*2500 - MOCA		
CHETT, MI FIX	GIPPER, MI VORTAC	*3000
*2200 - MOCA		
GIPPER, MI VORTAC	LITCHFIELD, MI VOR/DME	2800
YOUNGSTOWN, OH VORTAC	VOLAN, PA FIX	*5000
*3000 - MOCA		
*3000 - GNSS MEA		
VOLAN, PA FIX	TALLS, PA FIX	*5000
*3200 - MOCA		
*3300 - GNSS MEA		
TALLS, PA FIX	REVLOC, PA VOR/DME	4100
REVLOC, PA VOR/DME	JUNEY, PA FIX	*5000 MAA - 12000
*5000 - GNSS MEA		
JUNEY, PA FIX	LANCASTER, PA VOR/DME	*5000
*3600 - MOCA		

95.6011 VOR FEDERAL AIRWAY V11

BROOKLEY, AL VORTAC	GREENE COUNTY, MS VORTAC	2000
GREENE COUNTY, MS VORTAC	MIZZE, MS FIX	*4000
*1900 - MOCA		
*3000 - GNSS MEA		
MIZZE, MS FIX	MAGNOLIA, MS VORTAC	*3000
*2400 - MOCA		
MAGNOLIA, MS VORTAC	SIDON, MS VORTAC	2000
SIDON, MS VORTAC	HOLLY SPRINGS, MS VORTAC	3000
HOLLY SPRINGS, MS VORTAC	DYERSBURG, TN VORTAC	*2500
*2000 - MOCA		
DYERSBURG, TN VORTAC	CUNNINGHAM, KY VOR/DME	2400

FROM	TO	MEA

95.6010 VOR FEDERAL AIRWAY V11 - CONTINUED

CUNNINGHAM, KY VOR/DME	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200
POCKET CITY, IN VORTAC	MACKY, IN FIX	2300
MACKY, IN FIX	CLOWN, IN FIX	*3000
*2100 - MOCA		
CLOWN, IN FIX	SCOTO, IN FIX	*6000
*2100 - MOCA		
SCOTO, IN FIX	BRICKYARD, IN VORTAC	*2900
*2200 - MOCA		
BRICKYARD, IN VORTAC	WELDO, IN FIX	2900
WELDO, IN FIX	MARION, IN VOR/DME	2800
MARION, IN VOR/DME	FORT WAYNE, IN VORTAC	2600
FORT WAYNE, IN VORTAC	EDGEE, OH FIX	3000

95.6012 VOR FEDERAL AIRWAY V12

GAVIOTA, CA VORTAC	SAN MARCUS, CA VORTAC	6400
SAN MARCUS, CA VORTAC	PALMDALE, CA VORTAC	9300
PALMDALE, CA VORTAC	HELDE, CA FIX	6000
HELDE, CA FIX	HECTOR, CA VORTAC	7900
HECTOR, CA VORTAC	CLIPP, CA FIX	9000
CLIPP, CA FIX	NEEDLES, CA VORTAC	*8000
*5900 - MOCA		
NEEDLES, CA VORTAC	DRAKE, AZ VORTAC	10000
DRAKE, AZ VORTAC	OATES, AZ FIX	10100
OATES, AZ FIX	WINSLOW, AZ VORTAC	10800
WINSLOW, AZ VORTAC	ZUNI, NM VORTAC	9000
ZUNI, NM VORTAC	*CARTY, NM FIX	11000
*10000 - MCA CARTY, NM FIX , W BND		
CARTY, NM FIX	*ALBUQUERQUE, NM VORTAC	9000
*10700 - MCA ALBUQUERQUE, NM VORTAC , E BND		
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR	12000
OTTO, NM VOR	ANTON CHICO, NM VORTAC	*10000
*9400 - MOCA		
ANTON CHICO, NM VORTAC	TUCUMCARI, NM VORTAC	7700
TUCUMCARI, NM VORTAC	PANHANDLE, TX VORTAC	6000
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	5500
MITBEE, OK VORTAC	CARON, OK FIX	
	SW BND	*5000
	NE BND	*8000
*3700 - MOCA		
CARON, OK FIX	ANTHONY, KS VORTAC	
	NE BND	3000
	SW BND	5000
ANTHONY, KS VORTAC	WICHITA, KS VORTAC	3600
WICHITA, KS VORTAC	EMPORIA, KS VORTAC	3600
EMPORIA, KS VORTAC	WETZL, KS FIX	*5000
*2600 - MOCA		
*3000 - GNSS MEA		
WETZL, KS FIX	NAPOLEON, MO VORTAC	3100
NAPOLEON, MO VORTAC	FRANC, MO FIX	3000
FRANC, MO FIX	COLUMBIA, MO VOR/DME	2600
COLUMBIA, MO VOR/DME	STITH, MO FIX	#*4000
*2200 - MOCA		
#COU R-096 UNUSABLE, USE FTZ R-272		
STITH, MO FIX	FORISTELL, MO VORTAC	*3000
*2500 - MOCA		
FORISTELL, MO VORTAC	TROY, IL VORTAC	*2600
*2100 - MOCA		
TROY, IL VORTAC	BIBLE GROVE, IL VORTAC	2300

FROM	TO	MEA

95.6010 VOR FEDERAL AIRWAY V12 - CONTINUED

BIBLE GROVE, IL VORTAC	WORKE, IL FIX	
	SW BND	2300
	NE BND	6000
WORKE, IL FIX	OZMOE, IN FIX	*6000
*2600 - MOCA		
OZMOE, IN FIX	SHELBYVILLE, IN VOR/DME	*2500
*2300 - MOCA		
ALLEGHENY, PA VOR/DME	*JOHNSTOWN, PA VOR/DME	#10000
*10000 - MCA JOHNSTOWN, PA VOR/DME , W BND		
#ALLEGHENY R-096 UNUSABLE USE JOHNSTOWN R-274		
JOHNSTOWN, PA VOR/DME	HARRISBURG, PA VORTAC	5400
HARRISBURG, PA VORTAC	KUPPS, PA FIX	#000
#UNUSABLE		
KUPPS, PA FIX	BOYER, PA FIX	#000
#UNUSABLE		
BOYER, PA FIX	POTTSTOWN, PA VORTAC	*3000
*2400 - MOCA		

95.6013 VOR FEDERAL AIRWAY V13

MC ALLEN, TX VOR/DME	MANNY, TX FIX	*5000
*1700 - MOCA		
MANNY, TX FIX	ASCOT, TX FIX	*5000
*1500 - MOCA		
ASCOT, TX FIX	SOLON, TX FIX	
	N BND	*4000
	S BND	*5000
*1600 - MOCA		
SOLON, TX FIX	CORPUS CHRISTI, TX VORTAC	1800
CORPUS CHRISTI, TX VORTAC	PALACIOS, TX VORTAC	1700
PALACIOS, TX VORTAC	HUMBLE, TX VORTAC	2000
HUMBLE, TX VORTAC	CLEEP, TX FIX	3000
CLEEP, TX FIX	*LEGGE, TX FIX	3100
*3000 - MRA		
LEGGE, TX FIX	LUFKIN, TX VORTAC	2100
LUFKIN, TX VORTAC	CARTH, TX FIX	*3800
*2400 - MOCA		
CARTH, TX FIX	BELCHER, LA VORTAC	3100
BELCHER, LA VORTAC	*IDDAS, LA FIX	2000
*3000 - MRA		
IDDAS, LA FIX	*DUBOW, AR FIX	2000
*4000 - MRA		
DUBOW, AR FIX	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	DEENS, AR FIX	
	SE BND	2300
	NW BND	4600
DEENS, AR FIX	RICH MOUNTAIN, OK VORTAC	*4600
*4000 - MOCA		
RICH MOUNTAIN, OK VORTAC	*HADES, AR FIX	**4600
*5000 - MRA		
**3900 - MOCA		
HADES, AR FIX	FORT SMITH, AR VORTAC	2000
FORT SMITH, AR VORTAC	*CHESO, AR FIX	3400
*5000 - MRA		
CHESO, AR FIX	RAZORBACK, AR VORTAC	3700
RAZORBACK, AR VORTAC	*PINNE, MO FIX	3000
*4500 - MRA		
PINNE, MO FIX	NEOSHO, MO VOR/DME	3000
NEOSHO, MO VOR/DME	NASHE, MO FIX	2900
NASHE, MO FIX	*DIZZI, MO FIX	2700
*3000 - MRA		

95.6010 VOR FEDERAL AIRWAY V13 - CONTINUED

FROM	TO	MEA
DIZZI, MO FIX	BUTLER, MO VORTAC	*2600
*2000 - MOCA		
BUTLER, MO VORTAC	NAPOLEON, MO VORTAC	2900
NAPOLEON, MO VORTAC	LAMONI, IA VOR/DME	2900
LAMONI, IA VOR/DME	*WIVEY, IA FIX	3000
*4300 - MRA		
WIVEY, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	*ANKEN, IA FIX	2700
*3500 - MCA ANKEN, IA FIX , N BND		
ANKEN, IA FIX	NEVAD, IA FIX	4000
NEVAD, IA FIX	ALOCK, IA FIX	*3300
*2700 - MOCA		
ALOCK, IA FIX	MASON CITY, IA VOR/DME	3000
MASON CITY, IA VOR/DME	FARMINGTON, MN VORTAC	3000
FARMINGTON, MN VORTAC	*WAGNR, MN FIX	**5500
*5500 - MRA		
**3400 - MOCA		
WAGNR, MN FIX	CINCI, MN FIX	*5500
*3400 - MOCA		
CINCI, MN FIX	SIREN, WI VOR/DME	*3400
*2700 - MOCA		
SIREN, WI VOR/DME	DULUTH, MN VORTAC	4000
DULUTH, MN VORTAC	WEMAN, MN FIX	4000
WEMAN, MN FIX	BYPOR, MN FIX	5000
BYPOR, MN FIX	THUNDER BAY, CANADA VOR/DME	#4000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6014 VOR FEDERAL AIRWAY V14

FROM	TO	MEA
CHISUM, NM VORTAC	ONSOM, NM FIX	
	W BND	*7000
	E BND	*7500
*6000 - MOCA		
ONSOM, NM FIX	WINNS, TX FIX	*8000
*6300 - MOCA		
WINNS, TX FIX	*FLATT, TX FIX	**8000
*8000 - MRA		
**5200 - MOCA		
FLATT, TX FIX	SHALO, TX FIX	5200
SHALO, TX FIX	LUBBOCK, TX VORTAC	*5100
*5000 - GNSS MEA		
LUBBOCK, TX VORTAC	CHILDRESS, TX VORTAC	5100
CHILDRESS, TX VORTAC	HOBART, OK VORTAC	3700
HOBART, OK VORTAC	CARFF, OK FIX	3700
CARFF, OK FIX	*DATTA, OK FIX	3000
*3500 - MRA		
DATTA, OK FIX	WILL ROGERS, OK VORTAC	3000
WILL ROGERS, OK VORTAC	TOTES, OK FIX	3700
TOTES, OK FIX	DROPS, OK FIX	*3700
*2500 - MOCA		
DROPS, OK FIX	TULSA, OK VORTAC	
	NE BND	2800
	SW BND	3800
TULSA, OK VORTAC	ADAIR, OK FIX	2500
ADAIR, OK FIX	NEOSHO, MO VOR/DME	3000
NEOSHO, MO VOR/DME	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	VICHY, MO VOR/DME	3100
VICHY, MO VOR/DME	STEER, MO FIX	*3000
*2300 - MOCA		
STEER, MO FIX	ST LOUIS, MO VORTAC	2600
ST LOUIS, MO VORTAC	VANDALIA, IL VORTAC	2500
VANDALIA, IL VORTAC	TERRE HAUTE, IN VORTAC	2400

FROM	TO	MEA

95.6015 VOR FEDERAL AIRWAY V14 - CONTINUED

TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	MUNCIE, IN VOR/DME	2900
MUNCIE, IN VOR/DME	FLAG CITY, OH VORTAC	3000
BUFFALO, NY VOR/DME	GENESEO, NY VOR/DME	#4000
#BUFFALO R-106 UNUSABLE		
GENESEO, NY VOR/DME	BEEPS, NY FIX	*4000
*3300 - MOCA		
BEEPS, NY FIX	SCIPO, NY FIX	*4000
*3400 - MOCA		
SCIPO, NY FIX	VESPE, NY FIX	4000
VESPE, NY FIX	GEORGETOWN, NY VORTAC	4000
GEORGETOWN, NY VORTAC	SHERB, NY FIX	4000
SHERB, NY FIX	COBIA, NY FIX	5000
COBIA, NY FIX	CASIL, NY FIX	*5000
*3800 - MOCA		
CASIL, NY FIX	ALBANY, NY VORTAC	3600
ALBANY, NY VORTAC	WARIC, MA FIX	5000
WARIC, MA FIX	GARDNER, MA VOR/DME	*4000
*3500 - MOCA		
GARDNER, MA VOR/DME	GRAYM, MA FIX	3000
GRAYM, MA FIX	NORWICH, CT VOR/DME	*3000
*2200 - MOCA		

95.6015 VOR FEDERAL AIRWAY V15

HOBBY, TX VOR/DME	NAVASOTA, TX VOR/DME	2100
NAVASOTA, TX VOR/DME	COLLEGE STATION, TX VORTAC	2000
COLLEGE STATION, TX VORTAC	SATTY, TX FIX	2200
SATTY, TX FIX	WACO, TX VORTAC	2400
WACO, TX VORTAC	CEDAR CREEK, TX VORTAC	2500
CEDAR CREEK, TX VORTAC	BONHAM, TX VORTAC	*3500
*2200 - MOCA		
BONHAM, TX VORTAC	*PRIZZ, OK FIX	**3600
*7000 - MRA		
**2100 - MOCA		
PRIZZ, OK FIX	MC ALESTER, OK VORTAC	*3000
*2500 - MOCA		
MC ALESTER, OK VORTAC	*HOFFE, OK FIX	2700
*4700 - MRA		
HOFFE, OK FIX	OKMULGEE, OK VOR/DME	2600
OKMULGEE, OK VOR/DME	MALTS, OK FIX	3500
MALTS, OK FIX	*PRYOR, OK FIX	**2900
*2900 - MRA		
**2200 - MOCA		
PRYOR, OK FIX	NEOSHO, MO VOR/DME	3000
SIOUX CITY, IA VORTAC	SIOUX FALLS, SD VORTAC	3400
SIOUX FALLS, SD VORTAC	HURON, SD VORTAC	3700
HURON, SD VORTAC	ABERDEEN, SD VOR/DME	3000
ABERDEEN, SD VOR/DME	BISMARCK, ND VOR/DME	*4700
*3500 - MOCA		
BISMARCK, ND VOR/DME	MINOT, ND VOR/DME	4100

95.6016 VOR FEDERAL AIRWAY V16

LOS ANGELES, CA VORTAC	PRADO, CA FIX	4000
PRADO, CA FIX	PARADISE, CA VORTAC	5000
PARADISE, CA VORTAC	*SETER, CA FIX	5500
*12000 - MCA SETER, CA FIX , E BND		

FROM	TO	MEA

95.6016 VOR FEDERAL AIRWAY V16 - CONTINUED

SETER, CA FIX	BANDS, CA FIX	
	E BND	13000
	W BND	9000
BANDS, CA FIX	*PALM SPRINGS, CA VORTAC	13000
*11800 - MCA PALM SPRINGS, CA VORTAC , W BND		
PALM SPRINGS, CA VORTAC	BLYTHE, CA VORTAC	8000
BLYTHE, CA VORTAC	BUCKEYE, AZ VORTAC	6000
BUCKEYE, AZ VORTAC	PERKY, AZ FIX	5000
PERKY, AZ FIX	PHOENIX, AZ VORTAC	4000
PHOENIX, AZ VORTAC	*TOTEC, AZ FIX	5000
*5500 - MCA TOTEC, AZ FIX , E BND		
TOTEC, AZ FIX	TUCSON, AZ VORTAC	6500
TUCSON, AZ VORTAC	SAN SIMON, AZ VORTAC	11500
SAN SIMON, AZ VORTAC	ANIMA, NM FIX	8000
ANIMA, NM FIX	DARCE, NM FIX	9000
DARCE, NM FIX	COLUMBUS, NM VOR/DME	*9000
*8200 - MOCA		
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000
EL PASO, TX VORTAC	SALT FLAT, TX VORTAC	*8000
*7400 - MOCA		
SALT FLAT, TX VORTAC	DILLI, TX FIX	8000
DILLI, TX FIX	CAVRN, TX FIX	*10000
*7500 - MOCA		
CAVRN, TX FIX	WINK, TX VORTAC	*10000
*5300 - MOCA		
WINK, TX VORTAC	GOMIT, TX FIX	5500
GOMIT, TX FIX	PIZON, TX FIX	5000
PIZON, TX FIX	MERGE, TX FIX	*7000
*4400 - MOCA		
MERGE, TX FIX	BIG SPRING, TX VORTAC	4400
BIG SPRING, TX VORTAC	WEEPE, TX FIX	4200
WEEPE, TX FIX	*LORAN, TX FIX	4500
*6500 - MRA		
LORAN, TX FIX	MERKE, TX FIX	4500
MERKE, TX FIX	ABILENE, TX VORTAC	*4000
*3200 - MOCA		
ABILENE, TX VORTAC	*ROGEE, TX FIX	3600
*5000 - MRA		
ROGEE, TX FIX	BOWIE, TX VORTAC	*4500
*2900 - MOCA		
BOWIE, TX VORTAC	BONHAM, TX VORTAC	4000
BONHAM, TX VORTAC	PARIS, TX VOR/DME	2400
PARIS, TX VOR/DME	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	*HOSES, AR FIX	2000
*3000 - MRA		
HOSES, AR FIX	SPARO, AR FIX	*4000
*2300 - MOCA		
SPARO, AR FIX	BUNNS, AR FIX	*6000
*1900 - MOCA		
BUNNS, AR FIX	PINE BLUFF, AR VOR/DME	2000
PINE BLUFF, AR VOR/DME	MARVELL, AR VOR/DME	1900
MARVELL, AR VOR/DME	HOLLY SPRINGS, MS VORTAC	2200
SHELBYVILLE, TN VOR/DME	HINCH MOUNTAIN, TN VOR/DME	5000
HINCH MOUNTAIN, TN VOR/DME	BUCKY, TN FIX	5000
BUCKY, TN FIX	VOLUNTEER, TN VORTAC	3500
VOLUNTEER, TN VORTAC	*PENCE, TN FIX	3000
*4000 - MCA PENCE, TN FIX , NE BND		
PENCE, TN FIX	TAKEN, TN FIX	4000
TAKEN, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	6000
HOLSTON MOUNTAIN, TN VORTAC	DAMAS, TN FIX	6000
DAMAS, TN FIX	*STOVE, VA FIX	7500
*7500 - MCA STOVE, VA FIX , SW BND		
STOVE, VA FIX	SPEEL, VA FIX	6000

FROM	TO	MEA

95.6016 VOR FEDERAL AIRWAY V16 - CONTINUED

SPEEL, VA FIX	PULASKI, VA VORTAC	5400
PULASKI, VA VORTAC	ROANOKE, VA VOR/DME	5300
ROANOKE, VA VOR/DME	GOOZE, VA FIX	5000
GOOZE, VA FIX	LYNCHBURG, VA VOR/DME	
	W BND	*5000
	E BND	*3000
*2900 - MOCA		
LYNCHBURG, VA VOR/DME	FLAT ROCK, VA VORTAC	3000
FLAT ROCK, VA VORTAC	RICHMOND, VA VORTAC	2600
RICHMOND, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	PATUXENT, MD VORTAC	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		
GARED, MD FIX	CHOPS, MD FIX	*4500
*1500 - MOCA		
*4000 - GNSS MEA		
CHOPS, MD FIX	SMYRNA, DE VORTAC	*2000
*1500 - MOCA		
SMYRNA, DE VORTAC	CEDAR LAKE, NJ VOR/DME	1800
CEDAR LAKE, NJ VOR/DME	COYLE, NJ VORTAC	1900
COYLE, NJ VORTAC	DIXIE, NJ FIX	*2500
*1600 - MOCA		
DIXIE, NJ FIX	KENNEDY, NY VOR/DME	*2500
*1600 - MOCA		
KENNEDY, NY VOR/DME	CALVERTON, NY VOR/DME	2000
CALVERTON, NY VOR/DME	CREAM, NY FIX	2000
CREAM, NY FIX	NORWICH, CT VOR/DME	2500
NORWICH, CT VOR/DME	WOONS, RI FIX	2500
WOONS, RI FIX	BOSTON, MA VOR/DME	2000

95.6017 VOR FEDERAL AIRWAY V17

BROWNSVILLE, TX VORTAC	HARLINGEN, TX VOR/DME	1600
HARLINGEN, TX VOR/DME	MC ALLEN, TX VOR/DME	2400
MC ALLEN, TX VOR/DME	FATOR, TX FIX	*2500
*1700 - MOCA		
FATOR, TX FIX	*NELEE, TX FIX	**4000
*5500 - MRA		
**2800 - MOCA		
NELEE, TX FIX	LAREDO, TX VORTAC	2500
LAREDO, TX VORTAC	*KAHAN, TX FIX	2400
*5000 - MRA		
KAHAN, TX FIX	COTULLA, TX VORTAC	*2400
*1800 - MOCA		
COTULLA, TX VORTAC	MILET, TX FIX	2500
MILET, TX FIX	SOMER, TX FIX	*4000
*2500 - MOCA		
SOMER, TX FIX	SAN ANTONIO, TX VORTAC	*3000
*2400 - MOCA		
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	3500
CENTEX, TX VORTAC	WACO, TX VORTAC	3600
WACO, TX VORTAC	*GAINS, TX FIX	**3000
*4000 - MRA		
**2500 - MOCA		
GAINS, TX FIX	*BRIAN, TX FIX	3000
*5000 - MRA		
BRIAN, TX FIX	GLEN ROSE, TX VORTAC	3000

95.6016 VOR FEDERAL AIRWAY V17 - CONTINUED

FROM	TO	MEA
GLEN ROSE, TX VORTAC	MILLSAP, TX VORTAC	3000
MILLSAP, TX VORTAC	BOWIE, TX VORTAC	3000
BOWIE, TX VORTAC	ARDMORE, OK VORTAC	3000
ARDMORE, OK VORTAC	WILL ROGERS, OK VORTAC	3100
WILL ROGERS, OK VORTAC	ODINS, OK FIX	3300
ODINS, OK FIX *3600 - MOCA	CAMAR, OK FIX	*4900
CAMAR, OK FIX	MITBEE, OK VORTAC	
	W BND	4300
	E BND	4900
MITBEE, OK VORTAC *3900 - MOCA	FLACK, KS FIX	*4400
FLACK, KS FIX	GARDEN CITY, KS VORTAC	4700
GARDEN CITY, KS VORTAC *9000 - MRA **4600 - MOCA	*COFFE, KS FIX	**5500
COFFE, KS FIX	GOODLAND, KS VORTAC	5500

95.6018 VOR FEDERAL AIRWAY V18

FROM	TO	MEA
MILLSAP, TX VORTAC	GLEN ROSE, TX VORTAC	3000
GLEN ROSE, TX VORTAC *2200 - MOCA	CEDAR CREEK, TX VORTAC	*3000
CEDAR CREEK, TX VORTAC	QUITMAN, TX VOR/DME	2500
QUITMAN, TX VOR/DME	CADOZ, TX FIX	2400
CADOZ, TX FIX	BELCHER, LA VORTAC	2500
BELCHER, LA VORTAC	MONROE, LA VORTAC	2000
MONROE, LA VORTAC	MAGNOLIA, MS VORTAC	2500
MAGNOLIA, MS VORTAC	MERIDIAN, MS VORTAC	2500
MERIDIAN, MS VORTAC	CRIMSON, AL VORTAC	2000
CRIMSON, AL VORTAC	VULCAN, AL VORTAC	2400
VULCAN, AL VORTAC	TRUST, AL FIX	3500
TRUST, AL FIX	TALLADEGA, AL VOR/DME	3700
TALLADEGA, AL VOR/DME	ATLANTA, GA VORTAC	4000
ATLANTA, GA VORTAC *2500 - MOCA	CONNI, GA FIX	*3000
CONNI, GA FIX *2300 - MOCA	MADDI, GA FIX	*4000
MADDI, GA FIX *2000 - MOCA	CORVI, GA FIX	*5000
CORVI, GA FIX *2200 - MOCA	RAFFE, GA FIX	*6000
RAFFE, GA FIX *2000 - MOCA	COLLIERS, SC VORTAC	*2500
COLLIERS, SC VORTAC	LASHE, SC FIX	2400
LASHE, SC FIX *2200 - MOCA	NORMS, SC FIX	*3000
NORMS, SC FIX *1700 - MOCA	SACKS, SC FIX	*4000
SACKS, SC FIX	CHARLESTON, SC VORTAC	2100

95.6019 VOR FEDERAL AIRWAY V19

FROM	TO	MEA
CINCINNATI, KY VORTAC *2800 - MOCA	APPLETON, OH VORTAC	*4000

FROM	TO	MEA

95.6020 VOR FEDERAL AIRWAY V20

FROM	TO	MEA
MC ALLEN, TX VOR/DME	LATEX, TX FIX	1700
LATEX, TX FIX	ASCOT, TX FIX	*4000
*1900 - MOCA		
ASCOT, TX FIX	SOLON, TX FIX	
	N BND	*4000
	S BND	*5000
*1600 - MOCA		
SOLON, TX FIX	CORPUS CHRISTI, TX VORTAC	1800
CORPUS CHRISTI, TX VORTAC	BETZY, TX FIX	1800
BETZY, TX FIX	PALACIOS, TX VORTAC	2000
PALACIOS, TX VORTAC	*MAGUS, TX FIX	1800
*3000 - MRA		
MAGUS, TX FIX	KEEDS, TX FIX	1700
KEEDS, TX FIX	HOBBY, TX VOR/DME	2500
HOBBY, TX VOR/DME	BEAUMONT, TX VOR/DME	2100
BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000
LAKE CHARLES, LA VORTAC	LAFAYETTE, LA VORTAC	1800
LAFAYETTE, LA VORTAC	RESERVE, LA VOR/DME	2000
RESERVE, LA VOR/DME	GULFPORT, MS VORTAC	2000
GULFPORT, MS VORTAC	SEMMES, AL VORTAC	2000
SEMMES, AL VORTAC	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	*PICKS, AL FIX	2300
*3500 - MRA		
PICKS, AL FIX	MONTGOMERY, AL VORTAC	2300
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	2000
TUSKEGEE, AL VOR/DME	MARVO, AL FIX	2100
MARVO, AL FIX	COLUMBUS, GA VORTAC	*2600
*2000 - MOCA		
COLUMBUS, GA VORTAC	GRANT, GA FIX	*3000
*2400 - MOCA		
GRANT, GA FIX	*SMARR, GA FIX	**4000
*4500 - MCA SMARR, GA FIX , NE BND		
**2500 - MOCA		
**2600 - GNSS MEA		
SMARR, GA FIX	*SINCA, GA FIX	**4500
*4500 - MCA SINCA, GA FIX , SW BND		
**2500 - MOCA		
**2500 - GNSS MEA		
SINCA, GA FIX	ATHENS, GA VOR/DME	*3000
*2200 - MOCA		
ATHENS, GA VOR/DME	ELECTRIC CITY, SC VORTAC	*2800
*2300 - MOCA		
ELECTRIC CITY, SC VORTAC	ELLID, SC FIX	3000
ELLID, SC FIX	CLEVA, SC FIX	3400
CLEVA, SC FIX	TUXDO, SC FIX	5000
TUXDO, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6200
SUGARLOAF MOUNTAIN, NC VORTAC	BARRETTS MOUNTAIN, NC VOR/DME	6200
BARRETTS MOUNTAIN, NC VOR/DME	LEAKS, NC FIX	3600
LEAKS, NC FIX	SOUTH BOSTON, VA VORTAC	3000
SOUTH BOSTON, VA VORTAC	*NUTTS, VA FIX	**3000
*9000 - MRA		
**2000 - MOCA		
NUTTS, VA FIX	MELIA, VA FIX	*3000
*2400 - MOCA		
MELIA, VA FIX	RICHMOND, VA VORTAC	2000
RICHMOND, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	*COLIN, VA FIX	**5000
*10000 - MCA COLIN, VA FIX , N BND		
**1500 - MOCA		
**2000 - GNSS MEA		

95.6020 VOR FEDERAL AIRWAY V20 – CONTINUED

FROM	TO	MEA
COLIN, VA FIX	NOTTINGHAM, MD VORTAC	*10000
*1800 - MOCA		
*2000 - GNSS MEA		

95.6021 VOR FEDERAL AIRWAY V21

FROM	TO	MEA
SANTA CATALINA, CA VORTAC	SEAL BEACH, CA VORTAC	4000
SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*OLLIE, CA FIX	3000
*3000 - MRA		
*4100 - MCA OLLIE, CA FIX , NE BND		
OLLIE, CA FIX	PARADISE, CA VORTAC	5000
PARADISE, CA VORTAC	*RAVON, CA FIX	4500
*8800 - MCA RAVON, CA FIX , NE BND		
RAVON, CA FIX	GAREY, CA FIX	
	NE BND	10500
	SW BND	8000
GAREY, CA FIX	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	HECTOR, CA VORTAC	*9000
*7000 - MOCA		
HECTOR, CA VORTAC	*WHIGG, CA FIX	10000
*12000 - MRA		
WHIGG, CA FIX	BOULDER CITY, NV VORTAC	10000
BOULDER CITY, NV VORTAC	MORMON MESA, NV VORTAC	7500
MORMON MESA, NV VORTAC	BERYL, UT FIX	9800
BERYL, UT FIX	MILFORD, UT VORTAC	10000
MILFORD, UT VORTAC	DELTA, UT VORTAC	9600
DELTA, UT VORTAC	FAIRFIELD, UT VORTAC	10300
FAIRFIELD, UT VORTAC	*WASATCH, UT VORTAC	9600
*8000 - MCA WASATCH, UT VORTAC , S BND		
WASATCH, UT VORTAC	OGDEN, UT VORTAC	7000
OGDEN, UT VORTAC	*CORIN, UT FIX	
	N BND	10000
	S BND	7600
*13000 - MRA		
CORIN, UT FIX	MALAD CITY, ID VOR/DME	10000
MALAD CITY, ID VOR/DME	BANNO, ID FIX	10000
BANNO, ID FIX	*POCATELLO, ID VOR/DME	9000
*8000 - MCA POCATELLO, ID VOR/DME , SE BND		
POCATELLO, ID VOR/DME	IDAHO FALLS, ID VOR/DME	7000
IDAHO FALLS, ID VOR/DME	*DUBOIS, ID VORTAC	7600
*8600 - MCA DUBOIS, ID VORTAC , N BND		
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	*12000
*11200 - MOCA		
DILLON, MT VOR/DME	*WHITEHALL, MT VOR/DME	10000
*9300 - MCA WHITEHALL, MT VOR/DME , N BND		
WHITEHALL, MT VOR/DME	*HELENA, MT VORTAC	10600
*10000 - MCA HELENA, MT VORTAC , SE BND		
HELENA, MT VORTAC	GREAT FALLS, MT VORTAC	10000
GREAT FALLS, MT VORTAC	CUT BANK, MT VOR/DME	6000
CUT BANK, MT VOR/DME	U.S. CANADIAN BORDER	6300
U.S. CANADIAN BORDER	LETHBRIDGE, CANADA VOR/DME	000

95.6023 VOR FEDERAL AIRWAY V23

FROM	TO	MEA
MISSION BAY, CA VORTAC	OCEANSIDE, CA VORTAC	3000
OCEANSIDE, CA VORTAC	BALBO, CA FIX	4000
BALBO, CA FIX	SEAL BEACH, CA VORTAC	
	NW BND	3000
	SE BND	4000
SEAL BEACH, CA VORTAC	LOS ANGELES, CA VORTAC	2500
LOS ANGELES, CA VORTAC	*CHATY, CA FIX	4000
*5400 - MCA CHATY, CA FIX , NW BND		
CHATY, CA FIX	*CASTA, CA FIX	6000
*8300 - MCA CASTA, CA FIX , NW BND		
CASTA, CA FIX	GORMAN, CA VORTAC	9500
GORMAN, CA VORTAC	*GRAPE, CA FIX	9500
*9500 - MCA GRAPE, CA FIX , S BND		
GRAPE, CA FIX	*LAMPE, CA FIX	
	NW BND	5000
	SE BND	9500
*7800 - MCA LAMPE, CA FIX , SE BND		
LAMPE, CA FIX	SHAFTER, CA VORTAC	
	NW BND	3000
	SE BND	6000
SHAFTER, CA VORTAC	DELNO, CA FIX	3000
DELNO, CA FIX	PIXEY, CA FIX	*5000
*2000 - MOCA		
*3000 - GNSS MEA		
PIXEY, CA FIX	LATON, CA FIX	*6000
*2000 - MOCA		
*3000 - GNSS MEA		
LATON, CA FIX	FRAME, CA FIX	*6000
*1900 - MOCA		
*2000 - GNSS MEA		
EBTUW, CA FIX	WRAPS, CA FIX	*4000
*3000 - MOCA		
WRAPS, CA FIX	LINDEN, CA VOR/DME	3000
LINDEN, CA VOR/DME	SACRAMENTO, CA VORTAC	2300
SACRAMENTO, CA VORTAC	GRIME, CA FIX	*2000
*1600 - MOCA		
GRIME, CA FIX	YUBBA, CA FIX	*4000
*2000 - MOCA		
YUBBA, CA FIX	*GRIDD, CA FIX	**4000
*4000 - MRA		
**3400 - MOCA		
GRIDD, CA FIX	RED BLUFF, CA VORTAC	*3000
*1700 - MOCA		
RED BLUFF, CA VORTAC	BEIRA, CA FIX	
	NW BND	8000
	SE BND	3000
BEIRA, CA FIX	*SHATA, CA FIX	
	NW BND	**8000
	SE BND	**6500
*8000 - MCA SHATA, CA FIX , NW BND		
**5500 - MOCA		
SHATA, CA FIX	FORT JONES, CA VOR/DME	10000
FORT JONES, CA VOR/DME	TALEM, OR FIX	*10000
*9400 - MOCA		
TALEM, OR FIX	*ROGUE VALLEY, OR VORTAC	
	NW BND	8000
	SE BND	10000
*7000 - MCA ROGUE VALLEY, OR VORTAC , SE BND		
ROGUE VALLEY, OR VORTAC	MOURN, OR FIX	7000
MOURN, OR FIX	*CURTI, OR FIX	**8000
*7000 - MRA		
**6500 - MOCA		

FROM	TO	MEA

95.6023 VOR FEDERAL AIRWAY V23 - CONTINUED

CURTI, OR FIX	EUGENE, OR VORTAC	
	SE BND	*6000
	NW BND	*4000
*4000 - MOCA		
EUGENE, OR VORTAC	TURNO, OR FIX	3000
TURNO, OR FIX	RAWER, OR FIX	5000
RAWER, OR FIX	BATTLE GROUND, WA VORTAC	4100
BATTLE GROUND, WA VORTAC	*MALAY, WA FIX	
	NW BND	6000
	SE BND	5000
*9500 - MRA		
MALAY, WA FIX	*MCKEN, WA FIX	
	S BND	6000
	N BND	5000
*4100 - MCA MCKEN, WA FIX , S BND		
MCKEN, WA FIX	SEATTLE, WA VORTAC	3000
SEATTLE, WA VORTAC	PAINE, WA VOR/DME	3000
PAINE, WA VOR/DME	EGRET, WA FIX	4500
EGRET, WA FIX	ACORD, WA FIX	3500
ACORD, WA FIX	WHATCOM, WA VORTAC	*3000
*2200 - MOCA		
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER	VANCOUVER, CANADA VOR/DME	#3000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6024 VOR FEDERAL AIRWAY V24

ABERDEEN, SD VOR/DME	WATERTOWN, SD VORTAC	3600
WATERTOWN, SD VORTAC	REDWOOD FALLS, MN VOR/DME	3800
REDWOOD FALLS, MN VOR/DME	*ALMAY, MN FIX	**3400
*5000 - MRA		
**2700 - MOCA		
ALMAY, MN FIX	KASPR, MN FIX	*3400
*2700 - MOCA		
KASPR, MN FIX	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	LONE ROCK, WI VOR/DME	3000
LONE ROCK, WI VOR/DME	GLARS, WI FIX	*3400
*2800 - MOCA		
GLARS, WI FIX	JANESVILLE, WI VOR/DME	*2800
*2300 - MOCA		
JANESVILLE, WI VOR/DME	FARMM, IL FIX	2900
FARMM, IL FIX	NORTHBROOK, IL VOR/DME	2700
PEOTONE, IL VORTAC	KENLA, IL FIX	2400
KENLA, IL FIX	VAGES, IN FIX	2600
VAGES, IN FIX	*POTES, IN FIX	**4000
*4000 - MRA		
**2300 - MOCA		
POTES, IN FIX	JAKKS, IN FIX	*4000
*2300 - MOCA		
JAKKS, IN FIX	BRICKYARD, IN VORTAC	2700

95.6025 VOR FEDERAL AIRWAY V25

MISSION BAY, CA VORTAC	REDIN, CA FIX	3000
REDIN, CA FIX	PACIF, CA FIX	*6000
*2000 - MOCA		
PACIF, CA FIX	ALBAS, CA FIX	*3000
*2000 - MOCA		
ALBAS, CA FIX	*FERMY, CA FIX	2100
*2700 - MCA FERMY, CA FIX , NW BND		

FROM	TO	MEA

95.6024 VOR FEDERAL AIRWAY V25 - CONTINUED

FERMY, CA FIX	*HERMO, CA FIX	3200
*2700 - MCA HERMO, CA FIX , SE BND		
HERMO, CA FIX	LOS ANGELES, CA VORTAC	2500
LOS ANGELES, CA VORTAC	*MERMA, CA FIX	2000
*3000 - MRA		
MERMA, CA FIX	EXERT, CA FIX	2000
EXERT, CA FIX	VENTURA, CA VOR/DME	5000
VENTURA, CA VOR/DME	DEANO, CA FIX	6000
DEANO, CA FIX	*SAN MARCUS, CA VORTAC	6200
*7600 - MCA SAN MARCUS, CA VORTAC , NW BND		
SAN MARCUS, CA VORTAC	POZOE, CA FIX	8600
POZOE, CA FIX	PASO ROBLES, CA VORTAC	
	NW BND	6000
	SE BND	7000
PASO ROBLES, CA VORTAC	SALINAS, CA VORTAC	5500
SALINAS, CA VORTAC	SANTY, CA FIX	*5000
*4000 - MOCA		
SANTY, CA FIX	WOODSIDE, CA VOR/DME	5100
WOODSIDE, CA VOR/DME	SAN FRANCISCO, CA VOR/DME	4700
SAN FRANCISCO, CA VOR/DME	SUTRO, CA FIX	3500
SUTRO, CA FIX	GOBBS, CA FIX	3000
GOBBS, CA FIX	POINT REYES, CA VOR/DME	3500
POINT REYES, CA VOR/DME	FREES, CA FIX	3500
FREES, CA FIX	*GETER, CA FIX	6000
*12000 - MCA GETER, CA FIX , N BND		
GETER, CA FIX	*LAPED, CA FIX	**12000
*9000 - MRA		
*11000 - MCA LAPED, CA FIX , S BND		
**6300 - MOCA		
LAPED, CA FIX	*GRENY, CA FIX	9000
*5500 - MCA GRENY, CA FIX , S BND		
GRENY, CA FIX	RED BLUFF, CA VORTAC	3000
RED BLUFF, CA VORTAC	HOMAN, CA FIX	*4000
*4000 - MOCA		
HOMAN, CA FIX	*ITMOR, CA FIX	**5000
*7000 - MCA ITMOR, CA FIX , N BND		
**4000 - MOCA		
**4000 - GNSS MEA		
ITMOR, CA FIX	MUREX, CA FIX	*11000
*9600 - MOCA		
*10000 - GNSS MEA		
MUREX, CA FIX	KLAMATH FALLS, OR VORTAC	
	N BND	*8500
	S BND	*11000
*8500 - MOCA		
KLAMATH FALLS, OR VORTAC	SPRAG, OR FIX	*12000
*9500 - MOCA		
*10000 - GNSS MEA		
SPRAG, OR FIX	OCTAD, OR FIX	*12000
*9500 - MOCA		
*10000 - GNSS MEA		
OCTAD, OR FIX	DESCHUTES, OR VORTAC	
	N BND	*7000
	S BND	*12000
*7000 - GNSS MEA		
DESCHUTES, OR VORTAC	*GASHE, OR FIX	**7000
*10000 - MRA		
**6500 - MOCA		
GASHE, OR FIX	*KLICKITAT, OR VOR/DME	**7000
*5400 - MCA KLICKITAT, OR VOR/DME , N BND		
**6500 - MOCA		
KLICKITAT, OR VOR/DME	GUBSE, WA FIX	7800

FROM	TO	MEA

95.6025 VOR FEDERAL AIRWAY V25 - CONTINUED

GUBSE, WA FIX	YAKIMA, WA VORTAC	
	N BND	*5000
	S BND	*7800
*4500 - MOCA		
YAKIMA, WA VORTAC	*ELLENSBURG, WA VOR/DME	5900
*6800 - MCA ELLENSBURG, WA VOR/DME , N BND		
ELLENSBURG, WA VOR/DME	*WENATCHEE, WA VOR/DME	8900
*7400 - MCA WENATCHEE, WA VOR/DME , S BND		

95.6026 VOR FEDERAL AIRWAY V26

BLUE MESA, CO VOR/DME	MONTROSE, CO VOR/DME	12500
MONTROSE, CO VOR/DME	GRAND JUNCTION, CO VOR/DME	11000
GRAND JUNCTION, CO VOR/DME	RAYMN, CO FIX	
	NE BND	11000
	SW BND	10000
RAYMN, CO FIX	MEEKER, CO VOR/DME	11000
MEEKER, CO VOR/DME	STRIM, CO FIX	11000
STRIM, CO FIX	CHEROKEE, WY VOR/DME	10000
CHEROKEE, WY VOR/DME	ALCOS, WY FIX	11700
ALCOS, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	*10000
*9400 - MOCA		
MUDDY MOUNTAIN, WY VOR/DME	SALON, WY FIX	8000
SALON, WY FIX	*RULER, SD FIX	**13000
*9000 - MRA		
**9200 - MOCA		
RULER, SD FIX	*RAPID CITY, SD VORTAC	
	E BND	8000
	W BND	13000
*6500 - MCA RAPID CITY, SD VORTAC , W BND		
RAPID CITY, SD VORTAC	PHILIP, SD VOR/DME	5000
PHILIP, SD VOR/DME	PIERRE, SD VORTAC	*4400
*3700 - MOCA		
PIERRE, SD VORTAC	HURON, SD VORTAC	4000
HURON, SD VORTAC	*OBITT, SD FIX	**5000
*5000 - MRA		
**4000 - GNSS MEA		
OBITT, SD FIX	GHENT, MN FIX	*6000
*3400 - MOCA		
*4000 - GNSS MEA		
GHENT, MN FIX	REDWOOD FALLS, MN VOR/DME	*5000
*4000 - GNSS MEA		
REDWOOD FALLS, MN VOR/DME	BEEGR, MN FIX	*3000
*2500 - MOCA		
BEEGR, MN FIX	LYDIA, MN FIX	*5500
*2400 - MOCA		
LYDIA, MN FIX	FARMINGTON, MN VORTAC	*3500
*2500 - MOCA		
FARMINGTON, MN VORTAC	PRESS, WI FIX	*3500
*2800 - MOCA		
PRESS, WI FIX	ELPAS, WI FIX	*5500
*2600 - MOCA		
ELPAS, WI FIX	EAU CLAIRE, WI VORTAC	*3500
*2800 - MOCA		
EAU CLAIRE, WI VORTAC	EDGRR, WI FIX	*4500
*2900 - MOCA		

FROM	TO	MEA

95.6026 VOR FEDERAL AIRWAY V26 - CONTINUED

FROM	TO	MEA
EDGRR, WI FIX	*WAUSAU, WI VORTAC	**6000
*7100 - MCA WAUSAU, WI VORTAC , E BND		
**3600 - MOCA		
**3600 - GNSS MEA		
WAUSAU, WI VORTAC	CHURP, WI FIX	*8000
*3000 - GNSS MEA		
CHURP, WI FIX	GREEN BAY, WI VORTAC	*7000
*2400 - MOCA		
GREEN BAY, WI VORTAC	NEROE, WI FIX	3000
NEROE, WI FIX	WELKO, MI FIX	*5000
*2400 - MOCA		
WELKO, MI FIX	WHITE CLOUD, MI VOR/DME	4000

95.6027 VOR FEDERAL AIRWAY V27

FROM	TO	MEA
MISSION BAY, CA VORTAC	REDIN, CA FIX	3000
REDIN, CA FIX	PACIF, CA FIX	*6000
*2000 - MOCA		
PACIF, CA FIX	AVOLS, CA FIX	*3000
*2000 - MOCA		
AVOLS, CA FIX	SANTA CATALINA, CA VORTAC	4000
SANTA CATALINA, CA VORTAC	EXERT, CA FIX	4000
EXERT, CA FIX	VENTURA, CA VOR/DME	5000
VENTURA, CA VOR/DME	KWANG, CA FIX	5000
KWANG, CA FIX	*GOLET, CA FIX	**4000
*5000 - MCA GOLET, CA FIX , NW BND		
**2300 - MOCA		
GOLET, CA FIX	GAVIOTA, CA VORTAC	6400
GAVIOTA, CA VORTAC	*ORCUT, CA FIX	6000
*6000 - MCA ORCUT, CA FIX , S BND		
ORCUT, CA FIX	MORRO BAY, CA VORTAC	4000
MORRO BAY, CA VORTAC	BLANC, CA FIX	4000
BLANC, CA FIX	BIG SUR, CA VORTAC	7000
BIG SUR, CA VORTAC	CARME, CA FIX	7000
CARME, CA FIX	SHOEY, CA FIX	*6000
*5200 - MOCA		
SHOEY, CA FIX	*EUGEN, CA FIX	**6000
*7000 - MRA		
**3000 - MOCA		
EUGEN, CA FIX	*TAILS, CA FIX	**6000
*7000 - MRA		
**3000 - MOCA		
TAILS, CA FIX	HADLY, CA FIX	*6000
*3000 - MOCA		
HADLY, CA FIX	SEEMS, CA FIX	*4000
*3000 - MOCA		
SEEMS, CA FIX	STINS, CA FIX	*3500
*3000 - MOCA		
STINS, CA FIX	POINT REYES, CA VOR/DME	3500
POINT REYES, CA VOR/DME	FREES, CA FIX	3500
FREES, CA FIX	MENDOCINO, CA VORTAC	6000
MENDOCINO, CA VORTAC	OLRIO, CA FIX	6700
OLRIO, CA FIX	FORTUNA, CA VORTAC	
	NW BND	4000
	SE BND	6700
FORTUNA, CA VORTAC	CRESCENT CITY, CA VORTAC	3000
CRESCENT CITY, CA VORTAC	*ROOTY, OR FIX	6400
*11000 - MRA		
ROOTY, OR FIX	LEDGE, OR FIX	6400

95.6027 VOR FEDERAL AIRWAY V27 – CONTINUED

FROM	TO	MEA
LEDGE, OR FIX	NORTH BEND, OR VOR/DME	
	S BND	6400
	N BND	4000
NORTH BEND, OR VOR/DME	*GAMMA, OR FIX	
	S BND	4000
	N BND	4500
*6200 - MRA		
GAMMA, OR FIX	NEWPORT, OR VORTAC	4500
NEWPORT, OR VORTAC	CUTEL, OR FIX	
	S BND	3300
	N BND	8000
CUTEL, OR FIX	DANES, OR FIX	
	N BND	*8000
	S BND	*5000
*3600 - MOCA		
*4000 - GNSS MEA		
DANES, OR FIX	ASTORIA, OR VOR/DME	*8000
*5000 - MOCA		
*5000 - GNSS MEA		
ASTORIA, OR VOR/DME	HOQUIAM, WA VORTAC	3700
HOQUIAM, WA VORTAC	*CARRO, WA FIX	3200
*4000 - MRA		
CARRO, WA FIX	SEATTLE, WA VORTAC	3000

95.6028 VOR FEDERAL AIRWAY V28

FROM	TO	MEA
OAKLAND, CA VOR/DME	*SALAD, CA FIX	4000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	ALTAM, CA FIX	5000
ALTAM, CA FIX	HAIRE, CA FIX	4500
HAIRE, CA FIX	*LINDEN, CA VOR/DME	**3000
*4000 - MCA LINDEN, CA VOR/DME , NE BND		
**2100 - MOCA		
LINDEN, CA VOR/DME	*KATSO, CA FIX	5000
*12400 - MCA KATSO, CA FIX , NE BND		
KATSO, CA FIX	*SPOOK, CA FIX	**13000
*15000 - MCA SPOOK, CA FIX , N BND		
**12100 - MOCA		
SPOOK, CA FIX	RICHY, CA FIX	*15000
*12000 - MOCA		
RICHY, CA FIX	*MUSTANG, NV VORTAC	13000
*10500 - MCA MUSTANG, NV VORTAC , S BND		

95.6029 VOR FEDERAL AIRWAY V29

FROM	TO	MEA
SNOW HILL, MD VORTAC	*SALISBURY, MD VORTAC	**2000
*5000 - MCA SALISBURY, MD VORTAC , N BND		
**1500 - MOCA		
SALISBURY, MD VORTAC	*EZIZI, DE FIX	5000
*7000 - MCA EZIZI, DE FIX , N BND		
EZIZI, DE FIX	*LAFLN, DE FIX	**7000
*7000 - MCA LAFLN, DE FIX , S BND		
**5000 - GNSS MEA		
LAFLN, DE FIX	SMYRNA, DE VORTAC	1800
SMYRNA, DE VORTAC	DUPONT, DE VORTAC	#1800
#DUPONT R-181 UNUSABLE BELOW 10000 USE SMYRNA R-360		
DUPONT, DE VORTAC	MODENA, PA VORTAC	*3000
*1800 - MOCA		
*2000 - GNSS MEA		

95.6029 VOR FEDERAL AIRWAY V29 - CONTINUED

FROM	TO	MEA
MODENA, PA VORTAC	POTTSTOWN, PA VORTAC	2400
POTTSTOWN, PA VORTAC	*HIKES, PA FIX	2900
*4000 - MRA		
HIKES, PA FIX	EAST TEXAS, PA VOR/DME	2900
EAST TEXAS, PA VOR/DME	SLATT, PA FIX	4000
SLATT, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	SCOFF, PA FIX	4000
SCOFF, PA FIX	BINGHAMTON, NY VOR/DME	3600
BINGHAMTON, NY VOR/DME	CORTA, NY FIX	*4000
*3600 - MOCA		
CORTA, NY FIX	VESPE, NY FIX	4500
VESPE, NY FIX	SYRACUSE, NY VORTAC	*4000
*3600 - MOCA		
SYRACUSE, NY VORTAC	PAGER, NY FIX	*2400
*1800 - MOCA		
PAGER, NY FIX	WATERTOWN, NY VORTAC	*2600
*2000 - MOCA		
WATERTOWN, NY VORTAC	*LETUS, NY FIX	**3000
*4000 - MRA		
**1900 - MOCA		

95.6030 VOR FEDERAL AIRWAY V30

FROM	TO	MEA
BADGER, WI VOR/DME	SQUIB, MI FIX	2900
SQUIB, MI FIX	PULLMAN, MI VOR/DME	3500
PULLMAN, MI VOR/DME	LITCHFIELD, MI VOR/DME	2800
CLARION, PA VOR/DME	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	SELINSGROVE, PA VOR/DME	4100
SELINSGROVE, PA VOR/DME	EAST TEXAS, PA VOR/DME	4000
EAST TEXAS, PA VOR/DME	SOLBERG, NJ VOR/DME	2700

95.6031 VOR FEDERAL AIRWAY V31

FROM	TO	MEA
PATUXENT, MD VORTAC	*ARUYE, MD FIX	2500
*6000 - MRA		
ARUYE, MD FIX	NOTTINGHAM, MD VORTAC	#*6000
*3000 - GNSS MEA		
#NOTTINGHAM R-138 UNUSABLE BELOW 6000'.		
BALTIMORE, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	GRAMO, PA FIX	*7000
*5000 - GNSS MEA		
GRAMO, PA FIX	HARRISBURG, PA VORTAC	*7000
*5000 - GNSS MEA		
HARRISBURG, PA VORTAC	*MORTO, PA FIX	3000
*5000 - MRA		
MORTO, PA FIX	SELINSGROVE, PA VOR/DME	5000
SELINSGROVE, PA VOR/DME	WATSO, PA FIX	*3500
*3100 - MOCA		
WATSO, PA FIX	WILLIAMSPORT, PA VOR/DME	3800
WILLIAMSPORT, PA VOR/DME	ELMIRA, NY VOR/DME	4000
ELMIRA, NY VOR/DME	GIBBE, NY FIX	3800
GIBBE, NY FIX	BEEPS, NY FIX	3500
BEEPS, NY FIX	ROCHESTER, NY VOR/DME	4000
ROCHESTER, NY VOR/DME	*AIRCO, NY FIX	4000
*6000 - MRA		

95.6032 VOR FEDERAL AIRWAY V32

FROM	TO	MEA
MUSTANG, NV VORTAC	HAZEN, NV VORTAC	*10000
*9200 - MOCA		
HAZEN, NV VORTAC	LOVELOCK, NV VORTAC	8000
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	11000
BATTLE MOUNTAIN, NV VORTAC	*BULLION, NV VOR/DME	**10000
*10800 - MCA BULLION, NV VOR/DME , E BND		
**9400 - MOCA		
BULLION, NV VOR/DME	SPATS, NV FIX	13000
SPATS, NV FIX	BONNEVILLE, UT VORTAC	*11000
*10000 - MOCA		
BONNEVILLE, UT VORTAC	*WASATCH, UT VORTAC	9000
*10400 - MCA WASATCH, UT VORTAC , NE BND		
WASATCH, UT VORTAC	FORT BRIDGER, WY VOR/DME	12000

95.6033 VOR FEDERAL AIRWAY V33

FROM	TO	MEA
HARCUM, VA VORTAC	*COLIN, VA FIX	**4000
*10000 - MCA COLIN, VA FIX , N BND		
**1600 - MOCA		
**2000 - GNSS MEA		
COLIN, VA FIX	NOTTINGHAM, MD VORTAC	*10000
*1800 - MOCA		
*2000 - GNSS MEA		
BALTIMORE, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	GRAMO, PA FIX	*7000
*5000 - GNSS MEA		
GRAMO, PA FIX	*HARRISBURG, PA VORTAC	**7000
*3600 - MCA HARRISBURG, PA VORTAC , NW BND		
*4600 - MCA HARRISBURG, PA VORTAC , SE BND		
**5000 - GNSS MEA		
HARRISBURG, PA VORTAC	*PHILIPSBURG, PA VORTAC	4900
*4800 - MCA PHILIPSBURG, PA VORTAC , SE BND		
PHILIPSBURG, PA VORTAC	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	BUFFALO, NY VOR/DME	#*11000
*5000 - GNSS MEA		
#BRADFORD R-006 UNUSABLE USE BUF R-187		

95.6034 VOR FEDERAL AIRWAY V34

FROM	TO	MEA
ROCHESTER, NY VOR/DME	HANCOCK, NY VOR/DME	4000
HANCOCK, NY VOR/DME	WEETS, NY FIX	6400
WEETS, NY FIX	PAWLING, NY VOR/DME	
	W BND	6000
	E BND	4000
PAWLING, NY VOR/DME	MADISON, CT VOR/DME	3000
MADISON, CT VOR/DME	SANDY POINT, RI VOR/DME	*2000
*1400 - MOCA		
SANDY POINT, RI VOR/DME	NANTUCKET, MA VOR/DME	2000

FROM	TO	MEA

95.6035 VOR FEDERAL AIRWAY V35

FROM	TO	MEA
DOLPHIN, FL VORTAC	CURVE, FL FIX	*2000
*1500 - MOCA		
CURVE, FL FIX	*DEEDS, FL FIX	**5000
*4000 - MRA		
**1300 - MOCA		
DEEDS, FL FIX	LEE COUNTY, FL VORTAC	2200
LEE COUNTY, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	ENDED, FL FIX	2500
ENDED, FL FIX	CROSS CITY, FL VORTAC	*3000
*1500 - MOCA		
CROSS CITY, FL VORTAC	GREENVILLE, FL VORTAC	2000
GREENVILLE, FL VORTAC	*SALER, GA FIX	2500
*3000 - MRA		
SALER, GA FIX	PECAN, GA VOR/DME	*2000
*1700 - MOCA		
PECAN, GA VOR/DME	MACON, GA VORTAC	2000
MACON, GA VORTAC	SINCA, GA FIX	2500
SINCA, GA FIX	ATHENS, GA VOR/DME	*3000
*2200 - MOCA		
ATHENS, GA VOR/DME	ELECTRIC CITY, SC VORTAC	*2800
*2300 - MOCA		
ELECTRIC CITY, SC VORTAC	ELLID, SC FIX	3000
ELLID, SC FIX	CLEVA, SC FIX	3400
CLEVA, SC FIX	TUXDO, SC FIX	5000
TUXDO, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6200
SUGARLOAF MOUNTAIN, NC VORTAC	*BUSIC, NC FIX	8800
*9000 - MCA BUSIC, NC FIX , N BND		
BUSIC, NC FIX	*ROANS, TN FIX	9000
*9000 - MCA ROANS, TN FIX , S BND		
ROANS, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000
HOLSTON MOUNTAIN, TN VORTAC	GLADE SPRING, VA VOR/DME	6700
GLADE SPRING, VA VOR/DME	MACET, WV FIX	#6500
#GZG TO COP UNUSABLE EXCEPT FOR AIRCRAFT WITH SUITABLE RNAV SYSTEM WITH GPS.		
MACET, WV FIX	CHARLESTON, WV VOR/DME	
	N BND	4500
	S BND	6500
CHARLESTON, WV VOR/DME	CARLA, WV FIX	*4000
*3000 - MOCA		
CARLA, WV FIX	BENZO, WV FIX	*4000
*3300 - MOCA		
BENZO, WV FIX	CLARKSBURG, WV VOR/DME	3300
CLARKSBURG, WV VOR/DME	MORGANTOWN, WV VOR/DME	4000
PHILIPSBURG, PA VORTAC	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	ELMIRA, NY VOR/DME	*4500
*3900 - MOCA		
ELMIRA, NY VOR/DME	SCIPO, NY FIX	3700
SCIPO, NY FIX	SYRACUSE, NY VORTAC	3500

95.6036 VOR FEDERAL AIRWAY V36

FROM	TO	MEA
U.S. CANADIAN BORDER	SAULT STE MARIE, MI VOR/DME	*4600
*3100 - MOCA		
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*5000
*2800 - MOCA		
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	000
BUFFALO, NY VOR/DME	*BURST, NY FIX	**11000
*11000 - MCA BURST, NY FIX , NW BND		
**4000 - GNSS MEA		

95.6036 VOR FEDERAL AIRWAY V36 - CONTINUED

FROM	TO	MEA
BURST, NY FIX	THINK, NY FIX	4000
THINK, NY FIX	ELMIRA, NY VOR/DME	3500
HAWLY, PA FIX	HOPCE, NJ FIX	*15500
*3600 - MOCA		
*4000 - GNSS MEA		
HOPCE, NJ FIX	NEION, NJ FIX	*13500
*3600 - MOCA		
*4000 - GNSS MEA		

95.6037 VOR FEDERAL AIRWAY V37

FROM	TO	MEA
CRAIG, FL VORTAC	CARVL, FL FIX	2100
CARVL, FL FIX	BRUNSWICK, GA VORTAC	2000
BRUNSWICK, GA VORTAC	*BROUN, GA FIX	**3000
*11000 - MRA		
**2200 - MOCA		
BROUN, GA FIX	*HARPS, GA FIX	**3000
*3800 - MRA		
**2200 - MOCA		
HARPS, GA FIX	SAVANNAH, GA VORTAC	*3000
*2200 - MOCA		
SAVANNAH, GA VORTAC	ALLENDALE, SC VOR	*6000
*1600 - MOCA		
*4000 - GNSS MEA		
ALLENDALE, SC VOR	COLUMBIA, SC VORTAC	*3000
*2000 - GNSS MEA		
COLUMBIA, SC VORTAC	RICHE, SC FIX	*4000
*2400 - MOCA		
*2400 - GNSS MEA		
RICHE, SC FIX	CHARLOTTE, NC VOR/DME	2500
CHARLOTTE, NC VOR/DME	OWALT, NC FIX	3000
OWALT, NC FIX	JOTTA, NC FIX	*6000
*3500 - MOCA		
JOTTA, NC FIX	DOILY, VA FIX	*7000
*5100 - MOCA		
DOILY, VA FIX	PULASKI, VA VORTAC	*6000
*5000 - MOCA		
PULASKI, VA VORTAC	HAWKI, WV FIX	8000
HAWKI, WV FIX	ELKINS, WV VORTAC	6000
ELKINS, WV VORTAC	CLARKSBURG, WV VOR/DME	*5000
*3900 - MOCA		
CLARKSBURG, WV VOR/DME	TEDDS, WV FIX	*4000
*3400 - MOCA		
TEDDS, WV FIX	CETPU, PA FIX	*5000
*3400 - MOCA		
*4000 - GNSS MEA		
CETPU, PA FIX	ELLWOOD CITY, PA VOR/DME	*4000
*3200 - MOCA		
ELLWOOD CITY, PA VOR/DME	ERIE, PA VORTAC	3000
ERIE, PA VORTAC	U.S. CANADIAN BORDER	3000

FROM	TO	MEA

95.6038 VOR FEDERAL AIRWAY V38

MOLINE, IL VOR/DME	TRIDE, IL FIX	3300
TRIDE, IL FIX	MEDAN, IL FIX	*4000
*2200 - MOCA		
MEDAN, IL FIX	PEOTONE, IL VORTAC	2400
PEOTONE, IL VORTAC	LUCIT, IN FIX	2500
LUCIT, IN FIX	CLEFT, IN FIX	*4000
*2400 - MOCA		
CLEFT, IN FIX	FORT WAYNE, IN VORTAC	2800
FORT WAYNE, IN VORTAC	WINES, OH FIX	2500
APPLETON, OH VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	PARKERSBURG, WV VOR/DME	3000
PARKERSBURG, WV VOR/DME	SACKY, WV FIX	3000
SACKY, WV FIX	*JULEA, WV FIX	3000
*5000 - MRA		
JULEA, WV FIX	BENZO, WV FIX	3300
BENZO, WV FIX	ELKINS, WV VORTAC	4000
ELKINS, WV VORTAC	*DEKAY, WV FIX	9000
*9500 - MRA		
DEKAY, WV FIX	CEROL, VA FIX	9000
CEROL, VA FIX	GORDONSVILLE, VA VORTAC	6000
GORDONSVILLE, VA VORTAC	*ROOKY, VA FIX	2500
*2500 - MRA		
ROOKY, VA FIX	RICHMOND, VA VORTAC	2100
RICHMOND, VA VORTAC	HARCUM, VA VORTAC	2000
HARCUM, VA VORTAC	CAPE CHARLES, VA VORTAC	2000

95.6039 VOR FEDERAL AIRWAY V39

SANDHILLS, NC VORTAC	SOUTH BOSTON, VA VORTAC	2500
SOUTH BOSTON, VA VORTAC	SHEPS, VA FIX	*3000
*2000 - MOCA		
SHEPS, VA FIX	GORDONSVILLE, VA VORTAC	3000
GORDONSVILLE, VA VORTAC	LURAY, VA FIX	6100
LURAY, VA FIX	*KERRE, VA FIX	**6000
*7000 - MRA		
**5000 - MOCA		
KERRE, VA FIX	MARTINSBURG, WV VORTAC	*6000
*5000 - MOCA		
MARTINSBURG, WV VORTAC	HYPER, MD FIX	*5000
*3900 - MOCA		
HYPER, MD FIX	BINNS, PA FIX	*9000
*2600 - MOCA		
*4000 - GNSS MEA		
BINNS, PA FIX	DELRO, PA FIX	*9000
*4500 - GNSS MEA		
DELRO, PA FIX	LANCASTER, PA VOR/DME	3000
LANCASTER, PA VOR/DME	BOYER, PA FIX	2900
BOYER, PA FIX	EAST TEXAS, PA VOR/DME	*3000
*2400 - MOCA		
EAST TEXAS, PA VOR/DME	SPARTA, NJ VORTAC	2700
SPARTA, NJ VORTAC	CARMEL, NY VOR/DME	2600
CARMEL, NY VOR/DME	SOARS, CT FIX	3000
SOARS, CT FIX	STUBY, CT FIX	*6000
*4100 - MOCA		
STUBY, CT FIX	CHESTER, MA VOR/DME	4000
CHESTER, MA VOR/DME	VAPER, MA FIX	*3700
*3200 - MOCA		
VAPER, MA FIX	GARDNER, MA VOR/DME	*3500
*2900 - MOCA		
GARDNER, MA VOR/DME	CONCORD, NH VOR/DME	4000
CONCORD, NH VOR/DME	AUGUSTA, ME VOR/DME	3500
AUGUSTA, ME VOR/DME	RINTH, ME FIX	*3000
*2000 - MOCA		

FROM	TO	MEA

95.6039 VOR FEDERAL AIRWAY V39 - CONTINUED

RINTH, ME FIX	MILLINOCKET, ME VOR/DME	*3000
*2400 - MOCA		
MILLINOCKET, ME VOR/DME	PRESQUE ISLE, ME VOR/DME	*3000
*2500 - MOCA		
PRESQUE ISLE, ME VOR/DME	GRINS, ME FIX	*5000
*3000 - MOCA		
GRINS, ME FIX	U.S. CANADIAN BORDER	3000

95.6041 VOR FEDERAL AIRWAY V41

CUTTA, OH FIX	YOUNGSTOWN, OH VORTAC	*5000
*3600 - GNSS MEA		

95.6043 VOR FEDERAL AIRWAY V43

YOUNGSTOWN, OH VORTAC	ERIE, PA VORTAC	*5000
*3000 - GNSS MEA		

95.6044 VOR FEDERAL AIRWAY V44

COLUMBIA, MO VOR/DME	HODGS, MO FIX	2800
HODGS, MO FIX	FORISTELL, MO VORTAC	*2800
*2200 - MOCA		
FORISTELL, MO VORTAC	MOODS, IL FIX	2600
MOODS, IL FIX	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	SAMSVILLE, IL VOR/DME	2400
FALMOUTH, KY VOR/DME	YORK, KY VORTAC	3300
YORK, KY VORTAC	PARKERSBURG, WV VOR/DME	3300
PARKERSBURG, WV VOR/DME	BENDS, WV FIX	3000
BENDS, WV FIX	MORGANTOWN, WV VOR/DME	4000
MORGANTOWN, WV VOR/DME	KEYER, WV FIX	5000
KEYER, WV FIX	MARTINSBURG, WV VORTAC	*5000
*4100 - MOCA		
MARTINSBURG, WV VORTAC	WOOLY, MD FIX	3200
WOOLY, MD FIX	BALTIMORE, MD VORTAC	2600
BALTIMORE, MD VORTAC	PALEO, MD FIX	*2200
*1700 - MOCA		
PALEO, MD FIX	SPEAK, MD FIX	*13500
*2000 - GNSS MEA		
SPEAK, MD FIX	SEA ISLE, NJ VORTAC	*7000
*1500 - MOCA		
*2000 - GNSS MEA		
SEA ISLE, NJ VORTAC	*KARRS, NJ FIX	**6000
*7000 - MCA KARRS, NJ FIX , NE BND		
**1800 - MOCA		
**2000 - GNSS MEA		
KARRS, NJ FIX	GAMBY, NJ FIX	*7000
*1300 - MOCA		
*2500 - GNSS MEA		
GAMBY, NJ FIX	DEER PARK, NY VOR/DME	*5000
*1600 - MOCA		
*2500 - GNSS MEA		

FROM	TO	MEA

95.6044 VOR FEDERAL AIRWAY V44 - CONTINUED

DEER PARK, NY VOR/DME	NESSI, CT FIX	2000
NESSI, CT FIX	BRIDGEPORT, CT VOR/DME	2000
BRIDGEPORT, CT VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	*ATHOS, NY FIX	3100
*8000 - MCA ATHOS, NY FIX , N BND		
ATHOS, NY FIX	GROUP, NY FIX	*8000
*3000 - GNSS MEA		
GROUP, NY FIX	*ALBANY, NY VORTAC	**6000
*6000 - MCA ALBANY, NY VORTAC , S BND		
**2800 - GNSS MEA		

95.6045 VOR FEDERAL AIRWAY V45

NEW BERN, NC VOR/DME	KINSTON, NC VORTAC	2500
KINSTON, NC VORTAC	WENDI, NC FIX	2000
WENDI, NC FIX	RALEIGH/DURHAM, NC VORTAC	2600
RALEIGH/DURHAM, NC VORTAC	*CHAPL, NC FIX	**2400
*2800 - MCA CHAPL, NC FIX , W BND		
**1900 - MOCA		
CHAPL, NC FIX	GREENSBORO, NC VORTAC	3100
GREENSBORO, NC VORTAC	*PROVE, NC FIX	2700
*3500 - MCA PROVE, NC FIX , NW BND		
PROVE, NC FIX	*FREON, NC FIX	4300
*4800 - MCA FREON, NC FIX , NW BND		
FREON, NC FIX	PULASKI, VA VORTAC	6200
PULASKI, VA VORTAC	BLUEFIELD, WV VOR/DME	6000
BLUEFIELD, WV VOR/DME	CHARLESTON, WV VOR/DME	*6000
*5500 - MOCA		
CHARLESTON, WV VOR/DME	HENDERSON, WV VORTAC	3100
HENDERSON, WV VORTAC	*BREMN, OH FIX	**10000
*10000 - MCA BREMN, OH FIX , S BND		
**3000 - GNSS MEA		
BREMN, OH FIX	APPLETON, OH VORTAC	3000
SAGINAW, MI VOR/DME	SEEKS, MI FIX	2200
SEEKS, MI FIX	ALPENA, MI VORTAC	*3500
*2600 - MOCA		
ALPENA, MI VORTAC	SAULT STE MARIE, MI VOR/DME	2900

95.6046 VOR FEDERAL AIRWAY V46

DEER PARK, NY VOR/DME	CALVERTON, NY VOR/DME	1900
CALVERTON, NY VOR/DME	HAMPTON, NY VORTAC	1900
HAMPTON, NY VORTAC	LIBBE, NY FIX	#000
#UNUSABLE		
LIBBE, NY FIX	CLAMY, MA FIX	*3000
*2000 - MOCA		
CLAMY, MA FIX	NANTUCKET, MA VOR/DME	2000

95.6047 VOR FEDERAL AIRWAY V47

PINE BLUFF, AR VOR/DME	GILMORE, AR VOR/DME	*4000
*1800 - MOCA		
GILMORE, AR VOR/DME	DYERSBURG, TN VORTAC	2500
DYERSBURG, TN VORTAC	CUNNINGHAM, KY VOR/DME	2400
CUNNINGHAM, KY VOR/DME	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200
CINCINNATI, KY VORTAC	MIZZA, OH FIX	2800

FROM	TO	MEA

95.6047 VOR FEDERAL AIRWAY V47 - CONTINUED

MIZZA, OH FIX	ROSEWOOD, OH VORTAC	3000
ROSEWOOD, OH VORTAC	FLAG CITY, OH VORTAC	3000

95.6048 VOR FEDERAL AIRWAY V48

OTTUMWA, IA VOR/DME	BURLINGTON, IA VOR/DME	2500
BURLINGTON, IA VOR/DME	PEORIA, IL VORTAC	2500
PEORIA, IL VORTAC	MAROC, IL FIX	*3000
*2400 - MOCA		
MAROC, IL FIX	PONTIAC, IL VOR/DME	2500

95.6049 VOR FEDERAL AIRWAY V49

VULCAN, AL VORTAC	*FOLSO, AL FIX	3100
*7000 - MRA		
FOLSO, AL FIX	MASHA, AL FIX	*3000
*2400 - MOCA		
MASHA, AL FIX	DECATUR, AL VOR/DME	*3000
*2200 - MOCA		
DECATUR, AL VOR/DME	ELKED, AL FIX	2500
ELKED, AL FIX	NASHVILLE, TN VORTAC	*3500
*2700 - MOCA		
NASHVILLE, TN VORTAC	TANDS, TN FIX	#*4000
*2300 - MOCA		
#BOWLING GREEN R-192 UNUSABLE USE NASHVILLE R-016		
TANDS, TN FIX	BOWLING GREEN, KY VORTAC	*4000
*2300 - MOCA		
BOWLING GREEN, KY VORTAC	MYSTIC, KY VOR	#2700
#BOWLING GREEN R-007 UNUSABLE USE MYSTIC R-190		

95.6050 VOR FEDERAL AIRWAY V50

HASTINGS, NE VOR/DME	PAWNEE CITY, NE VORTAC	4000
PAWNEE CITY, NE VORTAC	ST JOSEPH, MO VORTAC	4000
ST JOSEPH, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	QUINCY, IL VORTAC	2700
QUINCY, IL VORTAC	SPINNER, IL VORTAC	*3000
*2100 - MOCA		
SPINNER, IL VORTAC	ADDERS, IL VORTAC	3000
ADDERS, IL VORTAC	TERRE HAUTE, IN VORTAC	2500
TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	DAYTON, OH VOR/DME	3000

95.6051 VOR FEDERAL AIRWAY V51

PAHOKEE, FL VOR/DME	*SHEDS, FL FIX	2000
*3000 - MRA		
SHEDS, FL FIX	TREASURE, FL VORTAC	*2000
*1400 - MOCA		
TREASURE, FL VORTAC	OVIDO, FL FIX	*4000
*2800 - MOCA		
OVIDO, FL FIX	ORMOND BEACH, FL VORTAC	3000
ORMOND BEACH, FL VORTAC	*BULLI, FL FIX	**2000
*3000 - MRA		
**1400 - MOCA		

95.6051 VOR FEDERAL AIRWAY V51 - CONTINUED

FROM	TO	MEA
BULLI, FL FIX	*ASTOR, FL FIX	**2000
*3000 - MRA		
**1400 - MOCA		
ASTOR, FL FIX	CRAIG, FL VORTAC	2100
CRAIG, FL VORTAC	ALMA, GA VORTAC	#*5000
*1700 - MOCA		
*4000 - GNSS MEA		
#ALMA R-144 NA BELOW 10000		
ALMA, GA VORTAC	DUBLIN, GA VORTAC	#*3000
*2000 - GNSS MEA		
#ALMA R-345 UNUSABLE, USE DUBLIN R-170		
DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	*3000
*2200 - MOCA		
ATHENS, GA VOR/DME	IRMOS, GA FIX	3100
IRMOS, GA FIX	CORCE, GA FIX	3800
CORCE, GA FIX	TALLE, GA FIX	5300
TALLE, GA FIX	HARRIS, GA VORTAC	7000
HARRIS, GA VORTAC	ETOWA, TN FIX	7000
ETOWA, TN FIX	HINCH MOUNTAIN, TN VOR/DME	5000
HINCH MOUNTAIN, TN VOR/DME	LIVINGSTON, TN VOR/DME	5000
LIVINGSTON, TN VOR/DME	LOUISVILLE, KY VORTAC	3200
SHELBYVILLE, IN VOR/DME	*OCKEL, IN FIX	**5000
*4700 - MCA OCKEL, IN FIX , SE BND		
**2900 - MOCA		
OCKEL, IN FIX	BOILER, IN VORTAC	2600
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2800

95.6052 VOR FEDERAL AIRWAY V52

FROM	TO	MEA
DES MOINES, IA VORTAC	BUSSY, IA FIX	#*4500
*2400 - MOCA		
*2700 - GNSS MEA		
#DES MOINES R-105 UNUSABLE, USE OTTUMWA R-287		
BUSSY, IA FIX	OTTUMWA, IA VOR/DME	2700
OTTUMWA, IA VOR/DME	QUINCY, IL VORTAC	2600
QUINCY, IL VORTAC	*RIVRS, IL FIX	2600
*6000 - MRA		
RIVRS, IL FIX	ST LOUIS, MO VORTAC	2600
ST LOUIS, MO VORTAC	TROY, IL VORTAC	2400
TROY, IL VORTAC	CRATS, IL FIX	2600
CRATS, IL FIX	POCKET CITY, IN VORTAC	*4500
*2100 - MOCA		
POCKET CITY, IN VORTAC	*CENTRAL CITY, KY VORTAC	2300
*6900 - MCA CENTRAL CITY, KY VORTAC , SE BND		
CENTRAL CITY, KY VORTAC	*BOWLING GREEN, KY VORTAC	#**3000
*11000 - MCA BOWLING GREEN, KY VORTAC , SE BND		
**2400 - MOCA		
#BOWLING GREEN R-303 UNUSABLE USE CENTRAL CITY R-125		
BOWLING GREEN, KY VORTAC	LIVINGSTON, TN VOR/DME	11000

95.6053 VOR FEDERAL AIRWAY V53

FROM	TO	MEA
CHARLESTON, SC VORTAC	COLUMBIA, SC VORTAC	2000
COLUMBIA, SC VORTAC	WILLS, SC FIX	4000
WILLS, SC FIX	SPARTANBURG, SC VORTAC	2700
SPARTANBURG, SC VORTAC	CARTT, SC FIX	*3000
*2300 - MOCA		

95.6053 VOR FEDERAL AIRWAY V53 - CONTINUED

FROM	TO	MEA
CARTT, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	
	NW BND	6200
	SE BND	3000
SUGARLOAF MOUNTAIN, NC VORTAC	*BUSIC, NC FIX	8800
*9000 - MCA BUSIC, NC FIX , N BND		
BUSIC, NC FIX	*ROANS, TN FIX	9000
*9000 - MCA ROANS, TN FIX , S BND		
ROANS, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000
HOLSTON MOUNTAIN, TN VORTAC	HAZARD, KY VOR/DME	6400
HAZARD, KY VOR/DME	*IRVIN, KY FIX	4000
*6000 - MRA		
IRVIN, KY FIX	LEXINGTON, KY VOR/DME	4000
LEXINGTON, KY VOR/DME	*LOUISVILLE, KY VORTAC	2800
*7000 - MCA LOUISVILLE, KY VORTAC , NW BND		
LOUISVILLE, KY VORTAC	HOUSE, IN FIX	*10000
*3000 - MOCA		
HOUSE, IN FIX	MOUTH, IN FIX	*2800
*2300 - MOCA		
MOUTH, IN FIX	BRICKYARD, IN VORTAC	2700

95.6054 VOR FEDERAL AIRWAY V54

FROM	TO	MEA
WACO, TX VORTAC	CEDAR CREEK, TX VORTAC	2500
CEDAR CREEK, TX VORTAC	QUITMAN, TX VOR/DME	2500
QUITMAN, TX VOR/DME	TEXARKANA, AR VORTAC	2300
TEXARKANA, AR VORTAC	*WASHO, AR FIX	2200
*4000 - MRA		
WASHO, AR FIX	CANEY, AR FIX	*3500
*1800 - MOCA		
CANEY, AR FIX	MALVE, AR FIX	*3500
*1900 - MOCA		
MALVE, AR FIX	LITTLE ROCK, AR VORTAC	2000
LITTLE ROCK, AR VORTAC	MARVELL, AR VOR/DME	1900
MARVELL, AR VOR/DME	HOLLY SPRINGS, MS VORTAC	2200
HOLLY SPRINGS, MS VORTAC	MUSCLE SHOALS, AL VORTAC	3000
MUSCLE SHOALS, AL VORTAC	TANNE, AL FIX	2400
TANNE, AL FIX	ROCKET, AL VORTAC	2900
ROCKET, AL VORTAC	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	*CRAND, GA FIX	3000
*4500 - MCA CRAND, GA FIX , E BND		
CRAND, GA FIX	MELLS, GA FIX	6000
MELLS, GA FIX	HARRIS, GA VORTAC	*6000
*5200 - MOCA		
HARRIS, GA VORTAC	DILLA, GA FIX	7500
DILLA, GA FIX	RESTS, SC FIX	*8000
*6800 - MOCA		
RESTS, SC FIX	CLEVA, SC FIX	5000
CLEVA, SC FIX	SPARTANBURG, SC VORTAC	*4000
*3300 - GNSS MEA		
SPARTANBURG, SC VORTAC	CHARLOTTE, NC VOR/DME	#4000
#CHARLOTTE R-081 UNUSABLE BELOW 15000		
CHARLOTTE, NC VOR/DME	LOCAS, NC FIX	3100
LOCAS, NC FIX	SANDHILLS, NC VORTAC	2500
SANDHILLS, NC VORTAC	*RAEFO, NC FIX	**6000
*6000 - MRA		
**2000 - MOCA		
**3000 - GNSS MEA		
RAEFO, NC FIX	FAYETTEVILLE, NC VOR/DME	*2800
*1900 - MOCA		

FROM	TO	MEA

95.6053 VOR FEDERAL AIRWAY V54 - CONTINUED

FAYETTEVILLE, NC VOR/DME	KINSTON, NC VORTAC	*2000
*1900 - MOCA		

95.6055 VOR FEDERAL AIRWAY V55

DAYTON, OH VOR/DME	FORT WAYNE, IN VORTAC	2800
FORT WAYNE, IN VORTAC	GOSHEN, IN VORTAC	2700
GOSHEN, IN VORTAC	GIPPER, MI VORTAC	3000
GIPPER, MI VORTAC	KEELER, MI VOR/DME	*4000
*2300 - MOCA		
KEELER, MI VOR/DME	PULLMAN, MI VOR/DME	4000
PULLMAN, MI VOR/DME	MUSKEGON, MI VORTAC	2500
MUSKEGON, MI VORTAC	WHALL, MI FIX	2400
WHALL, MI FIX	NEROE, WI FIX	*5000
*2400 - MOCA		
NEROE, WI FIX	GREEN BAY, WI VORTAC	3000
GREEN BAY, WI VORTAC	BIPID, WI FIX	3000
EAU CLAIRE, WI VORTAC	SIREN, WI VOR/DME	*5000
*2800 - MOCA		
*3000 - GNSS MEA		
PARK RAPIDS, MN VOR/DME	BETRA, MN FIX	*4500
*3200 - MOCA		
*3600 - GNSS MEA		
BETRA, MN FIX	GRAND FORKS, ND VOR/DME	*3300
*2400 - MOCA		
GRAND FORKS, ND VOR/DME	*BEHQY, ND FIX	**8000
*12000 - MRA		
**3600 - MOCA		
BEHQY, ND FIX	BISMARCK, ND VOR/DME	3900

95.6056 VOR FEDERAL AIRWAY V56

MERIDIAN, MS VORTAC	KEWANEE, MS VORTAC	2000
KEWANEE, MS VORTAC	MONTGOMERY, AL VORTAC	*5500
*2300 - MOCA		
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	2000
TUSKEGEE, AL VOR/DME	MARVO, AL FIX	2100
MARVO, AL FIX	COLUMBUS, GA VORTAC	*2600
*2000 - MOCA		
COLUMBUS, GA VORTAC	*PRATZ, GA FIX	2500
*3000 - MRA		
MACON, GA VORTAC	MISTY, GA FIX	*6000
*2200 - MOCA		
MISTY, GA FIX	COLLIERS, SC VORTAC	2300
COLLIERS, SC VORTAC	COLUMBIA, SC VORTAC	3000
COLUMBIA, SC VORTAC	FLORENCE, SC VORTAC	2000
FLORENCE, SC VORTAC	FAYETTEVILLE, NC VOR/DME	2300
FAYETTEVILLE, NC VOR/DME	*ROZBO, NC FIX	
	E BND	7000
	W BND	2000
*5000 - MRA		
ROZBO, NC FIX	WALLO, NC FIX	
	E BND	7000
	W BND	2000
WALLO, NC FIX	KROVE, NC FIX	*7000
*2400 - MOCA		
*3000 - GNSS MEA		

FROM	TO	MEA

95.6053 VOR FEDERAL AIRWAY V56 - CONTINUED

KROVE, NC FIX	*NEW BERN, NC VOR/DME	
	E BND	**2400
	W BND	**7000
*3000 - MCA NEW BERN, NC VOR/DME , W BND		
**1800 - MOCA		

95.6057 VOR FEDERAL AIRWAY V57

LEXINGTON, KY VOR/DME	FALMOUTH, KY VOR/DME	3000

95.6058 VOR FEDERAL AIRWAY V58

GRACE, PA FIX	*EARED, PA FIX	3400
*4000 - MRA		
EARED, PA FIX	PHILIPSBURG, PA VORTAC	*6000
*4100 - MOCA		
*5000 - GNSS MEA		
PHILIPSBURG, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
HELON, NY FIX	KINGSTON, NY VOR/DME	4000
KINGSTON, NY VOR/DME	HARTFORD, CT VOR/DME	3200
HARTFORD, CT VOR/DME	GROTON, CT VOR/DME	2500
GROTON, CT VOR/DME	SANDY POINT, RI VOR/DME	*2000
*1500 - MOCA		
SANDY POINT, RI VOR/DME	NANTUCKET, MA VOR/DME	2000

95.6059 VOR FEDERAL AIRWAY V59

PULASKI, VA VORTAC	BECKLEY, WV VOR/DME	6000
BECKLEY, WV VOR/DME	ITALY, WV FIX	*5000
*4300 - MOCA		
ITALY, WV FIX	WARDO, WV FIX	*5000
*4300 - MOCA		
WARDO, WV FIX	*EDSOE, WV FIX	3000
*3500 - MRA		
EDSOE, WV FIX	PARKERSBURG, WV VOR/DME	3000
PARKERSBURG, WV VOR/DME	NEWCOMERSTOWN, OH VOR/DME	3000

95.6060 VOR FEDERAL AIRWAY V60

GALLUP, NM VORTAC	*CUBBA, NM FIX	11000
*10000 - MCA CUBBA, NM FIX , W BND		
CUBBA, NM FIX	ALBUQUERQUE, NM VORTAC	8600
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR	10000
OTTO, NM VOR	FORT UNION, NM VORTAC	10000

95.6061 VOR FEDERAL AIRWAY V61

GRAND ISLAND, NE VOR/DME	PAWNEE CITY, NE VORTAC	*4000
*3200 - MOCA		
PAWNEE CITY, NE VORTAC	ROBINSON, KS VOR/DME	2800
ROBINSON, KS VOR/DME	BOWLR, KS FIX	2600

FROM	TO	MEA

95.6062 VOR FEDERAL AIRWAY V62

GALLUP, NM VORTAC	CABZO, NM FIX	11000
CABZO, NM FIX	ZIASE, NM FIX	10000
ZIASE, NM FIX	SANTA FE, NM VORTAC	9000
SANTA FE, NM VORTAC	ANTON CHICO, NM VORTAC	10000
ANTON CHICO, NM VORTAC	FLUTY, NM FIX	8000
FLUTY, NM FIX	TEXICO, TX VORTAC	6500
TEXICO, TX VORTAC	SPADE, TX FIX	5900
SPADE, TX FIX	LUBBOCK, TX VORTAC	5000
LUBBOCK, TX VORTAC	ROTAN, TX FIX	*6000
*5000 - MOCA		
ROTAN, TX FIX	ABILENE, TX VORTAC	
	SE BND	3700
	NW BND	6000
ABILENE, TX VORTAC	FLECK, TX FIX	3300
FLECK, TX FIX	GEENI, TX FIX	*4000
*3500 - MOCA		
GEENI, TX FIX	GLEN ROSE, TX VORTAC	*3500
*3000 - MOCA		

95.6063 VOR FEDERAL AIRWAY V63

BOWIE, TX VORTAC	TEXOMA, OK VOR/DME	3000
TEXOMA, OK VOR/DME	MC ALESTER, OK VORTAC	2800
MC ALESTER, OK VORTAC	RAZORBACK, AR VORTAC	*4000
*3000 - MOCA		
RAZORBACK, AR VORTAC	GAMPS, AR FIX	3500
GAMPS, AR FIX	BILIE, MO FIX	*4000
*3200 - MOCA		
BILIE, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	PLADD, MO FIX	3000
PLADD, MO FIX	BARTI, MO FIX	*6000
*2600 - MOCA		
BARTI, MO FIX	HALLSVILLE, MO VORTAC	3100
HALLSVILLE, MO VORTAC	QUINCY, IL VORTAC	2900
QUINCY, IL VORTAC	BURLINGTON, IA VOR/DME	2600
BURLINGTON, IA VOR/DME	MOLINE, IL VOR/DME	3100
MOLINE, IL VOR/DME	DAVENPORT, IA VORTAC	3100
DAVENPORT, IA VORTAC	*MIHAL, IL FIX	2700
*4000 - MRA		
MIHAL, IL FIX	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	JANESVILLE, WI VOR/DME	2700
JANESVILLE, WI VOR/DME	*DEBOW, WI FIX	#**4000
*10000 - MRA		
**3000 - GNSS MEA		
#JANESVILLE R-044 UNUSABLE, USE BADGER R-226		
DEBOW, WI FIX	RASTT, WI FIX	*4000
*4000 - GNSS MEA		
RASTT, WI FIX	BADGER, WI VOR/DME	*3000
*3000 - GNSS MEA		
BADGER, WI VOR/DME	OSHKOSH, WI VORTAC	3000
WAUSAU, WI VORTAC	RHINELANDER, WI VOR/DME	#000
#UNUSABLE		
RHINELANDER, WI VOR/DME	HOUGHTON, MI VOR/DME	3600

