AIP

AERONAUTICAL INFORMATION PUBLICATION

UNITED STATES OF AMERICA

TWENTY–FOURTH EDITION **DATED 10 NOV 2016**

AMENDMENT 1

27 APR 2017

CONSULT NOTAM FOR LATEST INFORMATION

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

AIP Amendment 1

Page Control Chart

27 April 2017

REMOVE PAGES	DATED	INSERT PAGES	DATED
GEN 0.1–1	10 NOV 16	GEN 0.1–1	27 APR 17
GEN 0.1–2	10 NOV 16	GEN 0.1–2	10 NOV 16
GEN 0.4–1 through GEN 0.4–3	10 NOV 16	GEN 0.4–1 through GEN 0.4–3	27 APR 17
GEN 1.7–107	10 NOV 16	GEN 1.7–107	27 APR 17
GEN 1.7–108	10 NOV 16	GEN 1.7–108	10 NOV 16
GEN 2.2–1	10 NOV 16	GEN 2.2–1	27 APR 17
GEN 2.2–2	10 NOV 16	GEN 2.2–2	10 NOV 16
GEN 3.2–11	10 NOV 16	GEN 3.2–11	27 APR 17
GEN 3.2–12	10 NOV 16	GEN 3.2–12	10 NOV 16
GEN 3.3–1 through GEN 3.3–4	10 NOV 16	GEN 3.3–1 through GEN 3.3–4	27 APR 17
GEN 3.3–9 through GEN 3.3–11	10 NOV 16	GEN 3.3–9 through GEN 3.3–11	27 APR 17
GEN 3.3–12	10 NOV 16	GEN 3.3–12	10 NOV 16
GEN 3.3–17	10 NOV 16	GEN 3.3–17	27 APR 17
ENR 0.4–1 through ENR 0.4–3	10 NOV 16	ENR 0.4–1 through ENR 0.4–3	27 APR 17
ENR 0.6–1	10 NOV 16	ENR 0.6–1	27 APR 17
ENR 0.6–2	10 NOV 16	ENR 0.6–2	10 NOV 16
ENR 1.1–13 through ENR 1.1–86	10 NOV 16	ENR 1.1–13 through ENR 1.1–86	27 APR 17
ENR 1.5–1 through ENR 1.5–81	10 NOV 16	ENR 1.5–1 through ENR 1.5–85	27 APR 17
ENR 1.10–17	10 NOV 16	ENR 1.10–17	10 NOV 16
ENR 1.10–18 and ENR 1.10–19	10 NOV 16	ENR 1.10–18 and ENR 1.10–19	27 APR 17
ENR 1.10–20	10 NOV 16	ENR 1.10–20	10 NOV 16
ENR 1.12–1 through ENR 1.12–9	10 NOV 16	ENR 1.12–1 through ENR 1.12–14	27 APR 17
ENR 1.17–9	10 NOV 16	ENR 1.17–9 and ENR 1.17–10	27 APR 17
ENR 4.1–1	10 NOV 16	ENR 4.1–1	10 NOV 16
ENR 4.1–2 through ENR 4.1–34	10 NOV 16	ENR 4.1–2 through ENR 4.1–35	27 APR 17
ENR 5.7–1	10 NOV 16	ENR 5.7–1	10 NOV 16
ENR 5.7–2	10 NOV 16	ENR 5.7–2	27 APR 17
ENR 6.1–3	10 NOV 16	ENR 6.1–3	10 NOV 16
ENR 6.1–4	10 NOV 16	ENR 6.1–4	27 APR 17
ENR 7.1–3	10 NOV 16	ENR 7.1–3	10 NOV 16
ENR 7.1–4 and ENR 7.1–5	10 NOV 16	ENR 7.1–4 through ENR 7.1–6	27 APR 17
ENR 7.4–1	10 NOV 16	ENR 7.4–1	27 APR 17
ENR 7.4–2 and ENR 7.4–3	10 NOV 16	ENR 7.4–2 and ENR 7.4–3	10 NOV 16
ENR 7.4–4	10 NOV 16	ENR 7.4–4 and ENR 7.4–5	27 APR 17
ENR 7.12–1	10 NOV 16	ENR 7.12–1	27 APR 17
AD 0.4–1 through AD 0.4–4	10 NOV 16	AD 0.4–1 through AD 0.4–4	27 APR 17
AD 1.1–13	10 NOV 16	AD 1.1–13	27 APR 17
AD 1.1–14	10 NOV 16	AD 1.1–14	10 NOV 16

REMOVE PAGES	DATED	INSERT PAGES	DATED
AD 2–1 through AD 2–437	10 NOV 16	AD 2–1 through AD 2–444	27 APR 17
I–1 through I–8	10 NOV 16	I–1 through I–8	27 APR 17
A–1 [and Supplemental Pages 1–423]	10 DEC 15	A–1 [and Supplemental Pages 1–405]	27 APR 17

PART 1 – GENERAL (GEN)

GEN 0.

GEN 0.1 Preface

1. Name of the Publishing Authority

1.1 The United States of America Aeronautical Information Publication (AIP) is published by the authority of the Federal Aviation Administration.

2. Applicable ICAO Documents

2.1 The AIP is prepared in accordance with the Standards and Recommended Practices (SARP) of Annex 15 to the Convention on International Civil Aviation and the Aeronautical Information Services Manual (ICAO Doc 8126). Charts contained in the AIP are produced in accordance with Annex 4 to the Convention on International Civil Aviation and the Aeronautical Chart Manual (ICAO Doc 8697). Differences from ICAO Standards, Recommended Practices and Procedures are given in subsection GEN 1.7.

3. The AIP Structure and Established Regular Amendment Interval

3.1 The AIP Structure

The AIP is made up of three Parts; General (GEN), En Route (ENR), and Aerodromes (AD); each divided into sections and subsections as applicable, containing various types of information subjects.

3.1.1 PART 1 – General (GEN)

PART 1 consists of five sections containing information as briefly described hereafter:

3.1.1.1 GEN 0. – Preface; Record of AIP Amendments; Checklist of AIP Pages; and Table of Contents to PART 1.

3.1.1.2 GEN 1. National Regulations and Requirements – Designated Authorities; Entry, Transit, and Departure of Aircraft; Entry, Transit, and Departure of Passengers and Crew; Entry, Transit, and Departure of Cargo; Aircraft Instruments, Equipment, and Flight Documents; Summary of National Regulations and International Agreements/Conventions; and Differences from ICAO Standards, Recommended Practices, and Procedures.

3.1.1.3 GEN 2. Tables and Codes – Measuring System, Time System, and Aircraft Markings; Abbreviations Used in AIS Publications; Chart Symbols; Location Indicators; List of Radio Navigation Aids; Conversion Tables; and Sunrise/Sunset Tables.

3.1.1.4 GEN 3. Services – Aeronautical Information Services; Aeronautical Charts; Air Traffic Services; Communication Service; Meteorological Services; Search and Rescue; and Aircraft Rescue and Fire Fighting Communications.

3.1.1.5 GEN 4. Charges for Aerodromes/Heliports and Air Navigation Services – Fees and Charges; and Air Navigation Facility Charges.

3.1.2 PART 2 – En Route (ENR)

PART 2 consists of seven sections containing information as briefly described hereafter:

3.1.2.1 ENR 0. – Checklist of AIP Pages; and the Table of Contents to PART 2.

3.1.2.2 ENR 1. General Rules and Procedures – General Rules; Visual Flight Rules; Instrument Flight Rules; ATS Airspace Classification; Holding, Approach, and Departure Procedures; Altimeter Setting Procedures; Flight Planning; Addressing of Flight Plans for Domestic or international Flight Planning; National Security and Interception Procedures; Medical Facts for Pilots; Safety, Hazard, and Accident Reports; and Performance–Based Navigation (PBN) and Area Navigation (RNAV).

3.1.2.3 ENR 2. Air Traffic Services Airspace.

3.1.2.4 ENR 3. ATS Routes – Lower ATS Routes; Upper ATS Routes; Area Navigation Routes; and Other Routes.

3.1.2.5 ENR 4. Navigation Aids/Systems – Navigation Aids – En Route; and Special Navigation Systems.

3.1.2.6 ENR 5. Navigation Warnings – Prohibited, Restricted, and Other Areas; Military Exercise and Training Areas; Bird Migration and Areas with Sensitive Fauna; and Potential Flight Hazards.

3.1.2.7 ENR 6. Helicopter Operations – Helicopter IFR Operations; and Special Operations.

3.1.2.8 ENR 7. Oceanic Operations – General Procedures; Data Link Procedures; Special Procedures for In–Flight Contingencies in Oceanic Airspace; Operational Policy 50 NM Lateral Separation; Operational Policy ADS–C Distance–Based Separation; North Atlantic (NAT) Oceanic Clearance Procedures; North Atlantic (NAT) Timekeeping Procedures; North Atlantic (NAT) Safety Information; San Juan FIR Customs Procedures; Y–Routes Between Florida and Puerto Rico; Atlantic High Offshore Airspace Offshore Routes Supporting Florida Airspace Optimization; Reduced Separation Climb/Descent Procedures; and New York Oceanic Control Area (OCA) West Flight Level Allocation.

3.1.3 PART 3 – Aerodromes (AD)

PART 3 consists of three sections containing information as briefly described hereafter:

3.1.3.1 AD 0. – Checklist of AIP Pages; and Table of Contents to PART 3.

3.1.3.2 AD 1. Aerodromes – Introduction: Aerodrome Availability.

3.1.3.3 AD 2. Aerodromes: Listing of Aerodromes.

3.2 Regular Amendment Interval

Regular amendments to the AIP will be issued every 6 months on Aeronautical Information Regulation and Control (AIRAC) effective dates listed in TBL GEN 0.1–1. A list of all AIRAC effective dates are contained in TBL GEN 0.1–2.

TBL GEN 0.1–1
Publication Schedule

New Edition or Amendment	Cutoff Date for Submission	Effective Date of Publication
Twenty–Fourth Edition	5/26/16	11/10/16
Amendment 1	11/10/16	4/27/17
Amendment 2	4/27/17	10/12/17
Amendment 3	10/12/17	3/29/18

TBL GEN 0.1–2
AIRAC System Effective Dates

2016	2017	2018	2019	2020
7 JAN	5 JAN	4 JAN	3 JAN	2 JAN
4 FEB	2 FEB	1 FEB	31 JAN	30 JAN
3 MAR	2 MAR	1 MAR	28 FEB	27 FEB
31 MAR	30 MAR	29 MAR	28 MAR	26 MAR
28 APR	27 APR	26 APR	25 APR	23 APR
26 MAY	25 MAY	24 MAY	23 MAY	21 MAY
23 JUN	22 JUN	21 JUN	20 JUN	18 JUN
21 JUL	20 JUL	19 JUL	18 JUL	16 JUL
18 AUG	17 AUG	16 AUG	15 AUG	13 AUG
15 SEP	14 SEP	13 SEP	12 SEP	10 SEP
13 OCT	12 OCT	11 OCT	10 OCT	8 OCT
10 NOV	9 NOV	8 NOV	07 NOV	5 NOV
8 DEC	7 DEC	6 DEC	05 DEC	3 DEC
				31 DEC

GEN 0.4 Checklist of Pages

PAGE	DATE
PART 1 – GENERAL (GEN)	
GEN 0	
0.1–1	27 APR 17
0.1–2	10 NOV 16
0.1–3	10 NOV 16
0.2–1	10 NOV 16
0.4–1	27 APR 17
0.4–2	27 APR 17
0.4–3	27 APR 17
0.6–1	10 NOV 16
GEN 1	
1.1–1	10 NOV 16
1.1–2	10 NOV 16
1.1–3	10 NOV 16
1.1–4	10 NOV 16
1.2–1	10 NOV 16
1.2–2	10 NOV 16
1.2–3	10 NOV 16
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1.2–7	10 NOV 16
1.2–8	10 NOV 16
1.2–9	10 NOV 16
1.3–1	10 NOV 16
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PAGE	DATE
1.7–14	10 NOV 16
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1.7–17	10 NOV 16
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PAGE	DATE
1.7–61	10 NOV 16
1.7–62	10 NOV 16
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1.7–103	10 NOV 16
1.7–104	10 NOV 16
1.7–105	10 NOV 16
1.7–106	10 NOV 16
1.7–107	27 APR 17
1.7–108	10 NOV 16

PAGE	DATE
GEN 2	
2.1–1	10 NOV 16
2.1–2	10 NOV 16
2.2–1	27 APR 17
2.2–2	10 NOV 16
2.2–3	10 NOV 16
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2.7–1	10 NOV 16
GEN 3	
3.1–1	10 NOV 16
3.1–2	10 NOV 16
3.1–3	10 NOV 16
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3.3–17	27 APR 17
3.4–1	10 NOV 16
3.4–2	10 NOV 16
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3.6–7	10 NOV 16
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3.6–19	10 NOV 16
3.6–20	10 NOV 16
3.7–1	10 NOV 16
3.7–2	10 NOV 16

PAGE	DATE
GEN 4	
4.1–1	10 NOV 16
4.2–1	10 NOV 16

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

PANS – OPS – 8168/611	
VOLUME 1	
PART III	
Table III−1−1 and Table III−1−2	Max speeds for visual maneuvering (Circling)" must not be applied to circling procedures in the U.S. Comply with the airspeeds and circling restrictions in ENR 1.5, paragraphs 11.1 and 11.6, in order to remain within obstacle protection areas.

PART IV	
1.2.1	The airspeeds contained in ENR 1.5 shall be used in U.S. **CONTROLLED AIRSPACE**.

PAN – ABC – DOC 8400
Differences between abbreviations used in U.S. AIP, International NOTAMs Class I and Class II, and Notices to Airmen Publication and ICAO PANS − ABC are listed in GEN 2.2**.** For other U.S. listings of abbreviations (contractions) for general use, air traffic control, and National Weather Service (NWS), which differ in some respects, see U.S. publication Contractions Handbook (DOT/FAA Order 7340.1). In addition, various U.S. publications contain abbreviations of terms used therein, particularly those unique to that publication.

GEN 2.2 Abbreviations Used in AIS Publications

NOTE–
An "s" may be added for plural. ICAO indicates ICAO usage.

A	
/	and
AAS	airport advisory service
A/C	approach control
ICAO:	AAP – approach control; AC – altocumulus
ACFT	aircraft
ACR	air carrier
ADF	automatic direction finder
AER	approach end runway
AFIS	Automatic Flight Information Service
AFT	after
AGL	above ground level
AHRS	Attitude Heading Reference System
AIM	Aeronautical Information Manual
AIS	Aeronautical Information Services
ALS	approach light system
ALSF–1	standard 2400' high–intensity approach lighting system with sequenced flashers (Category I configuration)
ALSF–2	standard 2400' high–intensity approach lighting system with sequenced flashers (Category II configuration)
ALSTG	altimeter setting
ALT	altitude
ALTM	altimeter
ALTN	alternate
AMDT	amendment
ICAO:	AMD – amendment
APCH	approach
APCHG	approaching
APRX	approximate
APV	approve or approved or approval
ARPT	airport
ICAO:	AD – aerodrome
ARR	arrive or arrival
ARSR	air route surveillance radar
ARTCC	air route traffic control center
ASDE	airport surface detection equipment
ASPH	asphalt
ASSC	Airport Surface Surveillance Capability
ATCT	air traffic control tower
ATD	along–track distance
ASR	airport surveillance radar
ATIS	automatic terminal information service
AVBL	available
AWY	airway
B	
BC	back course
BCN	beacon
BCST	broadcast
BLDG	building
BRG	bearing
BTN	between
BYD	beyond
C	
CAT	category
ICAO:	CAT – clear air turbulence
CFR	Code of Federal Regulations
CFR	crash fire rescue
CLNC	clearance
ICAO:	CLR – clear/cleared to/clearance
CLSD	close or closed or closing
CMSND	commissioned
CNTR	center
CNTRLN	centerline
ICAO:	CL – centerline
COMLO	compass locator
CONST	construction
CPTY	capacity
CRS	course
CTC	contact
ICAO:	CTR – control zone
D	
ICAO:	D – danger area
ICAO:	D – downward (tendency in RVR during previous 10 minutes)
DALGT	daylight
DCMSND	decommissioned

DDT	runway weight bearing capacity for aircraft with double dual–tandem type landing gear
DEGS	degrees
ICAO:	C – degrees Celsius (Centigrade) F – degrees Fahrenheit
DEP	depart; departure
ICAO:	DEP – depart/departure/departure message
DF	direction finder
ICAO:	DF – I am connecting you to the station you request
DH	decision height
DME	UHF standard (TACAN compatible distance measuring equipment)
ICAO:	DME – distance meaning equipment
DSPLCD	displaced
DSTC	distance
ICAO:	DIST – distance
DT	runway weight bearing capacity for aircraft with dual–tandem type landing gear
DURG	during
ICAO:	DRG – during
DVFR	defense visual flight rule
DW	runway weight bearing capacity for aircraft with dual–wheel type landing gear
E	
E	east
ICAO:	E – east/east longitude
EQUIP	equipment
ICAO:	EQPT – equipment
ETA	estimated time of arrival
ETE	estimated time en route
EXCP	except
ICAO:	EXC–except
EXTD	extend or extended
F	
FAF	final approach fix
FAR	Federal Aviation Regulation
FDC	flight data center
Fl/P	flight information (permanent)
Fl/T	flight information (temporary)
FL	flight level
FM	fan marker
FM	from
ICAO:	FM – from; FM – from (followed by time weather change is forecast to begin)
FREQ	frequency
FRQ	frequent
FSS	Flight Service Station
FT	feet
G	
GOVT	government
GP	glide path
ICAO:	GP – glide path
GS	glide slope
ICAO:	GS – ground speed; GS – small hail and/or snow pellets
GWT	gross weight
H	
HAA	height above airport
HAT	height above touchdown
ICAO:	HGT – height/height above
HIRL	High intensity runway lights
HOL	holiday
HWY	highway
I	
IAF	initial approach fix
IAP	instrument approach procedure
ICAO:	INA – initial approach
IDENT	identification
ICAO:	ID – identifier/identification/identify
IF	intermediate fix
ICAO:	IF – intermediate approach fix
IFR	instrument flight rules
IFSS	international flight service station
ILS	instrument landing system
INFO	information
INOP	inoperative
INS	Inertial Navigation System
INT	intersection

The DACS individual data files are:

ENHIGH.DAT: High altitude airways (conterminous U.S.)
ENLOW.DAT: Low altitude airways (conterminous U.S.)
IAPFIX.DAT: Selected instrument approach procedure NAVAID and fix data.
MTRFIX.DAT: Military training routes data.
ALHIGH.DAT: Alaska high altitude airways data.
ALLOW.DAT: Alaska low altitude airways data.
PR.DAT: Puerto Rico airways data.
HAWAII.DAT: Hawaii airways data.
BAHAMA.DAT: Bahamas routes data.
OCEANIC.DAT: Oceanic routes data.
STARS.DAT: Standard terminal arrivals data.
DP.DAT: Instrument departure procedures data.
LOPREF.DAT: Preferred low altitude IFR routes data.
HIPREF.DAT: Preferred high altitude IFR routes data.
ARF.DAT: Air route radar facilities data.
ASR.DAT: Airport surveillance radar facilities data.

4.5.2 The Coded Instrument Flight Procedures (CIFP) (ARINC 424 [Ver 13 & 15]). The CIFP is a basic digital dataset, modeled to an international standard, which can be used as a basis to support GPS navigation. Initial data elements included are: Airport and Helicopter Records, VHF and NDB Navigation aids, en route waypoints and airways. Additional data elements will be added in subsequent releases to include: departure procedures, standard terminal arrivals, and GPS/RNAV instrument approach procedures. The database is updated every 28 days. The data is available for free download at the AIS website.

4.5.3 digital–Visual Charts (d–VC). These digital VFR charts are geo–referenced images of FAA Sectional Aeronautical, TAC, and Helicopter Route charts. Additional digital data may easily be overlaid on the raster image using commonly available Geographic Information System software. Data such as weather, temporary flight restrictions, obstacles, or other geospatial data can be combined with d–VC data to support a variety of needs. The file resolution is 300 dots per inch and the data is 8–bit color. The data is provided as a GeoTIFF and distributed for free on the AIS website. The root mean square error of the transformation will not exceed two pixels.

FIG GEN 3.2–14
Chart Supplement U.S. Geographic Areas

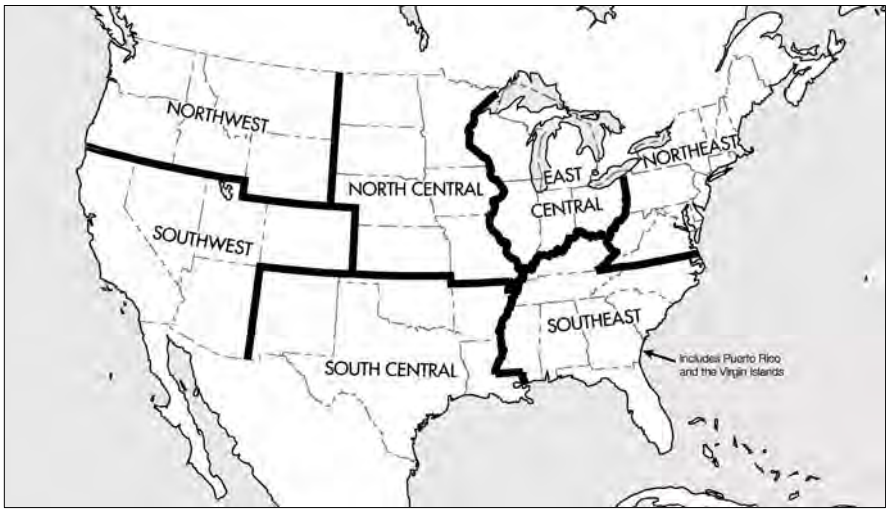
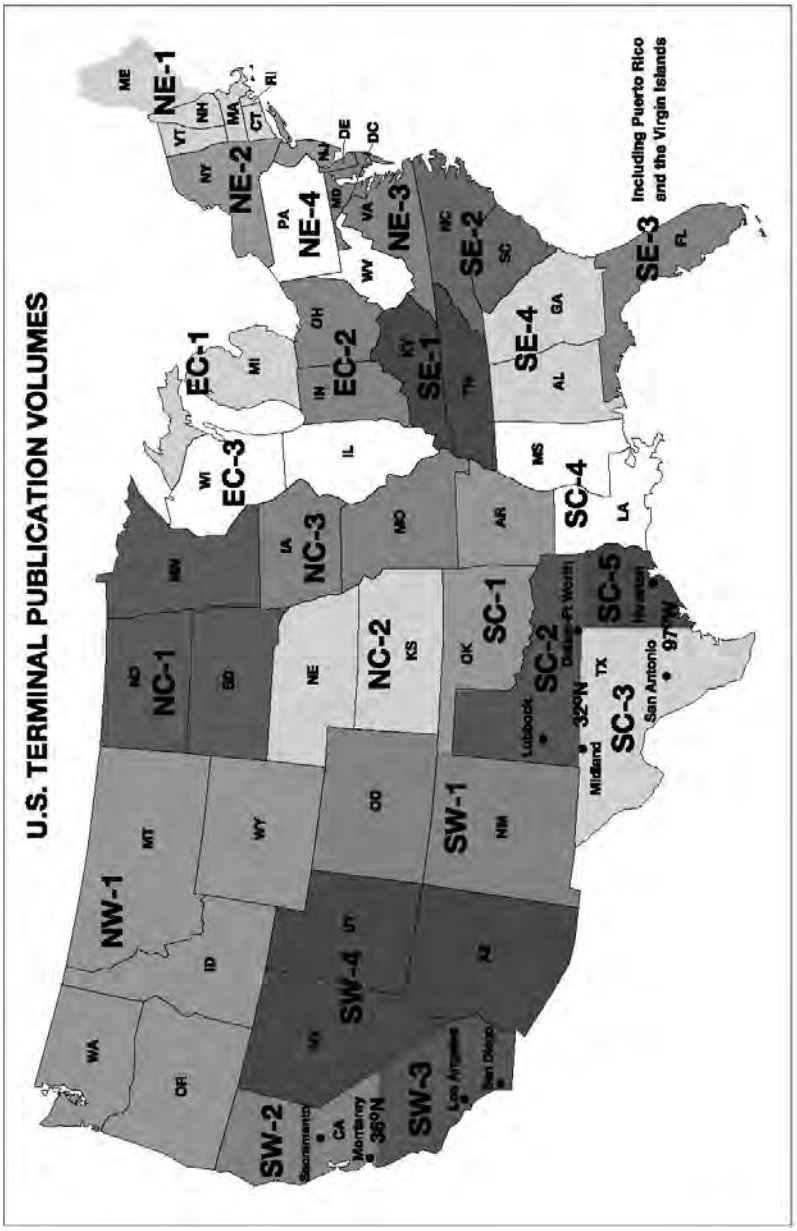


FIG GEN 3.2–15

U.S. Terminal Publication Volumes



GEN 3.3 Air Traffic Services

1. Responsible Authority

1.1 The authority responsible for the overall administration of air traffic services provided for civil aviation in the U.S. and its territories, possessions and international airspace under its jurisdiction is the Chief Operating Officer of the Air Traffic Organization, acting under the authority of the Federal Aviation Administration (FAA).

2. Area of Responsibility

2.1 Air traffic services as indicated in the following paragraphs are provided for the entire territory of the conterminous U.S., Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands, as well as the international airspace in oceanic areas under the jurisdiction of the U.S. which lies within the ICAO Caribbean (CAR), North Atlantic (NAT), North American (NAM), and Pacific (PAC) regions.

3. Air Traffic Services

3.1 With the exception of terminal control services at certain civil aerodromes and military aerodromes, air traffic service in the U.S. is provided by the Air Traffic Organization, FAA, Department of Transportation (DOT), U.S. Government.

3.2 Air Traffic control is exercised within the area of responsibility of the U.S.:

3.2.1 On all airways.

3.2.2 In Class B, C, D, and E Airspace; and

3.2.3 Within the Class A airspace whose vertical extent is from 18,000 feet to and including FL 600 throughout most of the conterminous U.S. and, in Alaska, from 18,000 feet to and including FL 600 but not including the airspace less than 1,500 feet above the surface of the earth and the Alaskan Peninsula west of longitude 160° 00″ West. (A complete description of Class A airspace is contained in the Code of Federal Regulations (CFR), Title 14, Part 71.)

3.3 Air traffic control and alerting services are provided by various air traffic control (ATC) units and are described in ENR 1.1.

3.4 Radar service is an integral part of the air traffic system. A description of radar services and procedures is provided in ENR 1.1.

3.5 The description of airspace designated for air traffic services is found in ENR 1.4.

3.6 Procedural data and descriptions are found in ENR 1.5.

3.7 Numerous restricted and prohibited areas are established within U.S. territory. These areas, none of which interfere with normal air traffic, are explained in ENR 1.5. Activation of areas subject to intermittent activity is notified in advance by a Notice to Airmen (NOTAM), giving reference to the area by its identification.

3.8 In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures. Differences between the national and international rules and procedures are given in GEN 1.7. The regional supplementary procedures and altimeter setting procedures are reproduced in full with an indication wherein there is a difference.

3.9 Coordination between the operator and air traffic services is effected in accordance with 2.11 of Annex II, and 2.1.1.4 and 2.1.2.5 of Part VIII of the PANS–ATM (Doc 4444).

3.10 Minimum flight altitudes on the ATS routes as listed in ENR 1.4 have been determined so as to ensure at least 1,000 feet vertical clearance above the highest obstacle within 4 nautical miles (NM) on each side of the centerline of the route. However, where the regular divergence (4.5 degrees) of the navigational aid signal in combination with the distance between the navigational aids could result in the aircraft being more than 4 NM on either side of the centerline, the 4 NM protection limit is increased by the extent to which the divergence is more than 4 NM from the centerline.

3.11 Pilot Visits to Air Traffic Facilities. Pilots are encouraged to participate in local pilot/air traffic control outreach activities. However, due to security and workload concerns, requests for air traffic facility visits may not always be approved. Therefore, visit requests should be submitted through the air traffic

facility as early as possible. Pilots should contact the facility and advise them of the number of persons in the group, the time and date of the proposed visit, and the primary interest of the group. The air traffic facility will provide further instructions if a request can be approved.

3.12 Operation Rain Check. Operation Rain Check is a program designed and managed by local air traffic control facility management. Its purpose is to familiarize pilots and aspiring pilots with the ATC system, its functions, responsibilities and benefits.

4. En Route Procedures

4.1 Air Route Traffic Control Center (ARTCC)

An ARTCC is a facility established to provide air traffic control service to aircraft operating on instrument flight rule (IFR) flight plans within CONTROLLED AIRSPACE and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to visual flight rule (VFR) aircraft.

4.2 ARTCC Communications

4.2.1 Direct Communications, Controllers and Pilots

4.2.1.1 ARTCCs are capable of direct communications with IFR air traffic on certain frequencies. Maximum communications coverage is possible through the use of Remote Center Air/Ground (RCAG) sites comprised of very high frequency (VHF) and ultra high frequency (UHF) transmitters and receivers. These sites are located throughout the U.S. Although they may be several hundred miles away from the ARTCC, they are remoted to the various centers by land lines or microwave links. As IFR operations are expedited through the use of direct communications, pilots are requested to use these frequencies strictly for communications pertinent to the control of IFR aircraft. Flight plan filing, en route weather, weather forecasts, and similar data should be requested through Flight Service Stations, company radio, or appropriate military facilities capable of performing these services.

4.2.1.2 An ARTCC is divided into sectors. Each sector is handled by one or a team of controllers and has its own sector discrete frequency. As a flight progresses from one sector to another, the pilot is requested to change to the appropriate sector discrete frequency.

4.2.1.3 Controller Pilot Data Link Communications (CPDLC) is a system that supplements air/ground voice communications. As a result, it expands two−way air traffic control air/ground communications capabilities. Consequently, the air traffic system's operational capacity is increased and any associated air traffic delays become minimized. A related safety benefit is that pilot/controller read−back and hear−back errors will be significantly reduced. The CPDLC's principal operating criteria are:

a) Voice remains the primary and controlling air/ground communications means.

b) Participating aircraft will need to have the appropriate CPDLC avionics equipment in order to receive uplink or transmit downlink messages.

c) CPDLC Build 1 offers four ATC data link services. These are altimeter setting (AS), transfer of communications (TC), initial contact (IC), and menu text messages (MT).

1) Altimeter settings are usually transmitted automatically when a CPDLC session and eligibility has been established with an aircraft. A controller may also manually send an altimeter setting message.

NOTE−
When conducting instrument approach procedures, pilots are responsible to obtain and use the appropriate altimeter setting in accordance with 14 CFR Section 97.20. CPDLC issued altimeter settings are excluded for this purpose.

2) Initial contact is a safety validation transaction that compares a pilot's initiated altitude downlink message with an aircraft's ATC host computer stored altitude. If an altitude mismatch is detected, the controller will verbally provide corrective action.

3) Transfer of communications automatically establishes data link contact with a succeeding sector.

4) Menu text transmissions are scripted nontrajectory altering uplink messages.

NOTE−
Initial use of CPDLC will be at the Miami Air Route Traffic Control Center (ARTCC). Air carriers will be the first users. Subsequently, CPDLC will be made available to all NAS users. Later versions will include trajectory altering services and expanded clearance and advisory message capabilities.

4.2.2 ATC Frequency Change Procedures

4.2.2.1 The following phraseology will be used by controllers to effect a frequency change:

EXAMPLE−
(Aircraft identification) CONTACT (facility name or location name and terminal function) (frequency) AT (time, fix, or altitude).

NOTE−
Pilots are expected to maintain a listening watch on the transferring controller's frequency until the time, fix, or altitude specified. ATC will omit frequency change restrictions whenever pilot compliance is expected upon receipt.

4.2.2.2 The following phraseology should be utilized by pilots for establishing contact with the designated facility:

a) When operating in a radar environment:

1) On initial contact, the pilot should inform the controller of the aircraft's assigned altitude preceded by the words "level," or "climbing to," or "descending to," as appropriate; and the aircraft's present vacating altitude, if applicable.

EXAMPLE−
1. *(Name) CENTER, (aircraft identification), LEVEL (altitude or flight level).*

2. *(Name) CENTER, (aircraft identification), LEAVING (exact altitude or flight level), CLIMBING TO OR DESCENDING TO (altitude or flight level).*

NOTE−
Exact altitude or flight level means to the nearest 100 foot increment. exact altitude or flight level reports on initial contact provide ATC with information required prior to using Mode C altitude information for separation purposes.

b) When operating in a nonradar environment:

1) On initial contact, the pilot should inform the controller of the aircraft's present position, altitude and time estimate for the next reporting point.

EXAMPLE−
(*Name) CENTER, (aircraft identification), (POSITION), (altitude), ESTIMATING (reporting point) at (time).*

2) After initial contact, when a position report will be made, the pilot should give the controller a complete position report.

EXAMPLE−
(*Name) CENTER, (aircraft identification), (position), (time), (altitude), (type of flight plan), (ETA and name of next reporting point), (the name of the next succeeding reporting point), AND (remarks).*

REFERENCE−
AIP, Position Reporting, Paragraph 6.

4.2.2.3 At times controllers will ask pilots to verify the fact that they are at a particular altitude. The phraseology used will be: "VERIFY AT (altitude)." In climbing/descending situations, controllers may ask pilots to "VERIFY ASSIGNED ALTITUDE AS (altitude)." Pilots should confirm that they are at the altitude stated by the controller or that the assigned altitude is correct as stated. If this is not the case, they should inform the controller of the actual altitude being maintained or the different assigned altitude.

CAUTION−
Pilots should not take action to change their actual altitude or different assigned altitude to that stated in the controller's verification request unless the controller specifically authorizes a change.

4.2.3 ARTCC Radio Frequency Outage. ARTCC's normally have at least one back−up radio receiver and transmitter system for each frequency which can usually be pressed into service quickly with little or no disruption of ATC service. Occasionally, technical problems may cause a delay but switchover seldom takes more than 60 seconds. When it appears that the outage will not be quickly remedied, the ARTCC will usually request a nearby aircraft, if there is one, to switch to the affected frequency to broadcast communications instructions. It is important, therefore, that the pilot wait at least one minute before deciding that the ARTCC has actually experienced a radio frequency failure. When such an outage does occur, the pilot should, if workload and equipment capability permit, maintain a listening watch on the affected frequency while attempting to comply with the recommended communications procedures which follow.

4.2.3.1 If two−way communications cannot be established with the ARTCC after changing frequencies, a pilot should attempt to recontact the transferring controller for the assignment of an alternative frequency or other instructions.

4.2.3.2 When an ARTCC radio frequency failure occurs after two−way communications have been established, the pilot should attempt to reestablish contact with the center on any other known ARTCC frequency, preferably that of the next responsible sector when practicable, and ask for instructions. However, when the next normal frequency change

along the route is known to involve another ATC facility, the pilot should contact that facility, if feasible, for instructions. If communications cannot be reestablished by either method, the pilot is expected to request communications instructions from the FSS appropriate to the route of flight.

NOTE−
The exchange of information between an aircraft and an ARTCC through an FSS is quicker than relay via company radio because the FSS has direct interphone lines to the responsible ARTCC sector. Accordingly, when circumstances dictate a choice between the two, during an ARTCC frequency outage, relay via FSS radio is recommended.

5. Radio Communications Failure

5.1 Pilots of IFR flights experiencing two−way radio failure are expected to adhere to the procedures prescribed in GEN 3.4, paragraph 12.

REFERENCE−
14 CFR Section 91.185

6. Position Reporting

6.1 The safety and effectiveness of traffic control depends to a large extent on accurate position reporting. In order to provide the proper separation and expedite aircraft movements, ATC must be able to make accurate estimates of the progress of every aircraft operating on an IFR flight plan.

6.2 Position Identification

6.2.1 When a position report is to be made passing a VOR radio facility, the time reported should be the time at which the first complete reversal of the "to/from" indicator is accomplished.

6.2.2 When a position report is made passing a facility by means of an airborne automatic direction finder (ADF), the time reported should be the time at which the indicator makes a complete reversal.

6.2.3 When an aural or light−panel indication is used to determine the time passing a reporting point, such as a fan marker, Z marker, cone of silence or intersection of range courses, the time should be noted when the signal is first received and again when it ceases. The mean of these two times should then be taken as the actual time over the fix.

6.2.4 If a position is given with respect to distance and direction from a reporting point, the distance and direction should be computed as accurately as possible.

6.2.5 Except for terminal transition purposes, position reports or navigation with reference to aids not established for use in the structure in which flight is being conducted will not normally be required by ATC.

6.3 Position Reporting Points

6.3.1 Federal Aviation Regulations require pilots to maintain a listening watch on the appropriate frequency and, unless operating under the provisions of subparagraph 6.4, to furnish position reports passing certain reporting points. Reporting points are indicated by symbols on en route charts. The designated compulsory reporting point symbol is the solid triangle  ; the "on request" reporting point symbol is the open triangle  . Reports passing an "on request" reporting point are only necessary when requested by ATC.

6.4 Position Reporting Requirements

6.4.1 Flights Along Airways or Routes. A position report is required by all flights regardless of altitude, including those operating in accordance with an ATC clearance specifying "VFR−on−top," over each designated compulsory reporting point along the route being flown.

6.4.2 Flight Along a Direct Route. Regardless of the altitude or flight level being flown, including flights operating in accordance with an ATC clearance specifying "VFR−on−top," pilots must report over each reporting point used in the flight plan to define the route of flight.

6.4.3 Flights in a Radar Environment. When informed by ATC that their aircraft are in "RADAR CONTACT," PILOTS SHOULD DISCONTINUE POSITION REPORTS OVER DESIGNATED REPORTING POINTS. They should resume normal position reporting when ATC advises "RADAR CONTACT LOST" or "RADAR SERVICE TERMINATED."

9.2.4.4 Automatic Flight Information Service (AFIS) – Alaska FSSs Only

a) AFIS is the continuous broadcast of recorded non−control information at airports in Alaska where an FSS provides local airport advisory service. Its purpose is to improve FSS specialist efficiency by reducing frequency congestion on the local airport advisory frequency.

1) The AFIS broadcast will automate the repetitive transmission of essential but routine information (for example, weather, favored runway, braking action, airport NOTAMs, etc.). The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS frequency).

2) Use of AFIS is not mandatory, but pilots who choose to utilize two−way radio communications with the FSS are urged to listen to AFIS, as it relieves frequency congestion on the local airport advisory frequency. AFIS broadcasts are updated upon receipt of any official hourly and special weather, and changes in other pertinent data.

3) When a pilot acknowledges receipt of the AFIS broadcast, FSS specialists may omit those items contained in the broadcast if they are current. When rapidly changing conditions exist, the latest ceiling, visibility, altimeter, wind or other conditions may be omitted from the AFIS and will be issued by the FSS specialist on the appropriate radio frequency.

EXAMPLE–
"Kotzebue information ALPHA. One six five five zulu. Wind, two one zero at five; visibility two, fog; ceiling one hundred overcast; temperature minus one two, dew point minus one four; altimeter three one zero five. Altimeter in excess of three one zero zero, high pressure altimeter setting procedures are in effect. Favored runway two six. Weather in Kotzebue surface area is below V–F–R minima – an ATC clearance is required. Contact Kotzebue Radio on 123.6 for traffic advisories and advise intentions. Notice to Airmen, Hotham NDB out of service. Transcribed Weather Broadcast out of service. Advise on initial contact you have ALPHA."

NOTE–
The absence of a sky condition or ceiling and/or visibility on Alaska FSS AFIS indicates a sky condition or ceiling of 5,000 feet or above and visibility of 5 miles or more. A remark may be made on the broadcast, "the weather is better than 5000 and 5."

b) Pilots should listen to Alaska FSSs AFIS broadcasts whenever Alaska FSSs AFIS is in operation.

NOTE–
Some Alaska FSSs are open part time and/or seasonally.

c) Pilots should notify controllers on initial contact that they have received the Alaska FSSs AFIS broadcast by repeating the phonetic alphabetic letter appended to the broadcast.

EXAMPLE–
"Information Alpha received."

d) While it is a good operating practice for pilots to make use of the Alaska FSS AFIS broadcast where it is available, some pilots use the phrase "have numbers" in communications with the FSS. Use of this phrase means that the pilot has received wind, runway, and altimeter information ONLY and the Alaska FSS does not have to repeat this information. It does not indicate receipt of the AFIS broadcast and should never be used for this purpose.

CAUTION–
All aircraft in the vicinity of an airport may not be in communication with the FSS.

9.2.5 Information Provided by Aeronautical Advisory Stations (UNICOM)

9.2.5.1 UNICOM is a nongovernment air/ground radio communication station which may provide airport information at public use airports where there is no tower or FSS.

9.2.5.2 On pilot request, UNICOM stations may provide pilots with weather information, wind direction, the recommended runway, or other necessary information. If the UNICOM frequency is designated as the CTAF, it will be identified in appropriate aeronautical publications.

9.2.5.3 Unavailability of Information from FSS or UNICOM. Should LAA by an FSS or Aeronautical Advisory Station UNICOM be unavailable, wind and weather information may be obtainable from nearby controlled airports via Automatic Terminal Information Service (ATIS) or Automated Weather Observing System (AWOS) frequency.

9.2.6 Self−Announce Position and/or Intentions

9.2.6.1 General. Self-announce is a procedure whereby pilots broadcast their position or intended flight activity or ground operation on the designated

CTAF. This procedure is used primarily at airports which do not have an FSS on the airport. The self-announce procedure should also be used if a pilot is unable to communicate with the FSS on the designated CTAF. Pilots stating, *"Traffic in the area, please advise"* is not a recognized Self−Announce Position and/or Intention phrase and should not be used under any condition.

9.2.6.2 If an airport has a tower which is temporarily closed or operated on a part−time basis, and there is no FSS on the airport or the FSS is closed, use the CTAF to self−announce your position or intentions.

9.2.6.3 Where there is no tower, FSS, or UNICOM station on the airport, use MULTICOM frequency 122.9 for self−announce procedures. Such airports will be identified in appropriate aeronautical information publications.

9.2.6.4 Practice Approaches. Pilots conducting practice instrument approaches should be particularly alert for other aircraft that may be departing in the opposite direction. When conducting any practice approach, regardless of its direction relative to other airport operations, pilots should make announcements on the CTAF as follows:

a) Departing the final approach fix, inbound (nonprecision approach) or departing the outer marker or fix used in lieu of the outer marker, inbound (precision approach).

b) Established on the final approach segment or immediately upon being released by ATC.

c) Upon completion or termination of the approach; and

d) Upon executing the missed approach procedure.

9.2.6.5 Departing aircraft should always be alert for arrival aircraft coming from the opposite direction.

9.2.6.6 Recommended Self−Announce Phraseologies. It should be noted that aircraft operating to or from another nearby airport may be making self−announce broadcasts on the same UNICOM or MULTICOM frequency. To help identify one airport from another, the airport name should be spoken at the beginning and end of each self−announce transmission.

a) Inbound

EXAMPLE−
Strawn traffic, Apache Two Two Five Zulu, (position), (altitude), (descending) or entering downwind/base/ final (as appropriate) runway one seven full stop/touch−and−go, Strawn.
Strawn traffic Apache Two Two Five Zulu clear of runway one seven Strawn.

b) Outbound

EXAMPLE−
Strawn traffic, Queen Air Seven One Five Five Bravo (location on airport) taxiing to runway two six Strawn.

Strawn traffic, Queen Air Seven One Five Five Bravo departing runway two six. "Departing the pattern to the (direction), climbing to (altitude) Strawn."

c) Practice Instrument Approach

EXAMPLE−
Strawn traffic, Cessna Two One Four Three Quebec (position from airport) inbound descending through (altitude) practice (name of approach) approach runway three five Strawn.

Strawn traffic, Cessna Two One Four Three Quebec practice (type) approach completed or terminated runway three five Strawn.

9.2.7 UNICOM Communication Procedures

9.2.7.1 In communicating with a UNICOM station, the following practices will help reduce frequency congestion, facilitate a better understanding of pilot intentions, help identify the location of aircraft in the traffic pattern, and enhance safety of flight:

a) Select the correct UNICOM frequency.

b) State the identification of the UNICOM station you are calling in each transmission.

c) Speak slowly and distinctly.

d) Report approximately 10 miles from the airport, reporting altitude, and state your aircraft type, aircraft identification, location relative to the airport, state whether landing or overflight, and request wind information and runway in use.

e) Report on downwind, base and final approach.

f) Report leaving the runway.

9.2.7.2 Recommended UNICOM Phraseologies:

a) Inbound.

PHRASEOLOGY−
FREDERICK UNICOM CESSNA EIGHT ZERO ONE TANGO FOXTROT 10 MILES SOUTHEAST DE-

SCENDING THROUGH (altitude) LANDING FREDERICK, REQUEST WIND AND RUNWAY INFORMATION FREDERICK.

FREDERICK TRAFFIC CESSNA EIGHT ZERO ONE TANGO FOXTROT ENTERING DOWNWIND/BASE/FINAL (as appropriate) FOR RUNWAY ONE NINER FULL STOP/TOUCH−AND−GO FREDERICK.

FREDERICK TRAFFIC CESSNA EIGHT ZERO ONE TANGO FOXTROT CLEAR OF RUNWAY ONE NINER FREDERICK.

b) Outbound

PHRASEOLOGY−
FREDERICK UNICOM CESSNA EIGHT ZERO ONE TANGO FOXTROT (location on airport) TAXIING TO RUNWAY ONE NINE, REQUEST WIND AND TRAFFIC INFORMATION FREDERICK.

FREDERICK TRAFFIC CESSNA EIGHT ZERO ONE TANGO FOXTROT DEPARTING RUNWAY ONE NINE. "REMAINING IN THE PATTERN" OR "DEPARTING THE PATTERN TO THE (direction) (as appropriate)" FREDERICK.

9.3 IFR Approaches/Ground Vehicle Operations

9.3.1 IFR Approaches. When operating in accordance with an IFR clearance and ATC approves a change to the advisory frequency, make an expeditious change to the CTAF and employ the recommended traffic advisory procedures.

9.3.2 Ground Vehicle Operation. Airport ground vehicles equipped with radios should monitor the CTAF frequency when operating on the airport movement area and remain clear of runways/taxiways being used by aircraft. Radio transmissions from ground vehicles should be confined to safety−related matters.

9.3.3 Radio Control of Airport Lighting Systems. Whenever possible, the CTAF will be used to control airport lighting systems at airports without operating control towers. This eliminates the need for pilots to change frequencies to turn the lights on and allows a continuous listening watch on a single frequency. The CTAF is published on the instrument approach chart and in other appropriate aeronautical information publications. For further details concerning radio controlled lights, see Advisory Circular 150/5340.27.

TBL GEN 3.3−1

Summary of Recommended Communication Procedures

			COMMUNICATION/BROADCAST PROCEDURES		
	Facility at Airport	**Frequency Use**	**Outbound**	**Inbound**	**Practice Instrument Approach**
1.	UNICOM (No Tower or FSS)	Communicate with UNICOM station on published CTAF frequency (122.7; 122.8; 122.725; 122.975; or 123.0). If unable to contact UNICOM station, use self-announce procedures on CTAF.	Before taxiing and before taxiing onto the runway for departure.	10 miles out; entering downwind, base, and final; leaving the runway.	
2.	No Tower, FSS, or UNICOM	Self-announce on MULTICOM frequency 122.9.	Before taxiing and before taxiing onto the runway for departure.	10 miles out; entering downwind, base, and final; leaving the runway.	Departing final approach fix (name) or on final approach segment inbound.
3.	No Tower in operation, FSS open (Alaska only)	Communicate with FSS on CTAF frequency.	Before taxiing and before taxiing onto the runway for departure.	10 miles out; entering downwind, base, and final; leaving the runway.	Approach completed/ terminated.
4.	FSS closed (No Tower)	Self-announce on CTAF.	Before taxiing and before taxiing onto the runway for departure.	10 miles out; entering downwind, base, and final; leaving the runway.	
5.	Tower or FSS not in operation	Self-announce on CTAF.	Before taxiing and before taxiing onto the runway for departure.	10 miles out; entering downwind, base, and final; leaving the runway.	
6.	Designated CTAF Area (Alaska Only)	Self-announce on CTAF designated on chart or Chart Supplement Alaska.	Before taxiing and before taxiing on the runway for departure until leaving designated area.	When entering designated CTAF area.	

9.8 Operations at Uncontrolled Airports with Automated Surface Observing System (ASOS)/Automated Weather Sensor System(AWSS)/Automated Weather Observation System (AWOS)

9.8.1 Many airports throughout the National Airspace System are equipped with either ASOS, AWSS, or AWOS. At most airports with an operating control tower or human observer, the weather will be available to you in a METAR hourly or special observation format on the Automatic Terminal Information Service (ATIS) or directly transmitted from the controller/observer.

9.8.2 At uncontrolled airports that are equipped with ASOS/AWSS/AWOS with ground−to−air broadcast capability, the one−minute updated airport weather should be available to you within approximately 25 NM of the airport below 10,000 feet. The frequency for the weather broadcast will be published on sectional charts and in the Chart Supplement U.S. Some part−time towered airports may also broadcast the automated weather on their ATIS frequency during the hours that the tower is closed.

9.8.3 Controllers issue SVFR or IFR clearances based on pilot request, known traffic and reported weather; i.e., METAR/SPECI observations, when they are available. Pilots have access to more current weather at uncontrolled ASOS/AWSS/AWOS airports than do the controllers who may be located several miles away. Controllers will rely on the pilot to determine the current airport weather from the ASOS/AWSS/AWOS. All aircraft arriving or departing an ASOS/AWSS/AWOS equipped uncontrolled airport should monitor the airport weather frequency to ascertain the status of the airspace. Pilots in Class E airspace must be alert for changing weather conditions which may affect the status of the airspace from IFR/VFR. If ATC service is required for IFR/SVFR approach/departure or requested for VFR service, the pilot should advise the controller that he/she has received the one−minute weather and state his/her intentions.

EXAMPLE−
"I have the (airport) one−minute weather, request an ILS runway 14 approach."

REFERENCE−
Section GEN 3.5, Paragraph 7, Weather Observing Programs.

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

PAGE	DATE
PART 2 – EN ROUTE (ENR)	
ENR 0	
0.4–1	27 APR 17
0.4–2	27 APR 17
0.4–3	27 APR 17
0.6–1	27 APR 17
0.6–2	10 NOV 16
ENR 1	
1.1–1	10 NOV 16
1.1–2	10 NOV 16
1.1–3	10 NOV 16
1.1–4	10 NOV 16
1.1–5	10 NOV 16
1.1–6	10 NOV 16
1.1–7	10 NOV 16
1.1–8	10 NOV 16
1.1–9	10 NOV 16
1.1–10	10 NOV 16
1.1–11	10 NOV 16
1.1–12	10 NOV 16
1.1–13	27 APR 17
1.1–14	27 APR 17
1.1–15	27 APR 17
1.1–16	27 APR 17
1.1–17	27 APR 17
1.1–18	27 APR 17
1.1–19	27 APR 17
1.1–20	27 APR 17
1.1–21	27 APR 17
1.1–22	27 APR 17
1.1–23	27 APR 17
1.1–24	27 APR 17
1.1–25	27 APR 17
1.1–26	27 APR 17
1.1–27	27 APR 17
1.1–28	27 APR 17
1.1–29	27 APR 17
1.1–30	27 APR 17
1.1–31	27 APR 17

PAGE	DATE
1.1–32	27 APR 17
1.1–33	27 APR 17
1.1–34	27 APR 17
1.1–35	27 APR 17
1.1–36	27 APR 17
1.1–37	27 APR 17
1.1–38	27 APR 17
1.1–39	27 APR 17
1.1–40	27 APR 17
1.1–41	27 APR 17
1.1–42	27 APR 17
1.1–43	27 APR 17
1.1–44	27 APR 17
1.1–45	27 APR 17
1.1–46	27 APR 17
1.1–47	27 APR 17
1.1–48	27 APR 17
1.1–49	27 APR 17
1.1–50	27 APR 17
1.1–51	27 APR 17
1.1–52	27 APR 17
1.1–53	27 APR 17
1.1–54	27 APR 17
1.1–55	27 APR 17
1.1–56	27 APR 17
1.1–57	27 APR 17
1.1–58	27 APR 17
1.1–59	27 APR 17
1.1–60	27 APR 17
1.1–61	27 APR 17
1.1–62	27 APR 17
1.1–63	27 APR 17
1.1–64	27 APR 17
1.1–65	27 APR 17
1.1–66	27 APR 17
1.1–67	27 APR 17
1.1–68	27 APR 17
1.1–69	27 APR 17
1.1–70	27 APR 17
1.1–71	27 APR 17

PAGE	DATE
1.1–72	27 APR 17
1.1–73	27 APR 17
1.1–74	27 APR 17
1.1–75	27 APR 17
1.1–76	27 APR 17
1.1–77	27 APR 17
1.1–78	27 APR 17
1.1–79	27 APR 17
1.1–80	27 APR 17
1.1–81	27 APR 17
1.1–82	27 APR 17
1.1–83	27 APR 17
1.1–84	27 APR 17
1.1–85	27 APR 17
1.1–86	27 APR 17
1.2–1	10 NOV 16
1.3–1	10 NOV 16
1.4–1	10 NOV 16
1.4–2	10 NOV 16
1.4–3	10 NOV 16
1.4–4	10 NOV 16
1.4–5	10 NOV 16
1.4–6	10 NOV 16
1.4–7	10 NOV 16
1.4–8	10 NOV 16
1.4–9	10 NOV 16
1.4–10	10 NOV 16
1.4–11	10 NOV 16
1.4–12	10 NOV 16
1.4–13	10 NOV 16
1.4–14	10 NOV 16
1.4–15	10 NOV 16
1.4–16	10 NOV 16
1.5–1	27 APR 17
1.5–2	27 APR 17
1.5–3	27 APR 17
1.5–4	27 APR 17
1.5–5	27 APR 17
1.5–6	27 APR 17
1.5–7	27 APR 17

PAGE	DATE
1.5–8	27 APR 17
1.5–9	27 APR 17
1.5–10	27 APR 17
1.5–11	27 APR 17
1.5–12	27 APR 17
1.5–13	27 APR 17
1.5–14	27 APR 17
1.5–15	27 APR 17
1.5–16	27 APR 17
1.5–17	27 APR 17
1.5–18	27 APR 17
1.5–19	27 APR 17
1.5–20	27 APR 17
1.5–21	27 APR 17
1.5–22	27 APR 17
1.5–21	27 APR 17
1.5–22	27 APR 17
1.5–23	27 APR 17
1.5–24	27 APR 17
1.5–25	27 APR 17
1.5–26	27 APR 17
1.5–27	27 APR 17
1.5–28	27 APR 17
1.5–29	27 APR 17
1.5–30	27 APR 17
1.5–31	27 APR 17
1.5–32	27 APR 17
1.5–33	27 APR 17
1.5–34	27 APR 17
1.5–35	27 APR 17
1.5–36	27 APR 17
1.5–37	27 APR 17
1.5–38	27 APR 17
1.5–39	27 APR 17
1.5–40	27 APR 17
1.5–41	27 APR 17
1.5–42	27 APR 17
1.5–43	27 APR 17
1.5–44	27 APR 17
1.5–45	27 APR 17
1.5–46	27 APR 17
1.5–47	27 APR 17
1.5–48	27 APR 17
1.5–49	27 APR 17
1.5–50	27 APR 17
1.5–51	27 APR 17
1.5–52	27 APR 17
1.5–53	27 APR 17
1.5–54	27 APR 17
1.5–55	27 APR 17
1.5–56	27 APR 17
1.5–57	27 APR 17

PAGE	DATE
1.5–58	27 APR 17
1.5–59	27 APR 17
1.5–60	27 APR 17
1.5–61	27 APR 17
1.5–62	27 APR 17
1.5–63	27 APR 17
1.5–64	27 APR 17
1.5–65	27 APR 17
1.5–66	27 APR 17
1.5–67	27 APR 17
1.5–68	27 APR 17
1.5–69	27 APR 17
1.5–70	27 APR 17
1.5–71	27 APR 17
1.5–72	27 APR 17
1.5–73	27 APR 17
1.5–74	27 APR 17
1.5–75	27 APR 17
1.5–76	27 APR 17
1.5–77	27 APR 17
1.5–78	27 APR 17
1.5–79	27 APR 17
1.5–80	27 APR 17
1.5–81	27 APR 17
1.5–82	27 APR 17
1.5–83	27 APR 17
1.5–84	27 APR 17
1.5–85	27 APR 17
1.6–1	10 NOV 16
1.6–1	10 NOV 16
1.7–1	10 NOV 16
1.7–2	10 NOV 16
1.7–3	10 NOV 16
1.7–4	10 NOV 16
1.8–1	10 NOV 16
1.9–1	10 NOV 16
1.10–1	10 NOV 16
1.10–2	10 NOV 16
1.10–3	10 NOV 16
1.10–4	10 NOV 16
1.10–5	10 NOV 16
1.10–6	10 NOV 16
1.10–7	10 NOV 16
1.10–8	10 NOV 16
1.10–9	10 NOV 16
1.10–10	10 NOV 16
1.10–11	10 NOV 16
1.10–12	10 NOV 16
1.10–13	10 NOV 16
1.10–14	10 NOV 16
1.10–15	10 NOV 16
1.10–16	10 NOV 16

PAGE	DATE
1.10–17	10 NOV 16
1.10–18	27 APR 17
1.10–19	27 APR 17
1.10–20	10 NOV 16
1.10–21	10 NOV 16
1.11–1	10 NOV 16
1.11–2	10 NOV 16
1.12–1	27 APR 17
1.12–2	27 APR 17
1.12–3	27 APR 17
1.12–4	27 APR 17
1.12–5	27 APR 17
1.12–6	27 APR 17
1.12–7	27 APR 17
1.12–8	27 APR 17
1.12–9	27 APR 17
1.12–10	27 APR 17
1.12–11	27 APR 17
1.12–12	27 APR 17
1.12–13	27 APR 17
1.12–14	27 APR 17
1.13–1	10 NOV 16
1.14–1	10 NOV 16
1.15–1	10 NOV 16
1.15–2	10 NOV 16
1.15–3	10 NOV 16
1.15–4	10 NOV 16
1.15–5	10 NOV 16
1.15–6	10 NOV 16
1.15–7	10 NOV 16
1.15–8	10 NOV 16
1.16–1	10 NOV 16
1.16–2	10 NOV 16
1.16–3	10 NOV 16
1.17–1	10 NOV 16
1.17–2	10 NOV 16
1.17–3	10 NOV 16
1.17–4	10 NOV 16
1.17–5	10 NOV 16
1.17–6	10 NOV 16
1.17–7	10 NOV 16
1.17–8	10 NOV 16
1.17–9	27 APR 17
1.17–10	27 APR 17
ENR 2	
2–1	10 NOV 16
ENR 3	
3.1–1	10 NOV 16
3.2–1	10 NOV 16
3.3–1	10 NOV 16

PAGE	DATE
3.4–1	10 NOV 16
3.5–1	10 NOV 16
3.5–2	10 NOV 16
3.5–3	10 NOV 16
3.5–4	10 NOV 16
ENR 4	
4.1–1	10 NOV 16
4.1–2	27 APR 17
4.1–3	27 APR 17
4.1–4	27 APR 17
4.1–5	27 APR 17
4.1–6	27 APR 17
4.1–7	27 APR 17
4.1–8	27 APR 17
4.1–9	27 APR 17
4.1–10	27 APR 17
4.1–11	27 APR 17
4.1–12	27 APR 17
4.1–13	27 APR 17
4.1–14	27 APR 17
4.1–15	27 APR 17
4.1–16	27 APR 17
4.1–17	27 APR 17
4.1–18	27 APR 17
4.1–19	27 APR 17
4.1–20	27 APR 17
4.1–21	27 APR 17
4.1–22	27 APR 17
4.1–23	27 APR 17
4.1–24	27 APR 17
4.1–25	27 APR 17
4.1–26	27 APR 17
4.1–27	27 APR 17
4.1–28	27 APR 17
4.1–29	27 APR 17
4.1–30	27 APR 17
4.1–31	27 APR 17
4.1–32	27 APR 17
4.1–33	27 APR 17
4.1–34	27 APR 17
4.1–35	27 APR 17
4.2–1	10 NOV 16
ENR 5	
5.1–1	10 NOV 16
5.1–2	10 NOV 16
5.1–3	10 NOV 16
5.1–4	10 NOV 16
5.1–5	10 NOV 16

PAGE	DATE
5.2–1	10 NOV 16
5.2–2	10 NOV 16
5.3–1	10 NOV 16
5.4–1	10 NOV 16
5.5–1	10 NOV 16
5.6–1	10 NOV 16
5.6–2	10 NOV 16
5.6–3	10 NOV 16
5.7–1	10 NOV 16
5.7–2	27 APR 17
5.7–3	10 NOV 16
5.7–4	10 NOV 16
5.7–5	10 NOV 16
5.7–6	10 NOV 16
5.7–7	10 NOV 16
5.7–8	10 NOV 16
5.7–9	10 NOV 16
5.7–10	10 NOV 16
5.7–11	10 NOV 16
5.7–12	10 NOV 16
5.7–13	10 NOV 16
5.7–14	10 NOV 16
ENR 6	
6.1–1	10 NOV 16
6.1–2	10 NOV 16
6.1–3	10 NOV 16
6.1–4	27 APR 17
6.1–5	10 NOV 16
6.1–6	10 NOV 16
6.1–7	10 NOV 16
6.2–1	10 NOV 16
6.2–2	10 NOV 16
6.2–3	10 NOV 16
6.2–4	10 NOV 16
6.2–5	10 NOV 16
6.2–6	10 NOV 16
6.2–7	10 NOV 16
6.2–8	10 NOV 16
6.2–9	10 NOV 16
6.2–10	10 NOV 16
6.2–11	10 NOV 16
6.2–12	10 NOV 16
6.2–13	10 NOV 16
6.2–14	10 NOV 16
6.2–15	10 NOV 16
6.2–17	10 NOV 16
6.2–18	10 NOV 16

PAGE	DATE
ENR 7	
7.1–1	10 NOV 16
7.1–2	10 NOV 16
7.1–3	10 NOV 16
7.1–4	27 APR 17
7.1–5	27 APR 17
7.1–6	27 APR 17
7.2–1	10 NOV 16
7.2–2	10 NOV 16
7.2–3	10 NOV 16
7.3–1	10 NOV 16
7.3–2	10 NOV 16
7.3–3	10 NOV 16
7.4–1	27 APR 17
7.4–2	10 NOV 16
7.4–3	10 NOV 16
7.4–4	27 APR 17
7.4–5	27 APR 17
7.5–1	10 NOV 16
7.5–2	10 NOV 16
7.5–3	10 NOV 16
7.6–1	10 NOV 16
7.6–2	10 NOV 16
7.7–1	10 NOV 16
7.8–1	10 NOV 16
7.8–2	10 NOV 16
7.9–1	10 NOV 16
7.10–1	10 NOV 16
7.10–2	10 NOV 16
7.11–1	10 NOV 16
7.11–2	10 NOV 16
7.12–1	27 APR 17
7.13–1	10 NOV 16

ENR 0.5 List of Hand Amendments to the AIP – Not applicable

ENR 0.6 Table of Contents to Part 2

Page

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General Rules . . . . . ENR 1.1–1
ENR 1.2 Visual Flight Rules . . . . . ENR 1.2–1
ENR 1.3 Instrument Flight Rules . . . . . ENR 1.3–1
ENR 1.4 ATS Airspace Classification . . . . . ENR 1.4–1
ENR 1.5 Holding, Approach, and Departure Procedures . . . . . ENR 1.5–1
ENR 1.6 [Reserved] . . . . . ENR 1.6–1
ENR 1.7 Altimeter Setting Procedures . . . . . ENR 1.7–1
ENR 1.8 [Reserved] . . . . . ENR 1.8–1
ENR 1.9 [Reserved] . . . . . ENR 1.9–1
ENR 1.10 Flight Planning (Restriction, Limitation or Advisory Information) . . . . . ENR 1.10–1
ENR 1.11 Addressing of Flight Plans for Domestic or International Flight Planning . . . . . ENR 1.11–1
ENR 1.12 National Security and Interception Procedures . . . . . ENR 1.12–1
ENR 1.13 [Reserved] . . . . . ENR 1.13–1
ENR 1.14 [Reserved] . . . . . ENR 1.14–1
ENR 1.15 Medical Facts for Pilots . . . . . ENR 1.15–1
ENR 1.16 Safety, Hazard, and Accident Reports . . . . . ENR 1.16–1
ENR 1.17 Area Navigation (RNAV) and Required Navigation Performance (RNP) . . . . . ENR 1.17–1

ENR 2. AIR TRAFFIC SERVICES AIRSPACE . . . . . ENR 2–1

ENR 3. ATS ROUTES

ENR 3.1 Lower ATS Routes . . . . . ENR 3.1–1
ENR 3.2 Upper ATS Routes . . . . . ENR 3.2–1
ENR 3.3 Area Navigation (RNAV) Routes . . . . . ENR 3.3–1
ENR 3.4 [Reserved] . . . . . ENR 3.4–1
ENR 3.5 Other Routes . . . . . ENR 3.5–1

ENR 4. NAVIGATION AIDS/SYSTEMS

ENR 4.1 Navigation Aids – En Route . . . . . ENR 4.1–1
ENR 4.2 Special Navigation Systems . . . . . ENR 4.2–1

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, Restricted, and Other Areas . . . . . ENR 5.1–1
ENR 5.2 Military Exercise and Training Areas . . . . . ENR 5.2–1
ENR 5.3 [Reserved] . . . . . ENR 5.3–1
ENR 5.4 [Reserved] . . . . . ENR 5.4–1
ENR 5.5 [Reserved] . . . . . ENR 5.5–1
ENR 5.6 Bird Migration and Areas with Sensitive Fauna . . . . . ENR 5.6–1
ENR 5.7 Potential Flight Hazards . . . . . ENR 5.7–1

ENR 6. HELICOPTER OPERATIONS

ENR 6.1 Helicopter IFR Operations . . . . . ENR 6.1–1
ENR 6.2 Special Operations . . . . . ENR 6.2–1

7. OCEANIC OPERATIONS

ENR 7.1 General Procedures . . . . . ENR 7.1−1
ENR 7.2 Data Link Procedures . . . . . ENR 7.2−1
ENR 7.3 Special Procedures for In−Flight Contingencies in Oceanic Airspace . . . . . ENR 7.3−1
ENR 7.4 Operational Policy 50 NM Lateral Separation . . . . . ENR 7.4−1
ENR 7.5 Operational Policy ADS−C Distance−Based Separation . . . . . ENR 7.5−1
ENR 7.6 North Atlantic (NAT) Oceanic Clearance Procedures . . . . . ENR 7.6−1
ENR 7.7 North Atlantic (NAT) Timekeeping Procedures . . . . . ENR 7.7−1
ENR 7.8 North Atlantic (NAT) Safety Information . . . . . ENR 7.8−1
ENR 7.9 San Juan FIR Customs Procedures . . . . . ENR 7.9−1
ENR 7.10 Y−Routes Between Florida and Puerto Rico . . . . . ENR 7.10−1
ENR 7.11 Atlantic High Offshore Airspace Offshore Routes Supporting Florida Airspace Optimization . . . . . ENR 7.11−1
ENR 7.12 Reduced Separation Climb/Descent Procedures . . . . . ENR 7.12−1
ENR 7.13 New York Oceanic Control Area (OCA) West Flight Level Allocation . . . . . ENR 7.13−1

9. Low Level Wind Shear/Microburst Detection Systems

9.1 Low Level Wind Shear Alert System (LLWAS), Terminal Doppler Weather Radar (TDWR), Weather System Processor (WSP), and Integrated Terminal Weather System (ITWS) display information on hazardous wind shear and microburst activity in the vicinity of an airport to air traffic controllers who relay this information to pilots.

9.1.1 LLWAS provides wind shear alert and gust front information but does not provide microburst alerts. The LLWAS is designed to detect low level wind shear conditions around the periphery of an airport. It does not detect wind shear beyond that limitation. Controllers will provide this information to pilots by giving the pilot the airport wind followed by the boundary wind.

EXAMPLE–
Wind shear alert, airport wind 230 at 8, south boundary wind 170 at 20.

9.1.2 LLWAS "network expansion," (LLWAS NE) and LLWAS Relocation/Sustainment (LLWAS–RS) are systems integrated with TDWR. These systems provide the capability of detecting microburst alerts and wind shear alerts. Controllers will issue the appropriate wind shear alerts or microburst alerts. In some of these systems controllers also have the ability to issue wind information oriented to the threshold or departure end of the runway.

EXAMPLE–
Runway 17 arrival microburst alert, 40 knot loss 3 mile final.

NOTE–
Reference GEN 3.5, Paragraph 25, Microbursts.

9.1.3 More advanced systems are in the field or being developed such as ITWS. ITWS provides alerts for microbursts, wind shear, and significant thunderstorm activity. ITWS displays wind information oriented to the threshold or departure end of the runway.

9.1.4 The WSP provides weather processor enhancements to selected Airport Surveillance Radar (ASR)–9 facilities. The WSP provides Air Traffic with detection and alerting of hazardous weather such as wind shear, microbursts, and significant thunderstorm activity. The WSP displays terminal area 6 level weather, storm cell locations and movement, as well as the location and predicted future position and intensity of wind shifts that may affect airport operations. Controllers will receive and issue alerts based on Areas Noted for Attention (ARENA). An ARENA extends on the runway center line from a 3 mile final to the runway to a 2 mile departure.

9.1.5 An airport equipped with the LLWAS, ITWS, or WSP is so indicated in the Chart Supplement U.S. under Weather Data Sources for that particular airport.

10. Braking Action Reports and Advisories

10.1 When available, ATC furnishes pilots the quality of braking action received from pilots. The quality of braking action is described by the terms "good," "good to medium," "medium," "medium to poor," "poor," and "nil." When pilots report the quality of braking action by using the terms noted above, they should use descriptive terms that are easily understood, such as, "braking action poor the first/last half of the runway," together with the particular type of aircraft.

10.2 FICON NOTAMs will provide contaminant measurements for paved runways; however, a FICON NOTAM for braking action will only be used for non–paved runway surfaces, taxiways, and aprons. These NOTAMs are classified according to the most critical term ("good to medium," "medium," "medium to poor," and "poor").

10.2.1 FICON NOTAM reporting of a braking condition for paved runway surfaces is not permissible by Federally Obligated Airports or those airports certificated under 14 CFR Part 139.

10.2.2 A "NIL" braking condition at these airports must be mitigated by closure of the affected surface. Do not include the type of vehicle in the FICON NOTAM.

10.3 When tower controllers receive runway braking action reports which include the terms medium, poor, or nil, or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, *"BRAKING ACTION ADVISORIES ARE IN EFFECT."*

10.4 During the time that braking action advisories are in effect, ATC will issue the most recent braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request

current runway condition information if not issued by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

11. Runway Condition Reports

11.1 Aircraft braking coefficient is dependent upon the surface friction between the tires on the aircraft wheels and the pavement surface. Less friction means less aircraft braking coefficient and less aircraft braking response.

11.2 Runway condition code (RwyCC) values range from 1 (poor) to 6 (dry). For frozen contaminants on runway surfaces, a runway condition code reading of 4 indicates the level when braking deceleration or directional control is between good and medium.

NOTE–
A RwyCC of "0" is used to delineate a braking action report of NIL and is prohibited from being reported in a FICON NOTAM.

11.3 Airport management should conduct runway condition assessments on wet runways or runways covered with compacted snow and/or ice.

11.3.1 Numerical readings may be obtained by using the Runway Condition Assessment Matrix (RCAM). The RCAM provides the airport operator with data to complete the report that includes the following:

11.3.1.1 Runway(s) in use

11.3.1.2 Time of the assessment

11.3.1.3 Runway condition codes for each zone (touchdown, mid–point, roll–out)

11.3.1.4 Pilot–reported braking action report (if available)

11.3.1.5 The contaminant (for example, wet snow, dry snow, slush, ice, etc.)

11.3.2 Assessments for each zone (see 11.3.1.3) will be issued in the direction of takeoff and landing on the runway, ranging from "1" to "6" to describe contaminated surfaces.

NOTE–
A RwyCC of "0" is used to delineate a braking action report of NIL and is prohibited from being reported in a FICON NOTAM.

11.3.3 When any 1 or more runway condition codes are reported as less than 6, airport management must notify ATC for dissemination to pilots.

11.3.4 Controllers will not issue runway condition codes when all 3 segments of a runway are reporting values of 6.

11.4 When runway condition code reports are provided by airport management, the ATC facility providing approach control or local airport advisory must provide the report to all pilots.

11.5 Pilots should use runway condition code information with other knowledge including aircraft performance characteristics, type, and weight, previous experience, wind conditions, and aircraft tire type (such as bias ply vs. radial constructed) to determine runway suitability.

11.6 The Runway Condition Assessment Matrix identifies the descriptive terms "good," "good to medium," "medium," "medium to poor," "poor," and "nil" used in braking action reports.

REFERENCE–
Advisory Circular AC 91–79A (Revision 1), Mitigating the Risks of a Runway Overrun Upon Landing, Appendix 1

FIG ENR 1.1–7

Runway Condition Assessment Matrix (RCAM)

Assessment Criteria		Control/Braking Assessment Criteria	
Runway Condition Description	RwyCC	Deceleration or Directional Control Observation	Pilot Reported Braking Action
• Dry	6	—	—
• Frost • Wet (Includes damp and 1/8 inch depth or less of water) ***1/8 inch (3mm) depth or less of:*** • Slush • Dry Snow • Wet Snow	5	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
-15°C and Colder outside air temperature: • Compacted Snow	4	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
• Slippery When Wet (wet runway) • Dry Snow or Wet Snow (any depth) over Compacted Snow ***Greater than 1/8 inch (3 mm) depth of:*** • Dry Snow • Wet Snow ***Warmer than -15°C outside air temperature:*** • Compacted Snow	3	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 inch(3 mm) depth of: • Water • Slush	2	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice	1	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• Wet Ice • Slush over Ice • Water over Compacted Snow • Dry Snow or Wet Snow over Ice	0	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

12. Communications Prior to Departure

12.1 Nontower Controlled Airports

12.1.1 At airports not served by a FSS located on the airport, the pilot in command should broadcast his/her intentions on the prescribed frequency prior to aircraft movement and departure.

12.1.2 At airports served by a FSS located on the airport, the pilot in command should obtain airport advisory service prior to aircraft movement and departure.

12.1.3 Aircraft departing on an IFR clearance must obtain the clearance prior to departure via telephone, the appropriate FSS, or via direct communications with the ATC facility issuing the clearance as appropriate. An IFR clearance does not relieve the pilot from the communication stated above prior to aircraft movement and departure.

12.2 Tower Controlled Airports

12.2.1 Pilots of departing aircraft 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. Unless otherwise advised by the tower, remain on the frequency during taxiing and run up, then change to local control frequency when ready to request takeoff clearance.

NOTE–
Refer to Automatic Terminal Information Service (ATIS) for continuous broadcast of terminal information.

13. Gate Holding Due to Departure Delays

13.1 Pilots should contact ground control/clearance delivery prior to starting engines as gate hold procedures will be in effect whenever departure delays exceed or are anticipated to exceed 15 minutes. The sequence for departure will be maintained in accordance with initial call up unless modified by flow control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine startup advisories or new proposed start time if the delay changes.

13.2 The tower controller will consider that pilots of turbine–powered aircraft are ready for takeoff when they reach the runway/warm–up block unless advised otherwise.

14. Taxiing

14.1 General. Approval must be obtained prior to moving an aircraft or vehicle onto the movement area during the hours an airport traffic control tower is in operation.

14.1.1 Always state your position on the airport when calling the tower for taxi instructions.

14.1.2 The movement area is normally described in local bulletins issued by the airport manager or control tower. These bulletins may be found in FSSs, fixed base operators offices, air carrier offices, and operations offices.

14.1.3 The control tower also issues bulletins describing areas where they cannot provide airport traffic control service due to nonvisibility or other reasons.

14.1.4 A clearance must be obtained prior to taxiing on a runway, taking off, or landing during the hours an airport traffic control tower is in operation.

14.1.5 A clearance must be obtained prior to crossing any runway. ATC will issue an explicit clearance for all runway crossings.

14.1.6 When assigned a takeoff runway, ATC will first specify the runway, issue taxi instructions, and state any hold short instructions or runway crossing clearances if the taxi route will cross a runway. This does not authorize the aircraft to “enter” or “cross” the assigned departure runway at any point. In order to preclude misunderstandings in radio communications, ATC will not use the word “cleared” in conjunction with authorization for aircraft to taxi. AIR TRAFFIC CONTROLLERS ARE REQUIRED TO OBTAIN A READBACK FROM THE PILOT OF ALL RUNWAY HOLD SHORT INSTRUCTIONS.

14.1.7 When issuing taxi instructions to any point other than an assigned takeoff runway, ATC will specify the point to taxi to, issue taxi instructions, and state any hold short instructions or runway crossing clearances if the taxi route will cross a runway.

14.1.8 If a pilot is expected to hold short of a runway approach (“APPCH”) area or ILS holding position (see FIG AD 1.1–24, Taxiways Located in Runway Approach Area, in Section AD 1.1, Aerodrome Availability), ATC will issue instructions.

14.1.9 When taxi instructions are received from the controller, pilots should always read back:

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, 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."*

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 state, "Hold for wake turbulence." If after considering wake turbulence hazards, the pilot feels that a lesser time interval is appropriate, the pilot may request a waiver to the 3–minute interval. To initiate such a request, simply say "Request waiver to 3–minute interval" or a similar statement. Controllers

may then issue a takeoff clearance if other traffic permits, since the pilot has accepted the responsibility for wake turbulence separation.

16.5 The 3–minute interval is not required when the intersection is 500 feet or less from the departure point of the preceding aircraft and both aircraft are taking off in the same direction. Controllers may permit the small aircraft to alter course after takeoff to avoid the flight path of the preceding departure.

16.6 A 4–minute interval is mandatory for small, large, and heavy aircraft behind a super aircraft. The 3–minute interval is mandatory behind a heavy aircraft in all cases, and for small aircraft behind a B757.

17. VFR Flights in Terminal Areas

17.1 Use reasonable restraint in exercising the prerogative of VFR flight, especially in terminal areas. The weather minimums and distances from clouds are minimums. Giving yourself a greater margin in specific instances is just good judgment.

17.1.1 Approach Area. Conducting a VFR operation in Class D and E Airspace when the official visibility is 3 or 4 miles is not prohibited, but good judgment would dictate that you keep out of the approach area.

17.1.2 Reduced Visibility. It has always been recognized that precipitation reduces forward visibility. Consequently, although again it may be perfectly legal to cancel your IFR flight plan at any time you can proceed VFR, it is good practice, when precipitation is occurring, to continue IFR operation into a terminal area until you are reasonably close to your destination.

17.1.3 Simulated Instrument Flights. In conducting simulated instrument flights, be sure that the weather is good enough to compensate for the restricted visibility of the safety pilot and your greater concentration on your flight instruments. Give yourself a greater margin when your flight plan lies in or near a busy airway or close to an airport.

18. Low Approach

18.1 A low approach (sometimes referred to as a low pass) is the go–around maneuver following approach. Instead of landing or making a touch–and–go, a pilot may wish to go around (low approach) in order to expedite a particular operation–a series of practice instrument approaches is an example of such an operation. Unless otherwise authorized by ATC, the low approach should be made straight ahead with no turns or climb made until the pilot has made a thorough visual check for other aircraft in the area.

18.2 When operating within Class D airspace, a pilot intending to make a low approach should contact the tower for approval. This request should be made prior to starting the final approach.

18.3 When operating to an airport within Class E airspace, a pilot intending to make a low approach should, prior to leaving the final approach fix inbound (nonprecision approach) or the outer marker or fix used in lieu of the outer marker inbound (precision approach), so advise the FSS, UNICOM, or make a broadcast as appropriate.

19. Practice Instrument Approaches

19.1 Various air traffic incidents required adoption of measures to achieve more organized and controlled operations where practice instrument approaches are conducted. Practice instrument approaches are considered to be instrument approaches made by either a VFR aircraft not on an IFR flight plan or an aircraft on an IFR flight plan. To achieve this and thereby enhance air safety, it is Air Traffic Operations policy to provide for separation of such operations at locations where approach control facilities are located and, as resources permit, at certain other locations served by ARTCCs or approach control facilities. Pilot requests to practice instrument approaches may be approved by ATC subject to traffic and workload conditions. Pilots should anticipate that in some instances the controller may find it necessary to deny approval or withdraw previous approval when traffic conditions warrant. It must be clearly understood, however, that even though the controller may be providing separation, pilots on VFR flight plans are required to comply with basic visual flight rules (14 CFR Section 91.155). Application of ATC procedures or any action taken by the controller to avoid traffic conflictions does not relieve IFR and VFR pilots of their responsibility to see and avoid other traffic while operating in VFR conditions (14 CFR Section 91.113). In addition to the normal IFR separation minimums (which includes visual separation) during VFR conditions, 500 feet vertical separation may be applied between VFR aircraft and between a VFR aircraft and an IFR aircraft. Pilots not on IFR flight plans desiring

practice instrument approaches should always state "practice" when making requests to ATC. Controllers will instruct VFR aircraft requesting an instrument approach to maintain VFR. This is to preclude misunderstandings between the pilot and controller as to the status of the aircraft. If the pilot wishes to proceed in accordance with instrument flight rules, he/she must specifically request and obtain an IFR clearance.

19.2 Before practicing an instrument approach, pilots should inform the approach control facility or the tower of the type of practice approach they desire to make and how they intend to terminate it; i.e., full–stop landing, touch–and–go, or missed/low approach maneuver. This information may be furnished progressively when conducting a series of approaches. Pilots on an IFR flight plan, who have made a series of instrument approaches to full stop landings, should inform ATC when they make their final landing. The controller will control flights practicing instrument approaches so as to ensure that they do not disrupt the flow of arriving and departing itinerant IFR or VFR aircraft. The priority afforded itinerant aircraft over practice instrument approaches is not intended to be so rigidly applied that it causes a grossly inefficient application of services. A minimum delay to itinerant traffic may be appropriate to allow an aircraft practicing an approach to complete that approach.

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 restriction.

19.3 At airports without a tower, pilots wishing to make practice instrument approaches should notify the facility having control jurisdiction of the desired approach as indicated on the approach chart. All approach control facilities and ARTCCs are required to publish a Letter to Airmen depicting those airports where they provide standard separation to both VFR and IFR aircraft conducting practice instrument approaches.

19.4 The controller will provide approved separation between both VFR and IFR aircraft when authorization is granted to make practice approaches to airports where an approach control facility is located and to certain other airports served by approach control or an ARTCC. Controller responsibility for separation of VFR aircraft begins at the point where the approach clearance becomes effective or when the aircraft enters Class B or TRSA airspace whichever comes first.

19.5 VFR aircraft practicing instrument approaches are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. Separation will not be provided unless the missed approach has been approved by ATC.

19.6 Except in an emergency, aircraft cleared to practice instrument approaches must not deviate from the approved procedure until cleared to do so by the controller.

19.7 At radar approach control locations when a full approach procedure (procedure turn, etc.) cannot be approved, pilots should expect to be vectored to a final approach course for a practice instrument approach which is compatible with the general direction of traffic at that airport.

19.8 When granting approval for a practice instrument approach, the controller will usually ask the pilot to report to the tower prior to or over the final approach fix inbound (nonprecision approaches) or over the outer marker or fix used in lieu of the outer marker inbound (precision approaches).

19.9 When authorization is granted to conduct practice instrument approaches to an airport with a tower but where approved standard separation is not provided to aircraft conducting practice instrument approaches, the tower will approve the practice approach, instruct the aircraft to maintain VFR, and issue traffic information, as required.

19.10 When a pilot notifies an FSS providing Airport Advisory Service of intent to conduct a practice instrument approach and if separation will be provided, he/she will be instructed to contact the appropriate facility on a specified frequency prior to initiating the approach. At airports where separation is not provided, the FSS will acknowledge the message and issue known traffic information but will neither approve or disapprove the approach.

19.11 Pilots conducting practice instrument approaches should be particularly alert for other aircraft operating in the local traffic pattern or in proximity to the airport.

20. Option Approach

20.1 The "Cleared for the Option" procedure will permit an instructor, flight examiner or pilot the option to make a touch–and–go, low approach, missed approach, stop–and–go, or full stop landing. This procedure can be very beneficial in a training situation in that neither the student pilot nor examinee would know what maneuver would be accomplished. The pilot should make a request for this procedure passing the final approach fix inbound on an instrument approach or entering downwind for a VFR traffic pattern. After ATC approval of the option, the pilot should inform ATC as soon as possible of any delay on the runway during their stop-and-go or full stop landing. The advantages of this procedure as a training aid are that it enables an instructor or examiner to obtain the reaction of a trainee or examinee under changing conditions, the pilot would not have to discontinue an approach in the middle of the procedure due to student error or pilot proficiency requirements, and finally it allows more flexibility and economy in training programs. This procedure will only be used at those locations with an operational control tower and will be subject to ATC approval.

21. Communications Release of IFR Aircraft Landing at an Airport Without an Operating Control Tower

21.1 Aircraft operating on an IFR flight plan, landing at an airport without an operating control tower will be advised to change to the airport advisory frequency when direct communication with ATC is no longer required.

22. Pilot Responsibilities When Conducting Land and Hold Short Operations (LAHSO)

22.1 LAHSO is an acronym for "Land And Hold Short Operations." These operations include landing and holding short of an intersecting runway, an intersecting taxiway, or some other designated point on a runway other than an intersecting runway or taxiway. (See FIG ENR 1.1–8, FIG ENR 1.1–9, FIG ENR 1.1–10.)

22.2 Pilot Responsibilities and Basic Procedures

22.2.1 LAHSO is an air traffic control procedure that requires pilot participation to balance the needs for increased airport capacity and system efficiency, consistent with safety. This procedure can be done safely **provided** pilots and controllers are knowledgeable and understand their responsibilities. The following paragraphs outline specific pilot/operator responsibilities when conducting LAHSO.

22.2.2 At controlled airports, air traffic may clear a pilot to land and hold short. Pilots may accept such a clearance provided that the pilot–in–command determines that the aircraft can safely land and stop within the Available Landing Distance (ALD). ALD data are published in the special notices section of the Chart Supplement U.S. and in the U.S. Terminal Procedures Publications. Controllers will also provide ALD data upon request. Student pilots or pilots not familiar with LAHSO should not participate in the program.

FIG ENR 1.1–8
Land and Hold Short of an Intersecting Runway

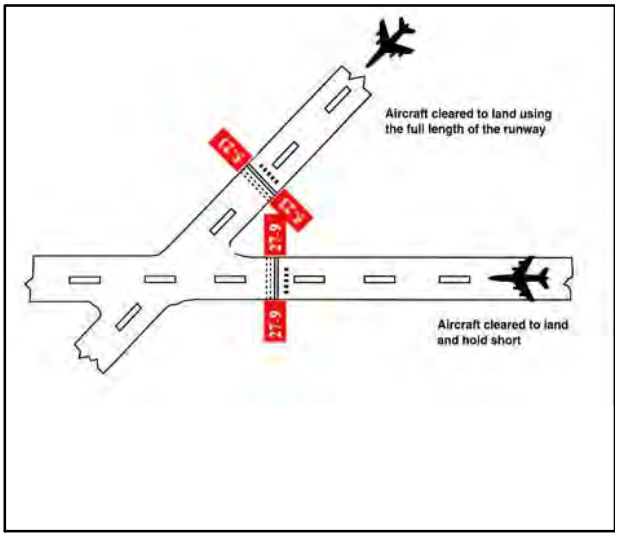
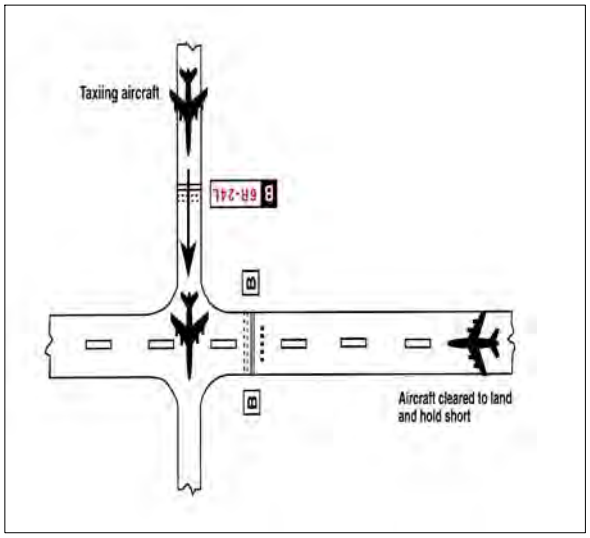


FIG ENR 1.1–9

Land and Hold Short of an Intersecting Taxiway



EXAMPLE–

FIG ENR 1.1–10 – Holding short at a designated point may be required to avoid conflicts with the runway safety area/flight path of a nearby runway.

NOTE–

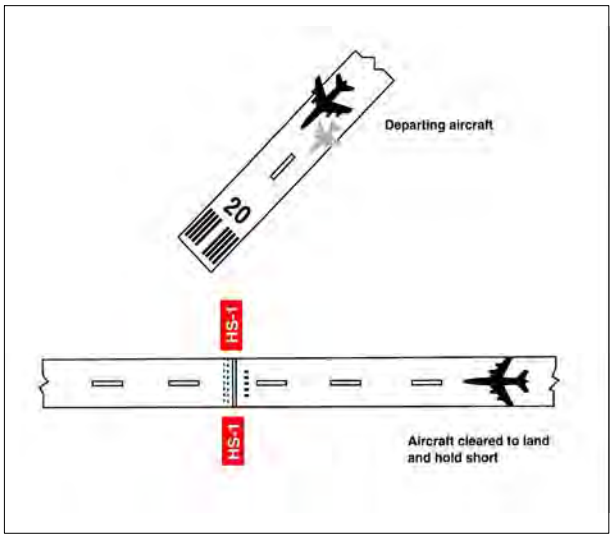
Each figure shows the approximate location of LAHSO markings, signage, and in–pavement lighting when installed.

REFERENCE–

AIP, Part 3 – Aerodromes.

FIG ENR 1.1–10

Land and Hold Short of a Designated Point on a Runway Other Than an Intersecting Runway or Taxiway



22.2.3 The pilot–in–command has the final authority to accept or decline any land and hold short clearance. The safety and operation of the aircraft remain the responsibility of the pilot. Pilots are expected to decline a LAHSO clearance if they determine it will compromise safety.

22.2.4 To conduct LAHSO, pilots should become familiar with all available information concerning LAHSO at their destination airport. Pilots should have, *readily available,* the **published ALD** and runway **slope information** for **all** LAHSO runway combinations at **each** airport of intended landing. Additionally, knowledge about landing performance data permits the pilot to *readily* determine that the ALD for the assigned runway is sufficient for safe LAHSO. As part of a pilot's preflight planning process, pilots should determine if their destination airport has LAHSO. If so, their preflight planning process should include an assessment of which LAHSO combinations would work for them given their aircraft's required landing distance. Good pilot decision–making is knowing in advance whether one can accept a LAHSO clearance if offered.

22.2.5 For those airplanes flown with two crewmembers, effective **intra–cockpit** communication between cockpit crewmembers is also critical. There have been several instances where the pilot working the radios accepted a LAHSO clearance but then simply forgot to tell the pilot flying the aircraft.

22.2.6 If, for any reason, such as difficulty in discerning the location of a LAHSO intersection, wind conditions, aircraft condition, etc., the pilot elects to request to land on the full length of the runway, to land on another runway, or to decline LAHSO, a pilot is expected to promptly inform ATC, ideally even before the clearance is issued. **A LAHSO clearance, once accepted, must be adhered to, just as any other ATC clearance, unless an amended clearance is obtained or an emergency occurs. A LAHSO clearance does not preclude a rejected landing.**

22.2.7 A pilot who accepts a LAHSO clearance should land and exit the runway at the first convenient taxiway (unless directed otherwise) before reaching the hold short point. Otherwise, the pilot must stop and hold at the hold short point. **If a rejected landing becomes necessary after accepting a LAHSO clearance, the pilot should maintain safe separation from other aircraft or vehicles, and should promptly notify the controller.**

22.2.8 Controllers need a full read back of all LAHSO clearances. Pilots should read back their

LAHSO clearance and include the words, "HOLD SHORT OF (RUNWAY/TAXIWAY/OR POINT)" in their acknowledgment of all LAHSO clearances. In order to reduce frequency congestion, pilots are encouraged to read back the LAHSO clearance without prompting. Don't make the controller have to ask for a read back!

22.3 LAHSO Situational Awareness

22.3.1 Situational awareness is **vital** to the success of LAHSO. Situational awareness starts with having current airport information in the cockpit, readily accessible to the pilot. (An airport diagram assists pilots in identifying their location on the airport, thus reducing requests for "progressive taxi instructions" from controllers.)

22.3.2 Situational awareness includes effective pilot–controller radio communication. ATC expects pilots to specifically acknowledge and read back all LAHSO clearances as follows:

EXAMPLE–
ATC: *"(Aircraft ID) cleared to land runway six right, hold short of taxiway bravo for crossing traffic (type aircraft)."*
Aircraft: *"(Aircraft ID), wilco, cleared to land runway six right to hold short of taxiway bravo."*
ATC: *"(Aircraft ID) cross runway six right at taxiway bravo, landing aircraft will hold short."*
Aircraft: *"(Aircraft ID), wilco, cross runway six right at bravo, landing traffic (type aircraft) to hold."*

22.3.3 Situational awareness also includes a thorough understanding of the airport markings, signage, and lighting associated with LAHSO. These visual aids consist of a three–part system of **yellow hold–short markings, red and white signage** and, in certain cases, **in–pavement lighting**. Visual aids assist the pilot in determining where to hold short. FIG ENR 1.1–8, FIG ENR 1.1–9, FIG ENR 1.1–10 depict how these markings, signage, and lighting combinations will appear once installed. Pilots are cautioned that not all airports conducting LAHSO have installed any or all of the above markings, signage, or lighting.

22.3.4 Pilots should only receive a LAHSO clearance when there is a minimum ceiling of 1,000 feet and 3 statute miles visibility. The intent of having "basic" VFR weather conditions is to allow pilots to maintain visual contact with other aircraft and ground vehicle operations. Pilots should consider the effects of prevailing inflight visibility (such as landing into the sun) and how it may affect overall situational awareness. Additionally, surface vehicles and aircraft being taxied by maintenance personnel may also be participating in LAHSO, especially in those operations that involve crossing an active runway.

23. Exiting the Runway after Landing

23.1 The following procedures must be followed after landing and reaching taxi speed.

23.1.1 Exit the runway without delay at the first available taxiway or on a taxiway as instructed by ATC. Pilots must not exit the landing runway onto another runway unless authorized by ATC. At airports with an operating control tower, pilots should not stop or reverse course on the runway without first obtaining ATC approval.

23.1.2 Taxi clear of the runway unless otherwise directed by ATC. An aircraft is considered clear of the runway when all parts of the aircraft are past the runway edge and there are no restrictions to its continued movement beyond the runway holding position markings. In the absence of ATC instructions, the pilot is expected to taxi clear of the landing runway by taxiing beyond the runway holding position markings associated with the landing runway, even if that requires the aircraft to protrude into or cross another taxiway or ramp area. Once all parts of the aircraft have crossed the runway holding position markings, the pilot must hold unless further instructions have been issued by ATC.

NOTE–
1. *The tower will issue the pilot instructions which will permit the aircraft to enter another taxiway, runway, or ramp area when required.*

2. *Guidance contained in subparagraphs 23.1.1 and 23.1.2 above is considered an integral part of the landing clearance and satisfies the requirement of 14 CFR Section 91.129.*

23.1.3 Immediately change to ground control frequency when advised by the tower and obtain a taxi clearance.

NOTE–
1. *The tower will issue instructions required to resolve any potential conflictions with other ground traffic prior to advising the pilot to contact ground control.*

2. *Ground control will issue taxi clearance to parking. That clearance does not authorize the aircraft to "enter" or "cross" any runways. Pilots not familiar with the taxi route should request specific taxi instructions from ATC.*

24. Hand Signals

FIG ENR 1.1–11
Signalman Directs Towing

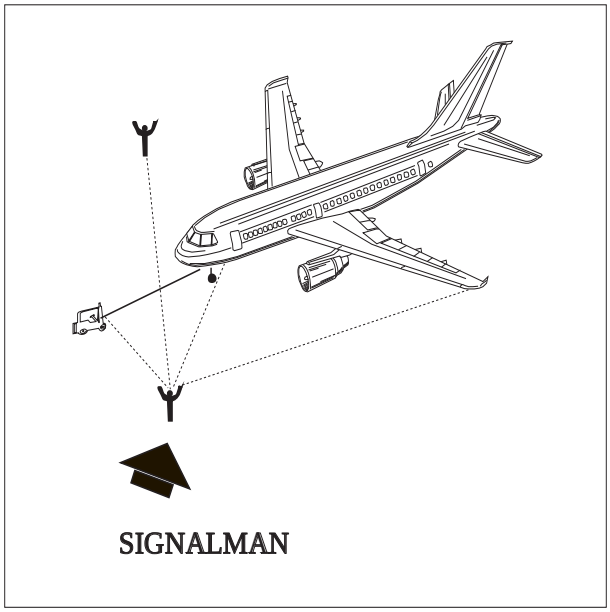


FIG ENR 1.1–12
Signalman's Position

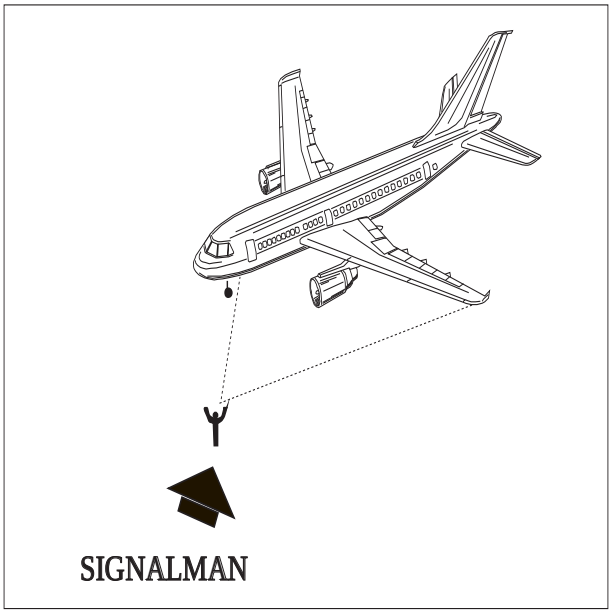


FIG ENR 1.1–13
All Clear (O.K.)

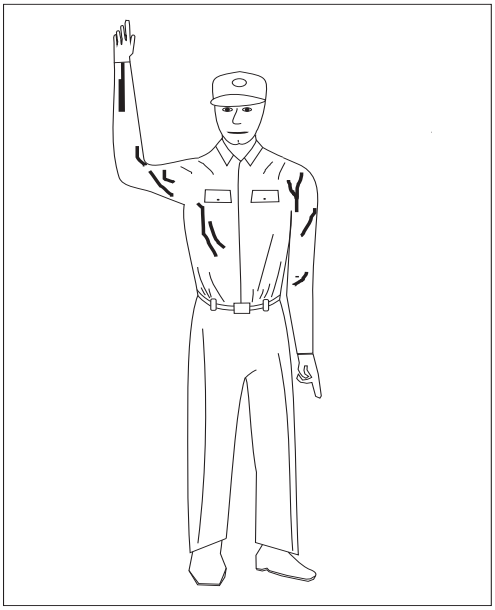


FIG ENR 1.1–14
Start Engine

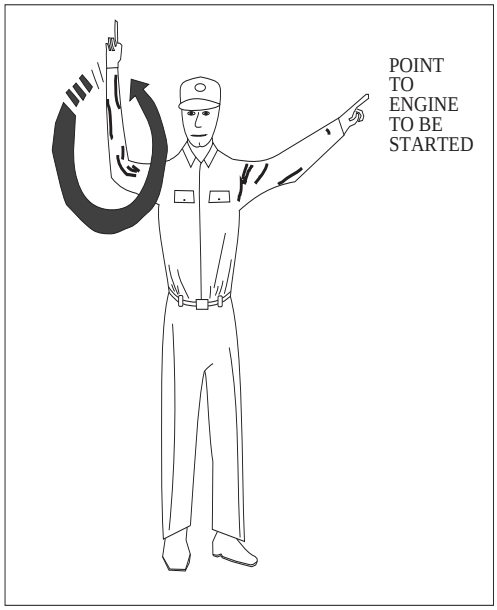


FIG ENR 1.1–15
Pull Chocks

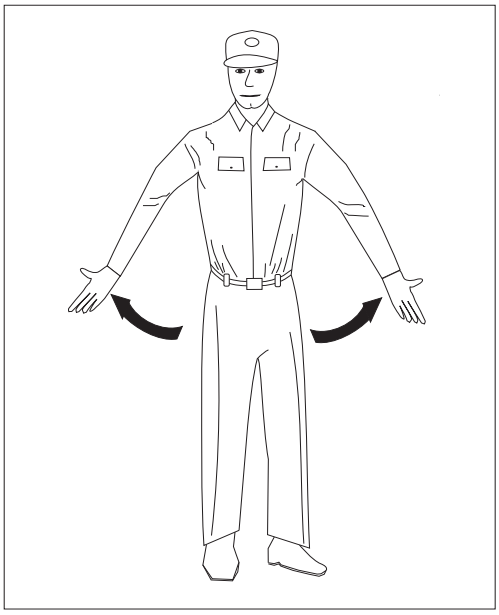


FIG ENR 1.1–16
Proceed Straight Ahead

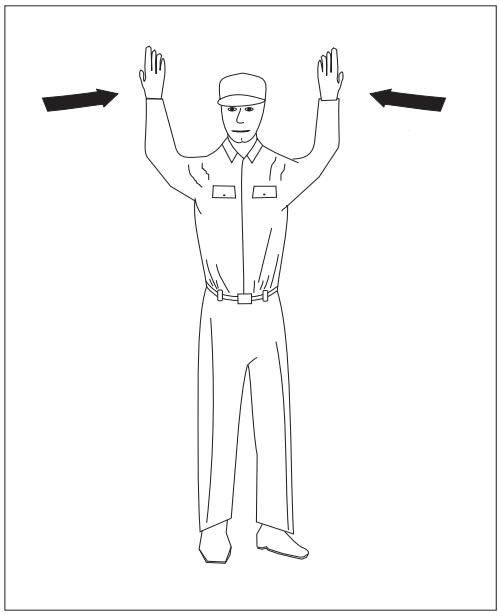


FIG ENR 1.1–17
Left Turn

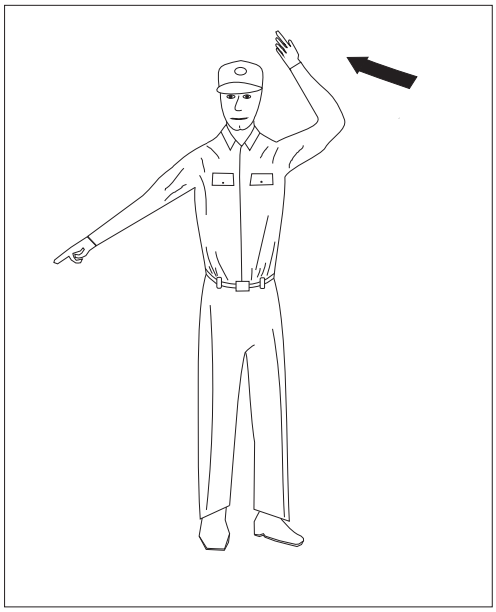


FIG ENR 1.1–18
Right Turn

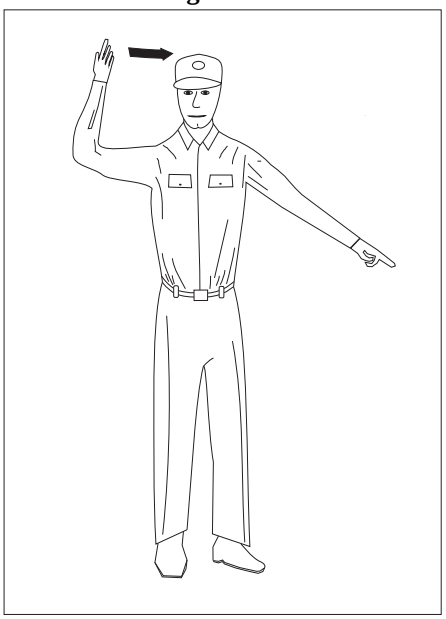


FIG ENR 1.1–19
Slow Down

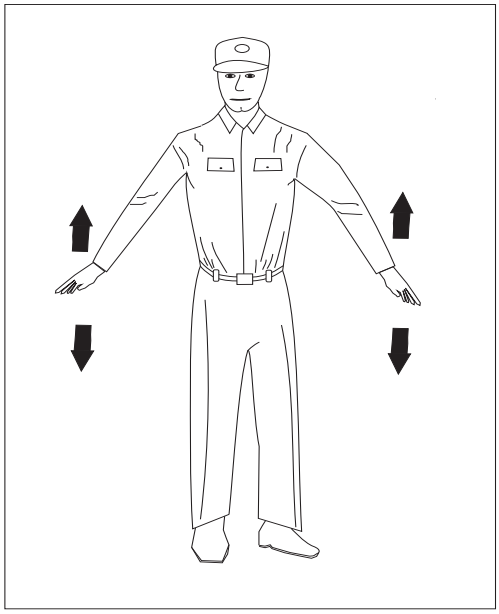


FIG ENR 1.1–20
Flagman Directs Pilot

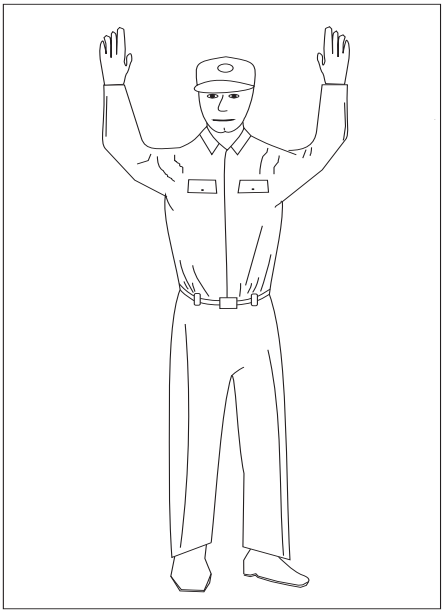


FIG ENR 1.1–21
Insert Chocks

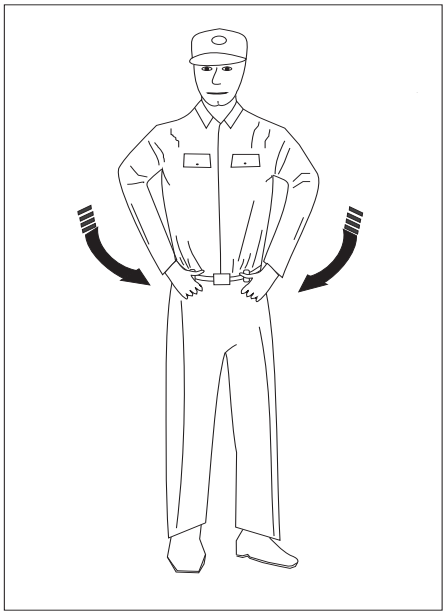


FIG ENR 1.1–22
Cut Engines

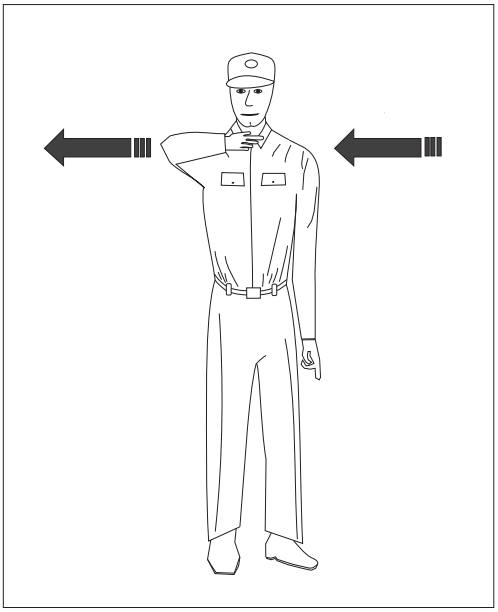
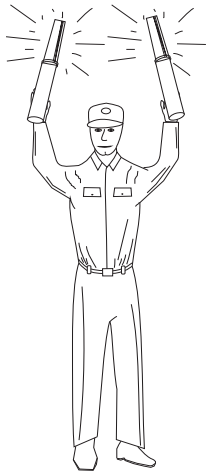


FIG ENR 1.1–23

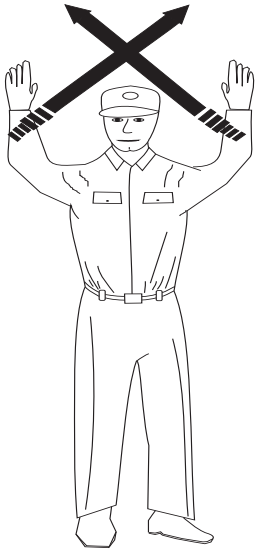
Night Operation



Use same hand movements
as day operation

FIG ENR 1.1–24

Stop



25. Use of Aircraft Lights

25.1 Aircraft position lights are required to be lighted on aircraft operated on the surface and in flight from sunset to sunrise. In addition, aircraft equipped with an anti–collision light system are required to operate that light system during all types of operations (day and night). However, during any adverse meteorological conditions, the pilot–in–command may determine that the anti–collision lights should be turned off when their light output would constitute a hazard to safety (14 CFR Section 91.209). Supplementary strobe lights should be turned off on the ground when they adversely affect ground personnel or other pilots, and in flight when there are adverse reflection from clouds.

25.2 An aircraft anti–collision light system can use one or more rotating beacons and/or strobe lights, be colored either red or white, and have different (higher than minimum) intensities when compared to other aircraft. Many aircraft have both a rotating beacon and a strobe light system.

25.3 The FAA has a voluntary pilot safety program, *Operation Lights On*, to enhance the see–and–avoid concept. Pilots are encouraged to turn on their landing lights during takeoff; i.e., either after takeoff clearance has been received or when beginning takeoff roll. Pilots are further encouraged to turn on their landing lights when operating below 10,000 feet, day or night, especially when operating within 10 miles of any airport or in conditions of reduced visibility and in areas where flocks of birds may be expected; i.e., coastal areas, lake areas, around refuse dumps, etc. Although turning on aircraft lights does enhance the see–and–avoid concept, pilots should not become complacent about keeping a sharp lookout for other aircraft. Not all aircraft are equipped with lights, and some pilots may not have their lights turned on. Aircraft manufacturers' recommendations for operation of landing lights and electrical systems should be observed.

25.4 Prop and jet blast forces generated by large aircraft have overturned or damaged several smaller aircraft taxiing behind them. To avoid similar results and in the interest of preventing upsets and injuries to ground personnel from such forces, the FAA recommends that air carriers and commercial operators turn on their rotating beacons anytime their aircraft engines are in operation. General aviation pilots using rotating beacon–equipped aircraft are also encouraged to participate in this program which is designed to alert others to the potential hazard. Since this is a voluntary program, exercise caution and do not rely solely on the rotating beacon as an indication that aircraft engines are in operation.

25.5 Prior to commencing taxi, it is recommended to turn on navigation, position, anti-collision, and logo lights (if equipped). To signal intent to other pilots, consider turning on the taxi light when the aircraft is moving or intending to move on the ground, and turning it off when stopped or yielding to other ground traffic. Strobe lights should not be illuminated during taxi if they will adversely affect the vision of other pilots or ground personnel.

25.6 At the discretion of the pilot-in-command, all exterior lights should be illuminated when taxiing on or across any runway. This increases the conspicuity of the aircraft to controllers and other pilots approaching to land, taxiing, or crossing the runway. Pilots should comply with any equipment operating limitations and consider the effects of landing and strobe lights on other aircraft in their vicinity.

25.7 When entering the departure runway for takeoff or to "line up and wait," all lights, except for landing lights, should be illuminated to make the aircraft conspicuous to ATC and other aircraft on approach. Landing lights should be turned on when takeoff clearance is received or when commencing takeoff roll at an airport without an operating control tower.

26. Flight Inspection/"Flight Check" Aircraft in Terminal Areas

26.1 "Flight Check" is a call sign used to alert pilots and air traffic controllers when an FAA aircraft is engaged in flight inspection/certification of NAVAIDs and flight procedures. Flight check aircraft fly preplanned high/low altitude flight patterns such as grids, orbits, DME arcs, and tracks, including low passes along the full length of the runway to verify NAVAID performance.

26.2 Pilots should be especially watchful and avoid the flight paths of any aircraft using the call sign "Flight Check." These flights will normally receive special handling from ATC. Pilot patience and cooperation in allowing uninterrupted recordings can significantly help expedite flight inspections, minimize costly, repetitive runs, and reduce the burden on the U.S. taxpayer.

27. ATC Clearances and Aircraft Separation

27.1 Clearance

27.1.1 A clearance issued by ATC is predicated on known traffic and known physical airport conditions. An ATC clearance means an authorization by ATC, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified conditions within Classes A, B, C, D, and E airspace. IT IS NOT AUTHORIZATION FOR A PILOT TO DEVIATE FROM ANY RULE, REGULATION OR MINIMUM ALTITUDE NOR TO CONDUCT UNSAFE OPERATION OF THE AIRCRAFT.

27.1.2 14 CFR Section 91.3(a) states: "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." If ATC issues a clearance that would cause a pilot to deviate from a rule or regulation, or in the pilot's opinion, would place the aircraft in jeopardy, IT IS THE PILOT'S RESPONSIBILITY TO REQUEST AN AMENDED CLEARANCE. Similarly, if a pilot prefers to follow a different course of action, such as make a 360–degree turn for spacing to follow traffic when established in a landing or approach sequence, land on a different runway, takeoff from a different intersection, takeoff from the threshold instead of an intersection, or delay operation, THE PILOT IS EXPECTED TO INFORM ATC ACCORDINGLY. When the pilot requests a different course of action, however, the pilot is expected to cooperate so as to preclude the disruption of the traffic flow or the creation of conflicting patterns. The pilot is also expected to use the appropriate aircraft call sign to acknowledge all ATC clearances, frequency changes, or advisory information.

27.1.3 Each pilot who deviates from an ATC clearance in response to a traffic alert and collision avoidance system resolution advisory must notify ATC of that deviation as soon as possible.

27.1.4 When weather conditions permit, during the time an IFR flight is operating, it is the direct responsibility of the pilot to avoid other aircraft since VFR flights may be operating in the same area without the knowledge of ATC, and traffic clearances provide standard separation only between IFR flights.

27.2 Clearance Prefix

A clearance, information, or request for information originated by an ATC facility and relayed to the pilot through an air/ground communication station will be prefixed by "ATC CLEARS," "ATC ADVISES," or "ATC REQUESTS."

27.3 Clearance Items

27.3.1 An ATC clearance normally contains the following:

27.3.1.1 Clearance Limit. The traffic clearance issued prior to departure will normally authorize flight to the airport of intended landing. Many airports and associated NAVAIDs are collocated with the same name and/or identifier, so care should be exercised to ensure a clear understanding of the clearance limit. When the clearance limit is the airport of intended landing, the clearance should contain the airport name followed by the word "airport." Under certain conditions, a clearance limit may be a NAVAID or other fix. When the clearance limit is a NAVAID, intersection, or waypoint and the type is known, the clearance should contain type. Under certain conditions at some locations, a short–range clearance procedure is utilized whereby a clearance is issued to a fix within or just outside the terminal area, and pilots are advised of the frequency on which they will receive the long–range clearance direct from the center controller.

27.3.1.2 Departure Procedure. Headings to fly and altitude restrictions may be issued to separate a departure from other air traffic in the terminal area. Where the volume of traffic warrants, instrument departure procedures (DPs) have been developed. (See ENR 1.5.)

27.3.1.3 Route of Flight

a) Clearances are normally issued for the altitude/flight level and route filed by the pilot. However, due to traffic conditions, it is frequently necessary for ATC to specify an altitude/flight level or route different from that requested by the pilot. In addition, flow patterns have been established in certain congested areas, or between congested areas, whereby traffic capacity is increased by routing all traffic on preferred routes. Information on these flow patterns is available in offices where preflight briefing is furnished or where flight plans are accepted.

b) When required, air traffic clearances include data to assist pilots in identifying radio reporting points. It is the responsibility of a pilot to notify ATC immediately if the radio equipment cannot receive the type of signals the pilot must utilize to comply with the clearance.

27.3.1.4 Altitude Data

a) The altitude/flight level instructions in an ATC clearance normally require that a pilot "MAINTAIN" the altitude/flight level to which the flight will operate when in Classes A, B, C, D, and E airspace. Altitude/flight level changes while en route should be requested prior to the time the change is desired.

b) When possible, if the altitude assigned is different than that requested by the pilot, ATC will inform an aircraft when to expect climb or descent clearance or to request altitude change from another facility. If this has not been received prior to crossing the boundary of the ATC facility's area and assignment at a different flight level is still desired, the pilot should reinitiate the request with the next facility.

c) The term "CRUISE" may be used instead of "MAINTAIN" to assign a block of airspace, to a pilot, from the minimum IFR altitude up to and including the altitude specified in the cruise clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, the pilot may not return to that altitude without additional ATC clearance.

27.4 Amended Clearances

27.4.1 Amendments to the initial clearance will be issued at any time an air traffic controller deems such action necessary to avoid possible confliction between aircraft. Clearances will require that a flight "hold" or change altitude prior to reaching the point where standard separation from other IFR traffic would no longer exist.

NOTE–
Some pilots have questioned this action and requested "traffic information" and were at a loss when the reply indicated "no traffic reported." In such cases the controller has taken action to prevent a traffic confliction which would have occurred at a distant point.

27.4.2 A pilot may wish an explanation of the handling of the flight at the time of occurrence; however, controllers are not able to take time from their immediate control duties, nor can they afford to overload the ATC communications channels to furnish explanations. Pilots may obtain an explanation by directing a letter or telephone call to the chief controller of the facility involved.

27.4.3 Pilots have the privilege of requesting a different clearance from that which has been issued by ATC if they feel that they have information which would make another course of action more practicable or if aircraft equipment limitations or company procedures forbid compliance with the clearance issued.

27.4.4 Pilots should pay particular attention to the clearance and not assume that the route and altitude/flight level are the same as requested in the flight plan. It is suggested that pilots make a written report of clearances at the time they are received, and verify, by a repeat back, any portions that are complex or about which a doubt exists. It will be the responsibility of each pilot to accept or refuse the clearance issued.

27.5 Special VFR Clearance

27.5.1 An ATC clearance must be obtained *prior* to operating within a Class B, Class C, Class D, and Class E surface area when the weather is less than that required for VFR flight. A VFR pilot may request and be given a clearance to enter, leave or operate within most Class D and Class E surface areas and some Class B and Class C surface areas in special VFR conditions, traffic permitting, and providing such flight will not delay IFR operations. All special VFR flights must remain clear of clouds. The visibility requirements for Special VFR aircraft (other than helicopters) are:

27.5.1.1 At least one statute mile flight visibility for operations within Classes B, C, D, and E surface areas.

27.5.1.2 At least one statute mile ground visibility if taking off or landing. If ground visibility is not reported at that airport, the flight visibility must be at least one statute mile.

27.5.1.3 The restrictions in subparagraphs 27.5.1.1 and 27.5.1.2 do not apply to helicopters. Helicopters must remain clear of clouds and may operate in

Classes B, C, D, and E surface areas with less than one statute mile visibility.

27.5.2 When a control tower is located within a Class B, Class C, and Class D surface area, requests for clearances should be to the tower. If no tower is located within the surface area, a clearance may be obtained from the nearest tower, FSS or ARTCC.

27.5.3 It is not necessary to file a complete flight plan with the request for clearance, but pilots should state their intentions in sufficient detail to permit ATC to fit their flight into the traffic flow. The clearance will not contain a specific altitude as the pilot must remain clear of clouds. The controller may require the pilot to fly at or below a certain altitude due to other traffic, but the altitude specified will permit flight at or above the minimum safe altitude. In addition, at radar locations, flight may be vectored if necessary for control purposes or on pilot request.

NOTE–
The pilot is responsible for obstacle or terrain clearance (reference 14 CFR Section 91.119).

27.5.4 Special VFR clearances are effective within Classes B, C, D, and E surface areas only. ATC does not provide separation after an aircraft leaves Class D surface area on a special VFR clearance.

27.5.5 Special VFR operations by fixed–wing aircraft are prohibited in some Classes B and C surface areas due to the volume of IFR traffic. A list of these Classes B and C surface areas is contained in 14 CFR Part 91, Appendix D, Section 3 and also depicted on Sectional Aeronautical Charts.

27.5.6 ATC provides separation between special VFR flights and between them and other IFR flights.

27.5.7 Special VFR operations by fixed–wing aircraft are prohibited between sunset and sunrise unless the pilot is instrument rated and the aircraft is equipped for IFR flight.

27.5.8 Pilots arriving or departing an uncontrolled airport that has automated weather broadcast capability (ASOS/AWSS/AWOS) should monitor the broadcast frequency, advise the controller that they have the "one–minute weather," and state intentions prior to operating within the Class B, Class C, Class D, or Class E surface areas.

NOTE–
One–minute weather is the most recent one minute updated weather broadcast received by a pilot from an uncontrolled airport ASOS/AWSS/AWOS.

28. Pilot Responsibilities Upon Clearance Issuance

28.1 Record ATC Clearance. When conducting an IFR operation, make a written record of your ATC clearance. The specified conditions which are a part of your air traffic clearance may be somewhat different from those included in your flight plan. Additionally, ATC may find it necessary to ADD conditions, such as a particular departure route. The very fact that ATC specifies different or additional conditions means that other aircraft are involved in the traffic situation.

28.2 ATC Clearance/Instruction Readback. Pilots of airborne aircraft should read back *those parts* of ATC clearances and instructions containing altitude assignments, vectors, or runway assignments as a means of mutual verification. The read back of the "numbers" serves as a double check between pilots and controllers and reduces the kinds of communications errors that occur when a number is either "misheard" or is incorrect.

28.2.1 Include the aircraft identification in all readbacks and acknowledgments. This aids controllers in determining that the correct aircraft received the clearance or instruction. The requirement to include aircraft identification in all readbacks and acknowledgments becomes more important as frequency congestion increases and when aircraft with similar call signs are on the same frequency.

EXAMPLE–
"Climbing to Flight Level three three zero, United Twelve" or "November Five Charlie Tango, roger, cleared to land runway nine left."

28.2.2 Read back altitudes, altitude restrictions, and vectors in the same sequence as they are given in the clearance/instruction.

28.2.3 Altitudes contained in charted procedures such as DPs, instrument approaches, etc., should not be read back unless they are specifically stated by the controller.

28.2.4 Initial read back of a taxi, departure or landing clearance should include the runway assignment, including left, right, center, etc. if applicable.

28.3 It is the responsibility of the pilot to accept or refuse the clearance issued.

29. IFR Clearance VFR−On−Top

29.1 A pilot on an IFR flight plan operating in VFR weather conditions, may request VFR−on−top in lieu of an assigned altitude. This would permit pilots to select an altitude or flight level of their choice (subject to any ATC restrictions).

29.2 Pilots desiring to climb through a cloud, haze, smoke, or other meteorological formation and then either cancel their IFR flight plan or operate VFR−on−top may request a climb to VFR−on−top. The ATC authorization must contain either a top report or a statement that no top report is available, and a request to report reaching VFR−on−top. Additionally, the ATC authorization may contain a clearance limit, routing and an alternative clearance if VFR−on−top is not reached by a specified altitude.

29.3 A pilot on an IFR flight plan operating in VFR conditions may request to climb/descend in VFR conditions.

29.4 ATC may not authorize VFR−on−top/VFR conditions operations unless the pilot requests the VFR operation or a clearance to operate in VFR conditions will result in noise abatement benefits where part of the IFR departure route does not conform to an FAA approved noise abatement route or altitude.

29.5 When operating in VFR conditions with an ATC authorization to "maintain VFR−on−top" or "maintain VFR conditions," pilots on IFR flight plans must:

29.5.1 Fly at the appropriate VFR altitude as prescribed in 14 CFR Section 91.159.

29.5.2 Comply with the VFR visibility and distance from cloud criteria in 14 CFR Section 91.155 (Basic VFR Weather Minimums).

NOTE−
See AIP, GEN 1.7, Annex 2, Rules of the Air, for a table showing basic VFR weather minimums.

29.5.3 Comply with instrument flight rules that are applicable to this flight; i.e., minimum IFR altitude, position reporting, radio communications, course to be flown, adherence to ATC clearance, etc. Pilots should advise ATC prior to any altitude change to ensure the exchange of accurate traffic information.

29.6 ATC authorization to "maintain VFR−on−top" is not intended to restrict pilots so that they must operate only above an obscuring meteorological formation (layer). Instead, it permits operation above, below, between layers or in areas where there is no meteorological obscuration. It is imperative that clearance to operate "VFR−on−top/VFR conditions" does not imply cancellation of the IFR flight plan.

29.7 Pilots operating VFR−on−top/VFR conditions may receive traffic information from ATC on other pertinent IFR or VFR aircraft. However, aircraft operating in Class B or Class C airspace and TRSAs must be separated as required by FAA Order 7110.65, Air Traffic Control.

NOTE−
When operating in VFR weather conditions, it is the pilot's responsibility to be vigilant so as to see and avoid other aircraft.

30. VFR/IFR Flights

30.1 A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the minimum en route altitude (MEA)/minimum IFR altitude (MIA)/minimum vector altitude (MVA)/off route obstruction clearance altitude (OROCA), pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If the pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions.

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.

31. Adherence to Clearance

31.1 When air traffic clearance has been obtained under either the Visual or Instrument Flight Rules, the pilot in command of the aircraft must not deviate from the provisions thereof unless an amended clearance is obtained. When ATC issues a clearance or instruction, pilots are expected to execute its provisions upon receipt. ATC, in certain situations, will include the word "IMMEDIATELY" in a clearance or instruction to impress urgency of an

imminent situation, and expeditious compliance by the pilot is expected and necessary for safety. The addition of a VFR or other restriction; i.e., climb or descent point or time, crossing altitude, etc., does not authorize a pilot to deviate from the route of flight or any other provision of the ATC clearance.

31.2 When a heading is assigned or a turn is requested by ATC, pilots are expected to promptly initiate the turn, to complete the turn, and to maintain the new heading unless issued additional instructions.

31.3 The term "at pilot's discretion" included in the altitude information of an ATC clearance means that ATC has offered the pilot the option to start climb or descent when the pilot wishes, is authorized to conduct the climb or descent at any rate, and to temporarily level off at any intermediate altitude as desired. However, once the aircraft has vacated an altitude, it may not return to that altitude.

31.4 When ATC has not used the term "AT PILOT'S DISCRETION" nor imposed any climb or descent restrictions, pilots should initiate climb or descent promptly on acknowledgement of the clearance. Descend or climb at an optimum rate consistent with the operating characteristics of the aircraft to 1,000 feet above or below the assigned altitude, and then attempt to descend or climb at a rate of between 500 and 1,500 fpm until the assigned altitude is reached. If at anytime the pilot is unable to climb or descend at a rate of at least 500 feet a minute, advise ATC. If it is necessary to level off at an intermediate altitude during climb or descent, advise ATC, except when leveling off at 10,000 feet MSL on descent, or 2,500 feet above airport elevation (prior to entering a Class C or Class D surface area), when required for speed reduction (14 CFR Section 91.117).

NOTE–
Leveling off at 10,000 feet MSL on descent or 2,500 feet above airport elevation (prior to entering a Class C or Class D surface area) to comply with 14 CFR Section 91.117 airspeed restrictions is commonplace. Controllers anticipate this action and plan accordingly. Leveling off at any other time on climb or descent may seriously affect air traffic handling by ATC. Consequently, it is imperative that pilots make every effort to fulfill the above expected actions to aid ATC in safely handling and expediting traffic.

31.5 If the altitude information of an ATC DESCENT clearance includes a provision to "CROSS (fix) AT" or "AT OR ABOVE/BELOW (altitude)," the manner in which the descent is executed to comply with the crossing altitude is at the pilot's discretion. This authorization to descend at pilot's discretion is only applicable to that portion of the flight to which the crossing altitude restriction applies, and the pilot is expected to comply with the crossing altitude as a provision of the clearance. Any other clearance in which pilot execution is optional will so state: "AT PILOT'S DISCRETION."

EXAMPLE–
1. *"United Four Seventeen, descend and maintain six thousand."*

NOTE–
1. *The pilot is expected to commence descent upon receipt of the clearance and to descend at the suggested rates until reaching the assigned altitude of 6,000 feet.*

EXAMPLE–
2. *"United Four Seventeen, descend at pilot's discretion, maintain six thousand."*

NOTE–
2. *The pilot is authorized to conduct descent within the context of the term at pilot's discretion as described above.*

EXAMPLE–
3. *"United Four Seventeen, cross Lakeview V–O–R at or above Flight Level two zero zero, descend and maintain six thousand."*

NOTE–
3. *The pilot is authorized to conduct descent at pilot's discretion until reaching Lakeview VOR and must comply with the clearance provision to cross the Lakeview VOR at or above FL 200. After passing Lakeview VOR, the pilot is expected to descend at the suggested rates until reaching the assigned altitude of 6,000 feet.*

EXAMPLE–
4. *"United Four Seventeen, cross Lakeview V–O–R at six thousand, maintain six thousand."*

NOTE–
4. *The pilot is authorized to conduct descent at pilot's discretion, however, must comply with the clearance provision to cross the Lakeview VOR at 6,000 feet.*

EXAMPLE–
5. *"United Four Seventeen, descend now to Flight Level two seven zero, cross Lakeview V–O–R at or below one zero thousand, descend and maintain six thousand."*

NOTE–
5. *The pilot is expected to promptly execute and complete descent to FL 270 upon receipt of the clearance. After reaching FL 270 the pilot is authorized to descend "at pilot's discretion" until reaching Lakeview VOR. The pilot must comply with the clearance provision to cross Lakeview VOR at or below 10,000 feet. After Lakeview*

VOR the pilot is expected to descend at the suggested rates until reaching 6,000 feet.

EXAMPLE–
6. *"United Three Ten, descend now and maintain Flight Level two four zero, pilot's discretion after reaching Flight Level two eight zero."*

NOTE–
6. *The pilot is expected to commence descent upon receipt of the clearance and to descend at the suggested rates until reaching FL 280. At that point, the pilot is authorized to continue descent to FL 240 within the context of the term "at pilot's discretion" as described above.*

31.6 In case emergency authority is used to deviate from the provisions of an ATC clearance, the pilot in command must notify ATC as soon as possible and obtain an amended clearance. In an emergency situation which results in no deviation from the rules prescribed in 14 CFR Part 91 but which requires ATC to give priority to an aircraft, the pilot of such aircraft must, when requested by ATC, make a report within 48 hours of such emergency situation to the manager of that ATC facility.

31.7 The guiding principle is that the last ATC clearance has precedence over the previous ATC clearance. When the route or altitude in a previously issued clearance is amended, the controller will restate applicable altitude restrictions. If altitude to maintain is changed or restated, whether prior to departure or while airborne, and previously issued altitude restrictions are omitted, those altitude restrictions are canceled, including Departure Procedures and Standard Terminal Arrival Route (STAR) altitude restrictions.

EXAMPLE–
1. *A departure flight receives a clearance to destination airport to maintain FL 290. The clearance incorporates a DP which has certain altitude crossing restrictions. Shortly after takeoff, the flight receives a new clearance changing the maintaining FL from 290 to 250. If the altitude restrictions are still applicable, the controller restates them.*

2. *A departing aircraft is cleared to cross Fluky Intersection at or above 3,000 feet, Gordonville VOR at or above 12,000 feet, maintain FL 200. Shortly after departure, the altitude to be maintained is changed to FL 240. If the altitude restrictions are still applicable, the controller issues an amended clearance as follows: "cross Fluky Intersection at or above three thousand, cross Gordonville V–O–R at or above one two thousand, maintain Flight Level two four zero."*

3. *An arriving aircraft is cleared to the destination airport via V45 Delta VOR direct; the aircraft is cleared to cross Delta VOR at 10,000 feet, and then to maintain 6,000 feet. Prior to Delta VOR, the controller issues an amended clearance as follows: "turn right heading one eight zero for vector to runway three six I–L–S approach, maintain six thousand."*

NOTE–
Because the altitude restriction "cross Delta V–O–R at 10,000 feet" was omitted from the amended clearance, it is no longer in effect.

31.8 Pilots of turbojet aircraft equipped with afterburner engines should advise ATC prior to takeoff if they intend to use afterburning during their climb to the en route altitude. Often, the controller may be able to plan traffic to accommodate a high performance climb and allow the aircraft to climb to the planned altitude without restriction.

31.9 If an "expedite" climb or descent clearance is issued by ATC, and the altitude to maintain is subsequently changed or restated without an expedite instruction, the expedite instruction is canceled. Expedite climb/descent normally indicates to the pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics. Normally controllers will inform pilots of the reason for an instruction to expedite.

32. IFR Separation Standards

32.1 ATC effects separation of aircraft vertically by assigning different altitudes; longitudinally by providing an interval expressed in time or distance between aircraft on the same, converging, or crossing courses; and laterally by assigning different flight paths.

32.2 Separation will be provided between all aircraft operating on IFR flight plans except during that part of the flight (outside Class B airspace or a TRSA) being conducted on a VFR–on–top/VFR conditions clearance. Under these conditions, ATC may issue traffic advisories, but it is the sole responsibility of the pilot to be vigilant so as to see and avoid other aircraft.

32.3 When radar is employed in the separation of aircraft at the same altitude, a minimum of 3 miles separation is provided between aircraft operating within 40 miles of the radar antenna site, and 5 miles between aircraft operating beyond 40 miles from the

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 to maintain required or desired spacing.

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 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

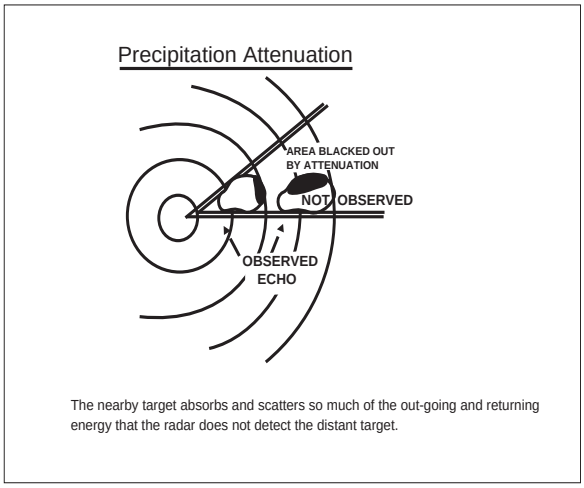
37.1.1.1 Radar is a method whereby radio waves are transmitted into the air and are then received when they have been reflected by an object in the path of the beam. Range is determined by measuring the time it takes (at the speed of light) for the radio wave to go out to the object and then return to 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 only solution to screening is the installation of strategically placed multiple radars, which has been done in some areas.

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 radar than a large commercial jet or military bomber. Here again, the use of radar beacon is invaluable if the aircraft is equipped with an airborne transponder. All ARTCC radars in the conterminous U.S. and many airport surveillance radars have the capability to interrogate Mode C and display altitude information to the controller from appropriately equipped aircraft. However, there are a number of airport surveillance radars that do not have Mode C display capability and, therefore, altitude information must be obtained from the pilot.

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

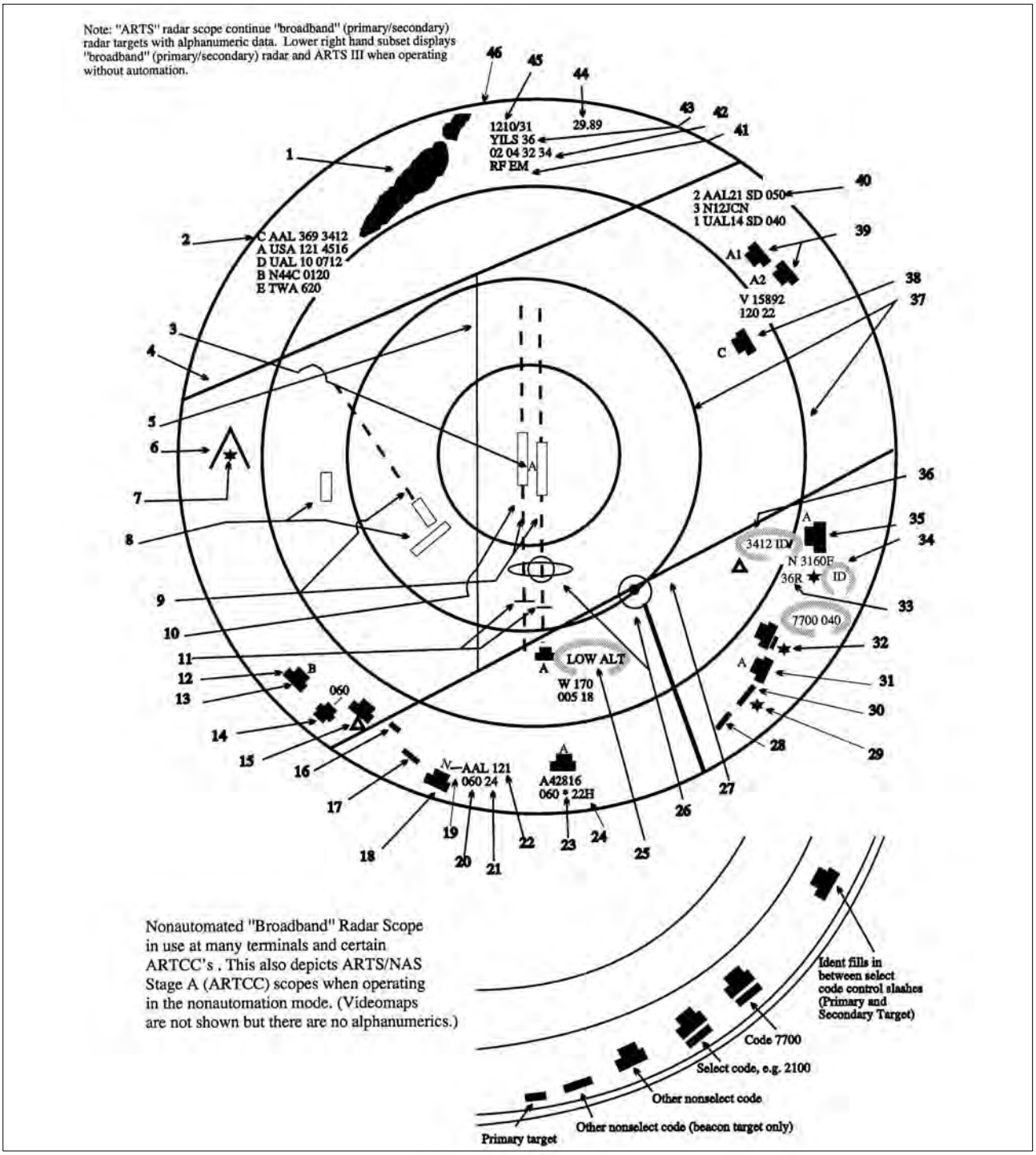
37.3.2 Surveillance radars scan through 360 degrees of azimuth and present target information on a radar display located in a tower or center. This information is used independently or in conjunction with other navigational aids in the control of air traffic.

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)*

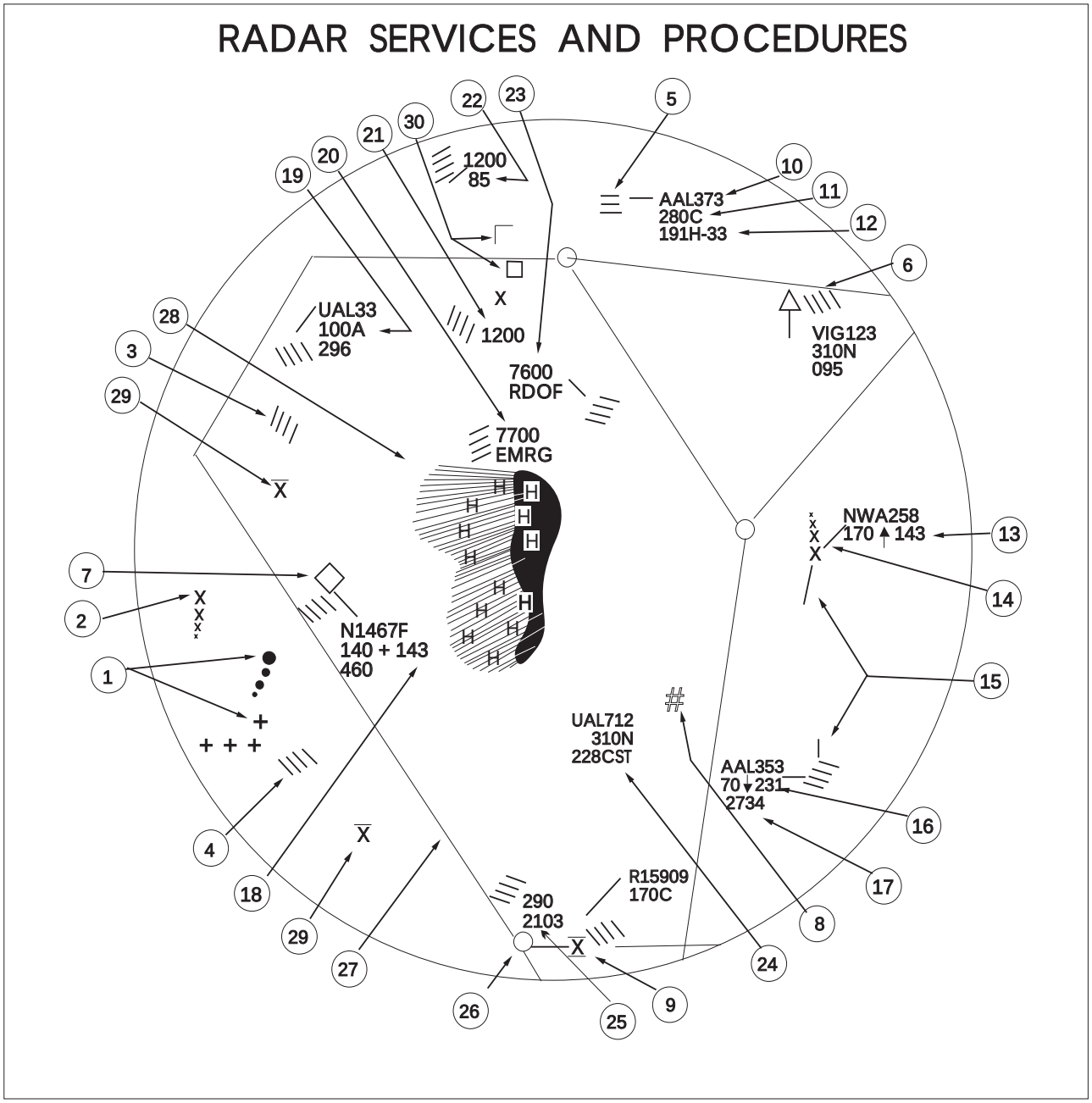
43. *General information (ATIS, runway, approach in use)*

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.

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 Operation

37.7.1 General

37.7.1.1 Pilots should be aware that proper application of transponder operating procedures will provide both VFR and IFR aircraft with a higher degree of safety while operating on the ground and airborne. Transponders with altitude reporting mode turned ON (Mode C or S) substantially increase the capability of surveillance systems to see an aircraft, thus providing the Air Traffic Controller 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 which 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 (if equipped) at all airports, any time the aircraft is positioned on any portion of an 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 (if equipped) during pushback or taxi-out from parking spot. Select TA or TA/RA (if equipped with TCAS) when taking the active runway.

b) Arrivals. Maintain transponder to the altitude reporting mode or if TCAS-equipped (TA or TA/RA), select the transponder to altitude reporting mode. Maintain ADS-B Out transmissions (if equipped) after clearing the active runway. Select STBY or OFF for transponder and ADS-B (if equipped) upon arriving at the aircraft's parking spot or gate.

37.7.1.4 Transponder and ADS-B Operations in the Air. EACH PILOT OPERATING AN AIRCRAFT EQUIPPED WITH AN OPERABLE ATC TRANSPONDER, MAINTAINED IN ACCORDANCE WITH 14 CFR SECTION 91.413 OR ADS-B TRANSMITTER, MUST OPERATE THE TRANSPONDER/TRANSMITTER, INCLUDING MODE C/S IF INSTALLED, ON THE APPROPRIATE MODE 3/A CODE OR AS ASSIGNED BY ATC. EACH PERSON OPERATING AN AIRCRAFT EQUIPPED WITH ADS-B OUT MUST OPERATE THIS EQUIPMENT IN THE TRANSMIT MODE AT ALL TIMES WHILE AIRBORNE UNLESS OTHERWISE REQUESTED BY ATC.

37.7.1.5 A pilot on an IFR flight who elects to cancel the IFR flight plan prior to reaching destination, should adjust the transponder 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" 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. Surveillance coverage can be improved by climbing to a higher altitude.

NOTE–
For a complete description of operating limitations and procedures, pilots of aircraft equipped with ADS–B should refer to AIP, Automatic Dependent Surveillance – Broadcast Services, ENR 1.1 Paragraph 45.

37.7.2 Transponder Code Designation

37.7.2.1 For ATC to utilize one or a combination of the 4096 discrete codes, FOUR DIGIT CODE DESIGNATION will be used; e.g., code 2100 will be expressed as TWO ONE ZERO ZERO. Due to the operational characteristics of the rapidly expanding automated ATC system, THE LAST TWO DIGITS OF THE SELECTED TRANSPONDER CODE SHOULD ALWAYS READ '00' UNLESS SPECIFICALLY REQUESTED BY ATC TO BE OTHERWISE.

37.7.3 Automatic Altitude Reporting (Mode C)

37.7.3.1 Some transponders are equipped with a Mode C automatic altitude reporting capability. This system converts aircraft altitude in 100 foot increments to coded digital information which is transmitted together with Mode C framing pulses to the interrogating radar facility. The manner in which transponder panels are designed differs, therefore, a pilot should be thoroughly familiar with the operation of the transponder so that ATC may realize its full capabilities.

37.7.3.2 Adjust transponder to reply on the Mode A/3 code specified by ATC and, if equipped, to reply on Mode C with altitude reporting capability activated unless deactivation is directed by ATC or unless the installed aircraft equipment has not been tested and calibrated as required by 14 CFR Section 91.217. If deactivation is required by ATC, run off the altitude reporting feature of your transponder. An instruction by ATC to "STOP ALTITUDE SQUAWK, ALTITUDE DIFFERS (number of feet) FEET," may be an indication that your transponder is transmitting incorrect altitude information or that you have an incorrect altimeter setting. While an incorrect altimeter setting has no effect on the Mode C altitude information transmitted by your transponder (transponders are preset at 29.92), it would cause you to fly at an actual altitude different from your assigned altitude. When a controller indicates that an altitude readout is invalid, the pilot should initiate a check to verify that the aircraft altimeter is set correctly.

37.7.3.3 Pilots of aircraft with operating Mode C altitude reporting transponders should exact altitude/flight level to the nearest hundred foot increment when establishing initial contact with an ATC. Exact altitude/flight level reports on initial contact provide ATC with information that is required prior to using Mode C altitude information for separation purposes. This will significantly reduce altitude verification requests.

37.7.4 Transponder IDENT Feature

37.7.4.1 The transponder must be operated only as specified by ATC. Activate the "IDENT" feature only upon request of the ATC controller.

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 Requirements

37.7.6.1 Specific details concerning requirements to carry and operate Mode C transponders, as well as exceptions and ATC authorized deviations from the requirements are found in 14 CFR Sections 91.215 and 99.13.

37.7.6.2 In general, the CFR requires aircraft to be equipped with Mode C transponders when operating:

a) At or above 10,000 feet MSL over the 48 contiguous states or the District of Columbia, excluding that airspace below 2,500 feet AGL.

b) Within 30 miles of a Class B airspace primary airport, below 10,000 feet MSL. Balloons, gliders, and aircraft not equipped with an engine driven electrical system are excepted from the above requirements when operating below the floor of Class A airspace and/or; outside of Class B airspace and below the ceiling of the Class B airspace (or 10,000 feet MSL, whichever is lower).

c) Within and above all Class C airspace up to 10,000 feet MSL.

d) Within 10 miles of certain designated airports from the surface to 10,000 feet MSL, excluding that airspace which is both outside Class D airspace and below 1,200 feet AGL. Balloons, gliders and aircraft not equipped with an engine driven electrical system are excepted from this requirement.

37.7.6.3 14 CFR Section 99.12 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.

37.7.6.4 Pilots must ensure that their aircraft transponder is operating on an appropriate ATC assigned VFR/IFR code and Mode C 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 Inflight requests for "immediate" deviation from the transponder requirements may be approved by controllers only when the flight will continue IFR or when weather conditions prevent VFR descent and continued VFR flight in airspace not affected by the CFR. All other requests for deviation should be made by contacting the nearest FSS 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's areas.

37.7.7 Transponder Operation Under Visual Flight Rules (VFR)

37.7.7.1 Unless otherwise instructed by an ATC Facility, adjust transponder to reply on Mode 3/A Code 1200 regardless of altitude.

NOTE–

1. *Aircraft not in contact with an ATC facility may squawk 1255 in lieu of 1200 while en route to, from, or within the designated fire fighting area(s).*

2. *VFR aircraft which fly 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 an ATC facility should squawk 1202 in lieu of 1200.*

REFERENCE–

FAA Order 7110.66, National Beacon Code Allocation Plan.

37.7.7.2 Adjust transponder to reply on Mode C, with altitude reporting capability activated if the aircraft is so equipped, unless deactivation is directed 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 and your transponder is so designed, turn off the altitude reporting switch and continue to transmit Mode C framing pulses. If this capability does not exist, turn off Mode C.

37.7.8 Radar Beacon Phraseology

37.7.8.1 Air traffic controllers, both civil and military, will use the following phraseology when referring to operation of the ATCRBS. Instructions by ATC refer only to Mode A/3 or Mode C operations and do not affect the operation of the transponder on other modes.

a) SQUAWK (number). Operate radar beacon transponder on designated code in Mode A/3.

b) IDENT. Engage the "IDENT" feature (military I/P) of the transponder.

c) SQUAWK (number) AND IDENT. Operate transponder on specified code in Mode A/3 and engage the "IDENT" (military I/P) feature.

d) SQUAWK STANDBY. Switch transponder to standby position.

e) SQUAWK LOW/NORMAL. Operate transponder on low or normal sensitivity as specified. Transponder is operated in "NORMAL" position unless ATC specified "LOW." ("ON" is used instead

of “NORMAL” as a master control label on some types of transponders.)

f) SQUAWK ALTITUDE. Activate Mode C with automatic altitude reporting.

g) STOP ALTITUDE SQUAWK. Turn off altitude reporting switch and continue transmitting Mode C framing pulses. If your equipment does not have this capability, turn off Mode C.

h) STOP SQUAWK (mode in use). Switch off specified mode. (Use for military aircraft when the controller is unaware if a military service requires the aircraft to continue operating on another mode.)

i) STOP SQUAWK. Switch off transponder.

j) SQUAWK MAYDAY. Operate transponder in the emergency position. (Mode A Code 7700 for civil transponder. Mode 3 Code 7700 and emergency feature for military transponder.)

k) SQUAWK VFR. Operate radar beacon transponder on code 1200 in the MODE A/3, or other appropriate VFR code.

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 Terminal Automated Radar Terminal System (ARTS) IIIA, Common ARTS (to include ARTS IIIE and ARTS IIE) (CARTS), Micro En Route Automated Radar Tracking System (MEARTS), and Standard Terminal Automation Replacement System (STARS) 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 ARTS IIIA, CARTS, MEARTS, and STARS 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.

37.10.3 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 when it is available, except that secondary radar 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 is available). Secondary radar 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 aircraft only." This means simply that only the aircraft which have transponders installed and in use will be depicted on ATC radar indicators when the primary 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 advisory in the same manner as if it were verified due to the accuracy of these readouts. 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.

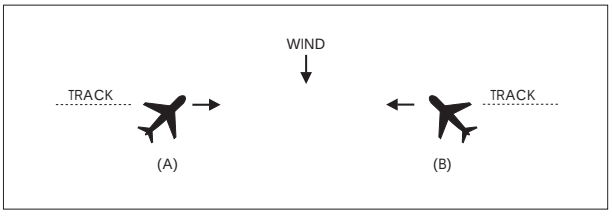
(b) Direction in which the target is proceeding.

(c) Type of aircraft and altitude if known.

EXAMPLE–
Traffic 8 miles south of the airport northeastbound, (type aircraft and altitude if known).

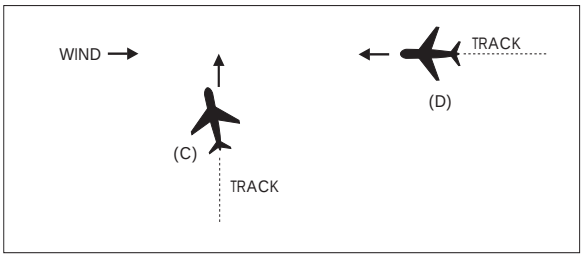
(d) The examples depicted in FIG ENR 1.1–28 and FIG ENR 1.1–29 point out the possible error in the position of this traffic when it is necessary for a pilot to apply drift correction to maintain this track. This error could also occur in the event a change in course is made at the time radar traffic 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 apply to RVSM operations in the airspace over the lower 48 states, Alaska, Atlantic and Gulf of Mexico High Offshore Airspace and airspace in the San Juan FIR where VHF or UHF voice direct controller–pilot communication (DCPC) is normally available. Policies, guidance and direction for RVSM operations in oceanic airspace where VHF or UHF voice DCPC is not available and the airspace of other countries are posted on the FAA "RVSM Documentation" Webpage described in Paragraph 38.3, Aircraft and Operator Approval Policy/Procedures, RVSM Monitoring and Databases for Aircraft and Operator Approval.

38.1.2 Mandate. At 0901 UTC on January 20, 2005, 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. On the same time and date, RVSM was also introduced into the adjoining airspace of Canada and Mexico to provide a seamless environment for aircraft traversing those borders. In addition, RVSM was implemented on the same date in the Caribbean and South American regions.

38.1.3 RVSM Authorization. In accordance with 14 CFR Section 91.180, with only limited excep-

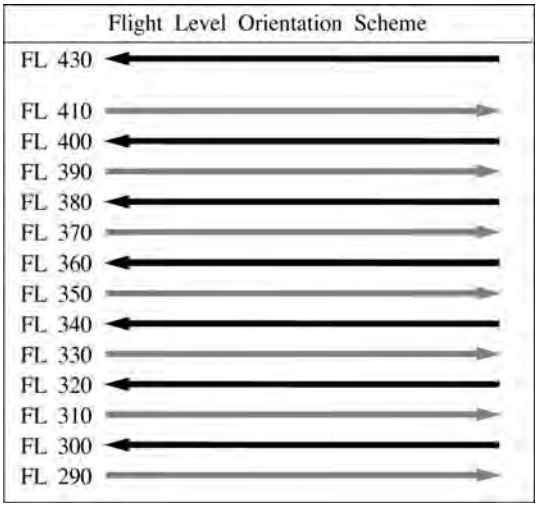
tions, prior to operating in RVSM airspace, operators and aircraft must have received RVSM authorization from the responsible civil aviation authority. (See paragraph 38.10, Procedures for Accommodation of Non–RVSM Aircraft.) If the operator or aircraft or both have not been authorized for RVSM operations, the aircraft will be referred to as a "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. 14 CFR Section 91.180 requires that, prior to conducting RVSM operations within the U.S., the operator obtain authorization from the FAA or from the responsible authority, as appropriate. In addition, it requires that the operator and the operator's aircraft comply with the standards of 14 CFR Part 91 Appendix G (Operations 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 aircraft monitoring program. The "Monitoring Requirements and Procedures" section of the RVSM Documentation Webpage contains policies and procedures for participation in the monitoring program. Ground–based and GPS–based monitoring systems are available for the Domestic RVSM program. 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).

38.4.6.3 To determine if the aircraft has "Advanced RNAV" capabilities and can be cleared to fly procedures for which that capability is required.

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 Mandate. If either the operator or the aircraft or both have not received RVSM authorization (non–RVSM aircraft), 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. Appendix B of AC 91–85, *Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace,* contains pilot practices and procedures for RVSM. Operators must incorporate Appendix B 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 Appendix B 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 Appendix B 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 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 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 or aircraft or both have not been authorized to conduct RVSM operations, 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 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 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 7110.10, Flight Services, and 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 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 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 (TAs) and resolution advisories (RAs). RAs provide recommended maneuvers in a vertical direction (climb or descend only) to avoid conflicting traffic. Airline aircraft, and larger commuter and business aircraft holding 31 passenger seats or more, use TCAS II equipment.

43.3 Each pilot who deviates from an ATC clearance in response to a TCAS II RA must notify ATC of that deviation as soon as practicable and expeditiously return to the current ATC clearance when the traffic conflict is resolved.

43.4 Deviations from rules, policies, or clearances should be kept to the minimum necessary to satisfy a TCAS II RA.

43.5 The serving IFR air traffic facility is not responsible for providing approved standard IFR separation to an aircraft after a TCAS II RA maneuver until one of the following conditions exists:

43.5.1 The aircraft has returned to its assigned altitude and course.

43.5.2 Alternate ATC instructions have been issued.

43.6 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.

43.7 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 of 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

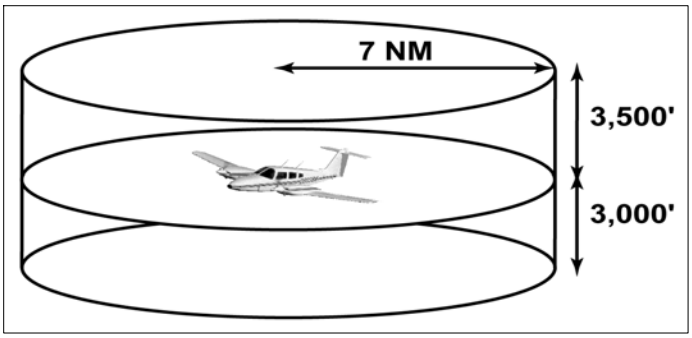


FIG ENR 1.1–32
Terminal Mode S Radar Sites

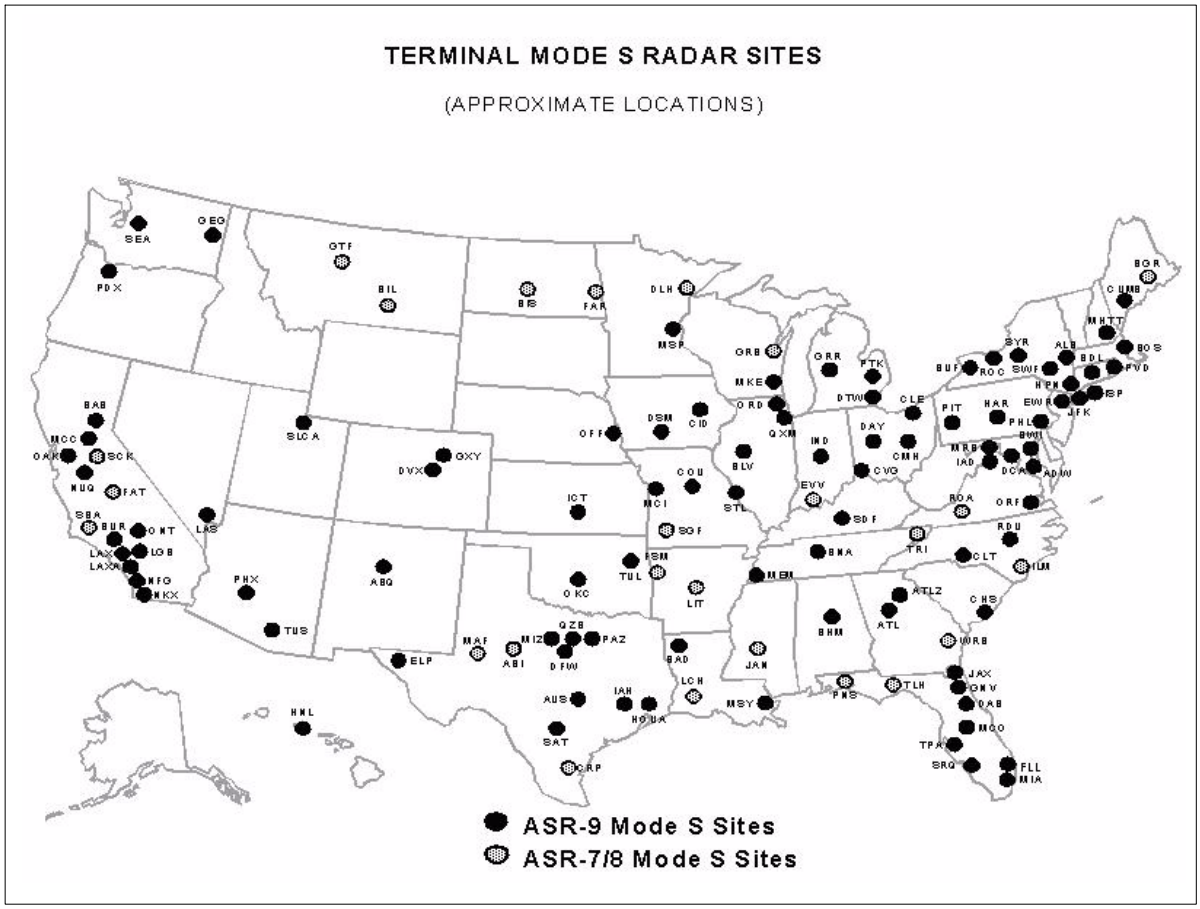
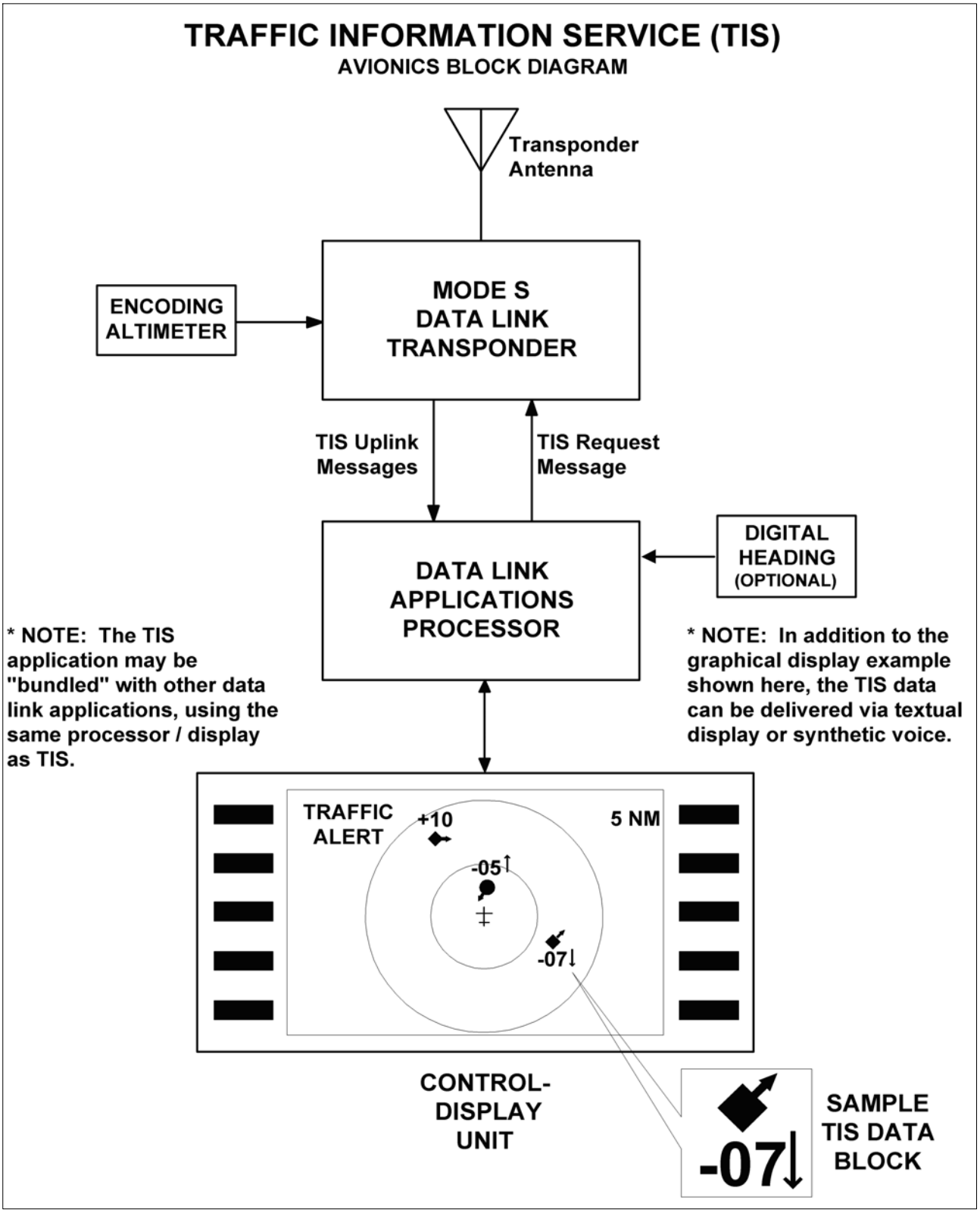


FIG ENR 1.1–33
Traffic Information Service (TIS)
Avionics Block Diagram



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 and 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 responsibility to "see and avoid" other aircraft (see paragraph 42.10, See and Avoid). TIS must not be 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. **No recommended avoidance maneuvers are provided for, 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, like 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 (e.g., 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 VOR or NDB. 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 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 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. On January 1, 2020, all aircraft operating within the airspace defined in 14 CFR part 91, § 91.225 will be 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 will require equipment which uses 1090 ES. 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 regulation will not require it, operators equipped with ADS–B In will realize additional benefits from ADS–B broadcast services: Traffic Information Service – Broadcast (TIS–B) and Flight Information Service – Broadcast (FIS–B).