95.6064 VOR FEDERAL AIRWAY V64

LOS ANGELES, CA VORTAC	LIMBO, CA FIX	3000
LIMBO, CA FIX	*WILMA, CA FIX	3200
*2800 - MCA WILMA, CA FIX , W BND		
WILMA, CA FIX	SEAL BEACH, CA VORTAC	2300

95.6064 VOR FEDERAL AIRWAY V64 - CONTINUED

FROM	TO	MEA
SEAL BEACH, CA VORTAC	*TUSTI, CA FIX	3000
*6200 - MCA TUSTI, CA FIX , E BND		
TUSTI, CA FIX	COREL, CA FIX	
	W BND	6200
	E BND	8000
COREL, CA FIX	PERIS, CA FIX	
	W BND	8000
	E BND	11000
PERIS, CA FIX	HEMET, CA FIX	*11000
*6700 - MOCA		
HEMET, CA FIX	HAPPE, CA FIX	*11000
*10200 - MOCA		
HAPPE, CA FIX	BALDI, CA FIX	10500
BALDI, CA FIX	CORLA, CA FIX	
	W BND	9700
	E BND	8000
CORLA, CA FIX	*THERMAL, CA VORTAC	
	W BND	8400
	E BND	6000
*7700 - MCA THERMAL, CA VORTAC , W BND		
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	7000

95.6066 VOR FEDERAL AIRWAY V66

FROM	TO	MEA
MISSION BAY, CA VORTAC	*RYAHH, CA FIX	
	E BND	7000
	W BND	4000
*6400 - MCA RYAHH, CA FIX , E BND		
RYAHH, CA FIX	BARET, CA FIX	
	E BND	*8400
	W BND	*7000
*6100 - MOCA		
BARET, CA FIX	*KUMBA, CA FIX	8400
*6700 - MCA KUMBA, CA FIX , W BND		
KUMBA, CA FIX	IMPERIAL, CA VORTAC	4300
IMPERIAL, CA VORTAC	BARD, CA VORTAC	3600
BARD, CA VORTAC	*MOHAK, AZ FIX	
	W BND	4000
	E BND	6000
*6000 - MCA MOHAK, AZ FIX , E BND		
MOHAK, AZ FIX	*JUDTH, AZ FIX	**6000
*6000 - MCA JUDTH, AZ FIX , W BND		
**4000 - MOCA		
JUDTH, AZ FIX	GILA BEND, AZ VORTAC	
	W BND	6000
	E BND	4000
GILA BEND, AZ VORTAC	FLIER, AZ FIX	6500
FLIER, AZ FIX	TUCSON, AZ VORTAC	*8000
*6700 - MOCA		
TUCSON, AZ VORTAC	*SULLI, AZ FIX	**8000
*9200 - MCA SULLI, AZ FIX , E BND		
**7200 - MOCA		
SULLI, AZ FIX	DOUGLAS, AZ VORTAC	10000
DOUGLAS, AZ VORTAC	ANIMA, NM FIX	*11000
*8700 - MOCA		
ANIMA, NM FIX	DARCE, NM FIX	9000
DARCE, NM FIX	COLUMBUS, NM VOR/DME	*9000
*8200 - MOCA		
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000
EL PASO, TX VORTAC	HUDSPETH, TX VORTAC	7500

FROM TO MEA

95.6066 VOR FEDERAL AIRWAY V66 - CONTINUED

FROM	TO	MEA
HUDSPETH, TX VORTAC	PECOS, TX VOR/DME	*9000
*8000 - MOCA		
PECOS, TX VOR/DME	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	BYPAS, TX FIX	*5000
*4400 - MOCA		
BYPAS, TX FIX	*HYMAN, TX FIX	**6000
*5000 - MRA		
**4400 - MOCA		
HYMAN, TX FIX	TYEES, TX FIX	*7000
*4500 - MOCA		
TYEES, TX FIX	ABILENE, TX VORTAC	*7000
*4300 - MOCA		
ABILENE, TX VORTAC	TRUSS, TX FIX	3500
TRUSS, TX FIX	MILLSAP, TX VORTAC	3700
CRIMSON, AL VORTAC	BROOKWOOD, AL VORTAC	*2500
*2000 - MOCA		
BROOKWOOD, AL VORTAC	LAGRANGE, GA VORTAC	3400
LAGRANGE, GA VORTAC	CANER, GA FIX	3500
CANER, GA FIX	GRANT, GA FIX	*3000
*2400 - MOCA		
GRANT, GA FIX	*SMARR, GA FIX	**4000
*4500 - MCA SMARR, GA FIX , NE BND		
**2500 - MOCA		
**2600 - GNSS MEA		
SMARR, GA FIX	*SINCA, GA FIX	**4500
*4500 - MCA SINCA, GA FIX , SW BND		
**2500 - MOCA		
**2500 - GNSS MEA		
SINCA, GA FIX	ATHENS, GA VOR/DME	*3000
*2200 - MOCA		
ATHENS, GA VOR/DME	GREENWOOD, SC VORTAC	*2500
*2200 - MOCA		
GREENWOOD, SC VORTAC	RICHE, SC FIX	*4000
*2100 - MOCA		
*2500 - GNSS MEA		
RICHE, SC FIX	SANDHILLS, NC VORTAC	*8000
*2300 - MOCA		
*2500 - GNSS MEA		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	2500
RALEIGH/DURHAM, NC VORTAC	FRANKLIN, VA VORTAC	2600

95.6067 VOR FEDERAL AIRWAY V67

FROM	TO	MEA
CHOO CHOO, TN VORTAC	SHELBYVILLE, TN VOR/DME	4000
CUNNINGHAM, KY VOR/DME	MARION, IL VOR/DME	2600
MARION, IL VOR/DME	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	VANDALIA, IL VORTAC	2500
VANDALIA, IL VORTAC	SPINNER, IL VORTAC	2500
SPINNER, IL VORTAC	BURLINGTON, IA VOR/DME	*2500
*2200 - MOCA		
BURLINGTON, IA VOR/DME	IOWA CITY, IA VOR/DME	*2600
*2100 - MOCA		
IOWA CITY, IA VOR/DME	CEDAR RAPIDS, IA VOR/DME	2700
CEDAR RAPIDS, IA VOR/DME	*LYERS, IA FIX	3300
*4000 - MRA		
LYERS, IA FIX	WATERLOO, IA VOR/DME	3300
WATERLOO, IA VOR/DME	FOYDE, IA FIX	3000
FOYDE, IA FIX	ROCHESTER, MN VOR/DME	3500

FROM	TO	MEA

95.6068 VOR FEDERAL AIRWAY V68

MONTROSE, CO VOR/DME	CONES, CO VOR/DME	12000
CONES, CO VOR/DME	DOVE CREEK, CO VORTAC	12000
DOVE CREEK, CO VORTAC	CORTEZ, CO VOR/DME	9800
CORTEZ, CO VOR/DME	PLATA, NM FIX	10600
PLATA, NM FIX	RATTLESNAKE, NM VORTAC	10000
RATTLESNAKE, NM VORTAC	OTINS, NM FIX	9000
OTINS, NM FIX	PEDRA, NM FIX	*11500
*10000 - MOCA		
PEDRA, NM FIX	ALBUQUERQUE, NM VORTAC	9000
*ALBUQUERQUE, NM VORTAC	CORONA, NM VORTAC	12000
*10000 - MCA ALBUQUERQUE, NM VORTAC , SE BND		
CORONA, NM VORTAC	HONDS, NM FIX	9000
HONDS, NM FIX	CHISUM, NM VORTAC	
	NW BND	9000
	SE BND	6500
CHISUM, NM VORTAC	HAGER, NM FIX	
	W BND	6000
	E BND	6500
HAGER, NM FIX	HOBBS, NM VORTAC	6500
HOBBS, NM VORTAC	ANEEL, TX FIX	5200
ANEEL, TX FIX	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	JOKES, TX FIX	4500
JOKES, TX FIX	STEEP, TX FIX	*5000
*4200 - MOCA		
STEEP, TX FIX	TANKR, TX FIX	4400
TANKR, TX FIX	SAN ANGELO, TX VORTAC	3700
SAN ANGELO, TX VORTAC	JUNCTION, TX VORTAC	4000
JUNCTION, TX VORTAC	CENTER POINT, TX VORTAC	4000
CENTER POINT, TX VORTAC	SAN ANTONIO, TX VORTAC	4100
SAN ANTONIO, TX VORTAC	*BRAUN, TX FIX	3100
*5500 - MRA		
BRAUN, TX FIX	MARCS, TX FIX	3100
MARCS, TX FIX	CRAYS, TX FIX	*2900
*2000 - MOCA		
CRAYS, TX FIX	INDUSTRY, TX VORTAC	2600
INDUSTRY, TX VORTAC	SEALY, TX FIX	2100
SEALY, TX FIX	HOBBY, TX VOR/DME	2000

95.6069 VOR FEDERAL AIRWAY V69

EL DORADO, AR VOR/DME	PINE BLUFF, AR VOR/DME	2000
PINE BLUFF, AR VOR/DME	BILLI, AR FIX	2000
BILLI, AR FIX	*HILLE, AR FIX	**6000
*6000 - MRA		
**1500 - MOCA		
HILLE, AR FIX	WALNUT RIDGE, AR VORTAC	*4000
*3000 - MOCA		
WALNUT RIDGE, AR VORTAC	FARMINGTON, MO VORTAC	3000
FARMINGTON, MO VORTAC	TROY, IL VORTAC	*3000
*2500 - MOCA		
TROY, IL VORTAC	SPINNER, IL VORTAC	2500
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	*3000
*2300 - MOCA		
PONTIAC, IL VOR/DME	JOLIET, IL VOR/DME	*3000
*2200 - MOCA		

95.6070 VOR FEDERAL AIRWAY V70

FROM	TO	MEA
U.S./MEXICO BORDER	BROWNSVILLE, TX VORTAC	*5000
*1600 - MOCA		
BROWNSVILLE, TX VORTAC	RAYMO, TX FIX	
	N BND	*3800
	S BND	*1600
*1600 - GNSS MEA		
RAYMO, TX FIX	JIMIE, TX FIX	
	N BND	*6000
	S BND	*4000
*1600 - MOCA		
*2000 - GNSS MEA		
JIMIE, TX FIX	JETTY, TX FIX	*6000
*1800 - MOCA		
*2000 - GNSS MEA		
JETTY, TX FIX	CORPUS CHRISTI, TX VORTAC	
	N BND	*2100
	S BND	*3800
*2100 - GNSS MEA		
CORPUS CHRISTI, TX VORTAC	BETZY, TX FIX	1800
BETZY, TX FIX	PALACIOS, TX VORTAC	2000
PALACIOS, TX VORTAC	SCHOLES, TX VOR/DME	2600
SCHOLES, TX VOR/DME	SABINE PASS, TX VOR/DME	2000
SABINE PASS, TX VOR/DME	LAKE CHARLES, LA VORTAC	1700
LAKE CHARLES, LA VORTAC	LAFAYETTE, LA VORTAC	1800
LAFAYETTE, LA VORTAC	*ROSEY, LA FIX	2100
*5000 - MRA		
ROSEY, LA FIX	FIGHTING TIGER, LA VORTAC	2100
FIGHTING TIGER, LA VORTAC	PICAYUNE, MS VOR/DME	2000
PICAYUNE, MS VOR/DME	GREENE COUNTY, MS VORTAC	2000
GREENE COUNTY, MS VORTAC	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	CHAFF, AL FIX	2000
CHAFF, AL FIX	*RUTEL, AL FIX	**2500
*4500 - MCA RUTEL, AL FIX , NE BND		
**1800 - MOCA		
RUTEL, AL FIX	*CRENS, AL FIX	**4500
*4500 - MCA CRENS, AL FIX , SW BND		
**1800 - MOCA		
CRENS, AL FIX	BANBI, AL FIX	2400
BANBI, AL FIX	EUFAULA, AL VORTAC	2400
EUFAULA, AL VORTAC	VIENNA, GA VORTAC	2400
VIENNA, GA VORTAC	OCONE, GA FIX	*3000
*2100 - MOCA		
OCONE, GA FIX	MILEN, GA FIX	*3000
*1900 - MOCA		MAA - 9000
MILEN, GA FIX	ALLENDALE, SC VOR	*3000
*1800 - MOCA		
GRAND STRAND, SC VORTAC	WILMINGTON, NC VORTAC	#3100
#COP NE TO WILMINGTON R-240 UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		
WILMINGTON, NC VORTAC	BEULA, NC FIX	#*8000
*1600 - MOCA		
*2000 - GNSS MEA		
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		
BEULA, NC FIX	*KINSTON, NC VORTAC	
	N BND	#2000
	S BND	8000
*4400 - MCA KINSTON, NC VORTAC , S BND		
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		
KINSTON, NC VORTAC	PEARS, NC FIX	#2500
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		

FROM	TO	MEA

95.6070 VOR FEDERAL AIRWAY V70 - CONTINUED

FROM	TO	MEA
PEARS, NC FIX	COFIELD, NC VORTAC	*3000
*2000 - MOCA		

95.6071 VOR FEDERAL AIRWAY V71

FROM	TO	MEA
FIGHTING TIGER, LA VORTAC	WRACK, LA FIX	*2200
*1800 - MOCA		
WRACK, LA FIX	NATCHEZ, MS VOR/DME	*3500
*2200 - MOCA		
*2200 - GNSS MEA		
NATCHEZ, MS VOR/DME	MONROE, LA VORTAC	2000
MONROE, LA VORTAC	EL DORADO, AR VOR/DME	2200
EL DORADO, AR VOR/DME	SPARO, AR FIX	
	S BND	*2500
	N BND	*4000
*1800 - MOCA		
SPARO, AR FIX	CANEY, AR FIX	*4000
*1700 - MOCA		
CANEY, AR FIX	HOT SPRINGS, AR VOR/DME	
	N BND	3000
	S BND	3500
HOT SPRINGS, AR VOR/DME	OLLAS, AR FIX	*3600
*3100 - MOCA		
OLLAS, AR FIX	*HAAWK, AR FIX	**4500
*10000 - MCA HAAWK, AR FIX , N BND		
**2500 - MOCA		
HAAWK, AR FIX	HARRISON, AR VOR/DME	*10000
*3700 - MOCA		
*4000 - GNSS MEA		
HARRISON, AR VOR/DME	REEDS, MO FIX	3300
REEDS, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	*SHIRE, MO FIX	**3000
*4000 - MRA		
**2500 - MOCA		
SHIRE, MO FIX	BUTLER, MO VORTAC	*3000
*2500 - MOCA		
BUTLER, MO VORTAC	TOPEKA, KS VORTAC	3100
TOPEKA, KS VORTAC	PAWNEE CITY, NE VORTAC	*4000
*2800 - MOCA		
PAWNEE CITY, NE VORTAC	LINCOLN, NE VORTAC	3000
LINCOLN, NE VORTAC	DWELL, NE FIX	*3300
*2600 - MOCA		
DWELL, NE FIX	COLUMBUS, NE VOR/DME	*3500
*3000 - MOCA		
COLUMBUS, NE VOR/DME	O'NEILL, NE VORTAC	4000
O'NEILL, NE VORTAC	WINNER, SD VOR	4000
WINNER, SD VOR	PIERRE, SD VORTAC	4100
PIERRE, SD VORTAC	LINTN, ND FIX	*5500
*3600 - MOCA		
LINTN, ND FIX	BISMARCK, ND VOR/DME	
	S BND	5500
	N BND	3600
BISMARCK, ND VOR/DME	CENTR, ND FIX	
	W BND	5600
	E BND	4000
CENTR, ND FIX	WILLISTON, ND VOR/DME	*5600
*3900 - MOCA		

95.6072 VOR FEDERAL AIRWAY V72

FROM	TO	MEA
RAZORBACK, AR VORTAC	EDUGE, AR FIX	3500
EDUGE, AR FIX *2900 - MOCA	REEDS, MO FIX	*4000
REEDS, MO FIX *2900 - MOCA	DOGWOOD, MO VORTAC	*3400
DOGWOOD, MO VORTAC	GOBEY, MO FIX	3400
GOBEY, MO FIX	MAPLES, MO VORTAC	3400
MAPLES, MO VORTAC	BUNKS, MO FIX	3000
BUNKS, MO FIX	FARMINGTON, MO VORTAC	3500
FARMINGTON, MO VORTAC *2500 - MOCA	NIKEL, IL FIX	*3000
NIKEL, IL FIX	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	BIBLE GROVE, IL VORTAC	2600

95.6073 VOR FEDERAL AIRWAY V73

FROM	TO	MEA
TULSA, OK VORTAC	FRAKS, OK FIX	3000
FRAKS, OK FIX	WICHITA, KS VORTAC	4000
WICHITA, KS VORTAC	HUTCHINSON, KS VOR/DME	3600
HUTCHINSON, KS VOR/DME	SALINA, KS VORTAC	3400

95.6074 VOR FEDERAL AIRWAY V74

FROM	TO	MEA
GARDEN CITY, KS VORTAC	DODGE CITY, KS VORTAC	4600
DODGE CITY, KS VORTAC *4500 - MRA	*SAFER, KS FIX	4300
SAFER, KS FIX	ANTHONY, KS VORTAC	
	NW BND	4300
	SE BND	3600
ANTHONY, KS VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	MANON, OK FIX	2700
MANON, OK FIX	TULSA, OK VORTAC	2500
TULSA, OK VORTAC	OWETA, OK FIX	3200
OWETA, OK FIX *1900 - MOCA	MALTS, OK FIX	*2800
MALTS, OK FIX	FORT SMITH, AR VORTAC	3000
FORT SMITH, AR VORTAC	MAGGA, AR FIX	
	E BND	4500
	W BND	4000
MAGGA, AR FIX *4000 - MOCA	DANIL, AR FIX	*4500
DANIL, AR FIX *2600 - MOCA	OLLAS, AR FIX	*4500
OLLAS, AR FIX *2700 - MOCA	MAUME, AR FIX	*4500
MAUME, AR FIX	LITTLE ROCK, AR VORTAC	3500
LITTLE ROCK, AR VORTAC	PINE BLUFF, AR VOR/DME	2500
PINE BLUFF, AR VOR/DME	GREENVILLE, MS VOR/DME	2000
GREENVILLE, MS VOR/DME	MAGNOLIA, MS VORTAC	2000

95.6075 VOR FEDERAL AIRWAY V75

FROM	TO	MEA
MORGANTOWN, WV VOR/DME	BELLAIRE, OH VOR/DME	4000
BELLAIRE, OH VOR/DME *3000 - MOCA	ATWOO, OH FIX	*6000
ATWOO, OH FIX *3100 - MOCA *3100 - GNSS MEA	BRIGGS, OH VOR/DME	*4000

FROM	TO	MEA

95.6076 VOR FEDERAL AIRWAY V76

LUBBOCK, TX VORTAC	*WELCH, TX FIX	5200
*7000 - MRA		
WELCH, TX FIX	PATTS, TX FIX	*6100
*5200 - MOCA		
PATTS, TX FIX	BIG SPRING, TX VORTAC	4700
BIG SPRING, TX VORTAC	*HYMAN, TX FIX	4500
*5000 - MRA		
HYMAN, TX FIX	*WATOR, TX FIX	4500
*7000 - MRA		
WATOR, TX FIX	SAN ANGELO, TX VORTAC	4500
SAN ANGELO, TX VORTAC	EVILE, TX FIX	3700
EVILE, TX FIX	BREDY, TX FIX	3800
BREDY, TX FIX	LLANO, TX VORTAC	3500
LLANO, TX VORTAC	CENTEX, TX VORTAC	3200
CENTEX, TX VORTAC	MOUZE, TX FIX	2200
MOUZE, TX FIX	INDUSTRY, TX VORTAC	2100
INDUSTRY, TX VORTAC	SEALY, TX FIX	2100
SEALY, TX FIX	HOBBY, TX VOR/DME	2000

95.6077 VOR FEDERAL AIRWAY V77

SAN ANGELO, TX VORTAC	ABILENE, TX VORTAC	4000
ABILENE, TX VORTAC	WICHITA FALLS, TX VORTAC	*3900
*3400 - MOCA		
WICHITA FALLS, TX VORTAC	FOYER, OK FIX	2900
FOYER, OK FIX	*FLECH, OK FIX	3000
*4900 - MRA		
FLECH, OK FIX	*NEADS, OK FIX	**3800
*5400 - MRA		
**2800 - MOCA		
NEADS, OK FIX	WILL ROGERS, OK VORTAC	3000
WILL ROGERS, OK VORTAC	CASTN, OK FIX	3500
CASTN, OK FIX	WENDY, OK FIX	4000
WENDY, OK FIX	PIONEER, OK VORTAC	2900
PIONEER, OK VORTAC	WICHITA, KS VORTAC	3600
WICHITA, KS VORTAC	*FLOSS, KS FIX	3600
*5000 - MRA		
FLOSS, KS FIX	HEYDN, KS FIX	*5000
*2900 - MOCA		
HEYDN, KS FIX	TOPEKA, KS VORTAC	3700
TOPEKA, KS VORTAC	ST JOSEPH, MO VORTAC	3000
ST JOSEPH, MO VORTAC	LAMONI, IA VOR/DME	2900
LAMONI, IA VOR/DME	*WIVEY, IA FIX	3000
*4300 - MRA		
WIVEY, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	*MIXIN, IA FIX	3100
*5000 - MRA		
MIXIN, IA FIX	NEWTON, IA VOR/DME	3000
NEWTON, IA VOR/DME	WATERLOO, IA VOR/DME	2800
WATERLOO, IA VOR/DME	WAUKON, IA VOR/DME	*3000
*2800 - MOCA		

95.6078 VOR FEDERAL AIRWAY V78

HURON, SD VORTAC	WATERTOWN, SD VORTAC	*3700
*3100 - MOCA		
WATERTOWN, SD VORTAC	CLAPS, MN FIX	*5500
*3300 - MOCA		
CLAPS, MN FIX	DARWIN, MN VORTAC	3000
DARWIN, MN VORTAC	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC	EAU CLAIRE, WI VORTAC	3400
EAU CLAIRE, WI VORTAC	RHINELANDER, WI VOR/DME	3700

95.6070 VOR FEDERAL AIRWAY V78 - CONTINUED

FROM	TO	MEA
RHINELANDER, WI VOR/DME	IRON MOUNTAIN, MI VOR/DME	4400
IRON MOUNTAIN, MI VOR/DME	VUKFI, MI FIX	3300
VUKFI, MI FIX	ESCANABA, MI VOR/DME	*3000
*2300 - MOCA		
PELLSTON, MI VORTAC	ALPENA, MI VORTAC	2700
ALPENA, MI VORTAC	*ZABLE, MI FIX	3000
*5000 - MCA ZABLE, MI FIX , S BND		
ZABLE, MI FIX	BANJO, MI FIX	*5000
*2900 - MOCA		
BANJO, MI FIX	BENNY, MI FIX	*3000
*2300 - MOCA		
BENNY, MI FIX	SAGINAW, MI VOR/DME	2400

95.6079 VOR FEDERAL AIRWAY V79

HASTINGS, NE VOR/DME	LINCOLN, NE VORTAC	4000

95.6080 VOR FEDERAL AIRWAY V80

AKRON, CO VOR/DME	HOLYO, CO FIX	6400
HOLYO, CO FIX	NORTH PLATTE, NE VOR/DME	*6500
*5000 - MOCA		
NORTH PLATTE, NE VOR/DME	O'NEILL, NE VORTAC	*5400
*4400 - MOCA		
O'NEILL, NE VORTAC	TYNDA, SD FIX	*4000
*3500 - MOCA		
TYNDA, SD FIX	DOLTS, SD FIX	*4000
*3200 - MOCA		
DOLTS, SD FIX	SIOUX FALLS, SD VORTAC	3400

95.6081 VOR FEDERAL AIRWAY V81

U.S. MEXICAN BORDER	MARFA, TX VOR/DME	10000
MARFA, TX VOR/DME	FORT STOCKTON, TX VORTAC	9000
FORT STOCKTON, TX VORTAC	MIDLAND, TX VORTAC	4500
MIDLAND, TX VORTAC	PATTS, TX FIX	4500
PATTS, TX FIX	*WELCH, TX FIX	**6100
*7000 - MRA		
**5200 - MOCA		
WELCH, TX FIX	LUBBOCK, TX VORTAC	5200
LUBBOCK, TX VORTAC	PLAINVIEW, TX VOR/DME	5000
PLAINVIEW, TX VOR/DME	*YOCAN, TX FIX	**5400
*6500 - MRA		
**4900 - MOCA		
YOCAN, TX FIX	PANHANDLE, TX VORTAC	5400
PANHANDLE, TX VORTAC	LANTT, TX FIX	6100
LANTT, TX FIX	EXELL, TX FIX	5400
EXELL, TX FIX	DALHART, TX VORTAC	5900
DALHART, TX VORTAC	TOBE, CO VOR/DME	8800
TOBE, CO VOR/DME	PUEBLO, CO VORTAC	7700
PUEBLO, CO VORTAC	*BLACK FOREST, CO VOR/DME	9500
*10000 - MCA BLACK FOREST, CO VOR/DME , N BND		
BLACK FOREST, CO VOR/DME	HOHUM, CO FIX	#*10000
*10000 - GNSS MEA		
#BLACK FOREST R-330 UNUSABLE		
HOHUM, CO FIX	SIGNE, CO FIX	9200
SIGNE, CO FIX	JEFFCO, CO VOR/DME	*9200
*8600 - MOCA		

FROM	TO	MEA

95.6080 VOR FEDERAL AIRWAY V81 - CONTINUED

JEFFCO, CO VOR/DME	WISER, CO FIX	8000
WISER, CO FIX	CHEYENNE, WY VORTAC	9000
CHEYENNE, WY VORTAC	SCOTTSBLUFF, NE VORTAC	8000
SCOTTSBLUFF, NE VORTAC	TOADSTOOL, NE VOR/DME	7000

95.6082 VOR FEDERAL AIRWAY V82

BAUDETTE, MN VOR/DME	BLUOX, MN FIX	*7000
*3400 - MOCA		
*3500 - GNSS MEA		
GOPHER, MN VORTAC	FARMINGTON, MN VORTAC	*3500
*2700 - MOCA		
FARMINGTON, MN VORTAC	*CORDY, MN FIX	3000
*4000 - MRA		
CORDY, MN FIX	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	DELLS, WI VORTAC	3000

95.6083 VOR FEDERAL AIRWAY V83

CARLSBAD, NM VORTAC	*NELON, NM FIX	5900
*7000 - MRA		
NELON, NM FIX	CHISUM, NM VORTAC	5900
CHISUM, NM VORTAC	HONDS, NM FIX	
	NW BND	9000
	SE BND	6500
HONDS, NM FIX	CORONA, NM VORTAC	9000
CORONA, NM VORTAC	OTTO, NM VOR	9000
OTTO, NM VOR	*LACRO, NM FIX	9000
*9000 - MRA		
LACRO, NM FIX	SANTA FE, NM VORTAC	9000
SANTA FE, NM VORTAC	NAMBE, NM FIX	
	N BND	11000
	S BND	9000
NAMBE, NM FIX	TAOS, NM VORTAC	11000
TAOS, NM VORTAC	*ALAMOSA, CO VORTAC	11600
*10400 - MCA ALAMOSA, CO VORTAC , S BND		
ALAMOSA, CO VORTAC	BLOKE, CO FIX	
	E BND	14000
	W BND	10400
BLOKE, CO FIX	*GOSIP, CO FIX	14000
*14000 - MCA GOSIP, CO FIX , SW BND		
GOSIP, CO FIX	PUEBLO, CO VORTAC	8700
PUEBLO, CO VORTAC	DRAKE, CO FIX	7600
DRAKE, CO FIX	BLACK FOREST, CO VOR/DME	9000

95.6084 VOR FEDERAL AIRWAY V84

NORTHBROOK, IL VOR/DME	*KUBBS, IL FIX	**2500
*4000 - MRA		
**1900 - MOCA		
KUBBS, IL FIX	*STORY, IL FIX	**2500
*3500 - MRA		
**1900 - MOCA		
STORY, IL FIX	PIVOT, IL FIX	*2500
*1900 - MOCA		
PIVOT, IL FIX	*JYBEE, MI FIX	**4000
*4000 - MRA		
**1900 - MOCA		

FROM	TO	MEA

95.6083 VOR FEDERAL AIRWAY V84 - CONTINUED

JYBEE, MI FIX	PULLMAN, MI VOR/DME	*4000
*2200 - MOCA		
BUFFALO, NY VOR/DME	GENESEO, NY VOR/DME	#4000
#BUF R-106 UNUSABLE.		
GENESEO, NY VOR/DME	BEEPS, NY FIX	*4000
*3300 - MOCA		
BEEPS, NY FIX	SYRACUSE, NY VORTAC	*3500
*2600 - MOCA		

95.6085 VOR FEDERAL AIRWAY V85

FALCON, CO VORTAC	HYGEN, CO FIX	
	SE BND	9400
	NW BND	16000
HYGEN, CO FIX	LARAMIE, WY VOR/DME	16000
LARAMIE, WY VOR/DME	MEDICINE BOW, WY VOR/DME	9400
MEDICINE BOW, WY VOR/DME	MULTI, WY FIX	10800
MULTI, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	
	N BND	8000
	S BND	10800
MUDDY MOUNTAIN, WY VOR/DME	RIVERTON, WY VOR/DME	8500
RIVERTON, WY VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	9600
BOYSEN RESERVOIR, WY VOR/DME	CODY, WY VOR/DME	9600
CODY, WY VOR/DME	EDDAR, MT FIX	8400
EDDAR, MT FIX	BILLINGS, MT VORTAC	
	S BND	8400
	N BND	7000

95.6086 VOR FEDERAL AIRWAY V86

MISSOULA, MT VOR/DME	COPPERTOWN, MT VOR/DME	*13000
*11300 - MOCA		
*12000 - GNSS MEA		
COPPERTOWN, MT VOR/DME	*WHITEHALL, MT VOR/DME	10500
*9100 - MCA WHITEHALL, MT VOR/DME , W BND		
WHITEHALL, MT VOR/DME	*BOZEMAN, MT VOR/DME	8500
*10200 - MCA BOZEMAN, MT VOR/DME , SE BND		
BOZEMAN, MT VOR/DME	LIVINGSTON, MT VOR/DME	10900
LIVINGSTON, MT VOR/DME	REEPO, MT FIX	9700
REEPO, MT FIX	COLUS, MT FIX	
	W BND	9700
	E BND	7000
COLUS, MT FIX	BILLINGS, MT VORTAC	
	W BND	9700
	E BND	6400
BILLINGS, MT VORTAC	KRONA, MT FIX	
	NW BND	6200
	SE BND	8000
KRONA, MT FIX	SHERIDAN, WY VOR/DME	8000
SHERIDAN, WY VOR/DME	WETON, WY FIX	#*10900
*7000 - MOCA		
*7000 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

95.6085 VOR FEDERAL AIRWAY V86 - CONTINUED

FROM	TO	MEA
WETON, WY FIX	*KOCYE, WY FIX	**13000
*15000 - MRA		
**7000 - MOCA		
**7000 - GNSS MEA		
KOCYE, WY FIX	KARAS, WY FIX	*13000
*8600 - MOCA		
*9000 - GNSS MEA		
KARAS, WY FIX	*PACTO, SD FIX	**11100
*9700 - MRA		
**9400 - MOCA		
**10000 - GNSS MEA		
PACTO, SD FIX	RAPID CITY, SD VORTAC	
	E BND	*8000
	W BND	*9700
*7100 - MOCA		

95.6087 VOR FEDERAL AIRWAY V87

FROM	TO	MEA
PANOCHE, CA VORTAC	SALINAS, CA VORTAC	6200
SALINAS, CA VORTAC	SANTY, CA FIX	*5000
*4000 - MOCA		
SANTY, CA FIX	WOODSIDE, CA VOR/DME	5100
WOODSIDE, CA VOR/DME	SAN FRANCISCO, CA VOR/DME	4700
SAN FRANCISCO, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	4000

95.6088 VOR FEDERAL AIRWAY V88

FROM	TO	MEA
TULSA, OK VORTAC	VINTA, OK FIX	2700
VINTA, OK FIX	NARCI, OK FIX	*4500
*2300 - MOCA		
*4000 - GNSS MEA		
NARCI, OK FIX	*WACCO, MO FIX	**6200
*6200 - MCA WACCO, MO FIX , SW BND		
**3100 - MOCA		
**4000 - GNSS MEA		
WACCO, MO FIX	*QUALM, MO FIX	**3700
*3700 - MCA QUALM, MO FIX , W BND		
**3000 - MOCA		
QUALM, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	VICHY, MO VOR/DME	3100
VICHY, MO VOR/DME	STEER, MO FIX	*3000
*2300 - MOCA		
STEER, MO FIX	TROY, IL VORTAC	2700

95.6089 VOR FEDERAL AIRWAY V89

FROM	TO	MEA
GILL, CO VOR/DME	HAMER, WY FIX	8000
HAMER, WY FIX	CHEYENNE, WY VORTAC	8500
CHEYENNE, WY VORTAC	LITER, WY FIX	8300
LITER, WY FIX	TOADSTOOL, NE VOR/DME	7800

FROM	TO	MEA

95.6091 VOR FEDERAL AIRWAY V91

SARDI, NY FIX	CALVERTON, NY VOR/DME	*2500
*1900 - MOCA		
CALVERTON, NY VOR/DME	NESSI, CT FIX	2000
NESSI, CT FIX	BRIDGEPORT, CT VOR/DME	2000
BRIDGEPORT, CT VOR/DME	ALBANY, NY VORTAC	*6000
*4100 - MOCA		
ALBANY, NY VORTAC	GLENS FALLS, NY VORTAC	*7000
*5000 - GNSS MEA		
GLENS FALLS, NY VORTAC	*ENSON, VT FIX	**10000
*10000 - MCA ENSON, VT FIX , SW BND		
**5000 - GNSS MEA		
ENSON, VT FIX	WEIGH, VT FIX	*4000
*2800 - MOCA		
WEIGH, VT FIX	BURLINGTON, VT VOR/DME	
	N BND	3000
	S BND	4000

95.6092 VOR FEDERAL AIRWAY V92

CHICAGO HEIGHTS, IL VORTAC	HALIE, IN FIX	2600
HALIE, IN FIX	INKEN, IN FIX	*4000
*2300 - MOCA		
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
NEWCOMERSTOWN, OH VOR/DME	BELLAIRE, OH VOR/DME	3000

95.6093 VOR FEDERAL AIRWAY V93

PATUXENT, MD VORTAC	*GRACO, MD FIX	**2500
*10000 - MRA		
**1700 - MOCA		
GRACO, MD FIX	PALEO, MD FIX	*10000
*1600 - MOCA		
PALEO, MD FIX	BALTIMORE, MD VORTAC	*2200
*1700 - MOCA		
BALTIMORE, MD VORTAC	VINNY, PA FIX	3000
VINNY, PA FIX	*ROAST, PA FIX	**9000
*10000 - MRA		
**4500 - GNSS MEA		
ROAST, PA FIX	LANCASTER, PA VOR/DME	
	SW BND	*9000
	NE BND	*4500
*2600 - MOCA		
*4500 - GNSS MEA		
LANCASTER, PA VOR/DME	HAILS, PA FIX	3400
HAILS, PA FIX	SNOWY, PA FIX	4000
SNOWY, PA FIX	LYTEL, PA FIX	4000
LYTEL, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	LAAYK, PA FIX	
	NE BND	*5000
	SW BND	*4000
*4000 - MOCA		
HELON, NY FIX	KINGSTON, NY VOR/DME	4000
KINGSTON, NY VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	CHESTER, MA VOR/DME	4000
CHESTER, MA VOR/DME	KEENE, NH VORTAC	*4000
*3500 - GNSS MEA		
KEENE, NH VORTAC	CONCORD, NH VOR/DME	5000
CONCORD, NH VOR/DME	KENNEBUNK, ME VOR/DME	3000

95.6093 VOR FEDERAL AIRWAY V93 - CONTINUED

KENNEBUNK, ME VOR/DME	BRNNS, ME FIX	*3000
*1600 - MOCA		
BRNNS, ME FIX	BANGOR, ME VORTAC	3000

95.6094 VOR FEDERAL AIRWAY V94

BLYTHE, CA VORTAC	*VICKO, AZ FIX	6000
*9000 - MRA		
VICKO, AZ FIX	GILA BEND, AZ VORTAC	*9000
*5200 - MOCA		
GILA BEND, AZ VORTAC	*POTER, AZ FIX	5000
*8000 - MRA		
POTER, AZ FIX	STANFIELD, AZ VORTAC	5000
STANFIELD, AZ VORTAC	*TOTEC, AZ FIX	**5000
*5500 - MCA TOTEC, AZ FIX , E BND		
**4300 - MOCA		
TOTEC, AZ FIX	CROME, AZ FIX	
	E BND	8000
	W BND	6500
CROME, AZ FIX	SAN SIMON, AZ VORTAC	10000
SAN SIMON, AZ VORTAC	DEMING, NM VORTAC	*9000
*8100 - MOCA		
DEMING, NM VORTAC	*MOLLY, NM FIX	**9000
*10000 - MRA		
**7700 - MOCA		
MOLLY, NM FIX	NEWMAN, TX VORTAC	9000
NEWMAN, TX VORTAC	SALT FLAT, TX VORTAC	8800
SALT FLAT, TX VORTAC	DILLI, TX FIX	8000
DILLI, TX FIX	CAVRN, TX FIX	*10000
*7500 - MOCA		
CAVRN, TX FIX	WINK, TX VORTAC	*10000
*5300 - MOCA		
WINK, TX VORTAC	YOGSU, TX FIX	5500
YOGSU, TX FIX	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	BYPAS, TX FIX	*5000
*4400 - MOCA		
BYPAS, TX FIX	*HYMAN, TX FIX	**6000
*5000 - MRA		
**4400 - MOCA		
HYMAN, TX FIX	TUSCOLA, TX VOR/DME	*7500
*4200 - MOCA		
TUSCOLA, TX VOR/DME	GEENI, TX FIX	4000
GEENI, TX FIX	GLEN ROSE, TX VORTAC	*3500
*3000 - MOCA		
GLEN ROSE, TX VORTAC	CEDAR CREEK, TX VORTAC	*3000
*2200 - MOCA		
CEDAR CREEK, TX VORTAC	GREGG COUNTY, TX VORTAC	2500
GREGG COUNTY, TX VORTAC	ELM GROVE, LA VORTAC	2000
ELM GROVE, LA VORTAC	*WETER, LA FIX	2400
*3000 - MRA		
WETER, LA FIX	MONROE, LA VORTAC	*2400
*1800 - MOCA		
MONROE, LA VORTAC	GREENVILLE, MS VOR/DME	2100
GREENVILLE, MS VOR/DME	HOLLY SPRINGS, MS VORTAC	*3000
*2100 - MOCA		

FROM	TO	MEA

95.6095 VOR FEDERAL AIRWAY V95

FROM	TO	MEA
GILA BEND, AZ VORTAC	*POTER, AZ FIX	5000
*8000 - MRA		
POTER, AZ FIX	PHOENIX, AZ VORTAC	8000
PHOENIX, AZ VORTAC	WINSLOW, AZ VORTAC	10000
WINSLOW, AZ VORTAC	*BUTTE, AZ FIX	
	NE BND	11000
	SW BND	8700
*9600 - MRA		
BUTTE, AZ FIX	CASTI, AZ FIX	
	NE BND	11000
	SW BND	8700
CASTI, AZ FIX	DERMA, NM FIX	*13000
*11400 - MOCA		
DERMA, NM FIX	RATTLESNAKE, NM VORTAC	
	E BND	8300
	W BND	13000
RATTLESNAKE, NM VORTAC	*DURANGO, CO VOR/DME	9700
*13200 - MCA DURANGO, CO VOR/DME , N BND		
DURANGO, CO VOR/DME	ZEANS, CO FIX	
	S BND	12300
	N BND	16500
ZEANS, CO FIX	LAZON, CO FIX	16500
LAZON, CO FIX	POWES, CO FIX	
	N BND	15000
	S BND	16500
POWES, CO FIX	BLUE MESA, CO VOR/DME	
	S BND	16500
	N BND	12800
BLUE MESA, CO VOR/DME	ROMLY, CO FIX	
	E BND	17000
	W BND	12000
ROMLY, CO FIX	*HOHUM, CO FIX	**17000
*13100 - MCA HOHUM, CO FIX , S BND		
**16200 - MOCA		
HOHUM, CO FIX	FALCON, CO VORTAC	9000

95.6096 VOR FEDERAL AIRWAY V96

FROM	TO	MEA
BRICKYARD, IN VORTAC	KOKOMO, IN VORTAC	2700
KOKOMO, IN VORTAC	FORT WAYNE, IN VORTAC	2600
FORT WAYNE, IN VORTAC	TWERP, OH FIX	*5000
*2300 - MOCA		

95.6097 VOR FEDERAL AIRWAY V97

FROM	TO	MEA
DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	*3000
*1500 - MOCA		
LA BELLE, FL VORTAC	ROGAN, FL FIX	
	SE BND	*2000
	NW BND	*4000
*2000 - GNSS MEA		
ROGAN, FL FIX	*BRDGE, FL FIX	**5000
*4300 - MCA BRDGE, FL FIX , SE BND		
**1400 - MOCA		
**2000 - GNSS MEA		
BRDGE, FL FIX	*ST PETERSBURG, FL VORTAC	2000
*3600 - MCA ST PETERSBURG, FL VORTAC , NW BND		

FROM	TO	MEA

95.6097 VOR FEDERAL AIRWAY V97 - CONTINUED

FROM	TO	MEA
ST PETERSBURG, FL VORTAC	DARBS, FL FIX	
	SE BND	*2100
	NW BND	*6000
*2100 - GNSS MEA		
DARBS, FL FIX	PLYER, FL FIX	*8000
*1400 - MOCA		
*4000 - GNSS MEA		
PLYER, FL FIX	CLAMP, FL FIX	*8000
*1400 - MOCA		
*4000 - GNSS MEA		
CLAMP, FL FIX	HEVVN, FL FIX	
	NW BND	*6000
	SE BND	*8000
*1400 - MOCA		
*4000 - GNSS MEA		
HEVVN, FL FIX	ADDAX, FL FIX	
	NW BND	*3000
	SE BND	*6000
*1400 - MOCA		
*2000 - GNSS MEA		
ADDAX, FL FIX	SEMINOLE, FL VORTAC	
	NW BND	*2000
	SE BND	*5000
*2000 - GNSS MEA		
SEMINOLE, FL VORTAC	PECAN, GA VOR/DME	2100
PECAN, GA VOR/DME	AMAPO, GA FIX	*2300
*1900 - MOCA		
AMAPO, GA FIX	*PRATZ, GA FIX	**3000
*3000 - MRA		
*4000 - MCA PRATZ, GA FIX , N BND		
**2300 - MOCA		
PRATZ, GA FIX	OLISY, GA FIX	*4000
*2700 - MOCA		
*3000 - GNSS MEA		
OLISY, GA FIX	ATLANTA, GA VORTAC	*3000
*2400 - MOCA		
ATLANTA, GA VORTAC	BAPPY, GA FIX	*4000
*3300 - MOCA		
BAPPY, GA FIX	NELLO, GA FIX	5000
NELLO, GA FIX	MELLS, GA FIX	*10000
*5800 - GNSS MEA		
MELLS, GA FIX	*HINDE, TN FIX	7400
*6600 - MCA HINDE, TN FIX , S BND		
HINDE, TN FIX	TALLA, TN FIX	6600
TALLA, TN FIX	VOLUNTEER, TN VORTAC	4200
VOLUNTEER, TN VORTAC	NOISE, TN FIX	3800
NOISE, TN FIX	LONDON, KY VOR/DME	*5000
*4200 - MOCA		
LONDON, KY VOR/DME	REBEL, KY FIX	*3400
*2900 - MOCA		
REBEL, KY FIX	LEXINGTON, KY VOR/DME	2800
LEXINGTON, KY VOR/DME	DARKS, KY FIX	3000
DARKS, KY FIX	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	SHELBYVILLE, IN VOR/DME	2800
SHELBYVILLE, IN VOR/DME	*OCKEL, IN FIX	**5000
*4700 - MCA OCKEL, IN FIX , SE BND		
**2900 - MOCA		
OCKEL, IN FIX	BOILER, IN VORTAC	2600
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2800
CHICAGO HEIGHTS, IL VORTAC	NILES, IL FIX	3500
KRENA, IL FIX	JANESVILLE, WI VOR/DME	2900

FROM	TO	MEA

95.6097 VOR FEDERAL AIRWAY V97 - CONTINUED

FROM	TO	MEA
JANESVILLE, WI VOR/DME	THEBO, WI FIX	3000
THEBO, WI FIX	LONE ROCK, WI VOR/DME	*3400
*2800 - MOCA		
LONE ROCK, WI VOR/DME	WEBYE, WI FIX	3000
WEBYE, WI FIX	NODINE, MN VORTAC	3100
NODINE, MN VORTAC	PEGGS, MN FIX	3000
PEGGS, MN FIX	GOPHER, MN VORTAC	3400

95.6099 VOR FEDERAL AIRWAY V99

FROM	TO	MEA
LA GUARDIA, NY VOR/DME	OUTTE, CT FIX	*4000
*1700 - MOCA		
OUTTE, CT FIX	SORRY, CT FIX	*4000
*2600 - MOCA		
SORRY, CT FIX	HARTFORD, CT VOR/DME	3000

95.6100 VOR FEDERAL AIRWAY V100

FROM	TO	MEA
MEDICINE BOW, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	9500
SCOTTSBLUFF, NE VORTAC	ALLIANCE, NE VOR/DME	6300
ALLIANCE, NE VOR/DME	AINSWORTH, NE VOR/DME	*7500
*5600 - MOCA		
AINSWORTH, NE VOR/DME	O'NEILL, NE VORTAC	4500
O'NEILL, NE VORTAC	SIOUX CITY, IA VORTAC	3700
SIOUX CITY, IA VORTAC	FORT DODGE, IA VORTAC	3000
FORT DODGE, IA VORTAC	WATERLOO, IA VOR/DME	3000
WATERLOO, IA VOR/DME	DUBUQUE, IA VORTAC	2900
DUBUQUE, IA VORTAC	ROCKFORD, IL VOR/DME	2900
ROCKFORD, IL VOR/DME	KRENA, IL FIX	2800
KRENA, IL FIX	FARMM, IL FIX	2900
FARMM, IL FIX	NORTHBROOK, IL VOR/DME	2700
NORTHBROOK, IL VOR/DME	*MINCE, MI FIX	2500
*3500 - MRA		
MINCE, MI FIX	MUSKY, MI FIX	2500
MUSKY, MI FIX	KEELER, MI VOR/DME	2400
KEELER, MI VOR/DME	LITCHFIELD, MI VOR/DME	2600

95.6101 VOR FEDERAL AIRWAY V101

FROM	TO	MEA
GILL, CO VOR/DME	*LIBEL, CO FIX	**10000
*13500 - MCA LIBEL, CO FIX , W BND		
**8900 - MOCA		
LIBEL, CO FIX	BROCC, CO FIX	16000
BROCC, CO FIX	ECHOA, CO FIX	13200
ECHOA, CO FIX	*HAYDEN, CO VOR/DME	
	E BND	13200
	W BND	11500
*11500 - MCA HAYDEN, CO VOR/DME , E BND		
HAYDEN, CO VOR/DME	STRIM, CO FIX	10000
STRIM, CO FIX	*RENAE, CO FIX	11000
*13000 - MRA		
RENAE, CO FIX	VERNAL, UT VOR/DME	11000
VERNAL, UT VOR/DME	*NEOLA, UT FIX	10000
*12000 - MCA NEOLA, UT FIX , W BND		
NEOLA, UT FIX	*WASATCH, UT VORTAC	15000
*11000 - MCA WASATCH, UT VORTAC , E BND		
WASATCH, UT VORTAC	OGDEN, UT VORTAC	7000
OGDEN, UT VORTAC	*KREBS, UT FIX	9400
*13000 - MRA		
KREBS, UT FIX	BLIDA, UT FIX	9400

FROM	TO	MEA

95.6100 VOR FEDERAL AIRWAY V101 - CONTINUED

BLIDA, UT FIX	MALTT, ID FIX	11400
MALTT, ID FIX	*BURLEY, ID VOR/DME	
	NW BND	**8000
	SE BND	**11400
*9300 - MCA BURLEY, ID VOR/DME , SE BND		
**7400 - MOCA		
BURLEY, ID VOR/DME	REAPS, ID FIX	
	S BND	7000
	N BND	9500
REAPS, ID FIX	HAILEY, ID NDB/DME	*9500
*8900 - MOCA		
HAILEY, ID NDB/DME	SOLDE, ID FIX	
	NE BND	9000
	SW BND	17000

95.6102 VOR FEDERAL AIRWAY V102

*SALT FLAT, TX VORTAC	CARLSBAD, NM VORTAC	10800
*10000 - MCA SALT FLAT, TX VORTAC , NE BND		
*CARLSBAD, NM VORTAC	HOBBS, NM VORTAC	5600
*7000 - MCA CARLSBAD, NM VORTAC , SW BND		
HOBBS, NM VORTAC	LUBBOCK, TX VORTAC	*6000
*5400 - MOCA		

95.6103 VOR FEDERAL AIRWAY V103

CHESTERFIELD, SC VOR/DME	GREENSBORO, NC VORTAC	2500
GREENSBORO, NC VORTAC	HENBY, VA FIX	3500
HENBY, VA FIX	TABER, VA FIX	5100
TABER, VA FIX	ROANOKE, VA VOR/DME	5600
ROANOKE, VA VOR/DME	NATTS, WV FIX	6000
NATTS, WV FIX	VELLI, WV FIX	7000
VELLI, WV FIX	ELKINS, WV VORTAC	*7000
*6400 - MOCA		
ELKINS, WV VORTAC	CLARKSBURG, WV VOR/DME	*5000
*3900 - MOCA		
CLARKSBURG, WV VOR/DME	BELLAIRE, OH VOR/DME	#3400
#CKB R-335 UNUSABLE BELOW 9000, USE AIR R-158.		
BELLAIRE, OH VOR/DME	ATWOO, OH FIX	*6000
*3000 - MOCA		
ATWOO, OH FIX	AKRON, OH VOR/DME	3000

95.6104 VOR FEDERAL AIRWAY V104

BURLINGTON, VT VOR/DME	MONTPELIER, VT VOR/DME	6300
MONTPELIER, VT VOR/DME	AYZOO, NH FIX	5400
AYZOO, NH FIX	BERLIN, NH VOR/DME	*7000
*6400 - MOCA		
BERLIN, NH VOR/DME	ANSYN, ME FIX	6500
ANSYN, ME FIX	BANGOR, ME VORTAC	4000

95.6105 VOR FEDERAL AIRWAY V105

FROM	TO	MEA
TUCSON, AZ VORTAC	STANFIELD, AZ VORTAC	*8000
*6700 - MOCA		
STANFIELD, AZ VORTAC	PHOENIX, AZ VORTAC	5000
PHOENIX, AZ VORTAC	KARLO, AZ FIX	10000
KARLO, AZ FIX	DRAKE, AZ VORTAC	*12000
*10000 - MOCA		
*10000 - GNSS MEA		
DRAKE, AZ VORTAC	WINDS, AZ FIX	10000
WINDS, AZ FIX	BOULDER CITY, NV VORTAC	*7000
*6000 - MOCA		
BOULDER CITY, NV VORTAC	*LAS VEGAS, NV VORTAC	6000
*10500 - MCA LAS VEGAS, NV VORTAC , W BND		
LAS VEGAS, NV VORTAC	HARLS, NV FIX	
	E BND	7000
	W BND	14000
HARLS, NV FIX	LUCKY, NV FIX	
	E BND	11000
	W BND	14000
LUCKY, NV FIX	*HIDEN, CA FIX	14000
*14000 - MRA		
*14000 - MCA HIDEN, CA FIX , E BND		
HIDEN, CA FIX	BEATTY, NV VORTAC	*12000
*8600 - MOCA		
BEATTY, NV VORTAC	COALDALE, NV VORTAC	*11000
*9600 - MOCA		
COALDALE, NV VORTAC	*YERIN, NV FIX	**14000
*12500 - MCA YERIN, NV FIX , SE BND		
**11200 - MOCA		
YERIN, NV FIX	CHIME, NV FIX	
	NW BND	10000
	SE BND	11500
CHIME, NV FIX	MUSTANG, NV VORTAC	10000

95.6106 VOR FEDERAL AIRWAY V106

FROM	TO	MEA
JOHNSTOWN, PA VOR/DME	HUDON, PA FIX	5000
HUDON, PA FIX	*RASHE, PA FIX	**7000
*14000 - MCA RASHE, PA FIX , E BND		
**4000 - MOCA		
**4000 - GNSS MEA		
RASHE, PA FIX	SELINSGROVE, PA VOR/DME	14000
SELINSGROVE, PA VOR/DME	DIANO, PA FIX	3700
DIANO, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	LAAYK, PA FIX	
	NE BND	*5000
	SW BND	*4000
*4000 - MOCA		
BARNES, MA VORTAC	GARDNER, MA VOR/DME	*3500
*3000 - MOCA		
GARDNER, MA VOR/DME	MANCHESTER, NH VOR/DME	4000
MANCHESTER, NH VOR/DME	RAYMY, NH FIX	*2600
*2100 - MOCA		
RAYMY, NH FIX	KENNEBUNK, ME VOR/DME	*5500
*2200 - MOCA		
*3000 - GNSS MEA		

95.6107 VOR FEDERAL AIRWAY V107

FROM	TO	MEA
LOS ANGELES, CA VORTAC	STABO, CA FIX	2500
STABO, CA FIX	*SANTA MONICA, CA VOR/DME	3000
*3700 - MCA SANTA MONICA, CA VOR/DME , W BND		
SANTA MONICA, CA VOR/DME	*FILLMORE, CA VORTAC	5000
*7500 - MCA FILLMORE, CA VORTAC , NW BND		
FILLMORE, CA VORTAC	PIRUE, CA FIX	
	SE BND	*8000
	NW BND	*9000
*7200 - MOCA		
PIRUE, CA FIX	REYES, CA FIX	*11000
*9200 - MOCA		
REYES, CA FIX	DERBB, CA FIX	11000
DERBB, CA FIX	AVENAL, CA VOR/DME	*7000
*6500 - MOCA		
AVENAL, CA VOR/DME	PANOCHE, CA VORTAC	8000
PANOCHE, CA VORTAC	*CATHE, CA FIX	**7000
*7000 - MCA CATHE, CA FIX , NW BND		
**5700 - MOCA		
CATHE, CA FIX	VINCO, CA FIX	*7000
*6400 - MOCA		
VINCO, CA FIX	MABRY, CA FIX	
	S BND	7000
	N BND	6000
MABRY, CA FIX	MISON, CA FIX	
	N BND	5500
	S BND	7000
MISON, CA FIX	OAKLAND, CA VOR/DME	
	SE BND	7000
	NW BND	4500
OAKLAND, CA VOR/DME	COMMO, CA FIX	*5000
*4000 - MOCA		
COMMO, CA FIX	POINT REYES, CA VOR/DME	5000
POINT REYES, CA VOR/DME	BOARS, CA FIX	5000

95.6108 VOR FEDERAL AIRWAY V108

FROM	TO	MEA
SANTA ROSA, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	4500
SCAGGS ISLAND, CA VORTAC	CONCORD, CA VOR/DME	3000
CONCORD, CA VOR/DME	OAKEY, CA FIX	3500
OAKEY, CA FIX	LINDEN, CA VOR/DME	2300
MEEKER, CO VOR/DME	RED TABLE, CO VOR/DME	*14000
*12800 - MOCA		
RED TABLE, CO VOR/DME	*STAMY, CO FIX	16400
*12300 - MCA STAMY, CO FIX , W BND		
STAMY, CO FIX	*BLACK FOREST, CO VOR/DME	12000
*10700 - MCA BLACK FOREST, CO VOR/DME , W BND		
BLACK FOREST, CO VOR/DME	ADANE, CO FIX	9500
ADANE, CO FIX	HUGO, CO VOR/DME	9000
HUGO, CO VOR/DME	GOODLAND, KS VORTAC	*7000
*6300 - MOCA		
GOODLAND, KS VORTAC	HILL CITY, KS VORTAC	5500

95.6110 VOR FEDERAL AIRWAY V110

FROM	TO	MEA
DEMING, NM VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	8000

FROM	TO	MEA

95.6111 VOR FEDERAL AIRWAY V111

BIG SUR, CA VORTAC	SALINAS, CA VORTAC	7000
SALINAS, CA VORTAC	CATHE, CA FIX	5500
CATHE, CA FIX	KARNN, CA FIX	5500
KARNN, CA FIX	PATYY, CA FIX	5000
PATYY, CA FIX	MODESTO, CA VOR/DME	*3000
*1500 - MOCA		

95.6112 VOR FEDERAL AIRWAY V112

HOQUIAM, WA VORTAC	ILWAC, WA FIX	2500
ILWAC, WA FIX	ASTORIA, OR VOR/DME	3000
ASTORIA, OR VOR/DME	PITER, OR FIX	5000
PITER, OR FIX	*BATTLE GROUND, WA VORTAC	4400
*5000 - MCA BATTLE GROUND, WA VORTAC , E BND		
BATTLE GROUND, WA VORTAC	KLICKITAT, OR VOR/DME	*7000
*6500 - MOCA		
KLICKITAT, OR VOR/DME	*OGPAY, OR FIX	5400
*6000 - MRA		
OGPAY, OR FIX	*LOAMS, OR FIX	5400
*6000 - MRA		
LOAMS, OR FIX	*ECHOD, OR FIX	4100
*6000 - MRA		
ECHOD, OR FIX	PENDLETON, OR VORTAC	4100
PENDLETON, OR VORTAC	LYLES, WA FIX	4000
LYLES, WA FIX	*RODNA, WA FIX	**5000
*6000 - MRA		
**4400 - MOCA		
RODNA, WA FIX	SPOKANE, WA VORTAC	5000
SPOKANE, WA VORTAC	DIANN, WA FIX	
	SW BND	*7000
	NE BND	*11000
*5500 - MOCA		
DIANN, WA FIX	CRANBROOK, CANADA VOR/DME	#*11000
*9700 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6113 VOR FEDERAL AIRWAY V113

MORRO BAY, CA VORTAC	PASO ROBLES, CA VORTAC	5000
PASO ROBLES, CA VORTAC	PRIEST, CA VOR	6000
PRIEST, CA VOR	*PANOCHE, CA VORTAC	7500
*5500 - MCA PANOCHE, CA VORTAC , S BND		
PANOCHE, CA VORTAC	*PATYY, CA FIX	5000
*5000 - MCA PATYY, CA FIX , SE BND		
PATYY, CA FIX	MODESTO, CA VOR/DME	*3000
*1500 - MOCA		
MODESTO, CA VOR/DME	*LINDEN, CA VOR/DME	2000
*4000 - MCA LINDEN, CA VOR/DME , NE BND		
LINDEN, CA VOR/DME	*KATSO, CA FIX	5000
*12400 - MCA KATSO, CA FIX , NE BND		
KATSO, CA FIX	*SPOOK, CA FIX	**13000
*15000 - MCA SPOOK, CA FIX , N BND		
**12100 - MOCA		
SPOOK, CA FIX	RICHY, CA FIX	*15000
*12000 - MOCA		
RICHY, CA FIX	*MUSTANG, NV VORTAC	13000
*10500 - MCA MUSTANG, NV VORTAC , S BND		
MUSTANG, NV VORTAC	NICER, NV FIX	10300
NICER, NV FIX	ROBUD, NV FIX	*12000
*10600 - MOCA		

FROM	TO	MEA

95.6113 VOR FEDERAL AIRWAY V113 - CONTINUED

ROBUD, NV FIX	SOD HOUSE, NV VORTAC	*10000
*9000 - MOCA		
SOD HOUSE, NV VORTAC	ROME, OR VOR/DME	10000
ROME, OR VOR/DME	*RENOL, ID FIX	9400
*7300 - MCA RENOL, ID FIX , SW BND		
RENOL, ID FIX	*BOISE, ID VORTAC	6000
*8200 - MCA BOISE, ID VORTAC , NE BND		
BOISE, ID VORTAC	SALMON, ID VOR/DME	16500
SALMON, ID VOR/DME	SLIPP, MT FIX	13000
SLIPP, MT FIX	*COPPERTOWN, MT VOR/DME	
	SW BND	13000
	NE BND	11000
*10200 - MCA COPPERTOWN, MT VOR/DME , SW BND		
COPPERTOWN, MT VOR/DME	HELENA, MT VORTAC	*13000
*10800 - MOCA		
HELENA, MT VORTAC	LEWISTOWN, MT VOR/DME	11100

95.6114 VOR FEDERAL AIRWAY V114

PANHANDLE, TX VORTAC	CAUDE, TX FIX	*5400
*4900 - MOCA		
CAUDE, TX FIX	*DOGIN, TX FIX	5000
*6500 - MRA		
DOGIN, TX FIX	CHILDRESS, TX VORTAC	5000
CHILDRESS, TX VORTAC	VASTY, TX FIX	3700
VASTY, TX FIX	WICHITA FALLS, TX VORTAC	3200
WICHITA FALLS, TX VORTAC	BONHAM, TX VORTAC	3000
BONHAM, TX VORTAC	QUITMAN, TX VOR/DME	2500
QUITMAN, TX VOR/DME	GREGG COUNTY, TX VORTAC	2400
GREGG COUNTY, TX VORTAC	CARTH, TX FIX	*2300
*1900 - MOCA		
CARTH, TX FIX	EXITE, LA FIX	*3000
*1700 - MOCA		
EXITE, LA FIX	COVEX, LA FIX	*3500
*1700 - MOCA		
COVEX, LA FIX	NUBOY, LA FIX	*5000
*1900 - MOCA		
NUBOY, LA FIX	ALEXANDRIA, LA VORTAC	
	W BND	5000
	E BND	2000
ALEXANDRIA, LA VORTAC	*MIKLE, LA FIX	2000
*3000 - MRA		
MIKLE, LA FIX	FIGHTING TIGER, LA VORTAC	2000
FIGHTING TIGER, LA VORTAC	VEILS, LA FIX	2800
VEILS, LA FIX	RESERVE, LA VOR/DME	2000
RESERVE, LA VOR/DME	GULFPORT, MS VORTAC	2000
GULFPORT, MS VORTAC	*MINDO, MS FIX	**6000
*6000 - MRA		
**2000 - GNSS MEA		
MINDO, MS FIX	EATON, MS VORTAC	*6000
*2000 - GNSS MEA		

95.6115 VOR FEDERAL AIRWAY V115

CRESTVIEW, FL VORTAC	PIGON, AL FIX	2500
PIGON, AL FIX	*REDDI, AL FIX	2500
*5500 - MRA		
REDDI, AL FIX	MONTGOMERY, AL VORTAC	2500
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	3000

FROM	TO	MEA

95.6113 VOR FEDERAL AIRWAY V115 - CONTINUED

VULCAN, AL VORTAC	WILED, AL FIX	3500
WILED, AL FIX	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	ETOWA, TN FIX	3000
ETOWA, TN FIX	GROSS, TN FIX	3100
GROSS, TN FIX	VOLUNTEER, TN VORTAC	3000
VOLUNTEER, TN VORTAC	MALIN, TN FIX	4500
MALIN, TN FIX	ROSAR, KY FIX	5000
ROSAR, KY FIX	HAZARD, KY VOR/DME	5200
HAZARD, KY VOR/DME	*CHARLESTON, WV VOR/DME	**6000
*4800 - MCA CHARLESTON, WV VOR/DME , SW BND		
**4000 - GNSS MEA		
CHARLESTON, WV VOR/DME	PARKERSBURG, WV VOR/DME	3000
PARKERSBURG, WV VOR/DME	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	ATWOO, OH FIX	3000
ATWOO, OH FIX	CAPEL, OH FIX	*6000
*3500 - MOCA		
CAPEL, OH FIX	FRANKLIN, PA VOR	3500

95.6116 VOR FEDERAL AIRWAY V116

ERIE, PA VORTAC	BRADFORD, PA VOR/DME	*5000
*3900 - MOCA		
BRADFORD, PA VOR/DME	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	SPARTA, NJ VORTAC	4000

95.6117 VOR FEDERAL AIRWAY V117

PARKERSBURG, WV VOR/DME	BELLAIRE, OH VOR/DME	3000
BELLAIRE, OH VOR/DME	WISKE, WV FIX	3300

95.6118 VOR FEDERAL AIRWAY V118

MEDICINE BOW, WY VOR/DME	LARAMIE, WY VOR/DME	9400
LARAMIE, WY VOR/DME	*SENSE, WY FIX	11000
*9900 - MCA SENSE, WY FIX , W BND		
SENSE, WY FIX	CHEYENNE, WY VORTAC	8800

95.6119 VOR FEDERAL AIRWAY V119

NEWCOMBE, KY VORTAC	*CROUP, OH FIX	2800
*5500 - MCA CROUP, OH FIX , NE BND		
CROUP, OH FIX	HENDERSON, WV VORTAC	5500
HENDERSON, WV VORTAC	*JACEE, WV FIX	2700
*3800 - MRA		
JACEE, WV FIX	PARKERSBURG, WV VOR/DME	2700
PARKERSBURG, WV VOR/DME	ANTIO, OH FIX	3000
ANTIO, OH FIX	INDIAN HEAD, PA VORTAC	5000
INDIAN HEAD, PA VORTAC	QUARY, PA FIX	*5000
*4500 - MOCA		
QUARY, PA FIX	TALLS, PA FIX	4000
TALLS, PA FIX	CLARION, PA VOR/DME	*3700
*3200 - MOCA		
CLARION, PA VOR/DME	BRADFORD, PA VOR/DME	#4200
#BRADFORD R-232 UNUSABLE. USE CLARION R-050.		
BRADFORD, PA VOR/DME	WELLSVILLE, NY VORTAC	*4500
*4000 - MOCA		

95.6119 VOR FEDERAL AIRWAY V119 - CONTINUED

FROM	TO	MEA
WELLSVILLE, NY VORTAC	BURST, NY FIX	4500
BURST, NY FIX	GENESEO, NY VOR/DME	4000
GENESEO, NY VOR/DME	ROCHESTER, NY VOR/DME	2800

95.6120 VOR FEDERAL AIRWAY V120

FROM	TO	MEA
*SEATTLE, WA VORTAC	TAGOR, WA FIX	
	E BND	**8500
	W BND	**5000
*6300 - MCA SEATTLE, WA VORTAC , E BND		
**5000 - MOCA		
TAGOR, WA FIX	CASHS, WA FIX	*12000
*11400 - MOCA		
CASHS, WA FIX	*WENATCHEE, WA VOR/DME	
	E BND	**7500
	W BND	**12000
*8200 - MCA WENATCHEE, WA VOR/DME , W BND		
**6700 - MOCA		
WENATCHEE, WA VOR/DME	EPHRATA, WA VORTAC	5500
EPHRATA, WA VORTAC	WIPES, WA FIX	4000
WIPES, WA FIX	*SPOKANE, WA VORTAC	5000
*5200 - MCA SPOKANE, WA VORTAC , E BND		
SPOKANE, WA VORTAC	KARPS, ID FIX	*9000
*7600 - MOCA		
KARPS, ID FIX	MULLAN PASS, ID VOR/DME	9100
MULLAN PASS, ID VOR/DME	CHARL, MT FIX	*13000
*9600 - MOCA		
CHARL, MT FIX	*SHIMY, MT FIX	**13000
*7000 - MRA		
*7900 - MCA SHIMY, MT FIX , W BND		
**12100 - MOCA		
SHIMY, MT FIX	GREAT FALLS, MT VORTAC	6800
GREAT FALLS, MT VORTAC	LEWISTOWN, MT VOR/DME	8400
LEWISTOWN, MT VOR/DME	ESTRO, MT FIX	7700
ESTRO, MT FIX	MILES CITY, MT VOR/DME	*9000
*7500 - MOCA		
MILES CITY, MT VOR/DME	DUPREE, SD VOR/DME	*10000
*6600 - MOCA		
DUPREE, SD VOR/DME	PIERRE, SD VORTAC	*4300
*3700 - MOCA		
PIERRE, SD VORTAC	MITCHELL, SD VOR/DME	*3900
*3400 - MOCA		
MITCHELL, SD VOR/DME	FRYRE, SD FIX	3700
FRYRE, SD FIX	SIOUX FALLS, SD VORTAC	3700
SIOUX FALLS, SD VORTAC	BILOO, IA FIX	3600
BILOO, IA FIX	*GRUVE, IA FIX	**6800
*8000 - MRA		
**3100 - MOCA		
GRUVE, IA FIX	BANCO, IA FIX	*6800
*3100 - MOCA		
BANCO, IA FIX	MASON CITY, IA VOR/DME	3000
MASON CITY, IA VOR/DME	*AREDA, IA FIX	3000
*4500 - MRA		
AREDA, IA FIX	*SEATS, IA FIX	3000
*4500 - MRA		
SEATS, IA FIX	WATERLOO, IA VOR/DME	3000

FROM	TO	MEA

95.6121 VOR FEDERAL AIRWAY V121

FORT JONES, CA VOR/DME	*BAYTS, OR FIX	**10000
*10000 - MRA		
*9000 - MCA BAYTS, OR FIX , S BND		
**9400 - MOCA		
BAYTS, OR FIX	ROGUE VALLEY, OR VORTAC	*8000
*7500 - MOCA		
ROGUE VALLEY, OR VORTAC	MOURN, OR FIX	7000
MOURN, OR FIX	ROSEBURG, OR VOR/DME	
	W BND	6000
	E BND	7000
ROSEBURG, OR VOR/DME	NORTH BEND, OR VOR/DME	6000
NORTH BEND, OR VOR/DME	SCOTY, OR FIX	
	NE BND	5000
	SW BND	4400
SCOTY, OR FIX	*VAUGN, OR FIX	5000
*7000 - MRA		
VAUGN, OR FIX	*EUGENE, OR VORTAC	
	NE BND	4100
	SW BND	5000
*9000 - MCA EUGENE, OR VORTAC , E BND		
EUGENE, OR VORTAC	DOSEE, OR FIX	
	E BND	10000
	W BND	5200
DOSEE, OR FIX	VIDAS, OR FIX	
	E BND	11600
	W BND	6000
VIDAS, OR FIX	WHIFF, OR FIX	*13000
*7500 - MOCA		
*12000 - GNSS MEA		
WHIFF, OR FIX	SNOKY, OR FIX	*13000
*12300 - MOCA		
SNOKY, OR FIX	*DESCHUTES, OR VORTAC	
	E BND	8000
	W BND	13000
*10400 - MCA DESCHUTES, OR VORTAC , W BND		
DESCHUTES, OR VORTAC	JABOT, OR FIX	
	NE BND	9000
	SW BND	7000
JABOT, OR FIX	KIMBERLY, OR VOR/DME	9000
KIMBERLY, OR VOR/DME	*BAKER CITY, OR VOR/DME	12000
*10000 - MCA BAKER CITY, OR VOR/DME , SW BND		
BAKER CITY, OR VOR/DME	DONNELLY, ID VOR/DME	11000
DONNELLY, ID VOR/DME	SALMON, ID VOR/DME	12000
SALMON, ID VOR/DME	NOSEY, MT FIX	12000
NOSEY, MT FIX	DILLON, MT VOR/DME	
	E BND	*10000
	W BND	*12000
*9100 - MOCA		

95.6122 VOR FEDERAL AIRWAY V122

CRESCENT CITY, CA VORTAC	REFIX, CA FIX	
	SW BND	4000
	NE BND	8000
REFIX, CA FIX	OBRIN, CA FIX	
	NE BND	8000
	SW BND	6000
OBRIN, CA FIX	*PAPLE, OR FIX	8000
*10100 - MRA		
PAPLE, OR FIX	GNATS, OR FIX	8000

95.6122 VOR FEDERAL AIRWAY V122 - CONTINUED

FROM	TO	MEA
GNATS, OR FIX	ROGUE VALLEY, OR VORTAC	
	SW BND	8000
	NE BND	5500
ROGUE VALLEY, OR VORTAC	BRUTE, OR FIX	
	E BND	9000
	W BND	5000
BRUTE, OR FIX	LANKS, OR FIX	
	W BND	*6500
	E BND	*9000
*5800 - MOCA		
LANKS, OR FIX	KLAMATH FALLS, OR VORTAC	*9000
*8500 - MOCA		
KLAMATH FALLS, OR VORTAC	LAKEVIEW, OR VORTAC	9600
LAKEVIEW, OR VORTAC	ROME, OR VOR/DME	12000

95.6123 VOR FEDERAL AIRWAY V123

FROM	TO	MEA
MITCH, MD FIX	SWANN, MD FIX	*7000
*3000 - GNSS MEA		
SWANN, MD FIX	*TACKS, MD FIX	**7000
*7000 - MCA TACKS, MD FIX , W BND		
**4000 - GNSS MEA		
TACKS, MD FIX	WOODSTOWN, NJ VORTAC	*2000
*1500 - MOCA		
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	*3000
*2000 - MOCA		
ROBBINSVILLE, NJ VORTAC	MINKS, NJ FIX	2000
MINKS, NJ FIX	LA GUARDIA, NY VOR/DME	2900
LA GUARDIA, NY VOR/DME	FAMMA, NY FIX	2000
FAMMA, NY FIX	HAARP, CT FIX	3000
HAARP, CT FIX	*RYMES, CT FIX	**5000
*5000 - MRA		
**2000 - MOCA		
**3000 - GNSS MEA		
RYMES, CT FIX	CARMEL, NY VOR/DME	2500
CARMEL, NY VOR/DME	CASSH, NY FIX	3000
CASSH, NY FIX	*WIGAN, NY FIX	3100
*8000 - MCA WIGAN, NY FIX , N BND		
WIGAN, NY FIX	GROUP, NY FIX	*8000
*3000 - GNSS MEA		
GROUP, NY FIX	*ALBANY, NY VORTAC	**6000
*6000 - MCA ALBANY, NY VORTAC , S BND		
**2800 - GNSS MEA		
ALBANY, NY VORTAC	*CAMBRIDGE, NY VOR/DME	#**4000
*4500 - MCA CAMBRIDGE, NY VOR/DME , N BND		
**3000 - MOCA		
#ALBANY R-067 UNUSABLE.		
CAMBRIDGE, NY VOR/DME	GLENS FALLS, NY VORTAC	4500

95.6124 VOR FEDERAL AIRWAY V124

FROM	TO	MEA
BONHAM, TX VORTAC	PARIS, TX VOR/DME	2400
PARIS, TX VOR/DME	DEENS, AR FIX	*4000
*2000 - MOCA		
DEENS, AR FIX	HOT SPRINGS, AR VOR/DME	*5000
*2700 - MOCA		
HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	3000
LITTLE ROCK, AR VORTAC	TAFTE, AR FIX	*4000
*1700 - MOCA		

FROM	TO	MEA

95.6124 VOR FEDERAL AIRWAY V124 - CONTINUED

TAFTE, AR FIX *6000 - MRA **1600 - MOCA	*HILLE, AR FIX	**6000
HILLE, AR FIX *1700 - MOCA	GILMORE, AR VOR/DME	*4000

95.6125 VOR FEDERAL AIRWAY V125

CAPE GIRARDEAU, MO VOR/DME	NIKEL, IL FIX	3500
NIKEL, IL FIX *2300 - MOCA	BURCK, IL FIX	*4500
BURCK, IL FIX *2600 - MOCA	ST LOUIS, MO VORTAC	*3500

95.6126 VOR FEDERAL AIRWAY V126

BEARZ, IN FIX	HALIE, IN FIX	3000
HALIE, IN FIX *2300 - MOCA	INKEN, IN FIX	*4000
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC *2400 - MOCA	ILTON, IN FIX	*3000
ERIE, PA VORTAC *3900 - MOCA	BRADFORD, PA VOR/DME	*5000
BRADFORD, PA VOR/DME	STONYFORK, PA VOR/DME	4500

95.6127 VOR FEDERAL AIRWAY V127

BRADFORD, IL VORTAC *3300 - MRA	*WYNET, IL FIX	2700
WYNET, IL FIX	POLO, IL VOR/DME	2600
POLO, IL VOR/DME	ROCKFORD, IL VOR/DME	2700

95.6128 VOR FEDERAL AIRWAY V128

JANESVILLE, WI VOR/DME	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	KELSI, IL FIX	2700
KELSI, IL FIX	SMARS, IL FIX	3000
SMARS, IL FIX	KANKAKEE, IL VOR/DME	2700
KANKAKEE, IL VOR/DME	KENLA, IL FIX	2400
KENLA, IL FIX	VAGES, IN FIX	2600
VAGES, IN FIX *4000 - MRA **2300 - MOCA	*POTES, IN FIX	**4000
POTES, IN FIX *2300 - MOCA	JAKKS, IN FIX	*4000
JAKKS, IN FIX	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	DECEE, IN FIX	2600
DECEE, IN FIX	CINCINNATI, KY VORTAC	2800
CINCINNATI, KY VORTAC	CALIF, KY FIX	2600
CALIF, KY FIX	YORK, KY VORTAC	4000
YORK, KY VORTAC *2300 - MOCA	CROUP, OH FIX	*3300
CROUP, OH FIX	RULEY, WV FIX	3200
RULEY, WV FIX	CHARLESTON, WV VOR/DME	3600

FROM	TO	MEA

95.6128 VOR FEDERAL AIRWAY V128 - CONTINUED

CHARLESTON, WV VOR/DME	SWIFT, WV FIX	3400
SWIFT, WV FIX	BITES, WV FIX	
	W BND	5000
	E BND	7000
BITES, WV FIX	VELLI, WV FIX	7000
VELLI, WV FIX	BOIER, WV FIX	*8000
*7100 - MOCA		
*7100 - GNSS MEA		
BOIER, WV FIX	LURAY, VA FIX	*10000
*6900 - MOCA		
*6900 - GNSS MEA		
LURAY, VA FIX	CASANOVA, VA VORTAC	6300

95.6129 VOR FEDERAL AIRWAY V129

SPINNER, IL VORTAC	PEORIA, IL VORTAC	2500
PEORIA, IL VORTAC	GENSO, IL FIX	2600
GENSO, IL FIX	DAVENPORT, IA VORTAC	3000
DAVENPORT, IA VORTAC	DUBUQUE, IA VORTAC	2900
DUBUQUE, IA VORTAC	QUEST, WI FIX	*3100
*2600 - MOCA		
QUEST, WI FIX	NODINE, MN VORTAC	3100
NODINE, MN VORTAC	EAU CLAIRE, WI VORTAC	3000
EAU CLAIRE, WI VORTAC	DULUTH, MN VORTAC	*4000
*3100 - MOCA		
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	INTERNATIONAL FALLS, MN VOR/DME	*3600
*3100 - MOCA		
INTERNATIONAL FALLS, MN VOR/DME	U.S. CANADIAN BORDER	2500

95.6130 VOR FEDERAL AIRWAY V130

NORWICH, CT VOR/DME	MINNK, RI FIX	2300
MINNK, RI FIX	FALMA, RI FIX	*3000
*1600 - MOCA		
FALMA, RI FIX	MARTHAS VINEYARD, MA VOR/DME	3000

95.6131 VOR FEDERAL AIRWAY V131

OKMULGEE, OK VOR/DME	TULSA, OK VORTAC	3200
TULSA, OK VORTAC	TYROE, KS FIX	3000
TYROE, KS FIX	CHANUTE, KS VOR/DME	2800
CHANUTE, KS VOR/DME	TOPEKA, KS VORTAC	2900

95.6132 VOR FEDERAL AIRWAY V132

MEDICINE BOW, WY VOR/DME	MOIST, WY FIX	9500
MOIST, WY FIX	CHEYENNE, WY VORTAC	9000
CHEYENNE, WY VORTAC	RAYME, CO FIX	8500
RAYME, CO FIX	AKRON, CO VOR/DME	6800
AKRON, CO VOR/DME	GOODLAND, KS VORTAC	6400
GOODLAND, KS VORTAC	ORION, KS FIX	5700
ORION, KS FIX	*RANSO, KS FIX	**10000
*10000 - MRA		
**4200 - MOCA		

FROM	TO	MEA

95.6132 VOR FEDERAL AIRWAY V132 - CONTINUED

RANSO, KS FIX	DISKS, KS FIX	*10000
*4400 - MOCA		
DISKS, KS FIX	*SPELT, KS FIX	**5000
*5000 - MRA		
**3300 - MOCA		
SPELT, KS FIX	HUTCHINSON, KS VOR/DME	3200
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
*5000 - MCA FLOSS, KS FIX , SE BND		
FLOSS, KS FIX	CHANUTE, KS VOR/DME	*5000
*2800 - MOCA		
CHANUTE, KS VOR/DME	NALLY, KS FIX	2800
NALLY, KS FIX	NASHE, MO FIX	2700
NASHE, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	FORNEY, MO VOR	3100
FORNEY, MO VOR	LENOX, MO FIX	3000

95.6133 VOR FEDERAL AIRWAY V133

LINCO, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	4000
BARRETTS MOUNTAIN, NC VOR/DME	MULBE, NC FIX	
	S BND	5400
	N BND	7200
MULBE, NC FIX	*STOVE, VA FIX	7200
*11000 - MCA STOVE, VA FIX , N BND		
STOVE, VA FIX	PINEE, WV FIX	*13000
*7000 - MOCA		
PINEE, WV FIX	*CHARLESTON, WV VOR/DME	
	N BND	**7000
	S BND	**13000
*8500 - MCA CHARLESTON, WV VOR/DME , S BND		
**5600 - MOCA		
**5600 - GNSS MEA		
CHARLESTON, WV VOR/DME	ZANESVILLE, OH VOR/DME	3000
SAGINAW, MI VOR/DME	WHIPP, MI FIX	2400
WHIPP, MI FIX	*LADIN, MI FIX	**5000
*5000 - MRA		
**2800 - MOCA		
LADIN, MI FIX	TRAVERSE CITY, MI VOR/DME	*5000
*2800 - MOCA		
TRAVERSE CITY, MI VOR/DME	ESCANABA, MI VOR/DME	5000
ESCANABA, MI VOR/DME	SAWYER, MI VOR/DME	2800
SAWYER, MI VOR/DME	HOUGHTON, MI VOR/DME	*4500
*3400 - MOCA		
HOUGHTON, MI VOR/DME	U.S. CANADIAN BORDER	*3100
*2500 - MOCA		
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	#2800
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
U.S. CANADIAN BORDER	INTERNATIONAL FALLS, MN VOR/DME	*3000
*2500 - MOCA		
INTERNATIONAL FALLS, MN VOR/DME	U.S. CANADIAN BORDER	*6500
*2800 - MOCA		

FROM	TO	MEA

95.6134 VOR FEDERAL AIRWAY V134

*FAIRFIELD, UT VORTAC	CARBON, UT VOR/DME	#13000
*10800 - MCA FAIRFIELD, UT VORTAC , E BND		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
*CARBON, UT VOR/DME	GRAND JUNCTION, CO VOR/DME	11900
*10200 - MCA CARBON, UT VOR/DME , W BND		
GRAND JUNCTION, CO VOR/DME	*PACES, CO FIX	11500
*13000 - MRA		
PACES, CO FIX	SLOLM, CO FIX	#13000
#MTA V134 NE TO V220 NW 12900		
SLOLM, CO FIX	*GLENO, CO FIX	14000
*16000 - MRA		
GLENO, CO FIX	RED TABLE, CO VOR/DME	14000
RED TABLE, CO VOR/DME	HERLS, CO FIX	
	E BND	16000
	W BND	14000
HERLS, CO FIX	*FUNDS, CO FIX	16000
*16500 - MRA		
FUNDS, CO FIX	BREWS, CO FIX	16500
BREWS, CO FIX	*FALCON, CO VORTAC	
	W BND	16500
	E BND	10000
*11600 - MCA FALCON, CO VORTAC , W BND		

95.6135 VOR FEDERAL AIRWAY V135

SAYUL, CA FIX	BARD, CA VORTAC	*4000
*2700 - MOCA		
BARD, CA VORTAC	BLYTHE, CA VORTAC	*5000
*3900 - MOCA		
BLYTHE, CA VORTAC	PARKER, CA VORTAC	5400
PARKER, CA VORTAC	NEEDLES, CA VORTAC	6000
NEEDLES, CA VORTAC	*GOFFS, CA VORTAC	**8000
*9600 - MCA GOFFS, CA VORTAC , NW BND		
**7100 - MOCA		
GOFFS, CA VORTAC	*WHIGG, CA FIX	**12000
*12000 - MRA		
**10000 - MOCA		
WHIGG, CA FIX	CLARR, CA FIX	*12000
*10500 - MOCA		
CLARR, CA FIX	*HIDEN, CA FIX	**12000
*14000 - MRA		
**9100 - MOCA		
HIDEN, CA FIX	BEATTY, NV VORTAC	*12000
*8600 - MOCA		
BEATTY, NV VORTAC	TEZUM, NV FIX	*11000
*9600 - MOCA		
TEZUM, NV FIX	TONOPAH, NV VORTAC	11000

95.6136 VOR FEDERAL AIRWAY V136

HINCH MOUNTAIN, TN VOR/DME	SWELL, TN FIX	5000
SWELL, TN FIX	VOLUNTEER, TN VORTAC	3000
VOLUNTEER, TN VORTAC	AUBRY, TN FIX	5000
AUBRY, TN FIX	*PITTE, TN FIX	6000
*7000 - MCA PITTE, TN FIX , E BND		
PITTE, TN FIX	SNOWBIRD, TN VORTAC	7000
SNOWBIRD, TN VORTAC	AFTEN, TN FIX	7000
AFTEN, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	6000

95.6134 VOR FEDERAL AIRWAY V136 - CONTINUED

FROM	TO	MEA
HOLSTON MOUNTAIN, TN VORTAC	DAMAS, TN FIX	6000
DAMAS, TN FIX	STOVE, VA FIX	7500
STOVE, VA FIX	SPEEL, VA FIX	6000
SPEEL, VA FIX	PULASKI, VA VORTAC	5400
PULASKI, VA VORTAC	PIGGS, VA FIX	5500
PIGGS, VA FIX	DUNCE, VA FIX	3500
DUNCE, VA FIX	SOUTH BOSTON, VA VORTAC	2800
SOUTH BOSTON, VA VORTAC	*ALDAN, NC FIX	2600
*3000 - MRA		
ALDAN, NC FIX	RALEIGH/DURHAM, NC VORTAC	2600
RALEIGH/DURHAM, NC VORTAC	LANHO, NC FIX	3000
LANHO, NC FIX	FAYETTEVILLE, NC VOR/DME	2000
FAYETTEVILLE, NC VOR/DME	GRAND STRAND, SC VORTAC	*3000
*2100 - MOCA		

95.6137 VOR FEDERAL AIRWAY V137

FROM	TO	MEA
NOVOS, CA FIX	IMPERIAL, CA VORTAC	*3000
*1900 - MOCA		
IMPERIAL, CA VORTAC	*BRAWL, CA FIX	**3700
*4500 - MRA		
**2300 - MOCA		
BRAWL, CA FIX	HENOM, CA FIX	3700
HENOM, CA FIX	THERMAL, CA VORTAC	3900
THERMAL, CA VORTAC	*PALM SPRINGS, CA VORTAC	4000
*11200 - MCA PALM SPRINGS, CA VORTAC , NW BND		
PALM SPRINGS, CA VORTAC	*WHETO, CA FIX	
	NW BND	**12000
	SE BND	**7000
*12400 - MCA WHETO, CA FIX , NW BND		
**6000 - MOCA		
WHETO, CA FIX	MORON, CA FIX	
	SE BND	12000
	NW BND	13500
MORON, CA FIX	*ARRAN, CA FIX	13500
*12000 - MCA ARRAN, CA FIX , E BND		
ARRAN, CA FIX	*PALMDALE, CA VORTAC	10700
*7000 - MCA PALMDALE, CA VORTAC , E BND		
PALMDALE, CA VORTAC	VICKY, CA FIX	*8000
*5800 - MOCA		
VICKY, CA FIX	JEFFY, CA FIX	
	E BND	8000
	W BND	9000
JEFFY, CA FIX	GORMAN, CA VORTAC	
	E BND	8000
	W BND	10100
GORMAN, CA VORTAC	*TAFTO, CA FIX	10000
*9000 - MCA TAFTO, CA FIX , SE BND		
TAFTO, CA FIX	AVENAL, CA VOR/DME	
	SE BND	5500
	NW BND	4500
AVENAL, CA VOR/DME	PRIEST, CA VOR	6500
PRIEST, CA VOR	SALINAS, CA VORTAC	6000

FROM	TO	MEA

95.6138 VOR FEDERAL AIRWAY V138

RIVERTON, WY VOR/DME	HUNTZ, WY FIX	9000
HUNTZ, WY FIX	MEDICINE BOW, WY VOR/DME	11200
MEDICINE BOW, WY VOR/DME	MILKY, WY FIX	10600
MILKY, WY FIX	CHEYENNE, WY VORTAC	9200
CHEYENNE, WY VORTAC	PIETY, WY FIX	8000
PIETY, WY FIX	SIDNEY, NE VOR/DME	*7600
*7000 - MOCA		
GRAND ISLAND, NE VOR/DME	BRADY, NE FIX	*3600
*3200 - MOCA		
BRADY, NE FIX	GAMBL, NE FIX	4100
GAMBL, NE FIX	LINCOLN, NE VORTAC	3300
LINCOLN, NE VORTAC	OMAHA, IA VORTAC	4000
OMAHA, IA VORTAC	*MADUP, IA FIX	**4500
*5500 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
MADUP, IA FIX	FORT DODGE, IA VORTAC	*3900
*2900 - MOCA		
*3000 - GNSS MEA		
FORT DODGE, IA VORTAC	MASON CITY, IA VOR/DME	3000
MASON CITY, IA VOR/DME	WAUKON, IA VOR/DME	3000