FIG ENR 1.1–34
ADS–B, TIS–B, and FIS–B: Broadcast Services Architecture

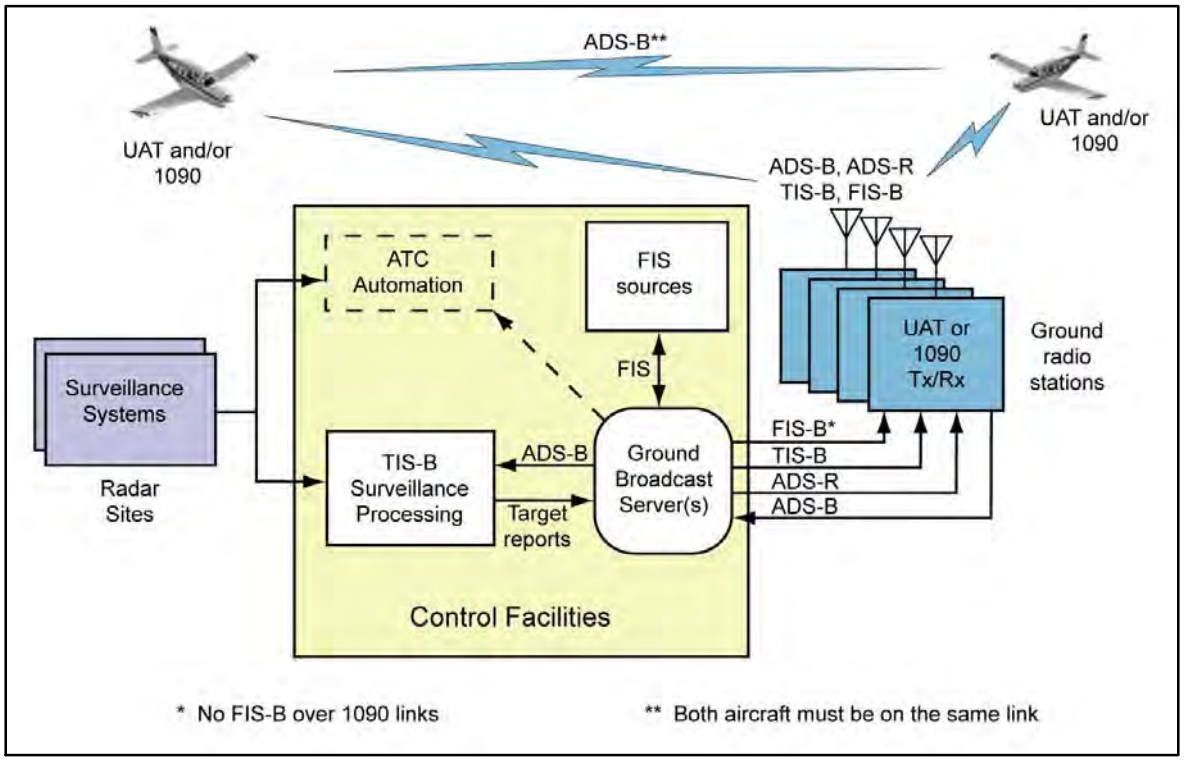


FIG ENR 1.1–35

En Route – ADS–B/ADS–R/TIS–B/FIS–B Service Ceilings/Floors

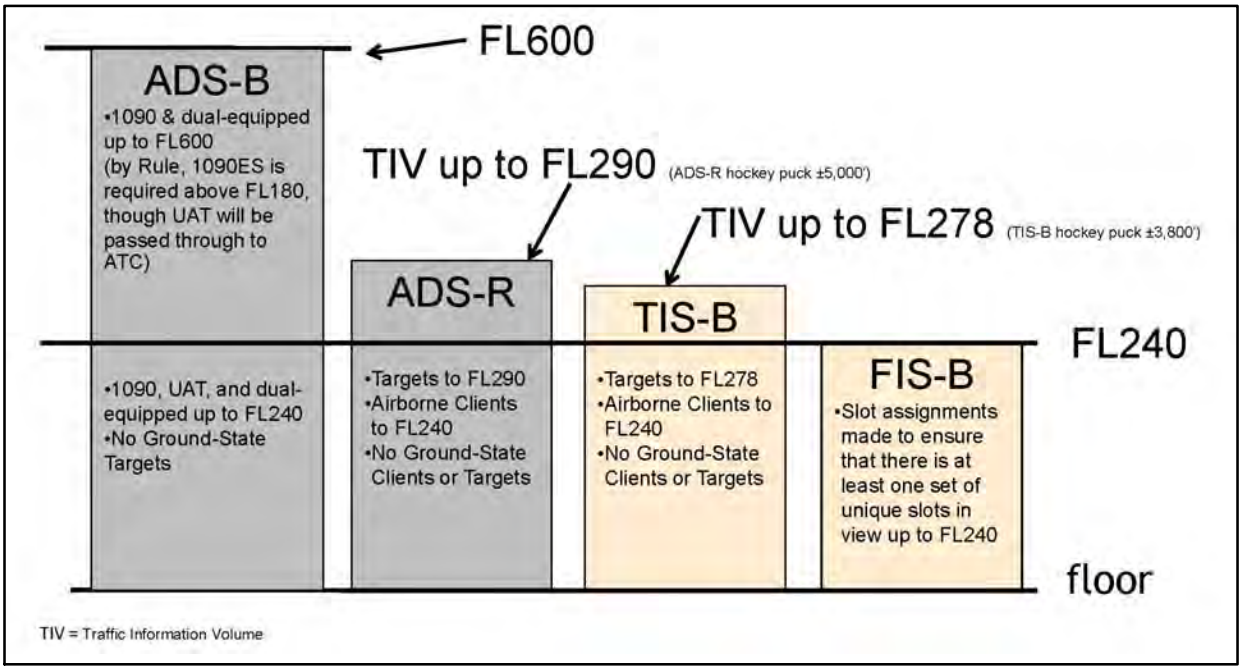
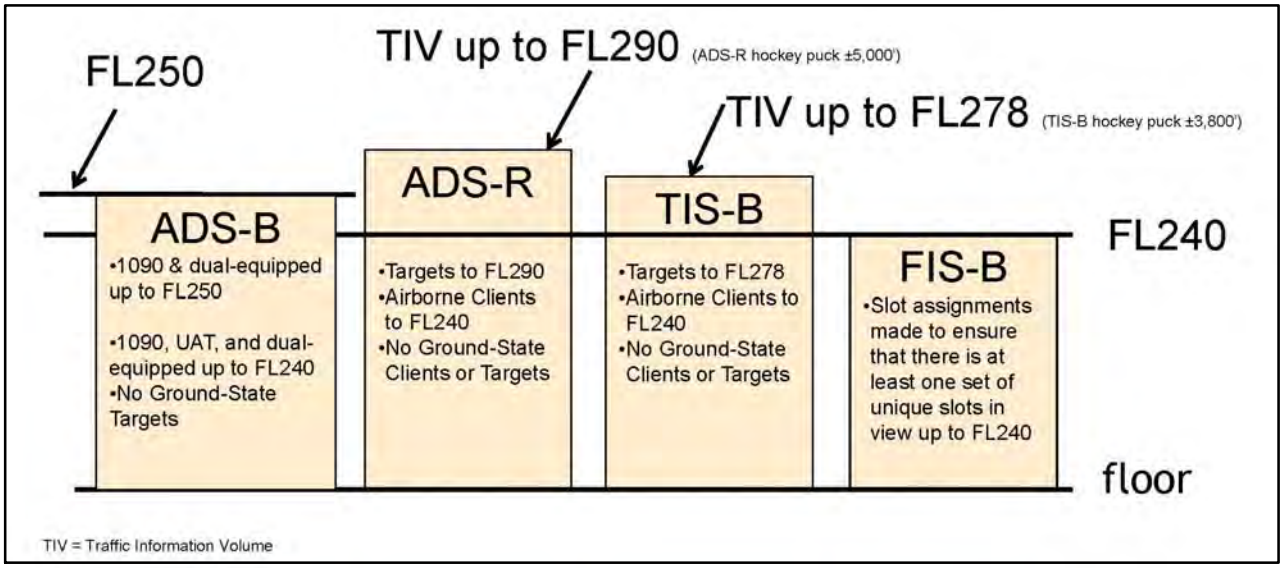


FIG ENR 1.1–36

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 An aircraft's Flight Identification (FLT ID), also known as registration number or airline flight number, is transmitted by the ADS-B Out avionics. The FLT ID is comprised of a maximum of seven alphanumeric characters and also corresponds to the aircraft identification annotated on the ATC flight plan. The FLT ID for airline and commuter aircraft is associated with the company name and flight number (for example, AAL3342). The FLT ID is typically entered by the flightcrew during preflight through either a Flight Management System (FMS) interface (Control Display Unit/CDU) or transponder control panel. The FLT ID for General Aviation (GA) aircraft is associated with the aircraft's registration number. The aircraft owner can preset the FLT ID to the aircraft's registration number (for example, N235RA), since it is a fixed value, or the pilot can enter it into the ADS-B Out system prior to flight.

ATC systems use transmitted FLT IDs to uniquely identify each aircraft within a given airspace and correlate them to a filed flight plan for the provision of surveillance and separation services. If the FLT ID is not entered correctly, ATC automation systems may not associate surveillance tracks for the aircraft to its filed flight plan. Therefore, Air Traffic services may be delayed or unavailable until this is corrected. Consequently, it is imperative that flightcrews and GA pilots ensure the FLT ID entry correctly matches the aircraft identification annotated in the filed ATC 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. The ICAO address is programmable 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 is equipped with ADS–B avionics on the UAT datalink have a feature that allows it 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. After January 1, 2020, and in the airspace identified in § 91.225, the UAT anonymous 24–bit address feature may only be used when the operator has not filed a flight plan and is not requesting ATC services. In the anonymity mode, the aircraft's beacon code must set to 1200, and depending on the manufacturer's implementation, the aircraft's call sign might not be transmitted. Operators should be aware that in UAT anonymous mode they will not be eligible to receive ATC separation and flight following services, and will likely 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 in–flight and airport surface use. ADS–B systems should be turned "on" –– and remain "on" –– whenever operating in the air and moving on the airport surface. Civil and military Mode A/C transponders and ADS–B systems should be adjusted to the "on" or normal operating position as soon as practical**, unless the

change to "standby" has been accomplished previously at the request of ATC.

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 a request for ATC services is predicated on ADS–B and such services are anticipated when either a VFR or IFR flight plan is filed, the aircraft's FLT ID as entered in Item 7 of the ICAO flight plan (Block 2 of FAA domestic flight plan) must be entered in the ADS–B avionics as described in paragraph 45.3.2.

45.4.2 Inflight:

When requesting ADS–B services while airborne, pilots should ensure that their ADS–B equipment is transmitting their aircraft's registration number or the approved FAA/ICAO company or organizational designator, prior to contacting ATC. Aircraft equipped with a "VFR" or anonymous feature, will not broadcast the appropriate aircraft identification information and should disable the anonymous feature before contacting ATC.

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.

45.5 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. ADS–B is intended only to assist in visual acquisition of other aircraft. No avoidance maneuvers are provided nor 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.

45.5.4 Use of ADS–B radar services is limited to the service volume of the GBT.

NOTE–
The coverage volume of GBTs are limited to line–of–sight.

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 1.5 Holding, Approach, and Departure Procedures

1. Holding Procedures

1.1 Whenever an aircraft is cleared to a fix other than the destination airport and delay is expected, it is the responsibility of ATC to issue complete holding instructions (unless the pattern is charted), an EFC time and best estimate of any additional en route/terminal delay.

NOTE–
Only those holding patterns depicted on U.S. government or commercially produced (meeting FAA requirements) low/high altitude en route, and area or STAR charts should be used.

1.2 If the holding pattern is charted and the controller doesn't issue complete holding instructions, the pilot is expected to hold as depicted on the appropriate chart. When the pattern is charted on the assigned procedure or route being flown, ATC may omit all holding instructions except the charted holding direction and the statement *AS PUBLISHED;* for example, *HOLD EAST AS PUBLISHED.* ATC must always issue complete holding instructions when pilots request them.

1.3 If no holding pattern is charted and holding instructions have not been issued, the pilot should ask ATC for holding instructions prior to reaching the fix. This procedure will eliminate the possibility of an aircraft entering a holding pattern other than that desired by ATC. If unable to obtain holding instructions prior to reaching the fix (due to frequency congestion, stuck microphone, etc.), then enter a standard pattern on the course on which the aircraft approached the fix and request further clearance as soon as possible. In this event, the altitude/flight level of the aircraft at the clearance limit will be protected so that separation will be provided as required.

1.4 When an aircraft is 3 minutes or less from a clearance limit and a clearance beyond the fix has not been received, the pilot is expected to start a speed reduction so that the aircraft will cross the fix, initially, at or below the maximum holding airspeed.

1.5 When no delay is expected, the controller should issue a clearance beyond the fix as soon as possible and, whenever possible, at least 5 minutes before the aircraft reaches the clearance limit.

1.6 Pilots should report to ATC the time and altitude/flight level at which the aircraft reaches the clearance limit and report leaving the clearance limit.

NOTE–
In the event of two-way communications failure, pilots are required to comply with 14 CFR Section 91.185.

1.7 Patterns at the most generally used holding fixes are depicted (charted) on U.S. Government or commercially produced (meeting FAA requirements) Low or High Altitude En Route, Area, Departure Procedure, and STAR Charts. Pilots are expected to hold in the pattern depicted unless specifically advised otherwise by ATC. (See ENR 1.1, Paragraph 27. ATC Clearances and Aircraft Separations.)

NOTE–
Holding patterns that protect for a maximum holding airspeed other than the standard may be depicted by an icon, unless otherwise depicted. The icon is a standard holding pattern symbol (racetrack) with the airspeed restriction shown in the center. In other cases, the airspeed restriction will be depicted next to the standard holding pattern symbol.

1.8 An ATC clearance requiring an aircraft to hold at a fix where the pattern is not charted will include the following information:

1.8.1 Direction of holding from the fix in terms of the eight cardinal compass points; i.e., N, NE, E, SE, etc.

1.8.2 Holding fix. (The fix may be omitted if it is included at the beginning of the transmission as the clearance limit.)

1.8.3 Radial, course, bearing, airway, or route on which the aircraft is to hold.

1.8.4 Leg length in miles if DME or RNAV is to be used. (Leg length will be specified in minutes on pilot request or if the controller considers it necessary.)

1.8.5 Direction of turn if left turns are to be made, the pilot requests, or the controller considers it necessary.

1.8.6 Time to expect further clearance, and any pertinent additional delay information.

1.9 Typical Holding Pattern Example

1.9.1 When holding at a VOR station, pilots should begin the turn to the outbound leg at the time of the

first complete reversal of the "to−from" indicator. See GEN 3.4, Paragraph 12, Two−Way Radio Communications Failure, for holding at the approach fix when radio failure occurs.

1.9.2 Holding Pattern Airspace Protection

Holding pattern airspace protection is based on the following procedures.

NOTE−
Holding pattern airspace protection design criteria is contained in FAA Handbook 7130.3, Holding Pattern Criteria.

1.9.2.1 Airspeeds

a) All aircraft may hold at the following altitudes and maximum holding airspeeds:

TBL ENR 1.5−1

Altitude (MSL)	Airspeed (KIAS)
MHA − 6,000'	200
6,001' − 14,000'	230
14,001' and above	265

NOTE−
These are the maximum indicated air speeds applicable to all holding.

b) The following are exceptions to the maximum holding airspeeds:

1) Holding patterns from 6,001' to 14,000' may be restricted to a maximum airspeed of 210 KIAS. This nonstandard pattern will be depicted by an icon.

2) Holding patterns may be restricted to a maximum speed. The speed restriction is depicted in parenthesis inside the holding pattern on the chart: for example, (175). The aircraft should be at or below the maximum speed prior to initially crossing the holding fix to avoid exiting the protected airspace. Pilots unable to comply with the maximum airspeed restriction should notify ATC.

3) Holding patterns at USAF airfields only − 310 KIAS maximum, unless otherwise depicted.

4) Holding patterns at Navy fields only − 230 KIAS maximum, unless otherwise depicted.

5) All helicopter/power lift aircraft holding on a "COPTER" instrument procedure is predicated on a minimum airspeed of 90 KIAS unless charted otherwise.

6) When a climb−in hold is specified by a published procedure (for example, "Climb−in holding pattern to depart XYZ VORTAC at or above 10,000." or "All aircraft climb−in TRUCK holding pattern to cross TRUCK Int at or above 11,500 before proceeding on course."), additional obstacle protection area has been provided to allow for greater airspeeds in the climb for those aircraft requiring them. A maximum airspeed of 310 KIAS is permitted in Climb−in−holding, unless a maximum holding airspeed is published, in which case that maximum airspeed is applicable. The airspeed limitations in 14 CFR Section 91.117, Aircraft Speed, still apply.

c) The following phraseology may be used by an ATC specialist to advise a pilot of the maximum holding airspeed for a holding pattern airspace area.

PHRASEOLOGY−
(AIRCRAFT IDENTIFICATION) (holding instructions, when needed) MAXIMUM HOLDING AIRSPEED IS (speed in knots).

FIG ENR 1.5−1
Holding Pattern Descriptive Terms

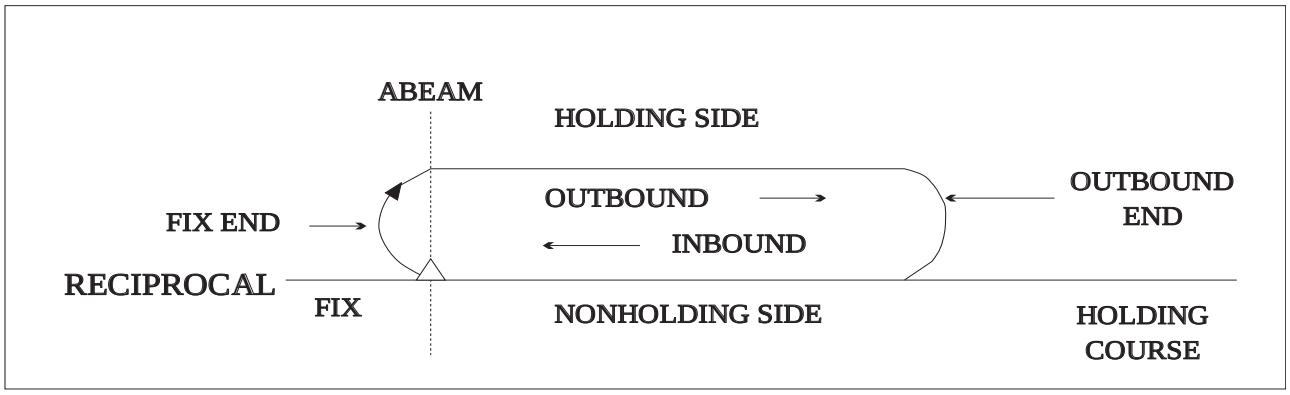


FIG ENR 1.5–2
Holding Patterns

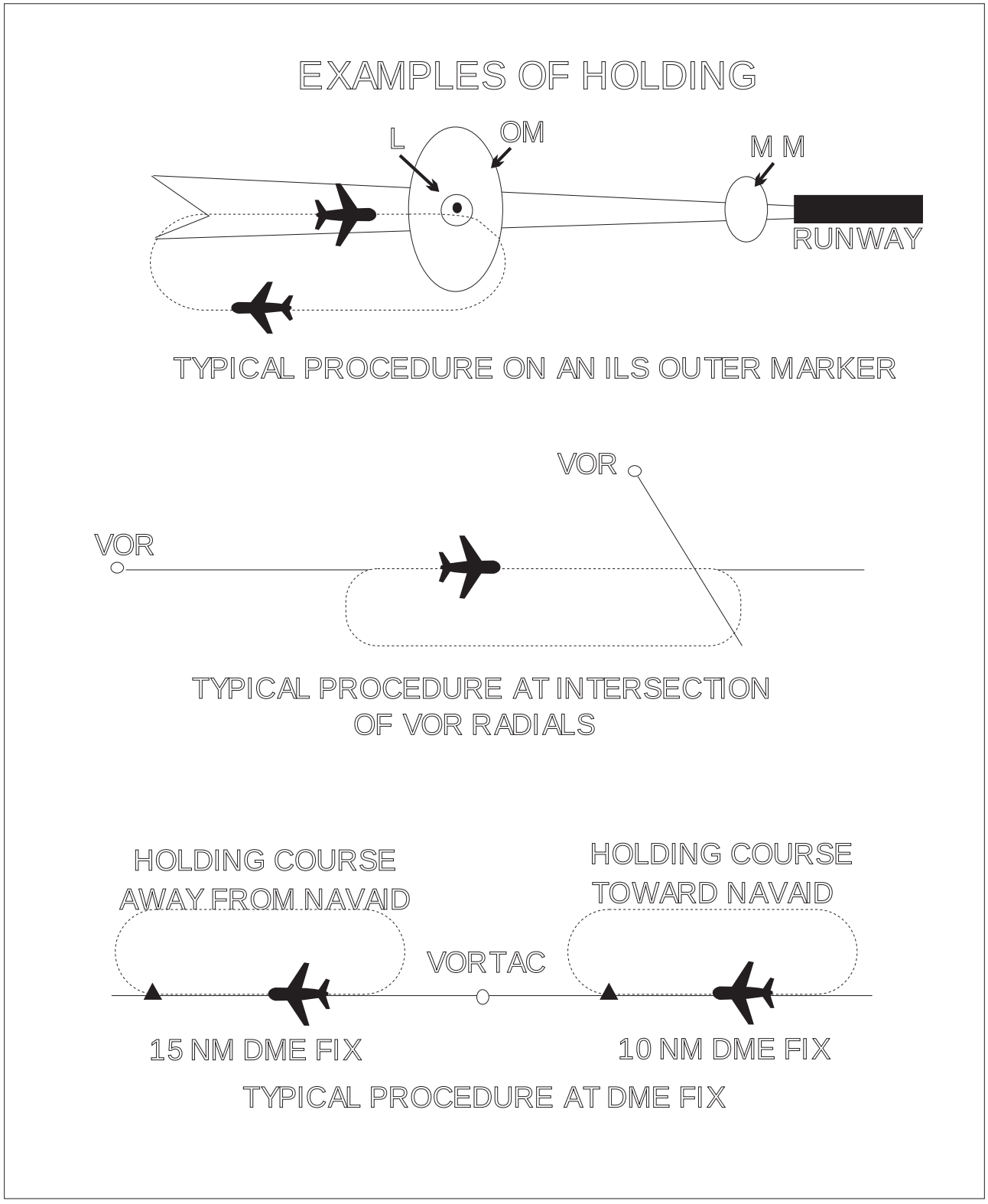
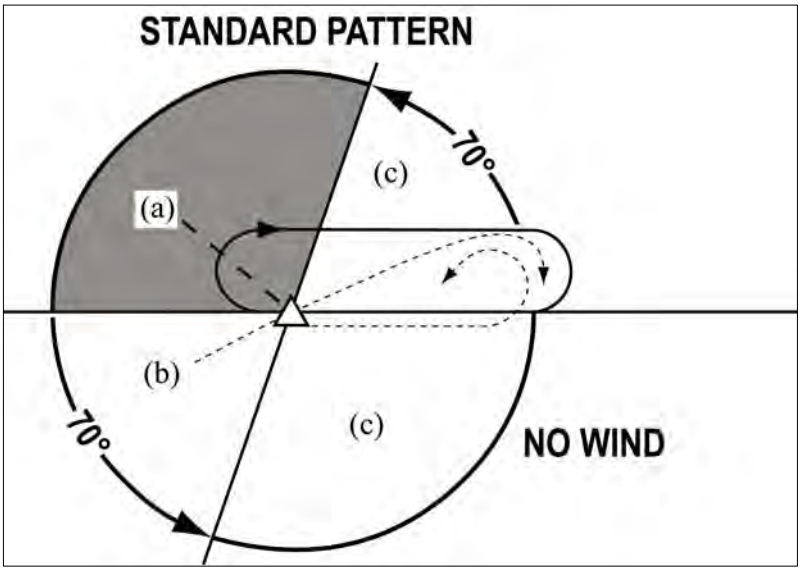


FIG ENR 1.5−3
Holding Pattern Entry Procedures



1.9.2.2 Entry Procedures. Holding protected airspace is designed based in part on pilot compliance with the three recommended holding pattern entry procedures discussed below. Deviations from these recommendations, coupled with excessive airspeed crossing the holding fix, may in some cases result in the aircraft exceeding holding protected airspace.(See FIG ENR 1.5−3.)

a) Parallel Procedure. When approaching the holding fix from anywhere in sector (a), the parallel entry procedure would be to turn to a heading to parallel the holding course outbound on the nonholding side for one minute, turn in the direction of the holding pattern through more than 180 degrees, and return to the holding fix or intercept the holding course inbound.

b) Teardrop Procedure. When approaching the holding fix from anywhere in sector (b), the teardrop entry procedure would be to fly to the fix, turn outbound to a heading for a 30 degree teardrop entry within the pattern (on the holding side) for a period of one minute, then turn in the direction of the holding pattern to intercept the inbound holding course.

c) Direct Entry Procedure. When approaching the holding fix from anywhere in sector (c), the direct entry procedure would be to fly directly to the fix and turn to follow the holding pattern.

d) While other entry procedures may enable the aircraft to enter the holding pattern and remain within protected airspace, the parallel, teardrop and direct entries are the procedures for entry and holding recommended by the FAA, and were derived as part of the development of the size and shape of the obstacle protection areas for holding.

e) Nonstandard Holding Pattern. Fix end and outbound end turns are made to the left. Entry procedures to a nonstandard pattern are oriented in relation to the 70 degree line on the holding side just as in the standard pattern.

1.9.2.3 Timing

a) Inbound Leg

1) At or below 14,000 feet MSL: 1 minute.

2) Above 14,000 feet MSL: $1^1/_2$ minutes.

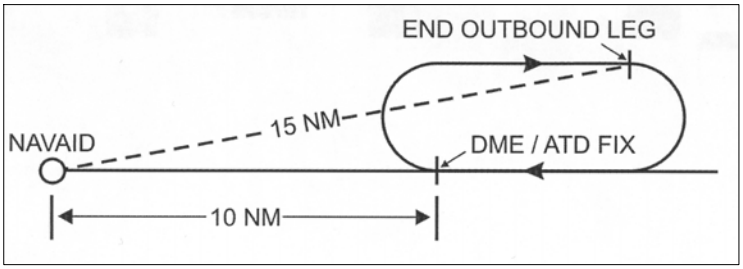
NOTE−
The initial outbound leg should be flown for 1 minute or $1^1/_2$ minutes (appropriate to altitude). Timing for subsequent outbound legs should be adjusted, as necessary, to achieve proper inbound leg time. Pilots may use any navigational means available; i.e. DME, RNAV, etc., to insure the appropriate inbound leg times.

b) Outbound Leg timing begins *over/abeam* the fix, whichever occurs later. If the abeam position cannot be determined, start timing when turn to outbound is completed.

1.9.2.4 Distance Measuring Equipment (DME)/ GPS Along−Track Distance (ATD). DME/GPS holding is subject to the same entry and holding procedures except that distances (nautical miles) are used in lieu of time values. The outbound course of the DME/GPS holding pattern is called the outbound

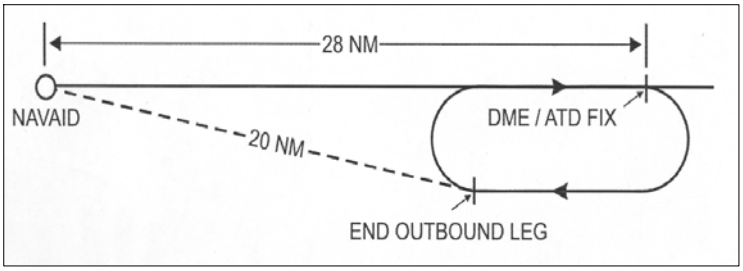
leg of the pattern. The controller or the instrument approach procedure chart will specify the length of the outbound leg. The end of the outbound leg is determined by the DME or ATD readout. The holding fix on conventional procedures, or controller defined holding based on a conventional navigation aid with DME, is a specified course or radial and distances are from the DME station for both the inbound and outbound ends of the holding pattern. When flying published GPS overlay or stand alone procedures with distance specified, the holding fix will be a waypoint in the database and the end of the outbound leg will be determined by the ATD. Some GPS overlay and early stand alone procedures may have timing specified. (See FIG ENR 1.5−4, FIG ENR 1.5−5 and FIG ENR 1.5−6.) See ENR 4.1, Paragraph 16. Global Positioning System (GPS), for requirements and restriction on using GPS for IFR operations.

FIG ENR 1.5−4
Inbound Toward NAVAID



NOTE−
When the inbound course is toward the NAVAID, the fix distance is 10 NM, and the leg length is 5 NM, then the end of the outbound leg will be reached when the DME reads 15 NM.

FIG ENR 1.5−5
Inbound Leg Away from NAVAID

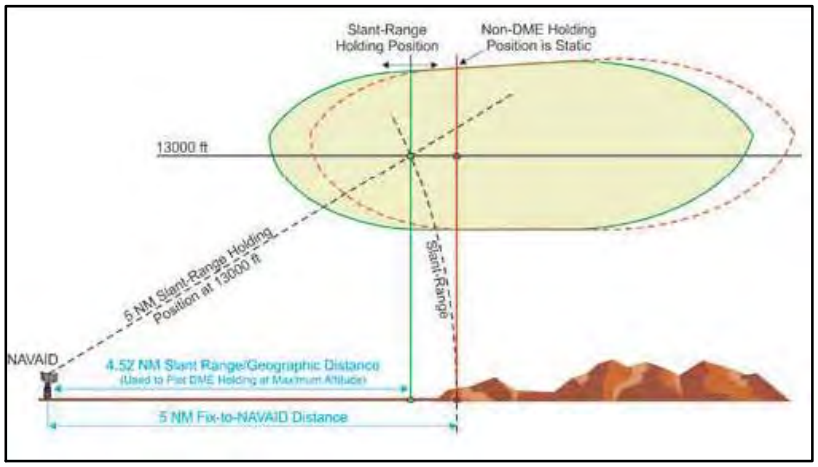


NOTE−
When the inbound course is away from the NAVAID and the fix distance is 28 NM, and the leg length is 8 NM, then the end of the outbound leg will be reached when the DME reads 20 NM.

1.9.2.5 Use of RNAV Distance in lieu of DME Distance. Substitution of RNAV computed distance to or from a NAVAID in place of DME distance is permitted when holding. However, the actual holding location and pattern flown will be further from the NAVAID than designed due to the lack of slant range in the position solution (see FIG ENR 1.5−6). This may result in a slight difference between RNAV distance readout in reference to the NAVAID and the DME readout, especially at higher altitudes. When used solely for DME substitution, the difference between RNAV distance to/from a fix and DME slant range distance can be considered negligible and no pilot action is required.

REFERENCE−
AIP ENR 1.17, Paragraph 3. Use of Suitable Area Navigation (RNAV) Systems on Conventional Procedures and Routes

FIG ENR 1.5−6
Difference Between DME Distance From NAVAID & RNAV Computed Distance From NAVAID



1.9.2.6 Use of RNAV Guidance and Holding. RNAV systems, including multi−sensor Flight Management Systems (FMS) and stand−alone GPS receivers, may be used to furnish lateral guidance when executing a hold. The manner in which holding is implemented in an RNAV system varies widely between aircraft and RNAV system manufacturers. Holding pattern data may be extracted from the RNAV database for published holds or may be manually entered for ad−hoc ATC−assigned holds. Pilots are expected to be familiar with the capabilities and limitations of the specific RNAV system used for holding.

a) All holding, including holding defined on an RNAV or RNP procedure, is based on the conventional NAVAID holding design criteria, including the holding protected airspace construction. There are differences between the holding entry and flight track assumed in conventional holding pattern design and the entry and track that may be flown when RNAV guidance is used to execute holding. Individually, these differences may not affect the ability of the aircraft to remain within holding pattern protected airspace. However, cumulatively, they can result in deviations sufficient to result in excursions up to limits of the holding pattern protected airspace, and in some circumstances beyond protected airspace. The following difference and considerations apply when an RNAV system furnishes the lateral guidance used to fly a holding pattern:

1) Many systems use ground track angle instead of heading to select the entry method. While the holding pattern design allows a 5 degree tolerance, this may result in an unexpected entry when the winds induce a large drift angle.

2) The holding protected airspace is based on the assumption that the aircraft will fly−over the holding fix upon initial entry. RNAV systems may execute a "fly−by" turn when approaching the holding fix prior to entry. A "fly−by" turn during a direct entry from the holding pattern side of holding course may result in excursions beyond protected airspace, especially as the intercept angle and ground speed increase.

3) During holding, RNAV systems furnish lateral steering guidance using either a constant bank or constant radius to achieve the desired inbound and outbound turns. An aircraft's flight guidance system

may use reduced bank angles for all turns including turns in holding, especially at higher altitudes, that may result in exceeding holding protected airspace. Use of a shallower bank angle will expand both the width and length of the aircraft track, especially as wind speed increases. If the flight guidance system's bank angle limit feature is pilot−selectable, a minimum 25 degree bank angle should be selected regardless of altitude unless aircraft operating limitations specify otherwise and the pilot advises ATC.

4) Where a holding distance is published, the turn from the outbound leg begins at the published distance from the holding fix, thus establishing the design turn point required to remain within protected airspace. RNAV systems apply a database coded or pilot−entered leg distance as a maximum length of the *inbound* leg to the holding fix. The RNAV system then calculates a turn point from the outbound leg required to achieve this inbound leg length. This often results in an RNAV−calculated turn point on the outbound leg beyond the design turn point. (See FIG ENR 1.5−7). With a strong headwind against the outbound leg, RNAV systems may fly up to and possibly beyond the limits of protected airspace before turning inbound. (See FIG ENR 1.5−8.) This is especially true at higher altitudes where wind speeds are greater and ground speed results in a wider holding pattern.

FIG ENR 1.5−7

RNAV Lateral Guidance and Holding – No Wind

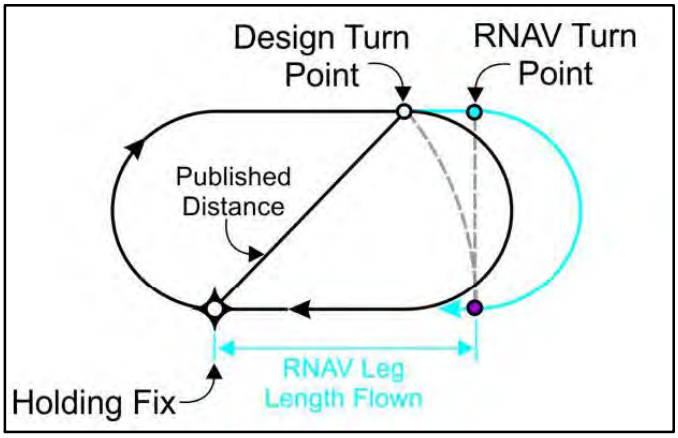
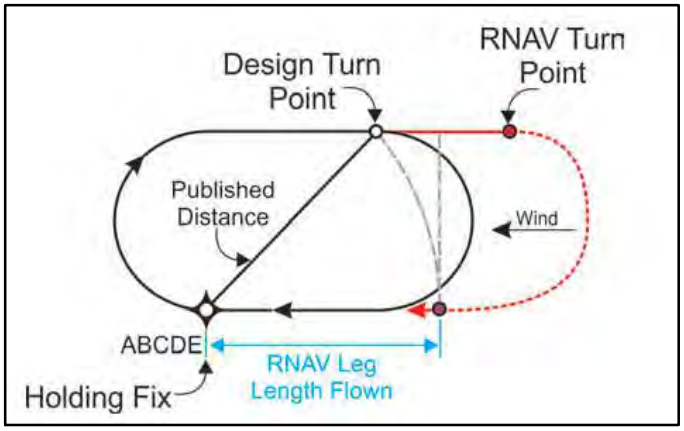


FIG ENR 1.5−8

RNAV Lateral Guidance and Holding – Effect of Wind



5) Some RNAV systems compute the holding pattern based on the aircraft's altitude and speed at a point prior to entering the hold. If the indicated airspeed is not reduced to comply with the maximum holding speed before this point, the computed pattern may exceed the protected airspace. Loading or executing a holding pattern may result in the speed and time limits applicable to the aircraft's current altitude being used to define the holding pattern for RNAV lateral guidance. This may result in an incorrect hold being flown by the RNAV system. For example, entering or executing the holding pattern above 14,000 feet when intending to hold below 14,000 feet may result in applying 1 ½ minute timing below 14,000 feet.

NOTE−
Some systems permit the pilot to modify leg time of holding patterns defined in the navigation database; for example, a hold−in−lieu of procedure turn. In most RNAV systems, the holding pattern time remains at the pilot−modified time and will not revert back to the coded time if the aircraft descends to a lower altitude where a shorter time interval applies.

b) RNAV systems are not able to alert the pilot for excursions outside of holding pattern protected airspace since the dimensions of this airspace are not included in the navigation database. In addition, the dimensions of holding pattern protected airspace vary with altitude for a charted holding pattern, even when the hold is used for the same application. Close adherence to the pilot actions described in this section reduce the likelihood of exceeding the boundary of holding pattern protected airspace when using RNAV lateral guidance to conduct holding.

c) Holding patterns may be stored in the RNAV system's navigation database and include coding with parameters defining how the RNAV system will conduct the hold. For example, coding will determine whether holding is conducted to manual termination (HM), continued holding until the aircraft reaches a specified altitude (HA), or holding is conducted until the holding fix is crossed the first time after entry (HF). Some systems do not store all holding patterns, and may only store patterns associated with missed approaches and hold−in−lieu of procedure turn (HILPT). Some store all holding as standard patterns and require pilot action to conduct non−standard holding (left turns).

1) Pilots are cautioned that multiple holding patterns may be established at the same fix. These holding patterns may differ in respect to turn directions and leg lengths depending on their application as an en route holding pattern, a holding pattern charted on a SID or STAR, or when used on an instrument approach procedure. Many RNAV systems limit the database coding at a particular fix to a single holding pattern definition. Pilots extracting the holding pattern from the navigation database are responsible for confirming that the holding pattern conforms to the assigned charted holding pattern in terms of turn direction, speed limit, timing, and distance.

2) If ATC assigns holding that is not charted, then the pilot is responsible for programming the RNAV system with the assigned holding course, turn direction, speed limit, leg length, or leg time.

3) Changes made after the initial execution may not apply until the next circuit of the holding pattern if the aircraft is in close proximity to the holding fix.

1.9.2.7 Pilot Action. The following actions are recommended to ensure that the aircraft remains within holding protected airspace when holding is performed using either conventional NAVAID guidance or when using RNAV lateral guidance.

a) Speed. When ATC furnishes advance notice of holding, start speed reduction to be at or below the maximum holding speed allowed at least 3 minutes prior to crossing the holding fix. If advance notice by ATC is not provided, begin speed reduction as expeditiously as practical. It is acceptable to allow RNAV systems to determine an appropriate deceleration point prior to the holding fix and to manage the speed reduction to the RNAV computed holding speed. If the pilot does not permit the RNAV system to manage the deceleration from the computed point, the actual hold pattern size at holding entry may differ from the holding pattern size computed by the RNAV system.

1) Aircraft are expected to enter holding at or below the maximum holding speed established in paragraph 1.9.2.1a or the charted maximum holding speed.

(a) All fixed wing aircraft conducting holding should fly at speeds at or above 90 KIAS to minimize the influence of wind drift.

(b) When RNAV lateral guidance is used in fixed wing airplanes, it is desirable to enter and conduct holding at the lowest practical airspeed

consistent with the airplane's recommended holding speed to address the cumulative errors associated with RNAV holding and increase the probability of remaining within protected airspace. It is acceptable to allow RNAV systems to determine a recommended holding speed *that is at or below the maximum holding speed.*

(c) Helicopter holding is based on a minimum airspeed of 90 KIAS.

2) Advise ATC immediately if unable to comply with the maximum holding airspeed and request an alternate clearance.

NOTE−
Speeds above the maximum or published holding speed may be necessary due to turbulence, icing, etc. Exceeding maximum holding airspeed may result in aircraft excursions beyond the holding pattern protected airspace. In a non−radar environment, the pilot should advise ATC that they cannot accept the assigned hold.

3) Ensure the RNAV system applies the proper time and speed restrictions to a holding pattern. This is especially critical when climbing or descending to a holding pattern altitude where time and speed restrictions are different than at the present aircraft altitude.

b) Bank Angle. For holding not involving the use of RNAV lateral guidance, make all turns during entry and while holding at:

1) 3 degrees per second, or

2) 30 degree bank angle, or

3) 25 degree bank angle, provided a flight director system is used.

NOTE−
Use whichever requires the least bank angle.

4) When using RNAV lateral guidance to conduct holding, it is acceptable to permit the RNAV system to calculate the appropriate bank angle for the outbound and inbound turns. Do not use flight guidance system bank angle limiting functions of less than 25 degrees unless the feature is not pilot−selectable, required by the aircraft limitations, or its use is necessary to comply with the aircraft's minimum maneuvering speed margins. If the bank angle must be limited to less than 25 degrees, advise ATC that additional area for holding is required.

c) Compensate for wind effect primarily by drift correction on the inbound and outbound legs. When outbound, triple the inbound drift correction to avoid major turning adjustments; for example, if correcting left by 8 degrees when inbound, correct right by 24 degrees when outbound.

d) Determine entry turn from aircraft heading upon arrival at the holding fix; +/− 5 degrees in heading is considered to be within allowable good operating limits for determining entry. When using RNAV lateral guidance for holding, it is permissible to allow the system to compute the holding entry.

e) RNAV lateral guidance may execute a fly−by turn beginning at an excessively large distance from the holding fix. Reducing speed to the maximum holding speed at least 3 minutes prior to reaching the holding fix and using the recommended 25 degree bank angle will reduce potential excursions beyond protected airspace.

f) When RNAV guidance is used for holding, pilots should be prepared to intervene if the turn from outbound leg to the inbound leg does not begin within a reasonable distance of the charted leg length, especially when holding is used as a course reversal HILPT. Pilot intervention is not required when holding in an ATC−assigned holding pattern that is not charted. However, notify ATC when the outbound leg length becomes excessive when RNAV guidance is used for holding.

g) When holding at a fix and instructions are received specifying the time of departure from the fix, the pilot should adjust the aircraft's flight path within the limits of the established holding pattern in order to leave the fix at the exact time specified. After departing the holding fix, normal speed is to be resumed with respect to other governing speed requirements such as terminal area speed limits, specific ATC requests, etc. Where the fix is associated with an instrument approach, and timed approaches are in effect, a procedure turn must not be executed unless the pilot advises ATC, since aircraft holding are expected to proceed inbound on final approach directly from the holding pattern when approach clearance is received.

1.10 Radar Surveillance of Holding Pattern Airspace Areas

1.10.1 Whenever aircraft are holding, ATC will usually provide radar surveillance of the holding airspace on the controller's radar display.

1.10.2 The controller will attempt to detect any holding aircraft that stray outside the holding airspace

and will assist any detected aircraft to return to the assigned airspace.

1.10.3 Many factors could prevent ATC from providing this additional service, such as workload, number of targets, precipitation, ground clutter, and radar system capability. These circumstances may make it unfeasible to maintain radar identification of aircraft or to detect aircraft straying from the holding pattern. The provision of this service depends entirely upon whether the controller is in a position to provide it and does not relieve a pilot of the responsibility to adhere to an accepted ATC clearance.

1.10.4 ATC is responsible for traffic and obstruction separation when they have assigned holding that is not associated with a published (charted) holding pattern. Altitudes assigned will be at or above the minimum vectoring or minimum IFR altitude.

2. Approach Procedures

2.1 Approach Control

2.1.1 Approach control is responsible for controlling all instrument flight operating within its area of responsibility. Approach control may serve one or more airfields, and control is exercised primarily by direct pilot/controller communications. Prior to arriving at the destination radio facility, instructions will be received from ARTCC to contact approach control on a specified frequency.

2.2 Radar Approach Control

2.2.1 Where radar is approved for approach control service, it is used not only for radar approaches (Airport Surveillance Radar (ASR) and Precision Approach Radar (PAR)) but is also used to provide vectors in conjunction with published nonradar approaches based on radio NAVAIDs (ILS, VOR, NDB, TACAN). Radar vectors can provide course guidance and expedite traffic to the final approach course of any established instrument approach procedure or to the traffic pattern for a visual approach. Approach control facilities that provide this radar service will operate in the following manner:

2.2.1.1 Arriving aircraft are either cleared to an outer fix most appropriate to the route being flown with vertical separation and, if required, given holding information or, when radar handoffs are effected between the ARTCC and approach control, or between two approach control facilities, aircraft are cleared to the airport or to a fix so located that the handoff will be completed prior to the time the aircraft reaches the fix. When radar handoffs are utilized, successive arriving flights may be handed off to approach control with radar separation in lieu of vertical separation.

2.2.1.2 After release to approach control, aircraft are vectored to the appropriate final approach course (ILS, RNAV, GLS, VOR, ADF, etc.). Radar vectors and altitude or flight levels will be issued as required for spacing and separating aircraft. *Therefore, pilots must not deviate from the headings issued by approach control.* Aircraft will normally be informed when it is necessary to vector across the final approach course for spacing or other reasons. If approach course crossing is imminent and the pilot has not been informed that the aircraft will be vectored across the final approach course, the pilot should query the controller.

2.2.1.3 The pilot is not expected to turn inbound on the final approach course unless an approach clearance has been issued. This clearance will normally be issued with the final vector for interception of the final approach course, and the vector will be such as to enable the pilot to establish the aircraft on the final approach course prior to reaching the final approach fix.

2.2.1.4 In the case of aircraft already inbound on the final approach course, approach clearance will be issued prior to the aircraft reaching the final approach fix. When established inbound on the final approach course, radar separation will be maintained, and the pilot will be expected to complete the approach utilizing the approach aid designated in the clearance (ILS, RNAV, GLS, VOR, radio beacons, etc.) as the primary means of navigation. Therefore, once established on the final approach course, pilots must not deviate from it unless a clearance to do so is received from ATC.

2.2.1.5 After passing the final approach fix on final approach, aircraft are expected to continue inbound on the final approach course and complete the approach or effect the missed approach procedure published for that airport.

2.2.2 ARTCCs are approved for and may provide approach control services to specific airports. The radar systems used by these centers do not provide the same precision as an ASR/PAR used by approach

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 STAR procedures must maintain last assigned altitude until receiving authorization to descend so as to comply with all published/issued restrictions. This authorization may contain the phraseology "DESCEND VIA." If vectored or cleared to deviate off of 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.

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 RNAV STAR.

3.4.1 All public RNAV STARs are RNAV1. These procedures require system performance currently met by GPS or DME/DME/IRU RNAV systems that satisfy the criteria discussed in AC 90–100A, U.S. Terminal and En Route Area Navigation (RNAV) Operations. RNAV1 procedures must maintain a total system error of not more than 1 NM for 95% of the total flight time.

3.4.2 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.

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/AWSS/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/AWSS/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.

6.5.3 Once reaching the final approach fix via the published segments, the pilot may continue on approach to a landing.

6.5.4 If proceeding to an IAF with a published course reversal (procedure turn or hold-in-lieu of PT pattern), except when cleared for a straight in approach by ATC, the pilot must execute the procedure turn/hold-in-lieu of PT, and complete the approach.

6.5.5 If cleared to an IAF/IF via a NoPT route, or no procedure turn/hold-in-lieu of PT is published, continue with the published approach.

6.5.6 In addition to the above, RNAV aircraft may be issued a clearance direct to the IAF/IF at intercept angles not greater than 90 degrees for both conventional and RNAV instrument approaches.

Controllers may issue a heading or a course direct to a fix between the IF and FAF at intercept angles not greater than 30 degrees for both conventional and RNAV instrument approaches. In all cases, controllers will assign altitudes that ensure obstacle clearance and will permit a normal descent to the FAF. When clearing aircraft direct to the IF, ATC will radar monitor the aircraft until the IF and will advise the pilot to expect clearance direct to the IF at least 5 miles from the fix. ATC must issue a straight-in approach clearance when clearing an aircraft direct to an IAF/IF with a procedure turn or hold−in−lieu of a procedure turn, and ATC does not want the aircraft to execute the course reversal.

NOTE−
Refer to 14 CFR 91.175 (i).

6.6 RNAV aircraft may be issued a clearance direct to the FAF that is also charted as an IAF, in which case the pilot is expected to execute the depicted procedure turn or hold-in-lieu of procedure turn. ATC will not issue a straight-in approach clearance. If the pilot desires a straight-in approach, they must request vectors to the final approach course outside of the FAF or fly a published "NoPT" route. When visual approaches are in use, ATC may clear an aircraft direct to the FAF.

NOTE−
1. *In anticipation of a clearance by ATC to any fix published on an instrument approach procedure, pilots of RNAV aircraft are advised to select an appropriate IAF or feeder fix when loading an instrument approach procedure into the RNAV system.*

2. *Selection of "Vectors-to-Final" or "Vectors" option for an instrument approach may prevent approach fixes located outside of the FAF from being loaded into an RNAV system. Therefore, the selection of these options is discouraged due to increased workload for pilots to reprogram the navigation system.*

6.7 An RF leg is defined as a constant radius circular path around a defined turn center that starts and terminates at a fix. An RF leg may be published as part of a procedure. Since not all aircraft have the capability to fly these leg types, pilots are responsible for knowing if they can conduct an RNAV approach with an RF leg. Requirements for RF legs will be indicated on the approach chart in the notes section or at the applicable initial approach fix. Controllers will clear RNAV-equipped aircraft for instrument approach procedures containing RF legs:

6.7.1 Via published transitions, or

6.7.2 In accordance with paragraph 6.5.6 above, and

6.7.3 ATC will not clear aircraft direct to any waypoint beginning or within an RF leg, and will not assign fix/waypoint crossing speeds in excess of charted speed restrictions.

EXAMPLE−
1. *Controllers will not clear aircraft direct to THIRD because that waypoint begins the RF leg, and aircraft cannot be vectored or cleared to TURNN or vectored to intercept the approach segment at any point between THIRD and FORTH because this is the RF leg. (See FIG ENR 1.5−9.)*

6.8 When necessary to cancel a previously issued approach clearance, the controller will advise the pilot "Cancel Approach Clearance" followed by any additional instructions when applicable.

7. Landing Priority

7.1 A clearance for a specific type of approach (ILS, RNAV, GLS, ADF, VOR, or visual approach) to an aircraft operating on an IFR flight plan does not mean that landing priority will be given over other traffic. Traffic control towers handle all aircraft, regardless of the type of flight plan, on a "first−come, first−served" basis. Therefore, because of local traffic or runway in use, it may be necessary for the controller, in the interest of safety, to provide a different landing sequence. In any case, a landing sequence will be issued to each aircraft as soon as possible to enable the pilot to properly adjust the aircraft's flight path.

8. Procedure Turn and Hold−in−lieu of Procedure Turn

8.1 A procedure turn is the maneuver prescribed when it is necessary to reverse direction to establish the aircraft inbound on an intermediate or final approach course. The procedure turn or hold−in−lieu−of−PT is a required maneuver when it is depicted on the approach chart, unless cleared by ATC for a straight−in approach. Additionally, the procedure turn or hold−in−lieu−of−PT is not permitted when the symbol "No PT" is depicted on the initial segment being used, when a RADAR VECTOR to the final approach course is provided, or when conducting a timed approach from a holding fix. The altitude prescribed for the procedure turn is a minimum altitude until the aircraft is established on the inbound

course. The maneuver must be completed within the distance specified in the profile view. For a hold−in−lieu−of−PT, the holding pattern should be flown as depicted and the specified leg length/timing must not be exceeded.

NOTE−
The pilot may elect to use the procedure turn or hold−in−lieu−of−PT when it is not required by the procedure, but must first receive an amended clearance from ATC. If the pilot is uncertain whether the ATC clearance intends for a procedure turn to be conducted or to allow for a straight−in approach, the pilot must immediately request clarification from ATC (14 CFR Section 91.123).

8.1.1 On U.S. Government charts, a barbed arrow indicates the maneuvering side of the outbound course on which the procedure turn is made. Headings are provided for course reversal using the 45 degree type procedure turn. However, the point at which the turn may be commenced and the type and rate of turn is left to the discretion of the pilot (limited by the charted remain within xx NM distance). Some of the options are the 45 degree procedure turn, the racetrack pattern, the teardrop procedure turn, or the 80 degree ↔ 260 degree course reversal. Racetrack entries should be conducted on the maneuvering side where the majority of protected airspace resides. If an entry places the pilot on the non−maneuvering side of the PT, correction to intercept the outbound course ensures remaining within protected airspace. Some procedure turns are specified by procedural track. These turns must be flown exactly as depicted.

8.1.2 Descent to the procedure turn (PT) completion altitude from the PT fix altitude (when one has been published or assigned by ATC) must not begin until crossing over the PT fix or abeam and proceeding outbound. Some procedures contain a note in the chart profile view that says “Maintain (altitude) or above until established outbound for procedure turn” (See FIG ENR 1.5−10). Newer procedures will simply depict an “at or above” altitude at the PT fix without a chart note (See FIG ENR 1.5−11). Both are there to ensure required obstacle clearance is provided in the procedure turn entry zone (See FIG ENR 1.5−12). Absence of a chart note or specified minimum altitude adjacent to the PT fix is an indication that descent to the procedure turn altitude can commence immediately upon crossing over the PT fix, regardless of the direction of flight. This is because the minimum altitudes in the PT entry zone and the PT maneuvering zone are the same.

8.1.3 When the approach procedure involves a procedure turn, a maximum speed of not greater than 200 knots (IAS) should be observed from first overheading the course reversal IAF through the procedure turn maneuver to ensure containment within the obstruction clearance area. Pilots should begin the outbound turn immediately after passing the procedure turn fix. The procedure turn maneuver must be executed within the distance specified in the profile view. The normal procedure turn distance is 10 miles. This may be reduced to a minimum of 5 miles where only Category A or helicopter aircraft are to be operated or increased to as much as 15 miles to accommodate high performance aircraft.

8.1.4 A teardrop procedure or penetration turn may be specified in some procedures for a required course reversal. The teardrop procedure consists of departure from an initial approach fix on an outbound course followed by a turn toward and intercepting the inbound course at or prior to the intermediate fix or point. Its purpose is to permit an aircraft to reverse direction and lose considerable altitude within reasonably limited airspace. Where no fix is available to mark the beginning of the intermediate segment, it must be assumed to commence at a point 10 miles prior to the final approach fix. When the facility is located on the airport, an aircraft is considered to be on final approach upon completion of the penetration turn. However, the final approach segment begins on the final approach course 10 miles from the facility.

FIG ENR 1.5–9

Example of an RNAV Approach with RF Leg

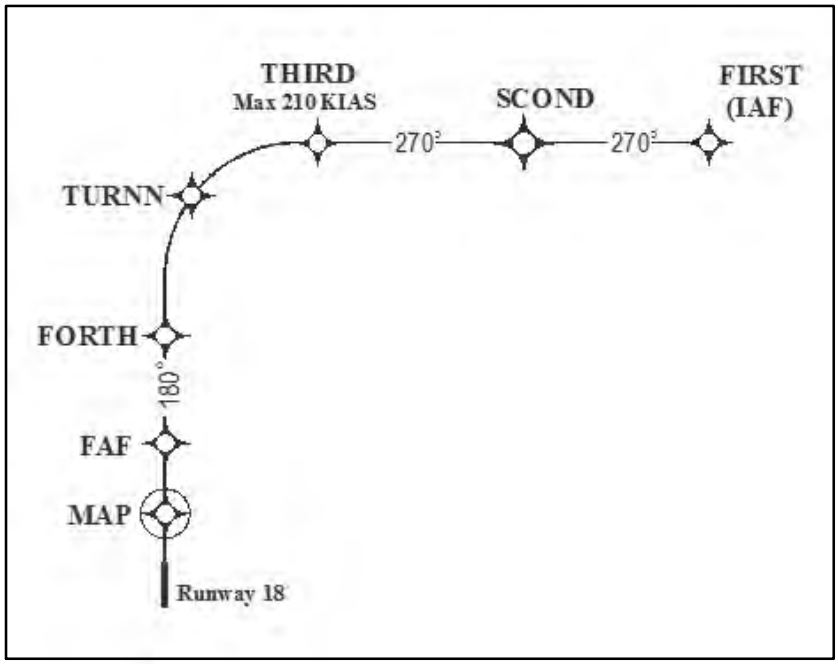


FIG ENR 1.5–10

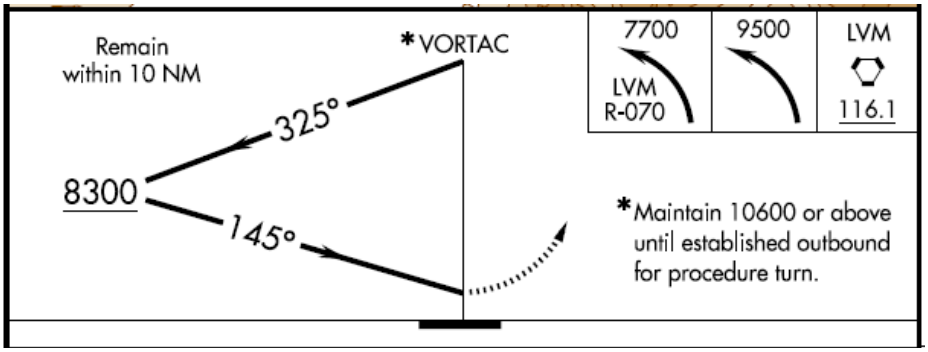
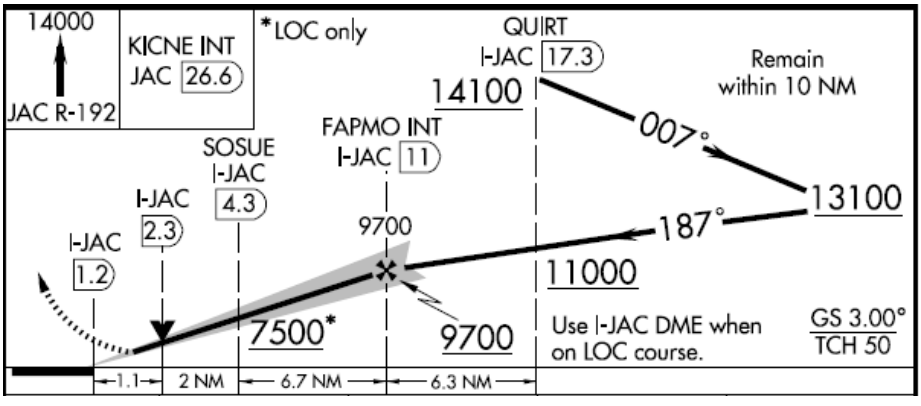


FIG ENR 1.5–11

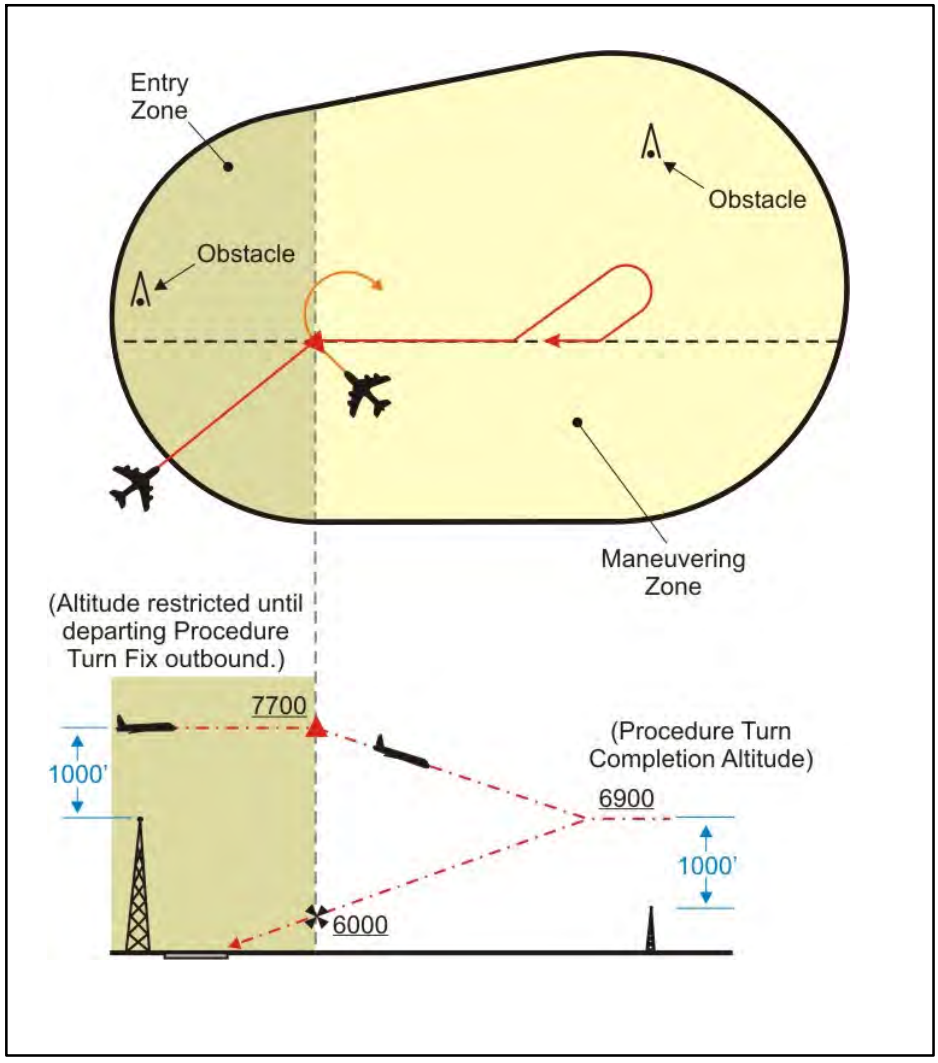


8.1.5 A holding pattern in lieu of procedure turn may be specified for course reversal in some procedures. In such cases, the holding pattern is established over an intermediate fix or a final approach fix. The holding pattern distance or time specified in the profile view must be observed. For a hold−in−lieu−of−PT, the holding pattern direction must be flown as depicted and the specified leg length/timing must not be exceeded. Maximum holding airspeed limitations as set forth for all holding patterns apply. The holding pattern maneuver is completed when the aircraft is established on the inbound course after executing the appropriate entry. If cleared for the approach prior to returning to the holding fix, and the aircraft is at the prescribed altitude, additional circuits of the holding pattern are not necessary nor expected by ATC. If pilots elect to make additional circuits to lose excessive altitude or to become better established on course, it is their responsibility to so advise ATC upon receipt of their approach clearance.

NOTE−
Some approach charts have an arrival holding pattern depicted at the IAF using a "thin line" holding symbol. It is charted where holding is frequently required prior to starting the approach procedure so that detailed holding instructions are not required. The arrival holding pattern is not authorized unless assigned by Air Traffic Control. Holding at the same fix may also be depicted on the enroute chart. A hold−in−lieu of procedure turn is depicted by a "thick line" symbol, and is part of the instrument approach procedure as described in paragraph 8. (See U. S. Terminal Procedures booklets page E1 for both examples.)

8.1.6 A procedure turn is not required when an approach can be made directly from a specified intermediate fix to the final approach fix. In such cases, the term "NoPT" is used with the appropriate course and altitude to denote that the procedure turn is not required. If a procedure turn is desired, and when cleared to do so by ATC, descent below the procedure turn altitude should not be made until the aircraft is established on the inbound course, since some NoPT altitudes may be lower than the procedure turn altitudes.

FIG ENR 1.5–12


Entry
Zone
Obstacle
Obstacle
Maneuvering
Zone
(Altitude restricted until
departing Procedure
Turn Fix outbound.)
7700
1000'
(Procedure Turn
Completion Altitude)
6900
1000'
6000

8.2 Limitations on Procedure Turns

8.2.1 In the case of a radar initial approach to a final approach fix or position, or a timed approach from a holding fix, or where the procedure specifies NoPT, no pilot may make a procedure turn unless, when final approach clearance is received, the pilot so advises ATC and a clearance is received to executive a procedure turn.

8.2.2 When a teardrop procedure turn is depicted and a course reversal is required, this type turn must be executed.

8.2.3 When a holding pattern replaces a procedure turn, the holding pattern must be followed, except when RADAR VECTORING is provided or when NoPT is shown on the approach course. The recommended entry procedures will ensure the aircraft remains within the holding pattern's protected airspace. As in the procedure turn, the descent from the minimum holding pattern altitude to the final approach fix altitude (when lower) may not commence until the aircraft is established on the inbound course. Where a holding pattern is established in−lieu−of a procedure turn, the maximum holding pattern airspeeds apply.

NOTE−
See Paragraph 1.9.2.1, Airspeeds.

8.2.4 The absence of the procedure turn barb in the plan view indicates that a procedure turn is not authorized for that procedure.

9. RNP AR Instrument Approach Procedures

These procedures require authorization analogous to the special authorization required for Category II or III ILS procedures. Authorization required (AR) procedures are to be conducted by aircrews meeting special training requirements in aircraft that meet the specified performance and functional requirements.

9.1 Unique characteristics of RNP AR Approaches

9.1.1 RNP value. Each published line of minima has an associated RNP value. The indicated value defines the lateral and vertical performance requirements. A minimum RNP type is documented as part of the RNP AR authorization for each operator and may vary depending on aircraft configuration or operational procedures (e.g., GPS inoperative, use of flight director vice autopilot).

9.1.2 Curved path procedures. Some RNP approaches have a curved path, also called a radius−to−a−fix (RF) leg. Since not all aircraft have the capability to fly these arcs, pilots are responsible for knowing if they can conduct an RNP approach with an arc or not. Aircraft speeds, winds and bank angles have been taken into consideration in the development of the procedures.

9.1.3 RNP required for extraction or not. Where required, the missed approach procedure may use RNP values less than RNP−1. The reliability of the navigation system has to be very high in order to conduct these approaches. Operation on these procedures generally requires redundant equipment, as no single point of failure can cause loss of both approach and missed approach navigation.

9.1.4 Non−standard speeds or climb gradients. RNP AR approaches are developed based on standard approach speeds and a 200 ft/NM climb gradient in the missed approach. Any exceptions to these standards will be indicated on the approach procedure, and the operator should ensure they can comply with any published restrictions before conducting the operation.

9.1.5 Temperature Limits. For aircraft using barometric vertical navigation (without temperature compensation) to conduct the approach, low and high−temperature limits are identified on the procedure. Cold temperatures reduce the glidepath angle while high temperatures increase the glidepath angle. Aircraft using baro VNAV with temperature compensation or aircraft using an alternate means for vertical guidance (e.g., SBAS) may disregard the temperature restrictions. The charted temperature limits are evaluated for the final approach segment only. Regardless of charted temperature limits or temperature compensation by the FMS, the pilot may need to manually compensate for cold temperature on minimum altitudes and the decision altitude.

9.1.6 Aircraft size. The achieved minimums may be dependent on aircraft size. Large aircraft may require higher minimums due to gear height and/or wingspan. Approach procedure charts will be annotated with applicable aircraft size restrictions.

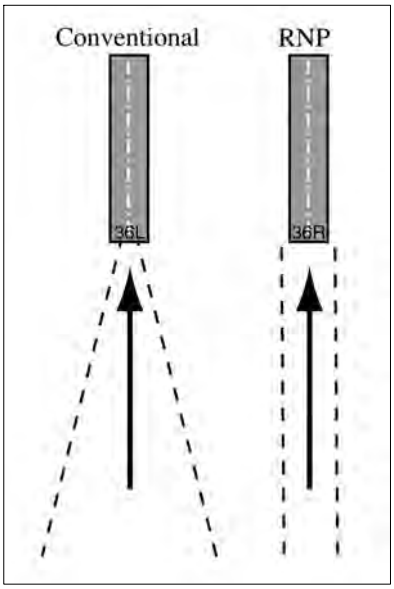
9.2 Types of RNP AR Approach Operations

9.2.1 RNP Stand−alone Approach Operations. RNP AR procedures can provide access to runways

regardless of the ground−based NAVAID infrastructure, and can be designed to avoid obstacles, terrain, airspace, or resolve environmental constraints.

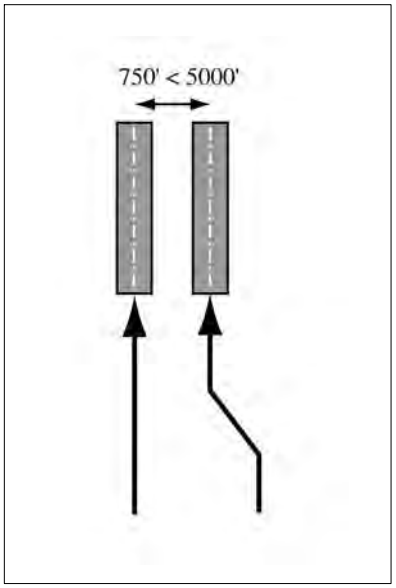
9.2.2 RNP Parallel Approach (RPA) Operations. RNP AR procedures can be used for parallel approaches where the runway separation is adequate (See FIG ENR 1.5−13). Parallel approach procedures can be used either simultaneously or as stand−alone operations. They may be part of either independent or dependent operations depending on the ATC ability to provide radar monitoring.

FIG ENR 1.5−13



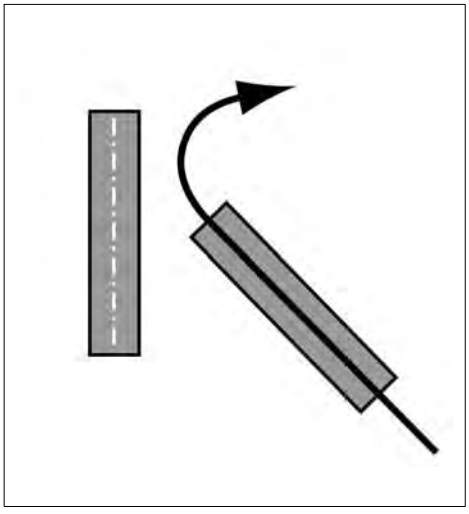
9.2.3 RNP Parallel Approach Runway Transitions (RPAT) Operations. RPAT approaches begin as a parallel IFR approach operation using simultaneous independent or dependent procedures. (See FIG ENR 1.5−14). Visual separation standards are used in the final segment of the approach after the final approach 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 $V_{REF,}$ if specified, or if V_{REF} is not specified, 1.3 V_{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 use the minima corresponding to the category determined during certification or higher. 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 must be used. For example, an airplane which fits into Category B, but is circling to land at a speed of 145 knots, must 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 must use the approach Category C minimums. See the following category limits:

11.1.1.1 Category A: Speed less than 91 knots.

11.1.1.2 Category B: Speed 91 knots or more but less than 121 knots.

11.1.1.3 Category C: Speed 121 knots or more but less than 141 knots.

11.1.1.4 Category D: Speed 141 knots or more but less than 166 knots.

11.1.1.5 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.

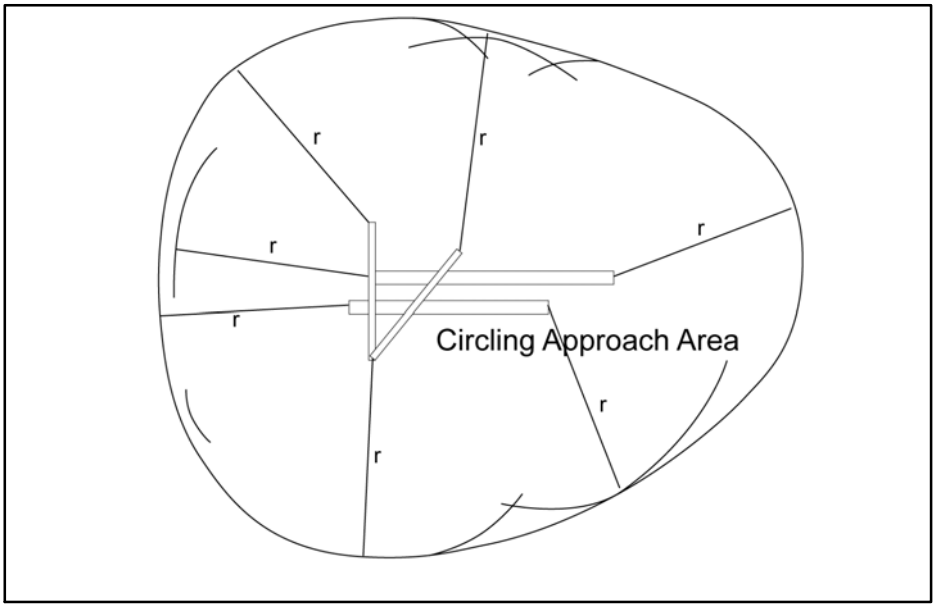
11.2 Published Approach Minimums. Approach minimums are published for different aircraft categories and consist of a minimum altitude (DA, DH, MDA) and required visibility. These minimums are determined by applying the appropriate TERPS criteria. When a fix is incorporated in a nonprecision final segment, 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

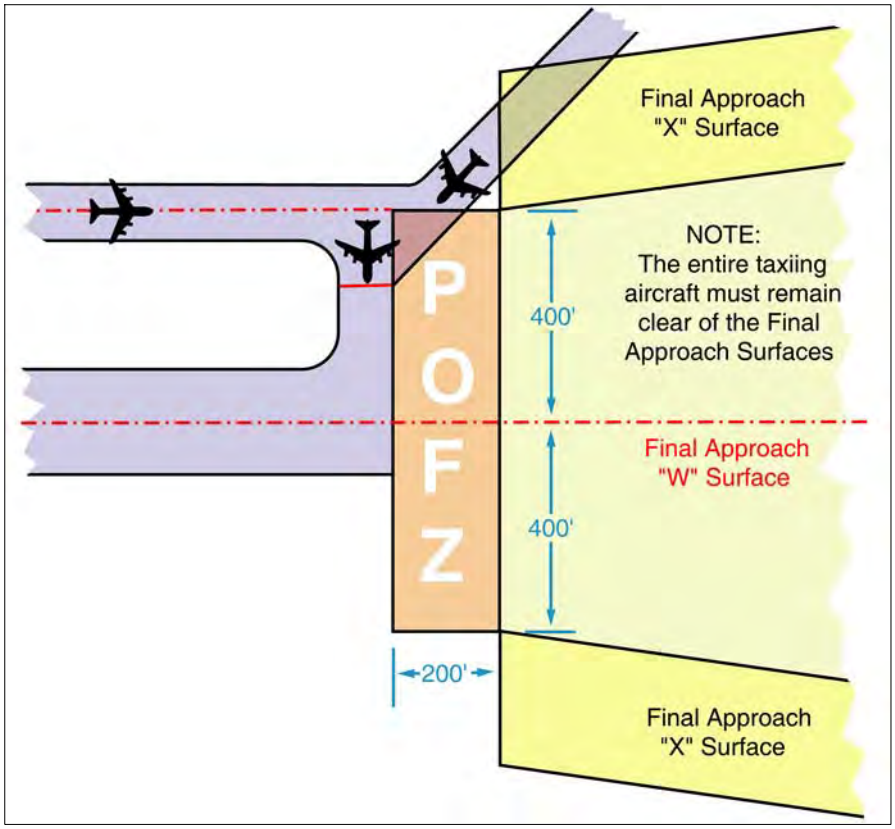
C EXPANDED CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

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 reported ceiling is 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 SIAP's 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). VOR/DME RNAV approaches will continue to be identified as VOR/DME RNAV RWY (Number) (e.g., VOR/DME RNAV RWY 21). VOR/DME RNAV procedures which can be flown by GPS will be annotated with "or GPS" (e.g., VOR/DME RNAV or GPS RWY 31).

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, 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, $\underline{\overline{5000}}$.

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.*

12.3 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 1.5−19 and FIG ENR 1.5−20 for the Basic “T” TAA configuration.

FIG ENR 1.5−19

Basic “T” Design

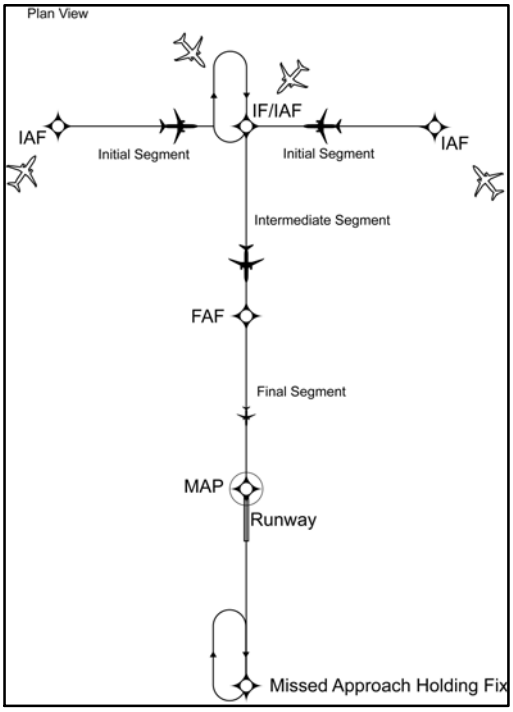
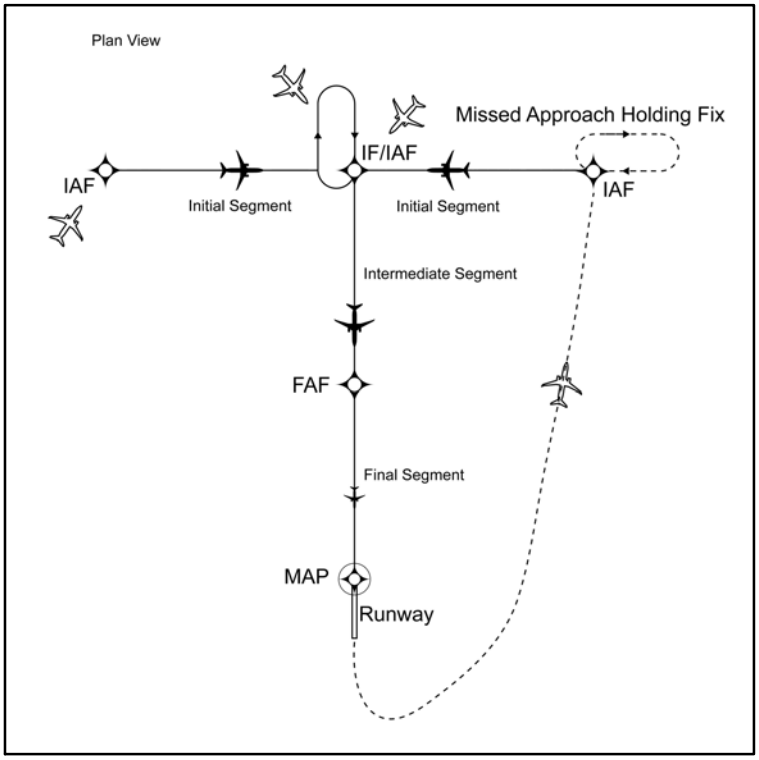


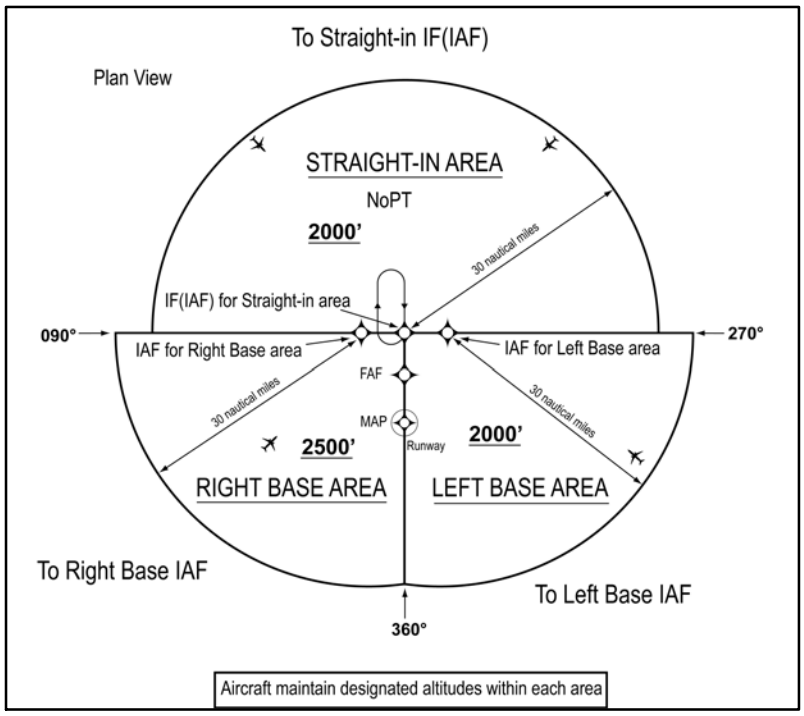
FIG ENR 1.5−20

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 1.5−21). 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 1.5−22). The right/left−base areas can only be subdivided using arcs based on RNAV distances from the IAFs for those areas.

FIG ENR 1.5−21
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.

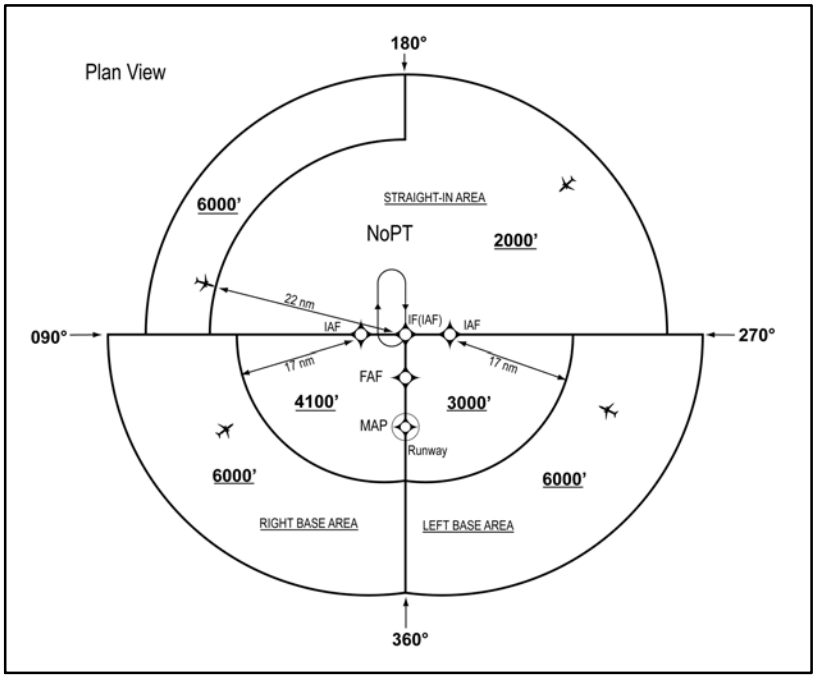
NOTE−
If approaching with a TO bearing that is on a sector boundary, the pilot is expected to proceed in accordance with a "NoPT" routing unless otherwise instructed by ATC.

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.

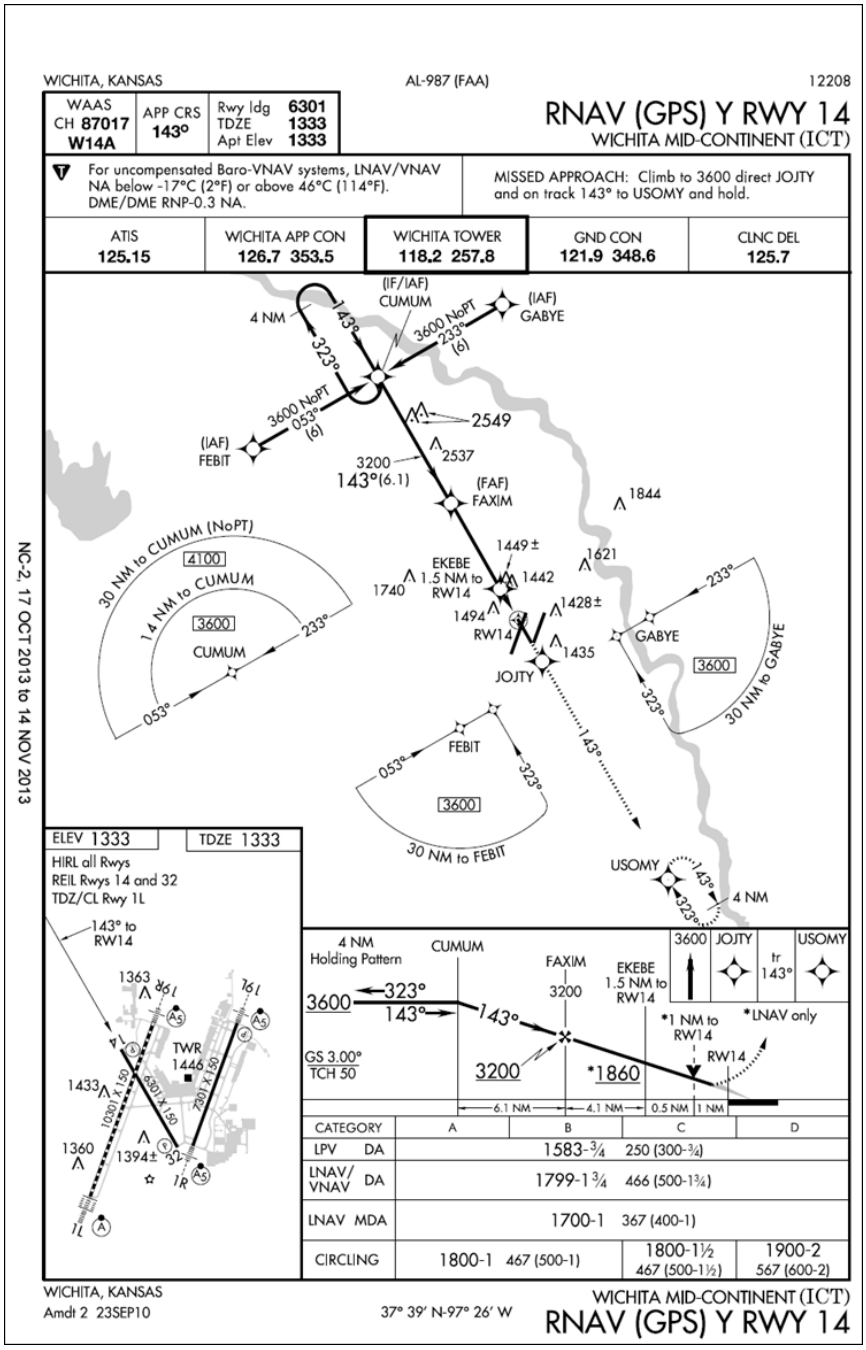
12.4.5.2 Once cleared for the approach, pilots may descend in the TAA sector to the minimum altitude depicted within the defined area/subdivision, unless instructed otherwise by air traffic control. Pilots should plan their descent within the TAA to permit a normal descent from the IF/IAF to the FAF. In FIG ENR 1.5−22, 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 1.5−22
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 1.5–23). 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.

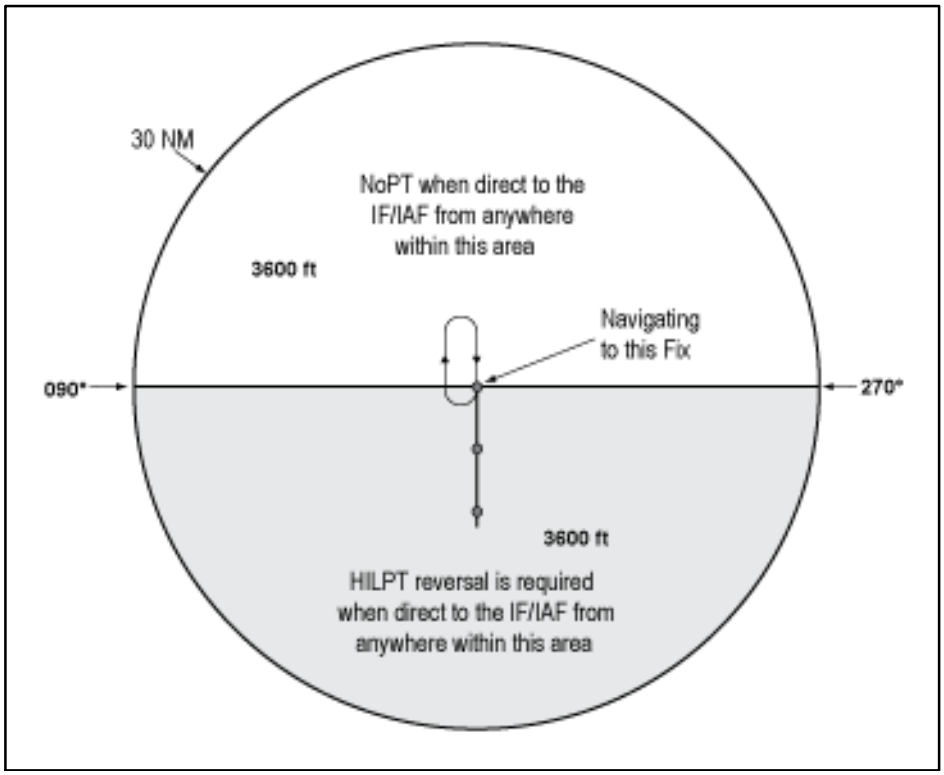
FIG ENR 1.5–23
RNAV (GPS) Approach Chart



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."

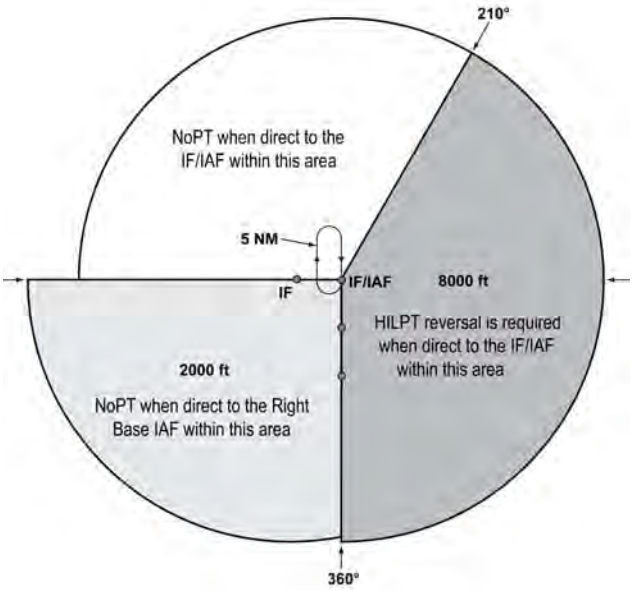
12.4.7.1 FIG ENR 1.5−24 depicts a TAA without a left base leg and right base leg. In this generalized example, pilots approaching on a bearing TO the IF/IAF from 271 clockwise to 089 are expected to execute a course reversal because the amount of turn required at the IF/IAF exceeds 90 degrees. The term "NoPT" will be annotated on the boundary of the TAA icon for the other portion of the TAA.

FIG ENR 1.5−24
TAA with Left and Right Base Areas Eliminated



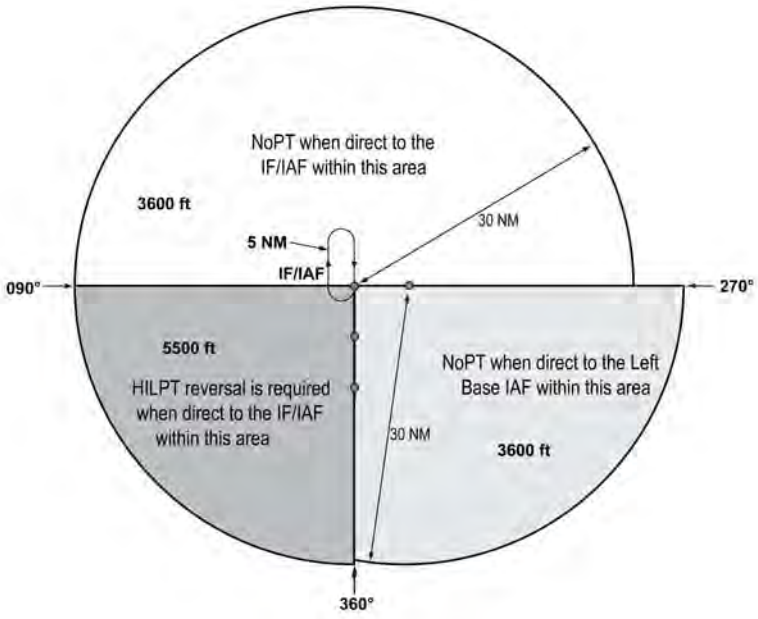
12.4.7.2 FIG ENR 1.5−25 depicts another TAA modification that pilots may encounter. In this generalized example, the left base area and part of the straight-in area have been eliminated. Pilots operating within the TAA between 210 clockwise to 360 bearing TO the IF/IAF are expected to proceed direct 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 1.5−25
TAA with Left Base and Part of Straight−In Area Eliminated



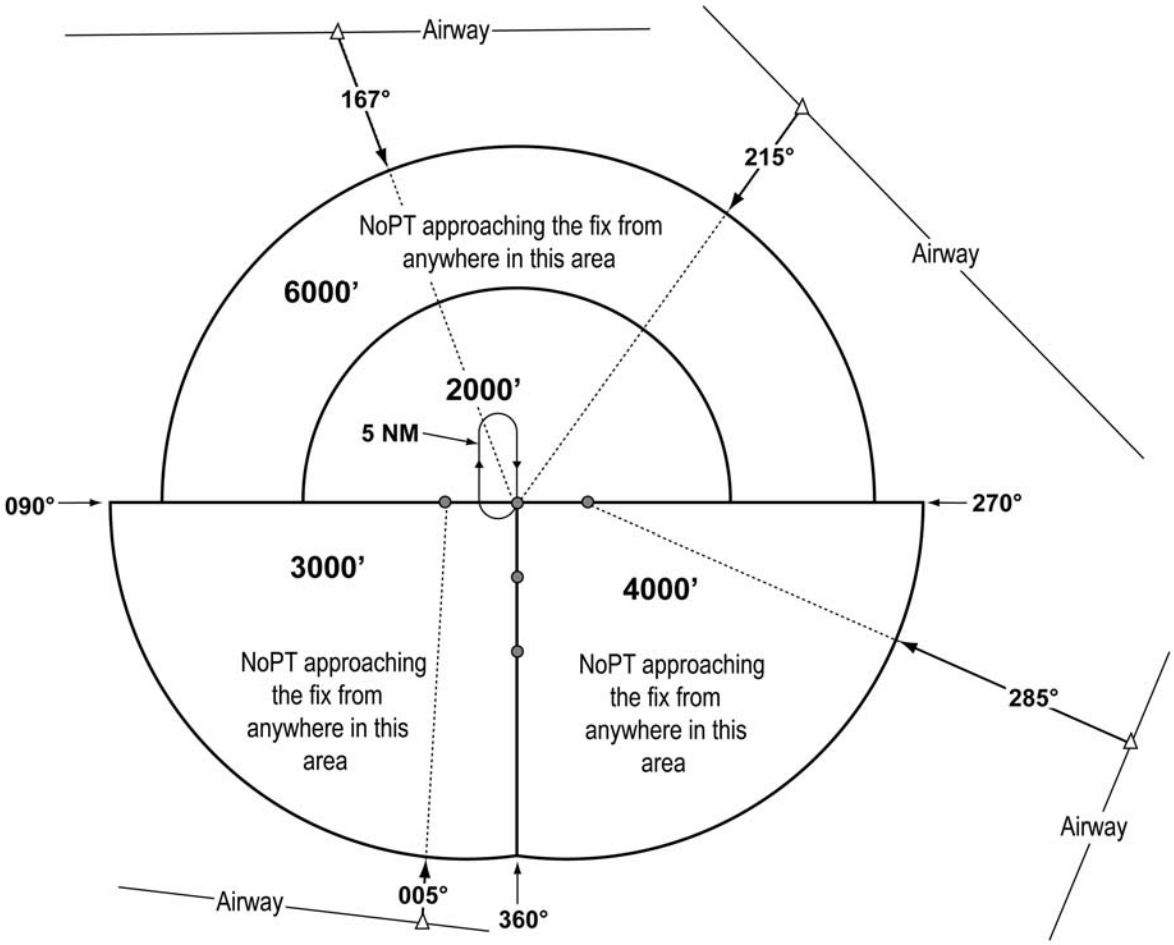
12.4.7.3 FIG ENR 1.5−26 depicts a TAA with right base leg and part of the straight-in area eliminated.

FIG ENR 1.5−26
TAA with Right Base Eliminated



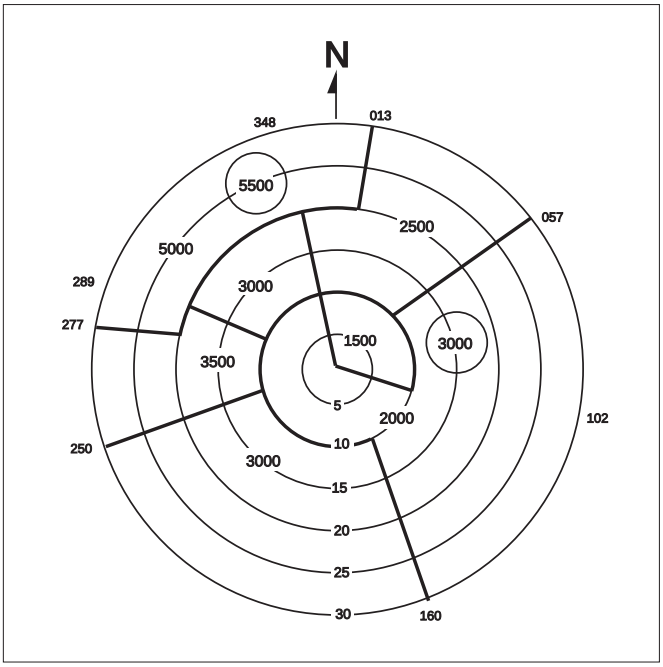
12.4.8 When an airway does not cross the lateral TAA boundaries, a feeder route will be established from an airway fix or NAVAID to the TAA boundary to provide a transition from the en route structure to the appropriate IAF. Each feeder route will terminate at the TAA boundary and will be aligned along 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 1.5−27).

FIG ENR 1.5−27
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 1.5−28
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 1.5−28.)

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.

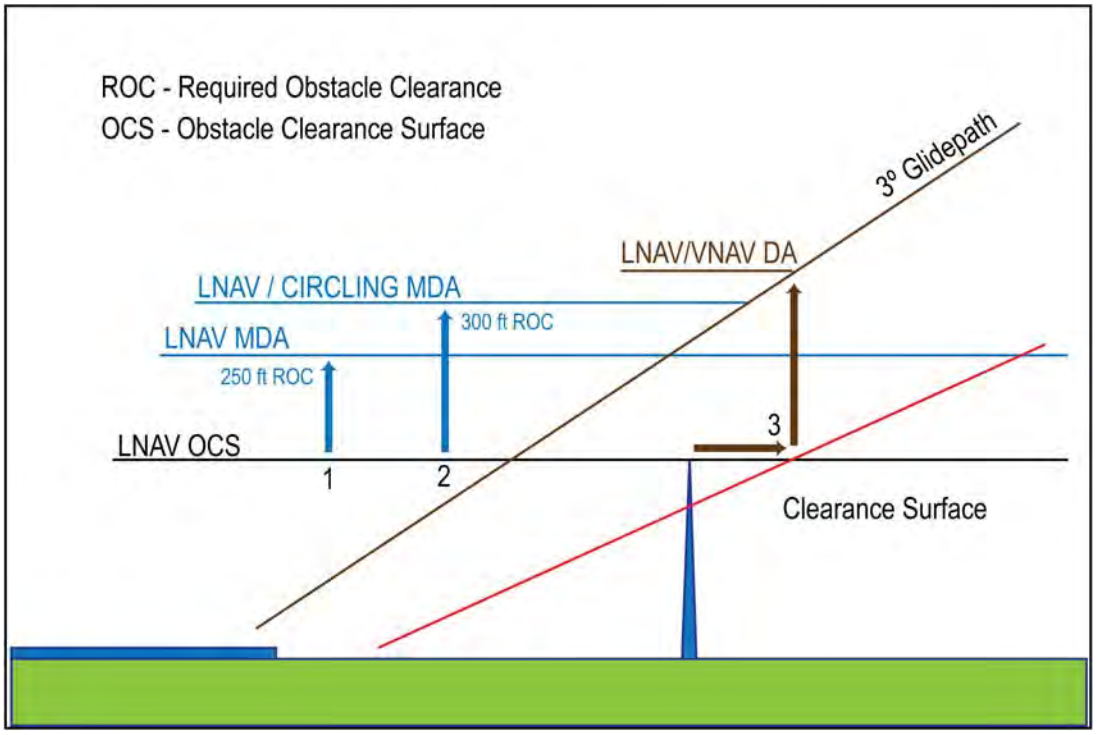
12.5.3 The MVA/MIA may be lower than the TAA minimum altitude. If ATC has assigned an altitude to an aircraft that is below the TAA minimum altitude, the aircraft will either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed 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 1.5–29
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 1.5–30
Explanation of LNAV and/or Circling Minima Lower than LNAV/VNAV DA



12.7 FIG ENR 1.5–30 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 1.5−29, the required obstacle clearance for both the LNAV and Circle resulted in the same MDA, but lower than the LNAV/VNAV DA. FIG ENR 1.5−30 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.

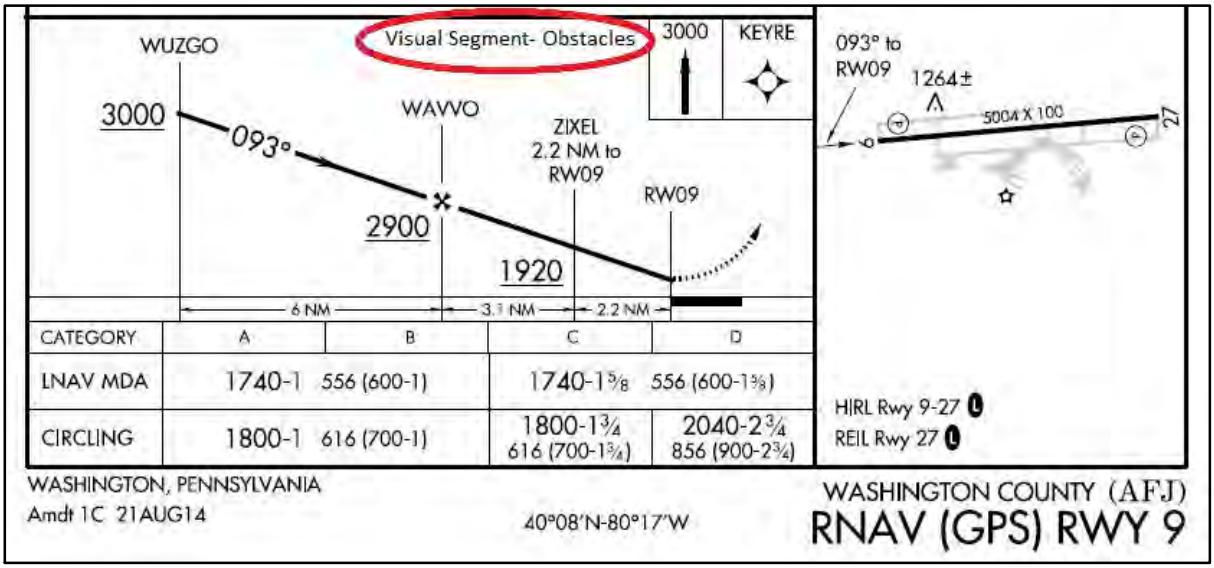
12.11 Vertical Descent Angle (VDA). FAA policy is to publish VDAs on all nonprecision approaches except those published in conjunction with vertically guided minimums or no-FAF procedures without step-down fixes. A VDA does not guarantee obstacle protection below the MDA in the visual segment. The

presence of a VDA does not change any nonprecision approach requirements.

12.11.1 Obstacles may penetrate the visual segment of an IAP that has a published VDA. When the VDA 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 1.5–31). 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 below the MDA on procedures with this note may encounter obstacles in the visual segment.

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 1.5–31
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 1.5−23). 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 1.5−23.)

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 1.5−23). 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. ILS Approaches to Parallel Runways

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 Parallel Dependent Approaches; Simultaneous (Parallel) Independent Approaches; and Simultaneous Close Parallel PRM Approaches. (See FIG ENR 1.5−32.) 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 radar monitoring and communications capabilities. At some airports one or more parallel localizer 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 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, glide slope 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 will be advised that simultaneous dependent approaches, simultaneous approaches, or simultaneous close parallel PRM approaches are in use. This information may be provided through the ATIS.

17.3 The close proximity of adjacent aircraft conducting simultaneous (parallel) independent approaches and 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 (parallel) independent approaches and 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.

17.4 Strict radio discipline is mandatory during simultaneous (parallel) 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 (parallel) 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

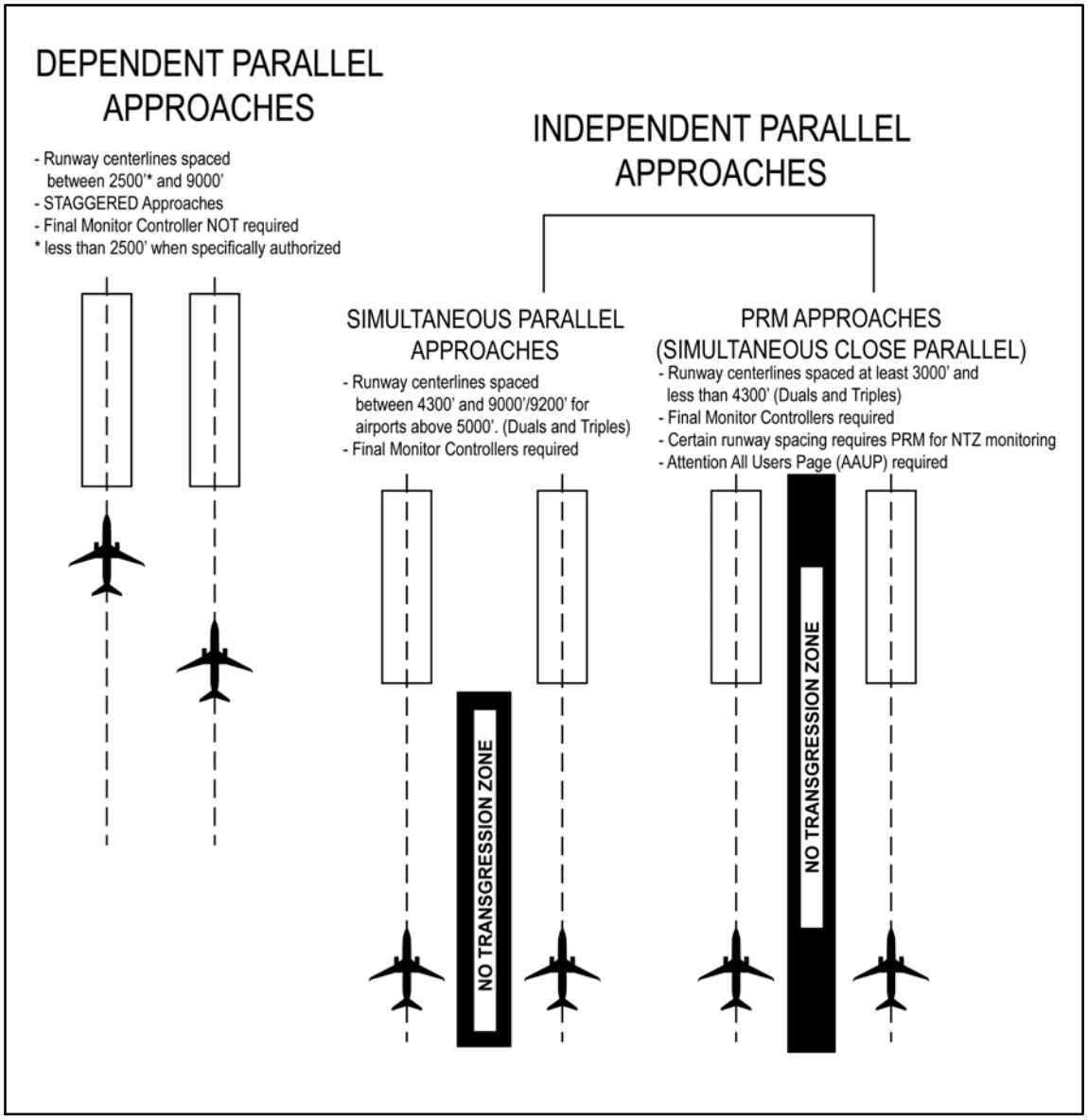
"stuck mike" or other blockage on the tower frequency.

REFERENCE–
AIP GEN 3.4–4.4, Radio Communications Phraseology and Techniques, gives additional communications information.

17.5 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.

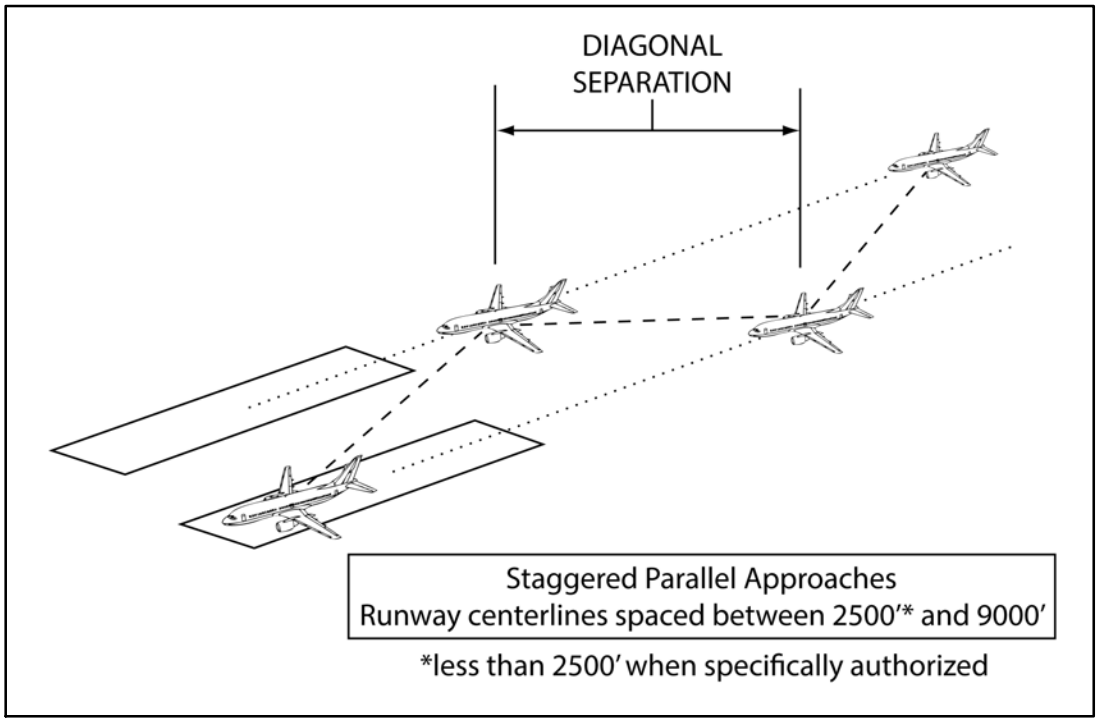
FIG ENR 1.5−32

Simultaneous Parallel Approaches
(Parallel Runways and Approach Courses and Offset Approach Courses between 2.5 and 3.0 degrees)



18. Parallel ILS Approaches (Dependent)
(See FIG ENR 1.5–33)

FIG ENR 1.5–33
Simultaneous (Parallel) Dependent Approaches



18.1 Simultaneous (parallel) dependent approaches are an ATC procedure permitting approaches to airports having parallel runway centerlines separated by between 2,500 feet and 9,000 feet. Integral parts of a total system are ILS, 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.

18.2 A simultaneous (parallel) dependent approach differs from a simultaneous (parallel) independent approach in that, the minimum distance between parallel runway centerlines is 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 progress, 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 specifically identify these operations as being dependent when advertised on the ATIS.

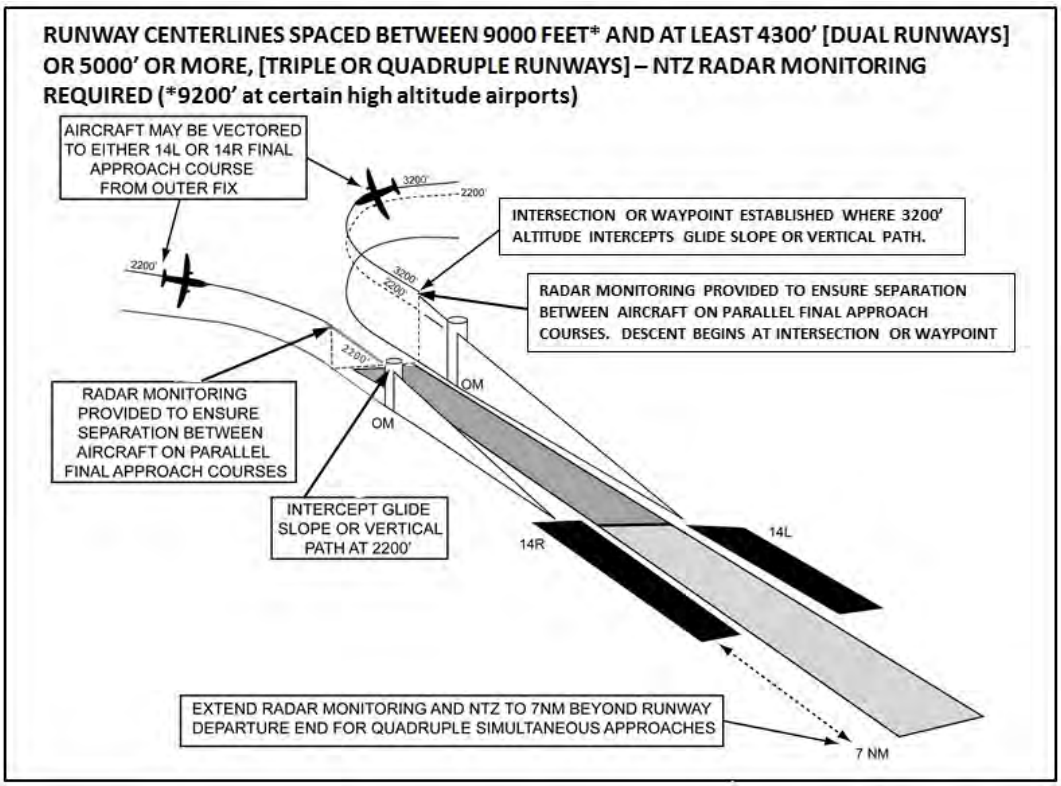
EXAMPLE–
Simultaneous dependent ILS runway 19R and 19L in progress.

18.5 At certain airports, simultaneous (parallel) dependent approaches are permitted to runways spaced less than 2500 feet apart. In this case, ATC will stagger aircraft on the parallel approaches with the leaders always arriving on the same runway. The trailing aircraft is permitted diagonal separation of not less than 1.5 NM, instead of the single runway separation normally utilized for runways spaced less than 2500 feet apart. For wake turbulence mitigation reasons: a) 1.5 NM spacing is only permitted when the leader is either in the large or small wake turbulence category, and b) all aircraft must descend on the glideslope from the altitude at which they were cleared for the approach during these operations. When 1.5 NM reduced separation is authorized, the IAP briefing strip which 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 ILS approaches or SOIA LDA PRM and ILS PRM approaches may be conducted to these runways depending on weather conditions and traffic volume. Pilots should use caution so as not to confuse these operations. Use SOIA procedures only when the ATIS advertises PRM approaches are in use, refer to AIP ENR 1.5–20. SFO is the only airport where both procedures are presently conducted.

19. Simultaneous (Parallel) Independent ILS/RNAV/GLS Approaches
(See FIG ENR 1.5–34)

FIG ENR 1.5–34
Simultaneous (Parallel) Independent ILS/RNAV/GLS Approaches



19.1 System. An approach system permitting simultaneous ILS/RNAV/GLS approaches to parallel runways with centerlines separated by 4,300 to 9,000 feet (9,200' for airports above 5,000') utilizing NTZ final monitor controllers. Simultaneous (parallel) 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 ILS, radar, communications, ATC procedures, and required airborne equipment. A chart note identifies that the approach is authorized for simultaneous use. When simultaneous operations are in progress, it will be advertised on the ATIS. When advised that simultaneous approaches are in progress, pilots must advise approach control immediately of malfunctioning or inoperative receivers, or if a simultaneous approach is not desired.

NOTE–
ATC does not use the word independent or parallel when advertising these operations on the ATIS.

EXAMPLE–
Simultaneous ILS 24L and ILS 24R approaches in progress.

19.2 Radar Services. These services are is provided for each simultaneous (parallel) independent approach.

19.2.1 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 glide path, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

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 mile or less from the runway threshold. Final monitor controllers will not advise pilots when radar monitoring is terminated.

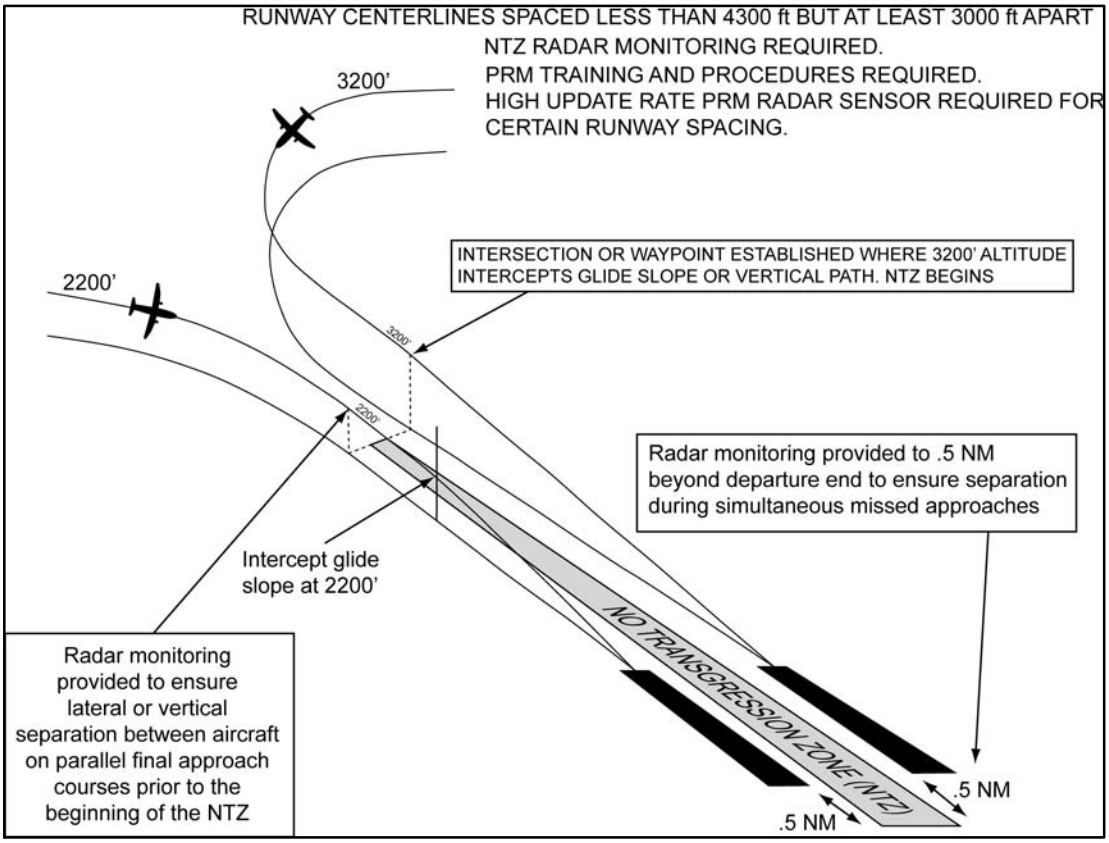
NOTE−
Simultaneous independent approaches conducted to runways spaced greater than 9,000 feet (or 9,200' at airports above 5,000') do not require an NTZ. However, from a pilot's perspective, the same alerts relative to deviating aircraft will be provided by ATC as are provided when an NTZ is being monitored. Pilots may not be aware as to whether or not an NTZ is being monitored.

20. Simultaneous Close Parallel ILS PRM/RNAV PRM/GLS PRM Approaches and Simultaneous Offset Instrument Approaches (SOIA)

(See FIG ENR 1.5−35)

FIG ENR 1.5−35

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 consists of high resolution ATC radar displays, 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 1.5−19., Simultaneous (Parallel) Independent ILS/RNAV/GLS Approaches. 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, publication on an AAUP, and use of a secondary PRM communication frequency.

Simultaneous close parallel ILS PRM approaches are depicted on a separate Approach Procedure Chart titled ILS PRM Rwy XXX (Simultaneous Close Parallel).

NOTE−
ATC does not use the word "independent" when advertising these operations on the ATIS.

EXAMPLE−
Simultaneous ILS PRM 33L and ILS PRM 33R approaches in progress.

20.1.1.1 In the discussion below, RNAV PRM and GLS PRM approaches may be substituted for one or both of the ILS PRM approaches in a simultaneous close parallel operation, or, in the case of SOIA, may be substituted for an ILS PRM and/or LDA PRM approach. RNAV PRM or GLS PRM approaches utilize the same applicable chart notations and the same fixes, crossing altitudes, and missed approach procedures as the ILS PRM or LDA PRM approach it overlays. Vertical guidance for an RNAV PRM or GLS PRM approach must be used when substituting for an ILS PRM or LDA PRM approach.

20.1.1.2 RNAV PRM and GLS PRM approaches may be substituted for:

a) one or both of the ILS PRM approaches in a simultaneous close parallel operation, or

b) the ILS PRM and/or LDA PRM approach in a Simultaneous Offset Instrument Approach (SOIA) operation.

20.1.1.3 The pilot may request to fly the RNAV PRM or GLS PRM approach in lieu of either the ILS PRM and LDA PRM approaches. ATIS may advertise RNAV or GLS PRM approaches to the affected runway or runways in the event of the loss of ground based NAVAIDS. The Attention All Users Page will address ILS PRM, LDA PRM, RNAV PRM, or GLS PRM approaches as applicable. In the remainder of this section:

a) The RNAV PRM or GLS PRM approaches may be substituted when reference is made to an ILS, LOC, or SOIA offset LDA PRM approach.

b) The RNAV PRM or GLS PRM Missed Approach Point (MAP) in SOIA operations may be substituted when reference is made to the LDA PRM MAP.

20.1.2 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 procedure published on the charted IAP. In the SOIA design of the offset approach, the lateral course terminates at the fictitious threshold point (FTP), which is an extension of the final approach course 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 LDA glideslope. RNAV and GLS lateral guidance, in contrast, is discontinued at the charted MAP and replaced by visual maneuvering to accomplish runway alignment in the same manner as LDA course guidance is discontinued at the MAP.

As a result of this RNAV and GLS approach coding, when executing a missed approach at and after passing the charted 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 will 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.

Because the SOIA LDA approach is coded in the FMS in same manner as the RNAV GPS approach, this same procedure should be utilized when conducting the LDA PRM missed approach at or inside of the LDA MAP.

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 the uncoded waypoint. In this case, the location is determined by noting its distance from the runway waypoint as published on the charted IAP.

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.

20.2 Simultaneous Offset Instrument Approach (SOIA).

20.2.1 SOIA is an acronym for Simultaneous Offset Instrument Approach, 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 an ILS PRM approach to one runway and an offset Localizer Type Directional Aid (LDA) PRM approach with glide slope to the adjacent runway. In SOIA operations, aircraft are paired, with the aircraft conducting the ILS PRM approach always positioned slightly ahead of the aircraft conducting the LDA PRM approach.

20.2.2 The ILS PRM approach plates used in SOIA operations are identical to other ILS PRM approach plates, with an additional note, which provides the separation between the two runways used for simultaneous approaches. The LDA PRM approach plate displays the required notations for closely spaced approaches as well as depicting the visual segment of the approach.

20.2.3 Controllers monitor the SOIA ILS PRM and LDA PRM approaches in exactly the same manner as is done for ILS PRM approaches. The procedures and system requirements for SOIA ILS PRM and LDA PRM approaches are identical with those used for simultaneous close parallel ILS PRM approaches until near the LDA PRM approach missed approach point (MAP) –– where visual acquisition of the ILS aircraft by the aircraft conducting the LDA PRM approach occurs. Since the ILS PRM and LDA PRM approaches are identical except for the visual segment in the SOIA concept, an understanding of the procedures for conducting ILS PRM approaches is essential before conducting a SOIA ILS PRM or LDA PRM operation.

20.2.4 In SOIA, the approach course separation (instead of the runway separation) meets established close parallel approach criteria. Refer to FIG ENR 1.5–36 for the generic SOIA approach geometry. A visual segment of the LDA PRM approach is established between the LDA MAP and the runway threshold. Aircraft transition in visual conditions from the LDA course, beginning at the LDA MAP, to align with the runway and can be stabilized by 500 feet above ground level (AGL) on the extended runway centerline. Aircraft will be "paired" in SOIA operations, with the ILS aircraft ahead of the LDA aircraft prior to the LDA aircraft reaching the LDA MAP. A cloud ceiling for the approach is established so that the LDA aircraft has nominally 30 seconds to acquire the leading ILS aircraft prior to the LDA aircraft reaching the LDA MAP. If visual acquisition is not accomplished, a missed approach must be executed at the LDA MAP.

20.3 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 ILS PRM or LDA PRM Simultaneous Close Parallel Approaches.

20.3.1 Pilot Training Requirement. Pilots must complete **special pilot training**, as outlined below, before accepting a clearance for a simultaneous close parallel ILS PRM or LDA PRM approach.

20.3.1.1 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, at a minimum, must require pilots to view the FAA video "ILS PRM AND SOIA APPROACHES: INFORMATION FOR AIR CARRIER PILOTS." 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 video.

20.3.1.2 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 FAA video "ILS PRM AND SOIA APPROACHES: INFORMATION FOR AIR CARRIER PILOTS." 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 video.

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 video, "ILS PRM AND SOIA APPROACHES: INFORMATION FOR GENERAL AVIATION PILOTS." 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 video.

NOTE–
Either simultaneous dependent ILS approaches, or SOIA LDA PRM and ILS PRM approaches may be conducted depending on weather conditions and traffic volume. Pilots should use caution so as not to confuse these operations. Use SOIA procedures only when the ATIS advertises PRM approaches are in use. For simultaneous (parallel) dependent approaches see paragraph ENR 1.5−18. SFO is the only airport where both procedures are presently conducted.

20.3.2 ATC Directed Breakout. An ATC directed "breakout" is defined as a vector off the ILS or LDA approach course of a threatened aircraft in response to another aircraft penetrating the NTZ.

20.3.3 Dual Communications. The aircraft flying the ILS PRM or LDA PRM approach must have the capability of enabling the pilot/s to listen to two communications frequencies simultaneously.

20.3.4 Radar Services.

20.3.4.1 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 glide path, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

20.3.4.2 The final monitor controller will have the capability of overriding the tower controller on the tower frequency.

20.3.4.3 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).

20.3.4.4 To ensure separation is maintained, and in order to avoid an imminent situation during simultaneous close parallel ILS PRM or SOIA ILS PRM and LDA PRM approaches, pilots must immediately comply with PRM monitor controller instructions.

20.3.4.5 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 LOCALIZER FINAL APPROACH COURSE,"
or
"(aircraft call sign) TURN (left/right) AND RETURN TO THE LOCALIZER FINAL APPROACH COURSE."

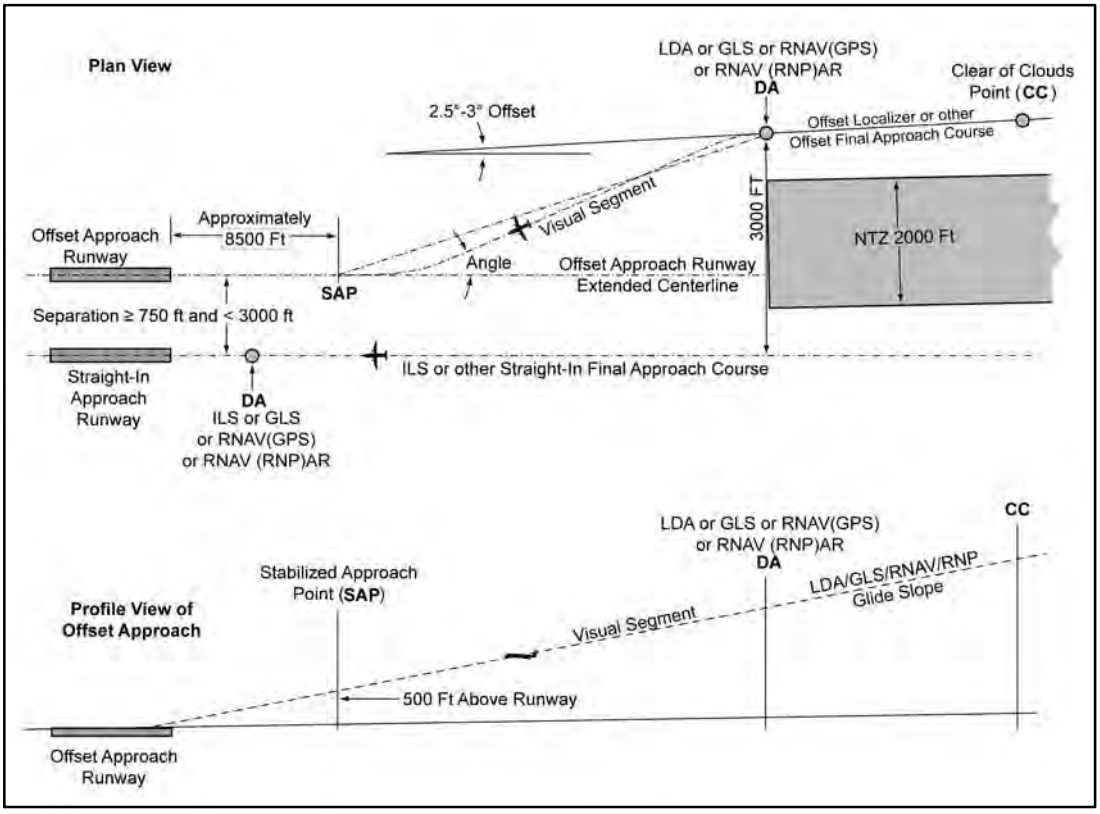
20.3.4.6 If a deviating aircraft fails to respond to such instructions or is observed penetrating the NTZ, the aircraft on the adjacent final approach course (if threatened) will be issued a breakout instruction.

PHRASEOLOGY–
"TRAFFIC ALERT (aircraft call sign) TURN (left/right) IMMEDIATELY HEADING (degrees), (climb/descend) AND MAINTAIN (altitude)."

20.3.4.7 Radar monitoring will automatically be terminated when visual separation is applied or the aircraft reports the approach lights or runway in sight. Otherwise, monitoring continues to at least .5 NM beyond the furthest DER. Final monitor controllers will **not** advise pilots when radar monitoring is terminated.

20.3.5 At airports that conduct PRM operations, (ILS PRM, and the case of airports where SOIAs are conducted, ILS PRM and LDA PRM approaches) the Attention All Users Page (AAUP) informs pilots who are unable to participate that they will be afforded appropriate arrival services as operational conditions permit and must notify the controlling ARTCC as soon as practical, but at least 100 miles from destination.

FIG ENR 1.5–36
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.*

20.4 Attention All Users Page (AAUP). Multiple PRM approach charts at the same airport have a single AAUP associated with them that must be referred to in preparation for conducting the approach.

Bullet points are published which summarize the PRM procedures which apply to each approach and must be briefed before conducting a PRM approach. The following information may be summarized in the bullet points or published in more detail in the Expanded Procedures section of the AAUP. Briefing on the Expanded Procedures is optional.

20.4.1 ATIS. When the ATIS broadcast advises ILS PRM approaches are in progress (or ILS PRM and LDA PRM approaches in the case of SOIA), pilots should brief to fly the ILS PRM or LDA PRM approach. If later advised to expect the ILS or LDA approach (should one be published), the ILS PRM or LDA PRM chart may be used after completing the following briefing items. The pilot may also request to fly the RNAV (GPS) PRM in lieu of either the ILS PRM or LDAPRM approach. In the event of the loss of ground based NAVAIDS, the ATIS may advertise RNAV (GPS) PRM approaches to the affected runway or runways.

20.4.1.1 Minimums and missed approach procedures are unchanged.

20.4.1.2 PRM Monitor frequency no longer required.

20.4.1.3 ATC may assign a lower altitude for glide slope intercept.

NOTE−
In the case of the LDA PRM approach, this briefing procedure only applies if an LDA-DME approach is also published.

In the case of the SOIA ILS PRM and LDA PRM procedure, the AAUP describes the weather conditions in which simultaneous approaches are authorized:

Simultaneous approach weather minimums are X,XXX feet (ceiling), x miles (visibility).

20.4.2 Dual VHF Communications Required. 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 at least one frequency if the other 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.

NOTE−
At KSFO, pilots conducting SOIA operations select the monitor frequency audio when communicating with the final radar controller. In this special case, the monitor controller's transmissions, if required, override the final controller's frequency.

20.4.3 Breakouts. Breakouts differ from other types of abandoned approaches in that they can happen anywhere and unexpectedly. Pilots directed by ATC to break off an approach must assume that an aircraft is blundering toward them and a breakout must be initiated **immediately**.

20.4.3.1 Hand-fly breakouts. All breakouts are to be hand-flown to ensure the maneuver is accomplished in the shortest amount of time.

20.4.3.2 ATC Directed "Breakouts." ATC directed breakouts will consist of a turn and a climb or descent. Pilots must always initiate the breakout in response to an air traffic controller's instruction.

Controllers will give a descending breakout only when there are no other reasonable options available, but in no case will the descent be below the minimum vectoring altitude (MVA) which provides at least 1,000 feet required obstruction clearance. The AAUP may provide the MVA in the final approach segment as X,XXX feet at (Name) Airport.

NOTE–
"TRAFFIC ALERT." If an aircraft enters the "NO TRANSGRESSION ZONE" (NTZ), the controller will breakout the threatened aircraft on the adjacent approach. The phraseology for the breakout will be:

PHRASEOLOGY–
TRAFFIC ALERT, (aircraft call sign) TURN (left/right) IMMEDIATELY, HEADING (degrees), CLIMB /DESCEND AND MAINTAIN (altitude).

20.4.4 ILS PRM Glideslope Navigation. The pilot may find crossing altitudes published along the final approach course. If the approach geometry warrants it, the pilot is advised on the AAUP that descending on the ILS or LDA glideslope ensures complying with any charted crossing restrictions.

20.4.5 SOIA and ILS PRM differences as noted on the AAUP

20.4.5.1 ILS PRM, LDA Traffic (only published on the AAUP when the ILS PRM approach is used in conjunction with an LDA PRM approach to the adjacent runway). To provide better situational awareness, and because traffic on the LDA may be visible on the ILS aircraft's TCAS, pilots are reminded of the fact that aircraft will be maneuvering behind them to align with the adjacent runway. While conducting the ILS PRM approach to Runway XXX, other aircraft may be conducting the offset LDA PRM approach to Runway XXX. These aircraft will approach from the (left/right) rear and will realign with Runway XXX after making visual contact with the ILS traffic. Under normal circumstances, these aircraft will not pass the ILS traffic.

20.4.5.2 SOIA LDA PRM Items. The AAUP section for the SOIA LDA PRM approach contains most information found in the ILS PRM section. It replaces certain information as seen below and provides pilots with the procedures to be used in the visual segment of the LDA PRM approach from the LDA MAP until landing.

20.4.5.3 SOIA LDA PRM Navigation (replaces ILS PRM 20.4.4 and 20.4.5.1 above). The pilot may find crossing altitudes published along the final approach course. The pilot is advised that descending on the LDA glideslope ensures complying with any charted crossing restrictions. Remain on the LDA course until passing XXXXX (LDA MAP name) intersection prior to maneuvering to align with the centerline of Runway XXX.

20.4.5.4 SOIA (Name) Airport Visual Segment (replaces ILS PRM 20.4.4 above). Pilot procedures for navigating beyond the LDA MAP are spelled out. If ATC advises that there is traffic on the adjacent ILS, pilots are authorized to continue past the LDA MAP to align with runway centerline when:

a) the ILS traffic is in sight and is expected to remain in sight,

b) ATC has been advised that "traffic is in sight." (ATC is not required to acknowledge this transmission),

c) the runway environment is in sight. Otherwise, a missed approach must be executed. Between the LDA MAP and the runway threshold, pilots conducting the LDA PRM approach are responsible for separating themselves visually from traffic conducting the ILS 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 ILS PRM approach is lost and execute a missed approach unless otherwise instructed by ATC.

20.5 Differences between Simultaneous ILS and ILS PRM or LDA PRM approaches of importance to the pilot.

20.5.1 Runway Spacing. Prior to 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. 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, he/she assumes 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 instruction (**breakout**) and maneuver as instructed by ATC, away from a blundering aircraft.

20.5.2 Communications. To help in avoiding communication problems caused by stuck microphones and two parties talking at the same time, two frequencies for each runway will be in use during ILS PRM and LDA PRM approach operations, the primary tower frequency and the PRM monitor frequency. The tower controller transmits and receives in a normal fashion on the primary frequency and also transmits on the PRM monitor frequency. The monitor controller's transmissions override on both frequencies. The pilots flying the approach will listen to both frequencies but only transmit on the primary tower frequency. If the PRM monitor controller initiates a breakout and the primary frequency is blocked by another transmission, the breakout instruction will still be heard on the PRM monitor frequency.

NOTE−
At some airports, the override capability may be on other than the tower frequency (KSFO overrides the final radar controller frequency). Pilots should carefully review the dual communications requirements on the AAUP prior to accepting a PRM approach.

20.5.3 Breakouts. The probability is extremely low that an aircraft will "blunder" from its assigned approach course and enter the NTZ, causing ATC to "breakout" the aircraft approaching on the adjacent ILS or LDA course. However, because of the close proximity of the final approach courses, it is essential that pilots follow the ATC breakout instructions precisely and expeditiously. The controller's "breakout" instructions provide conflict resolution for the threatened aircraft, with the turn portion of the "breakout" being the single most important element in achieving maximum protection. A descending breakout will only be issued when it is the only controller option. In no case will the controller descend an aircraft below the MVA, which will provide at least 1,000 feet clearance above obstacles. The pilot is not expected to exceed 1,000 feet per minute rate of descent in the event a descending breakout is issued.

20.5.4 Hand-flown Breakouts. The use of the autopilot is encouraged while flying an ILS PRM or LDA 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.

20.5.5 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 progress, 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.

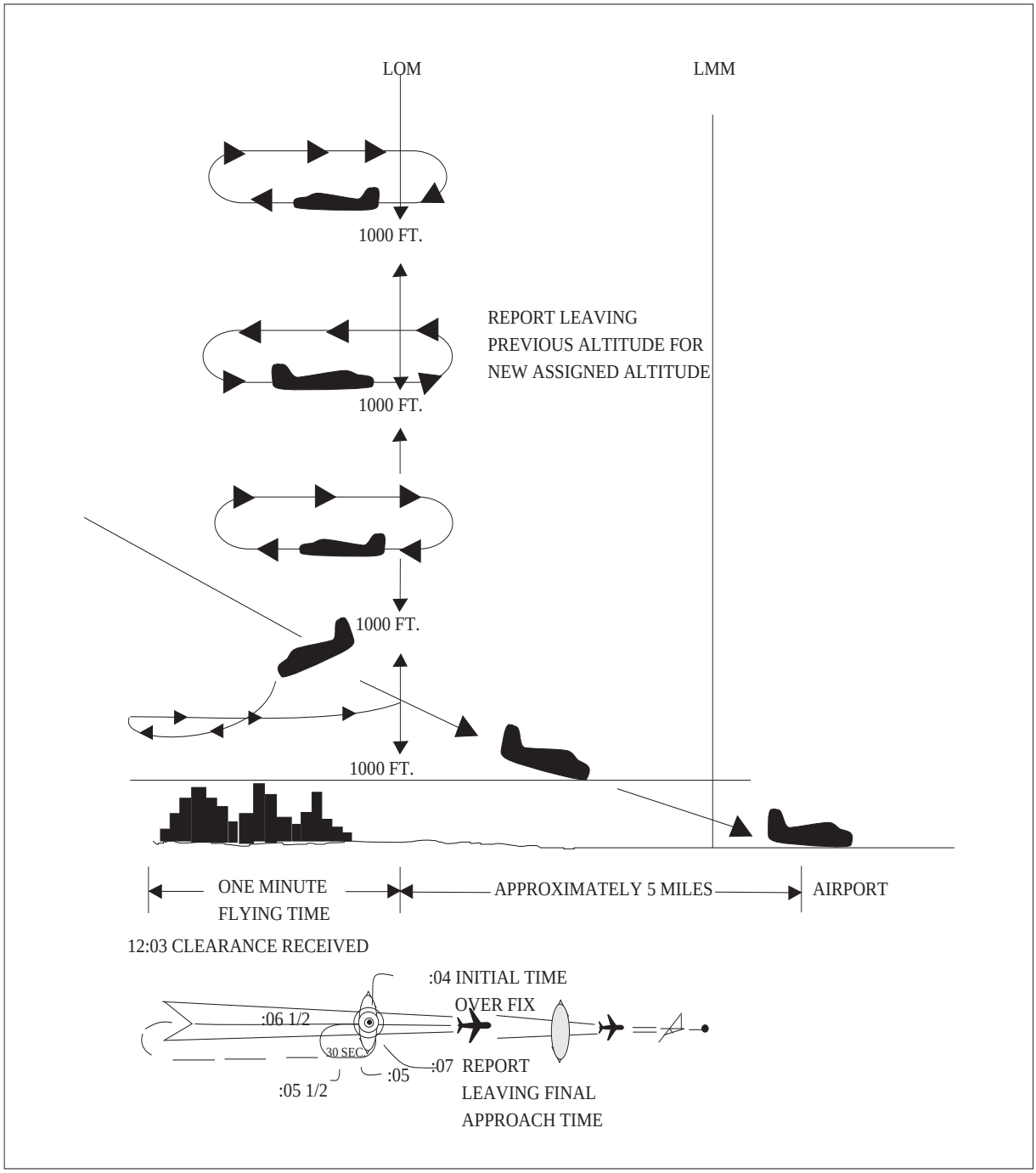
22.1.5 When cleared for the approach, pilots must not execute a procedure turn. (See 14 CFR Section 91.175j.)

22.2 Although the controller will not specifically state that “timed approaches are in progress,” 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 1.5−37.)

FIG ENR 1.5−37

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 An EFVS is an installed airborne system which uses an electronic means to provide a display of the forward external scene topography (the applicable natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as forward looking infrared, millimeter wave radiometry, millimeter wave radar, and/or low light level image intensifying. The EFVS imagery is displayed along with the additional flight information and aircraft flight symbology required by 14 CFR 91.175 (m) on a head–up display (HUD), or an equivalent display, in the same scale and alignment as the external view and includes the display element, sensors, computers and power supplies, indications, and controls. The display is typically presented to the pilot by means of an approved HUD.

24.2 Basic Strategy Using EFVS. When flying an instrument approach procedure (IAP), if the runway environment cannot be visually acquired at decision altitude (DA) or minimum descent altitude (MDA) using natural vision, then a pilot may use an EFVS to continue descending down to 100 feet above the Touchdown Zone Elevation (TDZE), provided all of the visibility requirements of 14 CFR part 91.175 (l) are met. The primary reference for maneuvering the aircraft is based on what the pilot sees through the EFVS. At 100 feet above the TDZE, a pilot can continue to descend only when the visual reference requirements for descent below 100 feet can be seen using natural vision (without the aid of the EFVS). In other words, a pilot may not continue to rely on the EFVS sensor image to identify the required visual references below 100 feet above the TDZE. Supporting information is provided by the flight path vector (FPV), flight path angle (FPA) reference cue, onboard navigation system, and other imagery and

flight symbology displayed on the EFVS. The FPV and FPA reference cue, along with the EFVS imagery of the Touchdown Zone (TDZ), provide the primary vertical path reference for the pilot when vertical guidance from a precision approach or approach with vertical guidance is not available.

24.2.1 Straight−In Instrument Approach Procedures. An EFVS may be used to descend below DA or MDA from any straight−in IAP, other than Category II or Category III approaches, provided all of the requirements of 14 CFR part 91.175 (l) are met. This includes straight−in precision approaches, approaches with vertical guidance (for example, LPV or LNAV/VNAV), and non−precision approaches (for example, VOR, NDB, LOC, RNAV, GPS, LDA, SDF, etc.).

24.2.2 Circling Approach Procedure. An IAP with a circle−to−land maneuver or circle−to−land minimums does not meet criteria for straight−in landing minimums. While the regulations do not prohibit EFVS from being used during any phase of flight, they do prohibit it from being used for operational credit on anything but a straight−in IAP with straight−in landing minima. EFVS must only be used during a circle−to−land maneuver provided the visual references required throughout the circling maneuver are distinctly visible using natural vision. An EFVS cannot be used to satisfy the requirement that an identifiable part of the airport be distinctly visible to the pilot during a circling maneuver at or above MDA or while descending below MDA from a circling maneuver.

24.2.3 Enhanced Flight Visibility. Flight visibility is determined by using natural vision, and enhanced flight visibility (EFV) is determined by using an EFVS. 14 CFR part 91.175 (l) requires that the EFV observed by using an EFVS cannot be less than the visibility prescribed in the IAP to be used in order to continue to descend below the DA or MDA.

24.3 EFVS Operations At or Below DA or MDA Down to 100 Feet Above the TDZE. The visual segment of an IAP begins at DA or MDA and continues to the runway. There are two means of operating in the visual segment−−one is by using natural vision and the other is by using an EFVS. If the pilot determines that the EFV observed by using the EFVS is not less than the minimum visibility prescribed in the IAP being flown, and the pilot acquires the required visual references prescribed in 14 CFR part 91.175 (l)(3) using the EFVS, then the pilot can continue the approach to 100 feet above the TDZE. To continue the approach, the pilot uses the EFVS image to visually acquire the runway environment (the approach light system (ALS), if installed, or both the runway threshold and the TDZ), confirm lateral alignment, maneuver to the extended runway centerline earlier than would otherwise be possible, and continue a normal descent from the DA or MDA to 100 feet above the TDZE.

24.3.1 Required Visual References. In order to descend below DA or MDA, the following visual references (specified in 14 CFR part 91.175 (l)(3)) for the runway of intended landing must be distinctly visible and identifiable to the pilot using the EFVS:

24.3.1.1 The ALS (if installed), or

24.3.1.2 The following visual references in both (b)(1) and (b)(2) below:

a) The runway threshold, identified by at least one of the following: the beginning of the runway landing surface, the threshold lights, or the runway end identifier lights (REIL).

b) The TDZ, identified by at least one of the following: the runway TDZ landing surface, the TDZ lights, the TDZ markings, or the runway lights.

24.3.2 Comparison of Visual Reference Requirements for EFVS and Natural Vision. The EFVS visual reference requirements of 14 CFR part 91.175 (l)(3) comprise a more stringent standard than the visual reference requirements prescribed under 14 CFR part 91.175 (c)(3) when using natural vision. The more stringent standard is needed because an EFVS might not display the color of the lights used to identify specific portions of the runway or might not be able to consistently display the runway markings. The main differences for EFVS operations are that the visual glide slope indicator (VGSI) lights cannot be used as a visual reference, and specific visual references from both the threshold and TDZ must be distinctly visible and identifiable. However, when using natural vision, only one of the specified visual references must be visible and identifiable.

24.3.3 Visual References and Offset Approaches. Pilots must be especially knowledgeable of the approach conditions and approach course alignment when considering whether to rely on EFVS during a non−precision approach with an offset final approach course. Depending upon the combination of

crosswind correction and the lateral field of view provided by a particular EFVS, the required visual references may or may not be within the pilot's view looking through the EFVS display. Pilots conducting any non−precision approach must verify lateral alignment with the runway centerline when determining when to descend from MDA.

24.3.4 When to Go Around. Any pilot operating an aircraft with an EFVS installed should be aware that the requirements of 14 CFR part 91.175 (c) for using natural vision and the requirements of 14 CFR part 91.175 (l) for using an EFVS are different. A pilot would, therefore, first have to determine whether an approach will be commenced using natural vision or using an EFVS. While these two sets of requirements provide a parallel decisionmaking process, the requirements for when a missed approach must be executed differ. Using EFVS, a missed approach must be initiated at or below DA or MDA down to 100 feet above TDZE whenever the pilot determines that:

24.3.4.1 The EFV is less than the visibility minima prescribed for the IAP being used;

24.3.4.2 The required visual references for the runway of intended landing are no longer distinctly visible and identifiable to the pilot using the EFVS imagery;

24.3.4.3 The aircraft is not continuously in a position from which a descent to a landing can be made on the intended runway, at a normal rate of descent, using normal maneuvers; or

24.3.4.4 For operations under 14 CFR parts 121 and 135, the descent rate of the aircraft would not allow touchdown to occur within the TDZ of the runway of intended landing.

24.3.5 Missed Approach Considerations. It should be noted that a missed approach after passing the DA, or beyond the missed approach point (MAP), involves additional risk until established on the published missed approach segment. Initiating a go−around after passing the published MAP may result in loss of obstacle clearance. As with any approach, pilot planning should include contingencies between the published MAP and touchdown with reference to obstacle clearance, aircraft performance, and alternate escape plans.

24.4 EFVS Operations At and Below 100 Feet Above the TDZE. At and below 100 feet above the TDZE, the regulations do not require the EFVS to be turned off or the display to be stowed in order to continue to a landing. A pilot may continue the approach below this altitude using an EFVS as long as the required visual references can be seen through the display using natural vision. An operator may not continue to descend beyond this point by relying solely on the sensor image displayed on the EFVS.

24.4.1 Required Visual References. In order to descend below 100 feet above the TDZE, the flight visibility−−assessed using natural vision−−must be sufficient for the following visual references to be distinctly visible and identifiable to the pilot without reliance on the EFVS to continue to a landing:

24.4.1.1 The lights or markings of the threshold, or

24.4.1.2 The lights or markings of the TDZ.

It is important to note that from 100 feet above the TDZE and below, the flight visibility does not have to be equal to or greater than the visibility prescribed for the IAP in order to continue descending. It only has to be sufficient for the visual references required by 14 CFR part 91.175 (l)(4) to be distinctly visible and identifiable to the pilot without reliance on the EFVS.

24.4.2 Comparison of Visual Reference Requirements for EFVS and Natural Vision. Again, the visual reference requirements for EFVS in 14 CFR part 91.175 (l)(4) are more stringent than those required for natural vision in 14 CFR part 91.175 (c)(3). The main differences for EFVS operations are that the ALS and red terminating bars or red side row bars, the REIL, and the VASI cannot be used as visual references. Only very specific visual references from the threshold or the TDZ can be used (that is, the lights or markings of the threshold or the lights or markings of the TDZ).

24.4.3 When to Go Around. A missed approach must be initiated when the pilot determines that:

24.4.3.1 The flight visibility is no longer sufficient to distinctly see and identify the required visual references listed in 14 CFR part 91.175 (l)(4) using natural vision;

24.4.3.2 The aircraft is not continuously in a position from which a descent to a landing can be made on the intended runway, at a normal rate of descent, using normal maneuvers; or

24.4.3.3 For operations under 14 CFR parts 121 and 135, the descent rate of the aircraft would not allow touchdown to occur within the TDZ of the runway of intended landing.

24.4.4 While touchdown within the TDZ is not specifically addressed in the regulations for operators other than 14 CFR parts 121 and 135 operators, continued operations below DA or MDA where touchdown in the TDZ is not assured, where a high sink rate occurs, or where the decision to conduct a missed approach procedure is not executed in a timely manner, all create a significant risk to the operation.

24.4.5 Missed Approach Considerations. As noted earlier, a missed approach initiated after the DA or MAP involves additional risk. At 100 feet or less above the runway, it is likely that an aircraft is significantly below the TERPS missed approach obstacle clearance surface. Prior planning is recommended and should include contingencies between the published MAP and touchdown with reference to obstacle clearance, aircraft performance, and alternate escape plans.

24.4.6 Light Emitting Diode (LED) Airport Lighting Impact on EFVS Operations. The FAA has recently begun to replace incandescent lamps 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. Pilots should be aware that LED lights cannot be sensed by current EFVS systems.

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 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.

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.

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/height (DA/H) 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 1.5−38.)

FIG ENR 1.5−38

Circling and Missed Approach Obstruction Clearance Areas

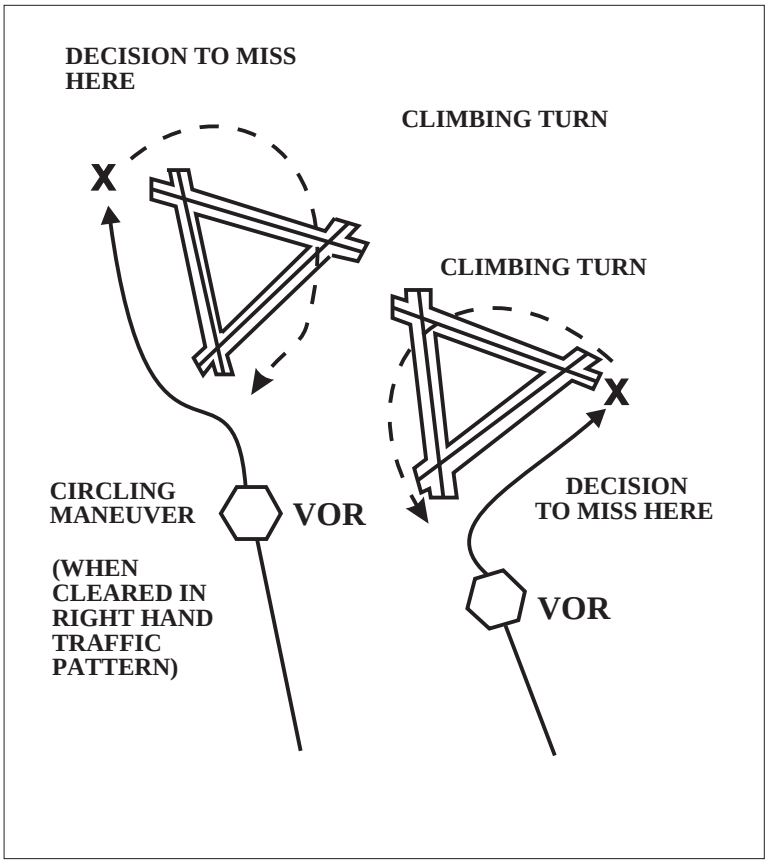


FIG ENR 1.5−39

Missed Approach

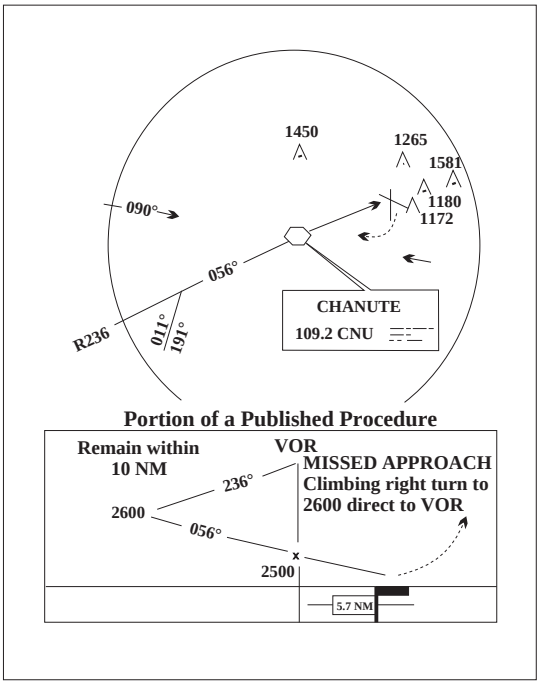
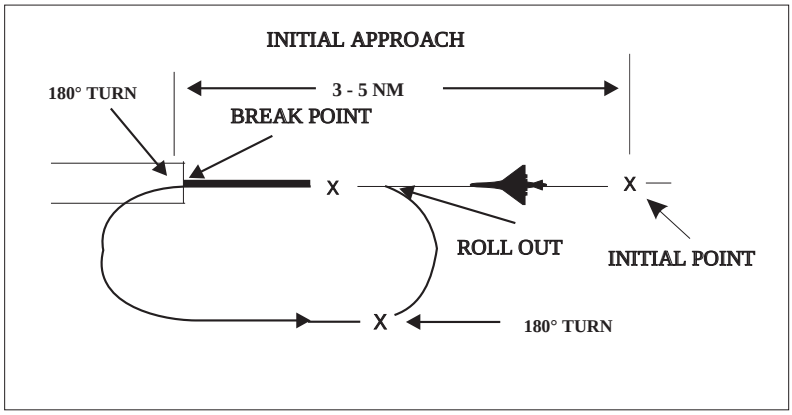


FIG ENR 1.5−40

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 cancelled when the aircraft reaches the initial point on the initial approach portion of the maneuver. (See FIG ENR 1.5−40.) 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 using the International Civil Aviation Organization (ICAO) airport facility identification (for example, KSLC 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. Taxi Clearance

31.1 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.

32. Line Up and Wait (LUAW)

32.1 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."

32.2 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.

32.3 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.

32.4 Situational awareness during line up and wait operations is enhanced by monitoring ATC instruc-

tions/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.

32.5 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.

32.6 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.

32.7 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."

32.8 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.

32.9 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.

33. Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times

33.1 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.

33.1.1 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.

33.1.2 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. This does not preclude the pilot from cancelling the IFR clearance with ATC and departing under VFR; but an IFR clearance may not be available after departure. In addition, ATC will include departure delay information in conjunction with "hold for release" instructions.

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.

33.1.3 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).

33.1.4 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.

33.2 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.

34. Departure Control

34.1 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.

34.2 Departure Control utilizing radar will normally clear aircraft out of the terminal area using DPs via radio navigation aids.

34.2.1 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.

34.2.2 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, Runway26L, 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.*

34.2.3 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.

34.3 Controllers will inform pilots of the departure control frequencies and, if appropriate, the transponder code before takeoff. Pilots must ensure their

transponder 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.

35. Abbreviated IFR Departure Clearance (Cleared . . . as Filed) Procedures

35.1 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:

35.1.1 The aircraft is on the ground or it has departed VFR and the pilot is requesting IFR clearance while airborne.

35.1.2 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.

35.1.3 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.

35.1.4 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:

35.1.4.1 Amended.

35.1.4.2 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.

35.2 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.

35.3 The clearance as issued will include the destination airport filed in the flight plan.

35.4 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.

35.5 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.

35.6 "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.

35.7 In a radar and a nonradar environment, the controller will state "Cleared to (destination) airport as filed" or:

35.7.1 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.

35.7.2 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.

35.7.3 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.

35.7.4 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.

35.8 To ensure success of the program, pilots should:

35.8.1 Avoid making changes to a filed flight plan just prior to departure.

35.8.2 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."

35.8.3 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."

35.8.4 Request verification or clarification from ATC if ANY portion of the clearance is not clearly understood.

35.8.5 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."

36. Instrument Departure Procedures (DP) − Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID)

36.1 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 (ODPs), printed either textually or graphically, and Standard Instrument Departures (SIDs), 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, e.g., 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, e.g., 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. 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.

36.2 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 36.3.3) 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:

36.2.1 Establish a steeper than normal climb gradient; or

36.2.2 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

36.2.3 Design and publish a specific departure route; or

36.2.4 A combination or all of the above.

36.3 What criteria is used to provide obstruction clearance during departure?

36.3.1 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."

36.3.2 ODPs and SIDs 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−8261−1.)

36.3.3 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 1.5−41. (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.