95.6139 VOR FEDERAL AIRWAY V139

FLORENCE, SC VORTAC	MOKKA, NC FIX	2000
MOKKA, NC FIX	WILMINGTON, NC VORTAC	#*8000
*2100 - MOCA		
*2100 - GNSS MEA		
#WILMINGTON R-273 UNUSABLE. USE FLORENCE R-088		
WILMINGTON, NC VORTAC	NEW BERN, NC VOR/DME	#*6000
*1800 - MOCA		
*2000 - GNSS MEA		
#WILMINGTON R-050 UNUSABLE. USE NEW BERN R-232		
NEW BERN, NC VOR/DME	PEARS, NC FIX	
	S BND	*4000
	N BND	*6000
*1800 - MOCA		
*2000 - GNSS MEA		
PEARS, NC FIX	SUNNS, NC FIX	*6000
*2100 - MOCA		
*2100 - GNSS MEA		
SUNNS, NC FIX	NORFOLK, VA VORTAC	
	NE BND	*2500
	SW BND	*4800
*1600 - MOCA		
*2000 - GNSS MEA		
NORFOLK, VA VORTAC	CAPE CHARLES, VA VORTAC	*2500
*1800 - MOCA		
CAPE CHARLES, VA VORTAC	DUNFE, VA FIX	
	NE BND	*4000
	SSW BND	*2000
*1600 - MOCA		
DUNFE, VA FIX	SNOW HILL, MD VORTAC	*4000
*1600 - MOCA		
SNOW HILL, MD VORTAC	CBEAV, MD FIX	2000
CBEAV, MD FIX	SEA ISLE, NJ VORTAC	*2500
*1700 - MOCA		

FROM	TO	MEA

95.6139 VOR FEDERAL AIRWAY V139 - CONTINUED

SEA ISLE, NJ VORTAC	AVALO, NJ FIX	*4500
*4000 - GNSS MEA		
AVALO, NJ FIX	HARBO, NJ FIX	*6000
*4000 - GNSS MEA		
HARBO, NJ FIX	*DRIFT, NJ FIX	**7500
*6000 - MRA		
**3000 - GNSS MEA		
DRIFT, NJ FIX	MANTA, NJ FIX	*12000
*3000 - GNSS MEA		
MANTA, NJ FIX	PLUME, NJ FIX	*7000
*2000 - MOCA		
*3000 - GNSS MEA		
PLUME, NJ FIX	*KOPPY, NY FIX	**4000
*5000 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
KOPPY, NY FIX	BEADS, NY FIX	*4000
*3000 - MOCA		
*3000 - GNSS MEA		
BEADS, NY FIX	HAMPTON, NY VORTAC	*2500
*1600 - MOCA		
HAMPTON, NY VORTAC	PROVIDENCE, RI VOR/DME	2000
PROVIDENCE, RI VOR/DME	INNDY, MA FIX	*3000
*2000 - GNSS MEA		
INNDY, MA FIX	*TONNI, MA FIX	6000
*6000 - MRA		
TONNI, MA FIX	SEEDY, NH FIX	*5000
*4000 - GNSS MEA		
SEEDY, NH FIX	KENNEBUNK, ME VOR/DME	*2500
*1800 - MOCA		

95.6140 VOR FEDERAL AIRWAY V140

PANHANDLE, TX VORTAC	BURNS FLAT, OK VORTAC	5300
BURNS FLAT, OK VORTAC	*HISLA, OK FIX	3600
*4000 - MRA		
HISLA, OK FIX	KINGFISHER, OK VORTAC	*3600
*3000 - MOCA		
KINGFISHER, OK VORTAC	LASTS, OK FIX	3000
LASTS, OK FIX	IBAAH, OK FIX	*4500
*3100 - MOCA		
IBAAH, OK FIX	TULSA, OK VORTAC	3300
TULSA, OK VORTAC	*PRYOR, OK FIX	2700
*2900 - MRA		
PRYOR, OK FIX	RAZORBACK, AR VORTAC	*3400
*2800 - MOCA		
RAZORBACK, AR VORTAC	SPRAY, AR FIX	*3400
*2900 - MOCA		
SPRAY, AR FIX	HARRISON, AR VOR/DME	*4000
*3500 - MOCA		
HARRISON, AR VOR/DME	VILLO, AR FIX	3000
VILLO, AR FIX	WALNUT RIDGE, AR VORTAC	
	W BND	3000
	E BND	2500
WALNUT RIDGE, AR VORTAC	HELMS, MO FIX	2400
HELMS, MO FIX	DYERSBURG, TN VORTAC	2000
DYERSBURG, TN VORTAC	NASHVILLE, TN VORTAC	3500
NASHVILLE, TN VORTAC	HARME, TN FIX	
	W BND	*3000
	E BND	*6000
*2400 - MOCA		

95.6140 VOR FEDERAL AIRWAY V140 - CONTINUED

FROM	TO	MEA
HARME, TN FIX	LIVINGSTON, TN VOR/DME	*6000
*2900 - MOCA		
LIVINGSTON, TN VOR/DME	LONDON, KY VOR/DME	3900
LONDON, KY VOR/DME	HAZARD, KY VOR/DME	4000
HAZARD, KY VOR/DME	STACY, VA FIX	*5000
*4200 - MOCA		
*4200 - GNSS MEA		
STACY, VA FIX	*KENYA, WV FIX	
	W BND	5000
	E BND	5400
*13000 - MRA		
KENYA, WV FIX	*BLUEFIELD, WV VOR/DME	5400
*7000 - MCA BLUEFIELD, WV VOR/DME , E BND		
BLUEFIELD, WV VOR/DME	SOFTY, WV FIX	*7000
*5600 - MOCA		
SOFTY, WV FIX	CASTE, VA FIX	6300
CASTE, VA FIX	MONTEBELLO, VA VOR/DME	6000
MONTEBELLO, VA VOR/DME	HOODE, VA FIX	6100
HOODE, VA FIX	CASANOVA, VA VORTAC	3200

95.6141 VOR FEDERAL AIRWAY V141

FROM	TO	MEA
NANTUCKET, MA VOR/DME	GAILS, MA FIX	1700
GAILS, MA FIX	*CELTS, MA FIX	**3000
*2500 - MRA		
**2000 - MOCA		
CELTS, MA FIX	BOSTON, MA VOR/DME	2000
MANCHESTER, NH VOR/DME	CONCORD, NH VOR/DME	*2900
*2100 - MOCA		
CONCORD, NH VOR/DME	KELLI, NH FIX	5000
KELLI, NH FIX	LEBANON, NH VOR/DME	*4000
*3600 - MOCA		
LEBANON, NH VOR/DME	RUCKY, VT FIX	*6000
*4000 - MOCA		
RUCKY, VT FIX	*BURLINGTON, VT VOR/DME	6300
*4000 - MCA BURLINGTON, VT VOR/DME , SE BND		
BURLINGTON, VT VOR/DME	BUGSY, NY FIX	#*9000
*5100 - MOCA		
*5500 - GNSS MEA		
#MASSENA R-129 UNSABLE USE BURLINGTON R-311		
BUGSY, NY FIX	MASSENA, NY VORTAC	#*9000
*4000 - MOCA		
*4000 - GNSS MEA		
#MASSENA R-129 UNUSABLE USE BURLINGTON R-311		

95.6142 VOR FEDERAL AIRWAY V142

FROM	TO	MEA
*TWIN FALLS, ID VORTAC	MURTH, ID FIX	
	E BND	13000
	W BND	7800
*12000 - MCA TWIN FALLS, ID VORTAC , E BND		
MURTH, ID FIX	OCLEY, ID FIX	
	E BND	15000
	W BND	9500
OCLEY, ID FIX	*SHEAR, UT FIX	**16500
*16500 - MCA SHEAR, UT FIX , W BND		
**12400 - MOCA		

95.6143 VOR FEDERAL AIRWAY V142 - CONTINUED

FROM	TO	MEA
SHEAR, UT FIX	*MALAD CITY, ID VOR/DME	
	SW BND	11000
	NE BND	10000
*13500 - MCA MALAD CITY, ID VOR/DME , SW BND		
MALAD CITY, ID VOR/DME	*ORNEY, UT FIX	10400
*11200 - MCA ORNEY, UT FIX , E BND		
ORNEY, UT FIX	FORT BRIDGER, WY VOR/DME	12200
FORT BRIDGER, WY VOR/DME	ROCK SPRINGS, WY VOR/DME	10000

95.6143 VOR FEDERAL AIRWAY V143

FROM	TO	MEA
GIZMO, NC FIX	GREENSBORO, NC VORTAC	3000
GREENSBORO, NC VORTAC	LEAKS, NC FIX	3000
LEAKS, NC FIX	LYNCHBURG, VA VOR/DME	3000
LYNCHBURG, VA VOR/DME	ELLON, VA FIX	
	N BND	5700
	S BND	3200
ELLON, VA FIX	*CLYFF, VA FIX	5700
*6300 - MCA CLYFF, VA FIX , N BND		
CLYFF, VA FIX	MONTEBELLO, VA VOR/DME	6400
MONTEBELLO, VA VOR/DME	LURAY, VA FIX	6000
LURAY, VA FIX	*KERRE, VA FIX	**6000
*7000 - MRA		
**5000 - MOCA		
KERRE, VA FIX	MARTINSBURG, WV VORTAC	*6000
*5000 - MOCA		
MARTINSBURG, WV VORTAC	HYPER, MD FIX	*5000
*3900 - MOCA		
HYPER, MD FIX	BINNS, PA FIX	*9000
*2600 - MOCA		
*4000 - GNSS MEA		
BINNS, PA FIX	DELRO, PA FIX	*9000
*4500 - GNSS MEA		
DELRO, PA FIX	LANCASTER, PA VOR/DME	3000
LANCASTER, PA VOR/DME	POTTSTOWN, PA VORTAC	4500
POTTSTOWN, PA VORTAC	YARDLEY, PA VOR/DME	*6900
*4000 - GNSS MEA		

95.6144 VOR FEDERAL AIRWAY V144

FROM	TO	MEA
BRADFORD, IL VORTAC	KANKAKEE, IL VOR/DME	2700
KANKAKEE, IL VOR/DME	RODNY, IN FIX	2400
RODNY, IN FIX	MAPPS, IN FIX	*3000
*2200 - MOCA		
MAPPS, IN FIX	CLEFT, IN FIX	*4000
*2400 - MOCA		
CLEFT, IN FIX	FORT WAYNE, IN VORTAC	2800
FORT WAYNE, IN VORTAC	BUZZI, OH FIX	*6000
*3000 - MOCA		
BUZZI, OH FIX	APPLETON, OH VORTAC	*4000
*2600 - MOCA		
APPLETON, OH VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	BEALL, OH FIX	3000
BEALL, OH FIX	*MORGANTOWN, WV VOR/DME	4000
*4600 - MCA MORGANTOWN, WV VOR/DME , SE BND		
MORGANTOWN, WV VOR/DME	KESSEL, WV VOR/DME	5700
KESSEL, WV VOR/DME	LINDEN, VA VORTAC	5500

FROM	TO	MEA

95.6145 VOR FEDERAL AIRWAY V145

UTICA, NY VORTAC	WEEPY, NY FIX	3400
WEEPY, NY FIX *2200 - MOCA	FLOOR, NY FIX	*3000
FLOOR, NY FIX	WATERTOWN, NY VORTAC	3000
WATERTOWN, NY VORTAC *1800 - MOCA	U.S. CANADIAN BORDER	*3000

95.6146 VOR FEDERAL AIRWAY V146

ALBANY, NY VORTAC	CHESTER, MA VOR/DME	4100
CHESTER, MA VOR/DME *3200 - MOCA	BARNES, MA VORTAC	*4000
BARNES, MA VORTAC *2500 - MOCA	PUTNAM, CT VOR/DME	*3000
PUTNAM, CT VOR/DME *2100 - MOCA	PROVIDENCE, RI VOR/DME	*3000
PROVIDENCE, RI VOR/DME	MARTHAS VINEYARD, MA VOR/DME	2100
MARTHAS VINEYARD, MA VOR/DME	NANTUCKET, MA VOR/DME	2000

95.6147 VOR FEDERAL AIRWAY V147

YARDLEY, PA VOR/DME *6000 - MRA	*SPUDS, PA FIX	5000
SPUDS, PA FIX *2500 - MOCA	EAST TEXAS, PA VOR/DME	*4100
EAST TEXAS, PA VOR/DME	SLATT, PA FIX	4000
SLATT, PA FIX	WILKES-BARRE, PA VORTAC	4000
WILKES-BARRE, PA VORTAC	ELMIRA, NY VOR/DME	4000
ELMIRA, NY VOR/DME	GENESEO, NY VOR/DME	4000
GENESEO, NY VOR/DME	ROCHESTER, NY VOR/DME	2800

95.6148 VOR FEDERAL AIRWAY V148

FALCON, CO VORTAC *10000 - MRA	*LIMEX, CO FIX	8500
LIMEX, CO FIX	THURMAN, CO VORTAC	7500
THURMAN, CO VORTAC *6500 - MOCA	MCJEF, NE FIX	*7000
MCJEF, NE FIX *5600 - MOCA	HAYES CENTER, NE VORTAC	*7000
HAYES CENTER, NE VORTAC *4500 - MOCA	NORTH PLATTE, NE VOR/DME	*4900
NORTH PLATTE, NE VOR/DME *4400 - MOCA	O'NEILL, NE VORTAC	*5400
O'NEILL, NE VORTAC *3500 - MOCA	TYNDA, SD FIX	*4000
TYNDA, SD FIX *3200 - MOCA	DOLTS, SD FIX	*4000
DOLTS, SD FIX	SIOUX FALLS, SD VORTAC	3400
SIOUX FALLS, SD VORTAC	REDWOOD FALLS, MN VOR/DME	3700
REDWOOD FALLS, MN VOR/DME	MAYER, MN FIX	2800
MAYER, MN FIX	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC *2700 - MOCA	ALEEN, WI FIX	*5000
ALEEN, WI FIX #UNUSABLE	HAYWARD, WI VOR/DME	#000

FROM	TO	MEA

95.6146 VOR FEDERAL AIRWAY V148 - CONTINUED

HAYWARD, WI VOR/DME	*IRONWOOD, MI VOR/DME	10000
*5200 - MCA IRONWOOD, MI VOR/DME , SW BND		
IRONWOOD, MI VOR/DME	HOUGHTON, MI VOR/DME	*3700
*3200 - MOCA		

95.6149 VOR FEDERAL AIRWAY V149

ALLENTOWN, PA VORTAC	BINGHAMTON, NY VOR/DME	*5000
*4000 - MOCA		

95.6150 VOR FEDERAL AIRWAY V150

SAN FRANCISCO, CA VOR/DME	SUTRO, CA FIX	3500
SUTRO, CA FIX	GOBBS, CA FIX	3000
GOBBS, CA FIX	SAUSALITO, CA VOR/DME	4000
SAUSALITO, CA VOR/DME	COMMO, CA FIX	4000
COMMO, CA FIX	REBAS, CA FIX	
	SW BND	4000
	NE BND	3000
REBAS, CA FIX	EMBER, CA FIX	3000
EMBER, CA FIX	SACRAMENTO, CA VORTAC	
	NE BND	2000
	SW BND	3000

95.6151 VOR FEDERAL AIRWAY V151

GAILS, MA FIX	PROVIDENCE, RI VOR/DME	*3000
*2000 - GNSS MEA		
PROVIDENCE, RI VOR/DME	PUTNAM, CT VOR/DME	*3000
*2100 - MOCA		
PUTNAM, CT VOR/DME	GARDNER, MA VOR/DME	3000
GARDNER, MA VOR/DME	KEENE, NH VORTAC	3600
KEENE, NH VORTAC	STRUM, NH FIX	3600
STRUM, NH FIX	*UNKER, NH FIX	6000
*6000 - MRA		
UNKER, NH FIX	MCADM, NH FIX	4500
MCADM, NH FIX	LEBANON, NH VOR/DME	*4000
*3500 - MOCA		
LEBANON, NH VOR/DME	ZIECH, VT FIX	*4000
*3600 - MOCA		
ZIECH, VT FIX	MONTPELIER, VT VOR/DME	*4400
*3900 - MOCA		
MONTPELIER, VT VOR/DME	*BURLINGTON, VT VOR/DME	6300
*5000 - MCA BURLINGTON, VT VOR/DME , SE BND		

95.6152 VOR FEDERAL AIRWAY V152

ST PETERSBURG, FL VORTAC	JENSN, FL FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
KIZER, FL FIX	ORMOND BEACH, FL VORTAC	
	NE BND	*3600
	SW BND	*5000
*2800 - MOCA		

95.6154 VOR FEDERAL AIRWAY V154

ROME, GA VORTAC	MACON, GA VORTAC	*4000
*3400 - MOCA		MAA - 7000
MACON, GA VORTAC	DUBLIN, GA VORTAC	#2300
#MACON R-099 UNUSABLE USE DUBLIN R-286		
DUBLIN, GA VORTAC	OCONE, GA FIX	#000
#UNUSABLE		
OCONE, GA FIX	*LOTTS, GA FIX	#000
*9000 - MRA		
#UNUSABLE		
LOTTS, GA FIX	SAVANNAH, GA VORTAC	*3000
*1800 - MOCA		

95.6155 VOR FEDERAL AIRWAY V155

COLUMBUS, GA VORTAC	GRANT, GA FIX	*3000
*2400 - MOCA		
GRANT, GA FIX	*SMARR, GA FIX	**4000
*4500 - MCA SMARR, GA FIX , NE BND		
**2500 - MOCA		
**2600 - GNSS MEA		
SMARR, GA FIX	*SINCA, GA FIX	**4500
*4500 - MCA SINCA, GA FIX , SW BND		
**2500 - MOCA		
**2500 - GNSS MEA		
SINCA, GA FIX	BEYLO, GA FIX	*5000
*2400 - MOCA		
*2400 - GNSS MEA		
BEYLO, GA FIX	COLLIERS, SC VORTAC	*3000
*2100 - MOCA		
COLLIERS, SC VORTAC	*WIDER, SC FIX	2500
*4000 - MRA		
WIDER, SC FIX	*BLOTS, SC FIX	2500
*4000 - MRA		
BLOTS, SC FIX	CHESTERFIELD, SC VOR/DME	2300
CHESTERFIELD, SC VOR/DME	LILLS, NC FIX	2300
LILLS, NC FIX	SANDHILLS, NC VORTAC	*8000
*2000 - MOCA		
*2400 - GNSS MEA		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	2500
RALEIGH/DURHAM, NC VORTAC	WIPER, NC FIX	2300
WIPER, NC FIX	LAWRENCEVILLE, VA VORTAC	#*8000
*2000 - MOCA		
*2300 - GNSS MEA		
#LAWRENCEVILLE R-225 UNUSABLE, USE RALEIGH/DURHAM R-046		
LAWRENCEVILLE, VA VORTAC	*MANGE, VA FIX	#**4000
*5000 - MRA		
**2000 - GNSS MEA		
#LAWRENCEVILLE R-042 UNUSABLE, USE RICHMOND R-223		
MANGE, VA FIX	FLAT ROCK, VA VORTAC	*5000
*1800 - MOCA		
*2000 - GNSS MEA		
FLAT ROCK, VA VORTAC	FALKO, VA FIX	2000
FALKO, VA FIX	BROOKE, VA VORTAC	*6000
*1700 - MOCA		
*2000 - GNSS MEA		

FROM	TO	MEA

95.6156 VOR FEDERAL AIRWAY V156

FROM	TO	MEA
CEDAR RAPIDS, IA VOR/DME	MOSCO, IA FIX	3200
MOSCO, IA FIX	MOLINE, IL VOR/DME	2600
MOLINE, IL VOR/DME	BRADFORD, IL VORTAC	2800
BRADFORD, IL VORTAC	PEOTONE, IL VORTAC	2700
PEOTONE, IL VORTAC	LUCIT, IN FIX	2500
LUCIT, IN FIX	MAPPS, IN FIX	*4000
*2400 - MOCA		
MAPPS, IN FIX	KNOX, IN VOR/DME	*3000
*2200 - MOCA		
KNOX, IN VOR/DME	GIPPER, MI VORTAC	2600
GIPPER, MI VORTAC	KALAMAZOO, MI VOR/DME	3000

95.6157 VOR FEDERAL AIRWAY V157

FROM	TO	MEA
KEY WEST, FL VORTAC	DVALL, FL FIX	*5000
*1400 - MOCA		
*3000 - GNSS MEA		
DVALL, FL FIX	*FAMIN, FL FIX	**5000
*5700 - MRA		
**1300 - MOCA		
**3000 - GNSS MEA		
FAMIN, FL FIX	DOLPHIN, FL VORTAC	*5000
*1600 - MOCA		
*3000 - GNSS MEA		
DOLPHIN, FL VORTAC	THNDR, FL FIX	*3000
*1500 - MOCA		
THNDR, FL FIX	LA BELLE, FL VORTAC	*3000
*1600 - MOCA		
LA BELLE, FL VORTAC	RINSE, FL FIX	*2000
*1500 - MOCA		
RINSE, FL FIX	LAKELAND, FL VORTAC	2300
LAKELAND, FL VORTAC	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	TAYLOR, FL VORTAC	2000
TAYLOR, FL VORTAC	WAYCROSS, GA VORTAC	2300
WAYCROSS, GA VORTAC	ALMA, GA VORTAC	#2000
#ALMA R-189 UNUSABLE USE WAYCROSS R-009.		
ALMA, GA VORTAC	*LOTTS, GA FIX	**10000
*9000 - MRA		
*10000 - MCA LOTTS, GA FIX , SW BND		
**2000 - GNSS MEA		
LOTTS, GA FIX	ALLENDALE, SC VOR	*9000
*1800 - MOCA		
*2000 - GNSS MEA		
ALLENDALE, SC VOR	VANCE, SC VORTAC	*6000
*2000 - GNSS MEA		
VANCE, SC VORTAC	FLORENCE, SC VORTAC	#*2000
*2000 - GNSS MEA		
#VANCE R-047 TO COP UNUSABLE BLO FL180 EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV.		
FLORENCE, SC VORTAC	FAYETTEVILLE, NC VOR/DME	2300
FAYETTEVILLE, NC VOR/DME	KINSTON, NC VORTAC	*2000
*1900 - MOCA		
KINSTON, NC VORTAC	TAR RIVER, NC VORTAC	2200
TAR RIVER, NC VORTAC	LAWRENCEVILLE, VA VORTAC	#*4500
*2500 - MOCA		
#LAWRENCEVILLE R-177 UNUSABLE BELOW 6000, USE TAR RIVER R-354.		

FROM	TO	MEA

95.6157 VOR FEDERAL AIRWAY V157 - CONTINUED

LAWRENCEVILLE, VA VORTAC	DALTO, VA FIX	#*4000
*2000 - GNSS MEA		
#LAWRENCEVILLE R-042 UNUSABLE.		
DALTO, VA FIX	RICHMOND, VA VORTAC	2000
RICHMOND, VA VORTAC	*TAPPA, VA FIX	2000
*5000 - MCA TAPPA, VA FIX , NE BND		
TAPPA, VA FIX	PATUXENT, MD VORTAC	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		
GARED, MD FIX	CHOPS, MD FIX	*4500
*1500 - MOCA		
*4000 - GNSS MEA		
CHOPS, MD FIX	SMYRNA, DE VORTAC	*2000
*1500 - MOCA		
SMYRNA, DE VORTAC	WOODSTOWN, NJ VORTAC	*1900
*1500 - MOCA		
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	*3000
*2000 - MOCA		
ROBBINSVILLE, NJ VORTAC	MINKS, NJ FIX	2000
MINKS, NJ FIX	LA GUARDIA, NY VOR/DME	2900
LA GUARDIA, NY VOR/DME	FAMMA, NY FIX	2000
FAMMA, NY FIX	HAARP, CT FIX	3000
HAARP, CT FIX	KINGSTON, NY VOR/DME	*7000
*2800 - MOCA		
*4000 - GNSS MEA		
KINGSTON, NY VOR/DME	*WIGAN, NY FIX	3100
*8000 - MCA WIGAN, NY FIX , N BND		
WIGAN, NY FIX	GROUP, NY FIX	*8000
*3000 - GNSS MEA		
GROUP, NY FIX	*ALBANY, NY VORTAC	**6000
*6000 - MCA ALBANY, NY VORTAC , S BND		
**2800 - GNSS MEA		

95.6158 VOR FEDERAL AIRWAY V158

MASON CITY, IA VOR/DME	POUND, IA FIX	3000
POUND, IA FIX	DUBUQUE, IA VORTAC	*6000
*3100 - MOCA		
DUBUQUE, IA VORTAC	POLO, IL VOR/DME	2800
POLO, IL VOR/DME	SHOOF, IL FIX	2700

95.6159 VOR FEDERAL AIRWAY V159

VIRGINIA KEY, FL VOR/DME	*NITNY, FL FIX	2100
*3000 - MCA NITNY, FL FIX , N BND		
NITNY, FL FIX	JUPEM, FL FIX	3000
JUPEM, FL FIX	TREASURE, FL VORTAC	2600
TREASURE, FL VORTAC	*PRESK, FL FIX	3000
*2500 - MRA		
PRESK, FL FIX	ORLANDO, FL VORTAC	2000
ORLANDO, FL VORTAC	*SHIMM, FL FIX	2000
*3000 - MRA		
SHIMM, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	*PERSE, FL FIX	2000
*3000 - MRA		

95.6159 VOR FEDERAL AIRWAY V159 - CONTINUED

FROM	TO	MEA
PERSE, FL FIX	*WILON, FL FIX	2000
*3000 - MRA		
WILON, FL FIX	CROSS CITY, FL VORTAC	2000
CROSS CITY, FL VORTAC	GREENVILLE, FL VORTAC	2000
GREENVILLE, FL VORTAC	*SALER, GA FIX	2500
*3000 - MRA		
SALER, GA FIX	PECAN, GA VOR/DME	*2000
*1700 - MOCA		
PECAN, GA VOR/DME	*SHANY, GA FIX	**2000
*4000 - MRA		
**1800 - MOCA		
SHANY, GA FIX	*SAWES, GA FIX	2100
*2200 - MRA		
SAWES, GA FIX	EUFAULA, AL VORTAC	2100
EUFAULA, AL VORTAC	TUSKEGEE, AL VOR/DME	2000
TUSKEGEE, AL VOR/DME	KENTT, AL FIX	*2600
*1900 - MOCA		
KENTT, AL FIX	KYLEE, AL FIX	3800
KYLEE, AL FIX	VULCAN, AL VORTAC	3800
VULCAN, AL VORTAC	HAMILTON, AL VORTAC	*2600
*2200 - MOCA		
HAMILTON, AL VORTAC	HOLLY SPRINGS, MS VORTAC	2300
HOLLY SPRINGS, MS VORTAC	GILMORE, AR VOR/DME	2500
GILMORE, AR VOR/DME	WALNUT RIDGE, AR VORTAC	2800
WALNUT RIDGE, AR VORTAC	DOGWOOD, MO VORTAC	*3400
*3000 - MOCA		
DOGWOOD, MO VORTAC	SPRINGFIELD, MO VORTAC	4300
SPRINGFIELD, MO VORTAC	*OLIVA, MO FIX	**3000
*6000 - MRA		
**2500 - MOCA		
OLIVA, MO FIX	TRALE, MO FIX	*3000
*2500 - MOCA		
TRALE, MO FIX	AUGIE, MO FIX	*3000
*2500 - MOCA		
AUGIE, MO FIX	HODEN, MO FIX	2700
HODEN, MO FIX	NAPOLEON, MO VORTAC	*3000
*2400 - MOCA		
NAPOLEON, MO VORTAC	ST JOSEPH, MO VORTAC	2900
ST JOSEPH, MO VORTAC	VIKKI, IA FIX	3000
VIKKI, IA FIX	OMAHA, IA VORTAC	3400
OMAHA, IA VORTAC	SIOUX CITY, IA VORTAC	3000
SIOUX CITY, IA VORTAC	OBERT, NE FIX	*4500
*2700 - MOCA		
OBERT, NE FIX	YANKTON, SD VOR/DME	3400
YANKTON, SD VOR/DME	MITCHELL, SD VOR/DME	3300
MITCHELL, SD VOR/DME	HURON, SD VORTAC	3000

95.6160 VOR FEDERAL AIRWAY V160

FROM	TO	MEA
*BLUE MESA, CO VOR/DME	MURFE, CO FIX	16400
*13100 - MCA BLUE MESA, CO VOR/DME , NE BND		
MURFE, CO FIX	*LARKS, CO FIX	**15000
*15600 - MRA		
**14400 - MOCA		
LARKS, CO FIX	*SIGNE, CO FIX	**14400
*11500 - MCA SIGNE, CO FIX , SW BND		
**13800 - MOCA		
SIGNE, CO FIX	FALCON, CO VORTAC	8800
FALCON, CO VORTAC	WITNE, CO FIX	8000
WITNE, CO FIX	SAYGE, CO FIX	*8000
*7200 - MOCA		

95.6159 VOR FEDERAL AIRWAY V160 - CONTINUED

SAYGE, CO FIX	TUMBL, CO FIX	*8000
*6800 - MOCA		
TUMBL, CO FIX	SIDNEY, NE VOR/DME	*8000
*6800 - MOCA		

95.6161 VOR FEDERAL AIRWAY V161

THREE RIVERS, TX VORTAC	LEMIG, TX FIX	2000
LEMIG, TX FIX	CENTER POINT, TX VORTAC	4000
CENTER POINT, TX VORTAC	LLANO, TX VORTAC	4000
LLANO, TX VORTAC	*BUILT, TX FIX	**6000
*6000 - MRA		
**3200 - MOCA		
BUILT, TX FIX	DUFFA, TX FIX	*6000
*2900 - MOCA		
DUFFA, TX FIX	MILLSAP, TX VORTAC	3000
MILLSAP, TX VORTAC	BOWIE, TX VORTAC	3000
BOWIE, TX VORTAC	ARDMORE, OK VORTAC	3000
ARDMORE, OK VORTAC	PHARA, OK FIX	3000
PHARA, OK FIX	OKMULGEE, OK VOR/DME	*3000
*2300 - MOCA		
OKMULGEE, OK VOR/DME	TULSA, OK VORTAC	3200
TULSA, OK VORTAC	NOVEL, OK FIX	3100
NOVEL, OK FIX	OSWEGO, KS VOR/DME	2800
OSWEGO, KS VOR/DME	NALLY, KS FIX	*3000
*2400 - MOCA		
NALLY, KS FIX	BUTLER, MO VORTAC	*3000
*2500 - MOCA		
BUTLER, MO VORTAC	NAPOLEON, MO VORTAC	2900
NAPOLEON, MO VORTAC	LAMONI, IA VOR/DME	2900
LAMONI, IA VOR/DME	*WIVEY, IA FIX	3000
*4300 - MRA		
WIVEY, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	*ANKEN, IA FIX	2700
*3500 - MCA ANKEN, IA FIX , N BND		
ANKEN, IA FIX	NEVAD, IA FIX	4000
NEVAD, IA FIX	ALOCK, IA FIX	*3300
*2700 - MOCA		
ALOCK, IA FIX	MASON CITY, IA VOR/DME	3000
MASON CITY, IA VOR/DME	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	*CORDY, MN FIX	3000
*4000 - MRA		
CORDY, MN FIX	FARMINGTON, MN VORTAC	3000
FARMINGTON, MN VORTAC	GOPHER, MN VORTAC	*3500
*2700 - MOCA		
INTERNATIONAL FALLS, MN VOR/DME	U.S. CANADIAN BORDER	3000

95.6162 VOR FEDERAL AIRWAY V162

HARRISBURG, PA VORTAC	BOBSS, PA FIX	#000
#UNUSABLE		
BOBSS, PA FIX	EAST TEXAS, PA VOR/DME	3000
EAST TEXAS, PA VOR/DME	ALLENTOWN, PA VORTAC	#3000
#ALLENTOWN R-240 UNUSABLE BELOW 9000 USE EAST TEXAS R-059		
ALLENTOWN, PA VORTAC	HUGUENOT, NY VOR/DME	3500

FROM	TO	MEA

95.6163 VOR FEDERAL AIRWAY V163

FROM	TO	MEA
U.S. MEXICAN BORDER	BROWNSVILLE, TX VORTAC	*2000
*1400 - MOCA		
BROWNSVILLE, TX VORTAC	RELAX, TX FIX	1800
RELAX, TX FIX	MANNY, TX FIX	*5000
*1800 - MOCA		
*1800 - GNSS MEA		
MANNY, TX FIX	ASCOT, TX FIX	*5000
*1500 - MOCA		
ASCOT, TX FIX	SOLON, TX FIX	
	N BND	*4000
	S BND	*5000
*1600 - MOCA		
SOLON, TX FIX	CORPUS CHRISTI, TX VORTAC	1800
CORPUS CHRISTI, TX VORTAC	SINTO, TX FIX	1800
SINTO, TX FIX	THREE RIVERS, TX VORTAC	2000
THREE RIVERS, TX VORTAC	YENNS, TX FIX	
	S BND	2000
	N BND	3000
YENNS, TX FIX	SAN ANTONIO, TX VORTAC	*3000
*2500 - MOCA		
SAN ANTONIO, TX VORTAC	SLIMM, TX FIX	*3500
*2900 - MOCA		
SLIMM, TX FIX	GOOCH SPRINGS, TX VORTAC	*3500
*3000 - MOCA		
GOOCH SPRINGS, TX VORTAC	*TENAT, TX FIX	**3500
*4000 - MRA		
**2700 - MOCA		
TENAT, TX FIX	GLEN ROSE, TX VORTAC	*3500
*2700 - MOCA		

95.6164 VOR FEDERAL AIRWAY V164

FROM	TO	MEA
BUFFALO, NY VOR/DME	*BENEE, NY FIX	**11000
*11000 - MCA BENEE, NY FIX , N BND		
**4400 - MOCA		
**5000 - GNSS MEA		
BENEE, NY FIX	WELLSVILLE, NY VORTAC	*6000
*4500 - MOCA		
*5000 - GNSS MEA		
WELLSVILLE, NY VORTAC	STONYFORK, PA VOR/DME	4500
STONYFORK, PA VOR/DME	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	DIANO, PA FIX	4000
DIANO, PA FIX	EAST TEXAS, PA VOR/DME	*4000
*3500 - MOCA		

95.6165 VOR FEDERAL AIRWAY V165

FROM	TO	MEA
MISSION BAY, CA VORTAC	SARGS, CA FIX	3000
SARGS, CA FIX	OCEANSIDE, CA VORTAC	2500
OCEANSIDE, CA VORTAC	BALBO, CA FIX	4000
BALBO, CA FIX	SEAL BEACH, CA VORTAC	
	NW BND	3000
	SE BND	4000
SEAL BEACH, CA VORTAC	LOS ANGELES, CA VORTAC	2500
LOS ANGELES, CA VORTAC	*VALEY, CA FIX	4000
*5600 - MCA VALEY, CA FIX , N BND		
VALEY, CA FIX	*SAUGS, CA FIX	6000
*6600 - MCA SAUGS, CA FIX , NW BND		
SAUGS, CA FIX	LAKE HUGHES, CA VORTAC	8000

95.6165 VOR FEDERAL AIRWAY V165 - CONTINUED

FROM	TO	MEA
LAKE HUGHES, CA VORTAC	JEFFY, CA FIX	8000
JEFFY, CA FIX	*LOPES, CA FIX	9000
*8600 - MCA LOPES, CA FIX , S BND		
LOPES, CA FIX	*ARVIN, CA FIX	8500
*7300 - MCA ARVIN, CA FIX , SE BND		
ARVIN, CA FIX	SHAFTER, CA VORTAC	3000
SHAFTER, CA VORTAC	TULE, CA VOR/DME	3000
TULE, CA VOR/DME	DINUB, CA FIX	3500
DINUB, CA FIX	SELMA, CA FIX	
	NW BND	2500
	SE BND	3500
SELMA, CA FIX	*CLOVIS, CA VORTAC	2000
*4000 - MCA CLOVIS, CA VORTAC , N BND		
CLOVIS, CA VORTAC	*COGOL, CA FIX	
	N BND	6500
	S BND	5000
*8500 - MCA COGOL, CA FIX , N BND		
COGOL, CA FIX	MARRI, CA FIX	#*16000
*13600 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
MARRI, CA FIX	*MUSTANG, NV VORTAC	**13000
*10000 - MCA MUSTANG, NV VORTAC , S BND		
**11000 - MOCA		
MUSTANG, NV VORTAC	PYRAM, NV FIX	*11000
*9700 - MOCA		
*10000 - GNSS MEA		
PYRAM, NV FIX	BINNZ, NV FIX	
	NW BND	*14000
	SE BND	*12000
*11000 - MOCA		
*11000 - GNSS MEA		
BINNZ, NV FIX	CHOIR, CA FIX	*14000
*12200 - MOCA		
CHOIR, CA FIX	LAKEVIEW, OR VORTAC	
	SE BND	*14000
	NW BND	*11000
*10500 - MOCA		
LAKEVIEW, OR VORTAC	URBIA, OR FIX	9500
URBIA, OR FIX	*DESCHUTES, OR VORTAC	
	SE BND	9500
	NW BND	7000
*9300 - MCA DESCHUTES, OR VORTAC , NW BND		
DESCHUTES, OR VORTAC	BOTTL, OR FIX	
	NW BND	12500
	SE BND	7000
BOTTL, OR FIX	WALDO, OR FIX	12500
WALDO, OR FIX	ELKES, OR FIX	
	NW BND	7800
	SE BND	12500
ELKES, OR FIX	*MAVER, OR FIX	
	SE BND	12500
	NW BND	7000
*9400 - MCA MAVER, OR FIX , SE BND		
MAVER, OR FIX	RAWER, OR FIX	*5000
*3600 - MOCA		
RAWER, OR FIX	NEWBERG, OR VOR/DME	4000
NEWBERG, OR VOR/DME	PITER, OR FIX	4000
PITER, OR FIX	CETRA, WA FIX	6000
CETRA, WA FIX	OLYMPIA, WA VORTAC	
	N BND	4000
	S BND	6000

95.6165 VOR FEDERAL AIRWAY V165 - CONTINUED

OLYMPIA, WA VORTAC	*CARRO, WA FIX	**4000
*4000 - MRA		
**2000 - MOCA		
CARRO, WA FIX	DIGGN, WA FIX	*6000
*5000 - MOCA		
DIGGN, WA FIX	PENN COVE, WA VOR/DME	*5000
*2600 - MOCA		
PENN COVE, WA VOR/DME	ISLND, WA FIX	*5000
*1500 - MOCA		
ISLND, WA FIX	CANDL, WA FIX	*5000
*2800 - MOCA		
CANDL, WA FIX	WHATCOM, WA VORTAC	*4000
*1900 - MOCA		

95.6166 VOR FEDERAL AIRWAY V166

PARKERSBURG, WV VOR/DME	MOSIC, WV FIX	3000
MOSIC, WV FIX	CLARKSBURG, WV VOR/DME	*3600
*3100 - MOCA		
CLARKSBURG, WV VOR/DME	TYGAR, WV FIX	3600
TYGAR, WV FIX	UGJOB, WV FIX	4700
UGJOB, WV FIX	KESSEL, WV VOR/DME	6300
KESSEL, WV VOR/DME	CAPON, WV FIX	*5000
*4500 - MOCA		
CAPON, WV FIX	MARTINSBURG, WV VORTAC	*5000
*3500 - MOCA		
MARTINSBURG, WV VORTAC	WESTMINSTER, MD VORTAC	*4000
*3300 - MOCA		
WESTMINSTER, MD VORTAC	BELAY, MD FIX	*3000
*2500 - MOCA		
BELAY, MD FIX	*BAINS, MD FIX	2000
*6000 - MRA		
BAINS, MD FIX	DUPONT, DE VORTAC	2000
DUPONT, DE VORTAC	WOODSTOWN, NJ VORTAC	2000
		MAA - 8000
WOODSTOWN, NJ VORTAC	BRIEF, NJ FIX	1900
BRIEF, NJ FIX	SEA ISLE, NJ VORTAC	3000

95.6167 VOR FEDERAL AIRWAY V167

HANCOCK, NY VOR/DME	HELON, NY FIX	4100
HELON, NY FIX	KINGSTON, NY VOR/DME	4000
KINGSTON, NY VOR/DME	HARTFORD, CT VOR/DME	3200
HARTFORD, CT VOR/DME	JEWIT, CT FIX	*2600
*2100 - MOCA		
JEWIT, CT FIX	PROVIDENCE, RI VOR/DME	2500
PROVIDENCE, RI VOR/DME	ZUNUX, MA FIX	*2500
*1800 - MOCA		
ZUNUX, MA FIX	PEAKE, MA FIX	*3000
*1800 - MOCA		
PEAKE, MA FIX	MARCONI, MA VOR/DME	#000
#UNUSABLE		
MARCONI, MA VOR/DME	KENNEBUNK, ME VOR/DME	*6000
*1600 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6168 VOR FEDERAL AIRWAY V168

VULCAN, AL VORTAC	LAGRANGE, GA VORTAC	4000
LAGRANGE, GA VORTAC	*MILER, AL FIX	2600
*6000 - MCA MILER, AL FIX , S BND		
*2600 - MCA MILER, AL FIX , N BND		
MILER, AL FIX	*WIREGRASS, AL VORTAC	**6000
*6000 - MCA WIREGRASS, AL VORTAC , N BND		
**3000 - GNSS MEA		

95.6169 VOR FEDERAL AIRWAY V169

TOBE, CO VOR/DME	HUGO, CO VOR/DME	8100
HUGO, CO VOR/DME	THURMAN, CO VORTAC	7300
THURMAN, CO VORTAC	AKRON, CO VOR/DME	*7000
*6200 - MOCA		
AKRON, CO VOR/DME	SIDNEY, NE VOR/DME	*6400
*6200 - MOCA		
SIDNEY, NE VOR/DME	SCOTTSBLUFF, NE VORTAC	*7000
*6000 - MOCA		
SCOTTSBLUFF, NE VORTAC	TOADSTOOL, NE VOR/DME	7000
TOADSTOOL, NE VOR/DME	WAXER, NE FIX	7000
WAXER, NE FIX	RAPID CITY, SD VORTAC	6000
RAPID CITY, SD VORTAC	DUPREE, SD VOR/DME	5000
DUPREE, SD VOR/DME	BISMARCK, ND VOR/DME	4700
BISMARCK, ND VOR/DME	DEVILS LAKE, ND VOR/DME	4000

95.6170 VOR FEDERAL AIRWAY V170

DEVILS LAKE, ND VOR/DME	JAMESTOWN, ND VOR/DME	3500
JAMESTOWN, ND VOR/DME	ABERDEEN, SD VOR/DME	3300
ABERDEEN, SD VOR/DME	SIOUX FALLS, SD VORTAC	*5000
*3400 - MOCA		
SIOUX FALLS, SD VORTAC	WORTHINGTON, MN VOR/DME	3400
ROCHESTER, MN VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	DELLS, WI VORTAC	3000
DELLS, WI VORTAC	BADGER, WI VOR/DME	3000
BADGER, WI VOR/DME	PETTY, WI FIX	2700
PETTY, WI FIX	RAINE, MI FIX	#000
#UNUSABLE		
RAINE, MI FIX	PULLMAN, MI VOR/DME	#000
#UNUSABLE		
PULLMAN, MI VOR/DME	HEBEL, MI FIX	#000
#UNUSABLE		
HEBEL, MI FIX	LESSY, MI FIX	#000
#UNUSABLE		
#UNUSABLE		
LESSY, MI FIX	SALEM, MI VORTAC	3000
BRADFORD, PA VOR/DME	SLATE RUN, PA VORTAC	4000
SLATE RUN, PA VORTAC	SELINSGROVE, PA VOR/DME	4000
SELINSGROVE, PA VOR/DME	RAVINE, PA VORTAC	*4000
*3400 - MOCA		
RAVINE, PA VORTAC	BOYER, PA FIX	3500
BOYER, PA FIX	MODENA, PA VORTAC	*3000
*2400 - MOCA		
MODENA, PA VORTAC	DUPONT, DE VORTAC	*3000
*1800 - MOCA		
*2000 - GNSS MEA		

FROM	TO	MEA

95.6171 VOR FEDERAL AIRWAY V170 - CONTINUED

DUPONT, DE VORTAC	ODESA, MD FIX	#*2000
*2000 - GNSS MEA		
#DUPONT R 233 UNUSABLE BEYOND 22 NM.		
ODESA, MD FIX	SWANN, MD FIX	#*2500
*1500 - MOCA		
*2000 - GNSS MEA		
#UNUSABLE		
SWANN, MD FIX	PALEO, MD FIX	#*2500
*1700 - MOCA		
#UNUSABLE		
PALEO, MD FIX	POLLA, MD FIX	2200 MAA - 13000

95.6171 VOR FEDERAL AIRWAY V171

LEXINGTON, KY VOR/DME	MCFEE, KY FIX	3000
MCFEE, KY FIX	LOUISVILLE, KY VORTAC	2600
LOUISVILLE, KY VORTAC	SCOTO, IN FIX	*10000
*3000 - MOCA		
SCOTO, IN FIX	TERRE HAUTE, IN VORTAC	*4000
*3000 - MOCA		
TERRE HAUTE, IN VORTAC	DANVILLE, IL VORTAC	2500
DANVILLE, IL VORTAC	PEOTONE, IL VORTAC	2500
PEOTONE, IL VORTAC	MEDAN, IL FIX	2400
MEDAN, IL FIX	JOLIET, IL VOR/DME	2400
JOLIET, IL VOR/DME	ROCKFORD, IL VOR/DME	2700
ROCKFORD, IL VOR/DME	GLARS, WI FIX	2900
GLARS, WI FIX	LONE ROCK, WI VOR/DME	*3400
*2800 - MOCA		
LONE ROCK, WI VOR/DME	WEBYE, WI FIX	3000
WEBYE, WI FIX	NODINE, MN VORTAC	3100
NODINE, MN VORTAC	EMILS, MN FIX	3000
EMILS, MN FIX	FARMINGTON, MN VORTAC	*5500
*3000 - GNSS MEA		
FARMINGTON, MN VORTAC	JONNA, MN FIX	*3500
*2500 - MOCA		
*3000 - GNSS MEA		
JONNA, MN FIX	DARWIN, MN VORTAC	2900
DARWIN, MN VORTAC	ALEXANDRIA, MN VOR/DME	3000
ALEXANDRIA, MN VOR/DME	STARR, MN FIX	*3500
*3000 - MOCA		
STARR, MN FIX	*SHELS, MN FIX	**6000
*4000 - MRA		
**3500 - MOCA		
SHELS, MN FIX	GRAND FORKS, ND VOR/DME	3000
GRAND FORKS, ND VOR/DME	ROSEAU, MN VOR/DME	2900

95.6172 VOR FEDERAL AIRWAY V172

NORTH PLATTE, NE VOR/DME	WOLBACH, NE VORTAC	*5400
*4500 - MOCA		
WOLBACH, NE VORTAC	COLUMBUS, NE VOR/DME	3800
COLUMBUS, NE VOR/DME	OMAHA, IA VORTAC	3700
OMAHA, IA VORTAC	WUNOT, IA FIX	
	NE BND	5500
	SW BND	4000
WUNOT, IA FIX	*LINDE, IA FIX	**5500
*5500 - MRA		
**3800 - MOCA		

FROM	TO	MEA

95.6174 VOR FEDERAL AIRWAY V172 - CONTINUED

LINDE, IA FIX	GUMBO, IA FIX	3500
GUMBO, IA FIX	NEWTON, IA VOR/DME	3300
NEWTON, IA VOR/DME	CEDAR RAPIDS, IA VOR/DME	2800
CEDAR RAPIDS, IA VOR/DME	LISBO, IA FIX	2700
LISBO, IA FIX	LOTTE, IA FIX	3300
LOTTE, IA FIX	*MIHAL, IL FIX	2700
*4000 - MRA		
MIHAL, IL FIX	POLO, IL VOR/DME	2700
POLO, IL VOR/DME	DUPAGE, IL VOR/DME	2600

95.6173 VOR FEDERAL AIRWAY V173

SPINNER, IL VORTAC	PEOTONE, IL VORTAC	*4500
*2300 - MOCA		

95.6174 VOR FEDERAL AIRWAY V174

YORK, KY VORTAC	HENDERSON, WV VORTAC	3300
HENDERSON, WV VORTAC	GAYED, WV FIX	*4000
*2700 - MOCA		
GAYED, WV FIX	CARLA, WV FIX	5500
CARLA, WV FIX	ELKINS, WV VORTAC	5500

95.6175 VOR FEDERAL AIRWAY V175

MALDEN, MO VORTAC	BUNKS, MO FIX	*4000
*2700 - MOCA		
BUNKS, MO FIX	VICHY, MO VOR/DME	3000
VICHY, MO VOR/DME	ZIPUR, MO FIX	*3000
*2500 - MOCA		
ZIPUR, MO FIX	HALLSVILLE, MO VORTAC	2700
HALLSVILLE, MO VORTAC	MACON, MO VOR/DME	3100
MACON, MO VOR/DME	KIRKSVILLE, MO VORTAC	2700
KIRKSVILLE, MO VORTAC	OHGEE, IA FIX	2800
OHGEE, IA FIX	DES MOINES, IA VORTAC	#*7000
*2500 - MOCA		
#DES MOINES R-141 UNUSABLE, USE KIRKSVILLE R-323		
DES MOINES, IA VORTAC	*LINDE, IA FIX	3500
*5500 - MRA		
LINDE, IA FIX	*MADUP, IA FIX	**5500
*5500 - MRA		
**3000 - MOCA		
MADUP, IA FIX	*WELTE, IA FIX	5500
*3900 - MRA		
WELTE, IA FIX	SIOUX CITY, IA VORTAC	
	W BND	3000
	E BND	5500
SIOUX CITY, IA VORTAC	OYENS, IA FIX	4400
OYENS, IA FIX	WORTHINGTON, MN VOR/DME	3600
WORTHINGTON, MN VOR/DME	REDWOOD FALLS, MN VOR/DME	3400
REDWOOD FALLS, MN VOR/DME	ALEXANDRIA, MN VOR/DME	3600
ALEXANDRIA, MN VOR/DME	PARK RAPIDS, MN VOR/DME	3300
PARK RAPIDS, MN VOR/DME	BLUOX, MN FIX	
	S BND	3500
	NW BND	7000
BLUOX, MN FIX	ROSEAU, MN VOR/DME	*7000
*2800 - MOCA		
*3300 - GNSS MEA		

FROM	TO	MEA

95.6174 VOR FEDERAL AIRWAY V175 - CONTINUED

ROSEAU, MN VOR/DME *2600 - MOCA	U.S. CANADIAN BORDER	*3600

95.6177 VOR FEDERAL AIRWAY V177

JOLIET, IL VOR/DME	NUELG, IL FIX	2700
NUELG, IL FIX *2300 - MOCA	JANESVILLE, WI VOR/DME	*4000
JANESVILLE, WI VOR/DME	MADISON, WI VORTAC	3000
WAUSAU, WI VORTAC #UNUSABLE	BAITS, WI FIX	#000
BAITS, WI FIX #UNUSABLE	HAYWARD, WI VOR/DME	#000
HAYWARD, WI VOR/DME #USUABLE	DULUTH, MN VORTAC	#000
DULUTH, MN VORTAC	ELY, MN VOR/DME	3600

95.6178 VOR FEDERAL AIRWAY V178

HALLSVILLE, MO VORTAC	BNTON, MO FIX	2800
BNTON, MO FIX *2200 - MOCA	VICHY, MO VOR/DME	*2800
VICHY, MO VOR/DME	FARMINGTON, MO VORTAC	3300
FARMINGTON, MO VORTAC	CAPE GIRARDEAU, MO VOR/DME	3000
CAPE GIRARDEAU, MO VOR/DME	CUNNINGHAM, KY VOR/DME	2400
CUNNINGHAM, KY VOR/DME	CENTRAL CITY, KY VORTAC	2600
CENTRAL CITY, KY VORTAC	NEW HOPE, KY VOR/DME	2700
NEW HOPE, KY VOR/DME	MAUDD, KY FIX	2700
MAUDD, KY FIX	MCFEE, KY FIX	5000
MCFEE, KY FIX	LEXINGTON, KY VOR/DME	3000
LEXINGTON, KY VOR/DME	TRENT, KY FIX	3400
TRENT, KY FIX *4200 - GNSS MEA	SLINK, WV FIX	*8000
SLINK, WV FIX *5400 - GNSS MEA	BLUEFIELD, WV VOR/DME	*6000

95.6179 VOR FEDERAL AIRWAY V179

BRUNSWICK, GA VORTAC	DUBLIN, GA VORTAC	2000
DUBLIN, GA VORTAC *2200 - MOCA	HUSKY, GA FIX	*3000

95.6180 VOR FEDERAL AIRWAY V180

INTERNATIONAL FALLS, MN VOR/DME	U.S. CANADIAN BORDER	2900

FROM	TO	MEA

95.6181 VOR FEDERAL AIRWAY V181

FROM	TO	MEA
KIRKSVILLE, MO VORTAC	LAMONI, IA VOR/DME	2900
LAMONI, IA VOR/DME	OMAHA, IA VORTAC	3000
OMAHA, IA VORTAC	NORFOLK, NE VOR/DME	3600
NORFOLK, NE VOR/DME	YANKTON, SD VOR/DME	3700
YANKTON, SD VOR/DME	SIOUX FALLS, SD VORTAC	#3400
#SIOUX FALLS R-340 UNUSABLE BELOW 4000		
SIOUX FALLS, SD VORTAC	*OBITT, SD FIX	**4000
*5000 - MRA		
**3500 - MOCA		
OBITT, SD FIX	WATERTOWN, SD VORTAC	*4000
*3200 - MOCA		
WATERTOWN, SD VORTAC	BANEY, ND FIX	4500
BANEY, ND FIX	FARGO, ND VOR/DME	
	N BND	2800
	S BND	3900
FARGO, ND VOR/DME	GRAND FORKS, ND VOR/DME	2600
GRAND FORKS, ND VOR/DME	HUMBOLDT, MN VORTAC	2600
HUMBOLDT, MN VORTAC	ZOMTA, ND FIX	2800
ZOMTA, ND FIX	U.S. CANADIAN BORDER	2800
U.S. CANADIAN BORDER	WINNIPEG, CANADA VORTAC	3000

95.6182 VOR FEDERAL AIRWAY V182

FROM	TO	MEA
NORTH BEND, OR VOR/DME	*GAMMA, OR FIX	
	S BND	4000
	N BND	4500
*6200 - MRA		
GAMMA, OR FIX	NEWPORT, OR VORTAC	4500
NEWPORT, OR VORTAC	NEWBERG, OR VOR/DME	6000
NEWBERG, OR VOR/DME	*BATTLE GROUND, WA VORTAC	4100
*5000 - MCA BATTLE GROUND, WA VORTAC , E BND		
BATTLE GROUND, WA VORTAC	KLICKITAT, OR VOR/DME	*7000
*6500 - MOCA		
KLICKITAT, OR VOR/DME	*BREED, OR FIX	5300
*5700 - MRA		
BREED, OR FIX	*UKIAH, OR FIX	8000
*9400 - MCA UKIAH, OR FIX , E BND		
UKIAH, OR FIX	*BAKER CITY, OR VOR/DME	**13000
*10000 - MCA BAKER CITY, OR VOR/DME , W BND		
**11000 - MOCA		
BAKER CITY, OR VOR/DME	*IBEAM, OR FIX	9000
*12000 - MCA IBEAM, OR FIX , NE BND		
IBEAM, OR FIX	LEZLE, WA FIX	*12000
*8100 - MOCA		
LEZLE, WA FIX	NEZ PERCE, ID VOR/DME	*7000
*6200 - MOCA		

95.6183 VOR FEDERAL AIRWAY V183

FROM	TO	MEA
*SAN MARCUS, CA VORTAC	TAFTO, CA FIX	9000
*7500 - MCA SAN MARCUS, CA VORTAC , N BND		
*TAFTO, CA FIX	MARIC, CA FIX	**6000
*6000 - MCA TAFTO, CA FIX , S BND		
**4500 - MOCA		
*MARIC, CA FIX	SHAFTER, CA VORTAC	3000
*5000 - MCA MARIC, CA FIX , S BND		

95.6184 VOR FEDERAL AIRWAY V184

FROM	TO	MEA
PHILIPSBURG, PA VORTAC	*HARRISBURG, PA VORTAC	#4900
*3600 - MCA HARRISBURG, PA VORTAC , NW BND		
#4800 MCA PHILIPSBURG, PA VORTAC, SE BND		
HARRISBURG, PA VORTAC	*DELRO, PA FIX	3000
*10000 - MCA DELRO, PA FIX , E BND		
DELRO, PA FIX	*MODENA, PA VORTAC	**10000
*10000 - MCA MODENA, PA VORTAC , W BND		
**4000 - GNSS MEA		
MODENA, PA VORTAC	WOODSTOWN, NJ VORTAC	2000
WOODSTOWN, NJ VORTAC	CEDAR LAKE, NJ VOR/DME	1900
CEDAR LAKE, NJ VOR/DME	ATLANTIC CITY, NJ VORTAC	1800
ATLANTIC CITY, NJ VORTAC	PANZE, NJ FIX	2100
PANZE, NJ FIX	FALON, NJ FIX	*5000
*1500 - MOCA		
*2000 - GNSS MEA		
FALON, NJ FIX	ZIGGI, NJ FIX	*2500
*1600 - MOCA		

95.6185 VOR FEDERAL AIRWAY V185

FROM	TO	MEA
SAVANNAH, GA VORTAC	*SPONG, GA FIX	**3000
*5000 - MRA		
**2200 - MOCA		
SPONG, GA FIX	COLLIERS, SC VORTAC	*3000
*2200 - MOCA		
COLLIERS, SC VORTAC	GREENWOOD, SC VORTAC	2400
GREENWOOD, SC VORTAC	*UNMAN, SC FIX	3000
*4000 - MCA UNMAN, SC FIX , N BND		
UNMAN, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	MUMMI, NC FIX	7000
MUMMI, NC FIX	SNOWBIRD, TN VORTAC	8000
SNOWBIRD, TN VORTAC	*PENCE, TN FIX	7000
*4000 - MCA PENCE, TN FIX , SE BND		
PENCE, TN FIX	VOLUNTEER, TN VORTAC	3000

95.6186 VOR FEDERAL AIRWAY V186

FROM	TO	MEA
SAN MARCUS, CA VORTAC	DEANO, CA FIX	6200
DEANO, CA FIX	*HENER, CA FIX	5000
*5100 - MCA HENER, CA FIX , E BND		
HENER, CA FIX	FILLMORE, CA VORTAC	6300
FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	6000
VAN NUYS, CA VOR/DME	TIFNI, CA FIX	5500
TIFNI, CA FIX	PARADISE, CA VORTAC	4000
PARADISE, CA VORTAC	TANNR, CA FIX	6000
TANNR, CA FIX	POGGI, CA VORTAC	5000

95.6187 VOR FEDERAL AIRWAY V187

FROM	TO	MEA
SOCORRO, NM VORTAC	ALBUQUERQUE, NM VORTAC	8000
ALBUQUERQUE, NM VORTAC	*CURLY, NM FIX	9000
*9500 - MCA CURLY, NM FIX , NW BND		
CURLY, NM FIX	*MISSY, NM FIX	11000
*9000 - MRA		
MISSY, NM FIX	RATTLESNAKE, NM VORTAC	8700
RATTLESNAKE, NM VORTAC	RIZAL, CO FIX	9200
RIZAL, CO FIX	*MANCA, CO FIX	10900
*11200 - MCA MANCA, CO FIX , N BND		

95.6187 VOR FEDERAL AIRWAY V187 - CONTINUED

FROM	TO	MEA
MANCA, CO FIX	HERRM, CO FIX	#*15000
*12800 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
HERRM, CO FIX	*GRAND JUNCTION, CO VOR/DME	**15000
*10700 - MCA GRAND JUNCTION, CO VOR/DME , S BND		
**12100 - MOCA		
GRAND JUNCTION, CO VOR/DME	*TESSY, CO FIX	10000
*10500 - MRA		
*10700 - MCA TESSY, CO FIX , N BND		
TESSY, CO FIX	*RACER, CO FIX	**12000
*12000 - MRA		
**11000 - MOCA		
RACER, CO FIX	*RENAE, CO FIX	**13000
*13000 - MRA		
**10700 - MOCA		
RENAE, CO FIX	ROCK SPRINGS, WY VOR/DME	*13000
*11700 - MOCA		
ROCK SPRINGS, WY VOR/DME	RIVERTON, WY VOR/DME	*12000
*10000 - MOCA		
*10000 - GNSS MEA		
RIVERTON, WY VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	9600
BOYSEN RESERVOIR, WY VOR/DME	PRYER, MT FIX	11000
PRYER, MT FIX	*BILLINGS, MT VORTAC	
	SE BND	11000
	NW BND	7000
*6500 - MCA BILLINGS, MT VORTAC , S BND		
BILLINGS, MT VORTAC	TASSE, MT FIX	
	SE BND	6000
	NW BND	8000
TASSE, MT FIX	*JUGAP, MT FIX	8000
*9500 - MCA JUGAP, MT FIX , NW BND		
JUGAP, MT FIX	GREAT FALLS, MT VORTAC	*11000
*10300 - MOCA		
GREAT FALLS, MT VORTAC	ROSOE, MT FIX	
	NE BND	8000
	SW BND	10000
ROSOE, MT FIX	MISSOULA, MT VOR/DME	*13000
*11400 - MOCA		
MISSOULA, MT VOR/DME	LOLLO, MT FIX	
	NE BND	*10000
	SW BND	*13000
*9300 - MOCA		
LOLLO, MT FIX	RIVAL, MT FIX	
	NE BND	*12000
	SW BND	*13000
*9000 - MOCA		
RIVAL, MT FIX	OFINO, ID FIX	*13000
*9900 - MOCA		
OFINO, ID FIX	NEZ PERCE, ID VOR/DME	
	SW BND	5500
	NE BND	10000
NEZ PERCE, ID VOR/DME	POTOR, WA FIX	*6000
*5400 - MOCA		
POTOR, WA FIX	*DATES, WA FIX	7200
*4500 - MCA DATES, WA FIX , E BND		
DATES, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	NIALS, WA FIX	2900
NIALS, WA FIX	FEBUS, WA FIX	4400
FEBUS, WA FIX	*ELLENSBURG, WA VOR/DME	6000
*6700 - MCA ELLENSBURG, WA VOR/DME , W BND		

95.6187 VOR FEDERAL AIRWAY V187 - CONTINUED

FROM	TO	MEA
ELLENSBURG, WA VOR/DME	THICK, WA FIX	
	E BND	7700
	W BND	10000
THICK, WA FIX	MOUNT, WA FIX	10000
MOUNT, WA FIX	ORTIN, WA FIX	
	W BND	8000
	E BND	10000
ORTIN, WA FIX	MCCHORD, WA VORTAC	6000
MCCHORD, WA VORTAC	OLYMPIA, WA VORTAC	6000
OLYMPIA, WA VORTAC	RINDS, WA FIX	4000
RINDS, WA FIX	ASTORIA, OR VOR/DME	5000

95.6188 VOR FEDERAL AIRWAY V188

FROM	TO	MEA
SLATE RUN, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	SWANK, PA FIX	4500
SWANK, PA FIX	WILKES-BARRE, PA VORTAC	
	E BND	*4000
	W BND	*4500
*3700 - MOCA		
WILKES-BARRE, PA VORTAC	SPARTA, NJ VORTAC	4000
SPARTA, NJ VORTAC	CARMEL, NY VOR/DME	*3000
*2500 - MOCA		
CARMEL, NY VOR/DME	GROTON, CT VOR/DME	3000

95.6189 VOR FEDERAL AIRWAY V189

FROM	TO	MEA
WRIGHT BROTHERS, NC VOR/DME	*DAREZ, NC FIX	**8000
*8000 - MCA DAREZ, NC FIX , E BND		
**3000 - GNSS MEA		
DAREZ, NC FIX	TAR RIVER, NC VORTAC	*6000
*3000 - MOCA		
*4000 - GNSS MEA		
TAR RIVER, NC VORTAC	FRANKLIN, VA VORTAC	2000
FRANKLIN, VA VORTAC	HOPEWELL, VA VORTAC	3000

95.6190 VOR FEDERAL AIRWAY V190

FROM	TO	MEA
PHOENIX, AZ VORTAC	*LAKEY, AZ FIX	5000
*7800 - MCA LAKEY, AZ FIX , NE BND		
LAKEY, AZ FIX	GRINE, AZ FIX	
	NE BND	*9000
	SW BND	*6000
*5300 - MOCA		
GRINE, AZ FIX	PEAKS, AZ FIX	*10000
*6700 - MOCA		
PEAKS, AZ FIX	TEDDI, AZ FIX	
	NE BND	13000
	SW BND	10000
TEDDI, AZ FIX	ST JOHNS, AZ VORTAC	*13000
*11000 - MOCA		
*11000 - GNSS MEA		

95.6187 VOR FEDERAL AIRWAY V190 - CONTINUED

FROM	TO	MEA
ST JOHNS, AZ VORTAC	ACOMA, NM FIX	11500
ACOMA, NM FIX	*ALBUQUERQUE, NM VORTAC	9000
*11500 - MCA ALBUQUERQUE, NM VORTAC , NE BND		
ALBUQUERQUE, NM VORTAC	RENCO, NM FIX	13000
RENCO, NM FIX	*FORT UNION, NM VORTAC	12000
*11300 - MCA FORT UNION, NM VORTAC , SW BND		
FORT UNION, NM VORTAC	DALHART, TX VORTAC	*10000
*9200 - MOCA		
DALHART, TX VORTAC	MITBEE, OK VORTAC	*7000
*5400 - MOCA		
MITBEE, OK VORTAC	CARON, OK FIX	
	SW BND	*5000
	NE BND	*8000
*3700 - MOCA		
CARON, OK FIX	FIRET, OK FIX	*8000
*2800 - MOCA		
FIRET, OK FIX	PIONEER, OK VORTAC	
	E BND	3000
	W BND	8000
PIONEER, OK VORTAC	BARTLESVILLE, OK VOR/DME	3000
BARTLESVILLE, OK VOR/DME	OSWEGO, KS VOR/DME	2700
OSWEGO, KS VOR/DME	*WACCO, MO FIX	3100
*3700 - MCA WACCO, MO FIX , E BND		
WACCO, MO FIX	*QUALM, MO FIX	**3700
*3700 - MCA QUALM, MO FIX , W BND		
**3000 - MOCA		
QUALM, MO FIX	SPRINGFIELD, MO VORTAC	3000
SPRINGFIELD, MO VORTAC	MAPLES, MO VORTAC	3000
MAPLES, MO VORTAC	BUNKS, MO FIX	3000
BUNKS, MO FIX	FARMINGTON, MO VORTAC	3500
FARMINGTON, MO VORTAC	MARION, IL VOR/DME	3000
MARION, IL VOR/DME	POCKET CITY, IN VORTAC	*5000
*2000 - MOCA		
*2300 - GNSS MEA		

95.6191 VOR FEDERAL AIRWAY V191

FROM	TO	MEA
TROY, IL VORTAC	ADDERS, IL VORTAC	2500
ADDERS, IL VORTAC	ROBERTS, IL VOR/DME	2800
ROBERTS, IL VOR/DME	NEWTT, IL FIX	2500
NEWTT, IL FIX	*BOJAK, IL FIX	**5000
*5000 - MRA		
**2200 - MOCA		
BOJAK, IL FIX	NORTHBROOK, IL VOR/DME	2500
NORTHBROOK, IL VOR/DME	BADGER, WI VOR/DME	2900
BADGER, WI VOR/DME	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	RHINELANDER, WI VOR/DME	*4500
*3100 - MOCA		
RHINELANDER, WI VOR/DME	IRONWOOD, MI VOR/DME	*8000
*3200 - MOCA		
IRONWOOD, MI VOR/DME	DULUTH, MN VORTAC	*3500
*3100 - MOCA		
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	GRAND RAPIDS, MN VOR/DME	3000

FROM	TO	MEA

95.6192 VOR FEDERAL AIRWAY V192

CHAMPAIGN, IL VORTAC	TERRE HAUTE, IN VORTAC	2500
TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	MUNCIE, IN VOR/DME	2900
MUNCIE, IN VOR/DME	DAYTON, OH VOR/DME	2800

95.6193 VOR FEDERAL AIRWAY V193

MUSKY, MI FIX	PULLMAN, MI VOR/DME	*3000
*2000 - MOCA		
PULLMAN, MI VOR/DME	CLOCK, MI FIX	*3000
*2400 - MOCA		
CLOCK, MI FIX	WHITE CLOUD, MI VOR/DME	2800
WHITE CLOUD, MI VOR/DME	TRAVERSE CITY, MI VOR/DME	4000
TRAVERSE CITY, MI VOR/DME	PELLSTON, MI VORTAC	3000
PELLSTON, MI VORTAC	SAULT STE MARIE, MI VOR/DME	3000

95.6194 VOR FEDERAL AIRWAY V194

CEDAR CREEK, TX VORTAC	KISER, TX FIX	2300
KISER, TX FIX	COLLEGE STATION, TX VORTAC	4000
COLLEGE STATION, TX VORTAC	PRARI, TX FIX	*7000
*2000 - MOCA		
*2000 - GNSS MEA		
PRARI, TX FIX	*SEALY, TX FIX	**7000
*7000 - MCA SEALY, TX FIX , NW BND		
**3500 - MOCA		
**3500 - GNSS MEA		
SEALY, TX FIX	HOBBY, TX VOR/DME	2000
HOBBY, TX VOR/DME	SABINE PASS, TX VOR/DME	3000
SABINE PASS, TX VOR/DME	GUSTI, LA FIX	*4000
*1600 - MOCA		
GUSTI, LA FIX	LAFAYETTE, LA VORTAC	2800
LAFAYETTE, LA VORTAC	*ROSEY, LA FIX	2100
*5000 - MRA		
ROSEY, LA FIX	FIGHTING TIGER, LA VORTAC	2100
FIGHTING TIGER, LA VORTAC	MC COMB, MS VORTAC	2300
MC COMB, MS VORTAC	MIZZE, MS FIX	*3000
*2000 - MOCA		
MIZZE, MS FIX	*PAULD, MS FIX	3000
*5000 - MRA		
*3000 - MCA PAULD, MS FIX , SW BND		
PAULD, MS FIX	MERIDIAN, MS VORTAC	2100
LIBERTY, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	3100
RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	2600
TAR RIVER, NC VORTAC	COFIELD, NC VORTAC	1800
COFIELD, NC VORTAC	SUNNS, NC FIX	*2000
*1600 - MOCA		

95.6195 VOR FEDERAL AIRWAY V195

OAKLAND, CA VOR/DME	CROIT, CA FIX	4000
CROIT, CA FIX	*CORDD, CA FIX	**5000
*7200 - MCA CORDD, CA FIX , N BND		
**3400 - MOCA		
CORDD, CA FIX	*RAGGS, CA FIX	**8500
*8500 - MRA		
**5000 - MOCA		

FROM	TO	MEA

95.6194 VOR FEDERAL AIRWAY V195 - CONTINUED

RAGGS, CA FIX	*BESSA, CA FIX	**8500
*8500 - MCA BESSA, CA FIX , S BND		
**4800 - MOCA		
BESSA, CA FIX	WILLIAMS, CA VORTAC	5300
WILLIAMS, CA VORTAC	RED BLUFF, CA VORTAC	*3000
*1700 - MOCA		
RED BLUFF, CA VORTAC	BURRS, CA FIX	3000
BURRS, CA FIX	*TOMAD, CA FIX	**6000
*7300 - MCA TOMAD, CA FIX , W BND		
**4600 - MOCA		
TOMAD, CA FIX	*YAGER, CA FIX	**11000
*7700 - MCA YAGER, CA FIX , E BND		
**8300 - MOCA		
YAGER, CA FIX	FORTUNA, CA VORTAC	6000

95.6196 VOR FEDERAL AIRWAY V196

UTICA, NY VORTAC	*SARANAC LAKE, NY VOR/DME	5400
*6500 - MCA SARANAC LAKE, NY VOR/DME , E BND		
SARANAC LAKE, NY VOR/DME	RIGID, NY FIX	
	E BND	9000
	W BND	5000

95.6197 VOR FEDERAL AIRWAY V197

PARADISE, CA VORTAC	*POMONA, CA VORTAC	4500
*10500 - MCA POMONA, CA VORTAC , NW BND		
POMONA, CA VORTAC	HASSA, CA FIX	
	NW BND	10500
	SE BND	6600
HASSA, CA FIX	*PALMDALE, CA VORTAC	10500
*8700 - MCA PALMDALE, CA VORTAC , SE BND		
PALMDALE, CA VORTAC	*FISCH, CA FIX	5000
*8300 - MCA FISCH, CA FIX , NW BND		
FISCH, CA FIX	*KELEN, CA FIX	**10200
*9300 - MCA KELEN, CA FIX , SE BND		
**10200 - MOCA		
KELEN, CA FIX	*ARVIN, CA FIX	8500
*7300 - MCA ARVIN, CA FIX , SE BND		
ARVIN, CA FIX	SHAFTER, CA VORTAC	3000

95.6198 VOR FEDERAL AIRWAY V198

SAN SIMON, AZ VORTAC	COLUMBUS, NM VOR/DME	8700
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000
EL PASO, TX VORTAC	HUDSPETH, TX VORTAC	7500
HUDSPETH, TX VORTAC	AGAZY, TX FIX	*11000
*8900 - MOCA		
AGAZY, TX FIX	DOWES, TX FIX	*8000
*6400 - MOCA		
DOWES, TX FIX	FORT STOCKTON, TX VORTAC	5000
FORT STOCKTON, TX VORTAC	KEMPL, TX FIX	*8000
*5500 - MOCA		
KEMPL, TX FIX	JUNCTION, TX VORTAC	*6000
*4000 - MOCA		
JUNCTION, TX VORTAC	SAN ANTONIO, TX VORTAC	4100
SAN ANTONIO, TX VORTAC	SEEDS, TX FIX	2900

95.6198 VOR FEDERAL AIRWAY V198 - CONTINUED

SEEDS, TX FIX	WEMAR, TX FIX	*2500
*2000 - MOCA		
WEMAR, TX FIX	EAGLE LAKE, TX VOR/DME	2000
EAGLE LAKE, TX VOR/DME	BLUMS, TX FIX	2000
BLUMS, TX FIX	HOBBY, TX VOR/DME	2400
HOBBY, TX VOR/DME	SABINE PASS, TX VOR/DME	3000
SABINE PASS, TX VOR/DME	WHITE LAKE, LA VOR/DME	*4000
*1700 - MOCA		
*2000 - GNSS MEA		
WHITE LAKE, LA VOR/DME	TIBBY, LA VOR/DME	2000
TIBBY, LA VOR/DME	HARVEY, LA VORTAC	2100
HARVEY, LA VORTAC	PEARL, LA FIX	2000
PEARL, LA FIX	MINNI, MS FIX	*2300
*1300 - MOCA		
MINNI, MS FIX	ELSIE, MS FIX	*3500
*1300 - MOCA		
ELSIE, MS FIX	*ROMMY, MS FIX	**2800
*4000 - MRA		
**1300 - MOCA		
ROMMY, MS FIX	BROOKLEY, AL VORTAC	2000
BROOKLEY, AL VORTAC	CRESTVIEW, FL VORTAC	3100
CRESTVIEW, FL VORTAC	DEFUN, FL FIX	
	W BND	2000
	E BND	3000
DEFUN, FL FIX	*CHEWS, FL FIX	**3000
*2500 - MCA CHEWS, FL FIX , W BND		
**1800 - MOCA		
CHEWS, FL FIX	MARIANNA, FL VORTAC	2000
MARIANNA, FL VORTAC	*SNEAD, FL FIX	2000
*3000 - MRA		
SNEAD, FL FIX	SEMINOLE, FL VORTAC	2000
SEMINOLE, FL VORTAC	GREENVILLE, FL VORTAC	2100
GREENVILLE, FL VORTAC	TAYLOR, FL VORTAC	2000
TAYLOR, FL VORTAC	CRAIG, FL VORTAC	*3000
*2100 - MOCA		

95.6199 VOR FEDERAL AIRWAY V199

SAN FRANCISCO, CA VOR/DME	SUTRO, CA FIX	3500
SUTRO, CA FIX	GOBBS, CA FIX	3000
GOBBS, CA FIX	STINS, CA FIX	3500
STINS, CA FIX	DUBRY, CA FIX	4500
DUBRY, CA FIX	MENDOCINO, CA VORTAC	6000
MENDOCINO, CA VORTAC	*HENLE, CA FIX	9000
*5800 - MCA HENLE, CA FIX , S BND		
HENLE, CA FIX	RED BLUFF, CA VORTAC	3000

95.6200 VOR FEDERAL AIRWAY V200

MENDOCINO, CA VORTAC	WILLIAMS, CA VORTAC	6200
WILLIAMS, CA VORTAC	YUBBA, CA FIX	4000
YUBBA, CA FIX	*RANGO, CA FIX	5000
*8500 - MCA RANGO, CA FIX , E BND		
RANGO, CA FIX	SIGNA, CA FIX	*11000
*10000 - MOCA		
SIGNA, CA FIX	MUSTANG, NV VORTAC	11500
BONNEVILLE, UT VORTAC	*STACO, UT FIX	9000
*11000 - MCA STACO, UT FIX , SE BND		
STACO, UT FIX	*FAIRFIELD, UT VORTAC	12100
*10700 - MCA FAIRFIELD, UT VORTAC , NW BND		
*12500 - MCA FAIRFIELD, UT VORTAC , E BND		

FROM	TO	MEA

95.6200 VOR FEDERAL AIRWAY V200 - CONTINUED

FROM	TO	MEA
FAIRFIELD, UT VORTAC	PANEL, UT FIX	
	W BND	*11000
	E BND	*13300
*9900 - MOCA		
PANEL, UT FIX	MYTON, UT VOR/DME	13300
MYTON, UT VOR/DME	*RACER, CO FIX	
	W BND	**10000
	E BND	**10500
*12000 - MRA		
**8700 - MOCA		
RACER, CO FIX	*MEEKER, CO VOR/DME	10500
*11300 - MCA MEEKER, CO VOR/DME , E BND		
MEEKER, CO VOR/DME	*KREMMLING, CO VOR/DME	14600
*12500 - MCA KREMMLING, CO VOR/DME , W BND		

95.6201 VOR FEDERAL AIRWAY V201

FROM	TO	MEA
LOS ANGELES, CA VORTAC	*BERRI, CA FIX	5000
*7600 - MCA BERRI, CA FIX , N BND		
BERRI, CA FIX	*SOLED, CA FIX	8800
*8400 - MCA SOLED, CA FIX , S BND		
SOLED, CA FIX	PALMDALE, CA VORTAC	7500

95.6202 VOR FEDERAL AIRWAY V202

FROM	TO	MEA
SAN SIMON, AZ VORTAC	SILVER CITY, NM VOR/DME	10300
SILVER CITY, NM VOR/DME	*KEAPS, NM FIX	10300
*11600 - MCA KEAPS, NM FIX , NE BND		
KEAPS, NM FIX	TRUTH OR CONSEQUENCES, NM VORTAC	12300

95.6203 VOR FEDERAL AIRWAY V203

FROM	TO	MEA
STELA, MA FIX	ALBANY, NY VORTAC	*6000
*4000 - GNSS MEA		
ALBANY, NY VORTAC	OTOLE, NY FIX	*6000
*2200 - MOCA		
*3000 - GNSS MEA		
OTOLE, NY FIX	DINNY, NY FIX	*10000
*6900 - MOCA		
*7000 - GNSS MEA		
DINNY, NY FIX	SARANAC LAKE, NY VOR/DME	7000
#SARANAC LAKE, NY VOR/DME	MASSENA, NY VORTAC	*10000
*5100 - MOCA		
*6000 - GNSS MEA		
#MASSENA R-159 UNUSABLE, USE SARANAC LAKE R-339		

95.6204 VOR FEDERAL AIRWAY V204

FROM	TO	MEA
HOQUIAM, WA VORTAC	*OLYMPIA, WA VORTAC	4500
*3200 - MCA OLYMPIA, WA VORTAC , W BND		
OLYMPIA, WA VORTAC	*MCKEN, WA FIX	4000
*5000 - MCA MCKEN, WA FIX , E BND		
MCKEN, WA FIX	*ALDER, WA FIX	5800
*5800 - MCA ALDER, WA FIX , E BND		

FROM	TO	MEA

95.6204 VOR FEDERAL AIRWAY V204 - CONTINUED

FROM	TO	MEA
ALDER, WA FIX	TAMPO, WA FIX	10000
TAMPO, WA FIX	*YAKIMA, WA VORTAC	
	W BND	8000
	E BND	6000
*5300 - MCA YAKIMA, WA VORTAC , W BND		
YAKIMA, WA VORTAC	*PAIDS, WA FIX	6000
*5300 - MCA PAIDS, WA FIX , W BND		
PAIDS, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	WATSY, WA FIX	3500
WATSY, WA FIX	SPOKANE, WA VORTAC	5000

95.6206 VOR FEDERAL AIRWAY V206

FROM	TO	MEA
NAPOLEON, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	OTTUMWA, IA VOR/DME	3000

95.6207 VOR FEDERAL AIRWAY V207

FROM	TO	MEA
GILL, CO VOR/DME	SCOTTSBLUFF, NE VORTAC	7500

95.6208 VOR FEDERAL AIRWAY V208

FROM	TO	MEA
VENTURA, CA VOR/DME	WEEZL, CA FIX	5000
WEEZL, CA FIX	SANTA CATALINA, CA VORTAC	4000
SANTA CATALINA, CA VORTAC	AVOLS, CA FIX	4000
AVOLS, CA FIX	PACIF, CA FIX	*3000
*2000 - MOCA		
PACIF, CA FIX	OCEANSIDE, CA VORTAC	3000
OCEANSIDE, CA VORTAC	*VISTA, CA FIX	3000
*5000 - MCA VISTA, CA FIX , E BND		
VISTA, CA FIX	JULIAN, CA VORTAC	7700
JULIAN, CA VORTAC	THERMAL, CA VORTAC	9000
THERMAL, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	7000
TWENTYNINE PALMS, CA VORTAC	NEEDLES, CA VORTAC	7800
NEEDLES, CA VORTAC	PEACH SPRINGS, AZ VOR/DME	9000
PEACH SPRINGS, AZ VOR/DME	GRAND CANYON, AZ VOR/DME	10000
GRAND CANYON, AZ VOR/DME	TUBA CITY, AZ VORTAC	9500
TUBA CITY, AZ VORTAC	PAGE, AZ VOR/DME	9000
PAGE, AZ VOR/DME	*HANKSVILLE, UT VORTAC	14000
*11500 - MCA HANKSVILLE, UT VORTAC , S BND		
HANKSVILLE, UT VORTAC	CARBON, UT VOR/DME	10000
CARBON, UT VOR/DME	MYTON, UT VOR/DME	11300
MYTON, UT VOR/DME	VERNAL, UT VOR/DME	8400
VERNAL, UT VOR/DME	CHEROKEE, WY VOR/DME	11700

95.6209 VOR FEDERAL AIRWAY V209

FROM	TO	MEA
SEMMES, AL VORTAC	JANES, AL FIX	*2300
*1800 - MOCA		
*2000 - GNSS MEA		
JANES, AL FIX	KEWANEE, MS VORTAC	2300
KEWANEE, MS VORTAC	BROOKWOOD, AL VORTAC	*5000
*2300 - MOCA		
BROOKWOOD, AL VORTAC	VULCAN, AL VORTAC	2500
VULCAN, AL VORTAC	TRUST, AL FIX	3500

FROM	TO	MEA

95.6209 VOR FEDERAL AIRWAY V209 - CONTINUED

FROM	TO	MEA
TRUST, AL FIX	GADSDEN, AL VOR/DME	3600
GADSDEN, AL VOR/DME	*MENLA, AL FIX	**5000
*5000 - MCA MENLA, AL FIX , SW BND		
**3700 - MOCA		
MENLA, AL FIX	CHOO CHOO, TN VORTAC	4000

95.6210 VOR FEDERAL AIRWAY V210

FROM	TO	MEA
LOS ANGELES, CA VORTAC	PIRRO, CA FIX	3500
PIRRO, CA FIX	*POMONA, CA VORTAC	4500
*10400 - MCA POMONA, CA VORTAC , NE BND		
POMONA, CA VORTAC	CALBE, CA FIX	
	SW BND	5700
	NE BND	10800
CALBE, CA FIX	MEANT, CA FIX	
	SW BND	10700
	NE BND	11500
MEANT, CA FIX	*APLES, CA FIX	11800
*9200 - MCA APLES, CA FIX , SW BND		
APLES, CA FIX	HECTOR, CA VORTAC	7900
HECTOR, CA VORTAC	GOFFS, CA VORTAC	*9000
*8200 - MOCA		
GOFFS, CA VORTAC	UNPAS, NV FIX	8000
UNPAS, NV FIX	PEACH SPRINGS, AZ VOR/DME	9000
PEACH SPRINGS, AZ VOR/DME	*GRAND CANYON, AZ VOR/DME	10000
*14500 - MCA GRAND CANYON, AZ VOR/DME , E BND		
GRAND CANYON, AZ VOR/DME	*TUBA CITY, AZ VORTAC	**14500
*14500 - MCA TUBA CITY, AZ VORTAC , W BND		
**9600 - MOCA		
TUBA CITY, AZ VORTAC	FULLY, NM FIX	12000
FULLY, NM FIX	RATTLESNAKE, NM VORTAC	
	NE BND	9000
	SW BND	12000
RATTLESNAKE, NM VORTAC	RESER, NM FIX	9000
RESER, NM FIX	MRKKO, CO FIX	15000
MRKKO, CO FIX	*ALAMOSA, CO VORTAC	
	W BND	14800
	E BND	10000
*11200 - MCA ALAMOSA, CO VORTAC , W BND		
ALAMOSA, CO VORTAC	BLOKE, CO FIX	
	E BND	14000
	W BND	10400
BLOKE, CO FIX	*GOSIP, CO FIX	14000
*14000 - MCA GOSIP, CO FIX , SW BND		
GOSIP, CO FIX	*RADIO, CO FIX	**12000
*10900 - MCA RADIO, CO FIX , SW BND		
**8500 - MOCA		
RADIO, CO FIX	BLOOM, CO FIX	*9400
*8000 - MOCA		
BLOOM, CO FIX	LAMAR, CO VOR/DME	7000
LAMAR, CO VOR/DME	LIBERAL, KS VORTAC	*6000
*5300 - MOCA		
LIBERAL, KS VORTAC	ROLLS, OK FIX	*12000
*4400 - MOCA		
*5000 - GNSS MEA		
ROLLS, OK FIX	WAXEY, OK FIX	
	W BND	*11000
	E BND	*9300
*3800 - MOCA		
*4000 - GNSS MEA		

95.6210 VOR FEDERAL AIRWAY V210 - CONTINUED

FROM	TO	MEA
WAXEY, OK FIX	WILL ROGERS, OK VORTAC	
	W BND	*9300
	E BND	*5000
*3300 - MOCA		
*4000 - GNSS MEA		
WILL ROGERS, OK VORTAC	MINGG, OK FIX	*4000
*3100 - MOCA		
MINGG, OK FIX	OKMULGEE, OK VOR/DME	*4000
*2600 - MOCA		
BRICKYARD, IN VORTAC	MUNCIE, IN VOR/DME	2900
MUNCIE, IN VOR/DME	ROSEWOOD, OH VORTAC	2800
REVLOC, PA VOR/DME	BLINK, PA FIX	4500
BLINK, PA FIX	HARRISBURG, PA VORTAC	4000
HARRISBURG, PA VORTAC	LANCASTER, PA VOR/DME	3000
LANCASTER, PA VOR/DME	SPERY, PA FIX	2800
SPERY, PA FIX	YARDLEY, PA VOR/DME	*3000
*2200 - MOCA		

95.6211 VOR FEDERAL AIRWAY V211

FROM	TO	MEA
BRAZO, NM FIX	DURANGO, CO VOR/DME	
	W BND	11300
	E BND	13000
DURANGO, CO VOR/DME	CORTEZ, CO VOR/DME	11300

95.6212 VOR FEDERAL AIRWAY V212

FROM	TO	MEA
SAN ANTONIO, TX VORTAC	SEEDS, TX FIX	2900
SEEDS, TX FIX	WEMAR, TX FIX	*2500
*2000 - MOCA		
WEMAR, TX FIX	INDUSTRY, TX VORTAC	2000
INDUSTRY, TX VORTAC	NAVASOTA, TX VOR/DME	2200
NAVASOTA, TX VOR/DME	OSCER, TX FIX	3000
OSCER, TX FIX	LUFKIN, TX VORTAC	*4000
*2000 - MOCA		
LUFKIN, TX VORTAC	COSGO, LA FIX	*4000
*1900 - MOCA		
COSGO, LA FIX	COCOS, LA FIX	*4000
*1800 - MOCA		
COCOS, LA FIX	ALEXANDRIA, LA VORTAC	*3000
*1900 - MOCA		
ALEXANDRIA, LA VORTAC	JOHON, LA FIX	2000
JOHON, LA FIX	SETTA, MS FIX	*4000
*2000 - MOCA		
SETTA, MS FIX	MC COMB, MS VORTAC	*3000
*2000 - MOCA		