36.3.4 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. The purpose of this note is to identify the obstacle(s) and alert the pilot to the height and

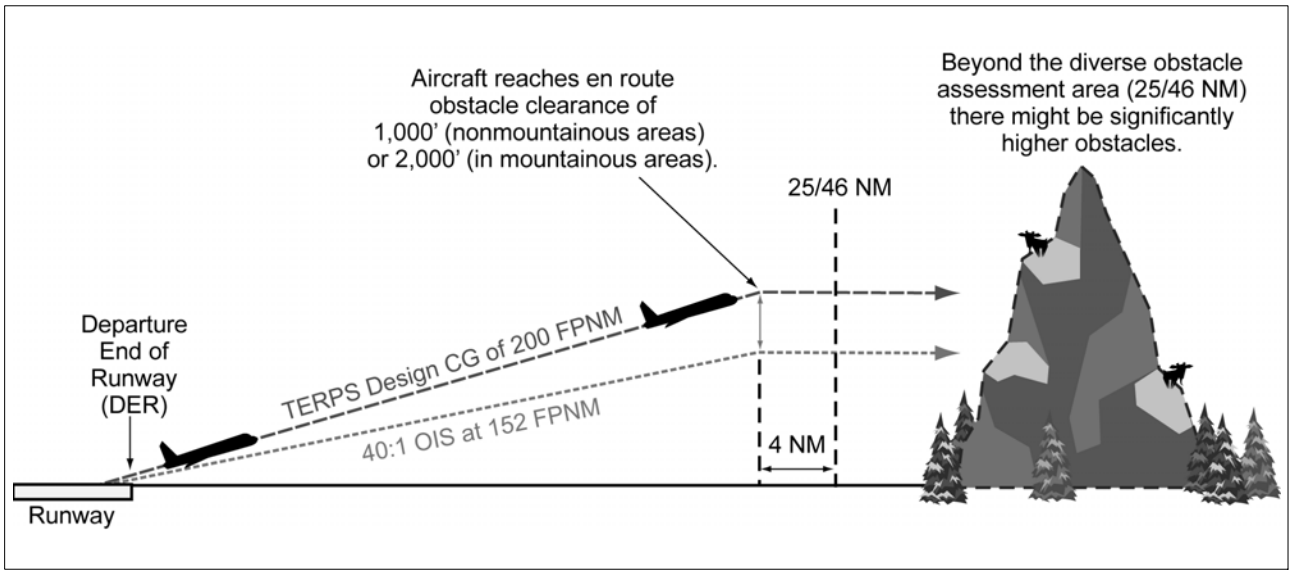
location of the obstacle(s) so they can be avoided. This can be accomplished in a variety of ways, e.g., the pilot may be able to see the obstruction and maneuver around the obstacle(s) if necessary; early liftoff/climb performance may allow the aircraft to cross well above the obstacle(s); or if the obstacle(s) cannot be visually acquired during departure, preflight planning should take into account what turns or other maneuver may be necessary immediately after takeoff to avoid the obstruction(s).

36.3.5 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. Additionally, ATC required crossing restrictions may also require climb gradients greater than 200 FPNM. These climb gradients may be amended or canceled at ATC's discretion. Multiple ATC climb gradients are permitted. An ATC climb gradient will not be used on an 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."

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.

FIG ENR 1.5−41
Diverse Departure Obstacle Assessment to 25/46 NM



EXAMPLE−
"TAKEOFF MINIMUMS: RWY 27, Standard with a minimum climb of 280' per NM to 2500, ATC climb of 310' per NM to 4000 ft." A climb of at least 280 FPNM is required to 2500 and is mandatory when the departure procedure is included in the ATC clearance. ATC requires a climb gradient of 310 FPNM to 4000, however, this ATC climb gradient may be amended or canceled.

36.3.6 Climb gradients may be specified only to an altitude/fix, above which the normal gradient applies.

EXAMPLE−
"Minimum climb 340 FPNM to ALPHA." The pilot climbs at least 340 FPNM to ALPHA, then at least 200 FPNM to MIA.

36.3.7 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."

36.4 Who is responsible for obstacle clearance? DPs are designed so that adherence to the procedure by the pilot will ensure obstacle protection. Additionally:

36.4.1 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 enroute altitude, unless specified otherwise.

36.4.2 ATC may assume responsibility for obstacle clearance by vectoring the aircraft prior to reaching the minimum vectoring altitude by using a Diverse Vector Area (DVA). 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.

36.4.2.1 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.*

36.4.2.2 Pilots should be aware that Air Traffic facilities may utilize a climb gradient greater than the standard 200 FPNM in a DVA. This information will be identified in the DVA text for pilot evaluation against the aircraft's available climb performance. Pilots should note that the DVA has been assessed for departures which do not follow a specific ground track. ATC may also vector an aircraft off a previously assigned DP. In all cases, the minimum 200 FPNM climb gradient is assumed unless a higher climb gradient is specified on the departure, and obstacle clearance is not provided by ATC until the controller begins to provide navigational guidance in the form of radar vectors.

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.

36.4.3 Pilots must preplan to determine if the aircraft can meet the climb gradient (expressed in feet per nautical mile) required by the departure procedure, 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.

36.5 Where are DPs located? DPs will be listed by airport in the IFR Takeoff Minimums and (Obstacle) Departure Procedures Section, Section L, of the Terminal Procedures Publications (TPPs). 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.

36.5.1 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.

36.6 Responsibilities

36.6.1 Each pilot, prior to departing an airport on an IFR flight should:

36.6.1.1 Consider the type of terrain and other obstacles on or in the vicinity of the departure airport;

36.6.1.2 Determine whether an ODP is available;

36.6.1.3 Determine if obstacle avoidance can be maintained visually or if the ODP should be flown; and

36.6.1.4 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.

36.6.2 Pilots should not exceed a published speed restriction associated with a SID waypoint until passing that waypoint.

36.6.3 After an aircraft is established on an 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 restrictions, pilots should expect the controller to issue an altitude to maintain. 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 not be vectored off of an ODP or issued an altitude lower than a published altitude on an ODP until at or above the MVA/MIA, at which time the ODP is canceled.

36.6.4 Aircraft instructed to resume a SID procedure such as a DP or SID which contains speed and/or altitude restrictions, must be:

36.6.4.1 Issued/reissued all applicable restrictions, or

36.6.4.2 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."

36.6.5 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).*"

36.6.6 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:

36.6.6.1 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.

36.6.6.2 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.

36.6.6.3 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.

36.6.7 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."

36.6.8 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.

36.6.9 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.

36.7 RNAV Departure Procedures

36.7.1 All public RNAV SIDs and graphic ODPs are RNAV 1. These procedures generally start with an initial RNAV 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 RNAV systems that satisfy the criteria discussed in AC 90−100A, U.S. Terminal and En Route Area Navigation (RNAV) Operations. RNAV 1 procedures must maintain a total system

error of not more than 1 NM for 95% of the total flight time.

REFERENCE−
ENR 4.1 Paragraph 16.2.5.11, Impact of Magnetic Variation on PBN Systems

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.

5.5.3 A description of the International Flight Plan Form is contained in the International Flight Information Manual (IFIM).

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 (not DUATS) 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

ENR 1.12 National Security and Interception Procedures

1. National Security

1.1 National security in the control of air traffic is governed by 14 Code of Federal Regulations (CFR) Part 99, *Security Control of Air Traffic*.

1.2 National Security Requirements

1.2.1 Pursuant to 14 CFR 99.7, *Special Security Instructions*, each person operating an aircraft in an Air Defense Identification Zone (ADIZ) or Defense Area must, in addition to the applicable rules of Part 99, comply with special security instructions issued by the FAA Administrator in the interest of national security, pursuant to agreement between the FAA and the Department of Defense (DOD), or between the FAA and a U.S. Federal security or intelligence agency.

1.2.2 In addition to the requirements prescribed in this section, national security requirements for aircraft operations to or from, within, or transiting U.S. territorial airspace are in effect pursuant to 14 CFR 99.7; 49 United States Code (USC) 40103, *Sovereignty and Use of Airspace*; and 49 USC 41703, *Navigation of Foreign Civil Aircraft*. Aircraft operations to or from, within, or transiting U.S. territorial airspace must also comply with all other applicable regulations published in 14 CFR.

1.2.3 Due to increased security measures in place at many areas and in accordance with 14 CFR 91.103, *Preflight Action*, prior to departure, pilots must become familiar with all available information concerning that flight. Pilots are responsible to comply with 14 CFR 91.137 (*Temporary flight restrictions in the vicinity of disaster/hazard areas*), 91.138 (*Temporary flight restrictions in national disaster areas in the State of Hawaii*), 91.141 (*Flight restrictions in the proximity of the Presidential and other parties*), and 91.143 (*Flight limitation in the proximity of space flight operations*) when conducting flight in an area where a temporary flight restrictions area is in effect, and should check appropriate NOTAMs during flight planning. In addition, NOTAMs may be issued for National Security Areas (NSA) that temporarily prohibit flight operations under the provisions of 14 CFR 99.7.

REFERENCE–
AIP ENR 5.1, Paragraph 2.1, National Security Areas
AIP ENR 5.1, Paragraph 2.2, Temporary Flight Restrictions

1.2.4 Noncompliance with the national security requirements for aircraft operations contained in this section may result in denial of flight entry into U.S. territorial airspace or ground stop of the flight at a U.S. airport.

1.2.5 Pilots of aircraft that do not adhere to the procedures in the national security requirements for aircraft operations contained in this section may be intercepted, and/or detained and interviewed by federal, state, or local law enforcement or other government personnel.

1.3 Definitions

1.3.1 *Air Defense Identification Zone (ADIZ)* means an area of airspace over land or water, in which the ready identification, location, and control of all aircraft (except Department of Defense and law enforcement aircraft) is required in the interest of national security.

1.3.2 *Defense Area* means any airspace of the contiguous U.S. that is not an ADIZ in which the control of aircraft is required for reasons of national security.

1.3.3 *U.S. territorial airspace*, for the purposes of this section, means the airspace over the U.S., its territories, and possessions, and the airspace over the territorial sea of the U.S., which extends 12 nautical miles from the baselines of the U.S., determined in accordance with international law.

1.3.4 *To U.S. territorial airspace* means any flight that enters U.S. territorial airspace after departure from a location outside of the U.S., its territories or possessions, for landing at a destination in the U.S., its territories or possessions.

1.3.5 *From U.S. territorial airspace* means any flight that exits U.S. territorial airspace after departure from a location in the U.S., its territories or possessions, and lands at a destination outside the U.S., its territories or possessions.

1.3.6 *Within U.S. territorial airspace* means any flight departing from a location inside of the U.S., its territories or possessions, which operates en route to a location inside the U.S., its territories or possessions.

1.3.7 *Transit or transiting U.S. territorial airspace* means any flight departing from a location outside of

the U.S., its territories or possessions, which operates in U.S. territorial airspace en route to a location outside the U.S., its territories or possessions without landing at a destination in the U.S., its territories or possessions.

1.3.8 *Aeronautical facility*, for the purposes of this section, means a communications facility where flight plans or position reports are normally filed during flight operations.

1.4 ADIZ Requirements

1.4.1 To facilitate early identification of all aircraft in the vicinity of U.S. airspace boundaries, Air Defense Identification Zones (ADIZ) have been established. All aircraft must meet certain requirements to facilitate early identification when operating into, within, and across an ADIZ, as described in 14 CFR 99. (See FIG ENR 1.12−1.)

1.4.2 Requirements for aircraft operations are as follows:

1.4.2.1 Transponder Requirements. Unless otherwise authorized by ATC, each aircraft conducting operations into, within, or across the contiguous U.S. ADIZ must be equipped with an operable radar beacon transponder having altitude reporting capability, and that transponder must be turned on and set to reply on the appropriate code or as assigned by ATC. (See 14 CFR 99.13, *Transponder−On Requirements*, for additional information.)

1.4.2.2 Two−way Radio. In accordance with 14 CFR 99.9, *Radio Requirements*, any person operating in an ADIZ must maintain two−way radio communication with an appropriate aeronautical facility. For two−way radio communications failure, follow instructions contained in 14 CFR 99.9.

1.4.2.3 Flight Plan. In accordance with 14 CFR 99.11, *Flight Plan Requirements*, and 14 CFR 99.9, except as specified in subparagraph 1.4.5, no person may operate an aircraft into, within, or from a departure point within an ADIZ, unless the person files, activates, and closes a flight plan with an appropriate aeronautical facility, or is otherwise authorized by air traffic control as follows:

a) Pilots must file an Instrument Flight Rules (IFR) flight plan or file a Defense Visual Flight Rules (DVFR) flight plan containing the time and point of ADIZ penetration;

b) The pilot must activate the DVFR flight plan with U.S. Flight Service and set the aircraft transponder to the assigned discrete beacon code prior to entering the ADIZ;

c) The IFR or DVFR aircraft must depart within 5 minutes of the estimated departure time contained in the flight plan, except for (d) below;

d) If the airport of departure within the Alaskan ADIZ has no facility for filing a flight plan, the flight plan must be filed immediately after takeoff or when within range of an appropriate aeronautical facility;

e) State aircraft (U.S. or foreign) planning to operate through an ADIZ should enter ICAO Code M in Item 8 of the flight plan to assist in identification of the aircraft as a state aircraft.

1.4.3 Position Reporting Before Penetration of ADIZ.

In accordance with 14 CFR 99.15, *Position Reports*, before entering the ADIZ, the pilot must report to an appropriate aeronautical facility as follows:

1.4.3.1 IFR flights in controlled airspace. The pilot must maintain a continuous watch on the appropriate frequency and report the time and altitude of passing each designated reporting point or those reporting points specified or requested by ATC, except that while the aircraft is under radar control, only the passing of those reporting points specifically requested by ATC need be reported. (See 14 CFR 91.183(a), *IFR Communications*.)

1.4.3.2 DVFR flights and IFR flights in uncontrolled airspace:

a) The time, position, and altitude at which the aircraft passed the last reporting point before penetration and the estimated time of arrival over the next appropriate reporting point along the flight route;

b) If there is no appropriate reporting point along the flight route, the pilot reports at least 15 minutes before penetration: the estimated time, position, and altitude at which the pilot will penetrate; or

c) If the departure airport is within an ADIZ or so close to the ADIZ boundary that it prevents the pilot from complying with (a) or (b) above, the pilot must report immediately after departure: the time of departure, the altitude, and the estimated time of arrival over the first reporting point along the flight route.

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 Maintain two−way radio communications with ATC;

1.6.3.4 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 1.6.3.6 below;

1.6.3.5 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

1.6.3.6 Aircraft not registered in the U.S., when conducting post−maintenance, manufacturer, production, or acceptance flight test operations, are exempt from the requirements in 1.6.3.4 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 Maintain two–way radio communications with ATC;

1.7.1.4 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2;

1.7.1.5 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);

1.7.1.6 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 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 Maintain two–way radio communications with ATC; and

1.7.3.4 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 Maintain two−way radio communications with ATC;

1.8.1.4 Comply with all other applicable ADIZ requirements described in paragraph 1.4 and any other national security requirements in paragraph 1.2.

1.8.2 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 web site 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 web site 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.*

FIG ENR 1.12–1

Air Defense Identification Zone Boundaries
Designated Mountainous Areas

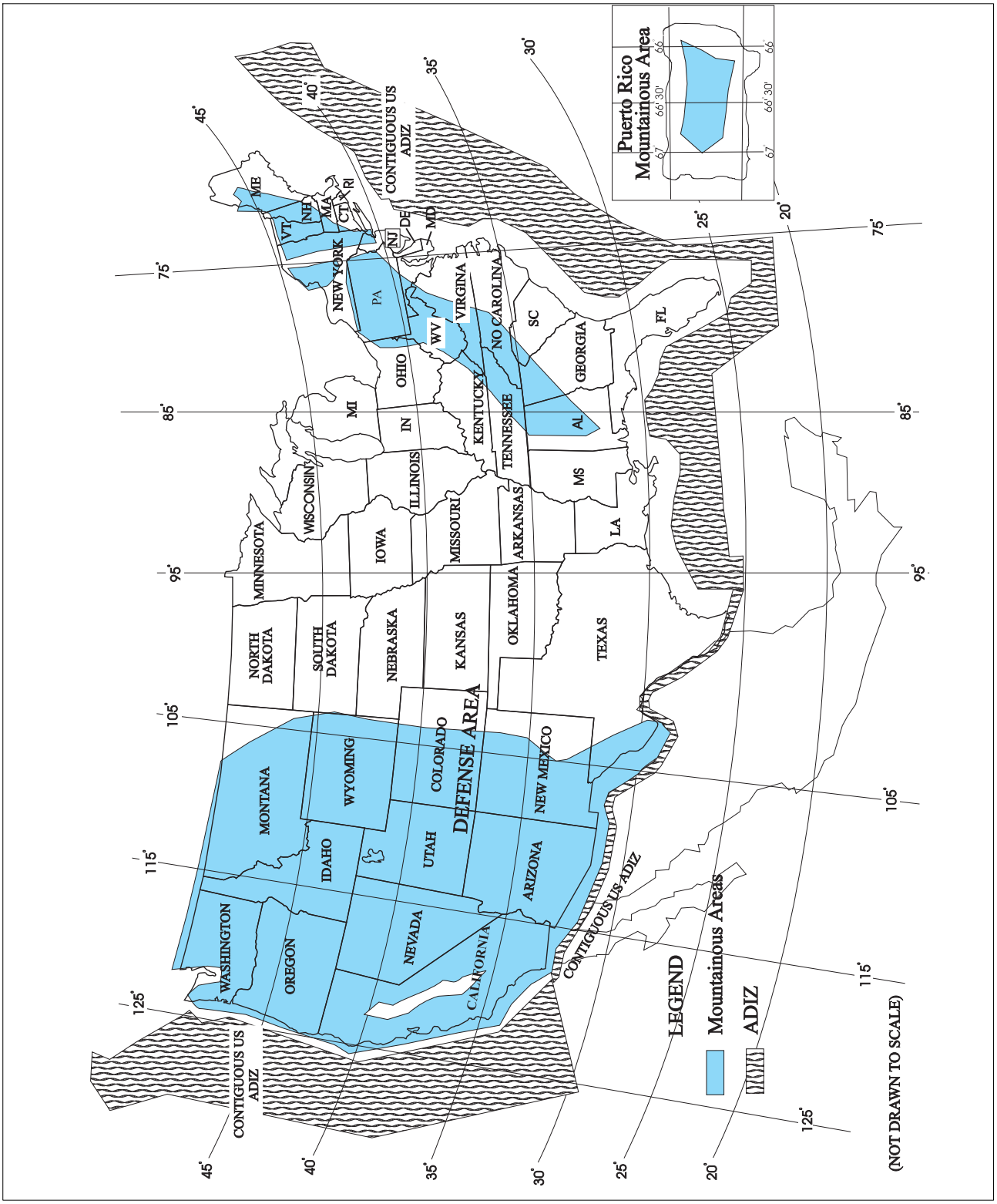
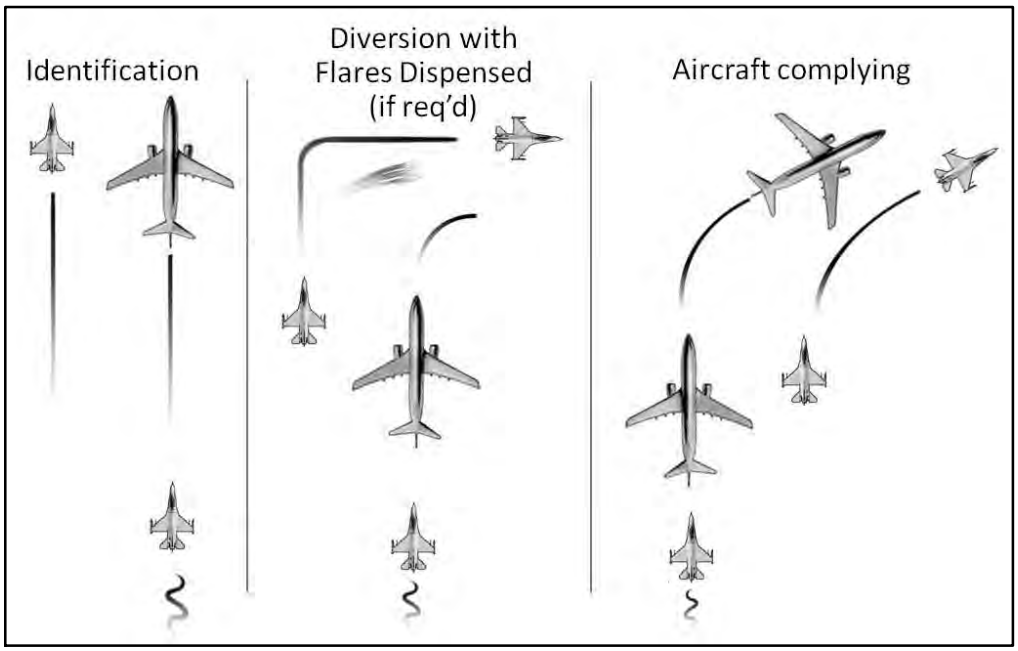


FIG ENR 1.12−2
Intercept Procedures



2.3 Helicopter Intercept Phases (See FIG ENR 1.12−3)

2.3.1 Approach Phase

2.3.1.1 Aircraft intercepted by helicopter may be approached from any direction, although the helicopter should close for identification and signaling from behind. Generally, the helicopter will approach off the left side of the intercepted aircraft. Safe separation between the helicopter and the unidentified aircraft will be maintained at all times.

2.3.2 Identification Phase

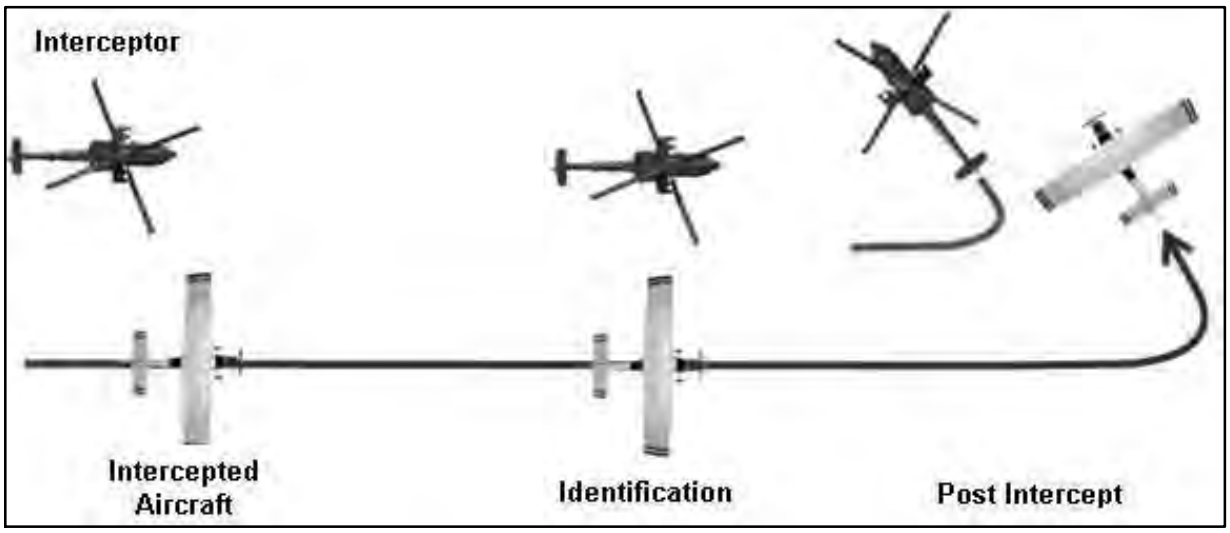
2.3.2.1 The helicopter will initiate a controlled closure toward the aircraft of interest, holding at a distance no closer than deemed necessary to establish positive identification and gather the necessary information. The intercepted pilot should expect the interceptor helicopter to take a position off his left wing slightly forward of abeam.

2.3.3 Post Intercept Phase

2.3.3.1 Visual signaling devices may be used in an attempt to communicate with the intercepted aircraft. Visual signaling devices may include, but are not limited to, LED scrolling signboards or blue flashing lights. If compliance is not obtained through the use of radios or signaling devices, standard ICAO intercept signals (TBL ENR 1.12−1) may be employed. In order to maintain safe aircraft separation, it is incumbent upon the pilot of the intercepted aircraft not to fall into a trail position (directly behind the helicopter) if instructed to follow the helicopter. This is because the helicopter pilot may lose visual contact with the intercepted aircraft.

NOTE−
Intercepted aircraft must not follow directly behind the helicopter thereby allowing the helicopter pilot to maintain visual contact with the intercepted aircraft and ensuring safe separation is maintained.

FIG ENR 1.12−3
Helicopter Intercept Procedures



2.3.4 Summary of Intercepted Aircraft Actions

2.3.4.1 An intercepted aircraft must, without delay:

a) Adhere to instructions relayed through the use of visual devices, visual signals, and radio communications from the intercepting aircraft.

b) Attempt to establish radio communications with the intercepting aircraft or with the appropriate air traffic control facility by making a general call on guard frequencies (121.5 or 243.0 MHz), giving the identity, position, and nature of the flight.

c) If transponder equipped, select Mode 3/A Code 7700 unless otherwise instructed by air traffic control.

NOTE−
If instruction received from any agency conflicts with that given by the intercepting aircraft through visual or radio communications, the intercepted aircraft must seek immediate clarification.

d) Continue to comply with interceptor aircraft signals and instructions until positively released.

2.4 Interception Signals (See TBL ENR 1.12−1 and TBL ENR 1.12−2)

2.5 Visual Warning System (VWS)

2.5.1 The VWS signal consists of highly-focused red and green colored laser lights designed to illuminate in an alternating red and green signal pattern. These lasers may be directed at specific aircraft suspected of making unauthorized entry into the Washington, DC Special Flight Rules Area (DC SFRA) proceeding on a heading or flight path that may be interpreted as a threat or that operate contrary to the operating rules for the DC SFRA. The beam is neither hazardous to the eyes of pilots/aircrew or passengers, regardless of altitude or distance from the source nor will the beam affect aircraft systems.

2.5.1.1 If you are communicating with ATC, and this signal is directed at your aircraft, you are required to contact ATC and advise that you are being illuminated by a visual warning system.

2.5.1.2 If this signal is directed at you, and you are not communicating with ATC, you are advised to turn to the most direct heading away from the center of the DC SFRA as soon as possible. Immediately contact ATC on an appropriate frequency, VHF Guard 121.5 or UHF Guard 243.0, and provide your aircraft identification, position, and nature of the flight. Failure to follow these procedures may result in interception by military aircraft. Further noncompliance with interceptor aircraft or ATC may result in the use of force.

2.5.1.3 Pilots planning to operate aircraft in or near the DC SFRA are to familiarize themselves with aircraft intercept procedures. This information applies to all aircraft operating within the DC SFRA including DOD, Law Enforcement, and aircraft engaged in aeromedical operations and does not

change procedures established for reporting unauthorized laser illumination as published in FAA Advisory Circulars and Notices.

REFERENCE−
CFR 91.161

2.5.1.4 More details including a video demonstration of the VWS are available from the following FAA web site: **www.faasafety.gov/VisualWarningSystem/VisualWarning.htm**.

3. Law Enforcement Operations by Civil and Military Organizations

3.1 Special law enforcement operations

3.1.1 Special law enforcement operations include in−flight identification, surveillance, interdiction, and pursuit activities performed in accordance with official civil and/or military mission responsibilities.

3.1.2 To facilitate accomplishment of these special missions, exemptions from specified sections of the Federal Aviation Regulations have been granted to designated departments and agencies. However, it is each organization's responsibility to apprise air traffic control (ATC) of their intent to operate under an authorized exemption before initiating actual operations.

3.1.3 Additionally, some departments and agencies that perform special missions have been assigned coded identifiers to permit them to apprise ATC of ongoing mission activities and solicit special air traffic assistance.

TBL ENR 1.12−1

Intercepting Signals

INTERCEPTING SIGNALS Signals initiated by intercepting aircraft and responses by intercepted aircraft (as set forth in ICAO Annex 2-Appendix 1, 2.1)				
Series	**INTERCEPTING Aircraft Signals**	**Meaning**	**INTERCEPTED Aircraft Responds**	**Meaning**
1	DAY−Rocking wings from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft and, after acknowledgement, a slow level turn, normally to the left, on to the desired heading. NIGHT-Same and, in addition, flashing navigational lights at irregular intervals. *NOTE 1−Meteorological conditions or terrain may require the intercepting aircraft to take up a position slightly above and ahead of, and to the right of, the intercepted aircraft and to make the subsequent turn to the right.* *NOTE 2−If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race−track patterns and to rock its wings each time it passes the intercepted aircraft.*	You have been intercepted. Follow me.	AEROPLANES: DAY−Rocking wings and following. NIGHT−Same and, in addition, flashing navigational lights at irregular intervals. HELICOPTERS: DAY or NIGHT−Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.
2	DAY or NIGHT−An abrupt break−away maneuver from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	AEROPLANES: DAY or NIGHT-Rocking wings. HELICOPTERS: DAY or NIGHT−Rocking aircraft.	Understood, will comply.
3	DAY−Circling aerodrome, lowering landing gear and overflying runway in direction of landing or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. NIGHT−Same and, in addition, showing steady landing lights.	Land at this aerodrome.	AEROPLANES: DAY−Lowering landing gear, following the intercepting aircraft and, if after overflying the runway landing is considered safe, proceeding to land. NIGHT−Same and, in addition, showing steady landing lights (if carried). HELICOPTERS: DAY or NIGHT-Following the intercepting aircraft and proceeding to land, showing a steady landing light (if carried).	Understood, will comply.

TBL ENR 1.12−2

Intercepting Signals

INTERCEPTING SIGNALS Signals and Responses During Aircraft Intercept Signals initiated by intercepted aircraft and responses by intercepting aircraft (as set forth in ICAO Annex 2-Appendix 1, 2.2)				
Series	**INTERCEPTED Aircraft Signals**	**Meaning**	**INTERCEPTING Aircraft Responds**	**Meaning**
4	AEROPLANES: DAY−Raising landing gear while passing over landing runway at a height exceeding 300m (1,000 ft) but not exceeding 600m (2,000 ft) above the aerodrome level, and continuing to circle the aerodrome. NIGHT−Flashing landing lights while passing over landing runway at a height exceeding 300m (1,000 ft) but not exceeding 600m (2,000 ft) above the aerodrome level, and continuing to circle the aerodrome. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate.	DAY or NIGHT−If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear and uses the Series 1 signals prescribed for intercepting aircraft. If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.	Understood, follow me. Understood, you may proceed.
5	AEROPLANES: DAY or NIGHT−Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	DAY or NIGHT-Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	AEROPLANES: DAY or NIGHT−Irregular flashing of all available lights. HELICOPTERS: DAY or NIGHT−Irregular flashing of all available lights.	In distress.	DAY or NIGHT-Use Series 2 signals prescribed for intercepting aircraft.	Understood.

procedures and display resolution allow for compliance with the 1,000−foot tolerance requirement.

3.7 Operational Requirements for Instrument Approach Procedures

3.7.1 When the use of RNAV equipment using GPS input is planned as a substitute means of navigation guidance for part of an instrument approach procedure at a destination airport, any required alternate airport must have an available instrument approach procedure that does not require the use of GPS. This restriction includes conducting a conventional approach at the alternate airport using a substitute means of navigation guidance based upon the use of GPS. This restriction does not apply to RNAV systems using WAAS as an input.

3.7.2 Pilots of aircraft with standalone GPS receivers must ensure that CDI sensitivity is ±1 NM.

NOTE−
If using GPS distance as an alternate or substitute means of navigation guidance for DME distance on an instrument approach procedure, pilots must select a named waypoint from the onboard navigation database that is associated with the subject DME facility. Pilots should not rely on information from an RNAV instrument approach procedure, as distances on RNAV approaches may not match the distance to the facility.

3.8 Operational Requirements for Specific Inputs to RNAV Systems:

3.8.1 GPS

3.8.1.1 RNAV systems using GPS input may be used as an alternate means of navigation guidance without restriction if appropriate RAIM is available.

3.8.1.2 Operators of aircraft with RNAV systems that use GPS input but do not automatically alert the pilot of a loss of GPS, must develop procedures to verify correct GPS operation.

3.8.1.3 RNAV systems using GPS input may be used as a substitute means of navigation guidance provided RAIM availability for the operation is confirmed. During flight planning, the operator should confirm the availability of RAIM with the latest GPS NOTAMs. If no GPS satellites are scheduled to be out−of−service, then the aircraft can depart without further action. However, if any GPS satellites are scheduled to be out−of−service, then the operator must confirm the availability of GPS integrity (RAIM) for the intended operation. In the event of a predicted, continuous loss of RAIM of more than five (5) minutes for any part of the route or procedure, the operator should delay, cancel, or re−route the flight as appropriate. Use of GPS as a substitute is not authorized when the RAIM capability of the GPS equipment is lost.

NOTE−
The FAA is developing a RAIM prediction service for general use. Until this capability is operational, a RAIM prediction does not need to be done for a departure or arrival procedure with an associated "RADAR REQUIRED" note charted or for routes where the operator expects to be in radar coverage. Operators may check RAIM availability for departure or arrival procedures at any given airport by checking approach RAIM for that location. This information is available upon request from a U.S. Flight Service Station, but is no longer available through DUATS.

3.8.2 WAAS

3.8.2.1 RNAV systems using WAAS input may be used as an alternate means of navigation guidance without restriction.

3.8.2.2 RNAV systems using WAAS input may be used as a substitute means of navigation guidance provided WAAS availability for the operation is confirmed. Operators must check WAAS NOTAMs.

3.8.3 DME/DME/IRU

3.8.3.1 RNAV systems using DME/DME/IRU, without GPS input, may be used as an alternate means of navigation guidance whenever valid DME/DME position updating is available.

4. Pilots and Air Traffic Controllers Recognizing Interference or Spoofing

4.1 Pilots need to maintain position awareness while navigating. This awareness may be facilitated by keeping relevant ground−based, legacy navigational aids tuned and available. By utilizing this practice, situational awareness is promoted and guards against significant pilot delay in recognizing the onset of GPS interference. Pilots may find cross−checks of other airborne systems (for example, DME/DME/IRU or VOR) useful to mitigate this otherwise undetected hazard.

REFERENCE−
AIP ENR 4.1, Paragraph 16. Global Positioning System (GPS)
AIP ENR 4.1, Paragraph 17. Wide Area Augmentation System (WAAS)

4.2 During preflight planning, pilots should be particularly alert for NOTAMs which could affect

navigation (GPS or WAAS) along their route of flight, such as Department of Defense electronic signal tests with GPS.

REFERENCE–
AIP ENR 4.1, Paragraph 16. Global Positioning System (GPS)
AIP ENR 4.1, Paragraph 17. Wide Area Augmentation System (WAAS)

4.3 If the pilot experiences interruptions while navigating with GPS, the pilot and ATC may both incur a higher workload. In the aircraft, the pilot may need to change to ground–based NAVAIDs (for example, DME/DME/IRU or VOR). If the pilot's aircraft is under ATC radar or multilateration surveillance, ATC may be able to provide radar vectors out of the interference affected area or to an alternate destination upon pilot request. An ADS–B Out aircraft's broadcast information may be incorrect and should not be relied upon for surveillance when interference or spoofing is suspected unless its accuracy can be verified by independent means. During the approach phase, a pilot might elect to continue in visual conditions or may need to execute the published missed approach. If the published missed approach procedure is GPS–based, the pilot will need alternate instructions. If the pilot were to choose to continue in visual conditions, the pilot could aid the controller by cancelling his/her IFR flight plan and proceeding to the airport to land. ATC would cancel the pilot's IFR clearance and issue a VFR squawk; freeing up the controller to handle other aircraft.

4.4 The FAA requests that pilots notify ATC if they experience interruptions to their GPS navigation or surveillance. GPS interference or outages associated with a known testing NOTAM should not be reported to ATC unless the interference/outage affects the pilot's ability to navigate his/her aircraft.

REFERENCE–
AIP ENR 4.1, Paragraph 22. User Reports Requested on NAVAID or Global Navigation Satellite System (GNSS) Performance or Interference.

ENR 4. NAVIGATION AIDS/SYSTEMS

ENR 4.1 Navigation Aids – En Route

1. Nondirectional Radio Beacon (NDB)

1.1 A low or medium frequency radio beacon transmits nondirectional signals whereby the pilot of an aircraft properly equipped can determine bearings and "home" on the station. These facilities normally operate in a frequency band of 190 to 535 kilohertz (kHz), according to ICAO Annex 10 the frequency range for NDBs is between 190 and 1750 kHz, and transmit a continuous carrier with either 400 or 1020 hertz (Hz) modulation. All radio beacons except the compass locators transmit a continuous three–letter identification in code except during voice transmissions.

1.2 When a radio beacon is used in conjunction with the Instrument Landing System markers, it is called a Compass Locator.

1.3 Voice transmissions are made on radio beacons unless the letter "W" (without voice) is included in the class designator (HW).

1.4 Radio beacons are subject to disturbances that may result in erroneous bearing information. Such disturbances result from such factors as lightning, precipitation, static, etc. At night radio beacons are vulnerable to interference from distant stations. Nearly all disturbances which affect the aircraft's Automatic Direction Finder (ADF) bearing also affect the facility's identification. Noisy identification usually occurs when the ADF needle is erratic; voice, music, or erroneous identification will usually be heard when a steady false bearing is being displayed. Since ADF receivers do not have a "FLAG" to warn the pilot when erroneous bearing information is being displayed, the pilot should continuously monitor the NDB's identification.

2. VHF Omni–directional Range (VOR)

2.1 VORs operate within the 108.0 – 117.95 MHz frequency band and have a power output necessary to provide coverage within their assigned operational service volume. They are subject to line–of–sight restrictions, and range varies proportionally to the altitude of the receiving equipment.

NOTE–
Normal service ranges for the various classes of VORs are given in GEN 3.4, TBL GEN 3.4–1, VOR/DME/TACAN Standard Service Volumes.

2.2 Most VORs are equipped for voice transmission on the VOR frequency. VORs without voice capability are indicated by the letter "W" (without voice) included in the class designator (VORW).

2.3 The effectiveness of the VOR depends upon proper use and adjustment of both ground and airborne equipment.

2.3.1 Accuracy. The accuracy of course alignment of the VOR is excellent, being generally plus or minus 1 degree.

2.3.2 Roughness. On some VORs, minor course roughness may be observed, evidenced by course needle or brief flag alarm activity (some receivers are more subject to these irregularities than others). At a few stations, usually in mountainous terrain, the pilot may occasionally observe a brief course needle oscillation, similar to the indication of "approaching station." Pilots flying over unfamiliar routes are cautioned to be on the alert of these vagaries, and, in particular, to use the "to–from" indicator to determine positive station passage.

2.3.2.1 Certain propeller RPM settings or helicopter rotor speeds can cause the VOR Course Deviation Indicator (CDI) to fluctuate as much as plus or minus six degrees. Slight changes to the RPM setting will normally smooth out this roughness. Pilots are urged to check for this modulation phenomenon prior to reporting a VOR station or aircraft equipment for unsatisfactory operation.

2.4 The only positive method of identifying a VOR is by its Morse Code identification or by the recorded automatic voice identification which is always indicated by use of the word "VOR" following the range's name. Reliance on determining the identification of an omnirange should never be placed on listening to voice transmissions by the FSS (or approach control facility) involved. Many FSS remotely operate several omniranges which have different names from each other and, in some cases,

none have the name of the "parent" FSS. During periods of maintenance the facility may radiate a T−E−S−T code (− ● ●●● −) or the code may be removed. Some VOR equipment decodes the identifier and displays it to the pilot for verification to charts, while other equipment simply displays the expected identifier from a database to aid in verification to the audio tones. You should be familiar with your equipment and use it appropriately. If your equipment automatically decodes the identifier, it is not necessary to listen to the audio identification.

2.5 Voice identification has been added to numerous VORs. The transmission consists of a voice announcement; i.e., "AIRVILLE VOR," alternating with the usual Morse Code identification.

2.6 The VOR Minimum Operational Network (MON). As flight procedures and route structure based on VORs are gradually being replaced with Performance−Based Navigation (PBN) procedures, the FAA is removing selected VORs from service. PBN procedures are primarily enabled by GPS and its augmentation systems, collectively referred to as Global Navigation Satellite System (GNSS). Aircraft that carry DME/DME equipment can also use RNAV which provides a backup to continue flying PBN during a GNSS disruption. For those aircraft that do not carry DME/DME, the FAA is retaining a limited network of VORs, called the VOR MON, to provide a basic conventional navigation service for operators to use if GNSS becomes unavailable. During a GNSS disruption, the MON will enable aircraft to navigate through the affected area or to a safe landing at a MON airport without reliance on GNSS. Navigation using the MON will not be as efficient as the new PBN route structure, but use of the MON will provide nearly continuous VOR signal coverage at 5,000 feet AGL across the NAS, outside of the Western U.S. Mountainous Area (WUSMA).

NOTE−
There is no plan to change the NAVAID and route structure in the WUSMA.

The VOR MON has been retained principally for IFR aircraft that are not equipped with DME/DME avionics. However, VFR aircraft may use the MON as desired. Aircraft equipped with DME/DME navigation systems would, in most cases, use DME/DME to continue flight using RNAV to their destination. However, these aircraft may, of course, use the MON.

2.6.1 Distance to a MON airport. Within the contiguous United States (CONUS), the VOR MON is designed to ensure that an airport that has an instrument approach that is not dependent on GPS, ADF, DME or radar within 100 NM of any location. These airports are referred to as "MON airports" and will have an ILS approach or a VOR approach if an ILS is not available. VORs to support these approaches will be retained in the VOR MON. MON airports are charted on low−altitude en route charts and are contained in the Chart Supplement U.S. and other appropriate publications.

NOTE−
Any suitable airport can be used to land in the event of a VOR outage. For example, an airport with a DME−required ILS approach may be available and could be used by aircraft that are equipped with DME. The intent of the MON airport is to provide an approach that can be used by aircraft without ADF or DME when radar may not be available.

2.6.2 Navigating to an airport. The VOR MON will retain sufficient VORs to ensure that pilots will have nearly continuous signal reception of a VOR when flying at 5,000 feet AGL. The service volume of VORs will be increased to provide service at 5,000feet above the VOR. If the pilot encounters a GPS outage, the pilot will be able to proceed via VOR−to−VOR navigation at 5,000 feet above the VOR, either through the GPS outage area or to a safe landing at a MON airport or another suitable airport, as appropriate. Nearly all VORs inside of the WUSMA and outside the CONUS are being retained. In these areas, pilots use the existing (Victor and Jet) route structure and VORs to proceed through a GPS outage or to a landing.

2.6.3 Using the VOR MON.

2.6.3.1 In the case of a planned GPS outage (for example, one that is in a published NOTAM), pilots may plan to fly through the outage using the MON as appropriate and as cleared by ATC. Similarly, aircraft not equipped with GPS may plan to fly and land using the MON, as appropriate and as cleared by ATC.

NOTE−
1. *In many cases, flying using the MON may involve a more circuitous route than flying GPS−enabled RNAV.*

2. *Aircraft not equipped with GPS may be limited to a visual approach at the planned destination.*

2.6.3.2 In the case of an unscheduled GPS outage, pilots and ATC will need to coordinate the best outcome for all aircraft. It is possible that a GPS

outage could be disruptive, causing high workload and demand for ATC service. Generally, the VOR MON concept will enable pilots to navigate through the GPS outage or land at a MON airport or at another airport that may have an appropriate approach or may be in visual conditions.

a) The VOR MON is a reversionary service provided by the FAA for use by aircraft that are unable to continue RNAV during a GPS disruption. The FAA has not mandated that preflight or inflight planning include provisions for GPS– or WAAS–equipped aircraft to carry sufficient fuel to proceed to a MON airport in case of an unforeseen GPS outage. Specifically, flying to a MON airport as a filed alternate will not be explicitly required. Of course, consideration for the possibility of a GPS outage is prudent during flight planning as is maintaining proficiency with VOR navigation.

b) Also, in case of a GPS outage, pilots may coordinate with ATC and elect to continue through the outage or land. The VOR MON is designed to ensure that an aircraft is within 100 NM of an airport, but pilots may decide to proceed to any appropriate airport where a landing can be made, as coordinated with ATC. WAAS users flying under Part 91 are not required to carry VOR avionics. These users do not have the ability or requirement to use the VOR MON. Prudent flight planning, by these WAAS–only aircraft, should consider the possibility of a GPS outage.

NOTE–
The FAA recognizes that non–GPS–based approaches will be reduced when VORs are eliminated, and that most airports with an instrument approach may only have GPS– or WAAS–based approaches. Pilots flying GPS– or WAAS–equipped aircraft that also have VOR/ILS avionics should be diligent to maintain proficiency in VOR and ILS approaches in the event of a GPS outage.

3. VOR Receiver Check

3.1 Periodic VOR receiver calibration is most important. If a receiver's Automatic Gain Control or modulation circuit deteriorates, it is possible for it to display acceptable accuracy and sensitivity close into the VOR or VOT and display out–of–tolerance readings when located at greater distances where weaker signal areas exist. The likelihood of this deterioration varies between receivers, and is generally considered a function of time. The best assurance of having an accurate receiver is periodic calibration. Yearly intervals are recommended at which time an authorized repair facility should recalibrate the receiver to the manufacturer's specifications.

3.2 14 CFR Section 91.171 provides for certain VOR equipment accuracy checks prior to flight under IFR. To comply with this requirement and to ensure satisfactory operation of the airborne system, the FAA has provided pilots with the following means of checking VOR receiver accuracy:

3.2.1 FAA VOR test facility (VOT) or a radiated test signal from an appropriately rated radio repair station.

3.2.2 Certified airborne check points.

3.2.3 Certified check points on the airport surface.

3.3 The FAA VOT transmits a test signal which provides a convenient means to determine the operational status and accuracy of a VOR receiver while on the ground where a VOT is located. The airborne use of VOT is permitted; however, its use is strictly limited to those areas/altitudes specifically authorized in the Chart Supplement U.S. or appropriate supplement. To use the VOT service, tune in the VOT frequency on your VOR receiver. With the CDI centered, the omni–bearing selector should read 0° with the to/from indicator showing "from," or the omni–bearing selector should read 180° with the to/from indicator showing "to." Should the VOR receiver operate a Radio Magnetic Indicator (RMI), it will indicate 180° on any OBS setting. Two means of identification are used. One is a series of dots, and the other is a continuous tone. Information concerning an individual test signal can be obtained from the local FSS.

3.4 A radiated VOR test signal from an appropriately rated radio repair station serves the same purpose as an FAA VOR signal and the check is made in much the same manner as a VOT with the following differences:

3.4.1 The frequency normally approved by the FCC is 108.0 MHz.

3.4.2 Repair stations are not permitted to radiate the VOR test signal continuously, consequently the owner/operator must make arrangements with the repair station to have the test signal transmitted. This service is not provided by all radio repair stations. The aircraft owner or operator must determine which

repair station in the local area provides this service. A representative of the repair station must make an entry into the aircraft logbook or other permanent record certifying to the radial accuracy and the date of transmission. The owner/operator or representative of the repair station may accomplish the necessary checks in the aircraft and make a logbook entry stating the results. It is necessary to verify which test radial is being transmitted and whether you should get a "to" or "from" indication.

3.5 Airborne and ground check points consist of certified radials that should be received at specific points on the airport surface, or over specific landmarks while airborne in the immediate vicinity of the airport.

3.5.1 Should an error in excess of plus or minus 4 degrees be indicated through use of a ground check, or plus or minus 6 degrees using the airborne check, IFR flight must not be attempted without first correcting the source of the error.

CAUTION−
No correction other than the "correction card" figures supplied by the manufacturer should be applied in making these VOR receiver checks.

3.5.2 Locations of airborne check points, ground check points and VOTs are published in the Chart Supplement U.S.

3.5.3 If a dual system VOR (units independent of each other except for the antenna) is installed in the aircraft, one system may be checked against the other. Turn both systems to the same VOR ground facility and note the indicated bearing to that station. The maximum permissible variations between the two indicated bearings is 4 degrees.

4. Distance Measuring Equipment (DME)

4.1 In the operation of DME, paired pulses at a specific spacing are sent out from the aircraft (this is the interrogation) and are received at the ground station. The ground station (transponder) then transmits paired pulses back to the aircraft at the same pulse spacing but on a different frequency. The time required for the round trip of this signal exchange is measured in the airborne DME unit and is translated into distance (nautical miles (NM)) from the aircraft to the ground station.

4.2 Operating on the line−of−sight principle, DME furnishes distance information with a very high degree of accuracy. Reliable signals may be received at distances up to 199 NM at line−of−sight altitude with an accuracy of better than $^1/_2$ mile or 3% of the distance, whichever is greater. Distance information received from DME equipment is SLANT RANGE distance and not actual horizontal distance.

4.3 Operating frequency range of a DME according to ICAO Annex 10 is from 960 MHz to 1215 MHz. Aircraft equipped with TACAN equipment will receive distance information from a VORTAC automatically, while aircraft equipped with VOR must have a separate DME airborne unit.

4.4 VOR/DME, VORTAC, ILS/DME, and LOC/DME navigation facilities established by the FAA provide course and distance information from collocated components under a frequency pairing plan. Aircraft receiving equipment which provides for automatic DME selection assures reception of azimuth and distance information from a common source whenever designated VOR/DME, VORTAC, ILS/DME, and LOC/DME are selected.

4.5 Due to the limited number of available frequencies, assignment of paired frequencies is required for certain military noncollocated VOR and TACAN facilities which serve the same area but which may be separated by distances up to a few miles.

4.6 VOR/DME, VORTAC, ILS/DME, and LOC/DME facilities are identified by synchronized identifications which are transmitted on a time share basis. The VOR or localizer portion of the facility is identified by a coded tone modulated at 1020 Hz or by a combination of code and voice. The TACAN or DME is identified by a coded tone modulated at 1350 Hz. The DME or TACAN coded identification is transmitted one time for each three or four times that the VOR or localizer coded identification is transmitted. When either the VOR or the DME is inoperative, it is important to recognize which identifier is retained for the operative facility. A signal coded identification with a repetition interval of approximately 30 seconds indicates that the DME is operative.

4.7 Aircraft equipment which provides for automatic DME selection assures reception of azimuth and distance information from a common source whenever designated VOR/DME, VORTAC, and

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 ground equipment consists of two highly directional transmitting systems and, along the approach, three (or fewer) marker beacons. The directional transmitters are known as the localizer and glide slope transmitters.

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 Precision radar, or compass locators located at the Outer Marker (OM) or Middle Marker (MM), may be substituted for marker beacons. DME, when specified in the procedure, may be substituted for the OM.

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

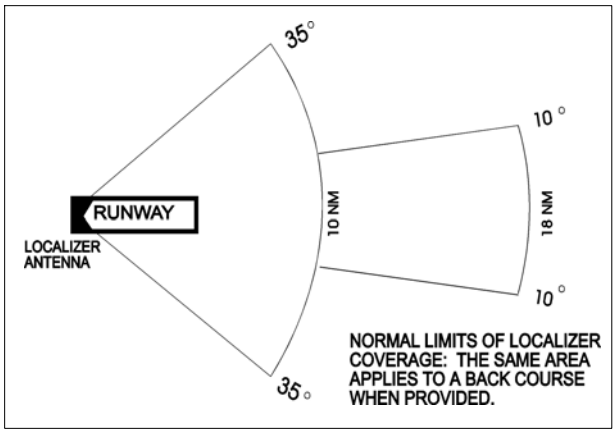
6.2.5 The localizer provides course guidance throughout the descent path to the runway threshold from a distance of 18 NM from the antenna between an altitude of 1,000 feet above the highest terrain along the course line and 4,500 feet above the elevation of the antenna site. Proper off−course indications 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.

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 Section , 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 Ordinarily, there are two marker beacons associated with an ILS, the outer marker (OM) and the middle marker (MM). Locations with a Category II or III ILS also have an inner marker (IM). When an aircraft passes over a marker, the pilot will receive the following indications:

6.6.3 The OM normally indicates a position at which an aircraft at the appropriate altitude on the localizer course will intercept the ILS glide path.

6.6.4 The MM indicates a position approximately 3,500 feet from the landing threshold. This will also be 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.

6.6.5 The IM indicates a point at which an aircraft is at a designated decision height (DH) on the glide path between the middle marker and landing threshold.

6.6.6 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. At or above 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.

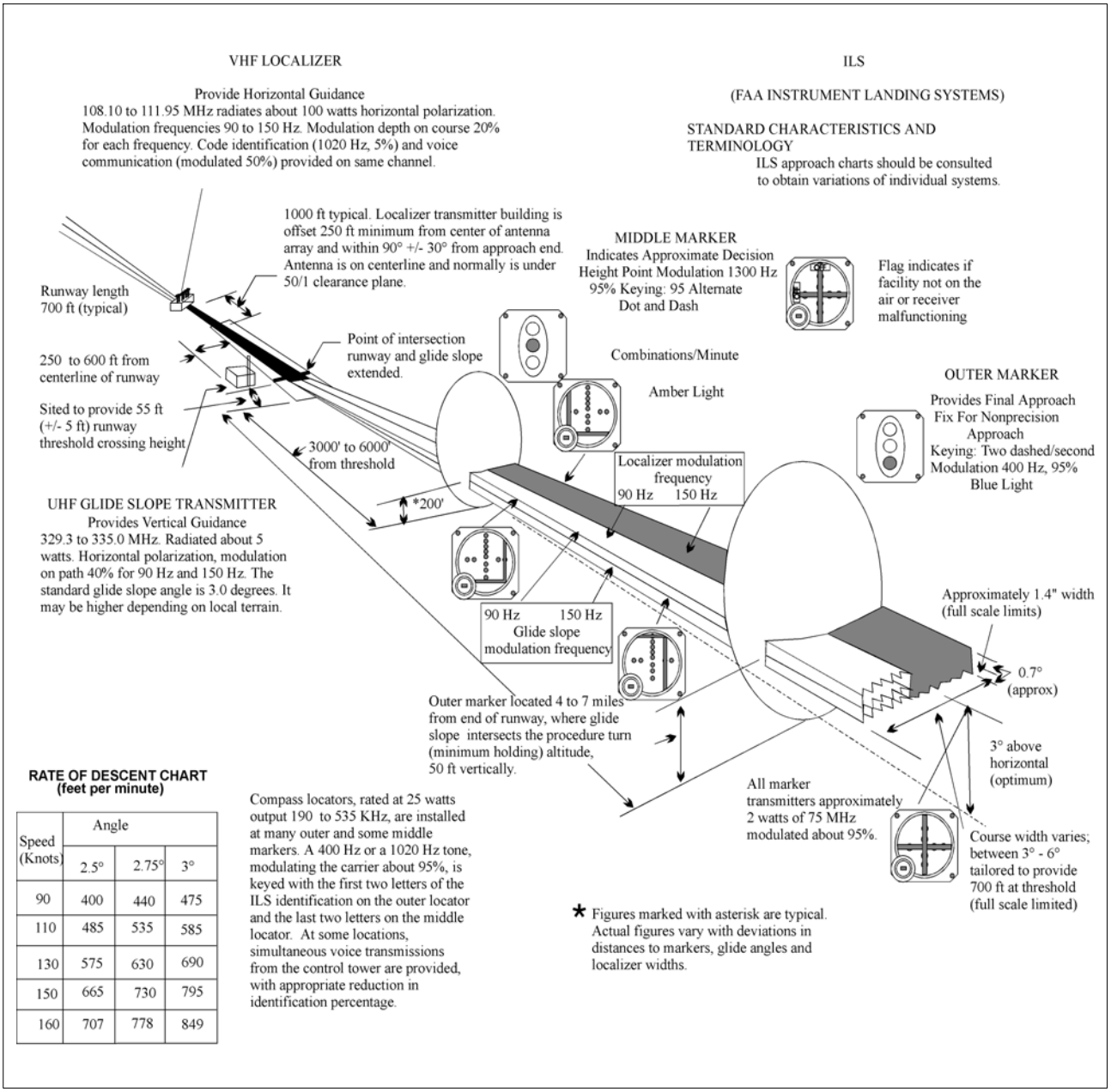
11.2.2.2 Localizer Critical Area. Except for aircraft that land, exit a runway, depart, or execute a missed approach, vehicles and aircraft are not authorized in or over the critical area when an arriving aircraft is inside the outer marker (OM) or the fix used in lieu of the OM. Additionally, when conditions are less than reported ceiling 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 5.7, 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 enroute 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), enroute 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 enroute 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. It provides differential augmentation to the Global Navigation Satellite System (GNSS).

18.1.2 LAAS was developed as an "ILS look−alike" system from the pilot perspective. LAAS is based on

GPS signals augmented by ground equipment and has been developed to provide GLS precision approaches similar to ILS at airfields.

18.1.3 GLS provides guidance similar to ILS approaches for the final approach segment; portions of the GLS approach prior to and after the final approach segment will be based on Area Navigation (RNAV) or Required Navigation Performance (RNP).

18.1.4 The equipment consists of a GBAS Ground Facility (GGF), four reference stations, a VHF Data Broadcast (VDB) uplink antenna, and an aircraft GBAS receiver.

18.2 Procedure

18.2.1 Pilots will select the five digit GBAS channel number of the associated 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 LAAS 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).

18.2.3 The pilot will fly the GLS approach using the same techniques as an ILS, once selected and identified.

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.

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 can 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 may 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.

ENR 5.7 Potential Flight Hazards

1. Accident Causal Factors

1.1 The ten most frequent cause factors for General Aviation Accidents in 1992 that involve the pilot in command are:

1.1.1 Inadequate preflight preparation and/or planning.

1.1.2 Failure to obtain/maintain flying speed.

1.1.3 Failure to obtain/maintain flying speed.

1.1.4 Failure to maintain direction control.

1.1.5 Improper level off.

1.1.6 Failure to see and avoid objects or obstructions.

1.1.7 Mismanagement of fuel.

1.1.8 Improper in–flight decisions or planning.

1.1.9 Misjudgment of distance and speed.

1.1.10 Selection of unsuitable terrain.

1.1.11 Improper operation of flight controls.

1.2 The above factors have continued to plague General Aviation pilots over the years. This list remains relatively stable and points out the need for continued refresher training to establish a higher level of flight proficiency for all pilots. A part of the FAA's continuing effort to promote increased aviation safety is the Aviation Safety Program. For information on the FAA's Aviation Safety Program, readers can contact their nearest Flight Standards District Office's Safety Program Manager.

1.3 Be alert at all times, especially when the weather is good. Most pilots pay attention to business when they are operating in full IFR weather conditions, but strangely, air collisions almost invariably have occurred under ideal weather conditions. Unlimited visibility appears to encourage a sense of security which is not at all justified. Considerable information of value may be obtained by listening to advisories being issued in the terminal area, even though controller workload may prevent a pilot from obtaining individual service.

1.4 If you think another aircraft is too close to you, give way instead of waiting for the other pilot to respect the right–of–way to which you may be entitled. It is a lot safer to pursue the right–of–way angle after you have completed your flight.

2. VFR In Congested Area

2.1 A high percentage of near midair collisions occur below 8,000 feet AGL and within 30 miles of an airport. When operating VFR in highly congested areas, whether you intend to land at an airport within the area or are just flying through, it is recommended that extra vigilance be maintained and that you monitor an appropriate control frequency. Normally the appropriate frequency is an approach control frequency. By such monitoring action you can "get the picture" of the traffic in your area. When the approach controller has radar, traffic advisories may be given to VFR pilots who request them, subject to the provisions included in ENR 1.1, paragraph 37.10.4, Radar Traffic Information Service (RTIS).

3. Obstructions to Flight

3.1 General

3.1.1 Many structures exist that could significantly affect the safety of your flight when operating below 500 feet above ground level (AGL), and particularly below 200 feet AGL. While 14 CFR Section 91.119 allows flight below 500 AGL when over sparsely populated areas or open water, such operations are very dangerous. At and below 200 feet AGL there are numerous power lines, antenna towers, etc., that are not marked and lighted as obstructions and therefore may not be seen in time to avoid a collision. Notices to Airmen (NOTAM) are issued on those lighted structures experiencing temporary light outages. However, some time may pass before the FAA is notified of these outages, and the NOTAM issued, thus pilot vigilance is imperative.

3.2 Antenna Towers

3.2.1 Extreme caution should be exercised when flying less that 2,000 feet above ground level (AGL) because of numerous skeletal structures, such as radio and television antenna towers, that exceed 1,000 feet AGL with some extending higher than 2,000 feet AGL. Most skeletal structures are supported by guy wires which are very difficult to see in good weather and can be invisible at dusk or during

periods of reduced visibility. These wires can extend about 1,500 feet horizontally from a structure; therefore, all skeletal structures should be avoided horizontally by at least 2,000 feet. Additionally, new towers may not be on your current chart because the information was not received prior to the printing of the chart.

3.3 Overhead Wires

3.3.1 Overhead transmission and utility lines often span approaches to runways, natural flyways such as lakes, rivers, gorges, and canyons, and cross other landmarks pilots frequently follow such as highways, railroad tracks, etc. As with antenna towers, these high voltage/power lines or the supporting structures of these lines may not always be readily visible and the wires may be virtually impossible to see under certain conditions. In some locations, the supporting structures of overhead transmission lines are equipped with unique sequence flashing white strobe light systems to indicate that there are wires between the structures. However, many power lines do not require notice to the FAA and, therefore, are not marked and/or lighted. Many of those that do require notice do not exceed 200 feet AGL or meet the Obstruction Standard of 14 CFR Part 77 and, therefore, are not marked and/or lighted. All pilots are cautioned to remain extremely vigilant for these power lines or their supporting structures when following natural flyways or during the approach and landing phase. This is particularly important for seaplane and/or float equipped aircraft when landing on, or departing from, unfamiliar lakes or rivers.

3.4 Other Objects/Structures

3.4.1 There are other objects or structures that could adversely affect your flight such as construction cranes near an airport, newly constructed buildings, new towers, etc. Many of these structures do not meet charting requirements or may not yet be charted because of the charting cycle. Some structures do not require obstruction marking and/or lighting and some may not be marked and lighted even though the FAA recommended it.

4. Avoid Flight Beneath Unmanned Balloons

4.1 The majority of unmanned free balloons currently being operated have, extended below them, either a suspension device to which the payload or instrument package is attached, or a trailing wire antenna, or both. In many instances these balloon subsystems may be invisible to the pilot until his/her aircraft is close to the balloon, thereby creating a potentially dangerous situation. Therefore, good judgment on the part of the pilot dictates that aircraft should remain well clear of all unmanned free balloons and flight below then should be avoided at all times.

4.2 Pilots are urged to report any unmanned free balloons sighted to the nearest FAA ground facility with which communication is established. Such information will assist FAA ATC facilities to identify and flight follow unmanned free balloons operating in the airspace.

5. Unmanned Aircraft Systems

5.1 Unmanned Aircraft Systems (UAS), formerly referred to as “Unmanned Aerial Vehicles” (UAVs) or “drones,” are having an increasing operational presence in the NAS. Once the exclusive domain of the military, UAS are now being operated by various entities. Although these aircraft are “unmanned,” UAS are flown by a remotely located pilot and crew. Physical and performance characteristics of unmanned aircraft (UA) vary greatly and unlike model aircraft that typically operate lower than 400 feet AGL, UA may be found operating at virtually any altitude and any speed. Sizes of UA can be as small as several pounds to as large as a commercial transport aircraft. UAS come in various categories including airplane, rotorcraft, powered−lift (tilt−rotor), and lighter−than−air. Propulsion systems of UAS include a broad range of alternatives from piston powered and turbojet engines to battery and solar−powered electric motors.

5.2 To ensure segregation of UAS operations from other aircraft, the military typically conducts UAS operations within restricted or other special use airspace. However, UAS operations are now being approved in the NAS outside of special use airspace through the use of FAA−issued Certificates of Waiver or Authorization (COA) or through the issuance of a special airworthiness certificate. COA and special airworthiness approvals authorize UAS flight operations to be contained within specific geographic boundaries and altitudes, usually require coordination with an ATC facility, and typically require the issuance of a NOTAM describing the operation to be conducted. UAS approvals also require observers to

in the visual segment. No reduction in MDA/DA is permitted. The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest approach category authorized by the procedure, but must be slowed to no more than 90 KIAS at the missed approach point (MAP) in order to apply the visibility reduction. Pilots are cautioned that such a decelerating approach may make early identification of wind shear on the approach path difficult or impossible. If required, use the Inoperative Components and Visual Aids Table provided in the front cover of the U.S. Terminal Procedures Volume to derive the Category A minima before applying the 14 CFR Section 97.3(d–1) rule.

2.1.2 Helicopters flying Copter SIAPs may use the published minima, with no reductions allowed. The maximum airspeed is 90 KIAS on any segment of the approach or missed approach.

2.1.3 Helicopters flying GPS Copter SIAPs must limit airspeed to 90 KIAS or less when flying any segment of the procedure, except speeds must be limited to no more than 70 KIAS on the final and missed approach segments. Military GPS Copter SIAPs are limited to no more than 90 KIAS throughout the procedure. If annotated, holding may also be limited to no more than 70 KIAS. Use the published minima, no reductions allowed.

NOTE–
Obstruction clearance surfaces are based on the aircraft speed and have been designed on these approaches for 70 knots. If the helicopter is flown at higher speeds, it may fly outside of protected airspace. Some helicopters have a V_{MINI} greater than 70 knots; therefore, they can not meet the 70 knot limitation to conduct this type of procedure. Some helicopter autopilots, when used in the "go–around" mode, are programmed with a V_{YI} greater than 70 knots, therefore when using the autopilot "go–around" mode, they can not meet the 70 knot limitation to conduct this type of approach. It may be possible to use the autopilot for the missed approach in the other than the "go–around" mode and meet the 70 knot limitation to conduct this type of approach. When operating at speeds other than V_{YI} or V_Y, performance data may not be available in the RFM to predict compliance with climb gradient requirements. Pilots may use observed performance in similar weight/altitude/temperature/speed conditions to evaluate the suitability of performance. Pilots are cautioned to monitor climb performance to ensure compliance with procedure requirements.

NOTE–
V_{MINI} – Instrument flight minimum speed, utilized in complying with minimum limit speed requirements for instrument flight
V_{YI} – Instrument climb speed, utilized instead of V_Y for compliance with the climb requirements for instrument flight
V_Y – Speed for best rate of climb

2.1.4 TBL ENR 6.1–1 summarizes these requirements.

TBL ENR 6.1–1
Helicopter Use of Standard Instrument Approach Procedures

Procedure	Helicopter Visibility Minima	Helicopter MDA/DA	Maximum Speed Limitations
Conventional (non–Copter)	The greater of: one half the Category A visibility minima, $^1/_4$ statute mile visibility, or 1200 RVR	As published for Category A	The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest Approach Category authorized by the procedure, but must be slowed to no more than 90 KIAS at the MAP in order to apply the visibility reduction.
Copter Procedure	As published	As published	90 KIAS when on a published route/track.
GPS Copter Procedure	As published	As published	90 KIAS when on a published route or track, EXCEPT 70 KIAS when on the final approach or missed approach segment and, if annotated, in holding. Military procedures are limited to 90 KIAS for all segments.

NOTE–
Several factors affect the ability of the pilot to acquire and maintain the visual references specified in 14 CFR Section 91.175(c), even in cases where the flight visibility may be at the minimum derived by TBL ENR 6.1–1. These factors include, but are not limited to:

1. *Cockpit cutoff angle (the angle at which the cockpit or other airframe structure limits downward visibility below the horizon).*

2. *Combinations of high MDA/DH and low visibility minimum, such as a conventional nonprecision approach with a reduced helicopter visibility minima (per 14 CFR Section 97.3).*

3. *Type, configuration, and intensity of approach and runway lighting systems.*

4. *Type of obscuring phenomenon and/or windshield contamination.*

2.1.5 Even with weather conditions reported at or above landing minima, some combinations of reduced cockpit cutoff angle, minimal approach/runway lighting, and high MDA/DH coupled with a low visibility minima, the pilot may not be able to identify the required visual reference(s) during the approach, or those references may only be visible in a very small portion of the pilot's available field of view. Even if identified by the pilot, these visual references may not support normal maneuvering and normal rates of descent to landing. The effect of such a combination may be exacerbated by other conditions such as rain on the windshield, or incomplete windshield defogging coverage.

2.1.6 Pilots are cautioned to be prepared to execute a missed approach even though weather conditions may be reported at or above landing minima.

NOTE–
See Section ENR 1.5, paragraph 27., Missed Approach, for additional information on missed approach procedures.

3. Helicopter Approach Procedures to VFR Heliports

3.1 Helicopter approaches may be developed for heliports that do not meet the design standards for an IFR heliport. The majority of IFR approaches to VFR heliports are developed in support of helicopter emergency medical services (HEMS) operators. These approaches can be developed from conventional NAVAIDs or a RNAV system (including GPS). They are developed either as a Special Approach (pilot training is required for special procedures due to their unique characteristics) or a public approach (no special training required). These instrument procedures are developed as either an approach designed to a specific landing site, or an approach designed to a point–in–space.

3.4 Anchorage Oceanic FIRs

3.4.1 Anchorage Arctic FIR

3.4.1.1 Flight plans must be filed with PAZAZQZX.

3.4.2 Anchorage Oceanic FIR

3.4.2.1 Flight plans must be filed with both PAZAZQZX and PAZNZQZX.

3.5 San Juan CTA/FIR

3.5.1 All aircraft transitioning through San Juan FIR/CTA from a foreign facility that will operate in North Atlantic (NAT) High Level Airspace (HLA) must forward the full route of flight for flight plan verification.

3.5.2 This must be accomplished prior to exiting the San Juan FIR/CTA by one of the following means:

3.5.2.1 Via Direct pilot–controller communication; or

3.5.2.2 Via Aeronautical Radio, Inc. (ARINC), when requested by ATC.

NOTE–
This requirement does not apply to aircraft operating outside of NAT HLA.

4. Beacon Code Requirements

4.1 Oakland Oceanic FIR

4.1.1 Upon entering the Oakland Oceanic CTA and after radar service is terminated; all aircraft should adjust their transponder to display code 2000 on their display. Aircraft should maintain code 2000 thereafter until otherwise directed by Air Traffic Control.

4.2 New York Oceanic FIR

4.2.1 All aircraft transitioning into the West Atlantic Route System (WATRS) via fixed ATS routes must remain on the last ATC–assigned beacon code.

4.3 Anchorage Oceanic FIR

4.3.1 CPDLC aircraft crossing the Anchorage/Oakland FIR boundary westbound between 150W and 160W must contact San Francisco ARINC HF Radio by 140W to receive a discrete beacon code for use in Anchorage airspace.

4.4 Anchorage Arctic FIR

4.4.1 4.4.1 RESERVED

4.5 Houston Oceanic FIR

4.5.1 All aircraft entering the Houston Oceanic CTA/FIR should remain on the last ATCassigned beacon code.

4.6 Miami CTA/FIR

4.6.1 There is no primary radar or weather returns available from the Grand Turk, Georgetown, and Nassau radar systems. Since radar separation is dependent upon the receipt of transponder returns, all aircraft within antenna coverage of either system are required to squawk transponder codes as assigned by ATC, or, if none assigned, squawk the appropriate stratum code.

4.6.2 Aircraft departing and overflying the Santo Domingo and Port Au Prince FIRs can expect ATC assigned codes from those ATS providers. If a code is not assigned by either Santo Domingo or Port Au Prince, pilots should request a code. The assigned code should be squawked prior to entering the Miami CTA/FIR.

5. Position Reporting in the Oceanic Environment

5.1 Pilots must report over each point used in the flight plan to define the route of flight, even if the point is depicted on aeronautical charts as an "on request" (non–compulsory) reporting point. For aircraft providing automatic position reporting via an Automatic Dependent Surveillance– Contract (ADS–C) logon, pilots should discontinue voice position reports.

5.2 Ocean21 cannot accept CPDLC position reports containing latitude and longitude in the ARINC 424 format. The flight crew should use latitudes and longitudes encoded as waypoint names in the ICAO format (for example, 54N150W).

NOTE–
ARINC 424 describes a 5–character latitude/longitude format for aircraft navigation databases (for example, 10N40 describes a latitude/longitude of 10N140W). The ATSU will reject any downlink message containing waypoint names in the ARINC 424 format.

5.3 Oakland Oceanic FIR

5.3.1 Aircraft filed on PACOTS routes within Oakland Oceanic CTA/FIR airspace must make position reports using latitude/longitude coordinates or named fixes as specified in the track definition messages (TDM). Position reports must comprise

information on present position, estimated next position, and ensuing position. Reporting points of reference not specified in the TDM and/or rounding off geographical coordinates is prohibited.

5.4 New York Oceanic FIR

5.4.1 Position reports should be made via ADSC, if the aircraft has ADS–C capability. The two types of ADS–C contracts that will be established with each aircraft are a twenty (20) minute Periodic Report Rate and a five (5) mile Lateral Deviation Event. This is in addition to normal waypoint reports.

5.4.2 Operators should not use CPDLC for position reports but it should be used for all other ATC communications. Position reports should be made via HF if ADS–C is not available.

5.5 Anchorage Oceanic FIR

5.5.1 All waypoints filed in Field 15 of the ICAO flight plan (route field) must be reported as a position report.

5.5.2 Position reports are to be made via ADS, CPDLC or Voice communication in that order of preference.

5.5.3 Aircraft with an active ADS connection must make a CPDLC position report when crossing the IFR boundary (inbound) to ensure CPDLC connectivity.

5.6 Anchorage Arctic FIR

5.6.1 Flights crossing the Anchorage Arctic FIR along 141W between 72N and 90N must file their 141W crossing point as a route element in field 15 of the ICAO flight plan.

5.6.2 All waypoints filed in Field 15 of the ICAO flight plan (route field) must be reported as a position report.

5.7 Houston Oceanic FIR

5.7.1 Position reports and the ability to communicate at any point of the route of flight is vital to the air traffic safety and control process. When flight planning, users are responsible to ensure that they will be capable of compliance. Inability to comply is in violation of ICAO requirements. The communication requirements for IFR flights within the Houston Oceanic Control Area are:

5.7.1.1 Functioning two–way radio communications equipment capable of communicating with at least one ground station from any point on the route;

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, 1 NM or 2 NM right of center line, 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 three positions that an aircraft may fly: center line or one or two miles right of center line. Offsets will not exceed 2 NM right of center line. The intent of this procedure is to reduce risk (add safety margin) by distributing aircraft laterally across the three available positions.

8.4.1 Aircraft without automatic offset programming capability must fly the center line.

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 three 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 7.4 Operational Policy 50 NM Lateral Separation

1. Houston and Miami Oceanic Airspace

1.1 The FAA and the Mexican air traffic services (ATS) providers have implemented 50 NM lateral separation between RNP 10 or RNP 4 aircraft operating in Gulf of Mexico oceanic airspace.

1.2 Fifty (50) NM lateral separation is implemented in the Houston Oceanic CTA/FIR, the Gulf of Mexico portion of the Miami Oceanic CTA/FIR, the Monterrey CTA, and the Merida CTA within the Mexico FIR/UTA.

1.3 RNAV routes within Houston Oceanic airspace are spaced a minimum of 50 NM to support this reduced lateral separation in the Gulf of Mexico.

1.4 Information useful for flight planning and operations within the Gulf of Mexico under this 50 NM lateral separation initiative can be found in the *West Atlantic Route System, Gulf of Mexico, and Caribbean Resource Guide for U.S. Operators* located at www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs400/afs470/media/WATRS.pdf. The Guide can also be found through a web search for "WATRS, GOMEX, Caribbean Resource Guide."

1.4.1 The web page contains detailed guidance on operator and aircraft authorization for RNP 10 or RNP 4 and includes Job Aids with FAA and ICAO document references.

NOTE–
For operations in the Atlantic portion of the Miami Oceanic CTA, or the San Juan CTA/FIR, please review ENR 7.4 Paragraph 5. New York Oceanic Airspace (for information pertaining to the application of 50 NM lateral separation throughout the West Atlantic Route System).

1.5 The 50 NM lateral separation is applied at all altitudes above the floor of controlled airspace. Lateral separation of 100 NM will continue to be provided in the Houston Oceanic, Monterrey, and Merida CTA/FIRs to aircraft not authorized RNP 10 or RNP 4. Similarly, those aircraft will experience 90 NM lateral separation in Miami Oceanic CTA/FIR.

1.6 Operations on certain routes that fall within the boundaries of affected CTAs are not affected by the introduction of 50 NM lateral separation. Operation on the following routes is not affected:

1.6.1 Routes that are flown by reference to ICAO standard ground–based navigation aids (VOR, VOR/DME, NDB); and

1.6.2 Special Area Navigation (RNAV) routes Q100, Q102 and Q105 in the Houston, Jacksonville and Miami CTAs.

1.7 Provisions for Accommodation of Non–RNP 10 Aircraft (Not Authorized RNP 10 or RNP 4).

1.7.1 Operators of Non–RNP 10 aircraft must:

1.7.2 Annotate ICAO flight plan Item 18 as follows:

1.7.2.1 "STS/NON–RNP10" (no space between letters and numbers).

1.7.2.2 Use of flight plan item 18 codes "PBN/A1" or "PBN/L1" are restricted to operators and aircraft specifically authorized for RNP 10 or RNP 4, as applicable.

1.7.3 Pilots of non–RNP 10 aircraft that operate in GoMex CTAs must report the lack of authorization by stating "Negative RNP 10":

1.7.3.1 On initial call to ATC in a Gulf of Mexico CTA; or

1.7.3.2 When approval status is requested by the controller (See paragraph 1.13.1.3).

1.7.4 Non–RNP 10 operators/aircraft may file any route at any altitude in a Gulf of Mexico CTA. They will be cleared to operate on their preferred routes and altitudes as traffic permits. 50 NM lateral separation will not be applied to non–RNP 10 aircraft.

1.7.5 Non–RNP 10 aircraft should plan on completing their climb to or descent from higher FLs within radar coverage, if possible.

1.7.6 In order to maximize operational flexibility provided by 50 NM lateral separation, operators capable of meeting RNP 10 or RNP 4 that operate on oceanic routes or areas in the Gulf of Mexico CTAs should obtain authorization for RNP 10 or RNP 4 and annotate the ICAO flight plan accordingly.

NOTE–
RNP 10 is the minimum Navigation Specification (NavSpec) required for the application of 50 NM lateral separation. RNP 4 is an operator option; operators/aircraft authorized RNP 4 are not required to also obtain RNP 10 authorization.

1.8 RNP 10 or RNP 4 Authorization Policy and Procedures for Aircraft and Operators

1.8.1 The following is ICAO guidance on the state authority responsible for authorizations such as RNP 10, RNP 4, and RVSM:

1.8.1.1 International commercial operators:

The State of Registry makes the determination that the aircraft meets the applicable RNP requirements. The State of Operator issues operating authority (for example, Operations Specifications (OpSpecs)).

1.8.1.2 International general aviation (IGA) operators:

The State of Registry makes the determination that the aircraft meets the applicable RNP requirements and issues operating authority (for example, Letter of Authorization (LOA)).

1.9 Guidance Material.

1.9.1 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*, provides operational approval guidance for RNP 4 and 10. It identifies minimum aircraft capabilities and operator procedural and training requirements in order to qualify for RNP 4 or 10. AC 90-105 is consistent with the ICAO PBN Manual discussed below. Pertinent FAA and ICAO documents are posted online in the *West Atlantic Route System, Gulf of Mexico and Caribbean Resource Guide for U.S. Operators* described in paragraph 1.4.

1.9.2 ICAO Performance–based Navigation (PBN) Manual (ICAO Doc 9613). Guidance for authorization of RNP 10 and RNP 4 is provided in ICAO Doc 9613. RNP 10 is addressed in Volume II, Part B; Chapter 1. RNP 4 is addressed in Volume II, Part C; Chapter 1.

1.9.3 Operators and authorities are encouraged to use the RNP 10 or RNP 4 Job Aids posted on the FAA Resource Guide for U.S. Operators described in paragraph 1.4. For U.S. operators, a set of RNP 10 and RNP 4 Job Aids provides references to FAA documents. An RNP 4 Job Aid, which references the ICAO PBN Manual, is also available on the ICAO European and North Atlantic Office website. These Job Aids address the operational and airworthiness elements of aircraft and operator authorization and provide references to appropriate document paragraphs. The Job Aids provide a method for operators to develop and authorities to track the operator/aircraft program elements required for RNP 10 or RNP 4 authorization.

1.10 Qualification of Aircraft Equipped With a Single Long–Range Navigation System (LRNS) for RNP 10 Operations in Gulf of Mexico CTAs.

1.10.1 Single LRNS operations in the Gulf of Mexico, the Caribbean Sea and the other designated areas have been conducted for at least 25 years. Provisions allowing aircraft equipage with a single LRNS for operations in specified oceanic and off–shore areas are contained in the following sections of 14 Code of Federal Regulations (CFR): 91.511, 121.351, 125.203 and 135.165.

1.10.2 The FAA worked with State regulators and ATS providers in the Gulf of Mexico and Caribbean areas, and coordinated with the ICAO North American, Central American, and Caribbean office, to implement a policy allowing single LRNS equipped aircraft, which are also qualified for RNP 10, to take advantage of RNP 10 separation criteria in the Gulf of Mexico CTAs identified in paragraph 1.2 above.

1.10.2.1 The factors considered in allowing RNP 10 operations in the Gulf of Mexico CTAs with single LRNS equipped aircraft were: the shortness of the legs outside the range of ground navigation aids, the availability of radar and VHF voice coverage in a large portion of Gulf of Mexico airspace, and the absence of adverse events attributed to single LRNS aircraft in Gulf of Mexico operations.

1.10.2.2 For U.S. operators, operational authorization for both oceanic and RNP 10 operations, when equipped with only a single LRNS, is provided via Operations Specification/Management Specification/Letter of Authorization B054, *Oceanic/Remote Continental Airspace Navigation Using a Single Long–Range Navigation System*. A U.S. operator must first be issued B054 in order to file a flight plan indicating RNP 10 capability for operations in the Gulf of Mexico CTAs identified in paragraph 1.2 when equipped with only a single LRNS.

1.10.3 Operators should review their Airplane Flight Manual (AFM), AFM Supplement or other appropriate documents and/or contact the airplane or avionics manufacturer to determine the RNP 10 time limit applicable to their aircraft. They will then need to determine its effect, if any, on their operation.

Unless otherwise approved, the basic RNP 10 time limit is 6.2 hours between position updates for aircraft on which Inertial Navigation Systems (INS) or Inertial Reference Units (IRU) provide the only source of long range navigation. Extended RNP 10 time limits of 10 hours and greater are already approved for many IRU systems. FAA Advisory Circular 90–105 contains provisions for extending RNP 10 time limits.

1.11 Flight Planning Requirements

1.11.1 Operators must make ICAO flight plan annotations in accordance with this paragraph and, if applicable, Paragraph 1.7, Provisions for Accommodation of Non–RNP 10 Aircraft (Not Authorized RNP 10 or RNP 4).

1.11.2 ICAO flight plans must be filed for operation on oceanic routes and areas in the Houston Oceanic CTA/FIR, the Gulf of Mexico portion of the Miami CTA/FIR, the Monterrey CTA and Merida High CTA.

1.11.3 To inform ATC that they have obtained RNP 10 or RNP 4 authorization and are eligible for 50 NM lateral separation, operators must:

1.11.3.1 Annotate ICAO Flight Plan Item 10 (Equipment) with the letter "R"; and

1.11.3.2 Annotate Item 18 (Other Information) with, as appropriate, "PBN/A1" for RNP 10 aircraft or "PBN/L1" for RNP 4 aircraft (no space between letters and numbers).

NOTE–
The letter "R" indicates that the performance–based navigation specification (for example, RNP 10 or RNP 4) is specified in Item 18 following the indicator "PBN/."

1.12 Pilot and Dispatcher Basic and In–Flight Contingency Procedures.

1.12.1 The RNP 10 and RNP 4 Job Aids contain references to pilot and, if applicable, dispatcher procedures contained in Advisory Circular 90–105 and ICAO PBN Manual, Volume II, Parts B and C, Chapter 1.

1.12.2 Pilots should use SLOP procedures in the course of regular oceanic operations. SLOP procedures are published in ICAO Document 4444, 15th Edition, Amendment 2, paragraph 16.5.

NOTE–
See ENR 7.1, paragraph 8.

1.12.3 ICAO Doc 4444, Chapter 15, In–flight Contingency Procedures contains important guidance for pilot training programs. Chapter 15 includes Special Procedures for In-flight Contingencies in Oceanic Airspace, as well as Weather Deviation Procedures. Chapter 15 covers in-flight diversion and turn-back scenarios, loss of navigation capability, and procedures to follow for weather avoidance. This critical guidance is reprinted in AIP Section ENR 7.3, the International section of the Notices to Airmen Publication, and FAA Advisory Circular 91-70, *Oceanic and Remote Continental Airspace Operations*.

1.12.4 When pilots suspect a navigation system malfunction, in addition to the actions suggested in ICAO Doc. 4444, Chapter 15, the following actions should be taken:

1.12.4.1 Immediately inform ATC of navigation system malfunction or failure;

1.12.4.2 Accounting for wind drift, fly magnetic compass heading to maintain track; and

1.12.4.3 Request radar vectors from ATC, when available.

1.13 Pilot Report of Non–RNP 10 Status

1.13.1 The pilot must report the lack of RNP 10 or RNP 4 status in accordance with the following:

1.13.1.1 When the operator/aircraft is not authorized RNP 10 or RNP 4 (See paragraph 1.7.)

1.13.1.2 If approval status is requested by the controller:

1.13.1.3 The pilot must communicate approval status using the following phraseology in TBL ENR 7.4–1.

TBL ENR 7.4–1

Controller Request	Pilot Response
[*call sign*] "CONFIRM RNP 10 OR 4 APPROVED"	"AFFIRM RNP 10 APPROVED" or "AFFIRM RNP 4 APPROVED" as appropriate; or "NEGATIVE RNP 10"

2. Oakland Oceanic Airspace

2.1 The application of 50 NM lateral separation minima between aircraft authorized RNP 10 or RNP 4 is supported.

2.2 RNP 10 is required for all aircraft operating in the Central East Pacific (CEP) fixed track system and Pacific Organized Track System (PACOTS).

2.3 Non–RNP 10 approved aircraft may file via random track, at any altitude, at least 100 NM from any PACOTS track.

3. Anchorage Oceanic FIR

3.1 The application of 50 NM lateral separation minima between aircraft authorized RNP 10 or RNP 4 is supported.

3.2 Non–RNP 10 approved aircraft may file via random track, at any altitude, at least 100 NM from the North Pacific (NOPAC) fixed track system. Aircraft entering the NOPAC should flight plan in accordance with Notices contained in the Alaska Chart Supplement.

4. Anchorage Arctic FIR

4.1 The application of 50 NM lateral separation minima between aircraft authorized RNP 10 is supported.

5. New York Oceanic Airspace

5.1 ATC applies 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4 within the West Atlantic Route System (WATRS) (that is, New York Oceanic West airspace). ATC similarly applies 50 NM lateral separation in the Atlantic portion of the Miami Oceanic CTA as well as the San Juan CTA/FIR. ATC may apply 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4 in airspace outside of WATRS (that is, New York Oceanic East).

5.2 Aircraft authorized RNP 10 or RNP 4 will have a better chance of obtaining their preferred routing and altitude in the most densely used airspace (that is, below FL 410) because of their ability to participate in ATC's use of 50 NM lateral separation. Non–RNP 10 or non–RNP 4 aircraft will be spaced at least 90 NM laterally from other aircraft.

5.3 ATC will not apply 50 NM lateral separation on routes that are defined by reference to ICAO standard ground–based navigation aids. In addition, 50 NM lateral separation is not applied to aircraft on the following route segments, at and above FL 310, because the routes are considered within ATC radar and VHF radio coverage:

5.3.1 M201 between BAHAA and PAEPR, and

5.3.2 L453 between PAEPR and AZEZU

NOTE–
SLOP is not to be used while flying these route segments.

5.4 Flight plan filing and addressing requirements are detailed in ENR 7.1, paragraphs 2 and 3.

5.5 Operators of aircraft not authorized RNP 10 or RNP 4 are expected to follow the procedures in ENR 7.4 paragraphs 1. 7 and 1.13 for alerting ATC of their RNP status. Those operators are expected to indicate their "non–RNP 10" status in Item 18 of their ATC flight plan. In addition, pilots are expected to inform ATC of their "non–RNP 10" status on initial call to ATC on WATRS routes and when reading back a clearance to descend through FL 410.

5.6 Filing a flight plan for, and conducting operations under, RNP 10 or RNP 4 navigation specifications require the aircraft to be equipped with two operable long–range navigation systems (LRNS). Operators who indicate RNP 10 or RNP 4 capability on their ATC flight plans, and subsequently experience a LRNS failure while operating on a WATRS route, must alert ATC to this failure. If the

pilot believes the aircraft can continue to be navigated within 10 NM of the cleared route with the single LRNS, ATC should be informed; as such, ATC may continue the aircraft on the cleared route.

5.7 In the event of LRNS failure prior to joining a WATRS route, pilots must inform ATC of the failure and ensure ATC is aware the aircraft is no longer qualified for the RNP level indicated in the flight plan. In addition to this notification, pilots should request ATC amend their flight plan to remove the RNP capability indication in Item 18 of the flight plan.

5.8 Information regarding operations in WATRS can be found in the *West Atlantic Route System, Gulf of Mexico, and Caribbean Resource Guide for U.S. Operators* which is available at:
http://www.faa.gov/about/office_headquarters_offices/avs/offices/afs/afs400/afs470/media.WATRS.pdf

6. Provisions for Accommodation of Non–RNP 10 Aircraft (Not Authorized RNP 10 or RNP 4)

The guidance contained in paragraphs 1.7 and 1.13 of this section is applicable to all operations using Non–RNP 10 aircraft throughout the airspace covered by this document.

7. RNP 10 or RNP 4 Authorization Policy and Procedures for Aircraft and Operators

The guidance contained in paragraphs 1.8 and 1.9 of this section is applicable to operations throughout the airspace covered by this document.

8. Flight Planning Requirements

The guidance contained in paragraphs 1.7 and 1.11 of this section is applicable to operations throughout the airspace covered by this document.

9. Pilot and Dispatcher Basic and In–Flight Contingency Procedures

Information and guidance pertaining to in–flight contingency procedures, applicable in all the oceanic airspace covered by this AIP are provided in ENR 7.4, paragraph 1.12 as well as section ENR 7.3.

ENR 7.12 Reduced Separation Climb/Descent Procedures

1. Automatic Dependent Surveillance–Broadcast (ADS–B) In–Trail Procedure (ITP)

1.1 The ITP is designed for use in non–surveillance oceanic airspace to enable appropriately equipped ADS–B In aircraft to perform flight level (FL) changes previously unavailable with procedural separation minima applied. The improved traffic information available to ADS–B In–equipped aircraft allows ITP maneuvers to occur safely with reduced separation minima applied. ITP will enable flight crews to execute FL changes to improve ride comfort, avoid weather, or obtain more favorable winds to improve fuel economy and arrival times. The ITP is only available within the Anchorage, Oakland, and New York Oceanic Flight Information Regions (FIR).

1.2 FAA air traffic procedures for the ADS–B ITP mirror those contained within ICAO Document 4444 (Doc. 4444), *Procedures for Air Navigation Service–Air Traffic Management (PANS–ATM)*, Section 5.4.2.7, Longitudinal Separation Minima Based on Distance Using ADS–B In–Trail Procedure (ITP), with one difference. Section 5.4.2.7.3.2 of Doc. 4444 states, "A controller may clear an aircraft for an ITP climb or descent provided the following conditions are satisfied: d) both the ITP aircraft and reference aircraft are either on; 2) parallel or same tracks with no turns permitted during the manoeuvre." The FAA's Advanced Technology and Oceanic Procedures (ATOP) automation platform is designed to ensure that separation will not decrease below required minima for same track aircraft should either the reference or maneuvering aircraft turn during the ITP. FAA Order JO 7110.65, Air Traffic Control, states that an aircraft may be cleared for an ITP climb or descent if both the ITP aircraft and reference aircraft are on the "same tracks with no turns permitted that reduce required separation during the ITP."

1.3 Equipment specifications and guidance for pilot procedures is available in FAA Advisory Circular (AC) 90–114, *Automatic Dependent Surveillance–Broadcast (ADS–B) Operations*, Appendix 2, ADS–B In–Trail Procedure.

1.4 Additional information is also available in ICAO Circular 325, In–Trail Procedure (ITP) Using Automatic Dependent Surveillance–Broadcast (ADS–B).

2. Automatic Dependent Surveillance–Contract (ADS–C) Climb Descend Procedure (CDP)

2.1 The ADS–C CDP is designed to improve service to properly equipped aircraft by allowing an oceanic air traffic controller to have an option for granting an altitude change request when other standard separations (such as ADS–C distance–based 30 NM longitudinal separation minima) do not allow for a climb or descent through the altitude of a blocking aircraft. It is an air traffic control tool to be applied between maneuvering and blocking aircraft pairs. The CDP is only available within the Anchorage, Oakland, and New York Oceanic FIRs.

2.2 FAA air traffic procedures, published in FAA Order JO 7110.65, Chapter 8, mirror those in ICAO Document 4444 (Doc 4444), *Procedures for Air Navigation Service–Air Traffic Management (PANS–ATM)*, Section 5.4.2.8, Longitudinal Separation Minima Based on Distance Using ADS–C Climb and Descend Procedure (CDP), and in ICAO Circular 342, *Automatic Dependent Surveillance – Contract (ADS–C) Climb and Descend Procedure (CDP)*. The FAA's ATOP automation platform is designed to alert the controller before separation decreases below the required minima. Aircraft pair distance verification is performed by the ground automation system, using near simultaneous ADS–C demand reports.

2.3 The implementation of the ADS–C CDP is intended to facilitate increased access to optimum flight levels for aircraft operating in airspace where no ATS surveillance service is available. It is similar to the ADS–B ITP [see ICAO Circular 325, *In–Trail Procedure (ITP) Using Automatic Dependent Surveillance–Broadcast (ADS–B)*] in that it is a climb or descend through procedure. Unlike the ITP, however, the pilots involved in an ADS–C CDP may not be aware of which separation minima a controller is utilizing.

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

PAGE	DATE
PART 3 – AERODROMES (AD)	
AD 0	
0.4–1	27 APR 17
0.4–2	27 APR 17
0.4–3	27 APR 17
0.4–4	27 APR 17
0.6–1	27 APR 17
AD 1	
1.1–1	10 NOV 16
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1.1–13	27 APR 17
1.1–14	10 NOV 16
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PAGE	DATE
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AD 2	
2–1	27 APR 17
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PAGE	DATE
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2–371	27 APR 17
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2–405	27 APR 17
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PAGE	DATE
2–439	27 APR 17
2–440	27 APR 17
2–441	27 APR 17
2–442	27 APR 17
2–443	27 APR 17
2–444	27 APR 17
INDEX	
I–1	27 APR 17
I–2	27 APR 17
I–3	27 APR 17
I–4	27 APR 17
I–5	27 APR 17
I–6	27 APR 17
I–7	27 APR 17
I–8	27 APR 17
APPENDIX	
A–1	27 APR 17
1 through 405	N/A

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 "On" when departing the gate or parking area until it is shutdown 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:

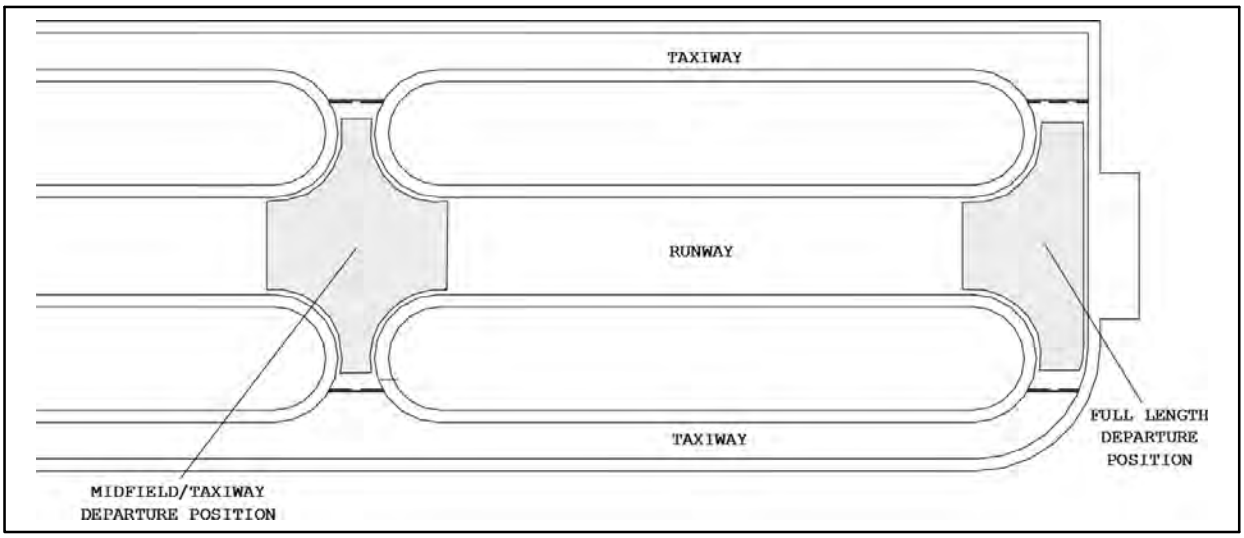
The stand-alone FAROS system is a fully automated system that provides runway occupancy status to pilots on final approach to indicate whether it may be unsafe to land. When an aircraft or vehicle is detected on the runway, the Precision Approach Path Indicator (PAPI) light fixtures flash as a signal 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)

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.

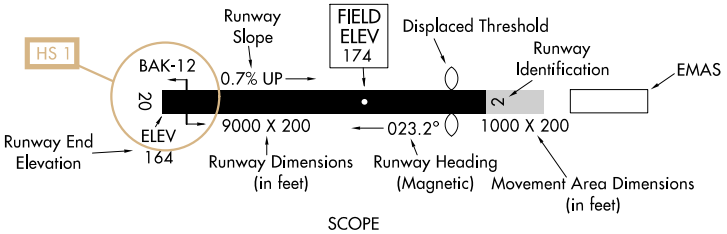
True/magnetic North orientation may vary from diagram to diagram

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)

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

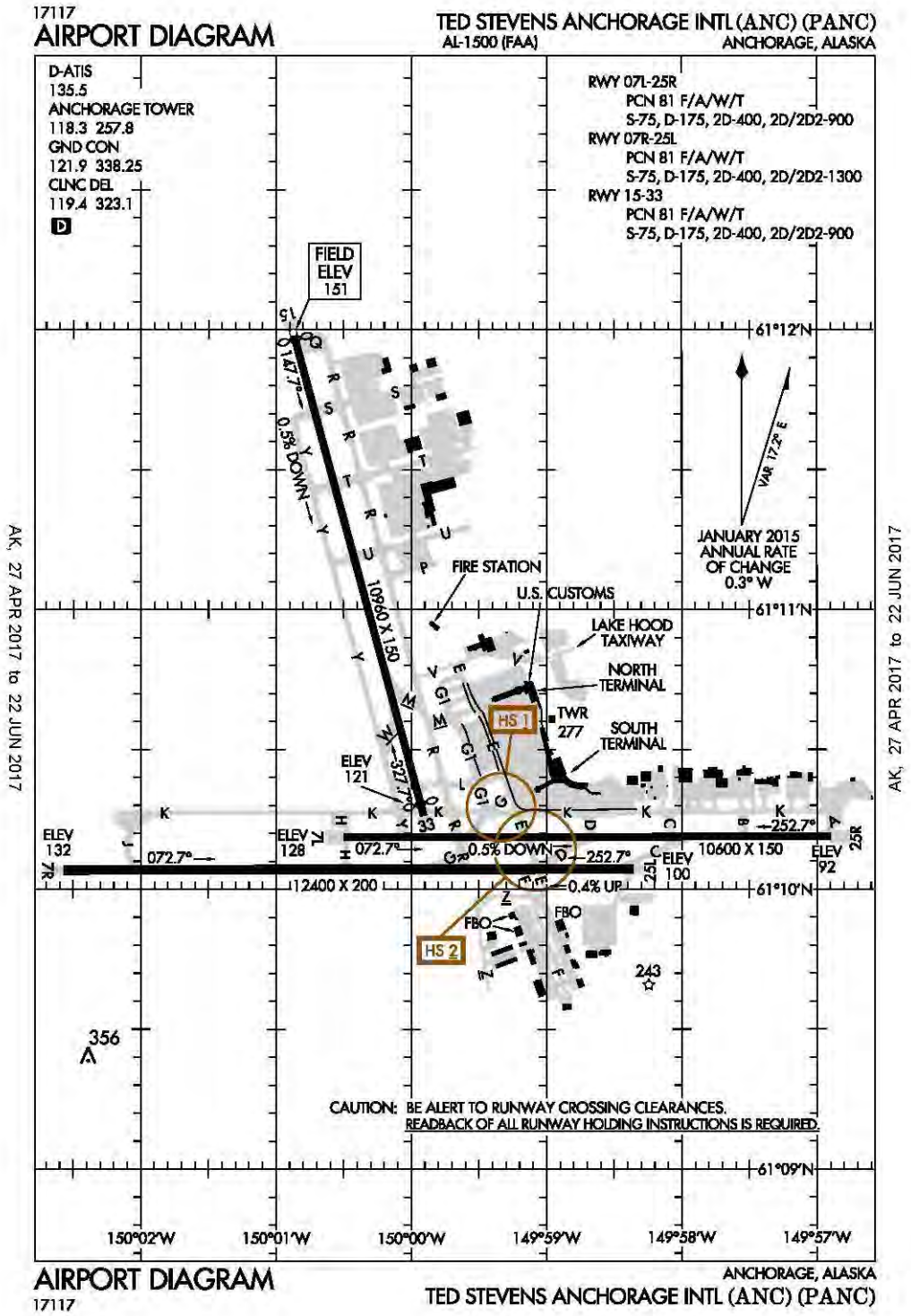
Airport diagrams are specifically designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations. Airport diagrams are not intended to be used for approach and landing or departure operations. For revisions to Airport Diagrams: Consult FAA Order 7910.4.

LEGEND

31 MAY 2012 to 28 JUN 2012

31 MAY 2012 to 28 JUN 2012

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: 61−10−26.96N / 149−59−53.48W
2.2.2 From City: 4 Miles SW Of Anchorage, AK
2.2.3 Elevation: 151.4 ft
2.2.5 Magnetic variation: 18E (2020)
2.2.6 Airport Contact: John Parrott
BOX 196960
Anchorage, AK 99519
(907−266−2525)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A1
2.4.4 De−icing facilities: None
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: 61−10−11.15N / 150−00−30.00W
2.12.6 Threshold elevation: 128 ft
2.12.6 Touchdown zone elevation: 128 ft
2.12.7 Slope: 0.5DOWN

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: 61−10−11.32N / 149−56−53.88W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 92 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: 61−10−00.00N / 150−02−34.34W
2.12.6 Threshold elevation: 132 ft
2.12.6 Touchdown zone elevation: 132 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: 61−10−00.00N / 149−58−21.54W
2.12.6 Threshold elevation: 100 ft
2.12.6 Touchdown zone elevation: 115 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 15
2.12.2 True Bearing: 165
2.12.3 Dimensions: 10960 ft x 150 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−11−59.97N / 150−00−52.84W
2.12.6 Threshold elevation: 151 ft
2.12.6 Touchdown zone elevation: 151 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: 33
2.12.2 True Bearing: 345
2.12.3 Dimensions: 10960 ft x 150 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61−10−15.78N / 149−59−54.53W
2.12.6 Threshold elevation: 121 ft
2.12.6 Touchdown zone elevation: 121 ft

AD 2.13 Declared distances

2.13.1 Designation: 07L
2.13.2 Takeoff run available: 10600
2.13.3 Takeoff 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 Takeoff run available: 10600
2.13.3 Takeoff 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 Takeoff run available: 10900
2.13.3 Takeoff 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 Takeoff run available: 12400
2.13.3 Takeoff 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 Takeoff run available: 10760
2.13.3 Takeoff distance available: 10760
2.13.4 Accelerate–stop distance available: 10094
2.13.5 Landing distance available: 10094

2.13.1 Designation: 33
2.13.2 Takeoff run available: 10960
2.13.3 Takeoff distance available: 11960
2.13.4 Accelerate–stop distance available: 10960
2.13.5 Landing distance available: 10694

AD 2.14 Approach and runway lighting

2.14.1 Designation: 07L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 4–box VASI on left

2.14.1 Designation: 07R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 15
2.14.2 Approach lighting system: Omnidirectional approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 33
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CD/S
2.18.3 Service designation: 128.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 323.1 MHz

2.18.1 Service designation: USB ANG OPS
2.18.3 Service designation: 4897.5 MHz

2.18.1 Service designation: ANG OPS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 338.25 MHz

2.18.1 Service designation: ANG OPNS
2.18.3 Service designation: 140.15 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.5 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 07L. Magnetic variation: 18E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61−10−11.33N / 149−56−32.65W
2.19.6 Site elevation: 84.7 ft

2.19.1 ILS type: Outer Marker for runway 07L. Magnetic variation: 18E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61−10−00.00N / 150−10−37.20W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 07L. Magnetic variation: 18E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61−10−13.64N / 150−00−10.18W
2.19.6 Site elevation: 122.8 ft

2.19.1 ILS type: DME for runway 07L. Magnetic variation: 18E
2.19.2 ILS identification: TGN
2.19.5 Coordinates: 61−10−14.06N / 149−56−33.03W
2.19.6 Site elevation: 105.5 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 18E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61−10−00.00N / 149−57−55.50W
2.19.6 Site elevation: 97.7 ft

2.19.1 ILS type: Outer Marker for runway 07R. Magnetic variation: 18E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61−10−00.00N / 150−10−37.20W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 07R. Magnetic variation: 18E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61−10−00.00N / 150−02−56.82W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 18E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61−10−00.00N / 150−02−12.46W
2.19.6 Site elevation: 124.9 ft

2.19.1 ILS type: Inner Marker for runway 07R. Magnetic variation: 18E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61−10−00.00N / 150−02−51.67W
2.19.6 Site elevation: 127 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 18E
2.19.2 ILS identification: ANC
2.19.5 Coordinates: 61−10−00.00N / 149−57−58.40W
2.19.6 Site elevation: 112 ft

2.19.1 ILS type: DME for runway 15. Magnetic variation: 18E
2.19.2 ILS identification: BSC
2.19.5 Coordinates: 61−10−00.00N / 149−59−40.34W
2.19.6 Site elevation: 134.7 ft

2.19.1 ILS type: Localizer for runway 15. Magnetic variation: 18E
2.19.2 ILS identification: BSC
2.19.5 Coordinates: 61−09−59.92N / 149−59−45.64W
2.19.6 Site elevation: 120.9 ft

2.19.1 ILS type: Glide Slope for runway 15. Magnetic variation: 18E

2.19.2 ILS identification: BSC

2.19.5 Coordinates: 61–11–45.22N / 150–00–52.61W

2.19.6 Site elevation: 141.9 ft

General Remarks:

MIGRATORY BIRDS IN THE VICINITY OF AIRPORT SPRING THROUGH FALL.

ONE HR PRIOR PERMISSION REQUIRED FOR NON–TRANSPONDER AIRCRAFT OPERATIONS. PRIOR PERMISSION REQUIRED FOR NON–RADIO AIRCRAFT OPERATIONS. NO NIGHTTIME NON–RADIO AIRCRAFT OPERATIONS PERMITTED. PILOTS MUST PROVIDE AN ESTIMATED TIME OF ARRIVAL & REMAIN WITHIN PLUS OR MINUS 15 MINUTES OF ESTIMATED TIME OF ARRIVAL.

FOR WEATHER SERVICE OFFICE PHONE 907–266–5105.

NOISE SENSITIVE AREA IN EFFECT; CONTACT AIRPORT MANAGER AT 907–266–2525 OR AIRPORT OPERATIONS 907–266–2600 FOR FURTHER INFORMATION.

TO COORDINATE NON–TRANSPONDER OR NON–RADIO OPERATIONS CONTACT AERONAUTICAL CHART ATCT AT 907–271–2700 DURING ADMIN HRS (0730–1600 WKDAYS). DURING NON–ADMIN HRS & HOLIDAYS CONTACT FAA AT 907–271–5936.

UNLIGHTED 489 FT TOWER 2 1/2 MILES NORTHEAST.

PORTIONS OF TAXIWAY K BETWEEN TAXIWAY H & TAXIWAY J NOT VISIBILITY FROM ATCT.

NO COMPASS CALIBRATION PAD.

RIGHT TURN OUT OF RAMP PARKING AREA R–2 THROUGH R–4 PROHIBITED.

USE FREQ 122.55 (RCO) FOR FILING, ACTIVATING & CANCELING FLIGHT PLANS IN THE ANCHORAGE BOWL AREA.

FAA RAMP PRIOR PERMISSION REQUIRED – CONTACT AERONAUTICAL CHART FLIGHT INSPECTION FIELD OFFICE FREQ 135.85, 907–271–2414 OR AVIATION 405–954–9780 MON–FRI 0600–1430L.

ANCHORAGE WX CAMERA AVAILABLE ON INTERNET AT HTTP://AVCAMS.FAA.GOV

TAXIWAY V SECURITY GATE EAST OF TAXIWAY E; KEY 121.75 5 TIMES TO ACTIVATE.TWY V RESTRICTED TO AIRCRAFT WEIGHING 12500 LBS OR LESS. SUBJECT TO JET BLAST WEST OF TAXIWAY E.

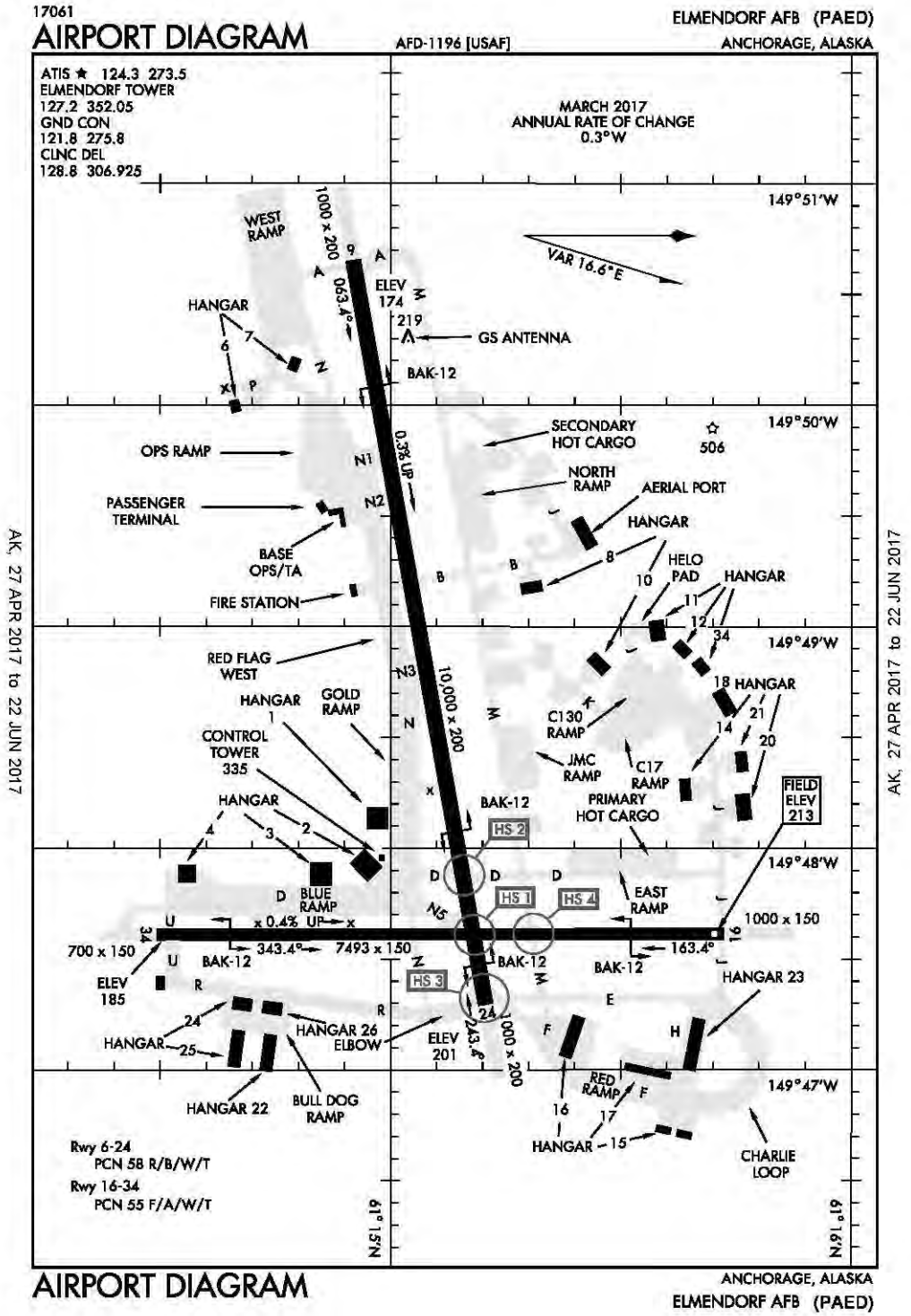
TRANSIENT MILITARY AIRCRAFT PRIOR PERMISSION REQUIRED.

RUNWAY 07R: BACK TAXIING FROM TAXIWAY J FOR DEP PROHIBITED.

REMOTE PARKING SPOTS R12–14 LEAD–IN LIGHTS OUT OF SERVICE INDEFINITELY.

RUNWAY END 25L HAS 200’ BLAST PAD.

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: 61–15–00.00N / 149–48–23.49W
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 Operational hours

2.3.1 – 2.3.11: 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: None
2.4.4 De–icing facilities: Units Deploying To, Staging Out Of, Or Flying Lcl Sorties At Elmendorf AFB Must Deploy With Maint Pers Required To Complete Operations To Include De–Ice Qualified Crewmembers Dur Cold Wx Operations.
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
2.6.4 Remarks: ARFF FAA Index D/ Cat 8/10.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Pline Pole. Not Lighted or Marked

2.10.1.a. Runway designation: 16
2.10.1.b Type of obstacle: Trees Hill. Not Lighted or Marked

2.10.1.a. Runway designation: 34
2.10.1.b Type of obstacle: Pline Tree. Not Lighted or Marked

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 / 149–50–39.33W
2.12.6 Threshold elevation: 174 ft
2.12.6 Touchdown zone elevation: 174 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: 61–15–12.17N / 149–47–18.01W
2.12.6 Threshold elevation: 201 ft
2.12.6 Touchdown zone elevation: 201 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 ft
2.12.6 Touchdown zone elevation: 212 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: 185 ft
2.12.6 Touchdown zone elevation: 194 ft
2.12.7 Slope: 0.4UP

AD 2.14 Approach and runway lighting

2.14.1 Designation: 06
2.14.2 Approach lighting system: ALSAF: 3000 feet high intensity approach lighting system with centerline sequence flashers
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Approach Lights Extended 15'' Above Surface Up To 100' Prior To Threshold Runway 06 PAPI Unusable Beyond 8 Degs Either Side Of Course Path.

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: PAPI Runway 24 Unusable Beyond 7 Degrees Right Of Course.

2.14.1 Designation: 16
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 34
2.14.2 Approach lighting system: ALSAF: 3000 feet high intensity approach lighting system with centerline sequence flashers
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: 11AF RESCUE COORD CNTR
2.18.3 Service designation: 123.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.3 MHz
2.18.4 Hours of operation: 0700−2300

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 134.8 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 273.5 MHz
2.18.4 Hours of operation: 0700−2300

2.18.1 Service designation: 11AF RESCUE COORD CNTR
2.18.3 Service designation: 282.8 MHz

2.18.1 Service designation: PMSV
2.18.3 Service designation: 346.6 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz
2.18.1 Service designation: 11AF COMD CEN
2.18.3 Service designation: 381 MHz

2.18.1 Service designation: ARTIC WARRIOR OPS
2.18.3 Service designation: 381 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 352.05 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 306.925 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 18E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61−15−14.34N / 149−46−52.33W
2.19.6 Site elevation: 212 ft

2.19.1 ILS type: Middle Marker for runway 06. Magnetic variation: 18E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61−14−49.02N / 149−51−49.94W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 18E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61−15−00.00N / 149−50−16.98W
2.19.6 Site elevation: 168 ft

2.19.1 ILS type: Inner Marker for runway 06. Magnetic variation: 18E
2.19.2 ILS identification: EDF
2.19.5 Coordinates: 61−14−52.87N / 149−51−00.00W
2.19.6 Site elevation: 192 ft

General Remarks:

LANDING RUNWAY 16 NOT RECOMMENDED FOR JET AIRCRAFT EXCEPT DURING DAY VFR DUE OBSTRUCTION 337’ MSL LOCATED 1950’ FROM THR & 574’ W OF CENTERLINE.

HANGAR SPACE & WARM STORAGE EXTREMELY LIMITED OCT−MAY.

PREVENTIVE MAINT: TACAN WED AND FRI 1600−1700Z; ILS TUE AND THR 1500−1700Z; PRECISION APPROACH RADAR SAT−SUN 1800−2000Z; AIRPORT SURVEILLANCE RADAR SAT−SUN 2000−2200.

QUIET HR 0630−1400Z WEEKDAYS; 0630−1600Z WEEKEND & HOLS, AIR MOBILITY COMMAND AIRCRAFT EXEMPT.

CAUTION: MOOSE ON & IN THE VICINITY OF RUNWAY.

DURING VISUAL METEOROLOGICAL CONDITIONS DEPS/MISSED APCHS/GO AROUNDS; AIRCRAFT SHALL MAINTAIN AT OR BELOW 1200’ MLS UNTIL DEP END OF RUNWAY 06.

ALL FIGHTER AIRCRAFT ON ARR EXPECT REDUCED SEPARATION; SAME TYPE AIRCRAFT AND DAY 3000 FT; DISSIMILAR AIRCRAFT AND/OR NIGHT 6000 FT; AHEAD/BEHIND FORMATION LANDING−6000 FT.

NOTICE: A RIDGE EXTENDING FROM APPROXIMATELY 260 – 020 DEGREES ONE TO TWO MILES FROM THE TOWER PREVENTS OBSERVATION OF FOG OVER KNIK ARM. VISIBILITY MAY DROP RAPIDLY AS FOG POURS OVER RIDGE.

ALL AIRCRAFT MAINTAIN IDLE POWER ON OUTBOARD ENGINE WHILE TAXIING.

NO SIGNS OR PAINTED HOLD SHORT LINES ON INTERSECTING RUNWAYS.

EXTENSIVE SERVICE DELAY FOR FUEL.

FREQUENT ACTIVITY IN R2203. WHEN UNABLE TO AVOID CONTACT ATCT.

SPECIAL AIR TRAFFIC RULES FAR PART 93, SEE REGULATORY NOTICES IN THE SUPPLEMENT.

FIRST 1000 FT RUNWAY 06 & FIRST 1200 FT RUNWAY 24 ARE CONCRETE, MIDDLE 7800 FT IS ASPHALT. FOR CURRENT RUNWAY CONDITION READING/RUNWAY SURFACE CONDITIONS ON RUNWAY 06/24 AND RUNWAY 16/34, AND AIRFIELD RCRS CONTACT TOWER.

LIMITED MAINTENANCE CAPABILITIES ON WEEKEND.

JOAP, JOINT OIL ANALYSIS PROGRAM AVAILABLE. L/H NIT, LOW & HIGH PRESSURE NITROGEN SERVICING AVAILABLE.

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.

FUEL: J8

OIL: O−123, O−128, O−133, O−148, O−156, JOAP.

JOAP & LOW & HIGH PRESURE NITROGEN SERVICING FURNISHED DURING NORMAL DUTY HOURS, OTHER TIMES ON REQUEST.

FLUID: PRESAIR, DE−ICE, NITROGEN−L/H NIT.

RUNWAY 16/34 RUBBER ACCUMULATE NORTH & SOUTH 1000FT.

IFF SERVICE AVAILABLE. AIRFIELD WX IS AUTOMATICALLY MONITOR BY AN/FQ−19 AUTOMATED WX OBSERVING SYSTEM AND BACKED−UP/ AUGMENTED BY HUMAN OBSERVER WHEN NECESSARY 24/7. DSN 317−552−4903/4397OR C907−552−4903/4397. FULL SERVICE WX BRIEFING 24HRS 17 OPERATIONAL WEATHER SQUADRON DSN 315−449−8333 OR C808−449−8333.

C17/C130 OVERT LIGHTS AVAILABLE ON RY16/34. C17/C130 COVERT LIGHTS AVAILABLE ON RUNWAY 16.

NVD OPERATIONS ON RUNWAY 16/34 & RUNWAY 06/24 MON−FRI FROM 0400−1000Z++.

DURING EVACUATION OF WX STATION, CONTACT 17 OPERATIONAL WX SQUADRON AT DSN 315−449−8333.

ALTERNATE WX LOCATION VISIBILITY OBSTRUCTED FROM SE−W DUE TO HANGARS. USE PHONE PATCH WHEN WX RELOCATES TO ALTERNATE LOCATION.PHONE PATCH CAPABILITY THROUGH 3 WG/CP AT 907−552−3000.

CAUTION: NUMEROUS AIRCRAFT WILL BE OPR IFR BETWEEN 1500−2000 MSL FROM BGQ 092/10 INTO R2203 TO EDF 320/07 IN THE VICINITY OF BIG LAKE, PALMER, BIRCHWOOD, GOOSEBAY AND WASILLA, AK., MON−SAT 0300−0800Z++, AND TUES AND THU 1800−2200Z++.

CAUTION: HEAVY RAINFALL MAY CAUSE HIGH POTENTIAL FOR HYDROPLANING FOR CONCRETE ENDS OF RUNWAY 06 AND RUNWAY 24.

RUNWAY 34 DEPARTURES FOR AIRCRAFT WITH WINGSPANS GREATER THAN 98 FT REQUIRE PRIOR COORD WITH AIR MOBILITY COMMAND, ATC TOWER, OR ALD MANAGEMENT.

DV SPOTS 1 AND 3 LIMITED TO AIRCRAFT WITH WINGSPANS OF 136 FT OR LESS.

CAUTION: UNLIT TERRAIN 0 FT AGL/341 FT MSL, 1909 FT PRIOR TO THRESHOLD, 1914 FT RIGHT OF COURSE.

CAUTION: WHEN RUNWAY 16 VGSI INOPERATIVE, STR−IN TO RUNWAY 16 ONLY AUTHORIZED AT NIGHT WITH MAJCOM A3 APPROVAL.

TAXIWAYS D1, D2, N4 & N5 PERMANENT CLOSED.

AIRFIELD MANAGEMENT DOES NOT HAVE COMSEC STORAGE AVAILABLE, FOR COMSEC STORAGE CONTACT COMMAND POST DSN 317−552−3000.

ALL TRANSIENT AIRCREWS OPERATING AT ELMENDORF AIRFIELD MUST DROP OFF A COPY OF THEIR CREW ORDERS TO AIRFIELD MANAGEMENT UPON ARR.

ALL VIP AIRCRAFT CONTACT BASE OPERATIONS 30 MIN PRIOR TO ARR ON PILOT TO DISPATCH 372.2 OR 134.1 OR C907−552−2107.

AIRCRAFT REQUIRING CUSTOMS AND AIR GROUND INSPECTIONS ARE REQUIRE TO CONTACT BASE OPERATIONS NO LATER THAN 90 MIN PRIOR TO ARR.

PRIOR PERMISSION REQUIRED REQUIRE FOR ALL NON−JBER ASSIGN AIRCRAFT.

SUBMIT ALL PRIOR PERMISSION REQUIREDUESTS UTILIZING THE PAED PRIOR PERMISSION REQUIREDUEST 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 PRIOR PERMISSION REQUIRED.

PPRS WILL BE ISSUED NO EARLIER THAN 7 DAYS PRIOR TO ARR.

NORMAL BARRIER CONFIGURATION DUR FIGHTER FLY WINDOW LEAVES 5675’ BETWEEN CABLES ON RUNWAY 06/24, OUTSIDE OF FIGHTER FLY WINDOWS THERE IS 7658’ BETWEEN CABLES.

AIRCRAFT REQUIRING CABLES DE−RIGGED MUST CONTACT BASE OPERATIONS 24HRS PRIOR TO ARR OR MAKE REQUEST PRIOR TO PRIOR PERMISSION REQUIRED BEING ISSUED.

AIR MOBILITY COMMAND AIRCRAFT ON AN AIR MOBILITY COMMAND ASSIGN MSN CAN EXPECT TO HAVE MAINT SERVICE ACCOMPLISHED BY 732 AMS.

UNITS DEPLOYING TO, STAGING OUT OF, OR FLYING LOCAL SORTIES AT ELMENDORF AFB MUST DEPLOY WITH MAINT PERS REQUIRED TO COMPLETE OPERATIONS TO INCLUDE DE−ICE QUALIFIED

CREWMEMBERS DUR COLD WX OPERATIONS.

ANY DEPLOYED OR STAGED AIRCRAFT WILL NOT RECEIVE TA SUPPORT BEYOND INITIAL BLOCK IN.

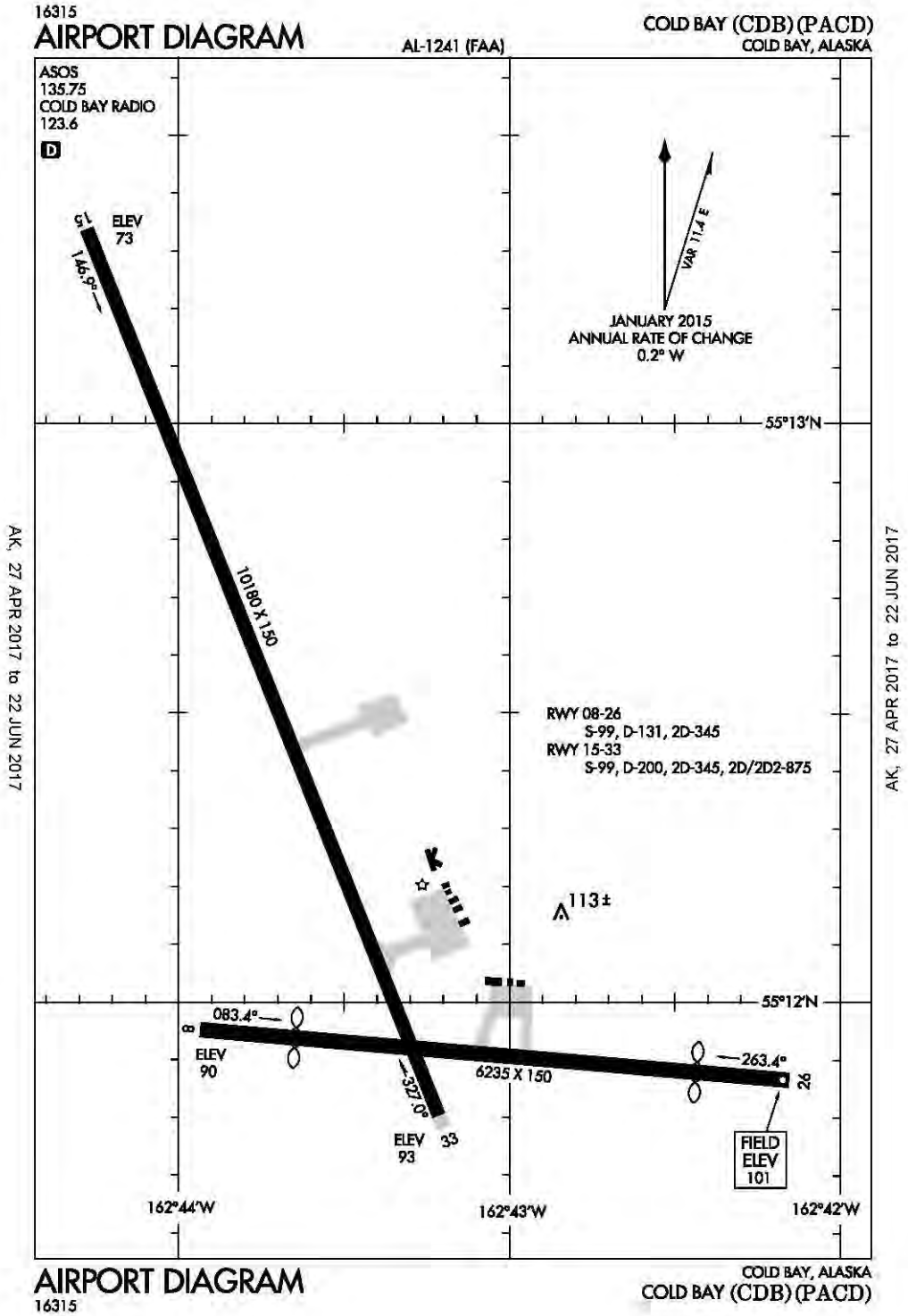
UNLESS PARTICIPATING IN MAJCOM SPONSORED EXERCISE AT ELMENDORF; DEPLOYED OR STAGED UNITS MUST CONTACT 3 WG SCHEDULING AT DSN 317–551–2406 OR C907–551–2406 AS EARLY AS POSSIBLE TO COORD LOCAL AREA ORIENTATION BRIEFING, MAINT SPONSORSHIP IF APPLICABLE, AND 3 OG/CC APPROVAL PRIOR TO LOCAL AREA OPERATIONS.

TRANSIENT ALERT AIRCRAFT SERVICE LIMITED TO POL SERVICING, INTAKE INSPECTIONS, MAGNETIC CHIP DETECTOR INSPECTIONS AND END OF RUNWAY INSPECTIONS.

IF EXPECT TO USE RUNWAY 16 FOR DEP OR RUNWAY 34 FOR LANDING SEE JBER CARTEE AIRSPACE DESCRIPTION IN NOTICES SECOND OF THIS SUPPLEMENT.

ALL NON–AMC AIRCRAFT REQUIRE 732 AMS MAINT/SVC MAY EXPERIENCE LOGISTICAL DELAYS DUE TO MISSION NECESSITIES.

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: 55−12−18.94N / 162−43−28.28W
2.2.2 From City: 0 Miles N Of Cold Bay, AK
2.2.3 Elevation: 101.3 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 Operational hours

2.3.1 – 2.3.11: OCT−APR Months, ALL Days, 0530−1800 Hours

AD 2.4 Handling services and facilities

2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: None
2.4.7 Remarks: Maint Duty Hours:0530−1730 Mon−Wed,0530−1630 Thurs, 0530−1630 Fri−Sun (1 Oct−30 Apr) 0700−1730 Mon−Wed,0700−1530 Thu−Sun (1 May−30 Sep)

AD 2.6 Rescue and firefighting services

2.6.1 Aerodrome category for firefighting: ARFF Index I B certified on 4/1/2005
2.6.4 Remarks: Closed To Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required In Writing To Airport Manager Box 97 Cold Bay Ak 99571. ARFF Is Available For Part 121 Carriers Involved In Etops Operations With 30 Minutes Notice.

AD 2.12 Runway physical characteristics

2.12.1 Designation: 15
2.12.2 True Bearing: 158
2.12.3 Dimensions: 10180 ft x 150 ft
2.12.5 Coordinates: 55−13−20.50N / 162−44−16.42W
2.12.6 Threshold elevation: 73 ft
2.12.6 Touchdown zone elevation: 75 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 338
2.12.3 Dimensions: 10180 ft x 150 ft
2.12.5 Coordinates: 55−11−47.24N / 162−43−11.70W
2.12.6 Threshold elevation: 93 ft
2.12.6 Touchdown zone elevation: 94 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 95
2.12.3 Dimensions: 6235 ft x 150 ft
2.12.5 Coordinates: 55−11−57.13N / 162−43−56.04W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 98 ft
2.12.7 Slope: 0.2UP

2.12.1 Designation: 26
2.12.2 True Bearing: 275
2.12.3 Dimensions: 6235 ft x 150 ft
2.12.5 Coordinates: 55−11−52.01N / 162−42−00.00W
2.12.6 Threshold elevation: 101 ft
2.12.6 Touchdown zone elevation: 101 ft

AD 2.13 Declared distances

2.13.1 Designation: 08
2.13.2 Takeoff run available: 6235
2.13.3 Takeoff distance available: 6235
2.13.4 Accelerate−stop distance available: 5900
2.13.5 Landing distance available: 4900

2.13.1 Designation: 26
2.13.2 Takeoff run available: 6235
2.13.3 Takeoff distance available: 6235
2.13.4 Accelerate−stop distance available: 5900
2.13.5 Landing distance available: 4900

AD 2.14 Approach and runway lighting

2.14.1 Designation: 15
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 33
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 08
2.14.4 Visual approach slope indicator system: 4−box VASI on left
2.14.10 Remarks: Line Of Sight For VASI Rwy 08 Offset 5 Degrees To The North.

2.14.1 Designation: 26
2.14.4 Visual approach slope indicator system: 4−box VASI on left

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 15. Magnetic variation: 12E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−11−41.00N / 162−43−00.00W
2.19.6 Site elevation: 85.3 ft

2.19.1 ILS type: Outer Marker for runway 15. Magnetic variation: 12E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−17−49.16N / 162−47−24.07W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Middle Marker for runway 15. Magnetic variation: 12E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−13−53.76N / 162−44−39.55W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 15. Magnetic variation: 12E
2.19.2 ILS identification: CDB
2.19.5 Coordinates: 55−13−12.78N / 162−44−00.00W
2.19.6 Site elevation: 71.3 ft

General Remarks:

SNOW & ICE REMOVAL AND AIRPORT HAZARD REPORTING ONLY PERFORMED DURING DUTY HRS UNLESS BY PRIOR ARRANGEMENT IN WRITING WITH AIRPORT MANAGER.

LARGE BIRDS NEAR APPROACH ENDS OF ALL RUNWAYS.

BRAKELOCK TURNS NOT ALLOWED ON RUNWAYS.

CODE OF FEDERAL REGULATIONS INDEX B. INDEX MAY BE REDUCED FOR AIRCRAFT LESS THAN 90'.

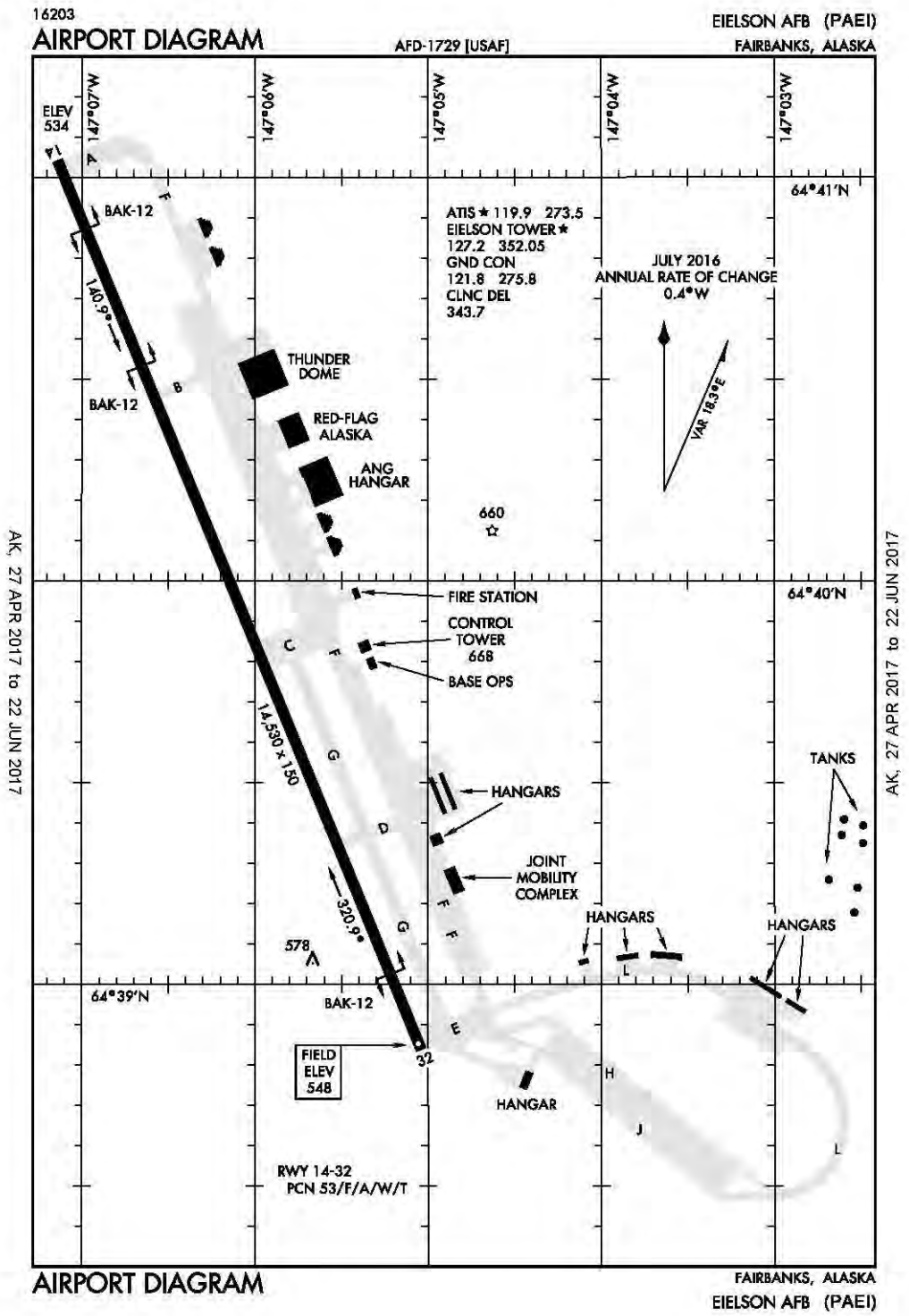
NO CUSTOMS AVAILABLE; WRITTEN PERMISSION REQUIRED FOR REFUELING STOPS 24−48 HRS IN ADVANCE IF ARRIVING FROM A FOREIGN COUNTY; FAX 907−271−2684 OR 907−271−2686.

TOWER 4.8 NAUTICAL MILE NW OF AIRPORT UNLIGHTED.

PERSONNEL AND EQUIPMENT MAY BE WORKING ON THE RUNWAY AT ANY TIME.

AIRPORT SAND LARGER GRADATION THAN FAA RECOMMENDED/SEE AC150/5200−30.

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 / 147−06−00.00W
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 Operational hours

2.3.1 – 2.3.11: 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: None
2.4.4 De−icing facilities: Military−Fluid De−Ice, Anti−Ice Unavailable.
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Trees. Not Lighted or Marked

AD 2.12 Runway physical characteristics

2.12.1 Designation: 14
2.12.2 True Bearing: 159
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 53 F/A/W/T
2.12.5 Coordinates: 64−41−00.00N / 147−07−00.00W
2.12.6 Threshold elevation: 534 ft
2.12.6 Touchdown zone elevation: 537 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 339
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 53 F/A/W/T
2.12.5 Coordinates: 64−38−49.48N / 147−05−00.00W
2.12.6 Threshold elevation: 548 ft
2.12.6 Touchdown zone elevation: 548 ft

AD 2.14 Approach and runway lighting

2.14.1 Designation: 14
2.14.2 Approach lighting system: ALSF1: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category 1 configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.2 Approach lighting system: ALSF1: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category 1 configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: SUAIS RADIO
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 259.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 273.5 MHz
2.18.4 Hours of operation: 1600−0800Z++

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 318.2 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: RDR SFA
2.18.3 Service designation: 324.3 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 343.7 MHz

2.18.1 Service designation: PMSV
2.18.3 Service designation: 346.6 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 352.05 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 139.3 MHz

2.18.1 Service designation: COMD POST/IGLOO OPS
2.18.3 Service designation: 259.5 MHz

2.18.1 Service designation: SOURDOUGH
2.18.3 Service designation: 139.6 MHz

2.18.1 Service designation: CP (HAVE QUICK)
2.18.3 Service designation: 289.4 MHz

2.18.1 Service designation: 168 ANG OPS
2.18.3 Service designation: 238.3 MHz

2.18.1 Service designation: 168 ANG OPS
2.18.3 Service designation: 293.6 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 119.9 MHz
2.18.4 Hours of operation: 1600–0800Z++

2.18.1 Service designation: SOURDOUGH
2.18.3 Service designation: 359.15 MHz

AD 2.19 Radio navigation and landing aids

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 / 147–04–51.27W
2.19.6 Site elevation: 548 ft

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 / 147–07–00.00W
2.19.6 Site elevation: 532 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 / 147–05–25.28W
2.19.6 Site elevation: 540 ft

2.19.1 ILS type: Middle Marker for runway 32. Magnetic variation: 19E
2.19.2 ILS identification: EAF
2.19.5 Coordinates: 64–38–10.49N / 147–04–32.62W
2.19.6 Site elevation:

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 / 147–07–21.41W
2.19.6 Site elevation: 528 ft

General Remarks:

TRANSMIT ALERT SERVICE AVAILABLE 0700–0000 MON–FRI EXCEPT HOLIDAY; OTHER TIMES PRIOR PERMISSION REQUIRED THROUGH BASE OPERATIONS OFFICE.

CRYPTO MATERIALS NOT AVAILABLE TRANSIENT CREW. ALL AIRCRAFT WITH VIP CONTACT AIRFIELD MANAGEMENT 20–30 MINUTES PRIOR TO ESTIMATED TIME OF ARRIVAL WITH FIRM CHOCK TIME. LIMITED FLEET SERVICE AVAILABLE, NO POTABLE WATER.

OVERHEAD TRAFFIC PATTERN ALTITUDE 2000 FT MSL; RECTANGULAR TRAFFIC PATTERN ALTITUDE 1500 FT MSL.

AVOID SMALL ARMS RANGE LOCATED 2.5 NAUTICAL MILE E OF APPROACH END RUNWAY 32. SMALL ARM RANGE ACTIVE WEEKEND 1700–0100Z++, SURFACE TO 3500 FT AGL.

CARGO & PASSENGER CARRYING AIRCRAFT CALL COMMAND POST 3 HRS PROIR TO LANDING AND 30 MIN PROIR TO LANDING AND STATE NUMBER OF PASSENGERS.

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 AIRCRAFT. REPORT ALL BIRD AND ANIMAL STRIKES ON & IN THE VICINITY OF EILSON TO AIRFIELD MANAGEMENT,

DSN 317–377–186, PILOT TO DISPATCH OR 354 FW/SE DSN 317–377–4110.

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 SERVICE NOT AVAILABLE. AIR TERMINAL AND GROUND HANDLING SERVICE OPRS 1630–0030Z++ WEEKDAYS.

DEP AIRCRAFT REMAIN AT OR BELOW 1500 FT UNTIL DEP END OF RUNWAY.

ALL PACAF FIGHTER AIRCRAFT ON ARR EXPECT REDUCED RUNWAY SEPARATION; SIMILAR FIGHTER TYPE/DAY – 3000 FT; DISSIMILAR FIGHTER TYPE AND/OR NIGHT WET RUNWAY OR RUNWAY CONDITION READING REPORT LESS THAN 17 – 6000 FT; BEHIND FORMATION LANDING – 6000 FT; FIGHTER TYPE LANDING BEHIND NON–FTR TYPE – 9000 FT; RUNWAY CONDITION READING VALIDATED AS CONDITIONS WARRANT.

TRANSMIT BILLETING EXTREMELY LIMITED/EXTENSIVE FUEL DELAYS DURING RED FLAG ALASKA EXERCISE (APR–OCT).

AIR TERMINAL AND GROUND HANDLING SERVICE OPRS 1630–0030Z++ WEEKDAYS. AIRCRAFT REQUIRING TERMINAL AND GROUND HANDLING SERVICE ARE REQUIRED TO PROVIDE ADVANCE NOTICE OR DELAYS IN SERVICE MAY BE EXPERIENCED. AIRCRAFT REQUIRING SERVICE SHOULD MAKE PRIOR COORDINATION WITH AIRFIELD MANAGEMENT.

ALASKA ANG 168TH AREFS OPERATIONS DSN (317–377–8800, C 907–377–8800) ANG OPR 24 HRS. AIRFIELD MANAGEMENT DSN 317–377–1861/3201.

FOR FLIGHT ADVISORIES OR STATUS OF RESTRICTED & MOAS CONTACT EIELSON RANGE CONTROL ON SAUIS RADIO 125.3 OR CALL 1–800–758–8723.

RUNWAY 14 & 32 PAPI GS NOT COINCIDENTAL WITH ILS GS.

CONTACT AIRFIELD MANAGEMENT DSN 317–377–1861, C907–377–1861 FOR PRIOR PERMISSION REQUIRED NUMBER NO EARLIER THAN 5 DAYS AND NO LATER THAN 24 HR PRIOR TO ARR. PRIOR PERMISSION REQUIRED GOOD FOR +/– 30 MIN OF PRIOR PERMISSION REQUIRED TIME. COORD OF PRIOR PERMISSION REQUIRED OUTSIDE OF TIME BY TELEPHONE IS REQ OR PRIOR PERMISSION REQUIRED NR WILL BE CONSIDERED CANCEL. EXPECT ARR TIME RESTRICTION FOR ALL AIRCRAFT EXCEPT AIR EVACUATION AND DV CODE 7 OR HIGHER.

DURING BIRD WATCH CONDITION MODERATE LOCAL PATTERN WORK LIMITED TO MIN REQUIRE WITH OG/CC APPROVAL, NO TOUCH AND GO LANDING, FORMATION TKOF/LNDG PROHIBITED AND LOW APPROACH LIMITED TO 300 FT AGL. DURING BIRD WATCH CONDITION SEVERE; TAKE-OFF, PATTERN, AND LANDING PROHIBITED WITHOUT OG/CC APPROVAL, EXCEPT FOR EMERGENCY.

MOOSE HAVE BEEN SPOTTED ON OR NEAR THE RUNWAY ENVIRONMENT ALL HRS OF THE DAY.

N & S BARRIER RUNOUT REDUCED TO 950 FT.

ALL TRANSIENT AIRCREWS MUST REGISTER WITH AIRFIELD MANAGEMENT UPON ARRIVAL. SEE AP1 SUPPLEMENTARY AIRPORT REMARKS. LIMITED SECRET AND COMSEC STORAGE AVAILABLE AT AIRFIELD MANAGEMENT.

LIMITED SECRET AND COMSEC STORAGE AVAILABLE AT BASE OPERATIONS. AIRFIELD MANAGEMENT DOES NOT HAVE COMSEC RESPONSIBILITIES. FOR TOP SECRET AND COMSEC ISSUE/STORAGE CONTACT COMMAND COMMAND POST DSN 317–377–1500.

PORTIONS OF APRON 'O' ROW AND SOUTH RAMP NOT VISIBLE FROM TOWER.

ALL CONTINGENCY OPER CONTACT AIRPORT MANAGER FOR COORDINATION.

TRANSIENT ALERT: TRANSIENT MAINT LIMITED TO F16 SERVICING UPON AIRCREW REQ. THRU FLIGHT/BPO/PREFLIGHT INSPECTION OF F16 NOT AVAILABLE.

AIRPORT OPR 1600–0800Z++.

RADIO/NAV/WEATHER REMARKS – (F) 1500–0700Z ++ DAILY.

PERSONNEL AND EQUIPMENT WORKING ON RUNWAY 14–32 WHEN TOWER UNMANNED.

PRE–COORDINATE WITH MAINT OPERATIONS CENTER DSN 317–377–1205 NO LATER THAN 48 HRS FROM ESTIMATED TIME OF ARRIVAL. UHF IS THE PREFERRED PATTERN FREQ.

AIRPORT REMARKS: PRIME KNIGHT NOT AVAILABLE.

AIRPORT REMARKS: RUNWAY 300 FT WIDE ENTIRE LENGTH, CENTER 150 FT USABLE.

FAIRBANKS FSS LOCAL CONTROL 474–0137. FOR FLIGHT ADVISORIES OR STATUS OF RESTRICTED AND MILITARY OPERATING AREAS, CONTACT EIELSON RANGE CONTROL ON SUAIS RADIO 125.3 OR TELEPHONE 1–800–758–8723.

BASE OPERATIONS DOES NOT HAVE COMSEC RESPONSIBILITIES. BASE OPERATIONS WILL NOT ISSUE COMSEC.

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.

AUGMENTATION CAPABLE DURING NORMAL OPR HR. DUR EVACUATION OF WX STATION CONTACT OP WX SQUADRON AT NUMBER ABOVE. ALTITUDE WX LOCATION VISIBILITY SEVERELY LIMITED DUE TO BUILDING AND PARK AIRCRAFT.

PHONE PATCH CAPABILITY THROUGH 354 FW/CP AT 907–377–1500. FMQ19 907–377–5846.

CAUTION: NONSTANDARD LIGHT, 2000 FT OF RUNWAY EDGE LIGHT BETWEEN DELTA–CHARLIE TAXIWAYS LOCATED 12 FT FR RUNWAY EDGE.

UNMONITORED WHEN PAEI TOWER CLOSED. FULL SERVICE AVAILABLE 1600–0800Z++, EXTEND AS REQ. SERVICE PRIORITY GIVEN TO LOCAL FLYING SCHEDULE. WX BRIEFING AVAILABLE DSN 317–377–3140/1160.

BRIEFING FOR TRANSIENT AIRCREWS BEYOND NORMAL OPERATING HRS BY WAY OF 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 LOCATED 64 FT NE OF TAXIWAY H CNTLN.

NO ENGINE RUNNING ON–LOADS/OFF–LOADS (ERO) SERVICES AVAILABLE FOR AIR MOBILITY COMMAND AIRCRAFT.

VHF PILOT TO DISPATCH FREQUENCY IS UNMONITORED.

QUIET HRS DAILY 0700–1500Z–, NO TAKE-OFF, LANDING, LO APPROACH, OR TOUCH AND GO LANDING, EXCEPTIONS REQUIRE OPERATIONS GROUP COMMANDER APPROVAL. UNCONTROLLED TKOF/LDG NOT AUTH.

LOOP TAXIWAY EAST OF CORROSION/ HANGAR 1348 THROUGH THE 4/8 BAY AREA RESTRICTED TO AIRCRAFT W/WINGSPAN OF 45 FT OR SMALLER.

NONSTANDARD RUNWAY EDGE LIGHTS.

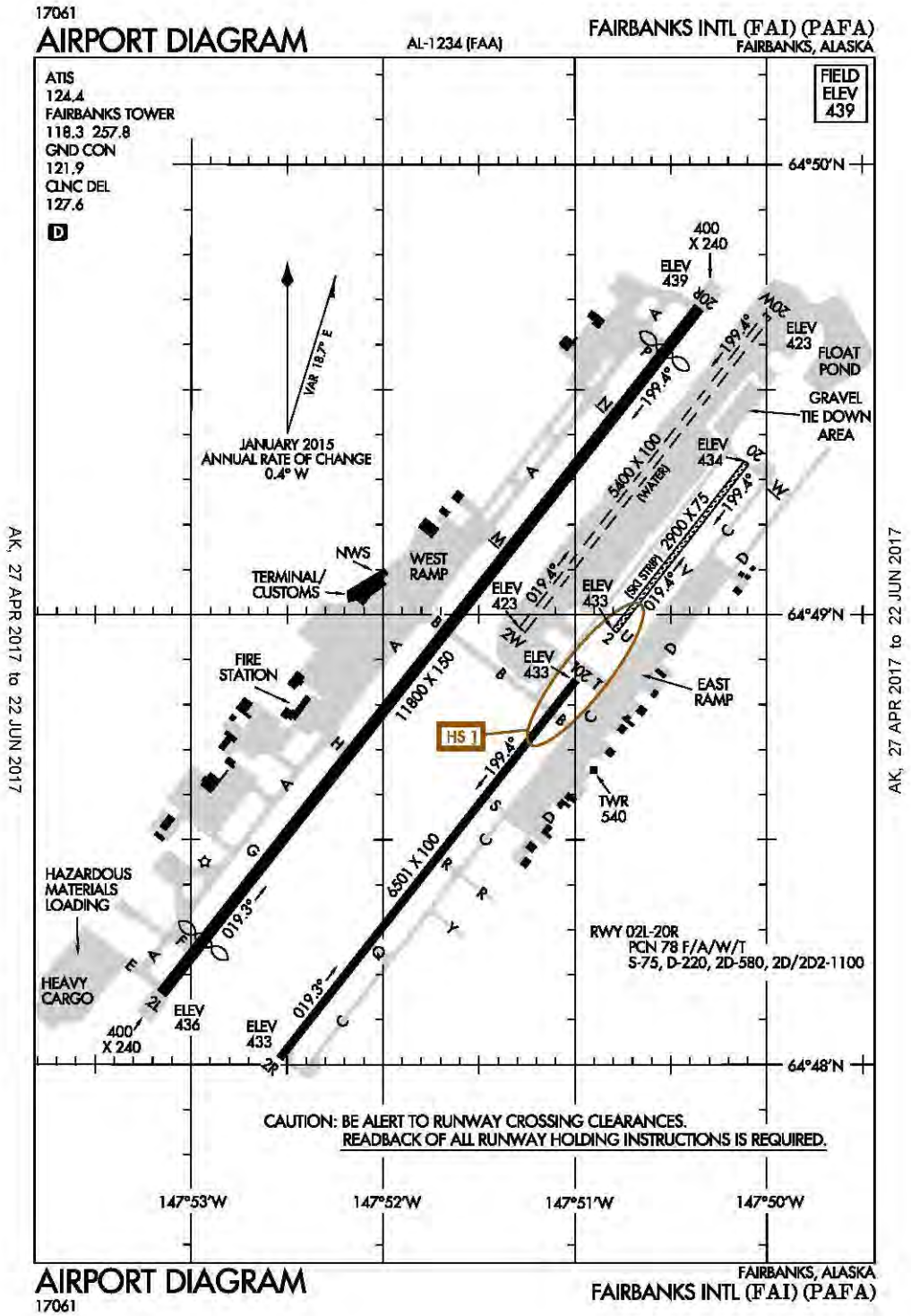
RUNWAY 14/32 BAK–12 DEP END CABLES IN RAISED POSITION; BAK–12 APPROACH END RUNWAY 14/32 AVAILABLE WITH 20 MIN PRIOR NOTICE. NORTH BARRIER RUNOUT REDUCED TO 950 FT, HOOK EQUIPPPED AIRCRAFT BE ALERT.

MILITARY–FLUID DE–ICE, ANTI–ICE UNAVAILABLE.

EDGE LIGHT NONSTANDARD RUNWAY 32/14 AT TAXIWAY A RUNWAY EDGE LIGHT AT TAXIWAY A ENTRANCE ON THE EAST SIDE OF THE RUNWAY; RESULTING GAP BETWEEN LIGHT IS 446’.

EDGE LIGHT NONSTANDARD RUNWAY 32/14 AT TAXIWAY C RUNWAY EDGE LIGHT AT TAXIWAY C ENTRANCE ON THE EAST SIDE OF THE RUNWAY; RESULTING GAP BETWEEN LIGHT IS 400’.

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: 64−48−54.40N / 147−51−23.20W
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: Jeff Roach
6450 AIRPORT WAY − SUITE 1
Fairbanks, AK 99709
(907−474−2500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 20W
2.10.1.b Type of obstacle: Fence (11 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 02W
2.10.1.b Type of obstacle: Fence (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 170 ft from Centerline

2.10.1.a. Runway designation: 02L
2.10.1.b Type of obstacle: Tree (72 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 652 ft from Centerline

2.10.1.a. Runway designation: 20R
2.10.1.b Type of obstacle: Tree (86 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 430 ft from Centerline

2.10.1.a. Runway designation: 02R
2.10.1.b Type of obstacle: Trees (79 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 350 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 02W
2.12.2 True Bearing: 38
2.12.3 Dimensions: 5400 ft x 100 ft
2.12.5 Coordinates: 64−48−58.00N / 147−51−16.59W
2.12.6 Threshold elevation: 423 ft
2.12.6 Touchdown zone elevation: 423 ft

2.12.1 Designation: 20W
2.12.2 True Bearing: 218
2.12.3 Dimensions: 5400 ft x 100 ft
2.12.5 Coordinates: 64−49−39.83N / 147−49−59.63W
2.12.6 Threshold elevation: 423 ft
2.12.6 Touchdown zone elevation: 423 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: 64−48−00.00N / 147−53−00.00W
2.12.6 Threshold elevation: 436 ft
2.12.6 Touchdown zone elevation: 439 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: 64−49−40.91N / 147−50−21.13W
2.12.6 Threshold elevation: 439 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
2.12.5 Coordinates: 64−48−00.00N / 147−52−32.24W
2.12.6 Threshold elevation: 433 ft
2.12.6 Touchdown zone elevation: 433 ft

2.12.1 Designation: 20L
2.12.2 True Bearing: 218
2.12.3 Dimensions: 6501 ft x 100 ft
2.12.5 Coordinates: 64−48−51.24N / 147−50−59.67W
2.12.6 Threshold elevation: 433 ft
2.12.6 Touchdown zone elevation: 434 ft

2.12.1 Designation: 02

2.12.2 True Bearing: 38
2.12.3 Dimensions: 2900 ft x 75 ft
2.12.5 Coordinates: 64–48–57.80N / 147–50–47.60W
2.12.6 Threshold elevation: 433 ft
2.12.6 Touchdown zone elevation: 435 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 218
2.12.3 Dimensions: 2900 ft x 75 ft
2.12.5 Coordinates: 64–49–20.26N / 147–50–00.00W
2.12.6 Threshold elevation: 434 ft
2.12.6 Touchdown zone elevation: 435 ft

AD 2.13 Declared distances
2.13.1 Designation: 02L
2.13.2 Takeoff run available: 11800
2.13.3 Takeoff 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 Takeoff run available: 11800
2.13.3 Takeoff distance available: 12800
2.13.4 Accelerate–stop distance available: 11800
2.13.5 Landing distance available: 11050

AD 2.14 Approach and runway lighting
2.14.1 Designation: 02L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 20R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Runway 20R PAPI Unusable Beyond 8 Degs Right Of Centerline .

2.14.1 Designation: 02R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 20L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS(907–456–1244)
2.18.3 Service designation: 124.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P TRSA IC
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: APCH/P DEP/P TRSA
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: APCH/P DEP/P TRSA IC
2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: APCH/P DEP/P TRSA
2.18.3 Service designation: 381.4 MHz

2.18.1 Service designation: RADAR
2.18.3 Service designation: 319.1 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 02L. Magnetic variation: 18E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64–49–49.84N / 147–50–00.00W
2.19.6 Site elevation: 438.1 ft

2.19.1 ILS type: DME for runway 02L. Magnetic variation: 18E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64−49−50.74N / 147−50−15.02W
2.19.6 Site elevation: 434.8 ft

2.19.1 ILS type: Middle Marker for runway 02L. Magnetic variation: 18E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64−47−53.40N / 147−53−39.80W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 02L. Magnetic variation: 18E
2.19.2 ILS identification: CNA
2.19.5 Coordinates: 64−48−21.00N / 147−52−36.30W
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: 64−48−00.00N / 147−53−12.53W
2.19.6 Site elevation: 429.8 ft

2.19.1 ILS type: Outer Marker for runway 20R. Magnetic variation: 18E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64−53−59.27N / 147−42−24.01W
2.19.6 Site elevation: 655 ft

2.19.1 ILS type: DME for runway 20R. Magnetic variation: 18E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64−48−00.00N / 147−53−28.16W
2.19.6 Site elevation: 430 ft

2.19.1 ILS type: Localizer for runway 20R. Magnetic variation: 18E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64−48−00.00N / 147−53−23.88W
2.19.6 Site elevation: 429.1 ft

2.19.1 ILS type: Glide Slope for runway 20R. Magnetic variation: 18E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64−49−24.42N / 147−50−39.71W
2.19.6 Site elevation: 434.3 ft

2.19.1 ILS type: Middle Marker for runway 20R. Magnetic variation: 18E
2.19.2 ILS identification: FAI
2.19.5 Coordinates: 64−49−56.80N / 147−49−51.90W
2.19.6 Site elevation:

General Remarks:
ATCT LOCATED AT 64−48−39.438N 147−50−55.722W ELEVATION 538’ MSL.

SEAPLANE BASE TAXI, TAKE−OFF AND LANDINGS CONTROLLED BY FAIRBANKS INTL TOWER, CONTACT TOWER ON FREQ. 118.3 FOR ALL REQUESTS. ALL PILOTS CONTACT TOWER. AS SOON AS PRACTICAL AFTER START UP FOR TAXI INSTRUCTIONS. USE CAUTION TO AVOID UNAUTHORIZED OPPOSITE DIRECTION DEPARTURES. FLOAT POND TRAFFIC. AS ASSIGNED BY FAIRBANKS TOWER. NO STEP TAXI EXCEPT IN CHANNEL FOR RUNWAY 02W−20W. RUNWAY 02W−20W TOUCHDOWN REFERENCE MARKERS 500 FT FROM SHORELINE, MARKED WITH BUOYS. LIMITED TRANSIENT FLOAT PLANE PARKING AVAILABLE CONTACT OPERATIONS 907−474−2530 FOR INFORMATION. SURFACE FROZEN IN WINTER, NOT MONITORED. MIGRATORY BIRDS IN VICINITY OF AIRPORT DURING SPRING THRU FALL, CONDITION NOT MONITORED.

BE ALERT FOR SNOW REMOVAL EQUIPMENT OPERATIONS FROM 1 OCT TO 15 MAY.

MILITARY CONTRACT FUEL AVAILABLE.

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.

NOISE ABATEMENT PROCEDURES IN EFECT FROM 2200−0800 ALL LARGE AIRCRAFT, TURBINE ENGINE, AND HEAVY AIRCRAFT UTILIZE RUNWAY 02L FOR ARRS AND 20R FOR DEPS WHEN WIND IS NOT AN OPERATIOINAL FACTOR. CONTACT AIRPORT OPERATIONS FOR ENGINE RUN−UP LOCATIONS.

RUNWAY 02R/20L CLOSED TO JET AIRCRAFT.

TRANSIENT PARKING EAST RAMP FOR NON JET AIRCRAFT WITH WINGSPAN LESS THAN 79 FT. NO TRANSIENT AIRCRAFT PARKING ON WEST RAMP, CONTACT APT OPERATIONS 907–474–2530 FOR INFORMATION & MEDIVAC PARKING.

FOR AVAILABILITY OF SUMMER GRAVEL STRIP RUNWAY 02/20 AND WINTER SKI STRIP RUNWAY 02/20 CONSULT LOCAL NOTAMS AND CONTACT TOWER PRIOR TO ARRIVAL /DEPARTURE.

N/S TAXIWAY (TWY A) IS WEST AND PARALLEL TO RUNWAY 02L/20R. BE ALERT TO AVOID LANDING ON TAXIWAY.

NE COMPASS ROSE CLOSED TO HELICOPTERS OVER 12,500 LBS. FROST HEAVES SOUTH 2600 FT RUNWAY 02R/20L CONTACT AIRPORT OPERS 907–474–2530 WITH SAFETY CONCERNS.

WX CAMERA AVAILABLE ON INTERNET AT HTTP://AVCAMS.FAA.GOV

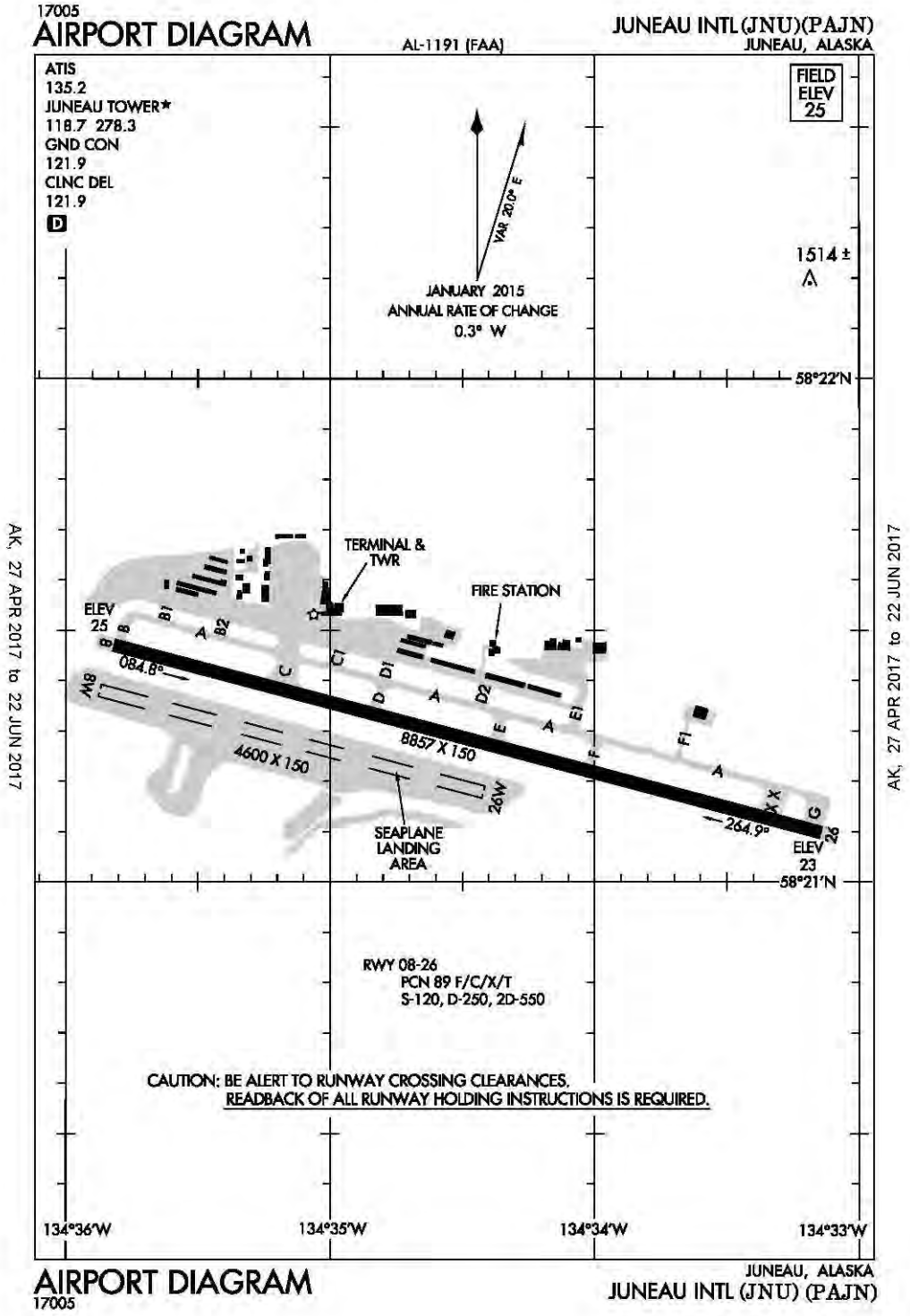
ALL RUNWAY HOLD LINES AND COMPASS ROSE AT TAXIWAY W OBSCURED OCTOBER 1 THRU APRIL 1.

FOR TRANSIENT HELICOPTER PARKING CALL AIRPORT OPERATIONS 907–474–2530.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW –20C.

SEE ADDITIONAL PAGES UNDER NOTICES FOR TERMINAL RADAR SERVICE AREA 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: 58–21–16.96N / 134–34–42.49W
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 Operational hours
2.3.1 – 2.3.11: 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+
2.4.4 De–icing facilities: None
2.4.5 Hangar space: Yes
2.4.6 Repair facilities: Major
2.4.7 Remarks: Airframe/Power Plant Service For Single/Twin Prop Eng Aircraft Turbin & Avionics.

AD 2.6 Rescue and firefighting services
2.6.1 Aerodrome category for firefighting: ARFF Index I C certified on 4/1/2005

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Tower (573 ft). Marked and Lighted
2.10.1.c Location of obstacle: 900 ft from Centerline

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 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: 58–21–00.00N / 134–33–00.00W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 23 ft

2.12.1 Designation: 08W
2.12.3 Dimensions: 4600 ft x 150 ft
2.12.5 Coordinates: 58–21–22.82N / 134–35–52.23W

2.12.1 Designation: 26W
2.12.3 Dimensions: 4600 ft x 150 ft
2.12.5 Coordinates: 58–21–10.71N / 134–34–25.26W

AD 2.13 Declared distances
2.13.1 Designation: 08
2.13.2 Takeoff run available: 8857
2.13.3 Takeoff 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 Takeoff run available: 8857
2.13.3 Takeoff distance available: 8857
2.13.4 Accelerate–stop distance available: 8457
2.13.5 Landing distance available: 8457

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08
2.14.4 Visual approach slope indicator system: 2–box VASI on left
2.14.10 Remarks: VASI Aligned Aprxly 13 Degs Right Of Runway Centerline And Is Not Visible On Runway Cntrl. VASI Unusable Beyond 06 Degs Left Of Crs. Rlls Lights: (Jnub Battleship Island, Jnua Engineers Cut, jnu Wetlands/Flats)

2.14.1 Designation: 26
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Runway 26 PAPI Unusable Beyond 2 Nm Due To Terrain.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 124.65 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 135.2 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 278.3 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 64.7 MHz

2.18.1 Service designation: SEASONAL USE ONLY.
2.18.3 Service designation: 120.7 MHz

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: 58−21−31.02N / 134−38−10.22W
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: 58−21−32.04N / 134−38−10.39W
2.19.6 Site elevation: 165 ft

General Remarks:

NATIONAL GUARD 24 HR PRIOR PERMISSION REQUIRED DUE TO LIMITED PARKING C907−789−3366. 0730−1600 WEEKDAYS CONTACT GUARD OPERATIONS 10 MIN PRIOR TO LANDING ON 124.65.

WILDLIFE & BIRDS ON & IN THE VICINITY OF AIRPORT.

BATTLESHIP ISLAND RUNWAY LEAD-IN LIGHTING SYSTEM GROUPING; CENTER LIGHT 582132.88N 1344012.22W. IJDL−LOCALIZER RUNWAY LEAD-IN LIGHTING SYSTEM GROUPING; CENTER LIGHT 582132.02N 1343810.39W.

INCREASED HELICOPTER/LIGH AIRCRAFT ACTIVITY APR 15−OCT 1 ENTIRE LENGTH ON GASTINEAU CHANNEL & WITHIN 5 MILES OF AIRPORT.

PARAGLIDING ACTIVITY 3 MILES N OF AIRPORT IN THE VICINITY OF THUNDER MOUNTAIN & OVER GASTINEAU CHANNEL NEARS DOWNTOWN APR 15−OCT 1 6000 FT & BELOW.

TRAFFIC PATTERN ALTITUDE 1500 AGL FOR LARGE TURBINE AIRCRAFT; 1000 FT AGL FOR FIXED WING AIRCRAFT; 500 FT AGL FOR HELICOPTERS.

FOR A LOCAL CALL TO JNU AUTOMATED FLIGHT SERVICE STATION CALL 907−789−7380.

TRANSIENT DOCK AVAILABLE FOR PUBLIC USE FOR UP TO SIX AIRCRAFT, SW CORNER.

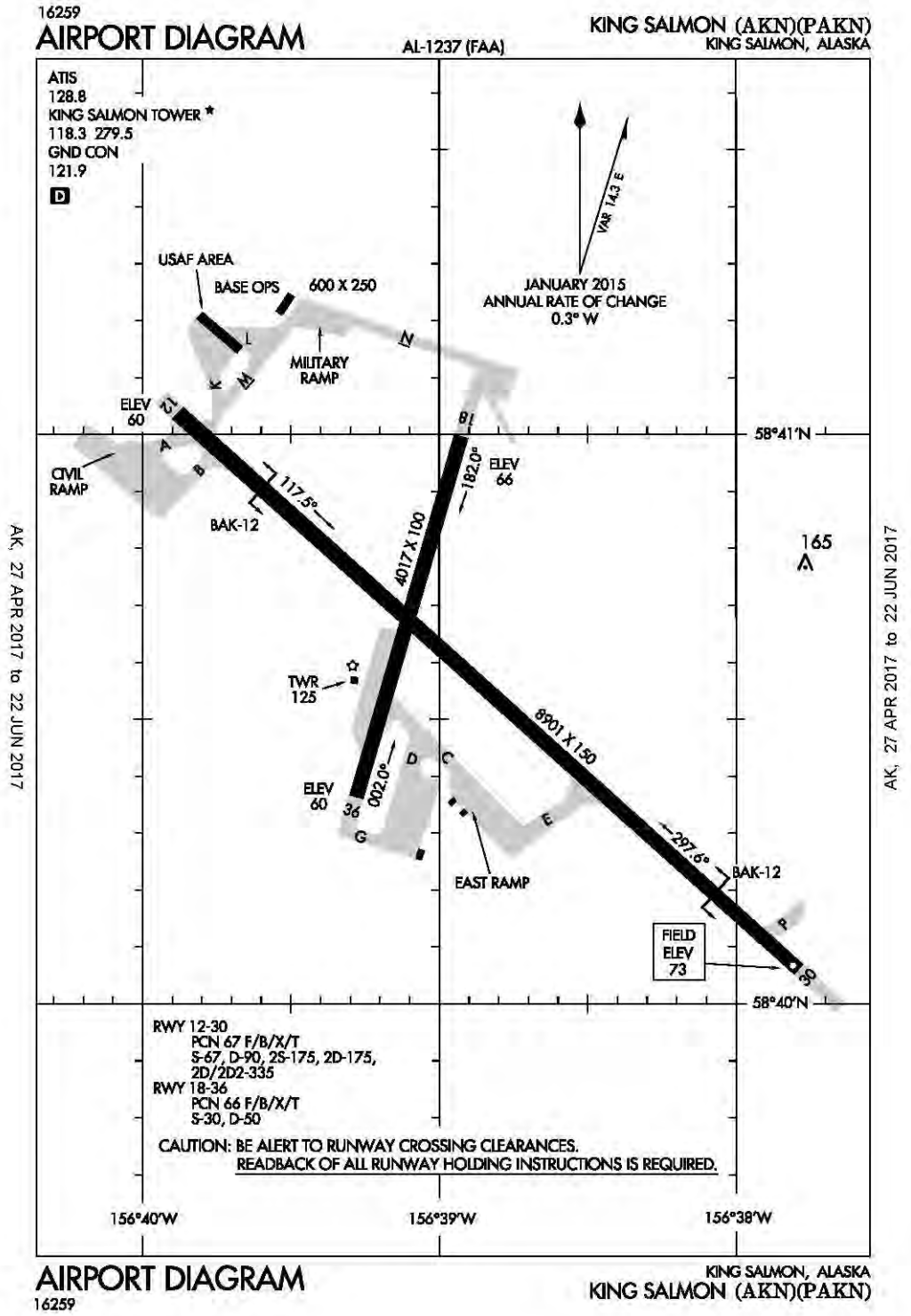
SEE SPECIAL NOTICES AND GENERAL NOTICES FOR ADDITIONAL INFORMATION ON OPERATIONS IN JUNEAU AREA.

LENA POINT, PEDERSON HILL AND SISTERS ISLAND WX CAMERAS AVAILABLE ON INTERNET AT HTTP://AVCAMS.FAA.GOV

RUNWAY 08/26 SAND USED TO ENHANCE RUNWAY FRICTION MAY NOT MEET FAA SPECS.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −13C/−9F.

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: 58−40−35.38N / 156−38−55.29W
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: Kyler Hylton
PO BOX 65
King Salmon, AK 99613
(907−246−3325)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: ALL Months, ALL Days, 0800−1800 Hours

AD 2.4 Handling services and facilities

2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
2.4.6 Repair facilities: Major
2.4.7 Remarks: Transient Parking Marked At North End Of General Aviation Ramp And East End Of Cargo Ramp.

AD 2.6 Rescue and firefighting services

2.6.1 Aerodrome category for firefighting: ARFF Index I A certified on 3/21/2005
2.6.4 Remarks: Closed To Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required In Writing To Airport Manager PO Box 65 King Salmon Ak, 99613.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 18
2.10.1.b Type of obstacle: Trees (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: NW
2.12.3 Dimensions: 4000 ft x 500 ft

2.12.1 Designation: SE
2.12.3 Dimensions: 4000 ft x 500 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: 58−40−59.78N / 156−38−55.61W
2.12.6 Threshold elevation: 66 ft
2.12.6 Touchdown zone elevation: 66 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: 58−40−21.80N / 156−39−16.96W
2.12.6 Threshold elevation: 60 ft
2.12.6 Touchdown zone elevation: 65 ft

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: 58−41−00.00N / 156−39−53.02W
2.12.6 Threshold elevation: 60 ft
2.12.6 Touchdown zone elevation: 62 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: 58−40−00.00N / 156−37−47.63W
2.12.6 Threshold elevation: 73 ft
2.12.6 Touchdown zone elevation: 73 ft

AD 2.13 Declared distances

2.13.1 Designation: 12
2.13.2 Takeoff run available: 8901
2.13.3 Takeoff 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 Takeoff run available: 8901
2.13.3 Takeoff distance available: 8901
2.13.4 Accelerate−stop distance available: 8501
2.13.5 Landing distance available: 8501

AD 2.14 Approach and runway lighting

2.14.1 Designation: 12
2.14.2 Approach lighting system: SSALR: Simplified short approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light

PAPI on left

2.14.1 Designation: 30
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 128.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 279.5 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58–44–14.14N / 156–46–45.49W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58–40–57.34N / 156–39–29.89W
2.19.6 Site elevation: 64 ft

2.19.1 ILS type: Middle Marker for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58–41–25.44N / 156–40–42.92W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: DME for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58–39–59.60N / 156–37–31.70W
2.19.6 Site elevation: 78 ft

2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 16E
2.19.2 ILS identification: AKN
2.19.5 Coordinates: 58–39–56.55N / 156–37–32.37W
2.19.6 Site elevation: 78 ft

General Remarks:
LANDING AREA RUNWAY NW/SE ALSO USED BY BOATS.

FLOCKS OF LARGE MIGRATORY BIRDS IN VICINITY DURING SEASON.

OFF PAVEMENT OPERATIONS BY AIRCRAFT; INCLUDING HELICOPTERS; NOT AUTHORIZED AT THE AIR CARRIER APRON. NO LANDING; PARKING OR TAKE-OFFS PERMITTED FROM DIRT OR GRASS.

ONE INCH DIP ON CENTERLINE 1850 FT FROM APPROACH END RUNWAY 36 EXTENDS TO THREE INCH DIP 25 FT WIDE ON WEST EDGE.

CIVILIAN TRANSIENT PARKING ON SE RAMP ONLY; OTHER PARKING LONGER THAN 48 HRS REQUIRES PERMIT.

ALL FIGHTER AIRCRAFT ON ARR EXPECT REDUCED SEPARATION; SIMILAR APPROACH CHARACTERISTICS AND DAY – 3000 FT; DISSIMILAR APPROACH CHARACTERISTICS AND/OR NIGHT – 6000 FT;

AHEAD/BEHIND FORMATION LANDING – 6000 FT.

600 FT SAFETY AREA APPROACH END RUNWAY 12.

RUNWAY CONDITION READING UPDATED AS REQUIRED DURING 11TH AF FIGHTER FLYING WINDOW. AIRCREWS COORD RUNWAY CONDITION READING CHECKS WITH KING SALMON OPERATIONS – 907–439–3001 OR 907–439–6000. AIRCRAFT OPERATIONS RESTRICTED TO LOW APPROACH/FULL STOP LANDING ONLY.

FIGHTER AIRCRAFT COORDINATE DESIRED BARRIER CONFIGURATION OR ENGAGEMENT AS EARLY AS POSSIBLE. EXPECT AT LEAST 30 MIN DELAY FOR SHORT−NOTICE REQUIREMENT.

FLIGHTS ORIG OUTSIDE ALASKA REFER TO USAF FOREIGN CLEARANCE GUIDE. NO CUSTOMS AVAILABLE.

SNOW, ICE REMOVAL & AIRPORT HAZARD CONDITION PERFORMED & REPORTED DURING MAINT DUTY HRS.

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. MILITARY AIRCRAFT NEED TO CONFIRM FUEL REQUIREMENTS 24−48 HOURS IN ADVANCE.

MILITARY FTRS/EMERGENCY DIVERTS CALL WARRIOR SOF/ELMENDORF SOF ON UHF AT 395.15. NON−EMERG/NON−FTR AIRCRAFT CALL KING SALMON OPERATIONS; 24 HR POINT NORMALLY MONITORS COMMON TRAFFIC ADVISORY FREQUENCY DURING OPR HRS.

RUNWAY 18/36 NOT INSPECTED FOR MILITARY OPERATIONS.

AIRCRAFT RESCUE AND FIRE FIGHTING EQUIPMENT STAFFED DURING PERIODS OF AIR CARRIER ACTIVITY ONLY.

PRIVATE JETS MAY PARK ON THE SE SECTION OF E RAMP; CALL AIRPORT MANAGER AT 907−246−3325 FOR INFORMATION.

AIRPORT MAINT DUTY HRS 0800−1700.

GENERAL AVIATION APRON,PAVEMENT CRUMBLING, POSSIBLE FOREIGN OBJECT DAMAGE HAZARD. JET AIRCRAFT BE ALERT DURING RUN−UP TO AVOID DAMAGE WITH JET WASH.

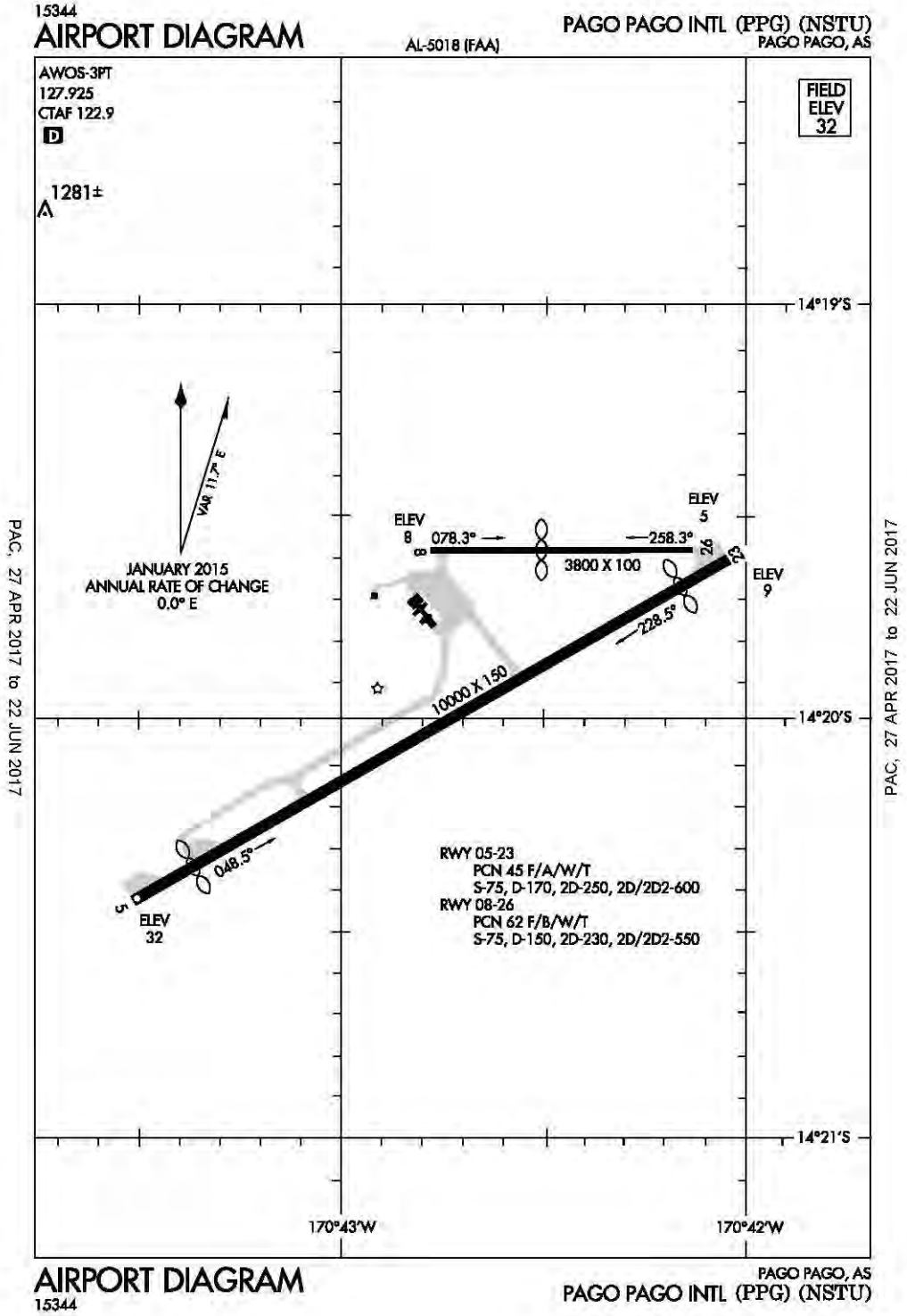
WX CAMERA AVAILABLE ON INTERNET AT HTTP://AVCAMS.FAA.GOV

APRON SPOTS 4, 5, 6, 7 NORTH OF MILITARY HANGARS CLOSED EXCEPT PROPELLER AIRCRAFT. TAXIWAY P CLOSED.

AIRCRAFT RESCUE AND FIRE FIGHTING IS AVAILABLE FOR PART 121 CARRIERS INVOLVED IN ETOPS OPERATIONS WITH 30 MINUTES NOTICE.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −31C/−24F.

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: 14−19−53.98S / 170−42−41.41W
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
DEPT OF PORT ADMIN, BOX 1539
Pago Pago, AS 96799 ((684) 733−3076)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 – 2.3.11: 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,A1+
2.4.4 De−icing facilities: None
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: ARFF Index I C certified on 5/1/1973

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 05
2.10.1.b Type of obstacle: Hill (446 ft). Lighted
2.10.1.c Location of obstacle: 1000 ft from Centerline

2.10.1.a. Runway designation: 23
2.10.1.b Type of obstacle: Fence (8 ft). Lighted

AD 2.12 Runway physical characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 3800 ft x 100 ft
2.12.4 PCN: 62 F/B/W/T
2.12.5 Coordinates: 14−19−35.13S / 170−42−46.75W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 6 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: 62 F/B/W/T
2.12.5 Coordinates: 14−19−35.10S / 170−42−00.00W
2.12.6 Threshold elevation: 5 ft
2.12.6 Touchdown zone elevation: 6 ft

2.12.1 Designation: 05
2.12.2 True Bearing: 60
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 45 F/A/W/T
2.12.5 Coordinates: 14−20−25.82S / 170−43−30.84W
2.12.6 Threshold elevation: 32 ft
2.12.6 Touchdown zone elevation: 32 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: 45 F/A/W/T
2.12.5 Coordinates: 14−19−36.47S / 170−42−00.00W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

AD 2.13 Declared distances
2.13.1 Designation: 05
2.13.2 Takeoff run available: 9200
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 9200

AD 2.14 Approach and runway lighting
2.14.1 Designation: 05
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 23
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.19 Radio navigation and landing aids
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 / 170−42−12.90W
2.19.6 Site elevation: 5.7 ft

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: Middle Marker for runway 05. Magnetic variation: 12E
2.19.2 ILS identification: TUT
2.19.5 Coordinates: 14–20–36.10S / 170–43–49.30W
2.19.6 Site elevation: 74 ft

General Remarks:
PERMANENT CABLE ACROSS MID PAGO PAGO HARBOR 4SM NNE AIRPORT, RISES ABRUPTLY TO 1609' MOUNTAIN ALAVA N SIDE OF HARBOR, EXTREMELY HAZARDOUS TO AIRCRAFT.

ALL FLIGHTS (EXCEPT SCHEDULED) PRIOR PERMISSION FROM AIRPORT MANAGER WITH 24 HRS PRIOR NOTICE.

SEA SPRAY FROM SURF & BLOW HOLES MAY DRIFT ACROSS RUNWAY 05/23 UNDER ROUGH SEA CONDITIONS.

ALL AIRCRAFT TRANSITING PAGO PAGO (EXCEPT COMMERCIAL CARRIERS) MUST MAKE FUEL ARRANGEMENTS WITH PPG AT 684–733–3158.

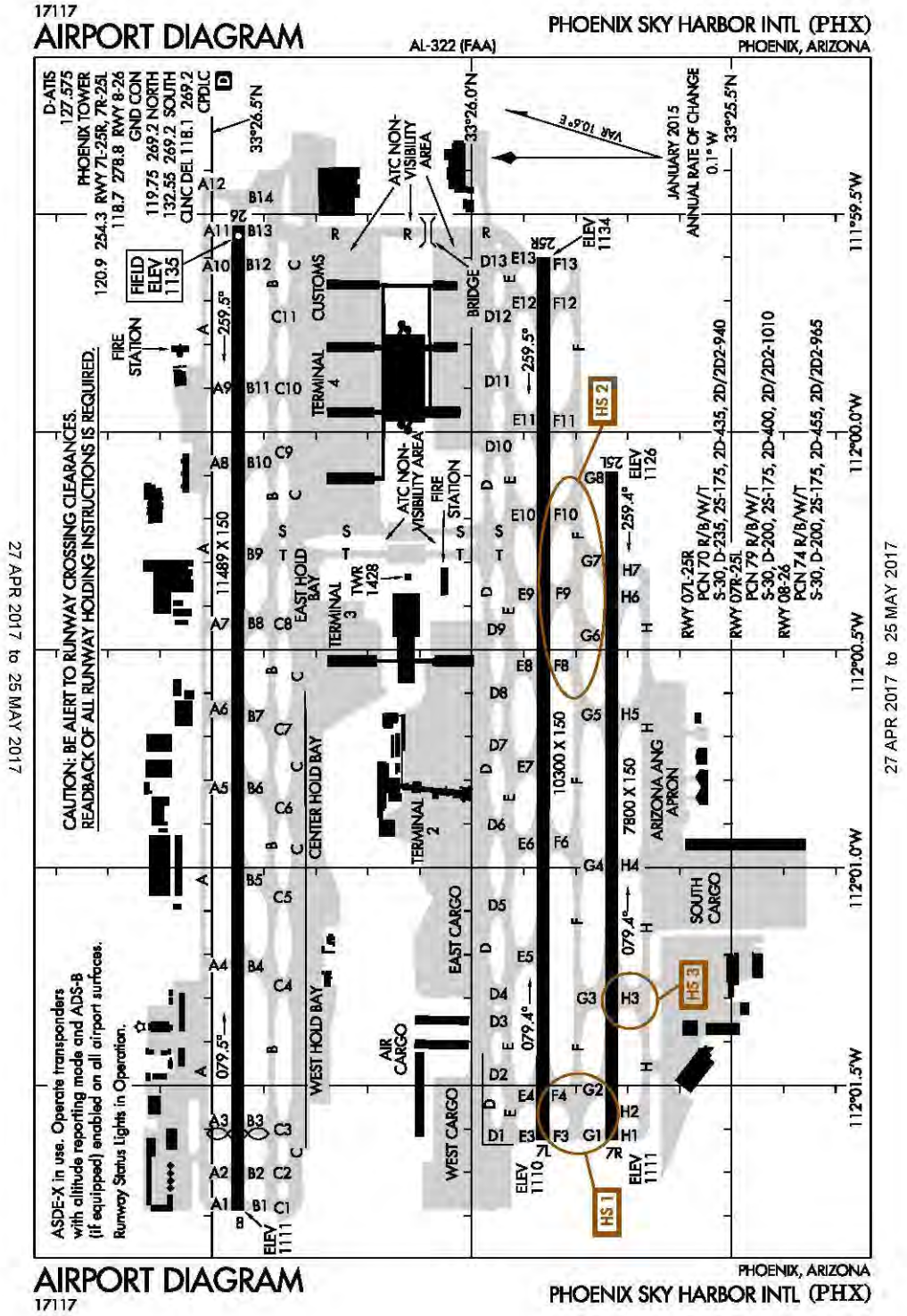
ALL AIRCRAFT EXCEEDING 100000 GROSS WEIGHT UPON TOUCHDOWN TAXI TO THR TURN– AROUND BEFORE TAXIING TO APRON. AIRCRAFT UNDER 100000 MAKE TURN–ARND WHERE FEASIBLE.

OLOTELE MOUNTAIN 1617 FT MSL 3.5 MILES WEST OF THRESHOLD RUNWAY 08.

PERMANENTLY LIGHTED & MARKED 226' TOWER ATOP MOUNTAIN ALAVA 4.3SM NNE AIRPORT.

FOR NOTAM CONTACT NEW ZEALAND (643) 358–1688.

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: 33–26–00.00N / 112–00–41.70W
2.2.2 From City: 3 Miles E Of Phoenix, AZ
2.2.3 Elevation: 1134.6 ft
2.2.5 Magnetic variation: 12E (2000)
2.2.6 Airport Contact: James E Bennett
3400 SKY HARBOR BLVD, SUITE 3300
Phoenix, AZ 85034 (602–273–3300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Bldg (66 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 503 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Road (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 540 ft from Centerline

2.10.1.a. Runway designation: 07L
2.10.1.b Type of obstacle: Pole (62 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 750 ft from Centerline

2.10.1.a. Runway designation: 25R
2.10.1.b Type of obstacle: Ant (416 ft). Marked and Lighted
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Pole (33 ft). Lighted
2.10.1.c Location of obstacle: 640 ft from Centerline

2.10.1.a. Runway designation: 25L
2.10.1.b Type of obstacle: Ant (424 ft). Marked and Lighted
2.10.1.c Location of obstacle: 1193 ft from Centerline

AD 2.12 Runway physical characteristics

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: 33–26–27.10N / 112–01–47.26W
2.12.6 Threshold elevation: 1111 ft
2.12.6 Touchdown zone elevation: 1118 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: 33–26–26.96N / 111–59–31.69W
2.12.6 Threshold elevation: 1135 ft
2.12.6 Touchdown zone elevation: 1135 ft

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: 33–25–51.81N / 112–01–37.56W
2.12.6 Threshold elevation: 1110 ft
2.12.6 Touchdown zone elevation: 1116 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: 33–25–51.73N / 111–59–36.05W
2.12.6 Threshold elevation: 1134 ft
2.12.6 Touchdown zone elevation: 1134 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: 33–25–43.89N / 112–01–37.57W
2.12.6 Threshold elevation: 1111 ft
2.12.6 Touchdown zone elevation: 1116 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: 33−25−43.84N / 112−00−00.00W
2.12.6 Threshold elevation: 1126 ft
2.12.6 Touchdown zone elevation: 1126 ft

AD 2.13 Declared distances
2.13.1 Designation: 08
2.13.2 Takeoff run available: 11489
2.13.3 Takeoff distance available: 11489
2.13.4 Accelerate−stop distance available: 11489
2.13.5 Landing distance available: 10591

2.13.1 Designation: 26
2.13.2 Takeoff run available: 11489
2.13.3 Takeoff distance available: 11489
2.13.4 Accelerate−stop distance available: 11489
2.13.5 Landing distance available: 11489

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 07L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 07R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: GND/P (NORTH)
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: GND/P (SOUTH)
2.18.3 Service designation: 132.55 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 254.3 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.575 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 278.8 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 08. Magnetic variation: 12E
2.19.2 ILS identification: SYQ
2.19.5 Coordinates: 33−26−24.32N / 111−59−19.70W
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: 33−26−29.65N / 112−01−24.63W
2.19.6 Site elevation: 1114 ft

2.19.1 ILS type: Localizer for runway 08. Magnetic variation: 12E
2.19.2 ILS identification: SYQ
2.19.5 Coordinates: 33−26−26.95N / 111−59−19.75W

2.19.6 Site elevation: 1145.2 ft

2.19.1 ILS type: DME for runway 26. Magnetic variation: 12E
2.19.2 ILS identification: CWJ
2.19.5 Coordinates: 33−26−24.18N / 112−01−59.25W
2.19.6 Site elevation: 1118.9 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 12E
2.19.2 ILS identification: CWJ
2.19.5 Coordinates: 33−26−29.60N / 111−59−44.43W
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: 33−26−27.11N / 112−01−59.23W
2.19.6 Site elevation: 1105 ft

2.19.1 ILS type: Glide Slope for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−49.05N / 112−01−25.22W
2.19.6 Site elevation: 1106.4 ft

2.19.1 ILS type: Middle Marker for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−51.76N / 112−02−00.00W
2.19.6 Site elevation: 1304 ft

2.19.1 ILS type: Localizer for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−51.72N / 111−59−20.41W
2.19.6 Site elevation: 1133.4 ft

2.19.1 ILS type: DME for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−54.14N / 111−59−19.06W
2.19.6 Site elevation: 1142.3 ft

2.19.1 ILS type: Outer Marker for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: PHX
2.19.5 Coordinates: 33−25−53.81N / 112−06−23.58W
2.19.6 Site elevation: 1056 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: AHA
2.19.5 Coordinates: 33−25−43.83N / 111−59−52.33W
2.19.6 Site elevation: 1112 ft

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: AHA
2.19.5 Coordinates: 33−25−46.63N / 112−01−25.09W
2.19.6 Site elevation: 1108 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: AHA
2.19.5 Coordinates: 33−25−43.83N / 111−59−52.33W
2.19.6 Site elevation: 1135 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: RJG
2.19.5 Coordinates: 33−25−43.83N / 111−59−52.33W
2.19.6 Site elevation: 1112 ft

2.19.1 ILS type: Glide Slope for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: RJG
2.19.5 Coordinates: 33−25−40.93N / 112−00−16.87W
2.19.6 Site elevation: 1120 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: RJG
2.19.5 Coordinates: 33−25−43.90N / 112−01−50.78W
2.19.6 Site elevation: 1110 ft

General Remarks:
FEE FOR ALL CHARTERS; TRAVEL CLUBS AND CERTAIN REVENUE PRODUCING AIRCRAFT.

NOISE ABATEMENT PROCEDURES ARE IN AFFECT AT ALL TIMES. CONTACT 602−273−4300 FOR MORE INFORMATION.

BIRD ACTIVITY WITHIN 10 MILES OF AIRPORT UP TO 10,000 MSL.

TAXIWAY R AND PORTIONS OF TAXIWAYS S AND T DIRECTLY BELOW THE ATCT ARE NON VISIBLE AREAS FROM THE ATCT. PHOENIX ATCT UNABLE TO PROVIDE AIR TRAFFIC CONTROL SERVICES TO AIRCRAFT WHILE ON TAXIWAY R, AND PORTIONS OF TAXIWAYS S AND T.

TAXIWAY D BETWEEN INTERSECTIONS TAXIWAYS D8 & D9 RESTRICTED TO AIRCRAFT WITH WINGSPAN 135 FT OR LESS.

TAXIWAY R OVERHEAD TRAIN BRIDGE AT MIDPOINT PROVIDES 82FT−4 IN. CLEARANCE.
WHEN ANG AIRFIELD CLOSED, TRANSIENT AIRCRAFT USE FBO CUTTER AVIATION FOR SERVICE C602−273−1237, 128.875."

FAA NAV EQUIPMENT SHACKS LOCATED 117 FT NORTH AND 117 FT SOUTH OF TAXIWAY F CENTERLINE BETWEEN TAXIWAYS G2 AND G3 INTERSECTIONS.

NO EXPERIMENTAL FLIGHT OR GROUND DMSTRN ON AIRPORT WITHOUT PRIOR WRITTEN CONSENT FROM THE AIRPORT.

THIS AIRPORT HAS BEEN SURVEYED BY THE NATIONAL GEODETIC SURVEY.

NATIONAL GUARD HAS LIMITED TRANSIENT MAINTENANCE AND PARKING REMAINING OVERNIGHT BY PRIOR PERMISSION.

AIRCRAFT DESIGN GROUP VI OPERATIONS WITH PRIOR PERMISSION REQUIRED.

NO TOUCH AND GO OR STOP AND GO OPERATIONS ALLOWED BETWEEN 0600 AND 2300 WITHOUT PRIOR WRITTEN CONSENT FROM THE AIRPORT.

OVERNIGHT PARKING FEE.

NO ENGINE RUNS ON AIRPORT WITHOUT PRIOR COORDN WITH AIRSIDE OPERATIONS.

NO ENGINE RUNS ON AIRPORT BETWEEN 2300L – 0500L.

INTERNATIONAL GATE USE REQUEST SUPPLEMENTARY FLIGHT PLAN COORDN WITH AIRPORT OPERATIONS 48 HOURS PRIOR TO ARRIVAL.

INTERNATIONAL LANDING RIGHTS REQUIRES US CUSTOMS AND BORDER PROTECTION NOTIFICATION 48 HOURS PRIOR TO LANDING.

GA SHOULD REVIEW AIRPORT SAFETY VIDEO @ HTTP://SKYHARBOR.COM/BUSINESS/FORPILOTS/SAFETYVIDEOFORPILOTS

FAA NAVIGATIONAL ANTS LOCATED 114 FT N AND S OF TAXIWAY F CENTERLINE, 525 W TAXIWAY G3 INTERSECTION.

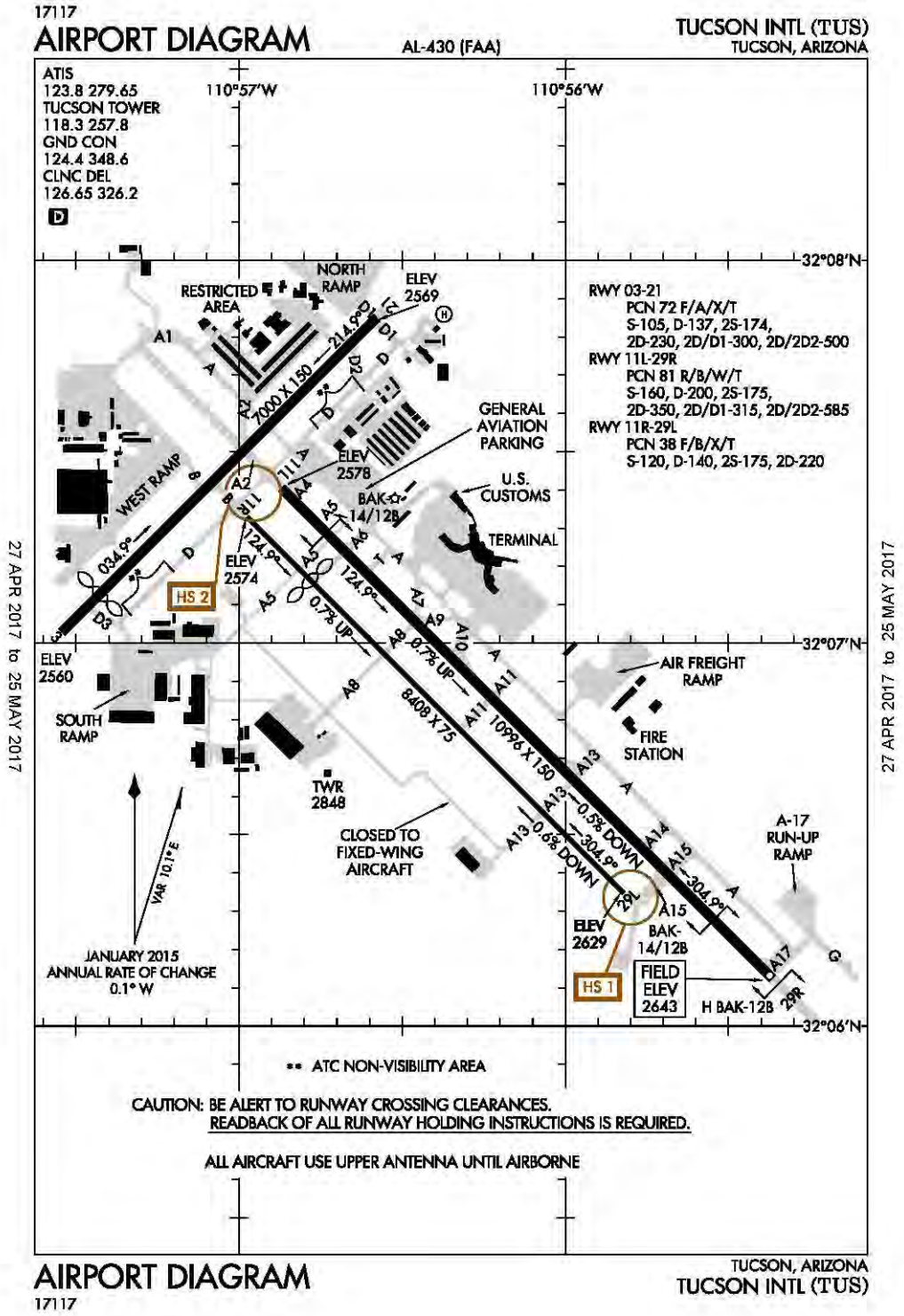
RUNWAY STATUS LIGHTS ARE IN OPN.

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.

RUNWAY 08 PAPI 7 DEGREE LEFT OF RUNWAY CENTER LINE UNUSABLE.

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: 32−06−57.90N / 110−56−27.70W
2.2.2 From City: 6 Miles S Of Tucson, AZ
2.2.3 Elevation: 2643.1 ft
2.2.5 Magnetic variation: 12E (1995)
2.2.6 Airport Contact: Bonnie Allin
TUCSON APT AUTH 7250 S TUCSON BLVD
Tucson, AZ 85756 (520−573−8100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 29L
2.10.1.b Type of obstacle: Pole (37 ft). Lighted
2.10.1.c Location of obstacle: 350 ft from Centerline

2.10.1.a. Runway designation: 29R
2.10.1.b Type of obstacle: Gnd (8 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 03
2.10.1.b Type of obstacle: Rr (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics

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: 32−07−19.57N / 110−56−58.75W
2.12.6 Threshold elevation: 2574 ft
2.12.6 Touchdown zone elevation: 2605 ft
2.12.7 Slope: 0.7UP

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: 32−06−20.72N / 110−55−49.66W
2.12.6 Threshold elevation: 2629 ft
2.12.6 Touchdown zone elevation: 2629 ft
2.12.7 Slope: 0.6DOWN

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: 32−07−24.13N / 110−56−52.49W
2.12.6 Threshold elevation: 2578 ft
2.12.6 Touchdown zone elevation: 2599 ft
2.12.7 Slope: 0.7UP

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: 32−06−00.00N / 110−55−22.14W
2.12.6 Threshold elevation: 2643 ft
2.12.6 Touchdown zone elevation: 2643 ft
2.12.7 Slope: 0.5DOWN

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: 32−07−00.00N / 110−57−32.55W
2.12.6 Threshold elevation: 2560 ft
2.12.6 Touchdown zone elevation: 2572 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: 32−07−50.74N / 110−56−34.96W
2.12.6 Threshold elevation: 2569 ft
2.12.6 Touchdown zone elevation: 2573 ft

AD 2.13 Declared distances

2.13.1 Designation: 11R
2.13.2 Takeoff run available: 6998
2.13.3 Takeoff 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 Takeoff run available: 6998
2.13.3 Takeoff distance available: 6998
2.13.4 Accelerate−stop distance available: 6998
2.13.5 Landing distance available: 6998

2.13.1 Designation: 11L
2.13.2 Takeoff run available: 10996
2.13.3 Takeoff 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 Takeoff run available: 10996
2.13.3 Takeoff distance available: 10996
2.13.4 Accelerate−stop distance available: 10996
2.13.5 Landing distance available: 10996

2.13.1 Designation: 03
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff 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 Takeoff run available: 6000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 11R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 11L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 21
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 119 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 123.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 124.4 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 126.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 326.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG COMD POST
2.18.3 Service designation: 138.525 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 279.65 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−07−14.77N / 110−56−48.06W
2.19.6 Site elevation: 2580.3 ft

2.19.1 ILS type: Middle Marker for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−07−51.90N / 110−57−22.60W
2.19.6 Site elevation: 2550 ft

2.19.1 ILS type: DME for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−05−54.98N / 110−55−00.00W
2.19.6 Site elevation: 2676.1 ft

2.19.1 ILS type: Localizer for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−05−53.51N / 110−55−00.00W
2.19.6 Site elevation: 2660 ft

2.19.1 ILS type: Outer Marker for runway 11L. Magnetic variation: 12E
2.19.2 ILS identification: TUS
2.19.5 Coordinates: 32−10−54.55N / 111−00−57.52W
2.19.6 Site elevation: 2500 ft

General Remarks:
AIRCRAFT DEPG RUNWAY 11R REQUIRED TO ATTAIN AT LEAST 400 FT AGL PRIOR TO STARTING TURN.

PORTIONS OF TAXIWAY D NOT VISIBLE FROM ATCT DUE TO HANGARS.

RUNWAY 11L/29R HAS DISTANCE REMAINING MARKINGS ON NE SIDE. RUNWAY 03/21 HAS DISTANCE REMAINING MARKERS ON SE SIDE.

NO B−747 TRAINING EXCEPT PRIOR PERMISSION REQUIRED; NO FLIGHT TRAINING 2200−0600 EXCEPT PRIOR PERMISSION REQUIRED; CALL AIRSIDE OPERATIONS DEPT. (520) 573−8190.

B747 AIRCRAFT TAXI WITH INBOARD ENGINES ONLY.

TAXIWAY T − GENERAL AVIATION TAXIWAY, 30,000 LBS OR LESS.

AIR CARRIERS USE RUNWAY 11L/29R & RUNWAY 03/21

RUNWAY 11R/29L RESTRICTED TO TKOF/LAND AIRCRAFT WITH WINGSPAN LESS THAN 73 FT & LANDING SPEED LESS THAN 120 KNOTS.

SERVICE−A−GEAR: BAK−14/BAK−12B APPROACH END RUNWAY 11L AND BAK−14/BAK−12B APPROACH END RUNWAY 29R, ENGAGEMENTS AVAILABLE ONLY DUR ANG DUTY HR AND 15 MIN PRIOR NOTICE REQUIRE. BAK−12B OVERRUN RUNWAY 29R AND BAK−12B OVERRUN RUNWAY 11L SERVICEABLE BUT NOT CERTIFIED. BAK−12B IN RUNWAY 11L OVERRUN HAS 850’ RUN OUT.

HELICOPTER OPERATIONS LOCATED SOUTH OF RUNWAY 11R/29L & WEST OF TAXIWAY A13.

TAXIWAY A5 LIMITED TO 70,000 LBS OR LESS.

ANG − OFFICIAL BUSINESS ONLY. PRIOR PERMISSION REQUIRED DSN 844−6731, C520−295−6731, FAX EXTENSION 6732. 24 HR NOTIFICATION REQ FOR ALL PPR’S. BASE OPERATIONS OPR 1300−2200Z++ MON−FRI EXCEPT HOLIDAY. NO TRANSIENT ALERT MAINT AVAILABLE. NO CONTRACT FUEL AVAILABLE. TRANSIENT AIRCRAFT EXPECT STR−IN FULL STOP ONLY.

ALL AIRCRAFT USE UPPER ANTENNA UNTIL AIRBORNE.

NO PUBLIC SERVICES AVAILABLE AT THE TUS EXECUTIVE TERMINAL.

CALL OPERATIONS OFFICE AT 520−573−8190.

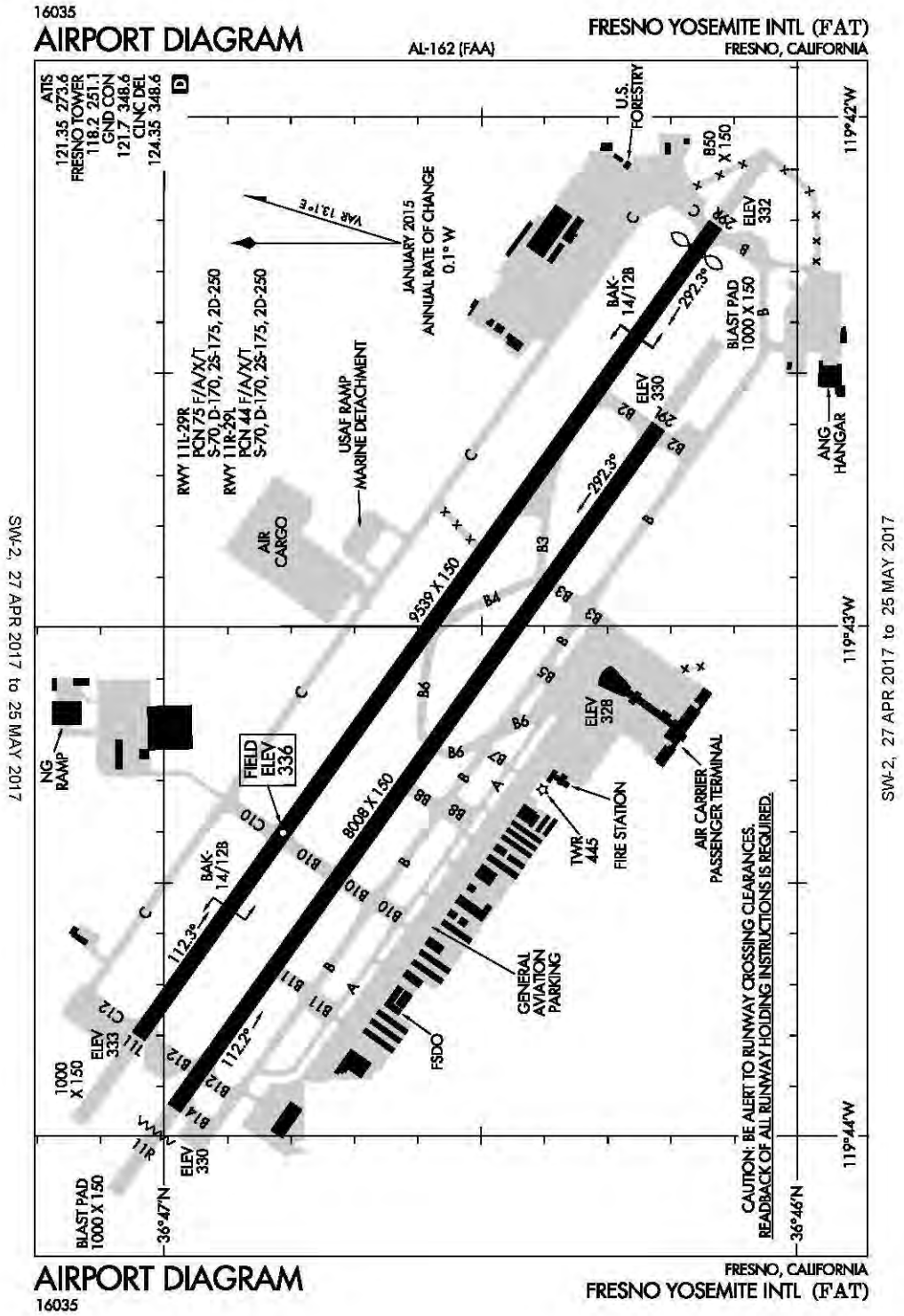
ANG: TAXIWAY ONTO APRON FENCE OPENING 78 FT 10 IN WIDE, 10 FT 2 IN HIGH.

SERVICE−FUEL: A++(MIL)

PRIOR PERMISSION REQUIREDUIRED FOR ALL CHARTER, SPORTS TEAM, CARGO AND MILITARY

AIRCRAFT. CONTACT AIRSIDE OPERATIONS FOR PRIOR PERMISSION REQUIRED NUMBER AT 520−573−8190. LANDING AND PARKING FEES MAY APPLY.

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: 36–46–35.60N / 119–43–00.00W
2.2.2 From City: 5 Miles NE Of Fresno, CA
2.2.3 Elevation: 335.9 ft
2.2.5 Magnetic variation: 14E (2005)
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 Operational hours

2.3.1 – 2.3.11: 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,A
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 11L
2.10.1.b Type of obstacle: Pole (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 650 ft from Centerline

2.10.1.a. Runway designation: 29R
2.10.1.b Type of obstacle: Road (16 ft). Lighted
2.10.1.c Location of obstacle: 580 ft from Centerline

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: 36–47–00.00N / 119–43–48.31W
2.12.6 Threshold elevation: 333 ft
2.12.6 Touchdown zone elevation: 336 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: 36–46–00.00N / 119–42–12.69W
2.12.6 Threshold elevation: 332 ft
2.12.6 Touchdown zone elevation: 333 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: 36–46–59.02N / 119–43–56.71W
2.12.6 Threshold elevation: 330 ft
2.12.6 Touchdown zone elevation: 333 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: 36–46–13.21N / 119–42–36.44W
2.12.6 Threshold elevation: 330 ft
2.12.6 Touchdown zone elevation: 331 ft

AD 2.13 Declared distances

2.13.1 Designation: 11L
2.13.2 Takeoff run available: 9539
2.13.3 Takeoff 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 Takeoff run available: 9539
2.13.3 Takeoff distance available: 9539
2.13.4 Accelerate–stop distance available: 9539
2.13.5 Landing distance available: 9227

AD 2.14 Approach and runway lighting

2.14.1 Designation: 11L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 29R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 29L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 119.6 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 121.35 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 132 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 251.1 MHz

2.18.1 Service designation: NG OPNS
2.18.3 Service designation: 255.8 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 273.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG
2.18.3 Service designation: 298.3 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: NG OPNS
2.18.3 Service designation: 40.95 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 323.25 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 268.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 351.95 MHz

2.18.1 Service designation: ANG
2.18.3 Service designation: 140 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: DME for runway 11L. Magnetic variation: 14E
2.19.2 ILS identification: RPW
2.19.5 Coordinates: 36−47−10.81N / 119−43−56.63W
2.19.6 Site elevation: 347.3 ft

2.19.1 ILS type: Localizer for runway 11L. Magnetic variation: 14E
2.19.2 ILS identification: RPW
2.19.5 Coordinates: 36−46−00.00N / 119−42−00.00W
2.19.6 Site elevation: 331.4 ft

2.19.1 ILS type: Localizer for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−47−00.00N / 119−43−58.60W
2.19.6 Site elevation: 333.8 ft

2.19.1 ILS type: Glide Slope for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−46−18.84N / 119−42−23.48W
2.19.6 Site elevation: 332.3 ft

2.19.1 ILS type: Outer Marker for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−43−48.19N / 119−38−00.00W
2.19.6 Site elevation: 340 ft

2.19.1 ILS type: DME for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36−47−10.81N / 119−43−56.63W
2.19.6 Site elevation: 347.2 ft

2.19.1 ILS type: Middle Marker for runway 29R. Mag-

netic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36–45–47.67N / 119–41–37.41W
2.19.6 Site elevation: 330 ft

2.19.1 ILS type: Inner Marker for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: FAT
2.19.5 Coordinates: 36–46–00.00N / 119–42–00.00W
2.19.6 Site elevation: 330.7 ft

General Remarks:
FRESNO YOSEMITE INTL IS NOISE SENSITIVE; NOISE ABATEMENT PROCEDURES IN EFFECT.

NO MULTIPLE APPROACHES AND LANDINGS MON–SAT 2200–0700 AND SUN 1800–1000.

POSSIBLE WAKE TURBULENCE OR WIND SHEAR ARR TO RUNWAY 29L OR DEP FROM RUNWAY 11R. JET TESTING CONDUCTED AT AIR NATIONAL GUARD RAMP LOCATED AT SE CORNER OF AIRPORT.

NUMEROUS BIRDS IN THE VICINITY OF AIRPORT.

LIGHTED RUNWAY DISTANCE REMAINING MARKERS ON SOUTH SIDE OF RUNWAY 11R/29L; LIGHTED RUNWAY DISTANCE REMAINING MARKERS BOTH SIDES OF RUNWAY 11L/29R– 11L DRM ON NORTH SIDE; 29R DRM ON SOUTH SIDE.

RETRACTABLE BAK–12/14 AVAILABLE ON RUNWAY 11L AND RUNWAY 29R ARE KEPT IN RECESSED POSITION UNTIL REQ FOR USE; TOWER MUST BE NOTIFIED AT LEAST 5 SECONDS PRIOR TO ENGAGEMENT SO THAT THE AIR GROUND CABLE MAY BE RAISED.

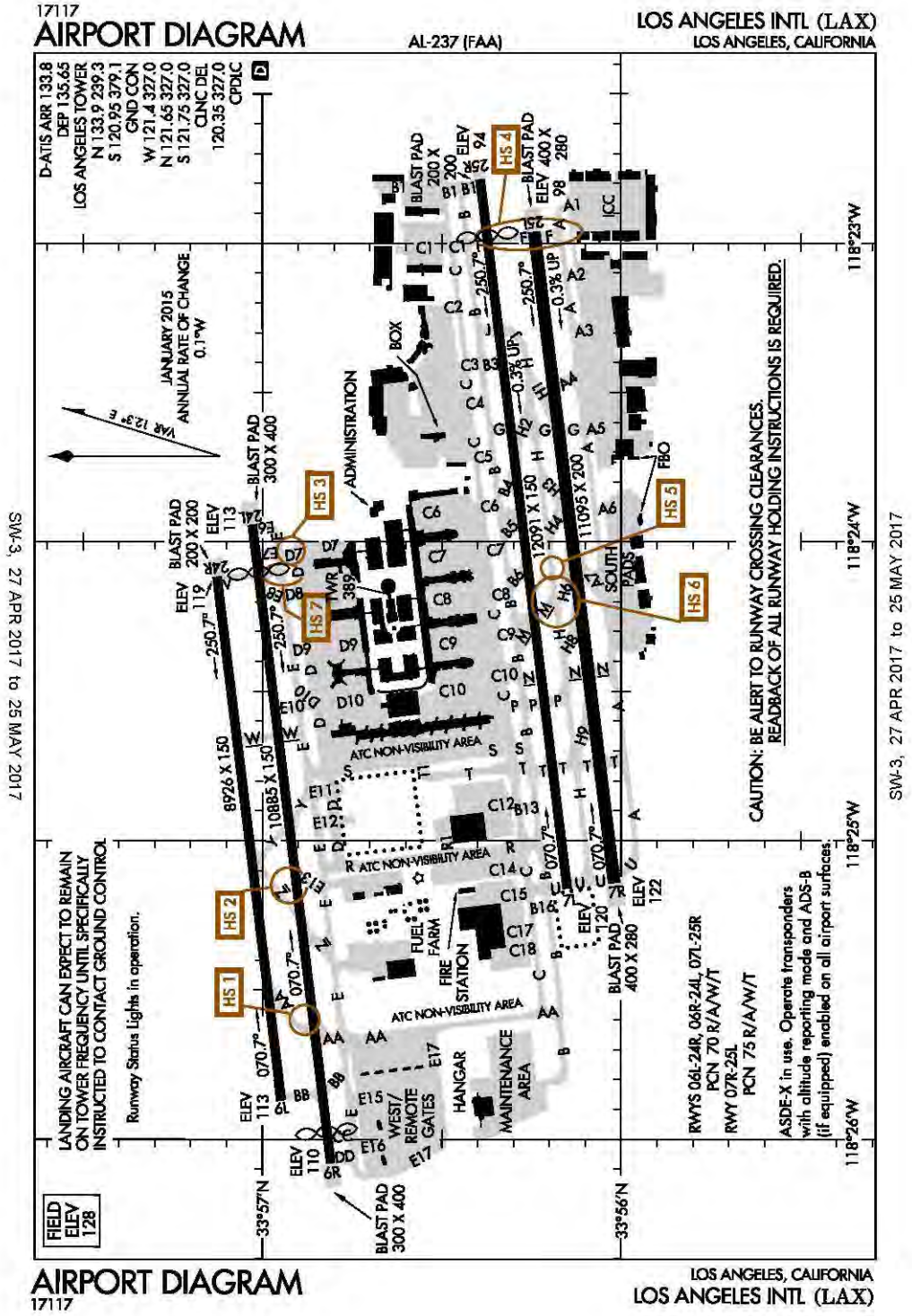
SERVICE– JET AIR START UNIT (JASU): (AM32A–60) 2(AGPU)

SERVICE–FUEL: SIGNATURE FLIGHT SUPPORT, C559–981–2490

SERVICE – FUEL: ROSS AVIATION, C559–251–1555

MILITARY: ANG: CONTACT ANG OPERATIONS FOR LOCAL BIRD WATCH CONDITION (BWC).

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: 33–56–33.45N / 118–24–28.09W
2.2.2 From City: 9 Miles SW Of Los Angeles, CA
2.2.3 Elevation: 127.7 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 Operational hours

2.3.1 – 2.3.11: 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: A
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 25R
2.10.1.b Type of obstacle: Rr (25 ft). Lighted
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Pole (67 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 825 ft from Centerline

2.10.1.a. Runway designation: 25L
2.10.1.b Type of obstacle: Rr (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 06L
2.10.1.b Type of obstacle: Pole (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 24R
2.10.1.b Type of obstacle: Sign (42 ft). Lighted
2.10.1.c Location of obstacle: 350 ft from Centerline

2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Pole (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 375 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 07L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 12091 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33–56–00.00N / 118–25–00.00W
2.12.6 Threshold elevation: 120 ft
2.12.6 Touchdown zone elevation: 128 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 12091 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33–56–23.56N / 118–22–47.20W
2.12.6 Threshold elevation: 94 ft
2.12.6 Touchdown zone elevation: 104 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: 33–56–00.00N / 118–25–00.00W
2.12.6 Threshold elevation: 122 ft
2.12.6 Touchdown zone elevation: 128 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: 33–56–14.51N / 118–22–57.77W
2.12.6 Threshold elevation: 98 ft
2.12.6 Touchdown zone elevation: 104 ft

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: 33–56–56.80N / 118–25–52.18W
2.12.6 Threshold elevation: 113 ft
2.12.6 Touchdown zone elevation: 119 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: 33−57−00.00N / 118−24−00.00W
2.12.6 Threshold elevation: 119 ft
2.12.6 Touchdown zone elevation: 122 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: 33−56−48.53N / 118−26−00.00W
2.12.6 Threshold elevation: 110 ft
2.12.6 Touchdown zone elevation: 116 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: 33−57−00.00N / 118−23−56.56W
2.12.6 Threshold elevation: 113 ft
2.12.6 Touchdown zone elevation: 122 ft

AD 2.13 Declared distances
2.13.1 Designation: 07L
2.13.2 Takeoff run available: 9139
2.13.3 Takeoff distance available: 9139
2.13.4 Accelerate−stop distance available: 8739

2.13.1 Designation: 25R
2.13.2 Takeoff run available: 9600
2.13.3 Takeoff distance available: 9600
2.13.4 Accelerate−stop distance available: 9301

2.13.1 Designation: 07R
2.13.2 Takeoff run available: 11095
2.13.3 Takeoff 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 Takeoff run available: 11095
2.13.3 Takeoff distance available: 11095
2.13.4 Accelerate−stop distance available: 11095
2.13.5 Landing distance available: 11095

2.13.1 Designation: 06L
2.13.2 Takeoff run available: 8925
2.13.3 Takeoff 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 Takeoff run available: 8925
2.13.3 Takeoff 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 Takeoff run available: 10285
2.13.3 Takeoff 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 Takeoff run available: 10285
2.13.3 Takeoff distance available: 10285
2.13.4 Accelerate−stop distance available: 10285
2.13.5 Landing distance available: 9483

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 07R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 25L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: ALSF2 Operates As SSALR Till Wx Goes Below Vfr.

2.14.1 Designation: 06L
2.14.2 Approach lighting system: MALSR: 1400 feet

medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 24R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: ALSF2 Operates As SSALR Till Wx Goes Below Vfr.

2.14.1 Designation: 06R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 24L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 120.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: SPECIAL FLIGHT RULE AREA
2.18.3 Service designation: 128.55 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 133.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 133.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P CD
2.18.3 Service designation: 327 MHz

2.18.1 Service designation: SAMSO FLT OPS
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 379.1 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33–56–00.00N / 118–24–56.67W
2.19.6 Site elevation: 119.6 ft

2.19.1 ILS type: Localizer for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33–56–24.76N / 118–22–35.45W
2.19.6 Site elevation: 112.2 ft

2.19.1 ILS type: DME for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: IAS
2.19.5 Coordinates: 33–56–00.00N / 118–25–24.83W
2.19.6 Site elevation: 104.5 ft

2.19.1 ILS type: Middle Marker for runway 07L. Magnetic variation: 12E
2.19.2 ILS identification: IAS

2.19.5 Coordinates: 33−56−00.00N / 118−25−46.90W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 25R. Magnetic variation: 12E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33−56−00.00N / 118−25−26.62W
2.19.6 Site elevation: 118.1 ft

2.19.1 ILS type: Glide Slope for runway 25R. Magnetic variation: 12E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33−56−17.87N / 118−23−10.22W
2.19.6 Site elevation: 97.7 ft

2.19.1 ILS type: Outer Marker for runway 25R. Magnetic variation: 12E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33−56−53.50N / 118−16−32.20W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 25R. Magnetic variation: 12E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33−56−00.00N / 118−25−24.83W
2.19.6 Site elevation: 104.5 ft

2.19.1 ILS type: Middle Marker for runway 25R. Magnetic variation: 12E
2.19.2 ILS identification: CFN
2.19.5 Coordinates: 33−56−25.90N / 118−22−24.40W
2.19.6 Site elevation: 87 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33−56−15.79N / 118−22−45.24W
2.19.6 Site elevation: 92.5 ft

2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33−55−59.93N / 118−24−55.05W
2.19.6 Site elevation: 118.2 ft

2.19.1 ILS type: Middle Marker for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33−55−58.50N / 118−25−41.70W
2.19.6 Site elevation: 104 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS identification: MKZ
2.19.5 Coordinates: 33−56−00.00N / 118−25−20.79W
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: 33−56−17.77N / 118−23−10.21W
2.19.6 Site elevation: 97.3 ft

2.19.1 ILS type: Outer Marker for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33−56−53.50N / 118−16−32.20W
2.19.6 Site elevation: 127 ft

2.19.1 ILS type: Middle Marker for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33−56−18.50N / 118−22−23.90W
2.19.6 Site elevation: 84 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33−55−59.86N / 118−25−20.87W
2.19.6 Site elevation: 118.4 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33−56−00.00N / 118−25−20.79W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: Inner Marker for runway 25L. Magnetic variation: 12E
2.19.2 ILS identification: LAX
2.19.5 Coordinates: 33−56−15.69N / 118−22−46.13W
2.19.6 Site elevation: 92.6 ft

2.19.1 ILS type: Localizer for runway 06L. Magnetic variation: 12E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33−57−00.00N / 118−23−57.20W
2.19.6 Site elevation: 108.5 ft

2.19.1 ILS type: Glide Slope for runway 06L. Magnetic variation: 12E
2.19.2 ILS identification: UWU

2.19.5 Coordinates: 33–56–54.59N / 118–25–39.82W
2.19.6 Site elevation: 110.5 ft

2.19.1 ILS type: DME for runway 06L. Magnetic variation: 12E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33–56–50.75N / 118–26–26.62W
2.19.6 Site elevation: 139.3 ft

2.19.1 ILS type: Middle Marker for runway 06L. Magnetic variation: 12E
2.19.2 ILS identification: UWU
2.19.5 Coordinates: 33–56–50.80N / 118–26–25.80W
2.19.6 Site elevation: 121 ft

2.19.1 ILS type: DME for runway 24R. Magnetic variation: 12E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33–56–50.75N / 118–26–26.62W
2.19.6 Site elevation: 139.3 ft

2.19.1 ILS type: Middle Marker for runway 24R. Magnetic variation: 12E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33–57–11.00N / 118–23–33.00W
2.19.6 Site elevation: 104 ft

2.19.1 ILS type: Localizer for runway 24R. Magnetic variation: 12E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33–56–53.16N / 118–26–27.68W
2.19.6 Site elevation: 125.5 ft

2.19.1 ILS type: Glide Slope for runway 24R. Magnetic variation: 12E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33–57–00.00N / 118–24–18.52W
2.19.6 Site elevation: 116.7 ft

2.19.1 ILS type: Outer Marker for runway 24R. Magnetic variation: 12E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33–57–53.70N / 118–16–40.70W
2.19.6 Site elevation: 136 ft

2.19.1 ILS type: Inner Marker for runway 24R. Magnetic variation: 12E
2.19.2 ILS identification: OSS
2.19.5 Coordinates: 33–57–00.00N / 118–23–55.75W
2.19.6 Site elevation: 107.7 ft

2.19.1 ILS type: DME for runway 06R. Magnetic variation: 12E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33–56–49.92N / 118–26–22.77W
2.19.6 Site elevation: 134.3 ft

2.19.1 ILS type: Localizer for runway 06R. Magnetic variation: 12E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33–57–00.00N / 118–23–49.32W
2.19.6 Site elevation: 105.2 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 12E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33–56–53.31N / 118–25–47.36W
2.19.6 Site elevation: 107.6 ft

2.19.1 ILS type: Middle Marker for runway 06R. Magnetic variation: 12E
2.19.2 ILS identification: GPE
2.19.5 Coordinates: 33–56–45.50N / 118–26–33.30W
2.19.6 Site elevation: 65 ft

2.19.1 ILS type: Localizer for runway 24L. Magnetic variation: 12E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33–56–46.75N / 118–26–22.25W
2.19.6 Site elevation: 123.4 ft

2.19.1 ILS type: DME for runway 24L. Magnetic variation: 12E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33–56–49.92N / 118–26–22.77W
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: 33–57–00.00N / 118–24–18.51W
2.19.6 Site elevation: 116.7 ft

2.19.1 ILS type: Middle Marker for runway 24L. Magnetic variation: 12E
2.19.2 ILS identification: HQB
2.19.5 Coordinates: 33–57–00.00N / 118–23–31.30W
2.19.6 Site elevation: 103 ft

2.19.1 ILS type: Outer Marker for runway 24L. Magnetic variation: 12E
2.19.2 ILS identification: HQB

2.19.5 Coordinates: 33−57−53.70N / 118−16−40.70W
2.19.6 Site elevation: 136 ft.

General Remarks:
NUMEROUS BIRDS ON AND IN VICINITY OF AIRPORT.

TURBULENCE MAY BE DEFLECTED UPWARD FROM THE BLAST FENCE 180 FT E OF RUNWAY 25R.

NOISE SENSITIVITY AIRPORT ON WESTERLY TAKEOFFS NO TURNS BEFORE CROSSING SHORELINE OVER−OCEAN APPROACHES UTILIZED 0000−0630.

PRACTICE INSTRUMENT APPROACHES & TOUCH AND GO LANDINGS ARE PROHIBITED.

RUNWAY 25L PREFERRED EMERGENCY RUNWAY.

SIMULTANEOUS AIRCRAFT OPERATIONS PROHIBITED ON TAXIWAYS T AND H9 BETWEEN RUNWAYS 07L/25R AND 07R/25L.

SIMULTANEOUS AIRCRAFT OPERATIONS PROHIBITED ON TAXIWAY H2 AND G BETWEEN RUNWAYS 07L/25R AND 07R/25L.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

MILITARY RESTRICTED: ALL MILITARY AIRCRAFT OFFICIAL BUSINESS ONLY, MIN 24 HR PRIOR PERMISSION REQUIRED, CONTACT 61 ABW/CP FLIGHT OPERATIONS DSN 633−3779/4014, C310−653−3779/4014.

MILITARY AF: ALL MILITARY AIRCREWS MUST CONTACT 61 ABW/CP FLIGHT OPERATIONS FOR PARK LOCATION/INSTR. NO GOVERNMENT TRANSPORTATION, QUARTERS OR SECURITY AVAILABLE. VIP NOTIFICATION PRO APPLY. USER FEES ASSESSED USING AVCARD CREDIT. CONTACT ATLANTIC AVIATION FBO 131.6 INBOUND. INBOUND RELAY ESTIMATED TIME OF ARRIVAL, VIP CODE, SERVICE REQUIRE 30 MIN PRIOR TO ARR.

TAXIWAY D BETWEEN TAXIWAY D−7 AND D−8 (NORTH OF TERMINAL ONE) CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 157 FT.

WEST REMOTE GATES: AIRCRAFT USE OF OPEN GATES AS TAXI PATH IS PROHIBITED (GATES 206, 207,208,209).

TAXIWAY E13 S OF TAXIWAY E CLOSED TO AIRCRAFT WITH WINGSPAN OVER 125 FT.

AIRCRAFT USE MINIMAL POWER WHEN TAXIING VICINITY TRMLS DUE BLAST HAZARD.

FOR AIRCRAFT WITH WINGSPAN GREATER THAN 214 FT CONTACT LAX AIRSIDE OPERATIONS (424)−646−5292 FOR AIRPORT RESTRICTIONS.

MAJOR CONSTRUCTION ON AIRPORT, DAILY.

AMERICAN EAGLE TERMINAL SOUTHBOUND TAXING AIRCRAFT USE MINIMUM POWER DUE TO BLAST HAZARD.

WEST/REMOTE GATES RAMP GATE 208 SOUTHBOUND TURN NOT AVAIL

ANY AIRCRAFT THAT COMES TO A STOP OR HAS ITS MOMENTUM INTRPD WHILE TURNING AND TAXING INTO ITS PARKING POSITION, MUST STOP AND BE TOWED.

ALL A346, B773, B77W AIRCRAFT ARE PROHIBITED ON TAXILANES C8 AND C9 BETWEEN TAXILANE C AND TAXIWAY B

B772 AIRCRAFT EASTBOUND ON TAXILANE C ARE NOT AUTHD TO TRANSITION TO TAXIWAY B AT TAXIWAY C9

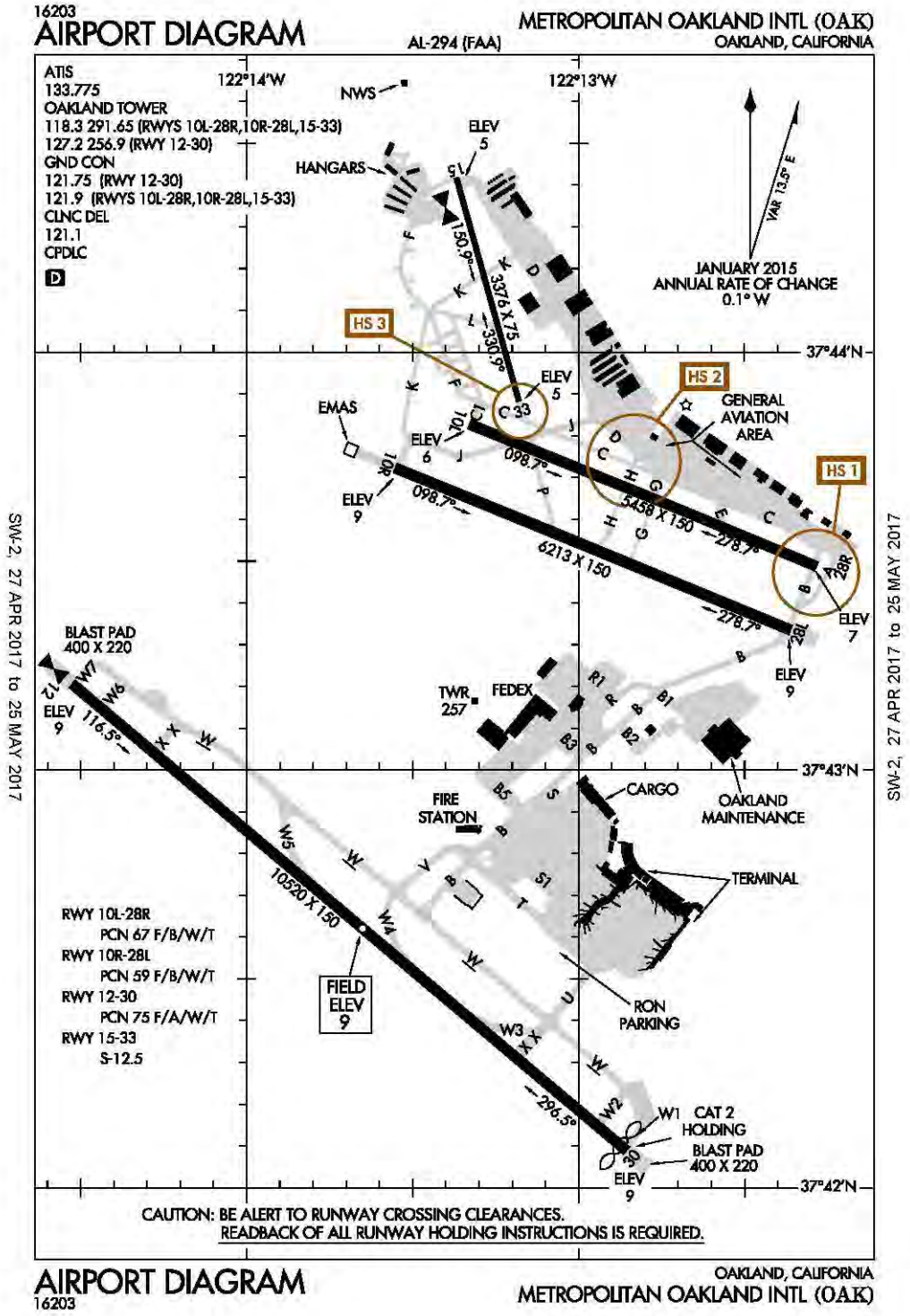
B747, B777, OR A340 AIRCRAFT OUTBOUND FROM TAXILANE D8 MAY NOT TURN WESTBOUND ONTO TAXILANE D UNDER POWER

AIRCRAFT WITH WINGSPAN GREATER THAN 157 FT ARE NOT AUTHD TO TAXI (POWER) ONTO GATE 123A FROM TAXIWAY D EASTBOUND

AIRCRAFT WITH WINGSPAN GREATER THAN 157 FT HOLDING ON TAXILANE C ABEAM T4 ARE NOT AUTHD TO MAKE THE LEFT TURN ON TAXIWAY C10 UNDER POWER

RUNWAY STATUS LIGHTS IN OPN.

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: 37–43–16.53N / 122–13–16.14W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Bldg (11 ft). Lighted
2.10.1.c Location of obstacle: 480 ft from Centerline

AD 2.12 Runway physical characteristics

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: 37–43–12.22N / 122–14–31.61W
2.12.6 Threshold elevation: 8 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: 37–42–00.00N / 122–12–51.32W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 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: 37–43–49.69N / 122–13–19.85W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 6 ft

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: 37–43–29.32N / 122–12–16.93W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 7 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 164
2.12.3 Dimensions: 3376 ft x 75 ft
2.12.5 Coordinates: 37–44–25.05N / 122–13–22.11W
2.12.6 Threshold elevation: 2 ft
2.12.6 Touchdown zone elevation: 5 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 344
2.12.3 Dimensions: 3376 ft x 75 ft
2.12.5 Coordinates: 37–43–52.90N / 122–13–10.83W
2.12.6 Threshold elevation: 4 ft
2.12.6 Touchdown zone elevation: 5 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: 37–43–43.35N / 122–13–33.25W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 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: 37–43–20.18N / 122–12–21.63W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 ft

AD 2.13 Declared distances

2.13.1 Designation: 12
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate–stop distance available: 10000

2.13.5 Landing distance available: 10000

2.13.1 Designation: 30
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 5458
2.13.3 Takeoff distance available: 5458
2.13.4 Accelerate−stop distance available: 5336
2.13.5 Landing distance available: 5336

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 5458
2.13.3 Takeoff distance available: 5458
2.13.4 Accelerate−stop distance available: 5458
2.13.5 Landing distance available: 5458

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 6213
2.13.3 Takeoff distance available: 6213
2.13.4 Accelerate−stop distance available: 6213
2.13.5 Landing distance available: 6213

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 6213
2.13.3 Takeoff distance available: 6213
2.13.4 Accelerate−stop distance available: 6213
2.13.5 Landing distance available: 6213

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 124.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.775 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 291.65 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 12. Magnetic variation: 14E
2.19.2 ILS identification: AAZ

2.19.5 Coordinates: 37–46–54.04N / 122–19–53.69W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 14E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37–42–00.00N / 122–12–46.65W
2.19.6 Site elevation: 7.2 ft

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 14E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37–43–00.00N / 122–14–22.82W
2.19.6 Site elevation: 2.9 ft

2.19.1 ILS type: Middle Marker for runway 12. Magnetic variation: 14E
2.19.2 ILS identification: AAZ
2.19.5 Coordinates: 37–43–31.45N / 122–15–00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 30. Magnetic variation: 14E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37–43–29.87N / 122–14–58.10W
2.19.6 Site elevation: 9.3 ft

2.19.1 ILS type: Glide Slope for runway 30. Magnetic variation: 14E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37–42–00.00N / 122–13–00.00W
2.19.6 Site elevation: 4.4 ft

2.19.1 ILS type: Middle Marker for runway 30. Magnetic variation: 14E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37–41–44.61N / 122–12–20.00W
2.19.6 Site elevation: 10 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 / 122–14–58.10W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: Outer Marker for runway 30. Magnetic variation: 14E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37–39–00.00N / 122–08–25.68W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Inner Marker for runway 30. Magnetic variation: 14E
2.19.2 ILS identification: INB
2.19.5 Coordinates: 37–42–00.00N / 122–12–44.56W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37–41–54.13N / 122–07–25.03W
2.19.6 Site elevation: 30 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37–43–28.60N / 122–12–30.62W
2.19.6 Site elevation: 3.3 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: OAK
2.19.5 Coordinates: 37–43–16.88N / 122–11–38.86W
2.19.6 Site elevation: 10 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

General Remarks:
BIRDS ON & IN THE VICINITY OF AIRPORT.

400 FT BY 220 FT BLAST PAD RUNWAY 12 AND RUNWAY 30.

RUNWAYS 10L/28R & 10R/28L HAVE CENTERLINE REFLECTORS.
NOISE ABATEMENT PROCEDURES NOT APPLICABLE IN EMERGENCIES OR WHENEVER RUNWAY 12/30 IS CLOSED DUE TO MAINTENANCE, SAFETY, WINDS OR WEATHER.

AIRCRAFT WITH EXPERIMENTAL OR LIMITED CERTIFICATION HAVING OVER 1000 HORSEPOWER OR 4000 LBS ARE RESTRICTED TO RUNWAY 12/30.

1000 FT CLEARWAYS RUNWAY 12 & RUNWAY 30.

100 FT LIGHTED MICROWAVE ANTENNA TOWER LOCATED 1320 FT WSW OF OAK VORTAC; S OF UPWIND END OF RUNWAY 28L.

RUNWAYS 30, 28R AND RUNWAY 28L DISTANCE REMAINING SIGNS LEFT SIDE.

FOR NOISE ABATEMENT INFORMATION CONTACT NOISE ABATEMENT OFFICE AT (510) 563−6463.

RUNWAY 15/33 CLOSED TO AIR CARRIER AIRCRAFT.

PREFERENTIAL RUNWAY USE PROGRAM IN EFFECT 2200−0600. NORTH FIELD PREFERRED ARR RUNWAY 28L, NORTH FIELD PREFERRED DEP RUNWAYS 10R OR 28R. IF THESE RUNWAYS UNACCEPTABLE FOR SAFETY OR ATC INSTRUCTION THEN RUNWAY 12/30 MUST BE USED.

24 HR NOISE ABATEMENT PROCEDURE − TURBOJET AND TURBOFAN POWERED AIRCRAFT, TURBOROPS OVER 17, 000 LBS, FOUR−ENGINE RECIPROCATING POWERED AIRCRAFT, AND SURPLUS MILITARY AIRCRAFT OVER 12,500 POUNDS SHOULD NOT DEPART RUNWAYS 28L & 28R OR LAND ON RUNWAYS 10R & 10L.

TAXIWAY A, E, G, H BETWEEN RUNWAY 28R AND TAXIWAY C MAX AIRCRAFT WEIGHT 150,000 LBS.

TAXIWAY G & H BETWEEN RUNWAY 28L & 28R: MAX AIRCRAFT WEIGHT 12,500 LBS.

TAXIWAY P MAX AIRCRAFT WEIGHT 24,000 LBS SINGLE; 40,000 LBS DUAL.

TAXIWAY C BETWEEN RUNWAY 28R & TAXIWAY G AND TAXIWAYS B, J, AND D MAX AIRCRAFT WEIGHT 900,000 LBS.

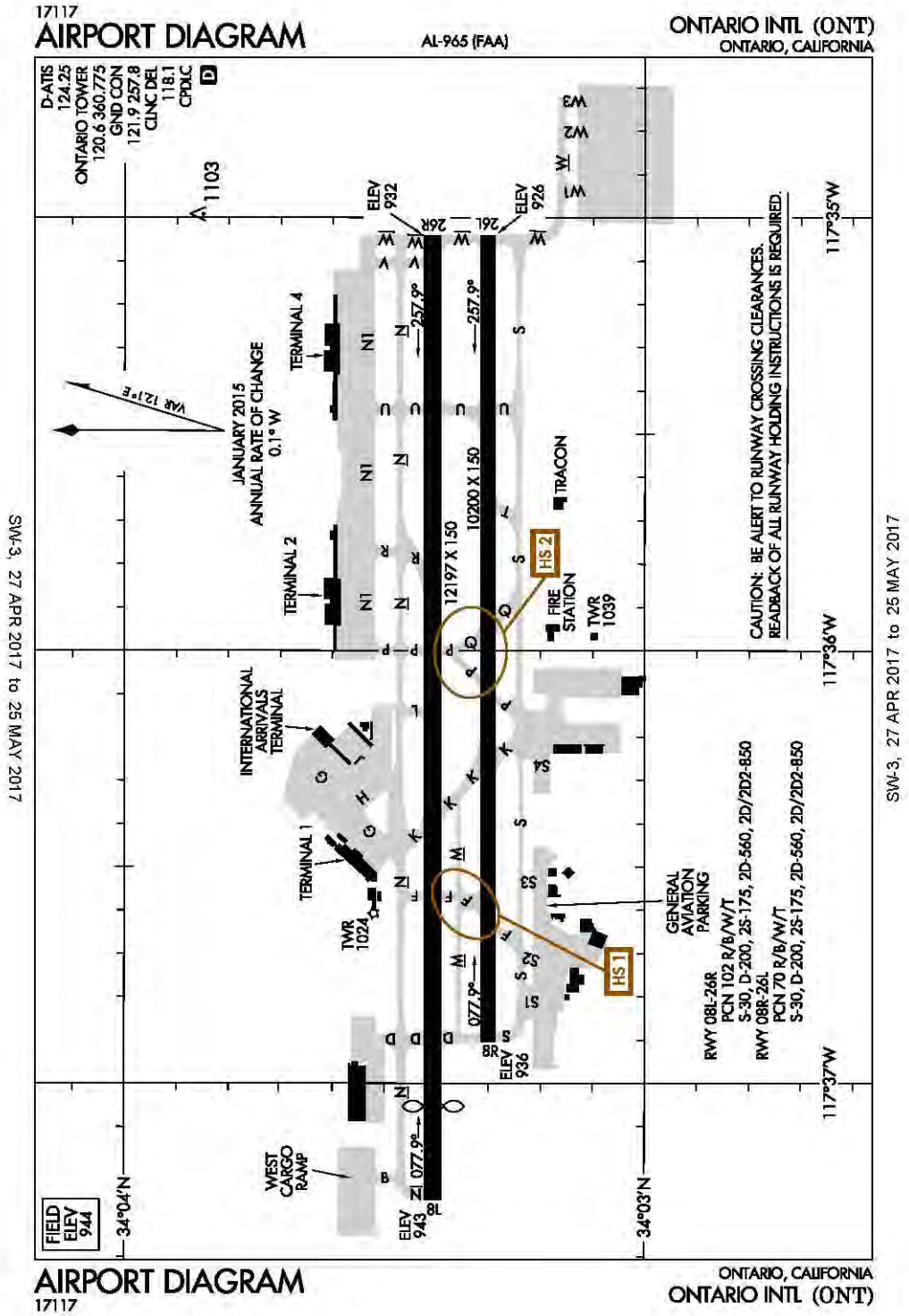
TAXIWAY C BETWEEN TAXIWAY G & J MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 175,000 LBS DUAL; 400,000 LBS TANDEM.

TAXIWAY C BETWEEN TAXIWAY J & F MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 150,000 LBS DUAL; 155,000 LBS TANDEM (DUAL TANDEM NOT AUTHORIZED).

TAXIWAY K BETWEEN TAXIWAY D & INTERSECTION TAXIWAYS F, L, K MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 115,000 LBS DUAL; 140,000 LBS TANDEM.

TAXIWAY K BETWEEN RUNWAY 10R AND INTERSECTION TAXIWAYS F, L, K MAX AIRCRAFT WEIGHT 25,000 LBS SINGLE; 45,000 LBS DUAL; TANDEM NOT AUTHORIZED.

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: 34−03−21.60N / 117−36−00.00W
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: Kelly Fredericks
1923 EAST AVION STREET
Ontario, CA 91761 (909−544−5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 08L
2.10.1.b Type of obstacle: Rr (20 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

2.10.1.a. Runway designation: 26R
2.10.1.b Type of obstacle: Pole (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 26L
2.10.1.b Type of obstacle: Pole (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

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: 34−03−24.75N / 117−37−22.15W
2.12.6 Threshold elevation: 943 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: 34−03−24.82N / 117−34−57.19W
2.12.6 Threshold elevation: 932 ft
2.12.6 Touchdown zone elevation: 932 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: 34−03−17.85N / 117−36−58.41W
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: 34−03−17.89N / 117−34−57.19W
2.12.6 Threshold elevation: 926 ft
2.12.6 Touchdown zone elevation: 926 ft

AD 2.13 Declared distances

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 12197
2.13.3 Takeoff 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 Takeoff run available: 12197
2.13.3 Takeoff 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 Takeoff run available: 10200
2.13.3 Takeoff 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 Takeoff run available: 10200
2.13.3 Takeoff 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: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 124.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 360.775 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 12E
2.19.2 ILS identification: AOD
2.19.5 Coordinates: 34–03–24.82N / 117–34–45.07W
2.19.6 Site elevation: 926.1 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 12E
2.19.2 ILS identification: AOD
2.19.5 Coordinates: 34–03–21.21N / 117–36–59.90W
2.19.6 Site elevation: 936 ft

2.19.1 ILS type: Middle Marker for runway 08L. Magnetic variation: 12E
2.19.2 ILS identification: AOD
2.19.5 Coordinates: 34–03–25.80N / 117–37–51.55W
2.19.6 Site elevation: 947 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 12E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34–03–24.75N / 117–37–34.63W
2.19.6 Site elevation: 943 ft

2.19.1 ILS type: DME for runway 26R. Magnetic variation: 12E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34–03–22.03N / 117–37–33.66W
2.19.6 Site elevation: 955 ft

2.19.1 ILS type: Middle Marker for runway 26R. Magnetic variation: 12E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34–03–24.79N / 117–34–24.33W
2.19.6 Site elevation: 940 ft

2.19.1 ILS type: Glide Slope for runway 26R. Magnetic variation: 12E
2.19.2 ILS identification: ONT
2.19.5 Coordinates: 34–03–22.01N / 117–35–10.97W
2.19.6 Site elevation: 925.8 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 12E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34–03–20.47N / 117–37–00.00W
2.19.6 Site elevation: 947.9 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 12E

2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−17.88N / 117−34−24.41W
2.19.6 Site elevation: 924 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 12E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−17.84N / 117−37−10.29W
2.19.6 Site elevation: 931.3 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 12E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−21.89N / 117−35−10.97W
2.19.6 Site elevation: 925.3 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 12E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−22.33N / 117−28−17.72W
2.19.6 Site elevation: 1010 ft

2.19.1 ILS type: Inner Marker for runway 26L. Magnetic variation: 12E
2.19.2 ILS identification: TWO
2.19.5 Coordinates: 34−03−17.89N / 117−34−47.85W
2.19.6 Site elevation: 921 ft

General Remarks:
FBO ON FREQ 130.75.

WILDLIFE HAZARD MANAGEMENT PLAN IN EFFECT; POTENTIAL BIRD HAZARDS MAY EXIST ON AND IN THE VICINITY OF AIRPORT; BE ALERT TO LARGE NUMBERS OF STARLINGS AND CROWS POSSIBLE ON APPROACH TO RUNWAY 26L AND RUNWAY 26R, HAWKS, EAGLES, FALCONS AND OWLS SPOTTED ON OCCASION.

TAXIWAY M, TAXIWAY S−3 AND TAXIWAY S−4 RESTRICTED TO AIRCRAFT WITH WINGSPAN 117 FT OR SMALLER.

PILOTS SHOULD USE JUDGEMENTAL OVERSTEER ON TAXIWAY M, TAXIWAY H, TAXIWAY S−3 AND TAXIWAY S−4.

NOISE ABATEMENT PROCEDURES IN EFFECT; FULL−LENGTH TURBOJET DEP ENCOURAGED, NIGHTLY PREFERENTIAL RUNWAY USAGE, 2200−0700.

EASTBOUND B747, B777, A330, A340 OR LARGER AIRCRAFT ON TAXIWAY S PROHIBITED FROM NORTHBOUND TURNS ONTO TAXIWAY K.

B747, B777, A330, A340 OR LARGER AIRCRAFT ON TAXIWAY S PROHIBITED FROM NORTHBOUND TURNS ONTO TAXIWAY P.

AIRCRAFT PARKING AND CONTRACT GROUND SERVICES ARE LIMITED FOR NON−SCHEDULED OPERATIONS. FOR SCHEDULING INFORMATION CALL AIRFIELD OPERATIONS (909) 544−5344.

TAXIWAY W SOUTH OF TAXIWAY S IS A NON−MOVEMENT AREA; ALL AIRCRAFT CONTACT RAMP CONTROL 131.325 FOR ACCESS.

ALL MILITARY AND GENERAL AVIATION (FIXED OR ROTOR WING) AIRCRAFT OPERATIONS ARE RESTRICTED TO FBO FACILITIES WITH ADVANCE COORDINATION; OVERNIGHT TIEDOWN AND PARKING FEE.

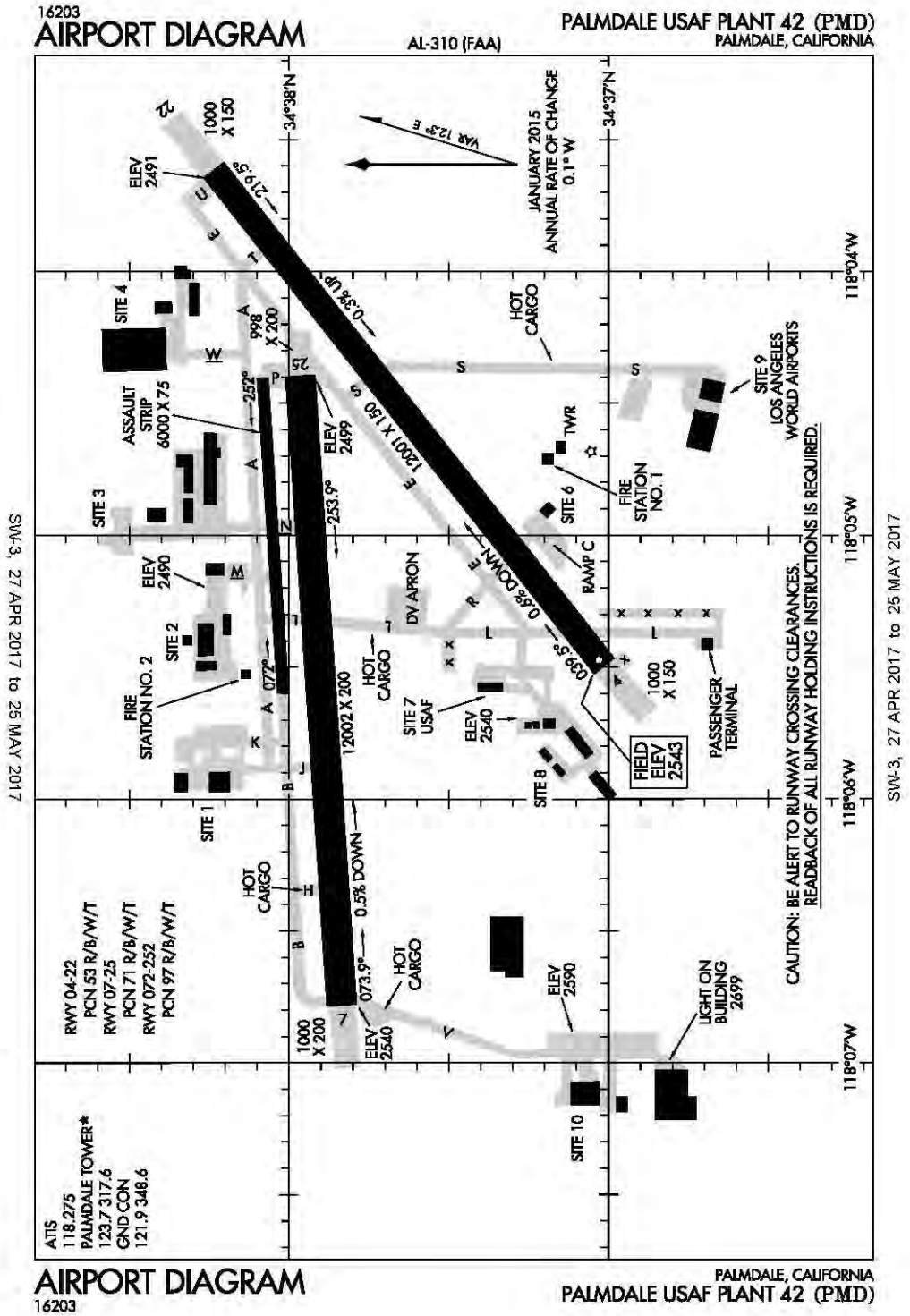
TAXIWAY S SOUTH OF CENTERLINE BETWEEN TXLN S−2 AND S−3, AND THE SOUTHERN HALF OF TXLN S−2 AND S−3 ARE NOT VISIBLE FROM ATCT; PILOTS USE CAUTION ENTERING TXLN S−2 AND S−3.

AIRCRAFT ACCESS TO TAXIWAY R FROM RUNWAY 26R PROHIBITED

TAXIWAY R AIRCRAFT ACCESS FROM RUNWAY 26L IS PROHIBITED

TAXIWAY S2 RESTRICTED TO AIRCRAFT WITH 117 FT WINGSPAN AND SMALLER.

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: 34–37–45.80N / 118–05–00.00W
2.2.2 From City: 3 Miles NE Of Palmdale, CA
2.2.3 Elevation: 2542.5 ft
2.2.5 Magnetic variation: 15E (1980)
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 Operational hours

2.3.1 – 2.3.11: 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: None
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 04
2.10.1.b Type of obstacle: Hill. Not Lighted or Marked

AD 2.12 Runway physical characteristics

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: 34–37–50.11N / 118–06–47.03W
2.12.6 Threshold elevation: 2540 ft
2.12.6 Touchdown zone elevation: 2540 ft
2.12.7 Slope: 0.5DOWN

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: 34–37–57.99N / 118–04–23.74W
2.12.6 Threshold elevation: 2499 ft
2.12.6 Touchdown zone elevation: 2503 ft
2.12.7 Slope: 0.2UP
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: 34–37–00.00N / 118–05–29.80W
2.12.6 Threshold elevation: 2542 ft
2.12.6 Touchdown zone elevation: 2542 ft
2.12.7 Slope: 0.6DOWN

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: 34–38–14.24N / 118–03–36.97W
2.12.6 Threshold elevation: 2491 ft
2.12.6 Touchdown zone elevation: 2498 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 072
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 97 R/B/W/T

2.12.1 Designation: 252
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 97 R/B/W/T

AD 2.14 Approach and runway lighting

2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 22
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34–38–00.00N / 118–04–40.08W
2.19.6 Site elevation: 2491.8 ft

2.19.1 ILS type: Middle Marker for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34–38–00.00N / 118–03–46.16W
2.19.6 Site elevation: 2492 ft

2.19.1 ILS type: Localizer for runway 25. Magnetic variation: 15E

2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34−37−48.79N / 118−07−10.91W
2.19.6 Site elevation: 2552.2 ft

2.19.1 ILS type: Outer Marker for runway 25. Magnetic variation: 15E
2.19.2 ILS identification: PMD
2.19.5 Coordinates: 34−38−22.66N / 117−57−30.34W
2.19.6 Site elevation: 2550 ft

General Remarks:
MISC: INDUSTRIAL INSTALL − NO TRANSPORTATION, LODGING OR NORMAL SERVICE AVAILABLE ON SITE.

PARKING RAMP LOCATED S OF RUNWAY 22 & TAXIWAY V NOT VISIBLE FROM ATCT.

UNLIGHTED OBSTRUCTION SURROUND AIRFIELD.

DRAINAGE DITCHES PARALLEL RUNWAY 22 FROM TAXIWAY S TO TAXIWAY U.

BIRD HAZARD POTENTIAL EXISTS. MIGRATORY SEASON PHASE II 1 OCT − 31 AT SEA. DURING BIRD WATCH CONDITION MODERATE, TAKE-OFF AND LANDING PERMITTED. DURING BIRD WATCH CONDITION SEVERE, TAKE-OFF AND LANDING PROHIBITED.

MILITARY USE: ASSAULT LANDING ZONE LOCATED 1ST 6,000 EAST END OF TAXIWAY B. RUNWAY 252 MRK ONLY FOR C−130 ASSAULT OPR; ONE−WAY LANDING ONLY.

MISC: WINDS ARE ESTIMATE DUE TO FMQ−13 WIND SENSORS BEING ACCURATE TO WITHIN ONLY +/− 2 KNOTS. ATC/WX WILL NOT INCLUDE/RELAY WIND CORRECTION INTO FORECAST/PHRASEOLOGY. THEREFORE, AIRCREWS WILL INCORPORATE A +/− 2 KNOTS ACCURACY INTO THEIR DECISION MAKING PROCESS FOR FLYING OPR.

SERVICE−LGT: GATED THRESHOLD LIGHT RUNWAY 07−25 AND RUNWAY 04−22.

TRANSIENT ALERT (1 OF 2): NO FLEET SERVICE AVAILABLE. NO FOLLOW ME SERVICE AVAILABLE. EXPECT PROGRESSIVE TAXI TO PARK. AIRCREW RESPONSIBLE FOR AIRCRAFT PINNING/SAFING.

MISC: COMSEC STORAGE UNAVAILABLE.

CAUTION: USE EXTREME CAUTION FOR UNMANNED AERIAL SYSTEMS (UAS) OPERATIONS IN VICINITY.

FUEL: A++ AVAILABLE. NO TRANSMIT AIRCRAFT FUEL SERVICE AVAILABLE. LIMITED FUELING AVAILABLE; GOVERNMENT AIRCRAFT ONLY 1600−2300Z++ MON−FRI. 24 HR PRIOR NOTICE WITH AIRFIELD MANAGER REQUIRE; NO SAME DAY REQ; GAS AND GO UNAVAILABLE. EXPECT 2+ HR DELAY FOR FUEL.

RESTRICTED − OFFICIAL BUSINESS ONLY. MILITARY AIRPORT. CIVIL USE REQUIRE USAF APPROVAL AND DD FORM 2400/01/02. PRIOR PERMISSION REQUIRED REQUIRE FOR FULL STOP LANDING ONLY. CALL C661−272−6619/6614.

TRANSIENT ALERT (2 OF 2): UNABLE TO SERVICE AIRCRAFT WITH ORDNANCE. LIMITED GRD SUPPORT EQUIPMENT AVAILABLE. NO POTABLE WATER SERVICE. NO TRANSIENT MAINT AVAILABLE. GROUND SERVICE UNAVAILABLE WHEN LIGHTNING WITHIN 5 NAUTICAL MILE.

MISC: FLIGHT PLANS MUST BE FILED AND ACTIVATED WITH P42 AIRFIELD MANAGEMENT. USE

PRESCOTT FSS WHEN P42 AIRFIELD MANAGEMENT CLOSED.

CAUTION: VARIOUS AIRCRAFT TEST OPERATIONS MARKINGS PAINTED IN WHITE ON TAXIWAY UNIFORM.

CAUTION: RUNWAY 25 NONSTANDARD MRK: SPOT LANDING ZONE MRK LOCATED AT 6000 FT REMAINING MRK. RUNWAY 07–25 DECEPTIVE SURFACE MRK EXCEED STANDARD BY APPROX 50 FT.

RESTRICTED: OVERNIGHT PARK UNAUTHD ON C–RAMP.

RESTRICTED: TAXIWAY L BETWEEN RUNWAY 04/22 AND PASSENGER TERMINAL UNLIGHTED AND USABLE FOR DAYLT VFR ONLY.

ALL DEPT AIRCRAFT MUST FILE FPL WITH P42 AIRFIELD MANAGEMENT OPERATIONS.

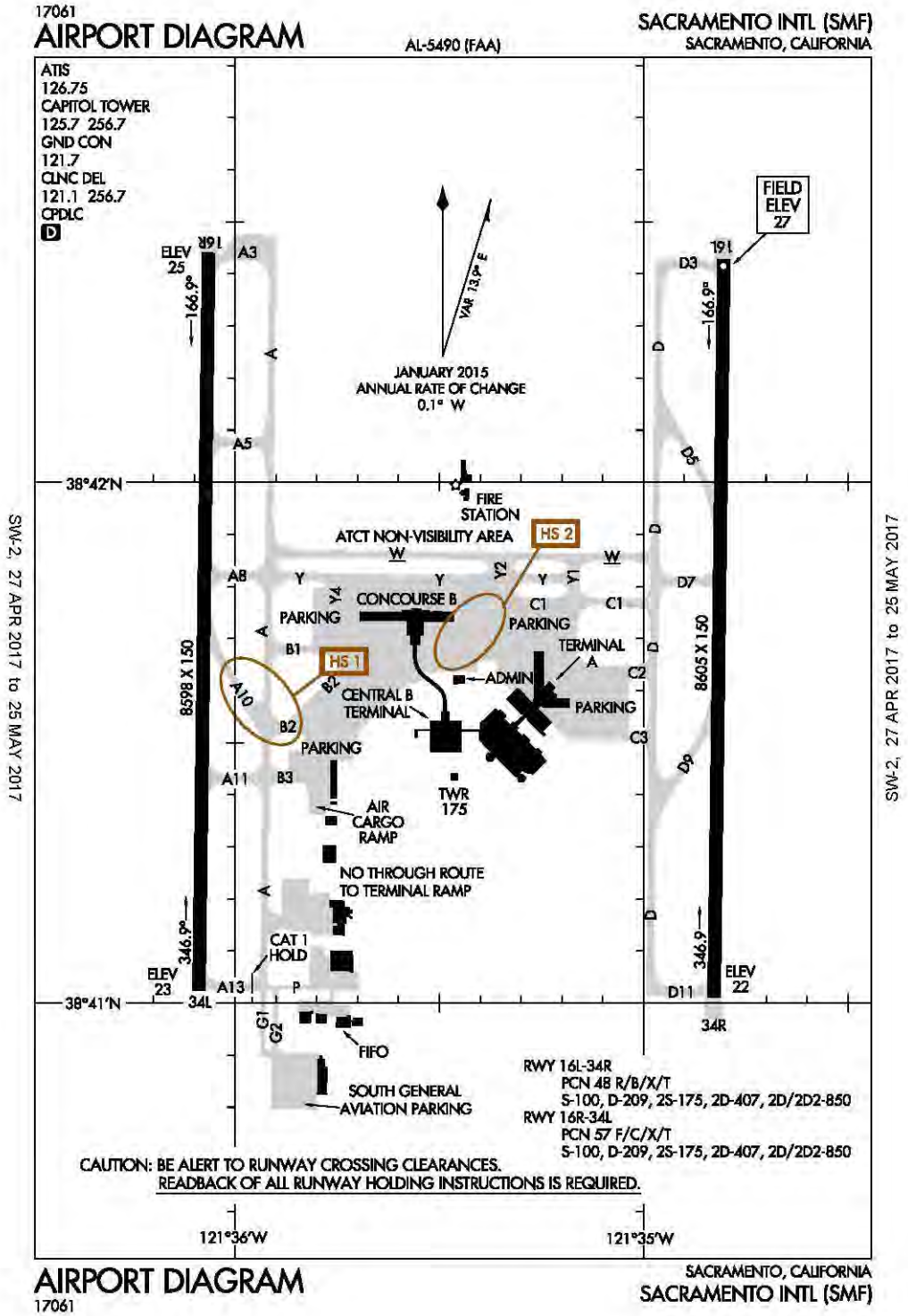
CAUTION: FOREIGN OBJECT DAMAGE HAZARD ON TAXIWAY S; ALL LARGE BODY AIRCRAFT MUST TAXI WITH OUTBOARD MOTORS SHUT OFF.

SERVICE–JASU: POWER CARS UNAVAILABLE.

BASE OPERATIONS OPR 0530–2200++ MON–FRI, CLOSED SAT, SUN AND FEDERAL HOLIDAY.

RESTRICTED: RUNWAY RESERVED FOR AIRCRAFT BASED THEREIN ON SAT AND SUN. GRD CREWS MUST INSPECT ALL ANTICIPATED AIRFIELD PAVEMENTS REQUIRE FOR THEIR MSN PRIOR TO EACH AIRCRAFT ARR OR DEP.

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: 38–41–43.60N / 121–35–26.80W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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: 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: 38–42–26.42N / 121–36–00.00W
2.12.6 Threshold elevation: 25 ft
2.12.6 Touchdown zone elevation: 25 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: 38–41–00.00N / 121–36–00.00W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 24 ft

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: 38–42–25.70N / 121–34–48.21W
2.12.6 Threshold elevation: 27 ft
2.12.6 Touchdown zone elevation: 27 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: 38–41–00.00N / 121–34–49.64W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 24 ft

AD 2.13 Declared distances

2.13.1 Designation: 16R
2.13.2 Takeoff run available: 8598
2.13.3 Takeoff 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 Takeoff run available: 8598
2.13.3 Takeoff distance available: 8598
2.13.4 Accelerate–stop distance available: 8598
2.13.5 Landing distance available: 8598

2.13.1 Designation: 16L
2.13.2 Takeoff run available: 8605
2.13.3 Takeoff 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 Takeoff run available: 8605
2.13.3 Takeoff distance available: 8605
2.13.4 Accelerate–stop distance available: 8605
2.13.5 Landing distance available: 8605

AD 2.14 Approach and runway lighting

2.14.1 Designation: 16R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 34L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 16L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P GND/P LCL/P
2.18.3 Service designation: 256.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 13E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−40−35.75N / 121−36−00.00W
2.19.6 Site elevation: 19.6 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 13E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−40−34.70N / 121−36−00.00W
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: 38−42−15.86N / 121−36−00.00W
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: 38−42−34.10N / 121−36−00.00W
2.19.6 Site elevation: 23 ft

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 13E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−42−53.08N / 121−36−00.00W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnetic variation: 13E
2.19.2 ILS identification: SMF
2.19.5 Coordinates: 38−47−41.76N / 121−35−57.70W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Outer Marker for runway 34L. Magnetic variation: 13E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−37−00.00N / 121−36−11.87W
2.19.6 Site elevation: 15 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 / 121−36−00.00W
2.19.6 Site elevation: 22 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 13E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−41−12.50N / 121−36−00.00W
2.19.6 Site elevation: 21.7 ft

2.19.1 ILS type: Middle Marker for runway 34L. Magnetic variation: 13E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−40−32.75N / 121−36−00.00W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 13E
2.19.2 ILS identification: HUX
2.19.5 Coordinates: 38−42−36.91N / 121−36−00.00W
2.19.6 Site elevation: 36.7 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 13E
2.19.2 ILS identification: MDK
2.19.5 Coordinates: 38−42−15.23N / 121−34−44.36W
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 16L. Magnetic variation: 13E
2.19.2 ILS identification: MDK
2.19.5 Coordinates: 38−40−50.22N / 121−34−46.30W
2.19.6 Site elevation: 30.9 ft

General Remarks:
BIRDS ON AND IN VICINITY OF AIRPORT.

FAA GROSS WEIGHT STRENGTH EVALUATION MD−11 = 590,000 LBS.

NOISE SENSITIVE AREAS W OF AIRPORT ON SAC RIVER. LOCAL TURN DISCOURAGED FOR JET AIRCRAFT. WHEN CONDUCTING IFR APPROACH IN VFR CONDITIONS EXECUTE MISSED APPROACH AT DEP END OF RUNWAYS. PLAN VFR PATTERNS TO E. USE MIN POWER SETTINGS.

ALL AIRCRAFT CONTACT ATC GROUND CONTROL PRIOR TO MOVEMENT ON RAMP.

CROP DUSTERS OPER IN THE VICINITY OF AIRPORT AT OR BELOW 200 FT AGL.

(A49A−16R) ALSF2 OPERS AS SSALR TILL WEATHER GOES BELOW VFR.

TAXIWAY REMARK #2: THE MAXIMUM ALLOWABLE GROSS AIRCRAFT LOAD FOR TAXIWAYS 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.

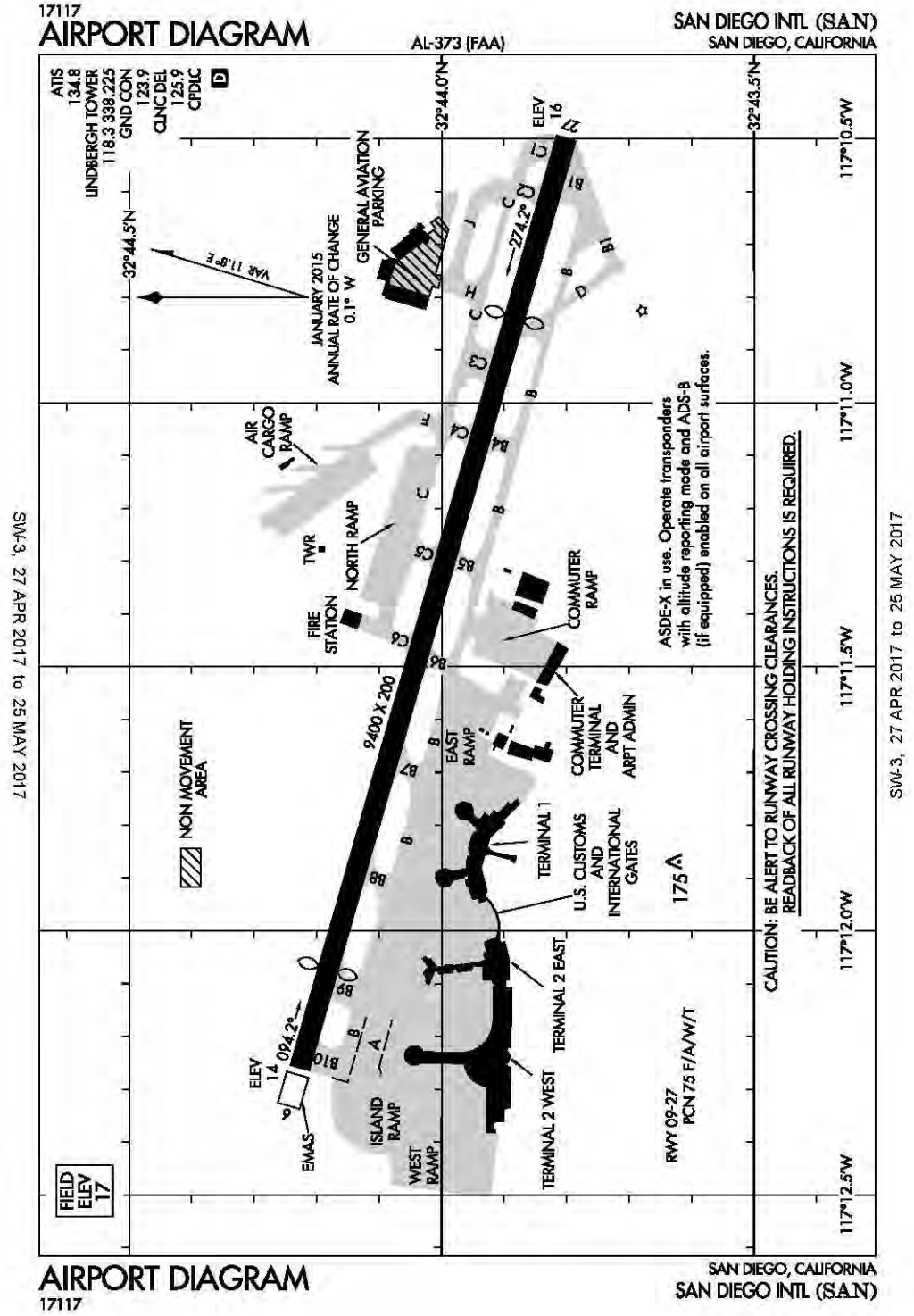
TAXIWAY REMARK #2 CONT'D: AN AIRCRAFT CANNOT EXCEED THE AIRPLANE DESIGN GROUP III CRITERIA AND MUST HAVE A WHEEL BASE OF LESS THAN 60 FT.

MILITARY AIRCRAFT PARKING LIMITED. CONTACT AIRPORT OPERATIONS IF PARKING IS REQUIRED (916) 806−5309.

PORTION OF TAXIWAY W 500 FT EAST OF TAXIWAY A TO 2100 FT EAST OF TAXIWAY A IS NOT VISIBLE FROM ATCT.

TAXIWAY Y4 RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (GROUP III).

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: 32–44–00.00N / 117–11–22.80W
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) 400–2710
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Tree (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 385 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Sign (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

AD 2.12 Runway physical characteristics

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: 32–44–13.64N / 117–12–15.68W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 17 ft

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: 32–43–48.01N / 117–10–29.90W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 17 ft

AD 2.13 Declared distances

2.13.1 Designation: 09
2.13.2 Takeoff run available: 8280
2.13.3 Takeoff distance available: 9401
2.13.4 Accelerate–stop distance available: 8280
2.13.5 Landing distance available: 7280

2.13.1 Designation: 27
2.13.2 Takeoff run available: 9401
2.13.3 Takeoff distance available: 9401
2.13.4 Accelerate–stop distance available: 9401
2.13.5 Landing distance available: 7591

AD 2.14 Approach and runway lighting

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on right
2.14.10 Remarks: PAPI Unusable Beyond 5 Degrees L & R Of Cntln. MALS Rwy 27 Threshold To 1400'.

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 134.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P

2.18.3 Service designation: 338.225 MHz

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: 32−43−47.08N / 117−10−28.47W
2.19.6 Site elevation: 27.4 ft

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 11E
2.19.2 ILS identification: SAN
2.19.5 Coordinates: 32−43−47.60N / 117−10−28.24W
2.19.6 Site elevation: 25.9 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: Middle Marker for runway 09. Magnetic variation: 11E
2.19.2 ILS identification: SAN
2.19.5 Coordinates: 32−44−23.65N / 117−12−57.08W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 27. Magnetic variation: 11E
2.19.2 ILS identification: UBR
2.19.5 Coordinates: 32−44−11.46N / 117−12−20.06W
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: 32−44−14.79N / 117−12−20.43W
2.19.6 Site elevation: 10.9 ft

General Remarks:
TERRAIN & BUILDINGS TO 500’ MSL N & E WITHIN 1 1/2 MI.

PRACTICE APPROACHES AND TOUCH AND GO LANDING PROHIBITED.

TO REDUCE JET BLAST IMPACT AT N END OF TAXIWAY F AIRCRAFT WILL NOT START ENGINE UNTIL 800 FT FROM N END OF TAXIWAY F; ABEAM THE SECOND PARKING PAD.

ULTRALIGHT AIRCRAFT PROHIBITED ON AP.

747 AND LARGER AIRCRAFT ARE PROHIBITED FROM MAKING INTERSECTION TAKE-OFFS.

INTERMITTENT PRESENCE OF BIRDS ON AND IN THE VICINITY OF OF AIRPORT.

CROSS−BLEED ENGINE STARTS PERMITTED ONLY ON PARALLEL TAXIWAY WITH AIRCRAFT ALIGNED ON TAXIWAY CENTERLINE.

OUTBOARD ENGINES OF FOUR−ENGINE AIRCRAFT ARE TO BE KEPT AT IDLE POWER FOR ALL GROUND MANEUVERING.

PILOTS REQUIRED TO CONTACT ATCT GROUND CONTROLLER PRIOR TO PUSHBACK, TOW OUT AND TAXI FOR TRAFFIC ADVISORIES.

MILITARY AIRCRAFT ON OFFICIAL BUSINESS ONLY CONTACT AIRPORT OPERATIONS AT 619−400−2710 FOR PRIOR PERMISSION REQUIRED.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TAXIWAY C EDGE LIGHTS OUT OF SERVICE INDEFINITELY.

AIRCRAFT CROSSING RUNWAY 09/27 ON TAXIWAY C6, HOLD SHORT OF TAXIWAY C6 FACING WEST ON TAXIWAY C, PARALLEL TO RUNWAY.

DUE TO PERSONNEL AND EQUIPMENT WORKING ON RUNWAY 09–27, 30 MINUTE PRIOR PERMISSION REQUIRED 0830–1230Z FOR ALL LANDINGS AND DEPARTURES CALL 619–400–2710.

30 MIN PRIOR PERMISSION REQUIRED (619–400–2710) FOR AIRCRAFT WITH OVER 171 FT WINGSPAN.

IN THE EVENT OF A DIVERSION OR IRREGULAR OPERATIONS EVENTS, AIRCRAFT OPERATORS CONTACT THE APT DUTY MANAGER (619) 400–2710 FOR PRIOR PERMISSION REQUIRED DUE TO LIMITATIONS ASSOCIATED WITH HANDLING DIVERTED FLIGHTS. LIMITATIONS INCLUDE RESTRICTED GATE SPACE, CUSTOMS SERVICES AS WELL AS AIRCRAFT SERVICING & PARKING.

TAXIWAY B RESTRICTED TO AIRCRAFT WITH WINGSPANS GREATER THAN 171 FT BETWEEN TAXIWAY B6 & TAXIWAY D.

AIRCRAFT WITH WINSPANS GREATER THAN 171 FT (52M) RESTRICTED FROM USING TAXIWAY D SOUTH OF TAXIWAY B, AND WHEN EXITING RUNWAY 9 WESTBOUND ON TAXIWAY B.

TAXIING AIRCRAFT ARE PROHIBITED FROM PASSING TO THE SOUTH OF AIRCRAFT LOCATED ON TAXIWAY B INTO ALLEY LOCATED BETWEEN GATES 7 AND 14.

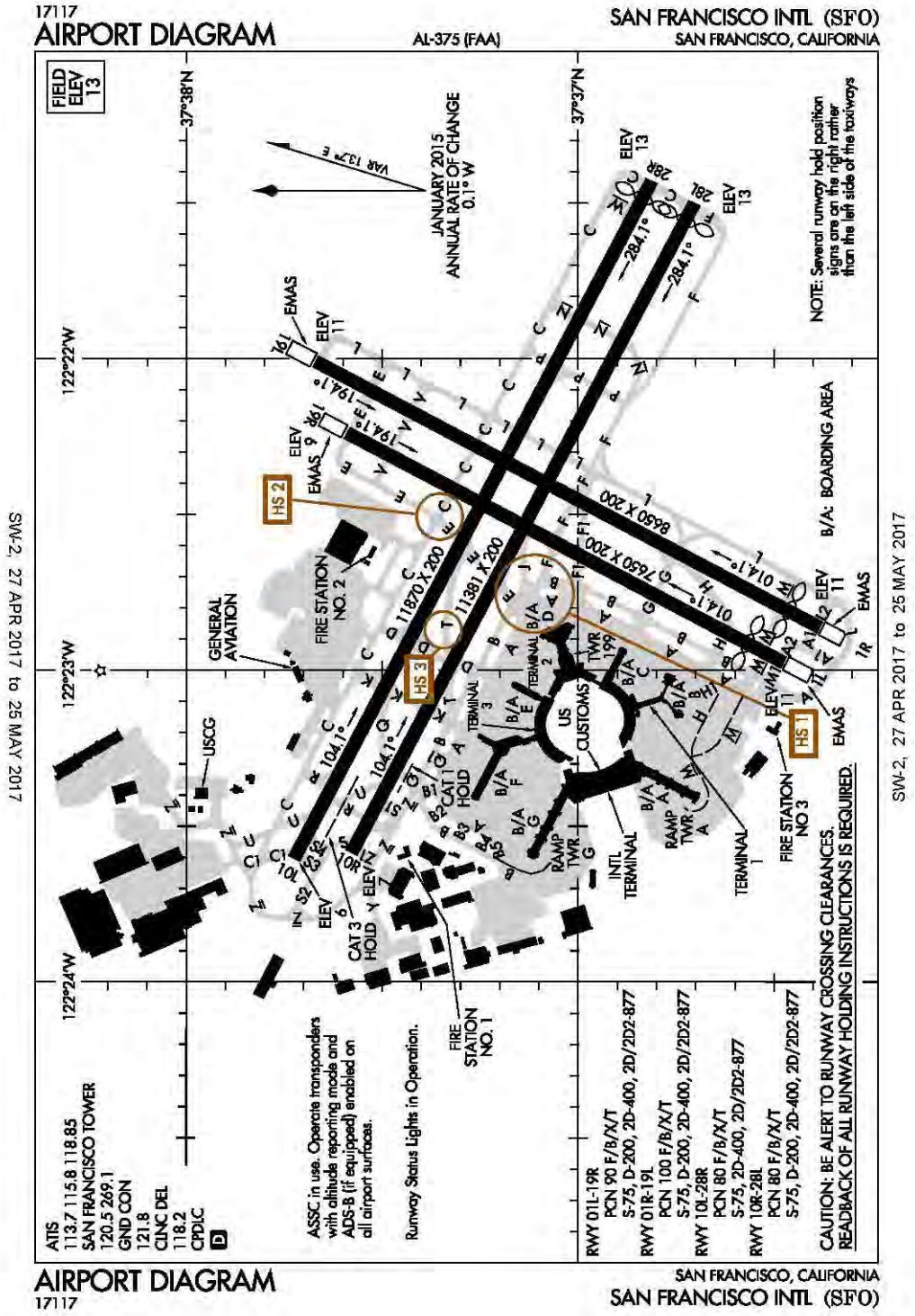
TAXIING AIRCRAFT SHALL FOLLOW LEAD–IN LINES UNTIL THE NOSE WHEEL OF THE AIRCRAFT HAS ENTERED THE NON–MOVEMENT AREA OF THE ALLEY.

FOR ACCESS TO/FR TERMINAL 2: GATES 23, 25, 27, 29, 31, 33–51 AND THE ISLAND AND WEST REMAINING OVERNIGHT PARKING RAMPS, CONTACT RAMP CONTROL ON 129.775 FR 0600–2400. FR 0000–0600 CONTACT GROUND CONTROL ON 123.9.

TAXILANE A RESTRICTED TO AIRCRAFT WITH WINGSPANS OF 171 FT OR LESS.

AIRCRAFT WITH WINGSPANS GREATER THAN 200 FT INBOUND TO WEST RAMP OR GATES 47 OR 51 MUST ACCESS BY WAY OF TRANSFER OF CONTROL POINT #1.

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: 37–37–00.00N / 122–22–31.50W
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: John L. Martin
PO BOX 8097
San Francisco, CA 94128
(650–821–5000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 01R
2.10.1.b Type of obstacle: Tree (177 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Tower (88 ft). Marked and Lighted
2.10.1.c Location of obstacle: 1300 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Tower (87 ft). Marked and Lighted
2.10.1.c Location of obstacle: 950 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 28X
2.12.3 Dimensions: 0 ft x 0 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: 37–36–22.79N / 122–22–51.75W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 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: 37–37–38.43N / 122–22–00.00W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 11 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: 37–37–43.46N / 122–23–36.21W
2.12.6 Threshold elevation: 6 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: 37–36–48.72N / 122–21–25.71W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 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: 37–37–34.65N / 122–23–35.18W
2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 8 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: 37–36–42.16N / 122–21–30.06W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 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: 37−36−28.43N / 122−22−58.54W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 ft

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: 37−37−35.33N / 122−22−14.19W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 11 ft

AD 2.13 Declared distances
2.13.1 Designation: 01R
2.13.2 Takeoff run available: 8650
2.13.3 Takeoff distance available: 8650
2.13.4 Accelerate−stop distance available: 8650
2.13.5 Landing distance available: 8090

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 8650
2.13.3 Takeoff distance available: 8650
2.13.4 Accelerate−stop distance available: 8650
2.13.5 Landing distance available: 8650

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 11870
2.13.3 Takeoff 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 Takeoff run available: 11870
2.13.3 Takeoff distance available: 11870
2.13.4 Accelerate−stop distance available: 11870
2.13.5 Landing distance available: 11236

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 11381
2.13.3 Takeoff distance available: 11381
2.13.4 Accelerate−stop distance available: 10704
2.13.5 Landing distance available: 10704

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 11381
2.13.3 Takeoff distance available: 11381
2.13.4 Accelerate−stop distance available: 10981
2.13.5 Landing distance available: 10275

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 7650
2.13.3 Takeoff distance available: 7650
2.13.4 Accelerate−stop distance available: 7650
2.13.5 Landing distance available: 7010

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 7650
2.13.3 Takeoff distance available: 7650
2.13.4 Accelerate−stop distance available: 7650
2.13.5 Landing distance available: 7650

AD 2.14 Approach and runway lighting
2.14.1 Designation: 19L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 19L MALSf Has A Non Standard Length Of 1,115 Ft With 3 Sequenced Flashers.

2.14.1 Designation: 10L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 113.7 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 115.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: LDA PRM RY 28R IC
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: ILS PRM RY 28L IC
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 128.65 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 351.8 MHz

2.18.1 Service designation: MONITOR ILS PRM RY 28L
2.18.3 Service designation: 125.15 MHz

2.18.1 Service designation: MONITOR LDA PRM RY 28R
2.18.3 Service designation: 127.675 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 118.85 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 28X. Magnetic variation: 14E
2.19.2 ILS identification: FNP
2.19.5 Coordinates: 37–37–14.91N / 122–22–00.00W
2.19.6 Site elevation: 22.4 ft

2.19.1 ILS type: Localizer for runway 28X. Magnetic variation: 14E
2.19.2 ILS identification: FNP
2.19.5 Coordinates: 37–37–16.68N / 122–22–00.00W
2.19.6 Site elevation: 15.5 ft

2.19.1 ILS type: Glide Slope for runway 28X. Magnetic variation: 14E
2.19.2 ILS identification: FNP
2.19.5 Coordinates: 37–36–49.94N / 122–21–40.24W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 14E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37–36–16.28N / 122–22–56.06W
2.19.6 Site elevation: 19 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 14E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37–37–30.74N / 122–22–11.06W
2.19.6 Site elevation: 6.3 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 14E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37–38–10.77N / 122–21–40.14W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 14E
2.19.2 ILS identification: SIA
2.19.5 Coordinates: 37–36–18.72N / 122–22–59.41W
2.19.6 Site elevation: 20.6 ft

2.19.1 ILS type: DME for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37–37–48.20N / 122–23–40.61W
2.19.6 Site elevation: 17.7 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37–34–19.93N / 122–15–35.65W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37–37–46.36N / 122–23–43.12W
2.19.6 Site elevation: 5.3 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: GWQ

2.19.5 Coordinates: 37−36−51.40N / 122−21−43.12W
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: 37−36−46.16N / 122−21−19.74W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 14E
2.19.2 ILS identification: GWQ
2.19.5 Coordinates: 37−36−33.79N / 122−20−50.18W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 14E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37−37−37.47N / 122−23−41.92W
2.19.6 Site elevation: 9.3 ft

2.19.1 ILS type: Glide Slope for runway 28L. Magnetic variation: 14E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37−36−51.28N / 122−21−43.20W
2.19.6 Site elevation: 8.2 ft

2.19.1 ILS type: Outer Marker for runway 28L. Magnetic variation: 14E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37−34−19.93N / 122−15−35.65W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 28L. Magnetic variation: 14E
2.19.2 ILS identification: SFO
2.19.5 Coordinates: 37−37−39.54N / 122−23−41.46W
2.19.6 Site elevation: 20.3 ft

General Remarks:
FLOCKS OF BIRDS FEEDING ALONG SHORELINE ADJACENT TO AIRPORT; ON OCCASIONS FLY ACROSS VARIOUS PARTS OF THE AIRPORT.

HIGH SPEED TAXIWAY (T) GRAVELLED FULL WIDTH BETWEEN RUNWAY 28R AND 28L.

NOISE SENSITIVE AIRPORT; FOR NOISE ABATEMENT PROCEDURES CONTACT AIRPORT NOISE OFFICE MON−FRI 0800−1700 BY CALLING 650−821−5100.

747−400'S SHALL TAXI AT A SPEED OF LESS THAN 10 MPH ON ALL NON−RESTRICTED TAXIWAYS ON THE TERMINAL SIDE OF THE INTERSECTING RUNWAYS. MOVEMENT SPEED OF NOT MORE THAN 5 MPH IS REQUIRED WHEN TWO 747−400'S PASS OR OVERTAKE EACH OTHER ON PARALLEL TAXIWAYS A & B.

SEVERAL RUNWAY HOLD POSITION SIGNS ARE ON THE RIGHT RATHER THAN THE LEFT SIDE OF THE TAXIWAYS.

NO GROOVING EXISTS AT AIRPORT RUNWAY INTERSECTIONS.

RUNWAY 10 PREFERRED RUNWAY BETWEEN 0100−0600 WEATHER AND FLIGHT CONDITIONS PERMITTING.

AIRLINE PILOTS SHALL STRICTLY FOLLOW THE PAINTED NOSE GEAR LINES AND NO OVERSTEERING ADJUSTMENT IS PERMITTED.

PERSONNEL AND EQUIPMENT WORKING APPROACH END RUNWAYS 28L, 28R, 19L INDEFINITELY.

RUNWAYS 01L/19R, 01R/19L, 10R/28L, 10L/28R GROOVED FULL LENGTH EXCEPT AT RUNWAY INTERSECTIONS.

B747, B777, A330, A340 OR LARGER AIRCRAFT ARE RESTRICTED FROM USING TAXIWAY A1 WHEN B747−400, A340−600, OR LARGER AIRCRAFT ARE HOLDING SHORT OF RUNWAY 1R ON TAXIWAY A.

RAMP CLOSED TO AIRCRAFT WITH WINGSPANS OVER 117 FT AT TERMINAL 1, GATE C41 INDEFINITELY.

ALL OUTBOUND TAXIWAY YANKEE HEAVY AIRCRAFT WITH A WINGSPAN OF 171 FT. OR GREATER UNDER POWER PROHIBITED FROM ENTERING WESTBOUND TAXIWAY ZULU.

SIMULTANEOUS OPERATIONS IN EFFECT ALL RUNWAYS.

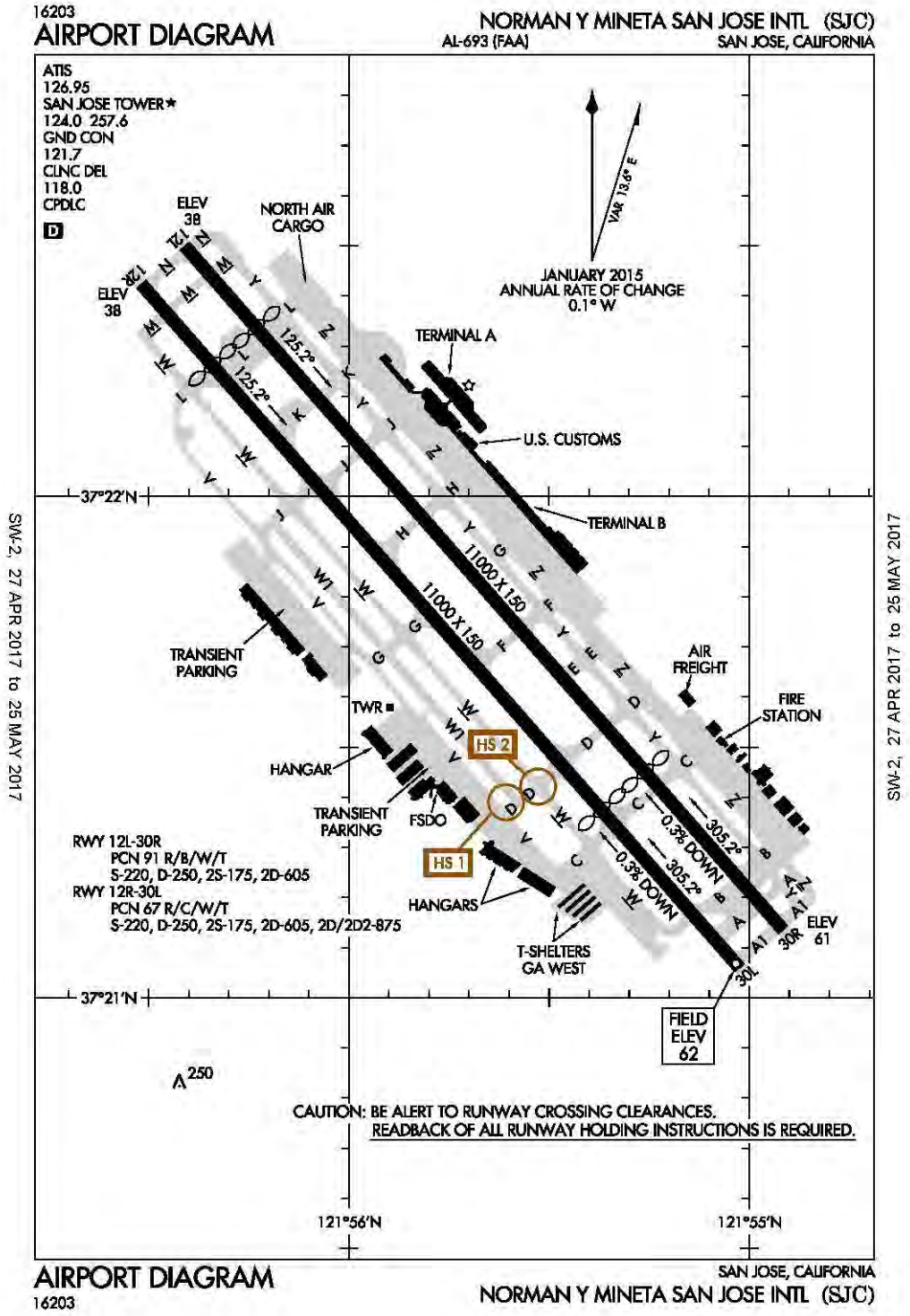
TAXIWAY Z1 NORTHBOUND ENTRANCE CLOSED TO RUNWAY 10R FOR JET AIRCRAFT AND FOUR ENGINE TURBOPROPS.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RUNWAY 1L CLOSED TO DEPARTING TRIJET AIRCRAFT WITH WINGSPAN GREATER THAN 155 FT.

RUNWAY STATUS LIGHTS IN OPN.

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: 37–21–46.77N / 121–55–43.03W
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: Kimberly Becker
1701 AIRPORT BLVD., SUITE B–1130
San Jose, CA 95110 ((408) 277–5100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 12L
2.10.1.b Type of obstacle: Pole (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 580 ft from Centerline

2.10.1.a. Runway designation: 30R
2.10.1.b Type of obstacle: Tree (54 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 550 ft from Centerline

2.10.1.a. Runway designation: 12R
2.10.1.b Type of obstacle: Pole (29 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 480 ft from Centerline

2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Fence (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 170 ft from Centerline

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: 37–22–29.97N / 121–56–24.63W
2.12.6 Threshold elevation: 38 ft
2.12.6 Touchdown zone elevation: 44 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: 37–21–00.00N / 121–54–54.92W
2.12.6 Threshold elevation: 61 ft
2.12.6 Touchdown zone elevation: 55 ft
2.12.7 Slope: 0.3DOWN

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: 37–22–25.42N / 121–56–31.15W
2.12.6 Threshold elevation: 38 ft
2.12.6 Touchdown zone elevation: 46 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: 37–21–00.00N / 121–55–00.00W
2.12.6 Threshold elevation: 62 ft
2.12.6 Touchdown zone elevation: 57 ft
2.12.7 Slope: 0.3DOWN

AD 2.13 Declared distances

2.13.1 Designation: 12L
2.13.2 Takeoff run available: 10139
2.13.3 Takeoff 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 Takeoff run available: 10134
2.13.3 Takeoff 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 Takeoff run available: 9883
2.13.3 Takeoff 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 Takeoff run available: 10152
2.13.3 Takeoff 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
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 30L PAPI Unusable Beyond 7 Degrees Of Cntrl Of Ry.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.95 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 257.6 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 13E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−22−00.00N / 121−56−14.58W
2.19.6 Site elevation: 36.5 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 13E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−22−36.25N / 121−56−43.05W
2.19.6 Site elevation: 32 ft

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 13E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−21−00.00N / 121−55−00.00W
2.19.6 Site elevation: 61 ft

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 13E
2.19.2 ILS identification: SLV
2.19.5 Coordinates: 37−21−00.00N / 121−55−00.00W
2.19.6 Site elevation: 81.1 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 13E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−22−27.19N / 121−56−33.10W
2.19.6 Site elevation: 34.6 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 13E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−21−33.00N / 121−55−27.87W
2.19.6 Site elevation: 48.6 ft

2.19.1 ILS type: DME for runway 30L. Magnetic variation: 13E
2.19.2 ILS identification: SJC
2.19.5 Coordinates: 37−22−27.56N / 121−56−32.60W
2.19.6 Site elevation: 55.9 ft

General Remarks:
BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

TAXIWAY Y WILL BE PERIODICALLY RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 171

FT (MD−11 OR SMALLER) DURING B−787 AND A−340 OPERATIONS ON RUNWAY 12L/30R.

TAXIWAY Z WILL BE PERIODICALLY RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (B−737−900 OR SMALLER) DURING B−787 AND A−340 OPERATIONS.

TAXIWAY V LIMITED TO AIRCRAFT WITH WINGSPAN OF LESS THAN 118 FT (B−737−900 OR SMALLER).

UNSCHEDULED OPERATIONS BY GROUP 5 AIRCRAFT (B747) AND LARGER NOT AUTH EXCEPT WITH PRIOR AIRPORT APPROVAL CONTACT AIRPORT MANAGER (408) 392−3500.

NOISE ABATEMENT PROCEDURE: RUNWAY 30L/12R IS PREFERRED ARRIVAL RUNWAY FOR JET AIRCRAFT AND RUNWAY 12L/30R IS THE PREFERRED DEP RUNWAY FOR JET AIRCRAFT. ALL JET AIRCRAFT TAKE-OFFS ARE TO BE INITIATED FROM END OF RUNWAY UNLESS DIRECTED OTHERWISE BY ATCT.

CURFEW HRS 2300−0700 FAR 36 STAGE II, 2330−0630 FAR 36 STAGE III AIRCRAFT 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 RUNWAY 30R & RUNWAY 30L CLOSED FOR TAKE-OFF DC10, MD11, L1011.

ALL TURBINE ENGINE RUN−UPS REQUIRE PRIOR AIRPORT APPROVAL, CONTACT MANAGER ON DUTY (408) 392−3500.

TAXIWAY D BETWEEN TAXIWAY W AND TAXIWAY V LIMITED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (B−737−900 OR SMALLER).

TAXIWAY W BETWEEN TAXIWAY J AND TAXIWAY L CAN SUPPORT GROUP IV AIRCRAFT.

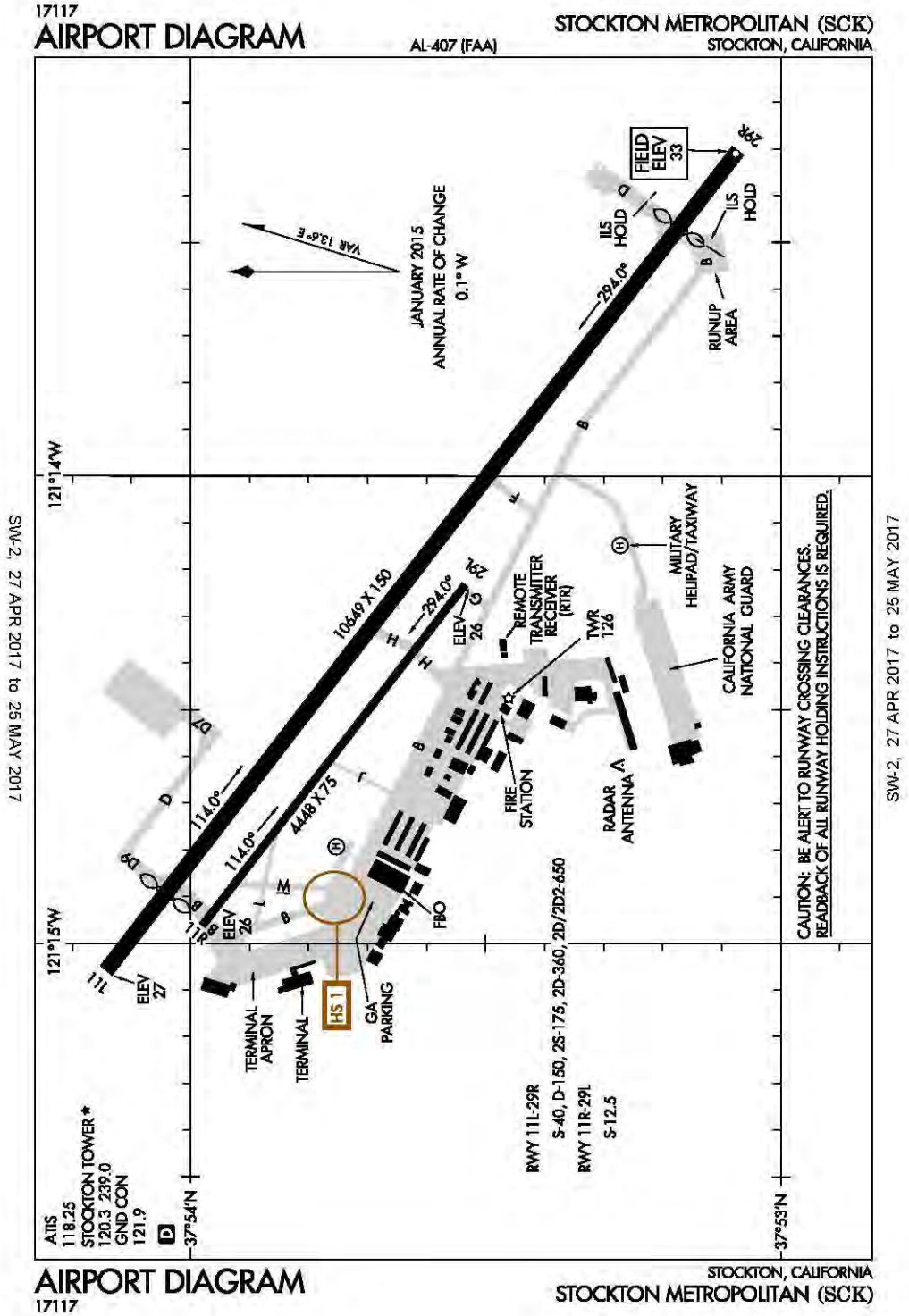
HOT SPOT 3: RUNWAY 11−29 IS NOW TAXIWAY W1. SURFACE IS USABLE ONLY AS TAXIWAY AND IS MARKED AND SIGNED AS A TAXIWAY.

HIGH INTENSITY LIGHT ACTIVITY: HIGH INTENSITY LIGHTS (LASERS AND LARGE MEDIA SCREENS) MAY BE VISIBLE TO ARR AND DEP AIRCRAFT 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 VISIBILITY MAY BE INTENSIFIED DURING ARR AND DEP OPERATIONS ESPECIALLY AT NIGHT.

RUNWAY REFERENCE POINT REQUIRED FROM FBO FOR TRANSIENT HELICOPTER OPERATIONS.

FOR CD WHEN ATCT IS CLOSED CONTACT NORCAL APPROACH AT 916−361−3748.

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: 37−53−39.00N / 121−14−17.90W
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: Harry Mavrogenes
5000 S. AIRPORT WAY ROOM 202
Stockton, CA 95206 (209−468−4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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
2.6.4 Remarks: Closed To Unscheduled Air Carrier Operations With More Than 30 Passenger Seats Except One Hr Prior Permission Required Call Airport Manager (209) 468−4700 Or 4722; After Hrs Call (209) 468−4722.

AD 2.12 Runway physical characteristics

2.12.1 Designation: H1
2.12.3 Dimensions: 70 ft x 70 ft
2.12.5 Coordinates: 37−53−45.27N / 121−14−47.57W
2.12.6 Threshold elevation: 26 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 128
2.12.3 Dimensions: 10649 ft x 150 ft
2.12.5 Coordinates: 37−54−00.00N / 121−15−00.00W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 29 ft

2.12.1 Designation: 29R
2.12.2 True Bearing: 308
2.12.3 Dimensions: 10649 ft x 150 ft
2.12.5 Coordinates: 37−53−00.00N / 121−13−17.93W
2.12.6 Threshold elevation: 33 ft
2.12.6 Touchdown zone elevation: 32 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 128
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.5 Coordinates: 37−53−58.67N / 121−14−57.42W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 308
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.5 Coordinates: 37−53−31.86N / 121−14−13.45W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 27 ft

AD 2.13 Declared distances

2.13.1 Designation: 11L
2.13.2 Takeoff run available: 8650
2.13.3 Takeoff distance available: 8650
2.13.4 Accelerate−stop distance available: 8650
2.13.5 Landing distance available: 8650

2.13.1 Designation: 29R
2.13.2 Takeoff run available: 8650
2.13.3 Takeoff distance available: 8650
2.13.4 Accelerate−stop distance available: 8650
2.13.5 Landing distance available: 8650

AD 2.14 Approach and runway lighting

2.14.1 Designation: H1
2.14.2 Approach lighting system: Omnidirectional approach lighting system

2.14.1 Designation: 11L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 29R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: ATIS
2.18.3 Service designation: 118.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239 MHz

2.18.1 Service designation: ANG OPNS
2.18.3 Service designation: 49 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 139.4 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 356.9 MHz

AD 2.19 Radio navigation and landing aids

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

2.19.1 ILS type: Outer Marker for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−49−54.29N / 121−08−00.00W
2.19.6 Site elevation: 52 ft

2.19.1 ILS type: Middle Marker for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−52−53.73N / 121−13−00.00W
2.19.6 Site elevation: 30 ft

2.19.1 ILS type: Glide Slope for runway 29R. Magnetic variation: 14E
2.19.2 ILS identification: SCK
2.19.5 Coordinates: 37−53−20.80N / 121−13−36.95W
2.19.6 Site elevation: 29.3 ft

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 / 121−15−15.20W
2.19.6 Site elevation: 22 ft

General Remarks:

SEAGULLS ON AND IN VICINITY OF AIRPORT MOSTLY DURING RAINY WEATHER.

AVOID OVERFLYING SAN JOAQUIN GENERAL HOSPITAL & THE CITY OF MANTECA.

AIRPORT CLOSED TO TOUCH AND GO LANDING & PLANNED LOW APPROACHES FOR TURBOJET AIRCRAFT 2200−0700 EXCEPT BY PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER PART 36 STAGE 3 AIRCRAFT.

PRACTICE CIRCLING APPROACHES TO RUNWAYS 11L/11R NOT AUTHORIZED FOR ANY TURBINE POWERED ACFT/PROP DRIVEN AIRCRAFT EXCEEDING 12500 LBS EXCEPT BY PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER.

MILITARY USE: ARRANGE OPR 1500−2330Z++ MON−FRI. DSN 466−5319, C209−983−5319, FAX 5391. PRIOR PERMISSION REQUIREDUIRED. LIMITED TRANSIENT SERVICE AND MAINT AVAILABLE FOR CH47.

THE FOLLOWING AREAS NOT VISIBLE FROM ATCT: TAXIWAY B FROM TERMINAL APRON TO INTERSECTION AT TAXIWAY M; TAXIWAY B FROM 300 FT W OF TAXIWAY J TO 375 FT E OF TAXIWAY J; MOVEMENT AREA S OF TAXIWAY B FROM TERMINAL APRON TO 200 FT W OF TAXIWAY H; SE HALF OF TERMINAL APRON; TRANSIENT PARKING APRON.

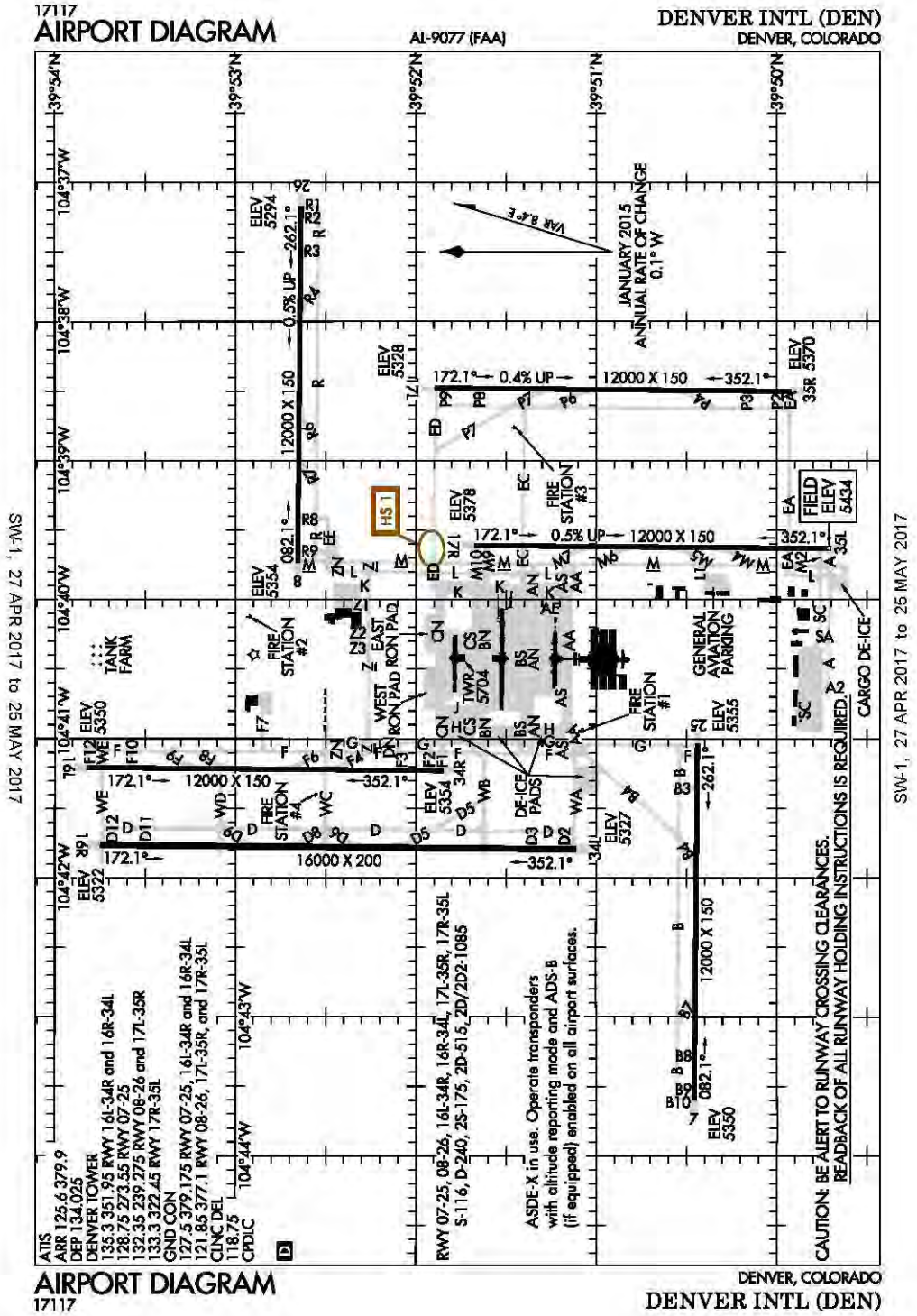
TRANSIENT PARKING AVAILABLE AT FBO.

BE ALERT TO ELEVATED MALSR APPROACH END RUNWAY 29R LOCATED AT DSPLCD THRESHOLD DEMARCATION BAR WHEN USING FULL LENGTH OF RUNWAY 29R.

TERMINAL APRON AND TAXIWAYS B, F, D, D9, AND H FOR AIRCRAFT ABOVE 12,500 LBS. ALL OTHER TAXIWAYS RESTRICTED TO AIRCRAFT LESS THAN 12,500 LBS.
PAVEMENT PRIOR TO THRESHOLDS NOT AVAILABLE FOR TAXI BACK OPERATIONS.

FOR CD WHEN ATCT CLOSED CONTACT NORCAL APPROACH AT 916–361–0516.

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: 39–51–42.00N / 104–40–23.40W
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 (303–342–2200)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,MOGAS
2.4.4 De–icing facilities: None
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: 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: 39–53–49.33N / 104–41–12.50W
2.12.6 Threshold elevation: 5350 ft
2.12.6 Touchdown zone elevation: 5357 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: 39–51–50.77N / 104–41–13.88W
2.12.6 Threshold elevation: 5354 ft
2.12.6 Touchdown zone elevation: 5354 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: 39–50–27.40N / 104–43–35.96W
2.12.6 Threshold elevation: 5350 ft
2.12.6 Touchdown zone elevation: 5352 ft

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: 39–50–26.37N / 104–41–00.00W
2.12.6 Threshold elevation: 5355 ft
2.12.6 Touchdown zone elevation: 5355 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: 39–52–39.20N / 104–39–44.03W
2.12.6 Threshold elevation: 5354 ft
2.12.6 Touchdown zone elevation: 5354 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: 39–52–38.08N / 104–37–10.15W
2.12.6 Threshold elevation: 5294 ft
2.12.6 Touchdown zone elevation: 5309 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: 39–51–53.83N / 104–38–28.70W
2.12.6 Threshold elevation: 5328 ft
2.12.6 Touchdown zone elevation: 5338 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: 39–49–55.27N / 104–38–30.16W
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: 39–51–40.48N / 104–39–36.56W
2.12.6 Threshold elevation: 5378 ft
2.12.6 Touchdown zone elevation: 5392 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: 39−49−41.93N / 104−39−37.98W
2.12.6 Threshold elevation: 5434 ft
2.12.6 Touchdown zone elevation: 5434 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: 39−53−44.87N / 104−41−45.90W
2.12.6 Threshold elevation: 5322 ft
2.12.6 Touchdown zone elevation: 5326 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: 39−51−00.00N / 104−41−47.72W
2.12.6 Threshold elevation: 5327 ft
2.12.6 Touchdown zone elevation: 5327 ft

AD 2.13 Declared distances
2.13.1 Designation: 16L
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 25
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 08
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 26
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 16R
2.13.2 Takeoff run available: 16000
2.13.3 Takeoff 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 Takeoff run available: 16000
2.13.3 Takeoff distance available: 16000
2.13.4 Accelerate−stop distance available: 16000
2.13.5 Landing distance available: 16000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 16L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 34R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 07
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 25
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 17L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 35R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 17R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 35L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 16R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 34L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 322.45 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 377.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 273.55 MHz

2.18.1 Service designation: LCL/P

2.18.3 Service designation: 135.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 351.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 379.175 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.025 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 379.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 322.45 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 377.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 273.55 MHz

2.18.1 Service designation: LCL/P

2.18.3 Service designation: 135.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 351.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 379.175 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.025 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 379.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.75 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 8E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39−51−40.67N / 104−41−14.00W
2.19.6 Site elevation: 5343.2 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39−53−39.55N / 104−41−17.87W
2.19.6 Site elevation: 5346.5 ft

2.19.1 ILS type: Outer Marker for runway 16L. Magnetic variation: 8E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39−58−19.70N / 104−41−26.10W
2.19.6 Site elevation: 5161 ft

2.19.1 ILS type: Middle Marker for runway 16L. Magnetic variation: 8E
2.19.2 ILS identification: LTT

2.19.5 Coordinates: 39–54–18.00N / 104–41–12.20W
2.19.6 Site elevation: 5347 ft

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 8E
2.19.2 ILS identification: LTT
2.19.5 Coordinates: 39–53–59.61N / 104–41–15.77W
2.19.6 Site elevation: 5357 ft

2.19.1 ILS type: Localizer for runway 34R. Magnetic variation: 8E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39–53–59.44N / 104–41–12.38W
2.19.6 Site elevation: 5349.7 ft

2.19.1 ILS type: DME for runway 34R. Magnetic variation: 8E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39–53–59.61N / 104–41–15.77W
2.19.6 Site elevation: 5357 ft

2.19.1 ILS type: Outer Marker for runway 34R. Magnetic variation: 8E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39–47–00.00N / 104–41–33.80W
2.19.6 Site elevation: 5561 ft

2.19.1 ILS type: Middle Marker for runway 34R. Magnetic variation: 8E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39–51–23.40N / 104–41–14.10W
2.19.6 Site elevation: 5298 ft

2.19.1 ILS type: Glide Slope for runway 34R. Magnetic variation: 8E
2.19.2 ILS identification: OUF
2.19.5 Coordinates: 39–52–00.00N / 104–41–19.01W
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: 39–51–42.29N / 104–41–13.98W
2.19.6 Site elevation: 5345 ft

2.19.1 ILS type: Localizer for runway 07. Magnetic variation: 8E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39–50–26.28N / 104–40–49.06W
2.19.6 Site elevation: 5354.9 ft

2.19.1 ILS type: Glide Slope for runway 07. Magnetic variation: 8E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39–50–23.27N / 104–43–22.66W
2.19.6 Site elevation: 5340.5 ft

2.19.1 ILS type: Outer Marker for runway 07. Magnetic variation: 8E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39–50–31.70N / 104–49–41.50W
2.19.6 Site elevation: 5215 ft

2.19.1 ILS type: DME for runway 07. Magnetic variation: 8E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39–50–23.66N / 104–40–48.62W
2.19.6 Site elevation: 5359.1 ft

2.19.1 ILS type: Middle Marker for runway 07. Magnetic variation: 8E
2.19.2 ILS identification: DZG
2.19.5 Coordinates: 39–50–27.60N / 104–44–11.80W
2.19.6 Site elevation: 5283 ft

2.19.1 ILS type: Outer Marker for runway 25. Magnetic variation: 8E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39–50–15.80N / 104–34–56.30W
2.19.6 Site elevation: 5319 ft

2.19.1 ILS type: Middle Marker for runway 25. Magnetic variation: 8E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39–50–26.10N / 104–40–25.50W
2.19.6 Site elevation: 5325 ft

2.19.1 ILS type: Localizer for runway 25. Magnetic variation: 8E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39–50–27.49N / 104–43–49.07W
2.19.6 Site elevation: 5348.9 ft

2.19.1 ILS type: DME for runway 25. Magnetic variation: 8E
2.19.2 ILS identification: ERP
2.19.5 Coordinates: 39–50–23.66N / 104–40–48.62W
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: 39−50−22.41N / 104−41−15.79W
2.19.6 Site elevation: 5344.2 ft

2.19.1 ILS type: Glide Slope for runway 08. Magnetic variation: 8E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39−52−43.15N / 104−39−29.86W
2.19.6 Site elevation: 5342.2 ft

2.19.1 ILS type: Middle Marker for runway 08. Magnetic variation: 8E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39−52−39.40N / 104−40−19.50W
2.19.6 Site elevation: 5352 ft

2.19.1 ILS type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39−52−37.98N / 104−36−57.04W
2.19.6 Site elevation: 5283.1 ft

2.19.1 ILS type: DME for runway 08. Magnetic variation: 8E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39−52−41.88N / 104−39−57.51W
2.19.6 Site elevation: 5360.2 ft

2.19.1 ILS type: Outer Marker for runway 08. Magnetic variation: 8E
2.19.2 ILS identification: FUI
2.19.5 Coordinates: 39−52−40.50N / 104−46−20.00W
2.19.6 Site elevation: 5245 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 8E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39−52−42.22N / 104−37−22.39W
2.19.6 Site elevation: 5293.2 ft

2.19.1 ILS type: Middle Marker for runway 26. Magnetic variation: 8E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39−52−37.80N / 104−36−31.00W
2.19.6 Site elevation: 5256 ft

2.19.1 ILS type: Localizer for runway 26. Magnetic variation: 8E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39−52−39.30N / 104−39−57.14W
2.19.6 Site elevation: 5347.6 ft

2.19.1 ILS type: DME for runway 26. Magnetic variation: 8E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39−52−41.88N / 104−39−57.51W
2.19.6 Site elevation: 5360.2 ft

2.19.1 ILS type: Outer Marker for runway 26. Magnetic variation: 8E
2.19.2 ILS identification: JOY
2.19.5 Coordinates: 39−52−34.30N / 104−29−18.70W
2.19.6 Site elevation: 5111 ft

2.19.1 ILS type: DME for runway 17L. Magnetic variation: 8E
2.19.2 ILS identification: BXP
2.19.5 Coordinates: 39−52−00.00N / 104−38−25.19W
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: 39−51−44.06N / 104−38−23.56W
2.19.6 Site elevation: 5326 ft

2.19.1 ILS type: Middle Marker for runway 17L. Magnetic variation: 8E
2.19.2 ILS identification: BXP
2.19.5 Coordinates: 39−52−23.20N / 104−38−28.30W
2.19.6 Site elevation: 5323 ft

2.19.1 ILS type: Localizer for runway 17L. Magnetic variation: 8E
2.19.2 ILS identification: BXP
2.19.5 Coordinates: 39−49−45.17N / 104−38−30.28W
2.19.6 Site elevation: 5362.9 ft

2.19.1 ILS type: Outer Marker for runway 17L. Magnetic variation: 8E
2.19.2 ILS identification: BXP
2.19.5 Coordinates: 39−56−35.40N / 104−38−23.70W
2.19.6 Site elevation: 5161 ft

2.19.1 ILS type: DME for runway 35R. Magnetic variation: 8E
2.19.2 ILS identification: DPP
2.19.5 Coordinates: 39−52−00.00N / 104−38−25.19W
2.19.6 Site elevation: 5345.1 ft

2.19.1 ILS type: Outer Marker for runway 35R. Magnetic variation: 8E
2.19.2 ILS identification: DPP

2.19.5 Coordinates: 39–45–13.10N / 104–38–27.20W
2.19.6 Site elevation: 5504 ft

2.19.1 ILS type: Localizer for runway 35R. Magnetic variation: 8E
2.19.2 ILS identification: DPP
2.19.5 Coordinates: 39–52–00.00N / 104–38–28.57W
2.19.6 Site elevation: 5335.5 ft

2.19.1 ILS type: Glide Slope for runway 35R. Magnetic variation: 8E
2.19.2 ILS identification: DPP
2.19.5 Coordinates: 39–50–00.00N / 104–38–24.77W
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: 39–49–46.78N / 104–38–30.27W
2.19.6 Site elevation: 5364.5 ft

2.19.1 ILS type: Middle Marker for runway 35R. Magnetic variation: 8E
2.19.2 ILS identification: DPP
2.19.5 Coordinates: 39–49–27.90N / 104–38–30.60W
2.19.6 Site elevation: 5356 ft

2.19.1 ILS type: DME for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: ACX
2.19.5 Coordinates: 39–51–50.92N / 104–39–33.05W
2.19.6 Site elevation: 5388 ft

2.19.1 ILS type: Outer Marker for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: ACX
2.19.5 Coordinates: 39–56–35.50N / 104–39–32.20W
2.19.6 Site elevation: 5286 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: ACX
2.19.5 Coordinates: 39–52–10.50N / 104–39–36.20W
2.19.6 Site elevation: 5365 ft

2.19.1 ILS type: Localizer for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: ACX
2.19.5 Coordinates: 39–49–31.82N / 104–39–38.10W
2.19.6 Site elevation: 5427.6 ft

2.19.1 ILS type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: ACX
2.19.5 Coordinates: 39–51–30.91N / 104–39–31.42W
2.19.6 Site elevation: 5378 ft

2.19.1 ILS type: Localizer for runway 35L. Magnetic variation: 8E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39–51–50.60N / 104–39–36.44W
2.19.6 Site elevation: 5377.3 ft

2.19.1 ILS type: Glide Slope for runway 35L. Magnetic variation: 8E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39–49–52.76N / 104–39–32.60W
2.19.6 Site elevation: 5422.6 ft

2.19.1 ILS type: Middle Marker for runway 35L. Magnetic variation: 8E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39–49–14.60N / 104–39–38.40W
2.19.6 Site elevation: 5411 ft

2.19.1 ILS type: Outer Marker for runway 35L. Magnetic variation: 8E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39–45–13.30N / 104–39–48.60W
2.19.6 Site elevation: 5606 ft

2.19.1 ILS type: DME for runway 35L. Magnetic variation: 8E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39–51–50.92N / 104–39–33.05W
2.19.6 Site elevation: 5388 ft

2.19.1 ILS type: Inner Marker for runway 35L. Magnetic variation: 8E
2.19.2 ILS identification: AQD
2.19.5 Coordinates: 39–49–33.44N / 104–39–38.09W
2.19.6 Site elevation: 5428.6 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 8E
2.19.2 ILS identification: DQQ
2.19.5 Coordinates: 39–53–55.74N / 104–41–50.90W
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: 39−53−34.82N / 104−41−51.28W
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: 39−50−56.78N / 104−41−47.83W
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: 39−53−55.74N / 104−41−50.90W
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: 39−51−17.60N / 104−41−52.85W
2.19.6 Site elevation: 5317.6 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 8E
2.19.2 ILS identification: DXU
2.19.5 Coordinates: 39−53−54.88N / 104−41−45.78W
2.19.6 Site elevation: 5320.1 ft

2.19.1 ILS type: Inner Marker for runway 34L. Magnetic variation: 8E
2.19.2 ILS identification: DXU
2.19.5 Coordinates: 39−50−58.30N / 104−41−47.81W
2.19.6 Site elevation: 5321.4 ft

General Remarks:
OVERHEAD PASSENGER BRIDGE ON SOUTH SIDE OF CONCOURSE 'A' PROVIDES 42 FT TAIL & 118 FT WINGSPAN CLEARANCE WHEN ON TAXIWAY CENTERLINE.