95.6213 VOR FEDERAL AIRWAY V213

FROM	TO	MEA
GRAND STRAND, SC VORTAC	WILMINGTON, NC VORTAC	#3100

#COP NE TO WILMINGTON R-240 UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS

95.6213 VOR FEDERAL AIRWAY V213 - CONTINUED

WILMINGTON, NC VORTAC | WALLO, NC FIX | #*8000
*1600 - MOCA
*5000 - GNSS MEA
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS.
WALLO, NC FIX | JOSCH, NC FIX | *6000
*1700 - MOCA
*2000 - GNSS MEA
JOSCH, NC FIX | ESTER, NC FIX | *6000
*1700 - MOCA
*2000 - GNSS MEA
ESTER, NC FIX | TAR RIVER, NC VORTAC | *6000
*2000 - GNSS MEA
TAR RIVER, NC VORTAC | GUMBE, NC FIX | 2000
GUMBE, NC FIX | HOPEWELL, VA VORTAC | *2000
*1500 - MOCA
HOPEWELL, VA VORTAC | *TAPPA, VA FIX | 2000
*5000 - MCA TAPPA, VA FIX , NE BND
TAPPA, VA FIX | PATUXENT, MD VORTAC | *5000
*1500 - MOCA
*2000 - GNSS MEA
PATUXENT, MD VORTAC | *GARED, MD FIX | **4500
*8000 - MRA
**1500 - MOCA
**4000 - GNSS MEA
GARED, MD FIX | CHOPS, MD FIX | *4500
*1500 - MOCA
*4000 - GNSS MEA
CHOPS, MD FIX | SMYRNA, DE VORTAC | *2000
*1500 - MOCA
SMYRNA, DE VORTAC | HOLEY, NJ FIX | *3000
*1600 - MOCA
HOLEY, NJ FIX | ROBBINSVILLE, NJ VORTAC | *3000
*2000 - MOCA
ROBBINSVILLE, NJ VORTAC | WARRD, NJ FIX | *3000
*1900 - MOCA | | MAA - 10000
WARRD, NJ FIX | SHOTT, NJ FIX | *3000
*2500 - MOCA | | MAA - 10000
SHOTT, NJ FIX | SPARTA, NJ VORTAC | *3500
*2600 - MOCA | | MAA - 10000
SPARTA, NJ VORTAC | FLOSI, NY FIX | *4000
*3200 - MOCA
FLOSI, NY FIX | WEETS, NY FIX | *5500
*4000 - MOCA
WEETS, NY FIX | ALBANY, NY VORTAC | *10000
*6100 - MOCA
*8000 - GNSS MEA

95.6214 VOR FEDERAL AIRWAY V214

KOKOMO, IN VORTAC | MARION, IN VOR/DME | 2600
MARION, IN VOR/DME | MUNCIE, IN VOR/DME | 2800
GLOOM, OH FIX | ZANESVILLE, OH VOR/DME | *4000
*2600 - MOCA
*3000 - GNSS MEA
ZANESVILLE, OH VOR/DME | BELLAIRE, OH VOR/DME | 3000
MARTINSBURG, WV VORTAC | WOOLY, MD FIX | 3200
WOOLY, MD FIX | BALTIMORE, MD VORTAC | 2600

95.6214 VOR FEDERAL AIRWAY V214 - CONTINUED

FROM	TO	MEA
BALTIMORE, MD VORTAC	SWANN, MD FIX	2000
SWANN, MD FIX *1500 - MOCA *2000 - GNSS MEA #UNUSABLE	ODESA, MD FIX	#*2500
ODESA, MD FIX *2000 - GNSS MEA #DUPONT R-233 UNUSABLE BEYOND 22 NM.	DUPONT, DE VORTAC	#*2000
DUPONT, DE VORTAC *3000 - GNSS MEA	YARDLEY, PA VOR/DME	*6000
YARDLEY, PA VOR/DME *2000 - MOCA	TETERBORO, NJ VOR/DME	*3000 MAA - 10000

95.6215 VOR FEDERAL AIRWAY V215

FROM	TO	MEA
*JYBEE, MI FIX *4000 - MRA **1700 - MOCA	SALES, MI FIX	**3500
SALES, MI FIX *2300 - MOCA	MUSKEGON, MI VORTAC	*3000
MUSKEGON, MI VORTAC	WHITE CLOUD, MI VOR/DME	2800
WHITE CLOUD, MI VOR/DME	GAYLORD, MI VOR/DME	4000

95.6216 VOR FEDERAL AIRWAY V216

FROM	TO	MEA
LAMAR, CO VOR/DME *5200 - MOCA	ORION, KS FIX	*6300
ORION, KS FIX *4300 - MOCA	HILL CITY, KS VORTAC	*5000
HILL CITY, KS VORTAC *3900 - MOCA	MANKATO, KS VORTAC	*4500
MANKATO, KS VORTAC	PAWNEE CITY, NE VORTAC	3600
PAWNEE CITY, NE VORTAC	LAMONI, IA VOR/DME	3400
LAMONI, IA VOR/DME	OTTUMWA, IA VOR/DME	2900
OTTUMWA, IA VOR/DME	IOWA CITY, IA VOR/DME	3000
IOWA CITY, IA VOR/DME *2600 - MOCA	LOTTE, IA FIX	*3500
LOTTE, IA FIX *2200 - MOCA	WACKS, IL FIX	*4000
WACKS, IL FIX	JANESVILLE, WI VOR/DME	2800

95.6217 VOR FEDERAL AIRWAY V217

FROM	TO	MEA
*BESIE, IL FIX *10000 - MRA	BADGER, WI VOR/DME	2900
BADGER, WI VOR/DME	CHING, WI FIX	3000
CHING, WI FIX	SHOOD, WI FIX	2700
SHOOD, WI FIX	GREEN BAY, WI VORTAC	2500
GREEN BAY, WI VORTAC	WISOM, WI FIX	2700
WISOM, WI FIX	RHINELANDER, WI VOR/DME	3600
RHINELANDER, WI VOR/DME *4100 - MOCA	DULUTH, MN VORTAC	*6000
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME *3100 - MOCA	BAUDETTE, MN VOR/DME	*5000
BAUDETTE, MN VOR/DME	U.S. CANADIAN BORDER	2800

95.6218 VOR FEDERAL AIRWAY V218

FROM	TO	MEA
INTERNATIONAL FALLS, MN VOR/DME	BEBEL, MN FIX	3000
BEBEL, MN FIX	SQEAK, MN FIX	5000
SQEAK, MN FIX	GRAND RAPIDS, MN VOR/DME	*5000
*3100 - MOCA		
GRAND RAPIDS, MN VOR/DME	GOPHER, MN VORTAC	*5500
*3000 - MOCA		
GOPHER, MN VORTAC	DLANY, MN FIX	*4800
*3200 - MOCA		
DLANY, MN FIX	WAUKON, IA VOR/DME	3000

95.6219 VOR FEDERAL AIRWAY V219

FROM	TO	MEA
HAYES CENTER, NE VORTAC	WOLBACH, NE VORTAC	*5000
*4500 - MOCA		
WOLBACH, NE VORTAC	NORFOLK, NE VOR/DME	4000
NORFOLK, NE VOR/DME	SIOUX CITY, IA VORTAC	3600

95.6220 VOR FEDERAL AIRWAY V220

FROM	TO	MEA
GRAND JUNCTION, CO VOR/DME	*PACES, CO FIX	11500
*13000 - MRA		
PACES, CO FIX	SLOLM, CO FIX	#13000
#MTA V220 NE TO V220 NW 12900		
SLOLM, CO FIX	RIFLE, CO VOR/DME	12400
RIFLE, CO VOR/DME	MEEKER, CO VOR/DME	12400
MEEKER, CO VOR/DME	AXIAL, CO FIX	11000
AXIAL, CO FIX	HAYDEN, CO VOR/DME	
	SW BND	11000
	NE BND	10000
HAYDEN, CO VOR/DME	HABRO, CO FIX	10000
HABRO, CO FIX	KREMMLING, CO VOR/DME	13000
KREMMLING, CO VOR/DME	NIWOT, CO FIX	*17000
*15900 - MOCA		
NIWOT, CO FIX	*GILL, CO VOR/DME	
	NE BND	7400
	SW BND	17000
*14500 - MCA GILL, CO VOR/DME , SW BND		
GILL, CO VOR/DME	AKRON, CO VOR/DME	7000
AKRON, CO VOR/DME	MCJEF, NE FIX	*7000
*6000 - MOCA		
MCJEF, NE FIX	MC COOK, NE VOR/DME	*7500
*5000 - MOCA		
MC COOK, NE VOR/DME	SPRIT, NE FIX	*5000
*4100 - MOCA		
SPRIT, NE FIX	KEARNEY, NE VOR	*5000
*3700 - MOCA		
KEARNEY, NE VOR	HASTINGS, NE VOR/DME	4300
HASTINGS, NE VOR/DME	COLUMBUS, NE VOR/DME	4000

FROM	TO	MEA

95.6221 VOR FEDERAL AIRWAY V221

BIBLE GROVE, IL VORTAC	HOOSIER, IN VORTAC	3000
HOOSIER, IN VORTAC	SHELBYVILLE, IN VOR/DME	#*6000
*3100 - MOCA		
*4000 - GNSS MEA		
#HOOSIER R-053 UNUSABLE		
SHELBYVILLE, IN VOR/DME	MUNCIE, IN VOR/DME	*2800
*2600 - MOCA		
MUNCIE, IN VOR/DME	FORT WAYNE, IN VORTAC	2700
FORT WAYNE, IN VORTAC	ILTON, IN FIX	3000

95.6222 VOR FEDERAL AIRWAY V222

EL PASO, TX VORTAC	SALT FLAT, TX VORTAC	*8000
*7400 - MOCA		
SALT FLAT, TX VORTAC	HOBAN, TX FIX	8000
HOBAN, TX FIX	FORT STOCKTON, TX VORTAC	5000
FORT STOCKTON, TX VORTAC	KEMPL, TX FIX	*8000
*5500 - MOCA		
KEMPL, TX FIX	JUNCTION, TX VORTAC	*6000
*4000 - MOCA		
JUNCTION, TX VORTAC	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	MARCS, TX FIX	4500
MARCS, TX FIX	CRAYS, TX FIX	*2900
*2000 - MOCA		
CRAYS, TX FIX	INDUSTRY, TX VORTAC	2600
INDUSTRY, TX VORTAC	SEALY, TX FIX	2100
SEALY, TX FIX	HUMBLE, TX VORTAC	2000
HUMBLE, TX VORTAC	BEAUMONT, TX VOR/DME	3100
BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000
LAKE CHARLES, LA VORTAC	MAXON, LA FIX	2000
MAXON, LA FIX	WRACK, LA FIX	*6000
*1800 - MOCA		
*2000 - GNSS MEA		
WRACK, LA FIX	MC COMB, MS VORTAC	*4000
*2000 - MOCA		
*2000 - GNSS MEA		
MC COMB, MS VORTAC	EATON, MS VORTAC	2000
EATON, MS VORTAC	PICAN, MS FIX	2300
PICAN, MS FIX	MONROEVILLE, AL VORTAC	*3000
*1900 - MOCA		
MONROEVILLE, AL VORTAC	MONTGOMERY, AL VORTAC	2300
MONTGOMERY, AL VORTAC	*MARST, AL FIX	2300
*3500 - MRA		
MARST, AL FIX	KENTT, AL FIX	2100
KENTT, AL FIX	LAGRANGE, GA VORTAC	2500
LAGRANGE, GA VORTAC	*TIROE, GA FIX	2600
*4000 - MRA		
LOGEN, GA FIX	CORCE, GA FIX	*4600
*3700 - MOCA		
CORCE, GA FIX	FOOTHILLS, SC VOR/DME	3400
FOOTHILLS, SC VOR/DME	SUNET, SC FIX	*6100
*4800 - MOCA		
SUNET, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	7100
SUGARLOAF MOUNTAIN, NC VORTAC	BARRETTS MOUNTAIN, NC VOR/DME	6200
BARRETTS MOUNTAIN, NC VOR/DME	HENBY, VA FIX	5000
HENBY, VA FIX	LYNCHBURG, VA VOR/DME	4000

FROM	TO	MEA

95.6223 VOR FEDERAL AIRWAY V223

FLAT ROCK, VA VORTAC	*HANEY, VA FIX	2800
*7000 - MRA		
HANEY, VA FIX	FLUKY, VA FIX	2600

95.6225 VOR FEDERAL AIRWAY V225

KEY WEST, FL VORTAC	RIGOR, FL FIX	1700
RIGOR, FL FIX	MARCI, FL FIX	*4000
*1400 - MOCA		
*1700 - GNSS MEA		
MARCI, FL FIX	LEE COUNTY, FL VORTAC	2100
LEE COUNTY, FL VORTAC	LA BELLE, FL VORTAC	*2000
*1500 - MOCA		
LA BELLE, FL VORTAC	DIDDY, FL FIX	*2000
*1500 - MOCA		
DIDDY, FL FIX	TREASURE, FL VORTAC	2000

95.6226 VOR FEDERAL AIRWAY V226

GRACE, PA FIX	CLARION, PA VOR/DME	3400
CLARION, PA VOR/DME	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	WILLIAMSPORT, PA VOR/DME	*4500
*3900 - MOCA		
WILLIAMSPORT, PA VOR/DME	SWANK, PA FIX	4500
SWANK, PA FIX	WILKES-BARRE, PA VORTAC	
	E BND	*4000
	W BND	*4500
*3700 - MOCA		
WILKES-BARRE, PA VORTAC	STILLWATER, NJ VOR/DME	4000

95.6227 VOR FEDERAL AIRWAY V227

BOILER, IN VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	PONTIAC, IL VOR/DME	3000
PONTIAC, IL VOR/DME	PLANO, IL FIX	3000

95.6228 VOR FEDERAL AIRWAY V228

DELLS, WI VORTAC	MADISON, WI VORTAC	3300
MADISON, WI VORTAC	*DEBOW, WI FIX	10000
*10000 - MRA		
DEBOW, WI FIX	*BESIE, IL FIX	10000
*10000 - MRA		
FARMM, IL FIX	NORTHBROOK, IL VOR/DME	2700
NORTHBROOK, IL VOR/DME	*NEPTS, MI FIX	2500
*3000 - MRA		
NEPTS, MI FIX	GIPPER, MI VORTAC	2600

95.6229 VOR FEDERAL AIRWAY V229

PATUXENT, MD VORTAC	*GARED, MD FIX	**4500
*8000 - MRA		
**1500 - MOCA		
**4000 - GNSS MEA		

FROM	TO	MEA

95.6229 VOR FEDERAL AIRWAY V229 - CONTINUED

FROM	TO	MEA
GARED, MD FIX	DONIL, DE FIX	*8000
*1600 - MOCA		
*4000 - GNSS MEA		
DONIL, DE FIX	ATLANTIC CITY, NJ VORTAC	*2000
*1500 - MOCA		
ATLANTIC CITY, NJ VORTAC	PANZE, NJ FIX	2100
PANZE, NJ FIX	DIXIE, NJ FIX	2500
DIXIE, NJ FIX	KENNEDY, NY VOR/DME	*2500
*1600 - MOCA		
KENNEDY, NY VOR/DME	KEEPM, NY FIX	2000
KEEPM, NY FIX	TRANZ, NY FIX	2000
TRANZ, NY FIX	PUGGS, NY FIX	*2500
*2000 - GNSS MEA		
PUGGS, NY FIX	BRIDGEPORT, CT VOR/DME	*2500
*2000 - GNSS MEA		
BRIDGEPORT, CT VOR/DME	HARTFORD, CT VOR/DME	2000
HARTFORD, CT VOR/DME	GARDNER, MA VOR/DME	3000
GARDNER, MA VOR/DME	KEENE, NH VORTAC	3600
KEENE, NH VORTAC	JAMMA, VT FIX	4000
JAMMA, VT FIX	EBERT, VT FIX	5500
EBERT, VT FIX	MUDDI, VT FIX	5900
MUDDI, VT FIX	*BURLINGTON, VT VOR/DME	6000
*3100 - MCA BURLINGTON, VT VOR/DME , SE BND		

95.6230 VOR FEDERAL AIRWAY V230

FROM	TO	MEA
SHOEY, CA FIX	*SALINAS, CA VORTAC	**5000
*6000 - MCA SALINAS, CA VORTAC , E BND		
**4100 - MOCA		
SALINAS, CA VORTAC	*PANOS, CA FIX	**6500
*8000 - MCA PANOS, CA FIX , E BND		
**5500 - MOCA		
PANOS, CA FIX	*FIDDO, CA FIX	**9000
*9000 - MCA FIDDO, CA FIX , W BND		
**5700 - MOCA		
FIDDO, CA FIX	PANOCHE, CA VORTAC	*7000
*5700 - MOCA		
PANOCHE, CA VORTAC	MENDO, CA FIX	4500
MENDO, CA FIX	BLEAR, CA FIX	*4000
*1600 - MOCA		
BLEAR, CA FIX	*FRIANT, CA VORTAC	**5500
*10400 - MCA FRIANT, CA VORTAC , NE BND		
**4700 - MOCA		
FRIANT, CA VORTAC	CAINS, CA FIX	
	NE BND	14300
	SW BND	11000
CAINS, CA FIX	NIKOL, CA FIX	14300
NIKOL, CA FIX	MINA, NV VORTAC	
	NE BND	11000
	SW BND	13000

95.6231 VOR FEDERAL AIRWAY V231

FROM	TO	MEA
BURLEY, ID VOR/DME	*MENIN, ID FIX	
	S BND	**7000
	N BND	**9500
*10600 - MCA MENIN, ID FIX , N BND		
**7000 - MOCA		
MENIN, ID FIX	SALMON, ID VOR/DME	14000

FROM	TO	MEA

95.6231 VOR FEDERAL AIRWAY V231 - CONTINUED

SALMON, ID VOR/DME	TUFFY, MT FIX	*12000
*11300 - MOCA		
TUFFY, MT FIX	*MISSOULA, MT VOR/DME	
	S BND	12000
	N BND	9000
*10000 - MCA MISSOULA, MT VOR/DME , S BND		
MISSOULA, MT VOR/DME	ARLEE, MT FIX	9200
ARLEE, MT FIX	*JESSY, MT FIX	**11000
*13000 - MCA JESSY, MT FIX , N BND		
**9200 - MOCA		
JESSY, MT FIX	*SKOTT, MT FIX	**13000
*12000 - MRA		
**8700 - MOCA		
SKOTT, MT FIX	KALISPELL, MT VOR/DME	
	N BND	8600
	S BND	10000

95.6232 VOR FEDERAL AIRWAY V232

KEATING, PA VORTAC	WATSO, PA FIX	4700
WATSO, PA FIX	MILTON, PA VORTAC	*4000
*2900 - MOCA		
MILTON, PA VORTAC	SOLBERG, NJ VOR/DME	4000
SOLBERG, NJ VOR/DME	TYKES, NJ FIX	2300
TYKES, NJ FIX	COLTS NECK, NJ VOR/DME	2000

95.6233 VOR FEDERAL AIRWAY V233

SPINNER, IL VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	KNOX, IN VOR/DME	*3000
*2200 - MOCA		
KNOX, IN VOR/DME	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	LITCHFIELD, MI VOR/DME	3000
MOUNT PLEASANT, MI VOR/DME	CARGA, MI FIX	5500
CARGA, MI FIX	GAYLORD, MI VOR/DME	4000
GAYLORD, MI VOR/DME	PELLSTON, MI VORTAC	3200

95.6234 VOR FEDERAL AIRWAY V234

ST JOHNS, AZ VORTAC	*STONY, NM FIX	**12000
*9500 - MCA STONY, NM FIX , SW BND		
**10500 - MOCA		
STONY, NM FIX	ALBUQUERQUE, NM VORTAC	9000
ALBUQUERQUE, NM VORTAC	ANTON CHICO, NM VORTAC	10000
ANTON CHICO, NM VORTAC	DALHART, TX VORTAC	*8500
*7500 - MOCA		
DALHART, TX VORTAC	BRAKR, OK FIX	5700
BRAKR, OK FIX	LIBERAL, KS VORTAC	*5700
*4700 - MOCA		
LIBERAL, KS VORTAC	FLACK, KS FIX	4600
FLACK, KS FIX	KRIER, KS FIX	*5000
*4100 - MOCA		
KRIER, KS FIX	BYWAY, KS FIX	*7100
*4000 - MOCA		
BYWAY, KS FIX	GABIE, KS FIX	*4500
*3800 - MOCA		
GABIE, KS FIX	HUTCHINSON, KS VOR/DME	3800

FROM	TO	MEA

95.6235 VOR FEDERAL AIRWAY V234 - CONTINUED

HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
FLOSS, KS FIX	EMPORIA, KS VORTAC	3300
EMPORIA, KS VORTAC	BUTLER, MO VORTAC	3000
BUTLER, MO VORTAC	AUGIE, MO FIX	2700
AUGIE, MO FIX	VICHY, MO VOR/DME	*3200
*2400 - MOCA		
VICHY, MO VOR/DME	DELMA, MO FIX	3000
DELMA, MO FIX	*GLASS, MO FIX	**3500
*4500 - MRA		
**2800 - MOCA		
GLASS, MO FIX	CENTRALIA, IL VORTAC	*3000
*2200 - MOCA		

95.6235 VOR FEDERAL AIRWAY V235

PEACH SPRINGS, AZ VOR/DME	MORMON MESA, NV VORTAC	10000
MORMON MESA, NV VORTAC	MATZO, UT FIX	
	NE BND	12000
	SW BND	9000
MATZO, UT FIX	*ENOCH, UT VOR/DME	12400
*11400 - MCA ENOCH, UT VOR/DME , S BND		
ENOCH, UT VOR/DME	MILFORD, UT VORTAC	10000
MILFORD, UT VORTAC	DELTA, UT VORTAC	9600
DELTA, UT VORTAC	FAIRFIELD, UT VORTAC	10300
*FAIRFIELD, UT VORTAC	GRODI, WY FIX	14000
*12500 - MCA FAIRFIELD, UT VORTAC , NE BND		
GRODI, WY FIX	FORT BRIDGER, WY VOR/DME	11000
ROCK SPRINGS, WY VOR/DME	BORGG, WY FIX	9500
BORGG, WY FIX	OILLY, WY FIX	11200
OILLY, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	9000
MUDDY MOUNTAIN, WY VOR/DME	NEWCASTLE, WY VOR	8300

95.6236 VOR FEDERAL AIRWAY V236

CEVAR, UT FIX	EMONT, UT FIX	9000
EMONT, UT FIX	OGDEN, UT VORTAC	#*8000
*7000 - MOCA		
#MTA V236 NE TO V21-101 SE 12000		

95.6237 VOR FEDERAL AIRWAY V237

NEEDLES, CA VORTAC	BOULDER CITY, NV VORTAC	7600
BOULDER CITY, NV VORTAC	LAS VEGAS, NV VORTAC	6000

95.6238 VOR FEDERAL AIRWAY V238

MAPLES, MO VORTAC	IMPER, MO FIX	3000
IMPER, MO FIX	TROY, IL VORTAC	2600

95.6239 VOR FEDERAL AIRWAY V239

FORNEY, MO VOR	BNTON, MO FIX	2900
BNTON, MO FIX	HALLSVILLE, MO VORTAC	2800

FROM	TO	MEA

95.6240 VOR FEDERAL AIRWAY V240

HARVEY, LA VORTAC	PEARL, LA FIX	2000
PEARL, LA FIX	MINNI, MS FIX	*2300
*1300 - MOCA		
MINNI, MS FIX	ELSIE, MS FIX	*3500
*1300 - MOCA		
ELSIE, MS FIX	*ROMMY, MS FIX	**2800
*4000 - MRA		
**1300 - MOCA		
ROMMY, MS FIX	SEMMES, AL VORTAC	2000

95.6241 VOR FEDERAL AIRWAY V241

SEMMES, AL VORTAC	CRESTVIEW, FL VORTAC	3100
CRESTVIEW, FL VORTAC	*WIREGRASS, AL VORTAC	2000
*3000 - MCA WIREGRASS, AL VORTAC , N BND		
WIREGRASS, AL VORTAC	EUFAULA, AL VORTAC	#*3000
*2000 - MOCA		
#WIREGRASS R-019 UNSABLE BELOW 6000 USE EUFAULA R-199		
EUFAULA, AL VORTAC	COLUMBUS, GA VORTAC	2400
COLUMBUS, GA VORTAC	*TIROE, GA FIX	3000
*4000 - MRA		

95.6242 VOR FEDERAL AIRWAY V242

INTERNATIONAL FALLS, MN VOR/DME	U.S. CANADIAN BORDER	3000

95.6243 VOR FEDERAL AIRWAY V243

CRAIG, FL VORTAC	WAYCROSS, GA VORTAC	*3000
*2300 - MOCA		
WAYCROSS, GA VORTAC	VIENNA, GA VORTAC	2300
VIENNA, GA VORTAC	*PRATZ, GA FIX	**3000
*3000 - MRA		
**2000 - MOCA		
PRATZ, GA FIX	LAGRANGE, GA VORTAC	3500
LAGRANGE, GA VORTAC	HEFIN, AL FIX	*4000
*3400 - MOCA		
HEFIN, AL FIX	FELTO, GA FIX	*6000
*3400 - MOCA		
FELTO, GA FIX	GORGO, GA FIX	*5000
*4000 - MOCA		
GORGO, GA FIX	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	MCMIN, TN FIX	4000
MCMIN, TN FIX	HARME, TN FIX	*6000
*3700 - MOCA		
HARME, TN FIX	BOWLING GREEN, KY VORTAC	*2800
*2300 - MOCA		

95.6244 VOR FEDERAL AIRWAY V244

OAKLAND, CA VOR/DME	*SALAD, CA FIX	4000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	ALTAM, CA FIX	5000
ALTAM, CA FIX	HAIRE, CA FIX	4500

FROM	TO	MEA

95.6244 VOR FEDERAL AIRWAY V244 - CONTINUED

HAIRE, CA FIX	*LINDEN, CA VOR/DME	**3000
*3300 - MCA LINDEN, CA VOR/DME , E BND		
**2100 - MOCA		
LINDEN, CA VOR/DME	*MERPH, CA FIX	
	W BND	6400
	E BND	15300
*9800 - MCA MERPH, CA FIX , E BND		
MERPH, CA FIX	*NIKOL, CA FIX	15300
*13100 - MCA NIKOL, CA FIX , W BND		
NIKOL, CA FIX	COALDALE, NV VORTAC	12500
COALDALE, NV VORTAC	TONOPAH, NV VORTAC	11000
TONOPAH, NV VORTAC	WILSON CREEK, NV VORTAC	12200
WILSON CREEK, NV VORTAC	*MILFORD, UT VORTAC	12000
*12000 - MCA MILFORD, UT VORTAC , E BND		
MILFORD, UT VORTAC	DETAN, UT FIX	14000
DETAN, UT FIX	HANKSVILLE, UT VORTAC	*16000
*14200 - MOCA		
HANKSVILLE, UT VORTAC	*ANIUM, UT FIX	**10500
*12300 - MCA ANIUM, UT FIX , E BND		
**8500 - MOCA		
ANIUM, UT FIX	*PAROX, CO FIX	**15500
*13300 - MCA PAROX, CO FIX , W BND		
**14800 - MOCA		
PAROX, CO FIX	*NADIN, CO FIX	**13000
*12000 - MCA NADIN, CO FIX , W BND		
**12000 - MOCA		
NADIN, CO FIX	MONTROSE, CO VOR/DME	11000
MONTROSE, CO VOR/DME	BLUE MESA, CO VOR/DME	12500
BLUE MESA, CO VOR/DME	DUFEL, CO FIX	
	E BND	16000
	W BND	12000
DUFEL, CO FIX	*FLOOD, CO FIX	16000
*10000 - MRA		
FLOOD, CO FIX	STANO, CO FIX	
	W BND	12000
	E BND	9000
STANO, CO FIX	PUEBLO, CO VORTAC	7800
PUEBLO, CO VORTAC	LAMAR, CO VOR/DME	7000
LAMAR, CO VOR/DME	*COFFE, KS FIX	**9000
*9000 - MRA		
**5400 - MOCA		
COFFE, KS FIX	*RANSO, KS FIX	**10000
*10000 - MRA		
**4400 - MOCA		
RANSO, KS FIX	HAYS, KS VORTAC	*5000
*3900 - MOCA		
HAYS, KS VORTAC	*GLIDE, KS FIX	3900
*4500 - MRA		
GLIDE, KS FIX	SALINA, KS VORTAC	*3900
*3200 - MOCA		

95.6245 VOR FEDERAL AIRWAY V245

ALEXANDRIA, LA VORTAC	NATCHEZ, MS VOR/DME	2000
NATCHEZ, MS VOR/DME	MAGNOLIA, MS VORTAC	3500
MAGNOLIA, MS VORTAC	BIGBEE, MS VORTAC	*5000
*2000 - MOCA		MAA - 17500
*3000 - GNSS MEA		
BIGBEE, MS VORTAC	MINIM, AL FIX	2000
MINIM, AL FIX	CRIMSON, AL VORTAC	2400

95.6246 VOR FEDERAL AIRWAY V246

FROM	TO	MEA
JANESVILLE, WI VOR/DME	DUBUQUE, IA VORTAC	3000
DUBUQUE, IA VORTAC	WAUKON, IA VOR/DME	3000
WAUKON, IA VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	MILTO, WI FIX	3000

95.6247 VOR FEDERAL AIRWAY V247

FROM	TO	MEA
SCOTTSBLUFF, NE VORTAC	HIPSHER, WY VOR/DME	8100
HIPSHER, WY VOR/DME	CRAZY WOMAN, WY VOR/DME	8000
CRAZY WOMAN, WY VOR/DME	SHERIDAN, WY VOR/DME	7000
SHERIDAN, WY VOR/DME	ARDMO, MT FIX	8000
ARDMO, MT FIX	BILLINGS, MT VORTAC	
	E BND	8000
	W BND	6000
BILLINGS, MT VORTAC	PELJE, MT FIX	
	W BND	10500
	E BND	6400
PELJE, MT FIX	BAXTA, MT FIX	
	E BND	7000
	W BND	10500
BAXTA, MT FIX	*WAUTS, MT FIX	**13000
*10700 - MCA WAUTS, MT FIX , E BND		
**10900 - MOCA		
WAUTS, MT FIX	HELENA, MT VORTAC	9400

95.6248 VOR FEDERAL AIRWAY V248

FROM	TO	MEA
SALINAS, CA VORTAC	*SARDO, CA FIX	**6000
*7000 - MRA		
**5500 - MOCA		
SARDO, CA FIX	FIKDU, CA FIX	*6000
*5500 - MOCA		
FIKDU, CA FIX	PASO ROBLES, CA VORTAC	
	SE BND	5000
	NW BND	6000
PASO ROBLES, CA VORTAC	AVENAL, CA VOR/DME	4500
AVENAL, CA VOR/DME	SCRAP, CA FIX	4000
SCRAP, CA FIX	SHAFTER, CA VORTAC	
	W BND	*4000
	E BND	*3000
*3000 - MOCA		

95.6249 VOR FEDERAL AIRWAY V249

FROM	TO	MEA
ROBBINSVILLE, NJ VORTAC	JERYY, NJ FIX	4000
JERYY, NJ FIX	SOLBERG, NJ VOR/DME	*3000
*2000 - MOCA		
SOLBERG, NJ VOR/DME	SPARTA, NJ VORTAC	3000
SPARTA, NJ VORTAC	FLOSI, NY FIX	*4000
*3200 - MOCA		
FLOSI, NY FIX	WEETS, NY FIX	*5500
*4000 - MOCA		
WEETS, NY FIX	RIMBA, NY FIX	6400
RIMBA, NY FIX	DELANCEY, NY VOR/DME	5500
DELANCEY, NY VOR/DME	MILID, NY FIX	4300
MILID, NY FIX	UTICA, NY VORTAC	3700

95.6250 VOR FEDERAL AIRWAY V250

O'NEILL, NE VORTAC	YANKTON, SD VOR/DME	3700
YANKTON, SD VOR/DME	WORTHINGTON, MN VOR/DME	3400
WORTHINGTON, MN VOR/DME	MANKATO, MN VOR/DME	3400

95.6251 VOR FEDERAL AIRWAY V251

ADDERS, IL VORTAC	CHAMPAIGN, IL VORTAC	2500
CHAMPAIGN, IL VORTAC	DANVILLE, IL VORTAC	2500
DANVILLE, IL VORTAC	BOILER, IN VORTAC	2500

95.6252 VOR FEDERAL AIRWAY V252

*AIRCO, NY FIX	GENESEO, NY VOR/DME	**4000
*6000 - MRA		
**2800 - MOCA		
GENESEO, NY VOR/DME	GIBBE, NY FIX	4000
GIBBE, NY FIX	BINGHAMTON, NY VOR/DME	3800
BINGHAMTON, NY VOR/DME	HUGIE, PA FIX	4000
HUGIE, PA FIX	RAGER, NY FIX	4400
RAGER, NY FIX	HUGUENOT, NY VOR/DME	4000
HUGUENOT, NY VOR/DME	COATE, NJ FIX	*4000
*3300 - MOCA		
COATE, NJ FIX	SLYNG, NJ FIX	*5000
*2700 - MOCA		
SLYNG, NJ FIX	ROBBINSVILLE, NJ VORTAC	2600
ROBBINSVILLE, NJ VORTAC	DUPONT, DE VORTAC	2000

95.6253 VOR FEDERAL AIRWAY V253

LUCIN, UT VORTAC	ROGET, ID FIX	11000
ROGET, ID FIX	*TWIN FALLS, ID VORTAC	
	NW BND	9000
	SE BND	11000
*9000 - MCA TWIN FALLS, ID VORTAC , SE BND		
TWIN FALLS, ID VORTAC	LITKE, ID FIX	6200
LITKE, ID FIX	ALKAL, ID FIX	
	SE BND	6000
	NW BND	9500
ALKAL, ID FIX	CANEK, ID FIX	*9500
*8500 - MOCA		
CANEK, ID FIX	*BOISE, ID VORTAC	7000
*7400 - MCA BOISE, ID VORTAC , N BND		
BOISE, ID VORTAC	BANGS, ID FIX	9000
BANGS, ID FIX	DONNELLY, ID VOR/DME	10400
DONNELLY, ID VOR/DME	OXLEY, ID FIX	12000
OXLEY, ID FIX	*NEZ PERCE, ID VOR/DME	
	SE BND	12000
	NW BND	7400
*6400 - MCA NEZ PERCE, ID VOR/DME , SE BND		
NEZ PERCE, ID VOR/DME	PULLMAN, WA VOR/DME	6000
PULLMAN, WA VOR/DME	SPOKANE, WA VORTAC	*6000
*5600 - MOCA		

FROM	TO	MEA

95.6254 VOR FEDERAL AIRWAY V254

FROM	TO	MEA
HIPSHER, WY VOR/DME	TOOKE, WY FIX	*10000
*7500 - MOCA		
TOOKE, WY FIX	GILLETTE, WY VOR/DME	7000
GILLETTE, WY VOR/DME	MILES CITY, MT VOR/DME	*9000
*6900 - MOCA		
MILES CITY, MT VOR/DME	GLASGOW, MT VOR/DME	6000

95.6255 VOR FEDERAL AIRWAY V255

FROM	TO	MEA
GARDEN CITY, KS VORTAC	HAYS, KS VORTAC	4600

95.6256 VOR FEDERAL AIRWAY V256

FROM	TO	MEA
TULSA, OK VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	HUTCHINSON, KS VOR/DME	3300

95.6257 VOR FEDERAL AIRWAY V257

FROM	TO	MEA
*PHOENIX, AZ VORTAC	**AVENT, AZ FIX	
	NW BND	14000
	SE BND	5000
**8000 - MRA		
*9400 - MCA PHOENIX, AZ VORTAC , NW BND		
AVENT, AZ FIX	*BANYO, AZ FIX	
	NW BND	14000
	SE BND	5000
*6000 - MRA		
BANYO, AZ FIX	COYOT, AZ FIX	
	NW BND	*14000
	SE BND	*9000
*8100 - MOCA		
COYOT, AZ FIX	*MAIER, AZ FIX	**14000
*14000 - MCA MAIER, AZ FIX , SE BND		
**9000 - GNSS MEA		
MAIER, AZ FIX	*DRAKE, AZ VORTAC	
	NW BND	10000
	SE BND	14000
*12000 - MCA DRAKE, AZ VORTAC , SE BND		
DRAKE, AZ VORTAC	*BISOP, AZ FIX	**10000
*11000 - MRA		
**8400 - MOCA		
**9000 - GNSS MEA		
BISOP, AZ FIX	*GRAND CANYON, AZ VOR/DME	10000
*14500 - MCA GRAND CANYON, AZ VOR/DME , N BND		
GRAND CANYON, AZ VOR/DME	*DOZIT, AZ FIX	**14500
*14500 - MCA DOZIT, AZ FIX , S BND		
**11200 - MOCA		
DOZIT, AZ FIX	JALMA, AZ FIX	*14500
*11200 - MOCA		
JALMA, AZ FIX	KACIR, AZ FIX	*13000
*11000 - MOCA		
KACIR, AZ FIX	BRYCE CANYON, UT VORTAC	11600
BRYCE CANYON, UT VORTAC	DELTA, UT VORTAC	12000
DELTA, UT VORTAC	*VERNE, UT FIX	11500
*12200 - MCA VERNE, UT FIX , N BND		
VERNE, UT FIX	*STACO, UT FIX	13000
*10500 - MCA STACO, UT FIX , S BND		

FROM	TO	MEA

95.6257 VOR FEDERAL AIRWAY V257 - CONTINUED

STACO, UT FIX	MOINT, UT FIX	*13000
*8900 - MOCA		
MOINT, UT FIX	*KREBS, UT FIX	**13000
*13000 - MRA		
**9600 - MOCA		
KREBS, UT FIX	MALAD CITY, ID VOR/DME	*11000
*10000 - MOCA		
MALAD CITY, ID VOR/DME	BANNO, ID FIX	10000
BANNO, ID FIX	*POCATELLO, ID VOR/DME	9000
*8000 - MCA POCATELLO, ID VOR/DME , SE BND		
POCATELLO, ID VOR/DME	ROCCA, ID FIX	7000
ROCCA, ID FIX	*DUBOIS, ID VORTAC	7500
*8600 - MCA DUBOIS, ID VORTAC , N BND		
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	*12000
*11200 - MOCA		
DILLON, MT VOR/DME	DIVID, MT FIX	11000
DIVID, MT FIX	*COPPERTOWN, MT VOR/DME	10000
*10000 - MCA COPPERTOWN, MT VOR/DME , SE BND		
COPPERTOWN, MT VOR/DME	GLUES, MT FIX	9200
GLUES, MT FIX	SCAAT, MT FIX	*16000
*9200 - MOCA		
SCAAT, MT FIX	SIEBE, MT FIX	*13000
*9800 - MOCA		
*9800 - GNSS MEA		
SIEBE, MT FIX	WOKEN, MT FIX	9000
WOKEN, MT FIX	GREAT FALLS, MT VORTAC	8800
GREAT FALLS, MT VORTAC	SHONK, MT FIX	6200
SHONK, MT FIX	HAVRE, MT VOR/DME	6000

95.6258 VOR FEDERAL AIRWAY V258

CHARLESTON, WV VOR/DME	BECKLEY, WV VOR/DME	5500
BECKLEY, WV VOR/DME	ZOOMS, WV FIX	*10000
*6300 - MOCA		
*6300 - GNSS MEA		
ZOOMS, WV FIX	ROANOKE, VA VOR/DME	6400
ROANOKE, VA VOR/DME	PIGGS, VA FIX	5400
PIGGS, VA FIX	ENTUK, VA FIX	*4000
*3400 - MOCA		
ENTUK, VA FIX	DANVILLE, VA VOR	3000

95.6259 VOR FEDERAL AIRWAY V259

GRAND STRAND, SC VORTAC	*CLETA, SC FIX	2000
*3000 - MRA		
CLETA, SC FIX	FLORENCE, SC VORTAC	2000
FLORENCE, SC VORTAC	CHESTERFIELD, SC VOR/DME	2000
CHESTERFIELD, SC VOR/DME	HUSTN, NC FIX	2500
MOPED, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	4000
BARRETTS MOUNTAIN, NC VOR/DME	GOWBE, NC FIX	
	SE BND	5000
	NW BND	7500
GOWBE, NC FIX	*HOLSTON MOUNTAIN, TN VORTAC	7500
*6600 - MCA HOLSTON MOUNTAIN, TN VORTAC , SE BND		

FROM	TO	MEA

95.6260 VOR FEDERAL AIRWAY V260

CHARLESTON, WV VOR/DME	MONTS, WV FIX	3400
MONTS, WV FIX	RAINELLE, WV VOR	5100
RAINELLE, WV VOR	ROANOKE, VA VOR/DME	*6000
*5400 - MOCA		
ROANOKE, VA VOR/DME	GOOZE, VA FIX	5000
GOOZE, VA FIX	LYNCHBURG, VA VOR/DME	
	W BND	*5000
	E BND	*3000
*2900 - MOCA		
LYNCHBURG, VA VOR/DME	FLAT ROCK, VA VORTAC	3000
FLAT ROCK, VA VORTAC	RICHMOND, VA VORTAC	2600
RICHMOND, VA VORTAC	HOPEWELL, VA VORTAC	1900
HOPEWELL, VA VORTAC	WAIKS, VA FIX	3000
WAIKS, VA FIX	FRANKLIN, VA VORTAC	3000
FRANKLIN, VA VORTAC	COFIELD, NC VORTAC	1800

95.6261 VOR FEDERAL AIRWAY V261

WICHITA, KS VORTAC	CEKIS, KS FIX	3600
CEKIS, KS FIX	MANHATTAN, KS VOR/DME	3000

95.6262 VOR FEDERAL AIRWAY V262

PEORIA, IL VORTAC	*DULAP, IL FIX	2700
*3000 - MRA		
DULAP, IL FIX	BRADFORD, IL VORTAC	2700
BRADFORD, IL VORTAC	MOTIF, IL FIX	2700
MOTIF, IL FIX	JOLIET, IL VOR/DME	*3000
*2200 - MOCA		

95.6263 VOR FEDERAL AIRWAY V263

CORONA, NM VORTAC	ENCIA, NM FIX	9700
ENCIA, NM FIX	ALBUQUERQUE, NM VORTAC	8000
ALBUQUERQUE, NM VORTAC	*SANTA FE, NM VORTAC	9000
*11600 - MCA SANTA FE, NM VORTAC , E BND		
SANTA FE, NM VORTAC	*FORT UNION, NM VORTAC	12500
*10900 - MCA FORT UNION, NM VORTAC , N BND		
*11300 - MCA FORT UNION, NM VORTAC , W BND		
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	*12000
*11100 - MOCA		
CIMARRON, NM VORTAC	TOBE, CO VOR/DME	*11600
*10700 - MOCA		
TOBE, CO VOR/DME	LAMAR, CO VOR/DME	*7400
*6700 - MOCA		
LAMAR, CO VOR/DME	HUGO, CO VOR/DME	*6900
*6200 - MOCA		
HUGO, CO VOR/DME	KANDO, CO FIX	*10000
*8500 - MOCA		
*9000 - GNSS MEA		
KANDO, CO FIX	AKRON, CO VOR/DME	
	NE BND	*8500
	SW BND	*10000
*7500 - MOCA		
PIERRE, SD VORTAC	ABERDEEN, SD VOR/DME	4000

95.6264 VOR FEDERAL AIRWAY V264

FROM	TO	MEA
LOS ANGELES, CA VORTAC	STABO, CA FIX	2500
STABO, CA FIX	AMTRA, CA FIX	3000
AMTRA, CA FIX	*POMONA, CA VORTAC	#4800
*5600 - MCA POMONA, CA VORTAC , E BND		
#MTA V264 E TO V197 NW 11800		
POMONA, CA VORTAC	*RAVON, CA FIX	6000
*11400 - MCA RAVON, CA FIX , E BND		
RAVON, CA FIX	REANS, CA FIX	
	E BND	12800
	W BND	9000
REANS, CA FIX	*YUCCA, CA FIX	13500
*12000 - MCA YUCCA, CA FIX , W BND		
YUCCA, CA FIX	TWENTYNINE PALMS, CA VORTAC	*8500
*7700 - MOCA		
TWENTYNINE PALMS, CA VORTAC	PARKER, CA VORTAC	6000
DRAKE, AZ VORTAC	OATES, AZ FIX	10100
OATES, AZ FIX	WINSLOW, AZ VORTAC	10800
WINSLOW, AZ VORTAC	ST JOHNS, AZ VORTAC	8900
ST JOHNS, AZ VORTAC	*SOCORRO, NM VORTAC	**12000
*10000 - MCA SOCORRO, NM VORTAC , W BND		
**11100 - MOCA		
SOCORRO, NM VORTAC	CORONA, NM VORTAC	9500
CORONA, NM VORTAC	TUCUMCARI, NM VORTAC	*11000
*9000 - MOCA		

95.6265 VOR FEDERAL AIRWAY V265

FROM	TO	MEA
KRANT, MD FIX	WESTMINSTER, MD VORTAC	2600
WESTMINSTER, MD VORTAC	*HARRISBURG, PA VORTAC	3400
*3600 - MCA HARRISBURG, PA VORTAC , NW BND		
HARRISBURG, PA VORTAC	*PHILIPSBURG, PA VORTAC	4900
*4800 - MCA PHILIPSBURG, PA VORTAC , SE BND		
PHILIPSBURG, PA VORTAC	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	JAMESTOWN, NY VOR/DME	4000

95.6266 VOR FEDERAL AIRWAY V266

FROM	TO	MEA
ELECTRIC CITY, SC VORTAC	PELZE, SC FIX	2800
PELZE, SC FIX	SPARTANBURG, SC VORTAC	2900
GREENSBORO, NC VORTAC	SOUTH BOSTON, VA VORTAC	2700
SOUTH BOSTON, VA VORTAC	LAWRENCEVILLE, VA VORTAC	*3000
*2000 - MOCA		
*2300 - GNSS MEA		
LAWRENCEVILLE, VA VORTAC	FRANKLIN, VA VORTAC	2000
FRANKLIN, VA VORTAC	SUNNS, NC FIX	*2000
*1500 - MOCA		
SUNNS, NC FIX	ELIZABETH CITY, NC VOR/DME	*5000
*4000 - MOCA		
ELIZABETH CITY, NC VOR/DME	WRIGHT BROTHERS, NC VOR/DME	4000

FROM	TO	MEA

95.6267 VOR FEDERAL AIRWAY V267

DOLPHIN, FL VORTAC	PAHOKEE, FL VOR/DME	*2000
*1500 - MOCA		
PAHOKEE, FL VOR/DME	DIDDY, FL FIX	*2000
*1500 - MOCA		
DIDDY, FL FIX	ORLANDO, FL VORTAC	2700
ORLANDO, FL VORTAC	PAOLA, FL FIX	
	N BND	*2800
	S BND	*1900
*1600 - MOCA		
PAOLA, FL FIX	WORMS, FL FIX	2800
WORMS, FL FIX	CRAIG, FL VORTAC	*3000
*2100 - MOCA		
CRAIG, FL VORTAC	*BAXLY, GA FIX	**5000
*10000 - MRA		
**3000 - GNSS MEA		
BAXLY, GA FIX	DUBLIN, GA VORTAC	
	N BND	*3000
	S BND	*5000
*2300 - MOCA		
*2500 - GNSS MEA		
DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	*3000
*2200 - MOCA		
ATHENS, GA VOR/DME	IRMOS, GA FIX	3100
		MAA - 17500
IRMOS, GA FIX	CORCE, GA FIX	3800
CORCE, GA FIX	TALLE, GA FIX	5300
TALLE, GA FIX	HARRIS, GA VORTAC	7000
HARRIS, GA VORTAC	FORMS, NC FIX	7800
FORMS, NC FIX	*KNITS, TN FIX	7500
*6200 - MCA KNITS, TN FIX , S BND		
KNITS, TN FIX	VOLUNTEER, TN VORTAC	4200

95.6268 VOR FEDERAL AIRWAY V268

NESTO, PA FIX	PLEEZ, PA FIX	*4000
*3100 - MOCA		
PLEEZ, PA FIX	INDIAN HEAD, PA VORTAC	*5000
*4500 - MOCA		
INDIAN HEAD, PA VORTAC	HAGERSTOWN, MD VOR	*12000
*4600 - MOCA		
*4700 - GNSS MEA		
HAGERSTOWN, MD VOR	KEMAR, MD FIX	5000
KEMAR, MD FIX	WESTMINSTER, MD VORTAC	*4000
*2600 - MOCA		
*2700 - GNSS MEA		
WESTMINSTER, MD VORTAC	BALTIMORE, MD VORTAC	2500
BALTIMORE, MD VORTAC	SMYRNA, DE VORTAC	2000
SMYRNA, DE VORTAC	LEEAH, NJ FIX	*1800
*1300 - MOCA		
LEEAH, NJ FIX	AVALO, NJ FIX	2000
AVALO, NJ FIX	HARBO, NJ FIX	*6000
*4000 - GNSS MEA		
HARBO, NJ FIX	*DRIFT, NJ FIX	**7500
*6000 - MRA		
**3000 - GNSS MEA		
DRIFT, NJ FIX	MANTA, NJ FIX	*12000
*3000 - GNSS MEA		
MANTA, NJ FIX	PLUME, NJ FIX	*7000
*2000 - MOCA		
*3000 - GNSS MEA		

95.6268 VOR FEDERAL AIRWAY V268 - CONTINUED

PLUME, NJ FIX	*KOPPY, NY FIX	**4000
*5000 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
KOPPY, NY FIX	BEADS, NY FIX	*4000
*3000 - MOCA		
*3000 - GNSS MEA		
BEADS, NY FIX	HAMPTON, NY VORTAC	*2500
*1600 - MOCA		
HAMPTON, NY VORTAC	SANDY POINT, RI VOR/DME	2000
SANDY POINT, RI VOR/DME	INNDY, MA FIX	2000
INNDY, MA FIX	*TONNI, MA FIX	6000
*6000 - MRA		
TONNI, MA FIX	*MESHL, ME FIX	**5000
*5000 - MRA		
**4000 - GNSS MEA		
MESHL, ME FIX	SAPPE, ME FIX	3000
SAPPE, ME FIX	AUGUSTA, ME VOR/DME	*3000
*1800 - MOCA		

95.6269 VOR FEDERAL AIRWAY V269

ELY, NV VOR/DME	*SPATS, NV FIX	**13000
*13000 - MCA SPATS, NV FIX , S BND		
**12200 - MOCA		
SPATS, NV FIX	WELLS, NV VOR/DME	11000
WELLS, NV VOR/DME	*TWIN FALLS, ID VORTAC	**13000
*7700 - MCA TWIN FALLS, ID VORTAC , S BND		
**11000 - MOCA		
**11000 - GNSS MEA		
TWIN FALLS, ID VORTAC	BURLEY, ID VOR/DME	7000
BURLEY, ID VOR/DME	POCATELLO, ID VOR/DME	7000
POCATELLO, ID VOR/DME	*JATTS, ID FIX	8000
*9700 - MCA JATTS, ID FIX , NW BND		
JATTS, ID FIX	YOYYU, ID FIX	*16000
*13300 - MOCA		
*13300 - GNSS MEA		
YOYYU, ID FIX	SALMON, ID VOR/DME	*14000
*13500 - MOCA		
*13500 - GNSS MEA		
SALMON, ID VOR/DME	DONNELLY, ID VOR/DME	12000
DONNELLY, ID VOR/DME	HOVEL, ID FIX	12000
HOVEL, ID FIX	FONNA, OR FIX	*12000
*8700 - MOCA		
*9000 - GNSS MEA		
FONNA, OR FIX	WILDHORSE, OR VOR/DME	9000
WILDHORSE, OR VOR/DME	DESCHUTES, OR VORTAC	9500
DESCHUTES, OR VORTAC	MANTE, OR FIX	10000
MANTE, OR FIX	MOBIL, OR FIX	*10000
*7600 - MOCA		
*8000 - GNSS MEA		
MOBIL, OR FIX	COBUR, OR FIX	
	NE BND	7000
	SW BND	5200
COBUR, OR FIX	*EUGENE, OR VORTAC	
	NE BND	5000
	SW BND	4400
*3800 - MCA EUGENE, OR VORTAC , NE BND		

FROM	TO	MEA

95.6270 VOR FEDERAL AIRWAY V270

ERIE, PA VORTAC	JAMESTOWN, NY VOR/DME	4000
JAMESTOWN, NY VOR/DME *11000 - MRA	*VAIRS, NY FIX	4000
VAIRS, NY FIX *4000 - MOCA	WELLSVILLE, NY VORTAC	*4500
WELLSVILLE, NY VORTAC *4000 - MOCA	WOMAN, NY FIX	*4500
WOMAN, NY FIX *3400 - MOCA	ELMIRA, NY VOR/DME	*4000
ELMIRA, NY VOR/DME	BINGHAMTON, NY VOR/DME	3500
BINGHAMTON, NY VOR/DME	DELANCEY, NY VOR/DME	4500
DELANCEY, NY VOR/DME	ATHOS, NY FIX	6300
ATHOS, NY FIX *4000 - MOCA	CHESTER, MA VOR/DME	*4500
CHESTER, MA VOR/DME	GLYDE, MA FIX	4000
GLYDE, MA FIX *3000 - MOCA	BOSTON, MA VOR/DME	*4000

95.6271 VOR FEDERAL AIRWAY V271

MUSKEGON, MI VORTAC *2500 - MOCA	WELKO, MI FIX	*3000
WELKO, MI FIX *2400 - MOCA	MANISTEE, MI VOR/DME	*4000
MANISTEE, MI VOR/DME *2100 - MOCA	ESCANABA, MI VOR/DME	*3000

95.6272 VOR FEDERAL AIRWAY V272

DALHART, TX VORTAC	BORGER, TX VORTAC	5700
BORGER, TX VORTAC	BRISC, TX FIX	5000
BRISC, TX FIX *4500 - MOCA	BURNS FLAT, OK VORTAC	*5000
BURNS FLAT, OK VORTAC	WILL ROGERS, OK VORTAC	4500
WILL ROGERS, OK VORTAC *3100 - MOCA	MINGG, OK FIX	*4000
MINGG, OK FIX *2600 - MOCA	HOLLE, OK FIX	*4000
HOLLE, OK FIX	MC ALESTER, OK VORTAC	3000
MC ALESTER, OK VORTAC *2900 - MOCA	FORT SMITH, AR VORTAC	*3500

95.6273 VOR FEDERAL AIRWAY V273

FALLZ, NJ FIX	HAAYS, NY FIX	3000
HAAYS, NY FIX	HUGUENOT, NY VOR/DME	3600
HUGUENOT, NY VOR/DME	HANCOCK, NY VOR/DME	4000
HANCOCK, NY VOR/DME	GEORGETOWN, NY VORTAC	4000
GEORGETOWN, NY VORTAC	SYRACUSE, NY VORTAC	4000

95.6274 VOR FEDERAL AIRWAY V274

PULLMAN, MI VOR/DME	VICTORY, MI VOR/DME	3000
VICTORY, MI VOR/DME	SAGINAW, MI VOR/DME	2600

FROM	TO	MEA

95.6275 VOR FEDERAL AIRWAY V275

CINCINNATI, KY VORTAC	DAYTON, OH VOR/DME	3000
DAYTON, OH VOR/DME	KLOEE, OH FIX	*6000
*2500 - MOCA		

95.6276 VOR FEDERAL AIRWAY V276

RASHE, PA FIX	*MORTO, PA FIX	4000
*5000 - MRA		
MORTO, PA FIX	RAVINE, PA VORTAC	4000
RAVINE, PA VORTAC	*HIKES, PA FIX	**4000
*4000 - MRA		
**3500 - MOCA		
HIKES, PA FIX	YARDLEY, PA VOR/DME	*4000
*2400 - MOCA		
YARDLEY, PA VOR/DME	ROBBINSVILLE, NJ VORTAC	2100
ROBBINSVILLE, NJ VORTAC	CASVI, NJ FIX	1900
CASVI, NJ FIX	*GAMBY, NJ FIX	**3000
*6000 - MCA GAMBY, NJ FIX , SE BND		
**1500 - MOCA		
GAMBY, NJ FIX	*PREPI, OA FIX	**6000
*8000 - MRA		
**2000 - MOCA		
**3000 - GNSS MEA		

95.6277 VOR FEDERAL AIRWAY V277

ROSEWOOD, OH VORTAC	FORT WAYNE, IN VORTAC	3000
FORT WAYNE, IN VORTAC	BAGEL, IN FIX	2800
BAGEL, IN FIX	KEELER, MI VOR/DME	4000

95.6278 VOR FEDERAL AIRWAY V278

TEXICO, TX VORTAC	PLAINVIEW, TX VOR/DME	5800
BOWIE, TX VORTAC	BONHAM, TX VORTAC	4000
BONHAM, TX VORTAC	PARIS, TX VOR/DME	2400
PARIS, TX VOR/DME	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	WARLO, AR FIX	2200
WARLO, AR FIX	LOCUS, AR FIX	*3000
*1700 - MOCA		
LOCUS, AR FIX	MONTICELLO, AR VOR/DME	*2500
*1600 - MOCA		
MONTICELLO, AR VOR/DME	GREENVILLE, MS VOR/DME	*2000
*1500 - MOCA		
GREENVILLE, MS VOR/DME	SIDON, MS VORTAC	2000
SIDON, MS VORTAC	BIGBEE, MS VORTAC	2400
BIGBEE, MS VORTAC	MINIM, AL FIX	2000
MINIM, AL FIX	VULCAN, AL VORTAC	2600

95.6279 VOR FEDERAL AIRWAY V279

GUNNE, OH FIX	FLAG CITY, OH VORTAC	3000

95.6280 VOR FEDERAL AIRWAY V280

U.S. MEXICAN BORDER	EL PASO, TX VORTAC	*8000
*6300 - MOCA		
EL PASO, TX VORTAC	PINON, NM VOR/DME	8800
PINON, NM VOR/DME	*HOPET, NM FIX	8800
*7400 - MCA HOPET, NM FIX , SW BND		
HOPET, NM FIX	CHISUM, NM VORTAC	7000
CHISUM, NM VORTAC	FRAIZ, NM FIX	
	NE BND	7500
	SW BND	6500
FRAIZ, NM FIX	DEBRA, NM FIX	*7500
*6000 - MOCA		
DEBRA, NM FIX	TEXICO, TX VORTAC	
	NE BND	*6500
	SW BND	*7500
*6000 - MOCA		
TEXICO, TX VORTAC	PANHANDLE, TX VORTAC	*5900
*5600 - MOCA		
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	5500
MITBEE, OK VORTAC	*CARKO, KS FIX	4000
*5000 - MCA CARKO, KS FIX , NE BND		
CARKO, KS FIX	WIPET, KS FIX	*8000
*3500 - MOCA		
WIPET, KS FIX	HUTCHINSON, KS VOR/DME	3300
HUTCHINSON, KS VOR/DME	BUHLS, KS FIX	4000
BUHLS, KS FIX	STONS, KS FIX	*4500
*2900 - MOCA		
STONS, KS FIX	HEYDN, KS FIX	*5000
*2900 - MOCA		
HEYDN, KS FIX	TOPEKA, KS VORTAC	3700

95.6281 VOR FEDERAL AIRWAY V281

PASCO, WA VOR/DME	MOSES LAKE, WA VOR/DME	4000

95.6282 VOR FEDERAL AIRWAY V282

SARANAC LAKE, NY VOR/DME	*FAWNS, NY FIX	5000
*5000 - MCA FAWNS, NY FIX , S BND		
FAWNS, NY FIX	U.S. CANADIAN BORDER	#5000
#FIX OVERLIES U.S. CANADIAN BORDER.		

95.6283 VOR FEDERAL AIRWAY V283

SEAL BEACH, CA VORTAC	*JOGIT, CA FIX	4000
*6000 - MCA JOGIT, CA FIX , E BND		
JOGIT, CA FIX	*KAYOH, CA FIX	6000
*7400 - MCA KAYOH, CA FIX , E BND		
KAYOH, CA FIX	HOMELAND, CA VOR	8000
HOMELAND, CA VOR	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	HECTOR, CA VORTAC	*9000
*7000 - MOCA		
HECTOR, CA VORTAC	*WHIGG, CA FIX	10000
*12000 - MRA		
WHIGG, CA FIX	BOULDER CITY, NV VORTAC	10000

95.6284 VOR FEDERAL AIRWAY V284

SEA ISLE, NJ VORTAC	CEDAR LAKE, NJ VOR/DME	*2500
*1800 - MOCA		

95.6285 VOR FEDERAL AIRWAY V285

BRICKYARD, IN VORTAC	KOKOMO, IN VORTAC	2700
KOKOMO, IN VORTAC	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	KALAMAZOO, MI VOR/DME	2600
KALAMAZOO, MI VOR/DME	VICTORY, MI VOR/DME	3000
VICTORY, MI VOR/DME	CLOCK, MI FIX	2800
CLOCK, MI FIX	WHITE CLOUD, MI VOR/DME	2800
WHITE CLOUD, MI VOR/DME	MANISTEE, MI VOR/DME	*4000
*2400 - MOCA		
MANISTEE, MI VOR/DME	TRAVERSE CITY, MI VOR/DME	2800

95.6286 VOR FEDERAL AIRWAY V286

ELKINS, WV VORTAC	DERIN, WV FIX	
	W BND	5700
	E BND	6200
DERIN, WV FIX	TEAKK, VA FIX	6900
TEAKK, VA FIX	CASANOVA, VA VORTAC	
	W BND	*6900
	E BND	*6500
*5800 - MOCA		
CASANOVA, VA VORTAC	FLUKY, VA FIX	*3000
*2300 - MOCA		
FLUKY, VA FIX	BROOKE, VA VORTAC	2000
BROOKE, VA VORTAC	*ZUNAR, VA FIX	**3000
*5000 - MCA ZUNAR, VA FIX , SE BND		
**2000 - GNSS MEA		
ZUNAR, VA FIX	FAGED, VA FIX	*5000
*2000 - GNSS MEA		
FAGED, VA FIX	GWYNN, VA FIX	2000
GWYNN, VA FIX	CAPE CHARLES, VA VORTAC	*2000
*1500 - MOCA		

95.6287 VOR FEDERAL AIRWAY V287

FORT JONES, CA VOR/DME	KLAMA, OR FIX	*12000
*9800 - MOCA		
KLAMA, OR FIX	*ROGUE VALLEY, OR VORTAC	
	SE BND	12000
	NW BND	8000
*7000 - MCA ROGUE VALLEY, OR VORTAC , SE BND		
ROGUE VALLEY, OR VORTAC	KOLER, OR FIX	*8000
*7400 - MOCA		
KOLER, OR FIX	CAMAS, OR FIX	*8500
*6000 - MOCA		
CAMAS, OR FIX	DEROY, OR FIX	
	NW BND	5500
	SE BND	8000
DEROY, OR FIX	NORTH BEND, OR VOR/DME	
	NW BND	4000
	SE BND	8000

FROM	TO	MEA

95.6268 VOR FEDERAL AIRWAY V287 - CONTINUED

NORTH BEND, OR VOR/DME	*RARES, OR FIX	
	N BND	6000
	S BND	3700
*5500 - MRA		
RARES, OR FIX	CRAAF, OR FIX	6000
CRAAF, OR FIX	MCCOY, OR FIX	*4000
*3400 - MOCA		
MCCOY, OR FIX	NEWBERG, OR VOR/DME	3600
NEWBERG, OR VOR/DME	BATTLE GROUND, WA VORTAC	4000
BATTLE GROUND, WA VORTAC	*MALAY, WA FIX	
	NW BND	6000
	SE BND	5000
*9500 - MRA		
MALAY, WA FIX	*TONNO, WA FIX	6000
*5000 - MRA		
TONNO, WA FIX	OLYMPIA, WA VORTAC	4000
OLYMPIA, WA VORTAC	*CARRO, WA FIX	**4000
*4000 - MRA		
**2000 - MOCA		
CARRO, WA FIX	*LOFAL, WA FIX	**6000
*5000 - MCA LOFAL, WA FIX , SW BND		
**5000 - MOCA		
LOFAL, WA FIX	PAINE, WA VOR/DME	*3000
*1900 - MOCA		
PAINE, WA VOR/DME	PENN COVE, WA VOR/DME	*3000
*1800 - MOCA		

95.6288 VOR FEDERAL AIRWAY V288

LUCIN, UT VORTAC	*CORIN, UT FIX	**13000
*13000 - MRA		
*16000 - MCA CORIN, UT FIX , E BND		
**9400 - MOCA		
CORIN, UT FIX	FORT BRIDGER, WY VOR/DME	*16000
*11600 - MOCA		
*12000 - GNSS MEA		

95.6289 VOR FEDERAL AIRWAY V289

BEAUMONT, TX VOR/DME	HONEE, TX FIX	2000
HONEE, TX FIX	LUFKIN, TX VORTAC	*3000
*1900 - MOCA		
LUFKIN, TX VORTAC	*PIPES, TX FIX	2400
*2400 - MRA		
PIPES, TX FIX	GREGG COUNTY, TX VORTAC	2000
GREGG COUNTY, TX VORTAC	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	*PROVO, AR FIX	**2200
*4500 - MRA		
**1700 - MOCA		
PROVO, AR FIX	UMPIR, AR FIX	*3900
*3400 - MOCA		
UMPIR, AR FIX	BATEZ, AR FIX	*4300
*3800 - MOCA		
BATEZ, AR FIX	FORT SMITH, AR VORTAC	*4100
*3600 - MOCA		
FORT SMITH, AR VORTAC	MULBY, AR FIX	
	SW BND	3300
	NE BND	4000

FROM	TO	MEA

95.6268 VOR FEDERAL AIRWAY V289 - CONTINUED

MULBY, AR FIX	HARRISON, AR VOR/DME	4000
HARRISON, AR VOR/DME	DOGWOOD, MO VORTAC	3400
DOGWOOD, MO VORTAC	GOBEY, MO FIX	3400
GOBEY, MO FIX	PEKLE, MO FIX	3400
PEKLE, MO FIX	VICHY, MO VOR/DME	3000

95.6290 VOR FEDERAL AIRWAY V290

RAINELLE, WV VOR	MONTEBELLO, VA VOR/DME	6500
*MONTEBELLO, VA VOR/DME	ROMAN, VA FIX	6300
*6000 - MCA MONTEBELLO, VA VOR/DME , SE BND		
ROMAN, VA FIX	ARVON, VA FIX	4000
ARVON, VA FIX	FLAT ROCK, VA VORTAC	#*5000
*2200 - GNSS MEA		
#FLAT ROCK R-297 UNUSABLE.		
TAR RIVER, NC VORTAC	KENIR, NC FIX	*4000
*1600 - MOCA		
*2000 - GNSS MEA		
KENIR, NC FIX	PUNGO, NC FIX	*5000
*1500 - MOCA		
*2000 - GNSS MEA		

95.6291 VOR FEDERAL AIRWAY V291

HOBBS, NM VORTAC	CHISUM, NM VORTAC	*6000
*5500 - MOCA		
CHISUM, NM VORTAC	DUPAL, NM FIX	
	NW BND	9000
	SE BND	6000
DUPAL, NM FIX	CORONA, NM VORTAC	9000
CORONA, NM VORTAC	ALBUQUERQUE, NM VORTAC	10000
ALBUQUERQUE, NM VORTAC	AROYO, NM FIX	8300
AROYO, NM FIX	*LORAT, NM FIX	9500
*12400 - MCA LORAT, NM FIX , W BND		
LORAT, NM FIX	BLINI, NM FIX	13300
BLINI, NM FIX	GALLUP, NM VORTAC	11000
GALLUP, NM VORTAC	FORAN, AZ FIX	9400
FORAN, AZ FIX	WINSLOW, AZ VORTAC	9000
WINSLOW, AZ VORTAC	*FLAGSTAFF, AZ VOR/DME	#10100
*11000 - MCA FLAGSTAFF, AZ VOR/DME , NE BND		
#MTA V327 N TO V291 E 11000		
FLAGSTAFF, AZ VOR/DME	KACEE, AZ FIX	11000
KACEE, AZ FIX	PEACH SPRINGS, AZ VOR/DME	*11000
*10000 - MOCA		

95.6292 VOR FEDERAL AIRWAY V292

HANCOCK, NY VOR/DME	SAGES, NY FIX	6400
SAGES, NY FIX	WIGAN, NY FIX	#000
#UNUSABLE		
WIGAN, NY FIX	BARNES, MA VORTAC	#*10000
*4900 - MOCA		
#BARNES R-279 UNUSABLE BYD 50 NM		

95.6268 VOR FEDERAL AIRWAY V292 - CONTINUED

BARNES, MA VORTAC	GLYDE, MA FIX	*7000
*2700 - MOCA		
*4000 - GNSS MEA		
GLYDE, MA FIX	BOSTON, MA VOR/DME	*4000
*3000 - MOCA		

95.6293 VOR FEDERAL AIRWAY V293

*GRAND CANYON, AZ VOR/DME	KLIFF, AZ FIX	**14500
*14500 - MCA GRAND CANYON, AZ VOR/DME , N BND		
**10900 - MOCA		
*KLIFF, AZ FIX	PAGE, AZ VOR/DME	8700
*14500 - MCA KLIFF, AZ FIX , S BND		
PAGE, AZ VOR/DME	CABER, UT FIX	8500
CABER, UT FIX	BRYCE CANYON, UT VORTAC	11000
BRYCE CANYON, UT VORTAC	*ENOCH, UT VOR/DME	13300
*12100 - MCA ENOCH, UT VOR/DME , E BND		
ENOCH, UT VOR/DME	BERYL, UT FIX	9000
BERYL, UT FIX	WILSON CREEK, NV VORTAC	11600
WILSON CREEK, NV VORTAC	ELY, NV VOR/DME	12000
ELY, NV VOR/DME	*BULLION, NV VOR/DME	#**14000
*12000 - MCA BULLION, NV VOR/DME , S BND		
**13100 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
BULLION, NV VOR/DME	SAMAN, ID FIX	10600
SAMAN, ID FIX	*TWIN FALLS, ID VORTAC	
	N BND	7500
	S BND	8600
*6500 - MCA TWIN FALLS, ID VORTAC , S BND		
TWIN FALLS, ID VORTAC	GOODE, ID FIX	6000
GOODE, ID FIX	*TORIN, ID FIX	6600
*8700 - MCA TORIN, ID FIX , NW BND		
TORIN, ID FIX	DERSO, ID FIX	
	NW BND	11500
	SE BND	9200
DERSO, ID FIX	DONNELLY, ID VOR/DME	11700

95.6294 VOR FEDERAL AIRWAY V294

DES MOINES, IA VORTAC	CEDAR RAPIDS, IA VOR/DME	2700
CEDAR RAPIDS, IA VOR/DME	DAVENPORT, IA VORTAC	2600

95.6295 VOR FEDERAL AIRWAY V295

VIRGINIA KEY, FL VOR/DME	HEATT, FL FIX	*5000
*2100 - MOCA		
HEATT, FL FIX	*BLUFI, FL FIX	**6000
*6000 - MCA BLUFI, FL FIX , S BND		
**2000 - MOCA		
BLUFI, FL FIX	STOOP, FL FIX	*5000
*2000 - MOCA		
STOOP, FL FIX	TREASURE, FL VORTAC	2000
TREASURE, FL VORTAC	BAIRN, FL FIX	2600
BAIRN, FL FIX	ORLANDO, FL VORTAC	2700

FROM	TO	MEA

95.6268 VOR FEDERAL AIRWAY V295 - CONTINUED

ORLANDO, FL VORTAC	*SHIMM, FL FIX	2000
*3000 - MRA		
SHIMM, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	*PERSE, FL FIX	2000
*3000 - MRA		
PERSE, FL FIX	*WILON, FL FIX	2000
*3000 - MRA		
WILON, FL FIX	CROSS CITY, FL VORTAC	2000
CROSS CITY, FL VORTAC	SEMINOLE, FL VORTAC	2000

95.6296 VOR FEDERAL AIRWAY V296

HUSTN, NC FIX	*RAEFO, NC FIX	**5000
*6000 - MRA		
**2300 - MOCA		
**2400 - GNSS MEA		
RAEFO, NC FIX	FAYETTEVILLE, NC VOR/DME	*2800
*1900 - MOCA		
#FAYETTEVILLE, NC VOR/DME	WILMINGTON, NC VORTAC	*3000
*2100 - MOCA		
#WILMNINGTON R-315 UNUSABLE, USE FAYETTEVILLE R-131		

95.6298 VOR FEDERAL AIRWAY V298

*SEATTLE, WA VORTAC	VAMPS, WA FIX	
	W BND	**4000
	E BND	**8400
*4300 - MCA SEATTLE, WA VORTAC , E BND		
**3100 - MOCA		
**5300 - GNSS MEA		
VAMPS, WA FIX	BANDR, WA FIX	
	E BND	*8400
	W BND	*7700
*7700 - GNSS MEA		
BANDR, WA FIX	*BEEZR, WA FIX	8400
*9000 - MRA		
BEEZR, WA FIX	PERTT, WA FIX	*9000
*7500 - MOCA		
PERTT, WA FIX	YAKIMA, WA VORTAC	6600
YAKIMA, WA VORTAC	*SUNED, WA FIX	**5000
*5500 - MRA		
**4300 - MOCA		
SUNED, WA FIX	BENTY, WA FIX	*5000
*4300 - MOCA		
BENTY, WA FIX	PASCO, WA VOR/DME	*4000
*3500 - MOCA		
PASCO, WA VOR/DME	PENDLETON, OR VORTAC	4000
PENDLETON, OR VORTAC	CABAN, OR FIX	6000
CABAN, OR FIX	IBEAM, OR FIX	8300
IBEAM, OR FIX	DONNELLY, ID VOR/DME	12000
DONNELLY, ID VOR/DME	*DUBOIS, ID VORTAC	**16000
*9800 - MCA DUBOIS, ID VORTAC , W BND		
**13600 - MOCA		
DUBOIS, ID VORTAC	*SABAT, ID FIX	
	W BND	**9000
	E BND	**13000
*10000 - MRA		
*11100 - MCA SABAT, ID FIX , E BND		
**8100 - MOCA		

95.6298 VOR FEDERAL AIRWAY V298 - CONTINUED

FROM	TO	MEA
SABAT, ID FIX	LAMON, ID FIX	
	W BND	*10000
	E BND	*13000
*8100 - MOCA		
LAMON, ID FIX	*QUIRT, WY FIX	15000
*14100 - MCA QUIRT, WY FIX , W BND		
QUIRT, WY FIX	DUNOIR, WY VOR/DME	*12000
*10800 - MOCA		
DUNOIR, WY VOR/DME	*BOYSEN RESERVOIR, WY VOR/DME	14000
*11000 - MCA BOYSEN RESERVOIR, WY VOR/DME , W BND		
BOYSEN RESERVOIR, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	*11000
*10300 - MOCA		
MUDDY MOUNTAIN, WY VOR/DME	CHANG, WY FIX	8500
CHANG, WY FIX	GILLETTE, WY VOR/DME	7200

95.6299 VOR FEDERAL AIRWAY V299

FROM	TO	MEA
*LOS ANGELES, CA VORTAC	VENTURA, CA VOR/DME	5000
*3200 - MCA LOS ANGELES, CA VORTAC , W BND		
VENTURA, CA VOR/DME	*FILLMORE, CA VORTAC	5000
*7200 - MCA FILLMORE, CA VORTAC , N BND		
FILLMORE, CA VORTAC	GORMAN, CA VORTAC	9500

95.6300 VOR FEDERAL AIRWAY V300

FROM	TO	MEA
U.S. CANADIAN BORDER	AVALE, MI FIX	#*9000
*2400 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
AVALE, MI FIX	U.S. CANADIAN BORDER	*3000
*2400 - MOCA		
U.S. CANADIAN BORDER	SAULT STE MARIE, MI VOR/DME	*3000
*2400 - MOCA		
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*3000
*2500 - MOCA		
U.S. CANADIAN BORDER	NAASH, MI FIX	*3000
*2500 - MOCA		
NAASH, MI FIX	U.S. CANADIAN BORDER	*6000
*2500 - MOCA		
U.S. CANADIAN BORDER	CAMPO, ME FIX	*9000
*5900 - MOCA		
*5900 - GNSS MEA		
CAMPO, ME FIX	WRAPT, ME FIX	*9000
*6000 - MOCA		
*6000 - GNSS MEA		
WRAPT, ME FIX	MILLINOCKET, ME VOR/DME	*7000
*5900 - MOCA		
*5900 - GNSS MEA		
MILLINOCKET, ME VOR/DME	U.S. CANADIAN BORDER	*3000
*2200 - MOCA		

FROM	TO	MEA

95.6301 VOR FEDERAL AIRWAY V301

PANOCHE, CA VORTAC	*SUNOL, CA FIX	6500
*6500 - MCA SUNOL, CA FIX , SE BND		
SUNOL, CA FIX	OAKLAND, CA VOR/DME	4000
OAKLAND, CA VOR/DME	COMMO, CA FIX	*5000
*4000 - MOCA		
COMMO, CA FIX	POINT REYES, CA VOR/DME	5000
POINT REYES, CA VOR/DME	SANTA ROSA, CA VOR/DME	3500
SANTA ROSA, CA VOR/DME	*KLOGE, CA FIX	5000
*6400 - MCA KLOGE, CA FIX , NE BND		
KLOGE, CA FIX	RUMSY, CA FIX	7000
RUMSY, CA FIX	WILLIAMS, CA VORTAC	
	SW BND	7000
	NE BND	5300

95.6302 VOR FEDERAL AIRWAY V302

AUGUSTA, ME VOR/DME	ANCOR, ME FIX	*5000
*3000 - GNSS MEA		

95.6303 VOR FEDERAL AIRWAY V303

HOT SPRINGS, AR VOR/DME	BLURB, AR FIX	*3500
*3000 - MOCA		
BLURB, AR FIX	BLIMP, AR FIX	*4100
*3600 - MOCA		
BLIMP, AR FIX	FORT SMITH, AR VORTAC	*2900
*2400 - MOCA		

95.6304 VOR FEDERAL AIRWAY V304

PANHANDLE, TX VORTAC	BORGER, TX VORTAC	5000
BORGER, TX VORTAC	LIBERAL, KS VORTAC	4800
LIBERAL, KS VORTAC	LAMAR, CO VOR/DME	*6000
*5300 - MOCA		

95.6305 VOR FEDERAL AIRWAY V305

EL DORADO, AR VOR/DME	LITTLE ROCK, AR VORTAC	3300
LITTLE ROCK, AR VORTAC	DUMPI, AR FIX	
	S BND	2000
	N BND	4000
DUMPI, AR FIX	WALNUT RIDGE, AR VORTAC	*4000
*2200 - MOCA		
WALNUT RIDGE, AR VORTAC	MALDEN, MO VORTAC	2300
MALDEN, MO VORTAC	CUNNINGHAM, KY VOR/DME	2500
CUNNINGHAM, KY VOR/DME	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200
POCKET CITY, IN VORTAC	*AUGUS, IN FIX	2400
*2600 - MRA		
AUGUS, IN FIX	*WEGEE, IN FIX	**3500
*3500 - MRA		
**1900 - MOCA		
WEGEE, IN FIX	HOOSIER, IN VORTAC	2700

95.6305 VOR FEDERAL AIRWAY V305 - CONTINUED

HOOSIER, IN VORTAC	BRICKYARD, IN VORTAC	#*2700
*2700 - GNSS MEA		
#HOOSIER R-027 UNUSABLE.		
BRICKYARD, IN VORTAC	WELDO, IN FIX	2900
WELDO, IN FIX	KOKOMO, IN VORTAC	2700

95.6306 VOR FEDERAL AIRWAY V306

JUNCTION, TX VORTAC	*AMUSE, TX FIX	**7000
*5000 - MCA AMUSE, TX FIX , W BND		
**5000 - MOCA		
AMUSE, TX FIX	CENTEX, TX VORTAC	*3300
*2900 - MOCA		
CENTEX, TX VORTAC	NAVASOTA, TX VOR/DME	2400
NAVASOTA, TX VOR/DME	ZMSKL, TX FIX	2000
ZMSKL, TX FIX	CLEEP, TX FIX	*5000
*2400 - MOCA		
CLEEP, TX FIX	DAISETTA, TX VORTAC	3100
DAISETTA, TX VORTAC	KUUPR, TX FIX	
	W BND	2300
	E BND	2800
KUUPR, TX FIX	OFERS, LA FIX	2800
OFERS, LA FIX	LAKE CHARLES, LA VORTAC	2000

95.6307 VOR FEDERAL AIRWAY V307

HARRISON, AR VOR/DME	NEOSHO, MO VOR/DME	*3400
*2800 - MOCA		
NEOSHO, MO VOR/DME	OSWEGO, KS VOR/DME	3000
OSWEGO, KS VOR/DME	CHANUTE, KS VOR/DME	*3000
*2500 - MOCA		
CHANUTE, KS VOR/DME	EMPORIA, KS VORTAC	3000
EMPORIA, KS VORTAC	*ALMAS, KS FIX	3300
*5000 - MCA ALMAS, KS FIX , N BND		
ALMAS, KS FIX	PAWNEE CITY, NE VORTAC	*5000
*3000 - MOCA		
PAWNEE CITY, NE VORTAC	OMAHA, IA VORTAC	3000
OMAHA, IA VORTAC	*DECKA, NE FIX	3000
*3500 - MRA		
DECKA, NE FIX	SIOUX CITY, IA VORTAC	3000

95.6308 VOR FEDERAL AIRWAY V308

NOTTINGHAM, MD VORTAC	*BILIT, MD FIX	**6000
*6000 - MCA BILIT, MD FIX , W BND		
**1600 - MOCA		
**2000 - GNSS MEA		
BILIT, MD FIX	WATERLOO, DE VOR/DME	*2000
*1500 - MOCA		
WATERLOO, DE VOR/DME	SEA ISLE, NJ VORTAC	*2000
*1500 - MOCA		
SEA ISLE, NJ VORTAC	AVALO, NJ FIX	*4500
*4000 - GNSS MEA		
AVALO, NJ FIX	HARBO, NJ FIX	*6000
*4000 - GNSS MEA		

FROM	TO	MEA

95.6308 VOR FEDERAL AIRWAY V308 - CONTINUED

FROM	TO	MEA
HARBO, NJ FIX	*DRIFT, NJ FIX	**7500
*6000 - MRA		
**3000 - GNSS MEA		
DRIFT, NJ FIX	MANTA, NJ FIX	*12000
*3000 - GNSS MEA		
MANTA, NJ FIX	PLUME, NJ FIX	*7000
*2000 - MOCA		
*3000 - GNSS MEA		
PLUME, NJ FIX	*KOPPY, NY FIX	**4000
*5000 - MRA		
**3000 - MOCA		
**3000 - GNSS MEA		
KOPPY, NY FIX	BEADS, NY FIX	*4000
*3000 - MOCA		
*3000 - GNSS MEA		
BEADS, NY FIX	HAMPTON, NY VORTAC	*2500
*1600 - MOCA		
HAMPTON, NY VORTAC	GROTON, CT VOR/DME	2000
GROTON, CT VOR/DME	NORWICH, CT VOR/DME	2000

95.6309 VOR FEDERAL AIRWAY V309

FROM	TO	MEA
CHARLESTON, WV VOR/DME	*JULEA, WV FIX	**5000
*5000 - MRA		
*5700 - MCA JULEA, WV FIX , NE BND		
**3200 - MOCA		
**3200 - GNSS MEA		
JULEA, WV FIX	RANDE, WV FIX	*7000
*3200 - MOCA		
*3200 - GNSS MEA		
RANDE, WV FIX	BURGS, WV FIX	*7000
*3300 - MOCA		
*3400 - GNSS MEA		
BURGS, WV FIX	BELLAIRE, OH VOR/DME	3400

95.6310 VOR FEDERAL AIRWAY V310

FROM	TO	MEA
LOUISVILLE, KY VORTAC	*DARBY, KY FIX	**3300
*5000 - MRA		
**2900 - MOCA		
DARBY, KY FIX	LONDON, KY VOR/DME	*3300
*3000 - MOCA		
LONDON, KY VOR/DME	ROSAR, KY FIX	*5500
*3800 - MOCA		
ROSAR, KY FIX	*HOLSTON MOUNTAIN, TN VORTAC	6900
*6900 - MCA HOLSTON MOUNTAIN, TN VORTAC , E BND		
HOLSTON MOUNTAIN, TN VORTAC	STAIN, TN FIX	6900
STAIN, TN FIX	*BURCH, NC FIX	8500
*8500 - MCA BURCH, NC FIX , W BND		
BURCH, NC FIX	GREENSBORO, NC VORTAC	3500
GREENSBORO, NC VORTAC	*CHAPL, NC FIX	3100
*2800 - MCA CHAPL, NC FIX , W BND		
CHAPL, NC FIX	RALEIGH/DURHAM, NC VORTAC	*2400
*1900 - MOCA		
RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	2600

FROM	TO	MEA

95.6310 VOR FEDERAL AIRWAY V310 - CONTINUED

TAR RIVER, NC VORTAC	ELIZABETH CITY, NC VOR/DME	*4000
*1600 - MOCA		
*2000 - GNSS MEA		

95.6311 VOR FEDERAL AIRWAY V311

HINCH MOUNTAIN, TN VOR/DME	DUBBS, TN FIX	5000
DUBBS, TN FIX	NELLO, GA FIX	*7000
*6400 - MOCA		
NELLO, GA FIX	*AWSON, GA FIX	**7000
*5000 - MRA		
**5500 - MOCA		
AWSON, GA FIX	CORCE, GA FIX	4600
CORCE, GA FIX	ELECTRIC CITY, SC VORTAC	3800
ELECTRIC CITY, SC VORTAC	GREENWOOD, SC VORTAC	2500
GREENWOOD, SC VORTAC	COLUMBIA, SC VORTAC	2400
COLUMBIA, SC VORTAC	*ERNIE, SC FIX	2000
*2500 - MRA		
ERNIE, SC FIX	SACKS, SC FIX	2000
SACKS, SC FIX	CHARLESTON, SC VORTAC	2100

95.6312 VOR FEDERAL AIRWAY V312

POLLA, MD FIX	TACKS, MD FIX	2200 MAA - 13000
TACKS, MD FIX	WOODSTOWN, NJ VORTAC	*2000
*1500 - MOCA		
WOODSTOWN, NJ VORTAC	COYLE, NJ VORTAC	2100
COYLE, NJ VORTAC	*DRIFT, NJ FIX	2000
*6000 - MRA		
DRIFT, NJ FIX	*PREPI, OA FIX	**4800
*8000 - MRA		
**2500 - GNSS MEA		

95.6313 VOR FEDERAL AIRWAY V313

MALDEN, MO VORTAC	CAPE GIRARDEAU, MO VOR/DME	2300
CAPE GIRARDEAU, MO VOR/DME	GENTS, IL FIX	3500
GENTS, IL FIX	CENTRALIA, IL VORTAC	*3000
*2400 - MOCA		
CENTRALIA, IL VORTAC	ADDERS, IL VORTAC	2500
ADDERS, IL VORTAC	PONTIAC, IL VOR/DME	3000

95.6314 VOR FEDERAL AIRWAY V314

U.S. CANADIAN BORDER	*PATTA, ME FIX	**6000
*10000 - MRA		
**3900 - MOCA		
PATTA, ME FIX	MILLINOCKET, ME VOR/DME	*6000
*3900 - MOCA		

FROM	TO	MEA

95.6315 VOR FEDERAL AIRWAY V315

PARIS, TX VOR/DME	RICH MOUNTAIN, OK VORTAC	4200

95.6316 VOR FEDERAL AIRWAY V316

IRONWOOD, MI VOR/DME *3700 - MOCA	SAWYER, MI VOR/DME	*6000
SAULT STE MARIE, MI VOR/DME *2800 - MOCA	U.S. CANADIAN BORDER	*5000

95.6317 VOR FEDERAL AIRWAY V317

MISSION BAY, CA VORTAC	POGGI, CA VORTAC	4500
POGGI, CA VORTAC	IMPERIAL, CA VORTAC	7000

95.6318 VOR FEDERAL AIRWAY V318

U.S. CANADIAN BORDER *3900 - MOCA	HOULTON, ME VOR/DME	*9000
HOULTON, ME VOR/DME	U.S. CANADIAN BORDER	1900

95.6319 VOR FEDERAL AIRWAY V319

BOYSEN RESERVOIR, WY VOR/DME	WORLAND, WY VOR/DME	9600
WORLAND, WY VOR/DME	ALVIL, WY FIX	7000
ALVIL, WY FIX	CODY, WY VOR/DME	8500

95.6320 VOR FEDERAL AIRWAY V320

PELLSTON, MI VORTAC	TRAVERSE CITY, MI VOR/DME	3000
TRAVERSE CITY, MI VOR/DME	MOUNT PLEASANT, MI VOR/DME	5000
MOUNT PLEASANT, MI VOR/DME	SAGINAW, MI VOR/DME	2600