CUSTOMS AVAILABLE WITH PRIOR PERMISSION.

INFORMAL RUNWAY USE PROGRAM IS IN EFFECT 24 HRS A DAY. FOR ADDITIONAL NOISE ABATEMENT INFORMATION CONTACT AIRPORT MANAGEMENT AT 303−342−4200.

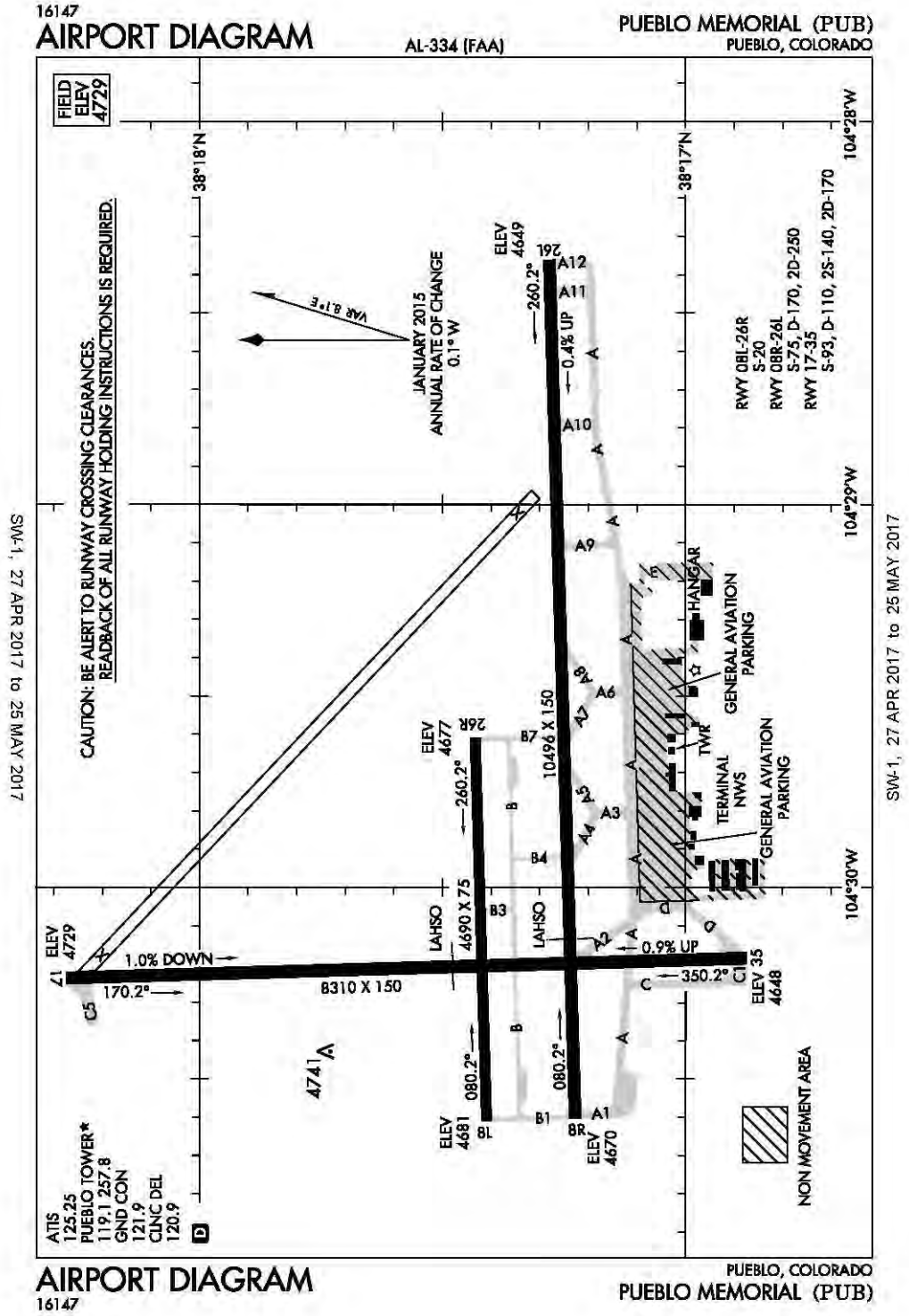
WATERFOWL AND MIGRATORY BIRD ACTIVITY IN THE VICINITY OF AIRPORT YEAR ROUND.

AIRPORT MAINTAINS CLEARWAYS (500 FT X 1,000 FT, 1.25% SLOPE) ON DEP RUNWAY 08, RUNWAY 25, & RUNWAY 34R.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

AIRPORT AREAS OF IRREG SURFACE − RUNWAY 17R/35L SOUTH BLAST PAD, RUNWAY 8/26 SOUTH SHOULDER BETWEEN R3/R4, TAXIWAY EC SOUTH SHOULDER 500FT WEST OF RY17R/35L, TAXIWAY B4 BETWEEN B4 AND AIRMET PAD, RUNWAY 17L/35R BETWEEN TAXIWAY P7 AND P8 WEST SHOULDER, TAXIWAY P BETWEEN TAXIWAY P7 AND ED.

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: 38−17−23.80N / 104−29−52.90W
2.2.2 From City: 5 Miles E Of Pueblo, CO
2.2.3 Elevation: 4729.4 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 Operational hours

2.3.1 – 2.3.11: ALL Months, ALL Days, 0600−2200 Hours

AD 2.4 Handling services and facilities

2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
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 Ii A certified on 5/1/1973

AD 2.12 Runway physical characteristics

2.12.1 Designation: 17
2.12.2 True Bearing: 178
2.12.3 Dimensions: 8310 ft x 150 ft
2.12.5 Coordinates: 38−18−15.06N / 104−30−14.69W
2.12.6 Threshold elevation: 4729 ft
2.12.6 Touchdown zone elevation: 4729 ft
2.12.7 Slope: 1DOWN

2.12.1 Designation: 35
2.12.2 True Bearing: 358
2.12.3 Dimensions: 8310 ft x 150 ft
2.12.5 Coordinates: 38−16−52.97N / 104−30−11.65W
2.12.6 Threshold elevation: 4648 ft
2.12.6 Touchdown zone elevation: 4677 ft
2.12.7 Slope: 0.9UP

2.12.1 Designation: 08R
2.12.2 True Bearing: 88
2.12.3 Dimensions: 10496 ft x 150 ft
2.12.5 Coordinates: 38−17−13.65N / 104−30−36.23W
2.12.6 Threshold elevation: 4670 ft
2.12.6 Touchdown zone elevation: 4671 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 268
2.12.3 Dimensions: 10496 ft x 150 ft
2.12.5 Coordinates: 38−17−16.77N / 104−28−24.67W
2.12.6 Threshold elevation: 4649 ft
2.12.6 Touchdown zone elevation: 4659 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 08L
2.12.2 True Bearing: 88
2.12.3 Dimensions: 4690 ft x 75 ft
2.12.5 Coordinates: 38−17−24.31N / 104−30−36.65W
2.12.6 Threshold elevation: 4681 ft
2.12.6 Touchdown zone elevation: 4681 ft
2.12.7 Slope: 0DOWN

2.12.1 Designation: 26R
2.12.2 True Bearing: 268
2.12.3 Dimensions: 4690 ft x 75 ft
2.12.5 Coordinates: 38−17−25.70N / 104−29−37.86W
2.12.6 Threshold elevation: 4677 ft
2.12.6 Touchdown zone elevation: 4678 ft

AD 2.13 Declared distances

2.13.1 Designation: 17
2.13.2 Takeoff run available: 8308
2.13.3 Takeoff 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 Takeoff run available: 8308
2.13.3 Takeoff distance available: 8308
2.13.4 Accelerate−stop distance available: 8308
2.13.5 Landing distance available: 8308

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 10496
2.13.3 Takeoff 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 Takeoff run available: 10496
2.13.3 Takeoff distance available: 10496
2.13.4 Accelerate−stop distance available: 10496
2.13.5 Landing distance available: 10496

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 4690
2.13.3 Takeoff 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 Takeoff run available: 4690
2.13.3 Takeoff distance available: 4690
2.13.4 Accelerate–stop distance available: 4690
2.13.5 Landing distance available: 4690

AD 2.14 Approach and runway lighting
2.14.1 Designation: 17
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 35
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 125.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: CLNC DEL
2.18.3 Service designation: 120.9 MHz

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: 38–17–18.93N / 104–30–21.58W
2.19.6 Site elevation: 4672.9 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 8E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38–17–12.61N / 104–31–20.10W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 8E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38–17–17.20N / 104–28–00.00W
2.19.6 Site elevation: 4653.2 ft

2.19.1 ILS type: Outer Marker for runway 08R. Magnetic variation: 8E
2.19.2 ILS identification: PUB
2.19.5 Coordinates: 38–17–00.00N / 104–38–49.50W
2.19.6 Site elevation: 4730.3 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 8E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38–17–21.36N / 104–28–39.20W
2.19.6 Site elevation: 4649.6 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 8E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38–17–26.64N / 104–21–17.89W
2.19.6 Site elevation: 4660.4 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 8E

2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38−17−17.69N / 104−27−45.32W
2.19.6 Site elevation: 4640.4 ft

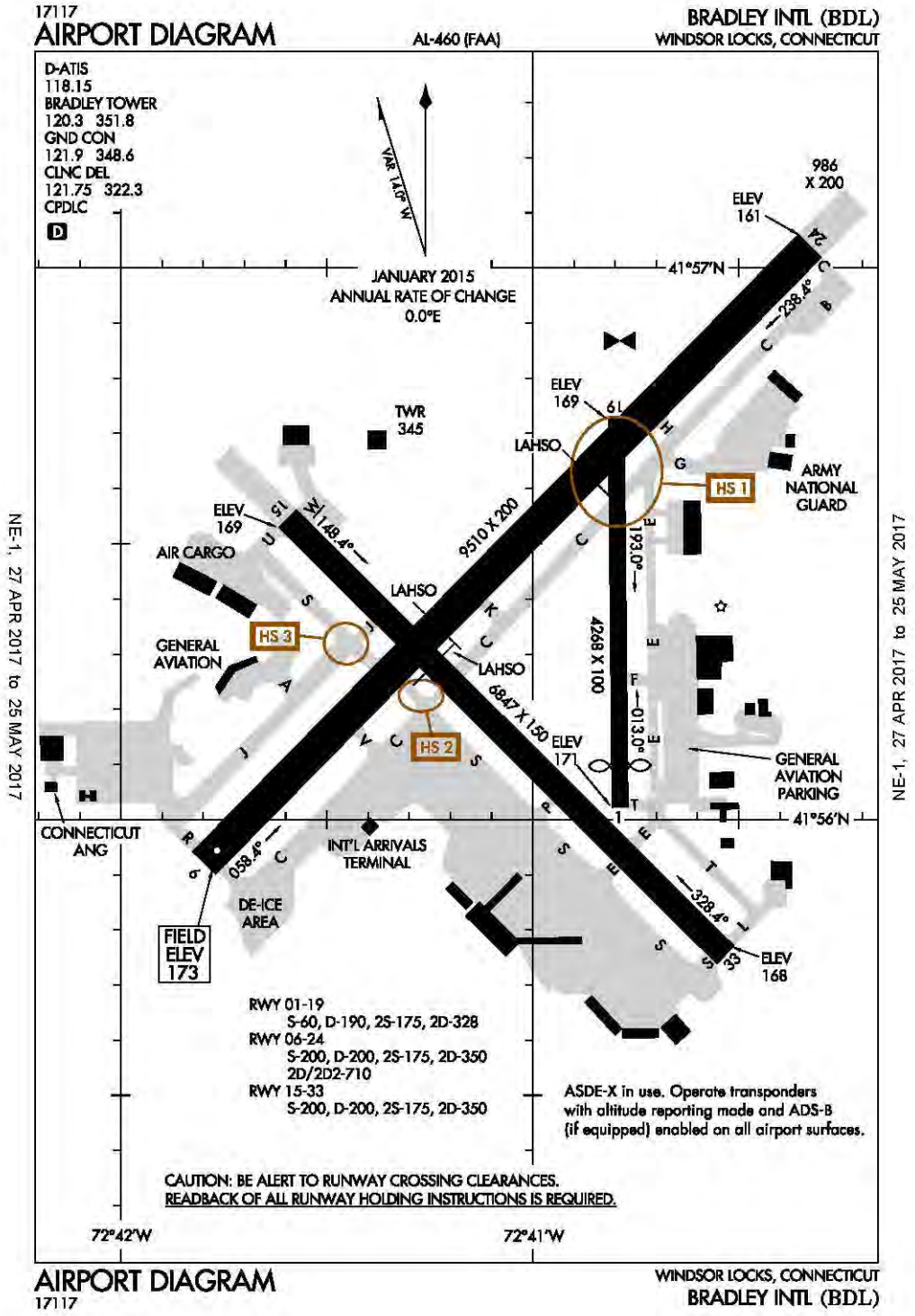
2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 8E
2.19.2 ILS identification: TFR
2.19.5 Coordinates: 38−17−13.25N / 104−30−52.56W
2.19.6 Site elevation: 4668 ft

General Remarks:
HIGH VOLUME TRAINING DA−20 AIRCRAFT SR−SS MON−FRI. OVERHEAD PATTERN DURING TRAINING. EXTENSIVE USE OF TRAINING AREA 12−28 DME N−SW OF AIRPORT 500 FT AGL−8500 FT MSL.

BE ALERT; INTENSIVE USAF STUDENT TRAINING IN VICINITY OF COLORADO SPRINGS & PUEBLO COLORADO.

SEE FLIGHT INFORMATION PUBLICATION AP/1 SUPPLEMENTARY AIRPORT INFORMATION.

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: 41−56−20.92N / 72−41−00.00W
2.2.2 From City: 3 Miles W Of Windsor Locks, CT
2.2.3 Elevation: 173.2 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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Trees (185 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Trees (71 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 15
2.10.1.b Type of obstacle: Trees (75 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 33
2.10.1.b Type of obstacle: Trees (44 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 430 ft from Centerline

2.10.1.a. Runway designation: 01
2.10.1.b Type of obstacle: Acft (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 350 ft from Centerline

2.10.1.a. Runway designation: 19
2.10.1.b Type of obstacle: Trees (90 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 06
2.12.2 True Bearing: 44
2.12.3 Dimensions: 9510 ft x 200 ft
2.12.5 Coordinates: 41−55−55.25N / 72−41−47.69W
2.12.6 Threshold elevation: 173 ft
2.12.6 Touchdown zone elevation: 173 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 224
2.12.3 Dimensions: 9510 ft x 200 ft
2.12.5 Coordinates: 41−57−00.00N / 72−40−19.68W
2.12.6 Threshold elevation: 161 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
2.12.5 Coordinates: 41−56−32.63N / 72−41−35.71W
2.12.6 Threshold elevation: 169 ft
2.12.6 Touchdown zone elevation: 171 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 6847 ft x 150 ft
2.12.5 Coordinates: 41−55−45.32N / 72−40−30.96W
2.12.6 Threshold elevation: 168 ft
2.12.6 Touchdown zone elevation: 171 ft

2.12.1 Designation: 01
2.12.2 True Bearing: 359
2.12.3 Dimensions: 4268 ft x 100 ft
2.12.5 Coordinates: 41−56−00.00N / 72−40−46.63W
2.12.6 Threshold elevation: 171 ft
2.12.6 Touchdown zone elevation: 171 ft

2.12.1 Designation: 19
2.12.2 True Bearing: 179
2.12.3 Dimensions: 4268 ft x 100 ft
2.12.5 Coordinates: 41−56−43.56N / 72−40−47.58W
2.12.6 Threshold elevation: 169 ft

2.12.6 Touchdown zone elevation: 170 ft

AD 2.13 Declared distances
2.13.1 Designation: 06
2.13.2 Takeoff run available: 9509
2.13.3 Takeoff 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 Takeoff run available: 9509
2.13.3 Takeoff 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 Takeoff run available: 6847
2.13.3 Takeoff 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 Takeoff run available: 6847
2.13.3 Takeoff distance available: 6847
2.13.4 Accelerate–stop distance available: 6847
2.13.5 Landing distance available: 6847

2.13.1 Designation: 01
2.13.2 Takeoff run available: 4268
2.13.3 Takeoff distance available: 4268
2.13.4 Accelerate–stop distance available: 4268

2.13.1 Designation: 19
2.13.5 Landing distance available: 4268

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Vgsi And Glidepath Not Coincident.

2.14.1 Designation: 24
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Vgsi And Glidepath Not Coincident.

2.14.1 Designation: 15
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 33
2.14.4 Visual approach slope indicator system: 4–light PAPI on right
2.14.10 Remarks: Vgsi And Glidepath Not Coincident.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 118.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 123.45 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 243.9 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG–OPS
2.18.3 Service designation: 349.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 351.8 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 41.9 MHz

2.18.1 Service designation: ANG OPS

2.18.3 Service designation: 138.55 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−57−17.85N / 72−39−59.41W
2.19.6 Site elevation: 149.4 ft

2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−56−00.00N / 72−41−41.89W
2.19.6 Site elevation: 169.1 ft

2.19.1 ILS type: Outer Marker for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−52−38.58N / 72−45−58.34W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−57−17.28N / 72−39−56.50W
2.19.6 Site elevation: 163.8 ft

2.19.1 ILS type: Inner Marker for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−55−49.46N / 72−41−56.05W
2.19.6 Site elevation: 173 ft

2.19.1 ILS type: Middle Marker for runway 06. Magnetic variation: 14W
2.19.2 ILS identification: BDL
2.19.5 Coordinates: 41−55−35.77N / 72−42−13.17W
2.19.6 Site elevation: 166 ft

2.19.1 ILS type: Glide Slope for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−56−53.58N / 72−40−25.96W
2.19.6 Site elevation: 156.6 ft

2.19.1 ILS type: Outer Marker for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 42−01−16.18N / 72−34−53.96W
2.19.6 Site elevation: 114 ft

2.19.1 ILS type: Middle Marker for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−57−20.88N / 72−39−55.38W
2.19.6 Site elevation: 159 ft

2.19.1 ILS type: Inner Marker for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−57−12.08N / 72−40−00.00W
2.19.6 Site elevation: 141 ft

2.19.1 ILS type: Localizer for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−55−47.66N / 72−41−57.63W
2.19.6 Site elevation: 169.9 ft

2.19.1 ILS type: DME for runway 24. Magnetic variation: 14W
2.19.2 ILS identification: MYQ
2.19.5 Coordinates: 41−57−17.28N / 72−39−56.50W
2.19.6 Site elevation: 163.8 ft

2.19.1 ILS type: Localizer for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−56−40.16N / 72−41−46.01W
2.19.6 Site elevation: 168.3 ft

2.19.1 ILS type: Glide Slope for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−55−54.77N / 72−40−38.59W
2.19.6 Site elevation: 167.4 ft

2.19.1 ILS type: DME for runway 33. Magnetic variation: 14W
2.19.2 ILS identification: IKX
2.19.5 Coordinates: 41−56−37.97N / 72−41−47.43W
2.19.6 Site elevation: 182.9 ft

General Remarks:

NUMEROUS BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

OPERATIONS CONTACT AUTOVON 636−8385; COMMERCIAL 860−627−3001.

ANG − OPR 0700−1530 TUES/FRI/SAT; 0700−2300 WED/THUR.

ANG − PRIOR PERMISSION REQUIRED V220−2356.

NO DE−ICING AVAILABLE AT ANG.

TAXIWAY J CLOSED BETWEEN S & R TO AIRCRAFT WITH WINGSPANS IN EXCESS OF 170 FT.

NO TRAINING FLIGHTS; NO PRACTICE APPROACHES; NO TOUCH AND GO LANDING BETWEEN: 2300 − 0700 MON THRU SAT & 2300 − 1200 SUN.

(E117) CT ANG AND U.S. ARMY NATIONAL GUARD.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

EXCEPT FOR TAXIING, RUNWAY 01/19 OPEN FOR AIRCRAFT WITH WINGSPAN LESS THAN 79 FT.

RUNWAY 01 IS CLOSED FOR ARRS TO ALL FIXED WING AIRCRAFT.

RUNWAY 19 CLOSED FOR DEPS TO ALL FIXED WING AIRCRAFT.

ANG: NONSTANDARD YELLOW AEROSPACE GROUND EQUIPMENT AND FIRE BOTTLE BOXES PAINTED ON ANG RAMP.

ARRANGE − DSN 636−7519/7520. C860−292−4519/4520.

ANG: AIRFIELD MANAGER DOES NOT ISSUE OR STORE COMSEC FOR TRANSIENT CREWS.

CAUTION: ANG RAMP MRK MAY NOT BE APPROPRIATE FOR LARGE AIRCRAFT: FOLLOW MARSHALLERS INSTR. KC35 AIRCRAFT USE CAUTION, FIRE HYDRANTS ARE 33” AND ARE LESS THAN 84 FT FROM TAXILANE CENTERLINE.

PARALLEL TAXIWAY OPERATIONS ON TAXIWAY C AND TAXIWAY B RESTRICTED TO AIRCRAFT WITH WINGSPANS OF 171 FT OR LESS.

AIRCRAFT REQUESTING US CUSTOMS SERVICES MUST PARK ON THE CUSTOMS SPOT WITH THE NOSE OF THE AIRCRAFT FACING SOUTHWEST. CONTACT CUSTOMS AT 860−292−1314 WHEN PARKED.

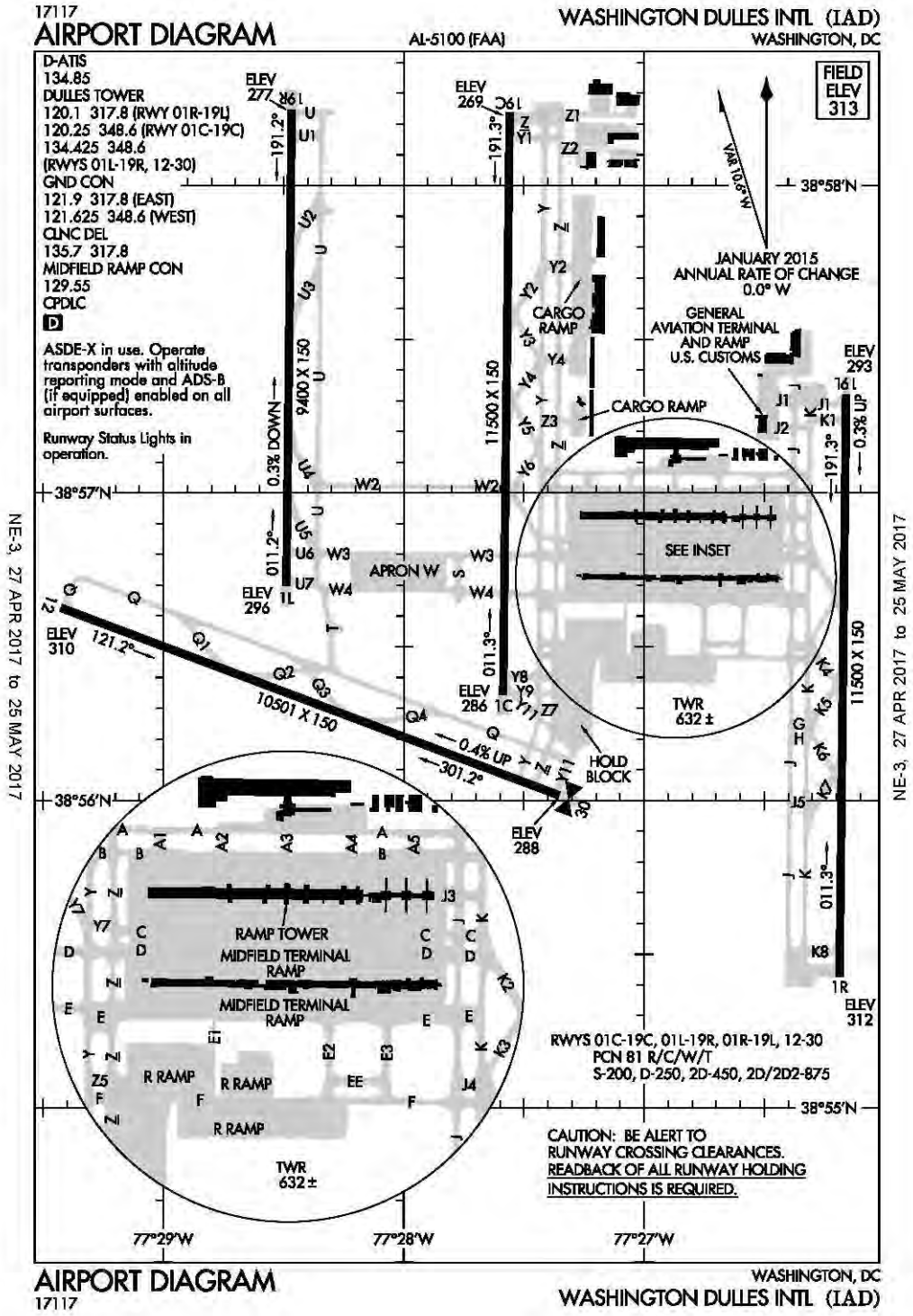
BASH PHASE II INCREASED BIRD ACTIVITY SEP−OCT AND MAR−APR.

FUEL: A++ (MIL).

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −23C/−9F.

FIXED WING AIRCRAFT USE LOW IDLE FOR TAXI, NO ENGINE CHECKS OR POWER RUNS ALLOWED ON THE ARRANGE RAMP DUE TO POSSIBLE FOREIGN OBJECT DAMAGE HAZARD.

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: 38–56–50.80N / 77–27–35.80W
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: Christopher Browne
1 SAARINEN CIRCLE
Dulles, VA 20166
(703–572–2730)
2.2.7 Traffic: IFR/VFR
2.2.8 Remarks: Located In Both Fairfax County Va And Loudoun County Va.

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 19L
2.10.1.b Type of obstacle: Pole (38 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 720 ft from Centerline

AD 2.12 Runway physical characteristics

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 / 77–29–25.60W
2.12.6 Threshold elevation: 310 ft
2.12.6 Touchdown zone elevation: 310 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: 38–56–00.00N / 77–27–21.23W
2.12.6 Threshold elevation: 288 ft
2.12.6 Touchdown zone elevation: 288 ft
2.12.7 Slope: 0.4UP

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: 38–55–25.53N / 77–26–11.22W
2.12.6 Threshold elevation: 312 ft
2.12.6 Touchdown zone elevation: 312 ft
2.12.7 Slope: 0.3DOWN

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: 38–57–19.19N / 77–26–00.00W
2.12.6 Threshold elevation: 293 ft
2.12.6 Touchdown zone elevation: 302 ft
2.12.7 Slope: 0.3UP

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: 38–56–20.64N / 77–27–35.20W
2.12.6 Threshold elevation: 286 ft
2.12.6 Touchdown zone elevation: 286 ft

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: 38–58–14.31N / 77–27–33.55W
2.12.6 Threshold elevation: 268 ft
2.12.6 Touchdown zone elevation: 271 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 / 77–28–29.32W
2.12.6 Threshold elevation: 296 ft
2.12.6 Touchdown zone elevation: 296 ft
2.12.7 Slope: 0.3DOWN

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: 38−58−14.78N / 77−28−27.98W
2.12.6 Threshold elevation: 277 ft
2.12.6 Touchdown zone elevation: 278 ft

AD 2.13 Declared distances
2.13.1 Designation: 12
2.13.2 Takeoff run available: 10501
2.13.3 Takeoff distance available: 10501
2.13.4 Accelerate−stop distance available: 10501
2.13.5 Landing distance available: 10501

2.13.1 Designation: 30
2.13.2 Takeoff run available: 10501
2.13.3 Takeoff distance available: 10501
2.13.4 Accelerate−stop distance available: 10501
2.13.5 Landing distance available: 10501

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff 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 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate−stop distance available: 11500
2.13.5 Landing distance available: 11500

2.13.1 Designation: 01C
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate−stop distance available: 11500
2.13.5 Landing distance available: 11500

2.13.1 Designation: 19C
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff 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 Takeoff run available: 9400
2.13.3 Takeoff 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 Takeoff run available: 9400
2.13.3 Takeoff distance available: 9400
2.13.4 Accelerate−stop distance available: 9400
2.13.5 Landing distance available: 9400

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 30
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 19L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R

2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LC/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 125.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 128.42 MHz

2.18.1 Service designation: MIDFLD RAMP CTL
2.18.3 Service designation: 129.55 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 132.45 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 134.85 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 135.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.25 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 134.425 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.625 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 128.525 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38–55–57.51N / 77–27–00.00W
2.19.6 Site elevation: 279.8 ft

2.19.1 ILS type: Outer Marker for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38–58–35.61N / 77–36–00.00W
2.19.6 Site elevation: 382 ft

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38–56–30.40N / 77–29–15.54W
2.19.6 Site elevation: 303.5 ft

2.19.1 ILS type: Middle Marker for runway 12. Magnetic variation: 10W
2.19.2 ILS identification: AJU
2.19.5 Coordinates: 38–56–47.20N / 77–29–58.37W
2.19.6 Site elevation: 319 ft

2.19.1 ILS type: Outer Marker for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38–50–50.18N / 77–26–16.38W
2.19.6 Site elevation: 242 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD

2.19.5 Coordinates: 38−57−30.87N / 77−26−00.00W
2.19.6 Site elevation: 301.8 ft

2.19.1 ILS type: Glide Slope for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38−55−35.85N / 77−26−00.00W
2.19.6 Site elevation: 306.5 ft

2.19.1 ILS type: Inner Marker for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38−55−17.13N / 77−26−11.35W
2.19.6 Site elevation: 319 ft

2.19.1 ILS type: Middle Marker for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38−54−53.77N / 77−26−11.67W
2.19.6 Site elevation: 317 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 10W
2.19.2 ILS identification: IAD
2.19.5 Coordinates: 38−55−11.08N / 77−26−00.00W
2.19.6 Site elevation: 314 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38−57−00.00N / 77−26−00.00W
2.19.6 Site elevation: 291.1 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38−57−43.15N / 77−26−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38−55−11.81N / 77−26−11.43W
2.19.6 Site elevation: 315.3 ft

2.19.1 ILS type: Outer Marker for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 39−01−14.61N / 77−25−55.33W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 10W
2.19.2 ILS identification: SGC
2.19.5 Coordinates: 38−55−11.08N / 77−26−00.00W
2.19.6 Site elevation: 313.9 ft

2.19.1 ILS type: Localizer for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38−58−24.67N / 77−27−33.39W
2.19.6 Site elevation: 263.2 ft

2.19.1 ILS type: Glide Slope for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38−56−31.06N / 77−27−40.74W
2.19.6 Site elevation: 283.3 ft

2.19.1 ILS type: Outer Marker for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38−50−31.20N / 77−27−35.06W
2.19.6 Site elevation: 219 ft

2.19.1 ILS type: Middle Marker for runway 01C. Magnetic variation: 10W
2.19.2 ILS identification: OSZ
2.19.5 Coordinates: 38−55−53.17N / 77−27−35.57W
2.19.6 Site elevation: 272 ft

2.19.1 ILS type: Localizer for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38−56−14.61N / 77−27−35.29W
2.19.6 Site elevation: 283.9 ft

2.19.1 ILS type: Glide Slope for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38−58−00.00N / 77−27−38.00W
2.19.6 Site elevation: 266.3 ft

2.19.1 ILS type: Middle Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38−58−46.70N / 77−27−33.10W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX

2.19.5 Coordinates: 39–01–50.27N / 77–27–29.64W
2.19.6 Site elevation: 234 ft

2.19.1 ILS type: Inner Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS identification: DLX
2.19.5 Coordinates: 38–58–22.94N / 77–27–33.42W
2.19.6 Site elevation: 263.4 ft

2.19.1 ILS type: Inner Marker for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38–56–33.39N / 77–28–29.45W
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: 38–58–24.77N / 77–28–27.84W
2.19.6 Site elevation: 276.9 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38–56–52.87N / 77–28–34.35W
2.19.6 Site elevation: 287.9 ft
2.19.1 ILS type: DME for runway 01L. Magnetic variation: 10W
2.19.2 ILS identification: OIU
2.19.5 Coordinates: 38–58–25.08N / 77–28–31.16W
2.19.6 Site elevation: 279.3 ft

2.19.1 ILS type: Inner Marker for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38–58–23.51N / 77–28–27.86W
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: 38–56–31.90N / 77–28–29.46W
2.19.6 Site elevation: 298.2 ft

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38–58–00.00N / 77–28–33.32W
2.19.6 Site elevation: 272 ft

2.19.1 ILS type: DME for runway 19R. Magnetic variation: 10W
2.19.2 ILS identification: ISU
2.19.5 Coordinates: 38–58–25.08N / 77–28–31.16W
2.19.6 Site elevation: 279.3 ft

General Remarks:
ITINERANT AIRCRAFT CONTACT FBO ON 122.95 FOR SERVICES.

AIR CARRIER PUSH BACKS & POWER FROM ALL APRON POSITIONS REQUIRE CLEARANCE FROM MWAA RAMP TOWER.

LARGE FLOCKS OF BIRDS ON & IN THE VICINITY OF ARPT/DEER IN THE VICINITY OF AIRPORT.

DURING PERIODS OF AIRCRAFT 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 CLEARANCES 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 BETWEEN A1 & A5.

RUNUP BLOCKS FOR RUNWAY 30 DESIGNATED AS NON–MOVEMENT AREA.

ALL 180 DEGREE TURNS OUT OF APRON POSITIONS SHALL BE MADE USING MINIMUM POWER.

LANDING FEE. FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE. 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.

TAXIWAY E1 RESTRICTED TO AIRCRAFT WITH A WINGSPAN LESS THAN 79 FT.

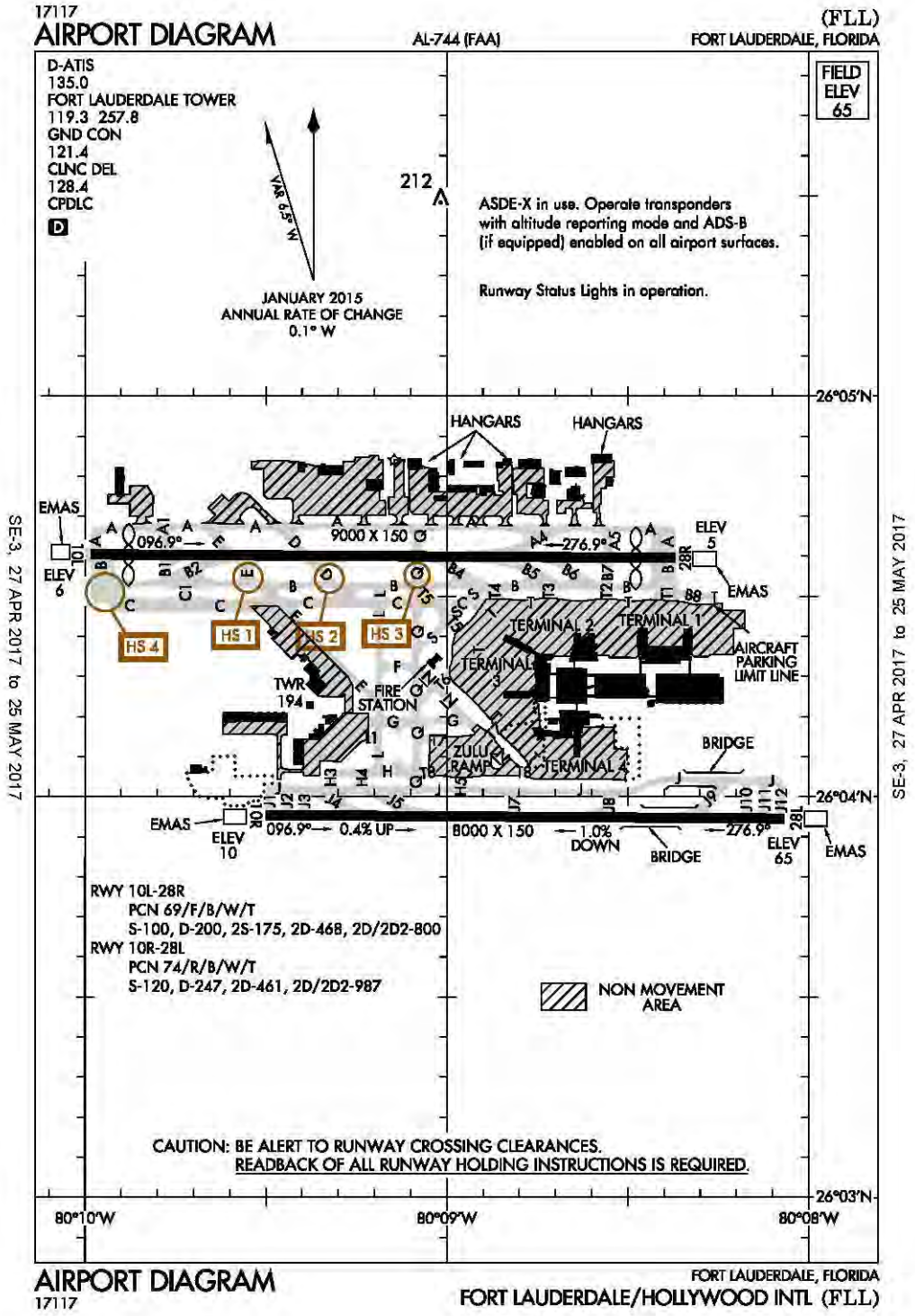
B747−8 RESTRICTED TO MAXIMUM TAXI SPEED 17 KTS (20 MPH) ON TAXIWAY J.

ENGINE RUN−UPS BETWEEN 2200L & 0700L REQUIRE PRIOR APPROVAL FROM AIRPORT OPERATIONS.

RUNWAY 30 DEPARTURES USE UPPER ANTENNA FOR ATC COMMUNICATIONS.

RUNWAY STATUS LIGHTS 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

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 26−04−18.00N / 80−08−58.90W
2.2.2 From City: 3 Miles SW Of Fort Lauderdale, FL
2.2.3 Elevation: 65.1 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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Road (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Rr (33 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 530 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Pole (35 ft). Lighted
2.10.1.c Location of obstacle: 587 ft from Centerline

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: 69 F/B/W/T
2.12.5 Coordinates: 26−04−37.02N / 80−09−59.54W
2.12.6 Threshold elevation: 6 ft
2.12.6 Touchdown zone elevation: 7 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: 69 F/B/W/T
2.12.5 Coordinates: 26−04−36.45N / 80−08−20.84W
2.12.6 Threshold elevation: 5 ft
2.12.6 Touchdown zone elevation: 6 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: 26−03−57.19N / 80−09−30.06W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 14 ft
2.12.7 Slope: 0.4UP

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: 26−03−56.68N / 80−08−00.00W
2.12.6 Threshold elevation: 65 ft
2.12.6 Touchdown zone elevation: 65 ft
2.12.7 Slope: 0.1DOWN

AD 2.13 Declared distances

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 8000
2.13.3 Takeoff 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 Takeoff run available: 8000

2.13.3 Takeoff 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: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 4–light PAPI on right
2.14.10 Remarks: Rwy 10R MALSf Non Standard With A 370 Ft Gap Between 8+00 And Station 11+70. The Standard Is 200 Ft Between Stations.

2.14.1 Designation: 28L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Runway 28L PAPI And Runway Aiming Point Marking Do Not Coincide.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.4 MHz

2.18.1 Service designation: GND/ALTERNATE
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: RAMP CTL
2.18.3 Service designation: 118.175 MHz

2.18.1 Service designation: RAMP CTL
2.18.3 Service designation: 129.875 MHz

2.18.1 Service designation: ARKES SID
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: BAHMA SID
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: PREDA SID
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: THNDR SID
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: ZAPPA SID
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: FORT LAUDERDALE SID
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: FORT LAUDERDALE SID
2.18.3 Service designation: 128.6 MHz

2.18.1 Service designation: FORT LAUDERDALE SID
2.18.3 Service designation: 128.6 MHz

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: 26–04–40.18N / 80–08–15.67W
2.19.6 Site elevation: 11.3 ft

2.19.1 ILS type: Middle Marker for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26–04–37.62N / 80–10–35.57W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26–04–36.41N / 80–08–13.15W
2.19.6 Site elevation: 4.2 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: LHI
2.19.5 Coordinates: 26–04–39.64N / 80–09–42.34W
2.19.6 Site elevation: 2.7 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 6W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26–04–39.63N / 80–08–39.07W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 6W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26–04–36.29N / 80–07–54.09W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 6W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26–04–37.04N / 80–10–00.00W
2.19.6 Site elevation: 4.6 ft

2.19.1 ILS type: DME for runway 28R. Magnetic variation: 6W
2.19.2 ILS identification: UDL
2.19.5 Coordinates: 26–04–34.53N / 80–10–00.00W
2.19.6 Site elevation: 10.9 ft

2.19.1 ILS type: DME for runway 10R. Magnetic variation: 6W
2.19.2 ILS identification: FLL
2.19.5 Coordinates: 26–03–58.84N / 80–07–55.71W
2.19.6 Site elevation: 68.2 ft

2.19.1 ILS type: Glide Slope for runway 10R. Magnetic variation: 6W
2.19.2 ILS identification: FLL
2.19.5 Coordinates: 26–03–53.17N / 80–09–18.57W
2.19.6 Site elevation: 5.5 ft

2.19.1 ILS type: Localizer for runway 10R. Magnetic variation: 6W
2.19.2 ILS identification: FLL
2.19.5 Coordinates: 26–03–56.63N / 80–07–55.57W
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: 26–03–59.49N / 80–09–40.45W
2.19.6 Site elevation: 14.9 ft

2.19.1 ILS type: Glide Slope for runway 28L. Magnetic variation: 6W
2.19.2 ILS identification: ADI
2.19.5 Coordinates: 26–03–52.74N / 80–08–15.53W
2.19.6 Site elevation: 44.9 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 6W
2.19.2 ILS identification: ADI
2.19.5 Coordinates: 26–03–57.24N / 80–09–37.77W
2.19.6 Site elevation: 7.4 ft

General Remarks:
CLOSED TO AIR CARRIER TRAINING. CLOSED TO LARGE AIRCRAFT TRAINING OVER 58000 LBS MAX CERTIFIED GROSS TAKE-OFF WEIGHT. CLOSED TO ALL TRAINING 2300–0700.

NOISE ABATEMENT IN EFFECT CONTACT AIRPORT NOISE ABATEMENT OFFICE–954–359–6181 FOR DETAILS. ALL RUNWAYS ARE NOISE SENSITIVE.

JET RUNUPS PROHIBITED 2300–0700.

FLOCKS OF BIRDS ON AND IN THE VICINITY OF THE AIRPORT.

PRIOR PERMISSION REQUIRED FOR AIRCRAFT WITH EXPLOSIVES.

AIRCRAFT WITH WINGSPANS GREATER THAN 118’ MAY UTILIZE TAXIWAY E BETWEEN TAXIWAY C AND TAXIWAY L BY PRIOR PERMISSION REQUIRED ONLY.

ARR AIRCRAFT FROM THE NORTH MAINTAIN 6000 FT UNTIL ABEAM RUNWAY 10L ON DOWNWIND.

ARR AIRCRAFT FROM ’N’ & ’W’ MAINTAIN 6000 FT UNTIL ABEAM RUNWAY 28R ON DOWNWIND.

NO VFR APPROACHES OR BASE LEGS UNTIL OFFSHORE.

TAXIWAY B8 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 126 FT AND TAIL HEIGHT GREATER THAN 46 FT.

AIR CARRIER AIRCRAFT USE RAMP PUSH BACK PROCEDURES AS PRESCRIBED BY AIRPORT OPERATIONS.

EAST SIDE OF CONCOURSE B AVAILBLE ONLY TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 124.9 FT.

AIRCRAFT OPERATING FROM TERMINAL 1, 2, 3, 4 MUST CONTACT RAMP CONTROL. RAMP CONTROL EFFECTIVE 0545–2245.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

CONCENTRATION OF BIRDS BELOW 500 FT, 2.0 NAUTICAL MILE WEST OF THE APPROACH ENDS OF RUNWAY 10L AND 10R.

TURBULENCE BELOW 1000 FT OVER LANDFILL LOCATED 2NM WEST.

NUMEROUS CRANES SE QUADRANT OF AIRPORT.

TAXIWAY J BEGINS TO ELEV 900’ EAST OF TAXIWAY Q. DUE TO ELEV ALL AIRCRAFT SHOULD REMAIN ON TAXIWAY CENTERLINE. TAXIWAY T8 AND TAXILANE T ARE NOT ACCESSIBLE FROM TAXIWAY J.

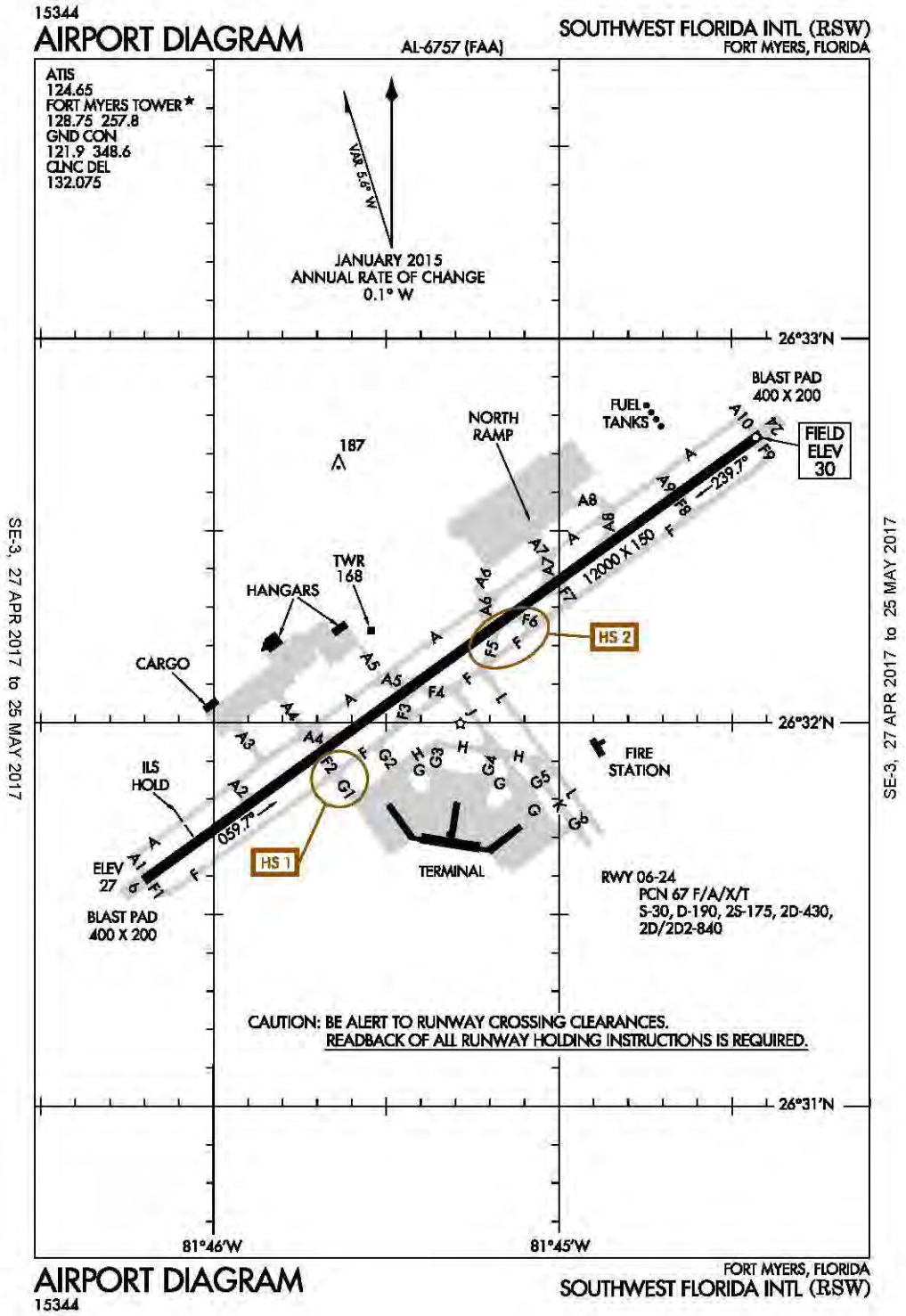
RUNWAY STATUS LIGHTS IN OPERATION

RUNWAY 10L RUNWAY VISUAL RANGE TOUCHDOWN AVAILABLE.

AIRCRAFT LANDING RUNWAY 10R AND EXITING AT J9 SHOULD FOLLOW TAXIWAY LEAD OFF LINE ONTO J9.

PREFERENTIAL RUNWAY USE PROGRAM IN EFFECT. CONTACT NOISE ABATEMENT OFICE FOR DETAILS.

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: 26–32–10.20N / 81–45–18.60W
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: Robert M. Ball
11000 TERMINAL ACCESS RD.
Fort Myers, FL 33913
(239–590–4800)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A+
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Trees (48 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 190 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 06
2.12.2 True Bearing: 54
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 67 F/A/X/T
2.12.5 Coordinates: 26–31–35.35N / 81–46–12.07W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 27 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 234
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 67 F/A/X/T
2.12.5 Coordinates: 26–32–45.02N / 81–44–25.03W
2.12.6 Threshold elevation: 30 ft
2.12.6 Touchdown zone elevation: 30 ft

AD 2.14 Approach and runway lighting

2.14.1 Designation: 06
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 125.15 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 306.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 327.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 343.75 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 132.075 MHz

2.18.1 Service designation: GND
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LCL
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

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 / 81−46−00.00W
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: 26−32−51.12N / 81−44−15.66W
2.19.6 Site elevation: 27.6 ft

2.19.1 ILS type: Outer Marker for runway 06. Magnetic variation: 4W
2.19.2 ILS identification: RSW
2.19.5 Coordinates: 26−29−00.00N / 81−50−00.00W
2.19.6 Site elevation: 10 ft

General Remarks:
AIR CARRIER PILOTS USE RAMP PROC AS PRESCRIBED BY AIRPORT OPERATIONS.

NO HELICOPTER OPERATIONS PERMITTED ON TERMINAL APRON.

LIGHTS ON PARALLEL ROAD & PARKING LOT NW OF RUNWAY 06/24 CAN BE MISTAKEN FOR THE RUNWAY & APPROACH ENVIRONMENT.

GROUND CLEARANCE REQUIRED PRIOR TO ENTERING TAXIWAY G.

AIRPORT HAS RUNWAY USE PROGRAM. USE DISTANT NOISE ABATEMENT DEP PROFILE. VISUAL APPROACHES TO RUNWAY 06 W OF FORT MYERS BEACH ARE REQUESTED TO MAINTAIN 3000 FT UNTIL CROSSING FORT MYERS BEACH SHORELINE 12 NAUTICAL MILE SW OF AIRPORT. RUNWAY 24 PREFERRED BETWEEN 2200−0600. FOR NOISE ABATEMENT PROCEDURES CONTACT AIRPORT MANAGER 239−590−4810

CAUTION: OPEN BAGGAGE BAYS AND CONSTRUCTION WITHIN THE TERMINAL RAMP AREA. AIRCREWS SHOULD USE MINIMUM THRUST SETTINGS IN THESE AREAS, ESPECIALLY DURING SINGLE ENGINE TAXI. CROSS−BLEED STARTS ONLY ALLOWED AFTER REACHING THE TUG RELEASE POINT.

ALL AIRCRAFT 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.

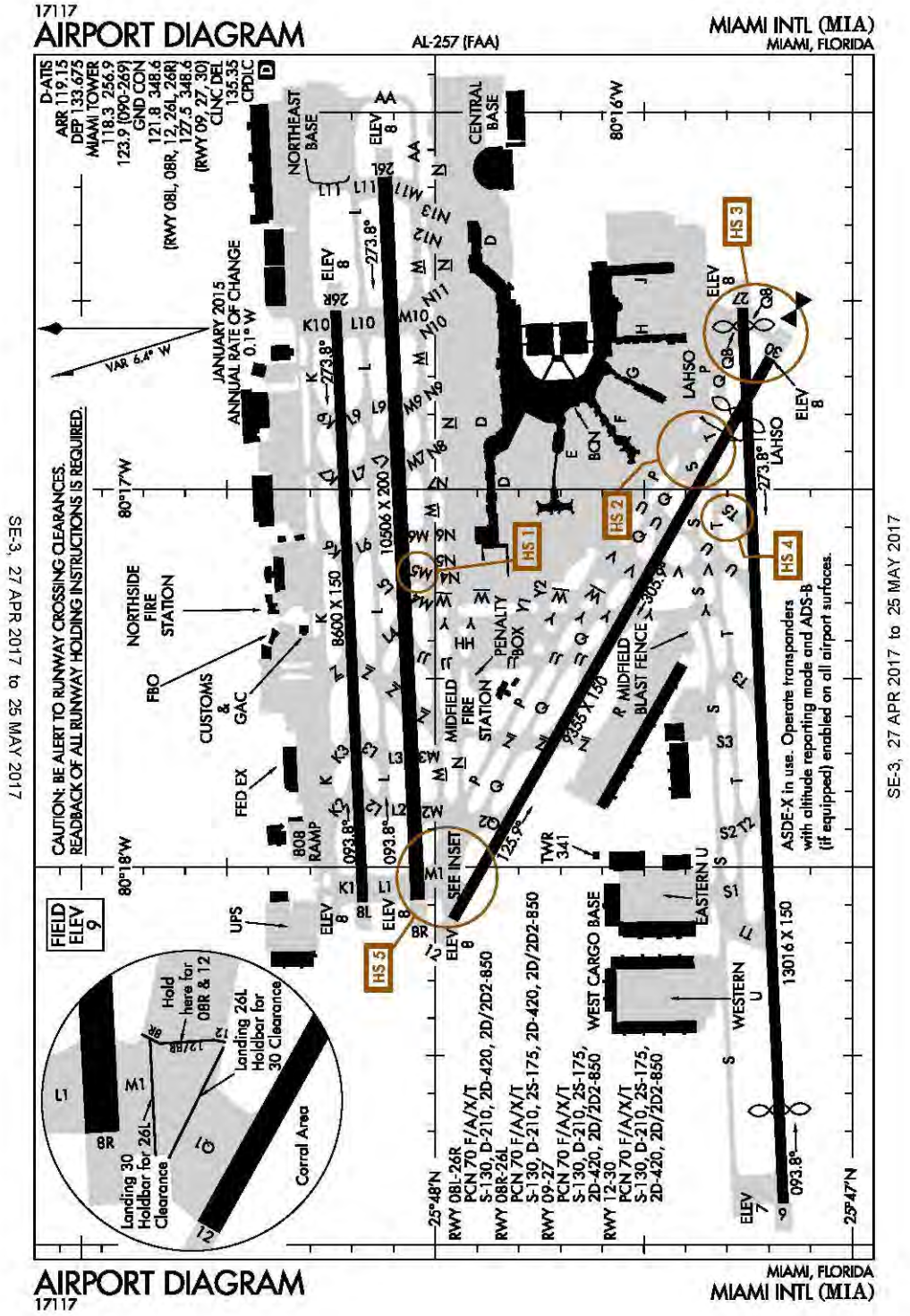
TAXIWAY F6 EXIT SIGN IS LOCATED IMMEDIATELY BEFORE TAXIWAY F5.

ARR − INBOUND TRAFFIC FOR ALL GATES, PROCEED DIRECTLY TO THE GATE UNLESS OTHERWISE DIRECTED BY ATC. ADVISE ATC IF GATE IS NOT AVAILABLE.

DEP − AIRCRAFT MUST OBTAIN APPROVAL FROM GROUND CONTROL PRIOR TO PUSHBACK FROM GATES B7, B9, C8, C9 & D10A. PILOTS ADVISE TUG OPERATORS THAT YOU HAVE OBTAINED CLEARANCE FROM GROUND CONTROL PRIOR TO ENTERING TAXIWAY G. DEPARTURES CONTACT GROUND CONTROL 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.

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: 25−47−43.30N / 80−17−24.40W
2.2.2 From City: 8 Miles NW Of Miami, FL
2.2.3 Elevation: 8.5 ft
2.2.5 Magnetic variation: 5W (2000)
2.2.6 Airport Contact: Emilio T. Gonzalez
PO BOX 025504
Miami, FL 33102
(305−876−7077)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 12
2.10.1.b Type of obstacle: Tower (40 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 30
2.10.1.b Type of obstacle: Tree (52 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Rr (23 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 580 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 12
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9355 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−47−57.43N / 80−18−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9355 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25−47−11.85N / 80−16−39.13W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 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: 25−48−10.43N / 80−18−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

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: 25−48−14.32N / 80−16−31.55W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 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: 25−48−00.00N / 80−18−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 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: 25−48−00.00N / 80−16−10.33W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 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: 25−47−00.00N / 80−18−53.42W
2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 7 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: 25–47–15.83N / 80–16–31.17W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 8 ft

AD 2.13 Declared distances
2.13.1 Designation: 12
2.13.2 Takeoff run available: 9355
2.13.3 Takeoff distance available: 9355
2.13.4 Accelerate–stop distance available: 8579
2.13.5 Landing distance available: 8579

2.13.1 Designation: 30
2.13.2 Takeoff run available: 9355
2.13.3 Takeoff distance available: 9355
2.13.4 Accelerate–stop distance available: 8853
2.13.5 Landing distance available: 7913

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 8600
2.13.3 Takeoff distance available: 8600
2.13.4 Accelerate–stop distance available: 8600
2.13.5 Landing distance available: 8600

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 8600
2.13.3 Takeoff 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 Takeoff run available: 10506
2.13.3 Takeoff 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 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate–stop distance available: 10506
2.13.5 Landing distance available: 10506

2.13.1 Designation: 09
2.13.2 Takeoff run available: 13016
2.13.3 Takeoff 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 Takeoff run available: 13016
2.13.3 Takeoff distance available: 13016
2.13.4 Accelerate–stop distance available: 13016
2.13.5 Landing distance available: 12755

AD 2.14 Approach and runway lighting
2.14.1 Designation: 12
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 30
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light

PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 119.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: RTIS(120−300 WITHIN 25 NM)
2.18.3 Service designation: 125.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: CD/P IC
2.18.3 Service designation: 135.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 290.325 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 263.025 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 354.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 379.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 133.675 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 120.35 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 124.85 MHz

2.18.1 Service designation: DEP/P IC
2.18.3 Service designation: 119.45 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 119.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: RTIS(120−300 WITHIN 25 NM)
2.18.3 Service designation: 125.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: APCH/S

2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: CD/P IC
2.18.3 Service designation: 135.35 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 290.325 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 263.025 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 322.3 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 354.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 379.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 133.675 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 120.35 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 124.85 MHz

2.18.1 Service designation: DEP/P IC
2.18.3 Service designation: 119.45 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 12. Magnetic variation: 5W
2.19.2 ILS identification: GEM
2.19.5 Coordinates: 25–47–11.28N / 80–16–32.41W
2.19.6 Site elevation: 7.7 ft

2.19.1 ILS type: Localizer for runway 12. Magnetic variation: 5W
2.19.2 ILS identification: GEM
2.19.5 Coordinates: 25–47–00.00N / 80–16–34.81W
2.19.6 Site elevation: 7.7 ft

2.19.1 ILS type: Glide Slope for runway 12. Magnetic variation: 5W
2.19.2 ILS identification: GEM
2.19.5 Coordinates: 25–47–49.35N / 80–17–59.90W
2.19.6 Site elevation: 6.3 ft

2.19.1 ILS type: Glide Slope for runway 30. Magnetic variation: 5W
2.19.2 ILS identification: DCX
2.19.5 Coordinates: 25–47–17.64N / 80–16–59.57W
2.19.6 Site elevation: 6.5 ft

2.19.1 ILS type: Localizer for runway 30. Magnetic variation: 5W
2.19.2 ILS identification: DCX
2.19.5 Coordinates: 25–47–59.88N / 80–18–13.04W
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: 25–47–57.77N / 80–18–14.51W
2.19.6 Site elevation: 7.3 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: ROY
2.19.5 Coordinates: 25–48–17.24N / 80–16–20.63W
2.19.6 Site elevation: 5.2 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: ROY
2.19.5 Coordinates: 25–48–14.77N / 80–16–20.62W
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: 25–48–00.00N / 80–18–16.47W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: CNV

2.19.5 Coordinates: 25−48−00.00N / 80−18−16.67W
2.19.6 Site elevation: 6.9 ft

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−16−00.00W
2.19.6 Site elevation: 5.7 ft

2.19.1 ILS type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−16−00.00W
2.19.6 Site elevation: 4.8 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−18−43.38W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: MFA
2.19.5 Coordinates: 25−48−00.00N / 80−17−54.81W
2.19.6 Site elevation: 4.1 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−18−13.77W
2.19.6 Site elevation: 7.1 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−18.83N / 80−11−42.26W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−18−14.94W
2.19.6 Site elevation: 5.8 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−16−22.51W
2.19.6 Site elevation: 5.5 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: VIN
2.19.5 Coordinates: 25−48−00.00N / 80−15−44.08W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−16.42N / 80−16−17.14W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−00.00N / 80−18−26.71W
2.19.6 Site elevation: 6.8 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−46−59.35N / 80−23−00.00W
2.19.6 Site elevation: 3.8 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−00.00N / 80−19−00.00W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 5W
2.19.2 ILS identification: BUL
2.19.5 Coordinates: 25−47−15.82N / 80−16−17.24W
2.19.6 Site elevation: 6.2 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25−47−11.73N / 80−16−45.40W
2.19.6 Site elevation: 4 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25−47−16.87N / 80−16−12.26W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA

2.19.5 Coordinates: 25–47–00.00N / 80–19–00.00W
2.19.6 Site elevation: 8.6 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 5W
2.19.2 ILS identification: MIA
2.19.5 Coordinates: 25–47–26.47N / 80–11–39.14W
2.19.6 Site elevation:

General Remarks:
CLOSED NON ENGINE AIRCRAFT.

AIRCRAFT WITH A WINGSPAN GREATER THAN 171 FT ARE PROHIBITED FROM TAXIING ON TAXIWAY P EAST OF TAXIWAY U. AIRCRAFT WITH A WINGSPAN GREATER THAN 143 FT ARE PROHIBITED FROM USING TAXIWAY AA.

ALL TURBOJET AIRCRAFT USE DISTANT NOISE ABATEMENT DEP PROFILE FROM ALL RUNWAYS EXCEPT A320, B727, B737–800, B767–400, AND DC9 WHICH SHOULD USE CLOSE–IN NOISE ABATEMENT ABATEMENT PROFILE.

BIRDS ON & IN THE VICINITY OF AIRPORT.

PRIOR PERMISSION REQUIRED 3 HRS PRIOR TO ALL ARRIVALS ON THE GENERAL AVIATION CENTER (GAC) RAMP 305–876–7550 CONTACT RAMP CONTROL UPON ARRIVAL ON FREQUENCY 131.600. AIRCRAFT WITH WINGSPAN GREATER THAN 78 FT ARE PROHIBITED FROM ENTERING THE GENERAL AVIATION AIRCRAFT RAMP.

ALL MEDICAL EMERGENCIES ARRIVALS, WITH THE EXCEPTION OF AIR AMBULANCE FLIGHTS, MUST SECURE DOORS UNTIL AIRCRAFT RESCUE AND FIRE FIGHTING IS ON SCENE.

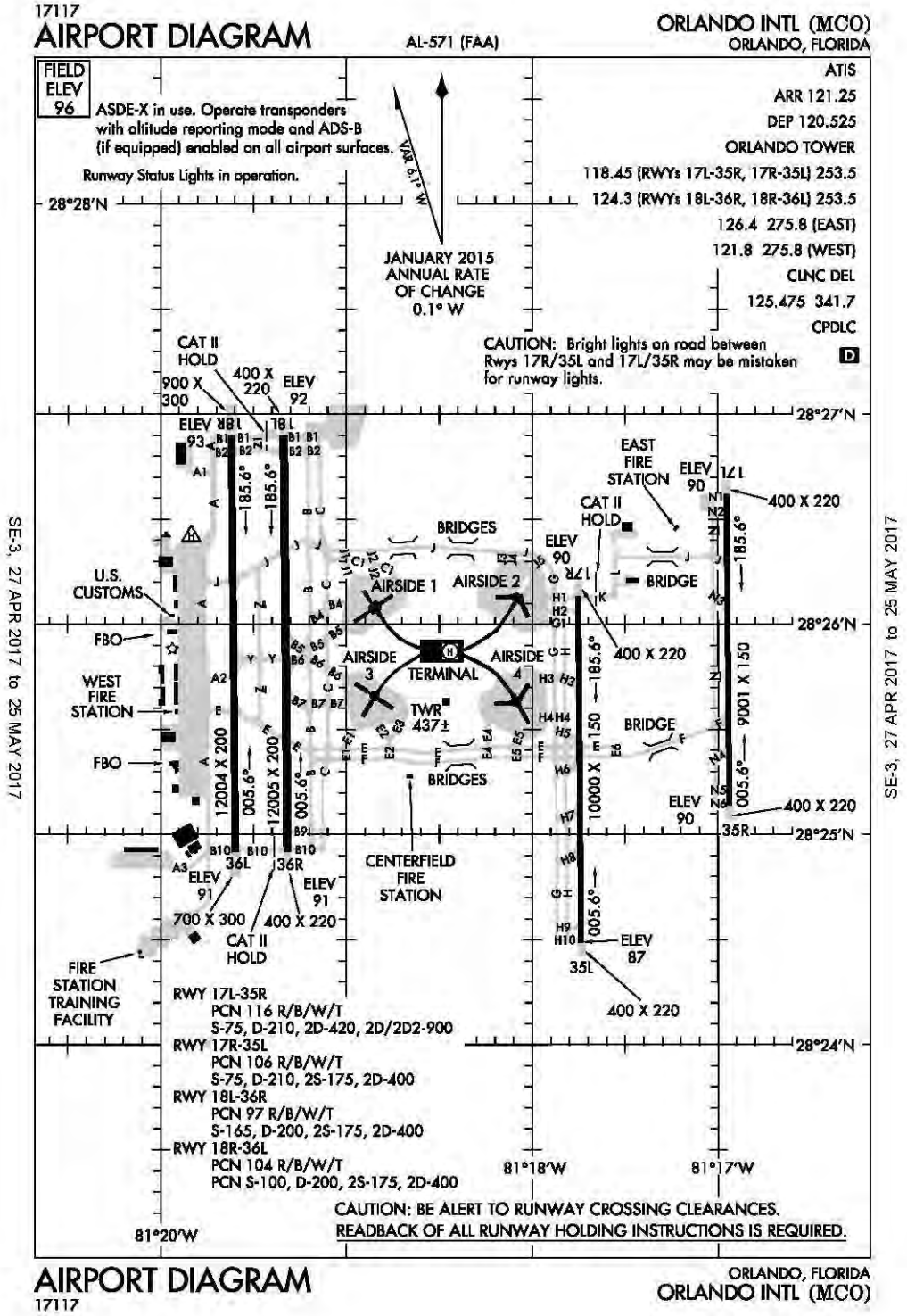
ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PRIOR PERMISSION REQUIRED FOR INBOUND MILITARY FLIGHTS 100 NAUTICAL MILE ON FREQ 130.5.

ALL DIVERSION CONTACT FREQ 130.5 UPON ARR.

B757, HEAVY AND SUPER AIRCRAFT ARE NOT AUTH INTERSECTION DEP FOR ANY RUNWAY UNLESS A PTN IS CLOSED OR UNUNSL.

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: 28–25–45.80N / 81–18–32.40W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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: 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: 28–26–53.86N / 81–19–37.11W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 94 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: 28–24–55.01N / 81–19–35.83W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 93 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: 28–26–00.00N / 81–17–45.17W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 90 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: 28–24–29.20N / 81–17–44.13W
2.12.6 Threshold elevation: 87 ft
2.12.6 Touchdown zone elevation: 88 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: 28–26–54.00N / 81–19–20.30W
2.12.6 Threshold elevation: 92 ft
2.12.6 Touchdown zone elevation: 96 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: 28–24–55.15N / 81–19–19.04W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 92 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: 28–26–37.31N / 81–16–57.29W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 90 ft

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: 28–25–00.00N / 81–16–56.38W
2.12.6 Threshold elevation: 90 ft
2.12.6 Touchdown zone elevation: 90 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 44 ft x 44 ft

AD 2.13 Declared distances

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004

2.13.4 Accelerate−stop distance available: 12004
2.13.5 Landing distance available: 12004

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004
2.13.4 Accelerate−stop distance available: 11621
2.13.5 Landing distance available: 11621

2.13.1 Designation: 17R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 12005
2.13.3 Takeoff 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 Takeoff run available: 12004
2.13.3 Takeoff distance available: 12004
2.13.4 Accelerate−stop distance available: 11601
2.13.5 Landing distance available: 11601

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 35R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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: 18R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 18L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: D−ATIS ARR
2.18.3 Service designation: 121.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: LCL/P (RYS 18L/36R & 18R/36L)
2.18.3 Service designation: 124.3 MHz

2.18.1 Service designation: AR OPS
2.18.3 Service designation: 148.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 341.7 MHz

2.18.1 Service designation: AR OPS
2.18.3 Service designation: 41.5 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 120.525 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 253.5 MHz

2.18.1 Service designation: LCL/P (RYS 17L/35R & 17R/35L)
2.18.3 Service designation: 118.45 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 125.475 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28–26–43.50N / 81–19–32.52W
2.19.6 Site elevation: 89 ft

2.19.1 ILS type: Middle Marker for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28–27–20.04N / 81–19–37.39W
2.19.6 Site elevation: 87.4 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28–24–42.58N / 81–19–35.70W
2.19.6 Site elevation: 86.8 ft

2.19.1 ILS type: Outer Marker for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28–33–00.00N / 81–19–38.75W
2.19.6 Site elevation: 103 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: TFE
2.19.5 Coordinates: 28–24–42.20N / 81–19–38.58W
2.19.6 Site elevation: 94.7 ft

2.19.1 ILS type: DME for runway 17R. Magnetic variation: 6W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28–24–18.95N / 81–17–47.08W
2.19.6 Site elevation: 86.4 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 6W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28–26–34.25N / 81–17–45.44W
2.19.6 Site elevation: 87.8 ft

2.19.1 ILS type: Localizer for runway 17R. Magnetic variation: 6W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28–24–18.77N / 81–17–44.03W
2.19.6 Site elevation: 81.6 ft

2.19.1 ILS type: Glide Slope for runway 17R. Magnetic variation: 6W
2.19.2 ILS identification: DIZ
2.19.5 Coordinates: 28–25–57.84N / 81–17–40.58W
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: 28–26–16.70N / 81–17–45.26W
2.19.6 Site elevation: 84.9 ft

2.19.1 ILS type: Localizer for runway 35L. Magnetic variation: 6W
2.19.2 ILS identification: DDO

2.19.5 Coordinates: 28–26–18.60N / 81–17–45.27W
2.19.6 Site elevation: 87.7 ft

2.19.1 ILS type: DME for runway 35L. Magnetic variation: 6W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28–26–18.39N / 81–17–48.15W
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: 28–24–39.53N / 81–17–39.76W
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: 28–24–20.53N / 81–17–44.04W
2.19.6 Site elevation: 82.1 ft

2.19.1 ILS type: Middle Marker for runway 35L. Magnetic variation: 6W
2.19.2 ILS identification: DDO
2.19.5 Coordinates: 28–24–00.00N / 81–17–43.86W
2.19.6 Site elevation: 82.4 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28–27–00.00N / 81–19–20.38W
2.19.6 Site elevation: 90.8 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28–25–00.00N / 81–19–23.63W
2.19.6 Site elevation: 87.7 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28–24–31.89N / 81–19–18.78W
2.19.6 Site elevation: 84.5 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28–24–46.65N / 81–19–18.94W
2.19.6 Site elevation: 86.6 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: OJP
2.19.5 Coordinates: 28–27–00.00N / 81–19–18.01W
2.19.6 Site elevation: 96.2 ft

2.19.1 ILS type: DME for runway 17L. Magnetic variation: 6W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28–24–57.99N / 81–16–51.74W
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: 28–26–27.05N / 81–16–52.59W
2.19.6 Site elevation: 94.4 ft

2.19.1 ILS type: Localizer for runway 17L. Magnetic variation: 6W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28–24–57.89N / 81–16–56.27W
2.19.6 Site elevation: 89.1 ft

2.19.1 ILS type: Middle Marker for runway 17L. Magnetic variation: 6W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28–26–59.77N / 81–16–57.52W
2.19.6 Site elevation: 89.1 ft

2.19.1 ILS type: Inner Marker for runway 17L. Magnetic variation: 6W
2.19.2 ILS identification: ARK
2.19.5 Coordinates: 28–26–45.82N / 81–16–57.40W
2.19.6 Site elevation: 89.6 ft

2.19.1 ILS type: DME for runway 35R. Magnetic variation: 6W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28–26–48.24N / 81–16–52.84W
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: 28–25–18.63N / 81–16–51.87W
2.19.6 Site elevation: 87.3 ft

2.19.1 ILS type: Localizer for runway 35R. Magnetic variation: 6W
2.19.2 ILS identification: CER

2.19.5 Coordinates: 28–26–47.61N / 81–16–57.40W
2.19.6 Site elevation: 89.6 ft

2.19.1 ILS type: Inner Marker for runway 35R. Magnetic variation: 6W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28–24–59.68N / 81–16–56.29W
2.19.6 Site elevation: 89.2 ft

2.19.1 ILS type: Middle Marker for runway 35R. Magnetic variation: 6W
2.19.2 ILS identification: CER
2.19.5 Coordinates: 28–24–45.67N
2.19.6 Site elevation: 81.1 ft

General Remarks:
BIRDS & DEER ON & IN THE VICINITY OF AIRPORT.

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.

WHEN OVERRUN LIGHTS ILS RUNWAY 7 AND MCO ILS RUNWAYS 17 & 18R SIMULTANEOUS OPERATIONS ARE CONDUCTED, ATC RADAR REQUIRED.

BRIGHT LIGHTS ON ROAD BETWEEN RUNWAY 17R/35L AND RUNWAY 17L/35R MAY BE MISTAKEN FOR RUNWAY LIGHTS.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

USE CAUTION IN VICINITY OF TAXIWAY ”A” ALONG WEST RAMP.

UNLESS ADV BY AUTOMATIC TERMINAL INFORMATION SERVICE, DEP FLIGHTS ON INITIAL CONTACT WITH GROUND CONTROL: AIRCRAFT ON WEST RAMP, AIRSIDE 1 & 3 (GATES 1–59) USE GROUND CONTROL 121.8. AIRCRAFT AT AIRSIDE 2 & 4 (GATES 60 AND HIGHER), USE GROUND CONTROL 126.4.

TAXIWAY J3 AND TAXIWAY J4 RESTRICTED TO WINGSPAN OF LESS THAN 118 FT.

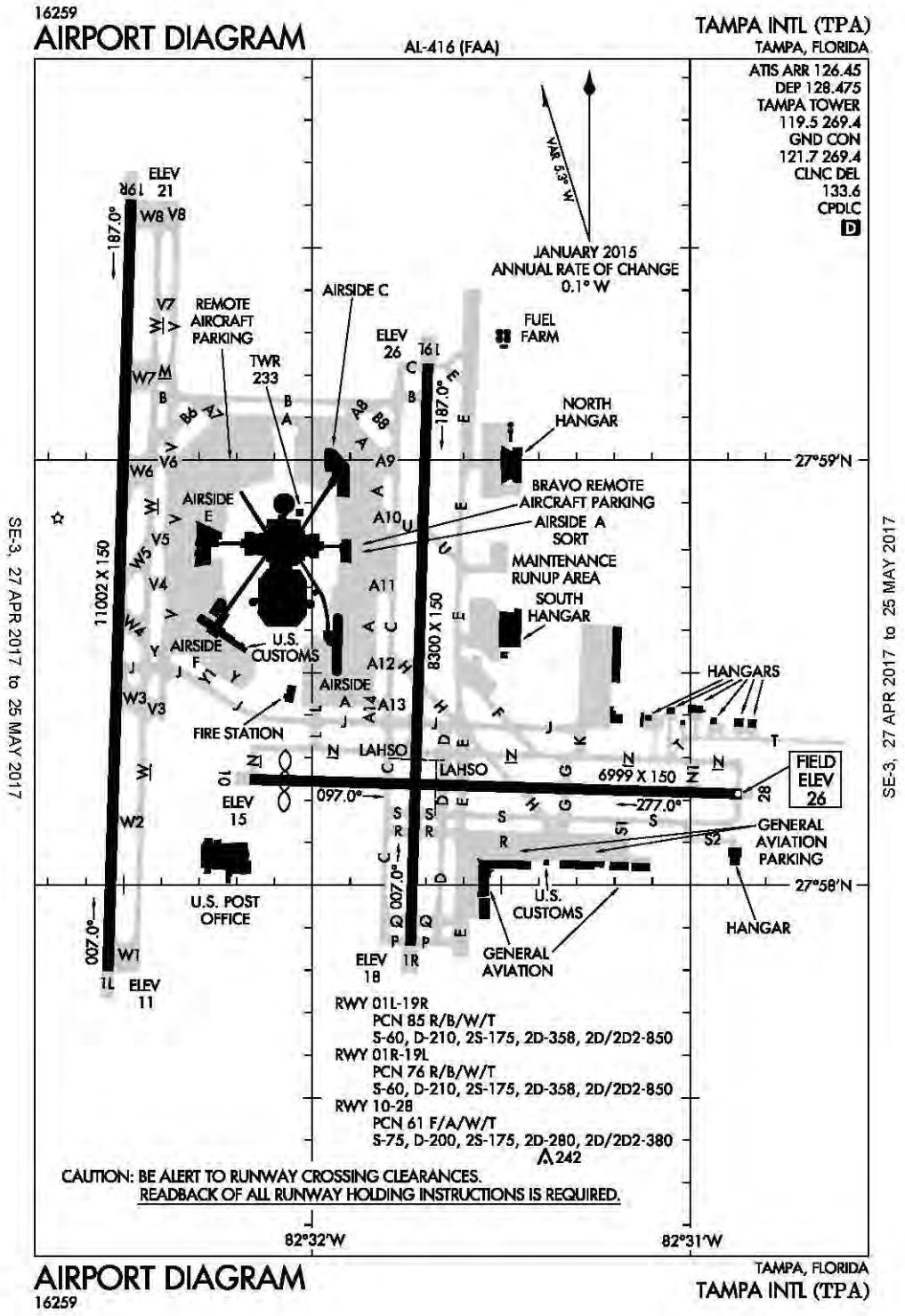
RUNWAY STATUS LIGHTS ARE IN OPERATION.

AIRCRAFT WITH WINGSPAN GREATER THAN 214 FT MUST ADHERE TO SPECIFIC RUNWAY AND TAXI ROUTES. CONTACT AIRFIELD OPERATIONS AT 407–825–2036 FOR DETAILS.

TAXIWAY A, SOUTH OF TAXIWAY A3 RESTRICTED TO WINGSPAN OF LESS THAN 118 FT. PRIOR PERMISSION REQUIREDUIRED FOR WINGSPAN 118 FT OR GREATER.

RUNWAY 17L–35R UNLIT 0400–1100Z.

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: 27–58–31.70N / 82–31–59.70W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Trees (26 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 301 ft from Centerline

AD 2.12 Runway physical characteristics

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: 27–58–14.99N / 82–32–00.00W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 22 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: 27–58–12.89N / 82–30–51.88W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 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: 27–57–47.86N / 82–32–32.48W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 ft

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: 27–59–36.74N / 82–32–28.78W
2.12.6 Threshold elevation: 21 ft
2.12.6 Touchdown zone elevation: 21 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: 27–57–51.52N / 82–31–44.37W
2.12.6 Threshold elevation: 18 ft
2.12.6 Touchdown zone elevation: 20 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: 27–59–13.66N / 82–31–41.57W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 ft

AD 2.13 Declared distances

2.13.1 Designation: 10
2.13.2 Takeoff run available: 6999
2.13.3 Takeoff 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 Takeoff run available: 6999
2.13.3 Takeoff distance available: 6999
2.13.4 Accelerate–stop distance available: 6501
2.13.5 Landing distance available: 6501

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002
2.13.4 Accelerate–stop distance available: 10800

2.13.5 Landing distance available: 10800

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002
2.13.4 Accelerate−stop distance available: 11002
2.13.5 Landing distance available: 11002

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 8300
2.13.3 Takeoff distance available: 8300
2.13.4 Accelerate−stop distance available: 8300
2.13.5 Landing distance available: 8300

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 8300
2.13.3 Takeoff distance available: 8300
2.13.4 Accelerate−stop distance available: 8300
2.13.5 Landing distance available: 8300

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Rwy 10 PAPI Unusable 8 Degrees Left And Right Of Rcl.

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 118.15 MHz

2.18.1 Service designation: FINAL−CTL IC
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 118.8 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 119.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 119.65 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.9 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.35 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 126.45 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.475 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: EMERG

2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: GND/P LCL/P
2.18.3 Service designation: 269.4 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 285.625 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 353.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 316.05 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 353.75 MHz

AD 2.19 Radio navigation and landing aids

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: 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: Glide Slope for runway 19R. Magnetic variation: 5W
2.19.2 ILS identification: JRT
2.19.5 Coordinates: 27–59–26.46N / 82–32–33.59W
2.19.6 Site elevation: 17.2 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 5W
2.19.2 ILS identification: JRT
2.19.5 Coordinates: 28–00–00.00N / 82–32–27.94W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27–51–40.24N / 82–32–44.87W
2.19.6 Site elevation: 5.8 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27–59–43.40N / 82–32–25.65W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27–59–44.79N / 82–32–28.50W
2.19.6 Site elevation: 20.6 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27–57–58.24N / 82–32–36.59W
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: 27–57–39.62N / 82–32–32.76W
2.19.6 Site elevation: 6.4 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS identification: AMP
2.19.5 Coordinates: 27–57–15.71N / 82–32–33.57W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27–57–40.97N / 82–31–44.73W
2.19.6 Site elevation: 13.7 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27–59–00.00N / 82–31–37.46W
2.19.6 Site elevation: 23.8 ft

2.19.1 ILS type: Outer Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 28–05–00.00N / 82–31–30.89W
2.19.6 Site elevation: 42.5 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27−59−40.39N / 82−31−40.66W
2.19.6 Site elevation: 29.4 ft

2.19.1 ILS type: Inner Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS identification: TPA
2.19.5 Coordinates: 27−59−23.66N / 82−31−41.23W
2.19.6 Site elevation: 25.7 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 5W
2.19.2 ILS identification: TWJ
2.19.5 Coordinates: 27−59−23.93N / 82−31−41.22W
2.19.6 Site elevation: 25.6 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 5W
2.19.2 ILS identification: TWJ
2.19.5 Coordinates: 27−59−22.98N / 82−31−38.43W
2.19.6 Site elevation: 35.9 ft

General Remarks:

RUNWAY 19L IS NOISE SENSITIVE TO TURBOJET DEPARTURES. RUNWAY 01R IS NOISE SENSITIVE TO TURBOJET ARRIVALS. PUBLISHED NOISE ABATEMENT PROCEDURES IN EFFECT.

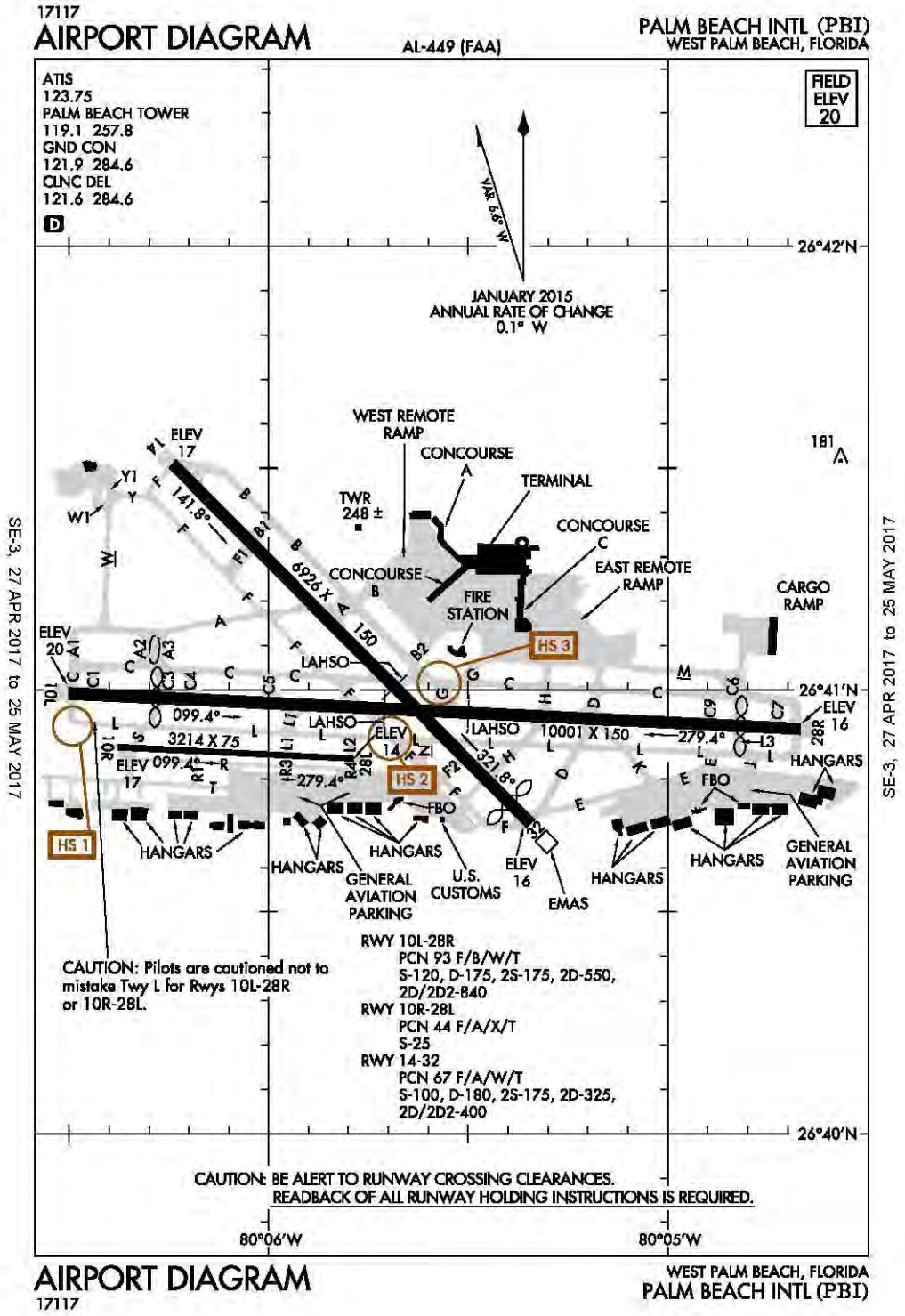
ONLY AIRCRAFT WITH PRIOR PERMISSION MAY USE TERMINAL APRON; ALL OTHERS USE GA APRON.

BIRD ACTIVITY ON AND IN VICINITY OF AIRPORT.

TAXIWAY RSTRS: AIRPLANE DESIGN GRP V OR LGR − TAXIWAY N WEST OF TAXIWAY L UNAVAILABLE. NORTH 1500 FT TAXIWAY E ALSO UNAVAILABLE FOR WINGSPAN GREATER THAN 171 FT UNLESS PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS.

TAXIWAY RSTRS: GRP IV AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT −− TAXILANE E SOUTH OF TAXIWAY S, AND TAXILANE R EAST OF TAXIWAY D ARE NON−MOVEMENT AREAS AND UNAVAILABLE WO PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS.

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: 26−40−59.40N / 80−05−44.10W
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: Bruce V Pelly
BLDG 846−PALM BEACH INTL
West Palm Beach, FL 33406
(561−471−7412)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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
2.6.4 Remarks: Index D ARFF Equipment Available

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Trees (84 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 150 ft from Centerline

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Road (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

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: 26−40−59.55N / 80−06−30.13W
2.12.6 Threshold elevation: 20 ft
2.12.6 Touchdown zone elevation: 16 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: 26−40−54.74N / 80−04−40.01W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 18 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: 26−40−52.28N / 80−06−22.64W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 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: 26−40−50.73N / 80−05−47.25W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 6926 ft x 150 ft
2.12.4 PCN: 67 F/A/W/T
2.12.5 Coordinates: 26−41−30.56N / 80−06−14.44W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 6926 ft x 150 ft
2.12.4 PCN: 67 F/A/W/T
2.12.5 Coordinates: 26−40−41.91N / 80−05−20.62W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 16 ft

AD 2.13 Declared distances

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8800

2.13.1 Designation: 28R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000

2.13.5 Landing distance available: 9189

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 3213
2.13.3 Takeoff distance available: 3213
2.13.4 Accelerate–stop distance available: 3213
2.13.5 Landing distance available: 3213

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 3213
2.13.3 Takeoff distance available: 3213
2.13.4 Accelerate–stop distance available: 3213
2.13.5 Landing distance available: 3213

2.13.1 Designation: 14
2.13.2 Takeoff run available: 6931
2.13.3 Takeoff distance available: 6931
2.13.4 Accelerate–stop distance available: 6000
2.13.5 Landing distance available: 6000

2.13.1 Designation: 32
2.13.2 Takeoff run available: 6931
2.13.3 Takeoff distance available: 6931
2.13.4 Accelerate–stop distance available: 6931
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: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 28R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 123.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: FINAL APCH
2.18.3 Service designation: 125 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: CLASS C /S
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 317.4 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 343.6 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 343.6 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 384.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Outer Marker for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−41−15.72N / 80−12−36.74W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: Localizer for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−40−54.24N / 80−04−28.61W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−40−55.98N / 80−06−00.00W
2.19.6 Site elevation: 14.5 ft

2.19.1 ILS type: Middle Marker for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−41−00.00N / 80−06−56.66W
2.19.6 Site elevation: 18 ft

2.19.1 ILS type: DME for runway 10L. Magnetic variation: 6W
2.19.2 ILS identification: PBI
2.19.5 Coordinates: 26−40−51.43N / 80−04−29.01W
2.19.6 Site elevation: 23.3 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 6W
2.19.2 ILS identification: PWB
2.19.5 Coordinates: 26−40−53.09N / 80−05−00.00W
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: 26−40−59.91N / 80−06−38.52W
2.19.6 Site elevation: 18.5 ft

General Remarks:
MIGRATORY BIRDS ON AND IN THE VICINITY OF AIRPORT.

NOISE ABATEMENT PROCEDURES IN EFFECT. MULTIENGINE FLIGHT TRAINING PROHIBITED SS TO SR SUN AND HOLIDAY; STRICT ENVIRONMENTAL OPERATING STAGE 2 AIRCRAFT 0300−1200Z CALL NOISE ABATEMENT OFFICER 561−471−7467.

BE ALERT; RUNWAYS 28L & 28R THRESHOLDS STAGGERED BY 5400 FT.

RUNWAY 10R/28L NON−AIR CARRIER AIRCRAFT ONLY.

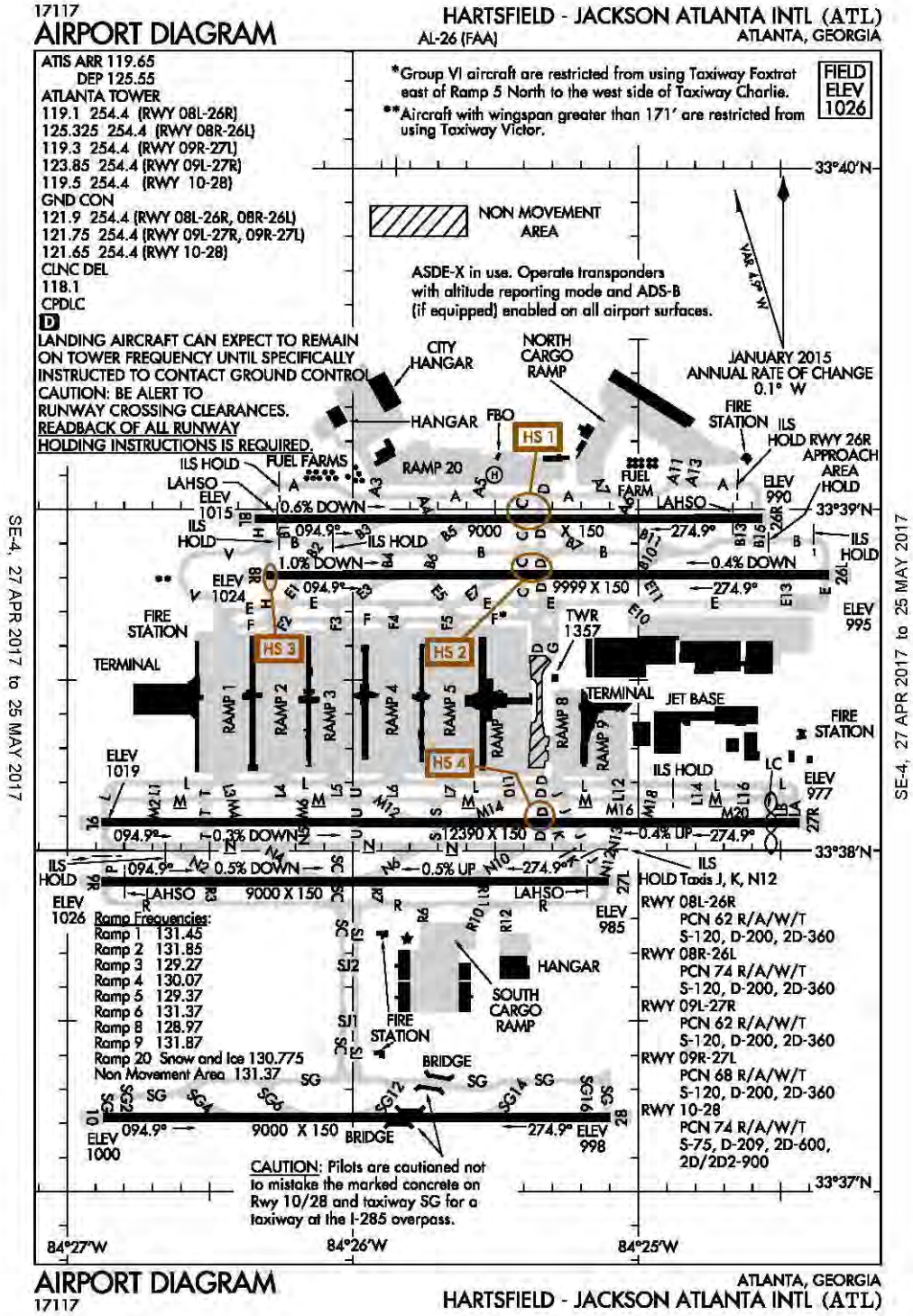
BE ALERT: TAXIWAY L IS LOCATED BETWEEN RUNWAYS 10L/28R & 10R/28L. TAXIWAY L IS WIDER AND LONGER THAN RUNWAY 10R/28L – DO NOT CONFUSE TAXIWAY L FOR RUNWAY. AIRCRAFT WITH WINGSPAN OF 118 FT OR GREATER IS PROHIBITED ON TAXIWAY L.

TAXIWAY R2 CLOSED.

NO AIRCRAFT WILL CROSS HOLD LINE WITHOUT AUTHORIZATION.

TAXIWAY E LIMITED TO WINGSPAN OF 108 FEET OR LESS.

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: 33−38−12.12N / 84−25−40.31W
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: Roosevelt Council Jr
PO BOX 20509
Atlanta, GA 30320
(404−530−6600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Other (108 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 09R
2.10.1.b Type of obstacle: Tower (88 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1000 ft from Centerline

2.10.1.a. Runway designation: 08L
2.10.1.b Type of obstacle: Sign (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 26R
2.10.1.b Type of obstacle: Ant (53 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 800 ft from Centerline

2.10.1.a. Runway designation: 08R
2.10.1.b Type of obstacle: Rr (64 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 26L
2.10.1.b Type of obstacle: Other (13 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 560 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Sign (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 770 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Tower (136 ft). Lighted
2.10.1.c Location of obstacle: 410 ft from Centerline

AD 2.12 Runway physical characteristics

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: 33−38−00.00N / 84−26−52.68W
2.12.6 Threshold elevation: 1019 ft
2.12.6 Touchdown zone elevation: 1019 ft
2.12.7 Slope: 0.3DOWN

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: 33−38−00.00N / 84−24−26.16W
2.12.6 Threshold elevation: 977 ft
2.12.6 Touchdown zone elevation: 985 ft
2.12.7 Slope: 0.4UP

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: 33–37–54.53N / 84–26–52.68W
2.12.6 Threshold elevation: 1026 ft
2.12.6 Touchdown zone elevation: 1026 ft
2.12.7 Slope: 0.4DOWN

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: 33–37–54.56N / 84–25–00.00W
2.12.6 Threshold elevation: 985 ft
2.12.6 Touchdown zone elevation: 999 ft
2.12.7 Slope: 0.5DOWN

2.12.1 Designation: H1
2.12.3 Dimensions: 52 ft x 52 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: 62 R/A/W/T
2.12.5 Coordinates: 33–38–58.32N / 84–26–20.49W
2.12.6 Threshold elevation: 1015 ft
2.12.6 Touchdown zone elevation: 1015 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33–38–58.35N / 84–24–34.03W
2.12.6 Threshold elevation: 990 ft
2.12.6 Touchdown zone elevation: 990 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: 33–38–48.43N / 84–26–18.10W
2.12.6 Threshold elevation: 1024 ft
2.12.6 Touchdown zone elevation: 1024 ft
2.12.7 Slope: 1DOWN

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: 33–38–48.46N / 84–24–19.83W
2.12.6 Threshold elevation: 995 ft
2.12.6 Touchdown zone elevation: 996 ft
2.12.7 Slope: 0.4DOWN

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: 33–37–12.98N / 84–26–52.36W
2.12.6 Threshold elevation: 1000 ft
2.12.6 Touchdown zone elevation: 1000 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: 33–37–13.03N / 84–25–00.00W
2.12.6 Threshold elevation: 998 ft
2.12.6 Touchdown zone elevation: 998 ft

AD 2.13 Declared distances

2.13.1 Designation: 09L
2.13.2 Takeoff run available: 12390
2.13.3 Takeoff distance available: 12390
2.13.4 Accelerate–stop distance available: 11730
2.13.5 Landing distance available: 11730

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 12390
2.13.3 Takeoff distance available: 12390
2.13.4 Accelerate–stop distance available: 12190
2.13.5 Landing distance available: 11690

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 8865
2.13.5 Landing distance available: 8865

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 8800
2.13.5 Landing distance available: 8800

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9999
2.13.3 Takeoff 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 Takeoff run available: 9999
2.13.3 Takeoff distance available: 9999
2.13.4 Accelerate−stop distance available: 9999
2.13.5 Landing distance available: 9999

2.13.1 Designation: 10
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 28
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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: 09L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 09R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 08L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI Rwy 26R Unusable Beyond 6 Degrees Left And 7 Degrees Right Of Rcl.

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: PAPI Rwy 26L Unusable Beyond 7 Degrees Left And Right Of Rcl.

2.14.1 Designation: 10
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 28
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 119.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 125.55 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 125.325 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 123.85 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 126.9 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 132.55 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 133.425 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 135.375 MHz

2.18.1 Service designation: LCL/P GND/P
2.18.3 Service designation: 254.4 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 09L. Magnetic variation: 5W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33–37–57.07N / 84–32–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 09L. Magnetic

variation: 5W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33–38–00.00N / 84–26–39.67W
2.19.6 Site elevation: 1016.6 ft

2.19.1 ILS type: Middle Marker for runway 09L. Magnetic variation: 5W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33–38–00.00N / 84–27–20.50W
2.19.6 Site elevation: 987 ft

2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 5W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33–38–00.00N / 84–24–19.08W
2.19.6 Site elevation: 949.5 ft

2.19.1 ILS type: DME for runway 09L. Magnetic variation: 5W
2.19.2 ILS identification: HZK
2.19.5 Coordinates: 33–38–00.00N / 84–24–44.38W
2.19.6 Site elevation: 978 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 5W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33–38–00.00N / 84–24–44.13W
2.19.6 Site elevation: 977.7 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 5W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33–38–00.00N / 84–23–54.35W
2.19.6 Site elevation: 954 ft

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 5W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33–38–00.00N / 84–27–00.00W
2.19.6 Site elevation: 1019.5 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 5W
2.19.2 ILS identification: AFA
2.19.5 Coordinates: 33–38–00.00N / 84–18–36.44W
2.19.6 Site elevation: 905 ft

2.19.1 ILS type: DME for runway 09R. Magnetic variation: 5W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33–37–56.63N / 84–24–54.24W
2.19.6 Site elevation: 995.5 ft

2.19.1 ILS type: Outer Marker for runway 09R. Magnetic variation: 5W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33–37–57.07N / 84–32–34.28W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 09R. Magnetic variation: 5W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33–37–54.57N / 84–24–52.61W
2.19.6 Site elevation: 976.2 ft

2.19.1 ILS type: Glide Slope for runway 09R. Magnetic variation: 5W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33–37–58.48N / 84–26–39.05W
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: 33–37–54.52N / 84–27–00.00W
2.19.6 Site elevation: 1029.2 ft

2.19.1 ILS type: Middle Marker for runway 09R. Magnetic variation: 5W
2.19.2 ILS identification: FUN
2.19.5 Coordinates: 33–37–55.49N / 84–27–19.57W
2.19.6 Site elevation: 992.6 ft

2.19.1 ILS type: Outer Marker for runway 27L. Magnetic variation: 5W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33–38–00.00N / 84–18–36.44W
2.19.6 Site elevation: 905 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 / 84–27–00.00W
2.19.6 Site elevation: 1015.7 ft

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 5W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33–37–58.50N / 84–25–18.96W
2.19.6 Site elevation: 986.7 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 5W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33–37–53.20N / 84–24–32.45W
2.19.6 Site elevation: 950.4 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 5W
2.19.2 ILS identification: FSQ
2.19.5 Coordinates: 33–37–53.70N / 84–27–00.00W
2.19.6 Site elevation: 1003.8 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: Middle Marker for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33–38–58.31N / 84–26–47.75W
2.19.6 Site elevation: 1024 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33–38–58.35N / 84–24–23.39W
2.19.6 Site elevation: 985.2 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33–39–00.00N / 84–26–00.00W
2.19.6 Site elevation: 1001.7 ft

2.19.1 ILS type: Outer Marker for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33–38–48.52N / 84–32–31.60W
2.19.6 Site elevation: 956 ft

2.19.1 ILS type: Inner Marker for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33–38–58.31N / 84–26–30.52W
2.19.6 Site elevation: 1017.7 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS identification: HFW
2.19.5 Coordinates: 33–39–00.00N / 84–24–24.70W
2.19.6 Site elevation: 977.2 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: Glide Slope for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33–39–00.00N / 84–24–47.63W
2.19.6 Site elevation: 983.8 ft

2.19.1 ILS type: Outer Marker for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33–38–43.61N / 84–18–39.88W
2.19.6 Site elevation: 834 ft

2.19.1 ILS type: Inner Marker for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33–38–58.36N / 84–24–22.79W

2.19.6 Site elevation:

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: Middle Marker for runway 26R. Magnetic variation: 5W
2.19.2 ILS identification: GXZ
2.19.5 Coordinates: 33−38−56.36N / 84−23−56.86W
2.19.6 Site elevation: 945 ft

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−48.46N / 84−24−00.00W
2.19.6 Site elevation: 986.8 ft

2.19.1 ILS type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−45.77N / 84−24−00.00W
2.19.6 Site elevation: 992.1 ft

2.19.1 ILS type: Outer Marker for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−48.52N / 84−32−31.60W
2.19.6 Site elevation: 956 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−49.69N / 84−26−48.58W
2.19.6 Site elevation: 1008 ft

2.19.1 ILS type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−52.40N / 84−26−00.00W
2.19.6 Site elevation: 1005 ft

2.19.1 ILS type: Inner Marker for runway 08R. Magnetic variation: 5W
2.19.2 ILS identification: ATL
2.19.5 Coordinates: 33−38−48.43N / 84−26−28.57W
2.19.6 Site elevation: 1033 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−48.45N / 84−26−30.17W
2.19.6 Site elevation: 1021 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−43.61N / 84−18−39.88W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−48.54N / 84−23−43.58W
2.19.6 Site elevation: 993.5 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−52.41N / 84−24−32.84W
2.19.6 Site elevation: 993.7 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS identification: BRU
2.19.5 Coordinates: 33−38−49.10N / 84−26−30.17W
2.19.6 Site elevation: 1030.3 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 5W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33−37−12.45N / 84−24−53.95W
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: 33–37–00.00N / 84–26–38.77W
2.19.6 Site elevation: 985.4 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 5W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33–37–13.02N / 84–24–53.96W
2.19.6 Site elevation: 991.1 ft

2.19.1 ILS type: Inner Marker for runway 10. Magnetic variation: 5W
2.19.2 ILS identification: OMO
2.19.5 Coordinates: 33–37–12.98N / 84–27–00.00W
2.19.6 Site elevation: 1001 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 5W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33–37–12.40N / 84–27–00.00W
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: 33–37–17.06N / 84–25–18.94W
2.19.6 Site elevation: 989.2 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 5W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33–37–12.98N / 84–27–00.00W
2.19.6 Site elevation: 994.5 ft

2.19.1 ILS type: Inner Marker for runway 28. Magnetic variation: 5W
2.19.2 ILS identification: PKU
2.19.5 Coordinates: 33–37–13.02N / 84–24–55.77W
2.19.6 Site elevation: 982.2 ft

General Remarks:
BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

PREFERENTIAL RUNWAY USE IN EFFECT, EXPECT TO USE RUNWAYS 08R/26L, 09L/27R FOR DEPS; RUNWAYS 08L/26R, 09R/27L ARE USED PRIMARILY FOR ARRIVALS.

RUNUPS ARE PERMITTED AT VARIOUS SITES; COORDINATE USE OF CITY FACILITIES, MOVEMENT AREAS, ALLOWABLE NON–MOVEMENT AREAS WITH DEPT OF AVIATION OPERATIONS, 404–530–6620; AND COORDINATE THE USE OF THE AIRLINES' FACILITIES WITH THEM.

NOISE & OPERATIONS MONITORING SYSTEM (NOMS) PROGRAM IN EFFECT; CALL THE ATLANTA DEPT OF AVIATION 770–43–NOISE OR 770–436–6473 FOR MORE INFORMATION.

ALL RUNWAYS, TOUCH AND GO OPERATIONS, LOW APPROACHES, AND PRACTICE INSTRUMENT APPROACHES NOT PERMITTED.

GROUP VI AIRCRAFT (LOCKHEED GALAXY C–5; ANTONOV AN–124 & AN–125) WITH A WINGSPAN OF GREATER THAN 214 FT ARE RESTRICTED FROM USING TAXIWAY F EAST OF RAMP 5 NORTH AND WEST OF TAXIWAY DIXIE.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FROM USING TAXIWAY V. AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE REQUIRED TO USE TAXI SPEEDS LESS THAN 15 MPH WHEN PASSING AIRCRAFT WITH WINGSPAN GREATER THAN 214FT ON TAXIWAY L/M (EAST OF L7).

RUNWAY 9L DEPARTURES CAN EXPECT INTERSECTION DEPARTURE FROM M2 WITH RUNWAY REMAINING 11,440 FT (TORA/TODA) AND 10,780 (ASDA).

ALL AIRCRAFT WITH WINGSPANS GREATER THAN 214 FT ARE REQUIRED TO USE TAXI SPEEDS NOT GREATER THAN 15 MPH ON TAXIWAYS A, L, M, AND SJ.

WHEN AIRCRAFT WITH WINGSPANS GREATER THAN 214 FT ARE PRESENT ON THE FIELD, ALL OTHER AIRCRAFT MUST ADHERE TO THE TAXIWAY CENTERLINE ON TAXIWAYS L AND M, TAXIWAYS E AND F, AND TAXIWAYS STRATOCUMULUS AND SJ BETWEEN SNOW GRAINS AND R DUE TO SEPARATION BETWEEN THE PARALLEL TAXIWAYS.

AIRCRAFT WITH WINGSPAN GREATER THAN 214 FT SHOULD EXPECT TO USE RUNWAYS 09L/27R AND 9R/27L.

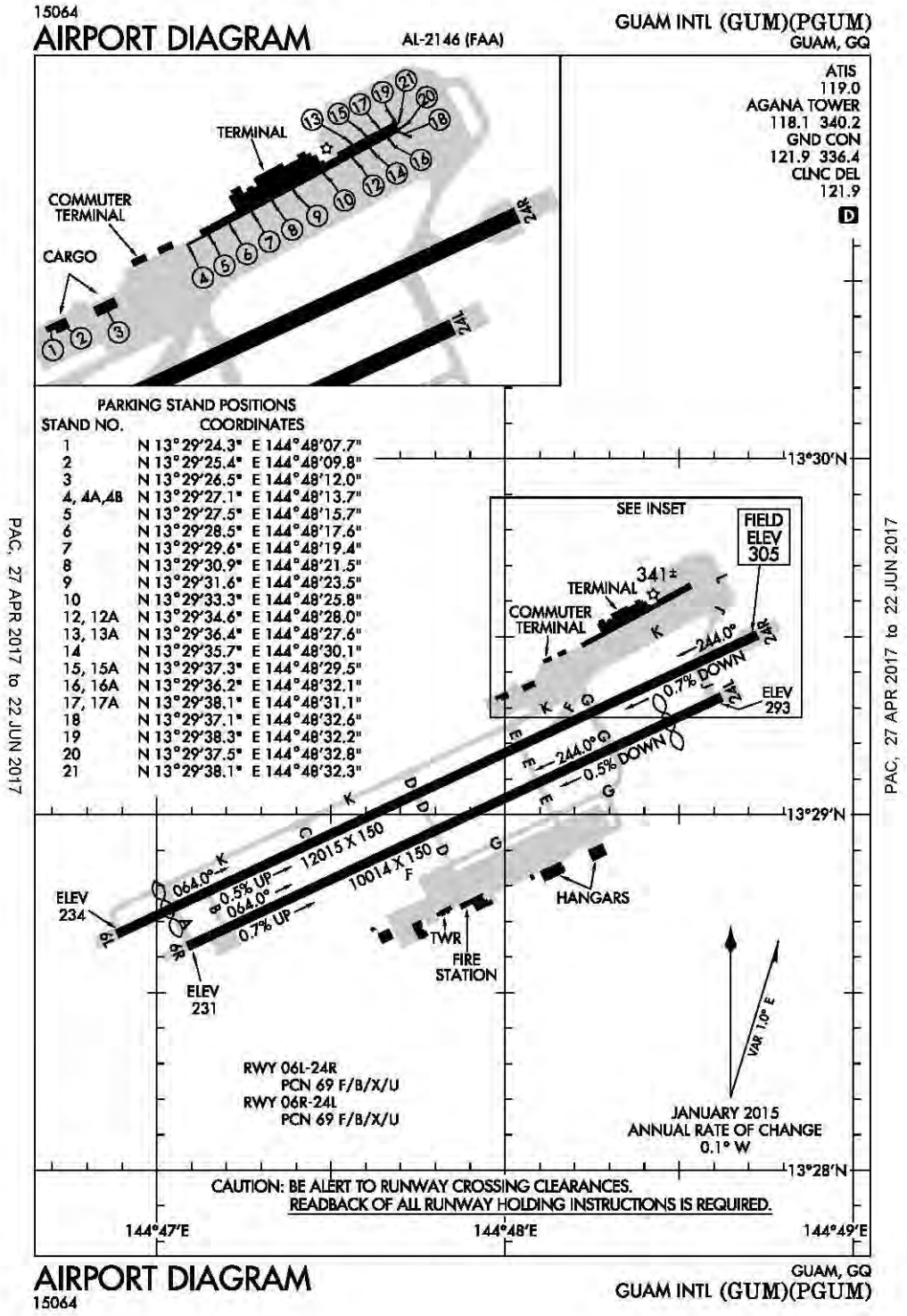
TWO AIRCRAFT WITH WINGSPANS GREATER THAN OR EQUAL TO 225 FT MAY NOT TAXI SIMULTANEOUSLY ON ADJACENT PARALLEL TAXIWAYS L/M EXCEPT WEST OF L7 AT SPEEDS LESS THAN 15 MPH.

NO AIRCRAFT WITH WINGSPAN GREATER THAN 213 FT MAY PASS ANOTHER AIRCRAFT WITH WINGSPAN GREATER THAN OR EQUAL TO 225 FT ON TAXIWAY L/M EAST OF L7.

NO AIRCRAFT WITH WINGSPAN GEATER THAN OR EQUAL TO 225 FT MAY TAXI ON TAXIWAY M BETWEEN L14 AND L16, TAXIWAY N BETWEEN P AND STRATOCUMULUS, AND TAXIWAY N BETWEEN U AND K.

TAXIWAY D IS REFERRED TO AS ”DIXIE”.

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: 13−29−00.00N / 144−47−49.68E
2.2.2 From City: 3 Miles NE Of Guam, GU
2.2.3 Elevation: 305.3 ft
2.2.5 Magnetic variation: 2E (2000)
2.2.6 Airport Contact: Charles H. Ada Ii
P.O. BOX 8770
Tamuning, GU 96931
(671−646−0300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 06L
2.10.1.b Type of obstacle: Tower (420 ft). Marked
2.10.1.c Location of obstacle: 1500 ft from Centerline

2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Tower (420 ft). Marked
2.10.1.c Location of obstacle: 1500 ft from Centerline

2.10.1.a. Runway designation: 24L
2.10.1.b Type of obstacle: Hill (220 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1200 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 06L
2.12.2 True Bearing: 65
2.12.3 Dimensions: 12015 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−28−39.87N / 144−46−53.15E
2.12.6 Threshold elevation: 234 ft
2.12.6 Touchdown zone elevation: 240 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 245
2.12.3 Dimensions: 12015 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13−29−30.31N / 144−48−43.47E
2.12.6 Threshold elevation: 305 ft
2.12.6 Touchdown zone elevation: 305 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: 13−28−37.78N / 144−47−00.00E
2.12.6 Threshold elevation: 231 ft
2.12.6 Touchdown zone elevation: 258 ft
2.12.7 Slope: 0.7UP

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: 13−29−19.82N / 144−48−37.29E
2.12.6 Threshold elevation: 293 ft
2.12.6 Touchdown zone elevation: 293 ft
2.12.7 Slope: 0.5DOWN

AD 2.13 Declared distances

2.13.1 Designation: 06L
2.13.2 Takeoff run available: 12015
2.13.3 Takeoff 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 Takeoff run available: 12015
2.13.3 Takeoff 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 Takeoff run available: 10014
2.13.3 Takeoff 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 Takeoff run available: 10014
2.13.3 Takeoff 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: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 24R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 06R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 24L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: PAPI Rwy 24L Unusable Beyond 5 Degrees Left Of Centerline .

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13–29–34.72N / 144–48–53.10E
2.19.6 Site elevation: 312.6 ft

2.19.1 ILS type: Glide Slope for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13–28–53.08N / 144–47–00.00E
2.19.6 Site elevation: 246 ft

2.19.1 ILS type: Outer Marker for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13–26–41.70N / 144–42–29.30E
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13–28–33.30N / 144–46–31.80E
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 06L. Magnetic variation: 2E
2.19.2 ILS identification: GUM
2.19.5 Coordinates: 13–29–38.08N / 144–48–51.50E
2.19.6 Site elevation: 331.8 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 2E
2.19.2 ILS identification: AWD
2.19.5 Coordinates: 13–28–38.00N / 144–47–15.40E
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

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

General Remarks:
1000’ OVERRUN S END & 450’ OVERRUN N END RUNWAY 6L–24R.

FOR PARKING INFORMATION ALL AIRCRAFT CONTACT RAMP CONTROL. ALL AIRCRAFT DEP TERMINAL PARKING CONTACT RAMP CONTROL FOR ENGINE START AND PUSHBACK.

TRANSIENT AIRCRAFT PROVIDE 24 HRS ADVANCE INFORMATION TO EXECUTIVE MANAGER GUAM INTL AIRPORT AUTHORITY; 1–671–642–4455 MON–FRI 0800–1700 OR FAX 1–671–646–8823.

EFFECTIVE RUNWAY GRADIENT RUNWAY 06L 0.46% UP NE; RUNWAY 24R 0.70% DOWN SW; RUNWAY 06R 0.80 % UP NE; RUNWAY 24L 0.52% DOWN SW.

LIGHTED TOWER 780 FT 1.3 NAUTICAL MILE ENE OF RUNWAY 24L THRESHOLD.

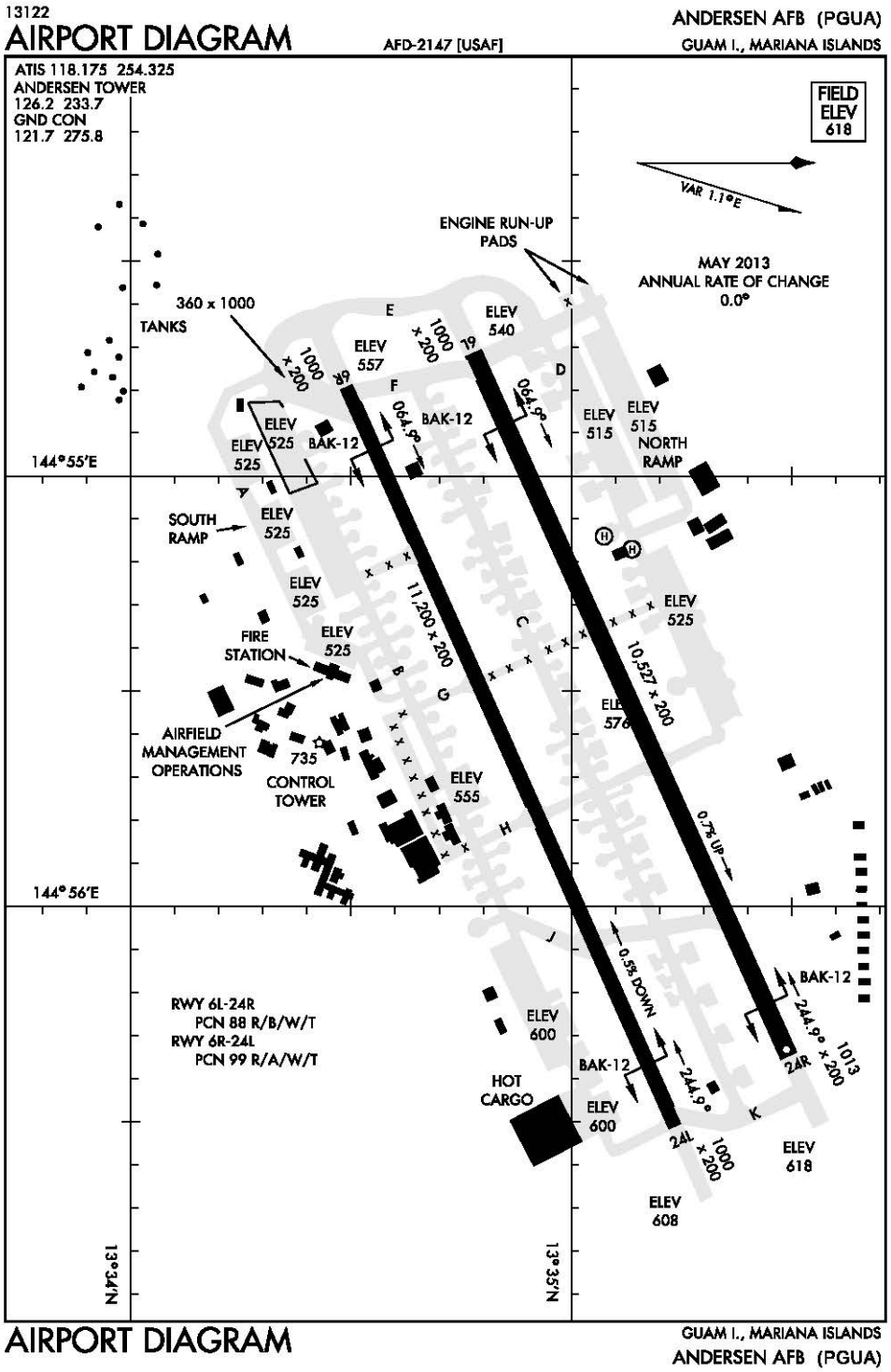
RISING TERRAIN 75 FT FROM RUNWAY 24L THRESHOLD 140 FT EAST OF CENTERLINE EXTENDED +8 FT.

DEP VFR AIRCRAFT MAINT RUNWAY HEADING UNTIL PAST DEP END OF RUNWAY AND REACHING 1000 FT AGL; RIGHT PATTERN 24L/R DO NOT EXCEED 1500 FT AGL IN TRAFFIC PATTERN.

CLASS III AIRCRAFT ARE PROHIBITED FROM MAKING ANY TURNS ONTO OR OFF TAXIWAY GOLF (SOUTH) WHILE UTILIZING TAXIWAY ECHO.

THE FIRST 500 FT OF THE LEFT SHOULDER OF RUNWAY 24L IS NOT VISIBLE FROM THE TOWER. PILOTS ARE ADVISED TO CAUTION FOR ANY PRESENCE OF WILDLIFE IN THAT AREA.

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: 13−35−00.00N / 144−55−48.21E
2.2.2 From City: 0 Miles N Of Andersen,Mariana Island, GU
2.2.3 Elevation: 618 ft
2.2.5 Magnetic variation: 2E (1980)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 – 2.3.11: 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: None
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Tower−L. Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 06R
2.12.3 Dimensions: 11200 ft x 200 ft
2.12.4 PCN: 111 R/B/W/T
2.12.5 Coordinates: 13−34−31.17N / 144−54−59.38E
2.12.6 Threshold elevation: 557 ft
2.12.6 Touchdown zone elevation: 557 ft

2.12.1 Designation: 24L
2.12.3 Dimensions: 11200 ft x 200 ft
2.12.4 PCN: 111 R/B/W/T
2.12.5 Coordinates: 13−35−16.58N / 144−56−43.00E
2.12.6 Threshold elevation: 608 ft
2.12.6 Touchdown zone elevation: 608 ft

2.12.1 Designation: 06L
2.12.3 Dimensions: 10527 ft x 200 ft
2.12.4 PCN: 111 R/B/W/T
2.12.5 Coordinates: 13−34−49.28N / 144−54−56.32E
2.12.6 Threshold elevation: 540 ft
2.12.6 Touchdown zone elevation: 540 ft

2.12.1 Designation: 24R
2.12.3 Dimensions: 10527 ft x 200 ft
2.12.4 PCN: 111 R/B/W/T
2.12.5 Coordinates: 13−35−31.93N / 144−56−33.74E
2.12.6 Threshold elevation: 618 ft
2.12.6 Touchdown zone elevation: 618 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06R
2.14.2 Approach lighting system: ALSF1: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category 1 configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24L
2.14.2 Approach lighting system: SALS: Short approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Mod 1300’ Length.

2.14.1 Designation: 06L
2.14.2 Approach lighting system: SALS: Short approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24R
2.14.2 Approach lighting system: ALSF1: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category 1 configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.19 Radio navigation and landing aids
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 / 144−55−00.00E
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: 13–34–25.70N / 144–54–46.90E
2.19.6 Site elevation: 568.8 ft

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 / 144–54–42.50E
2.19.6 Site elevation: 533.6 ft

General Remarks:
FREQUENT RAIN SHOWERS OF SHORT DURATION, EXPECT WET RUNWAY BRAKING ACTION.

HAZARDOUS AIR TURBULENCE FINAL APPROACH RUNWAYS 24L/24R. NO VISIBILITY REFERENCE AVAILABLE ON NIGHT TAKE-OFF BEYOND END RUNWAY 6.

ARRESTING GEAR BAK–12 RUNWAYS 06L & 06R 30 MIN NOTICE REQUIRE.

AREA BETWEEN 1000' ROLL BAR AND THU LIGHT RUNWAY 06R AND 06L UNLIGHTED. LAST 642' PRIOR TO THU LIGHT 24R UNLIGHTED.

MAINT AVAILABLE 0100–0400 WEEKDAY ONLY; CLOSED WEEKEND & HOLIDAY.

BASE OPERATIONS V366–4188; FAX V366–6217.

TAXIWAY B AND C BETWEEN TAXIWAY J AND K CLOSED DUE TO CONSTRUCTION.

NO ARRESTING GEAR MARKERS LOCATED ON THE LEFT SIDE OF ALL APPROACH END BARRIERS.

RESTRICTED: BRAKING ACTION ON BOTH RUNWAYS MAY BE LESS THAN EXPECT DUE TO RUBBER BUILD–UP; PROBABILITY OF HYDROPLANING EXISTS.

RESTRICTED: PRIOR PERMISSION NOT REQUIRED FOR AIR MOBILITY COMMAND MSN. ALL AEROMEDICAL EVACUATION MISSIONS ARE REQUIRED TO CONTACT AMCC (DSN 366–2961, C671–366–2961) BY ANY MEANS AVAIL 3 HRS PRIOR TO ARR. ALL AIR MOBILITY COMMAND AIRCRAFT REQUIRE TO MAKE UHF CALL 30 MIN PRIOR ARR.

MISC: AIRFIELD MANAGEMENT HAS NO COMSEC STORAGE AVAILABLE FOR TRANSIENT AIRCREWS. TRANSMIT AIRCREWS CAN STORE COMSEC AT 36WG CIRCULAR POLARIZATION; AIR MOBILITY COMMAND AIRCREWS CAN STORE COMSEC AT AMCC.

MISC: ALL NON–AMC AIRCREWS INTENDING TO REMAINING OVERNIGHT MUST CHECK INTO AIRFIELD MANAGEMENT OPERATIONS AND PROVIDE POC INFORMATION UPON ARRIVAL.

MISC: BASE WX STATION PROVIDES CONTINUOUS 24-HOUR SERVICE OBSN, LIMITED WX BRIEF SUPPORT. WX OBSERVERS VIEW OBSTRUCTED BY BUILDINGS N–SSW. REMOTE BRIEF AVAILABLE CONTINUOUS 24-HOUR SERVICE FOR USN/USMC FR FWCAD PH AT DSN 315–449–8333/7950.

RESTRICTED: ALL NON–AMC AIRCRAFT CONTACT 36 WG COMMAND POST 90 MIN OUT AND AT 30 MIN OUT PRIOR TO ARR.

MISC: AIRCRAFT EXCEEDING AIRFIELD WEIGHTS MUST REQUEST WEIGHT BEARING CAPACITY WAIVER WITH 24 HR NOTICE TO AIRFIELD OPERATIONS TO PROCESS ANY APPROVALS NEEDED. IF REQUESTS

ARE NOT MADE WITHIN 24 HRS EXPECT DELAYS.

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 LOCATED 317' FROM RUNWAY CENTERLINE, 217' FROM RUNWAY EDGE, MAX HEIGHT 8'. NO ARRESTING–GEAR MARKER LOCATED ON LEFT SIDE OF ALL APPROACH END BARRIERS.

RESTRICTED: PRIOR PERMISSION REQUIRED DSN 366–4188/1010.

MISC: ATTENTION: 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 AIRCRAFT LANDING TUE–FRI AND 72 HR IN ADVANCE FOR AIRCRAFT LANDING SAT–MON. DUR HOLIDAY, ADD 2 HR TO COORD TIME.

RESTRICTED: RESTRICTIONS TO FLIGHT OPERATIONS DUR EA BIRD WATCH CONDITION. MODERATE: NO TOUCH AND GO LANDING. RESTRICTED LOW APPROACH NO LOWER THAN 200' OR AS DETERMINED BY SOF. SEVERE: RESTRICTED LOW APPROACH NO LOWER THAN 200' OR AS DETERMINED BY SOF. EMERGENCY LANDING AND 36 OG/CC APPROVE DEP ONLY. PHASE I: PHASE I:1 APR – 31 JUL. PHASE II: 1 AUG – 31 AT SEA.

RESTRICTED 1 OF 2: THERE WILL BE NO OVERFLIGHT OF MARIANA CROW TERRITORIES BELOW 1,000 FT AGL FROM SEP–MAY. OVERFLIGHT BELOW 1,000 FT AGL IS ALLOWED BETWEEN JUNE AND AUG, THE CROW NON–BREEDING SEASON.

RESTRICTED 2 OF 2: CROW NESTING TERRITORIES ARE IDENT BY DEPARTMENT OF AQUATIC AND WILDLIFE RESOURCES (DAWR) AND UPDATES WILL BE PROVIDED TO 36 CES/CEV AND 36TH OSS STAFFS.

MISC: RUNWAY 06L AND 06R UNDERRUNS 1000' AVAILABLE FOR TWY/TKOF. RUNWAY 24R UNDERRUN AVAILABLE 500' FOR TAXI/TKOF.

CAUTION: USE EXTREME CAUTION FOR EXTV UAS OPERATIONS IN VICINITY OF ANDERSEN AFB.

NS ABATEMENT: QUIET HR 1200–2000Z (2200–0600L) DAILY. NO AFTERBURNER, OR OVER FLIGHT OF BASE AND LOCAL POPULATED AREAS. OTHER RESTRICTIONS BY NOTAM.

CAUTION: 47' TACAN ANTENNAE LOCATED 1,300 FT NE OF RUNWAY 24L & 1,300 FT SE OF RUNWAY 24R THRESHOLDS.

CAUTION: NONSTANDARD DSPLCD THRESHOLD MARKINGS FOR RUNWAYS 06R, 06L, AND 24R.

SERVICE–FLUID: C–5 NITROGEN SERVICE CAPABILITY UNAVAILABLE.

CAUTION: FAA SIZE 1 SIGNS LOCATED 74.3 FT FR TAXIWAY EDGES TO ACCOMMODATE B–52.

SERVICE–LGT: AIRPORT BEACON 763 FT MSL LOCATED 1.4 NAUTICAL MILE SSW OF AIRFIELD.

MISC: PAVEMENT PRIOR TO RUNWAY 06R AND RUNWAY 06L THRESHOLDS AVAILABLE FOR TAKE-OFF RUN WHEN NECESSARY FOR MSN ACCOMPLISHMENT.

CAUTION: POTENTIAL FOR REDUCED BRAKING CAPABILITY AND/OR DIREC CONTROL EXISTS, PARTICULARLY DURING WET RESCUE SUB-CENTER FOR RUNWAY 06L.

MISC: PARK SPOT S74 CLOSED. ANDERSEN AFB DOES NOT HAVE CAPABILITY TO STORE REFRIGERATED CARGO.

RESTRICTED: AIRCRAFT MUST ADHERE TO PRIOR PERMISSION REQUIRED ARR +/– 30 MIN. AIRCRAFT

WITH WINGSPANS GREATER THAN 261’ NOT AUTHORIZED.

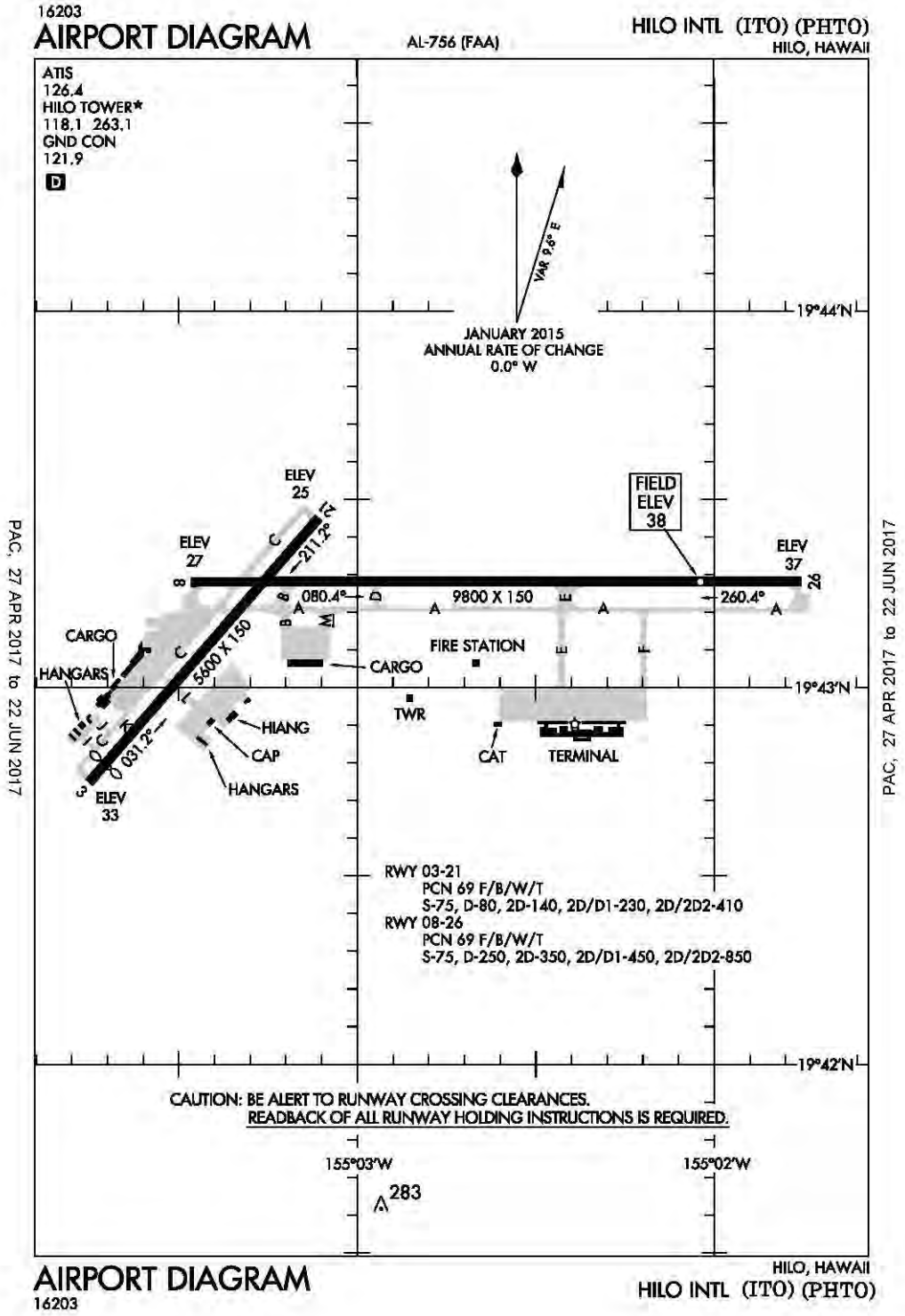
RESTRICTED: ALL OPR MUST OBTAIN APPROVAL FR GROUND AND AMOPS PRIOR TO ENGINE START/RUN.

RESTRICTED: PRIOR PERMISSION REQUIRED MUST BE MADE 24 HR PRIOR EXCEPT FOR WX–EVAC OPERATIONS.

RESTRICTED: PRIOR PERMISSION REQUIRED NOT ISSUED MORE THAN 7 DAYS PRIOR TO ARR/DEP.

MISC: ”NO VHF CAPABILITIES WITH AIRFIELD MANAGEMENT.”

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: 19–43–12.95N / 155–02–54.49W
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 Operational hours

2.3.1 – 2.3.11: ALL Months, ALL Days, 0700–2030 Hours

AD 2.4 Handling services and facilities

2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Tree (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Tree (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

2.10.1.a. Runway designation: 03
2.10.1.b Type of obstacle: Fence (7 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 21
2.10.1.b Type of obstacle: Pole (37 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 20 ft from Centerline

AD 2.12 Runway physical characteristics

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: 19–43–16.93N / 155–03–27.99W
2.12.6 Threshold elevation: 27 ft
2.12.6 Touchdown zone elevation: 30 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: 19–43–16.92N / 155–01–45.41W
2.12.6 Threshold elevation: 37 ft
2.12.6 Touchdown zone elevation: 38 ft

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: 19–42–44.96N / 155–03–44.78W
2.12.6 Threshold elevation: 33 ft
2.12.6 Touchdown zone elevation: 34 ft
2.12.7 Slope: 0.1DOWN

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: 19–43–26.99N / 155–03–00.00W
2.12.6 Threshold elevation: 25 ft
2.12.6 Touchdown zone elevation: 31 ft
2.12.7 Slope: 0.1UP

AD 2.13 Declared distances

2.13.1 Designation: 03
2.13.2 Takeoff run available: 5600
2.13.3 Takeoff 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 Takeoff run available: 5251
2.13.3 Takeoff distance available: 5251
2.13.4 Accelerate–stop distance available: 5510
2.13.5 Landing distance available: 5510

AD 2.14 Approach and runway lighting

2.14.1 Designation: 08
2.14.2 Approach lighting system: Omnidirectional ap-

proach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: PAPI Rwy 08 Unusable Beyond 3.0 Nm

2.14.1 Designation: 26
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 03
2.14.4 Visual approach slope indicator system: 4−box VASI on left
2.14.10 Remarks: VASI Usable Dist Limited To 4 Nm From Threshold Due Obstruction.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 126.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 263.1 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 323 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 120.25 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−16.93N / 155−03−38.78W
2.19.6 Site elevation: 25.8 ft

2.19.1 ILS type: DME for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−13.74N / 155−03−39.51W
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: 19−43−20.89N / 155−01−58.10W
2.19.6 Site elevation: 32.5 ft

2.19.1 ILS type: Middle Marker for runway 26. Magnetic variation: 11E
2.19.2 ILS identification: ITO
2.19.5 Coordinates: 19−43−16.90N / 155−01−00.00W
2.19.6 Site elevation: 26 ft

General Remarks:
RUNWAY 08 PAVED 1325’ MARKED BY CHEVRONS, UNUSABLE FOR LANDING/TAKEOFF/OVERUN/STY; CANNOT BE USED IN COMPUTING TAKE-OFF DATA.

ATCT CONTROLS ENTRY/EXIT TRAFFIC ON TAXIWAYS F&E TO EAST TERMINAL RAMP.

181’ LIGHTED SMOKE STACK 1/2 STATUTE MILE SOUTH OF FIELD.

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSIENT PARKING.

BE ALERT OCCASIONAL BIRD FLOCKS ON AIRPORT AND IN FLIGHT ACROSS RUNWAY 08/26 AND 03/21.

(A70A) JET FUEL AVAILABLE MON−SAT 0800−1700 CALL (808) 935−6881/6122 OR 961−6601.

(E93) NO MARKED PAD, HELICOPTER OPER FROM FBO HANGER AREA.

DIVISION 1.1, 1.2, 1.3 EXPLOSIVES PROHIBITED.

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSPORTATION OF DIVISION 1.4 EXPLOSIVES AND HAZARDOUS MATERIAL IN OR OUT OF AIRPORT.

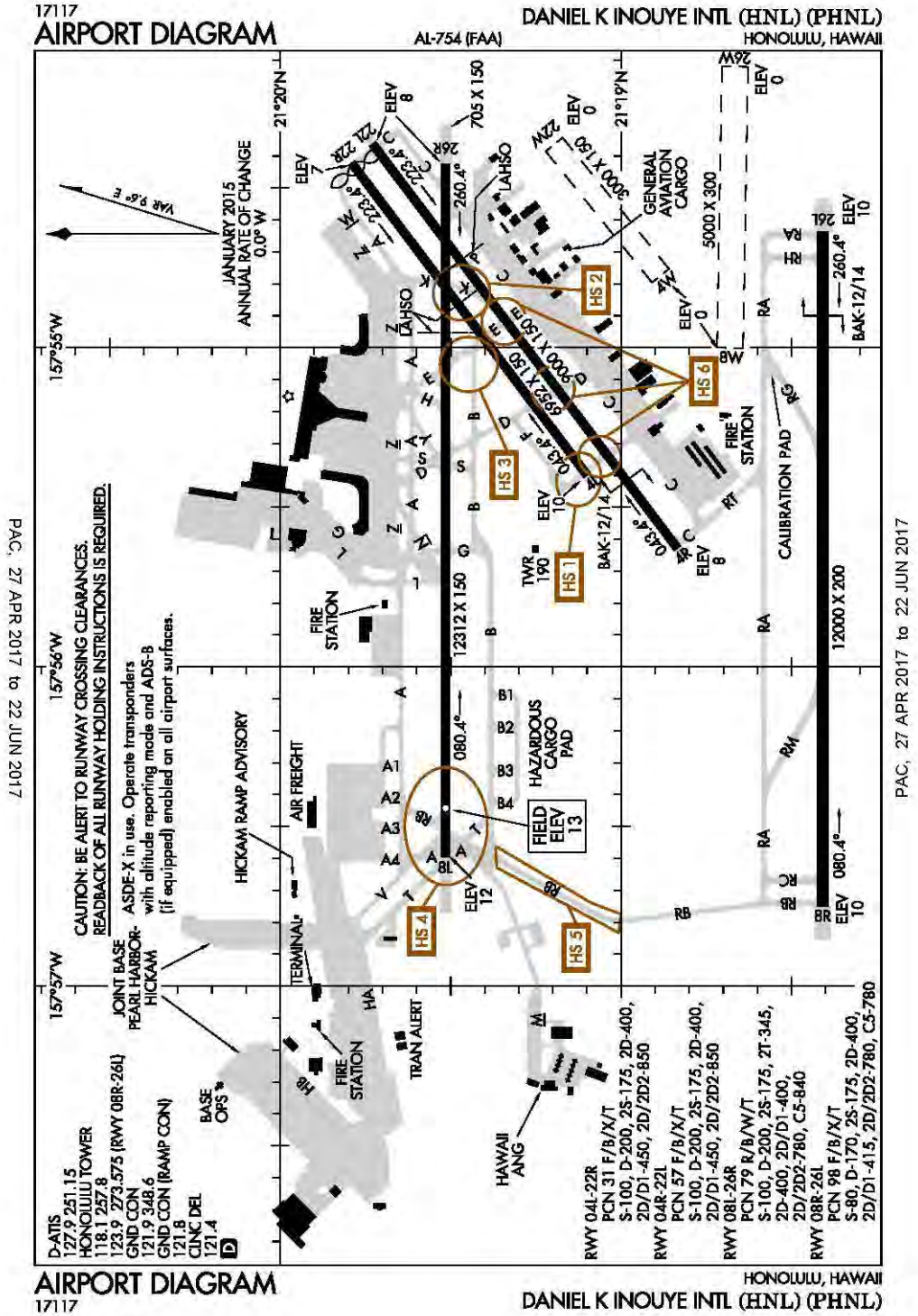
NOISE ABATEMENT: AVOID OVERFLIGHT OF NOISE SENSITIVE RESIDENTIAL AREAS N, W AND SW OF AIRPORT.

RUNWAY 3/21 CLOSED TO TURBINE AIRCRAFT 1800–0600.

RUNWAY 08/26 SINGLE–BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 450,000 LBS.

RUNWAY 03/21 SINGLE–BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 230,000 LBS.

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: 21–19–00.00N / 157–55–12.95W
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 Operational hours

2.3.1 – 2.3.11: 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: 100,80,A,A1+,B
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 26R
2.10.1.b Type of obstacle: Road (15 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Stack (74 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 475 ft from Centerline

2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Tree (20 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 200 ft from Centerline

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Ant (50 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 20 ft from Centerline

AD 2.12 Runway physical characteristics

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: 21–19–30.88N / 157–56–35.66W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 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: 21–19–30.88N / 157–54–25.43W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 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: 21–18–50.10N / 157–55–37.68W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 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: 21–19–43.76N / 157–54–21.65W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 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: 21–18–24.49N / 157–56–45.06W
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: 21–18–24.49N / 157–54–38.15W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

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: 21−19−00.00N / 157−55−23.95W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 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: 21−19−47.45N / 157−54−25.22W
2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 04W
2.12.2 True Bearing: 51
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.5 Coordinates: 21−18−53.09N / 157−54−46.44W
2.12.6 Threshold elevation: 0 ft

2.12.1 Designation: 22W
2.12.2 True Bearing: 231
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.5 Coordinates: 21−19−11.80N / 157−54−21.78W
2.12.6 Threshold elevation: 0 ft

2.12.1 Designation: 08W
2.12.2 True Bearing: 91
2.12.3 Dimensions: 5000 ft x 300 ft
2.12.5 Coordinates: 21−18−40.85N / 157−55−00.00W
2.12.6 Threshold elevation: 0 ft

2.12.1 Designation: 26W
2.12.2 True Bearing: 271
2.12.3 Dimensions: 5000 ft x 300 ft
2.12.5 Coordinates: 21−18−39.98N / 157−54−00.00W
2.12.6 Threshold elevation: 0 ft

AD 2.13 Declared distances
2.13.1 Designation: 08L
2.13.2 Takeoff run available: 12300
2.13.3 Takeoff 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 Takeoff run available: 12300
2.13.3 Takeoff distance available: 12300
2.13.4 Accelerate−stop distance available: 12300
2.13.5 Landing distance available: 12300

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 8937
2.13.5 Landing distance available: 8937

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 6952
2.13.3 Takeoff 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 Takeoff run available: 6952
2.13.3 Takeoff distance available: 6952
2.13.4 Accelerate−stop distance available: 6952
2.13.5 Landing distance available: 6952

AD 2.14 Approach and runway lighting
2.14.1 Designation: 08L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Rwy 26R PAPI Unusable Beyond 1.5 Nm From Thr

2.14.1 Designation: 04R

2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 22L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Rwy 22L PAPI Unusable Beyond 2 Nm.

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 6–box VASI on left
2.14.10 Remarks: Rwy 08R VASI Upper GA 3.25 Degrees Threshold Crossing Height 96 Ft; Lower GA 3.00 Degrees Threshold Crossing Height 52 Ft.

2.14.1 Designation: 26L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Rwy 26L PAPI Aligned 05 Degrees L Of Rwy Centerline . Rwy 26L PAPI Unusablee Beyond 5 Degrees R Of Rwy Centerline .

2.14.1 Designation: 04L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 121.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: HONOLULU RAMP ADVISORY
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: MOLOKAI SID
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: PALAY SID
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 127.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: PTD
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: HICKAM ADVSY RAMP
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: CP
2.18.3 Service designation: 141.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 269 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 281.4 MHz

2.18.1 Service designation: AS ASIGNED
2.18.3 Service designation: 285.4 MHz

2.18.1 Service designation: ANG–OPNS
2.18.3 Service designation: 293.7 MHz

2.18.1 Service designation: SAC–OPNS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 317.6 MHz

2.18.1 Service designation: MOLOKAI SID
2.18.3 Service designation: 317.6 MHz

2.18.1 Service designation: PALAY SID
2.18.3 Service designation: 317.6 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 317.6 MHz

2.18.1 Service designation: AS ASIGNED
2.18.3 Service designation: 338.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 372.2 MHz

2.18.1 Service designation: COMD POST
2.18.3 Service designation: 292.5 MHz

2.18.1 Service designation: SHAKA OPS
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: SHAKA OPS
2.18.3 Service designation: 349.4 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 251.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 239.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: HICKAM ADVSY RAMP
2.18.3 Service designation: 254.4 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−30.88N / 157−54−14.75W
2.19.6 Site elevation: 5.6 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−26.67N / 157−56−24.53W
2.19.6 Site elevation: 6.7 ft

2.19.1 ILS type: Middle Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−31.00N / 157−57−10.30W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−29.70N / 158−02−55.90W
2.19.6 Site elevation: 42 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 11E
2.19.2 ILS identification: HNL
2.19.5 Coordinates: 21−19−27.88N / 157−54−17.17W
2.19.6 Site elevation: 20 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 04R. Magnetic variation: 11E
2.19.2 ILS identification: IUM
2.19.5 Coordinates: 21−19−47.86N / 157−54−11.08W
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 / 157−55−26.90W
2.19.6 Site elevation: 5.9 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 11E
2.19.2 ILS identification: IUM
2.19.5 Coordinates: 21−18−33.00N / 157−55−59.70W
2.19.6 Site elevation: 4 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 11E
2.19.2 ILS identification: EPC
2.19.5 Coordinates: 21−19−35.07N / 157−54−28.29W

2.19.6 Site elevation: 6.7 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 11E

2.19.2 ILS identification: EPC
2.19.5 Coordinates: 21–19–36.96N / 157–54–25.90W
2.19.6 Site elevation: 21 ft

General Remarks:
REMAIN AT LEAST 1 MILE OFF SHORE OF WAIKIKI DIAMOND HEAD KOKO HEAD & EWA BEACH. ARR RUNWAY 08L; FLY ILS APPROACH PROC OR A CLOSE–IN BASE LEG REMAINING OVER CENTER OF PEARL HARBOR CHANNEL. ARR 26L/R; RNM AT TRAFFIC PATTERN ALTITUDES AS LONG AS POSSIBLE BEFORE BEGINNING DESCENT FOR LANDING.

RUNWAY 04R/22L DC10 450000+; L–1011 450000+; RUNWAY 04L/22R DC10 450000; L–1011 450000+; RUNWAY 08L/26R DC10 400000; L–1011 410000; RUNWAY 08R/26L DC10 415000; L–1011 400000.

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSPORATION OF CLASS A OR B EXPLOSIVES IN AND/OR OUT OF HNL.

DUE TO NON–VISIBILITY TOWER UNABLE TO DETERMINE IF THE FOLLOWING AREAS ARE CLEAR OF OBSTRUCTIONS AND/OR TRAFFIC: PORTIONS OF TAXIWAY RB BETWEEN TAXIWAY B & RUNWAY 08R; PORTIONS OF INTER–ISLAND AIRCRAFT PARKING RAMP.

MILITARY: PRIOR PERMISSION REQUIRED ALL AIRCRAFT UNITS PLANNING TO STAGE OPERATIONS FROM HICKAM AFB MUST CONTACT 15 OSS/OSX DSN 315–449–1596/1597 AT LEAST 60 DAYS PRIOR TO ARRIVAL.

PERSONNEL AND EQUIPMENT WORKING 600–1300 FT EAST RUNWAY 22L & 22R THRESHOLD, 0700–1530 MON–FRI.

DUE TO LOCATION OF ATCT, CONTROLLERS UNABLE TO DETERMINE WHETHER AIRCRAFT ARE ON CORRECT FINAL APPROACH TO RUNWAYS 04L–04R AND 22L–22R.

TAXIWAYS G AND L BETWEEN TAXIWAY A AND INTER–ISLAND RAMP CLOSED TO WIDE–BODIED AND 4–ENGINE TURBO–JET AIRCRAFT UNDER POWER WITHOUT PRIOR PERMISSION FROM AIRPORT OPERATIONS MANAGER (808) 836–6428 MON–FRI 0745–1630.

RUNWAYS CLOSED 1730–1930 EVERY MONTH AS FOLLOWS; RUNWAY 04R/22L FIRST TUE; RUNWAY 08R/26L SECOND TUE; AND RUNWAY 08L/26R THIRD TUE.

CAUTION: DURING PERIODS OF REPEATED PRECIPITATION ANTICIPATE WET RUNWAY CONDTIONS, IF CURRENT CONDITIONS REQUIRE CONFIRMATION CONTACT HONOLULU TOWER ON INITIAL CONTACT.

CAUTION: RECREATIONAL BOATING ACTIVITIES ON AND IN THE VICINITY OF WATERWAYS.

MILITARY: ALL AIRCRAFT INBOUND TO HICKAM SHOULD ADDRESS FLIGHT PLAN TO PHIKYXYX.

MILITARY: ALL MILITARY AIRCRAFT WITH VIP CODE 7 OR ABOVE CONTACT 15WG COMMAND POST OR

RELAY THRU HF/SSB AIRWAY 1 HR OUT TO CONFIRM BLOCKTIME.

TRAFFIC PATTERN OVERHEAD ALTITUDE 2000 FT, RESTRICTED TO HIANG AIRCRAFT.

MILITARY: ALL MILITARY AIRCRAFT REQUIRE CUSTOMS/AGRICULTURE/IMIGRATION INSPECTION MUST CONTACT 15WG COMMAND POST OR IF AIR MOBILITY COMMAND CONTACT HICKAM AMCC, NOT LATER THAN 3 HRS PRIOR TO ARR WITH DEPARTURE LOCATION, ESTIMATE BLOCK TIME, NR OF AIRCREW, CIV/MIL PASSENGER, FOREIGN NATIONALS, AND DV CODES.*

RUNWAYS 04W/22W AND 08W/26W RECREATIONAL BOATING ACTIVITIES ON AND IN THE VICINITY OF WATERWAYS.

BIRD STRIKE HAZARD ALL RUNWAYS.

MILITARY ARRESTING GEAR: HOOK MB100(B) LOCATED 200 FT FROM THRESHOLD RUNWAY 26R.

MILITARY: TO MINIMIZE FOREIGN OBJECT DAMAGE POTENTIAL, ALL AIRCRAFT SHOULD USE MINIMUM THRUST, ESPECIALLY OUTBOARD ENGINES, WHEN TAXIING PAST THE F−22 ALERT FACILITY ON TAXIWAY T.

MILITARY CAUTION: FOREIGN OBJECT DAMAGE HAZARD EXISTS ON ALL MOVEMENT AREAS E OF TAXIWAY S. FIGHTER AIRCRAFT EXERCISE EXTREME CAUTION WHEN TAXIING.

MILITARY CAUTION: A FOREIGN OBJECT DAMAGE HAZARD EXISTS ON ALL TAXIWAYS AND RUNWAYS BUT ESPECIALLY ON RUNWAY 4L/22R AND TAXIWAYS NORTH OF RUNWAY 8L/26R.

MILITARY CAUTION: NO FIGHTER TRANSIENT SUPPORT AVAILABLE IN ACCORDANCE WITH AREA CONTROL CENTER LSET FLASH SAFETY 06−02. TRANSIENT FIGHTER UNITS SHOULD PROVIDE THEIR OWN MAINTENANCE SUPPORT.

MILITARY RESTRICTED: UPON ARRIVAL, CREWS WILL PROCEED DIRECTLY TO COMMAND POST (BLDG 2050) AND COMPLETE AN OUTBOUND SETUP SHEET TO FACILITATE DEPARTURE REQUIREMENTS.

MILITARY/COMMUNICATIONS: BEDTIME (ALL CORONET W TANKERS USE 311.0 FOR TANKER−FIGHTER INTER−PLANE ON LAUNCH DAY. AFTER DUTY HR DSN 448−8888 613AOC/AMD, FLIGHT MGMT).

MILITARY MISC (1 OF 2): HICKAM BASE WX STATION OPEN MON−FRI 1400Z−0800Z; CLOSED WEEKENDS/HOL EXCEPT DUR LOCAL FLYING, AS MANNING PERMITS.

MILITARY MISC (2 OF 2 CONT'D): LIMITED WX BRIEF SUPPORT.REMOTE FLIGHT WX BRIEFINGS CONTACT 17TH WX SQUALL CONTINUOUS 24-HOUR SERVICE, DSN 315−449−7950/8333, FAX DSN 315−449−8336; 2 HR PRIOR NOTICE REQUIRE FOR TIMELY BRIEF.OFFICIAL OBSN TAKEN BY FAA. COOPERATIVE WX WATCH PROCEDURES DO NOT EXIST BETWEEN WX AND ATC.

MILITARY MISC: NO COMSEC MATERIAL AVAILABLE THRU HICKAM AIRFIELD OPERATIONS. TRANSIENT AIRCREWS SHOULD PLAN TO ARR WITH APPROPRIATE AMOUNT OF COMSEC TO COMPLETE ENTIRE MSN.

MILITARY REMARKS: SEE FLIGHT INFORMATION PUBLICATION AP/3 SUPPLEMENTARY AIRPORT INFORMATION, ROUTE AND AREA RESTRICTED, AND OAKLAND FIR FLIGHT HAZARD.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

MILITARY MISC: AIRFIELD OPERATIONS DSN 449−0046/0048 FAX DSN 449−7624.

MILITARY RESTRICTED: WIDE BODY AND 4 ENGINE TURBO−JETS LANDING ON RUNWAY 04R ROLL TO END OF RUNWAY, NO LEFT TURN AT TAXIWAY K WITHOUT TOWER APPROVAL. TAXIWAY K NOT A HIGH SPEED EXIT TAXIWAY. TAXIWAY RA HOLD SHORT APPROACH ZONE RUNWAY 04L/R AT HOLD LINE. TAXIWAY P CLOSED TO AIRCRAFT OVER 12,500 LB.

MILITARY SERVICE−A−GEAR: RUNWAY 4R/22L AND 8R/26L SURFACE GROOVED WITHIN 10 FT OF A−G SYSTEM. POTENTIAL FOR FIGHTER AIRCRAFT TAIL HOOK SKIP EXISTS.

MILITARY MISC 1 OF 2: DUE TO SENSITIVITIES OF CITIZENS, FIGHTER AIRCRAFT AND WATER−AUGMENT-

ED AIRCRAFT DEP ONLY AUTHORIZED FR 1700–0700Z MON–SAT, AND 1800–0700Z SUN AND HOLIDAY. ALL REQ FOR WAIVERS WILL BE SENT TO THE 15/OG/CC AT LEAST 5 WORKING DAYS IN ADVANCE.

MILITARY MISC 2 OF 2: WAIVERS WILL BE GRANTED ON EXTREME NECESSARY. IF SHORT NOTICE MSN ESSENTIAL WAIVERS ARE NECESSARY, CONTACT 15OG/CC BY TELEPHONE THRU 15 WG COMMAND POST(15 WG/CP). 15 WG COMMAND POST WILL PASS APPROVAL TO HICKAM FLIGHT SERVICE AND HICKAM RAMP ADVISORY.

MILITARY TRANSIENT ALERT: 15 WG CAN PROVIDE EQUIPMENT BUT CREWS MUST PROVIDE OWN PERS WHEN NEEDED.

MILITARY RESTRICTED: JBPH–H IS PRIOR PERMISSION REQUIRED TO ALL NON–TFWC MSN, AIR MOBILITY COMMAND TRAINING MSN AND KC–135 8 UNABLE & 8 EN MSN CALL 735TH MINIMUM OBSTACLE CLEARANCE AT DSN (315) 499–6970 FOR PRIOR PERMISSION REQUIRED. ALL AIR MOBILITY COMMAND PRIOR PERMISSION REQUIRED WILL BE COORD MON–FRI 1700–0400Z ONLY. ALL NON–AMC AIRCRAFT SUCH AS FOREIGN, SISTER SERVICE, TRANSIENT AIRCRAFT OR KC–135 AND, QDN, QEN, PEN, KEN, CJZ, DV1, DV7, DC5, AND C–130 MSN MUST CONTACT 15 OSS/OSA (AMOPS) AT DSN (315) 449–0046 FOR PRIOR PERMISSION REQUIRED. ALL PRIOR PERMISSION REQUIRED WILL BE APPROVED NO EARLIER THAN 72 HR BUT NO LATER THAN 24 HR PRIOR.

MILITARY RESTRICTED: ALL TRANSIENT AIRCRAFT NOT ON AN AMC/TWCF MSN AND HOME STATION AIRCRAFT 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).

MILITARY RESTRICTED: MILITARY AIRCRAFT OPR DUR BIRD WATCH CONDITION MODERATE (INITIAL TAKE-OFF OR FULL STOP LANDING ONLY, NO MULTIPLE IFR/VFR APCH) AND SEVERE (TKOF AND LANDING PROH WO 15 OG/CC APPROVAL OR 154 OG/CC APPROVAL FOR HIANG ACFT) CONTACT HIK RAMP, PILOT TO DISPATCH, 15 WG COMMAND POST, 735 AIR MOBILITY COMMAND COMMAND POST, 154 WG COMMAND POST FOR CURRENT CONDITION.

ALL JET AIRCRAFT CONTACT RAMP CONTROL PRIOR TO ENGINE START AT GATE OR HARD STAND.

CRANE 290 FT AGL APPROX 2,600 FT NORTH RUNWAY 08L, 2,500 FT WEST INTERMITTENT ISLAND TERMINAL 0630 – 1730 DAILY.

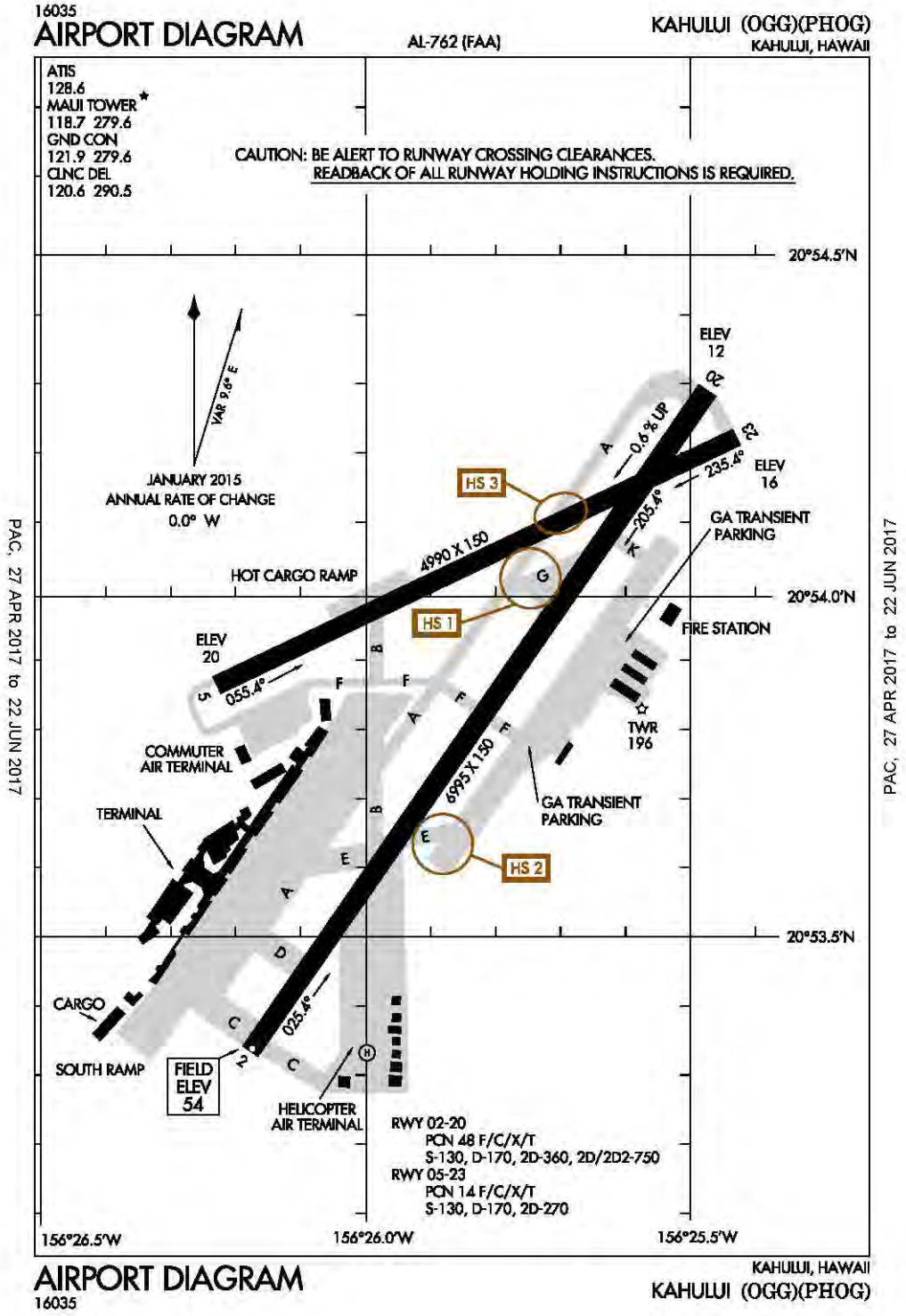
TAXIWAY K NOT A HIGH SPEED EXIT TAXIWAY. WIDE BODY AND 4 ENGINE TURBOJETS LANDING ON RUNWAY 04R ROLL TO END OF RUNWAY, NO LEFT TURN AT TAXIWAY K WO APPROVAL.

APRON TAXILANE 2 EAST END 360 FT CLOSED.

APRON TAXILANE 6 BETWEEN TAXIWAY C AND SOUTH RAMP CLOSED EXCEPT GA/FIXED WING LOADING/UNLOADING ONLY.

MILITARY SERVICE–FUEL: A++ (MIL; AVAILABLE H24).

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: 20–53–55.14N / 156–25–49.65W
2.2.2 From City: 3 Miles E Of Kahului, HI
2.2.3 Elevation: 53.5 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 Operational hours
2.3.1 – 2.3.11: 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,A
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 02
2.10.1.b Type of obstacle: Stack (198 ft). Lighted
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 20
2.10.1.b Type of obstacle: Bldg (5 ft). Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

2.10.1.a. Runway designation: 05
2.10.1.b Type of obstacle: Trees (31 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 23
2.10.1.b Type of obstacle: Pole (35 ft). Not Lighted or Marked

AD 2.12 Runway physical characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 35
2.12.3 Dimensions: 6995 ft x 150 ft
2.12.4 PCN: 48 F/C/X/T
2.12.5 Coordinates: 20–53–20.90N / 156–26–10.75W
2.12.6 Threshold elevation: 54 ft
2.12.6 Touchdown zone elevation: 54 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 215
2.12.3 Dimensions: 6995 ft x 150 ft
2.12.4 PCN: 48 F/C/X/T
2.12.5 Coordinates: 20–54–17.71N / 156–25–28.47W
2.12.6 Threshold elevation: 12 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: 20–53–52.88N / 156–26–13.56W
2.12.6 Threshold elevation: 20 ft
2.12.6 Touchdown zone elevation: 20 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: 20–54–13.75N / 156–25–25.85W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 17 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 125 ft x 125 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 02
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–box VASI on left

2.14.1 Designation: 20
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 05
2.14.4 Visual approach slope indicator system: 4–box VASI on left
2.14.10 Remarks: VASI Unusable Beyond 4 Nm From Threshold Due To Rapidly Rising Terrain.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P

2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 120.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 128.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 290.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC

2.18.3 Service designation: 322.4 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 225.4 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−54−25.92N / 156−25−22.36W
2.19.6 Site elevation: 8.3 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 / 156−25−59.23W
2.19.6 Site elevation: 47.7 ft

2.19.1 ILS type: Middle Marker for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−52−59.70N / 156−26−26.50W
2.19.6 Site elevation: 66 ft

2.19.1 ILS type: Outer Marker for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−48−13.30N / 156−29−59.30W
2.19.6 Site elevation: 39 ft

2.19.1 ILS type: DME for runway 02. Magnetic variation: 11E
2.19.2 ILS identification: OGG
2.19.5 Coordinates: 20−54−27.37N / 156−25−23.81W
2.19.6 Site elevation: 5.4 ft

General Remarks:

570’ LIGHTED TOWER APPROXIMATE 3 MI. W.

24 HRS PRIOR PERMISSION REQUIRED FOR DIVISION 1.1,1.2,1.3 EXPLOSIVES AND 4 HRS PRIOR PERMISSION REQUIRED FOR OTHER HAZARDOUS CARGO IN/OUT OF AIRPORT; CONTACT (808) 872−3830 0745−1630 OTHER TIMES (808) 872−3888.

RAMP AREA E SIDE RUNWAY 02 UNDER STATE AUTHORITY. FAA NOT RESPONSIBLE FOR DIRECTION & CONTROL GROUND TRAFFIC IN AREA.

MIGRATORY BIRD ACTIVITY BELOW 1500 FT WITHIN 5 NAUTICAL MILE RADIUS OF AIRPORT DURING AUG−MAY.

MILITARY HELICOPTER OPERATIONS RESTRICTED TO THE SW CORNER OF HOT CARGO APRON (HAZMAT) N OF RUNWAY 05−23.

COMMUTER TERMINAL RAMP RESTRICTED TO AIRCRAFT 140000 LBS OR LESS.

AREA E OF APPROACH END RUNWAY 02 DESIGNATED AS HELICOPTER OPER AREA. NO FIXED WING AIRCRAFT MAY OPER ON HELIPAD DURING OPERATIONAL HRS SR–SS.

PRIOR PERMISSION REQUIRED FOR FIXED WING AIRCRAFT OPERATIONS ON HELIPAD DURING NON–OPERATIONAL HRS CALL (808) 872–3880 5:15A–10:00P.

ACCESS TO HELIPAD FROM TAXIWAY C ONLY.

DUE TO NONVISIBILITY ATCT UNABLE TO DETERMINE IF FOLLOWING AREA IS CLEAR OF OBSTRUCTIONS AND/OR TRAFFIC: PORTION OF TAXIWAY F BETWEEN THE COMMUTER AIR TERMINAL & APPROACH END RUNWAY 05.

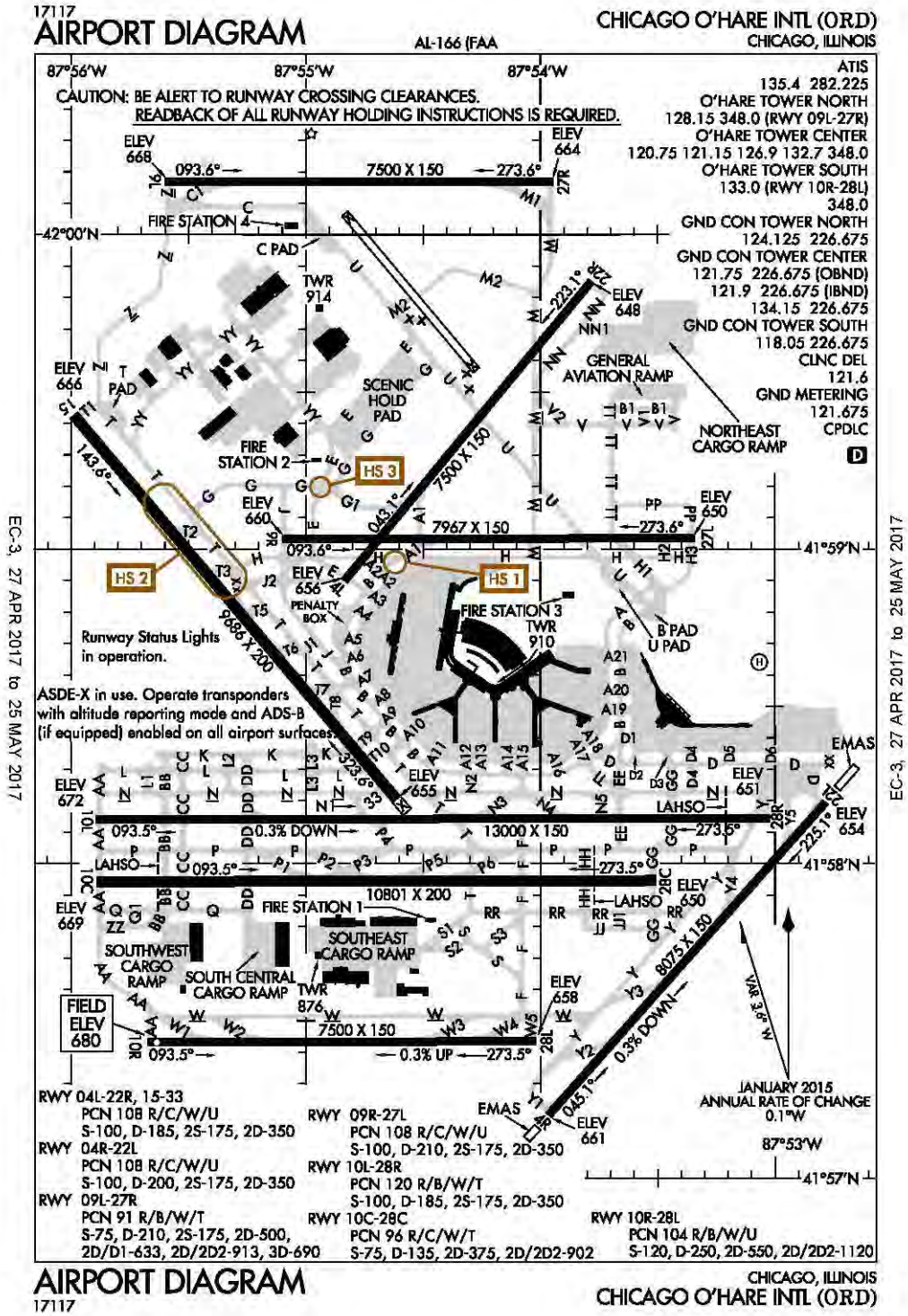
DUE TO NONVISIBILITY ATCT UNABLE TO PROVIDE ATC SERVICE BETWEEN AIRCRAFT & GROUND VEHICLES ON THE COMMUTER AIR TERMINAL S OF TAXIWAY F AND THE HELICOPTER AIR TERMINAL E OF APPROACH END RUNWAY 02.

TRANSIENT PARKING LOCATED ON NE SECTION OF E RAMP.

RUNWAY 02/20 SINGLE–BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 460,000 LBS.

AIRCRAFT OVER 30,000 LB LANDING ON RUNWAY 02/20 UNABLE TO TURN OFF ONTO RUNWAY 05/23 DUE TO PAVEMENT CONDITION.

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: 41–58–38.35N / 87–54–28.82W
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: Ginger Evans
P.O. BOX 66848
Chicago, IL 60666
(773–686–8060)
2.2.7 Traffic: IFR/VFR
2.2.8 Remarks: And Du Page Co.

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 15
2.10.1.b Type of obstacle: Pole (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 770 ft from Centerline

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Pole (29 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 411 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Ant (109 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 545 ft from Centerline

2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Ant (743 ft). Marked and Lighted
2.10.1.c Location of obstacle: 4443 ft from Centerline

2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Ant (87 ft). Marked and Lighted
2.10.1.c Location of obstacle: 118 ft from Centerline

2.10.1.a. Runway designation: 27L
2.10.1.b Type of obstacle: Rr (34 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 44 ft from Centerline

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Tree (68 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 770 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Sign (56 ft). Lighted
2.10.1.c Location of obstacle: 723 ft from Centerline

2.10.1.a. Runway designation: 10C
2.10.1.b Type of obstacle: Pole (48 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 759 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Tree (78 ft). Lighted
2.10.1.c Location of obstacle: 817 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 15
2.12.2 True Bearing: 140
2.12.3 Dimensions: 9686 ft x 200 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41–59–25.57N / 87–55–59.30W
2.12.6 Threshold elevation: 666 ft
2.12.6 Touchdown zone elevation: 668 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 320
2.12.3 Dimensions: 9686 ft x 200 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41–58–12.30N / 87–54–36.83W
2.12.6 Threshold elevation: 655 ft
2.12.6 Touchdown zone elevation: 659 ft

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: 41–58–53.96N / 87–54–50.10W
2.12.6 Threshold elevation: 656 ft

2.12.6 Touchdown zone elevation: 658 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: 41−59−51.13N / 87−53−46.94W
2.12.6 Threshold elevation: 648 ft
2.12.6 Touchdown zone elevation: 652 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: 41−57−11.98N / 87−53−57.91W
2.12.6 Threshold elevation: 661 ft
2.12.6 Touchdown zone elevation: 661 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: 41−58−11.72N / 87−52−47.08W
2.12.6 Threshold elevation: 654 ft
2.12.6 Touchdown zone elevation: 654 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: 42−00−10.20N / 87−55−36.03W
2.12.6 Threshold elevation: 668 ft
2.12.6 Touchdown zone elevation: 668 ft
2.12.7 Slope: 0.1DOWN

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: 42−00−10.19N / 87−53−56.70W
2.12.6 Threshold elevation: 664 ft
2.12.6 Touchdown zone elevation: 664 ft
2.12.7 Slope: 0.1UP

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: 41−59−00.00N / 87−55−00.00W
2.12.6 Threshold elevation: 660 ft
2.12.6 Touchdown zone elevation: 660 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: 41−59−00.00N / 87−53−20.58W
2.12.6 Threshold elevation: 650 ft
2.12.6 Touchdown zone elevation: 654 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: 41−58−00.00N / 87−55−53.51W
2.12.6 Threshold elevation: 672 ft
2.12.6 Touchdown zone elevation: 672 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: 41−58−00.00N / 87−53−00.00W
2.12.6 Threshold elevation: 651 ft
2.12.6 Touchdown zone elevation: 651 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 200 ft x 100 ft
2.12.1 Designation: 10C
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10801 ft x 200 ft
2.12.4 PCN: 96 R/C/W/T
2.12.5 Coordinates: 41−57−56.53N / 87−55−53.48W
2.12.6 Threshold elevation: 669 ft
2.12.6 Touchdown zone elevation: 669 ft

2.12.1 Designation: 28C
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10801 ft x 200 ft
2.12.4 PCN: 96 R/C/W/T
2.12.5 Coordinates: 41−57−56.76N / 87−53−30.52W
2.12.6 Threshold elevation: 650 ft
2.12.6 Touchdown zone elevation: 651 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: 41−57−25.92N / 87−55−40.30W
2.12.6 Threshold elevation: 680 ft
2.12.6 Touchdown zone elevation: 680 ft
2.12.7 Slope: 0.3DOWN

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: 41–57–26.09N / 87–54–00.00W
2.12.6 Threshold elevation: 658 ft
2.12.6 Touchdown zone elevation: 667 ft
2.12.7 Slope: 0.3UP

AD 2.13 Declared distances

2.13.1 Designation: 15
2.13.2 Takeoff run available: 9686
2.13.3 Takeoff distance available: 9686
2.13.4 Accelerate–stop distance available: 9662
2.13.5 Landing distance available: 8650

2.13.1 Designation: 33
2.13.2 Takeoff run available: 9686
2.13.3 Takeoff distance available: 9686
2.13.4 Accelerate–stop distance available: 9686

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff distance available: 7500
2.13.4 Accelerate–stop distance available: 7500
2.13.5 Landing distance available: 7500

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 8075
2.13.3 Takeoff distance available: 8075
2.13.4 Accelerate–stop distance available: 8075
2.13.5 Landing distance available: 8075

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 8075
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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 Takeoff run available: 7967
2.13.3 Takeoff 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 Takeoff run available: 7967
2.13.3 Takeoff distance available: 7967
2.13.4 Accelerate–stop distance available: 7782
2.13.5 Landing distance available: 7782

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 13000
2.13.3 Takeoff 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 Takeoff run available: 13000
2.13.3 Takeoff distance available: 13000
2.13.4 Accelerate–stop distance available: 13000
2.13.5 Landing distance available: 13000

2.13.1 Designation: 10C
2.13.2 Takeoff run available: 10801
2.13.3 Takeoff 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 Takeoff run available: 10801
2.13.3 Takeoff distance available: 10801
2.13.4 Accelerate–stop distance available: 10801
2.13.5 Landing distance available: 10801

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 7500
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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: 15
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 22R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Vgsi And ILS Glidepath Not Coincident.

2.14.1 Designation: 04R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 22L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 09L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 27R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 09R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 27L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 10L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 10C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 10R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 28L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/S PRE–TAXI CLNC/S
2.18.3 Service designation: 119.25 MHz

2.18.1 Service designation: O'HARE TWR CENTER LCL/P

2.18.3 Service designation: 121.15 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND METERING
2.18.3 Service designation: 121.675 MHz

2.18.1 Service designation: VFR ADV
2.18.3 Service designation: 126.8 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: ALCP
2.18.3 Service designation: 252.1 MHz

2.18.1 Service designation: O'HARE TWR CENTER LCL/P
2.18.3 Service designation: 126.9 MHz

2.18.1 Service designation: O'HARE TWR CENTER LCL/P
2.18.3 Service designation: 120.75 MHz

2.18.1 Service designation: O'HARE TWR CENTER LCL/P
2.18.3 Service designation: 132.7 MHz

2.18.1 Service designation: O'HARE TWR CENTER LCL/S
2.18.3 Service designation: 127.925 MHz

2.18.1 Service designation: PRE–TAXI CLNC
2.18.3 Service designation: 121.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 121.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 124.125 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.15 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 282.225 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P (INBOUND)
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P (OUTBOUND)
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: O'HARE ALL TWRS GC/P
2.18.3 Service designation: 226.675 MHz

2.18.1 Service designation: O'HARE TWR NORTH LCL/P
2.18.3 Service designation: 348 MHz

2.18.1 Service designation: O'HARE TWR CENTER LCL/P
2.18.3 Service designation: 348 MHz

2.18.1 Service designation: O'HARE TWR SOUTH LCL/P
2.18.3 Service designation: 348 MHz

2.18.1 Service designation: GND
2.18.3 Service designation: 134.15 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 118.05 MHz

2.18.1 Service designation: RY 28L PRM
2.18.3 Service designation: 128.05 MHz

2.18.1 Service designation: RY 10R PRM
2.18.3 Service designation: 128.05 MHz

2.18.1 Service designation: RY 10C PRM
2.18.3 Service designation: 119.625 MHz

2.18.1 Service designation: RY 28C PRM
2.18.3 Service designation: 119.625 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 15. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41–57–37.70N / 87–54–00.00W
2.19.6 Site elevation: 665.4 ft

2.19.1 ILS type: Outer Marker for runway 15. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 42−03−21.36N / 88−00−28.05W
2.19.6 Site elevation: 693 ft

2.19.1 ILS type: Localizer for runway 15. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−58−00.00N / 87−54−28.47W
2.19.6 Site elevation: 653.3 ft

2.19.1 ILS type: Glide Slope for runway 15. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−59−15.81N / 87−55−55.22W
2.19.6 Site elevation: 662.1 ft

2.19.1 ILS type: Inner Marker for runway 15. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−59−32.73N / 87−56−00.00W
2.19.6 Site elevation: 657.8 ft

2.19.1 ILS type: Middle Marker for runway 15. Magnetic variation: 3W
2.19.2 ILS identification: ORD
2.19.5 Coordinates: 41−59−46.54N / 87−56−22.90W
2.19.6 Site elevation: 674 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 3W
2.19.2 ILS identification: HNA
2.19.5 Coordinates: 41−59−58.86N / 87−53−38.40W
2.19.6 Site elevation: 644.5 ft

2.19.1 ILS type: Outer Marker for runway 04L. Magnetic variation: 3W
2.19.2 ILS identification: HNA
2.19.5 Coordinates: 41−54−51.77N / 87−59−19.38W
2.19.6 Site elevation: 701.9 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 41−58−46.49N / 87−54−58.35W
2.19.6 Site elevation: 655.5 ft

2.19.1 ILS type: Outer Marker for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 42−03−20.68N / 87−50−00.00W
2.19.6 Site elevation: 665 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 41−59−46.51N / 87−53−59.03W
2.19.6 Site elevation: 645.1 ft

2.19.1 ILS type: Middle Marker for runway 22R. Magnetic variation: 3W
2.19.2 ILS identification: RXZ
2.19.5 Coordinates: 42−00−10.86N / 87−53−25.14W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−58−16.20N / 87−52−41.76W
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: 41−53−54.57N / 87−57−51.36W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−56−48.83N / 87−54−28.68W
2.19.6 Site elevation: 655 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 3W
2.19.2 ILS identification: FJU
2.19.5 Coordinates: 41−57−16.86N / 87−53−44.35W
2.19.6 Site elevation: 654.1 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 41−57−00.00N / 87−54−00.00W
2.19.6 Site elevation: 653 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 42−02−16.02N / 87−47−46.00W
2.19.6 Site elevation: 629 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 41–58–34.71N / 87–52–19.73W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 3W
2.19.2 ILS identification: LQQ
2.19.5 Coordinates: 41–58–00.00N / 87–52–52.61W
2.19.6 Site elevation: 645.9 ft

2.19.1 ILS type: DME for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42–00–14.10N / 87–55–48.23W
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: 42–00–14.22N / 87–55–20.67W
2.19.6 Site elevation: 651.3 ft

2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42–00–10.19N / 87–53–43.33W
2.19.6 Site elevation: 660.9 ft

2.19.1 ILS type: Inner Marker for runway 09L. Magnetic variation: 3W
2.19.2 ILS identification: SAJ
2.19.5 Coordinates: 42–00–10.19N / 87–55–47.42W
2.19.6 Site elevation: 668.8 ft

2.19.1 ILS type: Inner Marker for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42–00–00.00N / 87–53–45.30W
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: 42–00–10.19N / 87–55–50.20W
2.19.6 Site elevation: 668.1 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42–00–14.21N / 87–54–11.74W
2.19.6 Site elevation: 648.4 ft

2.19.1 ILS type: DME for runway 27R. Magnetic variation: 3W
2.19.2 ILS identification: ABU
2.19.5 Coordinates: 42–00–14.10N / 87–55–48.23W
2.19.6 Site elevation: 669.5 ft

2.19.1 ILS type: Outer Marker for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41–59–00.00N / 88–01–39.29W
2.19.6 Site elevation: 717 ft

2.19.1 ILS type: Middle Marker for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41–59–00.00N / 87–55–54.53W
2.19.6 Site elevation: 659 ft

2.19.1 ILS type: DME for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41–59–00.00N / 87–53–10.23W
2.19.6 Site elevation: 653.7 ft

2.19.1 ILS type: Localizer for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41–59–00.00N / 87–53–10.49W
2.19.6 Site elevation: 642.8 ft

2.19.1 ILS type: Glide Slope for runway 09R. Magnetic variation: 3W
2.19.2 ILS identification: JAV
2.19.5 Coordinates: 41–59–00.00N / 87–54–51.29W
2.19.6 Site elevation: 658 ft

2.19.1 ILS type: Localizer for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41–59–00.00N / 87–55–17.98W
2.19.6 Site elevation: 665 ft

2.19.1 ILS type: Outer Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41–59–00.00N / 87–47–20.48W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−53−34.35W
2.19.6 Site elevation: 646.5 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−52−41.36W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−53−10.23W
2.19.6 Site elevation: 653.7 ft

2.19.1 ILS type: Inner Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS identification: IAC
2.19.5 Coordinates: 41−59−00.00N / 87−53−00.00W
2.19.6 Site elevation: 641.5 ft

2.19.1 ILS type: Localizer for runway 10L. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41−58−00.00N / 87−52−39.70W
2.19.6 Site elevation: 644.9 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41−58−00.00N / 87−55−38.77W
2.19.6 Site elevation: 665.3 ft

2.19.1 ILS type: Outer Marker for runway 10L. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41−58−00.00N / 88−01−35.55W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 10L. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41−58−00.00N / 87−52−41.68W
2.19.6 Site elevation: 656 ft

2.19.1 ILS type: Middle Marker for runway 10L. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41−58−00.00N / 87−55−52.10W
2.19.6 Site elevation:

2.19.1 ILS type: Inner Marker for runway 10L. Magnetic variation: 3W
2.19.2 ILS identification: MED
2.19.5 Coordinates: 41−58−00.00N / 87−56−00.00W
2.19.6 Site elevation: 676.8 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41−58−00.00N / 87−53−15.05W
2.19.6 Site elevation: 648.2 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41−58−00.00N / 87−52−23.76W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41−58−00.00N / 87−56−00.00W
2.19.6 Site elevation: 679.1 ft

2.19.1 ILS type: DME for runway 28R. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41−58−00.00N / 87−52−41.68W
2.19.6 Site elevation: 656 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41−58−00.00N / 87−47−22.63W
2.19.6 Site elevation:

2.19.1 ILS type: Inner Marker for runway 28R. Magnetic variation: 3W
2.19.2 ILS identification: TSL
2.19.5 Coordinates: 41−58−00.00N / 87−52−49.13W
2.19.6 Site elevation: 649 ft

2.19.1 ILS type: DME for runway 10C. Magnetic variation: 3W
2.19.2 ILS identification: SXH
2.19.5 Coordinates: 41−58−00.00N / 87−56−00.00W
2.19.6 Site elevation: 689.3 ft

2.19.1 ILS type: Inner Marker for runway 10C. Magnetic variation: 3W
2.19.2 ILS identification: SXH
2.19.5 Coordinates: 41–57–56.50N / 87–56–00.00W
2.19.6 Site elevation: 674.3 ft

2.19.1 ILS type: Glide Slope for runway 10C. Magnetic variation: 3W
2.19.2 ILS identification: SXH
2.19.5 Coordinates: 41–57–52.85N / 87–55–39.02W
2.19.6 Site elevation: 663 ft

2.19.1 ILS type: Localizer for runway 10C. Magnetic variation: 3W
2.19.2 ILS identification: SXH
2.19.5 Coordinates: 41–57–56.80N / 87–52–57.29W
2.19.6 Site elevation: 646.3 ft

2.19.1 ILS type: Inner Marker for runway 28C. Magnetic variation: 3W
2.19.2 ILS identification: VZE
2.19.5 Coordinates: 41–57–58.75N / 87–53–19.17W
2.19.6 Site elevation: 648 ft

2.19.1 ILS type: DME for runway 28C. Magnetic variation: 3W
2.19.2 ILS identification: VZE
2.19.5 Coordinates: 41–58–00.00N / 87–56–00.00W
2.19.6 Site elevation: 689.3 ft

2.19.1 ILS type: Localizer for runway 28C. Magnetic variation: 3W
2.19.2 ILS identification: VZE
2.19.5 Coordinates: 41–57–56.50N / 87–56–00.00W
2.19.6 Site elevation: 676.4 ft

2.19.1 ILS type: Glide Slope for runway 28C. Magnetic variation: 3W
2.19.2 ILS identification: VZE
2.19.5 Coordinates: 41–57–53.03N / 87–53–44.32W
2.19.6 Site elevation: 642.4 ft

2.19.1 ILS type: DME for runway 10R. Magnetic variation: 4W
2.19.2 ILS identification: BYW
2.19.5 Coordinates: 41–57–28.34N / 87–53–27.46W
2.19.6 Site elevation: 655 ft

2.19.1 ILS type: Localizer for runway 10R. Magnetic variation: 4W
2.19.2 ILS identification: BYW
2.19.5 Coordinates: 41–57–31.61N / 87–53–26.41W
2.19.6 Site elevation: 649.5 ft

2.19.1 ILS type: Glide Slope for runway 10R. Magnetic variation: 4W
2.19.2 ILS identification: BYW
2.19.5 Coordinates: 41–57–21.91N / 87–55–25.57W
2.19.6 Site elevation: 671.7 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 4W
2.19.2 ILS identification: VQX
2.19.5 Coordinates: 41–57–25.90N / 87–55–53.71W
2.19.6 Site elevation: 680.2 ft

2.19.1 ILS type: Glide Slope for runway 28L. Magnetic variation: 4W
2.19.2 ILS identification: VQX
2.19.5 Coordinates: 41–57–22.03N / 87–54–14.18W
2.19.6 Site elevation: 654 ft

2.19.1 ILS type: DME for runway 28L. Magnetic variation: 4W
2.19.2 ILS identification: VQX
2.19.5 Coordinates: 41–57–22.23N / 87–53–34.24W
2.19.6 Site elevation: 656.1 ft

2.19.1 ILS type: Inner Marker for runway 28L. Magnetic variation: 4W
2.19.2 ILS identification: VQX
2.19.5 Coordinates: 41–57–26.95N / 87–53–47.46W
2.19.6 Site elevation: 650.4 ft

General Remarks:
AIRPORT NIGHTTIME NOISE ABATEMENT PROCEDURES ARE IN EFFECT FROM 2200 TO 0700; CONTACT AIRPORT MANAGER ON 773–686–2255.

BIRDS ON & IN THE VICINITY OF AIRPORT. PYROTECHNICS & BIRD CANNONS IN USE FOR BIRD CONTROL.

AIRCRAFT WITH WINGSPAN GREATER THAN 214 FT REQUIRE 48 HRS PRIOR PERMISSION REQUIRED – CALL 773–686–2255.

SEE LAND AND HOLD SHORT OPERATIONS SECTION.

BE ALERT: OF DUPLICATE ALPHA–NUMERIC TAXIWAY DESIGNATORS & TERMINAL GATE DESIGNATIONS INVOLVING THE LETTERS C, G, H, K, L & M.

MAGNETIC DEVIATION POSSIBLE IMMEDIATELY WEST OF TAXIWAY Y & RUNWAY 22L APPROACH ON TAXIWAY N.

PERSONNEL AND EQUIPMENT WORKING NEAR VARIOUS TAXIWAYS.

PERIODIC FIRE DEPT TRAINING AT N SECTOR OF THE AIRPORT.

PRIMARY RUN–UP LOCATION GROUND RUN UP ENCLOSURE; SECONDARY RUN UP LOCATIONS AVAILABLE UPON REQ CONTACT CITY OPERATIONS 773–686–2255.

LINE UP AND WAIT AUTHORIZATION IN EFFECTIVE BETWEEN SS AND SR AT THE FOLLOWING INTENSE: RUNWAY 33 AT TAXIWAY T10 AND TAXIWAY L; RUNWAY 28R AT TAXIWAY GG, TAXIWAY EE AND TAXIWAY N5; RUNWAY 10L AT TAXIWAY DD AND TAXIWAY CC. THESE RUNWAYS WILL BE USED FOR DEPS ONLY WHEN EXERCISING THE PROVISIONS OF THIS AUTHORIZATION.

ALL PART 91 & UNSCHEDULED PART 125, 133 & 135 CHARTER OPERATORS CONTACT SIGNATURE FLIGHT SUPPORT AT 773–686–7000 REGARDING NEW SECURITY REGULATIONS PRIOR TO DEP.

RUNWAY H1, APPROACH/ DEP PATHS ARE EAST & WEST.

B747–400, B747–8, B777–300ER, B777–200LR(F), A340–600 OR A340–500, & A350–900 CANNOT PASS ON TAXIWAYS 'A' & 'B' INSUFFICIENT WINGTIP CLEARANCE.

ATCT IS AUTHORIZED TO CONDUCT ARRS TO RUNWAY 15 WHILE CONDUCTING SIMULTANEOUS OPPOSITE DIRECTION DEPS OFF OF RUNWAY 09R & RUNWAY 28R DURING IFR WEATHER CONDITIONS.

ATCT IS AUTHORIZED TO CONDUCT SIMULTANEOUS OPPOSITE DIRECTION DEPS ON RUNWAY 09R AND RUNWAY 28R DURING INSTRUMENT FLIGHT RULES (IFR) WX CONDITIONS.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RUNWAY 9L/27R TRIPLE DUAL TANDEM 690,000 LBS; DUAL TANDUM W/DUAL WHEEL (2D/D1) 633,000 LBS.

EAST AND WEST GATES ARE MANNED 24 HRS A DAY.

RUNWAY 33 CLOSED TO ARRIVALS. RUNWAY 15/33 DUAL USE RWY/TWY. EDGE/TDZL AVAILABLE FOR RUNWAY OPERATIONS; GREEN CL AVAILABLE FOR TAXI OPERATIONS.

ATCT IS AUTHORIZED TO CONDUCT SIMULTANEOUS DEPS FROM RUNWAY 4L/4R, RUNWAY 22R/22L, RUNWAY 9R WITH RUNWAY 9L OR RUNWAY 10L, RUNWAY 27L WITH 28R OR RUNWAY 27R, RUNWAY 10C WITH RUNWAY 9R AND RUNWAY 28C WITH RUNWAY 27L WITH COURSE DIVERGENCE BEGINNING NO LATER THAN 4 MILES FROM RUNWAY END.

BE ALERT: TAXIWAY S–1 OUTBOUND OR EASTBOUND ONLY, TAXIWAY S–2 INBOUND OR WESTBOUND ONLY, TAXIWAY Y5 NORTHBOUND ONLY EXITING RUNWAY, TAXIWAYS P1, P2, P3, P5, AND P6 NORTHBOUND ONLY, TAXIWAY A1 SOUTHBOUND ONLY FROM RUNWAY 09R–27L, TAXIWAY U SOUTHBOUND ONLY FROM RUNWAY 09R–27L.

A380–800 OPERATIONAL CONSTRAINTS EXIST ON RUNWAYS, TAXIWAYS, AND RAMPS. CONTACT AIRPORT OPERATIONS FOR ADDNL INFORMATION 773–686–2255.

DIVERSION ACROSS WO A PRESENCE AT ORDER, INDICATION OF SHOULD CONTACT AIRPORT OPERATIONS 773–686–2255 PRIOR TO DIVERTING TO THE EXTENT PRACTICAL AND PROVIDE: CO, FLIGHT OPERATIONS CONTACT INFORMATION, AIRCRAFT TYPE, PERSONS ON BOARD, INTL OR DOMESTIC, ANY GROUND HANDLER AGRMTS IN PLACE.

BE ALERT: THE NORTHEAST/SOUTHWEST PORTION OF TAXIWAY YY IS NOT VISIBLE FROM THE CENTER ATCT.

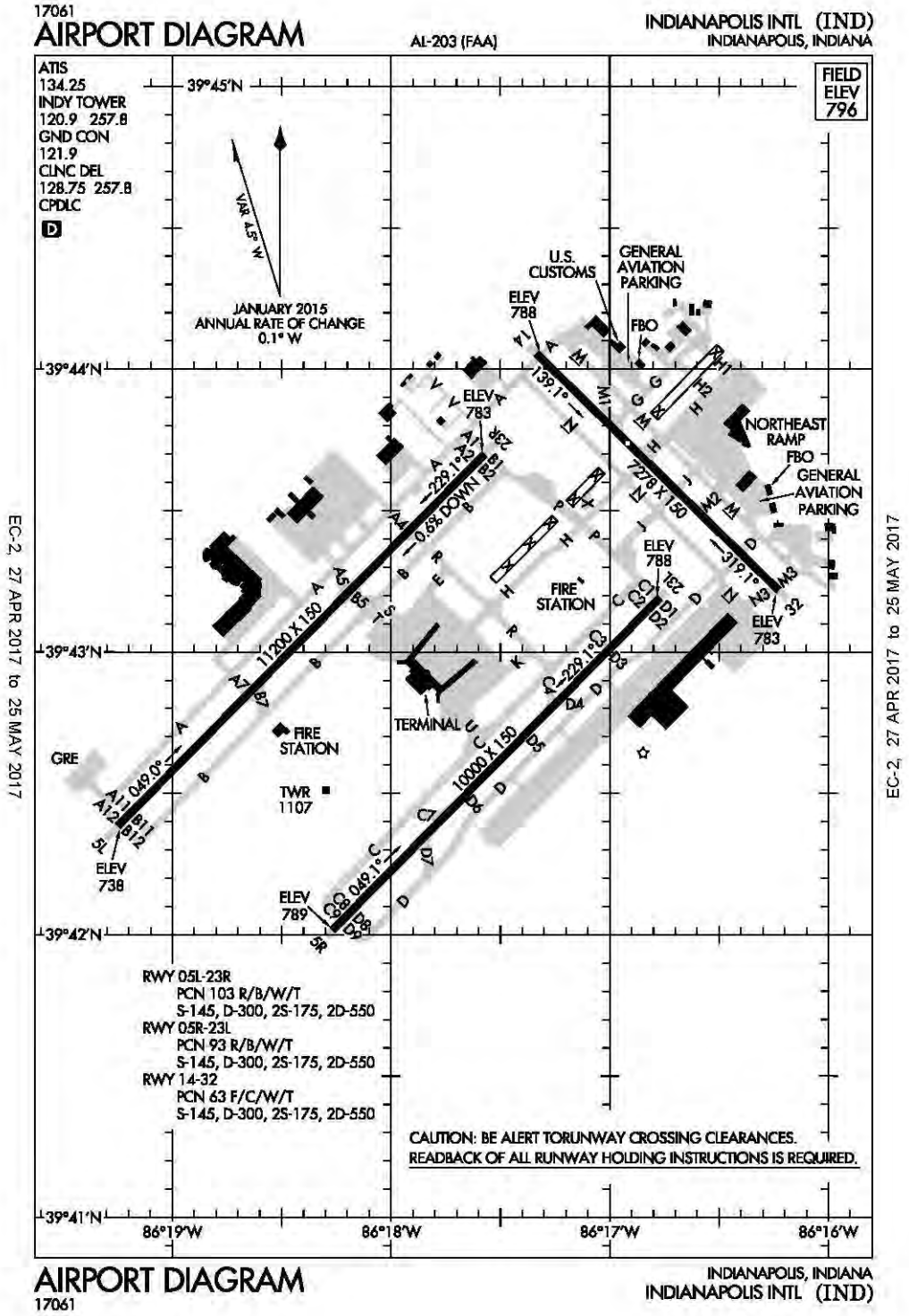
B747–8 OPERATIONS NOT AUTHORIZED ON RUNWAYS 09R/27L, 09L/27R AND 10R/28L.

AIRCRAFT ARE NOT PERMITTED TO STOP ON EITHER TAXIWAY A OR B BRIDGES.

RUNWAY 9R PAPI UNUSABLE BEYOND 5 DEGREE RIGHT OF CENTERLINE

RUNWAY STATUS LIGHTS ARE IN OPN.

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: 39–43–00.00N / 86–17–40.70W
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 Operational hours

2.3.1 – 2.3.11: 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,A1+
2.4.4 De–icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 23L
2.10.1.b Type of obstacle: Ant (78 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 484 ft from Centerline

2.10.1.a. Runway designation: 23R
2.10.1.b Type of obstacle: Ant (140 ft). Lighted
2.10.1.c Location of obstacle: 138 ft from Centerline

2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Ant (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 756 ft from Centerline

AD 2.12 Runway physical characteristics

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: 39–42–00.00N / 86–18–15.91W
2.12.6 Threshold elevation: 789 ft
2.12.6 Touchdown zone elevation: 791 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: 39–43–11.29N / 86–16–46.12W
2.12.6 Threshold elevation: 788 ft
2.12.6 Touchdown zone elevation: 790 ft

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: 39–42–23.03N / 86–19–14.90W
2.12.6 Threshold elevation: 738 ft
2.12.6 Touchdown zone elevation: 747 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: 39–43–41.91N / 86–17–34.36W
2.12.6 Threshold elevation: 783 ft
2.12.6 Touchdown zone elevation: 783 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: 39–44–00.00N / 86–17–19.76W
2.12.6 Threshold elevation: 788 ft
2.12.6 Touchdown zone elevation: 796 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: 39–43–12.75N / 86–16–13.39W
2.12.6 Threshold elevation: 783 ft
2.12.6 Touchdown zone elevation: 793 ft

AD 2.13 Declared distances

2.13.1 Designation: 05R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000

2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 05L
2.13.2 Takeoff run available: 11200
2.13.3 Takeoff 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 Takeoff run available: 11200
2.13.3 Takeoff distance available: 11200
2.13.4 Accelerate−stop distance available: 11200
2.13.5 Landing distance available: 11200

2.13.1 Designation: 14
2.13.2 Takeoff run available: 7278
2.13.3 Takeoff 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 Takeoff run available: 7278
2.13.3 Takeoff 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: 05R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 05L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 14
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Unusable Beyond 8 Degrees Right Of Course.

2.14.1 Designation: 32
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: Vgsi And ILS Glidepath Not Coincident.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 124.65 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 127.15 MHz

2.18.1 Service designation: CD PRE TAXI CLNC
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CD LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 317.8 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.05 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 134.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 128.175 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 05R. Magnetic variation: 5W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39–42–00.00N / 86–18–00.00W
2.19.6 Site elevation: 788.5 ft

2.19.1 ILS type: Outer Marker for runway 05R. Magnetic variation: 5W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39–37–00.00N / 86–24–28.44W
2.19.6 Site elevation: 708.6 ft

2.19.1 ILS type: Middle Marker for runway 05R. Magnetic variation: 5W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39–42–00.00N / 86–19–43.10W
2.19.6 Site elevation: 770 ft

2.19.1 ILS type: Localizer for runway 05R. Magnetic variation: 5W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39–43–18.38N / 86–16–37.11W
2.19.6 Site elevation: 785.5 ft

2.19.1 ILS type: Inner Marker for runway 05R. Magnetic variation: 5W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39–41–52.06N / 86–18–27.14W
2.19.6 Site elevation: 776.4 ft

2.19.1 ILS type: DME for runway 05R. Magnetic variation: 5W
2.19.2 ILS identification: OQV
2.19.5 Coordinates: 39–43–20.19N / 86–16–39.54W
2.19.6 Site elevation: 802 ft

2.19.1 ILS type: Localizer for runway 23L. Magnetic variation: 5W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39–41–53.53N / 86–18–25.26W
2.19.6 Site elevation: 777.3 ft

2.19.1 ILS type: Outer Marker for runway 23L. Magnetic variation: 5W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39–47–10.92N / 86–11–46.58W
2.19.6 Site elevation: 703.8 ft

2.19.1 ILS type: Glide Slope for runway 23L. Magnetic variation: 5W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39–43–00.00N / 86–16–54.29W
2.19.6 Site elevation: 785 ft

2.19.1 ILS type: Middle Marker for runway 23L. Magnetic variation: 5W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39–43–30.36N / 86–16–21.76W
2.19.6 Site elevation: 785 ft

2.19.1 ILS type: DME for runway 23L. Magnetic variation: 5W
2.19.2 ILS identification: FVJ
2.19.5 Coordinates: 39–43–20.19N / 86–16–39.54W
2.19.6 Site elevation: 802 ft

2.19.1 ILS type: Outer Marker for runway 05L. Magnetic variation: 5W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39–37–43.65N / 86–25–00.00W
2.19.6 Site elevation: 688.5 ft

2.19.1 ILS type: Middle Marker for runway 05L. Magnetic variation: 5W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39–42–00.00N / 86–19–43.10W
2.19.6 Site elevation: 726 ft

2.19.1 ILS type: Localizer for runway 05L. Magnetic variation: 5W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39–43–49.03N / 86–17–25.28W
2.19.6 Site elevation: 787.8 ft

2.19.1 ILS type: Glide Slope for runway 05L. Magnetic

variation: 5W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−42−32.77N / 86−19−00.00W
2.19.6 Site elevation: 735 ft

2.19.1 ILS type: Inner Marker for runway 05L. Magnetic variation: 5W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−42−15.71N / 86−19−24.44W
2.19.6 Site elevation: 735.9 ft

2.19.1 ILS type: DME for runway 05L. Magnetic variation: 5W
2.19.2 ILS identification: IND
2.19.5 Coordinates: 39−43−51.35N / 86−17−27.57W
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: 39−43−36.51N / 86−17−48.43W
2.19.6 Site elevation: 772.4 ft

2.19.1 ILS type: Middle Marker for runway 23R. Magnetic variation: 5W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−44−24.76N / 86−16−00.00W
2.19.6 Site elevation: 789 ft

2.19.1 ILS type: Localizer for runway 23R. Magnetic variation: 5W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−42−15.92N / 86−19−23.97W
2.19.6 Site elevation: 736.6 ft

2.19.1 ILS type: Outer Marker for runway 23R. Magnetic variation: 5W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−47−44.67N / 86−12−24.00W
2.19.6 Site elevation: 731 ft

2.19.1 ILS type: DME for runway 23R. Magnetic variation: 5W
2.19.2 ILS identification: UZK
2.19.5 Coordinates: 39−43−51.35N / 86−17−27.57W
2.19.6 Site elevation: 797.6 ft

2.19.1 ILS type: Outer Marker for runway 14. Magnetic variation: 5W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39−47−34.33N / 86−22−00.00W
2.19.6 Site elevation: 867.1 ft

2.19.1 ILS type: Localizer for runway 14. Magnetic variation: 5W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39−43−00.00N / 86−16−00.00W
2.19.6 Site elevation: 763.6 ft

2.19.1 ILS type: Glide Slope for runway 14. Magnetic variation: 5W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39−43−59.31N / 86−17−00.00W
2.19.6 Site elevation: 790 ft

2.19.1 ILS type: Middle Marker for runway 14. Magnetic variation: 5W
2.19.2 ILS identification: BJP
2.19.5 Coordinates: 39−44−19.96N / 86−17−42.27W
2.19.6 Site elevation: 776 ft

2.19.1 ILS type: Outer Marker for runway 32. Magnetic variation: 5W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39−39−25.01N / 86−11−00.00W
2.19.6 Site elevation: 686.4 ft

2.19.1 ILS type: Middle Marker for runway 32. Magnetic variation: 5W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39−42−52.06N / 86−15−44.56W
2.19.6 Site elevation: 752 ft

2.19.1 ILS type: Localizer for runway 32. Magnetic variation: 5W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39−44−10.35N / 86−17−29.17W
2.19.6 Site elevation: 782.3 ft

2.19.1 ILS type: Glide Slope for runway 32. Magnetic variation: 5W
2.19.2 ILS identification: COA
2.19.5 Coordinates: 39−43−16.28N / 86−16−25.51W
2.19.6 Site elevation: 781.7 ft

General Remarks:
PRIMARY STUDENT TOUCH AND GO LANDING NOT PERMITTED.

LARGE FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

NOISE ABATEMENT PROCEDURES IN EFFECT CONTACT AIRPORT MANAGEMENT ON 317–487–9594.

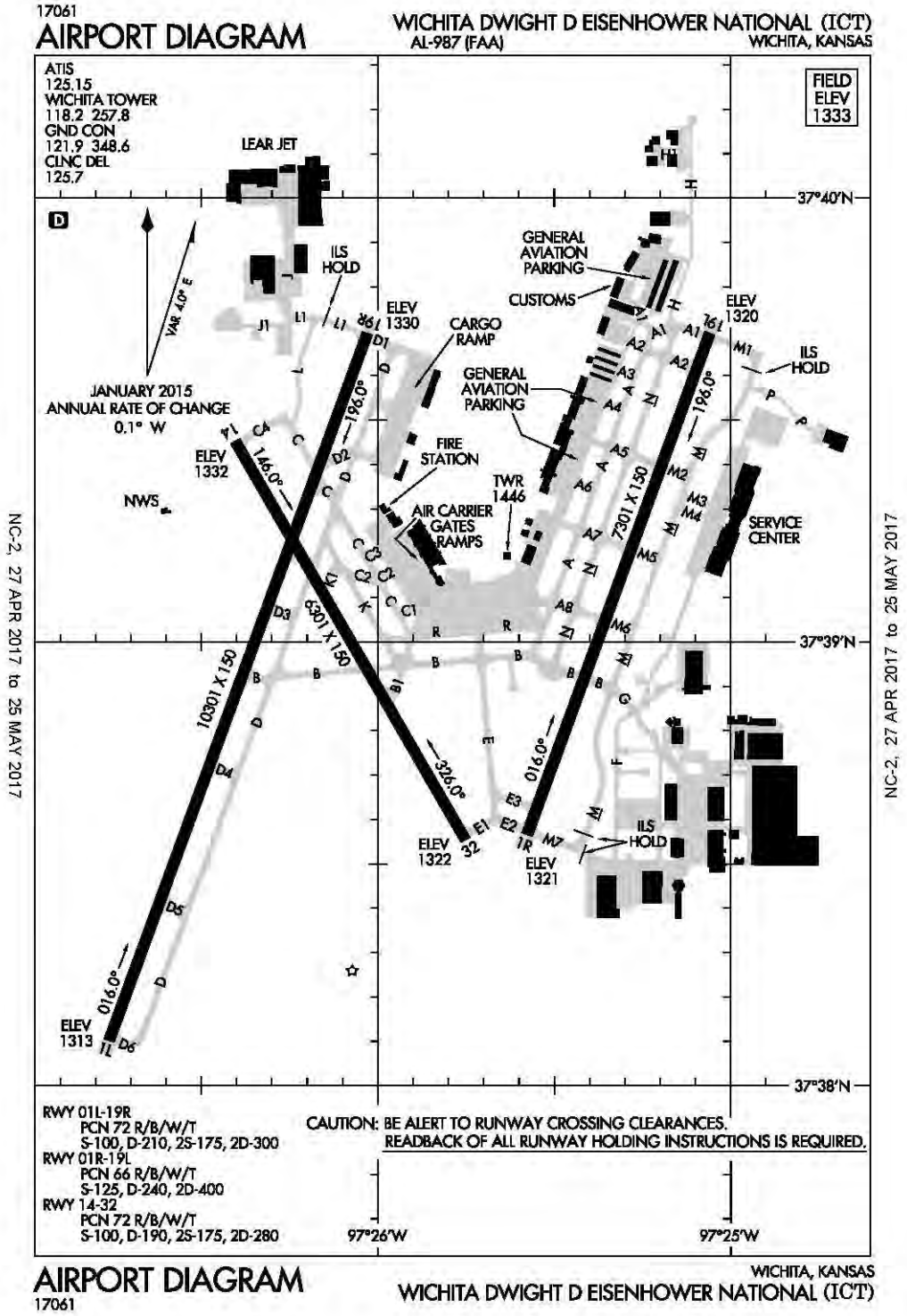
BE ALERT TO CLOSE PROXIMITY OF RUNWAY 14/32 TO NORTHEAST RAMP.

TAXIWAY 'H' RUNS CONTIGUOUS AT NORTHEAST RAMP.

RUNWAY 05R/23L & RUNWAY 14/32 HAVE 200 FT BLAST PADS BOTH ENDS. RUNWAY 5L/23R HAS 400 FT BLAST PAD AT BOTH ENDS.

TAXIWAY V IS NOT AVAILABLE FOR AIR CARRIER OPERATIONS.

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: 37–38–59.80N / 97–25–59.00W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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: 37–38–00.00N / 97–26–45.59W
2.12.6 Threshold elevation: 1313 ft
2.12.6 Touchdown zone elevation: 1314 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: 37–39–41.76N / 97–26–00.00W
2.12.6 Threshold elevation: 1330 ft
2.12.6 Touchdown zone elevation: 1330 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: 37–38–33.95N / 97–25–34.63W
2.12.6 Threshold elevation: 1321 ft
2.12.6 Touchdown zone elevation: 1321 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: 37–39–41.77N / 97–25–00.00W
2.12.6 Threshold elevation: 1320 ft
2.12.6 Touchdown zone elevation: 1320 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: 37–39–27.16N / 97–26–24.27W
2.12.6 Threshold elevation: 1332 ft
2.12.6 Touchdown zone elevation: 1332 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: 37–38–33.22N / 97–25–45.10W
2.12.6 Threshold elevation: 1322 ft
2.12.6 Touchdown zone elevation: 1322 ft

AD 2.13 Declared distances

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 10301
2.13.3 Takeoff 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 Takeoff run available: 10301
2.13.3 Takeoff distance available: 10301
2.13.4 Accelerate–stop distance available: 10301
2.13.5 Landing distance available: 10301

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 7301
2.13.3 Takeoff distance available: 7301
2.13.4 Accelerate–stop distance available: 7301
2.13.5 Landing distance available: 7301

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 7301
2.13.3 Takeoff distance available: 7301
2.13.4 Accelerate–stop distance available: 7301

2.13.5 Landing distance available: 7301

2.13.1 Designation: 14
2.13.2 Takeoff run available: 6301
2.13.3 Takeoff distance available: 6301
2.13.4 Accelerate−stop distance available: 6301
2.13.5 Landing distance available: 6301

2.13.1 Designation: 32
2.13.2 Takeoff run available: 6301
2.13.3 Takeoff 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: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 19R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 01R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 19L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 134.85 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 134.85 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 325.8 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 353.5 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 134.8 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 125.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 290.275 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 290.275 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 4E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37–39–51.34N / 97–25–57.41W
2.19.6 Site elevation: 1320 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 4E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37–38–16.71N / 97–26–46.01W
2.19.6 Site elevation: 1310 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 4E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37–33–33.95N / 97–28–51.78W
2.19.6 Site elevation: 1310 ft

2.19.1 ILS type: Inner Marker for runway 01L. Magnetic variation: 4E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37–37–57.14N / 97–26–49.69W
2.19.6 Site elevation: 1317 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 4E
2.19.2 ILS identification: TWI
2.19.5 Coordinates: 37–37–39.47N / 97–26–57.83W
2.19.6 Site elevation: 1323 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 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: 1326 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 4E
2.19.2 ILS identification: HOV
2.19.5 Coordinates: 37–40–00.00N / 97–25–49.89W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 19R. Magnetic variation: 4E
2.19.2 ILS identification: HOV
2.19.5 Coordinates: 37–44–16.61N / 97–24–00.00W
2.19.6 Site elevation: 8 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: Glide Slope for runway 01R. Magnetic variation: 4E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37–38–42.64N / 97–25–24.70W
2.19.6 Site elevation: 1314.7 ft

2.19.1 ILS type: Middle Marker for runway 01R. Magnetic variation: 4E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37–38–00.00N / 97–25–49.07W
2.19.6 Site elevation: 999 ft

2.19.1 ILS type: Outer Marker for runway 01R. Magnetic variation: 4E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37–34–41.50N / 97–27–21.09W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 4E
2.19.2 ILS identification: ICT
2.19.5 Coordinates: 37–39–52.04N / 97–25–00.00W
2.19.6 Site elevation: 1326.6 ft

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: 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 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 / 97−25−00.00W
2.19.6 Site elevation: 1312 ft

General Remarks:
PRIOR PERMISSION REQUIREDUIRED FOR AIRCRAFT CARRYING CLASS 1 − DIVISION 1.1; 1.2 OR 1.3 EXPLOSIVES AS DEFINED BY 49 CODE OF FEDERAL REGULATIONS 173.50 OR AS AMENDED.

TAXIWAYS F, G, H, J, P AND ALL PARKING RAMPS ARE NON−MOVEMENT AREAS.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

MIGRATORY BIRDS ON AND IN THE VICINITY OF AIRPORT.

ATCT HAS LIMITED VISIBILITY OF TERMINAL GATES 1−8.

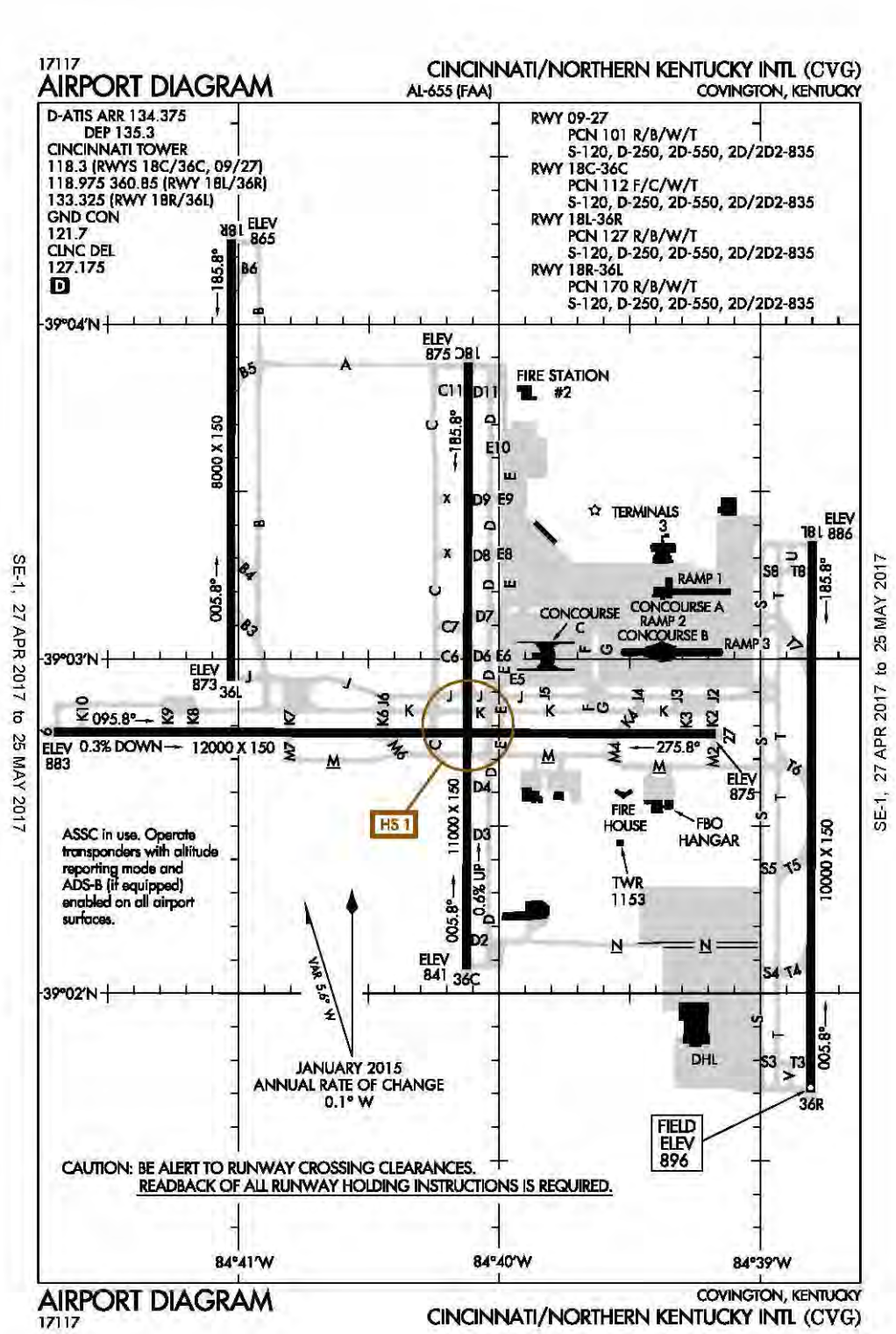
TAXIWAY H CLOSED TO AIRCRAFT WITH WINGSPAN MORE THAN 75FT. TAXIWAY H CONJESTED AND NOT VISIBLE FROM ATCT; USE CAUTION.

TAXIWAY L AND L1 CLOSED TO AIRCRAFT WITH WINGSPAN MORE THAN 118FT.

TAXIWAY P CLOSED TO AIRCRAFT WITH WINGSPAN MORE THAN 79FT.

NOTE: SEE SPECIAL NOTICES−CONTINUOUS POWER FACILITIES.

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: 39−02−55.81N / 84−40−00.00W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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: 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: 39−03−53.07N / 84−40−00.00W
2.12.6 Threshold elevation: 875 ft
2.12.6 Touchdown zone elevation: 875 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: 39−02−00.00N / 84−40−00.00W
2.12.6 Threshold elevation: 841 ft
2.12.6 Touchdown zone elevation: 851 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: 39−03−21.08N / 84−38−48.00W
2.12.6 Threshold elevation: 886 ft
2.12.6 Touchdown zone elevation: 889 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: 39−01−42.24N / 84−38−48.46W
2.12.6 Threshold elevation: 896 ft
2.12.6 Touchdown zone elevation: 896 ft

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: 39−02−46.91N / 84−41−42.36W
2.12.6 Threshold elevation: 883 ft
2.12.6 Touchdown zone elevation: 883 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: 39−02−46.54N / 84−39−10.26W
2.12.6 Threshold elevation: 875 ft
2.12.6 Touchdown zone elevation: 875 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: 39−04−15.18N / 84−41−00.00W
2.12.6 Threshold elevation: 865 ft
2.12.6 Touchdown zone elevation: 868 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: 39−02−56.11N / 84−41−00.00W
2.12.6 Threshold elevation: 873 ft
2.12.6 Touchdown zone elevation: 873 ft

AD 2.13 Declared distances

2.13.1 Designation: 18C
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 11000
2.13.5 Landing distance available: 11000

2.13.1 Designation: 36C
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate–stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 09
2.13.2 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate–stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate–stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 36L
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff 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: 18C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right
2.14.10 Remarks: Out Of Service Indefinitely.

2.14.1 Designation: 36C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 18L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 18R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 36L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.975 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: JAKIE RNAV STAR
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 123.875 MHz

2.18.1 Service designation: (001−180)
2.18.3 Service designation: 126.65 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.175 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 128.7 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 134.375 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.3 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 360.85 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 254.25 MHz

2.18.1 Service designation: JAKIE RNAV STAR
2.18.3 Service designation: 254.25 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 363.15 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133.325 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−03−42.65N / 84−40−12.14W
2.19.6 Site elevation: 868 ft

2.19.1 ILS type: Outer Marker for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−07−30.20N / 84−40−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−04−10.50N / 84−40−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−01−54.18N / 84−40−00.00W
2.19.6 Site elevation: 819 ft

2.19.1 ILS type: DME for runway 18C. Magnetic variation: 4W
2.19.2 ILS identification: SIC
2.19.5 Coordinates: 39−01−54.15N / 84−40−00.00W
2.19.6 Site elevation: 819 ft

2.19.1 ILS type: Glide Slope for runway 36C. Magnetic variation: 6W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39−02−15.48N / 84−40−12.49W
2.19.6 Site elevation: 834 ft

2.19.1 ILS type: Middle Marker for runway 36C. Magnetic variation: 6W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39−01−31.79N / 84−40−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 36C. Magnetic variation: 6W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39−04−00.00N / 84−40−00.00W
2.19.6 Site elevation: 882 ft

2.19.1 ILS type: DME for runway 36C. Magnetic variation: 6W

2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39–04–00.00N / 84–40–10.17W
2.19.6 Site elevation: 886 ft

2.19.1 ILS type: Inner Marker for runway 36C. Magnetic variation: 6W
2.19.2 ILS identification: CVG
2.19.5 Coordinates: 39–01–54.05N / 84–40–00.00W
2.19.6 Site elevation: 956 ft

2.19.1 ILS type: DME for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39–01–31.58N / 84–38–45.41W
2.19.6 Site elevation: 915 ft

2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39–01–31.79N / 84–38–48.50W
2.19.6 Site elevation: 899 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39–03–10.88N / 84–38–42.98W
2.19.6 Site elevation: 881.3 ft

2.19.1 ILS type: Middle Marker for runway 18L. Magnetic variation: 4W
2.19.2 ILS identification: CIZ
2.19.5 Coordinates: 39–03–47.57N / 84–38–48.51W
2.19.6 Site elevation: 872 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39–03–31.49N / 84–38–47.95W
2.19.6 Site elevation: 892.1 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39–01–52.80N / 84–38–43.34W
2.19.6 Site elevation: 890 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39–03–30.88N / 84–38–51.18W
2.19.6 Site elevation: 905 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39–01–33.56N / 84–38–48.50W
2.19.6 Site elevation: 899 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS identification: EEI
2.19.5 Coordinates: 39–01–16.54N / 84–38–48.58W
2.19.6 Site elevation: 915 ft

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39–02–46.51N / 84–39–00.00W
2.19.6 Site elevation: 873.7 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39–02–42.92N / 84–41–28.27W
2.19.6 Site elevation: 873.6 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39–02–46.92N / 84–41–27.61W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39–02–44.69N / 84–46–22.67W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 09. Magnetic variation: 4W
2.19.2 ILS identification: URN
2.19.5 Coordinates: 39–02–43.95N / 84–39–00.00W
2.19.6 Site elevation: 872 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39–02–46.94N / 84–41–55.34W
2.19.6 Site elevation: 884 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP

2.19.5 Coordinates: 39−02−42.63N / 84−39−25.16W
2.19.6 Site elevation: 867 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39−02−46.53N / 84−32−59.24W
2.19.6 Site elevation: 860 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 4W
2.19.2 ILS identification: JDP
2.19.5 Coordinates: 39−02−46.46N / 84−38−37.56W
2.19.6 Site elevation: 890 ft

2.19.1 ILS type: Inner Marker for runway 36L. Magnetic variation: 6W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−02−44.31N / 84−41−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 6W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−04−25.03N / 84−41−00.00W
2.19.6 Site elevation: 848 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 6W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−04−25.49N / 84−41−00.00W
2.19.6 Site elevation: 855 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 6W
2.19.2 ILS identification: VAC
2.19.5 Coordinates: 39−03−00.00N / 84−41−00.00W
2.19.6 Site elevation: 867 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−04−00.00N / 84−41−00.00W
2.19.6 Site elevation: 860.5 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−02−41.27N / 84−41−00.00W
2.19.6 Site elevation: 871 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−04−23.57N / 84−41−00.00W
2.19.6 Site elevation: 856 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 6W
2.19.2 ILS identification: CJN
2.19.5 Coordinates: 39−02−41.52N / 84−41−00.00W
2.19.6 Site elevation: 869 ft

General Remarks:
NOISE SENSITIVE AREAS NORTH & SOUTH OF AIRPORT. RUNWAY ASSIGNMENTS BETWEEN 2200−0700 WILL BE PREDICATED ON NOISE ABATEMENT CONSIDERATIONS.

SUCCESSIVE OR SIMULTANEOUS DEPS FROM RUNWAYS 18L AND RUNWAY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FROM END OF RUNWAY DUE TO NOISE ABATEMENT RESTRICTIONS.

RUNWAY 09/27 WEST 4200 FT CONCRETE; EAST 750 FT CONCRETE; REMAINDER ASPHALT OVERLAY.

SUCCESSIVE OR SIMULTANEOUS DEPS FROM RUNWAY 36C & RUNWAY 36R ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FROM END OF RUNWAY DUE TO NOISE ABATEMENT RESTRICTIONS.

CVG TAXIWAYS, ALL TAXIWAYS RESTRICTED TO 15 MPH OR LESS WITH WINGSPAN 214 FT AND GREATER.

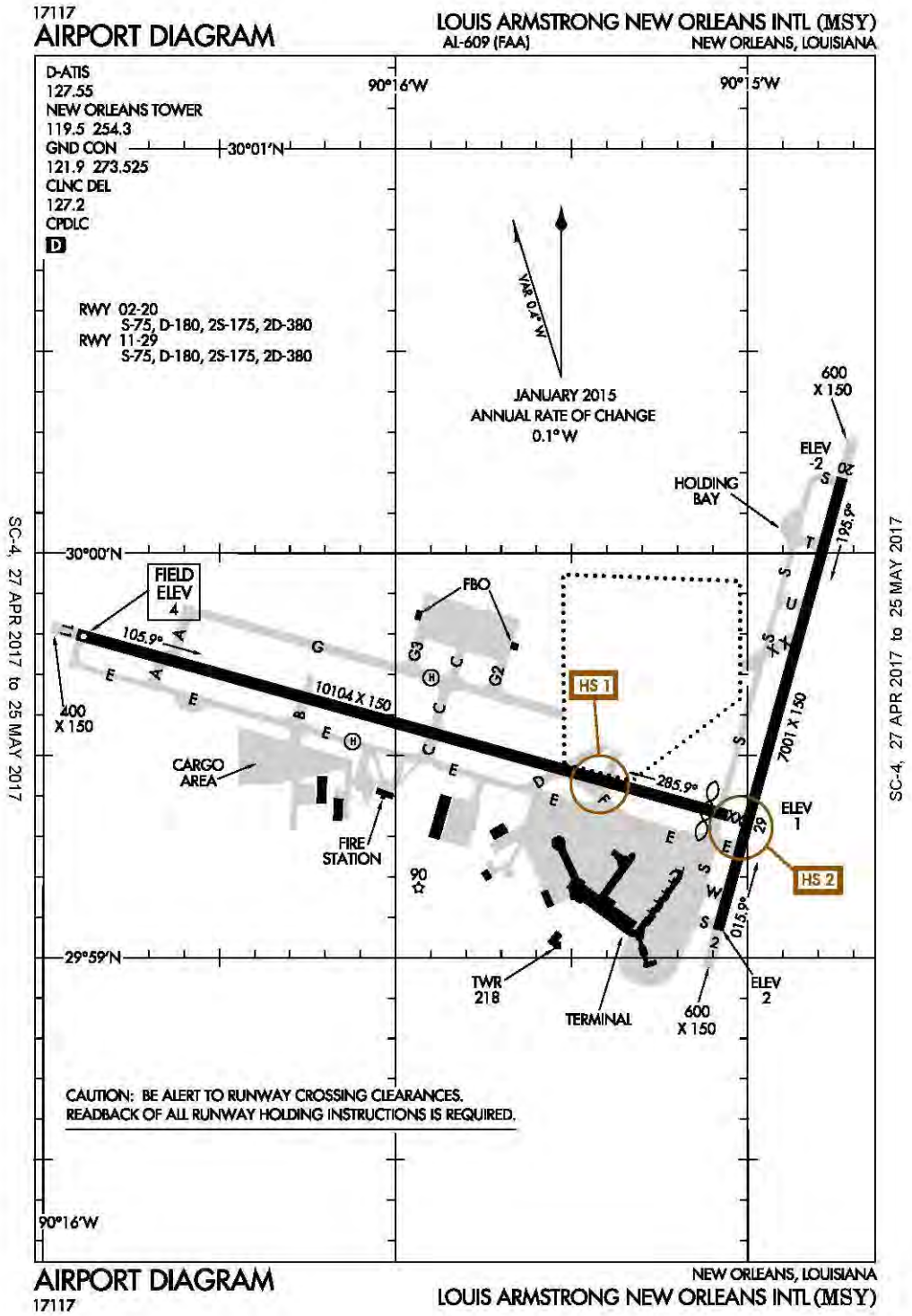
SUCCESSIVE OR SIMULTANEOUS DEPARTURES FROM RUNWAY 36L AND RUNWAY 36R ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 2 MILES FROM END OF RUNWAY DUE TO NOISE ABATEMENT RESTRICTIONS.

LARGE FLOCKS OF BIRDS ON AND IN THE VICINITY OF THE AIRPORT.

RAMP CONTROL EFFECTIVE 0800−0400Z. RAMP CONTROL 130.375 130.900 DHL RAMP CONTROL 129.475

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

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: 29–59–35.80N / 90–15–32.50W
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: Walter Krygowski
PO BOX 20007
New Orleans, LA 70141
(504) 303–7551
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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: ARFF Index I D certified on 5/1/1973

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 02
2.10.1.b Type of obstacle: Road (12 ft). Lighted
2.10.1.c Location of obstacle: 365 ft from Centerline

2.10.1.a. Runway designation: 20
2.10.1.b Type of obstacle: Road (13 ft). Lighted
2.10.1.c Location of obstacle: 289 ft from Centerline

2.10.1.a. Runway designation: 29
2.10.1.b Type of obstacle: Tree (53 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 694 ft from Centerline

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
2.12.5 Coordinates: 29–59–00.00N / 90–15–00.00W
2.12.6 Threshold elevation: 2 ft
2.12.6 Touchdown zone elevation: 2 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 195
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.5 Coordinates: 30–00–10.99N / 90–14–43.84W
2.12.6 Threshold elevation: –2 ft
2.12.6 Touchdown zone elevation: –1 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 105
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.5 Coordinates: 29–59–47.86N / 90–16–54.22W
2.12.6 Threshold elevation: 4 ft
2.12.6 Touchdown zone elevation: 4 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 285
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.5 Coordinates: 29–59–21.17N / 90–15–00.00W
2.12.6 Threshold elevation: 1 ft
2.12.6 Touchdown zone elevation: 2 ft

AD 2.13 Declared distances

2.13.1 Designation: 02
2.13.2 Takeoff run available: 7001
2.13.3 Takeoff 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 Takeoff run available: 7001
2.13.3 Takeoff 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 Takeoff run available: 10104
2.13.3 Takeoff distance available: 10104
2.13.4 Accelerate–stop distance available: 10104
2.13.5 Landing distance available: 10104

2.13.1 Designation: 29
2.13.2 Takeoff run available: 10104
2.13.3 Takeoff 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
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 20
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 11
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 29
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 123.85 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 127.2 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 133.15 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 133.15 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 254.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 350.35 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B
2.18.3 Service designation: 350.35 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 273.525 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.55 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 02. Magnetic variation: 1W
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 30−00−20.51N / 90−14−40.81W
2.19.6 Site elevation: −4.2 ft

2.19.1 ILS type: DME for runway 02. Magnetic variation: 1W
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 30−00−21.66N / 90−14−43.25W
2.19.6 Site elevation: 1.3 ft

2.19.1 ILS type: Outer Marker for runway 02. Magnetic variation: 1W
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 29−54−53.36N / 90−16−26.35W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 02. Magnet-

ic variation: 1W
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 29–58–28.53N / 90–15–15.88W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 02. Magnetic variation: 1W
2.19.2 ILS identification: JFI
2.19.5 Coordinates: 29–59–13.61N / 90–14–58.56W
2.19.6 Site elevation: –0.9 ft

2.19.1 ILS type: DME for runway 20. Magnetic variation: 1W
2.19.2 ILS identification: ONW
2.19.5 Coordinates: 30–00–21.66N / 90–14–43.25W
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: 29–58–55.15N / 90–15–00.00W
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: 29–59–17.21N / 90–14–55.72W
2.19.6 Site elevation: 12.4 ft

2.19.1 ILS type: Outer Marker for runway 11. Magnetic variation: 1W
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 30–01–30.85N / 90–23–59.59W
2.19.6 Site elevation: 7.2 ft

2.19.1 ILS type: Localizer for runway 11. Magnetic variation: 1W
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29–59–19.32N / 90–14–55.85W
2.19.6 Site elevation: –0.5 ft

2.19.1 ILS type: Glide Slope for runway 11. Magnetic variation: 1W
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29–59–48.62N / 90–16–39.25W
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: 29–59–50.26N / 90–17–00.00W
2.19.6 Site elevation: 4.4 ft

2.19.1 ILS type: Middle Marker for runway 11. Magnetic variation: 1W
2.19.2 ILS identification: MSY
2.19.5 Coordinates: 29–59–56.63N / 90–17–22.12W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 29. Magnetic variation: 1W
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29–59–50.52N / 90–17–00.00W
2.19.6 Site elevation: 4.4 ft

2.19.1 ILS type: Glide Slope for runway 29. Magnetic variation: 1W
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29–59–27.97N / 90–15–16.79W
2.19.6 Site elevation: 0.1 ft

2.19.1 ILS type: Outer Marker for runway 29. Magnetic variation: 1W
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29–58–12.35N / 90–10–27.99W
2.19.6 Site elevation: 5 ft

2.19.1 ILS type: Middle Marker for runway 29. Magnetic variation: 1W
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29–59–15.11N / 90–14–37.70W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: DME for runway 29. Magnetic variation: 1W
2.19.2 ILS identification: HOX
2.19.5 Coordinates: 29–59–17.21N / 90–14–55.72W
2.19.6 Site elevation: 12.4 ft

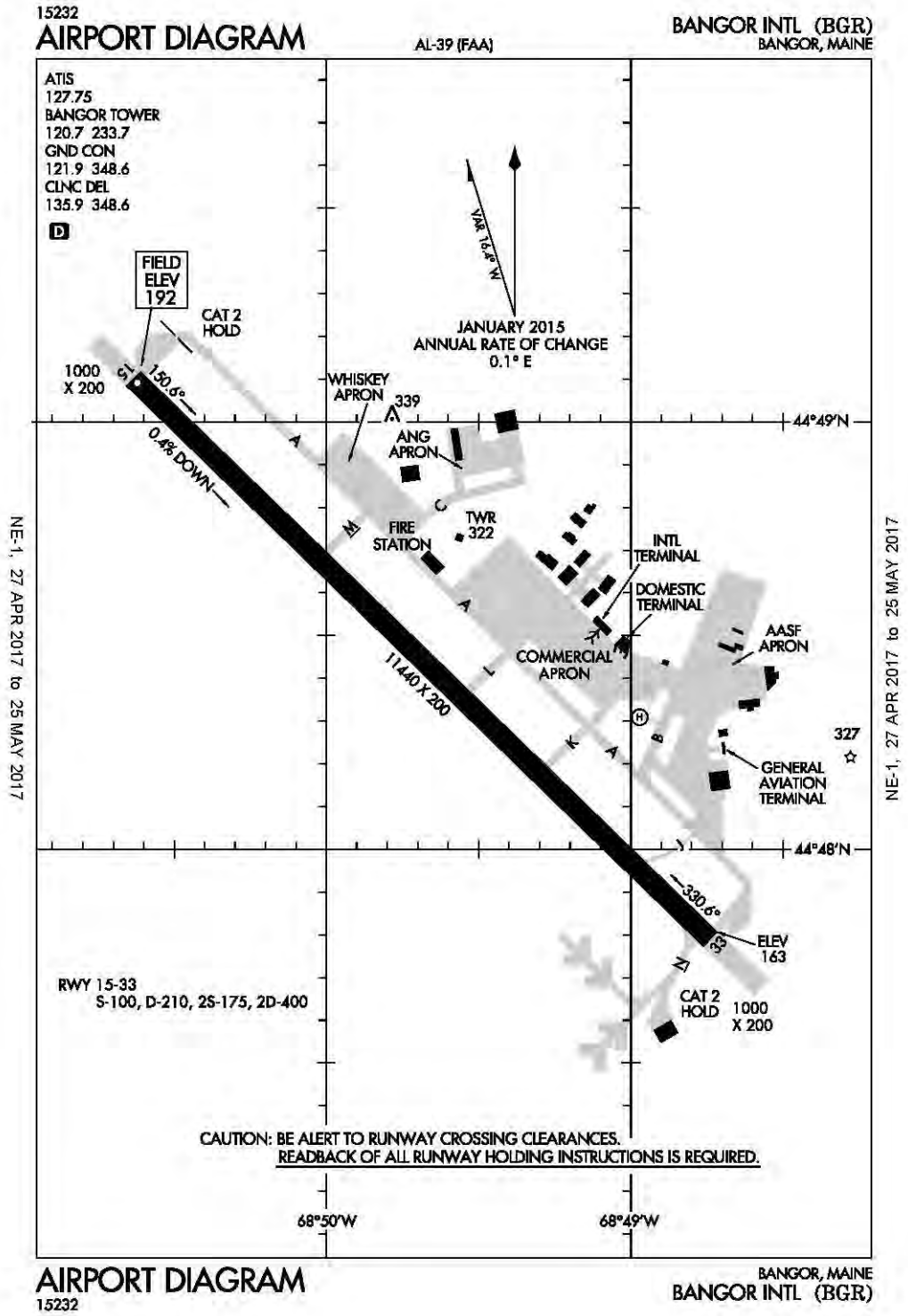
General Remarks:
180 DEGREE & LOCKED WHEEL TURNS PROHIBITED ON ASPHALT SURFACE AIRCRAFT 12500 LBS & OVER.

FLOCKS OF BIRDS ON & IN VICINITY OF AIRPORT.

RUNWAY 11 NOISE SENSITIVE FOR DEP; AVAILABLE FOR OPERATIONAL NECESSITY. ALL RUNWAYS

NOISE SENSITIVE FOR ARR. ARRIVING TURBOJETS MUST MAKE 5 MILE FINAL APPROACH 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: 44−48−26.80N / 68−49−41.30W
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 Operational hours
2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 33
2.10.1.b Type of obstacle: Trees (76 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

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
2.12.5 Coordinates: 44−49−00.00N / 68−50−38.15W
2.12.6 Threshold elevation: 192 ft
2.12.6 Touchdown zone elevation: 192 ft

2.12.1 Designation: 33
2.12.2 True Bearing: 314
2.12.3 Dimensions: 11440 ft x 200 ft
2.12.5 Coordinates: 44−47−47.41N / 68−48−44.36W
2.12.6 Threshold elevation: 163 ft
2.12.6 Touchdown zone elevation: 163 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 100 ft x 100 ft

AD 2.13 Declared distances
2.13.1 Designation: 15
2.13.2 Takeoff run available: 11440
2.13.3 Takeoff distance available: 11440
2.13.4 Accelerate−stop distance available: 11440
2.13.5 Landing distance available: 11440

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/S DEP/S CLASS C/S
2.18.3 Service designation: 124.5 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 127.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 135.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: NG OPS
2.18.3 Service designation: 41.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C/P IC
2.18.3 Service designation: 118.925 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 233.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 15. Magnetic variation: 16W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44–47–40.37N / 68–48–34.19W
2.19.6 Site elevation: 161.7 ft

2.19.1 ILS type: Glide Slope for runway 15. Magnetic variation: 16W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44–49–00.00N / 68–50–22.48W
2.19.6 Site elevation: 187.7 ft

2.19.1 ILS type: DME for runway 15. Magnetic variation: 16W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44–47–42.50N / 68–48–31.81W
2.19.6 Site elevation: 166.2 ft

2.19.1 ILS type: Inner Marker for runway 15. Magnetic variation: 16W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44–49–12.06N / 68–50–46.72W
2.19.6 Site elevation: 184 ft

2.19.1 ILS type: Middle Marker for runway 15. Magnetic variation: 16W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44–49–23.69N / 68–51–00.00W
2.19.6 Site elevation: 158 ft

2.19.1 ILS type: Outer Marker for runway 15. Magnetic variation: 16W
2.19.2 ILS identification: JVH
2.19.5 Coordinates: 44–52–49.62N / 68–55–59.54W
2.19.6 Site elevation: 129 ft

2.19.1 ILS type: Localizer for runway 33. Magnetic variation: 16W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44–49–13.62N / 68–50–48.98W
2.19.6 Site elevation: 181.7 ft

2.19.1 ILS type: Outer Marker for runway 33. Magnetic variation: 16W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44–43–39.19N / 68–42–46.33W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 33. Magnetic variation: 16W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44–47–53.70N / 68–48–59.71W
2.19.6 Site elevation: 148.8 ft

2.19.1 ILS type: Middle Marker for runway 33. Magnetic variation: 16W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44–47–30.62N / 68–48–20.24W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 33. Magnetic variation: 16W
2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44–47–42.50N / 68–48–31.81W
2.19.6 Site elevation: 166.2 ft

General Remarks:
TAXIWAY J LIMITED TO AIRCRAFT 75000 LBS GROSS TAKEOFF WEIGHT

TRANSIENT AIRCRAFT MAY BE DIVERTED TO CIVILIAN SIDE DURING NON–DUTY HRS & WEEKENDS. FEE REQUIRED; NO ANG TRANSIENT ALERT.

RESTRICTED: TAXIWAY 'J' CLOSED DURING WINTER.

TRAFFIC PATTERN: RUNWAY 33 LEFT TRAFFIC, TURBO JET TRAFFIC 2000' MSL UNLESS OTHERWISE INSTR.

MISC: RUNWAY 15−33 GROOVED.

ANG: PRIOR PERMISSION REQUIREDUIRED DSN 698−7232 (COMM 207−990−7232), 3 HR OUT CALL (HF 6761) & 30 MIN OUT CALL (311.0) REQUIRED TO ENSURE CUSTOMS/AG AVAIL & TIMELY TRANSIENT SERVICE. TRANSIENT MAINT AVAILABLE BY PRIOR PERMISSION REQUIRED. TRANSIENT AIRCRAFT MAY BE DIVERTED TO CIVIL SIDE DUR OPERATING HRS.

ANG: FEE REQUIRE. ANG NOT EQUIPMENT OR MANNED WITH AN AERIAL PORT FLIGHT 30 OR MORE PASSENGER WILL BE SENT TO CITY FOR PROCESSING. CAN HANDLE ALL AIR MOBILITY COMMAND AIRCRAFT. SERVICE AVAILABLE 24/7. CITY WILL ACCEPT ALL FLIGHTS. NO RESTRICTIONS FOR HAZARD CARGO. CALL CITY OPERATIONS AT 207−992−4623 TO COORD PARKING

ARRANGE: OPR 1230−2100Z++ MON−FRI EXCEPT HOLIDAY. LIMITED MAINT. J8. PRIOR PERMISSION REQUIRED MAY−OCT SERVICE DSN 626−1100.

CAUTION: BASH PHASE II PERIOD OCT−NOV, APR−MAY. EXPECT INCREASED BIRD ACTIVITY. CONTACT BASE OPS/COMMAND POST/SOF FOR CURRENT BIRDWATCH CONDITION.

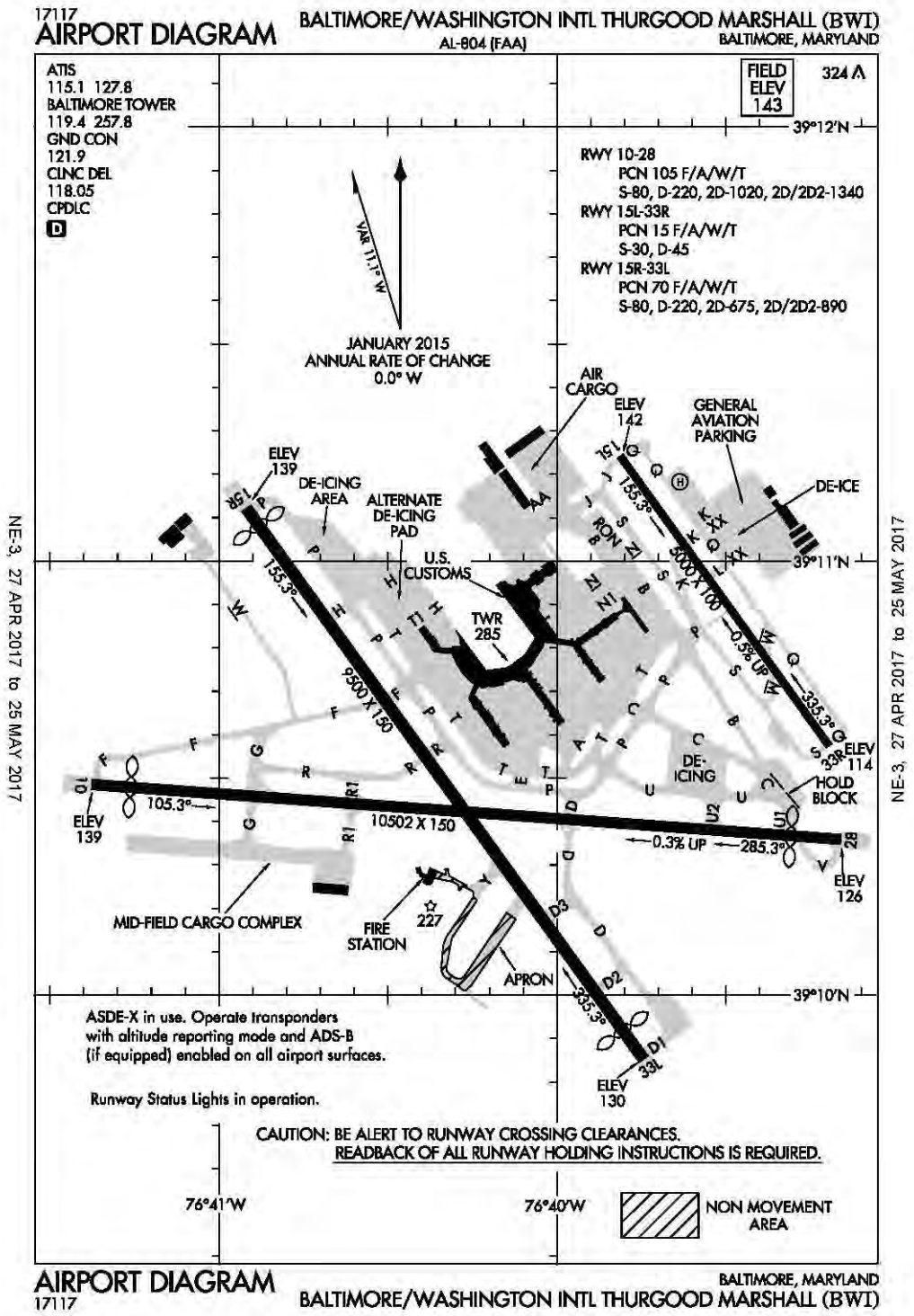
SERVICE−FLUID: REMARKS: FOREIGN MILITARY ONLY: ON BASE LOX SERVICE UNAVAILABLE.

FUEL: A++ (MIL).

MILITARY SVR−FLUID: OFF−BASE CONTRACTED LOX AVAILABLE H24−RQR 24HR NOTICE, PRIOR PERMISSION REQUIRED CONTACT C207−404−7232.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −31C/−24F.

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: 39−10−32.62N / 76−40−00.00W
2.2.2 From City: 9 Miles S Of Baltimore, MD
2.2.3 Elevation: 143.2 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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: RWY 28 De−Ice Pad Lane 1 R Standard To Aircraft With Wingspan 171 Ft Or Less, Lane 2 R Standard To Aircraft With Wingspan 135 Ft Or Less, Lane 3 Is Used By Large Aircraft Max Wingspan 215 Ft And When In Use− Lanes 2 And 4 Are Unavailable. Lanes 4, 5 & 6 Are R Standard To Aircraft Wingspan 135 Ft Or Less.
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 15L
2.10.1.b Type of obstacle: Pole (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 615 ft from Centerline

2.10.1.a. Runway designation: 33R
2.10.1.b Type of obstacle: Tree (39 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 585 ft from Centerline

2.10.1.a. Runway designation: 15R
2.10.1.b Type of obstacle: Ant (126 ft). Lighted
2.10.1.c Location of obstacle: 908 ft from Centerline

2.10.1.a. Runway designation: 33L
2.10.1.b Type of obstacle: Tower (154 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 906 ft from Centerline

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Tree (35 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 305 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Tree (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 425 ft from Centerline

AD 2.12 Runway physical characteristics

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: 39−11−14.54N / 76−39−48.74W
2.12.6 Threshold elevation: 142 ft
2.12.6 Touchdown zone elevation: 142 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: 39−10−34.45N / 76−39−11.63W
2.12.6 Threshold elevation: 114 ft
2.12.6 Touchdown zone elevation: 124 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 144
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39−11−00.00N / 76−40−55.17W
2.12.6 Threshold elevation: 139 ft
2.12.6 Touchdown zone elevation: 138 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 324
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39−09−51.13N / 76−39−44.61W
2.12.6 Threshold elevation: 130 ft
2.12.6 Touchdown zone elevation: 143 ft

2.12.1 Designation: H1
2.12.3 Dimensions: 100 ft x 100 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 94
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 105 F/A/W/T
2.12.5 Coordinates: 39–10–29.09N / 76–41–22.63W
2.12.6 Threshold elevation: 139 ft
2.12.6 Touchdown zone elevation: 143 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 274
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 105 F/A/W/T
2.12.5 Coordinates: 39–10–21.48N / 76–39–00.00W
2.12.6 Threshold elevation: 126 ft
2.12.6 Touchdown zone elevation: 143 ft
2.12.7 Slope: 0.3UP

AD 2.13 Declared distances
2.13.1 Designation: 15L
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate–stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 33R
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate–stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 15R
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate–stop distance available: 8600
2.13.5 Landing distance available: 8300

2.13.1 Designation: 33L
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate–stop distance available: 8800
2.13.5 Landing distance available: 8300

2.13.1 Designation: 10
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate–stop distance available: 10502
2.13.5 Landing distance available: 9952

2.13.1 Designation: 28
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate–stop distance available: 10502
2.13.5 Landing distance available: 9802

AD 2.14 Approach and runway lighting
2.14.1 Designation: 15L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 33R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 15R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 33L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 10
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 28
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 115.1 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−10−29.40N / 76−39−00.00W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: Outer Marker for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−14−55.34N / 76−43−16.63W
2.19.6 Site elevation: 301 ft

2.19.1 ILS type: Middle Marker for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−11−37.14N / 76−40−00.00W
2.19.6 Site elevation: 180 ft

2.19.1 ILS type: Glide Slope for runway 15L. Magnetic variation: 11W
2.19.2 ILS identification: UQC
2.19.5 Coordinates: 39−11−00.00N / 76−39−44.24W
2.19.6 Site elevation: 138.1 ft

2.19.1 ILS type: Middle Marker for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−10−00.00N / 76−38−48.58W
2.19.6 Site elevation: 80 ft

2.19.1 ILS type: DME for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−11−18.90N / 76−39−48.50W
2.19.6 Site elevation: 128.7 ft

2.19.1 ILS type: Localizer for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−11−19.76N / 76−39−53.57W
2.19.6 Site elevation: 133 ft

2.19.1 ILS type: Glide Slope for runway 33R. Magnetic variation: 11W
2.19.2 ILS identification: BWI
2.19.5 Coordinates: 39−10−40.05N / 76−39−21.19W
2.19.6 Site elevation: 110.3 ft

2.19.1 ILS type: Localizer for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−09−39.11N / 76−39−33.48W
2.19.6 Site elevation: 116 ft

2.19.1 ILS type: Outer Marker for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−14−13.45N / 76−43−52.10W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−10−53.60N / 76−40−48.90W
2.19.6 Site elevation: 130 ft

2.19.1 ILS type: Middle Marker for runway 15R. Magnetic variation: 11W
2.19.2 ILS identification: FND
2.19.5 Coordinates: 39−11−33.15N / 76−41−19.11W
2.19.6 Site elevation:

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

2.19.1 ILS type: DME for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39−11−00.00N / 76−41−00.00W

2.19.6 Site elevation: 127 ft

2.19.1 ILS type: Glide Slope for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39–10–00.00N / 76–39–59.72W
2.19.6 Site elevation: 125 ft

2.19.1 ILS type: Middle Marker for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39–09–29.15N / 76–39–26.74W
2.19.6 Site elevation: 92 ft

2.19.1 ILS type: Outer Marker for runway 33L. Magnetic variation: 11W
2.19.2 ILS identification: RUX
2.19.5 Coordinates: 39–06–36.92N / 76–36–43.69W
2.19.6 Site elevation: 151 ft

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39–10–23.56N / 76–41–00.00W
2.19.6 Site elevation: 137.6 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39–10–45.89N / 76–46–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39–10–30.85N / 76–41–53.99W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39–10–20.59N / 76–38–54.29W
2.19.6 Site elevation: 137.6 ft

2.19.1 ILS type: Inner Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: BAL
2.19.5 Coordinates: 39–10–31.24N / 76–41–27.11W
2.19.6 Site elevation: 131 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 11W
2.19.2 ILS identification: OEH
2.19.5 Coordinates: 39–09–56.02N / 76–31–00.00W
2.19.6 Site elevation: 39 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 / 76–41–35.42W
2.19.6 Site elevation: 134 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 / 76–39–31.02W
2.19.6 Site elevation: 129.2 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 11W
2.19.2 ILS identification: OEH
2.19.5 Coordinates: 39–10–18.69N / 76–38–22.68W
2.19.6 Site elevation: 55 ft

General Remarks:
PRACTICE LANDING & APPROACH BY TURBO–POWERED AIRCRAFT PROHIBITED 2200–0600; PRACTICE LANDING & TAKE-OFF BY B–747 AIRCRAFT PROHIBITED RUNWAY 15R/33L.

CONT MOWING OPERATIONS ADJACENT ALL RUNWAYS & TAXIWAYS – APR THRU NOV.

NO APRON PARKING FOR UNSCHEDULED AIR CARRIER.

DEER & BIRDS OCCASIONALLY ON & IN THE VICINITY OF AIRPORT.

DISTRACTING LIGHTS (GOLF DRIVING RANGE) RIGHT SIDE EXTENDED CENTERLINE RUNWAY 33L FROM APPROACH END RUNWAY TO 1/4 MI FINAL.

NOISE ABATEMENT PROCEDURES IN EFFECT – RESTRICTION FOR RUNWAY 15L/33R EXCEPT FOR EMERGENCIES OR MERCY FLIGHTS CONTACT AIRPORT MANAGER FOR INFORMATION.

MAJOR CONSTRUCTION ON AIRPORT DAILY; AIRCRAFT MOVEMENT & PARKING AREAS SUBJECT TO SHORT NOTICE CHANGE/CLOSURE. FOR CURRENT INFORMATION PHONE BWI OPERATIONS CENTER 410−859−7018.

AIRCRAFT ON VISUAL APPROACHES EXPECT TO MAINTAIN 3,000 FT UNTIL 10 DME FROM BALANCE VORTAC; DEPART AIRCRAFT SHOULD EXPECT TURNS BASED ON BALTIMORE DME.

TAXIING PROHIBITED BETWEEN GATE C14 & ADJACENT BUILDING STRUCTURE 'SW' OF PIER C.

RUNWAY 15R DEICE PAD, POSITION # 1, RESTRICTED TO AIRCRAFT WITH WINGSPAN OF 156 FT 1 INCH OR LESS & LENGTH OF 180 FT 3 INCHES OR LESS. PSN'S #2 & #3 ARE RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF 156 FT 1 INCH OR LESS, POSITION #3 IS RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF 156 FT 1 INCH OR LESS & LENGTH OF 180 FT 3 INCHES OR LESS; POSITION 4 RESTRICTED TO AIRCRAFT WITH WINGSPAN OF 213 FT OR LESS & LENGTH OF 229 FT 2 INCHES OR LESS.

TAXIWAY "S", SOUTH OF TAXIWAY "P", RESTRICTED TO AIRCRAFT 60,000 LBS. & LESS.

GENERAL AVIATION AIRCRAFT CONTACT UNICOM PRIOR TO ARRIVING AT GENERAL AVIATION RAMP FOR SECURITY PURPOSES.

TAXILANES 'T−1' & "H" RESTRICTED TO GROUP III AIRCRAFT WITH MAX WINGSPAN OF 118 FEET.

CONCOURSE A − ALTERNATE DEICING AREA IS RESTRICTED TO B737−800 SIZE AIRCRAFT WITH WINGLETS OR SMALLER ON SPOTS 6, 7A, AND 8A. B737−700 SIZE AIRCRAFT WITH WINGLETS OR SMALLER ARE RESTRICTED TO SPOTS 7B & 8B.

RUNWAY 28 DE−ICE PAD LANE 1 RESTRICTED TO AIRCRAFT WITH WINGSPAN 171 FT OR LESS, LANE 2 RESTRICTED TO AIRCRAFT WITH WINGSPAN 135 FT OR LESS, LANE 3 IS USED BY LARGE AIRCRAFT MAX WINGSPAN 215 FT AND WHEN IN USE− LANES 2 AND 4 ARE UNAVAILABLE. LANES 4, 5 & 6 ARE RESTRICTED TO AIRCRAFT WINGSPAN 135 FT OR LESS.

TAXIWAY T BETWEEN TAXIWAY H AND TAXIWAY E RESTRICTED TO GROUP IV AIRCRAFT WITH WINGSPAN LESS THAN 171'. TAXIWAY T BETWEEN TAXIWAY E AND TAXIWAY B RESTRICTED TO GROUP V AIRCRAFT WITH WINGSPAN LESS THAN 214'; WHEN GROUP V AIRCRAFT ARE ON TAXIWAY T, TAXIWAY A IS RESTRICTED TO MAX WINGSPANS OF 110'.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

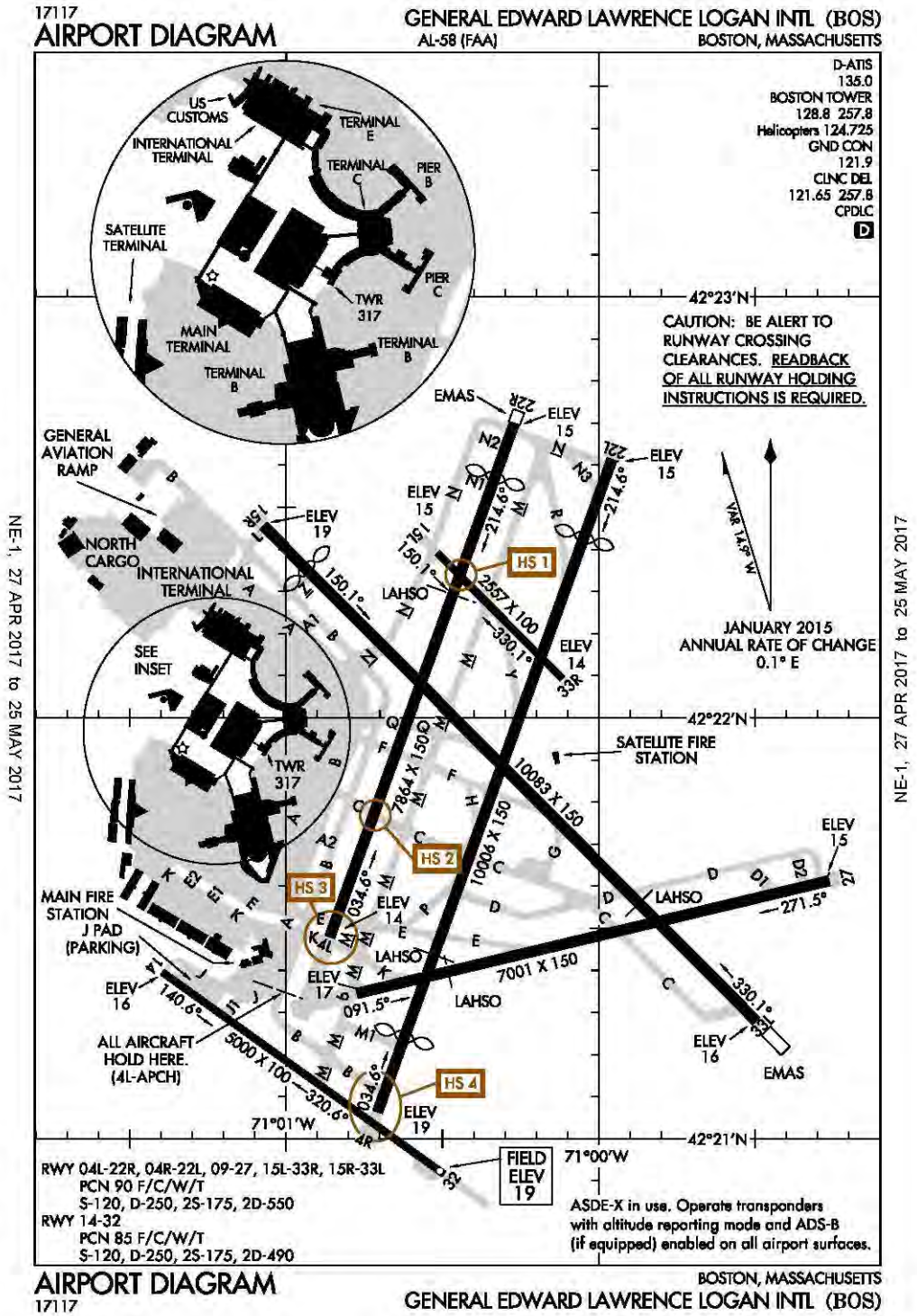
DUAL PARALLEL TAXILANES HAVE BEEN ADDED TO THE 'D'/'E' ALLEYWAY; TAXILANE 'N' AND TAXILANE 'N1'. TAXILANE 'N' IS DESIGNATED A "GROUP V" TAXILANE WITH MAX WINGSPAN OF 213 FT. TAXILANE 'N1' IS DESIGNATED A "GROUP IV" TAXILANE WITH MAX WINGSPAN OF 170 FT.

TAXIWAY 'A' IS RESTRICTED TO GROUP IV AIRCRAFT WINGSPAN 171 FT OR LESS.

RUNWAY LENGTH AVAILABLE FOR RUNWAY 28 DEPS FROM TAXIWAY U1 IS 9802 FT.

RUNWAY STATUS LIGHTS IN OPN.

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: 42−21−46.60N / 71−00−23.00W
2.2.2 From City: 1 Miles E Of Boston, MA
2.2.3 Elevation: 19.1 ft
2.2.5 Magnetic variation: 16W (1995)
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 Operational hours

2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Boat (158 ft). Lighted

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Boat (45 ft). Lighted

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Boat (161 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Boat (44 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Boat (157 ft). Lighted

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Boat (45 ft). Not Lighted or Marked
2.10.1.a. Runway designation: 15R
2.10.1.b Type of obstacle: Trees (62 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 140 ft from Centerline

2.10.1.a. Runway designation: 33L
2.10.1.b Type of obstacle: Boat (160 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Bldg (174 ft). Lighted
2.10.1.c Location of obstacle: 70 ft from Centerline

AD 2.12 Runway physical characteristics

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: 42−21−20.72N / 71−00−46.42W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 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: 42−21−36.78N / 70−59−15.73W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 17 ft

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: 42−21−28.76N / 71−00−51.62W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 14 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: 42−22−41.88N / 71−00−16.25W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 15 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: 42−21−00.00N / 71−00−42.46W
2.12.6 Threshold elevation: 19 ft

2.12.6 Touchdown zone elevation: 18 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: 42–22–36.84N / 70–59–57.45W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 16 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: 42–22–27.37N / 71–01–00.00W
2.12.6 Threshold elevation: 19 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: 42–21–16.74N / 70–59–29.71W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 16 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: 42–21–23.75N / 71–01–23.79W
2.12.6 Threshold elevation: 16 ft
2.12.6 Touchdown zone elevation: 19 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: 42–20–54.96N / 71–00–29.68W
2.12.6 Threshold elevation: 19 ft
2.12.6 Touchdown zone elevation: 19 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: 42–22–23.50N / 71–00–31.01W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 16 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: 42–22–00.00N / 71–00–00.00W
2.12.6 Threshold elevation: 14 ft
2.12.6 Touchdown zone elevation: 16 ft

AD 2.13 Declared distances

2.13.1 Designation: 09
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate–stop distance available: 7000
2.13.5 Landing distance available: 7000

2.13.1 Designation: 27
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate–stop distance available: 7000
2.13.5 Landing distance available: 7000

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 7861
2.13.3 Takeoff distance available: 7861
2.13.4 Accelerate–stop distance available: 7861
2.13.5 Landing distance available: 7861

2.13.1 Designation: 22R
2.13.2 Takeoff run available: 7861
2.13.3 Takeoff distance available: 7861
2.13.4 Accelerate–stop distance available: 7861
2.13.5 Landing distance available: 7046

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 10005
2.13.3 Takeoff distance available: 10005
2.13.4 Accelerate–stop distance available: 10005
2.13.5 Landing distance available: 8851

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 10005
2.13.3 Takeoff distance available: 10005
2.13.4 Accelerate–stop distance available: 10005
2.13.5 Landing distance available: 8806

2.13.1 Designation: 15R
2.13.2 Takeoff run available: 10083
2.13.3 Takeoff 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 Takeoff run available: 10083
2.13.3 Takeoff distance available: 10083
2.13.4 Accelerate−stop distance available: 10083
2.13.5 Landing distance available: 10083

2.13.1 Designation: 14
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff 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 Takeoff run available: 5000
2.13.3 Takeoff 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 Takeoff run available: 2557
2.13.3 Takeoff 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 Takeoff run available: 2557
2.13.3 Takeoff distance available: 2557
2.13.4 Accelerate−stop distance available: 2557
2.13.5 Landing distance available: 2557

AD 2.14 Approach and runway lighting
2.14.1 Designation: 27
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 15R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 124.725 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P (ARR/DEP RY 14/32)
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: LCL/P (ARR/DEP RYS 04R/22L 09/27)
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: LCL/P (ARR/DEP RYS 4L/22R 15R/33L 15L/33R)
2.18.3 Service designation: 128.8 MHz

2.18.1 Service designation: GATE CTL
2.18.3 Service designation: 134.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P CD/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.75 MHz

2.18.1 Service designation: LCL/S (ARR/DEP RYS 04R/22L, 09/27)
2.18.3 Service designation: 132.225 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 16W
2.19.2 ILS identification: DGU
2.19.5 Coordinates: 42–21–18.48N / 71–00–59.05W
2.19.6 Site elevation: 16.5 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 16W
2.19.2 ILS identification: DGU
2.19.5 Coordinates: 42–21–31.30N / 70–59–28.35W
2.19.6 Site elevation: 12.3 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 16W
2.19.2 ILS identification: DGU
2.19.5 Coordinates: 42–21–15.70N / 71–00–55.78W
2.19.6 Site elevation: 30.5 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42–22–57.47N / 70–59–50.90W
2.19.6 Site elevation: 34.5 ft

2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42–16–25.52N / 71–02–56.95W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42–22–55.97N / 70–59–48.19W
2.19.6 Site elevation: 17.6 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42–21–21.82N / 71–00–24.55W
2.19.6 Site elevation: 10.1 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42–21–00.00N / 71–00–39.93W
2.19.6 Site elevation: 16.5 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 16W
2.19.2 ILS identification: BOS
2.19.5 Coordinates: 42–20–53.19N / 71–00–47.61W
2.19.6 Site elevation: 11.8 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42–22–57.47N / 70–59–50.89W
2.19.6 Site elevation: 34.5 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42–27–00.00N / 70–57–47.83W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42–21–00.00N / 71–00–44.28W
2.19.6 Site elevation: 14.6 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 16W
2.19.2 ILS identification: LQN
2.19.5 Coordinates: 42–22–17.00N / 71–00–11.99W
2.19.6 Site elevation: 11.1 ft

2.19.1 ILS type: Localizer for runway 15R. Magnetic variation: 16W
2.19.2 ILS identification: MDC
2.19.5 Coordinates: 42–21–26.36N / 70–59–37.05W
2.19.6 Site elevation: 11.1 ft

2.19.1 ILS type: Glide Slope for runway 15R. Magnetic variation: 16W
2.19.2 ILS identification: MDC
2.19.5 Coordinates: 42−22−14.69N / 71−00−42.42W
2.19.6 Site elevation: 11.3 ft

2.19.1 ILS type: DME for runway 15R. Magnetic variation: 16W
2.19.2 ILS identification: MDC
2.19.5 Coordinates: 42−21−26.51N / 70−59−35.06W
2.19.6 Site elevation: 26.4 ft

2.19.1 ILS type: DME for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42−21−26.51N / 70−59−35.06W
2.19.6 Site elevation: 26.4 ft

2.19.1 ILS type: Glide Slope for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42−21−26.64N / 70−59−34.71W
2.19.6 Site elevation: 11.3 ft

2.19.1 ILS type: Middle Marker for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42−20−58.45N / 70−59−00.00W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Localizer for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42−22−37.56N / 71−01−18.09W
2.19.6 Site elevation: 15.9 ft

2.19.1 ILS type: Outer Marker for runway 33L. Magnetic variation: 16W
2.19.2 ILS identification: LIP
2.19.5 Coordinates: 42−18−11.14N / 70−55−18.75W
2.19.6 Site elevation:

General Remarks:
BIRDS ON & IN THE VICINITY OF AIRPORT.

NOISE SENSITIVE AREA − HELICOPTERS OPERATING WITHIN THE CONTROL ZONE ARE REQUIRED TO MAINT THE HIGHEST POSSIBLE ALTITUDE.

BETWEEN 0000−0600 LOCAL − RUNWAY 15R IS PREFERENTIAL NIGHT RUNWAY FOR TAKE-OFF & RUNWAY 33L IS PREFERENTIAL NIGHT RUNWAY FOR LANDING.

FOR NOISE ABATEMENT PROCEDURES CALL 617−561−1636 0900−1700 MON−FRI.

NO REMAINING OVERNIGHT PARKING FOR NON−TENANT CHARTER AIRCRAFT WITHOUT PRIOR MASSPORT PERMISSION.

TERMINAL E; NORTH & SOUTH CARGO ARRIVALS CONTACT MASSPORT GATE CONTROL ON FREQ 131.1 BEFORE ENTERING/DEPARTING RAMP AREA.

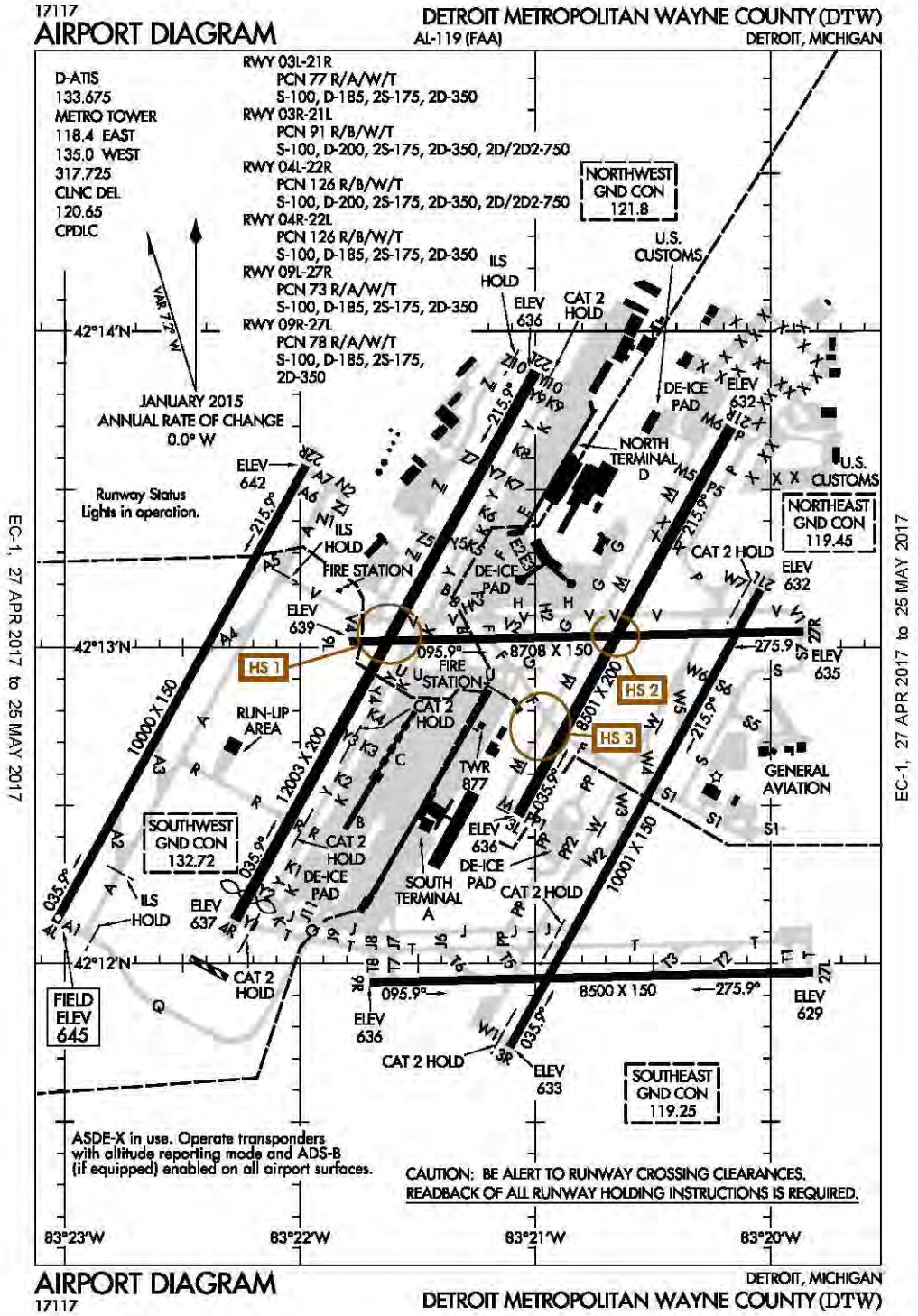
NUMEROUS CRANES ON & IN THE VICINITY OF OF AIRPORT UP TO & INCLUDING 250 FT. MSL.

RY14/32 UNIDIRECTIONAL; NO LANDINGS RUNWAY 14; NO TAKEOFFS RUNWAY 32.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PILOTS SHOULD COMPLETE ALL CALCULATIONS PRIOR TO PUSHBACK FROM GATE.

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: 42−12−44.70N / 83−21−12.20W
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: Joe Nardone
1 L C SMITH BUILDING MEZZANINE
Detroit, MI 48242 (734−942−3550)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Tree (75 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 159 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Rr (27 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 597 ft from Centerline

2.10.1.a. Runway designation: 21L
2.10.1.b Type of obstacle: Berm (19 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 529 ft from Centerline

2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Ant (107 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 461 ft from Centerline

2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Berm (7 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 373 ft from Centerline

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Tree (48 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 157 ft from Centerline

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Road (14 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 545 ft from Centerline

2.10.1.a. Runway designation: 03L
2.10.1.b Type of obstacle: Pole (19 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 569 ft from Centerline

2.10.1.a. Runway designation: 21R
2.10.1.b Type of obstacle: Pole (42 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 179 ft from Centerline

AD 2.12 Runway physical characteristics
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: 42−12−00.00N / 83−22−16.57W
2.12.6 Threshold elevation: 637 ft
2.12.6 Touchdown zone elevation: 638 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: 42−13−52.37N / 83−20−59.97W
2.12.6 Threshold elevation: 636 ft
2.12.6 Touchdown zone elevation: 637 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: 42−11−44.21N / 83−21−00.00W
2.12.6 Threshold elevation: 633 ft
2.12.6 Touchdown zone elevation: 633 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: 42–13–10.86N / 83–20–00.00W
2.12.6 Threshold elevation: 632 ft
2.12.6 Touchdown zone elevation: 632 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: 42–13–00.00N / 83–21–47.41W
2.12.6 Threshold elevation: 639 ft
2.12.6 Touchdown zone elevation: 640 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: 42–13–00.00N / 83–19–51.72W
2.12.6 Threshold elevation: 635 ft
2.12.6 Touchdown zone elevation: 635 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: 42–11–56.46N / 83–21–42.23W
2.12.6 Threshold elevation: 636 ft
2.12.6 Touchdown zone elevation: 636 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: 42–11–58.34N / 83–19–49.33W
2.12.6 Threshold elevation: 629 ft
2.12.6 Touchdown zone elevation: 630 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: 42–12–00.00N / 83–23–00.00W
2.12.6 Threshold elevation: 645 ft
2.12.6 Touchdown zone elevation: 645 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: 42–13–34.48N / 83–21–58.61W
2.12.6 Threshold elevation: 642 ft
2.12.6 Touchdown zone elevation: 642 ft

2.12.1 Designation: 04X
2.12.2 True Bearing: 29
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 22X
2.12.2 True Bearing: 209
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 03L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 8501 ft x 200 ft
2.12.4 PCN: 77 R/A/W/T
2.12.5 Coordinates: 42–12–28.21N / 83–21–00.00W
2.12.6 Threshold elevation: 636 ft
2.12.6 Touchdown zone elevation: 637 ft

2.12.1 Designation: 21R
2.12.2 True Bearing: 209
2.12.3 Dimensions: 8501 ft x 200 ft
2.12.4 PCN: 77 R/A/W/T
2.12.5 Coordinates: 42–13–41.85N / 83–20–10.12W
2.12.6 Threshold elevation: 632 ft
2.12.6 Touchdown zone elevation: 634 ft

AD 2.13 Declared distances

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 12003
2.13.3 Takeoff distance available: 12003
2.13.4 Accelerate–stop distance available: 12003
2.13.5 Landing distance available: 11494

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 12003
2.13.3 Takeoff distance available: 12003
2.13.4 Accelerate–stop distance available: 12003
2.13.5 Landing distance available: 12003

2.13.1 Designation: 03R
2.13.2 Takeoff run available: 10001
2.13.3 Takeoff 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 Takeoff run available: 10001
2.13.3 Takeoff distance available: 10001
2.13.4 Accelerate–stop distance available: 10001
2.13.5 Landing distance available: 10001

2.13.1 Designation: 09L
2.13.2 Takeoff run available: 8708
2.13.3 Takeoff 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 Takeoff run available: 8708
2.13.3 Takeoff 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 Takeoff run available: 8500
2.13.3 Takeoff 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 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate–stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate–stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 03L
2.13.2 Takeoff run available: 8501
2.13.3 Takeoff 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 Takeoff run available: 8501
2.13.3 Takeoff distance available: 8501
2.13.4 Accelerate–stop distance available: 8501
2.13.5 Landing distance available: 8501

AD 2.14 Approach and runway lighting

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.10 Remarks: Also Has SSALR.

2.14.1 Designation: 22L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 03R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right
2.14.10 Remarks: ALSF2 Required When RVR/Visibility Is 6000/1 Mile Or Less. SSALR Operated When RVR/Visibility Is 6000/1 Mile. Unusable Beyond 8 Degrees Left Of Course.

2.14.1 Designation: 21L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 27L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 04L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 22R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway

alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 03L
2.14.4 Visual approach slope indicator system: 4–light PAPI on right
2.14.10 Remarks: Unusable 8 Degrees Left/Right Course.

2.14.1 Designation: 21R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 118.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.95 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.95 MHz

2.18.1 Service designation: CD PRE TAXI CLNC
2.18.3 Service designation: 120.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124.05 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 125.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.525 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 128.75 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 132.025 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 132.72 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 133.675 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 134.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 134.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: AIR–EVAC
2.18.3 Service designation: 259.6 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 119.25 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 119.45 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: DEP/P CLASS B
2.18.3 Service designation: 239.275 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124.975 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 124.25 MHz

2.18.1 Service designation: ILS PRM
2.18.3 Service designation: 127.05 MHz

2.18.1 Service designation: ILS PRM
2.18.3 Service designation: 135.775 MHz

2.18.1 Service designation: LCL/P DIAGRAM, DP
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: LCL/P DIAGRAM, DP
2.18.3 Service designation: 135 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.125 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 317.725 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 7W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−07−12.37N / 83−25−54.19W
2.19.6 Site elevation: 631 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: 632 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 7W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−11−44.10N / 83−22−34.50W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 7W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−14−00.00N / 83−20−53.38W
2.19.6 Site elevation: 636.3 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 7W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−13−59.69N / 83−20−50.36W
2.19.6 Site elevation: 650.1 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 7W
2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42−12−00.00N / 83−22−19.38W
2.19.6 Site elevation: 636.7 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 7W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−13−59.69N / 83−20−50.36W
2.19.6 Site elevation: 650.1 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 7W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−18−20.74N / 83−17−40.65W
2.19.6 Site elevation: 626 ft

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 7W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−11−59.54N / 83−22−23.06W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 7W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−13−43.86N / 83−21−12.29W
2.19.6 Site elevation: 635.6 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 7W
2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42−14−21.64N / 83−20−38.75W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 03R. Magnetic variation: 7W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−13−20.38N / 83−19−55.63W
2.19.6 Site elevation: 635 ft

2.19.1 ILS type: Outer Marker for runway 03R. Magnetic variation: 7W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−06−27.60N / 83−24−57.66W
2.19.6 Site elevation: 625 ft

2.19.1 ILS type: Middle Marker for runway 03R. Magnetic variation: 7W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42−11−20.09N / 83−21−24.29W
2.19.6 Site elevation: 633 ft

2.19.1 ILS type: DME for runway 03R. Magnetic variation: 7W
2.19.2 ILS identification: HUU

2.19.5 Coordinates: 42–11–34.31N / 83–21–00.00W
2.19.6 Site elevation: 629.5 ft

2.19.1 ILS type: Glide Slope for runway 03R. Magnetic variation: 7W
2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42–11–51.13N / 83–20–54.98W
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: 42–11–36.55N / 83–21–12.14W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Localizer for runway 21L. Magnetic variation: 7W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42–11–34.94N / 83–21–13.32W
2.19.6 Site elevation: 631.2 ft

2.19.1 ILS type: Glide Slope for runway 21L. Magnetic variation: 7W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42–12–58.50N / 83–20–00.00W
2.19.6 Site elevation: 628.9 ft

2.19.1 ILS type: Middle Marker for runway 21L. Magnetic variation: 7W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42–13–38.34N / 83–19–46.25W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Outer Marker for runway 21L. Magnetic variation: 7W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42–18–00.00N / 83–16–20.34W
2.19.6 Site elevation: 604 ft

2.19.1 ILS type: DME for runway 21L. Magnetic variation: 7W
2.19.2 ILS identification: EJR
2.19.5 Coordinates: 42–11–34.31N / 83–21–00.00W
2.19.6 Site elevation: 629.5 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 7W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42–13–12.02N / 83–12–11.92W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 7W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42–13–00.00N / 83–19–10.55W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 7W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42–13–00.00N / 83–22–00.00W
2.19.6 Site elevation: 639.1 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 7W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42–12–58.36N / 83–20–00.00W
2.19.6 Site elevation: 628.9 ft

2.19.1 ILS type: DME for runway 27R. Magnetic variation: 7W
2.19.2 ILS identification: DMI
2.19.5 Coordinates: 42–12–47.29N / 83–21–59.99W
2.19.6 Site elevation: 637.7 ft

2.19.1 ILS type: Outer Marker for runway 27L. Magnetic variation: 7W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42–12–00.00N / 83–12–39.63W
2.19.6 Site elevation: 600 ft

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 7W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42–11–54.66N / 83–20–00.00W
2.19.6 Site elevation: 626 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 7W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42–11–59.00N / 83–19–11.92W
2.19.6 Site elevation: 626 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 7W
2.19.2 ILS identification: EPA
2.19.5 Coordinates: 42–11–53.67N / 83–21–55.11W
2.19.6 Site elevation: 635 ft

2.19.1 ILS type: Localizer for runway 27L. Magnetic variation: 7W
2.19.2 ILS identification: EPA

2.19.5 Coordinates: 42−11−56.23N / 83−21−55.64W
2.19.6 Site elevation: 634 ft

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 7W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−13−41.92N / 83−21−48.73W
2.19.6 Site elevation: 649.6 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 7W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−12−18.95N / 83−23−00.00W
2.19.6 Site elevation: 640.5 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 7W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−13−43.23N / 83−21−52.16W
2.19.6 Site elevation: 641.7 ft

2.19.1 ILS type: Inner Marker for runway 04L. Magnetic variation: 7W
2.19.2 ILS identification: HJT
2.19.5 Coordinates: 42−12−00.00N / 83−23−00.00W
2.19.6 Site elevation: 646 ft

2.19.1 ILS type: DME for runway 22R. Magnetic variation: 7W
2.19.2 ILS identification: JKI
2.19.5 Coordinates: 42−13−41.92N / 83−21−48.73W
2.19.6 Site elevation: 649.6 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 7W
2.19.2 ILS identification: JKI
2.19.5 Coordinates: 42−13−27.23N / 83−22−10.00W
2.19.6 Site elevation: 636.8 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 7W
2.19.2 ILS identification: JKI
2.19.5 Coordinates: 42−11−59.07N / 83−23−00.00W
2.19.6 Site elevation: 644.9 ft

2.19.1 ILS type: DME for runway 04X. Magnetic variation: 7W
2.19.2 ILS identification: ALA
2.19.5 Coordinates: 42−11−57.11N / 83−23−00.00W
2.19.6 Site elevation: 643 ft

2.19.1 ILS type: Glide Slope for runway 04X. Magnetic variation: 7W
2.19.2 ILS identification: ALA
2.19.5 Coordinates: 42−12−19.05N / 83−23−00.00W
2.19.6 Site elevation: 640.5 ft

2.19.1 ILS type: Localizer for runway 04X. Magnetic variation: 7W
2.19.2 ILS identification: ALA
2.19.5 Coordinates: 42−13−33.40N / 83−21−50.94W
2.19.6 Site elevation: 639 ft

2.19.1 ILS type: Localizer for runway 22X. Magnetic variation: 7W
2.19.2 ILS identification: BZB
2.19.5 Coordinates: 42−11−56.26N / 83−23−00.00W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Glide Slope for runway 22X. Magnetic variation: 7W
2.19.2 ILS identification: BZB
2.19.5 Coordinates: 42−13−27.35N / 83−22−10.30W
2.19.6 Site elevation: 638 ft

2.19.1 ILS type: DME for runway 22X. Magnetic variation: 7W
2.19.2 ILS identification: BZB
2.19.5 Coordinates: 42−11−57.11N / 83−23−00.00W
2.19.6 Site elevation: 643 ft

General Remarks:
BRIGHTLY LIGHTED PARKING LOT 2.6 NAUTICAL MILE SW OF AIRPORT.

BE ALERT BIRDS, WATERFOWL, ON & IN THE VICINITY OF AIRPORT.

RUNWAY 21R DEPS BE ALERT FOR 'OPTICAL ILLUSION', AIRCRAFT TAXIING ON TAXIWAY 'T' MAY APPEAR AS THOUGH CROSSING RUNWAY 21R CENTERLINE.

AIRCRAFT ON TAXIWAY 'F' AND TAXIWAY 'V' DO NOT BLOCK FIRE STATION EXITS.

TAXIWAY 'G' N OF TAXIWAY 'H' IS A NON−MOVEMENT AREA.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

UNIDIRECTIONAL STOPBARS ON RUNWAY 27R WHEN BEING USED FOR TAXI BETWEEN RUNWAYS 3L AND 4R.

AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT ARE RESTRICTED FROM USING TAXIWAY H BETWEEN TAXIWAY H2 AND TAXIWAY G.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT CANNOT USE TAXIWAY G NORTH OF TAXIWAY V EXCEPT FOR AIRCRAFT UNDER TOW TO REMAINING OVERNIGHT SPOT 2H.

RUNWAY STATUS LIGHTS ARE IN OPN.

RUNWAY VISUAL SCREEN 20 FT AGL 1150 FT S. APPROACH END RUNWAY 04R

PRIOR PERMISSION REQUIRED FOR B747–8 OPRS DUE TO CONSTRAINTS ON RUNWAYS, TAXIWAYS AND RAMPS CONTACT AIRFIELD OPRS AT 734–942–3685.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FROM USING TAXIWAY PAY PERIOD.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FROM USING TAXIWAY H BETWEEN K AND H2.

AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT ARE RESTRICTED FROM USING TAXIWAY G BETWEEN 27R AND TAXIWAY V.

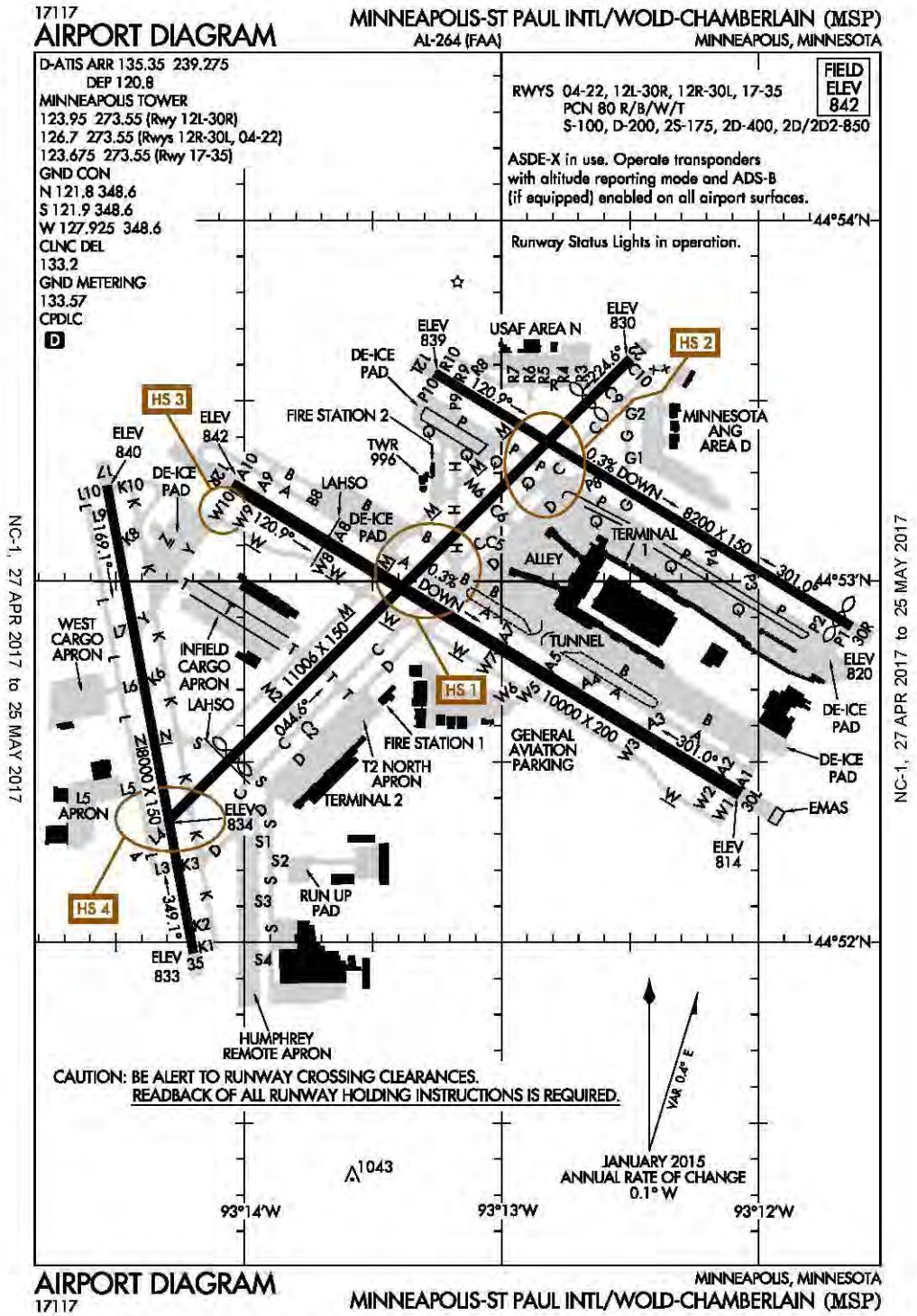
AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT ARE RESTRICTED FROM USING TAXIWAY M NORTHBOUND TO TAXIWAY V WESTBOUND.

DIVERSIONAIR CARRIERS WITHOUT A PRESENCE AT DTW SHOULD CONTACT AIRFIELD OPRS 734–942–3685 PRIOR TO DIVERTING TO THE EXTENT PRACTICAL AND PROVIDE COMPANY, FLIGHT OPRS, CONTACT INFORMATION, AIRCRAFT TYPE, PERSONS ONBOARD, INTERNATIONAL OR DOMESTIC, ANY GRND HANDLER AGGREEMENTS IN PLACE.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT CANNOT PASS EACH OTHER ON TAXIWAYS Y AND K BETWEEN TAXIWAYS U AND K6 INSUFFICIENT WINGTIP CLEARANCE.

TURNING RESTRICTION TAXIWAY B TO TAXIWAY K RESTRICTED TO AIRCRAFT WITH WINGSPAN 171 FT OR LESS.

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: 44–52–55.10N / 93–13–18.40W
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: Phil Burke
4300 GLUMACK SUITE 3000
St Paul, MN 55111
(612–725–6464)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 12L
2.10.1.b Type of obstacle: Tree (61 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 667 ft from Centerline

2.10.1.a. Runway designation: 30R
2.10.1.b Type of obstacle: Tree (13 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 272 ft from Centerline

2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Tree (36 ft). Lighted
2.10.1.c Location of obstacle: 562 ft from Centerline

2.10.1.a. Runway designation: 04
2.10.1.b Type of obstacle: Tree (101 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 834 ft from Centerline

2.10.1.a. Runway designation: 22
2.10.1.b Type of obstacle: Tree (66 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 636 ft from Centerline

2.10.1.a. Runway designation: 17
2.10.1.b Type of obstacle: Tree (52 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 732 ft from Centerline

AD 2.12 Runway physical characteristics

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: 44–53–34.63N / 93–13–15.57W
2.12.6 Threshold elevation: 839 ft
2.12.6 Touchdown zone elevation: 841 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: 44–52–52.52N / 93–11–38.30W
2.12.6 Threshold elevation: 820 ft
2.12.6 Touchdown zone elevation: 822 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: 44–53–16.04N / 93–14–00.00W
2.12.6 Threshold elevation: 842 ft
2.12.6 Touchdown zone elevation: 842 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 / 93–12–00.00W
2.12.6 Threshold elevation: 814 ft
2.12.6 Touchdown zone elevation: 823 ft

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: 44–52–20.16N / 93–14–17.94W
2.12.6 Threshold elevation: 834 ft
2.12.6 Touchdown zone elevation: 832 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: 44−53−36.99N / 93−12−29.84W
2.12.6 Threshold elevation: 830 ft
2.12.6 Touchdown zone elevation: 828 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: 44−53−15.91N / 93−14−32.11W
2.12.6 Threshold elevation: 840 ft
2.12.6 Touchdown zone elevation: 840 ft
2.12.7 Slope: 0.1DOWN

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: 44−51−58.24N / 93−14−11.92W
2.12.6 Threshold elevation: 833 ft
2.12.6 Touchdown zone elevation: 834 ft
2.12.7 Slope: 0.1UP

AD 2.13 Declared distances
2.13.1 Designation: 12L
2.13.2 Takeoff run available: 8200
2.13.3 Takeoff distance available: 8200
2.13.4 Accelerate−stop distance available: 7620
2.13.5 Landing distance available: 7620

2.13.1 Designation: 30R
2.13.2 Takeoff run available: 8200
2.13.3 Takeoff distance available: 8200
2.13.4 Accelerate−stop distance available: 8200
2.13.5 Landing distance available: 8000

2.13.1 Designation: 12R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 04
2.13.2 Takeoff run available: 11006
2.13.3 Takeoff 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 Takeoff run available: 11006
2.13.3 Takeoff distance available: 11006
2.13.4 Accelerate−stop distance available: 11006
2.13.5 Landing distance available: 10006

2.13.1 Designation: 17
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff 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 Takeoff run available: 8000
2.13.3 Takeoff 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: 12L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 12R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04
2.14.2 Approach lighting system: MALSR: 1400 feet

medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 22
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 17
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 35
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 120.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 133.2 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135.35 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 273.55 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: GND METERING
2.18.3 Service designation: 133.57 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 127.925 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.675 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 239.275 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: PTD
2.18.3 Service designation: 324.1 MHz

2.18.1 Service designation: PTD
2.18.3 Service designation: 282.675 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Outer Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44–56–37.77N / 93–20–26.52W
2.19.6 Site elevation: 900 ft

2.19.1 ILS type: Glide Slope for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44–53–31.12N / 93–12–56.69W
2.19.6 Site elevation: 831 ft

2.19.1 ILS type: Middle Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44–53–47.98N / 93–13–46.30W
2.19.6 Site elevation: 832 ft

2.19.1 ILS type: DME for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44–53–00.00N / 93–11–48.87W
2.19.6 Site elevation: 824 ft

2.19.1 ILS type: Localizer for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44−52−50.33N / 93−11−33.24W
2.19.6 Site elevation: 813 ft

2.19.1 ILS type: Inner Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: PJL
2.19.5 Coordinates: 44−53−39.69N / 93−13−25.90W
2.19.6 Site elevation: 845.3 ft

2.19.1 ILS type: Outer Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44−49−57.40N / 93−05−00.00W
2.19.6 Site elevation: 821 ft

2.19.1 ILS type: Localizer for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44−53−40.84N / 93−13−29.92W
2.19.6 Site elevation: 843.1 ft

2.19.1 ILS type: Glide Slope for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44−53−00.00N / 93−11−48.85W
2.19.6 Site elevation: 813.2 ft

2.19.1 ILS type: Middle Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44−52−38.68N / 93−11−00.00W
2.19.6 Site elevation: 705 ft

2.19.1 ILS type: DME for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: INN
2.19.5 Coordinates: 44−53−00.00N / 93−11−48.87W
2.19.6 Site elevation: 824 ft

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44−52−26.92N / 93−12−20.55W
2.19.6 Site elevation: 825.4 ft

2.19.1 ILS type: Outer Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44−56−14.87N / 93−21−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44−53−29.37N / 93−14−33.50W
2.19.6 Site elevation: 819 ft

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44−52−20.38N / 93−11−54.35W
2.19.6 Site elevation: 812.8 ft

2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: HKZ
2.19.5 Coordinates: 44−53−00.00N / 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: 44−53−20.87N / 93−14−12.70W
2.19.6 Site elevation: 840 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44−53−22.46N / 93−14−17.69W
2.19.6 Site elevation: 840 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44−52−27.00N / 93−12−20.21W
2.19.6 Site elevation: 812.1 ft

2.19.1 ILS type: Middle Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44−52−10.08N / 93−11−30.30W
2.19.6 Site elevation: 698 ft

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44−49−32.68N / 93−05−28.78W
2.19.6 Site elevation: 880 ft

2.19.1 ILS type: DME for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44–52–26.92N / 93–12–20.55W
2.19.6 Site elevation: 825.4 ft

2.19.1 ILS type: Inner Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: MSP
2.19.5 Coordinates: 44–52–19.44N / 93–11–52.18W
2.19.6 Site elevation: 808.1 ft

2.19.1 ILS type: Middle Marker for runway 04. Magnetic variation: 0E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44–52–19.77N / 93–14–18.50W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 04. Magnetic variation: 0E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44–53–44.00N / 93–12–19.97W
2.19.6 Site elevation: 832.1 ft

2.19.1 ILS type: Glide Slope for runway 04. Magnetic variation: 0E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44–52–40.53N / 93–13–55.93W
2.19.6 Site elevation: 826 ft

2.19.1 ILS type: Outer Marker for runway 04. Magnetic variation: 0E
2.19.2 ILS identification: APL
2.19.5 Coordinates: 44–49–26.67N / 93–18–21.81W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 22. Magnetic variation: 0E
2.19.2 ILS identification: SIJ
2.19.5 Coordinates: 44–57–00.00N / 93–07–23.01W
2.19.6 Site elevation: 1021.9 ft
2.19.1 ILS type: Localizer for runway 22. Magnetic variation: 0E
2.19.2 ILS identification: SIJ
2.19.5 Coordinates: 44–52–12.79N / 93–14–28.30W
2.19.6 Site elevation: 831.4 ft

2.19.1 ILS type: Middle Marker for runway 22. Magnetic variation: 0E
2.19.2 ILS identification: SIJ
2.19.5 Coordinates: 44–53–55.58N / 93–12–00.00W
2.19.6 Site elevation: 821 ft

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 0E
2.19.2 ILS identification: TJZ
2.19.5 Coordinates: 44–51–48.43N / 93–14–00.00W
2.19.6 Site elevation: 830.4 ft

2.19.1 ILS type: DME for runway 17. Magnetic variation: 0E
2.19.2 ILS identification: TJZ
2.19.5 Coordinates: 44–53–24.62N / 93–14–38.04W
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: 44–52–00.00N / 93–14–20.11W
2.19.6 Site elevation: 829.9 ft

2.19.1 ILS type: Localizer for runway 35. Magnetic variation: 0E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44–53–25.72N / 93–14–34.65W
2.19.6 Site elevation: 845.3 ft

2.19.1 ILS type: Inner Marker for runway 35. Magnetic variation: 0E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44–51–49.91N / 93–14–00.00W
2.19.6 Site elevation: 832.6 ft

2.19.1 ILS type: DME for runway 35. Magnetic variation: 0E
2.19.2 ILS identification: BMA
2.19.5 Coordinates: 44–53–24.62N / 93–14–38.04W
2.19.6 Site elevation: 832.5 ft

General Remarks:
TRAINING FLIGHTS PROHIBITED. GA FLIGHTS MUST TERMINATE AT THE FBO OR US CUSTOMS UNLESS APPROVED BY AIRPORT MANAGER.

FOR NOISE ABATEMENT PROCEDURES CALL (612) 726–9411; NO STAGE 1 CATEGORY CIVIL AIRCRAFT; NIGHTTIME HRS ARE 2230–0600.

BIRDS ON & IN THE VICINITY OF AIRPORT.

SIGNATURE FLIGHT SUPPORT 128.95

MILITARY REMARKS: ARFC 934 AW: OPR 1300−−400Z++ MON−THU, 1300−2230Z++ FRI, CLOSED WEEKEND AND HOLIDAY, CONTACT AIRFIELD MANAGEMENT FOR OPR HRS DURING UNIT TRAINING ASSEMBLY WEEKEND. TRANSMIT AIRCRAFT MUST OPR 1300−2145Z++ MON−FRI, EXCEPT HOLIDAY UNLESS DIRECTLY SUPPORTING 934 AW OR OTHER SPECIAL CIRCUMSTANCES.

MILITARY RESTRICTED: NO HAZARD CL/DIV1.1 OR 1.2 EXPLOSIVES PERMITTED. LOADING OR UNLOADING OF HAZARD CL/DIV 1.3, 1.4, 1.5 0R 1.6 MUST BE APPROVE BY AIRPORT DIRECT PRIOR TO FLIGHT.

COMPLEX GEOMETRY AT RUNWAY 04 APPROACH END. RUNWAY 04 DEPARTURES CHECK COMPASS TO VERIFY CORRECT RUNWAY HEADING.

VEHICLES PARKED ALONG SOUTH END OF TAXIWAY 'S'.

133 AW AIRFIELD MANAGEMENT − 324.1 REMARKS: (CALL LIGHTHOUSE).

COMMUNICATIONS: MINNEAPOLIS AIR RESERVE STATION JOINT COMMAND POST − 252.1 REMARKS: CALL NORTHSTAR.

934 AW AIRFIELD MANAGEMENT − PILOT TO DISPATCH 282.675 REMARKS: (CALL VIKING OPS).

REMARKS: AFRC 934 AW: CONTACT PILOT TO DISPATCH (VIKING OPS) 20 MIN PRIOR LANDING.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

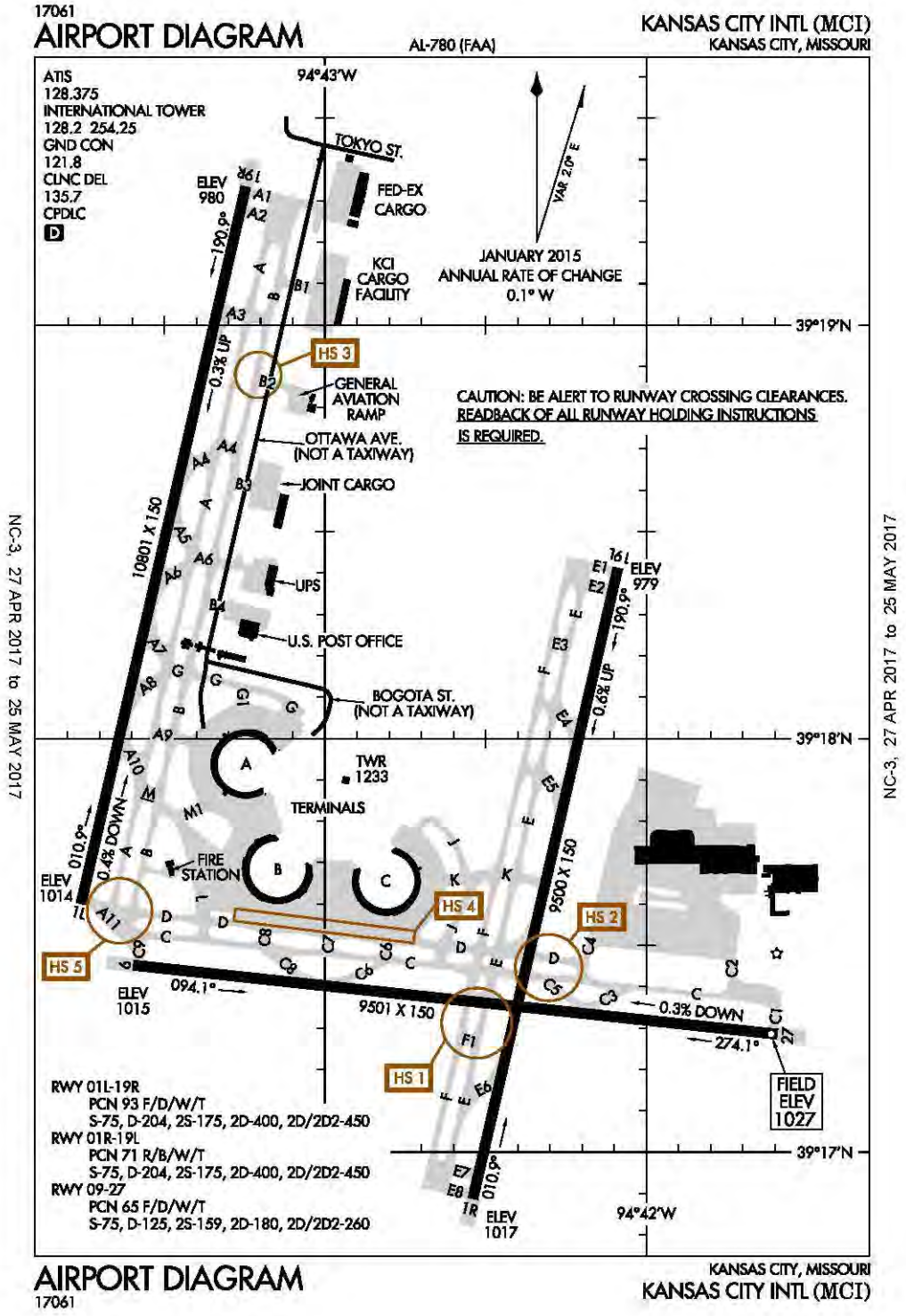
ALL UNSCHEDULED AIRCRAFT AT TERMINAL 2−HUMPHREY ARE REQUIRED TO CONTACT TERMINAL 2 GATE CONTROL ON 122.95 OR CALL 612−726−5742 PRIOR TO ARR.

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) PRIOR PERMISSION REQUIRED.

RUNWAY STATUS LIGHTS ARE IN OPN.

ALL GA AIRCRAFT WITH LESS THAN 20 PASSENGERS THAT NEED TO CLEAR US CUSTOMS SHOULD CONTACT SIGNATURE FLIGHT SUPPORT AT 128.95 OR 612−726−5700 PRIOR TO ARR.

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: 39−17−51.40N / 94−42−50.00W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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: 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: 96
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 65 F/D/W/T
2.12.5 Coordinates: 39−17−27.10N / 94−43−35.74W
2.12.6 Threshold elevation: 1015 ft
2.12.6 Touchdown zone elevation: 1016 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: 39−17−17.07N / 94−41−35.60W
2.12.6 Threshold elevation: 1027 ft
2.12.6 Touchdown zone elevation: 1027 ft
2.12.7 Slope: 0.3DOWN

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: 39−17−36.00N / 94−43−45.54W
2.12.6 Threshold elevation: 1014 ft
2.12.6 Touchdown zone elevation: 1014 ft
2.12.7 Slope: 0.4DOWN

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: 39−19−20.04N / 94−43−14.78W
2.12.6 Threshold elevation: 980 ft
2.12.6 Touchdown zone elevation: 990 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: 39−16−53.23N / 94−42−32.39W
2.12.6 Threshold elevation: 1017 ft
2.12.6 Touchdown zone elevation: 1017 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: 39−18−24.74N / 94−42−00.00W
2.12.6 Threshold elevation: 978 ft
2.12.6 Touchdown zone elevation: 995 ft

AD 2.13 Declared distances

2.13.1 Designation: 09
2.13.2 Takeoff run available: 9501
2.13.3 Takeoff distance available: 9501
2.13.4 Accelerate−stop distance available: 9501
2.13.5 Landing distance available: 9501

2.13.1 Designation: 27
2.13.2 Takeoff run available: 9501
2.13.3 Takeoff distance available: 9501
2.13.4 Accelerate−stop distance available: 9501
2.13.5 Landing distance available: 9501

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 10801
2.13.3 Takeoff 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 Takeoff run available: 10801

2.13.3 Takeoff distance available: 10801
2.13.4 Accelerate–stop distance available: 10801
2.13.5 Landing distance available: 10801

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate–stop distance available: 9500
2.13.5 Landing distance available: 9500

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate–stop distance available: 9500
2.13.5 Landing distance available: 9500

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 01L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 19R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 01R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 19L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.9 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.7 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.7 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 125.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.2 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 135.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 254.25 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 284.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: APCH/P DEP/P

2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 120.95 MHz

2.18.1 Service designation: DEP/P IC
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.375 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 2E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−16.01N / 94−41−22.93W
2.19.6 Site elevation: 1020.2 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 2E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−18.90N / 94−41−21.70W
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: 39−17−21.08N / 94−43−22.95W
2.19.6 Site elevation: 1010.7 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 2E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−17−30.00N / 94−44−10.10W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 2E
2.19.2 ILS identification: RNI
2.19.5 Coordinates: 39−18−00.00N / 94−51−00.00W
2.19.6 Site elevation: 761 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 2E
2.19.2 ILS identification: UQY
2.19.5 Coordinates: 39−17−28.63N / 94−43−54.07W
2.19.6 Site elevation: 1015.3 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 2E
2.19.2 ILS identification: UQY
2.19.5 Coordinates: 39−17−15.71N / 94−41−50.27W
2.19.6 Site elevation: 1021.4 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 2E
2.19.2 ILS identification: UQY
2.19.5 Coordinates: 39−17−25.67N / 94−43−54.59W
2.19.6 Site elevation: 1024.3 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 2E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−17−48.27N / 94−43−47.13W
2.19.6 Site elevation: 1002.8 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 2E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−17−00.00N / 94−43−53.30W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 2E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−19−30.07N / 94−43−00.00W
2.19.6 Site elevation: 988.8 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 2E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−19−31.12N / 94−43−11.52W
2.19.6 Site elevation: 972.3 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 2E
2.19.2 ILS identification: DOT
2.19.5 Coordinates: 39−13−15.42N / 94−44−59.60W
2.19.6 Site elevation: 958.7 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 2E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39−17−23.12N / 94−43−49.35W
2.19.6 Site elevation: 1017.6 ft

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 2E
2.19.2 ILS identification: PAJ

2.19.5 Coordinates: 39–19–11.05N / 94–43–22.68W
2.19.6 Site elevation: 976.8 ft

2.19.1 ILS type: Outer Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39–24–51.80N / 94–41–36.10W
2.19.6 Site elevation: 893 ft

2.19.1 ILS type: DME for runway 19R. Magnetic variation: 2E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39–17–25.78N / 94–43–51.96W
2.19.6 Site elevation: 1026 ft

2.19.1 ILS type: Inner Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39–19–30.12N / 94–43–11.82W
2.19.6 Site elevation: 972.4 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS identification: PAJ
2.19.5 Coordinates: 39–19–49.26N / 94–43–00.00W
2.19.6 Site elevation: 965.1 ft

2.19.1 ILS type: Localizer for runway 01R. Magnetic variation: 2E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39–18–34.40N / 94–42–00.00W
2.19.6 Site elevation: 963.3 ft

2.19.1 ILS type: Glide Slope for runway 01R. Magnetic variation: 2E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39–17–00.00N / 94–42–24.23W
2.19.6 Site elevation: 1010.8 ft

2.19.1 ILS type: DME for runway 01R. Magnetic variation: 2E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39–18–35.63N / 94–42–00.00W
2.19.6 Site elevation: 960 ft

2.19.1 ILS type: Inner Marker for runway 01R. Magnetic variation: 2E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39–16–45.10N / 94–42–34.80W
2.19.6 Site elevation: 1011.1 ft

2.19.1 ILS type: Middle Marker for runway 01R. Magnetic variation: 2E
2.19.2 ILS identification: PVL
2.19.5 Coordinates: 39–16–27.63N / 94–42–39.97W
2.19.6 Site elevation: 994.9 ft

2.19.1 ILS type: Localizer for runway 19L. Magnetic variation: 2E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39–16–43.58N / 94–42–35.25W
2.19.6 Site elevation: 1011.8 ft

2.19.1 ILS type: DME for runway 19L. Magnetic variation: 2E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39–16–43.62N / 94–42–38.55W
2.19.6 Site elevation: 1017.5 ft

2.19.1 ILS type: Outer Marker for runway 19L. Magnetic variation: 2E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39–23–12.92N / 94–40–37.14W
2.19.6 Site elevation: 830 ft

2.19.1 ILS type: Middle Marker for runway 19L. Magnetic variation: 2E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39–18–51.61N / 94–41–57.37W
2.19.6 Site elevation: 970 ft

2.19.1 ILS type: Glide Slope for runway 19L. Magnetic variation: 2E
2.19.2 ILS identification: DYH
2.19.5 Coordinates: 39–18–13.95N / 94–42–00.00W
2.19.6 Site elevation: 977.9 ft

General Remarks:
WATERFOWL ON AND IN THE VICINITY OF AIRPORT.

WINDSHEAR ALERT SYSTEM ON AIRPORT.

NOISE ABATEMENT PROCEDURES IN EFFECT 2200–0600 WITH LANDING ON RUNWAYS 01L & 19L; TAKEOFFS ON RUNWAYS 01R & 19R.

MILITARY AIRCRAFT MAY BE CHARGED RAMP/PARKING FEES.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE AT GATE 90.

PRIOR PERMISSION REQUIRED TO PARK AT AIRLINE GATES CONTACT RESPECTIVE AIRLINE.

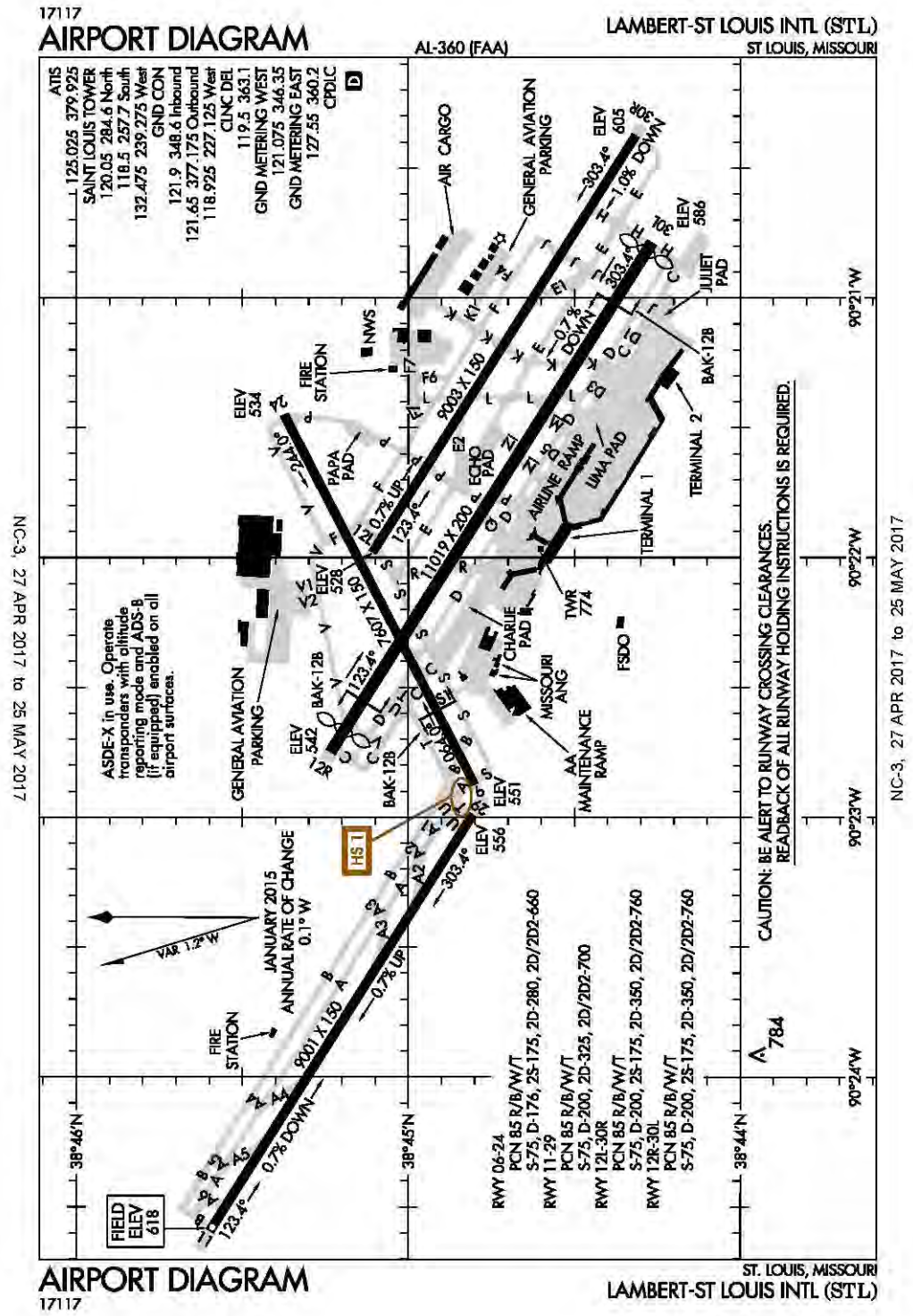
WHEN USING HIGH−SPEED EXITS C5 & C6 CONTINUE UNTIL FIRST PARALLEL TAXIWAY, THEN USE EXTREME CARE WHEN TURNING IN EXCESS OF 90 DEGREES.