95.6321 VOR FEDERAL AIRWAY V321

PECAN, GA VOR/DME	KUTVE, GA FIX	2000
KUTVE, GA FIX *5000 - MCA PREST, GA FIX , NW BND	*PREST, GA FIX	2600
PREST, GA FIX *5000 - MCA COLUMBUS, GA VORTAC , SE BND **3300 - MOCA	*COLUMBUS, GA VORTAC	**5000
COLUMBUS, GA VORTAC	LAGRANGE, GA VORTAC	2500
LAGRANGE, GA VORTAC *3400 - MOCA	HEFIN, AL FIX	*4000
HEFIN, AL FIX	GADSDEN, AL VOR/DME	4000
GADSDEN, AL VOR/DME	OWENT, AL FIX	3000
OWENT, AL FIX	ROCKET, AL VORTAC	3700
ROCKET, AL VORTAC	SHELBYVILLE, TN VOR/DME	3000
SHELBYVILLE, TN VOR/DME	LIVINGSTON, TN VOR/DME	3800

95.6322 VOR FEDERAL AIRWAY V322

FROM	TO	MEA
CONCORD, NH VOR/DME	GRUMP, NH FIX	4000
GRUMP, NH FIX	*NOTTY, NH FIX	5000
*6000 - MCA NOTTY, NH FIX , N BND		
NOTTY, NH FIX	WYLIE, ME FIX	*7000
*5600 - MOCA		
WYLIE, ME FIX	BUKER, NH FIX	*7000
*6000 - MOCA		
BUKER, NH FIX	BERLIN, NH VOR/DME	*6000
*5100 - MOCA		
BERLIN, NH VOR/DME	U.S. CANADIAN BORDER	#6500
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6323 VOR FEDERAL AIRWAY V323

FROM	TO	MEA
MONTGOMERY, AL VORTAC	EUFAULA, AL VORTAC	2400
EUFAULA, AL VORTAC	BYROE, GA FIX	*3000
*2100 - MOCA		
BYROE, GA FIX	MACON, GA VORTAC	2300
MACON, GA VORTAC	NALIZ, GA FIX	*3000
*2500 - MOCA		
NALIZ, GA FIX	WEMOB, GA FIX	*3000
*2100 - MOCA		
WEMOB, GA FIX	HUSKY, GA FIX	*3000
*2200 - MOCA		

95.6324 VOR FEDERAL AIRWAY V324

FROM	TO	MEA
GILLETTE, WY VOR/DME	*CRAZY WOMAN, WY VOR/DME	7500
*9500 - MCA CRAZY WOMAN, WY VOR/DME , W BND		
CRAZY WOMAN, WY VOR/DME	CHAPY, WY FIX	12000
CHAPY, WY FIX	WORLAND, WY VOR/DME	
	E BND	12000
	W BND	8000

95.6325 VOR FEDERAL AIRWAY V325

FROM	TO	MEA
COLUMBIA, SC VORTAC	*VESTO, GA FIX	8000
*8000 - MCA VESTO, GA FIX , E BND		
VESTO, GA FIX	ATHENS, GA VOR/DME	
	W BND	2500
	E BND	8000
ATHENS, GA VOR/DME	WOMAC, GA FIX	3700
WOMAC, GA FIX	LOGEN, GA FIX	*4600
*3700 - MOCA		
CARAN, GA FIX	GADSDEN, AL VOR/DME	*5000
*4200 - MOCA		
GADSDEN, AL VOR/DME	MASHA, AL FIX	3500
MASHA, AL FIX	MUSCLE SHOALS, AL VORTAC	2500

95.6326 VOR FEDERAL AIRWAY V326

FROM	TO	MEA
FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	5000

FROM	TO	MEA

95.6327 VOR FEDERAL AIRWAY V327

PHOENIX, AZ VORTAC	KNOBB, AZ FIX	8000
KNOBB, AZ FIX	RADOM, AZ FIX	
	S BND	8000
	N BND	11000
RADOM, AZ FIX	*FERER, AZ FIX	
	N BND	**12000
	S BND	**11000
*12000 - MRA		
*11000 - MCA FERER, AZ FIX , S BND		
**8400 - MOCA		
**9000 - GNSS MEA		
FERER, AZ FIX	OATES, AZ FIX	**12000
**9400 - MOCA		
**10000 - GNSS MEA		
OATES, AZ FIX	*FLAGSTAFF, AZ VOR/DME	#*10500
*11000 - MCA FLAGSTAFF, AZ VOR/DME , NE BND		
#MTA V327 N TO V291 E 11000		

95.6328 VOR FEDERAL AIRWAY V328

JACKSON, WY VOR/DME	BIG PINEY, WY VOR/DME	#13500
#MTA V328 NW TO V465 SW 15100		
BIG PINEY, WY VOR/DME	ROCK SPRINGS, WY VOR/DME	*10000
*9700 - MOCA		
ROCK SPRINGS, WY VOR/DME	SNAKY, WY FIX	11000
SNAKY, WY FIX	CELIA, CO FIX	*12000
*10000 - GNSS MEA		
CELIA, CO FIX	HAYDEN, CO VOR/DME	10000
HAYDEN, CO VOR/DME	HABRO, CO FIX	10000
HABRO, CO FIX	KREMMLING, CO VOR/DME	13000
KREMMLING, CO VOR/DME	*SKEED, CO FIX	**16500
*16500 - MRA		
**15800 - MOCA		
SKEED, CO FIX	*POWDR, CO FIX	14500
*15600 - MRA		
POWDR, CO FIX	MILE HIGH, CO VORTAC	14000

95.6330 VOR FEDERAL AIRWAY V330

WILDHORSE, OR VOR/DME	BOISE, ID VORTAC	8000
BOISE, ID VORTAC	CANEK, ID FIX	7000
CANEK, ID FIX	ALKAL, ID FIX	*9500
*8500 - MOCA		
ALKAL, ID FIX	TORIN, ID FIX	
	E BND	*8000
	W BND	*9500
*6700 - MOCA		
TORIN, ID FIX	*KINZE, ID FIX	8000
*8000 - MCA KINZE, ID FIX , W BND		
IDAHO FALLS, ID VOR/DME	*OSITY, ID FIX	8000
*9500 - MCA OSITY, ID FIX , E BND		
OSITY, ID FIX	*JACKSON, WY VOR/DME	#14000
*13400 - MCA JACKSON, WY VOR/DME , W BND		
#MTA V330 E TO V520 W 16000		
JACKSON, WY VOR/DME	DUNOIR, WY VOR/DME	13000
DUNOIR, WY VOR/DME	*ROWEY, WY FIX	**14000
*11000 - MCA ROWEY, WY FIX , W BND		
**13500 - MOCA		
ROWEY, WY FIX	RIVERTON, WY VOR/DME	8800

95.6310 VOR FEDERAL AIRWAY V330 - CONTINUED

RIVERTON, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	8500

95.6331 VOR FEDERAL AIRWAY V331

HAZARD, KY VOR/DME	NEWCOMBE, KY VORTAC	*4000
*3500 - MOCA		

95.6332 VOR FEDERAL AIRWAY V332

FRIANT, CA VORTAC	HANGTOWN, CA VOR/DME	8500
HANGTOWN, CA VOR/DME	RED BLUFF, CA VORTAC	6000

95.6333 VOR FEDERAL AIRWAY V333

DALAS, GA FIX	ROME, GA VORTAC	*4000
*3200 - MOCA		
ROME, GA VORTAC	CHOO CHOO, TN VORTAC	4000
CHOO CHOO, TN VORTAC	*BOOPS, TN FIX	3500
*4500 - MRA		
BOOPS, TN FIX	HINCH MOUNTAIN, TN VOR/DME	5000
HINCH MOUNTAIN, TN VOR/DME	JELLO, TN FIX	5000
JELLO, TN FIX	DOLLY, KY FIX	4000
DOLLY, KY FIX	LEXINGTON, KY VOR/DME	3800

95.6334 VOR FEDERAL AIRWAY V334

SAN JOSE, CA VOR/DME	*OAKEY, CA FIX	5000
*3000 - MCA OAKEY, CA FIX , S BND		
OAKEY, CA FIX	SACRAMENTO, CA VORTAC	2500

95.6335 VOR FEDERAL AIRWAY V335

ST LOUIS, MO VORTAC	ARNOL, IL FIX	2800
ARNOL, IL FIX	*GLASS, MO FIX	**3000
*4500 - MRA		
**2100 - MOCA		
GLASS, MO FIX	NIKEL, IL FIX	*4500
*2200 - MOCA		
*3500 - GNSS MEA		
NIKEL, IL FIX	MARION, IL VOR/DME	2400

95.6336 VOR FEDERAL AIRWAY V336

ELLENSBURG, WA VOR/DME	*QUINT, WA FIX	7100
*6500 - MCA QUINT, WA FIX , SW BND		
QUINT, WA FIX	EPHRATA, WA VORTAC	5000

FROM	TO	MEA

95.6338 VOR FEDERAL AIRWAY V338

LINDEN, CA VOR/DME	*HANGTOWN, CA VOR/DME	5000
*7000 - MCA HANGTOWN, CA VOR/DME , NE BND		
HANGTOWN, CA VOR/DME	SQUAW VALLEY, CA VOR/DME	11000

95.6339 VOR FEDERAL AIRWAY V339

HAZARD, KY VOR/DME	TRENT, KY FIX	4000
TRENT, KY FIX	FALMOUTH, KY VOR/DME	3500

95.6340 VOR FEDERAL AIRWAY V340

BEARZ, IN FIX	KNOX, IN VOR/DME	3000
KNOX, IN VOR/DME	FORT WAYNE, IN VORTAC	3000

95.6341 VOR FEDERAL AIRWAY V341

CEDAR RAPIDS, IA VOR/DME	DUBUQUE, IA VORTAC	2900
DUBUQUE, IA VORTAC	*BAULK, WI FIX	3600
*4000 - MRA		
BAULK, WI FIX	MADISON, WI VORTAC	3600
MADISON, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	GREEN BAY, WI VORTAC	*3000
*2300 - MOCA		
GREEN BAY, WI VORTAC	MENOMINEE, MI VOR/DME	2600
MENOMINEE, MI VOR/DME	HAVEL, MI FIX	2500
HAVEL, MI FIX	IRON MOUNTAIN, MI VOR/DME	3300
IRON MOUNTAIN, MI VOR/DME	SAWYER, MI VOR/DME	3100
SAWYER, MI VOR/DME	HOUGHTON, MI VOR/DME	*4500
*3400 - MOCA		

95.6343 VOR FEDERAL AIRWAY V343

*DUBOIS, ID VORTAC	RANEY, MT FIX	**15000
*8500 - MCA DUBOIS, ID VORTAC , N BND		
**13200 - MOCA		
RANEY, MT FIX	*GATEY, MT FIX	
	S BND	14000
	N BND	10200
*11500 - MCA GATEY, MT FIX , S BND		
GATEY, MT FIX	*BOZEMAN, MT VOR/DME	
	S BND	11500
	N BND	8000
*10500 - MCA BOZEMAN, MT VOR/DME , S BND		
BOZEMAN, MT VOR/DME	THESE, MT FIX	8000
THESE, MT FIX	SUZZY, MT FIX	
	E BND	8300
	W BND	10800
SUZZY, MT FIX	EVVER, MT FIX	11000

95.6344 VOR FEDERAL AIRWAY V344

DUPREE, SD VOR/DME	ABERDEEN, SD VOR/DME	*6500
*4100 - MOCA		
ABERDEEN, SD VOR/DME	FARGO, ND VOR/DME	*3900
*3000 - MOCA		

FROM	TO	MEA

95.6345 VOR FEDERAL AIRWAY V345

DELLS, WI VORTAC *2800 - MOCA	MILTO, WI FIX	*3500
MILTO, WI FIX	EAU CLAIRE, WI VORTAC	3500
EAU CLAIRE, WI VORTAC *3100 - MOCA *4000 - GNSS MEA #HAYWARD R-178 UNUSABLE USE EAU CLAIRE R-357	HAYWARD, WI VOR/DME	#*5200

95.6346 VOR FEDERAL AIRWAY V346

U.S. CANADIAN BORDER *5100 - MOCA	MILLINOCKET, ME VOR/DME	*6000

95.6347 VOR FEDERAL AIRWAY V347

LONDON, KY VOR/DME *4600 - MOCA	HINCH MOUNTAIN, TN VOR/DME	*4700

95.6348 VOR FEDERAL AIRWAY V348

U.S. CANADIAN BORDER *2800 - MOCA	U.S. CANADIAN BORDER	*15000
U.S. CANADIAN BORDER *2800 - MOCA	U.S. CANADIAN BORDER	*15000
U.S. CANADIAN BORDER *2800 - MOCA	SAULT STE MARIE, MI VOR/DME	*15000
SAULT STE MARIE, MI VOR/DME *3000 - MOCA	U.S. CANADIAN BORDER	*7000

95.6349 VOR FEDERAL AIRWAY V349

WHATCOM, WA VORTAC *2600 - MOCA	U.S. CANADIAN BORDER	*3000

95.6350 VOR FEDERAL AIRWAY V350

LIBERAL, KS VORTAC *4500 - MOCA	WICHITA, KS VORTAC	*8000
WICHITA, KS VORTAC	CHANUTE, KS VOR/DME	3600

95.6352 VOR FEDERAL AIRWAY V352

*PATTA, ME FIX *10000 - MRA	HOULTON, ME VOR/DME	6500

95.6354 VOR FEDERAL AIRWAY V354

WILL ROGERS, OK VORTAC	PIONEER, OK VORTAC	4000
PIONEER, OK VORTAC	EMPORIA, KS VORTAC	3500

95.6355 VOR FEDERAL AIRWAY V355

FROM	TO	MEA
BOWIE, TX VORTAC	WICHITA FALLS, TX VORTAC	3100

95.6356 VOR FEDERAL AIRWAY V356

FROM	TO	MEA
RED TABLE, CO VOR/DME	FISTR, CO FIX	
	NE BND	15200
	SW BND	14200
FISTR, CO FIX	FIDLE, CO FIX	15200
FIDLE, CO FIX	*ELORE, CO FIX	**16500
*12400 - MCA ELORE, CO FIX , W BND		
**15600 - MOCA		
ELORE, CO FIX	MILE HIGH, CO VORTAC	7800

95.6357 VOR FEDERAL AIRWAY V357

FROM	TO	MEA
LAKEVIEW, OR VORTAC	WILDHORSE, OR VOR/DME	*10000
*9500 - MOCA		
WILDHORSE, OR VOR/DME	POTSY, OR FIX	10000
POTSY, OR FIX	BAKER CITY, OR VOR/DME	12000
BAKER CITY, OR VOR/DME	*TOLGA, OR FIX	9000
*7000 - MCA TOLGA, OR FIX , SE BND		
TOLGA, OR FIX	*WALLA WALLA, WA VOR/DME	6700
*5300 - MCA WALLA WALLA, WA VOR/DME , SE BND		
WALLA WALLA, WA VOR/DME	MOSES LAKE, WA VOR/DME	4000
MOSES LAKE, WA VOR/DME	QUINT, WA FIX	4000
QUINT, WA FIX	WENATCHEE, WA VOR/DME	5500

95.6358 VOR FEDERAL AIRWAY V358

FROM	TO	MEA
SAN ANTONIO, TX VORTAC	GUADA, TX FIX	*4000
*2800 - MOCA		
GUADA, TX FIX	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	GOOCH SPRINGS, TX VORTAC	*3800
*3200 - MOCA		
GOOCH SPRINGS, TX VORTAC	SONET, TX FIX	3000
SONET, TX FIX	WACO, TX VORTAC	2700

95.6359 VOR FEDERAL AIRWAY V359

FROM	TO	MEA
U.S. MEXICAN BORDER	LAREDO, TX VORTAC	*3000
*2500 - MOCA		

95.6360 VOR FEDERAL AIRWAY V360

FROM	TO	MEA
SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*6000
*2600 - MOCA		

FROM	TO	MEA

95.6361 VOR FEDERAL AIRWAY V361

RATTLESNAKE, NM VORTAC	MARKE, CO FIX	
	NE BND	16300
	SW BND	9500
MARKE, CO FIX	UNLAP, CO FIX	
	NE BND	*16300
	SW BND	*11000
*10400 - MOCA		
UNLAP, CO FIX	SCRUB, CO FIX	16300
SCRUB, CO FIX	LYZZA, CO FIX	
	SW BND	16300
	NE BND	12400
LYZZA, CO FIX	MONTROSE, CO VOR/DME	
	SW BND	16300
	NE BND	9600
MONTROSE, CO VOR/DME	ICIES, CO FIX	
	S BND	10600
	N BND	15000
ICIES, CO FIX	RED TABLE, CO VOR/DME	15000
RED TABLE, CO VOR/DME	KREMMLING, CO VOR/DME	14000
KREMMLING, CO VOR/DME	BARGR, CO FIX	*16000
*15600 - MOCA		
BARGR, CO FIX	CHEYENNE, WY VORTAC	
	NE BND	9200
	SW BND	16000

95.6362 VOR FEDERAL AIRWAY V362

BRUNSWICK, GA VORTAC	*HABLE, GA FIX	**3000
*10000 - MCA HABLE, GA FIX , NW BND		
**1700 - MOCA		
HABLE, GA FIX	ALMA, GA VORTAC	*10000
*1700 - MOCA		
*3000 - GNSS MEA		
ALMA, GA VORTAC	SEYBO, GA FIX	#*5000
*1800 - MOCA		
*2000 - GNSS MEA		
#ALMA R-309 UNUSABLE, USE VIENNA R-127.		
SEYBO, GA FIX	VIENNA, GA VORTAC	2000
VIENNA, GA VORTAC	MACON, GA VORTAC	2000

95.6363 VOR FEDERAL AIRWAY V363

MISSION BAY, CA VORTAC	HURSI, CA FIX	3000
HURSI, CA FIX	OORAH, CA FIX	*4000
*2600 - MOCA		
OORAH, CA FIX	OFREE, CA FIX	*4000
*2300 - MOCA		
OFREE, CA FIX	EL TORO, CA VOR/DME	4000
EL TORO, CA VOR/DME	POMONA, CA VORTAC	4000

95.6364 VOR FEDERAL AIRWAY V364

FROM	TO	MEA
LINCO, NC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	WEAKS, NC FIX	8000
WEAKS, NC FIX	UNICO, TN FIX	*9000
*7700 - MOCA		
*7700 - GNSS MEA		
UNICO, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000

95.6365 VOR FEDERAL AIRWAY V365

FROM	TO	MEA
BURLEY, ID VOR/DME	IDAHO FALLS, ID VOR/DME	8000
IDAHO FALLS, ID VOR/DME	RIGBY, ID FIX	7600
RIGBY, ID FIX	*SABAT, ID FIX	8000
*10000 - MRA		
LIVINGSTON, MT VOR/DME	*BOZEMAN, MT VOR/DME	10900
*10200 - MCA BOZEMAN, MT VOR/DME , E BND		
BOZEMAN, MT VOR/DME	*MENAR, MT FIX	8700
*9200 - MCA MENAR, MT FIX , NW BND		
MENAR, MT FIX	SWEDD, MT FIX	*10000
*9400 - MOCA		
SWEDD, MT FIX	HELENA, MT VORTAC	10000
HELENA, MT VORTAC	WOKEN, MT FIX	9000
WOKEN, MT FIX	*SHIMY, MT FIX	**9500
*7000 - MRA		
**7500 - MOCA		
SHIMY, MT FIX	CHOTE, MT FIX	*9500
*7000 - MOCA		
CHOTE, MT FIX	CUT BANK, MT VOR/DME	7000

95.6366 VOR FEDERAL AIRWAY V366

FROM	TO	MEA
HUGO, CO VOR/DME	FALCON, CO VORTAC	8500

95.6367 VOR FEDERAL AIRWAY V367

FROM	TO	MEA
INTERNATIONAL FALLS, MN VOR/DME	U.S. CANADIAN BORDER	3000

95.6368 VOR FEDERAL AIRWAY V368

FROM	TO	MEA
ALAMOSA, CO VORTAC	RODDS, CO FIX	
	W BND	13000
	E BND	10000
RODDS, CO FIX	*WAPRE, CO FIX	13000
*14000 - MRA		
WAPRE, CO FIX	MANUL, NM FIX	13000
MANUL, NM FIX	TURLY, NM FIX	
	E BND	11000
	W BND	9700
TURLY, NM FIX	RATTLESNAKE, NM VORTAC	9000

FROM	TO	MEA

95.6369 VOR FEDERAL AIRWAY V369

NAVASOTA, TX VOR/DME	GROESBECK, TX VOR/DME	2300
GROESBECK, TX VOR/DME	MAVERICK, TX VOR/DME	3600

95.6370 VOR FEDERAL AIRWAY V370

LOS ANGELES, CA VORTAC	PRADO, CA FIX	4000
PRADO, CA FIX	PARADISE, CA VORTAC	5000
PARADISE, CA VORTAC	*SETER, CA FIX	5500
*12000 - MCA SETER, CA FIX , E BND		
SETER, CA FIX	BANDS, CA FIX	
	E BND	13000
	W BND	9000
BANDS, CA FIX	*PALM SPRINGS, CA VORTAC	13000
*11800 - MCA PALM SPRINGS, CA VORTAC , W BND		
*6200 - MCA PALM SPRINGS, CA VORTAC , N BND		
PALM SPRINGS, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	7600

95.6371 VOR FEDERAL AIRWAY V371

BOILER, IN VORTAC	KNOX, IN VOR/DME	2500

95.6372 VOR FEDERAL AIRWAY V372

SEAL BEACH, CA VORTAC	*JOGIT, CA FIX	4000
*6000 - MCA JOGIT, CA FIX , E BND		
JOGIT, CA FIX	*KAYOH, CA FIX	6000
*7400 - MCA KAYOH, CA FIX , E BND		
KAYOH, CA FIX	*HOMELAND, CA VOR	8000
*11200 - MCA HOMELAND, CA VOR , NE BND		
HOMELAND, CA VOR	BANDS, CA FIX	
	E BND	13000
	W BND	8000
BANDS, CA FIX	*PALM SPRINGS, CA VORTAC	13000
*11800 - MCA PALM SPRINGS, CA VORTAC , W BND		
PALM SPRINGS, CA VORTAC	BLYTHE, CA VORTAC	8000

95.6373 VOR FEDERAL AIRWAY V373

GREENSBORO, NC VORTAC	SANDHILLS, NC VORTAC	3600

95.6374 VOR FEDERAL AIRWAY V374

BINGHAMTON, NY VOR/DME	*GAYEL, NY FIX	**10000
*10000 - MCA GAYEL, NY FIX , NW BND		
**4400 - MOCA		
**4400 - GNSS MEA		
GAYEL, NY FIX	VOLLU, NY FIX	*5000
*3200 - MOCA		
VOLLU, NY FIX	CARMEL, NY VOR/DME	2600
CARMEL, NY VOR/DME	*BETHA, CT FIX	2500
*8000 - MRA		
BETHA, CT FIX	CREAM, NY FIX	2500
CREAM, NY FIX	KURTY, CT FIX	2500
KURTY, CT FIX	GROTON, CT VOR/DME	3000

95.6310 VOR FEDERAL AIRWAY V374 - CONTINUED

FROM	TO	MEA
..GROTON, CT VOR/DME	MINNK, RI FIX	*3000
*1500 - MOCA		
MINNK, RI FIX	MARTHAS VINEYARD, MA VOR/DME	*3000
*1600 - MOCA		

95.6375 VOR FEDERAL AIRWAY V375

FROM	TO	MEA
ROANOKE, VA VOR/DME	PROSE, VA FIX	5000
PROSE, VA FIX	ROMAN, VA FIX	6500
ROMAN, VA FIX	GORDONSVILLE, VA VORTAC	4000
GORDONSVILLE, VA VORTAC	*HANEY, VA FIX	2800
*7000 - MRA		
HANEY, VA FIX	FLUKY, VA FIX	2600

95.6376 VOR FEDERAL AIRWAY V376

FROM	TO	MEA
RICHMOND, VA VORTAC	*GRUBY, VA FIX	2000
*3000 - MCA GRUBY, VA FIX , N BND		
GRUBY, VA FIX	IRONS, MD FIX	*4500
*1700 - MOCA		

95.6377 VOR FEDERAL AIRWAY V377

FROM	TO	MEA
MONTEBELLO, VA VOR/DME	KESSEL, WV VOR/DME	*6000
*5500 - MOCA		
KESSEL, WV VOR/DME	*TOMAC, WV FIX	4900
*4300 - MCA TOMAC, WV FIX , SW BND		
TOMAC, WV FIX	HAGERSTOWN, MD VOR	4000
HAGERSTOWN, MD VOR	HARRISBURG, PA VORTAC	*5000
*3800 - MOCA		
*4000 - GNSS MEA		

95.6378 VOR FEDERAL AIRWAY V378

FROM	TO	MEA
BALTIMORE, MD VORTAC	*BELAY, MD FIX	2300
*9500 - MCA BELAY, MD FIX , NE BND		
BELAY, MD FIX	TROYZ, MD FIX	*9500
*4000 - GNSS MEA		
TROYZ, MD FIX	NUGGY, PA FIX	*7500
*4000 - GNSS MEA		
NUGGY, PA FIX	MODENA, PA VORTAC	*6000
*2000 - MOCA		
*4000 - GNSS MEA		

95.6379 VOR FEDERAL AIRWAY V379

FROM	TO	MEA
NOTTINGHAM, MD VORTAC	JETTA, MD FIX	1900
JETTA, MD FIX	*GRACO, MD FIX	**3000
*10000 - MRA		
**1600 - MOCA		
GRACO, MD FIX	SMYRNA, DE VORTAC	1800

FROM	TO	MEA

95.6380 VOR FEDERAL AIRWAY V380

FROM	TO	MEA
O'NEILL, NE VORTAC *3500 - MOCA	WOLBACH, NE VORTAC	*4000
WOLBACH, NE VORTAC *3300 - MOCA	GRAND ISLAND, NE VOR/DME	*4000
GRAND ISLAND, NE VOR/DME	HASTINGS, NE VOR/DME	4000
HASTINGS, NE VOR/DME	MANKATO, KS VORTAC	3900

95.6381 VOR FEDERAL AIRWAY V381

FROM	TO	MEA
BISHOP, CA VOR/DME *13000 - MCA NIKOL, CA FIX , SE BND **12300 - MOCA	*NIKOL, CA FIX	**13000

95.6382 VOR FEDERAL AIRWAY V382

FROM	TO	MEA
GRAND JUNCTION, CO VOR/DME *14000 - MCA CONES, CO VOR/DME , SE BND	*CONES, CO VOR/DME	12000
CONES, CO VOR/DME *12000 - MCA DURANGO, CO VOR/DME , NW BND	*DURANGO, CO VOR/DME	15300

95.6384 VOR FEDERAL AIRWAY V384

FROM	TO	MEA
LIVINGSTON, TN VOR/DME	VOLUNTEER, TN VORTAC	6100

95.6385 VOR FEDERAL AIRWAY V385

FROM	TO	MEA
LUBBOCK, TX VORTAC *4700 - MOCA	WAGUN, TX FIX	*8000
WAGUN, TX FIX *3900 - MOCA	ABILENE, TX VORTAC	*8000

95.6386 VOR FEDERAL AIRWAY V386

FROM	TO	MEA
SAN MARCUS, CA VORTAC *9000 - MRA	*OHIGH, CA FIX	8000
OHIGH, CA FIX *6100 - MCA FILLMORE, CA VORTAC , W BND	*FILLMORE, CA VORTAC	8000
FILLMORE, CA VORTAC *6300 - MCA SAUGS, CA FIX , NE BND	*SAUGS, CA FIX	6000
SAUGS, CA FIX	PALMDALE, CA VORTAC	7000
PALMDALE, CA VORTAC	APLES, CA FIX	7000
APLES, CA FIX	SOGGI, CA FIX	
	E BND	11000
	W BND	9000
SOGGI, CA FIX *9400 - MOCA	YUCCA, CA FIX	*11000
YUCCA, CA FIX *7600 - MCA PALM SPRINGS, CA VORTAC , NW BND **8200 - MOCA	*PALM SPRINGS, CA VORTAC	**9000

FROM	TO	MEA

95.6387 VOR FEDERAL AIRWAY V387

MC ALLEN, TX VOR/DME	U.S. MEXICAN BORDER	2000

95.6388 VOR FEDERAL AIRWAY V388

PARADISE, CA VORTAC	ACINS, CA FIX	
	E BND	7000
	W BND	5000
ACINS, CA FIX	DEWAY, CA FIX	9500
DEWAY, CA FIX	*PALM SPRINGS, CA VORTAC	9500
*6300 - MCA PALM SPRINGS, CA VORTAC , W BND		

95.6389 VOR FEDERAL AIRWAY V389

CIMARRON, NM VORTAC	*FOGLE, NM FIX	**11600
*15600 - MRA		
**10700 - MOCA		
FOGLE, NM FIX	*EARLS, CO FIX	**15600
*11600 - MRA		
**12000 - MOCA		
EARLS, CO FIX	RADIO, CO FIX	*11600
*8500 - MOCA		
RADIO, CO FIX	PUEBLO, CO VORTAC	8200
PUEBLO, CO VORTAC	DRAKE, CO FIX	7600
DRAKE, CO FIX	FALCON, CO VORTAC	9000

95.6390 VOR FEDERAL AIRWAY V390

TUCUMCARI, NM VORTAC	BORGER, TX VORTAC	6500
BORGER, TX VORTAC	MITBEE, OK VORTAC	4800

95.6391 VOR FEDERAL AIRWAY V391

RATTLESNAKE, NM VORTAC	PLATA, NM FIX	10000
PLATA, NM FIX	CORTEZ, CO VOR/DME	10600
CORTEZ, CO VOR/DME	DOVE CREEK, CO VORTAC	9800
DOVE CREEK, CO VORTAC	PAROX, CO FIX	*12000
*10500 - MOCA		
PAROX, CO FIX	*GRAND JUNCTION, CO VOR/DME	12000
*10700 - MCA GRAND JUNCTION, CO VOR/DME , S BND		
GRAND JUNCTION, CO VOR/DME	BONGO, UT FIX	10800
BONGO, UT FIX	*VERNAL, UT VOR/DME	8400
*9500 - MCA VERNAL, UT VOR/DME , N BND		
VERNAL, UT VOR/DME	ROCK SPRINGS, WY VOR/DME	11800

95.6392 VOR FEDERAL AIRWAY V392

OAKLAND, CA VOR/DME	*SALAD, CA FIX	4000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	*OAKEY, CA FIX	5000
*3000 - MCA OAKEY, CA FIX , S BND		
OAKEY, CA FIX	SACRAMENTO, CA VORTAC	2500
SACRAMENTO, CA VORTAC	ROZZY, CA FIX	*3500
*2300 - MOCA		
ROZZY, CA FIX	HAGAN, CA FIX	4000

95.6386 VOR FEDERAL AIRWAY V392 - CONTINUED

FROM	TO	MEA
HAGAN, CA FIX	*AUDIO, CA FIX	**6000
*9000 - MCA AUDIO, CA FIX , NE BND		
**4500 - MOCA		
AUDIO, CA FIX	CONYO, CA FIX	
	N BND	10000
	S BND	8000
CONYO, CA FIX	SIGNA, CA FIX	11000
SIGNA, CA FIX	MUSTANG, NV VORTAC	11500

95.6393 VOR FEDERAL AIRWAY V393

FROM	TO	MEA
*TUCSON, AZ VORTAC	NOGALES, AZ VOR/DME	11500
*9000 - MCA TUCSON, AZ VORTAC , S BND		
NOGALES, AZ VOR/DME	U.S. MEXICAN BORDER	*13000
*8800 - MOCA		
U.S. MEXICAN BORDER	HERMOSILLO, MX VOR/DME	000

95.6394 VOR FEDERAL AIRWAY V394

FROM	TO	MEA
SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*POMONA, CA VORTAC	4000
*10400 - MCA POMONA, CA VORTAC , NE BND		
POMONA, CA VORTAC	CALBE, CA FIX	
	SW BND	5700
	NE BND	10800
CALBE, CA FIX	MEANT, CA FIX	
	SW BND	10700
	NE BND	11500
MEANT, CA FIX	*APLES, CA FIX	11800
*9200 - MCA APLES, CA FIX , SW BND		
APLES, CA FIX	BASAL, CA FIX	7900
BASAL, CA FIX	DAGGETT, CA VORTAC	7500
DAGGETT, CA VORTAC	*OASYS, NV FIX	**12000
*10400 - MCA OASYS, NV FIX , SW BND		
**9500 - MOCA		
**10000 - GNSS MEA		
OASYS, NV FIX	LAS VEGAS, NV VORTAC	9000
LAS VEGAS, NV VORTAC	MORMON MESA, NV VORTAC	*7500
*6500 - MOCA		

95.6395 VOR FEDERAL AIRWAY V395

FROM	TO	MEA
*TUCSON, AZ VORTAC	NOGALES, AZ VOR/DME	10000
*9000 - MCA TUCSON, AZ VORTAC , S BND		
NOGALES, AZ VOR/DME	U.S. MEXICAN BORDER	*10000
*6500 - MOCA		

95.6397 VOR FEDERAL AIRWAY V397

FROM	TO	MEA
MONROE, LA VORTAC	RUTTS, AR FIX	*6000
*1600 - MOCA		
RUTTS, AR FIX	GREENVILLE, MS VOR/DME	2000
GREENVILLE, MS VOR/DME	MARVELL, AR VOR/DME	1900

95.6398 VOR FEDERAL AIRWAY V398

FROM	TO	MEA
ABERDEEN, SD VOR/DME	WATERTOWN, SD VORTAC	3600
WATERTOWN, SD VORTAC	REDWOOD FALLS, MN VOR/DME	3800
REDWOOD FALLS, MN VOR/DME	*ALMAY, MN FIX	**3400
*5000 - MRA		
**2700 - MOCA		
ALMAY, MN FIX	KASPR, MN FIX	*3400
*2700 - MOCA		
KASPR, MN FIX	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	WAUKON, IA VOR/DME	3000
WAUKON, IA VOR/DME	LONE ROCK, WI VOR/DME	3000

95.6399 VOR FEDERAL AIRWAY V399

FROM	TO	MEA
BRICKYARD, IN VORTAC	JAKKS, IN FIX	2700
JAKKS, IN FIX	BOILER, IN VORTAC	2500
BOILER, IN VORTAC	KENLA, IL FIX	2600
KENLA, IL FIX	PEOTONE, IL VORTAC	2400

95.6400 VOR FEDERAL AIRWAY V400

FROM	TO	MEA
PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	*6000
*4000 - MOCA		

95.6401 VOR FEDERAL AIRWAY V401

FROM	TO	MEA
WORLAND, WY VOR/DME	RANKK, WY FIX	
	SE BND	11000
	NW BND	7000
RANKK, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	11000

95.6402 VOR FEDERAL AIRWAY V402

FROM	TO	MEA
TUCUMCARI, NM VORTAC	MOSER, TX FIX	6300
MOSER, TX FIX	PANHANDLE, TX VORTAC	*6000
*5500 - MOCA		
PANHANDLE, TX VORTAC	*BRISC, TX FIX	**7000
*8000 - MCA BRISC, TX FIX , NE BND		
**5000 - MOCA		
BRISC, TX FIX	*MITBEE, OK VORTAC	**8000
*8000 - MCA MITBEE, OK VORTAC , SW BND		
**4500 - MOCA		

95.6403 VOR FEDERAL AIRWAY V403

FROM	TO	MEA
BELAY, MD FIX	SPERY, PA FIX	*10000
*2100 - MOCA		
*3000 - GNSS MEA		
SPERY, PA FIX	POTTSTOWN, PA VORTAC	*3000
*2100 - MOCA		
POTTSTOWN, PA VORTAC	SOLBERG, NJ VOR/DME	*6000
*2200 - MOCA		

FROM	TO	MEA

95.6404 VOR FEDERAL AIRWAY V404

FROM	TO	MEA
CHILDRESS, TX VORTAC	*SNEED, TX FIX	4700
*5000 - MRA		
SNEED, TX FIX	WICHITA FALLS, TX VORTAC	
	E BND	3000
	W BND	4700

95.6405 VOR FEDERAL AIRWAY V405

FROM	TO	MEA
BELAY, MD FIX	SPERY, PA FIX	*10000
*2100 - MOCA		
*3000 - GNSS MEA		
SPERY, PA FIX	POTTSTOWN, PA VORTAC	*3000
*2100 - MOCA		
POTTSTOWN, PA VORTAC	*LANNA, NJ FIX	6000
*5000 - MRA		
*6000 - MCA LANNA, NJ FIX , SW BND		
LANNA, NJ FIX	SOLBERG, NJ VOR/DME	2700
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	*3000
*2500 - MOCA		
CARMEL, NY VOR/DME	CASSH, NY FIX	3000
CASSH, NY FIX	PAWLING, NY VOR/DME	3100
PAWLING, NY VOR/DME	COBOL, MA FIX	*4000
*3500 - MOCA		
COBOL, MA FIX	BARNES, MA VORTAC	3500
BARNES, MA VORTAC	PUTNAM, CT VOR/DME	*3000
*2500 - MOCA		
PUTNAM, CT VOR/DME	PROVIDENCE, RI VOR/DME	*3000
*2100 - MOCA		
PROVIDENCE, RI VOR/DME	FALMA, RI FIX	*3000
*1400 - MOCA		
FALMA, RI FIX	MARTHAS VINEYARD, MA VOR/DME	*3000
*1600 - MOCA		

95.6407 VOR FEDERAL AIRWAY V407

FROM	TO	MEA
BROWNSVILLE, TX VORTAC	HARLINGEN, TX VOR/DME	1600
HARLINGEN, TX VOR/DME	JIMIE, TX FIX	
	N BND	*6000
	S BND	*1700
*1700 - GNSS MEA		
JIMIE, TX FIX	JETTY, TX FIX	*6000
*1800 - MOCA		
*2000 - GNSS MEA		
JETTY, TX FIX	CORPUS CHRISTI, TX VORTAC	
	N BND	*2100
	S BND	*3800
*2100 - GNSS MEA		
CORPUS CHRISTI, TX VORTAC	PALACIOS, TX VORTAC	1700
PALACIOS, TX VORTAC	GLAND, TX FIX	*4000
*1600 - MOCA		
GLAND, TX FIX	HUMBLE, TX VORTAC	*2500
*1900 - MOCA		
HUMBLE, TX VORTAC	DAISETTA, TX VORTAC	2000
DAISETTA, TX VORTAC	LUFKIN, TX VORTAC	2000
LUFKIN, TX VORTAC	ELM GROVE, LA VORTAC	*4000
*2000 - MOCA		
ELM GROVE, LA VORTAC	EL DORADO, AR VOR/DME	2000

FROM	TO	MEA

95.6408 VOR FEDERAL AIRWAY V408

ROBRT, MD FIX	VINNY, PA FIX	5000
VINNY, PA FIX	MODENA, PA VORTAC	3500
MODENA, PA VORTAC	POTTSTOWN, PA VORTAC	2400
POTTSTOWN, PA VORTAC	*HIKES, PA FIX	2900
*4000 - MRA		
HIKES, PA FIX	EAST TEXAS, PA VOR/DME	2900
EAST TEXAS, PA VOR/DME	ALLENTOWN, PA VORTAC	#3000
#ALLENTOWN R-240 UNUSABLE BELOW 9000 USE EAST TEXAS R-059		

95.6409 VOR FEDERAL AIRWAY V409

CHARLOTTE, NC VOR/DME	LOCAS, NC FIX	3100
LOCAS, NC FIX	LIBERTY, NC VORTAC	*3000
*2400 - MOCA		
LIBERTY, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	3100

95.6411 VOR FEDERAL AIRWAY V411

LONE ROCK, WI VOR/DME	WAUKON, IA VOR/DME	3000
WAUKON, IA VOR/DME	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	FARMINGTON, MN VORTAC	3000

95.6412 VOR FEDERAL AIRWAY V412

REDWOOD FALLS, MN VOR/DME	FLYING CLOUD, MN VOR/DME	2800

95.6413 VOR FEDERAL AIRWAY V413

GOPHER, MN VORTAC	BITLR, WI FIX	3400
BITLR, WI FIX	EAU CLAIRE, WI VORTAC	*3500
*2800 - MOCA		
EAU CLAIRE, WI VORTAC	RUSSH, WI FIX	
	SW BND	*6000
	NE BND	*8000
*2900 - MOCA		MAA - 17500
RUSSH, WI FIX	IRONWOOD, MI VOR/DME	8000

95.6415 VOR FEDERAL AIRWAY V415

MONTGOMERY, AL VORTAC	SEMAN, AL FIX	2300
SEMAN, AL FIX	GIFFY, AL FIX	*4000
*3300 - MOCA		
GIFFY, AL FIX	FELTO, GA FIX	*6000
*3400 - MOCA		
FELTO, GA FIX	GORGO, GA FIX	*5000
*4000 - MOCA		
GORGO, GA FIX	ROME, GA VORTAC	4000
ROME, GA VORTAC	NELLO, GA FIX	5600
NELLO, GA FIX	ANNYE, GA FIX	6000
ANNYE, GA FIX	FOOTHILLS, SC VOR/DME	5000
FOOTHILLS, SC VOR/DME	PELAM, SC FIX	4000
PELAM, SC FIX	SPARTANBURG, SC VORTAC	*3000
*2400 - MOCA		
SPARTANBURG, SC VORTAC	LOCKS, SC FIX	2300

FROM	TO	MEA

95.6417 VOR FEDERAL AIRWAY V417

MERIDIAN, MS VORTAC	CRIMSON, AL VORTAC	2000
CRIMSON, AL VORTAC	VULCAN, AL VORTAC	2400
VULCAN, AL VORTAC	ROME, GA VORTAC	4000
ROME, GA VORTAC	NELLO, GA FIX	5600
NELLO, GA FIX	*AWSON, GA FIX	**7000
*5000 - MRA		
**5500 - MOCA		
AWSON, GA FIX	CORCE, GA FIX	4600
CORCE, GA FIX	IRMOS, GA FIX	3800
IRMOS, GA FIX	ATHENS, GA VOR/DME	3100
ATHENS, GA VOR/DME	COLLIERS, SC VORTAC	2500
COLLIERS, SC VORTAC	ALLENDALE, SC VOR	3000
ALLENDALE, SC VOR	*STOAS, SC FIX	**6000
*6000 - MCA STOAS, SC FIX , W BND		
**2000 - GNSS MEA		
STOAS, SC FIX	CHARLESTON, SC VORTAC	2000

95.6419 VOR FEDERAL AIRWAY V419

WESTMINSTER, MD VORTAC	MODENA, PA VORTAC	*3000
*2400 - MOCA		
MODENA, PA VORTAC	*MAZIE, PA FIX	3000
*5000 - MRA		
MAZIE, PA FIX	*HARRS, PA FIX	2500
*5000 - MRA		
HARRS, PA FIX	*BIGGY, NJ FIX	2500
*5000 - MRA		
BIGGY, NJ FIX	SOLBERG, NJ VOR/DME	2500
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	*3000
*2500 - MOCA		
CARMEL, NY VOR/DME	BRISS, CT FIX	3000

95.6420 VOR FEDERAL AIRWAY V420

GREEN BAY, WI VORTAC	TRAVERSE CITY, MI VOR/DME	3500
TRAVERSE CITY, MI VOR/DME	GAYLORD, MI VOR/DME	#3000
#TRAVERSE CITY R-062 UNUSABLE USE GAYLORD R-247		
GAYLORD, MI VOR/DME	ALPENA, MI VORTAC	3200

95.6421 VOR FEDERAL AIRWAY V421

ZUNI, NM VORTAC	GALLUP, NM VORTAC	9000
GALLUP, NM VORTAC	RATTLESNAKE, NM VORTAC	10000
RATTLESNAKE, NM VORTAC	*DURANGO, CO VOR/DME	9700
*13200 - MCA DURANGO, CO VOR/DME , N BND		
DURANGO, CO VOR/DME	ZEANS, CO FIX	
	N BND	16500
	S BND	12300
ZEANS, CO FIX	LAZON, CO FIX	16500
LAZON, CO FIX	POWES, CO FIX	
	S BND	16500
	N BND	15000
POWES, CO FIX	BLUE MESA, CO VOR/DME	
	S BND	16500
	N BND	12800
BLUE MESA, CO VOR/DME	WENDT, CO FIX	
	N BND	16300
	S BND	13000
WENDT, CO FIX	CAZUU, CO FIX	*16300
*14600 - MOCA		

FROM	TO	MEA

95.6421 VOR FEDERAL AIRWAY V421 - CONTINUED

CAZUU, CO FIX	SKIER, CO FIX	16300
SKIER, CO FIX	RED TABLE, CO VOR/DME	*16300
*14900 - MOCA		
RED TABLE, CO VOR/DME	KREMMLING, CO VOR/DME	14000
KREMMLING, CO VOR/DME	ROBERT, CO VOR/DME	12900
ROBERT, CO VOR/DME	HAHNS, CO FIX	*13000
*12300 - MOCA		

95.6422 VOR FEDERAL AIRWAY V422

NILES, IL FIX	CHICAGO HEIGHTS, IL VORTAC	3500
CHICAGO HEIGHTS, IL VORTAC	KNOX, IN VOR/DME	2800
KNOX, IN VOR/DME	WEBSTER LAKE, IN VOR	2700
WEBSTER LAKE, IN VOR	TWERP, OH FIX	2700
TWERP, OH FIX	FLAG CITY, OH VORTAC	2600

95.6423 VOR FEDERAL AIRWAY V423

WILLIAMSPORT, PA VOR/DME	BINGHAMTON, NY VOR/DME	*4300
*3800 - MOCA		
BINGHAMTON, NY VOR/DME	ITHACA, NY VOR/DME	3700
ITHACA, NY VOR/DME	SYRACUSE, NY VORTAC	*4000
*3100 - MOCA		

95.6424 VOR FEDERAL AIRWAY V424

NAPOLEON, MO VORTAC	MACON, MO VOR/DME	2900

95.6425 VOR FEDERAL AIRWAY V425

BROOKLEY, AL VORTAC	AXSIS, AL FIX	2000

95.6428 VOR FEDERAL AIRWAY V428

ELMIRA, NY VOR/DME	ITHACA, NY VOR/DME	3800
ITHACA, NY VOR/DME	CORTA, NY FIX	3600
CORTA, NY FIX	GEORGETOWN, NY VORTAC	*5000
*3600 - MOCA		
GEORGETOWN, NY VORTAC	EATEN, NY FIX	4000
EATEN, NY FIX	UTICA, NY VORTAC	3500

95.6429 VOR FEDERAL AIRWAY V429

CAPE GIRARDEAU, MO VOR/DME	MARION, IL VOR/DME	3000
MARION, IL VOR/DME	BIBLE GROVE, IL VORTAC	*5000
*2100 - MOCA		
*2300 - GNSS MEA		
CHAMPAIGN, IL VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	MEDAN, IL FIX	2500
MEDAN, IL FIX	JOLIET, IL VOR/DME	2400

FROM	TO	MEA

95.6430 VOR FEDERAL AIRWAY V430

CUT BANK, MT VOR/DME	HAVRE, MT VOR/DME	6800
HAVRE, MT VOR/DME	GLASGOW, MT VOR/DME	*6500
*5500 - MOCA		
GLASGOW, MT VOR/DME	WILLISTON, ND VOR/DME	*6000
*5000 - MOCA		
WILLISTON, ND VOR/DME	MINOT, ND VOR/DME	*6000
*3900 - MOCA		
MINOT, ND VOR/DME	DEVILS LAKE, ND VOR/DME	3600
DEVILS LAKE, ND VOR/DME	GRAND FORKS, ND VOR/DME	3300
GRAND FORKS, ND VOR/DME	THIEF RIVER FALLS, MN VOR/DME	2900
THIEF RIVER FALLS, MN VOR/DME	GRAND RAPIDS, MN VOR/DME	*7000
*3400 - GNSS MEA		
GRAND RAPIDS, MN VOR/DME	DULUTH, MN VORTAC	3000
DULUTH, MN VORTAC	IRONWOOD, MI VOR/DME	3500
IRONWOOD, MI VOR/DME	DINER, MI FIX	3600
DINER, MI FIX	IRON MOUNTAIN, MI VOR/DME	*5000
*4000 - GNSS MEA		
IRON MOUNTAIN, MI VOR/DME	VUKFI, MI FIX	3300
VUKFI, MI FIX	ESCANABA, MI VOR/DME	*3000
*2300 - MOCA		

95.6431 VOR FEDERAL AIRWAY V431

REVER, MA FIX	LOBBY, MA FIX	2000
LOBBY, MA FIX	GARDNER, MA VOR/DME	3500
GARDNER, MA VOR/DME	KEENE, NH VORTAC	3600
KEENE, NH VORTAC	BRATS, VT FIX	*4400
*3600 - MOCA		
BRATS, VT FIX	GLENS FALLS, NY VORTAC	7000
GLENS FALLS, NY VORTAC	GASSY, NY FIX	*10000
*6000 - GNSS MEA		

95.6432 VOR FEDERAL AIRWAY V432

*THERMAL, CA VORTAC	PARKER, CA VORTAC	**9000
*4500 - MCA THERMAL, CA VORTAC , NE BND		
**7300 - MOCA		

95.6433 VOR FEDERAL AIRWAY V433

NOTTINGHAM, MD VORTAC	SWANN, MD FIX	#*000
*1700 - MOCA		
#UNUSABLE		
SWANN, MD FIX	ODESA, MD FIX	#*000
*1500 - MOCA		
*2000 - GNSS MEA		
#UNUSABLE		
ODESA, MD FIX	DUPONT, DE VORTAC	#*2000
*2000 - GNSS MEA		
#DUPONT R-233 UNUSABLE BEYOND 22NM.		
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	*6000
*3000 - GNSS MEA		
YARDLEY, PA VOR/DME	METRO, NJ FIX	*3000
*2000 - MOCA		MAA - 10000

FROM	TO	MEA

95.6433 VOR FEDERAL AIRWAY V433 - CONTINUED

FROM	TO	MEA
METRO, NJ FIX	GRITY, NJ FIX	*4000
*1700 - MOCA		
GRITY, NJ FIX	TICKL, NY FIX	4000
TICKL, NY FIX	LA GUARDIA, NY VOR/DME	2900
LA GUARDIA, NY VOR/DME	DUNBO, NY FIX	2000
DUNBO, NY FIX	BRIDGEPORT, CT VOR/DME	*2000
*1500 - MOCA		
BRIDGEPORT, CT VOR/DME	PAWLING, NY VOR/DME	3000
PAWLING, NY VOR/DME	*CYPER, NY FIX	6100
*10000 - MRA		
CYPER, NY FIX	ROCKDALE, NY VOR/DME	#*10000
*6100 - GNSS MEA		
#ROCKDALE R-127 UNUSABLE BELOW 10000'.		
ROCKDALE, NY VOR/DME	STODA, NY FIX	4000
STODA, NY FIX	SYRACUSE, NY VORTAC	2400

95.6434 VOR FEDERAL AIRWAY V434

FROM	TO	MEA
OTTUMWA, IA VOR/DME	MOLINE, IL VOR/DME	*3000
*2500 - MOCA		
MOLINE, IL VOR/DME	PEORIA, IL VORTAC	2600
PEORIA, IL VORTAC	CHAMPAIGN, IL VORTAC	2800
CHAMPAIGN, IL VORTAC	BRICKYARD, IN VORTAC	2700

95.6436 VOR FEDERAL AIRWAY V436

FROM	TO	MEA
HOBART, OK VORTAC	*NEADS, OK FIX	**5400
*5400 - MRA		
**3500 - MOCA		
NEADS, OK FIX	WILL ROGERS, OK VORTAC	3000
WILL ROGERS, OK VORTAC	BARNS, OK FIX	*4500
*3000 - MOCA		
BARNS, OK FIX	SAPPA, OK FIX	*4000
*2400 - MOCA		
SAPPA, OK FIX	TULSA, OK VORTAC	2500

95.6437 VOR FEDERAL AIRWAY V437

FROM	TO	MEA
DOLPHIN, FL VORTAC	PAHOKEE, FL VOR/DME	*2000
*1500 - MOCA		
PAHOKEE, FL VOR/DME	MELBOURNE, FL VOR/DME	*2100
*1600 - MOCA		
MELBOURNE, FL VOR/DME	AWINY, FL FIX	*3000
*1600 - MOCA		
AWINY, FL FIX	OVIDO, FL FIX	
	NW BND	5000
	SE BND	3000
OVIDO, FL FIX	KIZER, FL FIX	*5000
*2800 - MOCA		
KIZER, FL FIX	ORMOND BEACH, FL VORTAC	
	SW BND	*5000
	NE BND	*3600
*2800 - MOCA		
ORMOND BEACH, FL VORTAC	JETSO, FL FIX	*3000
*1300 - MOCA		
JETSO, FL FIX	HOTAR, FL FIX	*5000
*1200 - MOCA		

FROM	TO	MEA

95.6437 VOR FEDERAL AIRWAY V437 - CONTINUED

FROM	TO	MEA
HOTAR, FL FIX	STARY, GA FIX	*8000
*1200 - MOCA		
STARY, GA FIX	SAVANNAH, GA VORTAC	*3000
*1900 - MOCA		
SAVANNAH, GA VORTAC	CHARLESTON, SC VORTAC	2000
CHARLESTON, SC VORTAC	WESEL, SC FIX	1800
WESEL, SC FIX	FLORENCE, SC VORTAC	*4000
*1900 - MOCA		

95.6438 VOR FEDERAL AIRWAY V438

FROM	TO	MEA
HAGERSTOWN, MD VOR	LUCKE, VA FIX	*3800
*3300 - MOCA		

95.6439 VOR FEDERAL AIRWAY V439

FROM	TO	MEA
DICKINSON, ND VORTAC	WILLISTON, ND VOR/DME	4500

95.6440 VOR FEDERAL AIRWAY V440

FROM	TO	MEA
PANHANDLE, TX VORTAC	*BRISC, TX FIX	**7000
*7000 - MCA BRISC, TX FIX , SW BND		
**5000 - MOCA		
BRISC, TX FIX	BURNS FLAT, OK VORTAC	*5000
*4500 - MOCA		
BURNS FLAT, OK VORTAC	CARFF, OK FIX	3600
CARFF, OK FIX	*DATTA, OK FIX	3000
*3500 - MRA		
DATTA, OK FIX	WILL ROGERS, OK VORTAC	3000

95.6441 VOR FEDERAL AIRWAY V441

FROM	TO	MEA
MELBOURNE, FL VOR/DME	LAKELAND, FL VORTAC	2600
LAKELAND, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	BAYPO, FL FIX	2000
BAYPO, FL FIX	NITTS, FL FIX	*4000
*1500 - MOCA		
NITTS, FL FIX	OCALA, FL VORTAC	
	NE BND	2000
	SW BND	4000
OCALA, FL VORTAC	*LEJKO, FL FIX	2000
*3000 - MRA		
LEJKO, FL FIX	GATORS, FL VORTAC	2000
GATORS, FL VORTAC	BRUNSWICK, GA VORTAC	3000
BRUNSWICK, GA VORTAC	STARY, GA FIX	*3000
*1500 - MOCA		
STARY, GA FIX	SAVANNAH, GA VORTAC	*3000
*1900 - MOCA		

FROM	TO	MEA

95.6442 VOR FEDERAL AIRWAY V442

PARADISE, CA VORTAC	APLES, CA FIX	*9000
*8000 - MOCA		
APLES, CA FIX	HECTOR, CA VORTAC	*10000
*8300 - MOCA		
HECTOR, CA VORTAC	CLIPP, CA FIX	9000
CLIPP, CA FIX	PARKER, CA VORTAC	8000

95.6444 VOR FEDERAL AIRWAY V444

SPOKANE, WA VORTAC	DATES, WA FIX	5000
DATES, WA FIX	WALLA WALLA, WA VOR/DME	4000
BAKER CITY, OR VOR/DME	PAYET, ID FIX	9000
PAYET, ID FIX	*EMETT, ID FIX	
	SE BND	5600
	NW BND	9000
*9400 - MRA		
EMETT, ID FIX	*BOISE, ID VORTAC	5600
*7400 - MCA BOISE, ID VORTAC , E BND		
BOISE, ID VORTAC	AROWS, ID FIX	
	W BND	8000
	E BND	9000
AROWS, ID FIX	*DERSO, ID FIX	**12500
*15200 - MCA DERSO, ID FIX , E BND		
**10000 - MOCA		
DERSO, ID FIX	SOLDE, ID FIX	*17000
*10400 - MOCA		
SOLDE, ID FIX	*KINZE, ID FIX	
	SE BND	8000
	NW BND	17000
*15900 - MCA KINZE, ID FIX , NW BND		
KINZE, ID FIX	BURLEY, ID VOR/DME	*8000
*7000 - MOCA		

95.6445 VOR FEDERAL AIRWAY V445

MITCH, MD FIX	SWANN, MD FIX	*7000
*3000 - GNSS MEA		
SWANN, MD FIX	ODESA, MD FIX	#*2500
*1500 - MOCA		
*2000 - GNSS MEA		
#UNUSABLE		
ODESA, MD FIX	DUPONT, DE VORTAC	#*2000
*2000 - GNSS MEA		
#DUPONT R-233 UNUSABLE BEYOND 22NM.		
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	*6000
*3000 - GNSS MEA		
YARDLEY, PA VOR/DME	EMPYR, NY FIX	2100
EMPYR, NY FIX	NANCI, NY FIX	2700
NANCI, NY FIX	LA GUARDIA, NY VOR/DME	2900

95.6446 VOR FEDERAL AIRWAY V446

TROY, IL VORTAC	SAMSVILLE, IL VOR/DME	2600

FROM	TO	MEA

95.6447 VOR FEDERAL AIRWAY V447

FROM	TO	MEA
CAMBRIDGE, NY VOR/DME	KERST, VT FIX	*5900
*5400 - MOCA		
KERST, VT FIX	MUDDI, VT FIX	*6000
*5500 - MOCA		
MUDDI, VT FIX	RUCKY, VT FIX	*6000
*5500 - MOCA		
RUCKY, VT FIX	MONTPELIER, VT VOR/DME	*4500
*4000 - MOCA		
MONTPELIER, VT VOR/DME	*PLOTT, VT FIX	4800
*8000 - MRA		
PLOTT, VT FIX	*HURDS, VT FIX	5000
*6500 - MRA		
HURDS, VT FIX	U.S. CANADIAN BORDER	5000

95.6448 VOR FEDERAL AIRWAY V448

FROM	TO	MEA
ROGUE VALLEY, OR VORTAC	ROSEBURG, OR VOR/DME	7000
ROSEBURG, OR VOR/DME	*DRAIN, OR FIX	5000
*6000 - MRA		
DRAIN, OR FIX	EUGENE, OR VORTAC	
	N BND	*4000
	S BND	*5000
*3900 - MOCA		
EUGENE, OR VORTAC	GLORR, OR FIX	4000
GLORR, OR FIX	MAVER, OR FIX	6000
MAVER, OR FIX	*BATTLE GROUND, WA VORTAC	5000
*9400 - MCA BATTLE GROUND, WA VORTAC , NE BND		
BATTLE GROUND, WA VORTAC	LEARN, WA FIX	
	SW BND	*10500
	NE BND	*14500
*8000 - MOCA		
LEARN, WA FIX	ANGOO, WA FIX	14500
ANGOO, WA FIX	SIMCO, WA FIX	
	SW BND	*14500
	NE BND	*8500
*7500 - MOCA		
SIMCO, WA FIX	*YAKIMA, WA VORTAC	
	SW BND	12000
	NE BND	6300
*9500 - MCA YAKIMA, WA VORTAC , SW BND		
YAKIMA, WA VORTAC	RUBEL, WA FIX	6000
RUBEL, WA FIX	MOSES LAKE, WA VOR/DME	
	SW BND	6000
	NE BND	4000
MOSES LAKE, WA VOR/DME	BATUM, WA FIX	4000
BATUM, WA FIX	*SPOKANE, WA VORTAC	5000
*5200 - MCA SPOKANE, WA VORTAC , NE BND		
SPOKANE, WA VORTAC	CLASS, ID FIX	*9000
*7600 - MOCA		
CLASS, ID FIX	KILLY, MT FIX	*13000
*9900 - MOCA		
*10000 - GNSS MEA		
KILLY, MT FIX	KALISPELL, MT VOR/DME	*12000
*8600 - MOCA		
*8600 - GNSS MEA		

FROM	TO	MEA

95.6450 VOR FEDERAL AIRWAY V450

FROM	TO	MEA
ESCANABA, MI VOR/DME	MENOMINEE, MI VOR/DME	2500
MENOMINEE, MI VOR/DME	GREEN BAY, WI VORTAC	2600
GREEN BAY, WI VORTAC	MUSKEGON, MI VORTAC	3000
MUSKEGON, MI VORTAC	GIBER, MI FIX	*3000
*2400 - MOCA		
GIBER, MI FIX	LUGGS, MI FIX	*4000
*2400 - MOCA		
LUGGS, MI FIX	FLINT, MI VORTAC	*3000
*2400 - MOCA		

95.6451 VOR FEDERAL AIRWAY V451

FROM	TO	MEA
LA GUARDIA, NY VOR/DME	*NESSI, CT FIX	**4000
*4000 - MCA NESSI, CT FIX , W BND		
**1900 - MOCA		
**2000 - GNSS MEA		
NESSI, CT FIX	KEYED, NY FIX	#2500
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		
KEYED, NY FIX	CREAM, NY FIX	2000
CREAM, NY FIX	GROTON, CT VOR/DME	*6000
*4000 - GNSS MEA		

95.6452 VOR FEDERAL AIRWAY V452

FROM	TO	MEA
NEWPORT, OR VORTAC	*HORTE, OR FIX	6000
*4300 - MCA HORTE, OR FIX , W BND		
HORTE, OR FIX	EUGENE, OR VORTAC	4000
EUGENE, OR VORTAC	CHEEZ, OR FIX	
	SE BND	7000
	NW BND	5200
CHEEZ, OR FIX	MANSN, OR FIX	
	SE BND	#*11000
	NW BND	#*8000
*7400 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
MANSN, OR FIX	MIXUP, OR FIX	*11000
*9800 - MOCA		
MIXUP, OR FIX	KLAMATH FALLS, OR VORTAC	
	NW BND	11000
	SE BND	9100
KLAMATH FALLS, OR VORTAC	TULIP, CA FIX	9000
TULIP, CA FIX	BACHS, CA FIX	
	S BND	*14000
	N BND	*9000
*11000 - GNSS MEA		
BACHS, CA FIX	HALLE, NV FIX	*14000
*10200 - MOCA		
*11000 - GNSS MEA		
HALLE, NV FIX	MUSTANG, NV VORTAC	*11000
*9600 - MOCA		

95.6453 VOR FEDERAL AIRWAY V453

FROM	TO	MEA
GORDONSVILLE, VA VORTAC	CASANOVA, VA VORTAC	4500
CASANOVA, VA VORTAC	LINDEN, VA VORTAC	5000

FROM	TO	MEA

95.6454 VOR FEDERAL AIRWAY V454

BROOKLEY, AL VORTAC	MONROEVILLE, AL VORTAC	2000
MONROEVILLE, AL VORTAC	CHAFF, AL FIX	2000
CHAFF, AL FIX	*RUTEL, AL FIX	**2500
*4500 - MCA RUTEL, AL FIX , NE BND		
**1800 - MOCA		
RUTEL, AL FIX	*CRENS, AL FIX	**4500
*4500 - MCA CRENS, AL FIX , SW BND		
**1800 - MOCA		
CRENS, AL FIX	BANBI, AL FIX	*2400
*2100 - MOCA		
BANBI, AL FIX	COLUMBUS, GA VORTAC	2400
COLUMBUS, GA VORTAC	GRANT, GA FIX	*3000
*2400 - MOCA		
GRANT, GA FIX	*SMARR, GA FIX	**4000
*4500 - MCA SMARR, GA FIX , NE BND		
**2500 - MOCA		
**2600 - GNSS MEA		
SMARR, GA FIX	*SINCA, GA FIX	**4500
*4500 - MCA SINCA, GA FIX , SW BND		
**2500 - MOCA		
**2500 - GNSS MEA		
SINCA, GA FIX	*MADDI, GA FIX	**3000
*4000 - MCA MADDI, GA FIX , NE BND		
**2200 - MOCA		
MADDI, GA FIX	*VESTO, GA FIX	**4000
*4000 - MCA VESTO, GA FIX , SW BND		
**2300 - MOCA		
VESTO, GA FIX	GREENWOOD, SC VORTAC	2500
GREENWOOD, SC VORTAC	LOCKS, SC FIX	2400
GIZMO, NC FIX	LIBERTY, NC VORTAC	3000
LIBERTY, NC VORTAC	NOKIY, VA FIX	*6000
*3000 - GNSS MEA		
NOKIY, VA FIX	LAWRENCEVILLE, VA VORTAC	#*8000
*3000 - GNSS MEA		
#LAWRENCEVILLE R-242 UNUSABLE, USE LIBERTY R-056		
LAWRENCEVILLE, VA VORTAC	JUNKI, VA FIX	#*6000
*1900 - MOCA		
*2000 - GNSS MEA		
#LAWRENCEVILLE R-059 UNUSABLE, USE HOPEWELL R-237		
JUNKI, VA FIX	HOPEWELL, VA VORTAC	2000

95.6455 VOR FEDERAL AIRWAY V455

RESERVE, LA VOR/DME	PICAYUNE, MS VOR/DME	2000
PICAYUNE, MS VOR/DME	*PLUGG, MS FIX	2000
*5000 - MRA		
PLUGG, MS FIX	EATON, MS VORTAC	2000
EATON, MS VORTAC	MERIDIAN, MS VORTAC	2300

95.6456 VOR FEDERAL AIRWAY V456

FORT DODGE, IA VORTAC	MANKATO, MN VOR/DME	3000
MANKATO, MN VOR/DME	FLYING CLOUD, MN VOR/DME	*2900
*2400 - MOCA		

95.6457 VOR FEDERAL AIRWAY V457

BROADWAY, NJ VOR/DME	LANCASTER, PA VOR/DME	3000
LANCASTER, PA VOR/DME	*ROAST, PA FIX	
	SW BND	**9000
	NE BND	**4500
*10000 - MRA		
**2600 - MOCA		
**4500 - GNSS MEA		
ROAST, PA FIX	VINNY, PA FIX	*9000
*4500 - GNSS MEA		
VINNY, PA FIX	WESTMINSTER, MD VORTAC	3000
WESTMINSTER, MD VORTAC	MARTINSBURG, WV VORTAC	*4000
*3300 - MOCA		

95.6458 VOR FEDERAL AIRWAY V458

SANTA CATALINA, CA VORTAC	AVOLS, CA FIX	4000
AVOLS, CA FIX	PACIF, CA FIX	*3000
*2000 - MOCA		
PACIF, CA FIX	OCEANSIDE, CA VORTAC	3000
OCEANSIDE, CA VORTAC	*VISTA, CA FIX	3000
*5000 - MCA VISTA, CA FIX , E BND		
VISTA, CA FIX	JULIAN, CA VORTAC	7700
JULIAN, CA VORTAC	*KUMBA, CA FIX	7900
*5600 - MCA KUMBA, CA FIX , NW BND		
KUMBA, CA FIX	IMPERIAL, CA VORTAC	4300
IMPERIAL, CA VORTAC	BARD, CA VORTAC	3600

95.6459 VOR FEDERAL AIRWAY V459

SEAL BEACH, CA VORTAC	DARTS, CA FIX	
	SE BND	4000
	NW BND	6000
DARTS, CA FIX	*SAUGS, CA FIX	7000
*6600 - MCA SAUGS, CA FIX , NW BND		
SAUGS, CA FIX	LAKE HUGHES, CA VORTAC	8000
LAKE HUGHES, CA VORTAC	JEFFY, CA FIX	8000
JEFFY, CA FIX	*LOPES, CA FIX	9000
*8600 - MCA LOPES, CA FIX , S BND		
LOPES, CA FIX	*WRING, CA FIX	8500
*5800 - MCA WRING, CA FIX , SE BND		
WRING, CA FIX	TULE, CA VOR/DME	5000
TULE, CA VOR/DME	EXTRA, CA FIX	3500
EXTRA, CA FIX	FRIANT, CA VORTAC	5700
FRIANT, CA VORTAC	BAGBY, CA FIX	*8500
*6600 - MOCA		
BAGBY, CA FIX	LINDEN, CA VOR/DME	7000

95.6460 VOR FEDERAL AIRWAY V460

MISSION BAY, CA VORTAC	*RYAHH, CA FIX	
	E BND	7000
	W BND	4000
*6400 - MCA RYAHH, CA FIX , E BND		
RYAHH, CA FIX	BARET, CA FIX	
	E BND	*8400
	W BND	*7000
*6100 - MOCA		
BARET, CA FIX	CANNO, CA FIX	8400

95.6460 VOR FEDERAL AIRWAY V460 - CONTINUED

FROM	TO	MEA
CANNO, CA FIX	JULIAN, CA VORTAC	8800
JULIAN, CA VORTAC	*MOMAR, CA FIX	8500
*7300 - MCA MOMAR, CA FIX , SW BND		
MOMAR, CA FIX	BLYTHE, CA VORTAC	7000

95.6461 VOR FEDERAL AIRWAY V461

FROM	TO	MEA
GILA BEND, AZ VORTAC	BUCKEYE, AZ VORTAC	4000

95.6462 VOR FEDERAL AIRWAY V462

FROM	TO	MEA
FORT DODGE, IA VORTAC	SIOUX FALLS, SD VORTAC	4400

95.6463 VOR FEDERAL AIRWAY V463

FROM	TO	MEA
WOMAC, GA FIX	*ANNYE, GA FIX	**5000
*5900 - MCA ANNYE, GA FIX , N BND		
**4100 - MOCA		
ANNYE, GA FIX	HARRIS, GA VORTAC	7000

95.6465 VOR FEDERAL AIRWAY V465

FROM	TO	MEA
BULLION, NV VOR/DME	*WELLS, NV VOR/DME	13000
*11800 - MCA WELLS, NV VOR/DME , SW BND		
WELLS, NV VOR/DME	SHEAR, UT FIX	12000
SHEAR, UT FIX	*MALAD CITY, ID VOR/DME	
	SW BND	11000
	NE BND	10000
*10700 - MCA MALAD CITY, ID VOR/DME , NE BND		
MALAD CITY, ID VOR/DME	LUNDI, ID FIX	#11500
#MTA V465 SW TO V21-257 NW 11000		
LUNDI, ID FIX	JACKSON, WY VOR/DME	#*15000
*13300 - MOCA		
*13300 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
#MTA V465 NE TO V330 W OR V520 W 16000		
JACKSON, WY VOR/DME	DUNOIR, WY VOR/DME	13000
DUNOIR, WY VOR/DME	REDLO, MT FIX	*17000
*14500 - MOCA		
REDLO, MT FIX	LAREI, MT FIX	
	N BND	7200
	S BND	17000
LAREI, MT FIX	*BILLINGS, MT VORTAC	
	S BND	17000
	N BND	6000
*7000 - MCA BILLINGS, MT VORTAC , S BND		
BILLINGS, MT VORTAC	MILES CITY, MT VOR/DME	6000
MILES CITY, MT VOR/DME	WILLISTON, ND VOR/DME	*7000
*5200 - MOCA		
*6000 - GNSS MEA		

95.6466 VOR FEDERAL AIRWAY V466

VOLUNTEER, TN VORTAC	TAMPI, TN FIX	3500
TAMPI, TN FIX	YUMMY, VA FIX	4500
YUMMY, VA FIX	GLADE SPRING, VA VOR/DME	6000
GLADE SPRING, VA VOR/DME	*DORFF, VA FIX	6600
*7000 - MRA		
DORFF, VA FIX	PULASKI, VA VORTAC	6000

95.6468 VOR FEDERAL AIRWAY V468

*BATTLE GROUND, WA VORTAC	TROTS, WA FIX	**10000
*5300 - MCA BATTLE GROUND, WA VORTAC , NE BND		
**7200 - MOCA		
**8000 - GNSS MEA		
*TROTS, WA FIX	SWANY, WA FIX	**11500
*11500 - MCA TROTS, WA FIX , NE BND		
**6800 - MOCA		
**7000 - GNSS MEA		
*SWANY, WA FIX	HITCH, WA FIX	**8500
*11500 - MCA SWANY, WA FIX , SW BND		
**6800 - MOCA		
**7000 - GNSS MEA		
HITCH, WA FIX	YAKIMA, WA VORTAC	
	SW BND	*8500
	NE BND	*5000
*4400 - MOCA		
*5000 - GNSS MEA		
YAKIMA, WA VORTAC	GLEED, WA FIX	
	NW BND	5500
	SE BND	5000
GLEED, WA FIX	ELLENSBURG, WA VOR/DME	6000

95.6469 VOR FEDERAL AIRWAY V469

DANVILLE, VA VOR	LYNCHBURG, VA VOR/DME	3000
LYNCHBURG, VA VOR/DME	RADIA, VA FIX	4600
RADIA, VA FIX	RELEE, VA FIX	6000
RELEE, VA FIX	EXRAS, VA FIX	*8000
*5100 - MOCA		
*5200 - GNSS MEA		
EXRAS, VA FIX	BOIER, WV FIX	*10000
*6900 - MOCA		
*6900 - GNSS MEA		
BOIER, WV FIX	ELKINS, WV VORTAC	6800
ELKINS, WV VORTAC	TYGAR, WV FIX	*5000
*4400 - MOCA		
TYGAR, WV FIX	MORGANTOWN, WV VOR/DME	4000
MORGANTOWN, WV VOR/DME	*NESTO, PA FIX	**5000
*10000 - MCA NESTO, PA FIX , E BND		
**4300 - MOCA		
NESTO, PA FIX	*JOHNSTOWN, PA VOR/DME	10000
*10000 - MCA JOHNSTOWN, PA VOR/DME , W BND		
JOHNSTOWN, PA VOR/DME	ST THOMAS, PA VORTAC	#5000
#JOHNSTOWN R-125 UNUSABLE USE ST THOMAS R-307		
ST THOMAS, PA VORTAC	BADDI, PA FIX	*5000
*4000 - MOCA		
BADDI, PA FIX	HARRISBURG, PA VORTAC	4000
HARRISBURG, PA VORTAC	JOANE, PA FIX	4000
JOANE, PA FIX	DUPONT, DE VORTAC	3000

95.6469 VOR FEDERAL AIRWAY V469 - CONTINUED

DUPONT, DE VORTAC	WOODSTOWN, NJ VORTAC	2000 MAA - 8000

95.6470 VOR FEDERAL AIRWAY V470

PULASKI, VA VORTAC	TABER, VA FIX	5500
TABER, VA FIX	*MONAT, VA FIX	**5600
*4000 - MRA		
**5100 - MOCA		
MONAT, VA FIX	LYNCHBURG, VA VOR/DME	
	W BND	*4000
	E BND	*3000
*2900 - MOCA		

95.6471 VOR FEDERAL AIRWAY V471

BANGOR, ME VORTAC	MILLINOCKET, ME VOR/DME	*2500
*2100 - MOCA		
MILLINOCKET, ME VOR/DME	HOULTON, ME VOR/DME	*2600
*2000 - MOCA		
HOULTON, ME VOR/DME	U.S. CANADIAN BORDER	*2600
*2100 - MOCA		

95.6472 VOR FEDERAL AIRWAY V472

ELIZABETH CITY, NC VOR/DME	BERTI, NC FIX	*4000
*1600 - MOCA		
BERTI, NC FIX	*ZAGGY, NC FIX	**7000
*7000 - MCA ZAGGY, NC FIX , NE BND		
**2100 - MOCA		
**2100 - GNSS MEA		
ZAGGY, NC FIX	KINSTON, NC VORTAC	#2000
#SEGMENT UNUSABLE EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS		

95.6473 VOR FEDERAL AIRWAY V473

ROANOKE, VA VOR/DME	HOBOS, VA FIX	*6000
*5100 - MOCA		
HOBOS, VA FIX	MONTEBELLO, VA VOR/DME	6000
MONTEBELLO, VA VOR/DME	GORDONSVILLE, VA VORTAC	*6000
*5500 - MOCA		

95.6474 VOR FEDERAL AIRWAY V474

NESTO, PA FIX	PLEEZ, PA FIX	*4000
*3100 - MOCA		
PLEEZ, PA FIX	INDIAN HEAD, PA VORTAC	*5000
*4500 - MOCA		
INDIAN HEAD, PA VORTAC	ST THOMAS, PA VORTAC	*5000
*4500 - MOCA		

FROM	TO	MEA

95.6474 VOR FEDERAL AIRWAY V474 - CONTINUED

ST THOMAS, PA VORTAC	NOENO, PA FIX	*5000
*4000 - MOCA		
NOENO, PA FIX	DELRO, PA FIX	*5000
*3400 - MOCA		
*3400 - GNSS MEA		
DELRO, PA FIX	*MODENA, PA VORTAC	**10000
*10000 - MCA MODENA, PA VORTAC , W BND		
**4000 - GNSS MEA		

95.6475 VOR FEDERAL AIRWAY V475

LA GUARDIA, NY VOR/DME	DUNBO, NY FIX	2000
DUNBO, NY FIX	BRIDGEPORT, CT VOR/DME	*2000
*1500 - MOCA		
BRIDGEPORT, CT VOR/DME	MADISON, CT VOR/DME	*2000
*1500 - MOCA		
MADISON, CT VOR/DME	NORWICH, CT VOR/DME	#2600
#MADISON R-078 UNUSABLE BYD 16 NM USE NORWICH R-259		
NORWICH, CT VOR/DME	PROVIDENCE, RI VOR/DME	*2400
*1900 - MOCA		

95.6476 VOR FEDERAL AIRWAY V476

LYNCHBURG, VA VOR/DME	GORDONSVILLE, VA VORTAC	3300

95.6477 VOR FEDERAL AIRWAY V477

HUMBLE, TX VORTAC	LEONA, TX VORTAC	*3000
*2000 - MOCA		
LEONA, TX VORTAC	CEDAR CREEK, TX VORTAC	2100

95.6478 VOR FEDERAL AIRWAY V478

FALMOUTH, KY VOR/DME	NEWCOMBE, KY VORTAC	3100
NEWCOMBE, KY VORTAC	BECKLEY, WV VOR/DME	5900

95.6479 VOR FEDERAL AIRWAY V479

DUPONT, DE VORTAC	WILJR, NJ FIX	2100
WILJR, NJ FIX	MENGE, NJ FIX	*4000
*1600 - MOCA		
*2000 - GNSS MEA		
MENGE, NJ FIX	YARDLEY, PA VOR/DME	2000

95.6481 VOR FEDERAL AIRWAY V481

EUGENE, OR VORTAC	CORVALLIS, OR VOR/DME	3500
CORVALLIS, OR VOR/DME	CRAAF, OR FIX	4000

FROM	TO	MEA

95.6483 VOR FEDERAL AIRWAY V483

DEER PARK, NY VOR/DME	*RYMES, CT FIX	**2500
*5000 - MRA		
**2000 - MOCA		
RYMES, CT FIX	CARMEL, NY VOR/DME	2500
CARMEL, NY VOR/DME	KINGSTON, NY VOR/DME	3000
KINGSTON, NY VOR/DME	WEETS, NY FIX	
	NW BND	*6000
	SE BND	*4000
*3200 - MOCA		
WEETS, NY FIX	RIMBA, NY FIX	6400
RIMBA, NY FIX	DELANCEY, NY VOR/DME	5500
DELANCEY, NY VOR/DME	ROCKDALE, NY VOR/DME	4200
ROCKDALE, NY VOR/DME	STODA, NY FIX	4000
STODA, NY FIX	SYRACUSE, NY VORTAC	2400
SYRACUSE, NY VORTAC	*LYSAN, NY FIX	2300
*3000 - MRA		
LYSAN, NY FIX	ROCHESTER, NY VOR/DME	2300

95.6484 VOR FEDERAL AIRWAY V484

HAILEY, ID NDB/DME	KINZE, ID FIX	9300
KINZE, ID FIX	*TWIN FALLS, ID VORTAC	7000
*8000 - MCA TWIN FALLS, ID VORTAC , E BND		
TWIN FALLS, ID VORTAC	WODEN, ID FIX	8800
WODEN, ID FIX	*DRYAD, ID FIX	**12000
*13000 - MCA DRYAD, ID FIX , SE BND		
**9500 - MOCA		
DRYAD, ID FIX	SWITZ, UT FIX	#*16000
*11900 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
SWITZ, UT FIX	CAUSE, UT FIX	*11500
*8600 - MOCA		
CAUSE, UT FIX	*WASATCH, UT VORTAC	8600
*11000 - MCA WASATCH, UT VORTAC , E BND		
WASATCH, UT VORTAC	PARLE, UT FIX	11500
PARLE, UT FIX	MYTON, UT VOR/DME	13000
MYTON, UT VOR/DME	*WINDO, UT FIX	**10500
*13000 - MRA		
**9000 - MOCA		
WINDO, UT FIX	GRAND JUNCTION, CO VOR/DME	10500
GRAND JUNCTION, CO VOR/DME	BATTZ, CO FIX	12300
BATTZ, CO FIX	BLUE MESA, CO VOR/DME	14000
BLUE MESA, CO VOR/DME	HOMME, CO FIX	14600
HOMME, CO FIX	ALAMOSA, CO VORTAC	
	S BND	10000
	N BND	14600

95.6485 VOR FEDERAL AIRWAY V485

VENTURA, CA VOR/DME	*HENER, CA FIX	5000
*6500 - MCA HENER, CA FIX , NW BND		
HENER, CA FIX	FELLOWS, CA VOR/DME	9000
FELLOWS, CA VOR/DME	*REDDE, CA FIX	**7000
*7000 - MCA REDDE, CA FIX , SE BND		
**6100 - MOCA		
REDDE, CA FIX	PRIEST, CA VOR	6000
PRIEST, CA VOR	PANOS, CA FIX	6500
PANOS, CA FIX	HENCE, CA FIX	*6500
*5600 - MOCA		
HENCE, CA FIX	SAN JOSE, CA VOR/DME	4600

FROM	TO	MEA

95.6487 VOR FEDERAL AIRWAY V487

LA GUARDIA, NY VOR/DME	DUNBO, NY FIX	2000
DUNBO, NY FIX	BRIDGEPORT, CT VOR/DME	*2000
*1500 - MOCA		
BRIDGEPORT, CT VOR/DME	BOWAN, NY FIX	*6000
*4100 - MOCA		
BOWAN, NY FIX	CAMBRIDGE, NY VOR/DME	*5000
*4300 - MOCA		
CAMBRIDGE, NY VOR/DME	*GRISS, NY FIX	4000
*10000 - MRA		
GRISS, NY FIX	ENSON, VT FIX	*4000
*2700 - MOCA		
ENSON, VT FIX	WEIGH, VT FIX	*4000
*2800 - MOCA		
WEIGH, VT FIX	BURLINGTON, VT VOR/DME	
	N BND	3000
	S BND	4000
BURLINGTON, VT VOR/DME	U.S. CANADIAN BORDER	2800

95.6489 VOR FEDERAL AIRWAY V489

COATE, NJ FIX	HUGUENOT, NY VOR/DME	*4000
*3300 - MOCA		
HUGUENOT, NY VOR/DME	WEARD, NY FIX	*4000
*3500 - MOCA		
WEARD, NY FIX	SAGES, NY FIX	*7000
*5700 - MOCA		
SAGES, NY FIX	ALBANY, NY VORTAC	6000
ALBANY, NY VORTAC	GLENS FALLS, NY VORTAC	*7000
*5000 - GNSS MEA		

95.6490 VOR FEDERAL AIRWAY V490

UTICA, NY VORTAC	*GALWA, NY FIX	**4000
*6000 - MRA		
**3300 - MOCA		
GALWA, NY FIX	CAMBRIDGE, NY VOR/DME	*4000
*3300 - MOCA		
CAMBRIDGE, NY VOR/DME	STRUM, NH FIX	*6000
*5300 - MOCA		
STRUM, NH FIX	DUBIN, NH FIX	5000
DUBIN, NH FIX	LURCH, NH FIX	4000
LURCH, NH FIX	*MUGGY, NH FIX	4000
*4000 - MCA MUGGY, NH FIX , W BND		
MUGGY, NH FIX	MANCHESTER, NH VOR/DME	3000

95.6491 VOR FEDERAL AIRWAY V491

RAPID CITY, SD VORTAC	BFFLO, SD FIX	5000
BFFLO, SD FIX	HAYNI, ND FIX	*9000
*5000 - MOCA		
HAYNI, ND FIX	DICKINSON, ND VORTAC	*5000
*4500 - MOCA		
DICKINSON, ND VORTAC	MINOT, ND VOR/DME	*6000
*4400 - MOCA		

FROM	TO	MEA

95.6492 VOR FEDERAL AIRWAY V492

LA BELLE, FL VORTAC *1500 - MOCA	PAHOKEE, FL VOR/DME	*2000
PAHOKEE, FL VOR/DME *1500 - MOCA	PALM BEACH, FL VORTAC	*2000
PALM BEACH, FL VORTAC *2000 - MOCA	STOOP, FL FIX	*3000
STOOP, FL FIX	MELBOURNE, FL VOR/DME	3000

95.6493 VOR FEDERAL AIRWAY V493

LIVINGSTON, TN VOR/DME	LEXINGTON, KY VOR/DME	3600
LEXINGTON, KY VOR/DME	BEAER, KY FIX	3000
BEAER, KY FIX	YORK, KY VORTAC	3300
YORK, KY VORTAC	TARTO, OH FIX	3300
TARTO, OH FIX	APPLETON, OH VORTAC	3000
MENOMINEE, MI VOR/DME	RHINELANDER, WI VOR/DME	3500

95.6494 VOR FEDERAL AIRWAY V494

CRESCENT CITY, CA VORTAC *3500 - MOCA	FORTUNA, CA VORTAC	*6000
FORTUNA, CA VORTAC *6100 - MOCA	MENDOCINO, CA VORTAC	*13000
MENDOCINO, CA VORTAC	SANTA ROSA, CA VOR/DME	6000
SANTA ROSA, CA VOR/DME	POPES, CA FIX	5000
POPES, CA FIX *8500 - MRA	*RAGGS, CA FIX	5100
RAGGS, CA FIX	SACRAMENTO, CA VORTAC	5100
SACRAMENTO, CA VORTAC *2300 - MOCA	ROZZY, CA FIX	*3500
ROZZY, CA FIX	HAGAN, CA FIX	4000
HAGAN, CA FIX *9000 - MCA AUDIO, CA FIX , NE BND **4500 - MOCA	*AUDIO, CA FIX	**6000
AUDIO, CA FIX	SQUAW VALLEY, CA VOR/DME	11000
SQUAW VALLEY, CA VOR/DME *11000 - MCA VIKES, NV FIX , SW BND	*VIKES, NV FIX	12000
VIKES, NV FIX *9000 - MCA HAZEN, NV VORTAC , SW BND **9300 - MOCA	*HAZEN, NV VORTAC	**10000

95.6495 VOR FEDERAL AIRWAY V495

U.S. CANADIAN BORDER *1900 - MOCA	WHATCOM, WA VORTAC	*3000
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER *2800 - MOCA	VICTORIA, CANADA VOR/DME	*3000
VICTORIA, CANADA VOR/DME	CONDI, CANADA FIX	4500
CONDI, CANADA FIX	DISCO, CANADA FIX	4000
DISCO, CANADA FIX *4300 - MOCA	U.S. CANADIAN BORDER	*5400
U.S. CANADIAN BORDER *4300 - MOCA #V495 SE TO V4 W 8000	JAWBN, WA FIX	#*5400
JAWBN, WA FIX *4300 - MOCA	LOFAL, WA FIX	*5400

95.6495 VOR FEDERAL AIRWAY V495 - CONTINUED

FROM	TO	MEA
LOFAL, WA FIX	SEATTLE, WA VORTAC	*4000
*2800 - MOCA		
SEATTLE, WA VORTAC	CIDUG, WA FIX	*5000
*3000 - MOCA		
*3000 - GNSS MEA		
CIDUG, WA FIX	ALDER, WA FIX	
	S BND	*9000
	N BND	*5000
*4000 - MOCA		
*4000 - GNSS MEA		
ALDER, WA FIX	*TOUTL, WA FIX	**9000
*9000 - MCA TOUTL, WA FIX , N BND		
**6800 - MOCA		
**7000 - GNSS MEA		
TOUTL, WA FIX	BATTLE GROUND, WA VORTAC	
	N BND	*9000
	S BND	*5300
*5300 - GNSS MEA		
BATTLE GROUND, WA VORTAC	NEWBERG, OR VOR/DME	4000
NEWBERG, OR VOR/DME	CORVALLIS, OR VOR/DME	*4000
*3400 - MOCA		
CORVALLIS, OR VOR/DME	HORTE, OR FIX	4000
HORTE, OR FIX	*VAUGN, OR FIX	
	S BND	7000
	N BND	4000
*7000 - MRA		
VAUGN, OR FIX	ROSEBURG, OR VOR/DME	*7000
*4400 - MOCA		
ROSEBURG, OR VOR/DME	MERLI, OR FIX	*8000
*7500 - MOCA		
MERLI, OR FIX	*PAPLE, OR FIX	**9000
*10100 - MRA		
**6500 - MOCA		
PAPLE, OR FIX	*BAYTS, OR FIX	**10100
*10000 - MRA		
**7300 - MOCA		
BAYTS, OR FIX	FORT JONES, CA VOR/DME	*10000
*9400 - MOCA		