NO AIRCRAFT PARKING ON POSTAL APRON.

PUSHBACK CLEARANCE REQUIRED AT GATES 43 THRU 57 IN TERMINAL B AND GATES 68 THRU 77 IN TERMINAL C, PUSHBACK FROM THESE GATES ENTERS TAXIWAY D.

DESIGN GROUP V AND VI AIRCRAFT REQUIRE AN AIRPORT ESCORT ON TAXIWAY DELTA BETWEEN TAXIWAYS JULIET AND LIMA.

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 / 90−22−12.10W
2.2.2 From City: 10 Miles NW Of St Louis, MO
2.2.3 Elevation: 618 ft
2.2.5 Magnetic variation: 0E (2000)
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 Operational hours
2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Tree (31 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Sign (18 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 450 ft from Centerline

2.10.1.a. Runway designation: 30R
2.10.1.b Type of obstacle: Tower (42 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 580 ft from Centerline

2.10.1.a. Runway designation: 12L
2.10.1.b Type of obstacle: Bldg (54 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 12R
2.10.1.b Type of obstacle: Road (30 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 30L
2.10.1.b Type of obstacle: Sign (86 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 900 ft from Centerline

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: 38−44−48.04N / 90−22−52.43W
2.12.6 Threshold elevation: 551 ft
2.12.6 Touchdown zone elevation: 551 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: 38−45−22.38N / 90−21−27.02W
2.12.6 Threshold elevation: 534 ft
2.12.6 Touchdown zone elevation: 534 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: 38−45−00.00N / 90−21−58.66W
2.12.6 Threshold elevation: 528 ft
2.12.6 Touchdown zone elevation: 541 ft
2.12.7 Slope: 0.7UP

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: 38−44−18.99N / 90−20−22.51W
2.12.6 Threshold elevation: 604 ft
2.12.6 Touchdown zone elevation: 604 ft
2.12.7 Slope: 1DOWN

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: 38−45−14.05N / 90−22−44.97W
2.12.6 Threshold elevation: 542 ft

2.12.6 Touchdown zone elevation: 540 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: 38–44–16.01N / 90–20–47.27W
2.12.6 Threshold elevation: 586 ft
2.12.6 Touchdown zone elevation: 583 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: 38–45–35.83N / 90–24–35.55W
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: 38–44–48.46N / 90–22–59.39W
2.12.6 Threshold elevation: 556 ft
2.12.6 Touchdown zone elevation: 580 ft

2.12.1 Designation: 30X
2.12.3 Dimensions: 0 ft x 0 ft

AD 2.13 Declared distances
2.13.1 Designation: 06
2.13.2 Takeoff run available: 7602
2.13.3 Takeoff 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 Takeoff run available: 7602
2.13.3 Takeoff distance available: 7602
2.13.4 Accelerate–stop distance available: 7602
2.13.5 Landing distance available: 7602

2.13.1 Designation: 12L
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff distance available: 9003
2.13.4 Accelerate–stop distance available: 9003
2.13.5 Landing distance available: 9003

2.13.1 Designation: 30R
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff 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 Takeoff run available: 11019
2.13.3 Takeoff 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 Takeoff run available: 11019
2.13.3 Takeoff distance available: 11019
2.13.4 Accelerate–stop distance available: 11019
2.13.5 Landing distance available: 10819

2.13.1 Designation: 11
2.13.2 Takeoff run available: 9001
2.13.3 Takeoff 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 Takeoff run available: 9001
2.13.3 Takeoff distance available: 9001
2.13.4 Accelerate–stop distance available: 9001
2.13.5 Landing distance available: 9001

AD 2.14 Approach and runway lighting
2.14.1 Designation: 06
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 24
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 12L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 30R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with se-

quenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 12R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 30L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 11
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 29
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND CTL OUTBOUND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND CTL INBOUND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 257.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 306.2 MHz

2.18.1 Service designation: GND CTL INBOUND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 363.1 MHz

2.18.1 Service designation: GND METER EAST
2.18.3 Service designation: 127.55 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 119.5 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.025 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 379.925 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND METER EAST
2.18.3 Service designation: 360.2 MHz

2.18.1 Service designation: GND METER WEST
2.18.3 Service designation: 121.075 MHz

2.18.1 Service designation: GND METER WEST
2.18.3 Service designation: 346.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.475 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.275 MHz

2.18.1 Service designation: GND CTL/P
2.18.3 Service designation: 118.925 MHz

2.18.1 Service designation: GND CTL/P
2.18.3 Service designation: 227.125 MHz

2.18.1 Service designation: PRM

2.18.3 Service designation: 278.3 MHz

2.18.1 Service designation: PRM
2.18.3 Service designation: 351.9 MHz

2.18.1 Service designation: GND CTL OUTBOUND/P
2.18.3 Service designation: 377.175 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: DME for runway 06. Magnetic variation: 0E
2.19.2 ILS identification: JAK
2.19.5 Coordinates: 38–44–39.67N / 90–23–00.00W
2.19.6 Site elevation: 556 ft

2.19.1 ILS type: Glide Slope for runway 06. Magnetic variation: 0E
2.19.2 ILS identification: JAK
2.19.5 Coordinates: 38–44–54.72N / 90–22–40.02W
2.19.6 Site elevation: 536 ft

2.19.1 ILS type: Localizer for runway 06. Magnetic variation: 0E
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: Localizer for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38–44–43.52N / 90–23–00.00W
2.19.6 Site elevation: 545 ft

2.19.1 ILS type: DME for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38–44–39.67N / 90–23–00.00W
2.19.6 Site elevation: 556.2 ft

2.19.1 ILS type: Glide Slope for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38–45–13.62N / 90–21–37.59W
2.19.6 Site elevation: 528 ft

2.19.1 ILS type: Middle Marker for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38–45–37.15N / 90–20–50.60W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 24. Magnetic variation: 0E
2.19.2 ILS identification: STL
2.19.5 Coordinates: 38–47–16.98N / 90–16–43.91W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38–45–14.12N / 90–22–00.00W
2.19.6 Site elevation: 545.7 ft

2.19.1 ILS type: Outer Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38–41–46.48N / 90–15–44.59W
2.19.6 Site elevation: 530 ft

2.19.1 ILS type: Localizer for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38–45–12.10N / 90–22–10.20W
2.19.6 Site elevation: 533 ft

2.19.1 ILS type: Glide Slope for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38–44–21.96N / 90–20–38.02W
2.19.6 Site elevation: 592.4 ft

2.19.1 ILS type: Inner Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38–44–14.66N / 90–20–13.73W
2.19.6 Site elevation: 602 ft

2.19.1 ILS type: Middle Marker for runway 30R. Magnetic variation: 0E
2.19.2 ILS identification: SJW
2.19.5 Coordinates: 38–44–00.00N / 90–19–57.56W
2.19.6 Site elevation: 534 ft

2.19.1 ILS type: Glide Slope for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38–44–58.22N / 90–21–50.34W
2.19.6 Site elevation: 534 ft

2.19.1 ILS type: Outer Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: LDZ

2.19.5 Coordinates: 38−48−00.00N / 90−28−29.10W
2.19.6 Site elevation: 446 ft

2.19.1 ILS type: Middle Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−45−21.22N / 90−22−28.71W
2.19.6 Site elevation: 545 ft

2.19.1 ILS type: Localizer for runway 12L. Magnetic variation: 0E
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 12L. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−44−10.39N / 90−20−12.05W
2.19.6 Site elevation: 616 ft

2.19.1 ILS type: Inner Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS identification: LDZ
2.19.5 Coordinates: 38−45−11.93N / 90−22−00.00W
2.19.6 Site elevation: 530 ft

2.19.1 ILS type: Outer Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−48−00.00N / 90−28−29.10W
2.19.6 Site elevation: 446 ft

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 0E
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: Glide Slope for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−45−00.00N / 90−22−24.90W
2.19.6 Site elevation: 532 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−45−32.78N / 90−23−23.72W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 0E
2.19.2 ILS identification: LMR
2.19.5 Coordinates: 38−44−00.00N / 90−20−39.90W
2.19.6 Site elevation: 592 ft

2.19.1 ILS type: Localizer for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−45−19.34N / 90−22−55.70W
2.19.6 Site elevation: 551 ft

2.19.1 ILS type: Glide Slope for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−44−28.10N / 90−21−00.00W
2.19.6 Site elevation: 563.9 ft

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−41−45.98N / 90−15−44.21W
2.19.6 Site elevation: 530 ft

2.19.1 ILS type: Middle Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS identification: BKY
2.19.5 Coordinates: 38−44−00.00N / 90−20−20.21W
2.19.6 Site elevation: 590 ft

2.19.1 ILS type: Glide Slope for runway 11. Magnetic variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−45−26.04N / 90−24−25.38W
2.19.6 Site elevation: 598 ft

2.19.1 ILS type: Inner Marker for runway 11. Magnetic variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−45−40.35N / 90−24−44.74W
2.19.6 Site elevation: 614 ft

2.19.1 ILS type: Localizer for runway 11. Magnetic variation: 0E
2.19.2 ILS identification: OGZ
2.19.5 Coordinates: 38−44−38.72N / 90−22−39.63W
2.19.6 Site elevation: 545 ft

2.19.1 ILS type: DME for runway 11. Magnetic variation: 0E
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 29. Magnetic variation: 0E
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: Inner Marker for runway 29. Magnetic variation: 0E
2.19.2 ILS identification: RQN
2.19.5 Coordinates: 38–44–41.36N / 90–22–44.97W
2.19.6 Site elevation: 541 ft

2.19.1 ILS type: Localizer for runway 29. Magnetic variation: 0E
2.19.2 ILS identification: RQN
2.19.5 Coordinates: 38–45–41.35N / 90–24–46.77W
2.19.6 Site elevation: 613 ft

2.19.1 ILS type: DME for runway 29. Magnetic variation: 0E
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

General Remarks:
WAIVER TO CONDUCT SIMULTANEOUS APPROACHES TO PARALLEL RUNWAYS SEPARATED BY 1,300 FT IN EFFECT.

WG TIP CLEARANCE WITH GROUND VEH NOT ADEQUATE ALONG N SIDE OF MAIN TERMINAL APRON.

MISC: MILITARY AIRCRAFT PLANNING TO ARR WHEN WX IS ANTICIPATED TO BE LESS THAN 1200'/5 MUST FILE F;T PLAN BEFORE 0900Z++.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

ARRESTING GEAR: A–G ARE KEPT IN RECESSED POSITION UNTIL REQ FOR USE. TOWER MUST BE NOTIFIED AT LEAST 5 SECOND PRIOR TO ENGAGEMENT SO THAT CABLE MAY BE RAISED.

TAXIWAY D OR TAXILANE C FROM TAXIWAY S TO TAXIWAY H, B–747 OR LARGER AIRCRAFT ARE NOT AUTHORIZED TO PASS OR BE PASSED BY B–767 OR LARGER AIRCRAFT OPERATING ON THE PARALLEL TWY/TAXILANE.

TAXIWAY P, EAST OF THE PAPA PAD TO TAXIWAY F, RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 79 FT (JS–41 AND E–120), WHEN AIRCRAFT ARE PARKED ON THE PAPA PAD. THIS AREA IS RESTRICTED TO ALL OPERATIONS WHEN AIRCRAFT ARE PERFORMING ENGINE RUN–UPS IN THE PAPA PAD.

TAXIWAY V, UNDERLYING THE RUNWAY 12L FINAL APPROACH COURSE IS RESTRICTED TO AIRCRAFT SMALLER THAN A DC–9 (25 FT OR LESS), WHEN AIRCRAFT ARE LANDING ON RUNWAY 12L.

TAXIWAY E, BETWEEN TAXIWAY P AND TAXIWAY N, RESTRICTED TO B–767 OR SMALLER AIRCRAFT (WINGSPAN LESS THAN 171 FT) WHEN AIRCRAFT ARE PARKED ON THE ECHO PAD.

TAXIWAY C, EAST OF TAXIWAY D ONE TO THE APPROACH END OF RUNWAY 30L, RESTRICTED TO B–727 OR SMALLER AIRCRAFT (WINGSPAN OF 118 FT OR LESS) WHEN AIRCRAFT ARE PARKED ON THE JULIET PAD.

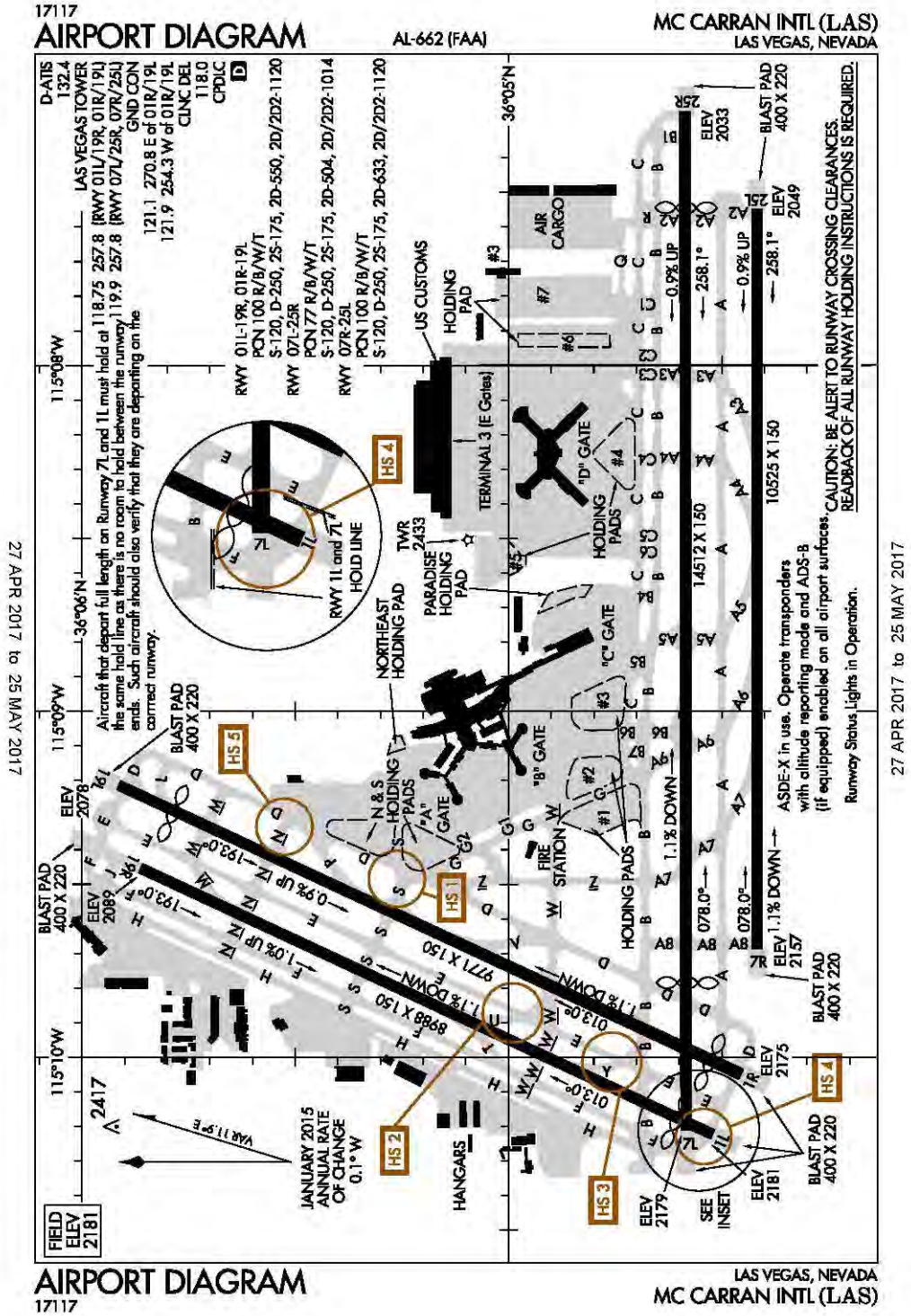
TAXILANE C, FROM TAXIWAY S TO TAXIWAY R, RESTRICTED TO B–767 OR SMALLER AIRCRAFT (156 FT AVBL) WHEN AFTER ARE PARKED IN THE CHARLIE PAD. RESTRICTION IS FOR TAXIING AIRCRAFT, LARGER AIRCRAFT MAY BE TOWED THROUGH THE AREA.

TAXILANE C FROM TAXIWAY P TO TAXIWAY L, RESTRICTED TO A B–757 300 SERIES OR SMALLER WHEN PASSING BEHIND AIRCRAFT THAT HAVE MADE THE INITIAL 10 FT PUSHBACK.

TAXIWAY A EAST OF TAXIWAY T, TAXIWAY S AND RUNWAY 06/24 SOUTH OF TAXIWAY B, NO AIRCRAFT OR VEHICLE OPERATIONS WHEN DEPARTING RUNWAY 11 OR ARRIVING RUNWAY 29.

TAXIWAY L NORTH OF RUNWAY 12L/30R, AIRCRAFT LARGER THAN A G5 TAXIING NORTHBOUND ARE PROHIBITED FROM MAKING A RIGHT TURN EASTBOUND ON TAXIWAY F.

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: 36−04−48.20N / 115−09−00.00W
2.2.2 From City: 5 Miles S Of Las Vegas, NV
2.2.3 Elevation: 2181.4 ft
2.2.5 Magnetic variation: 15E (1980)
2.2.6 Airport Contact: Rosemary A. Vassiliadis
5757 WAYNE NEWTON BLVD
Las Vegas, NV 89119
(702−261−5211)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A1+
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 01R
2.10.1.b Type of obstacle: Rr (41 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 19L
2.10.1.b Type of obstacle: Pole (17 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 17 ft from Centerline

2.10.1.a. Runway designation: 07L
2.10.1.b Type of obstacle: Hangar (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Pole (53 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 540 ft from Centerline

2.10.1.a. Runway designation: 01L
2.10.1.b Type of obstacle: Rr (48 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 19R
2.10.1.b Type of obstacle: Fence (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 150 ft from Centerline

AD 2.12 Runway physical characteristics

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: 36−04−27.26N / 115−10−00.00W
2.12.6 Threshold elevation: 2175 ft
2.12.6 Touchdown zone elevation: 2170 ft
2.12.7 Slope: 1.1DOWN

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: 36−05−54.88N / 115−09−12.80W
2.12.6 Threshold elevation: 2078 ft
2.12.6 Touchdown zone elevation: 2112 ft
2.12.7 Slope: 0.9UP

2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 14512 ft x 150 ft
2.12.4 PCN: 77 R/B/W/T
2.12.5 Coordinates: 36−04−34.92N / 115−10−12.68W
2.12.6 Threshold elevation: 2179 ft
2.12.6 Touchdown zone elevation: 2155 ft
2.12.7 Slope: 1.1DOWN

2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 14512 ft x 150 ft
2.12.4 PCN: 77 R/B/W/T
2.12.5 Coordinates: 36−04−35.07N / 115−07−15.93W
2.12.6 Threshold elevation: 2033 ft
2.12.6 Touchdown zone elevation: 2067 ft
2.12.7 Slope: 1.9UP

2.12.1 Designation: 07R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10525 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T

2.12.5 Coordinates: 36–04–25.06N / 115–09–41.16W
2.12.6 Threshold elevation: 2157 ft
2.12.6 Touchdown zone elevation: 2157 ft
2.12.7 Slope: 1.1DOWN

2.12.1 Designation: 25L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10525 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36–04–25.17N / 115–07–32.97W
2.12.6 Threshold elevation: 2048 ft
2.12.6 Touchdown zone elevation: 2069 ft
2.12.7 Slope: 0.9UP

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: 36–04–31.17N / 115–10–13.32W
2.12.6 Threshold elevation: 2181 ft
2.12.6 Touchdown zone elevation: 2176 ft
2.12.7 Slope: 1.1DOWN

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: 36–05–51.77N / 115–09–27.19W
2.12.6 Threshold elevation: 2089 ft
2.12.6 Touchdown zone elevation: 2117 ft
2.12.7 Slope: 1UP

AD 2.13 Declared distances
2.13.1 Designation: 01R
2.13.2 Takeoff run available: 9771
2.13.3 Takeoff distance available: 10168
2.13.4 Accelerate–stop distance available: 9437
2.13.5 Landing distance available: 8677

2.13.1 Designation: 19L
2.13.2 Takeoff run available: 9771
2.13.3 Takeoff distance available: 10171
2.13.4 Accelerate–stop distance available: 9681
2.13.5 Landing distance available: 8741

2.13.1 Designation: 07L
2.13.2 Takeoff run available: 14512
2.13.3 Takeoff distance available: 15101
2.13.4 Accelerate–stop distance available: 14101
2.13.5 Landing distance available: 11968

2.13.1 Designation: 25R
2.13.2 Takeoff run available: 14512
2.13.3 Takeoff distance available: 15157
2.13.4 Accelerate–stop distance available: 14157
2.13.5 Landing distance available: 12757

2.13.1 Designation: 07R
2.13.2 Takeoff run available: 10525
2.13.3 Takeoff distance available: 10525
2.13.4 Accelerate–stop distance available: 10525
2.13.5 Landing distance available: 10525

2.13.1 Designation: 25L
2.13.2 Takeoff run available: 10525
2.13.3 Takeoff distance available: 10525
2.13.4 Accelerate–stop distance available: 10525
2.13.5 Landing distance available: 10525

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 8988
2.13.3 Takeoff 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 Takeoff run available: 8988
2.13.3 Takeoff distance available: 9400
2.13.4 Accelerate–stop distance available: 8400
2.13.5 Landing distance available: 8400

AD 2.14 Approach and runway lighting
2.14.1 Designation: 01R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 19L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 07L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 25R
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 07R
2.14.4 Visual approach slope indicator system: 4–light

PAPI on left

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 01L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 19R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: RAMP CON
2.18.3 Service designation: 124.4 MHz

2.18.1 Service designation: RAMP CON
2.18.3 Service designation: 127.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 132.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 254.3 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 270.8 MHz

2.18.1 Service designation: RAMP CON
2.18.3 Service designation: 129.175 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−34.91N / 115−10−19.18W
2.19.6 Site elevation: 2186.5 ft

2.19.1 ILS type: Glide Slope for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−32.08N / 115−07−46.67W
2.19.6 Site elevation: 2047.1 ft

2.19.1 ILS type: Outer Marker for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−35.71N / 115−01−16.98W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−35.10N / 115−06−44.40W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 25R. Magnetic variation: 15E
2.19.2 ILS identification: LAS
2.19.5 Coordinates: 36−04−30.52N / 115−10−19.16W
2.19.6 Site elevation: 2202.5 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 15E
2.19.2 ILS identification: RLE
2.19.5 Coordinates: 36−04−25.05N / 115−09−53.34W
2.19.6 Site elevation: 2168.3 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 15E
2.19.2 ILS identification: RLE
2.19.5 Coordinates: 36−04−22.25N / 115−09−53.27W
2.19.6 Site elevation: 2182.3 ft

2.19.1 ILS type: Glide Slope for runway 25L. Magnetic variation: 15E

2.19.2 ILS identification: RLE
2.19.5 Coordinates: 36–04–22.00N / 115–07–46.66W
2.19.6 Site elevation: 2050.9 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 15E
2.19.2 ILS identification: CUA
2.19.5 Coordinates: 36–06–00.00N / 115–09–25.06W
2.19.6 Site elevation: 2086 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 15E
2.19.2 ILS identification: CUA
2.19.5 Coordinates: 36–04–49.14N / 115–10–00.00W
2.19.6 Site elevation: 2158.6 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 15E
2.19.2 ILS identification: CUA
2.19.5 Coordinates: 36–06–00.00N / 115–09–21.99W
2.19.6 Site elevation: 2079.1 ft

General Remarks:
EXTENSIVE GLIDER/SOARING OPERATIONS WEEKENDS & HOLS; SR–SS; LAS R187/020; ALTITUDES UP TO BUT NOT INCLUDING FL180. GLIDERS REMAIN CLEAR OF THE TCA BUT OTHERWISE OPERATE WITHIN THE ENTIRE SW QUADRANT OF THE TCA VEIL.

ALL NON–STD RUNWAY OPERATIONS PRIOR PERMISSION REQUIRED FROM DEPT OF AVIATION.

TURBOJET DEPS NOT PERMITTED ON RUNWAY 01R/19L OR RUNWAY 01L/19R 2000–0800. EXCEPTIONS FOR WX OR OPERATIONAL NECESSITY.

AIRCRAFT MAY EXPERIENCE REFLECTION OF SUN FROM GLASS HOTELS LOCATED NW OF AIRPORT. REFLECTION MAY OCCUR AT VARIOUS ALTITUDES HEADINGS & DISTANCES FROM AIRPORT.

GENERAL AVIATION PARKING VERY LIMITED. FOR PARKING AVAILABILITY CONTACT EITHER FBO (702) 736–1830 OR (702) 739–1100.

RUNWAY 07L 589 FT CLEARWAY; RUNWAY 25R 645 FT CLEARWAY.

LIGHTED GOLF RANGE 1400 FT SOUTH OF RUNWAYS 01L/19R AND O1R/19L.

TIEDOWN FEE.

(E98) PLUS 64 SHELTERS & 24 SHEDS.

AIRCRAFT USING FULL LENGTH DEP ON RUNWAY 07L USE MINIMAL POWER UNTIL PASSING THE PWR–UP POINT ON RUNWAY. PWR–UP POINT IS 348 FT EAST OF BLAST PAD AND MARKED WITH SIGN AND STANDARD MARKINGS FOR BEGINNING OF RUNWAY.

LARGE NUMBERS OF BIRDS AND BATS IN THE VICINITY OF OF AIRPORT BETWEEN SUNSET AND SUNRISE.

AIRCRAFT DEPARTING RUNWAY 19R USE MINIMAL POWER UNTIL PASSING THE RUNWAY THRESHOLD. RUNWAY 19R THRESHOLD HAS STANDARD RUNWAY MARKINGS AND IS 780 FT SOUTH OF THE BLAST PAD.

AIRCRAFT OPER NEAR THE INTERSECTION OF TAXIWAYS S, D, G AND THE NORTH END OF TAXIWAY Z SHOULD BE ALERT AS THERE ARE CLOSELY ALIGNED TAXIWAY CENTERLINES AND RADIUS TURNS.

AIRCRAFT THAT DEPART FULL LENGTH OF RUNWAYS 01L AND 07L MUST HOLD AT THE SAME HOLD LINE AS THERE IS NO ROOM TO HOLD BETWEEN THE RUNWAY ENDS AND SUCH AIRCRAFT SHOULD VERIFY THAT THEY ARE ON THE CORRECT RUNWAY.

GENERAL AVIATION CUSTOMS AND IMIGRATION LOCATED WEST SIDE OF AIRFIELD BETWEEN FBO'S.

AIRCRAFT LARGER THAN B757 PRIOR PERMISSION REQUIRED FROM DEPT OF AVIATION TO USE TAXIWAY H.

NUMEROUS HELICOPTER OPERATIONS ON WEST SIDE OF AIRPORT.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

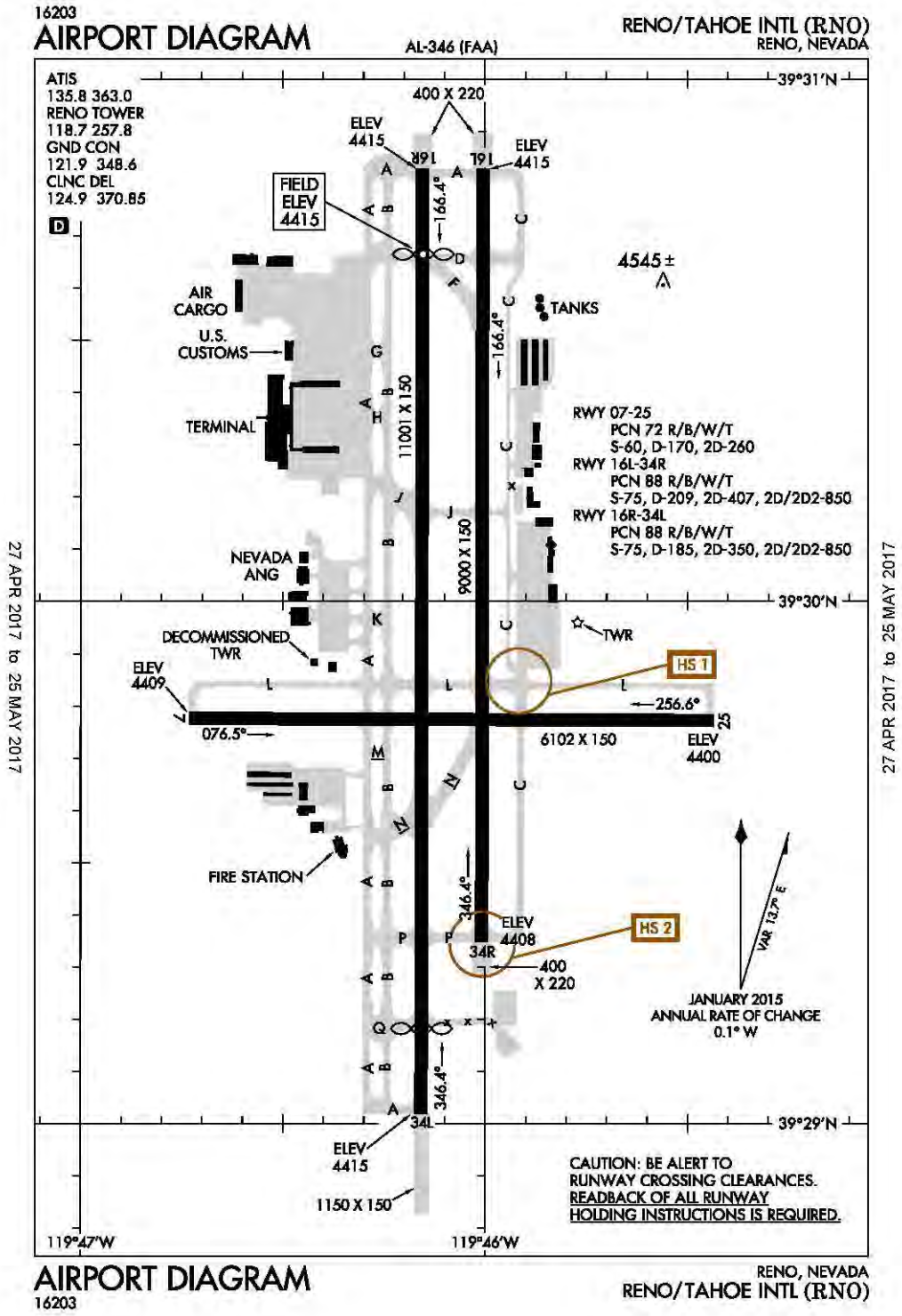
GENERAL AVIATION CBP RESERVATIONS ARE REQUIRED TO BE SUBMITTED A MINIMUM OF 12 HOURS IN ADVANCE (OTHER CONDITIONS APPLY). RESERVATIONS MUST BE MADE ONLINE AT,.MCCARRAN.-COM/GACBP. QUESTIONS CAN BE DIRECTED TO CBP559@MCCARRAN.COM. GENERAL AVIATION AIRCRAFT USING THE WEST SIDE CUSTOMS FACILITY MUST CONTACT RAMP CONTROL 124.4.

AIRCRAFT TAXIING WESTBOUND ON TAXIWAY B NEAR TAXIWAY E USE CARE NOT TO ENTER THE RUNWAY ON TAXIWAY Y, AIRCRAFT TAXIING WESTBOUND ON TAXIWAY W NEAR TAXIWAY E USE CARE NOT TO ENTER THE RUNWAY ON TAXIWAY U.

ALL AIRCRAFT CONTACT RAMP CONTROL ON FREQ 124.4 FOR OPERATIONS AT A,B, AND C GATES, CONTACT RAMP CONTROL ON FREQ 127.9 FOR OPERATIONS AT D AND E GATES AND CARGO RAMP PRIOR TO ENTERING RAMP OR PUSHING BACK FROM GATE OR PARKING SPOT.

RUNWAY STATUS LIGHTS ARE IN OPN.

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: 39−29−56.80N / 119−46−00.00W
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 Operational hours
2.3.1 − 2.3.11: 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+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 07
2.10.1.b Type of obstacle: Pole (118 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

2.10.1.a. Runway designation: 25
2.10.1.b Type of obstacle: Tree (44 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 275 ft from Centerline

2.10.1.a. Runway designation: 34L
2.10.1.b Type of obstacle: Gnd (243 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1500 ft from Centerline

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: 39−29−46.63N / 119−46−43.82W
2.12.6 Threshold elevation: 4409 ft
2.12.6 Touchdown zone elevation: 4409 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: 39−29−46.37N / 119−45−26.00W
2.12.6 Threshold elevation: 4400 ft
2.12.6 Touchdown zone elevation: 4402 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: 39−30−49.83N / 119−46−00.00W
2.12.6 Threshold elevation: 4415 ft
2.12.6 Touchdown zone elevation: 4415 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: 39−29−20.89N / 119−46−00.00W
2.12.6 Threshold elevation: 4408 ft
2.12.6 Touchdown zone elevation: 4408 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: 39−30−49.84N / 119−46−00.00W
2.12.6 Threshold elevation: 4415 ft
2.12.6 Touchdown zone elevation: 4415 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: 39−29−00.00N / 119−46−00.00W
2.12.6 Threshold elevation: 4414 ft
2.12.6 Touchdown zone elevation: 4410 ft

AD 2.13 Declared distances
2.13.1 Designation: 07
2.13.2 Takeoff run available: 5854
2.13.3 Takeoff 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 Takeoff run available: 6102
2.13.3 Takeoff distance available: 6102
2.13.4 Accelerate–stop distance available: 6102
2.13.5 Landing distance available: 6102

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: PAPI Not To Be Used Beyond 2 Nm Due To Rapidly Rising Mountainous Terrain

2.14.1 Designation: 16L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 34R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Rwy 34R PAPI Unusable Beyond 6 Degrees Right Of Centerline .

2.14.1 Designation: 16R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 34L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: PAPI Not To Be Used Beyond 6 Nm Due To High Terrain.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 124.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: ANG/OPS
2.18.3 Service designation: 280 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG COMD POST/ BASEOPS
2.18.3 Service designation: 8780 MHz
2.18.6 Remarks: Callsign – Roller Operations.

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 363 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 370.85 MHz

2.18.1 Service designation: ANG COMD POST/ BASEOPS
2.18.3 Service designation: 378.4 MHz
2.18.6 Remarks: Callsign – Roller Operations.

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39–28–49.53N / 119–46–00.00W
2.19.6 Site elevation: 4419.7 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39–28–48.32N / 119–46–00.00W
2.19.6 Site elevation: 4433.4 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnetic variation: 16E

2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39–36–27.48N / 119–46–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39–31–10.35N / 119–46–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39–30–28.10N / 119–46–00.00W
2.19.6 Site elevation: 4408.4 ft
2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39–30–59.98N / 119–46–00.00W
2.19.6 Site elevation: 4433.1 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39–31–00.00N / 119–46–12.57W
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: 39–29–16.60N / 119–46–00.00W
2.19.6 Site elevation: 4403.3 ft

General Remarks:
WATERFOWL ALL QUADRANTS ALL SEASONS. CONCENTRATED NW OF RUNWAY 16R AND E OF RUNWAY 16L.

24 HRS PRIOR PERMISSION REQUIRED FOR TRANSIENT AIRCRAFT PARKING WITH WINGSPANS GREATER THAN 75'.

TAXIWAY C BETWEEN TAXIWAY L & TAXIWAY D RESTRICTED TO AIRCRAFT 60000 LBS OR LESS.

NOISE SENSITIVE AREA ALL QUADS. PILOTS OF TURBOJET AIRCRAFT USE RECOMMENDED NOISE ABATEMENT PROCS; AVAILABLE ON REQUEST.

NOISE NOTE CONT: PILOTS OF NON–TURBOJET AIRCRAFT USE BEST ABATEMENT PROCS AND SETTINGS. AVOID AS MUCH AS FEASIBLE FLYING OVER POPULATED AREAS.

MILITARY AIRCRAFT: TRANSIENT AIRCRAFT EXECUTE STRAIGHT–IN FULL STOP APPROACH. OVERHEAD PATTERN NOT AUTH FOR TRANSIENT AIRCRAFT.

MILITARY AIRCRAFT: NOISE ABATEMENT CRITICAL TERMINATE AFTERBURNER ASAP THEN CLIMB TO 6500 FT MSL ASAP.

GLIDER/SOARING OPER 30–50 MILES SOUTH OF AIRPORT DURING VFR WEATHER & MOUNTAIN WAVE WIND CONDITIONS 1100 TO SS.

PURE JET TOUCH & GO LOW APPROACH & PRACTICE INSTRUMENT APPROACHES ARE PROHIBITED; AIRCRAFT OVER 12500 LBS REQUIRE PRIOR WRITTEN APPROVAL FOR TRAINING FLIGHTS; FOR FURTHER INFORMATION CONTACT AIRPORT OPERATIONS 1–877–736–6359.

TAXIWAY C BETWEEN TAXIWAY L AND TAXIWAY D CLOSED TO AIR CARRIER AIRCRAFT.

TAXIWAY A BETWEEN NORTH TAXIWAY B AND TAXIWAY D CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 149 FT.

ALL COMMERCIAL AIRCRAFT CONTACT GROUND CONTROL FOR ADVISORIES PRIOR TO PUSH BACK ON THE TERMINAL RAMP.

INTENSIVE GLIDER ACTIVITY IN THE VICINITY OF AIRPORT AND SURROUNDING AREAS UP TO 18,000 FT.

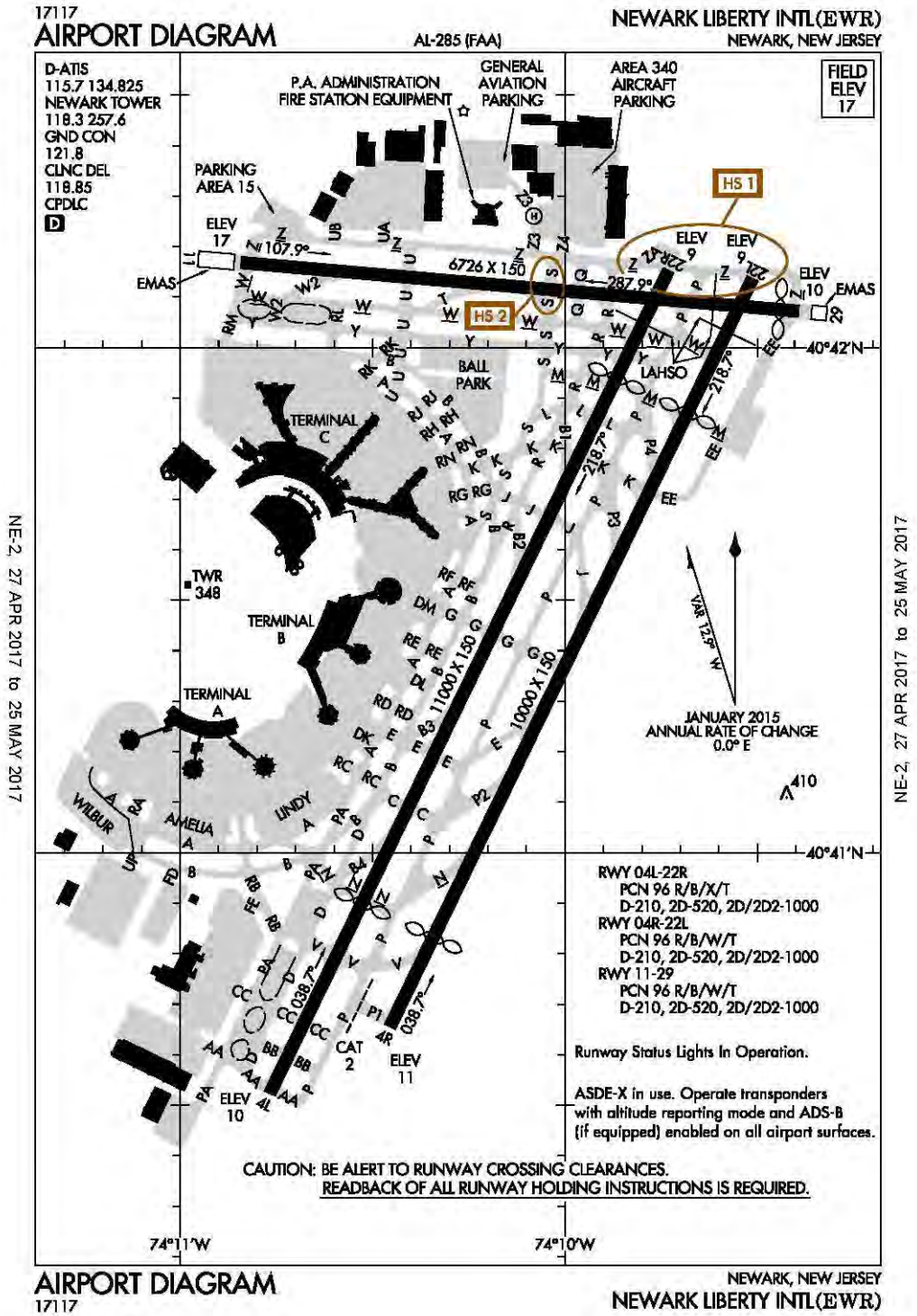
MILITARY: ANG OPERATIONS 1530−0100Z++ TUE−FRI EXCEPT HOLIDAY; DSN 830−4709.

TAXIWAY M CLOSED TO AIR CARRIER AIRCRAFT.

TAXIWAY J EAST OF RUNWAY 16L/34R CLOSED TO AIR CARRIER AIRCRAFT.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW −15C.

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: 40–41–32.93N / 74–10–00.00W
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: Diane M.Papaianni
BUILDING #1– CONRAD ROAD
Newark, NJ 7114 (973–961–6161)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 11
2.10.1.b Type of obstacle: Bldg (158 ft). Lighted
2.10.1.c Location of obstacle: 1437 ft from Centerline

2.10.1.a. Runway designation: 29
2.10.1.b Type of obstacle: Sign (54 ft). Lighted
2.10.1.c Location of obstacle: 514 ft from Centerline

2.10.1.a. Runway designation: 04R
2.10.1.b Type of obstacle: Pole (28 ft). Lighted
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Ant (30 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 534 ft from Centerline

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Pole (28 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 477 ft from Centerline

2.10.1.a. Runway designation: 04L
2.10.1.b Type of obstacle: Tree (65 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 572 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: H1
2.12.3 Dimensions: 54 ft x 54 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: 40–42–10.10N / 74–10–50.55W
2.12.6 Threshold elevation: 17 ft
2.12.6 Touchdown zone elevation: 17 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: 40–42–00.00N / 74–09–23.55W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

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: 40–40–31.37N / 74–10–46.02W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 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: 40−42−00.00N / 74−09−43.83W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 10 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: 40−40−39.30N / 74−10−27.28W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 11 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: 40−42−00.00N / 74−09−30.73W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 11 ft

AD 2.13 Declared distances

2.13.1 Designation: 11
2.13.2 Takeoff run available: 6726
2.13.3 Takeoff distance available: 6726
2.13.4 Accelerate−stop distance available: 6726
2.13.5 Landing distance available: 6726

2.13.1 Designation: 29
2.13.2 Takeoff run available: 6726
2.13.3 Takeoff distance available: 6726
2.13.4 Accelerate−stop distance available: 6726
2.13.5 Landing distance available: 6502

2.13.1 Designation: 04L
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff 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 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate−stop distance available: 11000
2.13.5 Landing distance available: 9560

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8810

2.13.1 Designation: 22L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 8207

AD 2.14 Approach and runway lighting

2.14.1 Designation: 11
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 29
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: Rwy 29 PAPI Unusable 5 Degs L Of Centerline .

2.14.1 Designation: 04L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 115.7 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 118.85 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.85 MHz

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 134.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P CLASS B
2.18.3 Service designation: 257.6 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 134.825 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/S
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 132.45 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 11. Magnetic variation: 13W
2.19.2 ILS identification: GPR
2.19.5 Coordinates: 40–42–10.84N / 74–10–35.03W
2.19.6 Site elevation: 9.5 ft

2.19.1 ILS type: DME for runway 11. Magnetic variation: 13W
2.19.2 ILS identification: GPR
2.19.5 Coordinates: 40–42–00.00N / 74–10–00.00W
2.19.6 Site elevation: 7.2 ft

2.19.1 ILS type: Localizer for runway 11. Magnetic variation: 13W
2.19.2 ILS identification: GPR
2.19.5 Coordinates: 40–42–00.00N / 74–10–00.00W
2.19.6 Site elevation: 7 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40–42–18.19N / 74–09–38.11W
2.19.6 Site elevation: 8.7 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40–41–00.00N / 74–10–22.76W
2.19.6 Site elevation: 7.4 ft

2.19.1 ILS type: Outer Marker for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40–35–37.20N / 74–13–48.00W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40–42–15.69N / 74–09–33.74W
2.19.6 Site elevation: 34.3 ft

2.19.1 ILS type: Middle Marker for runway 04L. Magnetic variation: 13W
2.19.2 ILS identification: EWR
2.19.5 Coordinates: 40−40−21.10N / 74−10−52.50W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40−41−47.56N / 74−09−53.88W
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: 40−40−22.39N / 74−10−51.73W
2.19.6 Site elevation: 9.1 ft

2.19.1 ILS type: Outer Marker for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40−45−55.11N / 74−07−17.20W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: DME for runway 22R. Magnetic variation: 13W
2.19.2 ILS identification: JNN
2.19.5 Coordinates: 40−42−15.69N / 74−09−33.74W
2.19.6 Site elevation: 34.3 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40−41−43.55N / 74−09−41.63W
2.19.6 Site elevation: 33.5 ft

2.19.1 ILS type: Outer Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40−36−26.40N / 74−13−00.00W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40−42−15.94N / 74−09−25.84W
2.19.6 Site elevation: 8.1 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40−40−57.60N / 74−10−00.00W
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: 40−40−41.48N / 74−10−23.17W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS identification: EZA
2.19.5 Coordinates: 40−40−26.62N / 74−10−35.32W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40−41−43.55N / 74−09−41.63W
2.19.6 Site elevation: 33.5 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40−45−55.11N / 74−07−17.20W
2.19.6 Site elevation: 28.7 ft

2.19.1 ILS type: Inner Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40−42−00.00N / 74−09−32.18W
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: 40−40−28.95N / 74−10−33.87W

2.19.6 Site elevation: 9.4 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40−41−43.67N / 74−09−41.74W
2.19.6 Site elevation: 7.4 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 13W
2.19.2 ILS identification: LSQ
2.19.5 Coordinates: 40−42−23.50N / 74−09−20.91W
2.19.6 Site elevation: 8 ft

General Remarks:
FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

FOR NOISE RESTRICTIONS CALL 212−435−3779 DURING NORMAL BUSINESS HOURS.

PARA−SAIL & BANNER TOWING OPERATIONS 1000 FT & BELOW IN UPPER & LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET INDEFINITELY.

TAXIWAY Z BETWEEN TAXIWAY U & UB RESTRICTED TO NARROW BODY AIRCRAFT INDEFINITELY.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RUNWAYS 04R & 04L DEPARTURES USE UPPER ANTENNA FOR ATC COMMUNICATIONS.

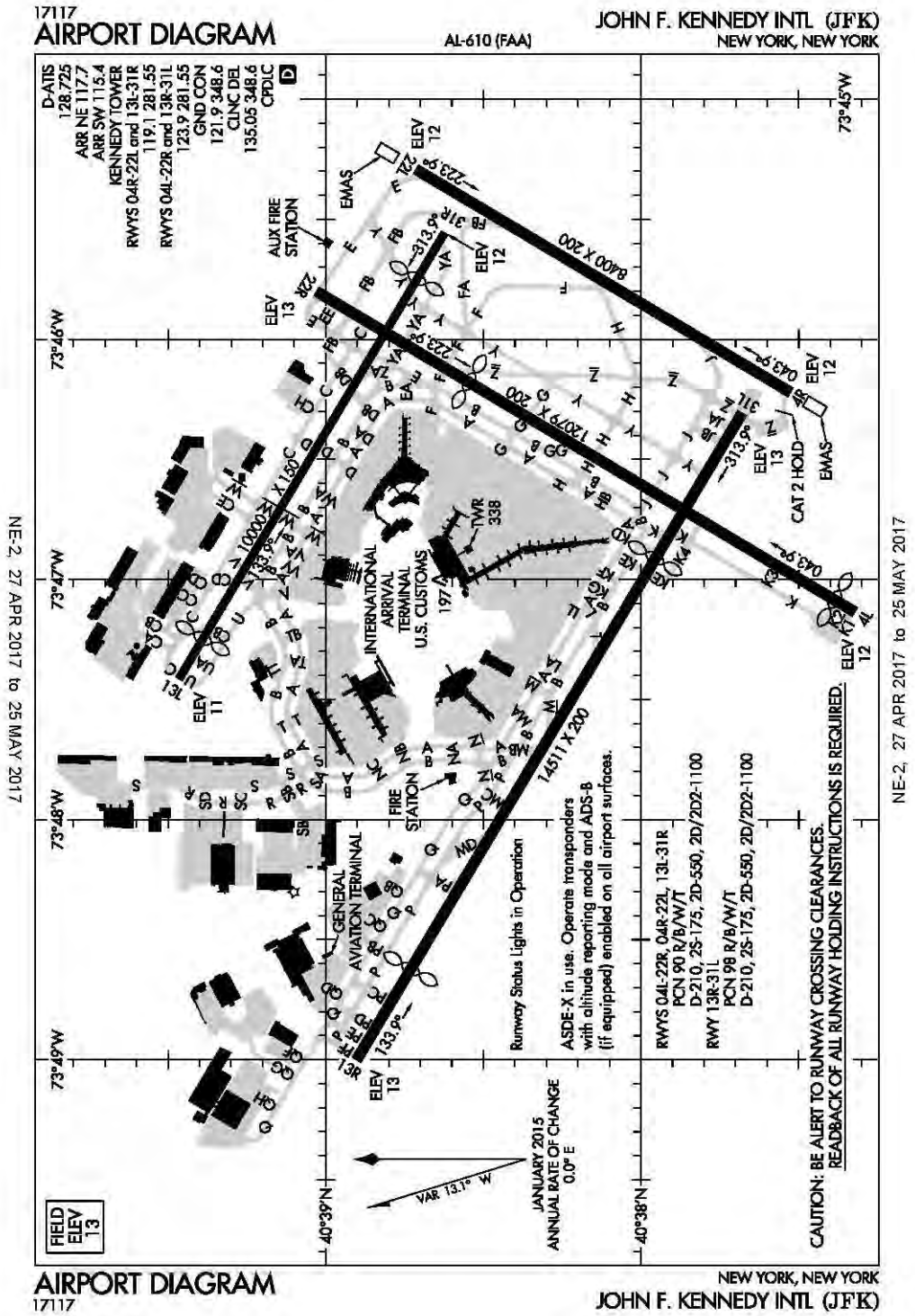
HIGH VOLUME OF LOW LEVEL HELICOPTER TRAFFIC ARRIVING AND DEPARTING HELO KEARNY HELIPORT (65NJ) LOCATED 3.5 MILES NORTHEAST OF THE AIRPORT.

RUNWAY STATUS LIGHTS IN OPR

ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 437 FT BY 178 FT IN WIDTH LOCATED AT THE DER 29.

CONTROLLER-PILOT DATA LINK COMMUNICATIONS DEPARTURE CLEARANCE SERVICE AVAILABLE.

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: 40–38–23.73N / 73–46–43.30W
2.2.2 From City: 13 Miles SE Of New York, NY
2.2.3 Elevation: 12.7 ft
2.2.5 Magnetic variation: 14W (2000)
2.2.6 Airport Contact: Michael Moran
BLDG 14
Jamaica, NY 11430
(718) 244–3501
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 22R
2.10.1.b Type of obstacle: Tree (70 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 37 ft from Centerline

2.10.1.a. Runway designation: 13L
2.10.1.b Type of obstacle: Pole (52 ft). Lighted
2.10.1.c Location of obstacle: 327 ft from Centerline

2.10.1.a. Runway designation: 31R
2.10.1.b Type of obstacle: Tree (79 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 392 ft from Centerline

2.10.1.a. Runway designation: 22L
2.10.1.b Type of obstacle: Tree (50 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 310 ft from Centerline

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: 40–37–19.28N / 73–47–00.00W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 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: 40–39–00.00N / 73–45–47.96W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 121
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40–39–27.95N / 73–47–24.89W
2.12.6 Threshold elevation: 11 ft
2.12.6 Touchdown zone elevation: 12 ft

2.12.1 Designation: 31R
2.12.2 True Bearing: 301
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 90 F/B/W/T
2.12.5 Coordinates: 40–38–37.40N / 73–45–33.41W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 12 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: 40–38–54.10N / 73–49–00.00W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 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: 40–37–40.78N / 73–46–18.41W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 13 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: 40−37−31.53N / 73−46−13.25W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 12 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: 40−38−42.85N / 73−45−17.51W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 12 ft

AD 2.13 Declared distances
2.13.1 Designation: 04L
2.13.2 Takeoff run available: 11351
2.13.3 Takeoff 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 Takeoff run available: 12079
2.13.3 Takeoff distance available: 12079
2.13.4 Accelerate−stop distance available: 11219
2.13.5 Landing distance available: 7795

2.13.1 Designation: 13L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 14511
2.13.3 Takeoff 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 Takeoff run available: 14511
2.13.3 Takeoff distance available: 14511
2.13.4 Accelerate−stop distance available: 14511
2.13.5 Landing distance available: 11248

2.13.1 Designation: 04R
2.13.2 Takeoff run available: 8400
2.13.3 Takeoff 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 Takeoff run available: 8400
2.13.3 Takeoff distance available: 8400
2.13.4 Accelerate−stop distance available: 8400
2.13.5 Landing distance available: 8400

AD 2.14 Approach and runway lighting
2.14.1 Designation: 04L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 22R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Rwy 22R PAPI Unusable Beyond 8 Degrees Right Of Centerline .

2.14.1 Designation: 13L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 12−box VASI on both sides
2.14.10 Remarks: Runway 13L VASI Unusable Left Of Centerline .

2.14.1 Designation: 31R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 13R
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: Runway 13R First P4L Horizontal Offset 22 Degs Left.
ry 13R Has Second P4L With Transitional Threshold Crossing Height And 3.00 Degrees Vgsi.

2.14.1 Designation: 31L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 04R
2.14.2 Approach lighting system: ALSF2: Standard 2400

feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 22L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Non Standard Light Spacing. Runway 22L PAPI Horizontal Offset 4 Degrees To Left.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 115.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 117.7 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: GATE HOLD
2.18.3 Service designation: 125.05 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 128.725 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 135.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 281.55 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 281.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 281.55 MHz

2.18.1 Service designation: GND/P CD/P PRE TAXI CLNC
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.25 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: PARCH STAR
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: ROBER STAR
2.18.3 Service designation: 125.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40–39–00.00N / 73–45–43.95W
2.19.6 Site elevation: 10.5 ft

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40–37–43.82N / 73–46–40.58W
2.19.6 Site elevation: 24 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40–37–31.08N / 73–46–54.91W
2.19.6 Site elevation: 9.3 ft

2.19.1 ILS type: Outer Marker for runway 04L. Magnetic variation: 14W
2.19.2 ILS identification: HIQ
2.19.5 Coordinates: 40–35–00.00N / 73–48–56.17W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Middle Marker for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40–39–00.00N / 73–45–46.80W

2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40−38−21.28N / 73−46−13.91W
2.19.6 Site elevation: 8.6 ft

2.19.1 ILS type: DME for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40−38−53.29N / 73−45−13.18W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 14W
2.19.2 ILS identification: JOC
2.19.5 Coordinates: 40−37−44.50N / 73−46−43.09W
2.19.6 Site elevation: 9.2 ft

2.19.1 ILS type: DME for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−38−33.54N / 73−45−18.24W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Middle Marker for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−39−37.10N / 73−47−44.80W
2.19.6 Site elevation: 11 ft

2.19.1 ILS type: Localizer for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−38−30.69N / 73−45−18.57W
2.19.6 Site elevation: 14.1 ft

2.19.1 ILS type: Glide Slope for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−39−14.76N / 73−47−00.00W
2.19.6 Site elevation: 10.5 ft

2.19.1 ILS type: Outer Marker for runway 13L. Magnetic variation: 14W
2.19.2 ILS identification: TLK
2.19.5 Coordinates: 40−41−40.70N / 73−52−00.00W
2.19.6 Site elevation: 126 ft

2.19.1 ILS type: DME for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−38−33.54N / 73−45−18.24W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: Outer Marker for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−35−50.70N / 73−39−26.60W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−39−30.78N / 73−47−31.09W
2.19.6 Site elevation: 11.9 ft

2.19.1 ILS type: Glide Slope for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−38−50.32N / 73−45−51.02W
2.19.6 Site elevation: 9.5 ft

2.19.1 ILS type: Middle Marker for runway 31R. Magnetic variation: 14W
2.19.2 ILS identification: RTH
2.19.5 Coordinates: 40−38−25.00N / 73−45−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−35−27.30N / 73−41−00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Glide Slope for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−37−59.87N / 73−47−00.00W
2.19.6 Site elevation: 8.7 ft

2.19.1 ILS type: Middle Marker for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−37−39.50N / 73−46−15.80W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Localizer for runway 31L. Magnetic variation: 14W
2.19.2 ILS identification: MOH
2.19.5 Coordinates: 40−38−59.65N / 73−49−12.42W

2.19.6 Site elevation: 13.7 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40–38–53.29N / 73–45–13.18W
2.19.6 Site elevation: 29 ft

2.19.1 ILS type: Glide Slope for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40–37–42.10N / 73–46–11.05W
2.19.6 Site elevation: 12.2 ft

2.19.1 ILS type: Middle Marker for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40–37–00.00N / 73–46–30.60W
2.19.6 Site elevation: 12 ft

2.19.1 ILS type: Localizer for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40–38–51.57N / 73–45–10.68W
2.19.6 Site elevation: 12.7 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 14W
2.19.2 ILS identification: JFK
2.19.5 Coordinates: 40–37–23.90N / 73–46–19.10W
2.19.6 Site elevation: 12 ft
2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40–43–31.10N / 73–41–35.40W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40–37–43.82N / 73–46–40.58W
2.19.6 Site elevation: 24 ft

2.19.1 ILS type: Glide Slope for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40–38–32.95N / 73–45–19.99W
2.19.6 Site elevation: 13.1 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40–39–12.30N / 73–44–54.50W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 22L. Magnetic variation: 14W
2.19.2 ILS identification: IWY
2.19.5 Coordinates: 40–37–27.51N / 73–46–16.39W
2.19.6 Site elevation: 10.5 ft

2.19.1 ILS type: Inner Marker for runway 22L. Magnetic variation: 14W
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

General Remarks:
FLOCKS OF BIRDS ON & IN THE VICINITY OF AIRPORT.

RUNWAY LEAD-IN LIGHTING SYSTEM RUNWAY 13L USES 1000 FT LIGHT STATION OF THE APPROACH LIGHT SYSTEM ONLY WITH CRI VOR APPROACHES & IS ANGLED TOWARD AQUEDUCT; ALSO 5 SEQUENCE FLASHING LIGHTS FROM 1200–2000 FT & A 5 SEQUENCE FLASHING LIGHTS GROUPING APPROXIMATELY 1 MI FROM RUNWAY +1 ADJACENT FORMING APPROACH. APPROACH GATE ANGLED 35 DEGS S OF RUNWAY 13L CENTERLINE DESIGNED TO PROVIDE EARLIER IDENT OF RUNWAY ENVI.

FOR NOISE ABATEMENT RESTRICTIONS CALL 212–435–3747 DURING NORMAL BUSINESS HOURS.

PARA–SAIL & BANNER TOWING OPERATIONS 1000 FT & BELOW IN UPPER & LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET INDEFINITELY.

SPECIAL AIR TRAFFIC RULES–PART 93 HIGH DENSITY AIRPORT. PRIOR RESERVATION REQUIRED. SEE AERONAUTICAL INFORMATION MANUAL.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

CONVERGING OPERATIONS ON RUNWAYS 13R AND 22L CONDUCTED BY WAY OF ARRIVAL DISTANCE WINDOW.

METERING PROCEDURES IN EFFECT− CONTACT RAMP CONTROL PRIOR TO PUSHBACK 1200Z−1500Z DAILY/1900Z−0300Z DAILY.

AIRCRAFT OPERATIONAL & TAXIWAY RESTRICTIONS EXIST FOR A380, B747−800,B777−300ER AND A340−600, PLEASE CONTACT JFK AIRPORT OPERATIONS FOR MORE INFORMATION.

GAT HELIPAD NON−STANDARD MARKINGS & LIGHTING.

RUNWAY 13R HAS TWO (2) PAPI − P4L SYSTEMS. (RUNWAY 13R) OFFSET PAPI SUPPORTS VOR OR GPS RUNWAY 13R & PARKWAY VISUAL RUNWAY 13R.

TAXIWAY 'A' BETWEEN TAXIWAY 'NA' & TAXIWAY 'NB' ARCFT SPEED RESTRICTION OF 17KTS/20MPH MAXIMUM FOR A380, B747−800, B747−400, B777−300ER, B777−200, A340, A330 & B787.

TAXIWAY 'H' CL LIGHTS BETWEEN TERMINAL 4 RAMP AND TAXIWAY A OUT OF SERVICE.

TAXIWAY 'H' CL LIGHTS BETWEEN TAXIWAY 'A' & RUNWAY 4L/22R OUT OF SERVICE.

RUNWAY 31R HOLDING POSITION MARKINGS AT RUNWAY 4L/22R 'SE' SIDE OBSCURE.

RUNWAY 13L HOLDING POSITION MARKINGS AT RUNWAY 4L/22R 'NW' SIDE OBSCURE.

UNTIL FURTHER NOTICE TAXIWAY 'D' BETWEEN TAXIWAY 'C' AND HANGAR 7 CLOSED.

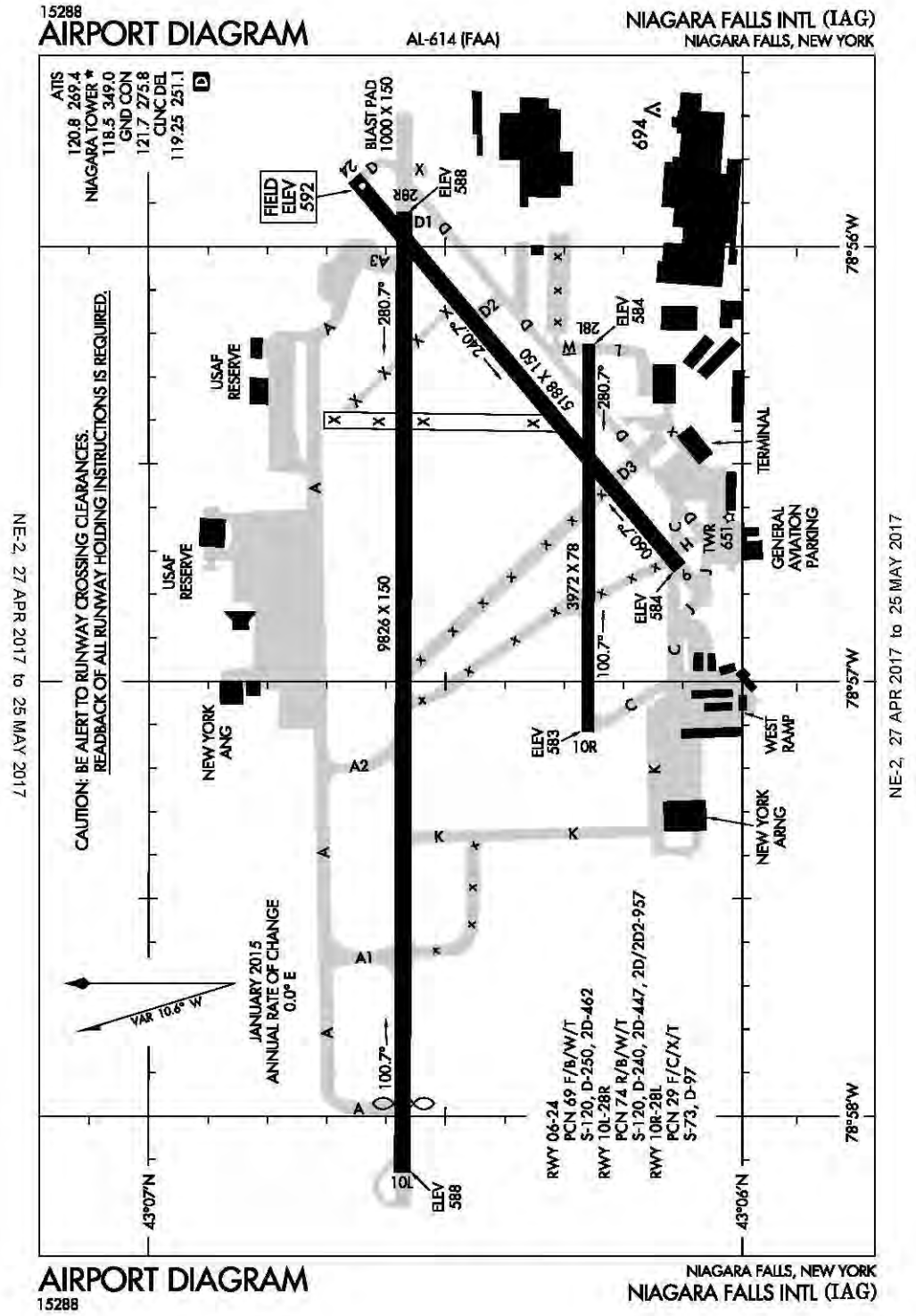
OBST BUILDING LIGHT OUT OF SERVICE 6.3 NAUTICAL MILE ESE JFK 222 FT MSL (220 FT AGL).

NON−STANDARD ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 393 FT IN LENGTH BY 226 FT IN WIDTH LOCATED AT THE DER 4R.

NON−STANDARD ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 405 FT IN LENGTH BY 226 FT IN WIDTH LOCATED AT THE DER 22L.

RUNWAY STATUS LIGHTS IN OPERATIONS.

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: 43−06−27.21N / 78−56−45.05W
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. Pascal Cohen
2035 NIAGARA FALLS BLVD
Niagara Falls, NY 14304
(716−855−6450)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A+
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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
2.6.4 Remarks: ARFF Index E Equipment Coverage Provided.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 06
2.10.1.b Type of obstacle: Tree (46 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 290 ft from Centerline

2.10.1.a. Runway designation: 24
2.10.1.b Type of obstacle: Tree (59 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 320 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Tree (64 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 60 ft from Centerline

2.10.1.a. Runway designation: 28L
2.10.1.b Type of obstacle: Stack (59 ft). Lighted
2.10.1.c Location of obstacle: 120 ft from Centerline

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Tree (52 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 480 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Tree (37 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

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: 43−06−00.00N / 78−56−44.30W
2.12.6 Threshold elevation: 584 ft
2.12.6 Touchdown zone elevation: 586 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: 43−06−39.20N / 78−55−50.61W
2.12.6 Threshold elevation: 592 ft
2.12.6 Touchdown zone elevation: 592 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: 43−06−15.60N / 78−57−00.00W
2.12.6 Threshold elevation: 583 ft
2.12.6 Touchdown zone elevation: 584 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: 43–06–15.51N / 78–56–13.46W
2.12.6 Threshold elevation: 584 ft
2.12.6 Touchdown zone elevation: 585 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: 43–06–34.35N / 78–58–00.00W
2.12.6 Threshold elevation: 588 ft
2.12.6 Touchdown zone elevation: 589 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: 43–06–34.16N / 78–55–55.32W
2.12.6 Threshold elevation: 588 ft
2.12.6 Touchdown zone elevation: 588 ft

AD 2.13 Declared distances

2.13.1 Designation: 06
2.13.2 Takeoff run available: 5188
2.13.3 Takeoff 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 Takeoff run available: 5188
2.13.3 Takeoff distance available: 5188
2.13.4 Accelerate–stop distance available: 5108
2.13.5 Landing distance available: 5108

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 3973
2.13.3 Takeoff 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 Takeoff run available: 3973
2.13.3 Takeoff distance available: 3973
2.13.4 Accelerate–stop distance available: 3973
2.13.5 Landing distance available: 3973

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 9829
2.13.3 Takeoff 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 Takeoff run available: 9829
2.13.3 Takeoff distance available: 10529
2.13.4 Accelerate–stop distance available: 9129
2.13.5 Landing distance available: 9129

AD 2.14 Approach and runway lighting

2.14.1 Designation: 06
2.14.4 Visual approach slope indicator system: 4–light PA-PI on left

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: 4–light PA-PI on left

2.14.1 Designation: 10R
2.14.4 Visual approach slope indicator system: 2–light PA-PI on left

2.14.1 Designation: 28L
2.14.4 Visual approach slope indicator system: 2–light PA-PI on left

2.14.1 Designation: 10L
2.14.4 Visual approach slope indicator system: 4–box VASI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PA-PI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 119.25 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 120.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 251.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 269.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 275.8 MHz
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 349 MHz

2.18.1 Service designation: NG−OPNS
2.18.3 Service designation: 41 MHz

2.18.1 Service designation: AFR−OPS
2.18.3 Service designation: 340.24 MHz

2.18.1 Service designation: 914 AW COMD POST
2.18.3 Service designation: 340.025 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−32.52N / 78−50−18.22W
2.19.6 Site elevation: 614.9 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−30.09N / 78−56−16.65W
2.19.6 Site elevation: 582.8 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−33.97N / 78−55−00.00W
2.19.6 Site elevation: 587 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 10W
2.19.2 ILS identification: IAG
2.19.5 Coordinates: 43−06−34.36N / 78−58−18.81W
2.19.6 Site elevation: 585.1 ft

General Remarks:

EXTENSIVE AIRCRAFT ACTIVITY OPERATING IN THE VICINITY OF US/CANADIAN FALLS ALL ALTITUDES.

CAUTION: HEAVY CONCENTRATIONS OF GULLS−BLACKBIRDS−STARLINGS UP TO 5000 AGL ON & IN THE VICINITY OF AIRPORT. BASH PHASE II OPERATIONS AT KIAG MAR−MAY AND SEP−NOV.

TAXIWAY D3 RESTRICTED TO 12500 LBS OR LESS.

TAXIWAY ”E” CLOSED PERMANENTLY BETWEEN TAXIWAYS ”C” AND ”D”.

TAXIWAY ”E” CLOSED INDEFINITELY FROM RUNWAY 10L/28R TO RUNWAY 06/24.

ALL MILITARY AIRCRAFT ONLY OPERATIONS RESTRICTED DURING BIRD WATCH CONDITIONS.

MODERATE – TAKE-OFF & LANDING PERMISSION ONLY WNEN DEP/ARR ROUTE AVOIDS IDENTIFIED BIRD ACTIVITY; NO LOCAL IFR/VFR TRAFFIC PATTERN ACTIVITY. SEVERE – TAKE-OFF & LANDING PHOHIBITED WO OG/CC APPROVAL; CONTACT COMMAND POST FOR CURRENT BIRD WATCH CONDITIONS.

ALL MILITARY AIRCRAFT ONLY MINIMAL CLASSIFIED MATERIALS AVAILABLE; AIRCREWS SHOULD ARRIVE WITH APPROPRIATE AMOUNT TO COMPLETE THEIR MISSION.

BEARING STRENGTH RUNWAY 06/24: ST110 TT145 SBTT281 TDT415 TRT252.

JASU: 2(A/M32A–86) 1(AM32A–60) 1(MA–1A).

FUEL: J8, A++ (MIL).

FLUID: SP LOX.

OIL: O–148(MIL).

REMARKS: SEE FLIGHT INFORMATION PUBLICATION AP/1 SUPPLEMENTARY AIRPORT REMARK.

MISC: LOCAL MISSION AIRCRAFT HAVE PRIORITY FOR DEICING; FULL AIRCRAFT DEICING FOR C–17 AND C–5 AIRCRAFT NOT AVAILABLE.

REMARKS–CAUTION: NIGHT VISION DEVICE OPERATIONS PERIODICALLY CONDUCTED IN THE AIRPORT TRAFFIC AREA.

REMARKS – MISC: FOR CURRENT MILITARY RUNWAY CONDITION READING (RCR) CALL OR CONTACT 914 AW COMMAND POST OR 914TH AW AIRFIELD MANAGEMENT.

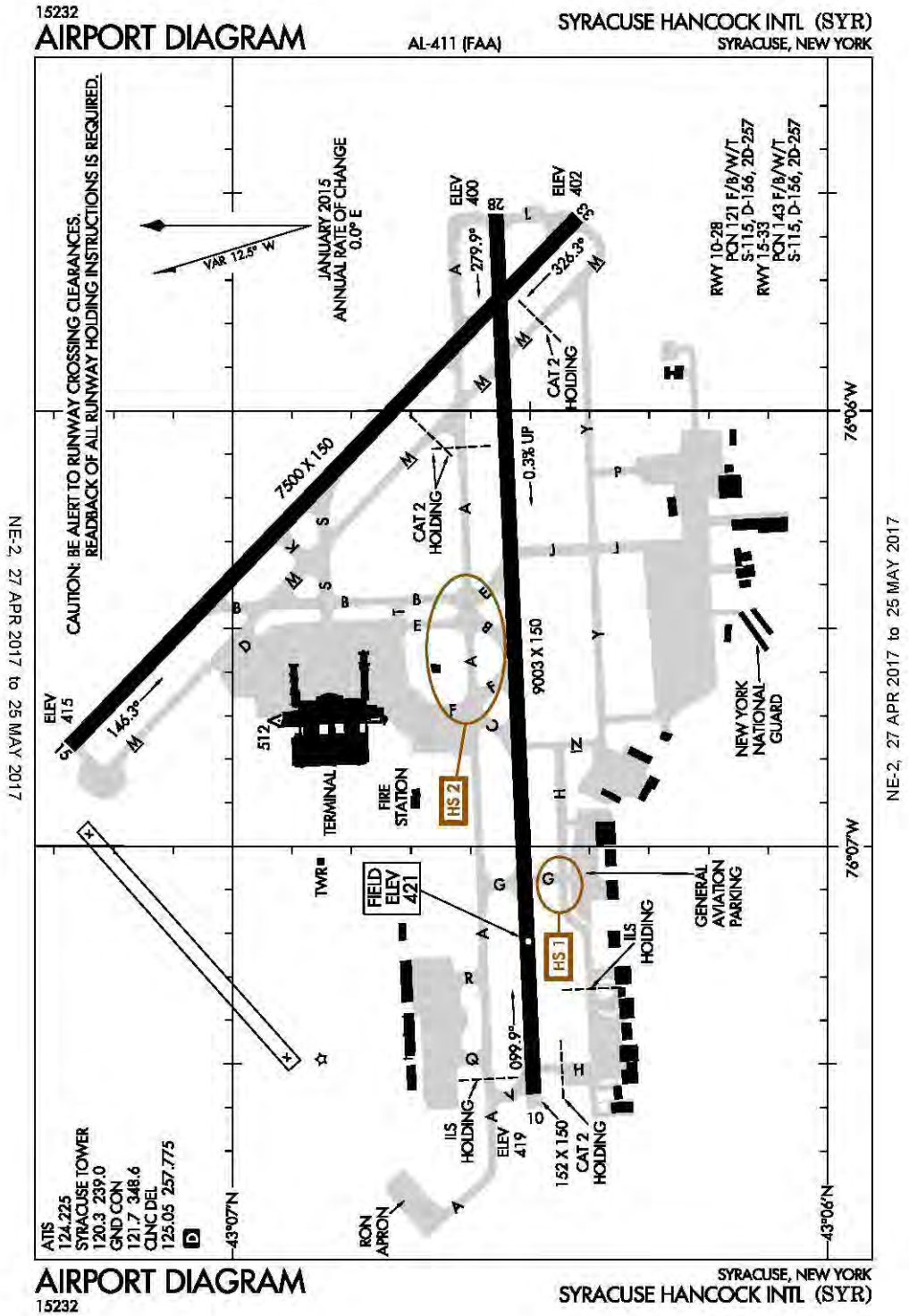
AFRC/ANG: NONSTANDARD APRON MRKS IDENTIFYING PARK ROWS & PARK LCTNS.

PRIOR PERMISSION REQUIRED CONTACT AIRFIELD MANAGEMENT DSN: 238–2176, C716–236–2176.

AIRFIELD MANAGEMENT DOES NOT ISSUE OR STORE COMSEC, FOR COMSEC STORAGE CONTACT COMMAND POST DSN 238–2150, C716–236–2150.

RUNWAY 28R 1000 FT BY 150 FT BLAST PAD.

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: 43–06–40.30N / 76–06–22.70W
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: Christina R. Callahan
1000 COL EILEEN COLLINS BLVD
Syracuse, NY 13212 (315–454–3263)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Trees (64 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 686 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Trees (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 287 ft from Centerline

2.10.1.a. Runway designation: 15
2.10.1.b Type of obstacle: Trees (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 380 ft from Centerline

2.10.1.a. Runway designation: 33
2.10.1.b Type of obstacle: Tree (34 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 520 ft from Centerline

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: 43–06–29.52N / 76–07–34.15W
2.12.6 Threshold elevation: 419 ft
2.12.6 Touchdown zone elevation: 421 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: 43–06–33.51N / 76–05–32.91W
2.12.6 Threshold elevation: 400 ft
2.12.6 Touchdown zone elevation: 413 ft
2.12.7 Slope: 0.3UP

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: 43–07–16.42N / 76–06–46.20W
2.12.6 Threshold elevation: 415 ft
2.12.6 Touchdown zone elevation: 417 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: 43–06–25.11N / 76–05–33.28W
2.12.6 Threshold elevation: 402 ft
2.12.6 Touchdown zone elevation: 409 ft

AD 2.13 Declared distances

2.13.1 Designation: 10
2.13.2 Takeoff run available: 9003
2.13.3 Takeoff 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 Takeoff run available: 9003
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 28
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 15
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 33
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 118.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 125.05 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 126.125 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 134.275 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: AR OPS
2.18.3 Service designation: 245.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: IC
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: ANG OPS
2.18.3 Service designation: 379.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 257.775 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 269.125 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.225 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43−06−33.96N / 76−05−19.01W
2.19.6 Site elevation: 395.6 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43−06−31.27N / 76−05−20.92W
2.19.6 Site elevation: 390.5 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 13W

2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43–06–28.04N / 76–08–11.83W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: MRZ
2.19.5 Coordinates: 43–06–26.02N / 76–07–20.15W
2.19.6 Site elevation: 423 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43–06–31.84N / 76–05–20.74W
2.19.6 Site elevation: 406 ft

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43–06–39.47N / 76–05–46.43W
2.19.6 Site elevation: 404 ft

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43–06–34.93N / 76–04–49.53W
2.19.6 Site elevation: 406 ft

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43–06–28.94N / 76–07–51.66W
2.19.6 Site elevation: 417 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43–06–43.94N / 76–00–00.00W
2.19.6 Site elevation: 403 ft

2.19.1 ILS type: Inner Marker for runway 28. Magnetic variation: 13W
2.19.2 ILS identification: SYR
2.19.5 Coordinates: 43–06–34.10N / 76–05–18.52W
2.19.6 Site elevation: 395 ft

General Remarks:
NO CHARTER OPER THRU PASSENGER TERMINAL BUILDING WITHOUT PRIOR PERMISSION.

NOISE ABATEMENT PROCEDURES IN EFFECT.

DEER/COYOTE/BIRDS ON IN THE VICINITY OF AIRPORT.

NO JET ENGINE MAINT RUNS ABOVE IDLE BETWEEN 2300–0600.

NO TRANSIENT AIRCRAFT 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.

FIELD CONDITION REPORTS RECORDING AVAILABLE CALL 315–455–3444.

HEAVY AIRCRAFT CONTACT AIRPORT COMMISSIONER FOR PARK AVAILABLE AT C315–455–3263. MILITARY PARK RAMP UNLIGHTED. LIMITED METRO AVAIL AT DSN 243–2185. C315–233–2185 OR CONTACT OWS DSN 576–9755/9702. ALL TRANSIENT AIRCRAFT REQ NOISE ABATEMENT BRIEFING.

COMMUNICATIONS – ANG – OPERATIONS – 139.625 379.5 REMARKS: (COBRA OPS) CONTACT ANG OPERATIONS 15 MIN PRIOR TO ARR.

RESTRICTED: TAXIWAY J AND P SOUTH OF TAXIWAY Y CLOSED TO CIVIL OPERATIONS.

CAUTION: TAXIWAY J AND P SOUTH OF TAXIWAY Y AND ANG RAMP HAVE UNCTL VEH AND EQUIPMENT TRAFFIC.

ANG: OPR 1100–2000Z++ WEEKEND EXCEPT HOLIDAY. PRIOR PERMISSION REQUIRED TRANSMIT

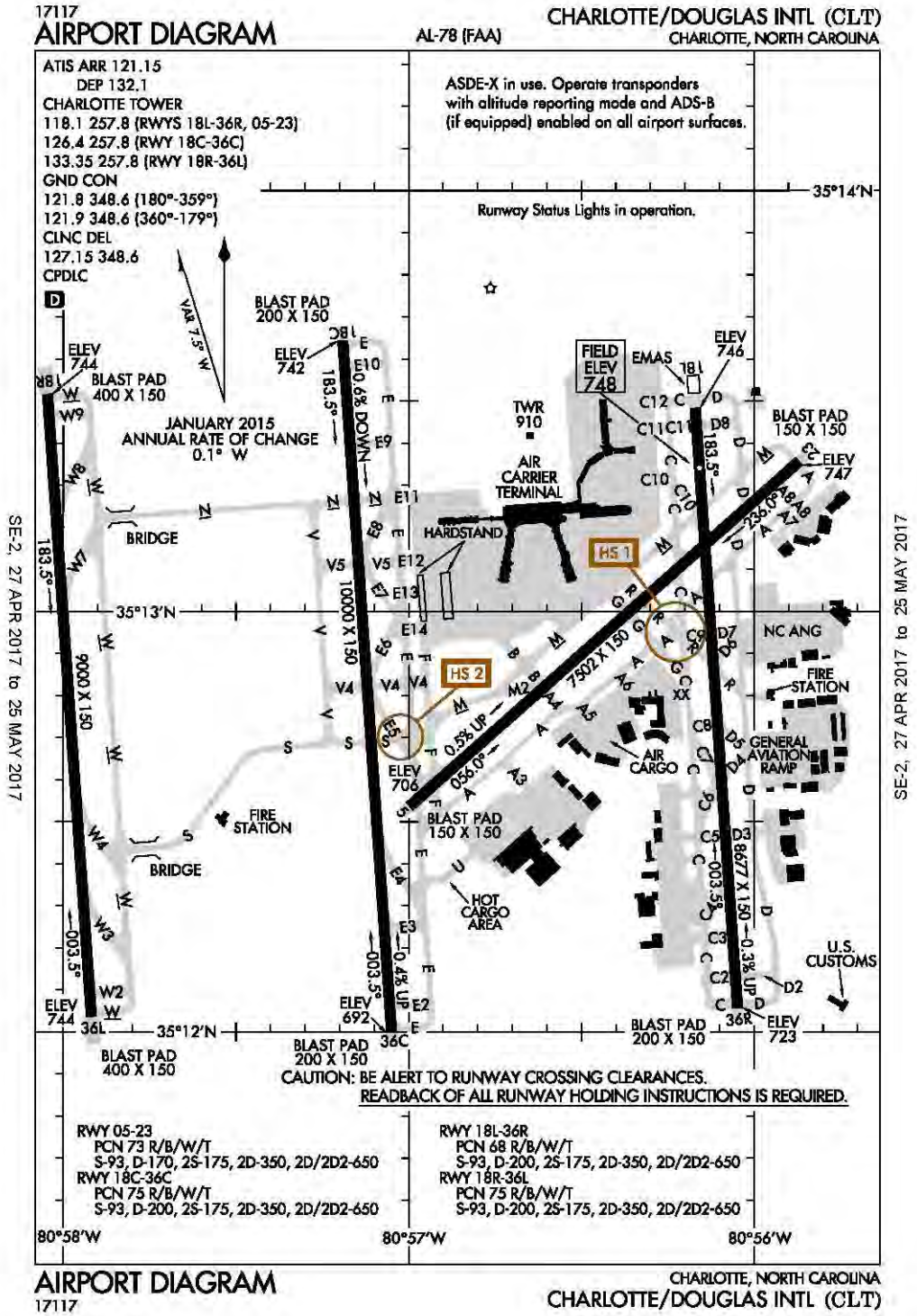
AIRCRAFT OFFICIAL BUSINESS ONLY. AIRFIELD MANAGER DSN 243−2208, AFTER DUTY HR CONTACT C315−530−2520. PRIOR PERMISSION REQUIRED FOR ALL TRANSIENT AIRCRAFT DUE LIMITED TRANSMIT SERVICE. NOTIFY AIRFIELD MANAGER OF ESTIMATED TIME OF ARRIVAL DELAY OVER 30 MIN OR MSN CANCEL IS REQUIRE.

ANG: HEAVY AIRCRAFT CONTACT AIRPORT COMMISSIONER FOR PARK AVAILABLE AT C315−455−3666. MILITARY PARK RAMP UNLIGHTED. ALL TRANSIENT AIRCRAFT REQUIRE NS ABATEMENT BRIEFING.

UAS OPERATE WITHIN THE CONFINES OF THE SYRACUSE CLASS C, TIMES VARY.

UAS OPERATIONS IN SYRACUSE APPROACH/DEP AIRSPACE WILL BE CONTROLLED BY SYR ATC AT ALL TIMES.

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: 35−12−49.50N / 80−56−56.60W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
2.4.5 Hangar space: No
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 05
2.10.1.b Type of obstacle: Trees (38 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 18L
2.10.1.b Type of obstacle: Rr (19 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 18C
2.10.1.b Type of obstacle: Road (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 425 ft from Centerline

AD 2.12 Runway physical characteristics

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: 35−12−32.23N / 80−56−59.80W
2.12.6 Threshold elevation: 706 ft
2.12.6 Touchdown zone elevation: 716 ft
2.12.7 Slope: 0.5DOWN

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: 35−13−21.42N / 80−55−52.12W
2.12.6 Threshold elevation: 747 ft
2.12.6 Touchdown zone elevation: 747 ft
2.12.7 Slope: 0.5UP

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: 35−13−29.05N / 80−56−10.17W
2.12.6 Threshold elevation: 746 ft
2.12.6 Touchdown zone elevation: 748 ft
2.12.7 Slope: 0.2DOWN

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: 35−12−00.00N / 80−56−00.00W
2.12.6 Threshold elevation: 723 ft
2.12.6 Touchdown zone elevation: 727 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 18C
2.12.2 True Bearing: 176
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 75 R/B/W/T
2.12.5 Coordinates: 35−13−38.63N / 80−57−11.41W
2.12.6 Threshold elevation: 742 ft
2.12.6 Touchdown zone elevation: 742 ft
2.12.7 Slope: 0.6DOWN

2.12.1 Designation: 36C
2.12.2 True Bearing: 356
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 75 R/B/W/T
2.12.5 Coordinates: 35−11−59.97N / 80−57−00.00W
2.12.6 Threshold elevation: 692 ft
2.12.6 Touchdown zone elevation: 707 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 18R

2.12.2 True Bearing: 176
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 75 R/B/W/T
2.12.5 Coordinates: 35–13–31.02N / 80–58–00.00W
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: 75 R/B/W/T
2.12.5 Coordinates: 35–12–00.00N / 80–57–55.07W
2.12.6 Threshold elevation: 744 ft
2.12.6 Touchdown zone elevation: 744 ft

AD 2.13 Declared distances
2.13.1 Designation: 05
2.13.2 Takeoff run available: 7502
2.13.3 Takeoff distance available: 7502
2.13.4 Accelerate–stop distance available: 7092
2.13.5 Landing distance available: 7092

2.13.1 Designation: 23
2.13.2 Takeoff run available: 7502
2.13.3 Takeoff distance available: 7502
2.13.4 Accelerate–stop distance available: 7502
2.13.5 Landing distance available: 7502

2.13.1 Designation: 18L
2.13.2 Takeoff run available: 8676
2.13.3 Takeoff 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 Takeoff run available: 8676
2.13.3 Takeoff distance available: 8676
2.13.4 Accelerate–stop distance available: 8390
2.13.5 Landing distance available: 8390

2.13.1 Designation: 18C
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate–stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 18R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9000
2.13.3 Takeoff 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: 05
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 23
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 18L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 18C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 36C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 18R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 36L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 120.05 MHz

2.18.1 Service designation: WEAZL RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: JOJJO RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: KRITR RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: BEAVY RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: ICONS RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: KWEEN RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: BOBCAT SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: BOBZY RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: CHARLOTTE SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: HORNET SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: ESTRR RNAV SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: KERMIT SID
2.18.3 Service designation: 120.5 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 121.15 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: BEAVY RNAV SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: ICONS RNAV SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: KWEEN RNAV SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: CHARLOTTE SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: CHARLOTTE SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: HORNET SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: PANTHER SID

2.18.3 Service designation: 124 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: BARMY RNAV SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: LIILS RNAV SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: KILNS RNAV SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: KERMIT SID
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: LCL/P (RY 18C–36C)
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.15 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 132.1 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: KNIGHTS SID
2.18.3 Service designation: 134.75 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 134.75 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 134.75 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 134.75 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: FILPZ RNAV STAR
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: PARQR RNAV STAR
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: ICONS RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: KWEEN RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: JOJJO RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: KRITR RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: WEAZL RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: KNIGHTS SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: BEAVY RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: KERMIT SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: LIINN STAR
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: BOBCAT SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: BOBZY RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: CHARLOTTE SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: HORNET SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: ESTRR RNAV SID
2.18.3 Service designation: 257.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P CD/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 128.32 MHz

2.18.1 Service designation: CHARLOTTE SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: CHARLOTTE SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: KNIGHTS SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: KERMIT SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: HORNET SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: PANTHER SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: BARMY RNAV SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: KILNS RNAV SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: LILLS RNAV SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: BEAVY RNAV SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: ICONS RNAV SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: KWEEN RNAV SID
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS B IC
2.18.3 Service designation: 307.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 133.35 MHz

2.18.1 Service designation: ALCP
2.18.3 Service designation: 292.25 MHz

2.18.1 Service designation: MLLET RNAV STAR
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: KABEE RNAV STAR
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: STOCR RNAV STAR
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: MAJIC STAR
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: CHSLY RNAV STAR
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: RASLN STAR
2.18.3 Service designation: 126.15 MHz

2.18.1 Service designation: MLLET RNAV STAR
2.18.3 Service designation: 282.325 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 282.325 MHz

2.18.1 Service designation: KABEE RNAV STAR
2.18.3 Service designation: 282.325 MHz

2.18.1 Service designation: STOCR RNAV STAR
2.18.3 Service designation: 282.325 MHz

2.18.1 Service designation: MAJIC STAR
2.18.3 Service designation: 282.325 MHz

2.18.1 Service designation: CHSLY STAR
2.18.3 Service designation: 282.325 MHz

2.18.1 Service designation: FILPZ RNAV STAR
2.18.3 Service designation: 135.6 MHz

2.18.1 Service designation: UNARM STAR
2.18.3 Service designation: 135.6 MHz

2.18.1 Service designation: JONZE RNAV STAR
2.18.3 Service designation: 135.6 MHz

2.18.1 Service designation: BANKR RNAV STAR
2.18.3 Service designation: 135.6 MHz

2.18.1 Service designation: CHPTR STAR
2.18.3 Service designation: 135.6 MHz

2.18.1 Service designation: BTSEY STAR
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: LIINN STAR
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: PARQR RNAV STAR
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: FILPZ RNAV STAR
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: UNARM STAR
2.18.3 Service designation: 377.15 MHz

2.18.1 Service designation: BANKR RNAV STAR
2.18.3 Service designation: 377.15 MHz

2.18.1 Service designation: JONZE RNAV STAR
2.18.3 Service designation: 377.15 MHz

2.18.1 Service designation: CHPTR STAR
2.18.3 Service designation: 377.15 MHz

2.18.1 Service designation: HUGO SID
2.18.3 Service designation: 128.325 MHz

2.18.1 Service designation: KNIGHTS SID
2.18.3 Service designation: 128.325 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Outer Marker for runway 05. Magnetic variation: 7W
2.19.2 ILS identification: CLT
2.19.5 Coordinates: 35–09–29.30N / 81–01–14.12W
2.19.6 Site elevation: 691 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: 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: Middle Marker for runway 05. Magnetic variation: 7W
2.19.2 ILS identification: CLT
2.19.5 Coordinates: 35–12–10.91N / 80–57–29.16W
2.19.6 Site elevation: 732 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 23. Magnetic variation: 7W
2.19.2 ILS identification: APU
2.19.5 Coordinates: 35–12–21.28N / 80–57–10.05W
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: 35–13–12.15N / 80–56–00.00W
2.19.6 Site elevation: 737.7 ft

2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35–11–50.60N / 80–56–00.00W
2.19.6 Site elevation: 719.2 ft

2.19.1 ILS type: Outer Marker for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35–20–19.08N / 80–56–41.44W
2.19.6 Site elevation: 717 ft

2.19.1 ILS type: Middle Marker for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35−14−00.00N / 80−56−14.34W
2.19.6 Site elevation: 739 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 7W
2.19.2 ILS identification: VKQ
2.19.5 Coordinates: 35−13−19.26N / 80−56−00.00W
2.19.6 Site elevation: 743.5 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 / 80−56−00.00W
2.19.6 Site elevation: 710 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−13−33.70N / 80−56−10.57W
2.19.6 Site elevation: 741.2 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−12−14.00N / 80−55−58.89W
2.19.6 Site elevation: 717.3 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−11−40.26N / 80−56−00.00W
2.19.6 Site elevation: 700 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−13−33.11N / 80−56−00.00W
2.19.6 Site elevation: 752.3 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−11−54.22N / 80−56−00.00W
2.19.6 Site elevation: 710 ft

2.19.1 ILS type: Outer Marker for runway 36R. Magnetic variation: 7W
2.19.2 ILS identification: BQC
2.19.5 Coordinates: 35−05−26.62N / 80−55−33.97W
2.19.6 Site elevation: 616 ft

2.19.1 ILS type: Localizer for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−11−48.60N / 80−57−00.00W
2.19.6 Site elevation: 683.3 ft

2.19.1 ILS type: Glide Slope for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−13−26.91N / 80−57−15.24W
2.19.6 Site elevation: 731.4 ft

2.19.1 ILS type: Outer Marker for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−20−12.02N / 80−57−48.14W
2.19.6 Site elevation: 737 ft

2.19.1 ILS type: DME for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−11−50.24N / 80−56−58.64W
2.19.6 Site elevation: 684.4 ft

2.19.1 ILS type: Middle Marker for runway 18C. Magnetic variation: 7W
2.19.2 ILS identification: PEP
2.19.5 Coordinates: 35−14−00.00N / 80−57−13.65W
2.19.6 Site elevation: 703 ft

2.19.1 ILS type: Localizer for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−13−53.95N / 80−57−12.73W
2.19.6 Site elevation: 749.4 ft

2.19.1 ILS type: Glide Slope for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−12−00.00N / 80−57−00.00W
2.19.6 Site elevation: 691.1 ft

2.19.1 ILS type: Outer Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35−05−43.52N / 80−56−26.77W
2.19.6 Site elevation: 593 ft

2.19.1 ILS type: Middle Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35–11–34.90N / 80–57–00.00W
2.19.6 Site elevation: 679 ft

2.19.1 ILS type: Inner Marker for runway 36C. Magnetic variation: 7W
2.19.2 ILS identification: DQG
2.19.5 Coordinates: 35–11–48.73N / 80–57–00.00W
2.19.6 Site elevation: 682.9 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35–12–13.26N / 80–58–00.00W
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: 35–13–20.10N / 80–58–00.00W
2.19.6 Site elevation: 733.9 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35–11–51.84N / 80–57–54.17W
2.19.6 Site elevation: 738.1 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 7W
2.19.2 ILS identification: RGS
2.19.5 Coordinates: 35–13–38.81N / 80–58–00.00W
2.19.6 Site elevation: 738.6 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35–13–19.83N / 80–58–00.00W
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: 35–12–12.98N / 80–58–00.00W
2.19.6 Site elevation: 732.3 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35–13–41.40N / 80–58–00.00W
2.19.6 Site elevation: 737.3 ft

2.19.1 ILS type: Inner Marker for runway 36L. Magnetic variation: 7W
2.19.2 ILS identification: XUU
2.19.5 Coordinates: 35–11–54.43N / 80–57–54.41W
2.19.6 Site elevation: 739.2 ft

General Remarks:
RUNWAY SURFACE CONDITION INFORMATION DURING DUTY HRS PHONE ANG OPERATIONS V583–9177/9144 OR AIRBORNE 292.2.

NOISE ABATEMENT PROCEDURE IN EFFECT 2300–0700; LAND ON RUNWAY 05 TAKE-OFF RUNWAY 23.

BE ALERT FOR FLOCKS OF MIGRATORY BIRDS ON & IN THE VICINITY OF AIRPORT.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

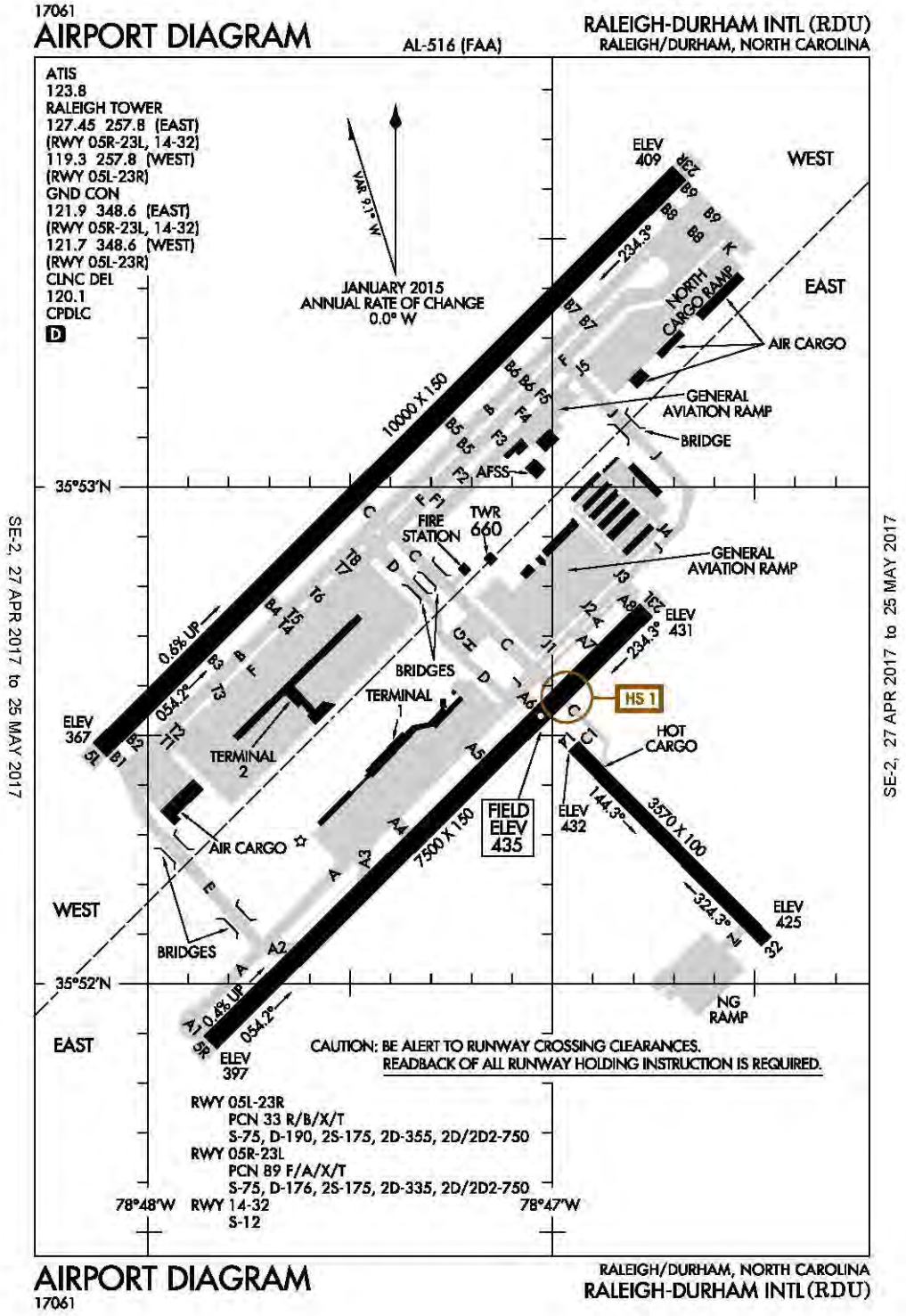
ANG: CONTACT NEWSREEL 292.25 30 MIN PRIOR LANDING. AMOPS/COMD POST – 292.25 (CALL NEWSREEL).

SUCCESSIVE OR SIMULTANEOUS DEPARTURES FROM RUNWAY 18L AND RUNWAY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 4 MILES FROM END OF RUNWAY.

RUNWAY STATUS LIGHTS IN OPR.

TAXIWAY 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.

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: 35–52–39.50N / 78–47–14.90W
2.2.2 From City: 9 Miles NW Of Raleigh/Durham, NC
2.2.3 Elevation: 435 ft
2.2.5 Magnetic variation: 9W (2020)
2.2.6 Airport Contact: Michael Landguth
1000 TRADE DRIVE
Rdu Airport, NC 27623
(919) 840–7701
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Trees (120 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 1 ft from Centerline

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: 35–52–28.02N / 78–48–00.00W
2.12.6 Threshold elevation: 367 ft
2.12.6 Touchdown zone elevation: 384 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: 35–53–37.76N / 78–46–40.92W
2.12.6 Threshold elevation: 409 ft
2.12.6 Touchdown zone elevation: 409 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: 35–51–52.67N / 78–47–50.42W
2.12.6 Threshold elevation: 397 ft
2.12.6 Touchdown zone elevation: 420 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: 35–52–44.98N / 78–46–45.82W
2.12.6 Threshold elevation: 431 ft
2.12.6 Touchdown zone elevation: 435 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.5 Coordinates: 35–52–30.11N / 78–46–57.64W
2.12.6 Threshold elevation: 432 ft
2.12.6 Touchdown zone elevation: 432 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.5 Coordinates: 35–52–00.00N / 78–46–27.05W
2.12.6 Threshold elevation: 425 ft
2.12.6 Touchdown zone elevation: 429 ft

AD 2.13 Declared distances

2.13.1 Designation: 05L
2.13.2 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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 Takeoff run available: 7500
2.13.3 Takeoff 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: 05L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 05R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 23L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.3 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 123.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: FINAL CTL
2.18.3 Service designation: 124.8 MHz

2.18.1 Service designation: KAROO STAR
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: BLOGS STAR
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124.95 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.45 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: MALNR RNAV STAR
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 132.35 MHz

2.18.1 Service designation: RDR
2.18.3 Service designation: 134.3 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 256.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 307.9 MHz

2.18.1 Service designation: MALNR RNAV STAR
2.18.3 Service designation: 307.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: BLOGS STAR
2.18.3 Service designation: 392.1 MHz

2.18.1 Service designation: KAROO STAR
2.18.3 Service designation: 392.1 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 392.1 MHz

2.18.1 Service designation: FINAL CTL
2.18.3 Service designation: 395 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 353.675 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 353.675 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35–52–37.80N / 78–48–00.00W
2.19.6 Site elevation: 365.6 ft

2.19.1 ILS type: Middle Marker for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35–52–00.00N / 78–48–41.35W
2.19.6 Site elevation: 334 ft

2.19.1 ILS type: Localizer for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35–53–48.07N / 78–46–28.19W
2.19.6 Site elevation: 408.8 ft

2.19.1 ILS type: DME for runway 05L. Magnetic variation: 7W
2.19.2 ILS identification: GKK
2.19.5 Coordinates: 35–53–47.52N / 78–46–27.57W
2.19.6 Site elevation: 410.9 ft

2.19.1 ILS type: DME for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35–52–19.51N / 78–48–13.82W
2.19.6 Site elevation: 370.4 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: Glide Slope for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35–53–32.48N / 78–46–54.35W
2.19.6 Site elevation: 396.3 ft

2.19.1 ILS type: Inner Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35–53–43.88N / 78–46–33.36W
2.19.6 Site elevation: 402 ft

2.19.1 ILS type: Middle Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS identification: DMP
2.19.5 Coordinates: 35–53–54.73N / 78–46–19.97W
2.19.6 Site elevation: 410 ft

2.19.1 ILS type: Localizer for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35–52–52.09N / 78–46–37.05W
2.19.6 Site elevation: 400 ft

2.19.1 ILS type: Glide Slope for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35–51–57.02N / 78–47–38.17W
2.19.6 Site elevation: 400.1 ft

2.19.1 ILS type: Outer Marker for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU
2.19.5 Coordinates: 35–47–48.98N / 78–52–58.70W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 05R. Magnetic variation: 7W
2.19.2 ILS identification: RDU

2.19.5 Coordinates: 35−51−26.40N / 78−48−22.84W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−51−45.63N / 78−47−59.10W
2.19.6 Site elevation: 357.5 ft

2.19.1 ILS type: Glide Slope for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−52−36.26N / 78−46−52.29W
2.19.6 Site elevation: 430.2 ft

2.19.1 ILS type: Middle Marker for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−53−00.00N / 78−46−24.99W
2.19.6 Site elevation: 376 ft

2.19.1 ILS type: Outer Marker for runway 23L. Magnetic variation: 7W
2.19.2 ILS identification: LEI
2.19.5 Coordinates: 35−55−38.51N / 78−43−19.67W
2.19.6 Site elevation: 500 ft

General Remarks:
NO JET ENGINE MAINTENANCE RUNS BETWEEN 0000−0600.

NATIONAL GUARD PRIOR PERMISSION REQUIRED FOR LANDING CONTACT V582−9181 C(919)664−9181.

NATIONAL GUARD 24 HR PRIOR PERMISSION REQUIRED FOR JET AIRCRAFT & TRANSMIT MILITARY AIRCRAFT − 919−840−2111.

NO APPROVAL REQUIRED FOR PUSHBACK AT TERMINAL GATES UNLESS AIRCRAFT REQUIRES USE OF TAXIWAY. CONTACT ATC PRIOR TO PUSHING ONTO TAXIWAY.

RESTRICTED: PRIOR PERMISSION REQUIRED FOR ALL MILITARY AIRCRAFT F/W – R/W & UNSCHEDULED CHARTER FLIGHTS WITH 30 OR MORE PASSENGERS. 24 HR PRIOR NOTICE REQUIRE FOR MILITARY PRACTICE APPROACH. CONTACT AIRPORT OPERATIONS 919−840−2111 OR RDU APPROACH CONTROL C919−380−3125. 24 HR PRIOR PERMISSION REQUIRED FOR ALL F/W AND R/W MILITARY AIRCRAFT GOING TO ARRANGE RAMP. POC DSN 582−9000, EXTENSION 16200, C919−804−5300, EXTENSION 16200. OSACOM FLIGHT DET DSN 582−9000, EXTENSION 16202, C919−804−5300, EXTENSION 16202.

AIRPORT CLOSED TO AIRSHIPS.

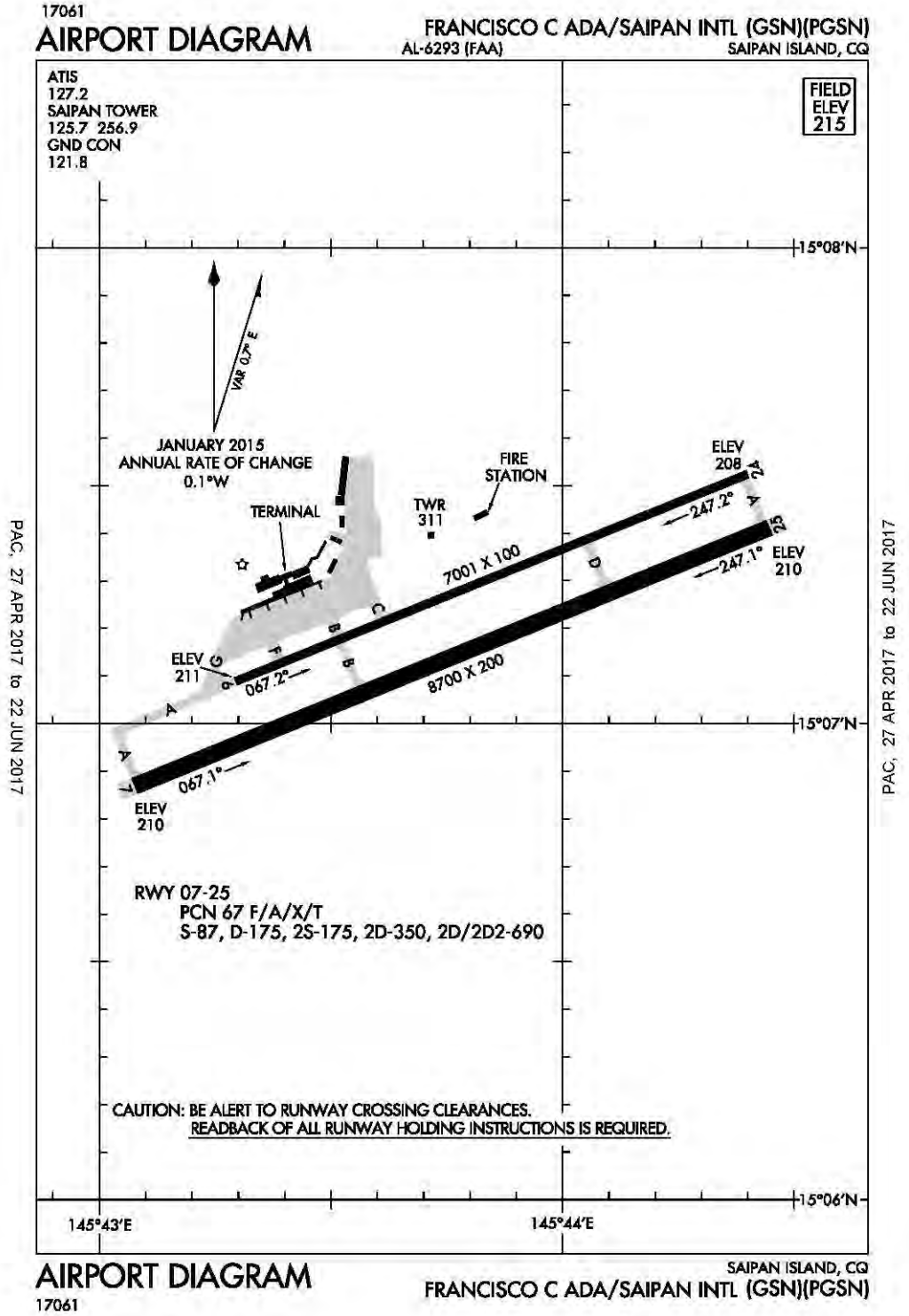
TAXIWAY E BEHIND SOUTH CARGO 4 & TAXIWAY J BEHIND CORPORATE HANGARS NOT VISIBLE FROM ATCT.

CRAN 75 FT AGL.76 NAUTICAL MILE FROM APPROACH END RUNWAY 05R.

ARRANGE: LIMITED PARK. ARRANGE OPERATIONS DSN 582−9000, EXTENSION 16200, C919−804−5300 EXTENSION 16200, DSN 582−9000,X16200, C919−804−5300,X16200 CONTACT FORECAST BASE 10 MIN PRIOR LANDING. RAMP CLOSED TO ALL F/W EXCEPT ARMY & MILITARY TRANSPORT WITH PRIOR PERMISSION REQUIRED, FACILITY HRS 1300−2130Z++ MON−FRI EXCEPT HOLIDAY. MAKE APPT FOR AFTER DUTY HRS. NO FUEL EXCARNG FERRY AIRCRAFT. OSACOM FLIGHT DET DSN 582−9248, C919−664−6248.

TAXIWAY F1 IS CLOSED UNTIL FURTHER NOTICE.

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: 15−07−12.92N / 145−43−47.94E
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: Maryann Q. Lizama
PO BOX 501055
Saipan, MP 96950
(670) 237−6500
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 − 2.3.11: 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,A1+
2.4.4 De−icing facilities: None
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: ARFF Index I D certified on 1/1/1978
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except Prior Permission Required Call Or Write Airport Manager 670−237−6500/670−285−1512(Cell); P.O. Box 501055 Saipan Mp 96950.

AD 2.12 Runway physical characteristics

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: 15−06−52.11N / 145−43−00.00E
2.12.6 Threshold elevation: 210 ft
2.12.6 Touchdown zone elevation: 215 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: 15−07−24.70N / 145−44−26.79E
2.12.6 Threshold elevation: 210 ft
2.12.6 Touchdown zone elevation: 210 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 68
2.12.3 Dimensions: 7001 ft x 100 ft
2.12.5 Coordinates: 15−07−00.00N / 145−43−17.64E
2.12.6 Threshold elevation: 211 ft
2.12.6 Touchdown zone elevation: 211 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 248
2.12.3 Dimensions: 7001 ft x 100 ft
2.12.5 Coordinates: 15−07−31.57N / 145−44−23.86E
2.12.6 Threshold elevation: 208 ft
2.12.6 Touchdown zone elevation: 208 ft

AD 2.14 Approach and runway lighting

2.14.1 Designation: 07
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: PVASI on left
2.14.10 Remarks: Restricted To 2.5nm & 5 Degrees Left & Right Of Runway Centerline Due To Intensity.

2.14.1 Designation: 25
2.14.4 Visual approach slope indicator system: PVASI on left
2.14.10 Remarks: Restricted Beyond 2.5 Nm Due To Intensity.
vasi Upwind Threshold Crossing Height 105 Ft Glide Angle 3.25; Downwind Threshold Crossing Height 60 Ft Glide Angle 3.00. Threshold Crossing Height 105 Ft Applies To VASI 6 High Angle.

2.14.1 Designation: 06
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway

alignment indicator lights
2.14.4 Visual approach slope indicator system: PVASI on left

2.14.1 Designation: 24
2.14.4 Visual approach slope indicator system: PVASI on left

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15–07–28.47N / 145–44–36.29E
2.19.6 Site elevation: 207 ft

2.19.1 ILS type: DME for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15–07–30.49N / 145–44–34.11E
2.19.6 Site elevation: 220 ft

2.19.1 ILS type: Middle Marker for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15–06–41.60N / 145–42–38.10E
2.19.6 Site elevation: 86 ft

2.19.1 ILS type: Glide Slope for runway 07. Magnetic variation: 2E
2.19.2 ILS identification: GSN
2.19.5 Coordinates: 15–06–58.69N / 145–43–13.05E
2.19.6 Site elevation: 207.6 ft

General Remarks:

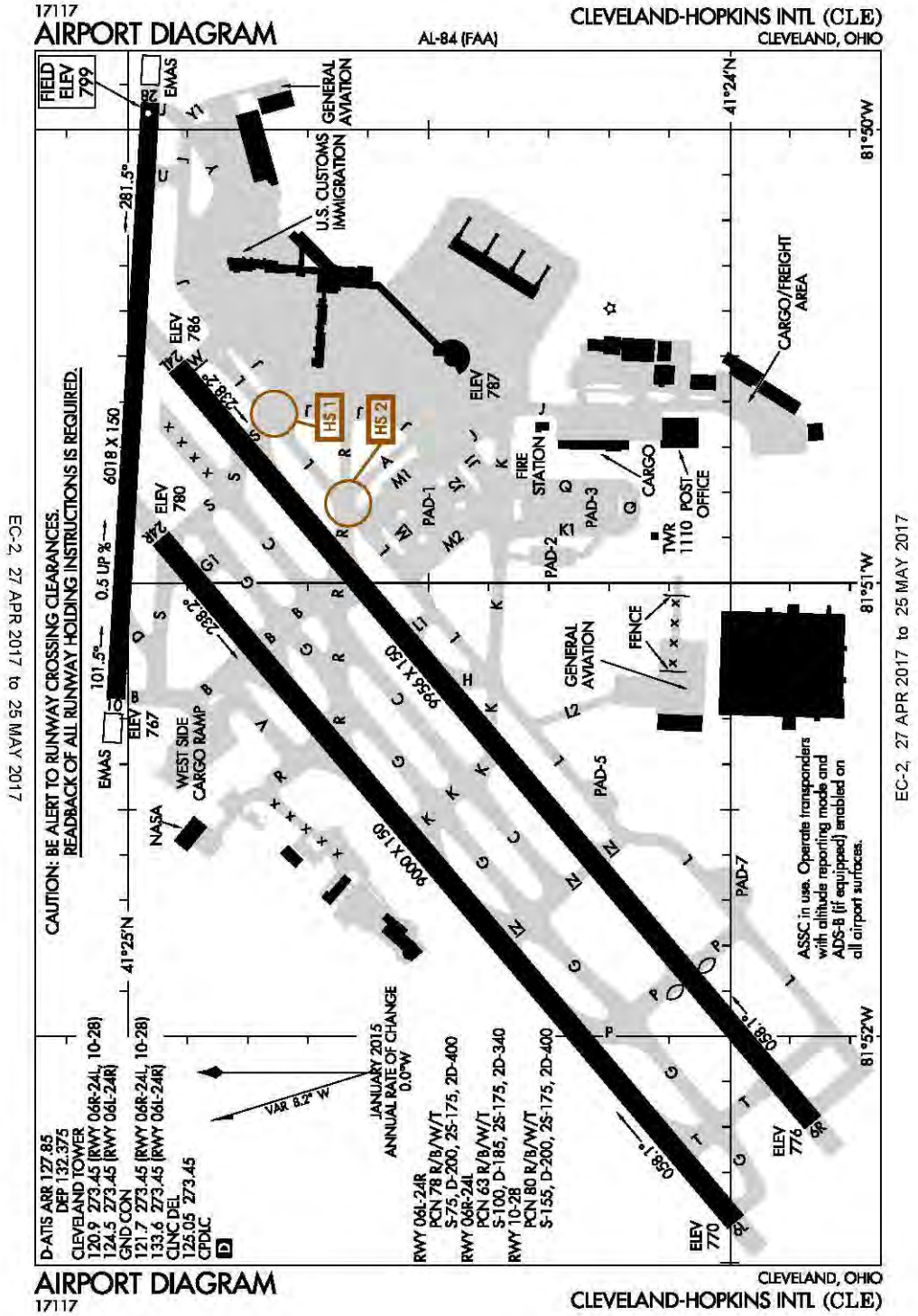
IMMIGRATION & CUSTOMS AVAILABLE DURING SCHEDULED OPERATIONS. OTHER TIMES PRIOR ARRANGEMENTS MUST BE MADE WITH CBP PORT DIRECTOR CALL (670)288–0025/26.

FOR AIRPORT SECURITY CALL (670) 237–6529.

RUNWAY 06–24 OPEN FOR TAXIING ONLY (NOT AVAILABLE FOR LANDING AND TAKE–OFF).

PRIOR PERMISSION REQUIRED FROM EXECUTIVE DIRECTOR COMMONWEALTH PORTS AUTHORITY SAIPAN CALL (670) 237–6500 MON–FRI 0730–1630 OTHER TIMES CALL (670) 237–6535.

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: 41–24–33.90N / 81–51–16.90W
2.2.2 From City: 9 Miles SW Of Cleveland, OH
2.2.3 Elevation: 799.4 ft
2.2.5 Magnetic variation: 7W (1990)
2.2.6 Airport Contact: Fred Szabo
P.O.B. 81009, 5300 RIVERSIDE DR
Cleveland, OH 44181 (216–265–6000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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+
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Tree (51 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 490 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Pole (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 392 ft from Centerline

2.10.1.a. Runway designation: 06R
2.10.1.b Type of obstacle: Trees (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 370 ft from Centerline

2.10.1.a. Runway designation: 06L
2.10.1.b Type of obstacle: Trees (97 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 847 ft from Centerline

AD 2.12 Runway physical characteristics

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: 41–25–00.00N / 81–51–15.28W
2.12.6 Threshold elevation: 767 ft
2.12.6 Touchdown zone elevation: 783 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: 41–24–57.82N / 81–49–56.44W
2.12.6 Threshold elevation: 799 ft
2.12.6 Touchdown zone elevation: 799 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: 41–23–51.85N / 81–52–11.38W
2.12.6 Threshold elevation: 776 ft
2.12.6 Touchdown zone elevation: 776 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 / 81–50–31.37W
2.12.6 Threshold elevation: 786 ft
2.12.6 Touchdown zone elevation: 786 ft

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: 41–23–59.53N / 81–52–24.55W
2.12.6 Threshold elevation: 770 ft
2.12.6 Touchdown zone elevation: 772 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: 41–24–56.75N / 81–50–54.15W
2.12.6 Threshold elevation: 780 ft
2.12.6 Touchdown zone elevation: 780 ft

2.12.1 Designation: 06X
2.12.3 Dimensions: 0 ft x 0 ft

2.12.1 Designation: 24X
2.12.3 Dimensions: 0 ft x 0 ft

AD 2.13 Declared distances
2.13.1 Designation: 10
2.13.2 Takeoff run available: 6017
2.13.3 Takeoff distance available: 6017
2.13.4 Accelerate−stop distance available: 6017
2.13.5 Landing distance available: 6017

2.13.1 Designation: 28
2.13.2 Takeoff run available: 6017
2.13.3 Takeoff distance available: 6017
2.13.4 Accelerate−stop distance available: 6017
2.13.5 Landing distance available: 6017

2.13.1 Designation: 06R
2.13.2 Takeoff run available: 9956
2.13.3 Takeoff distance available: 9956
2.13.4 Accelerate−stop distance available: 9956
2.13.5 Landing distance available: 8030

2.13.1 Designation: 24L
2.13.2 Takeoff run available: 9956
2.13.3 Takeoff distance available: 9956
2.13.4 Accelerate−stop distance available: 9956
2.13.5 Landing distance available: 9956

2.13.1 Designation: 06L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9000
2.13.3 Takeoff 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: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 06R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 06L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 24R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 125.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: RAMP CONTROL
2.18.3 Service designation: 129.17 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 128.25 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 127.85 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 132.375 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/S
2.18.3 Service designation: 135.225 MHz

2.18.1 Service designation: LC/P
2.18.3 Service designation: 124.5 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 124 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 126.55 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 133.6 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.35 MHz

2.18.1 Service designation: LDA PRM RY 06L/24R
2.18.3 Service designation: 118.975 MHz

2.18.1 Service designation: LDA PRM RY 06R/24L
2.18.3 Service designation: 135.875 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: APCH/P IC
2.18.3 Service designation: 354.025 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 346.325 MHz

2.18.1 Service designation: LCL/P GND/P CD/P
2.18.3 Service designation: 273.45 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41–25–00.00N / 81–51–21.25W
2.19.6 Site elevation: 756.2 ft

2.19.1 ILS type: Outer Marker for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41–24–34.70N / 81–42–32.40W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41–24–55.88N / 81–49–10.69W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41–25–00.00N / 81–50–00.00W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: DME for runway 28. Magnetic variation: 7W
2.19.2 ILS identification: PXP
2.19.5 Coordinates: 41–24–58.72N / 81–51–23.84W
2.19.6 Site elevation: 766.2 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41–24–13.72N / 81–51–45.28W
2.19.6 Site elevation: 766 ft

2.19.1 ILS type: Middle Marker for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41–23–44.19N / 81–52–23.50W
2.19.6 Site elevation: 768 ft

2.19.1 ILS type: DME for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41–25–00.00N / 81–50–11.10W
2.19.6 Site elevation: 794.2 ft

2.19.1 ILS type: Localizer for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41–25–00.00N / 81–50–15.51W
2.19.6 Site elevation: 785.7 ft

2.19.1 ILS type: Inner Marker for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41–23–57.23N / 81–52–00.00W

2.19.6 Site elevation: 760 ft

2.19.1 ILS type: Outer Marker for runway 06R. Magnetic variation: 7W
2.19.2 ILS identification: CLE
2.19.5 Coordinates: 41−20−19.06N / 81−57−51.96W
2.19.6 Site elevation: 800 ft

2.19.1 ILS type: Glide Slope for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−24−51.95N / 81−50−45.31W
2.19.6 Site elevation: 782.2 ft

2.19.1 ILS type: Middle Marker for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−25−22.70N / 81−49−43.90W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−23−45.43N / 81−52−21.52W
2.19.6 Site elevation: 771.9 ft

2.19.1 ILS type: DME for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−23−44.34N / 81−52−18.08W
2.19.6 Site elevation: 778.9 ft

2.19.1 ILS type: Outer Marker for runway 24L. Magnetic variation: 7W
2.19.2 ILS identification: HPI
2.19.5 Coordinates: 41−28−00.00N / 81−43−35.83W
2.19.6 Site elevation: 736 ft

2.19.1 ILS type: Inner Marker for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−23−53.94N / 81−52−33.40W
2.19.6 Site elevation: 761.3 ft

2.19.1 ILS type: DME for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−25−11.94N / 81−50−35.68W
2.19.6 Site elevation: 783.3 ft

2.19.1 ILS type: Glide Slope for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−24−00.00N / 81−52−17.52W
2.19.6 Site elevation: 764.3 ft

2.19.1 ILS type: Localizer for runway 06L. Magnetic variation: 7W
2.19.2 ILS identification: LIZ
2.19.5 Coordinates: 41−25−10.19N / 81−50−32.90W
2.19.6 Site elevation: 778.7 ft

2.19.1 ILS type: Inner Marker for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−25−00.00N / 81−50−47.31W
2.19.6 Site elevation: 778.7 ft

2.19.1 ILS type: DME for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−25−11.94N / 81−50−35.68W
2.19.6 Site elevation: 783.3 ft

2.19.1 ILS type: Glide Slope for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−24−53.01N / 81−51−00.00W
2.19.6 Site elevation: 768.4 ft

2.19.1 ILS type: Localizer for runway 24R. Magnetic variation: 7W
2.19.2 ILS identification: PVY
2.19.5 Coordinates: 41−23−53.08N / 81−52−34.75W
2.19.6 Site elevation: 760.5 ft

2.19.1 ILS type: DME for runway 06X. Magnetic variation: 7W
2.19.2 ILS identification: EYU
2.19.5 Coordinates: 41−25−00.00N / 81−50−00.00W
2.19.6 Site elevation: 800.8 ft

2.19.1 ILS type: Glide Slope for runway 06X. Magnetic variation: 7W
2.19.2 ILS identification: EYU
2.19.5 Coordinates: 41−24−13.65N / 81−51−45.21W
2.19.6 Site elevation: 765.5 ft

2.19.1 ILS type: Localizer for runway 06X. Magnetic variation: 7W
2.19.2 ILS identification: EYU
2.19.5 Coordinates: 41−25−00.00N / 81−50−00.00W

2.19.6 Site elevation: 785.5 ft

2.19.1 ILS type: DME for runway 24X. Magnetic variation: 7W
2.19.2 ILS identification: FVZ
2.19.5 Coordinates: 41–25–00.00N / 81–50–00.00W
2.19.6 Site elevation: 786 ft

2.19.1 ILS type: Glide Slope for runway 24X. Magnetic variation: 7W
2.19.2 ILS identification: FVZ
2.19.5 Coordinates: 41–24–51.95N / 81–50–45.31W
2.19.6 Site elevation: 782 ft

2.19.1 ILS type: Localizer for runway 24X. Magnetic variation: 7W
2.19.2 ILS identification: FVZ
2.19.5 Coordinates: 41–23–42.96N / 81–52–14.07W
2.19.6 Site elevation: 770.5 ft

General Remarks:
DEER & BIRDS INCLUDING WATERFOWL ON & IN THE VICINITY OF AIRPORT.

ADVISE CUSTOMS AVAILABLE MON–SUN 0800–1800; ALL REQ FOR SERVICE MUST BE MADE WITH THE U.S. CUSTOMS SERVICE OFFICE LOCATED AT GATE A–14 CALL (216) 267–3600 DURING LISTED HRS.

NASA GLENN RESEARCH CENTER; NASA RAMP PRIOR PERMISSION REQUIRED CALL 216–433–2020; 0800–1730 MON–FRI. CONTACT NASA OPERATIONS ON FREQ 122.925 WITHIN 50 NAUTICAL MILE.

PAD 2 RESTRICTED TO GROUP II AIRCRAFT, LESS THAN 79 FT WINGSPAN.

ALL APPROACHES ARE OVER NOISE SENSITIVE AREAS. AIRPORT LATE NIGHT NOISE ABATEMENT PROCEDURES ARE IN EFFECT 2300–0600. ADDITIONAL NOISE ABATEMENT PROCEDURES ARE IN EFFECT CALL AIRPORT MANAGER NORMAL BUSINESS HRS AT 216–265–6090.

THE FOLLOWING TAXIWAYS ARE CLOSED ANNUALLY FR 15 OCT THRU 15 APR TO SUPPORT DEICING OPERATIONS AT CLE: TAXIWAY M; TAXIWAY M1 BETWEEN TAXIWAY L & TAXIWAY J1; TAXIWAY M2 BETWEEN TAXIWAY L & TAXIWAY J1; TAXIWAY J2 BETWEEN TAXIWAY A & TAXIWAY K.

RAMP AREA CONCOURSE D BETWEEN GATES D1, D28 CLOSED EXCEPT AIRCRAFT WINGSPAN LESS THAN 86 FT.

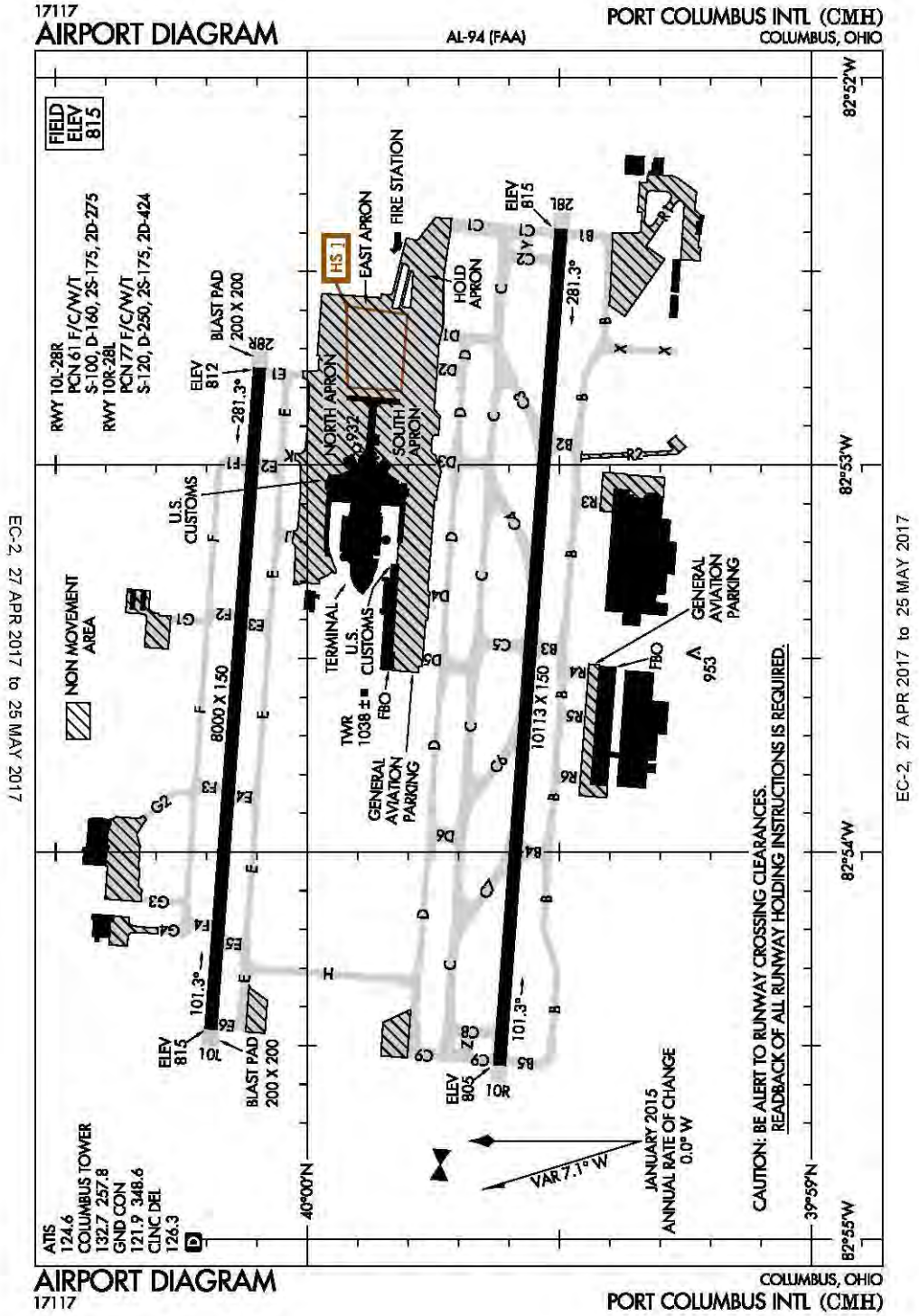
CONCOURSE C RAMP TAXILANE BETWEEN SPOT 2 AND SPOT 5 CLOSED TO AIRCRAFT WITH WINGSPAN 118 FT AND GREATER.

PAD 3 BAYS 1–5 CLOSED TO AIRCRAFT WITH WINGSPAN OVER 134 FT.

PAD 3 BAY 6 CLOSED TO AIRCRAFT WITH WINGSPAN OVER 94 FT.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

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: 39–59–49.00N / 82–53–31.80W
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: Elaine Roberts, A.A.E.
COLUMBUS RGNL ARPT AUTH
Columbus, OH 43219 (614–239–4000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A1+
2.4.4 De–icing facilities: None
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: 8000 ft x 150 ft
2.12.4 PCN: 61 F/C/W/T
2.12.5 Coordinates: 40–00–11.53N / 82–54–27.49W
2.12.6 Threshold elevation: 815 ft
2.12.6 Touchdown zone elevation: 815 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 274
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 61 F/C/W/T
2.12.5 Coordinates: 40–00–00.00N / 82–52–44.97W
2.12.6 Threshold elevation: 812 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: 39–59–37.14N / 82–54–33.04W
2.12.6 Threshold elevation: 805 ft
2.12.6 Touchdown zone elevation: 809 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: 39–59–29.81N / 82–52–23.46W
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 Takeoff run available: 8000
2.13.3 Takeoff 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 Takeoff run available: 8000
2.13.3 Takeoff 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 Takeoff run available: 10113
2.13.3 Takeoff 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 Takeoff run available: 10113
2.13.3 Takeoff 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: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 10R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/S
2.18.3 Service designation: 118.2 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 119.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 124.6 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 125.95 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.3 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 132.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 279.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/S
2.18.3 Service designation: 353.9 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 317.775 MHz

2.18.1 Service designation: CLASS C
2.18.3 Service designation: 317.775 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 338.225 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 371.975 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: RADAR
2.18.3 Service designation: 294.7 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 324.5 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 353.7 MHz

2.18.1 Service designation: AS ASIGNED
2.18.3 Service designation: 134.45 MHz

2.18.1 Service designation: FINAL
2.18.3 Service designation: 327.05 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 129.95 MHz

2.18.1 Service designation: CLASS C

2.18.3 Service designation: 134 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 134 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 10L. Magnetic variation: 7W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−00.00N / 82−52−32.03W
2.19.6 Site elevation: 799.4 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 7W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−14.28N / 82−54−14.87W
2.19.6 Site elevation: 809.9 ft

2.19.1 ILS type: Middle Marker for runway 10L. Magnetic variation: 7W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−12.93N / 82−54−52.25W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 10L. Magnetic variation: 7W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−36.46N / 83−01−44.26W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 10L. Magnetic variation: 7W
2.19.2 ILS identification: CBP
2.19.5 Coordinates: 40−00−00.00N / 82−54−41.03W
2.19.6 Site elevation: 822.3 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 7W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 40−00−12.27N / 82−54−40.56W
2.19.6 Site elevation: 811.6 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 7W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 40−00−00.00N / 82−52−56.99W
2.19.6 Site elevation: 808.4 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 7W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 39−59−46.26N / 82−46−18.93W
2.19.6 Site elevation: 1040 ft

2.19.1 ILS type: DME for runway 28R. Magnetic variation: 7W
2.19.2 ILS identification: ONB
2.19.5 Coordinates: 40−00−00.00N / 82−54−41.03W
2.19.6 Site elevation: 822.3 ft

2.19.1 ILS type: Outer Marker for runway 10R. Magnetic variation: 7W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 40−00−00.00N / 83−01−45.46W
2.19.6 Site elevation: 747.4 ft

2.19.1 ILS type: Localizer for runway 10R. Magnetic variation: 7W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−29.07N / 82−52−10.41W
2.19.6 Site elevation: 814.2 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: Middle Marker for runway 10R. Magnetic variation: 7W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−46.12N / 82−55−00.00W
2.19.6 Site elevation: 812 ft

2.19.1 ILS type: DME for runway 10R. Magnetic variation: 7W
2.19.2 ILS identification: AQI
2.19.5 Coordinates: 39−59−33.74N / 82−54−45.93W
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: 39−59−26.50N / 82−52−36.66W
2.19.6 Site elevation: 810.7 ft

2.19.1 ILS type: Middle Marker for runway 28L. Magnetic variation: 7W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−34.84N / 82−51−48.16W
2.19.6 Site elevation: 787 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 7W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−37.88N / 82−54−46.09W
2.19.6 Site elevation: 805.9 ft

2.19.1 ILS type: DME for runway 28L. Magnetic variation: 7W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−33.74N / 82−54−45.93W
2.19.6 Site elevation: 815.1 ft

2.19.1 ILS type: Outer Marker for runway 28L. Magnetic variation: 7W
2.19.2 ILS identification: CMH
2.19.5 Coordinates: 39−59−10.24N / 82−45−15.66W
2.19.6 Site elevation: 1067.1 ft

General Remarks:
MODEL AIRCRAFT TRAFFIC WITHIN A 1 NAUTICAL MILE RADIUS OF A POINT 8 NAUTICAL MILE ON A 010 DEGREE BEARING FROM THE AIRPORT; SURFACE − 5000 FT AGL; SR−SS DAILY.

BIRDS IN THE VICINITY OF AIRPORT.

TAXIWAY D−5 PAVEMENT (NORTH OF TAXIWAY D) IS RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 79 FT.

BE ALERT: RUNWAY 10L/28R RESTRICTIONS ON STAGE I & II TURBOJET AIRCRAFT 2200−0800 & ON STAGE III TURBOJET AIRCRAFT 2200−0700. PRACTICE APPROACHES FOR HIGH NOISE LEVEL TYPE AIRCRAFT INCLUDING NON−STAGE III MILITARY JET AIRCRAFT SHALL NOT BE APPROVED UNLESS RUNWAY 10R/28L IS IN USE & THE APPROACH TERMINATES IN A FULL STOP TAXI−BACK OPN.

ALL SURFACES AROUND TERMINAL; NORTH OF TAXIWAY 'D' & SOUTH OF TAXIWAY 'E' ARE NON−MOVEMENT AREAS.

NOISE BARRIER LOCATED AT SE SIDE OF AIRFIELD RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 79 FT.

PERSONNEL AND EQUIPMENT WORKING ADJACENT ALL RUNWAYS AND TAXIWAYS.

TO REQUEST LANDING RIGHTS CONTACT US CUSTOMS BETWEEN 1230−0300Z, MON−FRI AT 614−497−1865. FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

TAXIWAY F1 RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 120 FT.

TAXIWAYS R2, R3, R4, R5 AND R6 RESTRICTED TO WINGSPAN LESS THAN 118 FT.

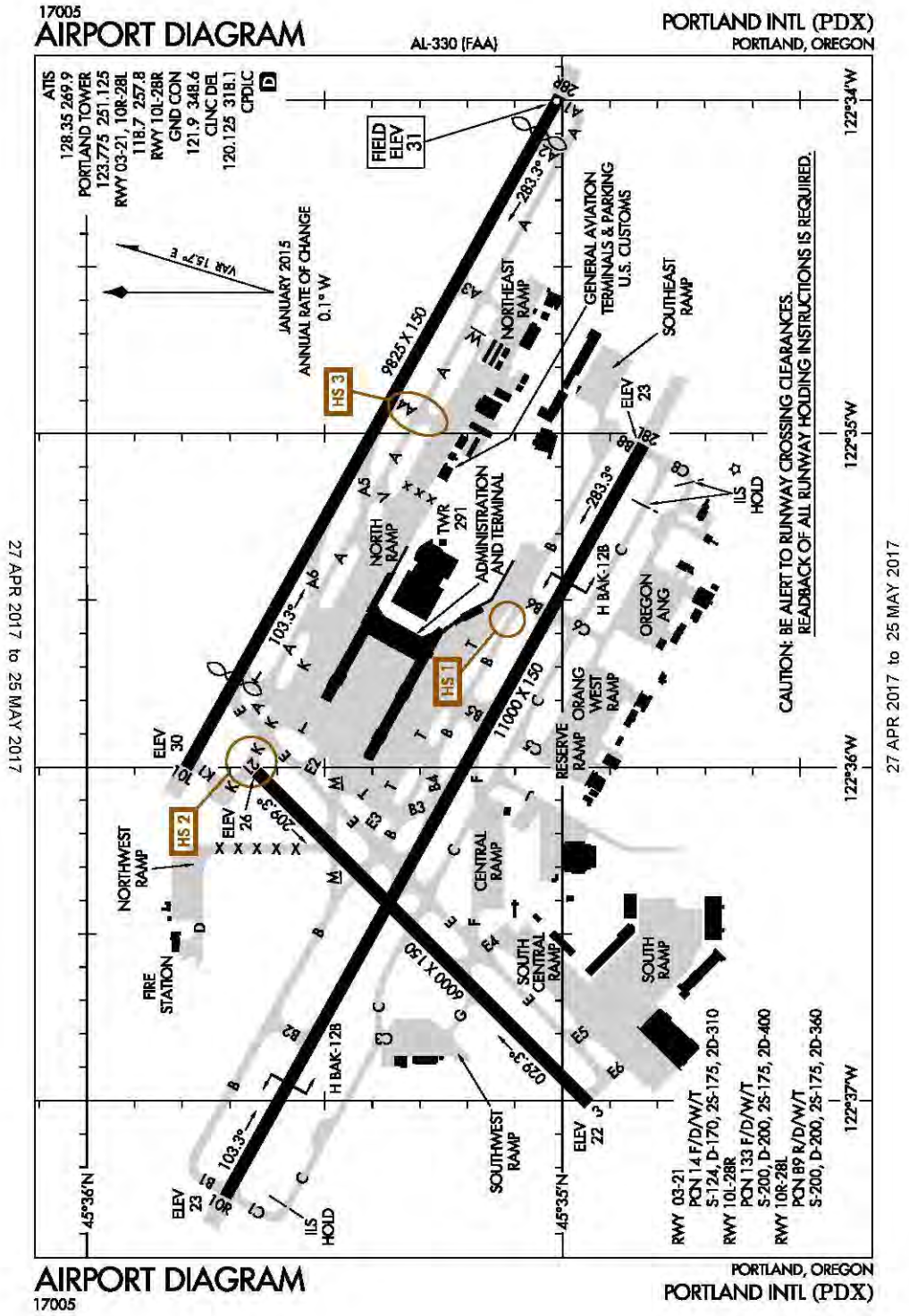
TAXIWAY R1 RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 79 FT.

TAXILANE N OF C CONCOURSE BETWEEN TAXIWAY J AND TAXIWAY K RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 118 FT.

TAXILANE CONCOURSE A BETWEEN TAXIWAY D3 AND TAXIWAY D4 CLOSED TO AIRCRAFT WINGSPAN MORE THAN 130 FT.

TAXILANE CONCOURSE C BETWEEN TAXIWAY J AND TAXIWAY K CLOSED TO AIRCRAFT WINGSPAN MORE THAN 135 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: 45−35−19.35N / 122−35−48.73W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 21
2.10.1.b Type of obstacle: Road (19 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Road (32 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 408 ft from Centerline

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: 14 F/D/W/T
2.12.5 Coordinates: 45−34−56.73N / 122−37−00.00W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 23 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: 14 F/D/W/T
2.12.5 Coordinates: 45−35−38.61N / 122−36−00.00W
2.12.6 Threshold elevation: 26 ft
2.12.6 Touchdown zone elevation: 26 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: 45−35−42.53N / 122−37−17.30W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 24 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: 45−34−49.85N / 122−35−00.00W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 23 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: 45−35−47.45N / 122−36−00.00W
2.12.6 Threshold elevation: 30 ft
2.12.6 Touchdown zone elevation: 30 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: 45−35−00.00N / 122−33−59.26W
2.12.6 Threshold elevation: 31 ft
2.12.6 Touchdown zone elevation: 31 ft

AD 2.13 Declared distances

2.13.1 Designation: 03
2.13.2 Takeoff run available: 6000
2.13.3 Takeoff 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 Takeoff run available: 6000
2.13.3 Takeoff distance available: 6000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 6000

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 11000
2.13.3 Takeoff 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 Takeoff run available: 11000
2.13.3 Takeoff distance available: 11000
2.13.4 Accelerate–stop distance available: 11000
2.13.5 Landing distance available: 11000

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 9825
2.13.3 Takeoff 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 Takeoff run available: 9825
2.13.3 Takeoff distance available: 9825
2.13.4 Accelerate–stop distance available: 9825
2.13.5 Landing distance available: 9290

AD 2.14 Approach and runway lighting
2.14.1 Designation: 03
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 21
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 10R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left
2.14.10 Remarks: Possible Rwy 28L Glideslope Fluctuation Prior To Addum When Weather Is Greater Than 800/2.

2.14.1 Designation: 10L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.125 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz
2.18.6 Remarks: Pdx Monitors 121.5 For Mcminnville (Mmv).

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: AFR OPNS
2.18.3 Service designation: 138.45 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: AFR OPNS
2.18.3 Service designation: 252.8 MHz

2.18.1 Service designation: ANG OPNS
2.18.3 Service designation: 280.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 123.775 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 251.125 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 132.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 128.35 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 269.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG COMD POST/ GUARD COMD POST
2.18.3 Service designation: 288.9 MHz

2.18.1 Service designation: PORTLAND GUARD OPS
2.18.3 Service designation: 281.2 MHz

AD 2.19 Radio navigation and landing aids

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 21. Magnetic variation: 16E
2.19.2 ILS identification: GPO
2.19.5 Coordinates: 45−34−47.97N / 122−37−00.00W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: DME for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−34−46.74N / 122−34−45.23W
2.19.6 Site elevation: 36 ft

2.19.1 ILS type: Localizer for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−34−43.53N / 122−34−45.82W
2.19.6 Site elevation: 20 ft

2.19.1 ILS type: Glide Slope for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−35−33.90N / 122−37−00.00W
2.19.6 Site elevation: 16 ft

2.19.1 ILS type: Inner Marker for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−35−46.71N / 122−37−28.03W
2.19.6 Site elevation: 17 ft

2.19.1 ILS type: Middle Marker for runway 10R. Magnetic variation: 16E
2.19.2 ILS identification: PDX
2.19.5 Coordinates: 45−35−58.13N / 122−37−57.39W
2.19.6 Site elevation: 25 ft

2.19.1 ILS type: DME for runway 28L. Magnetic variation: 16E
2.19.2 ILS identification: JMJ
2.19.5 Coordinates: 45−34−46.74N / 122−34−45.23W
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: 45−34−52.63N / 122−35−16.71W
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: 45−35−50.52N / 122−37−37.81W
2.19.6 Site elevation: 24.8 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: 29 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 16E
2.19.2 ILS identification: VDG
2.19.5 Coordinates: 45−35−39.76N / 122−35−30.17W
2.19.6 Site elevation: 31 ft

2.19.1 ILS type: DME for runway 10L. Magnetic variation: 16E
2.19.2 ILS identification: VDG
2.19.5 Coordinates: 45−35−47.95N / 122−36−13.55W
2.19.6 Site elevation: 26 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 16E
2.19.2 ILS identification: IAP

2.19.5 Coordinates: 45−35−52.30N / 122−36−12.47W
2.19.6 Site elevation: 25.6 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 / 122−34−16.40W
2.19.6 Site elevation: 30.1 ft

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 16E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−32−28.06N / 122−27−44.78W
2.19.6 Site elevation:

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 / 122−36−13.55W
2.19.6 Site elevation: 25.5 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 16E
2.19.2 ILS identification: IAP
2.19.5 Coordinates: 45−34−44.97N / 122−33−19.90W
2.19.6 Site elevation:

General Remarks:
AIRPORT CLOSED TO NON−POWERED AIRCRAFT EXCEPT IN EMERGENCY.

TAXIWAY T BETWEEN EXITS B5 & B6 CLOSED TO AIRCRAFT WITH WINGSPAN OF 118 FT AND GREATER.

MIGRATORY & WINTERING FLOCKS OF LARGE WATERFOWL ON & IN THE VICINITY OF AIRPORT. HEAVY SEAGULL ACTIVITY SEP THRU APR; EXPECT HIGH NUMBER OF BIRDS YEAR AROUND; CHECK LOCAL ADVISORIES.

NOISE ABATEMENT PROCEDURES IN EFFECT; CALL NOISE OFFICE AT 503−460−4100. RUNWAY 28L ARRIVALS ARE NOISE SENSITIVE, EXPECT APPROACH TO 28R WITH TRANSITION TO 28L.

180 DEGREE TURNS BY AIRCRAFT WEIGHING IN EXCESS OF 12500 LBS PROHIBITED ON RUNWAY 10L/28R, RUNWAY 03/21 AND ALL TAXIWAYS.

UNCONTROLLED TRAFFIC AT PEARSON FIELD VANCOUVER AIRMET 3 NAUTICAL MILE W OF RUNWAY 10L THRESHOLD ON EXTENDED CENTERLINE.

(E143−20) LOCALIZER ONLY.RWY 21.

(E94) WSFO/WSO/FW/RFC.

AREA OF TAXIWAY T BETWEEN M AND E3 NOT VISIBLE FROM TOWER.

AIRCRAFT AUTHORIZED TO UTILIZE THE NORTHWEST RAMP WILL BE TOWED TO/FROM THIS RAMP.

AT THE WEST END ARM/DEARM AREA ON TAXIWAY C NO AIRCRAFT OF ANY TYPE MAY TAXI PAST THE ARM/DEARM AREA WHILE IT IS BEING USED.

BEARING STRENGTH: RUNWAY 03−21 ST 175, RUNWAY 10L−28R ST175, RUNWAY 10R−28L ST175.

JASU − 4(A/M32A−86) (MC−11) 1(MA−1A).

FUEL − A (AIR BP − ATLANTIC AVIATION SERVICES. C503−331−4220) J8(MIL) (NC−100LL, A)

FLUID − LHOXRB.

OIL − O−128−133−148(MIL).

MISC: FLIGHT NOTIFICATION SERVICE, ADVISE CUSTOMS, AVAILABLE.

ANG: PRIOR PERMISSION REQUIRED/OFFICIAL BUSINESS ONLY. BASE OPERATIONS OPR 1500−2300Z++ MON−FRI EXCEPT HOLIDAY.; DSN 638−4390, C503−335−4390. CONTACT BASE OPERATIONS 15 MIN PRIOR TO LANDING AND AFTER DEP ON 281.2. TRANSIENT QUARTERS NOT AVAILABLE. CAUTION: OBST LIGHTING IS NOT NVD COMPATIBLE. NVD NOT AUTHORIZED WHILE AIRBORNE IN VICINITY OF AIRFIELD.

TAXIWAY V CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT. AIRCRAFT WITH WINGSPAN GREATER THAN 91 FT PROHIBITED FROM TURNING WESTBOUND ONTO TAXIWAY A FROM TAXIWAY V UNLESS UNDER TOW.

ANG: SEE FLIGHT INFORMATION PUBLICATION AP/1 FOR SUPPLEMENTARY AIRPORT INFORMATION. HAZARDOUS BIRD CONDITION EXIST. PHASE 1 MAY−OCT, PHASE II NOV−APR. CURRENT BIRD WATCH CONDITIONS ARE NOT REPORTED ON AUTOMATIC TERMINAL INFORMATION SERVICE.

TAXIWAY W CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FEET. TAXIWAY K BETWEEN THE NORTH RAMP AND THE GENERAL AVIATION RAMP CLOSED TO THRU TRAFFIC.

NONSTANDARD YELLOW PARK SPOT DESIGNATORS AND EQUIPMENT TOOL BOX LOCATION PAINTED ON RAMP. PLEASE CONTACT BASE OPERATIONS OR REQ FOLLOW ME IF NOT FAMILIAR WITH PANGB PARK PROCEDURES.

TAXIWAY C3 CLOSED TO AIRCRAFT WITH WINGSPAN EQUAL TO OR GREATER THAN 79 FT.

PDX HAS FACILITY CONSTRAINTS THAT LIMIT ITS ABILITY TO ACCOMMODATE DIVERTED FLIGHTS AND MAINTAIN THE AIRPORTS SAFE OPERATION DURING IRREG OPERATIONS. AIRCRAFT OPERATORS SHOULD CTCT THE ON−DUTY AIRPORT OPERATIONS SUPERVISOR (AOS) FOR AIRSIDE AT (503)460−4134 TO COORDINATE DIVERTED FLIGHTS EXCEPT IN THE CASE OF A DECLARED IN−FLIGHT EMERGENCY.

ACFTT WITH WINGSPAN GREATER THAN 118 FEET ARE PROHIBITED FROM TURNING EASTBOUND ON TAXIWAY C FROM SOUTHWESTBOUND ON TAXIWAY F UNLESS UNDER TOW.

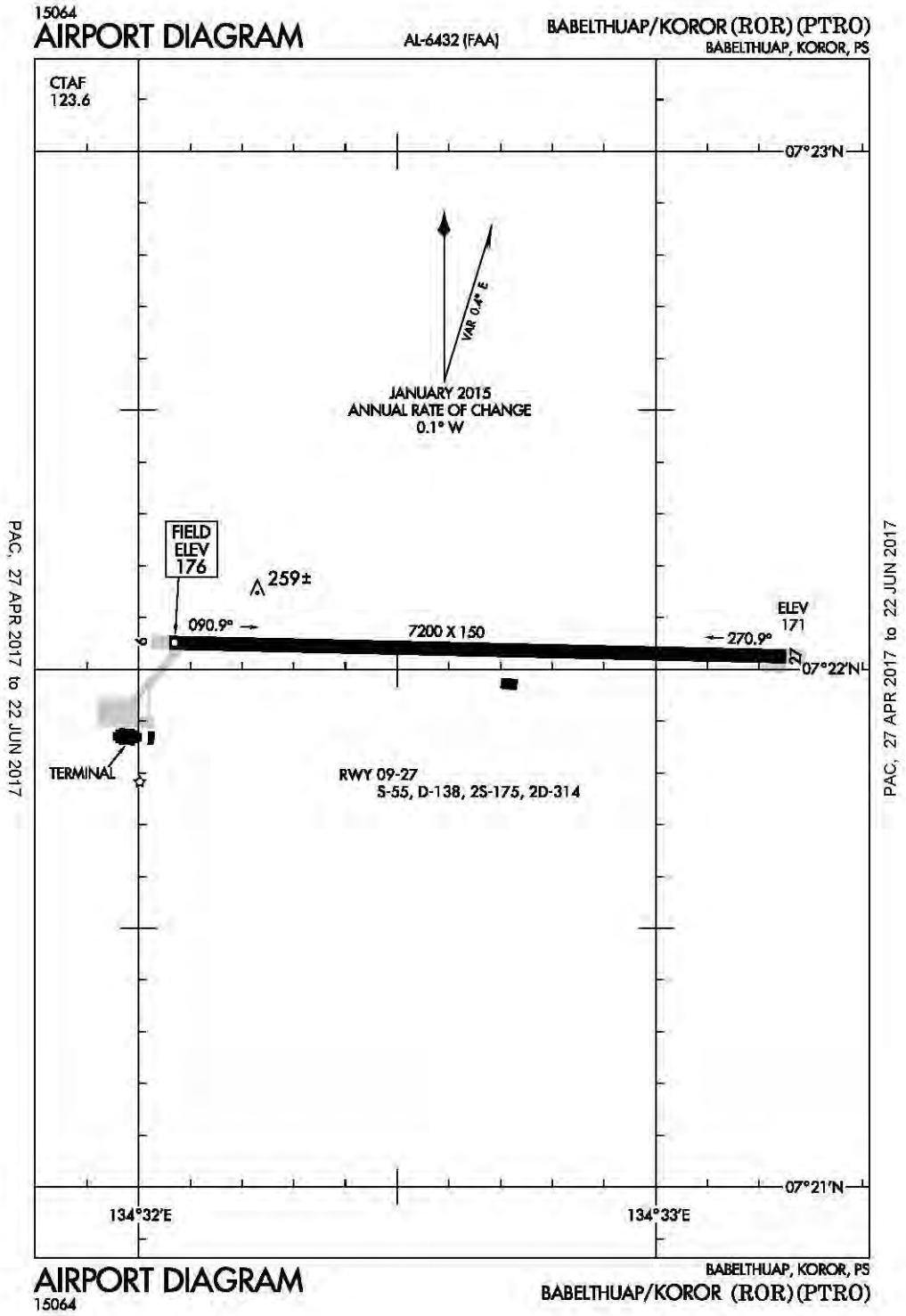
TAXIWAY A3 BETWEEN TAXIWAY A AND THE NE RAMP CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FEET UNLESS UNDER TOW.

TAXIWAY E3 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 198.

TAXIWAY T BETWEEN TAXIWAY E3 AND TAXIWAY B5 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 198.

TAXIWAY C BETWEEN TAXIWAY C6 AND TAXIWAY C8 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 180.

Babelthuap Island
Babelthuap/Koror
ICAO Identifier PTRO



Babelthuap Island, PW
Babelthuap/Koror
ICAO Identifier PTRO

AD 2.2 Aerodrome geographical and administrative data

AD 2.12 Runway physical characteristics
2.2.1 Reference Point: 07−22−00.00N / 134−32−39.40E
2.2.2 From City: 4 Miles NE Of Babelthuap Island, Pw
2.2.3 Elevation: 176.2 ft
2.2.5 Magnetic variation: 1E (1990)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 − 2.3.11: 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: 115,A1
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Trees (11 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 75 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 91
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.5 Coordinates: 07−22−00.00N / 134−32−00.00E
2.12.6 Threshold elevation: 176 ft
2.12.6 Touchdown zone elevation: 176 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 271
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.5 Coordinates: 07−22−00.00N / 134−33−15.17E
2.12.6 Threshold elevation: 171 ft
2.12.6 Touchdown zone elevation: 176 ft

AD 2.14 Approach and runway lighting
2.14.1 Designation: 09
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 27
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

General Remarks:
ALL UNSCHEDULED FLIGHTS MUST FILE A FLIGHT PLAN AT LEAST 7 DAYS PRIOR TO ARRIVAL AND ALL FLIGHTS MUST CONTACT KOROR COMMUNICATIONS ON 123.6 AT LEAST 20 MINUTES PRIOR TO ARRIVAL.

AIRCRAFT RESCUE AND FIRE FIGHTING AVAILABLE 2 HRS PRIOR TO SCHEDULE AIRCRAFT ARR AND UNTIL 1 HR AFTER DEP.

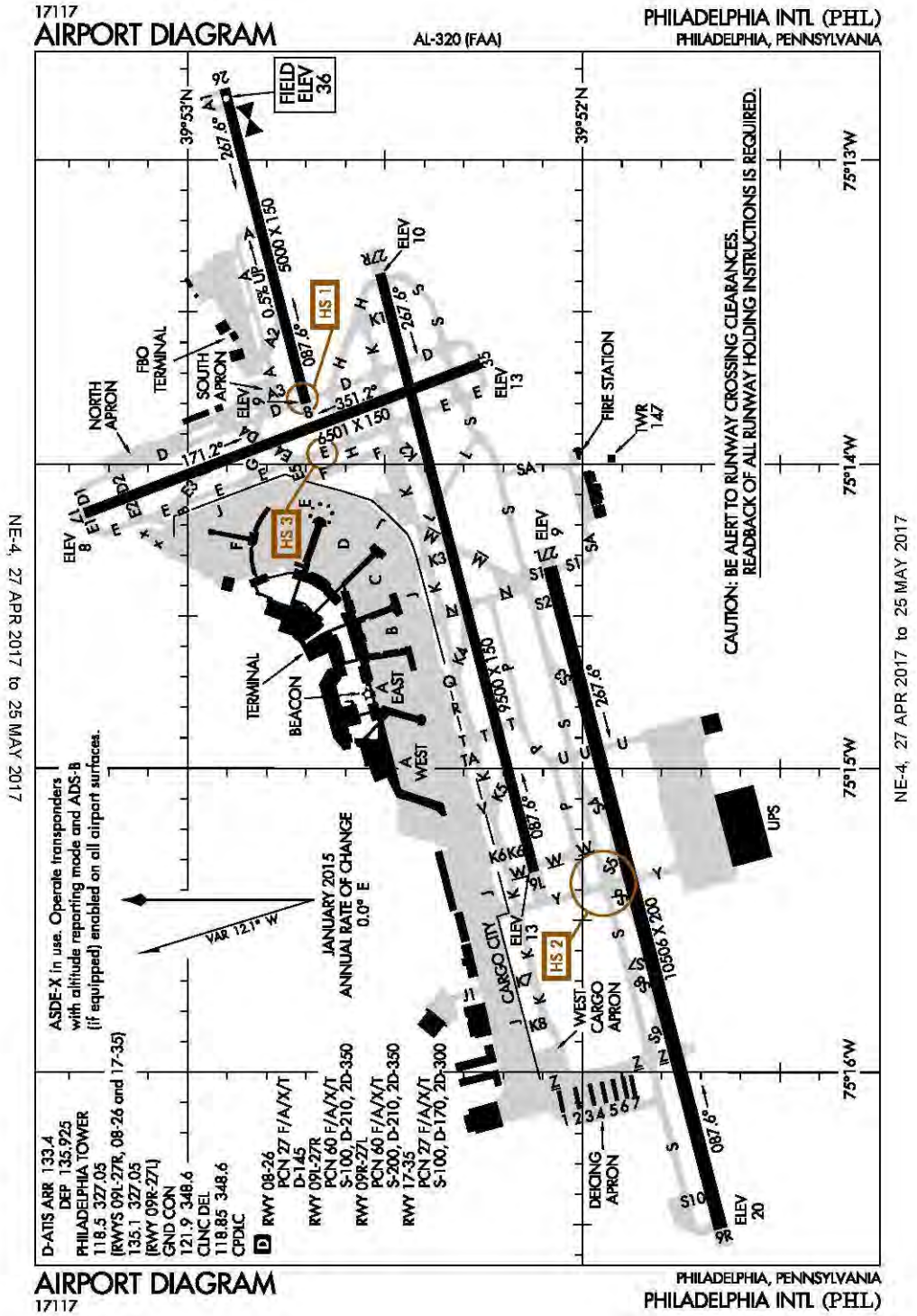
BE ALERT TO LARGE NUMBER OF BIRDS ON RUNWAY AT NIGHT.