95.6496 VOR FEDERAL AIRWAY V496

FROM	TO	MEA
UTICA, NY VORTAC	MALLO, NY FIX	4500
MALLO, NY FIX	GLENS FALLS, NY VORTAC	*7000
*6000 - GNSS MEA		
GLENS FALLS, NY VORTAC	KERST, VT FIX	*10000
*6000 - GNSS MEA		
KERST, VT FIX	LEBANON, NH VOR/DME	5900
LEBANON, NH VOR/DME	GRUMP, NH FIX	5000
GRUMP, NH FIX	NEETS, NH FIX	4000
NEETS, NH FIX	KENNEBUNK, ME VOR/DME	3600

95.6497 VOR FEDERAL AIRWAY V497

FROM	TO	MEA
ROME, OR VOR/DME	WILDHORSE, OR VOR/DME	9000
WILDHORSE, OR VOR/DME	KIMBERLY, OR VOR/DME	9000
KIMBERLY, OR VOR/DME	KLICKITAT, OR VOR/DME	7300
KLICKITAT, OR VOR/DME	*SUNED, WA FIX	7000
*5500 - MRA		
SUNED, WA FIX	MOSES LAKE, WA VOR/DME	6000

95.6495 VOR FEDERAL AIRWAY V497 - CONTINUED

FROM	TO	MEA
MOSES LAKE, WA VOR/DME	EPHRATA, WA VORTAC	4000

95.6499 VOR FEDERAL AIRWAY V499

FROM	TO	MEA
BALTIMORE, MD VORTAC	BELAY, MD FIX	2300
BELAY, MD FIX	LANCASTER, PA VOR/DME	2500
LANCASTER, PA VOR/DME	CHLSE, PA FIX	
	N BND	*8000
	S BND	*6000
*4000 - MOCA		
CHLSE, PA FIX	MEGSS, PA FIX	*8000
*4300 - MOCA		
MEGSS, PA FIX	BINGHAMTON, NY VOR/DME	
	N BND	4900
	S BND	8000

95.6500 VOR FEDERAL AIRWAY V500

FROM	TO	MEA
BATTLE GROUND, WA VORTAC	NEWBERG, OR VOR/DME	4000
NEWBERG, OR VOR/DME	GLARA, OR FIX	4000
GLARA, OR FIX	HARZL, OR FIX	
	W BND	*7200
	E BND	*10000
*6700 - MOCA		
*7000 - GNSS MEA		
HARZL, OR FIX	RATZZ, OR FIX	
	E BND	*10000
	W BND	*8000
*7400 – MOCA		
*8000 - GNSS MEA		
RATZZ, OR FIX	*GASHE, OR FIX	**10000
*10000 - MRA		
**8000 - MOCA		
**8000 - GNSS MEA		
GASHE, OR FIX	KIMBERLY, OR VOR/DME	*9200
*8200 - MOCA		
KIMBERLY, OR VOR/DME	*HOSTS, OR FIX	11000
*11700 - MRA		
HOSTS, OR FIX	PARMO, ID FIX	
	E BND	6000
	W BND	11000
PARMO, ID FIX	*BOISE, ID VORTAC	5000
*7400 - MCA BOISE, ID VORTAC , E BND		
BOISE, ID VORTAC	AROWS, ID FIX	
	E BND	9000
	W BND	8000
AROWS, ID FIX	*DERSO, ID FIX	**12500
*15200 - MCA DERSO, ID FIX , E BND		
**10000 - MOCA		
DERSO, ID FIX	SOLDE, ID FIX	*17000
*10400 - MOCA		
SOLDE, ID FIX	*REAPS, ID FIX	
	E BND	**14000
	W BND	**17000
*15400 - MCA REAPS, ID FIX , W BND		
**8200 - MOCA		
REAPS, ID FIX	BETRE, ID FIX	*9500
*7000 - MOCA		
BETRE, ID FIX	POCATELLO, ID VOR/DME	7500

FROM	TO	MEA

95.6501 VOR FEDERAL AIRWAY V501

MARTINSBURG, WV VORTAC	HAGERSTOWN, MD VOR	3500
HAGERSTOWN, MD VOR	ST THOMAS, PA VORTAC	4000
ST THOMAS, PA VORTAC	PHILIPSBURG, PA VORTAC	*4500
*4000 - MOCA		
WELLSVILLE, NY VORTAC	BEEPS, NY FIX	*4500
*4000 - MOCA		

95.6502 VOR FEDERAL AIRWAY V502

DODGE CITY, KS VORTAC	*DISKS, KS FIX	**4500
*5000 - MCA DISKS, KS FIX , E BND		
**4000 - MOCA		
DISKS, KS FIX	*SPELT, KS FIX	**5000
*5000 - MRA		
**3300 - MOCA		
SPELT, KS FIX	HUTCHINSON, KS VOR/DME	3200
HUTCHINSON, KS VOR/DME	WAIVE, KS FIX	4000
WAIVE, KS FIX	*FLOSS, KS FIX	3300
*5000 - MRA		
FLOSS, KS FIX	EMPORIA, KS VORTAC	3300
EMPORIA, KS VORTAC	KANSAS CITY, MO VORTAC	3100
KANSAS CITY, MO VORTAC	BRAYMER, MO VOR/DME	2600
BRAYMER, MO VOR/DME	KIRKSVILLE, MO VORTAC	2900

95.6503 VOR FEDERAL AIRWAY V503

ROCHESTER, MN VOR/DME	CEDAR RAPIDS, IA VOR/DME	*4500
*3600 - MOCA		

95.6505 VOR FEDERAL AIRWAY V505

DES MOINES, IA VORTAC	GUMBO, IA FIX	2700
GUMBO, IA FIX	FORT DODGE, IA VORTAC	3000
FORT DODGE, IA VORTAC	MASON CITY, IA VOR/DME	3000
MASON CITY, IA VOR/DME	FREED, MN FIX	3000
FREED, MN FIX	*ALMAY, MN FIX	**4600
*5000 - MRA		
**2800 - MOCA		
ALMAY, MN FIX	PRAGS, MN FIX	*5000
*2500 - MOCA		
PRAGS, MN FIX	GOPHER, MN VORTAC	3000
GOPHER, MN VORTAC	SIREN, WI VOR/DME	3000
SIREN, WI VOR/DME	DULUTH, MN VORTAC	4000
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	SQEAK, MN FIX	*5000
*3100 - MOCA		
SQEAK, MN FIX	BEBEL, MN FIX	5000
BEBEL, MN FIX	INTERNATIONAL FALLS, MN VOR/DME	3000

95.6506 VOR FEDERAL AIRWAY V506

TULSA, OK VORTAC	VINTA, OK FIX	2700
VINTA, OK FIX	NEOSHO, MO VOR/DME	3000
NEOSHO, MO VOR/DME	BILIE, MO FIX	3000
BILIE, MO FIX	SPRINGFIELD, MO VORTAC	3000

95.6507 VOR FEDERAL AIRWAY V507

FROM	TO	MEA
ARDMORE, OK VORTAC	WILL ROGERS, OK VORTAC	3100
WILL ROGERS, OK VORTAC	WAXEY, OK FIX	
	N BND	*9300
	S BND	*5000
*3300 - MOCA		
*4000 - GNSS MEA		
WAXEY, OK FIX	ROLLS, OK FIX	
	N BND	*11000
	S BND	*9300
*3800 - MOCA		
*4000 - GNSS MEA		
ROLLS, OK FIX	MITBEE, OK VORTAC	
	N BND	*4000
	S BND	*9300
*4000 - GNSS MEA		
MITBEE, OK VORTAC	LIBERAL, KS VORTAC	4700
LIBERAL, KS VORTAC	GARDEN CITY, KS VORTAC	4700

95.6508 VOR FEDERAL AIRWAY V508

FROM	TO	MEA
HILL CITY, KS VORTAC	HAYS, KS VORTAC	*4500
*3900 - MOCA		
HAYS, KS VORTAC	*GLIDE, KS FIX	3900
*4500 - MRA		
GLIDE, KS FIX	SALINA, KS VORTAC	*3900
*3200 - MOCA		
SALINA, KS VORTAC	*VASCO, KS FIX	3000
*5000 - MRA		
VASCO, KS FIX	MANHATTAN, KS VOR/DME	3000
MANHATTAN, KS VOR/DME	TOPEKA, KS VORTAC	3000
TOPEKA, KS VORTAC	RUGBB, KS FIX	2800

95.6509 VOR FEDERAL AIRWAY V509

FROM	TO	MEA
ST PETERSBURG, FL VORTAC	*CROWD, FL FIX	**5000
*5000 - MRA		
**2700 - MOCA		
CROWD, FL FIX	HALLR, FL FIX	*6000
*1800 - MOCA		

95.6510 VOR FEDERAL AIRWAY V510

FROM	TO	MEA
DICKINSON, ND VORTAC	BISMARCK, ND VOR/DME	4600
BISMARCK, ND VOR/DME	*BEHQY, ND FIX	3900
*12000 - MRA		
BEHQY, ND FIX	JAMESTOWN, ND VOR/DME	3900
JAMESTOWN, ND VOR/DME	*CHAFE, ND FIX	3300
*6000 - MRA		
CHAFE, ND FIX	FARGO, ND VOR/DME	
	W BND	3300
	E BND	2700
FARGO, ND VOR/DME	STARR, MN FIX	3600
STARR, MN FIX	ALEXANDRIA, MN VOR/DME	*3500
*3000 - MOCA		
ALEXANDRIA, MN VOR/DME	*DAYLE, MN FIX	5000
*5000 - MCA DAYLE, MN FIX , NW BND		

95.6510 VOR FEDERAL AIRWAY V510 - CONTINUED

FROM	TO	MEA
DAYLE, MN FIX	GOPHER, MN VORTAC	4000
GOPHER, MN VORTAC	*BITLR, WI FIX	3400
*5500 - MCA BITLR, WI FIX , SE BND		
BITLR, WI FIX	NODINE, MN VORTAC	5500
NODINE, MN VORTAC	DELLS, WI VORTAC	3000
BUFFALO, NY VOR/DME	*EHMAN, NY FIX	#**11000
*11000 - MCA EHMAN, NY FIX , SW BND		
**3000 - GNSS MEA		
#BUFFALO R-053 UNUSABLE BELOW 11000.		
EHMAN, NY FIX	ROCHESTER, NY VOR/DME	2400

95.6511 VOR FEDERAL AIRWAY V511

FROM	TO	MEA
LAKELAND, FL VORTAC	HALLR, FL FIX	*4000
*2300 - MOCA		
HALLR, FL FIX	THNDR, FL FIX	*7000
*1700 - MOCA		
*5000 - GNSS MEA		
THNDR, FL FIX	DOLPHIN, FL VORTAC	*3000
*1500 - MOCA		

95.6512 VOR FEDERAL AIRWAY V512

FROM	TO	MEA
POCKET CITY, IN VORTAC	HOLAN, IN FIX	2600
HOLAN, IN FIX	*SACKO, IN FIX	**3500
*10000 - MCA SACKO, IN FIX , E BND		
**2100 - MOCA		
**3000 - GNSS MEA		
SACKO, IN FIX	LOUISVILLE, KY VORTAC	10000
LOUISVILLE, KY VORTAC	*CLEGG, KY FIX	10000
*10000 - MCA CLEGG, KY FIX , W BND		
CLEGG, KY FIX	LEXINGTON, KY VOR/DME	2800

95.6513 VOR FEDERAL AIRWAY V513

FROM	TO	MEA
LIVINGSTON, TN VOR/DME	NEW HOPE, KY VOR/DME	4000
NEW HOPE, KY VOR/DME	LOUISVILLE, KY VORTAC	2700

95.6514 VOR FEDERAL AIRWAY V514

FROM	TO	MEA
MISSION BAY, CA VORTAC	*RYAHH, CA FIX	
	E BND	7000
	W BND	4000
*6400 - MCA RYAHH, CA FIX , E BND		
RYAHH, CA FIX	BARET, CA FIX	
	E BND	*8400
	W BND	*7000
*6100 - MOCA		
BARET, CA FIX	CANNO, CA FIX	8400
CANNO, CA FIX	JULIAN, CA VORTAC	8800
JULIAN, CA VORTAC	THERMAL, CA VORTAC	9000
THERMAL, CA VORTAC	*TWENTYNINE PALMS, CA VORTAC	7000
*10200 - MCA TWENTYNINE PALMS, CA VORTAC , NE BND		

FROM	TO	MEA

95.6516 VOR FEDERAL AIRWAY V514 - CONTINUED

*TWENTYNINE PALMS, CA VORTAC	GOFFS, CA VORTAC	**12000
*10200 - MCA TWENTYNINE PALMS, CA VORTAC , NE BND		
**7900 - MOCA		
**8000 - GNSS MEA		
GOFFS, CA VORTAC	BOULDER CITY, NV VORTAC	7600

95.6516 VOR FEDERAL AIRWAY V516

LIBERAL, KS VORTAC	ANTHONY, KS VORTAC	*6000
*4500 - MOCA		
ANTHONY, KS VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	TYROE, KS FIX	*3100
*2600 - MOCA		
TYROE, KS FIX	OSWEGO, KS VOR/DME	2700

95.6517 VOR FEDERAL AIRWAY V517

SNOWBIRD, TN VORTAC	MIAMI, TN FIX	6900
MIAMI, TN FIX	*LONDON, KY VOR/DME	5500
*6000 - MCA LONDON, KY VOR/DME , N BND		
LONDON, KY VOR/DME	*LOGIC, KY FIX	**6000
*6000 - MCA LOGIC, KY FIX , S BND		
**3700 - MOCA		
LOGIC, KY FIX	*CODEL, KY FIX	2800
*3000 - MRA		
CODEL, KY FIX	FALMOUTH, KY VOR/DME	2800
FALMOUTH, KY VOR/DME	CINCINNATI, KY VORTAC	2700

95.6518 VOR FEDERAL AIRWAY V518

FILLMORE, CA VORTAC	TWINE, CA FIX	5500
TWINE, CA FIX	*LANGE, CA FIX	7000
*7000 - MCA LANGE, CA FIX , NE BND		
LANGE, CA FIX	*PALMDALE, CA VORTAC	7000
*6300 - MCA PALMDALE, CA VORTAC , SW BND		

95.6519 VOR FEDERAL AIRWAY V519

VOLUNTEER, TN VORTAC	TAMPI, TN FIX	3500
TAMPI, TN FIX	YUMMY, VA FIX	4500
YUMMY, VA FIX	GLADE SPRING, VA VOR/DME	6000
GLADE SPRING, VA VOR/DME	*TELOC, VA FIX	6900
*13000 - MRA		
TELOC, VA FIX	BLUEFIELD, WV VOR/DME	
	NE BND	6100
	SW BND	6900
BLUEFIELD, WV VOR/DME	BECKLEY, WV VOR/DME	#*9000
*5900 - MOCA		
*5900 - GNSS MEA		
#BECKLEY R-193 UNUSABLE USE BLUEFIELD R-010		

FROM	TO	MEA

95.6520 VOR FEDERAL AIRWAY V520

*BATTLE GROUND, WA VORTAC	KLICKITAT, OR VOR/DME	7000
*4700 - MCA BATTLE GROUND, WA VORTAC , E BND		
KLICKITAT, OR VOR/DME	AMPLE, WA FIX	6000
AMPLE, WA FIX	VIRTU, WA FIX	
	NE BND	4000
	SW BND	5000
VIRTU, WA FIX	PASCO, WA VOR/DME	4000
PASCO, WA VOR/DME	*WALLA WALLA, WA VOR/DME	3200
*5800 - MCA WALLA WALLA, WA VOR/DME , NE BND		
WALLA WALLA, WA VOR/DME	CLOVA, WA FIX	8000
CLOVA, WA FIX	NEZ PERCE, ID VOR/DME	
	NE BND	5500
	SW BND	8000
NEZ PERCE, ID VOR/DME	FERDI, ID FIX	
	W BND	6700
	E BND	12000
FERDI, ID FIX	SALMON, ID VOR/DME	12000
SALMON, ID VOR/DME	*DUBOIS, ID VORTAC	13600
*9000 - MCA DUBOIS, ID VORTAC , E BND		
*10600 - MCA DUBOIS, ID VORTAC , W BND		
DUBOIS, ID VORTAC	*JACKSON, WY VOR/DME	#15300
*15200 - MCA JACKSON, WY VOR/DME , W BND		
#MTA V520 E TO V330 W 14200		

95.6521 VOR FEDERAL AIRWAY V521

DOLPHIN, FL VORTAC	RUTHY, FL FIX	*3000
*1500 - MOCA		
RUTHY, FL FIX	LEE COUNTY, FL VORTAC	2300
LEE COUNTY, FL VORTAC	QUNCY, FL FIX	2600
QUNCY, FL FIX	LAKELAND, FL VORTAC	2300
LAKELAND, FL VORTAC	*DADES, FL FIX	**2300
*5000 - MRA		
**1800 - MOCA		
DADES, FL FIX	NITTS, FL FIX	*2300
*1800 - MOCA		
NITTS, FL FIX	*ORATE, FL FIX	**3000
*3000 - MRA		
**1700 - MOCA		
ORATE, FL FIX	CROSS CITY, FL VORTAC	*2000
*1500 - MOCA		
CROSS CITY, FL VORTAC	HEVVN, FL FIX	#*5000
*1400 - MOCA		
*2000 - GNSS MEA		
#CROSS CITY R-289 UNUSABLE BEYOND 60 NM.		
TERES, FL FIX	CRESS, FL FIX	*4000
*1400 - MOCA		
*2000 - GNSS MEA		
CRESS, FL FIX	MARIANNA, FL VORTAC	2000
MARIANNA, FL VORTAC	WIREGRASS, AL VORTAC	2000
WIREGRASS, AL VORTAC	SKIPO, AL FIX	2300
SKIPO, AL FIX	*BANBI, AL FIX	**4000
*4000 - MCA BANBI, AL FIX , SE BND		
**1900 - MOCA		
**2300 - GNSS MEA		
BANBI, AL FIX	MONTGOMERY, AL VORTAC	2400
MONTGOMERY, AL VORTAC	KYLEE, AL FIX	3000
KYLEE, AL FIX	VULCAN, AL VORTAC	3800

FROM	TO	MEA

95.6524 VOR FEDERAL AIRWAY V524

HAYDEN, CO VOR/DME	LARAMIE, WY VOR/DME	14200
LARAMIE, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	*12000
*10900 - MOCA		
*11000 - GNSS MEA		
SCOTTSBLUFF, NE VORTAC	NORTH PLATTE, NE VOR/DME	7000

95.6526 VOR FEDERAL AIRWAY V526

NORTHBROOK, IL VOR/DME	*MINCE, MI FIX	2500
*3500 - MRA		
MINCE, MI FIX	MUSKY, MI FIX	2500
MUSKY, MI FIX	MAPER, MI FIX	*3500
*1700 - MOCA		
*2600 - GNSS MEA		
MAPER, MI FIX	GIPPER, MI VORTAC	2600

95.6527 VOR FEDERAL AIRWAY V527

*HOT SPRINGS, AR VOR/DME	HIDER, AR FIX	
	SE BND	3200
	NW BND	9500
*5700 - MCA HOT SPRINGS, AR VOR/DME , NW BND		
HIDER, AR FIX	ROVER, AR FIX	
	SE BND	*5500
	NW BND	*9500
*3200 - MOCA		
ROVER, AR FIX	*SCRAN, AR FIX	**9500
*9500 - MCA SCRAN, AR FIX , SE BND		
**3600 - MOCA		
SCRAN, AR FIX	CASKS, AR FIX	*6500
*3700 - MOCA		
CASKS, AR FIX	RAZORBACK, AR VORTAC	4000
RAZORBACK, AR VORTAC	GAMPS, AR FIX	3500
GAMPS, AR FIX	BILIE, MO FIX	*4000
*3200 - MOCA		
BILIE, MO FIX	SPRINGFIELD, MO VORTAC	3000

95.6528 VOR FEDERAL AIRWAY V528

*PHOENIX, AZ VORTAC	EAGUL, AZ FIX	**14500
*8000 - MCA PHOENIX, AZ VORTAC , NE BND		
**9400 - MOCA		
**10000 - GNSS MEA		
EAGUL, AZ FIX	*PAYSO, AZ FIX	**16000
*16000 - MCA PAYSO, AZ FIX , SW BND		
**10000 - MOCA		
PAYSO, AZ FIX	ST JOHNS, AZ VORTAC	*13000
*9800 - MOCA		

FROM	TO	MEA

95.6529 VOR FEDERAL AIRWAY V529

*FAMIN, FL FIX	SWAGS, FL FIX	**5700
*5700 - MRA		
**1500 - MOCA		
SWAGS, FL FIX	LA BELLE, FL VORTAC	*2000
*1400 - MOCA		

95.6530 VOR FEDERAL AIRWAY V530

TEXICO, TX VORTAC	CHILDRESS, TX VORTAC	6000

95.6531 VOR FEDERAL AIRWAY V531

PALM BEACH, FL VORTAC	*SHEDS, FL FIX	**3000
*3000 - MRA		
**2500 - MOCA		
SHEDS, FL FIX	*BAIRN, FL FIX	**6000
*6000 - MCA BAIRN, FL FIX , SE BND		
**2000 - MOCA		
BAIRN, FL FIX	ORLANDO, FL VORTAC	2700

95.6532 VOR FEDERAL AIRWAY V532

LITTLE ROCK, AR VORTAC	*PARON, AR FIX	2600
*3500 - MRA		
PARON, AR FIX	GATZY, AR FIX	*3700
*3100 - MOCA		
GATZY, AR FIX	BLURB, AR FIX	*5500
*3200 - MOCA		
BLURB, AR FIX	BLIMP, AR FIX	*4100
*3600 - MOCA		
BLIMP, AR FIX	FORT SMITH, AR VORTAC	*2900
*2400 - MOCA		
FORT SMITH, AR VORTAC	*AKINS, OK FIX	2500
*3000 - MRA		
AKINS, OK FIX	OKMULGEE, OK VOR/DME	*3000
*2200 - MOCA		
OKMULGEE, OK VOR/DME	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	WICHITA, KS VORTAC	3600
WICHITA, KS VORTAC	SALINA, KS VORTAC	3600
SALINA, KS VORTAC	LINCOLN, NE VORTAC	*5000
*3000 - MOCA		

95.6533 VOR FEDERAL AIRWAY V533

ST PETERSBURG, FL VORTAC	LAKELAND, FL VORTAC	2000
LAKELAND, FL VORTAC	*CAMBE, FL FIX	2000
*4000 - MRA		
CAMBE, FL FIX	ORLANDO, FL VORTAC	2000
ORLANDO, FL VORTAC	OAKIE, FL FIX	2000
OAKIE, FL FIX	ORMOND BEACH, FL VORTAC	*4000
*1600 - MOCA		

95.6534 VOR FEDERAL AIRWAY V534

FROM	TO	MEA
LITTLE ROCK, AR VORTAC	BIBBS, AR FIX	3500
BIBBS, AR FIX	HAAWK, AR FIX	*4500
*2500 - MOCA		
HAAWK, AR FIX	SCRAN, AR FIX	*4500
*3100 - MOCA		
SCRAN, AR FIX	FORT SMITH, AR VORTAC	
	W BND	*3500
	E BND	*4500
*3000 - MOCA		

95.6535 VOR FEDERAL AIRWAY V535

FROM	TO	MEA
SIDON, MS VORTAC	HOLLY SPRINGS, MS VORTAC	*3000
*2100 - MOCA		

95.6536 VOR FEDERAL AIRWAY V536

FROM	TO	MEA
NORTH BEND, OR VOR/DME	*RARES, OR FIX	
	N BND	6000
	S BND	3700
*5500 - MRA		
RARES, OR FIX	CORVALLIS, OR VOR/DME	6000
CORVALLIS, OR VOR/DME	SHEDD, OR FIX	3000
SHEDD, OR FIX	LATHE, OR FIX	4000
LATHE, OR FIX	*JAIME, OR FIX	6000
*8300 - MCA JAIME, OR FIX , E BND		
JAIME, OR FIX	MANTE, OR FIX	*10000
*7800 - MOCA		
MANTE, OR FIX	DESCHUTES, OR VORTAC	10000
DESCHUTES, OR VORTAC	ZORNS, OR FIX	
	NE BND	10000
	SW BND	7000
ZORNS, OR FIX	*RENCE, OR FIX	**10000
*10000 - MRA		
**7700 - MOCA		
RENCE, OR FIX	HEPPE, OR FIX	*10000
*7700 - MOCA		
HEPPE, OR FIX	PENDLETON, OR VORTAC	
	NE BND	6000
	SW BND	10000
PENDLETON, OR VORTAC	WALLA WALLA, WA VOR/DME	4100
WALLA WALLA, WA VOR/DME	PULLMAN, WA VOR/DME	*6000
*5700 - MOCA		
PULLMAN, WA VOR/DME	MULLAN PASS, ID VOR/DME	9100
MULLAN PASS, ID VOR/DME	KALISPELL, MT VOR/DME	*11500
*9700 - MOCA		
*10000 - GNSS MEA		
KALISPELL, MT VOR/DME	GAPAR, MT FIX	*13000
*10900 - MOCA		
GAPAR, MT FIX	*PIKUN, MT FIX	**12000
*10600 - MCA PIKUN, MT FIX , W BND		
**11400 - MOCA		
PIKUN, MT FIX	*CHOTE, MT FIX	
	W BND	**10000
	E BND	**9000
*9200 - MCA CHOTE, MT FIX , W BND		
**6900 - MOCA		
CHOTE, MT FIX	GREAT FALLS, MT VORTAC	7000

95.6536 VOR FEDERAL AIRWAY V536 – CONTINUED

FROM	TO	MEA
GREAT FALLS, MT VORTAC	SWEDD, MT FIX	*12000
*9700 - MOCA		
SWEDD, MT FIX	*MENAR, MT FIX	**10000
*9200 - MCA MENAR, MT FIX , NW BND		
**9400 - MOCA		
MENAR, MT FIX	*BOZEMAN, MT VOR/DME	8700
*9300 - MCA BOZEMAN, MT VOR/DME , SE BND		
SHERIDAN, WY VOR/DME	GILLETTE, WY VOR/DME	7000
GILLETTE, WY VOR/DME	NEWCASTLE, WY VOR	7500
NEWCASTLE, WY VOR	*ZAMBI, SD FIX	9300
*9300 - MRA		
ZAMBI, SD FIX	*RAPID CITY, SD VORTAC	
	E BND	8000
	W BND	9300
*6500 - MCA RAPID CITY, SD VORTAC , W BND		

95.6537 VOR FEDERAL AIRWAY V537

FROM	TO	MEA
PALM BEACH, FL VORTAC	STOOP, FL FIX	*3000
*2000 - MOCA		
STOOP, FL FIX	TREASURE, FL VORTAC	2000
TREASURE, FL VORTAC	*PRESK, FL FIX	3000
*2500 - MRA		
PRESK, FL FIX	CERMO, FL FIX	*8000
*2000 - MOCA		
CERMO, FL FIX	OCALA, FL VORTAC	
	NW BND	2000
	SE BND	8000
OCALA, FL VORTAC	*LEJKO, FL FIX	2000
*3000 - MRA		
LEJKO, FL FIX	GATORS, FL VORTAC	2000
GATORS, FL VORTAC	ALVIN, FL FIX	*3000
*2000 - MOCA		
ALVIN, FL FIX	GREENVILLE, FL VORTAC	2000

95.6538 VOR FEDERAL AIRWAY V538

FROM	TO	MEA
*TWENTYNINE PALMS, CA VORTAC	GOFFS, CA VORTAC	**12000
*10200 - MCA TWENTYNINE PALMS, CA VORTAC , NE BND		
**7900 - MOCA		
**8000 - GNSS MEA		
GOFFS, CA VORTAC	LAS VEGAS, NV VORTAC	9000

95.6539 VOR FEDERAL AIRWAY V539

FROM	TO	MEA
KEY WEST, FL VORTAC	CORGI, FL FIX	1500
CORGI, FL FIX	GOODY, FL FIX	*4000
*1200 - MOCA		
GOODY, FL FIX	LEE COUNTY, FL VORTAC	2000

95.6540 VOR FEDERAL AIRWAY V540

FROM	TO	MEA
CUNNINGHAM, KY VOR/DME	TAMMS, IL FIX	2800
TAMMS, IL FIX	FARMINGTON, MO VORTAC	3500

95.6541 VOR FEDERAL AIRWAY V541

GADSDEN, AL VOR/DME	HOBBI, AL FIX	*3600
*2800 - MOCA		
HOBBI, AL FIX	DECATUR, AL VOR/DME	3000
DECATUR, AL VOR/DME	MUSCLE SHOALS, AL VORTAC	2500

95.6542 VOR FEDERAL AIRWAY V542

ELMIRA, NY VOR/DME	BINGHAMTON, NY VOR/DME	3500
BINGHAMTON, NY VOR/DME	OXFOR, NY FIX	3500
OXFOR, NY FIX	ROCKDALE, NY VOR/DME	4000
ROCKDALE, NY VOR/DME	ALBANY, NY VORTAC	4000
ALBANY, NY VORTAC	CAMBRIDGE, NY VOR/DME	#*4000
*3000 - MOCA		
#ALB R-067 UNUSABLE.		
CAMBRIDGE, NY VOR/DME	*JAMMA, VT FIX	6200
*5000 - MCA JAMMA, VT FIX , W BND		
JAMMA, VT FIX	LEBANON, NH VOR/DME	5000

95.6543 VOR FEDERAL AIRWAY V543

LEEVILLE, LA VORTAC	SAFES, LA FIX	*2000
*1400 - MOCA		
SAFES, LA FIX	WAVEZ, LA FIX	*4000
*1600 - MOCA		
WAVEZ, LA FIX	OYSTY, LA FIX	*3000
*1800 - MOCA		
OYSTY, LA FIX	RYTHM, LA FIX	2000
RYTHM, LA FIX	EATON, MS VORTAC	*4200
*2000 - MOCA		
EATON, MS VORTAC	BAING, MS FIX	*3000
*2000 - MOCA		
BAING, MS FIX	*PAULD, MS FIX	3000
*5000 - MRA		
*3000 - MCA PAULD, MS FIX , SW BND		
PAULD, MS FIX	MERIDIAN, MS VORTAC	2100

95.6545 VOR FEDERAL AIRWAY V545

MILES CITY, MT VOR/DME	WILLISTON, ND VOR/DME	*7000
*5300 - MOCA		
*6000 - GNSS MEA		

95.6546 VOR FEDERAL AIRWAY V546

WINK, TX VORTAC	YOGSU, TX FIX	5500
YOGSU, TX FIX	MIDLAND, TX VORTAC	5000
MIDLAND, TX VORTAC	BIG SPRING, TX VORTAC	4400

FROM	TO	MEA

95.6547 VOR FEDERAL AIRWAY V547

CHEYENNE, WY VORTAC	HIPSHER, WY VOR/DME	9000
HIPSHER, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	7900

95.6548 VOR FEDERAL AIRWAY V548

HOBBY, TX VOR/DME	*SEALY, TX FIX	2000
*7000 - MCA SEALY, TX FIX , NW BND		
SEALY, TX FIX	PRARI, TX FIX	*7000
*3500 - MOCA		
*3500 - GNSS MEA		
PRARI, TX FIX	COLLEGE STATION, TX VORTAC	*7000
*2000 - MOCA		
*2000 - GNSS MEA		
COLLEGE STATION, TX VORTAC	BARBA, TX FIX	2500
BARBA, TX FIX	BOSEL, TX FIX	3600
BOSEL, TX FIX	WACO, TX VORTAC	
	N BND	2800
	S BND	3600

95.6549 VOR FEDERAL AIRWAY V549

HAYS, KS VORTAC	MANKATO, KS VORTAC	4100

95.6550 VOR FEDERAL AIRWAY V550

COTULLA, TX VORTAC	LEMIG, TX FIX	2500
LEMIG, TX FIX	SAN ANTONIO, TX VORTAC	3000
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	3300

95.6551 VOR FEDERAL AIRWAY V551

SALINA, KS VORTAC	MANKATO, KS VORTAC	*4500
*3100 - MOCA		

95.6552 VOR FEDERAL AIRWAY V552

BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000
LAKE CHARLES, LA VORTAC	HATHA, LA FIX	2000
HATHA, LA FIX	LAFAYETTE, LA VORTAC	2800
LAFAYETTE, LA VORTAC	*GRICE, LA FIX	**2000
*4000 - MRA		
**1500 - MOCA		
GRICE, LA FIX	TIBBY, LA VOR/DME	2000
TIBBY, LA VOR/DME	HARVEY, LA VORTAC	2100
HARVEY, LA VORTAC	PICAYUNE, MS VOR/DME	2000
PICAYUNE, MS VOR/DME	*MINDO, MS FIX	2000
*6000 - MRA		
MINDO, MS FIX	SEMMES, AL VORTAC	2000
SEMMES, AL VORTAC	MONROEVILLE, AL VORTAC	2000

95.6553 VOR FEDERAL AIRWAY V553

SALINA, KS VORTAC	PAWNEE CITY, NE VORTAC	3400

FROM	TO	MEA

95.6554 VOR FEDERAL AIRWAY V554

NATCHEZ, MS VOR/DME	*TULLO, LA FIX	**6000
*6000 - MCA TULLO, LA FIX , SE BND		
**1800 - MOCA		
TULLO, LA FIX	MONROE, LA VORTAC	2000

95.6555 VOR FEDERAL AIRWAY V555

PICAYUNE, MS VOR/DME	MC COMB, MS VORTAC	2000

95.6556 VOR FEDERAL AIRWAY V556

SAN ANGELO, TX VORTAC	CHILD, TX FIX	4000
CHILD, TX FIX	JUNCTION, TX VORTAC	*5000
*4000 - MOCA		
JUNCTION, TX VORTAC	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	MARCS, TX FIX	4500
MARCS, TX FIX	SEEDS, TX FIX	*7500
*2000 - MOCA		
SEEDS, TX FIX	WEMAR, TX FIX	*2500
*2000 - MOCA		
WEMAR, TX FIX	EAGLE LAKE, TX VOR/DME	2000
EAGLE LAKE, TX VOR/DME	KEEDS, TX FIX	2500
KEEDS, TX FIX	SCHOLES, TX VOR/DME	3100
SCHOLES, TX VOR/DME	SABINE PASS, TX VOR/DME	2000

95.6558 VOR FEDERAL AIRWAY V558

LLANO, TX VORTAC	SLIMM, TX FIX	3100
SLIMM, TX FIX	CENTEX, TX VORTAC	4100
CENTEX, TX VORTAC	MOUZE, TX FIX	2200
MOUZE, TX FIX	INDUSTRY, TX VORTAC	2100
INDUSTRY, TX VORTAC	EAGLE LAKE, TX VOR/DME	2000
EAGLE LAKE, TX VOR/DME	BLUMS, TX FIX	2000
BLUMS, TX FIX	HOBBY, TX VOR/DME	2400

95.6559 VOR FEDERAL AIRWAY V559

LAFAYETTE, LA VORTAC	FIGHTING TIGER, LA VORTAC	2100

95.6560 VOR FEDERAL AIRWAY V560

NEWMAN, TX VORTAC	MAYFY, TX FIX	9000
MAYFY, TX FIX	*CONNE, TX FIX	**10500
*10500 - MRA		
**9000 - MOCA		
CONNE, TX FIX	SALT FLAT, TX VORTAC	9000
SALT FLAT, TX VORTAC	CARLSBAD, NM VORTAC	8000

FROM	TO	MEA

95.6561 VOR FEDERAL AIRWAY V561

GRAND FORKS, ND VOR/DME	JAMESTOWN, ND VOR/DME	*4000
*3000 - MOCA		
JAMESTOWN, ND VOR/DME	PIERRE, SD VORTAC	*10000
*3400 - MOCA		

95.6562 VOR FEDERAL AIRWAY V562

PHOENIX, AZ VORTAC	KNOBB, AZ FIX	8000
KNOBB, AZ FIX	RADOM, AZ FIX	
	S BND	8000
	N BND	11000
RADOM, AZ FIX	*FERER, AZ FIX	
	N BND	**12000
	S BND	**11000
*12000 - MRA		
*11000 - MCA FERER, AZ FIX , S BND		
**8400 - MOCA		
**9000 - GNSS MEA		
FERER, AZ FIX	DRAKE, AZ VORTAC	*10000
*9200 - MOCA		
DRAKE, AZ VORTAC	PEACH SPRINGS, AZ VOR/DME	9200
PEACH SPRINGS, AZ VOR/DME	*MEADS, NV FIX	9000
*9000 - MCA MEADS, NV FIX , SE BND		
MEADS, NV FIX	LAS VEGAS, NV VORTAC	6000

95.6563 VOR FEDERAL AIRWAY V563

LUBBOCK, TX VORTAC	BIG SPRING, TX VORTAC	5200

95.6564 VOR FEDERAL AIRWAY V564

COALDALE, NV VORTAC	MINA, NV VORTAC	11500
MINA, NV VORTAC	YERIN, NV FIX	11500
YERIN, NV FIX	CHIME, NV FIX	
	NW BND	10000
	SE BND	11500
CHIME, NV FIX	MUSTANG, NV VORTAC	10000

95.6565 VOR FEDERAL AIRWAY V565

LLANO, TX VORTAC	AMUSE, TX FIX	3500
AMUSE, TX FIX	CENTEX, TX VORTAC	*3300
*2900 - MOCA		
CENTEX, TX VORTAC	COLLEGE STATION, TX VORTAC	2400
COLLEGE STATION, TX VORTAC	LUFKIN, TX VORTAC	*4000
*2000 - MOCA		

95.6566 VOR FEDERAL AIRWAY V566

GREGG COUNTY, TX VORTAC	*WORKS, TX FIX	2300
*3000 - MRA		
WORKS, TX FIX	BELCHER, LA VORTAC	3100
BELCHER, LA VORTAC	KNELT, LA FIX	2300

FROM	TO	MEA

95.6568 VOR FEDERAL AIRWAY V566 - CONTINUED

FROM	TO	MEA
KNELT, LA FIX	COVEX, LA FIX	*3500
*1800 - MOCA		
COVEX, LA FIX	NUBOY, LA FIX	*5000
*1900 - MOCA		
NUBOY, LA FIX	ALEXANDRIA, LA VORTAC	
	W BND	5000
	E BND	2000
ALEXANDRIA, LA VORTAC	MUSHE, LA FIX	#*3000
*1700 - MOCA		
#ALEXANDRIA R-106 UNUSABLE BEYOND 48 NM		
MUSHE, LA FIX	FISTY, LA FIX	*4000
*1700 - MOCA		
FISTY, LA FIX	WRACK, LA FIX	#000
#UNUSABLE		
WRACK, LA FIX	VEILS, LA FIX	*3000
*2100 - MOCA		
VEILS, LA FIX	RESERVE, LA VOR/DME	2000

95.6567 VOR FEDERAL AIRWAY V567

FROM	TO	MEA
PHOENIX, AZ VORTAC	KNOBB, AZ FIX	8000
KNOBB, AZ FIX	RADOM, AZ FIX	
	S BND	8000
	N BND	11000
RADOM, AZ FIX	*FERER, AZ FIX	
	N BND	**12000
	S BND	**11000
*12000 - MRA		
*14000 - MCA FERER, AZ FIX , NE BND		
*11000 - MCA FERER, AZ FIX , S BND		
**8400 - MOCA		
**9000 - GNSS MEA		
FERER, AZ FIX	WINSLOW, AZ VORTAC	*14000
*10000 - GNSS MEA		

95.6568 VOR FEDERAL AIRWAY V568

FROM	TO	MEA
CORPUS CHRISTI, TX VORTAC	THREE RIVERS, TX VORTAC	1800
THREE RIVERS, TX VORTAC	LEMIG, TX FIX	2000
LEMIG, TX FIX	SAN ANTONIO, TX VORTAC	3000
SAN ANTONIO, TX VORTAC	GUADA, TX FIX	*4000
*2800 - MOCA		
GUADA, TX FIX	STONEWALL, TX VORTAC	4000
STONEWALL, TX VORTAC	LLANO, TX VORTAC	3700
LLANO, TX VORTAC	*BUILT, TX FIX	**6000
*6000 - MRA		
**3200 - MOCA		
BUILT, TX FIX	GLEN ROSE, TX VORTAC	*3500
*3000 - MOCA		
GLEN ROSE, TX VORTAC	MILLSAP, TX VORTAC	3000
MILLSAP, TX VORTAC	KARYN, TX FIX	3000
KARYN, TX FIX	WICHITA FALLS, TX VORTAC	3100

95.6569 VOR FEDERAL AIRWAY V569

FROM	TO	MEA
BEAUMONT, TX VOR/DME	SILBE, TX FIX	2000
SILBE, TX FIX	LUFKIN, TX VORTAC	2500
LUFKIN, TX VORTAC	FRANKSTON, TX VOR/DME	2300
FRANKSTON, TX VOR/DME	CEDAR CREEK, TX VORTAC	2500

95.6570 VOR FEDERAL AIRWAY V570

FROM	TO	MEA
ALEXANDRIA, LA VORTAC	NATCHEZ, MS VOR/DME	2000
NATCHEZ, MS VOR/DME	MC COMB, MS VORTAC	2000

95.6571 VOR FEDERAL AIRWAY V571

FROM	TO	MEA
HUMBLE, TX VORTAC	NAVASOTA, TX VOR/DME	2000
NAVASOTA, TX VOR/DME	LEONA, TX VORTAC	3000
LEONA, TX VORTAC	CEDAR CREEK, TX VORTAC	2300

95.6572 VOR FEDERAL AIRWAY V572

FROM	TO	MEA
WINSLOW, AZ VORTAC	*FRISY, AZ FIX	10000
*10500 - MCA FRISY, AZ FIX , W BND		
FRISY, AZ FIX	FLAGSTAFF, AZ VOR/DME	11500

95.6573 VOR FEDERAL AIRWAY V573

FROM	TO	MEA
WILL ROGERS, OK VORTAC	*ALEXX, OK FIX	3100
*7000 - MRA		
ALEXX, OK FIX	ARDMORE, OK VORTAC	#000
#UNUSABLE		
ARDMORE, OK VORTAC	BONHAM, TX VORTAC	3600
BONHAM, TX VORTAC	SULPHUR SPRINGS, TX VOR/DME	2500
SULPHUR SPRINGS, TX VOR/DME	TEXARKANA, AR VORTAC	2000
TEXARKANA, AR VORTAC	ELMMO, AR FIX	
	SW BND	*3500
	NE BND	*5500
*2600 - MOCA		
ELMMO, AR FIX	MARKI, AR FIX	*5500
*2600 - MOCA		
MARKI, AR FIX	HOT SPRINGS, AR VOR/DME	
	NE BND	*3500
	SW BND	*5500
*2700 - MOCA		
HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	3000

95.6574 VOR FEDERAL AIRWAY V574

FROM	TO	MEA
CENTEX, TX VORTAC	MOUZE, TX FIX	2200
MOUZE, TX FIX	NAVASOTA, TX VOR/DME	2100
NAVASOTA, TX VOR/DME	HUMBLE, TX VORTAC	2000
HUMBLE, TX VORTAC	DAISETTA, TX VORTAC	2000
DAISETTA, TX VORTAC	BEAUMONT, TX VOR/DME	2300
BEAUMONT, TX VOR/DME	LAKE CHARLES, LA VORTAC	2000

FROM	TO	MEA

95.6575 VOR FEDERAL AIRWAY V575

FROM	TO	MEA
LARAMIE, WY VOR/DME	*NIWOT, CO FIX	11300
*9500 - MCA NIWOT, CO FIX , NW BND		
NIWOT, CO FIX	MILE HIGH, CO VORTAC	8000

95.6576 VOR FEDERAL AIRWAY V576

FROM	TO	MEA
PHILIPSBURG, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	HANCOCK, NY VOR/DME	4000
HANCOCK, NY VOR/DME	DELANCEY, NY VOR/DME	4000

95.6577 VOR FEDERAL AIRWAY V577

FROM	TO	MEA
CEDAR LAKE, NJ VOR/DME	BRIGS, NJ FIX	
	E BND	6000
	W BND	1700

95.6578 VOR FEDERAL AIRWAY V578

FROM	TO	MEA
PECAN, GA VOR/DME	TIFT MYERS, GA VOR	*2500
*2300 - MOCA		
TIFT MYERS, GA VOR	ALMA, GA VORTAC	#*3000
*2100 - MOCA		
*2100 - GNSS MEA		
#ALMA R-263 UNUSABLE USE TIFT MYERS R-083.		
ALMA, GA VORTAC	SAVANNAH, GA VORTAC	*10000
*2600 - MOCA		
*3000 - GNSS MEA		

95.6579 VOR FEDERAL AIRWAY V579

FROM	TO	MEA
LEE COUNTY, FL VORTAC	VIOLA, FL FIX	2000
VIOLA, FL FIX	SARASOTA, FL VOR/DME	*3000
*1600 - MOCA		
SARASOTA, FL VOR/DME	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	BAYPO, FL FIX	2000
BAYPO, FL FIX	NITTS, FL FIX	*4000
*1500 - MOCA		
NITTS, FL FIX	GATORS, FL VORTAC	
	S BND	*4000
	N BND	*3000
*2100 - MOCA		
GATORS, FL VORTAC	CROSS CITY, FL VORTAC	2000
CROSS CITY, FL VORTAC	VALDOSTA, GA VOR/DME	2000
VALDOSTA, GA VOR/DME	TIFT MYERS, GA VOR	2200
TIFT MYERS, GA VOR	VIENNA, GA VORTAC	2100

95.6580 VOR FEDERAL AIRWAY V580

FROM	TO	MEA
ST LOUIS, MO VORTAC	LEBOY, IL FIX	*3000
*2200 - MOCA		
LEBOY, IL FIX	SEXTN, IL FIX	4500
SEXTN, IL FIX	BURLINGTON, IA VOR/DME	*3000
*2200 - MOCA		

FROM	TO	MEA

95.6581 VOR FEDERAL AIRWAY V581

ST PETERSBURG, FL VORTAC	TUMPY, FL FIX	2000
TUMPY, FL FIX	*DADES, FL FIX	**5000
*5000 - MRA		
**2000 - GNSS MEA		
DADES, FL FIX	OCALA, FL VORTAC	2000

95.6582 VOR FEDERAL AIRWAY V582

ST LOUIS, MO VORTAC	LEBOY, IL FIX	*3000
*2200 - MOCA		
LEBOY, IL FIX	QUINCY, IL VORTAC	3000

95.6583 VOR FEDERAL AIRWAY V583

CENTEX, TX VORTAC	COLLEGE STATION, TX VORTAC	2200
COLLEGE STATION, TX VORTAC	LEONA, TX VORTAC	2000
LEONA, TX VORTAC	FRANKSTON, TX VOR/DME	2300
FRANKSTON, TX VOR/DME	QUITMAN, TX VOR/DME	2300
QUITMAN, TX VOR/DME	PARIS, TX VOR/DME	2100
PARIS, TX VOR/DME	MC ALESTER, OK VORTAC	*3000
*2500 - MOCA		

95.6586 VOR FEDERAL AIRWAY V586

EXCEL, MO FIX	MACON, MO VOR/DME	*3000
*2300 - MOCA		
MACON, MO VOR/DME	QUINCY, IL VORTAC	2700
QUINCY, IL VORTAC	PEORIA, IL VORTAC	2500
PEORIA, IL VORTAC	MAROC, IL FIX	*3000
*2400 - MOCA		
MAROC, IL FIX	PONTIAC, IL VOR/DME	2500
PONTIAC, IL VOR/DME	JOLIET, IL VOR/DME	*3000
*2200 - MOCA		

95.6587 VOR FEDERAL AIRWAY V587

HOMELAND, CA VOR	*LUCER, CA FIX	10500
*9300 - MCA LUCER, CA FIX , SW BND		
LUCER, CA FIX	BULGY, CA FIX	*9000
*8000 - MOCA		
BULGY, CA FIX	DAGGETT, CA VORTAC	8000
DAGGETT, CA VORTAC	*WHIGG, CA FIX	10000
*12000 - MRA		
WHIGG, CA FIX	BOULDER CITY, NV VORTAC	10000

95.6589 VOR FEDERAL AIRWAY V589

MEDICINE BOW, WY VOR/DME	ALCOS, WY FIX	10100
ALCOS, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	*10000
*9400 - MOCA		

FROM	TO	MEA

95.6591 VOR FEDERAL AIRWAY V591

GRAND JUNCTION, CO VOR/DME	*PACES, CO FIX	11500
*13000 - MRA		
PACES, CO FIX	SLOLM, CO FIX	#13000
#MTA V591 NE TO V220 NW 12900		
SLOLM, CO FIX	*GLENO, CO FIX	14000
*16000 - MRA		
GLENO, CO FIX	SNOW, CO VOR/DME	14000
SNOW, CO VOR/DME	*KREMMLING, CO VOR/DME	14600
*12500 - MCA KREMMLING, CO VOR/DME , W BND		

95.6595 VOR FEDERAL AIRWAY V595

*ROGUE VALLEY, OR VORTAC	CUTTR, OR FIX	
	NE BND	10500
	SW BND	6100
*5100 - MCA ROGUE VALLEY, OR VORTAC , NE BND		
CUTTR, OR FIX	COPPR, OR FIX	10500
COPPR, OR FIX	DRACK, OR FIX	
	NE BND	9900
	SW BND	10500
DRACK, OR FIX	*DESCHUTES, OR VORTAC	
	NE BND	6200
	SW BND	10500
*7900 - MCA DESCHUTES, OR VORTAC , SW BND		

95.6597 VOR FEDERAL AIRWAY V597

SAN MARCUS, CA VORTAC	*OHIGH, CA FIX	8000
*9000 - MRA		
OHIGH, CA FIX	*FILLMORE, CA VORTAC	8000
*6100 - MCA FILLMORE, CA VORTAC , W BND		
FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	6000
VAN NUYS, CA VOR/DME	DARTS, CA FIX	5500
DARTS, CA FIX	SEAL BEACH, CA VORTAC	
	NW BND	6000
	SE BND	4000
SEAL BEACH, CA VORTAC	BALBO, CA FIX	
	NW BND	3000
	SE BND	4000
BALBO, CA FIX	OCEANSIDE, CA VORTAC	4000
OCEANSIDE, CA VORTAC	MISSION BAY, CA VORTAC	3000

95.6599 VOR FEDERAL AIRWAY V599

LEE COUNTY, FL VORTAC	THNDR, FL FIX	*3000
*1500 - MOCA		
THNDR, FL FIX	DOLPHIN, FL VORTAC	*3000
*1500 - MOCA		

95.6601 VOR FEDERAL AIRWAY V601

PAHOKEE, FL VOR/DME	*DEEDS, FL FIX	**4000
*4000 - MRA		
*7000 - MCA DEEDS, FL FIX , S BND		
**1600 - MOCA		
**2000 - GNSS MEA		

95.6601 VOR FEDERAL AIRWAY V601 - CONTINUED

FROM	TO	MEA
DEEDS, FL FIX	KEY WEST, FL VORTAC	*7000
*1400 - MOCA		
*2000 - GNSS MEA		

95.6605 VOR FEDERAL AIRWAY V605

FROM	TO	MEA
#SPARTANBURG, SC VORTAC	*GENOD, NC FIX	#**7000
*10000 - MCA GENOD, NC FIX , N BND		
**6000 - MOCA		
**6000 - GNSS MEA		
#5200 - MCA SPARTANBURG, SC VORTAC , N BND		
#5200 - MCA SPARTANBURG, SC VORTAC , N BND		
GENOD, NC FIX	*HOLSTON MOUNTAIN, TN VORTAC	**10000
*8500 - MCA HOLSTON MOUNTAIN, TN VORTAC , S BND		
**8500 - MOCA		

95.6607 VOR FEDERAL AIRWAY V607

FROM	TO	MEA
MENDOCINO, CA VORTAC	YAGER, CA FIX	9000
YAGER, CA FIX	ARCATA, CA VOR/DME	8000

95.6609 VOR FEDERAL AIRWAY V609

FROM	TO	MEA
SAGINAW, MI VOR/DME	BENNY, MI FIX	2400
BENNY, MI FIX	BANJO, MI FIX	*3000
*2300 - MOCA		
BANJO, MI FIX	*ZABLE, MI FIX	**5000
*5000 - MCA ZABLE, MI FIX , S BND		
**2900 - MOCA		
ZABLE, MI FIX	*RONDO, MI FIX	3200
*5000 - MRA		
RONDO, MI FIX	PELLSTON, MI VORTAC	*3200
*2500 - MOCA		

95.6611 VOR FEDERAL AIRWAY V611

FROM	TO	MEA
NEWMAN, TX VORTAC	*MOLLY, NM FIX	9000
*10000 - MRA		
MOLLY, NM FIX	TRUTH OR CONSEQUENCES, NM VORTAC	10000
TRUTH OR CONSEQUENCES, NM VORTAC	SOCORRO, NM VORTAC	9000
SOCORRO, NM VORTAC	ALBUQUERQUE, NM VORTAC	8000
ALBUQUERQUE, NM VORTAC	*SANTA FE, NM VORTAC	9000
*11600 - MCA SANTA FE, NM VORTAC , E BND		
SANTA FE, NM VORTAC	*FORT UNION, NM VORTAC	12500
*10900 - MCA FORT UNION, NM VORTAC , N BND		
*11300 - MCA FORT UNION, NM VORTAC , W BND		
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	*12000
*11100 - MOCA		
CIMARRON, NM VORTAC	GOSIP, CO FIX	*11000
*10200 - MOCA		

FROM	TO	MEA

95.6611 VOR FEDERAL AIRWAY V611 - CONTINUED

GOSIP, CO FIX	PUEBLO, CO VORTAC	8700
PUEBLO, CO VORTAC	*BLACK FOREST, CO VOR/DME	9500
*10000 - MCA BLACK FOREST, CO VOR/DME , NE BND		
LIMEX, CO FIX	GILL, CO VOR/DME	7900
GILL, CO VOR/DME	CHEYENNE, WY VORTAC	8500
CHEYENNE, WY VORTAC	MOIST, WY FIX	9000
MOIST, WY FIX	DEALT, WY FIX	11500
DEALT, WY FIX	MUDDY MOUNTAIN, WY VOR/DME	
	NW BND	9000
	SE BND	10000
MUDDY MOUNTAIN, WY VOR/DME	CRAZY WOMAN, WY VOR/DME	7600
CRAZY WOMAN, WY VOR/DME	SHERIDAN, WY VOR/DME	9000
SHERIDAN, WY VOR/DME	KRONA, MT FIX	8000
KRONA, MT FIX	BILLINGS, MT VORTAC	
	SE BND	8000
	NW BND	6200
BILLINGS, MT VORTAC	SHELA, MT FIX	
	S BND	*6100
	N BND	*7700
*6000 - MOCA		
SHELA, MT FIX	LEWISTOWN, MT VOR/DME	7700
LEWISTOWN, MT VOR/DME	SHONK, MT FIX	7700
SHONK, MT FIX	HAVRE, MT VOR/DME	6000

95.6613 VOR FEDERAL AIRWAY V613

ALLENTOWN, PA VORTAC	WILKES-BARRE, PA VORTAC	4000

95.6615 VOR FEDERAL AIRWAY V615

RALEIGH/DURHAM, NC VORTAC	DUFFI, NC FIX	2600
DUFFI, NC FIX	HOPEWELL, VA VORTAC	*5000
*2500 - MOCA		
*2500 - GNSS MEA		

95.6623 VOR FEDERAL AIRWAY V623

SPARTA, NJ VORTAC	CARMEL, NY VOR/DME	3000

95.6625 VOR FEDERAL AIRWAY V625

U.S. MEXICAN BORDER	NOGALES, AZ VOR/DME	*10000
*9500 - MOCA		

95.6626 VOR FEDERAL AIRWAY V626

YMONT, UT FIX	MYTON, UT VOR/DME	*15000
*12600 - MOCA		
*12600 - GNSS MEA		

FROM	TO	MEA

95.6629 VOR FEDERAL AIRWAY V629

SHUSS, NV FIX	BOULDER CITY, NV VORTAC	7600

§95.6301 ALASKA VOR FEDERAL AIRWAYS

95.6301 ALASKA VOR FEDERAL AIRWAY V301

FAIRBANKS, AK VORTAC	DIFER, AK FIX	*8000
*7300 - MOCA		
DIFER, AK FIX	FORT YUKON, AK VORTAC	
	SE BND	8000
	NW BND	2300

95.6302 ALASKA VOR FEDERAL AIRWAY V302

FAIRBANKS, AK VORTAC	MAYPO, AK FIX	7000
MAYPO, AK FIX	FORT YUKON, AK VORTAC	
	SW BND	7000
	NE BND	2300

95.6308 ALASKA VOR FEDERAL AIRWAY V308

BETHEL, AK VORTAC	FISHH, AK FIX	
	E BND	*8000
	W BND	*2000
*1400 - MOCA		
FISHH, AK FIX	SPARREVOHN, AK VOR/DME	*8000
*6000 - MOCA		
*6000 - GNSS MEA		

95.6309 ALASKA VOR FEDERAL AIRWAY V309

PRINCE RUPERT, CANADA NDB	U.S. CANADIAN BORDER	
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	*5000
*4900 - MOCA		

95.6311 ALASKA VOR FEDERAL AIRWAY V311

ANNETTE ISLAND, AK VOR/DME	*TOKEE, AK FIX	6000
*9000 - MCA TOKEE, AK FIX , NW BND		
TOKEE, AK FIX	WIBTA, AK FIX	*9000
*4700 - MOCA		

95.6317 ALASKA VOR FEDERAL AIRWAY V311 - CONTINUED

FROM	TO	MEA
WIBTA, AK FIX	FLIPS, AK FIX	
	W BND	*7500
	E BND	*9000
*6300 - MOCA		
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	
	W BND	6100
	E BND	7500

95.6317 ALASKA VOR FEDERAL AIRWAY V317

FROM	TO	MEA
SANDSPIT, CANADA VOR/DME	U.S. CANADIAN BORDER	
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	5000
ANNETTE ISLAND, AK VOR/DME	GESTI, AK FIX	
	SE BND	5000
	NW BND	7000
GESTI, AK FIX	LEVEL ISLAND, AK VOR/DME	*7000
*5300 - MOCA		
LEVEL ISLAND, AK VOR/DME	HOODS, AK FIX	*9000
*6000 - MOCA		
HOODS, AK FIX	*SISTERS ISLAND, AK VORTAC	
	SE BND	**9000
	NW BND	**7000
*7900 - MCA SISTERS ISLAND, AK VORTAC , W BND		
**5500 - MOCA		
SISTERS ISLAND, AK VORTAC	CSPER, AK FIX	
	NE BND	*7000
	SW BND	*15000
*5300 - MOCA		
CSPER, AK FIX	*HAPIT, AK FIX	**15000
*15000 - MRA		
**4000 - MOCA		

95.6318 ALASKA VOR FEDERAL AIRWAY V318

FROM	TO	MEA
ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	6000

95.6319 ALASKA VOR FEDERAL AIRWAY V319

FROM	TO	MEA
YAKUTAT, AK VOR/DME	MALAS, AK FIX	
	E BND	2400
	W BND	10000
MALAS, AK FIX	KATAT, AK FIX	#*10000
*5600 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
KATAT, AK FIX	CASEL, AK FIX	*7000
*3400 - MOCA		
CASEL, AK FIX	*JOHNSTONE POINT, AK VOR/DME	4800
*4800 - MCA JOHNSTONE POINT, AK VOR/DME , E BND		
JOHNSTONE POINT, AK VOR/DME	EDELE, AK FIX	
	E BND	4400
	W BND	10000
EDELE, AK FIX	SNRIS, AK FIX	10000

FROM	TO	MEA

95.6319 ALASKA VOR FEDERAL AIRWAY V319 – CONTINUED

SNRIS, AK FIX	*ANCHORAGE, AK VOR/DME	
	W BND	8200
	E BND	10000
*8000 - MCA ANCHORAGE, AK VOR/DME , E BND		
ANCHORAGE, AK VOR/DME	YONEK, AK FIX	3000
YONEK, AK FIX	*TORTE, AK FIX	
	W BND	12000
	E BND	7000
*11400 - MCA TORTE, AK FIX , W BND		
TORTE, AK FIX	*VEILL, AK FIX	12000
*8000 - MCA VEILL, AK FIX , E BND		
VEILL, AK FIX	SPARREVOHN, AK VOR/DME	
	E BND	12000
	W BND	6600
SPARREVOHN, AK VOR/DME	ACRAN, AK FIX	
	W BND	*6000
	E BND	*5200
*5200 - MOCA		
ACRAN, AK FIX	VIDDA, AK FIX	6000
VIDDA, AK FIX	WEEKE, AK FIX	
	SW BND	*3000
	NE BND	*6000
*2100 - MOCA		
WEEKE, AK FIX	BETHEL, AK VORTAC	2000
BETHEL, AK VORTAC	ARSEN, AK FIX	2000
ARSEN, AK FIX	FANCI, AK FIX	*4000
*2000 - MOCA		
*2000 - GNSS MEA		
FANCI, AK FIX	HOOPER BAY, AK VOR/DME	2000
HOOPER BAY, AK VOR/DME	NANWAK, AK NDB/DME	2300

95.6320 ALASKA VOR FEDERAL AIRWAY V320

MC GRATH, AK VORTAC	ERLAN, AK FIX	
	E BND	10000
	W BND	5000
ERLAN, AK FIX	WINOR, AK FIX	
	E BND	10000
	W BND	8000
WINOR, AK FIX	*FRIDA, AK FIX	#10000
*9500 - MRA		
*7600 - MCA FRIDA, AK FIX , W BND		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
FRIDA, AK FIX	RUNTL, AK FIX	8500
RUNTL, AK FIX	KAYTI, AK FIX	6400
KAYTI, AK FIX	*ANCHORAGE, AK VOR/DME	3700
*6000 - MCA ANCHORAGE, AK VOR/DME , SE BND		
ANCHORAGE, AK VOR/DME	HOPER, AK FIX	
	SE BND	10000
	NW BND	6500
HOPER, AK FIX	NELLI, AK FIX	10000
NELLI, AK FIX	KEBAB, AK FIX	
	NW BND	10000
	SE BND	5000
KEBAB, AK FIX	JOHNSTONE POINT, AK VOR/DME	5000

FROM	TO	MEA

95.6321 ALASKA VOR FEDERAL AIRWAY V321

CAPE NEWENHAM, AK NDB/DME *4300 - MOCA	KING SALMON, AK VORTAC	*5000
KING SALMON, AK VORTAC	BATTY, AK FIX	
	NE BND	7000
	SW BND	6000
BATTY, AK FIX	AUGEY, AK FIX	7000
AUGEY, AK FIX *3000 - MOCA	HOMER, AK VOR/DME	*4000

95.6322 ALASKA VOR FEDERAL AIRWAY V322

KING SALMON, AK VORTAC	KONIC, AK FIX	
	W BND	5000
	E BND	9000
KONIC, AK FIX *7700 - MOCA *7700 - GNSS MEA	WORRI, AK FIX	*9000
WORRI, AK FIX *8500 - MOCA	MALLT, AK FIX	*9000
MALLT, AK FIX	HOMER, AK VOR/DME	
	SW BND	9000
	NE BND	4000

95.6333 ALASKA VOR FEDERAL AIRWAY V333

HOOPER BAY, AK VOR/DME	HALEM, AK FIX	4500
HALEM, AK FIX *2300 - MOCA	FAIRE, AK FIX	*8000
FAIRE, AK FIX	NOME, AK VOR/DME	3000
NOME, AK VOR/DME	GAITS, AK FIX	
	N BND	10000
	S BND	4000
GAITS, AK FIX *6700 - MOCA	SHISHMAREF, AK NDB	*10000

95.6334 ALASKA VOR FEDERAL AIRWAY V334

AUGEY, AK FIX *2000 - MOCA *2000 - GNSS MEA	CLAMS, AK FIX	*7000
CLAMS, AK FIX	KENAI, AK VOR/DME	2000
KENAI, AK VOR/DME	ANCHORAGE, AK VOR/DME	2000

95.6350 ALASKA VOR FEDERAL AIRWAY V350

DILLINGHAM, AK VOR/DME	TOGIAK, AK NDB/DME	5000
TOGIAK, AK NDB/DME	BAFIN, AK FIX	5400
BAFIN, AK FIX	BETHEL, AK VORTAC	
	SE BND	5400
	NW BND	2000
BETHEL, AK VORTAC	DAHLS, AK FIX	
	W BND	3600
	E BND	2000
DAHLS, AK FIX *3000 - MOCA *3000 - GNSS MEA	EMMONAK, AK VOR/DME	*3600

FROM	TO	MEA

95.6388 ALASKA VOR FEDERAL AIRWAY V350 - CONTINUED

EMMONAK, AK VOR/DME	NOME, AK VOR/DME	3000

95.6351 ALASKA VOR FEDERAL AIRWAY V351

DILLINGHAM, AK VOR/DME	PORT HEIDEN, AK NDB/DME	3000

95.6357 ALASKA VOR FEDERAL AIRWAY V357

KODIAK, AK VOR/DME	INNOL, AK FIX	3500
INNOL, AK FIX *3000 - MOCA	MOCHO, AK FIX	*4000
MOCHO, AK FIX *2300 - MOCA *7000 - GNSS MEA	GERKS, AK FIX	*7500
GERKS, AK FIX *3700 - MOCA *7000 - GNSS MEA	SANER, AK FIX	*9000
SANER, AK FIX	HOMER, AK VOR/DME	6000

95.6385 ALASKA VOR FEDERAL AIRWAY V385

HOOPER BAY, AK VOR/DME	EMMONAK, AK VOR/DME	4500
EMMONAK, AK VOR/DME *2800 - MOCA *3000 - GNSS MEA	UNALAKLEET, AK VOR/DME	*3500

95.6388 ALASKA VOR FEDERAL AIRWAY V388

ANCHORAGE, AK VOR/DME	NAPTO, AK FIX	2300
NAPTO, AK FIX	KENAI, AK VOR/DME	2400

95.6401 ALASKA VOR FEDERAL AIRWAY V401

AMBLER, AK NDB *4700 - MOCA	FARME, AK FIX	*5500
FARME, AK FIX	KOTZEBUE, AK VOR/DME	2000
KOTZEBUE, AK VOR/DME *2000 - MOCA	SHISHMAREF, AK NDB	*2500

95.6414 ALASKA VOR FEDERAL AIRWAY V414

GAMBELL, AK NDB/DME	KUKULIAK, AK VOR/DME	3000

95.6427 ALASKA VOR FEDERAL AIRWAY V427

FROM	TO	MEA
KING SALMON, AK VORTAC	TOMMY, AK FIX	3000
TOMMY, AK FIX	RINGO, AK FIX	*7000
*5300 - MOCA		
*6000 - GNSS MEA		
RINGO, AK FIX	NONDA, AK FIX	*14000
*9000 - MOCA		
*9000 - GNSS MEA		

95.6428 ALASKA VOR FEDERAL AIRWAY V428

FROM	TO	MEA
BIORKA ISLAND, AK VORTAC	SISTERS ISLAND, AK VORTAC	*7000
*6000 - MOCA		
*6000 - GNSS MEA		
SISTERS ISLAND, AK VORTAC	HAINES, AK NDB	#*10000
*8500 - MOCA		
*8500 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
HAINES, AK NDB	U.S. CANADIAN BORDER	*10000
*9600 - MOCA		

95.6435 ALASKA VOR FEDERAL AIRWAY V435

FROM	TO	MEA
HOMER, AK VOR/DME	KASSI, AK FIX	4400
KASSI, AK FIX	KENAI, AK VOR/DME	
	S BND	*4400
	N BND	*2000
*1700 - MOCA		
*2000 - GNSS MEA		

95.6436 ALASKA VOR FEDERAL AIRWAY V436

FROM	TO	MEA
ANCHORAGE, AK VOR/DME	TAGER, AK FIX	2200
TAGER, AK FIX	*TALKEETNA, AK VOR/DME	3000
*3800 - MCA TALKEETNA, AK VOR/DME , N BND		
TALKEETNA, AK VOR/DME	*EGRAM, AK FIX	6000
*7600 - MCA EGRAM, AK FIX , N BND		
EGRAM, AK FIX	NENANA, AK VORTAC	10000
NENANA, AK VORTAC	GOLLY, AK FIX	4000
GOLLY, AK FIX	TOLLO, AK FIX	*4000
*3400 - MOCA		
TOLLO, AK FIX	LIVEN, AK FIX	5000
LIVEN, AK FIX	BEETE, AK FIX	*10000
*5500 - MOCA		
BEETE, AK FIX	CHANDALAR LAKE, AK NDB	*10000
*6900 - MOCA		
CHANDALAR LAKE, AK NDB	*ARTIC, AK FIX	10000
*7000 - MCA ARTIC, AK FIX , SE BND		
ARTIC, AK FIX	PIPET, AK FIX	
	SE BND	*10000
	NW BND	*6000
*4500 - MOCA		
*5000 - GNSS MEA		

95.6436 ALASKA VOR FEDERAL AIRWAY V436 – CONTINUED

FROM	TO	MEA
PIPET, AK FIX	BIXER, AK FIX	
	SE BND	*10000
	NW BND	*5000
*3900 - MOCA		
*4000 - GNSS MEA		
BIXER, AK FIX	ARCON, AK FIX	
	SE BND	10000
	NW BND	3000
ARCON, AK FIX	DEADHORSE, AK VOR/DME	
	SE BND	10000
	NW BND	2000

95.6438 ALASKA VOR FEDERAL AIRWAY V438

FROM	TO	MEA
KODIAK, AK VOR/DME	SHUYA, AK FIX	4000
SHUYA, AK FIX	HOMER, AK VOR/DME	*6000
*5900 - MOCA		
HOMER, AK VOR/DME	SKILA, AK FIX	5000
SKILA, AK FIX	NAPTO, AK FIX	2400
NAPTO, AK FIX	ANCHORAGE, AK VOR/DME	2300
ANCHORAGE, AK VOR/DME	*BIG LAKE, AK VORTAC	2000
*2600 - MCA BIG LAKE, AK VORTAC , N BND		
BIG LAKE, AK VORTAC	*SURES, AK FIX	7500
*10000 - MRA		
SURES, AK FIX	LIBER, AK FIX	#*11000
*8900 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
LIBER, AK FIX	*GLOWS, AK FIX	7500
*4800 - MCA GLOWS, AK FIX , S BND		
GLOWS, AK FIX	FAIRBANKS, AK VORTAC	3400
FAIRBANKS, AK VORTAC	CHATA, AK FIX	
	N BND	*8000
	S BND	*7000
*5000 - MOCA		
CHATA, AK FIX	BURMA, AK FIX	*8000
*7200 - MOCA		
BURMA, AK FIX	BIJOU, AK FIX	5000
BIJOU, AK FIX	FORT YUKON, AK VORTAC	2300
FORT YUKON, AK VORTAC	RIGGS, AK FIX	#*10000
*9500 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
RIGGS, AK FIX	OILEE, AK FIX	
	SE BND	10000
	NW BND	8000
OILEE, AK FIX	WIMAN, AK FIX	
	SE BND	10000
	NW BND	5000
WIMAN, AK FIX	UVALL, AK FIX	
	SE BND	*10000
	NW BND	*4000
*3200 - MOCA		
UVALL, AK FIX	DEADHORSE, AK VOR/DME	
	SE BND	10000
	NW BND	2000
DEADHORSE, AK VOR/DME	OOSIK, AK FIX	
	W BND	*6000
	E BND	*2000
*1300 - MOCA		
OOSIK, AK FIX	TUNDA, AK FIX	*6000
*1300 - MOCA		

95.6438 ALASKA VOR FEDERAL AIRWAY V438 - CONTINUED

TUNDA, AK FIX	BARROW, AK VOR/DME	
	E BND	*6000
	W BND	*3000
*1500 - MOCA		

95.6439 ALASKA VOR FEDERAL AIRWAY V439

KODIAK, AK VOR/DME	BAREL, AK FIX	*6000
*4200 - MOCA		
BAREL, AK FIX	HOMER, AK VOR/DME	*6000
*5300 - MOCA		

95.6440 ALASKA VOR FEDERAL AIRWAY V440

NOME, AK VOR/DME	*GOLOS, AK FIX	3000
*4500 - MRA		
GOLOS, AK FIX	UNALAKLEET, AK VOR/DME	3000
UNALAKLEET, AK VOR/DME	YUCON, AK FIX	
	W BND	4600
	E BND	8000
YUCON, AK FIX	GANES, AK FIX	*8000
*5600 - MOCA		
*7000 - GNSS MEA		
GANES, AK FIX	MC GRATH, AK VORTAC	
	E BND	6000
	W BND	8000
MC GRATH, AK VORTAC	ERLAN, AK FIX	
	E BND	10000
	W BND	5000
ERLAN, AK FIX	WINOR, AK FIX	
	E BND	10000
	W BND	8000
WINOR, AK FIX	*FRIDA, AK FIX	#10000
*9500 - MRA		
*7600 - MCA FRIDA, AK FIX , W BND		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
FRIDA, AK FIX	*IVANN, AK FIX	6600
*5900 - MCA IVANN, AK FIX , W BND		
IVANN, AK FIX	*ANCHORAGE, AK VOR/DME	2200
*6000 - MCA ANCHORAGE, AK VOR/DME , SE BND		
ANCHORAGE, AK VOR/DME	HOPER, AK FIX	
	SE BND	10000
	NW BND	6500
HOPER, AK FIX	MODDS, AK FIX	10000
MODDS, AK FIX	MIDDLETON ISLAND, AK VOR/DME	
	SE BND	6000
	NW BND	10000
MIDDLETON ISLAND, AK VOR/DME	OCULT, AK FIX	*8000
*2000 - MOCA		
*7000 - GNSS MEA		
OCULT, AK FIX	YAKUTAT, AK VOR/DME	2000
YAKUTAT, AK VOR/DME	CENTA, AK FIX	
	SE BND	9000
	NW BND	2000
CENTA, AK FIX	SALIS, AK FIX	#*9000
*2000 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

FROM	TO	MEA

95.6440 ALASKA VOR FEDERAL AIRWAY V440 - CONTINUED

SALIS, AK FIX	BIORKA ISLAND, AK VORTAC	
	NW BND	9000
	SE BND	5100
BIORKA ISLAND, AK VORTAC	LATCH, AK FIX	
	NW BND	4500
	SE BND	12000
LATCH, AK FIX	U.S. CANADIAN BORDER	*12000
*4200 - MOCA		
*8000 - GNSS MEA		
U.S. CANADIAN BORDER	MOCHA, CANADA FIX	13000
MOCHA, CANADA FIX	SANDSPIT, CANADA VOR/DME	*13000
*5600 - MOCA		

95.6441 ALASKA VOR FEDERAL AIRWAY V441

MIDDLETON ISLAND, AK VOR/DME	DEALS, AK FIX	6000
DEALS, AK FIX	*SEWAR, AK FIX	**9000
*10000 - MRA		
**8400 - MOCA		
SEWAR, AK FIX	BROIL, AK FIX	*10000
*7700 - MOCA		
*7700 - GNSS MEA		
BROIL, AK FIX	*HATUL, AK FIX	7100
*5600 - MCA HATUL, AK FIX , SE BND		
HATUL, AK FIX	*ANCHORAGE, AK VOR/DME	4600
*4200 - MCA ANCHORAGE, AK VOR/DME , SE BND		

95.6444 ALASKA VOR FEDERAL AIRWAY V444

BARROW, AK VOR/DME	CHIPS, AK FIX	*2000
*1200 - MOCA		
CHIPS, AK FIX	BRONX, AK FIX	*5000
*1200 - MOCA		
BRONX, AK FIX	EVANSVILLE, AK NDB	*10000
*9100 - MOCA		
EVANSVILLE, AK NDB	BETTLES, AK VOR/DME	3500
BETTLES, AK VOR/DME	*CYCLE, AK FIX	3500
*4400 - MCA CYCLE, AK FIX , SE BND		
CYCLE, AK FIX	BRION, AK FIX	*6000
*5200 - MOCA		
BRION, AK FIX	LIVEN, AK FIX	*9000
*5200 - MOCA		
LIVEN, AK FIX	HESSE, AK FIX	*5000
*4400 - MOCA		
HESSE, AK FIX	FAIRBANKS, AK VORTAC	*5000
*4900 - MOCA		
FAIRBANKS, AK VORTAC	BIG DELTA, AK VORTAC	*5000
*4200 - MOCA		
BIG DELTA, AK VORTAC	NORTHWAY, AK VORTAC	*8000
*7800 - MOCA		
NORTHWAY, AK VORTAC	U. S. CANADIAN BORDER	#*9600
*8900 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

FROM	TO	MEA

95.6445 ALASKA VOR FEDERAL AIRWAY V445

FROM	TO	MEA
*FAIRBANKS, AK VORTAC	WILTS, AK FIX	5000
*4000 - MCA FAIRBANKS, AK VORTAC , W BND		
WILTS, AK FIX	TOLLO, AK FIX	*5000
*4200 - MOCA		
TOLLO, AK FIX	KANUT, AK FIX	7000
KANUT, AK FIX	BETTLES, AK VOR/DME	
	SE BND	7000
	NW BND	3500

95.6447 ALASKA VOR FEDERAL AIRWAY V447

FROM	TO	MEA
FAIRBANKS, AK VORTAC	*DOMEY, AK FIX	**5000
*7000 - MRA		
**4400 - MOCA		
DOMEY, AK FIX	TATTA, AK FIX	
	NW BND	*11000
	SE BND	*7000
*5400 - MOCA		
TATTA, AK FIX	CHANDALAR LAKE, AK NDB	#*11000
*8000 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

95.6452 ALASKA VOR FEDERAL AIRWAY V452

FROM	TO	MEA
KUKULIAK, AK VOR/DME	NOME, AK VOR/DME	3000
NOME, AK VOR/DME	MOSES POINT, AK VOR/DME	*5000
*4200 - MOCA		
MOSES POINT, AK VOR/DME	*DIBVY, AK FIX	**6000
*6000 - MRA		
**5200 - MOCA		
DIBVY, AK FIX	GALENA, AK VOR/DME	3000
GALENA, AK VOR/DME	HORSI, AK FIX	
	E BND	*8000
	W BND	*4000
*4000 - GNSS MEA		
HORSI, AK FIX	BONET, AK FIX	*8000
*4000 - MOCA		
*4000 - GNSS MEA		
BONET, AK FIX	NENANA, AK VORTAC	*7000
*4400 - MOCA		
*4400 - GNSS MEA		

95.6453 ALASKA VOR FEDERAL AIRWAY V453

FROM	TO	MEA
KING SALMON, AK VORTAC	DILLINGHAM, AK VOR/DME	2100
DILLINGHAM, AK VOR/DME	EDUCE, AK FIX	*7000
*6500 - MOCA		
EDUCE, AK FIX	BETHEL, AK VORTAC	
	S BND	*7000
	N BND	*4000
*2500 - MOCA		
*3000 - GNSS MEA		
BETHEL, AK VORTAC	WAPRO, AK FIX	*9000
*4300 - MOCA		
WAPRO, AK FIX	UNALAKLEET, AK VOR/DME	*11000
*5100 - MOCA		

FROM	TO	MEA

95.6454 ALASKA VOR FEDERAL AIRWAY V454

FROM	TO	MEA
KING SALMON, AK VORTAC	DILLINGHAM, AK VOR/DME	*5000
*4300 - MOCA		

95.6456 ALASKA VOR FEDERAL AIRWAY V456

FROM	TO	MEA
COLD BAY, AK VORTAC	BINAL, AK FIX	
	SW BND	*4000
	NE BND	*14000
*3400 - MOCA		
BINAL, AK FIX	TANIE, AK FIX	#*14000
*3400 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
TANIE, AK FIX	KING SALMON, AK VORTAC	#*3000
*1600 - MOCA		
#MEA 14000 SW WHEN DLG FSS SHUT DOWN		
KING SALMON, AK VORTAC	STREW, AK FIX	
	W BND	*3000
	E BND	*9000
*2300 - MOCA		
STREW, AK FIX	BITOP, AK FIX	
	E BND	*9000
	W BND	*5000
*5000 - MOCA		
*5000 - GNSS MEA		
BITOP, AK FIX	*NOSKY, AK FIX	**9000
*8200 - MCA NOSKY, AK FIX , NE BND		
**5200 - MOCA		
**6000 - GNSS MEA		
NOSKY, AK FIX	*TUCKS, AK FIX	**13000
*10300 - MCA TUCKS, AK FIX , SW BND		
**12300 - MOCA		
TUCKS, AK FIX	KENAI, AK VOR/DME	*5000
*3300 - MOCA		
KENAI, AK VOR/DME	ANCHORAGE, AK VOR/DME	2000
ANCHORAGE, AK VOR/DME	*BIG LAKE, AK VORTAC	2000
*5000 - MCA BIG LAKE, AK VORTAC , NE BND		
BIG LAKE, AK VORTAC	MATTA, AK FIX	7000
MATTA, AK FIX	*UREKA, AK FIX	**10000
*7200 - MCA UREKA, AK FIX , SW BND		
**9400 - MOCA		
UREKA, AK FIX	SMOKY, AK FIX	
	NE BND	*7000
	SW BND	*10000
*6300 - MOCA		
*7000 - GNSS MEA		
SMOKY, AK FIX	GULKANA, AK VOR/DME	
	NE BND	*5000
	SW BND	*10000
*5000 - GNSS MEA		
GULKANA, AK VOR/DME	*SANKA, AK FIX	
	NE BND	11000
	SW BND	6000
*8000 - MCA SANKA, AK FIX , NE BND		
SANKA, AK FIX	NORTHWAY, AK VORTAC	*11000
*10500 - MOCA		

95.6457 ALASKA VOR FEDERAL AIRWAY V457

FROM	TO	MEA
ILIAMNA, AK NDB/DME	*AWOMY, AK FIX	
	W BND	5700
	E BND	9000
*7000 - MCA AWOMY, AK FIX , E BND		
AWOMY, AK FIX	*MOFOF, AK FIX	9000
*7000 - MCA MOFOF, AK FIX , W BND		
MOFOF, AK FIX	KENAI, AK VOR/DME	
	W BND	9000
	E BND	3000

95.6459 ALASKA VOR FEDERAL AIRWAY V459

FROM	TO	MEA
EMMONAK, AK VOR/DME	ST MARYS, AK NDB	3000

95.6462 ALASKA VOR FEDERAL AIRWAY V462

FROM	TO	MEA
CAPE NEWENHAM, AK NDB/DME	DILLINGHAM, AK VOR/DME	*5000
*4300 - MOCA		
DILLINGHAM, AK VOR/DME	KOWOK, AK FIX	*3000
*2500 - MOCA		
KOWOK, AK FIX	SAHOK, AK FIX	*5000
*3800 - MOCA		
SAHOK, AK FIX	NONDA, AK FIX	#*14000
*8800 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
NONDA, AK FIX	*BLUGA, AK FIX	**14000
*10000 - MCA BLUGA, AK FIX , SW BND		
**12400 - MOCA		
BLUGA, AK FIX	*AMOTT, AK FIX	7000
*7400 - MCA AMOTT, AK FIX , SW BND		
AMOTT, AK FIX	ANCHORAGE, AK VOR/DME	4000

95.6473 ALASKA VOR FEDERAL AIRWAY V473

FROM	TO	MEA
LEVEL ISLAND, AK VOR/DME	FLIPS, AK FIX	*7000
*6300 - MOCA		
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	
	W BND	6100
	E BND	7500

95.6477 ALASKA VOR FEDERAL AIRWAY V477

FROM	TO	MEA
GALENA, AK VOR/DME	HUSLIA, AK VOR/DME	3000
HUSLIA, AK VOR/DME	ATAGO, AK FIX	
	W BND	*4000
	E BND	*3500
*2500 - MOCA		
ATAGO, AK FIX	DESOY, AK FIX	4000
DESOY, AK FIX	SELAWIK, AK VOR/DME	
	W BND	2500
	E BND	4000
SELAWIK, AK VOR/DME	JELLE, AK FIX	3500
JELLE, AK FIX	AMBLER, AK NDB	
	NE BND	5000
	SW BND	4000

95.6480 ALASKA VOR FEDERAL AIRWAY V480

FROM	TO	MEA
MOUNT MOFFETT, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	6000
ST PAUL ISLAND, AK NDB/DME	ZESKA, AK FIX	*10000
*1800 - MOCA		
ZESKA, AK FIX	BETHEL, AK VORTAC	
	SW BND	*10000
	NE BND	*2000
*1400 - MOCA		
BETHEL, AK VORTAC	CABOT, AK FIX	
	W BND	*2000
	E BND	*4000
*1400 - MOCA		
CABOT, AK FIX	ANIAK, AK FIX	*4000
*2300 - MOCA		
ANIAK, AK FIX	JOANY, AK FIX	#*8000
*5600 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
#CONTINUOUS NAV SIGNAL COVERAGE DOES NOT EXIST BETWEEN BETHEL 110 NM & MCGRATH 60 NM		
JOANY, AK FIX	MC GRATH, AK VORTAC	
	W BND	*8000
	E BND	*6000
*5200 - MOCA		
MC GRATH, AK VORTAC	MEFRA, AK FIX	
	W BND	4000
	E BND	8000
MEFRA, AK FIX	NENANA, AK VORTAC	*8000
*5000 - MOCA		
NENANA, AK VORTAC	FAIRBANKS, AK VORTAC	*4000
*2700 - MOCA		

95.6481 ALASKA VOR FEDERAL AIRWAY V481

FROM	TO	MEA
JOHNSTONE POINT, AK VOR/DME	FIDAL, AK FIX	
	S BND	5000
	N BND	10000
FIDAL, AK FIX	ROBES, AK FIX	
	S BND	8000
	N BND	10000
ROBES, AK FIX	KLUNG, AK FIX	10000
KLUNG, AK FIX	GULKANA, AK VOR/DME	
	N BND	6500
	S BND	10000
GULKANA, AK VOR/DME	DOZEY, AK FIX	
	N BND	12000
	S BND	4000
DOZEY, AK FIX	PAXON, AK FIX	
	S BND	7000
	N BND	12000
PAXON, AK FIX	*DONEL, AK FIX	**12000
*10500 - MCA DONEL, AK FIX , S BND		
**11500 - MOCA		
DONEL, AK FIX	*BIG DELTA, AK VORTAC	
	N BND	7000
	S BND	12000
*7800 - MCA BIG DELTA, AK VORTAC , S BND		
BIG DELTA, AK VORTAC	FORT YUKON, AK VORTAC	#7000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		

FROM	TO	MEA

95.6482 ALASKA VOR FEDERAL AIRWAY V482

FROM	TO	MEA
JOHNSTONE POINT, AK VOR/DME	TOSIN, AK FIX	*10000
*9300 - MOCA		
TOSIN, AK FIX	RIVVA, AK FIX	6000
RIVVA, AK FIX	GULKANA, AK VOR/DME	*5000
*4500 - MOCA		

95.6488 ALASKA VOR FEDERAL AIRWAY V488

FROM	TO	MEA
HOOPER BAY, AK VOR/DME	AKELT, AK FIX	
	NE BND	10000
	SW BND	4000
AKELT, AK FIX	ALMOT, AK FIX	*10000
*4000 - MOCA		
ALMOT, AK FIX	UNALAKLEET, AK VOR/DME	
	SW BND	10000
	NE BND	3000
UNALAKLEET, AK VOR/DME	EDMON, AK FIX	
	NE BND	*5500
	SW BND	*4000
*4000 - MOCA		
EDMON, AK FIX	VENCE, AK FIX	*5500
*4900 - MOCA		
VENCE, AK FIX	GALENA, AK VOR/DME	
	SW BND	*5500
	NE BND	*3000
*2500 - MOCA		
GALENA, AK VOR/DME	KUHZE, AK FIX	*5000
*4400 - MOCA		
KUHZE, AK FIX	CHOKK, AK FIX	6000
CHOKK, AK FIX	TANANA, AK VOR/DME	
	SW BND	6000
	NE BND	3000
TANANA, AK VOR/DME	*REEBA, AK FIX	
	E BND	**7000
	W BND	**4000
*7000 - MRA		
**4000 - MOCA		
REEBA, AK FIX	GOLLY, AK FIX	*7000
*5000 - MOCA		
GOLLY, AK FIX	*FAIRBANKS, AK VORTAC	5000
*4700 - MCA FAIRBANKS, AK VORTAC , W BND		

95.6489 ALASKA VOR FEDERAL AIRWAY V489

FROM	TO	MEA
GALENA, AK VOR/DME	HORSI, AK FIX	
	E BND	*8000
	W BND	*4000
*4000 - GNSS MEA		
HORSI, AK FIX	ROSII, AK FIX	
	NE BND	*6000
	SW BND	*8000
*4000 - MOCA		
ROSII, AK FIX	TANANA, AK VOR/DME	
	NE BND	3400
	SW BND	6000

FROM	TO	MEA

95.6491 ALASKA VOR FEDERAL AIRWAY V491

BIG LAKE, AK VORTAC	TALKEETNA, AK VOR/DME	3000

95.6496 ALASKA VOR FEDERAL AIRWAY V496

HOOPER BAY, AK VOR/DME	ST MARYS, AK NDB	3500

95.6498 ALASKA VOR FEDERAL AIRWAY V498

MC GRATH, AK VORTAC	NIXON, AK FIX	
	NW BND	*6000
	SE BND	*4500
*4500 - MOCA		
NIXON, AK FIX	AHVUH, AK FIX	*6000
*5500 - MOCA		
AHVUH, AK FIX	GALENA, AK VOR/DME	
	SE BND	*6000
	NW BND	*4000
*4000 - MOCA		
GALENA, AK VOR/DME	EBIKY, AK FIX	*3000
*2500 - MOCA		
EBIKY, AK FIX	*KATEL, AK FIX	
	NW BND	**8000
	SE BND	**4000
*8000 - MRA		
**4000 - MOCA		
KATEL, AK FIX	BALIN, AK FIX	*8000
*5300 - MOCA		
BALIN, AK FIX	KOTZEBUE, AK VOR/DME	
	SE BND	*8000
	NW BND	*2000
*2000 - MOCA		

95.6504 ALASKA VOR FEDERAL AIRWAY V504

NENANA, AK VORTAC	KANUT, AK FIX	7000
KANUT, AK FIX	BETTLES, AK VOR/DME	
	NW BND	3500
	SE BND	7000
BETTLES, AK VOR/DME	EVANSVILLE, AK NDB	3500
EVANSVILLE, AK NDB	DERIK, AK FIX	*10000
*9500 - MOCA		
DERIK, AK FIX	MUKTU, AK FIX	
	S BND	*10000
	N BND	*7000
*3800 - MOCA		
MUKTU, AK FIX	SHELO, AK FIX	
	S BND	*10000
	N BND	*5000
*3000 - MOCA		
SHELO, AK FIX	DEADHORSE, AK VOR/DME	
	S BND	10000
	N BND	2000

95.6506 ALASKA VOR FEDERAL AIRWAY V506

FROM	TO	MEA
CJAYY, AK FIX	KODIAK, AK VOR/DME	4000
#KODIAK, AK VOR/DME	BREMI, AK FIX	*12000
*9900 - MOCA		
*10000 - GNSS MEA		
#KODIAK R-280 UNUSABLE BYD 20NM BLO 12000		
BREMI, AK FIX	KING SALMON, AK VORTAC	
	E BND	12000
	W BND	5000
KING SALMON, AK VORTAC	KOWOK, AK FIX	*3000
*2400 - MOCA		
KOWOK, AK FIX	CAYON, AK FIX	*8000
*7000 - MOCA		
*7000 - GNSS MEA		
CAYON, AK FIX	BETHEL, AK VORTAC	
	E BND	8000
	W BND	4000
BETHEL, AK VORTAC	MARSI, AK FIX	
	W BND	16000
	E BND	2000
MARSI, AK FIX	JOHNI, AK FIX	#*16000
*3200 - MOCA		
*4000 - GNSS MEA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
JOHNI, AK FIX	DACIA, AK FIX	*8000
*3200 - MOCA		
*4000 - GNSS MEA		
DACIA, AK FIX	NOME, AK VOR/DME	
	S BND	*8000
	N BND	*4000
*3200 - MOCA		
NOME, AK VOR/DME	BAIME, AK FIX	
	N BND	7000
	S BND	6000
BAIME, AK FIX	SETUP, AK FIX	*7000
*5700 - MOCA		
*6000 - GNSS MEA		
SETUP, AK FIX	KOTZEBUE, AK VOR/DME	
	S BND	7000
	N BND	2000
KOTZEBUE, AK VOR/DME	HOTHAM, AK NDB	2000
HOTHAM, AK NDB	SHOKK, AK FIX	*6000
*5000 - MOCA		
*5000 - GNSS MEA		
SHOKK, AK FIX	MEADE, AK FIX	*10000
*7000 - MOCA		
*8000 - GNSS MEA		
MEADE, AK FIX	BARROW, AK VOR/DME	
	S BND	*10000
	N BND	*2000
*1100 - MOCA		

95.6507 ALASKA VOR FEDERAL AIRWAY V507

FROM	TO	MEA
NOME, AK VOR/DME	PHOTO, AK FIX	
	NW BND	*13000
	SE BND	*6000
*5700 - MOCA		
PHOTO, AK FIX	ESKAR, AK FIX	*13000
*6000 - MOCA		
*6000 - GNSS MEA		

95.6508 ALASKA VOR FEDERAL AIRWAY V507 – CONTINUED

FROM	TO	MEA
ESKAR, AK FIX	KOTZEBUE, AK VOR/DME	
	SW BND	*13000
	NE BND	*2100
*2100 - MOCA		

95.6508 ALASKA VOR FEDERAL AIRWAY V508

FROM	TO	MEA
MIDDLETON ISLAND, AK VOR/DME	DEALS, AK FIX	6000
DEALS, AK FIX	*SEWAR, AK FIX	**9000
*10000 - MRA		
**8400 - MOCA		
SEWAR, AK FIX	*SKILA, AK FIX	**9000
*5100 - MCA SKILA, AK FIX , E BND		
**7800 - MOCA		
**8000 - GNSS MEA		
SKILA, AK FIX	ROJAR, AK FIX	2400
ROJAR, AK FIX	KENAI, AK VOR/DME	2000
KENAI, AK VOR/DME	*NEARR, AK FIX	**3000
*7600 - MCA NEARR, AK FIX , W BND		
**2500 - MOCA		
NEARR, AK FIX	AKGAS, AK FIX	12000
AKGAS, AK FIX	SPARREVOHN, AK VOR/DME	
	W BND	6000
	E BND	12000
SPARREVOHN, AK VOR/DME	ANIAK, AK NDB	6000

95.6510 ALASKA VOR FEDERAL AIRWAY V510

FROM	TO	MEA
EMMONAK, AK VOR/DME	ANVIK, AK NDB	3900
ANVIK, AK NDB	SABOC, AK FIX	
	E BND	*10000
	W BND	*9000
*6200 - MOCA		
*7000 - GNSS MEA		
SABOC, AK FIX	MC GRATH, AK VORTAC	*10000
*6200 - MOCA		
*7000 - GNSS MEA		
MC GRATH, AK VORTAC	ERLAN, AK FIX	
	E BND	10000
	W BND	5000
ERLAN, AK FIX	WINOR, AK FIX	
	E BND	10000
	W BND	8000
WINOR, AK FIX	FFITZ, AK FIX	10000
FFITZ, AK FIX	ROHHN, AK FIX	*10000
*8800 - MOCA		
*9000 - GNSS MEA		
ROHHN, AK FIX	BIG LAKE, AK VORTAC	*4000
*3400 - MOCA		

FROM	TO	MEA

95.6515 ALASKA VOR FEDERAL AIRWAY V515

GULKANA, AK VOR/DME	MERIE, AK FIX	5000
MERIE, AK FIX	*BIG DELTA, AK VORTAC	12000
*8100 - MCA BIG DELTA, AK VORTAC , S BND		

95.6531 ALASKA VOR FEDERAL AIRWAY V531

*FAIRBANKS, AK VORTAC	GOLLY, AK FIX	5000
*4700 - MCA FAIRBANKS, AK VORTAC , W BND		
GOLLY, AK FIX	*REEBA, AK FIX	**7000
*7000 - MRA		
**5000 - MOCA		
REEBA, AK FIX	TANANA, AK VOR/DME	
	E BND	*7000
	W BND	*4000
*4000 - MOCA		
TANANA, AK VOR/DME	ELCON, AK FIX	
	W BND	*6500
	E BND	*5400
*5400 - MOCA		
ELCON, AK FIX	CENSE, AK FIX	*6500
*5700 - MOCA		
CENSE, AK FIX	HUSLIA, AK VOR/DME	
	W BND	*3500
	E BND	*6500
*3000 - MOCA		
HUSLIA, AK VOR/DME	ATAGO, AK FIX	
	W BND	*4000
	E BND	*3500
*2500 - MOCA		
ATAGO, AK FIX	DESOY, AK FIX	*4000
*3900 - MOCA		
DESOY, AK FIX	SELAWIK, AK VOR/DME	
	W BND	*2500
	E BND	*4000
*2500 - MOCA		
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	2500
KOTZEBUE, AK VOR/DME	BERJO, AK FIX	
	SE BND	*2500
	NW BND	*8000
*2500 - MOCA		
BERJO, AK FIX	POINT HOPE, AK NDB	*8000
*4000 - MOCA		

95.6593 ALASKA VOR FEDERAL AIRWAY V593

BIORKA ISLAND, AK VORTAC	LYRIC, AK FIX	
	SE BND	*6000
	NW BND	*8000
*4800 - MOCA		
LYRIC, AK FIX	SISTERS ISLAND, AK VORTAC	*8000
*5800 - MOCA		
*5800 - GNSS MEA		

FROM	TO	MEA

95.6603 ALASKA VOR FEDERAL AIRWAY V603

ELFEE, AK NDB	DILLINGHAM, AK VOR/DME	2700

95.6617 ALASKA VOR FEDERAL AIRWAY V617

HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	*12000
*8600 - MOCA		
*9000 - GNSS MEA		

95.6619 ALASKA VOR FEDERAL AIRWAY V619

PORT HEIDEN, AK NDB/DME	CHINOOK, AK NDB	4000
CHINOOK, AK NDB	DILLINGHAM, AK VOR/DME	3000

95.6621 ALASKA VOR FEDERAL AIRWAY V621

BARROW, AK VOR/DME	ATQASUK, AK NDB	2000

§95.6401 HAWAII VOR FEDERAL AIRWAYS

95.6401 HAWAII VOR FEDERAL AIRWAY V1

KONA, HI VORTAC	*REEFS, HI FIX	5000
*4100 - MCA REEFS, HI FIX , SE BND		
REEFS, HI FIX	MOANA, HI FIX	*2000
*1300 - MOCA		
MOANA, HI FIX	ROWIN, HI FIX	*4000
*1300 - MOCA		
ROWIN, HI FIX	*LAVAS, HI FIX	**8000
*7000 - MRA		
**1300 - MOCA		
LAVAS, HI FIX	MAKEN, HI FIX	*7000
*5000 - MOCA		
MAKEN, HI FIX	HARPO, HI FIX	6300
HARPO, HI FIX	MAUI, HI VORTAC	6000

95.6402 HAWAII VOR FEDERAL AIRWAY V2

HONOLULU, HI VORTAC	PALAY, HI FIX	3500
PALAY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	KEIKI, HI FIX	5000
KEIKI, HI FIX	*HARPO, HI FIX	**5000
*5600 - MCA HARPO, HI FIX , SE BND		
**2500 - MOCA		
HARPO, HI FIX	UPOLU POINT, HI VORTAC	6300
UPOLU POINT, HI VORTAC	WAPIO, HI FIX	*7000
*6000 - MOCA		

FROM	TO	MEA

95.6405 HAWAII VOR FEDERAL AIRWAY V2 - CONTINUED

WAPIO, HI FIX	PARIS, HI FIX	
	E BND	*4500
	W BND	*6000
*4000 - MOCA		
PARIS, HI FIX	*ARBOR, HI FIX	**4000
*8000 - MRA		
**3000 - MOCA		
ARBOR, HI FIX	HILO, HI VORTAC	3000

95.6403 HAWAII VOR FEDERAL AIRWAY V3

MYNAH, HI FIX	*JASON, HI FIX	3500
*5400 - MCA JASON, HI FIX , NE BND		
JASON, HI FIX	KAMUELA, HI VOR/DME	6700
KAMUELA, HI VOR/DME	TIGAH, HI FIX	6500
TIGAH, HI FIX	PARIS, HI FIX	5000

95.6404 HAWAII VOR FEDERAL AIRWAY V4

HONOLULU, HI VORTAC	*GECKO, HI FIX	**4000
*10000 - MRA		
**2800 - MOCA		
GECKO, HI FIX	*ZUKEY, HI FIX	
	W BND	16000
	E BND	4000
*16000 - MRA		
ZUKEY, HI FIX	BINJO, HI FIX	
	W BND	29000
	E BND	16000

95.6405 HAWAII VOR FEDERAL AIRWAY V5

KONA, HI VORTAC	*MYNAH, HI FIX	5200
*4400 - MCA MYNAH, HI FIX , SE BND		
MYNAH, HI FIX	*HEFTI, HI FIX	**2000
*4100 - MCA HEFTI, HI FIX , NW BND		
**1300 - MOCA		
HEFTI, HI FIX	MAKEN, HI FIX	7600

95.6406 HAWAII VOR FEDERAL AIRWAY V6

BLUSH, HI FIX	PLUMB, HI FIX	*5000
*1200 - MOCA		
PLUMB, HI FIX	MAUI, HI VORTAC	6300

95.6407 HAWAII VOR FEDERAL AIRWAY V7

KONA, HI VORTAC	*REEFS, HI FIX	5000
*4100 - MCA REEFS, HI FIX , SE BND		
REEFS, HI FIX	MOANA, HI FIX	*2000
*1300 - MOCA		

FROM	TO	MEA

95.6405 HAWAII VOR FEDERAL AIRWAY V7 - CONTINUED

MOANA, HI FIX	ROWIN, HI FIX	*4000
*1300 - MOCA		
ROWIN, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	MOLOKAI, HI VORTAC	4000
JOELE, OP FIX	ATINE, HI FIX	4000
ATINE, HI FIX	BERLE, HI FIX	7000
BERLE, HI FIX	ZIGIE, OP FIX	22000

95.6408 HAWAII VOR FEDERAL AIRWAY V8

HONOLULU, HI VORTAC	*ALANA, HI FIX	3000
*5000 - MRA		
ALANA, HI FIX	HAUNA, HI FIX	3000
HAUNA, HI FIX	LOKIE, HI FIX	2000
LOKIE, HI FIX	MOLOKAI, HI VORTAC	3500
MOLOKAI, HI VORTAC	BLUSH, HI FIX	5000
BLUSH, HI FIX	FISHE, HI FIX	*4000
*1200 - MOCA		

95.6411 HAWAII VOR FEDERAL AIRWAY V11

REEFS, HI FIX	*FLITT, HI FIX	**3000
*4600 - MCA FLITT, HI FIX , N BND		
**2000 - MOCA		
**2000 - GNSS MEA		
FLITT, HI FIX	UPOLU POINT, HI VORTAC	5700
UPOLU POINT, HI VORTAC	BARBY, HI FIX	5400
BARBY, HI FIX	*SWEEP, HI FIX	**5400
*5400 - MCA SWEEP, HI FIX , S BND		
**3000 - MOCA		
SWEEP, HI FIX	MAUI, HI VORTAC	5000

95.6412 HAWAII VOR FEDERAL AIRWAY V12

*KATHS, HI FIX	**NONNI, OP FIX	29000
*29000 - MRA		
**29000 - MRA		
NONNI, OP FIX	*LEANE, HI FIX	
	W BND	29000
	E BND	16000
*16000 – MRA		
LEANE, HI FIX	*KEOLA, HI FIX	
	W BND	16000
	E BND	5000
*10000 - MRA		
KEOLA, HI FIX	*SHIGI, HI FIX	4000
*5000 - MRA		
SHIGI, HI FIX	HONOLULU, HI VORTAC	4000
HONOLULU, HI VORTAC	*KOKO HEAD, HI VORTAC	5000
*4500 - MCA KOKO HEAD, HI VORTAC , W BND		
KOKO HEAD, HI VORTAC	BAMBO, OP FIX	4500
BAMBO, OP FIX	MAGGI, HI FIX	5000

FROM	TO	MEA

95.6412 HAWAII VOR FEDERAL AIRWAY V12 - CONTINUED

MAGGI, HI FIX	*SHARK, HI FIX	
	NE BND	**16000
	SW BND	**5000
*16000 - MRA		
**1200 - MOCA		

95.6413 HAWAII VOR FEDERAL AIRWAY V13

KOKO HEAD, HI VORTAC	BAMBO, OP FIX	4500
BAMBO, OP FIX	TOADS, HI FIX	5000

95.6415 HAWAII VOR FEDERAL AIRWAY V15

CANON, HI FIX	LILIA, OP FIX	
	W BND	32000
	E BND	8000
LILIA, OP FIX	SOUTH KAUAI, HI VORTAC	*8000
*4800 - MOCA		
SOUTH KAUAI, HI VORTAC	LIHUE, HI VORTAC	5000
LIHUE, HI VORTAC	BOOKE, HI FIX	4000
BOOKE, HI FIX	*SHIGI, HI FIX	5000
*5000 - MRA		
SHIGI, HI FIX	HONOLULU, HI VORTAC	4000
HONOLULU, HI VORTAC	*KOKO HEAD, HI VORTAC	5000
*4500 - MCA KOKO HEAD, HI VORTAC , W BND		
KOKO HEAD, HI VORTAC	MABBL, HI FIX	
	E BND	3500
	W BND	4500
MABBL, HI FIX	*MOLOKAI, HI VORTAC	
	E BND	3500
	W BND	4500
*5000 - MCA MOLOKAI, HI VORTAC , E BND		
MOLOKAI, HI VORTAC	*LORET, HI FIX	7000
*7800 - MCA LORET, HI FIX , E BND		
LORET, HI FIX	*MAUI, HI VORTAC	8000
*6800 - MCA MAUI, HI VORTAC , W BND		
MAUI, HI VORTAC	*BARBY, HI FIX	8400
*9800 - MCA BARBY, HI FIX , E BND		
BARBY, HI FIX	*RABAT, HI FIX	**10000
*10000 - MCA RABAT, HI FIX , W BND		
**2700 - MOCA		
RABAT, HI FIX	*PUMIC, HI FIX	6000
*10000 - MRA		
PUMIC, HI FIX	PARIS, HI FIX	4000
PARIS, HI FIX	*ARBOR, HI FIX	**4000
*8000 - MRA		
**3000 - MOCA		
ARBOR, HI FIX	HILO, HI VORTAC	3000
HILO, HI VORTAC	HODAY, HI FIX	2000
HODAY, HI FIX	EELIC, HI FIX	10000

95.6415 HAWAII VOR FEDERAL AIRWAY V15 – CONTINUED

EELIC, HI FIX	KUMME, HI FIX	
	W BND	10000
	E BND	31000
KUMME, HI FIX	MAITI, HI FIX	31000

95.6416 HAWAII VOR FEDERAL AIRWAY V16

*SYVAD, OP FIX	**PUPPI, OP FIX	
	W BND	32000
	E BND	14000
*32000 - MRA		
**11000 - MRA		
PUPPI, OP FIX	*OHANA, HI FIX	
	W BND	14000
	E BND	5000
*5000 - MRA		
OHANA, HI FIX	SOUTH KAUAI, HI VORTAC	
	W BND	14000
	SE BND	5000
SOUTH KAUAI, HI VORTAC	MORKE, HI FIX	
	NW BND	5000
	SE BND	3000
MORKE, HI FIX	*NAPUA, HI FIX	3000
*6000 - MRA		
NAPUA, HI FIX	*GRAIL, HI FIX	6000
*9000 - MRA		
GRAIL, HI FIX	*KEOLA, HI FIX	9000
*10000 - MRA		
KEOLA, HI FIX	*GECKO, HI FIX	10000
*10000 - MRA		
GECKO, HI FIX	*ALANA, HI FIX	7000
*5000 - MRA		
ALANA, HI FIX	JULLE, HI FIX	5000
JULLE, HI FIX	GRAMY, HI FIX	2000
GRAMY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	*LAVAS, HI FIX	4300
*7000 - MRA		
LAVAS, HI FIX	*UPOLU POINT, HI VORTAC	6000
*5800 - MCA UPOLU POINT, HI VORTAC , E BND		
UPOLU POINT, HI VORTAC	TIGAH, HI FIX	7000
TIGAH, HI FIX	*OKALA, HI FIX	**8000
*6500 - MCA OKALA, HI FIX , W BND		
**5500 - MOCA		
OKALA, HI FIX	*ARBOR, HI FIX	**8000
*8000 - MRA		
**5500 - MOCA		
ARBOR, HI FIX	HILO, HI VORTAC	3000

FROM	TO	MEA

95.6417 HAWAII VOR FEDERAL AIRWAY V17

HARPO, HI FIX	MAUI, HI VORTAC	6000
STAIT, HI FIX	FREDI, HI FIX	*17000
*1200 - MOCA		
FREDI, HI FIX	REXIE, HI FIX	*28000
*1200 - MOCA		

95.6420 HAWAII VOR FEDERAL AIRWAY V20

HONOLULU, HI VORTAC	HAUNA, HI FIX	3000
HAUNA, HI FIX	JULLE, HI FIX	4000
JULLE, HI FIX	JORDA, HI FIX	5000
JORDA, HI FIX	*FIRES, HI FIX	
	NW BND	**10000
	SE BND	**13000
*13000 - MRA		
**1300 - MOCA		
FIRES, HI FIX	*HOKLA, HI FIX	**13000
*13000 - MRA		
**1300 - MOCA		
HOKLA, HI FIX	TYPHO, HI FIX	*8000
*1300 - MOCA		
TYPHO, HI FIX	*ROBYN, HI FIX	
	SE BND	**3000
	NW BND	**8000
*3900 - MCA ROBYN, HI FIX , SE BND		
**1300 - MOCA		
ROBYN, HI FIX	KONA, HI VORTAC	5000

95.6421 HAWAII VOR FEDERAL AIRWAY V21

HONOLULU, HI VORTAC	*ALANA, HI FIX	3000
*5000 - MRA		
ALANA, HI FIX	JULLE, HI FIX	5000
JULLE, HI FIX	GRAMY, HI FIX	2000
GRAMY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	KEIKI, HI FIX	5000
KEIKI, HI FIX	*HARPO, HI FIX	**5000
*8200 - MCA HARPO, HI FIX , E BND		
**2500 - MOCA		
HARPO, HI FIX	FUNKI, HI FIX	*10000
*9000 - MOCA		
FUNKI, HI FIX	*PUMIC, HI FIX	10000
*10000 - MRA		
PUMIC, HI FIX	BISEN, HI FIX	14000
BISEN, HI FIX	CUTLE, HI FIX	21000
CUTLE, HI FIX	OSTAH, HI FIX	24000
OSTAH, HI FIX	SCOON, OP FIX	22000

95.6422 HAWAII VOR FEDERAL AIRWAY V22

*MOLOKAI, HI VORTAC	PLUMB, HI FIX	7000
*5000 - MCA MOLOKAI, HI VORTAC , E BND		
PLUMB, HI FIX	MAUI, HI VORTAC	6300

95.6415 HAWAII VOR FEDERAL AIRWAY V22 - CONTINUED

FROM	TO	MEA
MAUI, HI VORTAC	*BARBY, HI FIX	8400
*12000 - MCA BARBY, HI FIX , SE BND		
BARBY, HI FIX	SARDS, HI FIX	12000
SARDS, HI FIX	BONUS, HI FIX	8000
BONUS, HI FIX	HILO, HI VORTAC	6000
HILO, HI VORTAC	SESAW, HI FIX	2000
SESAW, HI FIX	BATES, HI FIX	8000
BATES, HI FIX	OSTAH, HI FIX	10000
OSTAH, HI FIX	SCOON, OP FIX	22000

95.6423 HAWAII VOR FEDERAL AIRWAY V23

FROM	TO	MEA
UPOLU POINT, HI VORTAC	JESSI, HI FIX	*6000
*5000 - MOCA		
JESSI, HI FIX	*FIRES, HI FIX	8000
*13000 - MRA		

95.6424 HAWAII VOR FEDERAL AIRWAY V24

FROM	TO	MEA
*LANAI, HI VORTAC	MAUI, HI VORTAC	**9000
*5100 - MCA LANAI, HI VORTAC , NE BND		
**7800 - MOCA		

95.6425 HAWAII VOR FEDERAL AIRWAY V25

FROM	TO	MEA
HILO, HI VORTAC	COOKE, HI FIX	3000
COOKE, HI FIX	BASSY, HI FIX	6000
BASSY, HI FIX	CODDY, HI FIX	9000
CODDY, HI FIX	ARROW, HI FIX	26000
ARROW, HI FIX	CLUTS, OP FIX	*26000
*1200 - MOCA		

§95.7001 JET ROUTES

95.7001 JET ROUTE J1

FROM	TO	MEA	MAA
U.S. MEXICAN BORDER	MISSION BAY, CA VORTAC	18000	45000
MISSION BAY, CA VORTAC	OCEANSIDE, CA VORTAC	18000	45000
OCEANSIDE, CA VORTAC	LOS ANGELES, CA VORTAC	18000	45000
LOS ANGELES, CA VORTAC	FILLMORE, CA VORTAC	18000	45000
FILLMORE, CA VORTAC	AVENAL, CA VOR/DME	18000	45000
AVENAL, CA VOR/DME	OAKLAND, CA VOR/DME	18000	45000
OAKLAND, CA VOR/DME	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	ROGUE VALLEY, OR VORTAC	18000	45000
ROGUE VALLEY, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000
BATTLE GROUND, WA VORTAC	SEATTLE, WA VORTAC	18000	45000

95.7002 JET ROUTE J2

FROM	TO	MEA	MAA
MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	18000	45000
IMPERIAL, CA VORTAC	BARD, CA VORTAC	18000	45000
BARD, CA VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	TUCSON, AZ VORTAC	18000	45000
TUCSON, AZ VORTAC	EL PASO, TX VORTAC	#25000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
EL PASO, TX VORTAC	FORT STOCKTON, TX VORTAC	18000	45000
FORT STOCKTON, TX VORTAC	JUNCTION, TX VORTAC	18000	45000
JUNCTION, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	HUMBLE, TX VORTAC	18000	45000
HUMBLE, TX VORTAC	LAKE CHARLES, LA VORTAC	18000	45000
LAKE CHARLES, LA VORTAC	FIGHTING TIGER, LA VORTAC	18000	45000
FIGHTING TIGER, LA VORTAC	SEMMES, AL VORTAC	18000	45000
SEMMES, AL VORTAC	CRESTVIEW, FL VORTAC	18000	45000
CRESTVIEW, FL VORTAC	SEMINOLE, FL VORTAC	18000	45000
SEMINOLE, FL VORTAC	TAYLOR, FL VORTAC	18000	45000

95.7003 JET ROUTE J3

FROM	TO	MEA	MAA
OAKLAND, CA VOR/DME	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	LAKEVIEW, OR VORTAC	18000	45000
LAKEVIEW, OR VORTAC	KIMBERLY, OR VOR/DME	18000	45000
KIMBERLY, OR VOR/DME	SPOKANE, WA VORTAC	18000	45000

95.7004 JET ROUTE J4

FROM	TO	MEA	MAA
LOS ANGELES, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	18000	45000
TWENTYNINE PALMS, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	BUCKEYE, AZ VORTAC	18000	45000
BUCKEYE, AZ VORTAC	SAN SIMON, AZ VORTAC	18000	45000
SAN SIMON, AZ VORTAC	NEWMAN, TX VORTAC	18000	45000
NEWMAN, TX VORTAC	WINK, TX VORTAC	18000	45000
WINK, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	BELCHER, LA VORTAC	18000	45000
BELCHER, LA VORTAC	MAGNOLIA, MS VORTAC	18000	45000
MAGNOLIA, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7005 JET ROUTE J4 – CONTINUED

MERIDIAN, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	COLLIERS, SC VORTAC	18000	45000

95.7005 JET ROUTE J5

LOS ANGELES, CA VORTAC	SHAFTER, CA VORTAC	18000	45000
SHAFTER, CA VORTAC	MUSTANG, NV VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MUSTANG, NV VORTAC	LAKEVIEW, OR VORTAC	18000	45000
LAKEVIEW, OR VORTAC	POWEL, OR FIX	18000	45000
POWEL, OR FIX	SUMMA, WA FIX	24000	45000
SUMMA, WA FIX	SEATTLE, WA VORTAC	18000	45000
SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	18000	45000

95.7006 JET ROUTE J6

SALINAS, CA VORTAC	AVENAL, CA VOR/DME	18000	45000
AVENAL, CA VOR/DME	PALMDALE, CA VORTAC	18000	45000
PALMDALE, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	NEEDLES, CA VORTAC	18000	45000
NEEDLES, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	PYRIT, AZ FIX	22000	45000
PYRIT, AZ FIX	ZUNI, NM VORTAC	18000	45000
ZUNI, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	TUCUMCARI, NM VORTAC	18000	45000
TUCUMCARI, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	BOWLING GREEN, KY VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BOWLING GREEN, KY VORTAC	CHARLESTON, WV VOR/DME	18000	45000
CHARLESTON, WV VOR/DME	MARTINSBURG, WV VORTAC	18000	45000
MARTINSBURG, WV VORTAC	LANCASTER, PA VOR/DME	18000	32000
LANCASTER, PA VOR/DME	BROADWAY, NJ VOR/DME	18000	45000
BROADWAY, NJ VOR/DME	SPARTA, NJ VORTAC	18000	45000
SPARTA, NJ VORTAC	ALBANY, NY VORTAC	18000	45000

95.7007 JET ROUTE J7

LOS ANGELES, CA VORTAC	FILLMORE, CA VORTAC	18000	45000
FILLMORE, CA VORTAC	FRIANT, CA VORTAC	18000	45000
FRIANT, CA VORTAC	MUSTANG, NV VORTAC	18000	45000
MUSTANG, NV VORTAC	ROME, OR VOR/DME	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROME, OR VOR/DME	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	SALMON, ID VOR/DME	18000	45000
SALMON, ID VOR/DME	GREAT FALLS, MT VORTAC	18000	45000
GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7008 JET ROUTE J8

NEEDLES, CA VORTAC	FLAGSTAFF, AZ VOR/DME	18000	45000
FLAGSTAFF, AZ VOR/DME	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	BORGER, TX VORTAC	18000	45000
BORGER, TX VORTAC	KINGFISHER, OK VORTAC	18000	45000
KINGFISHER, OK VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	CHARLESTON, WV VOR/DME	18000	45000
CHARLESTON, WV VOR/DME	CASANOVA, VA VORTAC	18000	45000

95.7009 JET ROUTE J9

LOS ANGELES, CA VORTAC	DAGGETT, CA VORTAC	18000	45000
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	18000	45000
LAS VEGAS, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	WASATCH, UT VORTAC	18000	45000
WASATCH, UT VORTAC	DUBOIS, ID VORTAC	18000	45000
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	18000	45000
DILLON, MT VOR/DME	GREAT FALLS, MT VORTAC	18000	45000

95.7010 JET ROUTE J10

LOS ANGELES, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	18000	45000
TWENTYNINE PALMS, CA VORTAC	HIPPI, AZ FIX	23000	40000
HIPPI, AZ FIX	FLAGSTAFF, AZ VOR/DME	23000	40000
FLAGSTAFF, AZ VOR/DME	RATTLESNAKE, NM VORTAC	18000	40000
RATTLESNAKE, NM VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	NORTH PLATTE, NE VOR/DME	18000	45000
NORTH PLATTE, NE VOR/DME	WOLBACH, NE VORTAC	18000	41000
WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	IOWA CITY, IA VOR/DME	18000	45000

95.7011 JET ROUTE J11

TUCSON, AZ VORTAC	PHOENIX, AZ VORTAC	18000	45000
PHOENIX, AZ VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	BRYCE CANYON, UT VORTAC	18000	45000
BRYCE CANYON, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	WASATCH, UT VORTAC	18000	45000

95.7012 JET ROUTE J12

SEATTLE, WA VORTAC	EPHRATA, WA VORTAC	18000	45000
EPHRATA, WA VORTAC	DONNELLY, ID VOR/DME	18000	45000
DONNELLY, ID VOR/DME	TWIN FALLS, ID VORTAC	18000	45000
TWIN FALLS, ID VORTAC	WASATCH, UT VORTAC	22000	45000
WASATCH, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	GRAND JUNCTION, CO VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7013 JET ROUTE J13

FROM	TO	MEA	MAA
U.S. MEXICAN BORDER	TRUTH OR CONSEQUENCES, NM VORTAC	18000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	FALCON, CO VORTAC	23000	45000
FALCON, CO VORTAC	CHEYENNE, WY VORTAC	18000	45000
CHEYENNE, WY VORTAC	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	GREAT FALLS, MT VORTAC	18000	45000
GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7014 JET ROUTE J14

FROM	TO	MEA	MAA
PANHANDLE, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	GREENSBORO, NC VORTAC	18000	45000
GREENSBORO, NC VORTAC	RICHMOND, VA VORTAC	18000	45000
RICHMOND, VA VORTAC	PATUXENT, MD VORTAC	18000	45000

95.7015 JET ROUTE J15

FROM	TO	MEA	MAA
HUMBLE, TX VORTAC	MARCS, TX FIX	19000	45000
MARCS, TX FIX	JUNCTION, TX VORTAC	18000	45000
JUNCTION, TX VORTAC	WINK, TX VORTAC	18000	45000
WINK, TX VORTAC	CHISUM, NM VORTAC	18000	45000
CHISUM, NM VORTAC	CORONA, NM VORTAC	18000	45000
CORONA, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	RATTLESNAKE, NM VORTAC	18000	45000
RATTLESNAKE, NM VORTAC	GRAND JUNCTION, CO VOR/DME	18000	45000
GRAND JUNCTION, CO VOR/DME	WASATCH, UT VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
WASATCH, UT VORTAC	TWIN FALLS, ID VORTAC	22000	45000
TWIN FALLS, ID VORTAC	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	KIMBERLY, OR VOR/DME	18000	45000
KIMBERLY, OR VOR/DME	BATTLE GROUND, WA VORTAC	18000	45000

95.7016 JET ROUTE J16

FROM	TO	MEA	MAA
BATTLE GROUND, WA VORTAC	PENDLETON, OR VORTAC	18000	45000
PENDLETON, OR VORTAC	WHITEHALL, MT VOR/DME	#29000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
WHITEHALL, MT VOR/DME	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	DUPREE, SD VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUPREE, SD VOR/DME	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	MASON CITY, IA VOR/DME	18000	45000
MASON CITY, IA VOR/DME	BADGER, WI VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7017 JET ROUTE J17

SAN ANTONIO, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	TOBE, CO VOR/DME	18000	45000
TOBE, CO VOR/DME	PUEBLO, CO VORTAC	18000	45000
PUEBLO, CO VORTAC	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	CHEYENNE, WY VORTAC	18000	45000
CHEYENNE, WY VORTAC	RAPID CITY, SD VORTAC	18000	45000

95.7018 JET ROUTE J18

MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	18000	45000
IMPERIAL, CA VORTAC	BARD, CA VORTAC	18000	45000
BARD, CA VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	PHOENIX, AZ VORTAC	18000	45000
PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	GARDEN CITY, KS VORTAC	18000	45000
GARDEN CITY, KS VORTAC	SALINA, KS VORTAC	18000	45000
SALINA, KS VORTAC	ST JOSEPH, MO VORTAC	18000	45000
ST JOSEPH, MO VORTAC	MOLINE, IL VOR/DME	18000	35000
MOLINE, IL VOR/DME	JOLIET, IL VOR/DME	18000	35000

95.7019 JET ROUTE J19

PHOENIX, AZ VORTAC	ZUNI, NM VORTAC	19000	45000
ZUNI, NM VORTAC	BUKKO, NM FIX	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BUKKO, NM FIX	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	BUTLER, MO VORTAC	18000	45000
BUTLER, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	ROBERTS, IL VOR/DME	18000	35000
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	35000

95.7020 JET ROUTE J20

SEATTLE, WA VORTAC	YAKIMA, WA VORTAC	18000	45000
YAKIMA, WA VORTAC	PENDLETON, OR VORTAC	18000	45000
PENDLETON, OR VORTAC	DONNELLY, ID VOR/DME	18000	45000
DONNELLY, ID VOR/DME	POCATELLO, ID VOR/DME	18000	45000
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	21000	45000
ROCK SPRINGS, WY VOR/DME	FALCON, CO VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
FALCON, CO VORTAC	HUGO, CO VOR/DME	18000	45000
HUGO, CO VOR/DME	LAMAR, CO VOR/DME	18000	45000
LAMAR, CO VOR/DME	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	BELCHER, LA VORTAC	18000	45000
BELCHER, LA VORTAC	MAGNOLIA, MS VORTAC	18000	45000
MAGNOLIA, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7005 JET ROUTE J20 – CONTINUED

MONTGOMERY, AL VORTAC	SEMINOLE, FL VORTAC	18000	45000

95.7021 JET ROUTE J21

U.S. MEXICAN BORDER	LAREDO, TX VORTAC	18000	45000
LAREDO, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	18000	45000
CENTEX, TX VORTAC	WACO, TX VORTAC	18000	45000
WACO, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	ARDMORE, OK VORTAC	18000	45000
ARDMORE, OK VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	OMAHA, IA VORTAC	18000	45000
OMAHA, IA VORTAC	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	DULUTH, MN VORTAC	18000	45000

95.7022 JET ROUTE J22

U.S. MEXICAN BORDER	LAREDO, TX VORTAC	18000	45000
LAREDO, TX VORTAC	CORPUS CHRISTI, TX VORTAC	18000	45000
CORPUS CHRISTI, TX VORTAC	PALACIOS, TX VORTAC	18000	45000
PALACIOS, TX VORTAC	LAKE CHARLES, LA VORTAC	18000	45000
LAKE CHARLES, LA VORTAC	MC COMB, MS VORTAC	18000	45000
MC COMB, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	PULASKI, VA VORTAC	18000	45000
PULASKI, VA VORTAC	MONTEBELLO, VA VOR/DME	18000	45000

95.7023 JET ROUTE J23

SAN ANTONIO, TX VORTAC	MILLSAP, TX VORTAC	18000	45000
MILLSAP, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	PIONEER, OK VORTAC	18000	45000
PIONEER, OK VORTAC	WICHITA, KS VORTAC	18000	45000

95.7024 JET ROUTE J24

MYTON, UT VOR/DME	HAYDEN, CO VOR/DME	18000	45000
HUGO, CO VOR/DME	HAYS, KS VORTAC	18000	45000
HAYS, KS VORTAC	SALINA, KS VORTAC	18000	45000
SALINA, KS VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	BRICKYARD, IN VORTAC	18000	45000
BRICKYARD, IN VORTAC	FALMOUTH, KY VOR/DME	18000	45000
FALMOUTH, KY VOR/DME	CHARLESTON, WV VOR/DME	18000	45000
CHARLESTON, WV VOR/DME	MONTEBELLO, VA VOR/DME	18000	41000
MONTEBELLO, VA VOR/DME	FLAT ROCK, VA VORTAC	18000	41000
FLAT ROCK, VA VORTAC	HARCUM, VA VORTAC	18000	29000

FROM	TO	MEA	MAA

95.7025 JET ROUTE J25

U.S. MEXICAN BORDER	BROWNSVILLE, TX VORTAC	18000	45000
BROWNSVILLE, TX VORTAC	CORPUS CHRISTI, TX VORTAC	18000	45000
CORPUS CHRISTI, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	CENTEX, TX VORTAC	18000	45000
CENTEX, TX VORTAC	WACO, TX VORTAC	18000	45000
WACO, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	MASON CITY, IA VOR/DME	18000	45000
MASON CITY, IA VOR/DME	GOPHER, MN VORTAC	18000	45000

95.7026 JET ROUTE J26

U.S. MEXICAN BORDER	EL PASO, TX VORTAC	18000	45000
EL PASO, TX VORTAC	CHISUM, NM VORTAC	18000	45000
CHISUM, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	18000	45000
MITBEE, OK VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	BRADFORD, IL VORTAC	18000	45000
BRADFORD, IL VORTAC	JOLIET, IL VOR/DME	18000	45000

95.7027 JET ROUTE J27

SAN ANTONIO, TX VORTAC	LUFKIN, TX VORTAC	18000	45000

95.7028 JET ROUTE J28

MILFORD, UT VORTAC	HANKSVILLE, UT VORTAC	18000	45000
HANKSVILLE, UT VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	PUEBLO, CO VORTAC	18000	45000
PUEBLO, CO VORTAC	GARDEN CITY, KS VORTAC	18000	45000
GARDEN CITY, KS VORTAC	WICHITA, KS VORTAC	18000	45000

95.7029 JET ROUTE J29

U.S. MEXICAN BORDER	CORPUS CHRISTI, TX VORTAC	24000	45000
CORPUS CHRISTI, TX VORTAC	PALACIOS, TX VORTAC	18000	45000
PALACIOS, TX VORTAC	HUMBLE, TX VORTAC	18000	45000
HUMBLE, TX VORTAC	EL DORADO, AR VOR/DME	18000	45000
EL DORADO, AR VOR/DME	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	POCKET CITY, IN VORTAC	18000	45000

95.7030 JET ROUTE J30

NODINE, MN VORTAC	JOLIET, IL VOR/DME	18000	45000
JOLIET, IL VOR/DME	APPLETON, OH VORTAC	18000	45000
APPLETON, OH VORTAC	BUCKO, WV FIX	20000	39000
BUCKO, WV FIX	KESSEL, WV VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7005 JET ROUTE J30 – CONTINUED

KESSEL, WV VOR/DME	TRIXY, VA FIX	19000	29000

95.7031 JET ROUTE J31

LEEVILLE, LA VORTAC	HARVEY, LA VORTAC	18000	45000
HARVEY, LA VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	VULCAN, AL VORTAC	18000	45000

95.7032 JET ROUTE J32

OAKLAND, CA VOR/DME	SACRAMENTO, CA VORTAC	18000	45000
SACRAMENTO, CA VORTAC	MUSTANG, NV VORTAC	18000	45000
MUSTANG, NV VORTAC	LOVELOCK, NV VORTAC	18000	45000
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	18000	45000
BATTLE MOUNTAIN, NV VORTAC	MALAD CITY, ID VOR/DME	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MALAD CITY, ID VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	18000	45000
BOYSEN RESERVOIR, WY VOR/DME	CRAZY WOMAN, WY VOR/DME	18000	45000
CRAZY WOMAN, WY VOR/DME	DUPREE, SD VOR/DME	18000	45000
DUPREE, SD VOR/DME	ABERDEEN, SD VOR/DME	18000	45000
ABERDEEN, SD VOR/DME	DULUTH, MN VORTAC	18000	45000

95.7033 JET ROUTE J33

HUMBLE, TX VORTAC	DONIE, TX FIX	18000	45000
DONIE, TX FIX	RANGER, TX VORTAC	18000	45000

95.7034 JET ROUTE J34

HOQUIAM, WA VORTAC	OLYMPIA, WA VORTAC	18000	45000
OLYMPIA, WA VORTAC	MOSES LAKE, WA VOR/DME	18000	45000
MOSES LAKE, WA VOR/DME	HELENA, MT VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
HELENA, MT VORTAC	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	DUPREE, SD VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUPREE, SD VOR/DME	REDWOOD FALLS, MN VOR/DME	18000	45000
REDWOOD FALLS, MN VOR/DME	NODINE, MN VORTAC	18000	45000
NODINE, MN VORTAC	DELLS, WI VORTAC	18000	45000
DELLS, WI VORTAC	BADGER, WI VOR/DME	18000	45000
BADGER, WI VOR/DME	VICTORY, MI VOR/DME	18000	45000
VICTORY, MI VOR/DME	CARLETON, MI VOR/DME	18000	45000
CARLETON, MI VOR/DME	DRYER, OH VOR/DME	18000	45000
DRYER, OH VOR/DME	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	BUCKO, WV FIX	18000	45000
BUCKO, WV FIX	KESSEL, WV VOR/DME	18000	45000
KESSEL, WV VOR/DME	TRIXY, VA FIX	19000	29000

FROM	TO	MEA	MAA

95.7035 JET ROUTE J35

LEEVILLE, LA VORTAC	MC COMB, MS VORTAC	18000	45000
MC COMB, MS VORTAC	SIDON, MS VORTAC	18000	45000
SIDON, MS VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	SPINNER, IL VORTAC	18000	45000
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	18000	31000
PONTIAC, IL VOR/DME	JOLIET, IL VOR/DME	18000	35000
JOLIET, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	45000

95.7036 JET ROUTE J36

MULLAN PASS, ID VOR/DME	GREAT FALLS, MT VORTAC	18000	45000
GREAT FALLS, MT VORTAC	HILGR, MT FIX	18000	45000
HILGR, MT FIX	DICKINSON, ND VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DICKINSON, ND VORTAC	FARGO, ND VOR/DME	18000	45000
FARGO, ND VOR/DME	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	NODINE, MN VORTAC	18000	45000
NODINE, MN VORTAC	BADGER, WI VOR/DME	18000	45000
BADGER, WI VOR/DME	FLINT, MI VORTAC	18000	45000

95.7037 JET ROUTE J37

HOBBY, TX VOR/DME	HARVEY, LA VORTAC	18000	45000
HARVEY, LA VORTAC	SEMMES, AL VORTAC	18000	45000
SEMMES, AL VORTAC	MONTGOMERY, AL VORTAC	18000	
LYNCHBURG, VA VOR/DME	GORDONSVILLE, VA VORTAC	18000	45000
GORDONSVILLE, VA VORTAC	BROOKE, VA VORTAC	18000	45000
BROOKE, VA VORTAC	NALES, DE FIX	18000	31000
NALES, DE FIX	COYLE, NJ VORTAC	18000	45000
KENNEDY, NY VOR/DME	KINGSTON, NY VOR/DME	18000	45000
KINGSTON, NY VOR/DME	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	MASSENA, NY VORTAC	#23000	45000
#MASSENA R-177 UNUSABLE USE ALBANY R-356			

95.7039 JET ROUTE J39

CRESTVIEW, FL VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	ROSEWOOD, OH VORTAC	18000	45000

95.7040 JET ROUTE J40

MONTGOMERY, AL VORTAC	MACON, GA VORTAC	#18000	45000
#MACON R-258 UNUSABLE USE MONTGOMERY R-075			
MACON, GA VORTAC	CHARLESTON, SC VORTAC	18000	45000
CHARLESTON, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000
WILMINGTON, NC VORTAC	TAR RIVER, NC VORTAC	18000	45000
TAR RIVER, NC VORTAC	RICHMOND, VA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7041 JET ROUTE J41

SEMINOLE, FL VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	OMAHA, IA VORTAC	18000	45000

95.7042 JET ROUTE J42

U.S. MEXICAN BORDER	FORT STOCKTON, TX VORTAC	18000	45000
FORT STOCKTON, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	TEXARKANA, AR VORTAC	18000	45000
TEXARKANA, AR VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	FOUNT, KY FIX	18000	45000
FOUNT, KY FIX	TONIO, KY FIX	#*20000	35000
*18000 - GNSS MEA			
TONIO, KY FIX	BECKLEY, WV VOR/DME	18000	35000
BECKLEY, WV VOR/DME	MONTEBELLO, VA VOR/DME	18000	41000
MONTEBELLO, VA VOR/DME	GORDONSVILLE, VA VORTAC	18000	41000
GORDONSVILLE, VA VORTAC	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	*GRACO, MD FIX	18000	35000
*10000 - MRA			
GRACO, MD FIX	WOODSTOWN, NJ VORTAC	18000	45000
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	18000	45000
ROBBINSVILLE, NJ VORTAC	HARTFORD, CT VOR/DME	18000	45000
HARTFORD, CT VOR/DME	PUTNAM, CT VOR/DME	18000	45000
PUTNAM, CT VOR/DME	BOSTON, MA VOR/DME	18000	45000

95.7043 JET ROUTE J43

NEDDY, GA FIX	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	FALMOUTH, KY VOR/DME	18000	45000
FALMOUTH, KY VOR/DME	ROSEWOOD, OH VORTAC	18000	45000
ROSEWOOD, OH VORTAC	CARLETON, MI VOR/DME	18000	45000

95.7044 JET ROUTE J44

PHOENIX, AZ VORTAC	WINSLOW, AZ VORTAC	18000	45000
WINSLOW, AZ VORTAC	RATTLESNAKE, NM VORTAC	18000	45000
RATTLESNAKE, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	FALCON, CO VORTAC	23000	45000
FALCON, CO VORTAC	MC COOK, NE VOR/DME	18000	45000
MC COOK, NE VOR/DME	LINCOLN, NE VORTAC	18000	41000

95.7045 JET ROUTE J45

ALMA, GA VORTAC	MACON, GA VORTAC	#18000	45000
#ALMA R-320 UNUSABLE USE MACON R-139			
MACON, GA VORTAC	ATLANTA, GA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7045 JET ROUTE J45 - CONTINUED

ATLANTA, GA VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	DES MOINES, IA VORTAC	#18000	45000
#DES MOINES R-141 UNUSABLE, USE KIRKVILLE R-323			
DES MOINES, IA VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	ABERDEEN, SD VOR/DME	18000	45000

95.7046 JET ROUTE J46

TULSA, OK VORTAC	WALNUT RIDGE, AR VORTAC	18000	45000
WALNUT RIDGE, AR VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	VOLUNTEER, TN VORTAC	18000	45000

95.7048 JET ROUTE J48

*LANNA, NJ FIX	POTTSTOWN, PA VORTAC	18000	45000
*5000 - MRA			
POTTSTOWN, PA VORTAC	WESTMINSTER, MD VORTAC	18000	45000
WESTMINSTER, MD VORTAC	CASANOVA, VA VORTAC	18000	45000
CASANOVA, VA VORTAC	MONTEBELLO, VA VOR/DME	18000	41000
MONTEBELLO, VA VOR/DME	FOOTHILLS, SC VOR/DME	18000	41000

95.7049 JET ROUTE J49

PHILIPSBURG, PA VORTAC	HANCOCK, NY VOR/DME	18000	45000
HANCOCK, NY VOR/DME	ALBANY, NY VORTAC	18000	45000
ALBANY, NY VORTAC	BANGOR, ME VORTAC	18000	45000
BANGOR, ME VORTAC	PRESQUE ISLE, ME VOR/DME	18000	45000

95.7050 JET ROUTE J50

SHAFTER, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	BLYTHE, CA VORTAC	18000	45000
BLYTHE, CA VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	STANFIELD, AZ VORTAC	18000	45000
STANFIELD, AZ VORTAC	SAN SIMON, AZ VORTAC	18000	45000
SAN SIMON, AZ VORTAC	EL PASO, TX VORTAC	18000	45000
EL PASO, TX VORTAC	WINK, TX VORTAC	18000	45000
WINK, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	WACO, TX VORTAC	18000	45000
WACO, TX VORTAC	LUFKIN, TX VORTAC	18000	45000
LUFKIN, TX VORTAC	ALEXANDRIA, LA VORTAC	18000	45000
ALEXANDRIA, LA VORTAC	MC COMB, MS VORTAC	18000	45000
MC COMB, MS VORTAC	CRESTVIEW, FL VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7051 JET ROUTE J51

TUBAS, NC FIX	FLAT ROCK, VA VORTAC	#*26000	45000
*18000 - GNSS MEA			
#FLAT ROCK R-218 UNUSABLE			
FLAT ROCK, VA VORTAC	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	PALEO, MD FIX	#18000	29000
#UNUSABLE			
PALEO, MD FIX	DUPONT, DE VORTAC	#18000	29000
#UNUSABLE			
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	18000	29000

95.7052 JET ROUTE J52

U.S. CANADIAN BORDER	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	SALMON, ID VOR/DME	18000	45000
SALMON, ID VOR/DME	DUBOIS, ID VORTAC	18000	45000
DUBOIS, ID VORTAC	ROCK SPRINGS, WY VOR/DME	18000	45000
ROCK SPRINGS, WY VOR/DME	FALCON, CO VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
FALCON, CO VORTAC	HUGO, CO VOR/DME	18000	45000
HUGO, CO VOR/DME	LAMAR, CO VOR/DME	18000	45000
LAMAR, CO VOR/DME	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	ARDMORE, OK VORTAC	18000	45000
ARDMORE, OK VORTAC	TEXARKANA, AR VORTAC	18000	45000
TEXARKANA, AR VORTAC	SIDON, MS VORTAC	18000	45000
SIDON, MS VORTAC	BIGBEE, MS VORTAC	18000	45000
BIGBEE, MS VORTAC	VULCAN, AL VORTAC	18000	45000
VULCAN, AL VORTAC	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	COLUMBIA, SC VORTAC	18000	45000
TUBAS, NC FIX	RALEIGH/DURHAM, NC VORTAC	18000	45000
RALEIGH/DURHAM, NC VORTAC	RICHMOND, VA VORTAC	18000	45000

95.7053 JET ROUTE J53

DUNKN, GA FIX	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	PULASKI, VA VORTAC	18000	45000

95.7054 JET ROUTE J54

TATOOSH, WA VORTAC	OLYMPIA, WA VORTAC	18000	45000
OLYMPIA, WA VORTAC	BAKER CITY, OR VOR/DME	#24000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	18000	45000
POCATELLO, ID VOR/DME	CHEROKEE, WY VOR/DME	25000	45000
CHEROKEE, WY VOR/DME	LARAMIE, WY VOR/DME	18000	45000

95.7055 JET ROUTE J55

CHARLESTON, SC VORTAC	FLORENCE, SC VORTAC	18000	45000
FLORENCE, SC VORTAC	TUBAS, NC FIX	18000	45000
TUBAS, NC FIX	RALEIGH/DURHAM, NC VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7045 JET ROUTE J55 - CONTINUED

RALEIGH/DURHAM, NC VORTAC	HOPEWELL, VA VORTAC	18000	45000
HOPEWELL, VA VORTAC	HUBBS, VA FIX	18000	20000
SEA ISLE, NJ VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	PROVIDENCE, RI VOR/DME	18000	45000
PROVIDENCE, RI VOR/DME	BOSTON, MA VOR/DME	18000	45000
BOSTON, MA VOR/DME	KENNEBUNK, ME VOR/DME	18000	45000
KENNEBUNK, ME VOR/DME	PRESQUE ISLE, ME VOR/DME	19000	45000

95.7056 JET ROUTE J56

MINA, NV VORTAC	WASATCH, UT VORTAC	#33000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
WASATCH, UT VORTAC	HAYDEN, CO VOR/DME	25000	45000
HAYDEN, CO VOR/DME	FALCON, CO VORTAC	18000	45000

95.7057 JET ROUTE J57

TRUTH OR CONSEQUENCES, NM VORTAC	SOCORRO, NM VORTAC	18000	45000
SOCORRO, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000

95.7058 JET ROUTE J58

COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	18000	45000
WILSON CREEK, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	RATTLESNAKE, NM VORTAC	33000	45000
RATTLESNAKE, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	WICHITA FALLS, TX VORTAC	18000	45000
WICHITA FALLS, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	ALEXANDRIA, LA VORTAC	18000	45000
ALEXANDRIA, LA VORTAC	HARVEY, LA VORTAC	18000	45000

95.7059 JET ROUTE J59

PHILIPSBURG, PA VORTAC	SYRACUSE, NY VORTAC	18000	45000

95.7060 JET ROUTE J60

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	18000	45000
BOULDER CITY, NV VORTAC	BRYCE CANYON, UT VORTAC	18000	45000
BRYCE CANYON, UT VORTAC	HANKSVILLE, UT VORTAC	18000	45000
HANKSVILLE, UT VORTAC	RED TABLE, CO VOR/DME	18000	45000
RED TABLE, CO VOR/DME	MILE HIGH, CO VORTAC	18000	45000
MILE HIGH, CO VORTAC	HAYES CENTER, NE VORTAC	18000	45000
HAYES CENTER, NE VORTAC	LINCOLN, NE VORTAC	18000	45000
LINCOLN, NE VORTAC	IOWA CITY, IA VOR/DME	18000	45000
IOWA CITY, IA VOR/DME	JOLIET, IL VOR/DME	18000	45000
JOLIET, IL VOR/DME	GOSHEN, IN VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7045 JET ROUTE J60 - CONTINUED

GOSHEN, IN VORTAC	DRYER, OH VOR/DME	18000	45000
DRYER, OH VOR/DME	PHILIPSBURG, PA VORTAC	18000	45000
PHILIPSBURG, PA VORTAC	SPARTA, NJ VORTAC	18000	45000

95.7061 JET ROUTE J61

EDDYS, NC FIX	FORTS, VA FIX	31000	45000
FORTS, VA FIX	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	WESTMINSTER, MD VORTAC	18000	45000
WESTMINSTER, MD VORTAC	PHILIPSBURG, PA VORTAC	18000	45000

95.7062 JET ROUTE J62

ROBBINSVILLE, NJ VORTAC	NANTUCKET, MA VOR/DME	18000	45000

95.7064 JET ROUTE J64

LOS ANGELES, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	PEACH SPRINGS, AZ VOR/DME	18000	45000
PEACH SPRINGS, AZ VOR/DME	TUBA CITY, AZ VORTAC	18000	45000
TUBA CITY, AZ VORTAC	RATTLESNAKE, NM VORTAC	18000	45000
RATTLESNAKE, NM VORTAC	PUEBLO, CO VORTAC	20000	45000
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	18000	45000
HILL CITY, KS VORTAC	PAWNEE CITY, NE VORTAC	18000	45000
PAWNEE CITY, NE VORTAC	LAMONI, IA VOR/DME	18000	45000
LAMONI, IA VOR/DME	BRADFORD, IL VORTAC	18000	45000
BRADFORD, IL VORTAC	FORT WAYNE, IN VORTAC	18000	45000
FORT WAYNE, IN VORTAC	ELLWOOD CITY, PA VOR/DME	18000	45000
ELLWOOD CITY, PA VOR/DME	RAVINE, PA VORTAC	18000	45000
RAVINE, PA VORTAC	SARAA, PA FIX	18000	45000

95.7065 JET ROUTE J65

SAN ANTONIO, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	CHISUM, NM VORTAC	25000	45000
CHISUM, NM VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	24000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	PHOENIX, AZ VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
PHOENIX, AZ VORTAC	BLYTHE, CA VORTAC	18000	45000
BLYTHE, CA VORTAC	PALMDALE, CA VORTAC	18000	45000
PALMDALE, CA VORTAC	SHAFTER, CA VORTAC	18000	45000
SACRAMENTO, CA VORTAC	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	KLAMATH FALLS, OR VORTAC	18000	45000
KLAMATH FALLS, OR VORTAC	SEATTLE, WA VORTAC	#31000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7066 JET ROUTE J66

NEWMAN, TX VORTAC	BIG SPRING, TX VORTAC	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

FROM	TO	MEA	MAA

95.7045 JET ROUTE J66 - CONTINUED

BIG SPRING, TX VORTAC	ABILENE, TX VORTAC	18000	45000
ABILENE, TX VORTAC	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	BONHAM, TX VORTAC	18000	45000
BONHAM, TX VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	MEMPHIS, TN VORTAC	18000	45000
MEMPHIS, TN VORTAC	ROME, GA VORTAC	18000	45000

95.7067 JET ROUTE J67

LINDEN, CA VOR/DME	LAKEVIEW, OR VORTAC	18000	45000
LAKEVIEW, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000

95.7068 JET ROUTE J68

GOPHER, MN VORTAC	DELLS, WI VORTAC	18000	45000
DELLS, WI VORTAC	BADGER, WI VOR/DME	18000	45000
BADGER, WI VOR/DME	FLINT, MI VORTAC	18000	45000
HANCOCK, NY VOR/DME	PUTNAM, CT VOR/DME	18000	45000
PUTNAM, CT VOR/DME	PROVIDENCE, RI VOR/DME	18000	45000
PROVIDENCE, RI VOR/DME	NANTUCKET, MA VOR/DME	18000	45000

95.7069 JET ROUTE J69

SEMMES, AL VORTAC	DELBE, AL FIX	22000	45000
DELBE, AL FIX	VULCAN, AL VORTAC	18000	45000

95.7070 JET ROUTE J70

HOQUIAM, WA VORTAC	SEATTLE, WA VORTAC	18000	45000
SEATTLE, WA VORTAC	EPHRATA, WA VORTAC	18000	45000
EPHRATA, WA VORTAC	MULLAN PASS, ID VOR/DME	18000	45000
MULLAN PASS, ID VOR/DME	LEWISTOWN, MT VOR/DME	18000	45000
LEWISTOWN, MT VOR/DME	DICKINSON, ND VORTAC	18000	45000
DICKINSON, ND VORTAC	ABERDEEN, SD VOR/DME	24000	45000
ABERDEEN, SD VOR/DME	GOPHER, MN VORTAC	18000	45000
GOPHER, MN VORTAC	NICKL, WI FIX	18000	45000
NICKL, WI FIX	AUGER, WI FIX	25000	45000
*25000 - MCA AUGER, WI FIX , W BND			
AUGER, WI FIX	BADGER, WI VOR/DME	18000	45000
BADGER, WI VOR/DME	PULLMAN, MI VOR/DME	18000	45000
PULLMAN, MI VOR/DME	SALEM, MI VORTAC	18000	45000
SALEM, MI VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	JAMESTOWN, NY VOR/DME	18000	45000
JAMESTOWN, NY VOR/DME	WILKES-BARRE, PA VORTAC	18000	45000
WILKES-BARRE, PA VORTAC	STILLWATER, NJ VOR/DME	18000	45000
STILLWATER, NJ VOR/DME	LA GUARDIA, NY VOR/DME	18000	24000
LA GUARDIA, NY VOR/DME	KENNEDY, NY VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7071 JET ROUTE J71

MEMPHIS, TN VORTAC	CENTRALIA, IL VORTAC	18000	45000
CENTRALIA, IL VORTAC	ROBERTS, IL VOR/DME	18000	35000
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	35000

95.7072 JET ROUTE J72

BOULDER CITY, NV VORTAC	PEACH SPRINGS, AZ VOR/DME	18000	45000
PEACH SPRINGS, AZ VOR/DME	GALLUP, NM VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
GALLUP, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	TEXICO, TX VORTAC	18000	45000
TEXICO, TX VORTAC	WICHITA FALLS, TX VORTAC	18000	45000

95.7073 JET ROUTE J73

WYATT, GA FIX	LAGRANGE, GA VORTAC	18000	45000
LAGRANGE, GA VORTAC	NASHVILLE, TN VORTAC	18000	45000
NASHVILLE, TN VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7074 JET ROUTE J74

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	NABOB, AZ FIX	21000	45000
NABOB, AZ FIX	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	CORONA, NM VORTAC	18000	45000
CORONA, NM VORTAC	TEXICO, TX VORTAC	18000	45000
TEXICO, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000

95.7075 JET ROUTE J75

GREENSBORO, NC VORTAC	GORDONSVILLE, VA VORTAC	18000	45000
GORDONSVILLE, VA VORTAC	MODENA, PA VORTAC	18000	45000
MODENA, PA VORTAC	SOLBERG, NJ VOR/DME	18000	23000
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	18000	32000
#CARMEL, NY VOR/DME	NELIE, CT FIX	18000	45000
#RADAR REQUIRED BETWEEN CARMEL AND NELIE			
NELIE, CT FIX	BOSTON, MA VOR/DME	18000	45000

95.7076 JET ROUTE J76

LAS VEGAS, NV VORTAC	TUBA CITY, AZ VORTAC	18000	45000
TUBA CITY, AZ VORTAC	FORT UNION, NM VORTAC	#27000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
#MEA GAP			
FORT UNION, NM VORTAC	TUCUMCARI, NM VORTAC	18000	45000
TUCUMCARI, NM VORTAC	WICHITA FALLS, TX VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7078 JET ROUTE J78

LOS ANGELES, CA VORTAC	SEAL BEACH, CA VORTAC	18000	45000
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	18000	45000
THERMAL, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	PYRIT, AZ FIX	22000	45000
PYRIT, AZ FIX	ZUNI, NM VORTAC	18000	45000
ZUNI, NM VORTAC	ALBUQUERQUE, NM VORTAC	18000	45000
ALBUQUERQUE, NM VORTAC	TUCUMCARI, NM VORTAC	18000	45000
TUCUMCARI, NM VORTAC	PANHANDLE, TX VORTAC	18000	45000
PANHANDLE, TX VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	CHARLESTON, WV VOR/DME	18000	45000

95.7079 JET ROUTE J79

CHARLESTON, SC VORTAC	TAR RIVER, NC VORTAC	18000	45000
TAR RIVER, NC VORTAC	FRANKLIN, VA VORTAC	18000	45000
FRANKLIN, VA VORTAC	SALISBURY, MD VORTAC	18000	45000
SALISBURY, MD VORTAC	KENNEDY, NY VOR/DME	18000	45000
KENNEDY, NY VOR/DME	CUJKE, MA FIX	18000	45000
CUJKE, MA FIX	MARCONI, MA VOR/DME	#99999	
#UNUSABLE			
MARCONI, MA VOR/DME	BANGOR, ME VORTAC	18000	45000

95.7080 JET ROUTE J80

COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	18000	45000
WILSON CREEK, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	GRAND JUNCTION, CO VOR/DME	18000	45000
GRAND JUNCTION, CO VOR/DME	RED TABLE, CO VOR/DME	18000	45000
RED TABLE, CO VOR/DME	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	GOODLAND, KS VORTAC	18000	45000
GOODLAND, KS VORTAC	HILL CITY, KS VORTAC	18000	45000
HILL CITY, KS VORTAC	KANSAS CITY, MO VORTAC	18000	45000
KANSAS CITY, MO VORTAC	SPINNER, IL VORTAC	18000	45000
SPINNER, IL VORTAC	BRICKYARD, IN VORTAC	18000	45000
BRICKYARD, IN VORTAC	BELLAIRE, OH VOR/DME	18000	45000

95.7081 JET ROUTE J81

DUNKN, GA FIX	COLLIERS, SC VORTAC	18000	45000

95.7082 JET ROUTE J82

BATTLE GROUND, WA VORTAC	DONNELLY, ID VOR/DME	22000	45000
DONNELLY, ID VOR/DME	DUBOIS, ID VORTAC	18000	45000
DUBOIS, ID VORTAC	CRAZY WOMAN, WY VOR/DME	#25000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CRAZY WOMAN, WY VOR/DME	RAPID CITY, SD VORTAC	18000	45000
RAPID CITY, SD VORTAC	SIOUX FALLS, SD VORTAC	18000	45000

95.7082 JET ROUTE J82 – CONTINUED

FROM	TO	MEA	MAA
SIOUX FALLS, SD VORTAC	FORT DODGE, IA VORTAC	18000	45000
FORT DODGE, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000
DUBUQUE, IA VORTAC	JOLIET, IL VOR/DME	18000	45000
JOLIET, IL VOR/DME	GOSHEN, IN VORTAC	18000	45000

95.7083 JET ROUTE J83

FROM	TO	MEA	MAA
SPARTANBURG, SC VORTAC	APPLETON, OH VORTAC	23000	45000
APPLETON, OH VORTAC	DRYER, OH VOR/DME	#18000	45000
#APPLETON R-021 UNUSABLE.			

95.7084 JET ROUTE J84

FROM	TO	MEA	MAA
OAKLAND, CA VOR/DME	LINDEN, CA VOR/DME	18000	45000
LINDEN, CA VOR/DME	MINA, NV VORTAC	18000	45000
MINA, NV VORTAC	DELTA, UT VORTAC	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DELTA, UT VORTAC	MEEKER, CO VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MEEKER, CO VOR/DME	SIDNEY, NE VOR/DME	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
SIDNEY, NE VOR/DME	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	DUBUQUE, IA VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	DANVILLE, IL VORTAC	18000	35000

95.7085 JET ROUTE J85

FROM	TO	MEA	MAA
ALMA, GA VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	CHARLESTON, WV VOR/DME	18000	45000
CHARLESTON, WV VOR/DME	DRYER, OH VOR/DME	18000	45000

95.7086 JET ROUTE J86

FROM	TO	MEA	MAA
BEATTY, NV VORTAC	FUZZY, NV FIX	18000	45000
FUZZY, NV FIX	BOULDER CITY, NV VORTAC	29000	45000
BOULDER CITY, NV VORTAC	PEACH SPRINGS, AZ VOR/DME	18000	45000
PEACH SPRINGS, AZ VOR/DME	BAVPE, AZ FIX	18000	45000
BAVPE, AZ FIX	WINSLOW, AZ VORTAC	18000	45000
WINSLOW, AZ VORTAC	EL PASO, TX VORTAC	#27000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
EL PASO, TX VORTAC	FORT STOCKTON, TX VORTAC	18000	45000
FORT STOCKTON, TX VORTAC	JUNCTION, TX VORTAC	18000	45000
JUNCTION, TX VORTAC	HUMBLE, TX VORTAC	18000	45000
HUMBLE, TX VORTAC	LEEVILLE, LA VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7087 JET ROUTE J87

HUMBLE, TX VORTAC	NAVASOTA, TX VOR/DME	18000	45000
NAVASOTA, TX VOR/DME	TORNN, TX FIX	18000	45000
TORNN, TX FIX	COWBOY, TX VOR/DME	18000	45000
COWBOY, TX VOR/DME	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	BUTLER, MO VORTAC	18000	45000
BUTLER, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	MOLINE, IL VOR/DME	18000	35000
MOLINE, IL VOR/DME	JOLIET, IL VOR/DME	18000	35000
JOLIET, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	45000

95.7088 JET ROUTE J88

LOS ANGELES, CA VORTAC	SAN MARCUS, CA VORTAC	18000	45000
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	18000	45000
SALINAS, CA VORTAC	POINT REYES, CA VOR/DME	18000	45000

95.7089 JET ROUTE J89

ICBOD, GA FIX	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	LOUISVILLE, KY VORTAC	18000	45000
LOUISVILLE, KY VORTAC	BOILER, IN VORTAC	18000	45000
BOILER, IN VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	BADGER, WI VOR/DME	18000	45000
BADGER, WI VOR/DME	DULUTH, MN VORTAC	18000	45000
DULUTH, MN VORTAC	WINNIPEG, CANADA VORTAC	18000	45000

95.7090 JET ROUTE J90

SEATTLE, WA VORTAC	MOSES LAKE, WA VOR/DME	18000	45000
MOSES LAKE, WA VOR/DME	HELENA, MT VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
HELENA, MT VORTAC	MILES CITY, MT VOR/DME	28000	45000
MILES CITY, MT VOR/DME	ABERDEEN, SD VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ABERDEEN, SD VOR/DME	REDWOOD FALLS, MN VOR/DME	18000	45000
REDWOOD FALLS, MN VOR/DME	MASON CITY, IA VOR/DME	18000	45000
MASON CITY, IA VOR/DME	NORTHBROOK, IL VOR/DME	18000	45000

95.7091 JET ROUTE J91

JOHNN, GA FIX	ATLANTA, GA VORTAC	24000	45000
ATLANTA, GA VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	HENDERSON, WV VORTAC	18000	45000

95.7092 JET ROUTE J92

KLAMATH FALLS, OR VORTAC	MUSTANG, NV VORTAC	18000	45000
MUSTANG, NV VORTAC	COALDALE, NV VORTAC	18000	45000
COALDALE, NV VORTAC	BEATTY, NV VORTAC	18000	45000
BEATTY, NV VORTAC	BOULDER CITY, NV VORTAC	24000	45000
BOULDER CITY, NV VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	PHOENIX, AZ VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J92 – CONTINUED

PHOENIX, AZ VORTAC	STANFIELD, AZ VORTAC	18000	45000
STANFIELD, AZ VORTAC	TUCSON, AZ VORTAC	18000	45000
TUCSON, AZ VORTAC	U.S. MEXICAN BORDER	18000	45000

95.7093 JET ROUTE J93

U.S. MEXICAN BORDER	JULIAN, CA VORTAC	18000	45000
JULIAN, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	LOS ANGELES, CA VORTAC	18000	45000

95.7094 JET ROUTE J94

MUSTANG, NV VORTAC	LOVELOCK, NV VORTAC	18000	45000
LOVELOCK, NV VORTAC	BATTLE MOUNTAIN, NV VORTAC	18000	45000
BATTLE MOUNTAIN, NV VORTAC	LUCIN, UT VORTAC	18000	45000
LUCIN, UT VORTAC	ROCK SPRINGS, WY VOR/DME	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROCK SPRINGS, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	18000	45000
SCOTTSBLUFF, NE VORTAC	O'NEILL, NE VORTAC	18000	45000
O'NEILL, NE VORTAC	FORT DODGE, IA VORTAC	18000	45000
FORT DODGE, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	PULLMAN, MI VOR/DME	18000	45000
PULLMAN, MI VOR/DME	FLINT, MI VORTAC	18000	45000

95.7095 JET ROUTE J95

DEER PARK, NY VOR/DME	GAYEL, NY FIX	18000	45000
GAYEL, NY FIX	BINGHAMTON, NY VOR/DME	18000	45000

95.7096 JET ROUTE J96

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	18000	45000
PARADISE, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CIMARRON, NM VORTAC	GARDEN CITY, KS VORTAC	18000	45000
GARDEN CITY, KS VORTAC	SALINA, KS VORTAC	18000	45000
SALINA, KS VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	PEORIA, IL VORTAC	18000	35000
PEORIA, IL VORTAC	JOLIET, IL VOR/DME	18000	35000

95.7097 JET ROUTE J97

SLATN, OA FIX	NANTUCKET, MA VOR/DME	25000	45000
NANTUCKET, MA VOR/DME	BOSTON, MA VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7098 JET ROUTE J98

LIBERAL, KS VORTAC	MITBEE, OK VORTAC	18000	45000
MITBEE, OK VORTAC	WILL ROGERS, OK VORTAC	18000	45000
WILL ROGERS, OK VORTAC	TULSA, OK VORTAC	18000	45000
TULSA, OK VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	FARMINGTON, MO VORTAC	18000	45000

95.7099 JET ROUTE J99

COLLIERS, SC VORTAC	VOLUNTEER, TN VORTAC	18000	45000
VOLUNTEER, TN VORTAC	LOUISVILLE, KY VORTAC	18000	45000

95.7100 JET ROUTE J100

LOS ANGELES, CA VORTAC	DAGGETT, CA VORTAC	18000	45000
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	18000	45000
LAS VEGAS, NV VORTAC	BRYCE CANYON, UT VORTAC	18000	45000
BRYCE CANYON, UT VORTAC	MEEKER, CO VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MEEKER, CO VOR/DME	SIDNEY, NE VOR/DME	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
SIDNEY, NE VOR/DME	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	DUBUQUE, IA VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7101 JET ROUTE J101

HUMBLE, TX VORTAC	LUFKIN, TX VORTAC	18000	45000
LUFKIN, TX VORTAC	LITTLE ROCK, AR VORTAC	18300	45000
LITTLE ROCK, AR VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	SPINNER, IL VORTAC	18000	45000
SPINNER, IL VORTAC	PONTIAC, IL VOR/DME	18000	31000
PONTIAC, IL VOR/DME	JOLIET, IL VOR/DME	18000	35000
JOLIET, IL VOR/DME	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	BADGER, WI VOR/DME	18000	45000
BADGER, WI VOR/DME	GREEN BAY, WI VORTAC	18000	45000
GREEN BAY, WI VORTAC	SAULT STE MARIE, MI VOR/DME	18000	45000

95.7102 JET ROUTE J102

PHOENIX, AZ VORTAC	ZUNI, NM VORTAC	18000	45000
ZUNI, NM VORTAC	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000
ALAMOSA, CO VORTAC	LAMAR, CO VOR/DME	18000	45000
LAMAR, CO VOR/DME	SALINA, KS VORTAC	18000	45000

95.7104 JET ROUTE J104

LOS ANGELES, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	18000	45000
TWENTYNINE PALMS, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	GILA BEND, AZ VORTAC	18000	45000
GILA BEND, AZ VORTAC	TUCSON, AZ VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J104 – CONTINUED

TUCSON, AZ VORTAC	SAN SIMON, AZ VORTAC	18000	45000
SAN SIMON, AZ VORTAC	SOCORRO, NM VORTAC	20000	45000
SOCORRO, NM VORTAC	FORT UNION, NM VORTAC	18000	45000
FORT UNION, NM VORTAC	PUEBLO, CO VORTAC	18000	45000

95.7105 JET ROUTE J105

RANGER, TX VORTAC	MC ALESTER, OK VORTAC	18000	45000
MC ALESTER, OK VORTAC	RAZORBACK, AR VORTAC	18000	45000
RAZORBACK, AR VORTAC	SPRINGFIELD, MO VORTAC	18000	45000
SPRINGFIELD, MO VORTAC	BRADFORD, IL VORTAC	18000	45000
BRADFORD, IL VORTAC	BADGER, WI VOR/DME	18000	45000

95.7106 JET ROUTE J106

JAMESTOWN, NY VOR/DME	WILKES-BARRE, PA VORTAC	18000	45000
WILKES-BARRE, PA VORTAC	STILLWATER, NJ VOR/DME	18000	45000
STILLWATER, NJ VOR/DME	LA GUARDIA, NY VOR/DME	18000	24000

95.7107 JET ROUTE J107

LOS ANGELES, CA VORTAC	HECTOR, CA VORTAC	18000	45000
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	18000	45000
BOULDER CITY, NV VORTAC	MILFORD, UT VORTAC	18000	45000
MILFORD, UT VORTAC	ROCK SPRINGS, WY VOR/DME	#33000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROCK SPRINGS, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	DUPREE, SD VOR/DME	18000	45000
DUPREE, SD VOR/DME	HUMBOLDT, MN VORTAC	21000	45000
HUMBOLDT, MN VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7108 JET ROUTE J108

WINSLOW, AZ VORTAC	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	18000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	WINK, TX VORTAC	24000	45000

95.7109 JET ROUTE J109

WILMINGTON, NC VORTAC	FLAT ROCK, VA VORTAC	18000	45000
FLAT ROCK, VA VORTAC	LINDEN, VA VORTAC	18000	45000

95.7110 JET ROUTE J110

BOULDER CITY, NV VORTAC	RATTLESNAKE, NM VORTAC	#28000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
RATTLESNAKE, NM VORTAC	ALAMOSA, CO VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J110 – CONTINUED

ALAMOSA, CO VORTAC	GARDEN CITY, KS VORTAC	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
GARDEN CITY, KS VORTAC	BUTLER, MO VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BUTLER, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	BRICKYARD, IN VORTAC	18000	45000
BRICKYARD, IN VORTAC	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	VINSE, PA FIX	18000	45000
VINSE, PA FIX	KIPPI, PA FIX	26000	45000
KIPPI, PA FIX	COYLE, NJ VORTAC	22000	45000

95.7111 JET ROUTE J111

NOME, AK VOR/DME	UNALAKLEET, AK VOR/DME	18000	45000
UNALAKLEET, AK VOR/DME	MC GRATH, AK VORTAC	18000	45000
MC GRATH, AK VORTAC	ANCHORAGE, AK VOR/DME	18000	45000

95.7112 JET ROUTE J112

BUTLER, MO VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	POCKET CITY, IN VORTAC	18000	45000
POCKET CITY, IN VORTAC	LOUISVILLE, KY VORTAC	18000	45000

95.7114 JET ROUTE J114

MILE HIGH, CO VORTAC	SIDNEY, NE VOR/DME	18000	45000
SIDNEY, NE VOR/DME	O'NEILL, NE VORTAC	23000	45000
O'NEILL, NE VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	GOPHER, MN VORTAC	18000	45000

95.7115 JET ROUTE J115

SHEMYA, AK NDB	MOUNT MOFFETT, AK NDB/DME	18000	45000
MOUNT MOFFETT, AK NDB/DME	DUTCH HARBOR, AK NDB/DME	18000	45000
DUTCH HARBOR, AK NDB/DME	COLD BAY, AK VORTAC	18000	45000
COLD BAY, AK VORTAC	KING SALMON, AK VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
KING SALMON, AK VORTAC	KENAI, AK VOR/DME	18000	45000
KENAI, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	BIG LAKE, AK VORTAC	18000	45000
BIG LAKE, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	CHANDALAR LAKE, AK NDB	18000	45000
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	18000	45000

95.7116 JET ROUTE J116

WASATCH, UT VORTAC	FAIRFIELD, UT VORTAC	18000	45000
FAIRFIELD, UT VORTAC	MEEKER, CO VOR/DME	18000	45000
MEEKER, CO VOR/DME	FALCON, CO VORTAC	20000	45000

FROM	TO	MEA	MAA

95.7117 JET ROUTE J117

MC GRATH, AK VORTAC	GALENA, AK VOR/DME	18000	45000
GALENA, AK VOR/DME	KOTZEBUE, AK VOR/DME	18000	45000

95.7118 JET ROUTE J118

MEMPHIS, TN VORTAC	CHOO CHOO, TN VORTAC	18000	45000
CHOO CHOO, TN VORTAC	SPARTANBURG, SC VORTAC	18000	45000

95.7120 JET ROUTE J120

MOUNT MOFFETT, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	18000	45000
ST PAUL ISLAND, AK NDB/DME	BETHEL, AK VORTAC	28000	45000
BETHEL, AK VORTAC	MC GRATH, AK VORTAC	18000	45000
MC GRATH, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	FORT YUKON, AK VORTAC	18000	45000

95.7121 JET ROUTE J121

CHARLESTON, SC VORTAC	KINSTON, NC VORTAC	18000	45000
KINSTON, NC VORTAC	NORFOLK, VA VORTAC	18000	45000
NORFOLK, VA VORTAC	SNOW HILL, MD VORTAC	18000	45000
SNOW HILL, MD VORTAC	SEA ISLE, NJ VORTAC	18000	45000
SEA ISLE, NJ VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	SANDY POINT, RI VOR/DME	18000	45000
SANDY POINT, RI VOR/DME	KENNEBUNK, ME VOR/DME	18000	45000

95.7122 JET ROUTE J122

FAIRBANKS, AK VORTAC	GALENA, AK VOR/DME	18000	45000
GALENA, AK VOR/DME	NOME, AK VOR/DME	18000	45000

95.7123 JET ROUTE J123

CJAYY, AK FIX	KODIAK, AK VOR/DME	18000	45000
KODIAK, AK VOR/DME	KING SALMON, AK VORTAC	18000	45000
KING SALMON, AK VORTAC	BETHEL, AK VORTAC	18000	45000
BETHEL, AK VORTAC	NOME, AK VOR/DME	18000	45000
NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	18000	45000
KOTZEBUE, AK VOR/DME	BARROW, AK VOR/DME	#21000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7124 JET ROUTE J124

BIG LAKE, AK VORTAC	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	NORTHWAY, AK VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7125 JET ROUTE J125

KODIAK, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	TALKEETNA, AK VOR/DME	18000	45000
TALKEETNA, AK VOR/DME	NENANA, AK VORTAC	18000	45000

95.7126 JET ROUTE J126

LOS ANGELES, CA VORTAC	SAN MARCUS, CA VORTAC	18000	45000
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	18000	45000
SALINAS, CA VORTAC	SACRAMENTO, CA VORTAC	18000	45000
SACRAMENTO, CA VORTAC	RED BLUFF, CA VORTAC	18000	45000
RED BLUFF, CA VORTAC	ROGUE VALLEY, OR VORTAC	18000	45000
ROGUE VALLEY, OR VORTAC	EUGENE, OR VORTAC	18000	45000
EUGENE, OR VORTAC	NEWBERG, OR VOR/DME	18000	45000
NEWBERG, OR VOR/DME	OLYMPIA, WA VORTAC	18000	45000
OLYMPIA, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	99999	
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	18000	45000

95.7127 JET ROUTE J127

KING SALMON, AK VORTAC	RINGO, AK FIX	18000	45000
RINGO, AK FIX	NONDA, AK FIX	18000	45000

95.7128 JET ROUTE J128

LOS ANGELES, CA VORTAC	RUSTT, CA FIX	18000	45000
RUSTT, CA FIX	PEACH SPRINGS, AZ VOR/DME	25000	45000
PEACH SPRINGS, AZ VOR/DME	TUBA CITY, AZ VORTAC	18000	45000
TUBA CITY, AZ VORTAC	BLUE MESA, CO VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	18000	45000
FALCON, CO VORTAC	HAYES CENTER, NE VORTAC	18000	45000
HAYES CENTER, NE VORTAC	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	DUBUQUE, IA VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000

95.7129 JET ROUTE J129

NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	18000	45000

95.7130 JET ROUTE J130

MC COOK, NE VOR/DME	PAWNEE CITY, NE VORTAC	18000	41000

95.7131 JET ROUTE J131

SAN ANTONIO, TX VORTAC	EDNAS, TX FIX	18000	45000
EDNAS, TX FIX	RANGER, TX VORTAC	18000	45000
RANGER, TX VORTAC	TEXARKANA, AR VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J131 – CONTINUED

TEXARKANA, AR VORTAC	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	POCKET CITY, IN VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7132 JET ROUTE J132

ELMIRA, NY VOR/DME	HUGUENOT, NY VOR/DME	18000	45000

95.7133 JET ROUTE J133

SITKA, AK NDB	ORCA BAY, AK NDB	18000	45000
ORCA BAY, AK NDB	JOHNSTONE POINT, AK VOR/DME	18000	
JOHNSTONE POINT, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	GALENA, AK VOR/DME	18000	45000

95.7134 JET ROUTE J134

LOS ANGELES, CA VORTAC	SEAL BEACH, CA VORTAC	18000	45000
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	18000	45000
THERMAL, CA VORTAC	PARKER, CA VORTAC	18000	45000
PARKER, CA VORTAC	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	GALLUP, NM VORTAC	18000	45000
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CIMARRON, NM VORTAC	LIBERAL, KS VORTAC	18000	45000
LIBERAL, KS VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	BUTLER, MO VORTAC	18000	45000
BUTLER, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	FALMOUTH, KY VOR/DME	18000	45000
FALMOUTH, KY VOR/DME	HENDERSON, WV VORTAC	18000	45000
HENDERSON, WV VORTAC	LINDEN, VA VORTAC	18000	45000

95.7135 JET ROUTE J135

BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	18000	45000

95.7136 JET ROUTE J136

NEWPORT, OR VORTAC	BATTLE GROUND, WA VORTAC	18000	45000
BATTLE GROUND, WA VORTAC	YAKIMA, WA VORTAC	18000	45000
YAKIMA, WA VORTAC	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	MULLAN PASS, ID VOR/DME	18000	45000
MULLAN PASS, ID VOR/DME	HELENA, MT VORTAC	18000	45000
HELENA, MT VORTAC	BILLINGS, MT VORTAC	18000	45000
BILLINGS, MT VORTAC	MEDICINE BOW, WY VOR/DME	28000	45000

FROM	TO	MEA	MAA

95.7137 JET ROUTE J137

SPINNER, IL VORTAC	FARMINGTON, MO VORTAC	18000	45000
FARMINGTON, MO VORTAC	WALNUT RIDGE, AR VORTAC	18000	45000
WALNUT RIDGE, AR VORTAC	LITTLE ROCK, AR VORTAC	18000	45000

95.7138 JET ROUTE J138

FORT STOCKTON, TX VORTAC	CENTER POINT, TX VORTAC	18000	45000
CENTER POINT, TX VORTAC	SAN ANTONIO, TX VORTAC	18000	45000
SAN ANTONIO, TX VORTAC	HOBBY, TX VOR/DME	18000	45000
HOBBY, TX VOR/DME	LAKE CHARLES, LA VORTAC	18000	45000
LAKE CHARLES, LA VORTAC	FIGHTING TIGER, LA VORTAC	18000	45000
FIGHTING TIGER, LA VORTAC	SEMMES, AL VORTAC	18000	45000

95.7139 JET ROUTE J139

BETTLES, AK VOR/DME	DEADHORSE, AK VOR/DME	18000	45000

95.7140 JET ROUTE J140

FARGO, ND VOR/DME	DULUTH, MN VORTAC	18000	45000
DULUTH, MN VORTAC	SAULT STE MARIE, MI VOR/DME	18000	45000

95.7141 JET ROUTE J141

EL PASO, TX VORTAC	U.S. MEXICAN BORDER	18000	45000

95.7142 JET ROUTE J142

SOCORRO, NM VORTAC	ANTON CHICO, NM VORTAC	18000	45000
ANTON CHICO, NM VORTAC	BORGER, TX VORTAC	18000	45000

95.7143 JET ROUTE J143

POINT REYES, CA VOR/DME	MENDOCINO, CA VORTAC	18000	45000
MENDOCINO, CA VORTAC	ROSEBURG, OR VOR/DME	18000	45000
ROSEBURG, OR VOR/DME	EUGENE, OR VORTAC	18000	45000
EUGENE, OR VORTAC	KLICKITAT, OR VOR/DME	18000	45000
KLICKITAT, OR VOR/DME	SPOKANE, WA VORTAC	18000	45000

95.7144 JET ROUTE J144

WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000

95.7145 JET ROUTE J145

FOOTHILLS, SC VOR/DME	CHARLESTON, WV VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7146 JET ROUTE J146

LOS ANGELES, CA VORTAC	DAGGETT, CA VORTAC	18000	45000
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC	18000	45000
LAS VEGAS, NV VORTAC	NOOTN, AZ FIX	18000	45000
NOOTN, AZ FIX	DOVE CREEK, CO VORTAC	#25000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DOVE CREEK, CO VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	GOODLAND, KS VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
GOODLAND, KS VORTAC	LINCOLN, NE VORTAC	18000	45000
LINCOLN, NE VORTAC	IOWA CITY, IA VOR/DME	18000	45000
IOWA CITY, IA VOR/DME	JOLIET, IL VOR/DME	18000	45000
JOLIET, IL VOR/DME	GIPPER, MI VORTAC	18000	45000
GIPPER, MI VORTAC	CHARDON, OH VOR/DME	18000	45000
CHARDON, OH VOR/DME	KEATING, PA VORTAC	18000	45000
KEATING, PA VORTAC	MILTON, PA VORTAC	18000	45000
MILTON, PA VORTAC	ALLENTOWN, PA VORTAC	18000	45000
ALLENTOWN, PA VORTAC	KENNEDY, NY VOR/DME	#18000	45000
#ALLENTOWN R-104 UNUSABLE. USE KENNEDY R-287.			

95.7148 JET ROUTE J148

COALDALE, NV VORTAC	DELTA, UT VORTAC	27000	45000
DELTA, UT VORTAC	MYTON, UT VOR/DME	18000	45000
MYTON, UT VOR/DME	CHEYENNE, WY VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
CHEYENNE, WY VORTAC	O'NEILL, NE VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
O'NEILL, NE VORTAC	MASON CITY, IA VOR/DME	18000	45000

95.7149 JET ROUTE J149

ARMEL, VA VOR/DME	EYTEE, WV FIX	#*31000	41000
*18000 - GNSS MEA #ARMEL R-281 UNUSABLE BYD 119 NM. NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS. GNSS REQUIRED.			
EYTEE, WV FIX	GEFFS, WV FIX	#*31000	41000
*18000 - GNSS MEA #GNSS REQUIRED			
GEFFS, WV FIX	HACKS, WV FIX	*29000	41000
*18000 - GNSS MEA			
HACKS, WV FIX	ROSEWOOD, OH VORTAC	*23000	45000
*18000 - GNSS MEA			
ROSEWOOD, OH VORTAC	FORT WAYNE, IN VORTAC	18000	45000

95.7150 JET ROUTE J150

GORDONSVILLE, VA VORTAC	NOTTINGHAM, MD VORTAC	18000	45000
NOTTINGHAM, MD VORTAC	*GRACO, MD FIX	18000	35000
*10000 - MRA			
GRACO, MD FIX	WOODSTOWN, NJ VORTAC	18000	45000
WOODSTOWN, NJ VORTAC	COYLE, NJ VORTAC	18000	45000
COYLE, NJ VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	MARCONI, MA VOR/DME	#99999	
#UNUSABLE			

FROM	TO	MEA	MAA

95.7082 JET ROUTE J150 – CONTINUED

FROM	TO	MEA	MAA
MARCONI, MA VOR/DME	STOOL, MA FIX	#99999	
#UNUSABLE			

95.7151 JET ROUTE J151

FROM	TO	MEA	MAA
VULCAN, AL VORTAC	FARMINGTON, MO VORTAC	25000	41000
FARMINGTON, MO VORTAC	ST LOUIS, MO VORTAC	18000	45000
ST LOUIS, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	OMAHA, IA VORTAC	18000	45000
OMAHA, IA VORTAC	O'NEILL, NE VORTAC	18000	45000
O'NEILL, NE VORTAC	RAPID CITY, SD VORTAC	18000	45000
RAPID CITY, SD VORTAC	BILLINGS, MT VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BILLINGS, MT VORTAC	WHITEHALL, MT VOR/DME	18000	45000

95.7152 JET ROUTE J152

FROM	TO	MEA	MAA
ROSEWOOD, OH VORTAC	JOHNSTOWN, PA VOR/DME	18000	45000
JOHNSTOWN, PA VOR/DME	HARRISBURG, PA VORTAC	18000	40000

95.7153 JET ROUTE J153

FROM	TO	MEA	MAA
ROME, OR VOR/DME	BAKER CITY, OR VOR/DME	18000	45000
BAKER CITY, OR VOR/DME	SPOKANE, WA VORTAC	18000	45000

95.7154 JET ROUTE J154

FROM	TO	MEA	MAA
BATTLE MOUNTAIN, NV VORTAC	BONNEVILLE, UT VORTAC	18000	45000
BONNEVILLE, UT VORTAC	WASATCH, UT VORTAC	18000	45000
WASATCH, UT VORTAC	ROCK SPRINGS, WY VOR/DME	18000	45000
ROCK SPRINGS, WY VOR/DME	MILE HIGH, CO VORTAC	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
MILE HIGH, CO VORTAC	GARDEN CITY, KS VORTAC	21000	45000

95.7155 JET ROUTE J155

FROM	TO	MEA	MAA
CHANDALAR LAKE, AK NDB	NENANA, AK VORTAC	18000	45000

95.7156 JET ROUTE J156

FROM	TO	MEA	MAA
WILSON CREEK, NV VORTAC	MEEKER, CO VOR/DME	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7157 JET ROUTE J157

FROM	TO	MEA	MAA
MYTON, UT VOR/DME	LARAMIE, WY VOR/DME	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
LARAMIE, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J157 – CONTINUED

SCOTTSBLUFF, NE VORTAC	RAPID CITY, SD VORTAC	18000	45000

95.7158 JET ROUTE J158

MINA, NV VORTAC	LUCIN, UT VORTAC	#23000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
LUCIN, UT VORTAC	MALAD CITY, ID VOR/DME	18000	45000
MALAD CITY, ID VOR/DME	BIG PINEY, WY VOR/DME	18000	45000
BIG PINEY, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	RAPID CITY, SD VORTAC	18000	45000
RAPID CITY, SD VORTAC	ABERDEEN, SD VOR/DME	18000	45000

95.7159 JET ROUTE J159

BATTLE GROUND, WA VORTAC	DESCHUTES, OR VORTAC	18000	45000

95.7160 JET ROUTE J160

FAIRBANKS, AK VORTAC	FORT YUKON, AK VORTAC	18000	45000
FORT YUKON, AK VORTAC	ADREW, AK FIX	18000	45000

95.7161 JET ROUTE J161

ZUNI, NM VORTAC	RATTLESNAKE, NM VORTAC	18000	45000

95.7162 JET ROUTE J162

DRYER, OH VOR/DME	BELLAIRE, OH VOR/DME	18000	45000
BELLAIRE, OH VOR/DME	MORGANTOWN, WV VOR/DME	18000	45000
MORGANTOWN, WV VOR/DME	MARTINSBURG, WV VORTAC	18000	29000

95.7163 JET ROUTE J163

BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	18000	45000
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	18000	45000
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	21000	45000
ROCK SPRINGS, WY VOR/DME	HAYDEN, CO VOR/DME	18000	45000

95.7165 JET ROUTE J165

DWYTE, SC FIX	RICHMOND, VA VORTAC	18000	45000

95.7166 JET ROUTE J166

SAN SIMON, AZ VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	18000	45000
TRUTH OR CONSEQUENCES, NM VORTAC	CHISUM, NM VORTAC	24000	45000

FROM	TO	MEA	MAA

95.7082 JET ROUTE J166 – CONTINUED

CHISUM, NM VORTAC	WICHITA FALLS, TX VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7167 JET ROUTE J167

JOHNSTONE POINT, AK VOR/DME	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	BIG DELTA, AK VORTAC	18000	45000
BIG DELTA, AK VORTAC	FORT YUKON, AK VORTAC	18000	45000
FORT YUKON, AK VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7168 JET ROUTE J168

WICHITA FALLS, TX VORTAC	LAMAR, CO VOR/DME	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7169 JET ROUTE J169

LOS ANGELES, CA VORTAC	SEAL BEACH, CA VORTAC	18000	45000
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	18000	45000
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	18000	45000
BLYTHE, CA VORTAC	STANFIELD, AZ VORTAC	18000	45000

95.7170 JET ROUTE J170

CRAZY WOMAN, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000
MUDDY MOUNTAIN, WY VOR/DME	MEDICINE BOW, WY VOR/DME	18000	45000

95.7171 JET ROUTE J171

TOBE, CO VOR/DME	HUGO, CO VOR/DME	18000	45000

95.7173 JET ROUTE J173

WASATCH, UT VORTAC	MEEKER, CO VOR/DME	18000	45000

95.7174 JET ROUTE J174

CHARLESTON, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000
WILMINGTON, NC VORTAC	DIXON, NC NDB/DME	18000	45000
DIXON, NC NDB/DME	NORFOLK, VA VORTAC	18000	45000
NORFOLK, VA VORTAC	SNOW HILL, MD VORTAC	18000	45000
SNOW HILL, MD VORTAC	HAMPTON, NY VORTAC	18000	45000
HAMPTON, NY VORTAC	MARCONI, MA VOR/DME	#99999	
#UNUSABLE			
MARCONI, MA VOR/DME	HERIN, MA FIX	#99999	45000
#UNUSABLE			

FROM	TO	MEA	MAA

95.7175 JET ROUTE J175

CHEYENNE, WY VORTAC	LARAMIE, WY VOR/DME	18000	45000
LARAMIE, WY VOR/DME	DUBOIS, ID VORTAC	#29000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7177 JET ROUTE J177

HUMBLE, TX VORTAC	HOBBY, TX VOR/DME	18000	45000
HOBBY, TX VOR/DME	PALACIOS, TX VORTAC	18000	45000
PALACIOS, TX VORTAC	U.S. MEXICAN BORDER	31000	45000

95.7178 JET ROUTE J178

FORT WAYNE, IN VORTAC	APPLETON, OH VORTAC	18000	45000

95.7179 JET ROUTE J179

MIDDLETON ISLAND, AK VOR/DME	KENAI, AK VOR/DME	18000	45000
KENAI, AK VOR/DME	SPARREVOHN, AK VOR/DME	18000	45000
SPARREVOHN, AK VOR/DME	ANIAK, AK NDB	18000	45000
ANIAK, AK NDB	ST MARYS, AK NDB	18000	45000
ST MARYS, AK NDB	EMMONAK, AK VOR/DME	18000	45000

95.7180 JET ROUTE J180

HUMBLE, TX VORTAC	DAISETTA, TX VORTAC	18000	45000
DAISETTA, TX VORTAC	CIDOR, LA FIX	18000	45000
CIDOR, LA FIX	FOSIN, LA FIX	19000	45000
FOSIN, LA FIX	SAWMILL, LA VOR/DME	18000	45000
SAWMILL, LA VOR/DME	LITTLE ROCK, AR VORTAC	18000	45000
LITTLE ROCK, AR VORTAC	FORISTELL, MO VORTAC	18000	45000

95.7181 JET ROUTE J181

RANGER, TX VORTAC	OKMULGEE, OK VOR/DME	18000	45000
OKMULGEE, OK VOR/DME	NEOSHO, MO VOR/DME	18000	45000
NEOSHO, MO VOR/DME	HALLSVILLE, MO VORTAC	18000	45000
HALLSVILLE, MO VORTAC	BAYLI, IL FIX	18000	23000
BAYLI, IL FIX	BRADFORD, IL VORTAC	18000	45000

95.7182 JET ROUTE J182

GOODLAND, KS VORTAC	WICHITA, KS VORTAC	18000	45000
WICHITA, KS VORTAC	RAZORBACK, AR VORTAC	18000	45000

95.7183 JET ROUTE J183

EL PASO, TX VORTAC	PECOS, TX VOR/DME	18000	45000
PECOS, TX VOR/DME	LLANO, TX VORTAC	20000	45000
LLANO, TX VORTAC	COLLEGE STATION, TX VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7184 JET ROUTE J184

BUCKEYE, AZ VORTAC	DEMING, NM VORTAC	23000	45000
DEMING, NM VORTAC	NEWMAN, TX VORTAC	18000	45000

95.7186 JET ROUTE J186

FOOTHILLS, SC VOR/DME	SNOWBIRD, TN VORTAC	18000	45000
SNOWBIRD, TN VORTAC	APPLETON, OH VORTAC	18000	45000

95.7187 JET ROUTE J187

MEMPHIS, TN VORTAC	FORISTELL, MO VORTAC	18000	45000

95.7188 JET ROUTE J188

BETHEL, AK VORTAC	SPARREVOHN, AK VOR/DME	18000	45000

95.7189 JET ROUTE J189

AVENAL, CA VOR/DME	LINDEN, CA VOR/DME	18000	45000
LINDEN, CA VOR/DME	KLAMATH FALLS, OR VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
KLAMATH FALLS, OR VORTAC	BATTLE GROUND, WA VORTAC	#19000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
BATTLE GROUND, WA VORTAC	SEATTLE, WA VORTAC	18000	45000

95.7190 JET ROUTE J190

CARLETON, MI VOR/DME	SLATE RUN, PA VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
#SLATE RUN, PA VORTAC	BINGHAMTON, NY VOR/DME	18000	45000
#USE SLATE RUN R-072 TO BINGHAMTON			
BINGHAMTON, NY VOR/DME	ROCKDALE, NY VOR/DME	18000	45000
ROCKDALE, NY VOR/DME	ALBANY, NY VORTAC	18000	45000

95.7191 JET ROUTE J191

ROBBINSVILLE, NJ VORTAC	DAVYS, NJ FIX	18000	45000
DAVYS, NJ FIX	SMYRNA, DE VORTAC	18000	33000
SMYRNA, DE VORTAC	PATUXENT, MD VORTAC	18000	45000
PATUXENT, MD VORTAC	HUBBS, VA FIX	18000	45000
HUBBS, VA FIX	HOPEWELL, VA VORTAC	18000	22000
HOPEWELL, VA VORTAC	WILMINGTON, NC VORTAC	18000	45000

95.7192 JET ROUTE J192

GOODLAND, KS VORTAC	PAWNEE CITY, NE VORTAC	18000	45000
PAWNEE CITY, NE VORTAC	IOWA CITY, IA VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7193 JET ROUTE J193

WILMINGTON, NC VORTAC	COFIELD, NC VORTAC	18000	45000
COFIELD, NC VORTAC	HARCUM, VA VORTAC	18000	29000
HARCUM, VA VORTAC	HUBBS, VA FIX	18000	28000

95.7195 JET ROUTE J195

ANNETTE ISLAND, AK VOR/DME	BIORKA ISLAND, AK VORTAC	18000	45000

95.7196 JET ROUTE J196

BRYCE CANYON, UT VORTAC	MEEKER, CO VOR/DME	33000	45000

95.7197 JET ROUTE J197

DOVE CREEK, CO VORTAC	HUGO, CO VOR/DME	33000	45000
HUGO, CO VOR/DME	GOODLAND, KS VORTAC	18000	45000
GOODLAND, KS VORTAC	WOLBACH, NE VORTAC	18000	45000
WOLBACH, NE VORTAC	SIOUX FALLS, SD VORTAC	18000	45000

95.7198 JET ROUTE J198

MINA, NV VORTAC	WILSON CREEK, NV VORTAC	18000	45000
WILSON CREEK, NV VORTAC	MEEKER, CO VOR/DME	33000	45000

95.7199 JET ROUTE J199

WILSON CREEK, NV VORTAC	DELTA, UT VORTAC	18000	45000
DELTA, UT VORTAC	MEEKER, CO VOR/DME	33000	45000

95.7202 JET ROUTE J202

FAIRFIELD, UT VORTAC	ROCK SPRINGS, WY VOR/DME	20000	45000
ROCK SPRINGS, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	18000	45000

95.7203 JET ROUTE J203

BILLINGS, MT VORTAC	GREAT FALLS, MT VORTAC	18000	45000

95.7204 JET ROUTE J204

DUPREE, SD VOR/DME	MILES CITY, MT VOR/DME	18000	45000
MILES CITY, MT VOR/DME	HILGR, MT FIX	19000	45000
HILGR, MT FIX	GREAT FALLS, MT VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7206 JET ROUTE J206

ALAMOSA, CO VORTAC	BLUE MESA, CO VOR/DME	18000	45000
BLUE MESA, CO VOR/DME	RED TABLE, CO VOR/DME	18000	45000
RED TABLE, CO VOR/DME	ROCK SPRINGS, WY VOR/DME	18000	45000

95.7207 JET ROUTE J207

FLORENCE, SC VORTAC	RALEIGH/DURHAM, NC VORTAC	31000	45000
RALEIGH/DURHAM, NC VORTAC	FRANKLIN, VA VORTAC	18000	45000

95.7209 JET ROUTE J209

RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	18000	45000
TAR RIVER, NC VORTAC	NORFOLK, VA VORTAC	18000	45000
NORFOLK, VA VORTAC	SALISBURY, MD VORTAC	18000	45000
SALISBURY, MD VORTAC	COYLE, NJ VORTAC	18000	45000
COYLE, NJ VORTAC	WHITE, NJ FIX	18000	45000

95.7210 JET ROUTE J210

VANCE, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000

95.7211 JET ROUTE J211

YOUNGSTOWN, OH VORTAC	JOHNSTOWN, PA VOR/DME	18000	45000
JOHNSTOWN, PA VOR/DME	WESTMINSTER, MD VORTAC	18000	45000

95.7212 JET ROUTE J212

STANFIELD, AZ VORTAC	BUCKEYE, AZ VORTAC	18000	45000
BUCKEYE, AZ VORTAC	PALM SPRINGS, CA VORTAC	26000	45000

95.7213 JET ROUTE J213

BECKLEY, WV VOR/DME	ARMEL, VA VOR/DME	*18000	45000
*18000 - GNSS MEA			

95.7217 JET ROUTE J217

HANCOCK, NY VOR/DME	KEATING, PA VORTAC	18000	45000

95.7220 JET ROUTE J220

ARMEL, VA VOR/DME	STONYFORK, PA VOR/DME	18000	23000

95.7222 JET ROUTE J222

ROBBINSVILLE, NJ VORTAC	KENNEDY, NY VOR/DME	18000	45000
KENNEDY, NY VOR/DME	CAMBRIDGE, NY VOR/DME	18000	31000

FROM	TO	MEA	MAA

95.7223 JET ROUTE J223

LA GUARDIA, NY VOR/DME	CORDS, PA FIX	18000	25000

95.7225 JET ROUTE J225

CEDAR LAKE, NJ VOR/DME	KENNEDY, NY VOR/DME	18000	45000
KENNEDY, NY VOR/DME	PROVIDENCE, RI VOR/DME	18000	45000

95.7227 JET ROUTE J227

ARMEL, VA VOR/DME	ELMIRA, NY VOR/DME	18000	23000

95.7230 JET ROUTE J230

ROBBINSVILLE, NJ VORTAC	LARRI, PA FIX	18000	45000
LARRI, PA FIX	VINSE, PA FIX	26000	45000
VINSE, PA FIX	BELLAIRE, OH VOR/DME	18000	45000

95.7231 JET ROUTE J231

TWENTYNINE PALMS, CA VORTAC	HIPPI, AZ FIX	23000	40000
HIPPI, AZ FIX	DRAKE, AZ VORTAC	18000	45000
DRAKE, AZ VORTAC	ST JOHNS, AZ VORTAC	18000	45000
ST JOHNS, AZ VORTAC	ANTON CHICO, NM VORTAC	18000	45000
ANTON CHICO, NM VORTAC	LIBERAL, KS VORTAC	18000	45000

95.7232 JET ROUTE J232

MOLINE, IL VOR/DME	KIRKSVILLE, MO VORTAC	18000	35000

95.7233 JET ROUTE J233

ST LOUIS, MO VORTAC	KIRKSVILLE, MO VORTAC	18000	45000
KIRKSVILLE, MO VORTAC	WATERLOO, IA VOR/DME	18000	27000

95.7236 JET ROUTE J236

THERMAL, CA VORTAC	NEEDLES, CA VORTAC	18000	45000
NEEDLES, CA VORTAC	TUBA CITY, AZ VORTAC	18000	45000

95.7239 JET ROUTE J239

ATLANTA, GA VORTAC	MERIDIAN, MS VORTAC	24000	45000

95.7240 JET ROUTE J240

MYTON, UT VOR/DME	BLUE MESA, CO VOR/DME	19000	45000

FROM	TO	MEA	MAA

95.7244 JET ROUTE J244

FORT UNION, NM VORTAC	ZUNI, NM VORTAC	21000	45000
ZUNI, NM VORTAC	PHOENIX, AZ VORTAC	19000	45000

95.7478 JET ROUTE J478

GLASGOW, MT VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7483 JET ROUTE J483

MINOT, ND VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7501 JET ROUTE J501

SAN MARCUS, CA VORTAC	BIG SUR, CA VORTAC	18000	45000
BIG SUR, CA VORTAC	POINT REYES, CA VOR/DME	18000	45000
POINT REYES, CA VOR/DME	ROGUE VALLEY, OR VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
ROGUE VALLEY, OR VORTAC	HOQUIAM, WA VORTAC	#22000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
HOQUIAM, WA VORTAC	TATOOSH, WA VORTAC	18000	45000
TATOOSH, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BIORKA ISLAND, AK VORTAC	18000	45000
BIORKA ISLAND, AK VORTAC	YAKUTAT, AK VOR/DME	18000	45000
YAKUTAT, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	18000	45000
JOHNSTONE POINT, AK VOR/DME	ANCHORAGE, AK VOR/DME	18000	45000
ANCHORAGE, AK VOR/DME	SPARREVOHN, AK VOR/DME	18000	45000
SPARREVOHN, AK VOR/DME	BETHEL, AK VORTAC	18000	45000

95.7502 JET ROUTE J502

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	99999	
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	22000	45000
ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	18000	45000
LEVEL ISLAND, AK VOR/DME	SISTERS ISLAND, AK VORTAC	18000	45000
SISTERS ISLAND, AK VORTAC	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
BURWASH, CANADA NDB	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
NORTHWAY, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	KOTZEBUE, AK VOR/DME	#27000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7503 JET ROUTE J503

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7505 JET ROUTE J505

FROM	TO	MEA	MAA
SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	#24000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
U.S. CANADIAN BORDER	CRANBROOK, CANADA VOR/DME	99999	

95.7506 JET ROUTE J506

FROM	TO	MEA	MAA
MILLINOCKET, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7507 JET ROUTE J507

FROM	TO	MEA	MAA
BARROW, AK VOR/DME	DEADHORSE, AK VOR/DME	18000	45000
DEADHORSE, AK VOR/DME	FORT YUKON, AK VORTAC	18000	45000
FORT YUKON, AK VORTAC	NORTHWAY, AK VORTAC	18000	45000
NORTHWAY, AK VORTAC	U.S. CANADIAN BORDER	#21000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
U.S. CANADIAN BORDER	YAKUTAT, AK VOR/DME	22000	45000

95.7511 JET ROUTE J511

FROM	TO	MEA	MAA
DILLINGHAM, AK VOR/DME	ANCHORAGE, AK VOR/DME	21000	45000
ANCHORAGE, AK VOR/DME	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7512 JET ROUTE J512

FROM	TO	MEA	MAA
EMMONAK, AK VOR/DME	UNALAKLEET, AK VOR/DME	18000	45000
UNALAKLEET, AK VOR/DME	GALENA, AK VOR/DME	18000	45000

95.7515 JET ROUTE J515

FROM	TO	MEA	MAA
FARGO, ND VOR/DME	HUMBOLDT, MN VORTAC	18000	45000
HUMBOLDT, MN VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	U.S. CANADIAN BORDER	99999	
U.S. CANADIAN BORDER	NORTHWAY, AK VORTAC	18000	45000
NORTHWAY, AK VORTAC	FAIRBANKS, AK VORTAC	18000	45000
FAIRBANKS, AK VORTAC	BETTLES, AK VOR/DME	18000	45000
BETTLES, AK VOR/DME	BARROW, AK VOR/DME	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

95.7516 JET ROUTE J516

FROM	TO	MEA	MAA
GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7517 JET ROUTE J517

FROM	TO	MEA	MAA
BOISE, ID VORTAC	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7518 JET ROUTE J518

DRYER, OH VOR/DME	INDIAN HEAD, PA VORTAC	18000	45000
INDIAN HEAD, PA VORTAC	BALTIMORE, MD VORTAC	18000	35000

95.7523 JET ROUTE J523

BRYCE CANYON, UT VORTAC	ELY, NV VOR/DME	18000	45000
ELY, NV VOR/DME	ROME, OR VOR/DME	29000	45000
ROME, OR VOR/DME	KIMBERLY, OR VOR/DME	18000	45000
KIMBERLY, OR VOR/DME	KLICKITAT, OR VOR/DME	18000	45000
KLICKITAT, OR VOR/DME	SEATTLE, WA VORTAC	18000	45000
SEATTLE, WA VORTAC	TATOOSH, WA VORTAC	18000	45000
TATOOSH, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	18000	45000

95.7526 JET ROUTE J526

BECKLEY, WV VOR/DME	LOUISVILLE, KY VORTAC	18000	45000

95.7530 JET ROUTE J530

GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	SWIFT CURRENT, CANADA VOR/DME	99999	

95.7533 JET ROUTE J533

DULUTH, MN VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	THUNDER BAY, CANADA VOR/DME	99999	

95.7534 JET ROUTE J534

IWACK, WA FIX	WHATCOM, WA VORTAC	18000	45000
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7536 JET ROUTE J536

SISTERS ISLAND, AK VORTAC	U.S. CANADIAN BORDER	#21000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
U.S. CANADIAN BORDER	WHITEHORSE, CANADA VOR/DME	99999	

95.7537 JET ROUTE J537

ROME, OR VOR/DME	MULLAN PASS, ID VOR/DME	22000	45000

95.7538 JET ROUTE J538

U.S. CANADIAN BORDER	DULUTH, MN VORTAC	18000	45000
DULUTH, MN VORTAC	DELLS, WI VORTAC	18000	45000
DELLS, WI VORTAC	BADGER, WI VOR/DME	18000	45000

FROM	TO	MEA	MAA

95.7539 JET ROUTE J539

GLASGOW, MT VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	SWIFT CURRENT, CANADA VOR/DME	99999	

95.7540 JET ROUTE J540

MULLAN PASS, ID VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	LETHBRIDGE, CANADA VOR/DME	99999	

95.7541 JET ROUTE J541

YAKUTAT, AK VOR/DME	SISTERS ISLAND, AK VORTAC	18000	45000

95.7547 JET ROUTE J547

NORTHBROOK, IL VOR/DME	PULLMAN, MI VOR/DME	18000	45000
PULLMAN, MI VOR/DME	FLINT, MI VORTAC	18000	45000

95.7548 JET ROUTE J548

PULLMAN, MI VOR/DME	TRAVERSE CITY, MI VOR/DME	18000	45000

95.7549 JET ROUTE J549

WILLISTON, ND VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BRANDON, CANADA VORTAC	#99999	

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7554 JET ROUTE J554

GIPPER, MI VORTAC	CARLETON, MI VOR/DME	18000	45000
CARLETON, MI VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	JAMESTOWN, NY VOR/DME	18000	45000

95.7561 JET ROUTE J561

PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	MONT JOLI, CANADA VOR/DME	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7562 JET ROUTE J562

DICKINSON, ND VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	BRANDON, CANADA VORTAC	99999	

95.7563 JET ROUTE J563

ALBANY, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

FROM	TO	MEA	MAA

95.7569 JET ROUTE J569

GREAT FALLS, MT VORTAC	CRANBROOK, CANADA VOR/DME	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7570 JET ROUTE J570

ALBANY, NY VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7573 JET ROUTE J573

KENNEBUNK, ME VOR/DME	SAINT JOHN, CANADA VOR/DME	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7575 JET ROUTE J575

BOSTON, MA VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7582 JET ROUTE J582

PRESQUE ISLE, ME VOR/DME	SEPT-ILES, CANADA VOR/DME	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7584 JET ROUTE J584

NORTHBROOK, IL VOR/DME	CARLETON, MI VOR/DME	18000	45000
CARLETON, MI VOR/DME	SLATE RUN, PA VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
SLATE RUN, PA VORTAC	WILLIAMSPORT, PA VOR/DME	18000	33000
WILLIAMSPORT, PA VOR/DME	BROADWAY, NJ VOR/DME	18000	31000

95.7585 JET ROUTE J585

NANTUCKET, MA VOR/DME	YARMOUTH, CANADA VOR/DME	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7589 JET ROUTE J589

ROSEBURG, OR VOR/DME	CORVALLIS, OR VOR/DME	18000	45000
CORVALLIS, OR VOR/DME	VICTORIA, CANADA VOR/DME	#28000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

95.7590 JET ROUTE J590

LAKE CHARLES, LA VORTAC	FIGHTING TIGER, LA VORTAC	18000	45000
FIGHTING TIGER, LA VORTAC	GREENE COUNTY, MS VORTAC	18000	45000
GREENE COUNTY, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7591 JET ROUTE J591

WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
U.S. CANADIAN BORDER	ANTLR, CANADA FIX	99999	

95.7599 JET ROUTE J599

MULLAN PASS, ID VOR/DME	CRANBROOK, CANADA VOR/DME	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

95.7603 JET ROUTE J603

ELFEE, AK NDB	DILLINGHAM, AK VOR/DME	18000	45000

95.7604 JET ROUTE J604

BORLAND, AK NDB/DME	WOODY ISLAND, AK NDB	18000	45000

95.7605 JET ROUTE J605

BIORKA ISLAND, AK VORTAC	MIDDLETON ISLAND, AK VOR/DME	23000	45000

95.7606 JET ROUTE J606

ST PAUL ISLAND, AK NDB/DME	CHINOOK, AK NDB	18000	45000

95.7617 JET ROUTE J617

HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	18000	45000

95.7618 JET ROUTE J618

MOUNT MOFFETT, AK NDB/DME	ELFEE, AK NDB	18000	45000

95.7619 JET ROUTE J619

CAPE NEWENHAM, AK NDB/DME	ST PAUL ISLAND, AK NDB/DME	18000	45000

95.7623 JET ROUTE J623

PORT HEIDEN, AK NDB/DME	COLD BAY, AK VORTAC	18000	45000
COLD BAY, AK VORTAC	ST PAUL ISLAND, AK NDB/DME	18000	45000

95.7713 JET ROUTE J713

BILLINGS, MT VORTAC	BOYSEN RESERVOIR, WY VOR/DME	18000	45000
BOYSEN RESERVOIR, WY VOR/DME	BIG PINEY, WY VOR/DME	18000	45000
BIG PINEY, WY VOR/DME	WASATCH, UT VORTAC	26000	45000

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

§95.8003 VOR FEDERAL AIRWAYS CHANGEOVER POINTS

V1

CRAIG, FL VORTAC	CHARLESTON, SC VORTAC	96	CRAIG
CHARLESTON, SC VORTAC	GRAND STRAND, SC VORTAC	46	CHARLESTON

V2

SEATTLE, WA VORTAC	ELLENSBURG, WA VOR/DME	47	SEATTLE
ELLENSBURG, WA VOR/DME	MOSES LAKE, WA VOR/DME	28	ELLENSBURG
SPOKANE, WA VORTAC	MULLAN PASS, ID VOR/DME	32	SPOKANE
MISSOULA, MT VOR/DME	HELENA, MT VORTAC	35	MISSOULA
MILES CITY, MT VOR/DME	DICKINSON, ND VORTAC	60	MILES CITY
GOPHER, MN VORTAC	NODINE, MN VORTAC	50	GOPHER
BUFFALO, NY VOR/DME	ROCHESTER, NY VOR/DME	45	BUFFALO

V3

VANCE, SC VORTAC	FLORENCE, SC VORTAC	21	VANCE
FLORENCE, SC VORTAC	SANDHILLS, NC VORTAC	20	FLORENCE
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	10	SANDHILLS
MODENA, PA VORTAC	SOLBERG, NJ VOR/DME	10	MODENA

V4

YAKIMA, WA VORTAC	PENDLETON, OR VORTAC	26	YAKIMA
BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	25	BAKER CITY
CHARLESTON, WV VOR/DME	ELKINS, WV VORTAC	27	CHARLESTON

V5

DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	47	DUBLIN
LOUISVILLE, KY VORTAC	CINCINNATI, KY VORTAC	38	LOUISVILLE
CINCINNATI, KY VORTAC	APPLETON, OH VORTAC	64	CINCINNATI

V6

OAKLAND, CA VOR/DME	SACRAMENTO, CA VORTAC	34	OAKLAND
SACRAMENTO, CA VORTAC	SQUAW VALLEY, CA VOR/DME	40	SACRAMENTO
OGDEN, UT VORTAC	FORT BRIDGER, WY VOR/DME	25	OGDEN
GRAND ISLAND, NE VOR/DME	OMAHA, IA VORTAC	52	GRAND ISLAND

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	

V7

SEMINOLE, FL VORTAC	WIREGRASS, AL VORTAC	53	SEMINOLE

V8

SEAL BEACH, CA VORTAC	PARADISE, CA VORTAC	13	SEAL BEACH
PARADISE, CA VORTAC	HECTOR, CA VORTAC	44	PARADISE
HECTOR, CA VORTAC	GOFFS, CA VORTAC	38	HECTOR
HANKSVILLE, UT VORTAC	GRAND JUNCTION, CO VOR/DME	40	HANKSVILLE
GRAND JUNCTION, CO VOR/DME	RIFLE, CO VOR/DME	37	GRAND JUNCTION
RIFLE, CO VOR/DME	KREMMLING, CO VOR/DME	20	RIFLE
GRAND ISLAND, NE VOR/DME	OMAHA, IA VORTAC	52	GRAND ISLAND
MARTINSBURG, WV VORTAC	WASHINGTON, DC VOR/DME	29	MARTINSBURG

V12

PALMDALE, CA VORTAC	HECTOR, CA VORTAC	60	PALMDALE
HECTOR, CA VORTAC	NEEDLES, CA VORTAC	41	HECTOR
DRAKE, AZ VORTAC	WINSLOW, AZ VORTAC	39	DRAKE
ALBUQUERQUE, NM VORTAC	OTTO, NM VOR	23	ALBUQUERQUE
ANTON CHICO, NM VORTAC	TUCUMCARI, NM VORTAC	30	ANTON CHICO
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	46	PANHANDLE
BIBLE GROVE, IL VORTAC	SHELBYVILLE, IN VOR/DME	70	BIBLE GROVE
JOHNSTOWN, PA VOR/DME	HARRISBURG, PA VORTAC	62	JOHNSTOWN

V13

CORPUS CHRISTI, TX VORTAC	BROWNSVILLE, TX VORTAC	47	CORPUS CHRISTI
LUFKIN, TX VORTAC	BELCHER, LA VORTAC	64	LUFKIN
NAPOLEON, MO VORTAC	LAMONI, IA VOR/DME	40	NAPOLEON

V14

MUNCIE, IN VOR/DME	FLAG CITY, OH VORTAC	44	MUNCIE

V15

HOBBY, TX VOR/DME	NAVASOTA, TX VOR/DME	38	HOBBY
CEDAR CREEK, TX VORTAC	BONHAM, TX VORTAC	20	CEDAR CREEK

V16

LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	25	LOS ANGELES
PARADISE, CA VORTAC	PALM SPRINGS, CA VORTAC	34	PARADISE
BLYTHE, CA VORTAC	BUCKEYE, AZ VORTAC	44	BLYTHE
SALT FLAT, TX VORTAC	WINK, TX VORTAC	42	SALT FLAT
TEXARKANA, AR VORTAC	PINE BLUFF, AR VOR/DME	62	TEXARKANA
VOLUNTEER, TN VORTAC	HOLSTON MOUNTAIN, TN VORTAC	38	VOLUNTEER

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V20

PALACIOS, TX VORTAC	HOBBY, TX VOR/DME	41	PALACIOS
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	30	MONTGOMERY
ATHENS, GA VOR/DME	ELECTRIC CITY, SC VORTAC	20	ATHENS

V21

SEAL BEACH, CA VORTAC	PARADISE, CA VORTAC	13	SEAL BEACH
PARADISE, CA VORTAC	HECTOR, CA VORTAC	44	PARADISE
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC	23	HECTOR
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	46	DUBOIS

V23

LOS ANGELES, CA VORTAC	GORMAN, CA VORTAC	36	LOS ANGELES
GORMAN, CA VORTAC	SHAFTER, CA VORTAC	10	GORMAN
RED BLUFF, CA VORTAC	FORT JONES, CA VOR/DME	53	RED BLUFF
ROGUE VALLEY, OR VORTAC	EUGENE, OR VORTAC	40	ROGUE VALLEY
EUGENE, OR VORTAC	BATTLE GROUND, WA VORTAC	57	EUGENE
WHATCOM, WA VORTAC	VANCOUVER, CA VOR/DME	10	WHATCOM

V25

MISSION BAY, CA VORTAC	LOS ANGELES, CA VORTAC	40	MISSION BAY
KLAMATH FALLS, OR VORTAC	DESCHUTES, OR VORTAC	23	KLAMATH FALLS

V26

MONTROSE, CO VOR/DME	GRAND JUNCTION, CO VOR/DME	23	MONTROSE
MEEKER, CO VOR/DME	CHEROKEE, WY VOR/DME	35	MEEKER
MUDDY MOUNTAIN, WY VOR/DME	RAPID CITY, SD VORTAC	92	MUDDY MOUNTAIN
EAU CLAIRE, WI VORTAC	WAUSAU, WI VORTAC	71	EAU CLAIRE
WAUSAU, WI VORTAC	GREEN BAY, WI VORTAC	8	WAUSAU

V27

SANTA CATALINA, CA VORTAC	OCEANSIDE, CA VORTAC	31	SANTA CATALINA
GAVIOTA, CA VORTAC	MORRO BAY, CA VORTAC	20	GAVIOTA
MENDOCINO, CA VORTAC	FORTUNA, CA VORTAC	67	MENDOCINO
NEWPORT, OR VORTAC	ASTORIA, OR VOR/DME	66	NEWPORT

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V30		
SELINSGROVE, PA VOR/DME	EAST TEXAS, PA VOR/DME	20	SELINSGROVE
	V31		
HARRISBURG, PA VORTAC	SELINSGROVE, PA VOR/DME	19	HARRISBURG
	V32		
BATTLE MOUNTAIN, NV VORTAC	BULLION, NV VOR/DME	24	BATTLE MOUNTAIN
BULLION, NV VOR/DME	BONNEVILLE, UT VORTAC	40	BULLION
WASATCH, UT VORTAC	FORT BRIDGER, WY VOR/DME	17	WASATCH
	V33		
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	35	HARRISBURG
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	30	KEATING
	V34		
ROCHESTER, NY VOR/DME	HANCOCK, NY VOR/DME	60	ROCHESTER
	V35		
PHILIPSBURG, PA VORTAC	STONYFORK, PA VOR/DME	25	PHILIPSBURG
	V37		
SAVANNAH, GA VORTAC	ALLENDALE, SC VOR	36	SAVANNAH
COLUMBIA, SC VORTAC	CHARLOTTE, NC VOR/DME	26	COLUMBIA
CHARLOTTE, NC VOR/DME	PULASKI, VA VORTAC	74	CHARLOTTE
	V38		
ELKINS, WV VORTAC	GORDONSVILLE, VA VORTAC	46	ELKINS
	V39		
MARTINSBURG, WV VORTAC	LANCASTER, PA VOR/DME	34	MARTINSBURG
	V44		
MORGANTOWN, WV VOR/DME	MARTINSBURG, WV VORTAC	53	MORGANTOWN

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V45		
HENDERSON, WV VORTAC	APPLETON, OH VORTAC	59	HENDERSON
	V47		
PINE BLUFF, AR VOR/DME	GILMORE, AR VOR/DME	41	PINE BLUFF
	V49		
VULCAN, AL VORTAC	DECATUR, AL VOR/DME	35	VULCAN
	V51		
CRAIG, FL VORTAC	ALMA, GA VORTAC	48	CRAIG
DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	47	DUBLIN
	V54		
CHOO CHOO, TN VORTAC	HARRIS, GA VORTAC	36	CHOO CHOO
HARRIS, GA VORTAC	SPARTANBURG, SC VORTAC	52	HARRIS
	V55		
PARK RAPIDS, MN VOR/DME	GRAND FORKS, ND VOR/DME	64	PARK RAPIDS
	V56		
MONTGOMERY, AL VORTAC	TUSKEGEE, AL VOR/DME	30	MONTGOMERY
	V59		
BECKLEY, WV VOR/DME	PARKERSBURG, WV VOR/DME	46	BECKLEY
	V62		
SANTA FE, NM VORTAC	ANTON CHICO, NM VORTAC	30	SANTA FE
ANTON CHICO, NM VORTAC	TEXICO, TX VORTAC	61	ANTON CHICO
	V64		
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	59	SEAL BEACH
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	29	THERMAL

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

V66

MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	39	MISSION BAY
GILA BEND, AZ VORTAC	TUCSON, AZ VORTAC	48	GILA BEND
DOUGLAS, AZ VORTAC	COLUMBUS, NM VOR/DME	#44	DOUGLAS
#UTILIZE DEMING VORTAC 233 M RAD FROM COP TO ANIMA FIX			
MIDLAND, TX VORTAC	ABILENE, TX VORTAC	51	MIDLAND
GREENWOOD, SC VORTAC	SANDHILLS, NC VORTAC	64	GREENWOOD
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	10	SANDHILLS

V67

CEDAR RAPIDS, IA VOR/DME	WATERLOO, IA VOR/DME	37	CEDAR RAPIDS

V68

CORONA, NM VORTAC	CHISUM, NM VORTAC	33	CORONA
SAN ANGELO, TX VORTAC	JUNCTION, TX VORTAC	25	SAN ANGELO

V71

EL DORADO, AR VOR/DME	HOT SPRINGS, AR VOR/DME	49	EL DORADO
HOT SPRINGS, AR VOR/DME	HARRISON, AR VOR/DME	47	HOT SPRINGS

V74

TULSA, OK VORTAC	FORT SMITH, AR VORTAC	48	TULSA

V77

ABILENE, TX VORTAC	WICHITA FALLS, TX VORTAC	56	ABILENE

V83

CARLSBAD, NM VORTAC	CHISUM, NM VORTAC	31	CARLSBAD
CHISUM, NM VORTAC	CORONA, NM VORTAC	48	CHISUM
CORONA, NM VORTAC	OTTO, NM VOR	20	CORONA

V86

MISSOULA, MT VOR/DME	COPPERTOWN, MT VOR/DME	35	MISSOULA
SHERIDAN, WY VOR/DME	RAPID CITY, SD VORTAC	100	SHERIDAN

V87

SAN FRANCISCO, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	19	SAN FRANCISCO

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V94

STANFIELD, AZ VORTAC	SAN SIMON, AZ VORTAC	82	STANFIELD
DEMING, NM VORTAC	NEWMAN, TX VORTAC	35	DEMING
SALT FLAT, TX VORTAC	WINK, TX VORTAC	42	SALT FLAT
MIDLAND, TX VORTAC	TUSCOLA, TX VOR/DME	51	MIDLAND

V95

WINSLOW, AZ VORTAC	RATTLESNAKE, NM VORTAC	91	WINSLOW
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	#77	BLUE MESA

#USE THE HUGO (HGO) VORTAC FROM THE COP TO THE GORJE INT

V97

ST PETERSBURG, FL VORTAC	SEMINOLE, FL VORTAC	97	ST PETERSBURG
CINCINNATI, KY VORTAC	SHELBYVILLE, IN VOR/DME	39	CINCINNATI
NODINE, MN VORTAC	GOPHER, MN VORTAC	60	NODINE

V101

GILL, CO VOR/DME	HAYDEN, CO VOR/DME	71	GILL
HAYDEN, CO VOR/DME	VERNAL, UT VOR/DME	56	HAYDEN
VERNAL, UT VOR/DME	WASATCH, UT VORTAC	75	VERNAL
OGDEN, UT VORTAC	BURLEY, ID VOR/DME	61	OGDEN

V102

SALT FLAT, TX VORTAC	CARLSBAD, NM VORTAC	24	SALT FLAT

V103

GREENSBORO, NC VORTAC	ROANOKE, VA VOR/DME	28	GREENSBORO

V104

MONTPELIER, VT VOR/DME	BERLIN, NH VOR/DME	39	MONTPELIER
BERLIN, NH VOR/DME	BANGOR, ME VORTAC	25	BERLIN

V105

DRAKE, AZ VORTAC	BOULDER CITY, NV VORTAC	55	DRAKE
BEATTY, NV VORTAC	COALDALE, NV VORTAC	34	BEATTY
COALDALE, NV VORTAC	MUSTANG, NV VORTAC	55	COALDALE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V107		
FILLMORE, CA VORTAC	AVENAL, CA VOR/DME	31	FILLMORE
AVENAL, CA VOR/DME	PANOCHE, CA VORTAC	45	AVENAL
	V111		
BIG SUR, CA VORTAC	SALINAS, CA VORTAC	21	BIG SUR
SALINAS, CA VORTAC	MODESTO, CA VOR/DME	22	SALINAS
	V112		
PENDLETON, OR VORTAC	SPOKANE, WA VORTAC	57	PENDLETON
	V113		
MORRO BAY, CA VORTAC	PASO ROBLES, CA VORTAC	7	MORRO BAY
MUSTANG, NV VORTAC	SOD HOUSE, NV VORTAC	48	MUSTANG
BOISE, ID VORTAC	SALMON, ID VOR/DME	45	BOISE
SALMON, ID VOR/DME	COPPERTOWN, MT VOR/DME	60	SALMON
HELENA, MT VORTAC	LEWISTOWN, MT VOR/DME	40	HELENA
	V115		
VULCAN, AL VORTAC	CHOO CHOO, TN VORTAC	59	VULCAN
HAZARD, KY VOR/DME	CHARLESTON, WV VOR/DME	40	HAZARD
	V119		
NEWCOMBE, KY VORTAC	HENDERSON, WV VORTAC	32	NEWCOMBE
	V120		
SEATTLE, WA VORTAC	WENATCHEE, WA VOR/DME	51	SEATTLE
WENATCHEE, WA VOR/DME	EPHRATA, WA VORTAC	10	WENATCHEE
MULLAN PASS, ID VOR/DME	GREAT FALLS, MT VORTAC	80	MULLAN PASS
LEWISTOWN, MT VOR/DME	MILES CITY, MT VOR/DME	74	LEWISTOWN
MILES CITY, MT VOR/DME	DUPREE, SD VOR/DME	90	MILES CITY
SIOUX FALLS, SD VORTAC	MASON CITY, IA VOR/DME	82	SIOUX FALLS
	V121		
KIMBERLY, OR VOR/DME	BAKER CITY, OR VOR/DME	67	KIMBERLY

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V123

WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	19	WOODSTOWN

V124

PARIS, TX VOR/DME	HOT SPRINGS, AR VOR/DME	75	PARIS
HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	14	HOT SPRINGS

V128

SMARS, IL FIX	KANKAKEE, IL VOR/DME	#44	SMARS
#COP MEASURED FROM BDF VORTAC.			
CINCINNATI, KY VORTAC	YORK, KY VORTAC	38	CINCINNATI
YORK, KY VORTAC	CHARLESTON, WV VOR/DME	29	YORK
CHARLESTON, WV VOR/DME	CASANOVA, VA VORTAC	114	CHARLESTON

V133

BARRETTS MOUNTAIN, NC VOR/DME	CHARLESTON, WV VOR/DME	77	BARRETTS MOUNTAIN
CHARLESTON, WV VOR/DME	ZANESVILLE, OH VOR/DME	52	CHARLESTON

V134

FAIRFIELD, UT VORTAC	CARBON, UT VOR/DME	20	FAIRFIELD
CARBON, UT VOR/DME	GRAND JUNCTION, CO VOR/DME	25	CARBON
GRAND JUNCTION, CO VOR/DME	RED TABLE, CO VOR/DME	#56	GRAND JUNCTION
#THE COP IS AT THE SLOLM INT.			

V135

GOFFS, CA VORTAC	BEATTY, NV VORTAC	31	GOFFS
BEATTY, NV VORTAC	COALDALE, NV VORTAC	#34	BEATTY

#COP 53 NM FROM AND UTILIZES COALDALE, NV VORTAC ON THE 129 M RAD.

V136

VOLUNTEER, TN VORTAC	SNOWBIRD, TN VORTAC	25	VOLUNTEER

V137

PALM SPRINGS, CA VORTAC	PALMDALE, CA VORTAC	30	PALM SPRINGS
GORMAN, CA VORTAC	AVENAL, CA VOR/DME	31	GORMAN

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V139		
CAPE CHARLES, VA VORTAC	SNOW HILL, MD VORTAC	38	CAPE CHARLES
SNOW HILL, MD VORTAC	SEA ISLE, NJ VORTAC	25	SNOW HILL
	V140		
PANHANDLE, TX VORTAC	BURNS FLAT, OK VORTAC	56	PANHANDLE
	V142		
MALAD CITY, ID VOR/DME	FORT BRIDGER, WY VOR/DME	32	MALAD CITY
	V143		
MARTINSBURG, WV VORTAC	LANCASTER, PA VOR/DME	34	MARTINSBURG
	V144		
BRADFORD, IL VORTAC	KANKAKEE, IL VOR/DME	44	BRADFORD
	V146		
ALBANY, NY VORTAC	CHESTER, MA VOR/DME	8	ALBANY
	V148		
THURMAN, CO VORTAC	HAYES CENTER, NE VORTAC	65	THURMAN
GOPHER, MN VORTAC	HAYWARD, WI VOR/DME	65	GOPHER
HAYWARD, WI VOR/DME	IRONWOOD, MI VOR/DME	20	HAYWARD
	V155		
SANDHILLS, NC VORTAC	RALEIGH/DURHAM, NC VORTAC	10	SANDHILLS
FLAT ROCK, VA VORTAC	BROOKE, VA VORTAC	43	FLAT ROCK
	V157		
VANCE, SC VORTAC	FLORENCE, SC VORTAC	21	VANCE
WOODSTOWN, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	19	WOODSTOWN
	V159		
OCALA, FL VORTAC	CROSS CITY, FL VORTAC	28	OCALA

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V161		
NAPOLEON, MO VORTAC	LAMONI, IA VOR/DME	40	NAPOLEON
INTERNATIONAL FALLS, MN VOR/DME	WINNIPEG, CA VORTAC	77	INTERNATIONAL FALLS
	V162		
ALLENTOWN, PA VORTAC	HUGUENOT, NY VOR/DME	10	ALLENTOWN
	V163		
BROWNSVILLE, TX VORTAC	CORPUS CHRISTI, TX VORTAC	71	BROWNSVILLE
	V165		
CLOVIS, CA VORTAC	MUSTANG, NV VORTAC	94	CLOVIS
MUSTANG, NV VORTAC	LAKEVIEW, OR VORTAC	70	MUSTANG
LAKEVIEW, OR VORTAC	DESCHUTES, OR VORTAC	73	LAKEVIEW
DESCHUTES, OR VORTAC	NEWBERG, OR VOR/DME	43	DESCHUTES
	V166		
WESTMINSTER, MD VORTAC	DUPONT, DE VORTAC	40	WESTMINSTER
WOODSTOWN, NJ VORTAC	SEA ISLE, NJ VORTAC	28	WOODSTOWN
	V168		
LAGRANGE, GA VORTAC	VULCAN, AL VORTAC	45	LAGRANGE
	V170		
PULLMAN, MI VOR/DME	SALEM, MI VORTAC	61	PULLMAN
	V177		
JOLIET, IL VOR/DME	JANESVILLE, WI VOR/DME	40	JOLIET
	V181		
OMAHA, IA VORTAC	NORFOLK, NE VOR/DME	51	OMAHA
	V182		
NEWPORT, OR VORTAC	NEWBERG, OR VOR/DME	29	NEWPORT
KLICKITAT, OR VOR/DME	BAKER CITY, OR VOR/DME	119	KLICKITAT

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V183		
SAN MARCUS, CA VORTAC	SHAFTER, CA VORTAC	20	SAN MARCUS
	V186		
VAN NUYS, CA VOR/DME	PARADISE, CA VORTAC	39	VAN NUYS
	V187		
ALBUQUERQUE, NM VORTAC	RATTLESNAKE, NM VORTAC	58	ALBUQUERQUE
RATTLESNAKE, NM VORTAC	GRAND JUNCTION, CO VOR/DME	90	RATTLESNAKE
GRAND JUNCTION, CO VOR/DME	ROCK SPRINGS, WY VOR/DME	86	GRAND JUNCTION
BOYSEN RESERVOIR, WY VOR/DME	BILLINGS, MT VORTAC	97	BOYSEN RESERVOIR
GREAT FALLS, MT VORTAC	MISSOULA, MT VOR/DME	84	GREAT FALLS
MISSOULA, MT VOR/DME	NEZ PERCE, ID VOR/DME	30	MISSOULA
	V189		
WRIGHT BROTHERS, NC VOR/DME	TAR RIVER, NC VORTAC	25	WRIGHT BROTHERS
	V190		
PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	67	PHOENIX
ALBUQUERQUE, NM VORTAC	FORT UNION, NM VORTAC	38	ALBUQUERQUE
	V191		
IRONWOOD, MI VOR/DME	DULUTH, MN VORTAC	32	IRONWOOD
	V194		
SABINE PASS, TX VOR/DME	LAFAYETTE, LA VORTAC	50	SABINE PASS
	V198		
SAN ANTONIO, TX VORTAC	EAGLE LAKE, TX VOR/DME	63	SAN ANTONIO
HARVEY, LA VORTAC	BROOKLEY, AL VORTAC	61	HARVEY
	V200		
WILLIAMS, CA VORTAC	MUSTANG, NV VORTAC	84	WILLIAMS
FAIRFIELD, UT VORTAC	MYTON, UT VOR/DME	32	FAIRFIELD
	V201		
LOS ANGELES, CA VORTAC	PALMDALE, CA VORTAC	19	LOS ANGELES

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	
	V203			
ALBANY, NY VORTAC	SARANAC LAKE, NY VOR/DME		60	ALBANY
	V204			
HOQUIAM, WA VORTAC	OLYMPIA, WA VORTAC		31	HOQUIAM
	V208			
SANTA CATALINA, CA VORTAC	OCEANSIDE, CA VORTAC		31	SANTA CATALINA
THERMAL, CA VORTAC	TWENTYNINE PALMS, CA VORTAC		20	THERMAL
NEEDLES, CA VORTAC	PEACH SPRINGS, AZ VOR/DME		39	NEEDLES
PEACH SPRINGS, AZ VOR/DME	GRAND CANYON, AZ VOR/DME		57	PEACH SPRINGS
PAGE, AZ VOR/DME	HANKSVILLE, UT VORTAC		61	PAGE
CARBON, UT VOR/DME	MYTON, UT VOR/DME		17	CARBON
VERNAL, UT VOR/DME	CHEROKEE, WY VOR/DME		54	VERNAL
	V209			
SEMMES, AL VORTAC	KEWANEE, MS VORTAC		50	SEMMES
	V210			
POMONA, CA VORTAC	HECTOR, CA VORTAC		16	POMONA
HECTOR, CA VORTAC	GOFFS, CA VORTAC		38	HECTOR
GOFFS, CA VORTAC	PEACH SPRINGS, AZ VOR/DME		42	GOFFS
PEACH SPRINGS, AZ VOR/DME	GRAND CANYON, AZ VOR/DME		57	PEACH SPRINGS
	V212			
SAN ANTONIO, TX VORTAC	EAGLE LAKE, TX VOR/DME		63	SAN ANTONIO
LUFKIN, TX VORTAC	ALEXANDRIA, LA VORTAC		65	LUFKIN
	V213			
TAR RIVER, NC VORTAC	HOPEWELL, VA VORTAC		43	TAR RIVER
	V217			
RHINELANDER, WI VOR/DME	DULUTH, MN VORTAC		49	RHINELANDER
	V218			
GRAND RAPIDS, MN VOR/DME	GOPHER, MN VORTAC		46	GRAND RAPIDS

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	

V220

GRAND JUNCTION, CO VOR/DME	RIFLE, CO VOR/DME	#56	GRAND JUNCTION

#COP - THE COP IS AT THE SLOLM INT

V222

SALT FLAT, TX VORTAC	FORT STOCKTON, TX VORTAC	52	SALT FLAT
BARRETTS MOUNTAIN, NC VOR/DME	LYNCHBURG, VA VOR/DME	62	BARRETTS MOUNTAIN

V229

BRIDGEPORT, CT VOR/DME	HARTFORD, CT VOR/DME	19	BRIDGEPORT

V230

SALINAS, CA VORTAC	PANOCHE, CA VORTAC	30	SALINAS
FRIANT, CA VORTAC	MINA, NV VORTAC	40	FRIANT

V231

MISSOULA, MT VOR/DME	KALISPELL, MT VOR/DME	29	MISSOULA

V234

DALHART, TX VORTAC	LIBERAL, KS VORTAC	45	DALHART

V235

FAIRFIELD, UT VORTAC	FORT BRIDGER, WY VOR/DME	32	FAIRFIELD
ROCK SPRINGS, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME	65	ROCK SPRINGS

V237

NEEDLES, CA VORTAC	BOULDER CITY, NV VORTAC	60	NEEDLES

V240

HARVEY, LA VORTAC	BROOKLEY, AL VORTAC	61	HARVEY

V243

WAYCROSS, GA VORTAC	VIENNA, GA VORTAC	30	WAYCROSS

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V244

COALDALE, NV VORTAC	TONOPAH, NV VORTAC	14	COALDALE
TONOPAH, NV VORTAC	WILSON CREEK, NV VORTAC	50	TONOPAH
WILSON CREEK, NV VORTAC	MILFORD, UT VORTAC	40	WILSON CREEK
MILFORD, UT VORTAC	HANKSVILLE, UT VORTAC	40	MILFORD
BLUE MESA, CO VOR/DME	PUEBLO, CO VORTAC	53	BLUE MESA

V245

NATCHEZ, MS VOR/DME	MAGNOLIA, MS VORTAC	25	NATCHEZ

V252

GENESEO, NY VOR/DME	BINGHAMTON, NY VOR/DME	34	GENESEO

V253

LUCIN, UT VORTAC	TWIN FALLS, ID VORTAC	40	LUCIN
TWIN FALLS, ID VORTAC	BOISE, ID VORTAC	48	TWIN FALLS
NEZ PERCE, ID VOR/DME	PULLMAN, WA VOR/DME	13	NEZ PERCE

V257

GRAND CANYON, AZ VOR/DME	BRYCE CANYON, UT VORTAC	36	GRAND CANYON
DELTA, UT VORTAC	MALAD CITY, ID VOR/DME	63	DELTA
DUBOIS, ID VORTAC	DILLON, MT VOR/DME	46	DUBOIS
DILLON, MT VOR/DME	COPPERTOWN, MT VOR/DME	27	DILLON

V258

CHARLESTON, WV VOR/DME	BECKLEY, WV VOR/DME	20	CHARLESTON

V259

GRAND STRAND, SC VORTAC	FLORENCE, SC VORTAC	25	GRAND STRAND

V263

SANTA FE, NM VORTAC	FORT UNION, NM VORTAC	21	SANTA FE
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	28	FORT UNION

V264

POMONA, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	37	POMONA
DRAKE, AZ VORTAC	WINSLOW, AZ VORTAC	39	DRAKE

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V265

HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	35	HARRISBURG
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	30	KEATING

V266

SOUTH BOSTON, VA VORTAC	LAWRENCEVILLE, VA VORTAC	38	SOUTH BOSTON

V267

DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	47	DUBLIN

V268

WESTMINSTER, MD VORTAC	BALTIMORE, MD VORTAC	12	WESTMINSTER

V269

WELLS, NV VOR/DME	TWIN FALLS, ID VORTAC	33	WELLS

V270

JAMESTOWN, NY VOR/DME	WELLSVILLE, NY VORTAC	22	JAMESTOWN

V271

MUSKEGON, MI VORTAC	MANISTEE, MI VOR/DME	37	MUSKEGON

V272

BORGER, TX VORTAC	BURNS FLAT, OK VORTAC	51	BORGER

V273

HANCOCK, NY VOR/DME	GEORGETOWN, NY VORTAC	31	HANCOCK

V277

FORT WAYNE, IN VORTAC	KEELER, MI VOR/DME	38	FORT WAYNE

V280

PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	46	PANHANDLE

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	
	V282			
SARANAC LAKE, NY VOR/DME	MONTREAL, CA VOR/DME		37	SARANAC LAKE
	V283			
SEAL BEACH, CA VORTAC	HOMELAND, CA VOR		24	SEAL BEACH
HECTOR, CA VORTAC	BOULDER CITY, NV VORTAC		23	HECTOR
	V285			
WHITE CLOUD, MI VOR/DME	MANISTEE, MI VOR/DME		28	WHITE CLOUD
	V286			
ELKINS, WV VORTAC	CASANOVA, VA VORTAC		43	ELKINS
BROOKE, VA VORTAC	CAPE CHARLES, VA VORTAC		22	BROOKE
	V287			
BATTLE GROUND, WA VORTAC	OLYMPIA, WA VORTAC		41	BATTLE GROUND
	V291			
ALBUQUERQUE, NM VORTAC	GALLUP, NM VORTAC		44	ALBUQUERQUE
FLAGSTAFF, AZ VOR/DME	PEACH SPRINGS, AZ VOR/DME		39	FLAGSTAFF
	V293			
ELY, NV VOR/DME	BULLION, NV VOR/DME		26	ELY
BULLION, NV VOR/DME	TWIN FALLS, ID VORTAC		66	BULLION
	V295			
OCALA, FL VORTAC	CROSS CITY, FL VORTAC		28	OCALA
	V298			
SEATTLE, WA VORTAC	ELLENSBURG, WA VOR/DME		47	SEATTLE
DONNELLY, ID VOR/DME	DUBOIS, ID VORTAC		109	DONNELLY
DUBOIS, ID VORTAC	DUNOIR, WY VOR/DME		68	DUBOIS
DUNOIR, WY VOR/DME	BOYSEN RESERVOIR, WY VOR/DME		15	DUNOIR
	V299			
LOS ANGELES, CA VORTAC	VENTURA, CA VOR/DME		18	LOS ANGELES

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	
	V300			
THUNDER BAY, CANADA VOR/DME	SAULT STE MARIE, MI VOR/DME		142	THUNDER BAY
	V306			
DAISETTA, TX VORTAC	LAKE CHARLES, LA VORTAC		30	DAISETTA
	V316			
IRONWOOD, MI VOR/DME	SAWYER, MI VOR/DME		94	IRONWOOD
	V317			
POGGI, CA VORTAC	IMPERIAL, CA VORTAC		25	POGGI
	V319			
WORLAND, WY VOR/DME	CODY, WY VOR/DME		39	WORLAND
	V321			
SHELBYVILLE, TN VOR/DME	LIVINGSTON, TN VOR/DME		40	SHELBYVILLE
	V323			
MONTGOMERY, AL VORTAC	EUFAULA, AL VORTAC		32	MONTGOMERY
	V324			
CRAZY WOMAN, WY VOR/DME	WORLAND, WY VOR/DME		15	CRAZY WOMAN
	V325			
ATHENS, GA VOR/DME	COLUMBIA, SC VORTAC		24	ATHENS
	V328			
JACKSON, WY VOR/DME	BIG PINEY, WY VOR/DME		20	JACKSON
	V330			
IDAHO FALLS, ID VOR/DME	JACKSON, WY VOR/DME		48	IDAHO FALLS
DUNOIR, WY VOR/DME	RIVERTON, WY VOR/DME		15	DUNOIR

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V336		
ELLENSBURG, WA VOR/DME	EPHRATA, WA VORTAC	19	ELLENSBURG
	V343		
DUBOIS, ID VORTAC	BOZEMAN, MT VOR/DME	60	DUBOIS
	V361		
RATTLESNAKE, NM VORTAC	MONTROSE, CO VOR/DME	61	RATTLESNAKE
	V365		
HELENA, MT VORTAC	CUT BANK, MT VOR/DME	51	HELENA
	V370		
LOS ANGELES, CA VORTAC	PARADISE, CA VORTAC	25	LOS ANGELES
PARADISE, CA VORTAC	PALM SPRINGS, CA VORTAC	34	PARADISE
	V372		
SEAL BEACH, CA VORTAC	HOMELAND, CA VOR	24	SEAL BEACH
	V373		
GREENSBORO, NC VORTAC	SANDHILLS, NC VORTAC	43	GREENSBORO
	V375		
ROANOKE, VA VOR/DME	GORDONSVILLE, VA VORTAC	48	ROANOKE
	V376		
RICHMOND, VA VORTAC	WASHINGTON, DC VOR/DME	53	RICHMOND
	V382		
CONES, CO VOR/DME	DURANGO, CO VOR/DME	25	CONES
	V392		
MUSTANG, NV VORTAC	WILLIAMS, CA VORTAC	30	MUSTANG

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	
	V393			
NOGALES, AZ VOR/DME	HERMOSILLO, MX VOR/DME		64	NOGALES
	V394			
POMONA, CA VORTAC	DAGGETT, CA VORTAC		16	POMONA
DAGGETT, CA VORTAC	LAS VEGAS, NV VORTAC		59	DAGGETT
	V401			
WORLAND, WY VOR/DME	MUDDY MOUNTAIN, WY VOR/DME		35	WORLAND
	V413			
EAU CLAIRE, WI VORTAC	IRONWOOD, MI VOR/DME		45	EAU CLAIRE
	V417			
ATHENS, GA VOR/DME	COLLIERS, SC VORTAC		24	ATHENS
	V419			
MODENA, PA VORTAC	SOLBERG, NJ VOR/DME		10	MODENA
	V428			
ITHACA, NY VOR/DME	GEORGETOWN, NY VORTAC		20	ITHACA
	V430			
DEVILS LAKE, ND VOR/DME	MINOT, ND VOR/DME		40	DEVILS LAKE
DULUTH, MN VORTAC	IRONWOOD, MI VOR/DME		55	DULUTH
IRONWOOD, MI VOR/DME	IRON MOUNTAIN, MI VOR/DME		44	IRONWOOD
	V432			
THERMAL, CA VORTAC	PARKER, CA VORTAC		30	THERMAL
	V433			
LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME		9	LA GUARDIA
	V437			
ORMOND BEACH, FL VORTAC	SAVANNAH, GA VORTAC		80	ORMOND BEACH

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	

V442

FROM	TO	DISTANCE	FROM
HECTOR, CA VORTAC	PARKER, CA VORTAC	#41	HECTOR

#USE THE NEEDLES (EED) VORTAC FROM THE COP TO THE CLIPP INT.

V444

FROM	TO	DISTANCE	FROM
BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	25	BAKER CITY
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	66	BOISE

V448

FROM	TO	DISTANCE	FROM
YAKIMA, WA VORTAC	MOSES LAKE, WA VOR/DME	15	YAKIMA
SPOKANE, WA VORTAC	KALISPELL, MT VOR/DME	105	SPOKANE

V452

FROM	TO	DISTANCE	FROM
EUGENE, OR VORTAC	KLAMATH FALLS, OR VORTAC	67	EUGENE

V454

FROM	TO	DISTANCE	FROM
LIBERTY, NC VORTAC	LAWRENCEVILLE, VA VORTAC	82	LIBERTY

V458

FROM	TO	DISTANCE	FROM
SANTA CATALINA, CA VORTAC	OCEANSIDE, CA VORTAC	31	SANTA CATALINA

V465

FROM	TO	DISTANCE	FROM
BULLION, NV VOR/DME	WELLS, NV VOR/DME	25	BULLION
WELLS, NV VOR/DME	MALAD CITY, ID VOR/DME	40	WELLS
MALAD CITY, ID VOR/DME	JACKSON, WY VOR/DME	#63	MALAD CITY
#MEA GAP AT COP			
DUNOIR, WY VOR/DME	BILLINGS, MT VORTAC	45	DUNOIR

V469

FROM	TO	DISTANCE	FROM
HARRISBURG, PA VORTAC	DUPONT, DE VORTAC	32	HARRISBURG

V475

FROM	TO	DISTANCE	FROM
LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA
MADISON, CT VOR/DME	NORWICH, CT VOR/DME	16	MADISON

V484

FROM	TO	DISTANCE	FROM
TWIN FALLS, ID VORTAC	WASATCH, UT VORTAC	59	TWIN FALLS
WASATCH, UT VORTAC	MYTON, UT VOR/DME	28	WASATCH

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

V487

LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA

V490

CAMBRIDGE, NY VOR/DME	MANCHESTER, NH VOR/DME	37	CAMBRIDGE

V494

MENDOCINO, CA VORTAC	SANTA ROSA, CA VOR/DME	25	MENDOCINO
SANTA ROSA, CA VOR/DME	SACRAMENTO, CA VORTAC	25	SANTA ROSA

V495

WHATCOM, WA VORTAC	VICTORIA, CA VOR/DME	10	WHATCOM
VICTORIA, CANADA VOR/DME	SEATTLE, WA VORTAC	41	VICTORIA
SEATTLE, WA VORTAC	BATTLE GROUND, WA VORTAC	20	SEATTLE

V500

NEWBERG, OR VOR/DME	KIMBERLY, OR VOR/DME	79	NEWBERG
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	66	BOISE

V501

ST THOMAS, PA VORTAC	PHILIPSBURG, PA VORTAC	22	ST THOMAS

V502

EMPORIA, KS VORTAC	KANSAS CITY, MO VORTAC	40	EMPORIA

V505

GOPHER, MN VORTAC	SIREN, WI VOR/DME	38	GOPHER

V514

THERMAL, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	20	THERMAL
GOFFS, CA VORTAC	BOULDER CITY, NV VORTAC	#60	GOFFS

#COP MEASURED FROM NEEDLES VORTAC.

V520

NEZ PERCE, ID VOR/DME	SALMON, ID VOR/DME	53	NEZ PERCE
DUBOIS, ID VORTAC	JACKSON, WY VOR/DME	60	DUBOIS

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM
	V527		
HOT SPRINGS, AR VOR/DME	RAZORBACK, AR VORTAC	42	HOT SPRINGS
	V532		
SALINA, KS VORTAC	LINCOLN, NE VORTAC	51	SALINA
	V536		
MULLAN PASS, ID VOR/DME	KALISPELL, MT VOR/DME	45	MULLAN PASS
KALISPELL, MT VOR/DME	GREAT FALLS, MT VORTAC	35	KALISPELL
	V569		
FRANKSTON, TX VOR/DME	CEDAR CREEK, TX VORTAC	5	FRANKSTON
	V571		
HUMBLE, TX VORTAC	NAVASOTA, TX VOR/DME	24	HUMBLE
	V573		
HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	14	HOT SPRINGS
	V574		
NAVASOTA, TX VOR/DME	HUMBLE, TX VORTAC	18	NAVASOTA
	V591		
GRAND JUNCTION, CO VOR/DME #THE COP IS AT THE SLOLM INT	RED TABLE, CO VOR/DME	#56	GRAND JUNCTION
	V611		
SANTA FE, NM VORTAC	FORT UNION, NM VORTAC	21	SANTA FE
FORT UNION, NM VORTAC	CIMARRON, NM VORTAC	28	FORT UNION
CIMARRON, NM VORTAC	PUEBLO, CO VORTAC	30	CIMARRON

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

ALASKA V309

PRINCE RUPERT, CANADA NDB	ANNETTE ISLAND, AK VOR/DME	26	PRINCE RUPERT

ALASKA V311

ANNETTE ISLAND, AK VOR/DME	BIORKA ISLAND, AK VORTAC	103	ANNETTE ISLAND

ALASKA V317

ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	64	ANNETTE ISLAND
LEVEL ISLAND, AK VOR/DME	SISTERS ISLAND, AK VORTAC	74	LEVEL ISLAND

ALASKA V319

YAKUTAT, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	119	YAKUTAT
SPARREVOHN, AK VOR/DME	BETHEL, AK VORTAC	92	SPARREVOHN

ALASKA V320

MC GRATH, AK VORTAC	ANCHORAGE, AK VOR/DME	95	MC GRATH

ALASKA V321

KING SALMON, AK VORTAC	HOMER, AK VOR/DME	70	KING SALMON

ALASKA V333

HOOPER BAY, AK VOR/DME	NOME, AK VOR/DME	70	HOOPER BAY
NOME, AK VOR/DME	SHISHMAREF, AK NDB	65	NOME

ALASKA V401

AMBLER, AK NDB	KOTZEBUE, AK VOR/DME	40	AMBLER
KOTZEBUE, AK VOR/DME	SHISHMAREF, AK NDB	60	KOTZEBUE

ALASKA V428

BIORKA ISLAND, AK VORTAC	SISTERS ISLAND, AK VORTAC	55	BIORKA ISLAND
SISTERS ISLAND, AK VORTAC	HAINES, AK NDB	21	SISTERS ISLAND
HAINES, AK NDB	WHITEHORSE, CA VOR/DME	30	HAINES

ALASKA V436

TALKEETNA, AK VOR/DME	NENANA, AK VORTAC	50	TALKEETNA
NENANA, AK VORTAC	CHANDALAR LAKE, AK NDB	120	NENANA
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	63	CHANDALAR LAKE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

ALASKA V438

KODIAK, AK VOR/DME	HOMER, AK VOR/DME	66	KODIAK
HOMER, AK VOR/DME	ANCHORAGE, AK VOR/DME	53	HOMER

ALASKA V440

NOME, AK VOR/DME	UNALAKLEET, AK VOR/DME	45	NOME
MC GRATH, AK VORTAC	ANCHORAGE, AK VOR/DME	95	MC GRATH
YAKUTAT, AK VOR/DME	BIORKA ISLAND, AK VORTAC	108	YAKUTAT
BIORKA ISLAND, AK VORTAC	SANDSPIT, CA VOR/DME	134	BIORKA ISLAND

ALASKA V441

MIDDLETON ISLAND, AK VOR/DME	KENAI, AK VOR/DME	84	MIDDLETON ISLAND

ALASKA V444

BARROW, AK VOR/DME	EVANSVILLE, AK NDB	105	BARROW
BETTLES, AK VOR/DME	FAIRBANKS, AK VORTAC	89	BETTLES
NORTHWAY, AK VORTAC	BURWASH, CA NDB	97	NORTHWAY

ALASKA V445

BETTLES, AK VOR/DME	NENANA, AK VORTAC	67	BETTLES

ALASKA V447

FAIRBANKS, AK VORTAC	CHANDALAR LAKE, AK NDB	103	FAIRBANKS

ALASKA V452

KUKULIAK, AK VOR/DME	NOME, AK VOR/DME	67	KUKULIAK
MOSES POINT, AK VOR/DME	GALENA, AK VOR/DME	70	MOSES POINT
GALENA, AK VOR/DME	NENANA, AK VORTAC	75	GALENA

ALASKA V453

BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	109	BETHEL

ALASKA V457

ILIAMNA, AK NDB/DME	KENAI, AK VOR/DME	47	ILIAMNA

ALASKA V459

EMMONAK, AK VOR/DME	ST MARYS, AK NDB	40	EMMONAK

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

ALASKA V480

ST PAUL ISLAND, AK NDB/DME	BETHEL, AK VORTAC	223	ST PAUL ISLAND
BETHEL, AK VORTAC	MC GRATH, AK VORTAC	128	BETHEL
MC GRATH, AK VORTAC	NENANA, AK VORTAC	70	MC GRATH

ALASKA V481

GULKANA, AK VOR/DME	BIG DELTA, AK VORTAC	63	GULKANA
BIG DELTA, AK VORTAC	FORT YUKON, AK VORTAC	69	BIG DELTA

ALASKA V488

HOOPER BAY, AK VOR/DME	HOOPER BAY, AK VOR/DME	91	HOOPER BAY
TANANA, AK VOR/DME	FAIRBANKS, AK VORTAC	40	TANANA

ALASKA V496

HOOPER BAY, AK VOR/DME	ST MARYS, AK NDB	40	HOOPER BAY

ALASKA V498

GALENA, AK VOR/DME	KOTZEBUE, AK VOR/DME	85	GALENA

ALASKA V504

NENANA, AK VORTAC	BETTLES, AK VOR/DME	67	NENANA
BETTLES, AK VOR/DME	DEADHORSE, AK VOR/DME	116	BETTLES

ALASKA V506

KODIAK, AK VOR/DME	KING SALMON, AK VORTAC	55	KODIAK
KING SALMON, AK VORTAC	BETHEL, AK VORTAC	102	KING SALMON
NOME, AK VOR/DME	KOTZEBUE, AK VOR/DME	64	NOME
HOTHAM, AK NDB	BARROW, AK VOR/DME	186	HOTHAM

ALASKA V508

MIDDLETON ISLAND, AK VOR/DME	KENAI, AK VOR/DME	85	MIDDLETON ISLAND
KENAI, AK VOR/DME	SPARREVOHN, AK VOR/DME	67	KENAI
SPARREVOHN, AK VOR/DME	ANIAK, AK NDB	68	SPARREVOHN

ALASKA V510

EMMONAK, AK VOR/DME	ANVIK, AK NDB	69	EMMONAK
ANVIK, AK NDB	MC GRATH, AK VORTAC	87	ANVIK

AIRWAY SEGMENT			CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM	

ALASKA V531

FAIRBANKS, AK VORTAC	TANANA, AK VOR/DME	69	FAIRBANKS
TANANA, AK VOR/DME	HUSLIA, AK VOR/DME	40	TANANA
SELAWIK, AK VOR/DME	KOTZEBUE, AK VOR/DME	30	SELAWIK
KOTZEBUE, AK VOR/DME	POINT HOPE, AK NDB	116	KOTZEBUE

ALASKA V603

ELFEE, AK NDB	DILLINGHAM, AK VOR/DME	207	ELFEE

ALASKA V617

HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	63	HOMER

HAWAII V15

MOLOKAI, HI VORTAC	MAUI, HI VORTAC	31	MOLOKAI

HAWAII V16

LANAI, HI VORTAC	UPOLU POINT, HI VORTAC	47	LANAI

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM

§95.8005 JET ROUTES CHANGEOVER POINT

J1

ROGUE VALLEY, OR VORTAC	BATTLE GROUND, WA VORTAC	90	ROGUE VALLEY

J2

BARD, CA VORTAC	GILA BEND, AZ VORTAC	32	BARD

J5

LAKEVIEW, OR VORTAC	SEATTLE, WA VORTAC	156	LAKEVIEW

J6

DRAKE, AZ VORTAC	ZUNI, NM VORTAC	76	DRAKE
MARTINSBURG, WV VORTAC	LANCASTER, PA VOR/DME	24	MARTINSBURG

J8

GALLUP, NM VORTAC	FORT UNION, NM VORTAC	101	GALLUP

J10

BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	50	BLUE MESA

J15

RATTLESNAKE, NM VORTAC	GRAND JUNCTION, CO VOR/DME	90	RATTLESNAKE

J16

BATTLE GROUND, WA VORTAC	PENDLETON, OR VORTAC	60	BATTLE GROUND

J17

CHEYENNE, WY VORTAC	RAPID CITY, SD VORTAC	90	CHEYENNE

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

J18

PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	88	PHOENIX
MOLINE, IL VOR/DME	JOLIET, IL VOR/DME	45	MOLINE

J19

BUKKO, NM FIX	FORT UNION, NM VORTAC	82	BUKKO
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	40	ROBERTS

J20

POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	82	POCATELLO

J21

GOPHER, MN VORTAC	DULUTH, MN VORTAC	81	GOPHER

J24

HUGO, CO VOR/DME	HAYS, KS VORTAC	80	HUGO
CHARLESTON, WV VOR/DME	MONTEBELLO, VA VOR/DME	104	CHARLESTON

J32

ABERDEEN, SD VOR/DME	DULUTH, MN VORTAC	130	ABERDEEN

J37

KENNEDY, NY VOR/DME	KINGSTON, NY VOR/DME	37	KENNEDY

J40

MONTGOMERY, AL VORTAC	MACON, GA VORTAC	139	MONTGOMERY

J42

MEMPHIS, TN VORTAC	NASHVILLE, TN VORTAC	119	MEMPHIS

J44

FALCON, CO VORTAC	MC COOK, NE VOR/DME	90	FALCON
MC COOK, NE VOR/DME	LINCOLN, NE VORTAC	51	MC COOK

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J48		
CASANOVA, VA VORTAC	MONTEBELLO, VA VOR/DME	58	CASANOVA
	J52		
BIGBEE, MS VORTAC	VULCAN, AL VORTAC	25	BIGBEE
	J54		
OLYMPIA, WA VORTAC	BAKER CITY, OR VOR/DME	143	OLYMPIA
	J55		
BOSTON, MA VOR/DME	KENNEBUNK, ME VOR/DME	38	BOSTON
	J56		
WASATCH, UT VORTAC	HAYDEN, CO VOR/DME	66	WASATCH
HAYDEN, CO VOR/DME	GILL, CO VOR/DME	#55	HAYDEN
#USE THE GILL (GLL) VORTAC FROM THE COP TO THE RIDJE INT			
	J58		
COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	44	COALDALE
MILFORD, UT VORTAC	RATTLESNAKE, NM VORTAC	92	MILFORD
	J60		
HANKSVILLE, UT VORTAC	RED TABLE, CO VOR/DME	75	HANKSVILLE
RED TABLE, CO VOR/DME	MILE HIGH, CO VORTAC	39	RED TABLE
GOSHEN, IN VORTAC	DRYER, OH VOR/DME	90	GOSHEN
	J64		
RATTLESNAKE, NM VORTAC	PUEBLO, CO VORTAC	93	RATTLESNAKE
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	80	PUEBLO
FORT WAYNE, IN VORTAC	ELLWOOD CITY, PA VOR/DME	112	FORT WAYNE
	J68		
DELLS, WI VORTAC	GOPHER, MN VORTAC	115	DELLS

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J70		
DICKINSON, ND VORTAC	ABERDEEN, SD VOR/DME	60	DICKINSON
	J71		
CENTRALIA, IL VORTAC	ROBERTS, IL VOR/DME	98	CENTRALIA
ROBERTS, IL VOR/DME	NORTHBROOK, IL VOR/DME	40	ROBERTS
	J75		
MODENA, PA VORTAC	SOLBERG, NJ VOR/DME	10	MODENA
	J78		
DRAKE, AZ VORTAC	ZUNI, NM VORTAC	76	DRAKE
	J79		
FRANKLIN, VA VORTAC	SALISBURY, MD VORTAC	20	FRANKLIN
	J80		
COALDALE, NV VORTAC	WILSON CREEK, NV VORTAC	44	COALDALE
MILFORD, UT VORTAC	GRAND JUNCTION, CO VOR/DME	50	MILFORD
	J82		
BATTLE GROUND, WA VORTAC	DONNELLY, ID VOR/DME	90	BATTLE GROUND
RAPID CITY, SD VORTAC	SIOUX FALLS, SD VORTAC	125	RAPID CITY
	J83		
APPLETON, OH VORTAC	DRYER, OH VOR/DME	75	APPLETON
	J84		
NORTHBROOK, IL VOR/DME	DANVILLE, IL VORTAC	67	NORTHBROOK
	J86		
HUMBLE, TX VORTAC	LEEVILLE, LA VORTAC	135	HUMBLE

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J87		
MOLINE, IL VOR/DME	JOLIET, IL VOR/DME	45	MOLINE
	J88		
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	71	SAN MARCUS
	J89		
ATLANTA, GA VORTAC	VALDOSTA, GA VOR/DME	90	ATLANTA
LOUISVILLE, KY VORTAC	ATLANTA, GA VORTAC	148	LOUISVILLE
	J90		
HELENA, MT VORTAC	MILES CITY, MT VOR/DME	115	HELENA
	J91		
VOLUNTEER, TN VORTAC	HENDERSON, WV VORTAC	135	VOLUNTEER
	J92		
BEATTY, NV VORTAC	BOULDER CITY, NV VORTAC	12	BEATTY
	J94		
ROCK SPRINGS, WY VOR/DME	SCOTTSBLUFF, NE VORTAC	105	ROCK SPRINGS
	J96		
DRAKE, AZ VORTAC	GALLUP, NM VORTAC	77	DRAKE
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	146	GALLUP
	J107		
MILFORD, UT VORTAC	ROCK SPRINGS, WY VOR/DME	120	MILFORD
	J110		
BELLAIRE, OH VOR/DME	COYLE, NJ VORTAC	132	BELLAIRE

AIRWAY SEGMENT FROM	TO	CHANGEOVER POINTS DISTANCE	FROM
	J115		
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	15	CHANDALAR LAKE
	J116		
MEEKER, CO VOR/DME	FALCON, CO VORTAC	60	MEEKER
	J118		
MEMPHIS, TN VORTAC	CHOO CHOO, TN VORTAC	130	MEMPHIS
	J120		
ST PAUL ISLAND, AK NDB/DME	BETHEL, AK VORTAC	190	ST PAUL ISLAND
	J121		
CHARLESTON, SC VORTAC	KINSTON, NC VORTAC	128	CHARLESTON
SNOW HILL, MD VORTAC	SEA ISLE, NJ VORTAC	20	SNOW HILL
	J123		
KODIAK, AK VOR/DME	KING SALMON, AK VORTAC	60	KODIAK
	J125		
KODIAK, AK VOR/DME	ANCHORAGE, AK VOR/DME	103	KODIAK
	J126		
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	71	SAN MARCUS
	J128		
BLUE MESA, CO VOR/DME	FALCON, CO VORTAC	50	BLUE MESA
	J130		
MC COOK, NE VOR/DME	PAWNEE CITY, NE VORTAC	72	MC COOK

AIRWAY SEGMENT FROM	TO	CHANGEOVER POINTS DISTANCE	FROM

J134

DRAKE, AZ VORTAC	GALLUP, NM VORTAC	77	DRAKE
GALLUP, NM VORTAC	CIMARRON, NM VORTAC	146	GALLUP
HENDERSON, WV VORTAC	LINDEN, VA VORTAC	133	HENDERSON

J136

YAKIMA, WA VORTAC	SPOKANE, WA VORTAC	50	YAKIMA
MULLAN PASS, ID VOR/DME	HELENA, MT VORTAC	100	MULLAN PASS
BILLINGS, MT VORTAC	MEDICINE BOW, WY VOR/DME	149	BILLINGS

J139

BETTLES, AK VOR/DME	DEADHORSE, AK VOR/DME	83	BETTLES

J140

DULUTH, MN VORTAC	SAULT STE MARIE, MI VOR/DME	171	DULUTH

J143

MENDOCINO, CA VORTAC	ROSEBURG, OR VOR/DME	150	MENDOCINO

J152

JOHNSTOWN, PA VOR/DME	HARRISBURG, PA VORTAC	62	JOHNSTOWN

J153

ROME, OR VOR/DME	BAKER CITY, OR VOR/DME	120	ROME
BAKER CITY, OR VOR/DME	SPOKANE, WA VORTAC	60	BAKER CITY

J154

WASATCH, UT VORTAC	ROCK SPRINGS, WY VOR/DME	35	WASATCH
ROCK SPRINGS, WY VOR/DME	GILL, CO VOR/DME	104	ROCK SPRINGS

J157

MYTON, UT VOR/DME	LARAMIE, WY VOR/DME	112	MYTON

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J163		
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	82	POCATELLO
	J165		
RICHMOND, VA VORTAC	CHARLESTON, SC VORTAC	152	RICHMOND
	J173		
WASATCH, UT VORTAC	MEEKER, CO VOR/DME	47	WASATCH
	J180		
SAWMILL, LA VOR/DME	LITTLE ROCK, AR VORTAC	105	SAWMILL
LITTLE ROCK, AR VORTAC	FORISTELL, MO VORTAC	118	LITTLE ROCK
	J181		
RANGER, TX VORTAC	OKMULGEE, OK VOR/DME	139	RANGER
OKMULGEE, OK VOR/DME	NEOSHO, MO VOR/DME	58	OKMULGEE
NEOSHO, MO VOR/DME	HALLSVILLE, MO VORTAC	130	NEOSHO
	J183		
LLANO, TX VORTAC	COLLEGE STATION, TX VORTAC	93	LLANO
	J187		
MEMPHIS, TN VORTAC	FORISTELL, MO VORTAC	96	MEMPHIS
	J189		
KLAMATH FALLS, OR VORTAC	BATTLE GROUND, WA VORTAC	78	KLAMATH FALLS
	J193		
COFIELD, NC VORTAC	HARCUM, VA VORTAC	36	COFIELD

AIRWAY SEGMENT		CHANGEOVER POINTS	
FROM	TO	DISTANCE	FROM

J197

DOVE CREEK, CO VORTAC	HUGO, CO VOR/DME	105	DOVE CREEK

J209

NORFOLK, VA VORTAC	SALISBURY, MD VORTAC	42	NORFOLK

J220

ARMEL, VA VOR/DME	STONYFORK, PA VOR/DME	122	ARMEL

J230

LARRI, PA FIX	BELLAIRE, OH VOR/DME	#163	LARRI

#COP MEASURED FROM COYLE, NJ VORTAC.

J233

KIRKSVILLE, MO VORTAC	WATERLOO, IA VOR/DME	78	KIRKSVILLE

J236

THERMAL, CA VORTAC	NEEDLES, CA VORTAC	53	THERMAL
NEEDLES, CA VORTAC	TUBA CITY, AZ VORTAC	72	NEEDLES

J240

MYTON, UT VOR/DME	BLUE MESA, CO VOR/DME	60	MYTON

J244

FORT UNION, NM VORTAC	ZUNI, NM VORTAC	86	FORT UNION

J501

SANDSPIT, CANADA VOR/DME	BIORKA ISLAND, AK VORTAC	99	SANDSPIT
BIORKA ISLAND, AK VORTAC	YAKUTAT, AK VOR/DME	98	BIORKA ISLAND
YAKUTAT, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	117	YAKUTAT

J502

SEATTLE, WA VORTAC	VICTORIA, CA VOR/DME	50	SEATTLE
SISTERS ISLAND, AK VORTAC	BURWASH, CA NDB	80	SISTERS ISLAND

AIRWAY SEGMENT FROM	TO	CHANGEOVER POINTS DISTANCE	FROM
	J505		
SEATTLE, WA VORTAC	CRANBROOK, CA VOR/DME	108	SEATTLE
	J507		
NORTHWAY, AK VORTAC	YAKUTAT, AK VOR/DME	135	NORTHWAY
	J511		
GULKANA, AK VOR/DME	BURWASH, CA NDB	55	GULKANA
	J515		
BETTLES, AK VOR/DME	BARROW, AK VOR/DME	130	BETTLES
	J517		
BOISE, ID VORTAC	SPOKANE, WA VORTAC	100	BOISE
	J518		
INDIAN HEAD, PA VORTAC	BALTIMORE, MD VORTAC	20	INDIAN HEAD
	J523		
ELY, NV VOR/DME	BRYCE CANYON, UT VORTAC	20	ELY
	J589		
CORVALLIS, OR VOR/DME	VICTORIA, CA VOR/DME	100	CORVALLIS
	J617		
HOMER, AK VOR/DME	JOHNSTONE POINT, AK VOR/DME	63	HOMER
	J713		
BIG PINEY, WY VOR/DME	WASATCH, UT VORTAC	94	BIG PINEY