ALL AIRCRAFT EXCEEDING 100000 LBS GROSS WEIGHT TAXI TO THR TURN AROUND BEFORE TAXING TO APRON. AIRCRAFT UNDER 100000 LBS GROSS WEIGHT MAY MAKE A TURN AROUND WHERE FEASIBLE.

ENTRY PERMIT REQUIRED CALL 011−680−488−2498 FAX 011−680−488−4385; LANDING PERMIT REQUIRED MUST GIVE SEVEN DAYS NOTICE CALL 011−680−488−2111 FAX 011−680−488−3207.

(E94) WX STATION 5 MI FROM AIRPORT.

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: 39−52−20.10N / 75−14−27.12W
2.2.2 From City: 5 Miles SW Of Philadelphia, PA
2.2.3 Elevation: 36.1 ft
2.2.5 Magnetic variation: 10W (1980)
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 Operational hours

2.3.1 − 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 17
2.10.1.b Type of obstacle: Trees (90 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 803 ft from Centerline

2.10.1.a. Runway designation: 35
2.10.1.b Type of obstacle: Boat (189 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 09L
2.10.1.b Type of obstacle: Tree (83 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 291 ft from Centerline

2.10.1.a. Runway designation: 27R
2.10.1.b Type of obstacle: Boat (189 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 09R
2.10.1.b Type of obstacle: Tree (24 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 421 ft from Centerline

2.10.1.a. Runway designation: 27L
2.10.1.b Type of obstacle: Boat (189 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Bldg (185 ft). Lighted
2.10.1.c Location of obstacle: 158 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Fence (10 ft). Lighted
2.10.1.c Location of obstacle: 283 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 17
2.12.2 True Bearing: 159
2.12.3 Dimensions: 6501 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−53−15.57N / 75−14−00.00W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 339
2.12.3 Dimensions: 6501 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39−52−15.57N / 75−13−40.13W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 14 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: 39−52−00.00N / 75−15−20.38W
2.12.6 Threshold elevation: 13 ft
2.12.6 Touchdown zone elevation: 13 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: 39−52−30.79N / 75−13−22.43W
2.12.6 Threshold elevation: 10 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 09R

2.12.2 True Bearing: 75
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39–51–38.92N / 75–16–30.70W
2.12.6 Threshold elevation: 20 ft
2.12.6 Touchdown zone elevation: 21 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 255
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39–52–00.00N / 75–14–20.27W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 10 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 75
2.12.3 Dimensions: 5000 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39–52–42.02N / 75–13–48.04W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 20 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 256
2.12.3 Dimensions: 5000 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39–52–54.38N / 75–12–45.94W
2.12.6 Threshold elevation: 36 ft
2.12.6 Touchdown zone elevation: 36 ft

AD 2.13 Declared distances
2.13.1 Designation: 17
2.13.2 Takeoff run available: 6501
2.13.3 Takeoff distance available: 6501
2.13.4 Accelerate–stop distance available: 6501
2.13.5 Landing distance available: 6501

2.13.1 Designation: 35
2.13.2 Takeoff run available: 6501
2.13.3 Takeoff distance available: 6501
2.13.4 Accelerate–stop distance available: 6501
2.13.5 Landing distance available: 6501

2.13.1 Designation: 09L
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate–stop distance available: 9500
2.13.5 Landing distance available: 9500

2.13.1 Designation: 27R
2.13.2 Takeoff run available: 9500
2.13.3 Takeoff distance available: 9500
2.13.4 Accelerate–stop distance available: 9500
2.13.5 Landing distance available: 8864

2.13.1 Designation: 09R
2.13.2 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate–stop distance available: 10506
2.13.5 Landing distance available: 10506

2.13.1 Designation: 27L
2.13.2 Takeoff run available: 10506
2.13.3 Takeoff distance available: 10506
2.13.4 Accelerate–stop distance available: 10331
2.13.5 Landing distance available: 10331

2.13.1 Designation: 08
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate–stop distance available: 5000
2.13.5 Landing distance available: 5000

2.13.1 Designation: 26
2.13.2 Takeoff run available: 5000
2.13.3 Takeoff distance available: 5000
2.13.4 Accelerate–stop distance available: 5000
2.13.5 Landing distance available: 5000

AD 2.14 Approach and runway lighting
2.14.1 Designation: 17
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 35
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 09L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 27R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 09R

2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 27L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 26
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: Runway 26 PAPI Unusable Beyond 8 Degs Right Of Centerline .

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: CLASS B
2.18.3 Service designation: 118.35 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 118.85 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 119.75 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/S
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P AT OR BELOW 5000 FT.
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: 5500 & BLO
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: PHL ONE DP
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: FINAL APCH
2.18.3 Service designation: 125.4 MHz

2.18.1 Service designation: RADAR
2.18.3 Service designation: 126.6 MHz

2.18.1 Service designation: APCH/P AT OR BELOW 5000 FT.
2.18.3 Service designation: 126.85 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 126.85 MHz

2.18.1 Service designation: APCH/P AT OR BELOW 5000 FT.
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 127.35 MHz

2.18.1 Service designation: APCH/P ABOVE 5000 FT.
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: CLASS B

2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: BUNTS 1 STAR
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: SPUDS 3 STAR
2.18.3 Service designation: 128.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.25 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: APCH/P ABOVE 5000 FT
2.18.3 Service designation: 273.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: 5500 & BLO
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CEDAR LAKE 8 ARR
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: APCH/P AT & BLO 5,000
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 317.55 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: PHL ONE DP
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 319.15 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 323.1 MHz

2.18.1 Service designation: CD/P GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 133.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135.925 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ILS PRM LCL/P

2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.5 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 135.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135.1 MHz

2.18.1 Service designation: ILS PRM LCL/P
2.18.3 Service designation: 327.05 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 327.05 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 123.6 MHz

2.18.1 Service designation: ILS PRM MONITOR/P
2.18.3 Service designation: 120.425 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 133.875 MHz

2.18.1 Service designation: APCH/P CLASS B 8,000−6,000
2.18.3 Service designation: 133.875 MHz

2.18.1 Service designation: CLASS B 6,000−8,000
2.18.3 Service designation: 133.875 MHz

2.18.1 Service designation: APCH/P ABOVE 5,000
2.18.3 Service designation: 272.575 MHz

2.18.1 Service designation: BUNTS 1 STAR
2.18.3 Service designation: 272.575 MHz

2.18.1 Service designation: SPUDS 3 STAR
2.18.3 Service designation: 272.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 272.575 MHz

2.18.1 Service designation: CLASS B
2.18.3 Service designation: 272.575 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Outer Marker for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−58−30.97N / 75−16−44.21W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−52−00.00N / 75−13−35.55W
2.19.6 Site elevation: 11.7 ft

2.19.1 ILS type: Glide Slope for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−53−00.00N / 75−14−00.00W
2.19.6 Site elevation: 5.6 ft

2.19.1 ILS type: Middle Marker for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−53−43.20N / 75−14−27.10W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 17. Magnetic variation: 10W
2.19.2 ILS identification: MYY
2.19.5 Coordinates: 39−52−00.00N / 75−13−39.56W
2.19.6 Site elevation: 10.8 ft

2.19.1 ILS type: Localizer for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−33.39N / 75−13−00.00W
2.19.6 Site elevation: 7.4 ft

2.19.1 ILS type: Glide Slope for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−00.00N / 75−15−00.00W
2.19.6 Site elevation: 8.5 ft

2.19.1 ILS type: Outer Marker for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−50−29.30N / 75−22−57.40W
2.19.6 Site elevation: 47 ft

2.19.1 ILS type: DME for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39−52−35.47N / 75−13−11.51W
2.19.6 Site elevation: 19.4 ft

2.19.1 ILS type: Middle Marker for runway 09L. Magnetic variation: 10W
2.19.2 ILS identification: VII
2.19.5 Coordinates: 39–52–00.00N / 75–15–55.00W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: DME for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39–52–35.47N / 75–13–11.51W
2.19.6 Site elevation: 19.4 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39–54–00.00N / 75–05–41.51W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39–52–00.00N / 75–15–32.93W
2.19.6 Site elevation: 8.8 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39–52–24.05N / 75–13–35.82W
2.19.6 Site elevation: 7.1 ft

2.19.1 ILS type: Middle Marker for runway 27R. Magnetic variation: 10W
2.19.2 ILS identification: PDP
2.19.5 Coordinates: 39–52–38.00N / 75–12–46.40W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39–52–11.15N / 75–13–49.18W
2.19.6 Site elevation: 15.5 ft

2.19.1 ILS type: Glide Slope for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39–51–37.82N / 75–16–15.73W
2.19.6 Site elevation: 13.5 ft

2.19.1 ILS type: Middle Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39–51–31.82N / 75–17–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39–50–29.30N / 75–22–57.40W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39–52–00.00N / 75–13–47.04W
2.19.6 Site elevation: 6.5 ft

2.19.1 ILS type: Inner Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS identification: PHL
2.19.5 Coordinates: 39–51–36.74N / 75–16–41.58W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: Localizer for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39–51–36.27N / 75–16–43.95W
2.19.6 Site elevation: 6.6 ft

2.19.1 ILS type: DME for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39–52–00.00N / 75–13–47.04W
2.19.6 Site elevation: 6.5 ft

2.19.1 ILS type: Glide Slope for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39–51–58.71N / 75–14–31.14W
2.19.6 Site elevation: 8.9 ft

2.19.1 ILS type: Middle Marker for runway 27L. Magnetic variation: 10W
2.19.2 ILS identification: GLC
2.19.5 Coordinates: 39–52–12.91N / 75–13–40.55W
2.19.6 Site elevation: 21 ft

2.19.1 ILS type: DME for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH
2.19.5 Coordinates: 39–52–42.22N / 75–13–32.38W
2.19.6 Site elevation: 19.1 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH
2.19.5 Coordinates: 39−52−49.37N / 75−12−58.35W
2.19.6 Site elevation: 21.7 ft

2.19.1 ILS type: Localizer for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH
2.19.5 Coordinates: 39−52−42.38N / 75−13−31.83W
2.19.6 Site elevation: 5.5 ft

General Remarks:
BIRDS ON & IN THE VICINITY OF AIRPORT.

RUNWAYS 27L, 27R & 35 SHIP CHANNEL (DELAWARE RIVER) MAX HEIGHT OF SHIPS 189 FT. RUNWAY 26 SHIP CHANNEL (SCHUYLKILL) MAX HEIGHT OF SHIPS 149 FT.

AIRPORT IS LOCATED IN A NOISE SENSITIVE AREA. AIRPORT NOISE ABATEMENT TAKEOFF PROCEDURES ARE TO BE USED.

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM EQUIPPED ACFT−TCAS ALERT MAY BE CAUSED BY TRANSPONDER EQUIPPED SHIPS LOCATED PHL NAVAL BASE 3 NAUTICAL MILE E.

UNLIGHTED STACK 288 FT MSL (271 FT AGL) 2.3 NAUTICAL MILE SW OF AIRPORT.

RUNWAY 09R ROLLOUT RUNWAY VISUAL RANGE USED FOR RUNWAY 09L MIDPOINT RUNWAY VISUAL RANGE.

ALL ENGINE RUNUPS REQUIRE PRIOR PERMISSION REQUIRED FROM DUTY OPERATIONS OFFICER AT 937−6914/6800; RUNUPS 20 MIN MAXIMUM.

ALL AIRCRAFT TRAVELING ON TAXIWAY J MUST USE MINIMUM POWER WHEN TURNING SOUTH DUE TO JETBLAST CONCERNS.

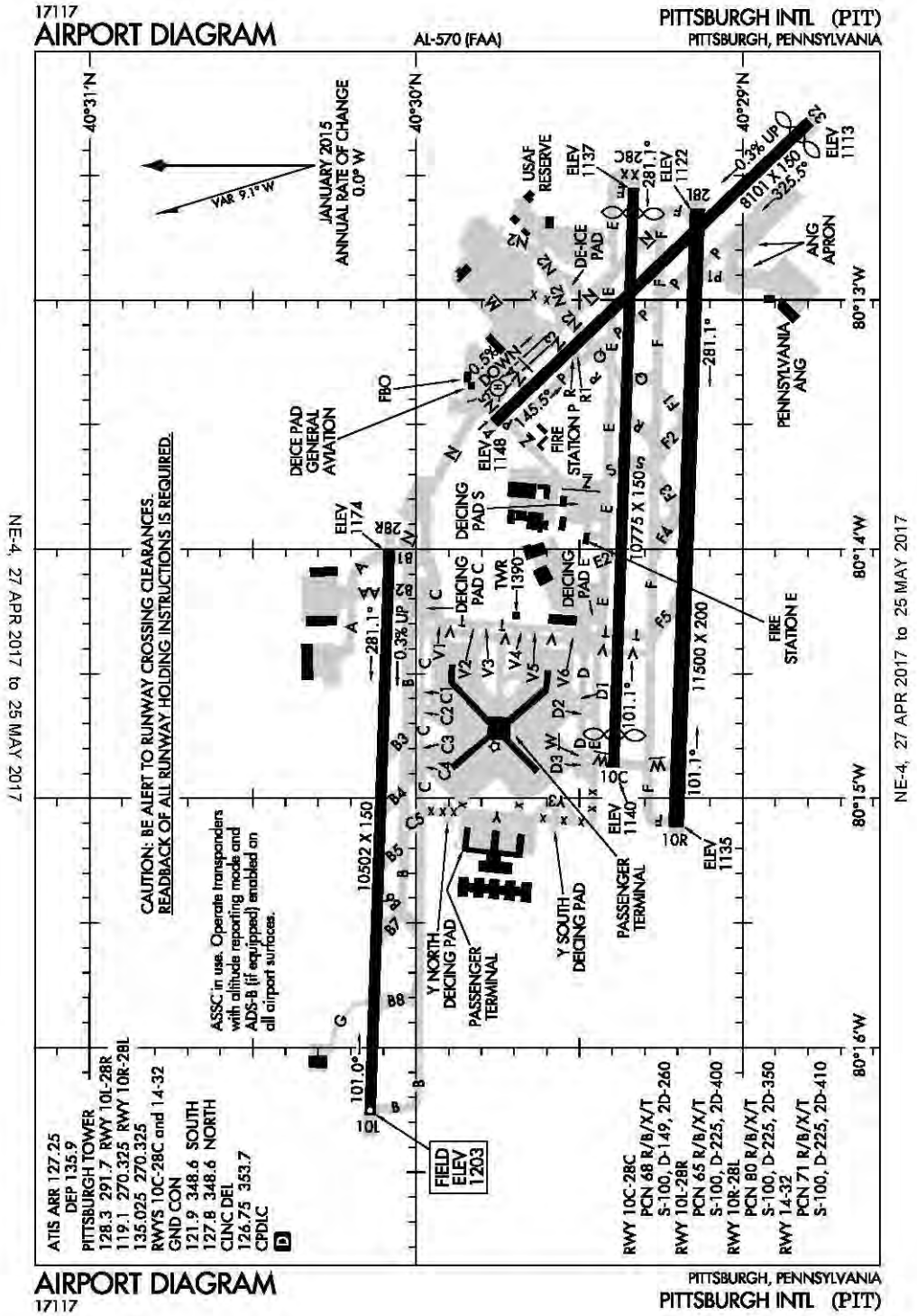
TAXIWAY J BETWEEN TAXIWAYS K3 AND Q RESTRICTED TO AIRCRAFT WITH WINGSPANS 171 FT AND LESS.

ONLY NOSE−IN PARKING PERMITTED ON NORTH REMOTE APRONS. PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS FOR ALL AIRCRAFT PARKING ON NORTH REMOTE APRONS; CONTACT 215−937−6914/6800.

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.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

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: 40−29−29.10N / 80−13−57.70W
2.2.2 From City: 12 Miles NW Of Pittsburgh, PA
2.2.3 Elevation: 1202.9 ft
2.2.5 Magnetic variation: 8W (1995)
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 14
2.10.1.b Type of obstacle: Pole (24 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 513 ft from Centerline

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Trees (30 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 526 ft from Centerline

2.10.1.a. Runway designation: 10L
2.10.1.b Type of obstacle: Trees (60 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 685 ft from Centerline

2.10.1.a. Runway designation: 28R
2.10.1.b Type of obstacle: Tree (121 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 909 ft from Centerline

2.10.1.a. Runway designation: 10R
2.10.1.b Type of obstacle: Trees (179 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 169 ft from Centerline

2.10.1.a. Runway designation: 28L
2.10.1.b Type of obstacle: Trees (17 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 520 ft from Centerline

AD 2.12 Runway physical characteristics

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: 40−29−23.70N / 80−14−52.55W
2.12.6 Threshold elevation: 1140 ft
2.12.6 Touchdown zone elevation: 1141 ft

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: 40−29−20.04N / 80−12−33.18W
2.12.6 Threshold elevation: 1137 ft
2.12.6 Touchdown zone elevation: 1134 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: 40−29−45.65N / 80−13−29.52W
2.12.6 Threshold elevation: 1148 ft
2.12.6 Touchdown zone elevation: 1148 ft
2.12.7 Slope: 0.5DOWN

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 / 80−12−17.22W
2.12.6 Threshold elevation: 1113 ft
2.12.6 Touchdown zone elevation: 1124 ft
2.12.7 Slope: 0.3UP

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: 40−30−00.00N / 80−16−16.27W
2.12.6 Threshold elevation: 1203 ft

2.12.6 Touchdown zone elevation: 1203 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: 40–30–00.00N / 80–14–00.00W
2.12.6 Threshold elevation: 1174 ft
2.12.6 Touchdown zone elevation: 1174 ft
2.12.7 Slope: 0.3UP

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: 40–29–12.22N / 80–15–00.00W
2.12.6 Threshold elevation: 1135 ft
2.12.6 Touchdown zone elevation: 1135 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: 40–29–00.00N / 80–12–38.12W
2.12.6 Threshold elevation: 1122 ft
2.12.6 Touchdown zone elevation: 1125 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: H1
2.12.3 Dimensions: 60 ft x 60 ft

AD 2.13 Declared distances
2.13.1 Designation: 10C
2.13.2 Takeoff run available: 10774
2.13.3 Takeoff distance available: 10774
2.13.4 Accelerate–stop distance available: 10172
2.13.5 Landing distance available: 9707

2.13.1 Designation: 28C
2.13.2 Takeoff run available: 10774
2.13.3 Takeoff distance available: 10774
2.13.4 Accelerate–stop distance available: 10309
2.13.5 Landing distance available: 9707

2.13.1 Designation: 14
2.13.2 Takeoff run available: 8101
2.13.3 Takeoff 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 Takeoff run available: 8101
2.13.3 Takeoff distance available: 8101
2.13.4 Accelerate–stop distance available: 7801
2.13.5 Landing distance available: 7466

2.13.1 Designation: 10L
2.13.2 Takeoff run available: 10502
2.13.3 Takeoff 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 Takeoff run available: 10502
2.13.3 Takeoff distance available: 10502
2.13.4 Accelerate–stop distance available: 10102
2.13.5 Landing distance available: 10102

2.13.1 Designation: 10R
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate–stop distance available: 11492
2.13.5 Landing distance available: 11492

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 11500
2.13.3 Takeoff distance available: 11500
2.13.4 Accelerate–stop distance available: 11500
2.13.5 Landing distance available: 11500

AD 2.14 Approach and runway lighting
2.14.1 Designation: 10C
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 28C
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 32
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 10L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with se-

quenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: ALSF2/SSALR Is A Dual Mode System & Controlled By ATCt & Remote Monitored.

2.14.1 Designation: 28R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 10R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 119.35 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 121.25 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P CLASS B IC
2.18.3 Service designation: 123.95 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 124.15 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 124.75 MHz

2.18.1 Service designation: CD/P PRE TAXI CLNC
2.18.3 Service designation: 126.75 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 127.8 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135.025 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 270.325 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CP
2.18.3 Service designation: 252.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 291.7 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 338.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 353.7 MHz

2.18.1 Service designation: OPS
2.18.3 Service designation: 36.35 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 360.8 MHz

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 279.625 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 285.575 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 336.2 MHz

2.18.1 Service designation: ANG−OPS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: DEP/S
2.18.3 Service designation: 125.275 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 135.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 127.25 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P CLASS B
2.18.3 Service designation: 133.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40–28–52.66N / 80–12–29.14W
2.19.6 Site elevation: 1112.2 ft

2.19.1 ILS type: Outer Marker for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40–25–53.20N / 80–08–44.60W
2.19.6 Site elevation: 1180 ft

2.19.1 ILS type: Middle Marker for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40–28–25.30N / 80–11–49.10W
2.19.6 Site elevation: 1100 ft

2.19.1 ILS type: Localizer for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40–29–50.41N / 80–13–35.46W
2.19.6 Site elevation: 1139.1 ft

2.19.1 ILS type: DME for runway 32. Magnetic variation: 8W
2.19.2 ILS identification: TQW
2.19.5 Coordinates: 40–29–48.85N / 80–13–37.58W
2.19.6 Site elevation: 1134 ft

2.19.1 ILS type: Outer Marker for runway 10L. Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40–30–17.54N / 80–21–59.03W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 10L. Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40–30–00.00N / 80–13–47.14W
2.19.6 Site elevation: 1160.8 ft

2.19.1 ILS type: Glide Slope for runway 10L. Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40–30–11.92N / 80–15–59.90W
2.19.6 Site elevation: 1195 ft

2.19.1 ILS type: Inner Marker for runway 10L. Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40–30–00.00N / 80–16–27.00W
2.19.6 Site elevation: 1175.5 ft

2.19.1 ILS type: Middle Marker for runway 10L. Magnetic variation: 8W
2.19.2 ILS identification: LXB
2.19.5 Coordinates: 40–30–00.00N / 80–16–48.80W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 28R. Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40–29–58.85N / 80–07–00.00W
2.19.6 Site elevation: 938 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40–30–00.00N / 80–16–31.33W
2.19.6 Site elevation: 1214.2 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40–30–00.00N / 80–14–14.63W
2.19.6 Site elevation: 1170.6 ft

2.19.1 ILS type: Middle Marker for runway 28R. Magnetic variation: 8W
2.19.2 ILS identification: HFE
2.19.5 Coordinates: 40–30–00.00N / 80–13–26.81W
2.19.6 Site elevation: 1164 ft

2.19.1 ILS type: Glide Slope for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT

2.19.5 Coordinates: 40−29−15.35N / 80−14−53.78W
2.19.6 Site elevation: 1129.2 ft

2.19.1 ILS type: Outer Marker for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−14.90N / 80−22−13.90W
2.19.6 Site elevation: 1081 ft

2.19.1 ILS type: Middle Marker for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−13.15N / 80−15−42.43W
2.19.6 Site elevation: 1155 ft

2.19.1 ILS type: Inner Marker for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−12.54N / 80−15−18.88W
2.19.6 Site elevation: 1144.8 ft

2.19.1 ILS type: Localizer for runway 10R. Magnetic variation: 8W
2.19.2 ILS identification: GUT
2.19.5 Coordinates: 40−29−00.00N / 80−12−34.12W
2.19.6 Site elevation: 1116.6 ft

2.19.1 ILS type: Localizer for runway 28L. Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−12.64N / 80−15−23.03W
2.19.6 Site elevation: 1141.2 ft

2.19.1 ILS type: Outer Marker for runway 28L. Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−00.00N / 80−06−00.00W
2.19.6 Site elevation: 1043 ft

2.19.1 ILS type: Glide Slope for runway 28L. Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−00.00N / 80−12−51.27W
2.19.6 Site elevation: 1120.3 ft

2.19.1 ILS type: Middle Marker for runway 28L. Magnetic variation: 8W
2.19.2 ILS identification: PFS
2.19.5 Coordinates: 40−29−00.00N / 80−12−00.00W
2.19.6 Site elevation: 1069 ft

General Remarks:
DEER & BIRDS ON & IN THE VICINITY OF AIRPORT.

ALL JETS DEPARTING RUNWAY 28R MUST BE ALIGNED WITHIN RUNWAY PRIOR TO APPLYING TAKE-OFF POWER.

AIRCRAFT USING TAXIWAY 'N' PROHIBITED TO STOP ON OVERPASS AREA DUE TO POSSIBLE EMERGENCY EVACUATION HAZARD.

ANG AIRCRAFT MUST CONTACT TANKER 303.0/FTR OPERATIONS 293.7 BEFORE CROSSING RUNWAY 28L TO OBTAIN CLEARANCE TO ENTER.

TERMINAL TAXILANES E OF CONCOURSES A & B RESTRD TO GROUP 3 AIRCRAFT & SMALLER.

TERMINAL APRON CONTROL FREQS ARE 130.77 FOR NORTH APRON; 131.37 FOR SOUTH APRON.

ATCT IS AUTHORIZED TO HAVE AIRCRAFT LINE−UP & WAIT ON RUNWAYS 28L AT TAXIWAY 'P' DURING HRS OF DARKNESS. THE SPECIFIC RUNWAY SHALL BE USED ONLY FOR DEPARTURES & THE INTERSECTION MUST BE VISIBLE FROM ATCT.

SERVICE−JASU: (ANG) (A/M32A−86) (AM 32−95; (AFRC − 2(A/M32−86 (AM32−95).

SERVICE−FLUID: LPOX L/H NIT.

SERVICE−OIL: O−156.

SERVICE−TRAN ALERT: NO PRIORITY BASIS.

AFRC: CALL PITT COMMAND POST PRIOR TO ENTRY TO S RAMP, MAIN RAMP.

ANG: OPR 1130–2030Z++ MON–FRI EXCEPT HOLIDAY (CLOSED EVERY OTH MON).

ANG: OPR 1130–2030Z++MON–FRI EXCEPT HOLIDAY. CLOSED EVERY OTHER MON. OFFICIAL BUSINESS ONLY. PRIOR PERMISSION REQUIRED 48 HR PRIOR NOTICE REQUIRE. CALL DSN 294–7374/7260, C412–776–7374/7260.

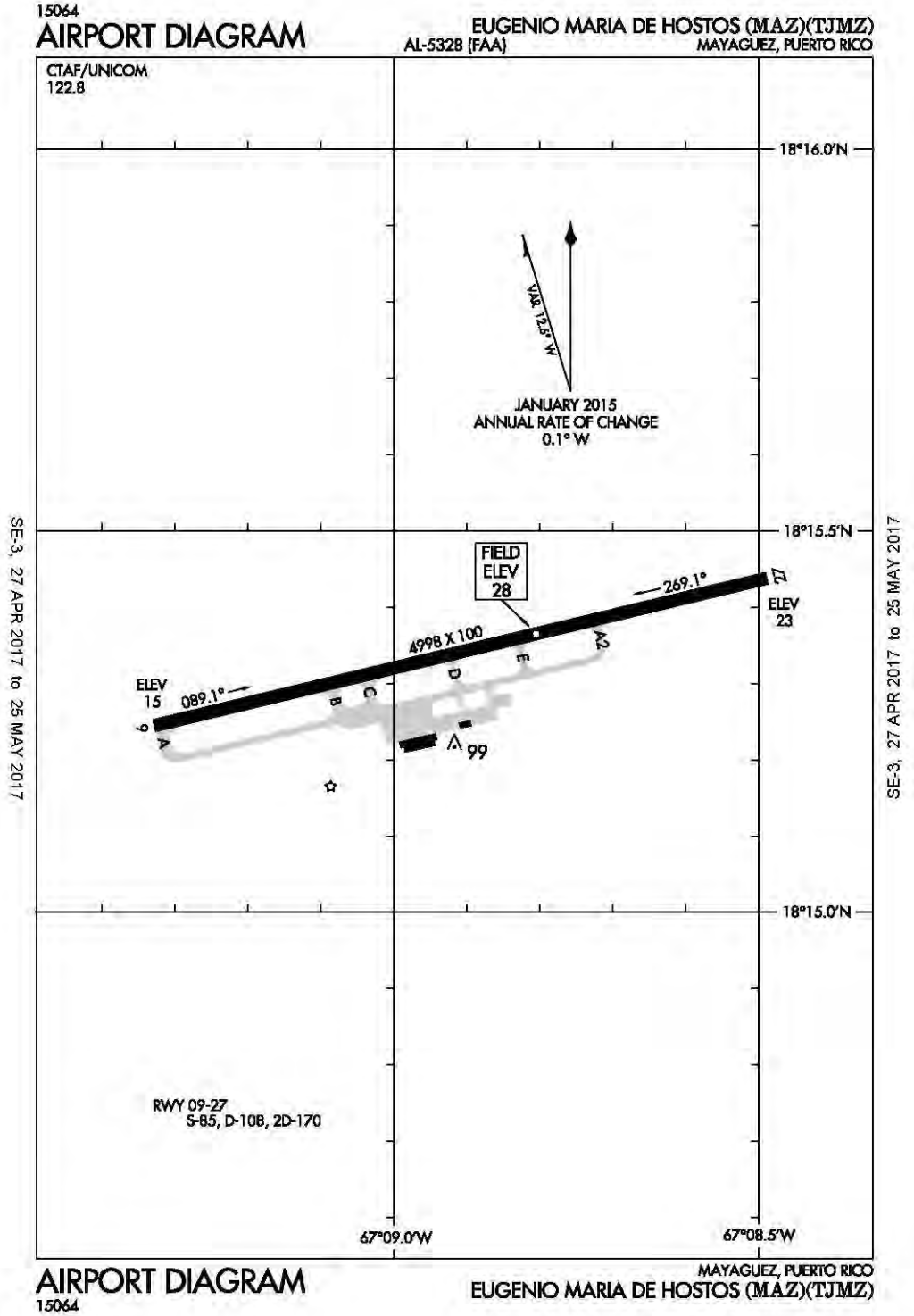
AFRC: MIN 48HR PRIOR NOTICE REQUIRE FOR C5, C141 DUE TO LIMITED PARKING, LIGHT, AND SERVICE. NO TRANSIENT SERVICE. TRANSIENT AIRCRAFT CALL FBO AVIATION CENTER C412–472–6700. NORMAL DUTY HR 1330–0400Z++ EXCEPT HOLIDAY. UNIT TRAINING ASSEMBLY 1300–2100Z++ SAT. AND SUN.

TAXIWAY G INTERSECTION AT RUNWAY 10L/28R RIGHT TURN NOT AUTHORIZED.

FUEL: A++ PROVIDED BY ANG AND AFRC.(MIL).

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

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: 18–15–20.50N / 67–08–54.50W
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: Jorge Santiago
BOX 710
Mayaguez, PR 709
(787–832–3390)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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: None
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Trees (38 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Trees (65 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 249 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 09
2.12.2 True Bearing: 76
2.12.3 Dimensions: 4998 ft x 100 ft
2.12.5 Coordinates: 18–15–14.68N / 67–09–19.73W
2.12.6 Threshold elevation: 15 ft
2.12.6 Touchdown zone elevation: 28 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 256
2.12.3 Dimensions: 4998 ft x 100 ft
2.12.5 Coordinates: 18–15–26.25N / 67–08–29.30W
2.12.6 Threshold elevation: 23 ft
2.12.6 Touchdown zone elevation: 28 ft

AD 2.14 Approach and runway lighting

2.14.1 Designation: 09
2.14.4 Visual approach slope indicator system: 4–light PA-PI on left

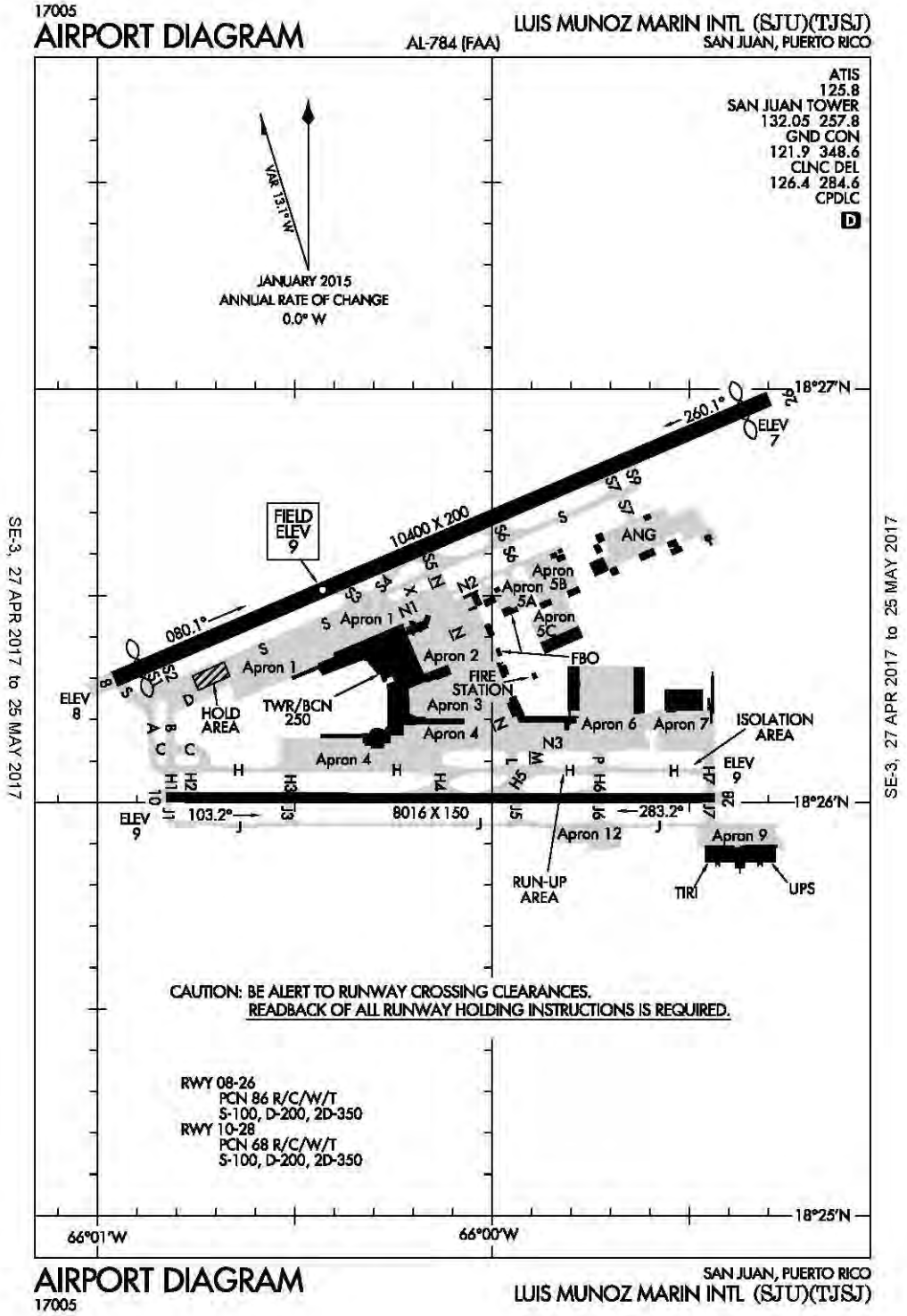
2.14.1 Designation: 27
2.14.4 Visual approach slope indicator system: 4–light PA-PI on left

General Remarks:
1200’ TOWER /1207’ MSL/ 9 NAUTICAL MILE NNW.

BIRDS ON AND IN THE VICINITY OF AIRPORT.

PERSONNEL AND EQUIPMENT WORKING RUNWAY 09/27 0730–1600 LOCAL M–F.

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: 18–26–21.84N / 66–00–00.00W
2.2.2 From City: 3 Miles SE Of San Juan, PR
2.2.3 Elevation: 9.4 ft
2.2.5 Magnetic variation: 11W (1985)
2.2.6 Airport Contact: Mr. Agustin Arellano
P. O. BOX 38085
San Juan, PR 937
(787) 289–7240
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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: 100,115,A+
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Tree (50 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Trees (24 ft). Not Lighted or Marked

2.10.1.a. Runway designation: 08
2.10.1.b Type of obstacle: Tree (59 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 26
2.10.1.b Type of obstacle: Tree (72 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 800 ft from Centerline

AD 2.12 Runway physical characteristics

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: 18–26–00.00N / 66–00–49.42W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 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: 18–26–00.00N / 65–59–26.16W
2.12.6 Threshold elevation: 9 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 67
2.12.3 Dimensions: 10400 ft x 200 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18–26–17.97N / 66–00–57.32W
2.12.6 Threshold elevation: 8 ft
2.12.6 Touchdown zone elevation: 9 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 247
2.12.3 Dimensions: 10400 ft x 200 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18–26–58.27N / 65–59–17.89W
2.12.6 Threshold elevation: 7 ft
2.12.6 Touchdown zone elevation: 7 ft

AD 2.13 Declared distances

2.13.1 Designation: 10
2.13.2 Takeoff run available: 8016
2.13.3 Takeoff 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 Takeoff run available: 8016
2.13.3 Takeoff distance available: 8016
2.13.4 Accelerate−stop distance available: 8016
2.13.5 Landing distance available: 8016

2.13.1 Designation: 08
2.13.2 Takeoff run available: 9784
2.13.3 Takeoff 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 Takeoff run available: 8128
2.13.3 Takeoff distance available: 10400
2.13.4 Accelerate−stop distance available: 9600
2.13.5 Landing distance available: 9600

AD 2.14 Approach and runway lighting

2.14.1 Designation: 10
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 08
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 26
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.4 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 120.9 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 125.8 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD PRE TAXI CLNC
2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 269.2 MHz

2.18.1 Service designation: CD
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 290.2 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.05 MHz

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: CLA
2.19.5 Coordinates: 18−25−57.56N / 66−00−39.05W
2.19.6 Site elevation: 4.4 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA

2.19.5 Coordinates: 18–26–00.00N / 66–01–15.39W
2.19.6 Site elevation: 1 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18–26–00.00N / 65–59–15.70W
2.19.6 Site elevation: 6.1 ft

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18–26–00.00N / 65–59–15.53W
2.19.6 Site elevation: 9 ft

2.19.1 ILS type: Outer Marker for runway 10. Magnetic variation: 11W
2.19.2 ILS identification: CLA
2.19.5 Coordinates: 18–26–00.00N / 66–05–00.00W
2.19.6 Site elevation: 6 ft

2.19.1 ILS type: Localizer for runway 08. Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18–26–59.78N / 65–59–14.14W
2.19.6 Site elevation: 5.9 ft

2.19.1 ILS type: Glide Slope for runway 08. Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18–26–27.04N / 66–00–45.58W
2.19.6 Site elevation: 4 ft

2.19.1 ILS type: Outer Marker for runway 08. Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18–24–31.82N / 66–05–21.83W
2.19.6 Site elevation: 67.1 ft

2.19.1 ILS type: Middle Marker for runway 08. Magnetic variation: 11W
2.19.2 ILS identification: SJU
2.19.5 Coordinates: 18–26–00.00N / 66–01–24.60W
2.19.6 Site elevation:

General Remarks:
APRON 12 AVAILABLE FOR GA AIRCRAFT ONLY.

ANG: BASE OPERATIONS 1130–2200Z TUE–FRI, CLOSED MON, WEEKEND, AND HOLIDAY.

TAXIWAY J BETWEEN J1 AND J5 (NOT INCLUDING J5) CLOSED TO AIRCRAFT WITH GREATER THAN 118 FT WINGSPAN.

TAXIWAY S BETWEEN TAXIWAY S2 AND TAXIWAY S5 CLOSED LIGHTED AND BARRICADED.

TAXIWAY N CLOSED TO AIRCRAFT WINGSPAN MORE THAN 160FT/ACFT MORE THAN 271000LB EXCEPT PRIOR PERMISSION REQUIRED.

ENGINE RUNUPS PROHIBITED ON GATES AREA.

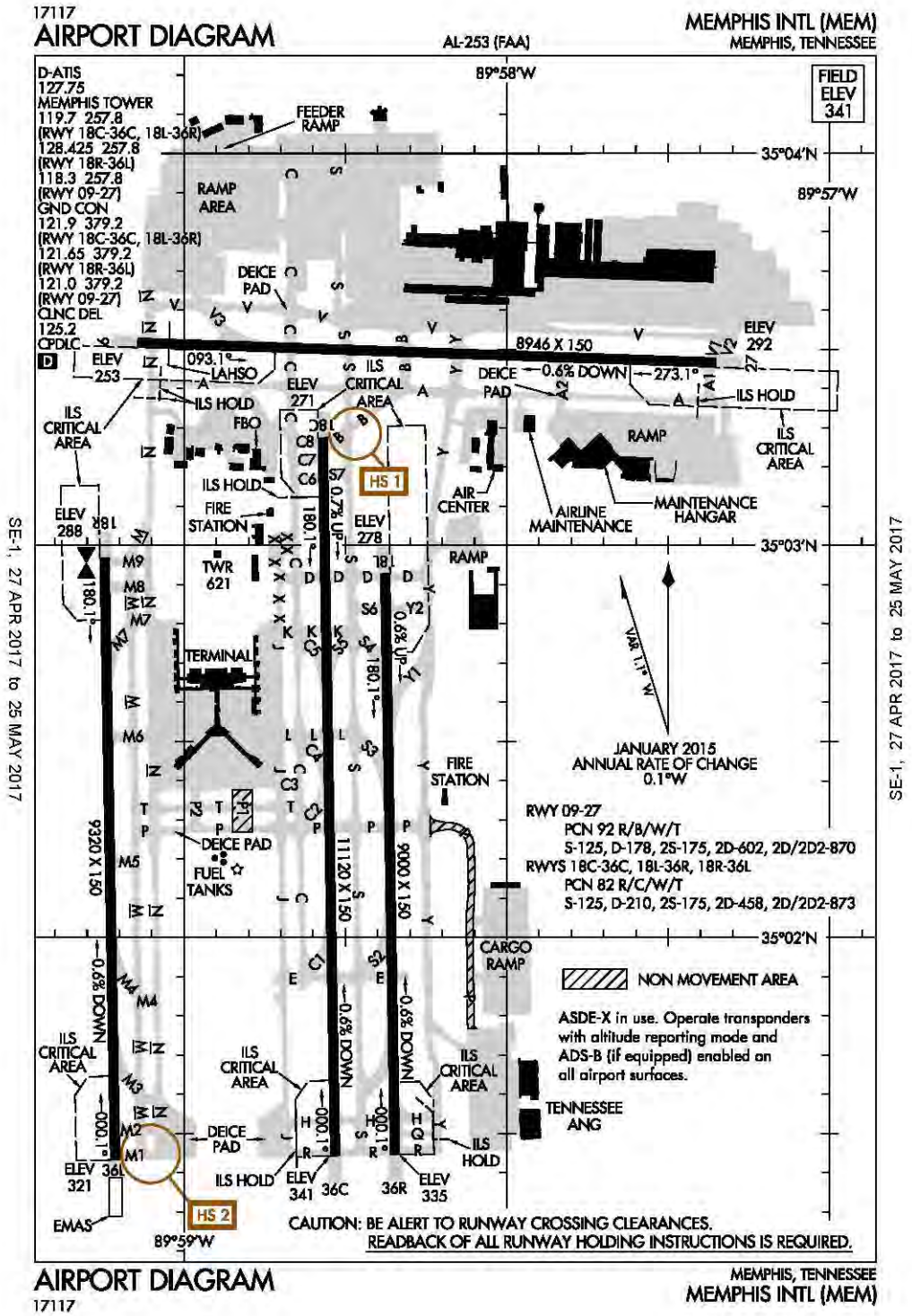
AIRCRAFT 180 TURNS ON TAXIWAYS REQUIRES OPERATIONS COORDINATIONS.

FBO/GROUND HANDLER MUST SUBMIT 72 HRS PRIOR PERMISSION REQUIRED FOR ALL MILITARY AIRCRAFT TO: CCO@AEROSTARAIRPORTS.COM OR BY PHONE TO: 787–253–0979

CAUTION: HANGAR 1 AND 104 OBST LIGHT O/S.

NONSTANDARD MARKINGS ON APRON.

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: 35–02–32.70N / 89–58–36.00W
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 Operational hours
2.3.1 – 2.3.11: 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,A+
2.4.4 De–icing facilities: None
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
2.6.4 Remarks: Index D ARFF Equipment Available 24 Hours Per Day, 7 Days Per Week.

AD 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 36R
2.10.1.b Type of obstacle: Trees (68 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 685 ft from Centerline

2.10.1.a. Runway designation: 36L
2.10.1.b Type of obstacle: Road (21 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 622 ft from Centerline

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Pole (27 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 608 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Pole (50 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 661 ft from Centerline

2.10.1.a. Runway designation: 18C
2.10.1.b Type of obstacle: Pole (63 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 802 ft from Centerline

AD 2.12 Runway physical characteristics
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: 35–02–55.74N / 89–58–22.63W
2.12.6 Threshold elevation: 278 ft
2.12.6 Touchdown zone elevation: 301 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: 35–01–26.74N / 89–58–20.75W
2.12.6 Threshold elevation: 335 ft
2.12.6 Touchdown zone elevation: 335 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: 35–02–58.16N / 89–59–14.79W
2.12.6 Threshold elevation: 288 ft
2.12.6 Touchdown zone elevation: 295 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: 35–01–25.98N / 89–59–12.81W
2.12.6 Threshold elevation: 321 ft
2.12.6 Touchdown zone elevation: 321 ft

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: 35–03–31.04N / 89–59–00.00W
2.12.6 Threshold elevation: 253 ft
2.12.6 Touchdown zone elevation: 259 ft
2.12.7 Slope: 0.1UP

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: 35−03−28.01N / 89−57−21.08W
2.12.6 Threshold elevation: 292 ft
2.12.6 Touchdown zone elevation: 292 ft
2.12.7 Slope: 0.6DOWN

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: 35−03−16.54N / 89−58−34.21W
2.12.6 Threshold elevation: 271 ft
2.12.6 Touchdown zone elevation: 290 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: 35−01−26.58N / 89−58−31.90W
2.12.6 Threshold elevation: 341 ft
2.12.6 Touchdown zone elevation: 341 ft

AD 2.13 Declared distances
2.13.1 Designation: 18L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 36R
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9320
2.13.3 Takeoff 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 Takeoff run available: 9320
2.13.3 Takeoff distance available: 9320
2.13.4 Accelerate−stop distance available: 9320
2.13.5 Landing distance available: 9320

2.13.1 Designation: 09
2.13.2 Takeoff run available: 8946
2.13.3 Takeoff 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 Takeoff run available: 8946
2.13.3 Takeoff 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 Takeoff run available: 11120
2.13.3 Takeoff 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 Takeoff run available: 11120
2.13.3 Takeoff distance available: 11120
2.13.4 Accelerate−stop distance available: 10715
2.13.5 Landing distance available: 10715

AD 2.14 Approach and runway lighting
2.14.1 Designation: 18L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right
2.14.10 Remarks: ALSF2 Unmonitored.

2.14.1 Designation: 18R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 36L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet

medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 27
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 18C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 36C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 127.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG CP
2.18.3 Service designation: 138.1 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 379.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 128.425 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121 MHz

2.18.1 Service designation: SATELLITE
2.18.3 Service designation: 134.2 MHz

2.18.1 Service designation: ANG CP
2.18.3 Service designation: 353.45 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 18L. Magnetic variation: 1E
2.19.2 ILS identification: EXS
2.19.5 Coordinates: 35–01–16.71N / 89–58–20.53W
2.19.6 Site elevation: 315.1 ft

2.19.1 ILS type: DME for runway 18L. Magnetic variation: 1E
2.19.2 ILS identification: EXS
2.19.5 Coordinates: 35–01–16.86N / 89–58–19.30W
2.19.6 Site elevation: 382 ft

2.19.1 ILS type: Glide Slope for runway 18L. Magnetic variation: 1E
2.19.2 ILS identification: EXS
2.19.5 Coordinates: 35–02–46.77N / 89–58–17.63W
2.19.6 Site elevation: 279 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 1W
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35–01–37.99N / 89–58–16.18W
2.19.6 Site elevation: 324 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 1W
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35–01–00.00N / 89–58–20.21W
2.19.6 Site elevation: 305 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 1W
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35–03–00.00N / 89–58–22.84W
2.19.6 Site elevation: 279 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 1W
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35–03–00.00N / 89–58–19.67W
2.19.6 Site elevation: 281 ft

2.19.1 ILS type: Inner Marker for runway 36R. Magnetic variation: 1W
2.19.2 ILS identification: MYO
2.19.5 Coordinates: 35–01–18.39N / 89–58–20.58W
2.19.6 Site elevation: 324 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35–01–17.37N / 89–59–12.63W
2.19.6 Site elevation: 320 ft

2.19.1 ILS type: Outer Marker for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35–07–44.20N / 89–59–23.09W
2.19.6 Site elevation: 306 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35–02–48.70N / 89–59–18.49W
2.19.6 Site elevation: 285 ft

2.19.1 ILS type: Middle Marker for runway 18R. Magnetic variation: 1E
2.19.2 ILS identification: OOI
2.19.5 Coordinates: 35–03–24.11N / 89–59–15.34W
2.19.6 Site elevation: 251 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 1W
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35–03–00.00N / 89–59–15.01W
2.19.6 Site elevation: 275.9 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 1W
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35–01–38.77N / 89–59–17.90W
2.19.6 Site elevation: 307 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 1W
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35–03–00.00N / 89–59–17.33W
2.19.6 Site elevation: 276 ft

2.19.1 ILS type: Inner Marker for runway 36L. Magnetic variation: 1W
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35–01–17.41N / 89–59–12.63W
2.19.6 Site elevation: 325 ft

2.19.1 ILS type: Outer Marker for runway 36L. Magnetic variation: 1W
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 34–57–13.77N / 89–59–00.00W
2.19.6 Site elevation: 320 ft

2.19.1 ILS type: Middle Marker for runway 36L. Magnetic variation: 1W
2.19.2 ILS identification: OHN
2.19.5 Coordinates: 35–00–55.71N / 89–59–12.14W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35–03–27.64N / 89–57–00.00W
2.19.6 Site elevation: 297 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35–03–42.16N / 90–04–17.75W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35–03–32.06N / 89–59–45.42W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 1E
2.19.2 ILS identification: MEM
2.19.5 Coordinates: 35–03–27.21N / 89–58–56.22W
2.19.6 Site elevation: 253 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35–03–31.39N / 89–59–20.99W
2.19.6 Site elevation: 251.1 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35–03–21.52N / 89–51–53.89W
2.19.6 Site elevation: 326 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35–03–27.13N / 89–56–49.73W
2.19.6 Site elevation: 304 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 1E
2.19.2 ILS identification: JIM
2.19.5 Coordinates: 35–03–24.48N / 89–57–36.25W
2.19.6 Site elevation: 277.3 ft

2.19.1 ILS type: Localizer for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35–01–10.23N / 89–58–31.56W
2.19.6 Site elevation: 346 ft

2.19.1 ILS type: Glide Slope for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35–03–00.00N / 89–58–37.51W
2.19.6 Site elevation: 273 ft

2.19.1 ILS type: Outer Marker for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35–07–45.23N / 89–58–37.90W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 18C. Magnetic variation: 1E
2.19.2 ILS identification: SDU
2.19.5 Coordinates: 35–03–51.13N / 89–58–34.92W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 36C. Magnetic variation: 1W
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35–03–22.50N / 89–58–34.34W
2.19.6 Site elevation: 261 ft

2.19.1 ILS type: Glide Slope for runway 36C. Magnetic variation: 1W
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35–01–38.08N / 89–58–36.94W
2.19.6 Site elevation: 330 ft

2.19.1 ILS type: Inner Marker for runway 36C. Magnetic variation: 1W
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35–01–17.65N / 89–58–31.71W
2.19.6 Site elevation: 318 ft

2.19.1 ILS type: Middle Marker for runway 36C. Magnetic variation: 1W
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35–01–00.00N / 89–58–31.42W
2.19.6 Site elevation: 326 ft

2.19.1 ILS type: DME for runway 36C. Magnetic variation: 1W
2.19.2 ILS identification: TSE
2.19.5 Coordinates: 35–03–22.23N / 89–58–37.26W
2.19.6 Site elevation: 253 ft

General Remarks:
ALL TRANSIENT AIRCRAFT REQUIRE –FOLLOW ME– ASSIST ENTERING ANG RAMP. USE OF ANG RAMP REQUIRES PRIOR PERMISSION REQUIRED V966–8131 –FOR OFFICIAL BUSINESS ONLY–.

HELICOPTER OPERATIONS PROHIBITED TO/FROM TERMINAL BUILDING.

LARGE FLOCKS OF BIRDS IN THE VICINITY OF AIRPORT.

TAXIWAY N NORTH OF TAXIWAY V, TAXIWAY C NORTH OF TAXIWAY V AND TAXIWAY S NORTH OF TAXIWAY V DESIGNATED AS NON–MOVEMENT AREAS.

LARGE & HEAVY EASTBOUND AIRCRAFT ON TAXIWAY V FOR RUNWAY 27 HOLD SHORT AT MINIMUM THRUST AREA SIGN.

PRIOR PERMISSION REQUIRED FOR TAXI CLEARANCE ON TAXIWAY 'N' NORTH OF TAXIWAY 'V', TAXIWAY 'S' NORTH TAXIWAY 'V', AND TAXIWAY 'C' NORTH OF TAXIWAY 'V' CONTACT FEDEX RAMP

ATCT ON FREQ 131.5.

IF POSSIBLE ALL AIRCRAFT CONDUCT GROUND OPERATIONS WITH TRANSPONDERS ON.

TAXIWAY V BETWEEN SPOT 7W AND APPROACH END RUNWAY 27 RESTRICTED TO AIRCRAFT WITH WINGSPANS OF 171 FT 6 INCHES OR LESS.

TAXIWAY V BETWEEN TAXIWAY S TAXIWAY Y RESTRICTED TO AIRCRAFT WITH TAIL HEIGHTS LESS THAN 65 FT 10 INCHES.

ANG–PRIOR PERMISSION REQUIRED DSN 726–7131/7505, C901–291–7131/7505. OPER 1245–2215Z MON – FRI AND CLOSED ALTITUDE MON & HOLIDAY DUE TO ALTERNATE WORK SCHEDULE. TRANSIENT AIRCRAFT MAINT NOT AVAILABLE. REFUEL SERVICE FOR OTHER THAN C17 AIRCRAFT REQUIRE QUALIFIED CREW CHIEF OR CREWMEMBERS. NON–C17 AIRCRAFT SUPPORT PROVIDED BY CONTRACT FBO ON FIELD. SECURITY AVAILABLE 24 HRS, DSN 726–7101, C901–291–7101. COMMAND POST DSN 726–7148/7311/7312, C901–291–7148/7311/7312. OPR 1230–0430Z++ MON–FRI, CLOSED ALTERNATE MON AND HOLIDAY DUE TO ALTERNATE WORK SCHEDULE. AIRFIELD MANAGER DOES NOT ISSUE OR STORE COMSEC FOR TRANSIENT CRES. TEMPORARY STOR OF CLASSIFIED MATERIALS UP TO TOP SECRET AT COMMAND POST.

CONTACT RAMP CONTROL ON 121.8 FOR ENTRY ON TO ANG RAMP. ANG FREQS 138.95 353.45. AFTER HRS CONTACT COMMAND POST AT DSN 726–7148, C901–291–7311/7312 OR SECURITY FORCES AT DSN 726–7101, C901–291–7101/7133.

READ BACK ALL HOLD SHORT INSTRUCTIONS REQURED.

AIRCRAFT WITH WINGSPANS GREATER THAN 171 FT RESTRICTED FROM TAXI ON TAXIWAY ’N’ BETWEEN TAXIWAY ’M7’ & TAXIWAY ’T’.

BASH PHASE II MAR–APR AND OCT–NOV; CURRENT BIRD WATCH CONDITION ARE NOT RPT ON AUTOMATIC TERMINAL INFORMATION SERVICE.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PRIOR PERMISSION REQUIRED FOR TAXI CLEARANCE FROM CARGO CENTRAL RAMP PARKING ON FREQUENCY 121.9.

COMMUNICATIONS–ANG COMMAND POST: RADIO CALL– ”GRACELAND OPS”.

TAXIWAY P1 IS DESIGNATED AS A NON–MOVEMENT AREA.

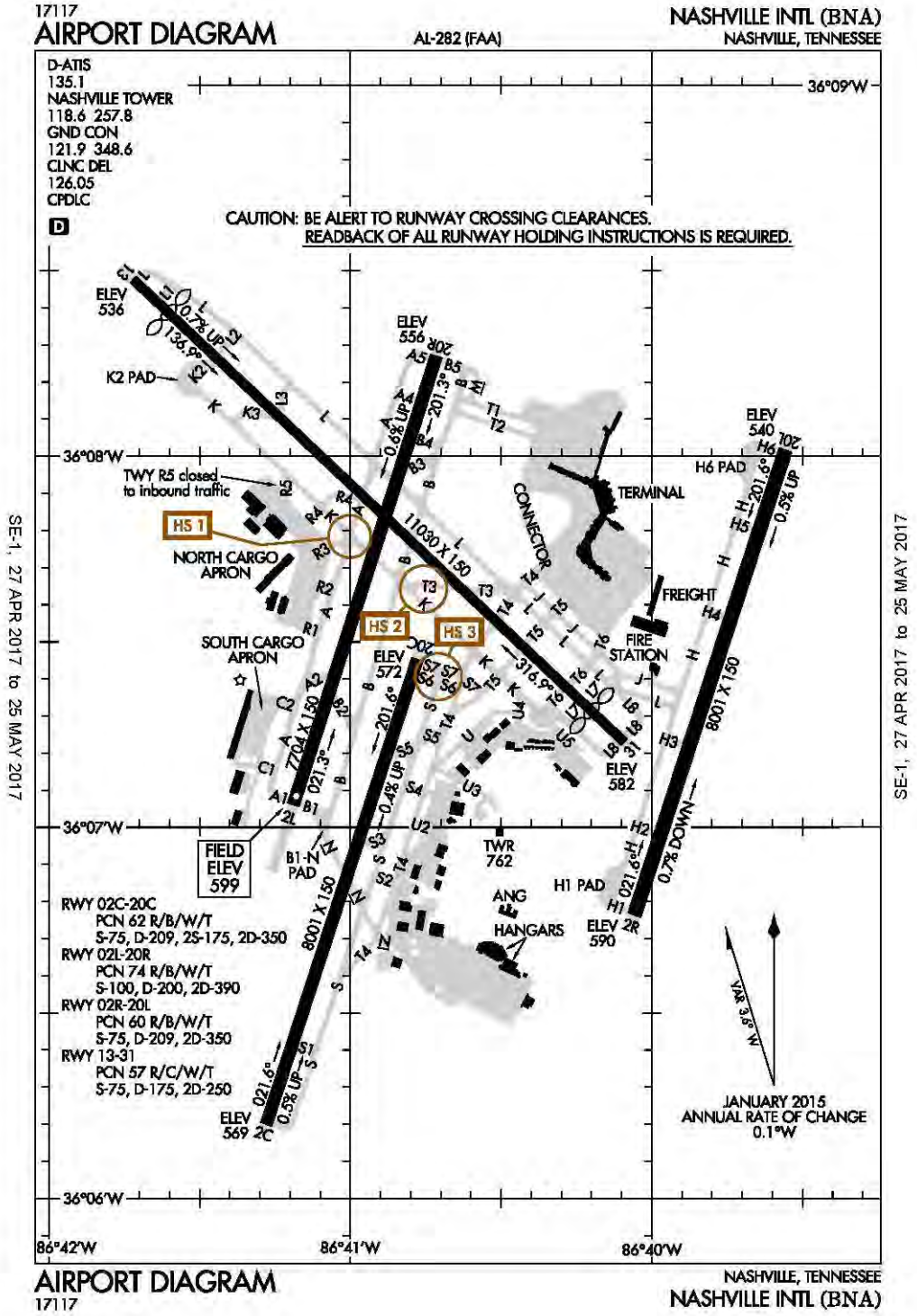
NOISE ABATEMENT PROCEDURES IN EFFECT. SUCCESSIVE AND/OR SIMULTANEOUS DEPARTURES APPROVED ON RUNWAY 36L–18R AND RUNWAY 36C–18C OR RUNWAY 36L–18R AND RUNWAY 36R–18L WITH COURSE DIVERGENCE NO LATER THAN 2.27 NAUTICAL MILE FROM RUNWAY END.

ANG: PRIOR PERMISSION REQUIRED 24 HR PRIOR NOTICE REQUIRE, LIMITED TO OFFICIAL BUSINESS ONLY.

AIRCRAFT WITH WINGSPANS GREATER THAN 118 FEET RESTRICTED FROM TAXIING ON TAXIWAY J NORTH OF TAXIWAY C3.

ANG–ATIS INFORMATION REPORTS BIRD ACT CONTINUOUS 24-HOUR SERVICE IN AREA.

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: 36−07−28.10N / 86−40−41.40W
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: Rob Wigington
ONE TERMINAL DR. SUITE 501
Nashville, TN 37214 (615−275−1703)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 13
2.10.1.b Type of obstacle: Trees. Not Lighted or Marked

2.10.1.a. Runway designation: 31
2.10.1.b Type of obstacle: Tree. Not Lighted or Marked

AD 2.12 Runway physical characteristics

2.12.1 Designation: 13
2.12.2 True Bearing: 133
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.4 PCN: 57 R/C/W/T
2.12.5 Coordinates: 36−08−28.60N / 86−41−43.28W
2.12.6 Threshold elevation: 536 ft
2.12.6 Touchdown zone elevation: 566 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: 57 R/C/W/T
2.12.5 Coordinates: 36−07−13.78N / 86−40−00.00W
2.12.6 Threshold elevation: 582 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: 60 R/B/W/T
2.12.5 Coordinates: 36−06−45.77N / 86−40−00.00W
2.12.6 Threshold elevation: 590 ft
2.12.6 Touchdown zone elevation: 590 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: 60 R/B/W/T
2.12.5 Coordinates: 36−08−00.00N / 86−39−33.40W
2.12.6 Threshold elevation: 540 ft
2.12.6 Touchdown zone elevation: 550 ft

2.12.1 Designation: 02C
2.12.2 True Bearing: 18
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 62 R/B/W/T
2.12.5 Coordinates: 36−06−11.99N / 86−41−16.66W
2.12.6 Threshold elevation: 569 ft
2.12.6 Touchdown zone elevation: 587 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: 62 R/B/W/T
2.12.5 Coordinates: 36−07−27.24N / 86−40−46.55W
2.12.6 Threshold elevation: 572 ft
2.12.6 Touchdown zone elevation: 588 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: 74 R/B/W/T
2.12.5 Coordinates: 36−07−00.00N / 86−41−11.31W
2.12.6 Threshold elevation: 599 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: 74 R/B/W/T
2.12.5 Coordinates: 36−08−16.23N / 86−40−42.84W
2.12.6 Threshold elevation: 556 ft
2.12.6 Touchdown zone elevation: 578 ft

AD 2.13 Declared distances

2.13.1 Designation: 13
2.13.2 Takeoff run available: 10288
2.13.3 Takeoff 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 Takeoff run available: 10228
2.13.3 Takeoff distance available: 11029
2.13.4 Accelerate–stop distance available: 10228
2.13.5 Landing distance available: 9487

2.13.1 Designation: 02R
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff 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 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate–stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 02C
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate–stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 20C
2.13.2 Takeoff run available: 8000
2.13.3 Takeoff distance available: 8000
2.13.4 Accelerate–stop distance available: 8000
2.13.5 Landing distance available: 8000

2.13.1 Designation: 02L
2.13.2 Takeoff run available: 7702
2.13.3 Takeoff 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 Takeoff run available: 7702
2.13.3 Takeoff distance available: 7702
2.13.4 Accelerate–stop distance available: 7702
2.13.5 Landing distance available: 7702

AD 2.14 Approach and runway lighting

2.14.1 Designation: 13
2.14.4 Visual approach slope indicator system: 6–box VASI on left

2.14.1 Designation: 02R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 20L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 02C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 20C
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 02L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 20R
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 126.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: ALCP
2.18.3 Service designation: 314.4 MHz

2.18.1 Service designation: APCH/P CLASS C IC

2.18.3 Service designation: 360.7 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 360.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.1 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 372 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 372 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 119.35 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Outer Marker for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−03−16.09N / 86−34−51.59W
2.19.6 Site elevation: 520 ft

2.19.1 ILS type: Middle Marker for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−06−57.26N / 86−39−44.59W
2.19.6 Site elevation: 547 ft

2.19.1 ILS type: Localizer for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−08−30.65N / 86−41−45.97W
2.19.6 Site elevation: 540 ft

2.19.1 ILS type: Glide Slope for runway 31. Magnetic variation: 3W
2.19.2 ILS identification: PNO
2.19.5 Coordinates: 36−07−28.27N / 86−40−18.60W
2.19.6 Site elevation: 566 ft

2.19.1 ILS type: DME for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−08−00.00N / 86−39−35.72W
2.19.6 Site elevation: 520 ft

2.19.1 ILS type: Localizer for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−08−10.51N / 86−39−29.60W
2.19.6 Site elevation: 531 ft

2.19.1 ILS type: Glide Slope for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−06−56.01N / 86−39−54.74W
2.19.6 Site elevation: 576.6 ft

2.19.1 ILS type: Inner Marker for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−06−37.69N / 86−40−00.00W
2.19.6 Site elevation: 569 ft

2.19.1 ILS type: Middle Marker for runway 02R. Magnetic variation: 3W
2.19.2 ILS identification: UQU
2.19.5 Coordinates: 36−06−19.86N / 86−40−13.85W
2.19.6 Site elevation: 607 ft

2.19.1 ILS type: Localizer for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−06−30.02N / 86−40−00.00W
2.19.6 Site elevation: 613.3 ft

2.19.1 ILS type: Glide Slope for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−07−50.03N / 86−39−33.12W
2.19.6 Site elevation: 534.3 ft

2.19.1 ILS type: DME for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36−06−30.96N / 86−40−12.89W
2.19.6 Site elevation: 621.1 ft

2.19.1 ILS type: Middle Marker for runway 20L. Magnetic variation: 3W
2.19.2 ILS identification: SSX
2.19.5 Coordinates: 36–08–25.51N / 86–39–23.69W
2.19.6 Site elevation: 610 ft

2.19.1 ILS type: Glide Slope for runway 02C. Magnetic variation: 3W
2.19.2 ILS identification: EZN
2.19.5 Coordinates: 36–06–22.64N / 86–41–16.89W
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: 36–07–31.97N / 86–40–44.66W
2.19.6 Site elevation: 574 ft

2.19.1 ILS type: Localizer for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36–08–25.75N / 86–40–39.10W
2.19.6 Site elevation: 552 ft

2.19.1 ILS type: Glide Slope for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36–07–12.95N / 86–41–00.00W
2.19.6 Site elevation: 590.8 ft

2.19.1 ILS type: Middle Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36–06–35.04N / 86–41–22.51W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36–01–51.60N / 86–43–18.44W
2.19.6 Site elevation: 985 ft

2.19.1 ILS type: DME for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36–08–26.46N / 86–40–42.35W
2.19.6 Site elevation: 535 ft

2.19.1 ILS type: Inner Marker for runway 02L. Magnetic variation: 3W
2.19.2 ILS identification: BNA
2.19.5 Coordinates: 36–06–54.83N / 86–41–14.80W
2.19.6 Site elevation: 595 ft

2.19.1 ILS type: Outer Marker for runway 20R. Magnetic variation: 3W
2.19.2 ILS identification: VIY
2.19.5 Coordinates: 36–12–13.70N / 86–39–00.00W
2.19.6 Site elevation: 433 ft

2.19.1 ILS type: Localizer for runway 20R. Magnetic variation: 3W
2.19.2 ILS identification: VIY
2.19.5 Coordinates: 36–06–49.68N / 86–41–16.79W
2.19.6 Site elevation: 587.1 ft

2.19.1 ILS type: Glide Slope for runway 20R. Magnetic variation: 3W
2.19.2 ILS identification: VIY
2.19.5 Coordinates: 36–08–00.00N / 86–40–42.76W
2.19.6 Site elevation: 554.8 ft

General Remarks:
READ BACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

PILOTS COMPLY WITH ALL HOLD SHORT INSTRUCTIONS PARTICULARLY AT TAXIWAY K & RUNWAY 20C APPROACH; TAXIWAY L8 & RUNWAY 31 APPROACH; TAXIWAY L AT RUNWAY 13 APPROACH; AND TAXIWAY H AT RUNWAY 31 APPROACH.

ALL TURBOJET RUNWAYS HAVE NOISE ABATEMENT PROCEDURES. MILITARY FIGHTER/ATTACK/TRAINER TURBOJETS USE RUNWAY 13/31 FOR ARRIVAL & DEPARTURE.

LIGHTED JET BLAST FENCE 598 MSL 1100 FT SE OF RUNWAY 31 THRESHOLD.

LIGHTED JET BLAST FENCE 568 FT MSL 1167 FT NW RUNWAY 13 THRESHOLD.

NO UNAUTHORIZED 180 DEGREE TURNS FOR AIRCRAFT OVER 12500 LBS ON ASPHALT SURFACES.

NO FLIGHT OVER MAIN TERMINAL BUILDING IS PERMITTED.

BIRD ACTIVITY ON & IN THE VICINITY OF AIRPORT.

DO NOT CONFUSE 150 FT WIDE TAXIWAY S FOR RUNWAY 20C.

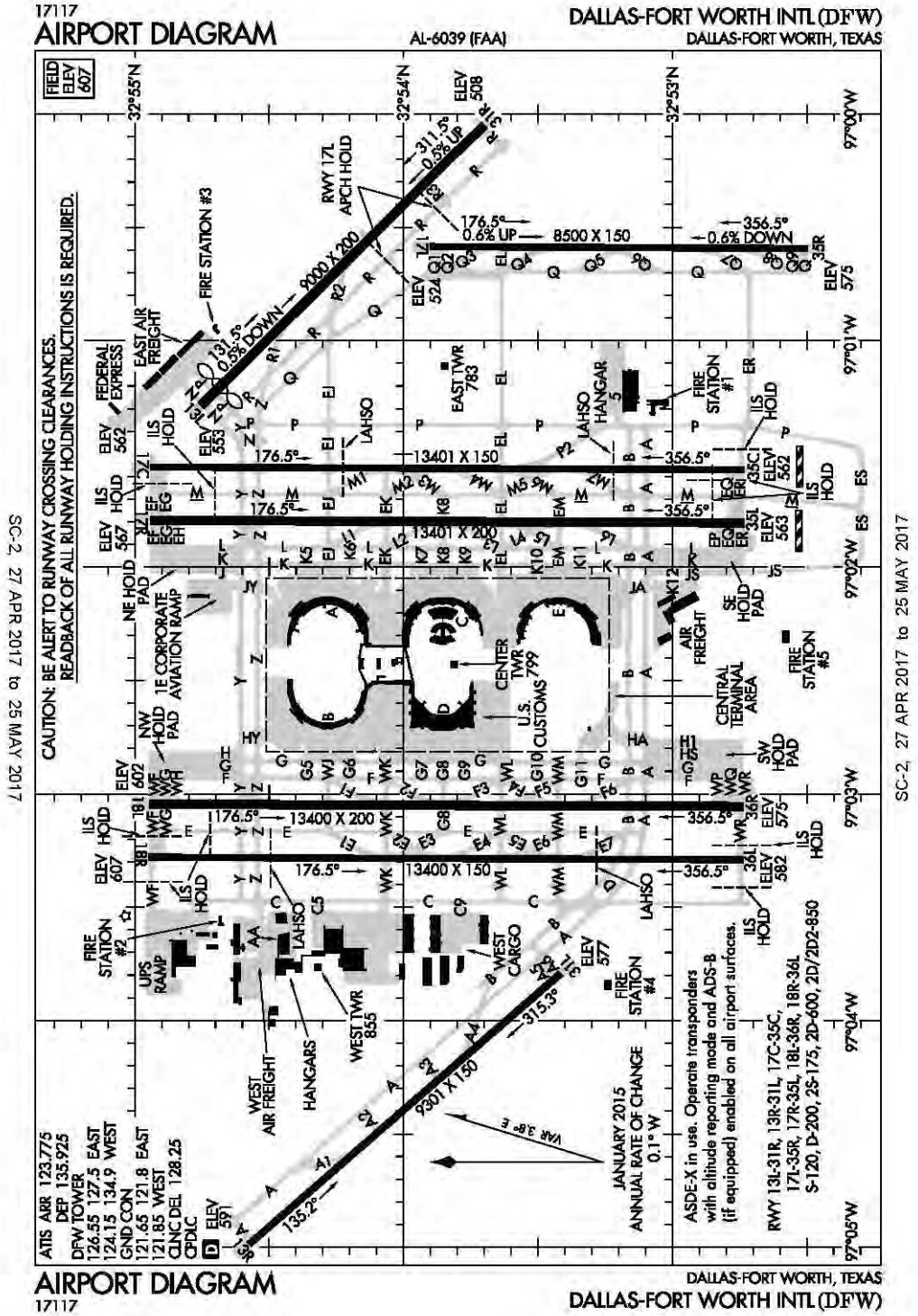
'C' CONCOURSE TAXILANES ARE; INNER TAXILANE FOR OUTBOUND TRAFFIC & OUTER TAXILANE FOR INBOUND TRAFFIC.

ANG: CALL SIGN MUSIC CITY OPERATIONS.

TAXIWAY K4 HAS BEEN REMOVED DURING CONSTRUCTION.

ARRANGE − PRIOR PERMISSION REQUIRED CONTACT 615−367−5567.

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: 32−53−50.03N / 97−02−15.70W
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
2.2.8 Remarks: And Dallas Co.

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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: ARFF Index I E certified on 7/1/1973

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 17L
2.10.1.b Type of obstacle: Ant (150 ft). Lighted
2.10.1.c Location of obstacle: 798 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 17C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 150 ft
2.12.5 Coordinates: 32−54−56.55N / 97−01−33.49W
2.12.6 Threshold elevation: 562 ft
2.12.6 Touchdown zone elevation: 562 ft

2.12.1 Designation: 35C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 150 ft
2.12.5 Coordinates: 32−52−43.96N / 97−01−34.22W
2.12.6 Threshold elevation: 562 ft
2.12.6 Touchdown zone elevation: 562 ft

2.12.1 Designation: 13L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 9000 ft x 200 ft
2.12.5 Coordinates: 32−54−45.20N / 97−01−17.32W
2.12.6 Threshold elevation: 553 ft
2.12.6 Touchdown zone elevation: 553 ft

2.12.1 Designation: 31R
2.12.2 True Bearing: 315
2.12.3 Dimensions: 9000 ft x 200 ft
2.12.5 Coordinates: 32−53−41.93N / 97−00−00.00W
2.12.6 Threshold elevation: 508 ft
2.12.6 Touchdown zone elevation: 523 ft

2.12.1 Designation: 13R
2.12.2 True Bearing: 139
2.12.3 Dimensions: 9301 ft x 150 ft
2.12.5 Coordinates: 32−54−34.47N / 97−04−59.28W
2.12.6 Threshold elevation: 591 ft
2.12.6 Touchdown zone elevation: 591 ft

2.12.1 Designation: 31L
2.12.2 True Bearing: 319
2.12.3 Dimensions: 9301 ft x 150 ft
2.12.5 Coordinates: 32−53−24.97N / 97−03−47.79W
2.12.6 Threshold elevation: 577 ft
2.12.6 Touchdown zone elevation: 581 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.5 Coordinates: 32−54−56.88N / 97−03−00.00W
2.12.6 Threshold elevation: 602 ft
2.12.6 Touchdown zone elevation: 602 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 200 ft

2.12.5 Coordinates: 32–52–44.30N / 97–03–00.00W
2.12.6 Threshold elevation: 575 ft
2.12.6 Touchdown zone elevation: 580 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.5 Coordinates: 32–54–56.93N / 97–03–16.71W
2.12.6 Threshold elevation: 607 ft
2.12.6 Touchdown zone elevation: 607 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.5 Coordinates: 32–52–44.35N / 97–03–17.40W
2.12.6 Threshold elevation: 582 ft
2.12.6 Touchdown zone elevation: 588 ft

2.12.1 Designation: 17L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.5 Coordinates: 32–53–53.95N / 97–00–35.20W
2.12.6 Threshold elevation: 524 ft
2.12.6 Touchdown zone elevation: 545 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.5 Coordinates: 32–52–29.85N / 97–00–35.67W
2.12.6 Threshold elevation: 575 ft
2.12.6 Touchdown zone elevation: 575 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.5 Coordinates: 32–54–56.60N / 97–01–47.58W
2.12.6 Threshold elevation: 566 ft
2.12.6 Touchdown zone elevation: 566 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.5 Coordinates: 32–52–44.02N / 97–01–48.29W
2.12.6 Threshold elevation: 563 ft
2.12.6 Touchdown zone elevation: 564 ft

AD 2.13 Declared distances

2.13.1 Designation: 17C
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff 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 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate–stop distance available: 13401
2.13.5 Landing distance available: 13401

2.13.1 Designation: 13L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff distance available: 9000
2.13.4 Accelerate–stop distance available: 9000
2.13.5 Landing distance available: 8375

2.13.1 Designation: 31R
2.13.2 Takeoff run available: 8375
2.13.3 Takeoff distance available: 8375
2.13.4 Accelerate–stop distance available: 8375
2.13.5 Landing distance available: 8375

2.13.1 Designation: 13R
2.13.2 Takeoff run available: 9301
2.13.3 Takeoff 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 Takeoff run available: 9301
2.13.3 Takeoff distance available: 9301
2.13.4 Accelerate–stop distance available: 9301
2.13.5 Landing distance available: 9301

2.13.1 Designation: 18L
2.13.2 Takeoff run available: 13400
2.13.3 Takeoff 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 Takeoff run available: 13400
2.13.3 Takeoff 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 Takeoff run available: 13400
2.13.3 Takeoff 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 Takeoff run available: 13400
2.13.3 Takeoff distance available: 13400
2.13.4 Accelerate−stop distance available: 13400
2.13.5 Landing distance available: 13400

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 35R
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500
2.13.5 Landing distance available: 8500

2.13.1 Designation: 17R
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate−stop distance available: 13401
2.13.5 Landing distance available: 13401

2.13.1 Designation: 35L
2.13.2 Takeoff run available: 13401
2.13.3 Takeoff distance available: 13401
2.13.4 Accelerate−stop distance available: 13401
2.13.5 Landing distance available: 13401

AD 2.14 Approach and runway lighting

2.14.1 Designation: 17C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: PAPI Unusable Beyond 7 Degrees Right Of Centerline .

2.14.1 Designation: 13L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 31R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 13R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 31L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 18L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 36R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 18R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 36L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 17L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 35R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 17R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 35L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: CLASS B NW
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.65 MHz

2.18.1 Service designation: GND/P IC
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.85 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 124.15 MHz

2.18.1 Service designation: CLASS B NE
2.18.3 Service designation: 124.3 MHz

2.18.1 Service designation: CLASS B SE
2.18.3 Service designation: 125.2 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 126.55 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 127.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128.25 MHz

2.18.1 Service designation: LCL/P IC
2.18.3 Service designation: 134.9 MHz

2.18.1 Service designation: CLASS B SW
2.18.3 Service designation: 135.975 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: CLASS B NW
2.18.3 Service designation: 306.95 MHz

2.18.1 Service designation: CLASS B SE
2.18.3 Service designation: 343.65 MHz

2.18.1 Service designation: CLASS B SW
2.18.3 Service designation: 379.9 MHz

2.18.1 Service designation: CLASS B NE
2.18.3 Service designation: 282.275 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 123.775 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 135.925 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−52−33.15N / 97−01−34.28W
2.19.6 Site elevation: 562.7 ft

2.19.1 ILS type: DME for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−52−34.13N / 97−01−39.65W
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 / 97−01−28.77W
2.19.6 Site elevation: 555.8 ft

2.19.1 ILS type: Middle Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−55−00.00N / 97−01−33.35W
2.19.6 Site elevation: 561 ft

2.19.1 ILS type: Inner Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−55−00.00N / 97−01−33.46W
2.19.6 Site elevation: 562 ft

2.19.1 ILS type: Outer Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS identification: FLQ
2.19.5 Coordinates: 32−59−44.75N / 97−01−46.52W
2.19.6 Site elevation: 525 ft

2.19.1 ILS type: Glide Slope for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−54.33N / 97−01−29.47W
2.19.6 Site elevation: 556.9 ft

2.19.1 ILS type: Middle Marker for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−16.34N / 97−01−34.37W
2.19.6 Site elevation: 559 ft

2.19.1 ILS type: Inner Marker for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−35.30N / 97−01−34.26W
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: 32−55−00.00N / 97−01−33.45W
2.19.6 Site elevation: 558 ft

2.19.1 ILS type: DME for runway 35C. Magnetic variation: 4E
2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32−52−34.13N / 97−01−39.65W
2.19.6 Site elevation: 575.1 ft

2.19.1 ILS type: Outer Marker for runway 35C. Magnetic variation: 4E

2.19.2 ILS identification: PKQ
2.19.5 Coordinates: 32–48–00.00N / 97–01–38.86W
2.19.6 Site elevation: 480 ft

2.19.1 ILS type: Glide Slope for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32–53–51.74N / 97–00–00.00W
2.19.6 Site elevation: 513 ft

2.19.1 ILS type: Outer Marker for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32–49–51.37N / 96–55–27.13W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32–54–52.67N / 97–01–26.10W
2.19.6 Site elevation: 552 ft

2.19.1 ILS type: DME for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32–54–50.71N / 97–01–27.86W
2.19.6 Site elevation: 548 ft

2.19.1 ILS type: Middle Marker for runway 31R. Magnetic variation: 4E
2.19.2 ILS identification: RRA
2.19.5 Coordinates: 32–53–20.76N / 96–59–38.13W
2.19.6 Site elevation:

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 / 97–03–40.07W
2.19.6 Site elevation: 576.7 ft

2.19.1 ILS type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32–54–24.13N / 97–04–54.08W
2.19.6 Site elevation: 587.5 ft

2.19.1 ILS type: Middle Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32–54–55.16N / 97–05–20.58W
2.19.6 Site elevation: 610 ft

2.19.1 ILS type: Outer Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32–58–20.35N / 97–08–45.76W
2.19.6 Site elevation: 605 ft

2.19.1 ILS type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: LWN
2.19.5 Coordinates: 32–53–16.07N / 97–03–42.77W
2.19.6 Site elevation: 589.5 ft

2.19.1 ILS type: Outer Marker for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32–59–42.30N / 97–02–58.02W
2.19.6 Site elevation: 571 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 / 97–03–00.00W
2.19.6 Site elevation: 570 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 / 97–03–00.00W
2.19.6 Site elevation: 594 ft

2.19.1 ILS type: Middle Marker for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32–55–00.00N / 97–03–00.00W
2.19.6 Site elevation: 600 ft

2.19.1 ILS type: DME for runway 18L. Magnetic variation: 4E
2.19.2 ILS identification: CIX
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 594 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 595 ft

2.19.1 ILS type: Outer Marker for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−47−34.94N / 97−03−00.00W
2.19.6 Site elevation: 523 ft

2.19.1 ILS type: Middle Marker for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−52−17.10N / 97−03−00.00W
2.19.6 Site elevation: 560 ft

2.19.1 ILS type: Glide Slope for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−52−54.85N / 97−03−00.00W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 4E
2.19.2 ILS identification: FJN
2.19.5 Coordinates: 32−55−00.00N / 97−03−00.00W
2.19.6 Site elevation: 594 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 / 97−03−21.57W
2.19.6 Site elevation: 599.6 ft

2.19.1 ILS type: Middle Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−55−00.00N / 97−03−16.70W
2.19.6 Site elevation: 600 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−52−33.93N / 97−03−17.46W
2.19.6 Site elevation: 580 ft

2.19.1 ILS type: DME for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−52−34.09N / 97−03−12.60W
2.19.6 Site elevation: 584 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−55−00.00N / 97−03−16.69W
2.19.6 Site elevation: 604 ft

2.19.1 ILS type: Outer Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS identification: VYN
2.19.5 Coordinates: 32−59−42.30N / 97−02−58.02W
2.19.6 Site elevation: 571 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−52−34.09N / 97−03−12.60W
2.19.6 Site elevation: 584 ft

2.19.1 ILS type: Outer Marker for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−47−34.94N / 97−03−00.00W
2.19.6 Site elevation: 523 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32−55−00.00N / 97−03−16.69W

2.19.6 Site elevation: 601.3 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32–52–54.41N / 97–03–22.04W
2.19.6 Site elevation: 579.8 ft

2.19.1 ILS type: Middle Marker for runway 36L. Magnetic variation: 4E
2.19.2 ILS identification: BXN
2.19.5 Coordinates: 32–52–15.86N / 97–03–17.54W
2.19.6 Site elevation: 542 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 / 97–00–40.18W
2.19.6 Site elevation: 577.3 ft

2.19.1 ILS type: Outer Marker for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32–58–00.00N / 97–00–26.70W
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: 32–52–19.44N / 97–00–35.73W
2.19.6 Site elevation: 583.9 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 / 97–00–31.14W
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: 32–54–00.00N / 97–00–35.26W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 17L. Magnetic variation: 4E
2.19.2 ILS identification: PPZ
2.19.5 Coordinates: 32–54–24.15N / 97–00–35.04W
2.19.6 Site elevation: 0 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 / 97–00–40.18W
2.19.6 Site elevation: 577 ft

2.19.1 ILS type: Outer Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32–48–20.28N / 97–00–26.58W
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: 32–54–00.00N / 97–00–35.15W
2.19.6 Site elevation: 519 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 / 97–00–30.90W
2.19.6 Site elevation: 559 ft

2.19.1 ILS type: Inner Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32–52–22.61N / 97–00–35.71W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 35R. Magnetic variation: 4E
2.19.2 ILS identification: AJQ
2.19.5 Coordinates: 32–52–00.00N / 97–00–35.82W
2.19.6 Site elevation:

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 / 97−01−43.06W
2.19.6 Site elevation: 561.3 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−55−26.68N / 97−01−47.42W
2.19.6 Site elevation: 561 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 / 97−01−48.35W
2.19.6 Site elevation: 558.1 ft

2.19.1 ILS type: Outer Marker for runway 17R. Magnetic variation: 4E
2.19.2 ILS identification: JHZ
2.19.5 Coordinates: 32−59−44.75N / 97−01−46.52W
2.19.6 Site elevation: 525 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 / 97−01−53.66W
2.19.6 Site elevation: 550 ft

2.19.1 ILS type: Localizer for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−55−00.00N / 97−01−47.52W
2.19.6 Site elevation: 567 ft

2.19.1 ILS type: Glide Slope for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−52−54.98N / 97−01−43.53W
2.19.6 Site elevation: 559 ft

2.19.1 ILS type: Outer Marker for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−48−00.00N / 97−01−38.86W
2.19.6 Site elevation: 499 ft

2.19.1 ILS type: Middle Marker for runway 35L. Magnetic variation: 4E
2.19.2 ILS identification: UWX
2.19.5 Coordinates: 32−52−17.25N / 97−01−48.43W
2.19.6 Site elevation: 554 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 / 97−01−53.66W
2.19.6 Site elevation: 550 ft

General Remarks:
BIRDS ON & IN THE VICINITY OF AIRPORT.

PRIOR PERMISSION REQUIRED FROM 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.

PRIOR PERMISSION REQUIRED FROM AIRPORT OPERATIONS FOR GENERAL AVIATION AIRCRAFT TO PROCEED TO AIRLINE TERMINAL GATE EXCEPT GENERAL AVIATION FACILITY.

STANDARD SAWED GROOVING 160 FT WIDE FULL LENGTH RUNWAYS 13L/31R; 18L/36R & 17R/35L. STANDARD GROOVING 130 FT WIDE FULL LENGTH RUNWAYS 17L/35R; 18R/36L; 13R/31L & 17C/35C.

AIRPORT UNDER CONSTRUCTION; PERSONNEL AND EQUIPMENT WORKING IN MOVEMENT AREAS.

TAKE-OFF DISTANCE FOR RUNWAY 17R FROM TAXIWAY EMERGENCY GEAR IS 13082 FT & FROM TAXIWAY EH IS 12816 FT.

LAND & HOLD SHORT SIGNS ON RUNWAY 17C AT TAXIWAY ’B’ 10,460 FT S OF RUNWAY 17C THRESHOLD;

RUNWAY 18R AT TAXIWAY ’B’ 10,100 FT S OF RUNWAY 18R THRESHOLD; RUNWAY 35C AT TAXIWAY ’EJ’ 9050 FT N OF RUNWAY 35C THRESHOLD; RUNWAY 36L AT TAXIWAY ’Z’ 10,650 FT N OF RUNWAY 36L THRESHOLD; LIGHTED & MARKED WITH IN–PAVEMENT PULSATING WHITE LIGHTS.

TAKE-OFF DISTANCE FOR RUNWAY 36R FROM TAXIWAY WAYPOINT IS 12,815 FT; FROM TAXIWAY WQ IS 13,082 FT.

TAKE-OFF DISTANCE FOR RUNWAY 17L FROM TAXIWAY Q2 IS 8196 FT.

TAXIWAYS MAY REQUIRE JUDGMENTAL OVERSTEERING FOR LARGE AIRCRAFT.

TAKE-OFF DISTANCE FOR RUNWAY 35R FROM TAXIWAY Q9 IS 8196 FT.

TAKE-OFF DISTANCE FOR RUNWAY 35L FROM TAXIWAY EQ IS 13084 FT & FROM TAXIWAY EN ROUTE PENETRATION IS 12811 FT.

APRON ENTRANCE/EXIT POINTS 22, 24, 105, & 107 CLOSED TO AIRCRAFT WITH WINGSPAN 125 FT AND GREATER.

TAXIWAY EDGE REFLECTORS ALONG ALL TAXIWAYS.

TERMINAL B APRON TAXILANE BETWEEN APRON ENTRANCE/EXIT POINT TAXILANES 107 & 115 CLOSED TO AIRCRAFT WITH WINGSPAN 118 FT AND GREATER.

TAKE-OFF DISTANCE FOR RUNWAY 18L FROM TAXIWAY WG IS 13,082; FROM TAXIWAY WH IS 12,815.

PRIOR PERMISSION REQUIRED GA OPERATIONS 0000–0500; CALL AIRPORT OPERATIONS 972–973–3112.

TAXIWAY G11 EAST OF TAXIWAY G CLOSED TO AIRCRAFT WITH WINGSPAN 125 FT & GREATER.

APRON ENTRANCE/EXIT POINT 124 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 213 FT.

TAXIWAY A5 CLOSED TO AIRCRAFT WITH WINGSPAN 171 FT AND GREATER.

TAKE-OFF DISTANCE FOR RUNWAY 17C FROM TAXIWAY EMERGENCY GEAR IS 13,082 FT.

TAKE-OFF DISTANCE FOR RUNWAY 18R FROM TAXIWAY WG IS 13,082 FT.

APRON ENTRANCE/EXIT POINTS 32, 33, 34, 35, 36, 37, 38, & 53 CLOSED TO AIRCRAFT 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.

PRIOR PERMISSION REQUIRED AIRCRAFT WITH WINGSPAN 215 FT OR GREATER (GROUP VI) CALL AIRPORT OPERATIONS 972–973–3112 FOR FOLLOW–ME SERVICES WHILE TAXIING TO & FROM RAMP & RUNWAYS.

RUNWAY VISUAL SCREEN 20 FT AGL 1180 FT S APPROACH END RUNWAY 35C.

RUNWAY VISUAL SCREEN 22 FT AGL 1179 FT S APPROACH END RUNWAY 35L.

AIRCRAFT USING TERMINAL E GATES MUST OBTAIN APPROVAL FROM DFW RAMP 131.0 PRIOR TO ENTERING RAMP AND PRIOR TO PUSHBACK 0430 LOCAL –0130 LOCAL DURING TIME CHANGE ONLY.

APRON ENTRANCE/EXIT POINT 124 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 213 FT.

B747–8 AND A380 OPERATIONS ONLY AUTHORIZED ON RUNWAYS 18R/36L AND 18L/36R, CONTACT AIRPORT OPERATIONS FOR ADDNL INFORMATION.

AIRCRAFT AT EAST AIR FREIGHT MUST CONTACT DFW TOWER AT 127.5 PRIOR TO TAXI OUT.

APRON ENTRANCE/EXIT POINTS 5, 7, 9, 42, 44, 49, 51, 52, AND 122 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118'.

APRON ENTRANCE/EXIT POINTS 1 AND 2 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 89' EXCEPT PRIOR PERMISSION REQUIRED.

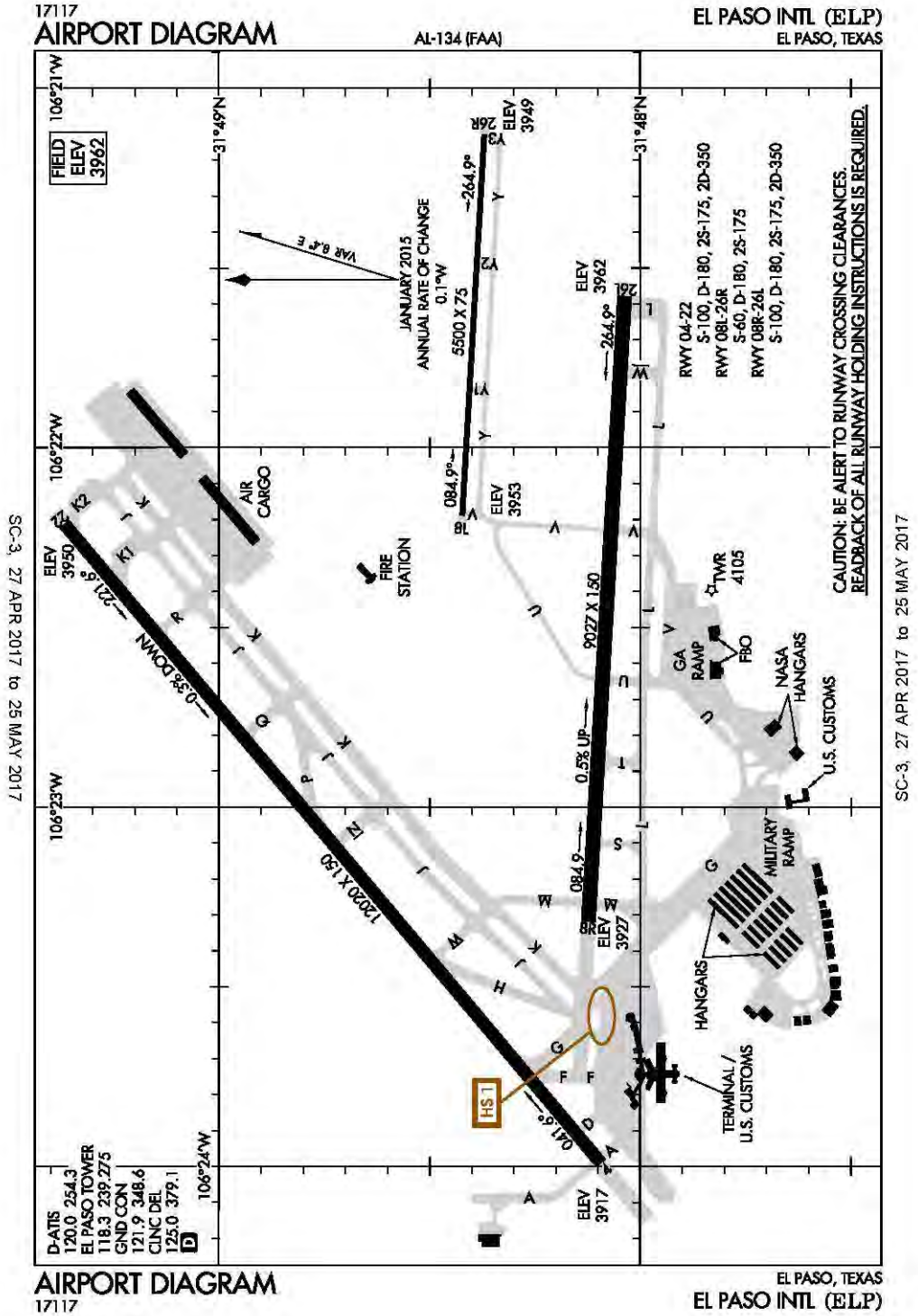
APRON ENTRANCE/EXIT POINTS 3 AND 4 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118' EXCEPT PRIOR PERMISSION REQUIRED.

APRON ENTRANCE/EXIT POINTS 31 AND 39 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 167'.

APRON ENTRANCE/EXIT POINT 48 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 195'. UNLESS OTHERWISE SPECIFIED, ALL APRON ENTRANCE/EXIT POINTS CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 214' EXCEPT PRIOR PERMISSION REQUIRED.

RUNWAY STATUS LIGHTS ARE IN AN OPR TEST ON RUNWAY 17R/35L, RUNWAY 17C/35C, RUNWAY 18L/36R AND MUST BE COMPLIED WITH. RUNWAY STATUS LIGHT ARRAYS MAY BE OFFLINE INTERMITTENTLY THROUGHOUT THE TEST PHASE. RUNWAY STATUS LIGHTS ARE RED IN–PAVEMENT LIGHTS THAT SERVE AS WARNING LIGHTS ON RUNWAYS AND TAXIWAYS INDICATING THAT IT IS UNSAFE TO ENTER, CROSS, OR BEGIN TAKE-OFF ON A RUNWAY. NOTE: RUNWAY STATUS LIGHTS INDICATE RUNWAY STATUS ONLY. THEY DO NOT INDICATE CLEARANCE. PILOTS AND VEHICLE OPRS MUST STILL RECEIVE A CLEARANCE FROM AIR TRAFFIC CONTROL BEFORE PROCEEDING. FOR ADDITIONAL INFORMATION VISIT: HTTP://WWW.FAA.GOV/AIRTRAFFIC/TECHNOLOGY/RWSL.

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: 31−48−26.40N / 106−22−34.90W
2.2.2 From City: 4 Miles NE Of El Paso, TX
2.2.3 Elevation: 3961.7 ft
2.2.5 Magnetic variation: 8E (2015)
2.2.6 Airport Contact: Monica Lombrana
6701 CONVAIR RD
El Paso, TX 79925
(915−780−4749)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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+,B+
2.4.4 De−icing facilities: None
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
2.12.5 Coordinates: 31−48−00.00N / 106−23−59.46W
2.12.6 Threshold elevation: 3917 ft
2.12.6 Touchdown zone elevation: 3923 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 230
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.5 Coordinates: 31−49−22.01N / 106−22−12.78W
2.12.6 Threshold elevation: 3950 ft
2.12.6 Touchdown zone elevation: 3950 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 93
2.12.3 Dimensions: 9027 ft x 150 ft
2.12.5 Coordinates: 31−48−00.00N / 106−23−19.15W
2.12.6 Threshold elevation: 3927 ft
2.12.6 Touchdown zone elevation: 3940 ft
2.12.7 Slope: 0.3UP

2.12.1 Designation: 26L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 9027 ft x 150 ft
2.12.5 Coordinates: 31−48−00.00N / 106−21−34.74W
2.12.6 Threshold elevation: 3962 ft
2.12.6 Touchdown zone elevation: 3962 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 93
2.12.3 Dimensions: 5500 ft x 75 ft
2.12.5 Coordinates: 31−48−25.33N / 106−22−11.37W
2.12.6 Threshold elevation: 3952 ft
2.12.6 Touchdown zone elevation: 3952 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 273
2.12.3 Dimensions: 5500 ft x 75 ft
2.12.5 Coordinates: 31−48−22.18N / 106−21−00.00W
2.12.6 Threshold elevation: 3949 ft
2.12.6 Touchdown zone elevation: 3949 ft

AD 2.13 Declared distances

2.13.1 Designation: 04
2.13.2 Takeoff run available: 12020
2.13.3 Takeoff 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 Takeoff run available: 12020
2.13.3 Takeoff distance available: 12020
2.13.4 Accelerate−stop distance available: 12449
2.13.5 Landing distance available: 12020

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 9025

2.13.3 Takeoff 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 Takeoff run available: 9025
2.13.3 Takeoff distance available: 9025
2.13.4 Accelerate–stop distance available: 9025
2.13.5 Landing distance available: 9025

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 5493
2.13.3 Takeoff distance available: 5493
2.13.4 Accelerate–stop distance available: 5493
2.13.5 Landing distance available: 5493

2.13.1 Designation: 26R
2.13.2 Takeoff run available: 5493
2.13.3 Takeoff distance available: 5493
2.13.4 Accelerate–stop distance available: 5493
2.13.5 Landing distance available: 5493

AD 2.14 Approach and runway lighting

2.14.1 Designation: 04
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 22
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 120 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: UTILITY
2.18.3 Service designation: 121.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CD/P PTC
2.18.3 Service designation: 125 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 254.3 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 263 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 353.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 379.1 MHz

2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: DEP/P CLASS C
2.18.3 Service designation: 119.15 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 124.25 MHz

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 298.85 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.275 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 04. Magnetic variation: 8E
2.19.2 ILS identification: ETF
2.19.5 Coordinates: 31−49−28.44N / 106−22−00.00W
2.19.6 Site elevation: 3950.5 ft

2.19.1 ILS type: DME for runway 04. Magnetic variation: 8E
2.19.2 ILS identification: ETF
2.19.5 Coordinates: 31−47−58.72N / 106−24−13.52W
2.19.6 Site elevation: 3926.8 ft

2.19.1 ILS type: Localizer for runway 22. Magnetic variation: 8E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−47−55.92N / 106−24−12.90W
2.19.6 Site elevation: 3910.9 ft

2.19.1 ILS type: DME for runway 22. Magnetic variation: 8E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−47−58.72N / 106−24−13.52W
2.19.6 Site elevation: 3926.8 ft

2.19.1 ILS type: Glide Slope for runway 22. Magnetic variation: 8E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−49−17.28N / 106−22−26.59W
2.19.6 Site elevation: 3940.3 ft

2.19.1 ILS type: Middle Marker for runway 22. Magnetic variation: 8E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−49−33.88N / 106−21−56.93W
2.19.6 Site elevation: 3947 ft

2.19.1 ILS type: Outer Marker for runway 22. Magnetic variation: 8E
2.19.2 ILS identification: ELP
2.19.5 Coordinates: 31−51−37.03N / 106−19−00.00W
2.19.6 Site elevation: 3993.1 ft

General Remarks:

24 HR PRIOR PERMISSION REQUIRED CLASS A EXPLOSIVES CONTACT 915−780−4749.

CAUTION: BIGGS AAF 2NM NW RUNWAY 21 CAN BE MISTAKEN FOR ELP RUNWAY 22.

NORTH BOUND TRAFFIC PROHIBITED ON TAXIWAY F SOUTH OF APPROACH END RUNWAY 08R.

TAXIWAY A FROM 700 FT NORTH OF RUNWAY 04 TO THE SOUTH; TAXIWAY J NE OF TAXIWAY K1; TAXIWAY K NE OF TAXIWAY K1 BETWEEN TAXIWAY J & NORTH CARGO RAMP; TAXIWAYS U & V SOUTH OF TAXIWAY L; & TAXIWAY K2 NOT VISIBLE FROM ATCT.

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.

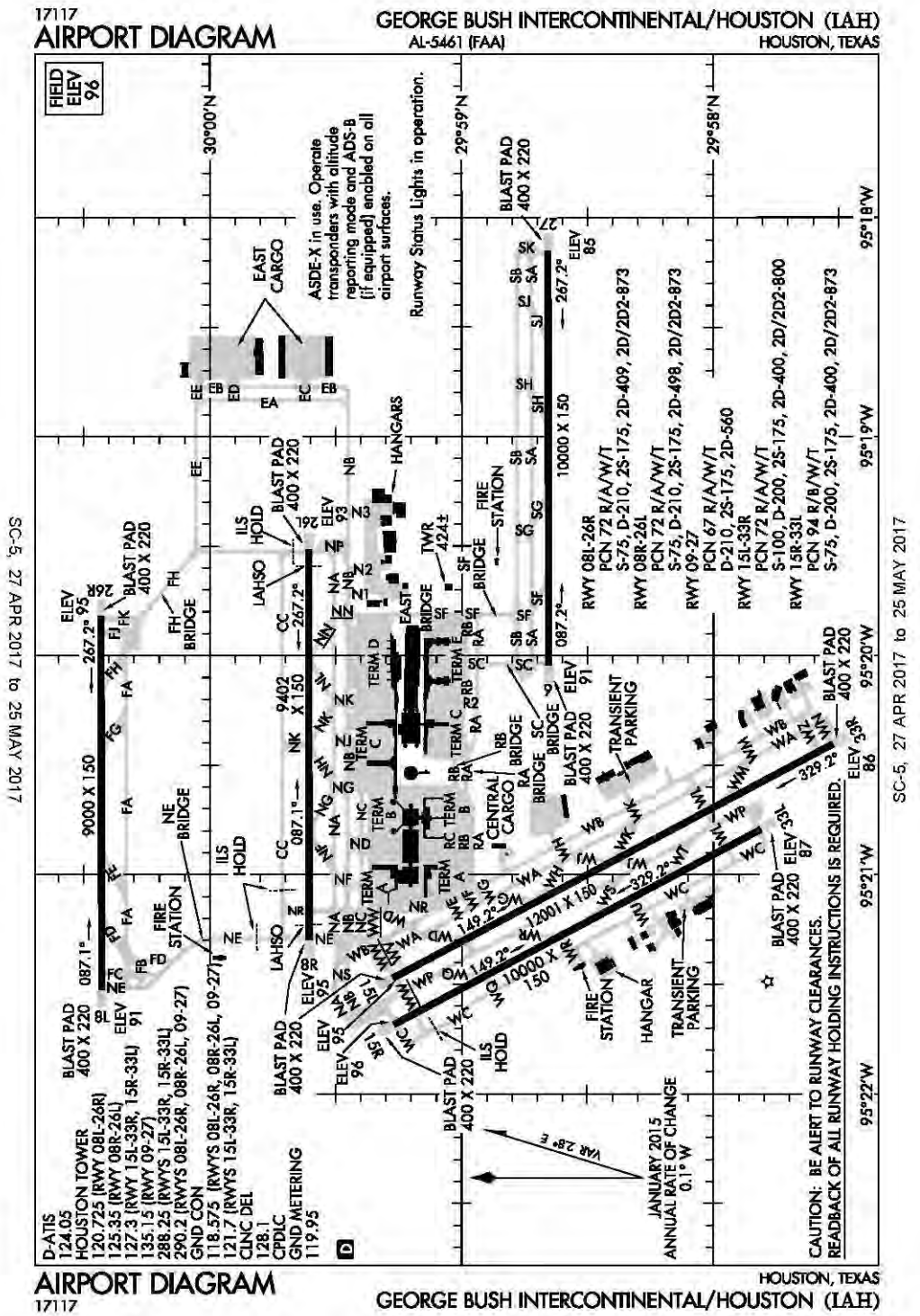
NOISE ABATEMENT PROCEDURES IN EFFECT, CONTACT ATCT FOR DETAILS.

ENGINE POWER IS RESTRICTED 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 OTHER REQUIREMENT NEEDING LONGER OR HIGHER POWER CONTACT TOWER

FOR DIRECTIONS TO DESIGNATED RUNUP AREAS.

COMPASS ROSE CLOSED INDEFINITELY.

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: 29–59–00.00N / 95–20–29.20W
2.2.2 From City: 15 Miles N Of Houston, TX
2.2.3 Elevation: 96.4 ft
2.2.5 Magnetic variation: 3E (2015)
2.2.6 Airport Contact: Theodore Kitchens
PO BOX 60106
Houston, TX 77205
(281–230–3100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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: 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: 29–59–16.40N / 95–21–28.33W
2.12.6 Threshold elevation: 95 ft
2.12.6 Touchdown zone elevation: 95 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: 29–57–31.55N / 95–20–24.19W
2.12.6 Threshold elevation: 86 ft
2.12.6 Touchdown zone elevation: 88 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: 29–59–16.11N / 95–21–41.04W
2.12.6 Threshold elevation: 96 ft
2.12.6 Touchdown zone elevation: 96 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: 29–57–48.75N / 95–20–47.58W
2.12.6 Threshold elevation: 87 ft
2.12.6 Touchdown zone elevation: 90 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: 29–59–36.30N / 95–21–17.87W
2.12.6 Threshold elevation: 95 ft
2.12.6 Touchdown zone elevation: 96 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: 29–59–36.38N / 95–19–30.96W
2.12.6 Threshold elevation: 93 ft
2.12.6 Touchdown zone elevation: 95 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: 29–58–39.34N / 95–20–00.00W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 91 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: 29–58–39.41N / 95–18–00.00W
2.12.6 Threshold elevation: 85 ft
2.12.6 Touchdown zone elevation: 87 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: 72 R/A/W/T
2.12.5 Coordinates: 30–00–25.78N / 95–21–31.65W
2.12.6 Threshold elevation: 91 ft
2.12.6 Touchdown zone elevation: 95 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: 30−00−25.86N / 95−19−49.29W
2.12.6 Threshold elevation: 95 ft
2.12.6 Touchdown zone elevation: 96 ft

AD 2.13 Declared distances

2.13.1 Designation: 15L
2.13.2 Takeoff run available: 12001
2.13.3 Takeoff distance available: 12001
2.13.4 Accelerate−stop distance available: 12001
2.13.5 Landing distance available: 12001

2.13.1 Designation: 33R
2.13.2 Takeoff run available: 12001
2.13.3 Takeoff distance available: 12001
2.13.4 Accelerate−stop distance available: 12001
2.13.5 Landing distance available: 12001

2.13.1 Designation: 15R
2.13.2 Takeoff run available: 9999
2.13.3 Takeoff distance available: 9999
2.13.4 Accelerate−stop distance available: 9999
2.13.5 Landing distance available: 9999

2.13.1 Designation: 33L
2.13.2 Takeoff run available: 9999
2.13.3 Takeoff distance available: 9999
2.13.4 Accelerate−stop distance available: 9999
2.13.5 Landing distance available: 9999

2.13.1 Designation: 08R
2.13.2 Takeoff run available: 9402
2.13.3 Takeoff 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 Takeoff run available: 9402
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff 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 Takeoff run available: 10000
2.13.3 Takeoff distance available: 10000
2.13.4 Accelerate−stop distance available: 10000
2.13.5 Landing distance available: 10000

2.13.1 Designation: 08L
2.13.2 Takeoff run available: 9000
2.13.3 Takeoff 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 Takeoff run available: 9000
2.13.3 Takeoff 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: 15L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 33R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 15R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 33L
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 08R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 26L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light

PAPI on right

2.14.1 Designation: 09
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 27
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 08L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

2.14.1 Designation: 26R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.725 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 135.15 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 290.2 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 127.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 288.25 MHz

2.18.1 Service designation: GND METERING
2.18.3 Service designation: 119.95 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 124.05 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 118.575 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Localizer for runway 33R. Magnetic variation: 3E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29–59–31.62N / 95–21–37.64W
2.19.6 Site elevation: 92.5 ft

2.19.1 ILS type: Outer Marker for runway 33R. Magnetic variation: 3E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29–53–33.65N / 95–17–56.01W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 33R. Magnetic variation: 3E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29–57–00.00N / 95–20–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 33R. Magnetic variation: 3E
2.19.2 ILS identification: CDG
2.19.5 Coordinates: 29–57–38.81N / 95–20–33.46W
2.19.6 Site elevation: 80.7 ft

2.19.1 ILS type: Glide Slope for runway 15R. Magnetic variation: 3E
2.19.2 ILS identification: LKM
2.19.5 Coordinates: 29–59–00.00N / 95–21–39.03W
2.19.6 Site elevation: 90.5 ft

2.19.1 ILS type: Localizer for runway 15R. Magnetic variation: 3E
2.19.2 ILS identification: LKM
2.19.5 Coordinates: 29–57–39.37N / 95–20–41.85W
2.19.6 Site elevation: 83.4 ft

2.19.1 ILS type: DME for runway 08R. Magnetic varia-

tion: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−38.92N / 95−21−31.31W
2.19.6 Site elevation: 92.9 ft

2.19.1 ILS type: Outer Marker for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.55N / 95−28−20.43W
2.19.6 Site elevation: 117 ft

2.19.1 ILS type: Middle Marker for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.24N / 95−21−51.93W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: Localizer for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.39N / 95−19−19.57W
2.19.6 Site elevation: 90.2 ft

2.19.1 ILS type: Glide Slope for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−40.32N / 95−21−00.00W
2.19.6 Site elevation: 89.4 ft

2.19.1 ILS type: Inner Marker for runway 08R. Magnetic variation: 3E
2.19.2 ILS identification: IAH
2.19.5 Coordinates: 29−59−36.29N / 95−21−29.37W
2.19.6 Site elevation: 94 ft

2.19.1 ILS type: Localizer for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.28N / 95−21−31.28W
2.19.6 Site elevation: 92.9 ft

2.19.1 ILS type: DME for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−38.92N / 95−21−31.31W
2.19.6 Site elevation: 92.9 ft

2.19.1 ILS type: Outer Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.04N / 95−12−54.15W
2.19.6 Site elevation: 75 ft

2.19.1 ILS type: Middle Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.42N / 95−18−57.72W
2.19.6 Site elevation: 91 ft

2.19.1 ILS type: Glide Slope for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−39.54N / 95−19−42.81W
2.19.6 Site elevation: 87.4 ft

2.19.1 ILS type: Inner Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS identification: JYV
2.19.5 Coordinates: 29−59−36.38N / 95−19−20.60W
2.19.6 Site elevation: 89.8 ft

2.19.1 ILS type: Localizer for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−39.41N / 95−17−57.58W
2.19.6 Site elevation: 81.6 ft

2.19.1 ILS type: DME for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−35.38N / 95−20−13.58W
2.19.6 Site elevation: 88.2 ft

2.19.1 ILS type: Outer Marker for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−44.10N / 95−26−00.00W
2.19.6 Site elevation: 105 ft

2.19.1 ILS type: Middle Marker for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−39.36N / 95−20−32.49W
2.19.6 Site elevation: 92 ft

2.19.1 ILS type: Glide Slope for runway 09. Magnetic variation: 3E
2.19.2 ILS identification: UYO
2.19.5 Coordinates: 29−58−35.39N / 95−19−50.68W
2.19.6 Site elevation: 86 ft

2.19.1 ILS type: Localizer for runway 27. Magnetic vari-

ation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29–58–39.32N / 95–20–15.34W
2.19.6 Site elevation: 88.1 ft

2.19.1 ILS type: DME for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29–58–35.38N / 95–20–13.58W
2.19.6 Site elevation: 88.2 ft

2.19.1 ILS type: Outer Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29–58–41.04N / 95–13–20.44W
2.19.6 Site elevation: 80 ft

2.19.1 ILS type: Middle Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29–58–39.42N / 95–17–37.46W
2.19.6 Site elevation: 83 ft

2.19.1 ILS type: Glide Slope for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29–58–35.44N / 95–18–20.86W
2.19.6 Site elevation: 81 ft

2.19.1 ILS type: Inner Marker for runway 27. Magnetic variation: 3E
2.19.2 ILS identification: GHI
2.19.5 Coordinates: 29–58–39.41N / 95–17–59.17W
2.19.6 Site elevation: 81.7 ft

2.19.1 ILS type: DME for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30–00–29.73N / 95–19–36.90W
2.19.6 Site elevation: 90.8 ft

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30–00–29.75N / 95–21–18.69W
2.19.6 Site elevation: 86.6 ft

2.19.1 ILS type: Localizer for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30–00–25.87N / 95–19–36.97W
2.19.6 Site elevation: 95.1 ft

2.19.1 ILS type: Inner Marker for runway 08L. Magnetic variation: 3E
2.19.2 ILS identification: BZU
2.19.5 Coordinates: 30–00–25.77N / 95–21–40.86W
2.19.6 Site elevation: 91.6 ft

2.19.1 ILS type: DME for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30–00–21.91N / 95–21–44.04W
2.19.6 Site elevation: 88 ft

2.19.1 ILS type: Glide Slope for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30–00–29.81N / 95–20–00.00W
2.19.6 Site elevation: 90.3 ft

2.19.1 ILS type: Localizer for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30–00–25.77N / 95–21–43.96W
2.19.6 Site elevation: 91.4 ft

2.19.1 ILS type: Inner Marker for runway 26R. Magnetic variation: 3E
2.19.2 ILS identification: OND
2.19.5 Coordinates: 30–00–25.87N / 95–19–40.42W
2.19.6 Site elevation: 95.3 ft

General Remarks:
BIRDS ON & IN VICINITY OF AIRPORT.

TXLN 'RA', 'RB', 'RC', 'R2', AND TAXIWAY 'SC' NORTH OF TAXIWAY 'SB' ARE DESIGNATED NON–MOVEMENT AREAS OPERD BY UAL RAMP CONTROL.

APPROACH END RUNWAY 26L BRIGHT LIGHTS APPROXIMATELY ONE MILE FROM THRESHOLD & 900 FT S OF CENTERLINE.

9 FT AGL UNMARKED SECURITY FENCE ADJACENT TO FBO & CORPORATE BASE OPERATOR RAMPS AND NONMOVEMENT AREA TAXILANES.

TAXIWAY 'NR' CLOSED TO AIRCRAFT WITH WINGSPANS GREATER THAN 125 FT BETWEEN TAXIWAY 'WD' & TAXIWAY 'WB'.

TAXIWAY 'SF' BETWEEN TAXIWAY 'NB' AND TXLN 'RA' IS DESIGNATED NON–MOVEMENT AREA.

DUAL TAXIWAY OPERATIONS TAXIWAY NK BETWEEN TAXIWAY NB & NORTH RAMP; WEST CENTERLINE RESTRICTED TO AIRCRAFT MAX WINGSPANS 125 FT & EAST CENTERLINE MAX WINGSPANS 214 FT.

THE FOLLOWING MOVEMENT AREAS ARE NOT VISIBLE FROM THE ATCT: PORTIONS OF TAXIWAYS 'WA' & 'WB' FROM TAXIWAY 'WH' TO THE APPROACH END RUNWAY 33R; TAXIWAYS 'WA' & 'WB' FROM TAXIWAY 'WD' NORTH FOR 400 FT; TAXIWAY 'WD' FROM TAXIWAY 'WA' TO TAXIWAY 'NR'; TAXIWAY 'NR'; TAXIWAY 'WL' FROM RUNWAY 15L TO TAXIWAY 'WB' & TAXIWAY 'WM'.

NORTH RAMP NORTH & SOUTH TAXI LANES CLOSED TO AIRCRAFT WITH WINGSPANS GREATER THAN 125 FT.

RUNWAY 15L/33R MAGNETIC ANOMALIES MAY AFFECT COMPASS HEADING FOR TAKE-OFF.

TAXIWAYS AIRMET & WESTBOUND MAGNETIC ANOMALIES MAY AFFECT COMPASS HEADING.

NORTH RAMP TAXILANE BETWEEN TAXIWAYS NF & NR RESTRICTED TO AIRCRAFT WITH WINGSPAN 125 FT & BELOW.

TAXIWAY WC WEST OF RUNWAY 15R/33L RESTRICTED TO AIRCRAFT WITH 118 FT WINGSPAN AND BELOW.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NOISE SENSITIVE AREA NORTH, EAST AND WEST OF AIRPORT.

TXLN RC CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT.

RUNWAY STATUS LIGHTS ARE IN OPN.

TAXIWAY WJ CLOSED INDEFINITELY BETWEEN RUNWAY 15L/33R & TAXIWAY AIRMET; BARRICADED & LIGHTED.

TAXIWAY WEAK CLOSED INDEFINITELY BETWEEN RUNWAY 15L/33R &TWY WESTBOUND; BARRICADED & LIGHTED.

TAXIWAY WZ CLOSED INDEFINITELY BETWEEN RUNWAY 15L/33R & TAXIWAY WESTBOUND; BARRICADED & LIGHTED.

TAXIWAY WM CLOSED INDEFINITELY BETWEEN RUNWAY 15L/33R AND TAXIWAY WESTBOUND; BARRICADED & LIGHTED.

TAXIWAY WH CLOSED INDEFINITELY BETWEEN RUNWAY 15L/33R AND TAXIWAY WESTBOUND; BARRICADED AND LIGHTED.

TAXIWAY AIRMET CLOSED INDEFINITELY BETWEEN TAXIWAYS WILL & WN.

TAXIWAY AIRMET CLOSED INDEFINITELY BETWEEN TAXIWAYS WG & WILL.

TAXIWAY WG CLOSED INDEFINITELY BETWEEN RUNWAY 15L/33R AND TAXIWAY AIRMET.

TAXIWAY WILL LIGHTS BETWEEN RUNWAY 15L/33R AND TAXIWAY WESTBOUND OUT OF SERVICE INDEFINITELY.

TAXIWAY SEVERE WEATHER FORECAST RUN UP PAD FOR RUNWAY 15L CLOSED TO AIRCRAFT WITH WINGSPAN 135 FT & OVER.

RUNWAY 09/27 CLOSED TO AIRCRAFT WITH WINGSPAN 215 FT & ABOVE.

TAXIWAY STANDARD FORM BETWEEN RUNWAY 09/27 UP TO AND INCLUDING THE EAST BRIDGE CLOSED TO AIRCRAFT WITH WINGSPAN 215 FT & OVER.

TAXIWAY NR BETWEEN TAXIWAY NO CHANGE AND TAXIWAY SEVERE WEATHER FORECAST CLOSED TO AIRCRAFT WINGSPAN MORE THAN 214 FT.

TAXIWAY SEVERE WEATHER FORECAST BETWEEN TAXIWAY NR AND TAXIWAY WESTBOUND CLOSED TO AIRCRAFT WINGSPAN MORE THAN 214 FT.

TAXIWAY NR BETWEEN SEVERE WEATHER FORECAST AND TAXIWAY WESTBOUND DESIGNATED NON–MOVEMENT AREA.

TAXIWAY NK BETWEEN TAXIWAY NB AND TERMINAL D RAMP SIMULTANEOUS AIRCRAFT OPERATIONS PROHIBITED WHEN MIDDLE TAXILANE IN USE.

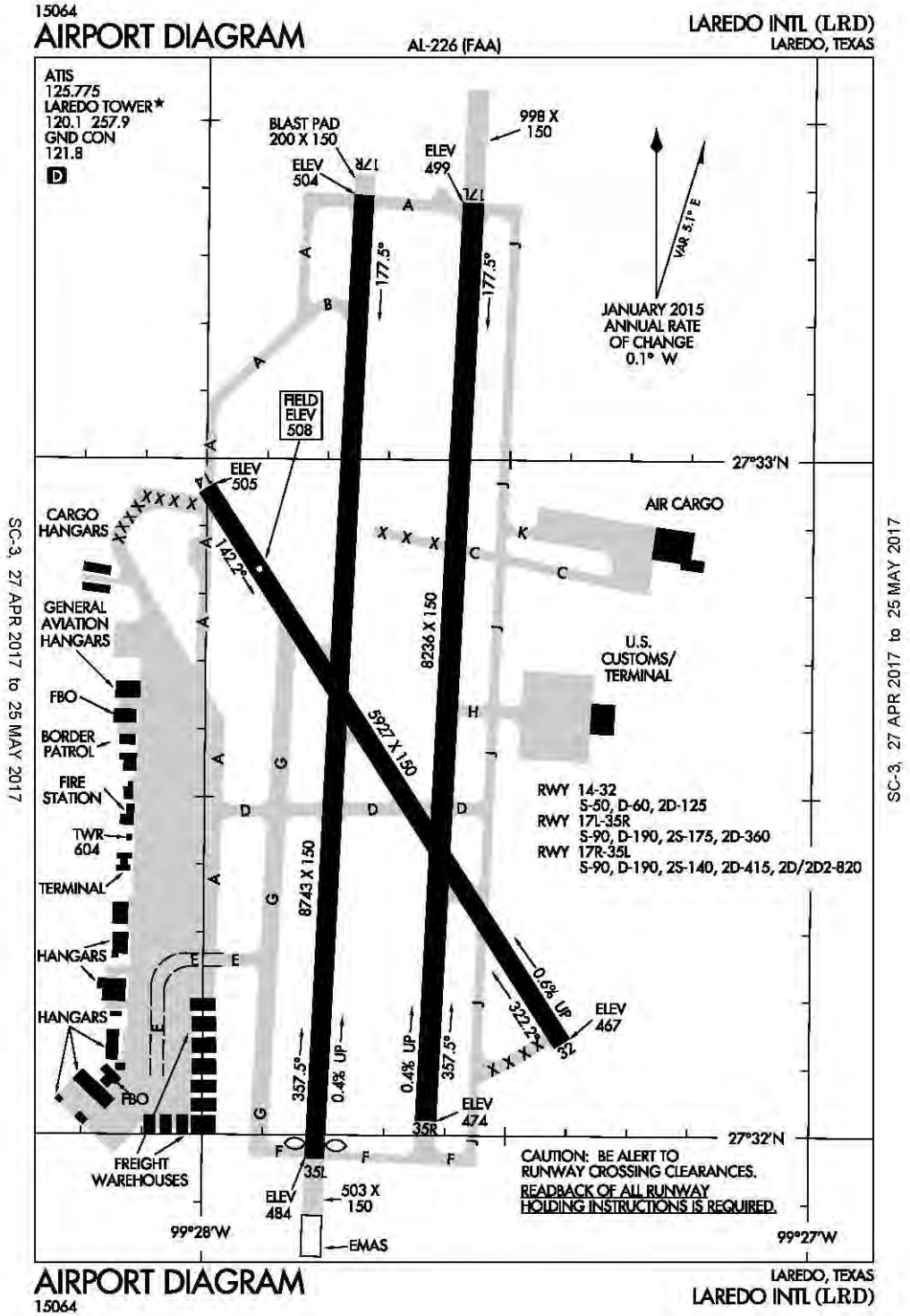
PILOTS/CREWS SHOULD BE AWARE OF DEP TURNS ON COURSE IN EXCESS OF 180 DGRS. PILOT READ–BACK OF DIRECTION OF TURNS IS HIGHLY ENCOURAGED.

APRON TAXILANE RA BETWEEN TAXIWAY STRATOCUMULUS AND TAXILANE R2 IRREGULAR SURFACE STEEL PLATE OVER CL LIGHT.

TAXIWAY STRATOCUMULUS BETWEEN TAXILANE RA AND TAXILANE RB STEEL PLATE OVER CL LIGHT FIXTURE.

HELICOPTER HOVER/TAXI RESTRICTED TO HARD SURFACE MOVEMENT AREAS ONLY.

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: 27–32–39.10N / 99–27–41.70W
2.2.2 From City: 3 Miles NE Of Laredo, TX
2.2.3 Elevation: 508 ft
2.2.5 Magnetic variation: 8E (1985)
2.2.6 Airport Contact: Mario I. Maldonado
5210 BOB BULLOCK LOOP
Laredo, TX 78041
(956–795–2000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 32
2.10.1.b Type of obstacle: Road (12 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 14
2.12.2 True Bearing: 147
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.5 Coordinates: 27–32–58.02N / 99–28–00.00W
2.12.6 Threshold elevation: 505 ft
2.12.6 Touchdown zone elevation: 508 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 327
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.5 Coordinates: 27–32–00.00N / 99–27–24.67W
2.12.6 Threshold elevation: 467 ft
2.12.6 Touchdown zone elevation: 494 ft
2.12.7 Slope: 0.6UP

2.12.1 Designation: 17R
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.5 Coordinates: 27–33–23.37N / 99–27–44.71W
2.12.6 Threshold elevation: 504 ft
2.12.6 Touchdown zone elevation: 504 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.5 Coordinates: 27–31–56.88N / 99–27–49.04W
2.12.6 Threshold elevation: 484 ft
2.12.6 Touchdown zone elevation: 497 ft
2.12.7 Slope: 0.4UP

2.12.1 Designation: 17L
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.5 Coordinates: 27–33–22.93N / 99–27–33.60W
2.12.6 Threshold elevation: 499 ft
2.12.6 Touchdown zone elevation: 499 ft
2.12.7 Slope: 0.2DOWN

2.12.1 Designation: 35R
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.5 Coordinates: 27–32–00.00N / 99–27–37.69W
2.12.6 Threshold elevation: 474 ft
2.12.6 Touchdown zone elevation: 487 ft
2.12.7 Slope: 0.4UP

AD 2.13 Declared distances

2.13.1 Designation: 14
2.13.2 Takeoff run available: 5927
2.13.3 Takeoff distance available: 5927
2.13.4 Accelerate–stop distance available: 5927
2.13.5 Landing distance available: 5927

2.13.1 Designation: 32
2.13.2 Takeoff run available: 5927
2.13.3 Takeoff distance available: 5927
2.13.4 Accelerate−stop distance available: 5927
2.13.5 Landing distance available: 5927

2.13.1 Designation: 17R
2.13.2 Takeoff run available: 8743
2.13.3 Takeoff distance available: 8743
2.13.4 Accelerate−stop distance available: 8743
2.13.5 Landing distance available: 8743

2.13.1 Designation: 35L
2.13.2 Takeoff run available: 8743
2.13.3 Takeoff distance available: 8743
2.13.4 Accelerate−stop distance available: 8743
2.13.5 Landing distance available: 8623

2.13.1 Designation: 17L
2.13.2 Takeoff run available: 8236
2.13.3 Takeoff distance available: 8236
2.13.4 Accelerate−stop distance available: 8236
2.13.5 Landing distance available: 8236

2.13.1 Designation: 35R
2.13.2 Takeoff run available: 8236
2.13.3 Takeoff distance available: 8236
2.13.4 Accelerate−stop distance available: 8236
2.13.5 Landing distance available: 8236

AD 2.14 Approach and runway lighting

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−box VASI on left

2.14.1 Designation: 17R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 35L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17L
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 125.775 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−33−12.50N / 99−27−40.70W
2.19.6 Site elevation: 497 ft

2.19.1 ILS type: Middle Marker for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−33−41.55N / 99−27−43.80W
2.19.6 Site elevation: 484 ft

2.19.1 ILS type: Localizer for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27−31−51.74N / 99−27−49.30W

2.19.6 Site elevation: 477 ft

2.19.1 ILS type: Outer Marker for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27–38–32.52N / 99–27–29.32W
2.19.6 Site elevation: 675 ft

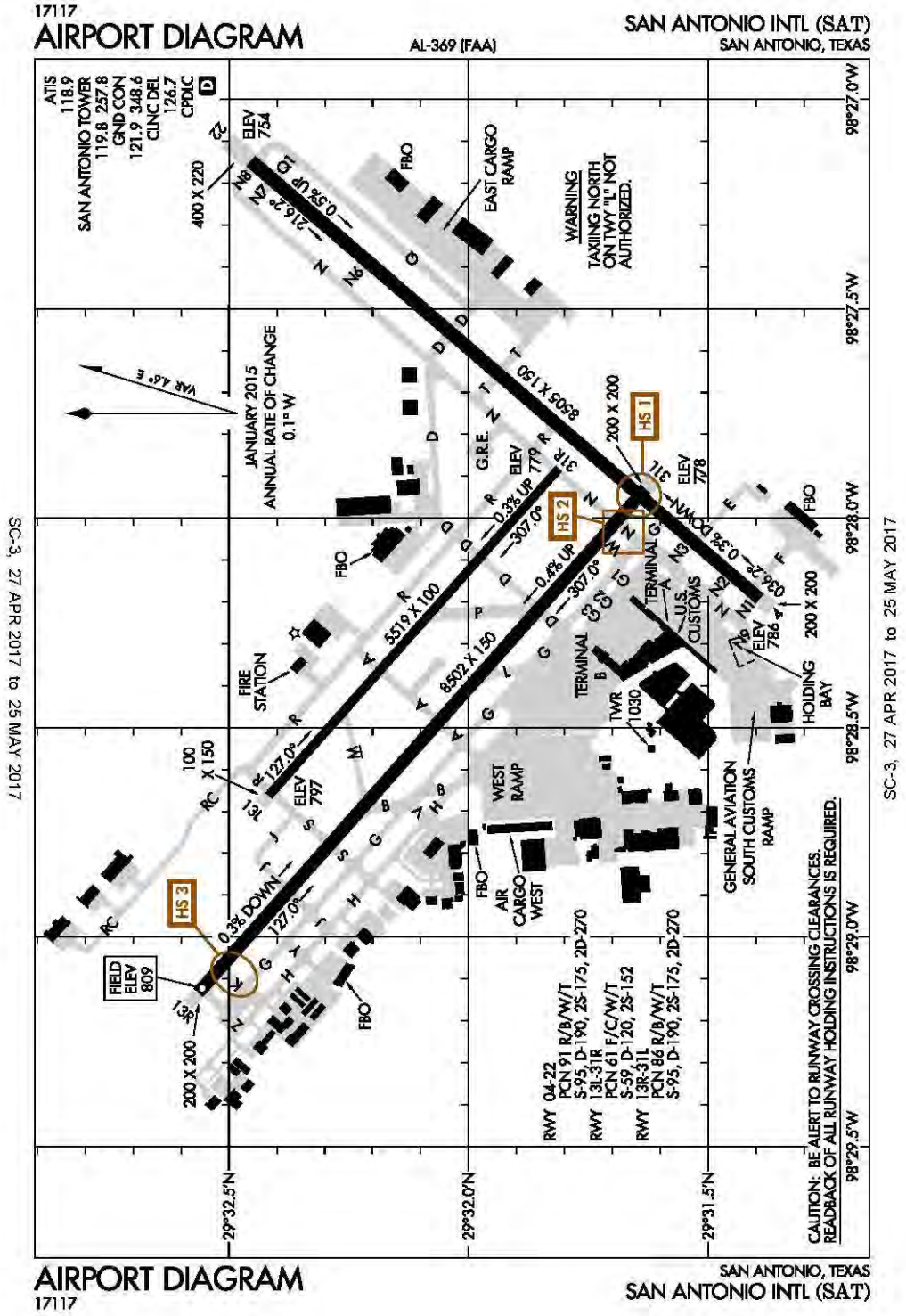
2.19.1 ILS type: DME for runway 17R. Magnetic variation: 8E
2.19.2 ILS identification: LRD
2.19.5 Coordinates: 27–31–50.88N / 99–27–46.67W
2.19.6 Site elevation: 477 ft

General Remarks:
RUNWAY 14/32 RESTRICTED TO AIRCRAFT LESS THAN 60,000 LBS DTW.

TAXIWAY C CLOSED BETWEEN RUNWAY 17L/35R & RUNWAY 17R INDEFINITELY.

FEDERAL INSPECTION STATION IS LOCATED ON THE WEST GENERAL AVIATION/CARGO APRON.
TAXIWAY LIMA CLOSED INDEFINITELY.

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: 29−32−00.00N / 98−28−00.00W
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 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De−icing facilities: None
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 31L
2.10.1.b Type of obstacle: Bldg (79 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 300 ft from Centerline

2.10.1.a. Runway designation: 04
2.10.1.b Type of obstacle: Pole (46 ft). Lighted
2.10.1.c Location of obstacle: 225 ft from Centerline

AD 2.12 Runway physical characteristics

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: 29−32−25.07N / 98−28−39.71W
2.12.6 Threshold elevation: 797 ft
2.12.6 Touchdown zone elevation: 797 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: 29−31−48.78N / 98−27−53.02W
2.12.6 Threshold elevation: 779 ft
2.12.6 Touchdown zone elevation: 788 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: 29−32−33.89N / 98−29−00.00W
2.12.6 Threshold elevation: 809 ft
2.12.6 Touchdown zone elevation: 809 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: 29−31−38.00N / 98−27−55.99W
2.12.6 Threshold elevation: 778 ft
2.12.6 Touchdown zone elevation: 790 ft

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: 29−31−23.64N / 98−28−11.66W
2.12.6 Threshold elevation: 786 ft
2.12.6 Touchdown zone elevation: 786 ft
2.12.7 Slope: 0.5UP

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: 29−32−27.39N / 98−27−00.00W
2.12.6 Threshold elevation: 754 ft
2.12.6 Touchdown zone elevation: 770 ft

2.12.7 Slope: 0.3DOWN

AD 2.13 Declared distances

2.13.1 Designation: 13L
2.13.2 Takeoff run available: 5519
2.13.3 Takeoff distance available: 5519
2.13.4 Accelerate−stop distance available: 5519
2.13.5 Landing distance available: 5519

2.13.1 Designation: 31R
2.13.2 Takeoff run available: 5519
2.13.3 Takeoff distance available: 5519
2.13.4 Accelerate−stop distance available: 5519
2.13.5 Landing distance available: 5519

2.13.1 Designation: 13R
2.13.2 Takeoff run available: 8502
2.13.3 Takeoff distance available: 8502
2.13.4 Accelerate−stop distance available: 8502
2.13.5 Landing distance available: 8502

2.13.1 Designation: 31L
2.13.2 Takeoff run available: 8502
2.13.3 Takeoff distance available: 8502
2.13.4 Accelerate−stop distance available: 8502
2.13.5 Landing distance available: 8502

2.13.1 Designation: 04
2.13.2 Takeoff run available: 8505
2.13.3 Takeoff 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 Takeoff run available: 8505
2.13.3 Takeoff distance available: 8505
2.13.4 Accelerate−stop distance available: 8505
2.13.5 Landing distance available: 8505

AD 2.14 Approach and runway lighting

2.14.1 Designation: 13L
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 31R
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 13R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 31L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

2.14.1 Designation: 04
2.14.2 Approach lighting system: MALS: 1400 feet medium intensity approach lighting system
2.14.4 Visual approach slope indicator system: 4−light PA-PI on right

2.14.1 Designation: 22
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 118.05 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118.9 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.8 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 120.3 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 121.2 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 124.45 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: ALAMO
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: ALISS
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: LEJON
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: SETZR
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: BOWIE
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: MILET
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: ALISS
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: BOWIE
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: LEJON
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: MILET
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: THX
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: SETZR
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: ALAMO
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: SETZR
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: THX
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: BOWIE
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 128.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 251.125 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: ALAMO
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: SETZR
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: BOWIE
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: THX
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: ALAMO
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: LEJON
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: SETZR
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: BOWIE
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: MILET
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 317.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 318.1 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 353.5 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 285.45 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 239.025 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 335.625 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: ALIS
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: BOWIE
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: MILET
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: THX
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: LEJON
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: LEJON
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: SETZR
2.18.3 Service designation: 290.225 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−31−31.31N / 98−27−47.38W
2.19.6 Site elevation: 770.9 ft

2.19.1 ILS type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29−31−29.11N / 98−27−49.94W
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: 29−32−28.99N / 98−28−54.82W
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: 29−32−38.99N / 98−29−14.51W

2.19.6 Site elevation: 803 ft

2.19.1 ILS type: Middle Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29–32–55.58N / 98–29–35.87W
2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 13R. Magnetic variation: 4E
2.19.2 ILS identification: ANT
2.19.5 Coordinates: 29–36–27.45N / 98–34–10.92W
2.19.6 Site elevation: 960 ft

2.19.1 ILS type: Middle Marker for runway 31L. Magnetic variation: 4E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29–31–20.34N / 98–27–33.19W
2.19.6 Site elevation: 761 ft

2.19.1 ILS type: Localizer for runway 31L. Magnetic variation: 4E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29–32–42.30N / 98–29–18.78W
2.19.6 Site elevation: 810.4 ft

2.19.1 ILS type: DME for runway 31L. Magnetic variation: 4E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29–31–29.11N / 98–27–49.94W
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: 29–31–47.90N / 98–28–00.00W
2.19.6 Site elevation: 777.6 ft

2.19.1 ILS type: Outer Marker for runway 31L. Magnetic variation: 4E
2.19.2 ILS identification: IZR
2.19.5 Coordinates: 29–28–00.00N / 98–23–19.32W
2.19.6 Site elevation: 692 ft

2.19.1 ILS type: Glide Slope for runway 04. Magnetic variation: 4E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29–31–30.20N / 98–27–58.06W
2.19.6 Site elevation: 775 ft

2.19.1 ILS type: Middle Marker for runway 04. Magnetic variation: 4E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29–31–00.00N / 98–28–35.26W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 04. Magnetic variation: 4E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29–32–33.08N / 98–26–58.86W
2.19.6 Site elevation: 757.2 ft

2.19.1 ILS type: Localizer for runway 04. Magnetic variation: 4E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29–32–35.07N / 98–27–00.00W
2.19.6 Site elevation: 748 ft

2.19.1 ILS type: Outer Marker for runway 04. Magnetic variation: 4E
2.19.2 ILS identification: SAT
2.19.5 Coordinates: 29–28–28.61N / 98–31–00.00W
2.19.6 Site elevation:

General Remarks:

TAXIWAY L CLOSED NORTHBOUND.

NUMEROUS FLOCKS OF BIRDS IN THE VICINITY OF AIRPORT.

GLIDER/SOARING OPERATIONS APPROXIMATELY 17 MILES NW OF AIRPORT DURING VFR.

TAXIWAY D NON–MOVEMENT AREA FROM TAXIWAY N TO 500 FT W OF TAXIWAY N.

NOISE SENSITIVE AREAS EXIST ON ALL SIDES OF THE AIRPORT: AT THE PILOT'S DISCRETION CLIMB AS QUICKLY & QUIETLY AS SAFELY POSSIBLE ON DEP & USE CONSIDERATION WHEN FLYING OVER POPULATED AREAS BY MINIMIZING FLIGHT & HIGH POWER SETTINGS. ENGINE−UPS ARE PERMITTED BETWEEN 0600−2300.

AIRCRAFT TAXIING ON RUNWAY 04 NE BOUND LOOK FOR HOLD SHORT TO RUNWAY 31L.

AIRCRAFT TAXIING ON TAXIWAY N SW BOUND LOOK FOR HOLD SHORT TO RUNWAY 31R.

WORK IN PROGRESS SCHEDULED MAINTENANCE ON & ALONG TAXIWAYS AND RAMPS AREAS AT VARIOUS TIMES.

GROUND RUN−UP ENCLOSURE AVAILABLE 24 HRS.

TERMINAL GATES A1, A5, A6, A7 & A8 USE ONLY WITH PRIOR PERMISSION REQUIRED CALL OPERATIONS 210−413−4928.

RUNWAY 13L/31R NOT AVAILABLE FOR PART 121 AIR CARRIER OPERATIONS.

THE FOLLOWING TAXIWAYS ARE NOT AVAILABLE FOR AIRCRAFT 59,000 LBS OR OVER: TAXIWAY A & TAXIWAY J NORTH OF RUNWAY 13R−31L, TAXIWAY M & TAXIWAY P, TAXIWAY H NORTHWEST OF TAXIWAY Z AND TAXIWAY E EAST OF RUNWAY 04/22.

TAXIWAY Z CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

C130 AND C141 TYPE AIRCRAFT SHALL PARK ON WEST RAMP TO CLEAR CUSTOMS.

INNER RAMP TAXILANE EAST OF TERMINAL A IS CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135' EXCEPT FOR AIRCRAFT CROSSING THE INNER RAMP TO GATES A1 TO A5.

PRIOR PERMISSION REQUIRED WITH AIRPORT OPERATIONS FOR AIRCRAFT POWERING BACK FROM TERMINAL GATES.

TAXIWAYS L & B CLOSED TO AIRCRAFT WITH WINGSPANS GREATER THAN 118 FT EXITING RUNWAY 31L.

A BARRICADED PAVEMENT ELEVATION CHANGE EXISTS ALONG THE EASTERN SIDE OF THE WEST RAMP.

FREQUENT RUBBER ACCUMULATION NW 2500 RUNWAY 13R/31L.

AIRCRAFT AT TERMINAL A & B ADVISE GROUND CONTROL PRIOR TO PUSH.

COMPASS DEVIATION MAY OCCUR AT THE NW PORTION OF TAXIWAY R DUE TO REBAR RE−ENFORCED CONCRETE BRIDGE LOCATED UNDER THE TAXIWAY.

TAXIWAY R WEST OF TAXIWAY D CLOSED TO AIRCRAFT OVER 270,000 LBS.

ALL INTERNATIONAL GA CLEAR U.S CUSTOMS AT SOUTH CUSTOMS RAMP, CALL U.S. CUSTOMS 210−821−6965 UPON ARRIVAL.

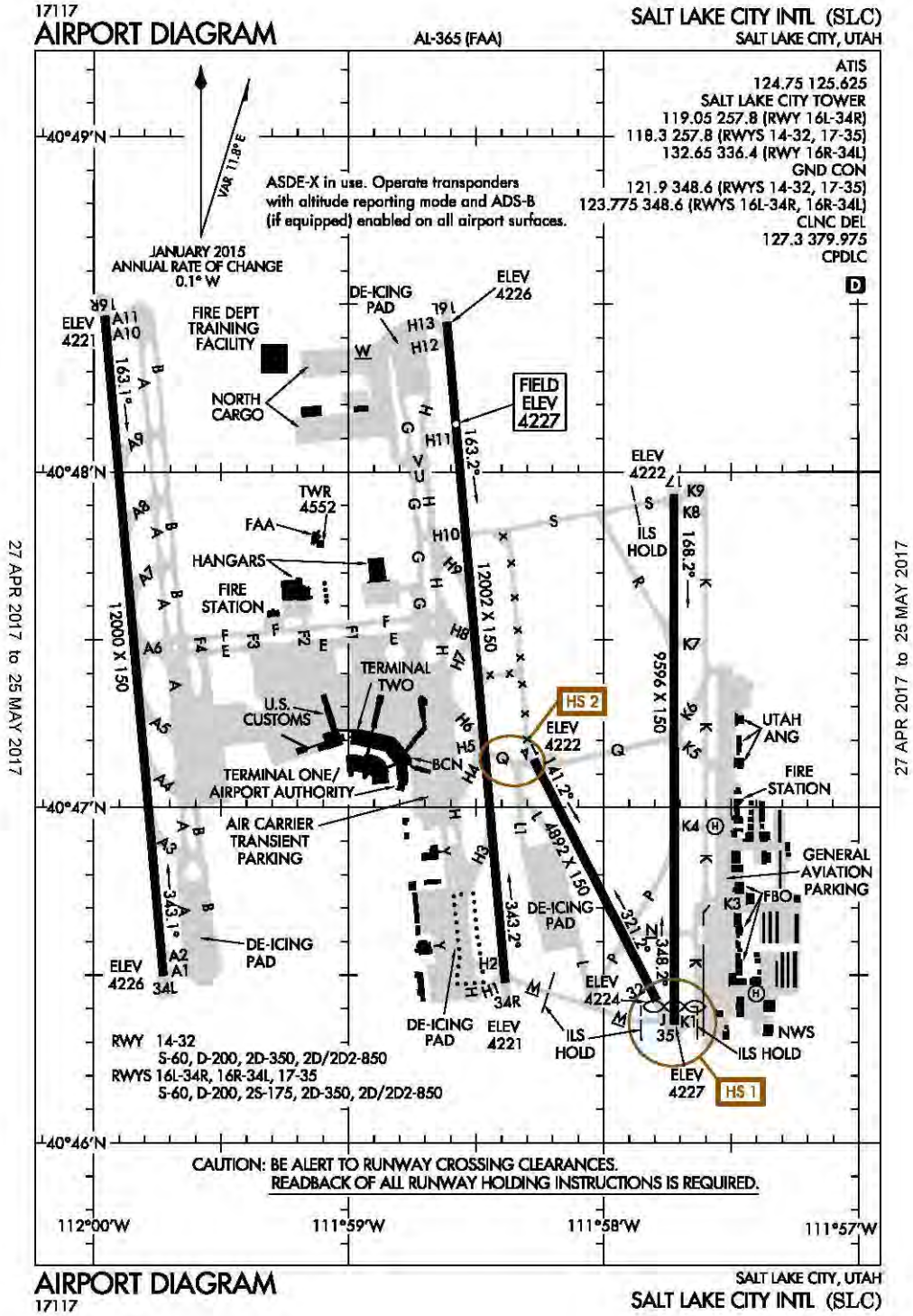
INNER TAXILANE NORTH OF TEMINAL A AND B IS CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135’.

AERODROME ALL SURFACE WORK IN PROGRESS CONSTRUCTION FOR CURRENT INFORMATION CONTACT OPERATIONS. 210–413–4928.

AIRPORT CLOSED TO AICFT WITH WINGSPAN GREATER THAN 171FT. USE ONLY WITH 24 HR PRIOR PERMISSION REQUIRED CONTACT OPERATIONS. 210–413–4928.

TAXIWAY R BETWEEN APPROACH END RUNWAY 13L AND TAXIWAY D CLOSED TO AIRCRAFT WINGSPAN MORE THAN 135FT. TAXIWAY S BETWEEN APPROACH END RUNWAY 13L AND RUNWAY 13R/31L CLOSED TO AIRCRAFT WINGSPAN MORE THAN 135FT.

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: 40–47–18.20N / 111–58–39.98W
2.2.2 From City: 3 Miles W Of Salt Lake City, UT
2.2.3 Elevation: 4227.4 ft
2.2.5 Magnetic variation: 14E (1995)
2.2.6 Airport Contact: Maureen Riley
P.O. BOX 145550
Salt Lake City, UT 84114
(801–575–2401)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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+
2.4.4 De–icing facilities: Taxiway L De–Ice Pad 131.975
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 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 35
2.10.1.b Type of obstacle: Ant (24 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 250 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 16L
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12002 ft x 150 ft
2.12.5 Coordinates: 40–48–26.80N / 111–58–36.97W
2.12.6 Threshold elevation: 4226 ft
2.12.6 Touchdown zone elevation: 4227 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12002 ft x 150 ft
2.12.5 Coordinates: 40–46–28.68N / 111–58–23.25W
2.12.6 Threshold elevation: 4221 ft
2.12.6 Touchdown zone elevation: 4222 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 40–48–27.99N / 111–59–57.42W
2.12.6 Threshold elevation: 4221 ft
2.12.6 Touchdown zone elevation: 4223 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.5 Coordinates: 40–46–29.90N / 111–59–43.69W
2.12.6 Threshold elevation: 4226 ft
2.12.6 Touchdown zone elevation: 4226 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.5 Coordinates: 40–47–56.10N / 111–57–43.46W
2.12.6 Threshold elevation: 4222 ft
2.12.6 Touchdown zone elevation: 4219 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 360
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.5 Coordinates: 40–46–21.29N / 111–57–43.44W
2.12.6 Threshold elevation: 4227 ft
2.12.6 Touchdown zone elevation: 4224 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 153
2.12.3 Dimensions: 4892 ft x 150 ft
2.12.5 Coordinates: 40–47–00.00N / 111–58–16.45W
2.12.6 Threshold elevation: 4222 ft
2.12.6 Touchdown zone elevation: 4222 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 333
2.12.3 Dimensions: 4892 ft x 150 ft
2.12.5 Coordinates: 40–46–25.51N / 111–57–47.58W
2.12.6 Threshold elevation: 4224 ft
2.12.6 Touchdown zone elevation: 4224 ft

2.12.1 Designation: HF
2.12.3 Dimensions: 60 ft x 60 ft
2.12.1 Designation: HB
2.12.3 Dimensions: 60 ft x 60 ft
2.12.5 Coordinates: 40–46–27.08N / 111–57–24.06W
2.12.6 Threshold elevation: 4220 ft

AD 2.13 Declared distances

2.13.1 Designation: 16L

2.13.2 Takeoff run available: 12002
2.13.3 Takeoff distance available: 12002
2.13.4 Accelerate−stop distance available: 12002
2.13.5 Landing distance available: 12002

2.13.1 Designation: 34R
2.13.2 Takeoff run available: 12002
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff 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 Takeoff run available: 12000
2.13.3 Takeoff distance available: 12000
2.13.4 Accelerate−stop distance available: 12000
2.13.5 Landing distance available: 12000

2.13.1 Designation: 17
2.13.2 Takeoff run available: 9597
2.13.3 Takeoff distance available: 9597
2.13.4 Accelerate−stop distance available: 9597
2.13.5 Landing distance available: 9597

2.13.1 Designation: 35
2.13.2 Takeoff run available: 9597
2.13.3 Takeoff distance available: 9597
2.13.4 Accelerate−stop distance available: 9597
2.13.5 Landing distance available: 9273

2.13.1 Designation: 14
2.13.2 Takeoff run available: 4892
2.13.3 Takeoff 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 Takeoff run available: 4892
2.13.3 Takeoff distance available: 4892
2.13.4 Accelerate−stop distance available: 4892
2.13.5 Landing distance available: 4892

AD 2.14 Approach and runway lighting

2.14.1 Designation: 16L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 17
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 35
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 14
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 32
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.05 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: CD/P PRE–TAXI CLNC PRE–DEP CLNC
2.18.3 Service designation: 127.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 132.65 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 336.4 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 379.975 MHz

2.18.1 Service designation: ANG COMD POST
2.18.3 Service designation: 303 MHz

2.18.1 Service designation: ANG COMD POST
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 124.75 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 125.625 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: GND/P
2.18.3 Service designation: 123.775 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40–48–17.07N / 111–58–30.61W
2.19.6 Site elevation: 4222.1 ft

2.19.1 ILS type: Middle Marker for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40–48–55.10N / 111–58–40.28W
2.19.6 Site elevation: 4217 ft

2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40–46–18.49N / 111–58–22.06W
2.19.6 Site elevation: 4223.5 ft

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40–46–18.71N / 111–58–18.11W
2.19.6 Site elevation: 4236 ft

2.19.1 ILS type: Inner Marker for runway 16L. Magnetic variation: 12E
2.19.2 ILS identification: MOY
2.19.5 Coordinates: 40–48–35.70N / 111–58–38.00W
2.19.6 Site elevation: 4223 ft

2.19.1 ILS type: Localizer for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40–48–37.67N / 111–58–38.21W
2.19.6 Site elevation: 4221.6 ft

2.19.1 ILS type: DME for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40–46–18.71N / 111–58–18.11W
2.19.6 Site elevation: 4236 ft

2.19.1 ILS type: Glide Slope for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40–46–39.32N / 111–58–19.28W
2.19.6 Site elevation: 4217 ft

2.19.1 ILS type: Inner Marker for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40–46–20.33N / 111–58–22.29W
2.19.6 Site elevation: 4222 ft

2.19.1 ILS type: Middle Marker for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−46−00.00N / 111−58−18.28W
2.19.6 Site elevation: 4221 ft

2.19.1 ILS type: Outer Marker for runway 34R. Magnetic variation: 12E
2.19.2 ILS identification: SLC
2.19.5 Coordinates: 40−40−52.21N / 111−57−46.57W
2.19.6 Site elevation: 4310 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−46−19.93N / 111−59−42.52W
2.19.6 Site elevation: 4224.6 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−48−17.29N / 112−00−00.00W
2.19.6 Site elevation: 4215.9 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−46−19.61N / 111−59−46.36W
2.19.6 Site elevation: 4232 ft

2.19.1 ILS type: Inner Marker for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−48−37.20N / 111−59−58.20W
2.19.6 Site elevation: 4218 ft

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 12E
2.19.2 ILS identification: UAT
2.19.5 Coordinates: 40−48−56.30N / 112−00−00.00W
2.19.6 Site elevation: 4215 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−46−39.89N / 111−59−50.26W
2.19.6 Site elevation: 4219.7 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−48−37.96N / 111−59−58.58W
2.19.6 Site elevation: 4217.3 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−46−19.61N / 111−59−46.36W
2.19.6 Site elevation: 4232 ft

2.19.1 ILS type: Inner Marker for runway 34L. Magnetic variation: 12E
2.19.2 ILS identification: UUH
2.19.5 Coordinates: 40−46−21.42N / 111−59−42.69W
2.19.6 Site elevation: 10 ft

2.19.1 ILS type: DME for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−46−10.06N / 111−57−46.86W
2.19.6 Site elevation: 4238 ft

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−46−10.06N / 111−57−43.44W
2.19.6 Site elevation: 4224.9 ft

2.19.1 ILS type: Glide Slope for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−47−45.73N / 111−57−49.95W
2.19.6 Site elevation: 4213.6 ft

2.19.1 ILS type: Middle Marker for runway 17. Magnetic variation: 12E
2.19.2 ILS identification: BNT
2.19.5 Coordinates: 40−48−23.40N / 111−57−43.40W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40−47−00.00N / 111−57−51.55W
2.19.6 Site elevation: 4217 ft

2.19.1 ILS type: Glide Slope for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40−46−35.14N / 111−57−48.63W
2.19.6 Site elevation: 4219.7 ft

2.19.1 ILS type: Outer Marker for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40–40–52.21N / 111–57–46.57W
2.19.6 Site elevation: 4310 ft

2.19.1 ILS type: DME for runway 35. Magnetic variation: 12E
2.19.2 ILS identification: UTJ
2.19.5 Coordinates: 40–46–10.06N / 111–57–46.86W
2.19.6 Site elevation: 4238 ft

General Remarks:

FLOCK OF BIRDS ON AND IN VICINITY OF AIRPORT.

HELIPADS B AND F LOCATED ON GENERAL AVIATION APRONS.

SURFACE MOVEMENT GUIDANCE CONTROL SYSTEM & LOW VISIBILITY TAXI PROCEDURES.

DUE TO TRAFFIC VOLUME, LOCAL DEPARTURE AND ARR OPERATIONS ARE DISCOURAGED AND DELAYS CAN BE EXPECTED BETWEEN 1000–1200 AND 2000–2300.

SPECIAL VFR IS NOT RECOMMEND AT THE AIRPORT, IF REQUIRED, EXPECT DELAYS.

ANG RAMP – OPR 1430–2230Z++ MON–THU. CLOSED FRI–SUN AND HOLIDAY. OFFICIAL BUSINESS ONLY. PRIOR PERMISSION REQUIRED 48 HR ALL AIRCRAFT, VALID 1 HR +/– ESTIMATED TIME OF ARRIVAL. TRANSIENT PRK/SVC EXTREMELY LIMITED. BASE OPERATIONS DSN 245–2274, C801–245–2274. MILITARY ALTITUDE HILL AFB (KHIF) 25 NAUTICAL MILE N. ALL AIRCRAFT CONTACT UTAH CONTROL (COMD POST) 20 MIN OUT WITH ESTIMATED TIME OF ARRIVAL AND REQ.

ANG RAMP – ALL AIRCRAFT CONTACT UTAH CONTROL WITH LANDING & DEP TIMES. COMMAND POST DSN: 245–2416/2417; C801–245–2416/2417. PHASE II WILDLIFE ACT DURING MIGRATION/MORNING/EVENING HRS FR OCT–APR. CONTACT UTAH CONTROL FOR CURRENT BIRD–WATCH CONDITION.

SEE FLIGHT INFORMATION PUBLICATION AP/1 SUPPLEMENTARY AIRPORT INFORMATION.

COMMUNICATIONS–ANG COMMAND POST: CALL UTAH CONTROL.

USE CAUTION FOR EXTENSIVE PARAGLIDING OPERATIONS IN THE VICINITY OF POINT OF THE MOUNTAIN.

SEE CURRENT NOTAMS FOR DATES AND ADDITIONAL INFORMATION.

ANG SERVICE–FUEL: A++.

TAXIWAY Y RESTRICTED TO WINGSPANS LESS THAN 171 FT BETWEEN TAXIWAY H3 AND H4.

RUNWAY 16L RUNUP AREA CLOSED PERMANENTLY.

USE MINIMUM THRUST IN CONSTRUCTION AREAS.

CONTACT GROUND ON 123.775 BEFORE TAXIING OUT OF NORTH CARGO.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

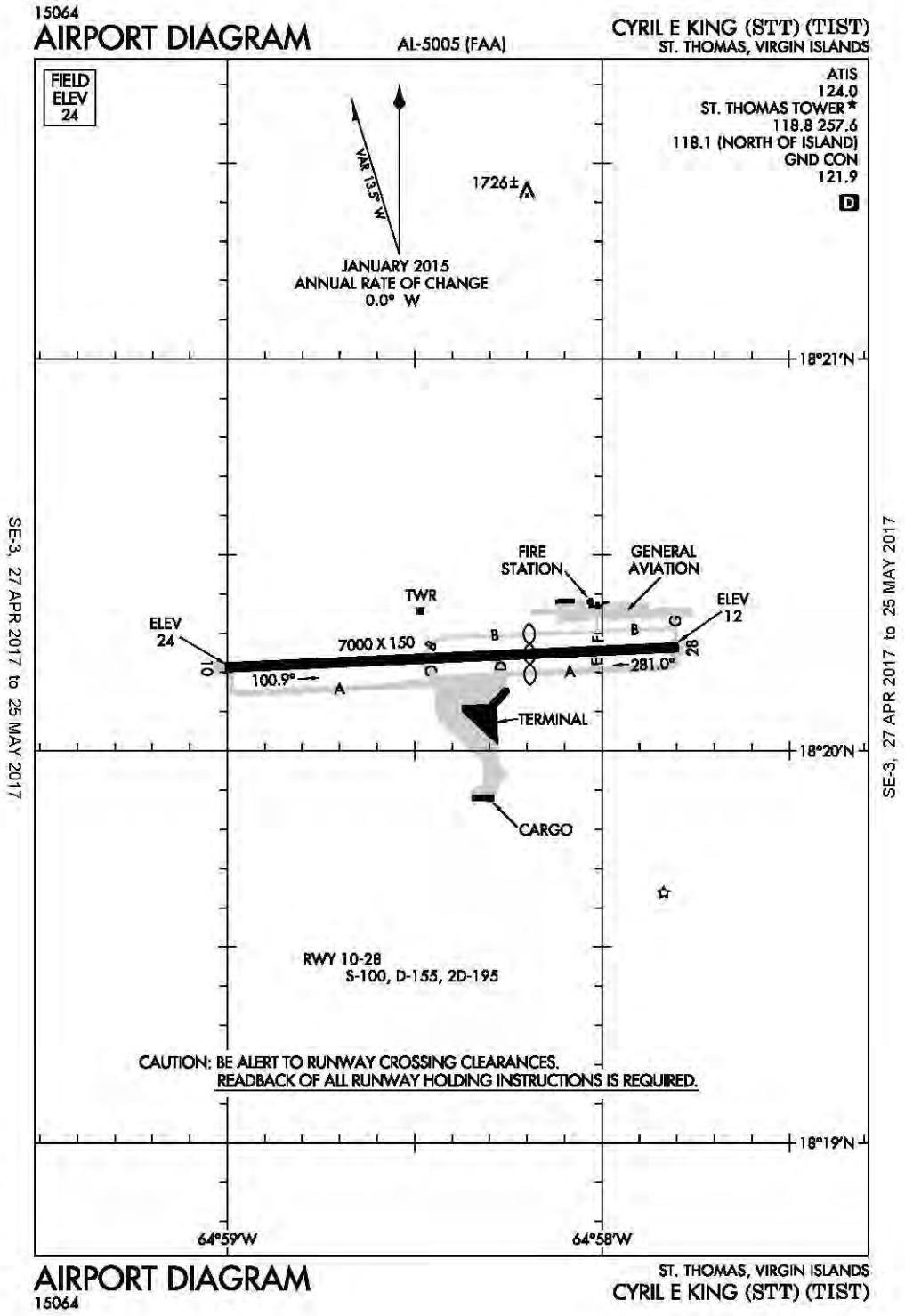
RUNWAY 34L DE–ICE PAD 128.975

RUNWAY 34R DE–ICE PAD 129.975

TAXIWAY L DE–ICE PAD 131.975

RUNWAY 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: 18−20−14.30N / 64−58−24.00W
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: Jose Nazario
CYRIL E. KING AIRPORT
St Thomas, VI 802
(340−774−5100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: ALL Months, ALL Days, 0700−2300 Hours

AD 2.4 Handling services and facilities

2.4.1 Cargo handling facilities: No
2.4.2 Fuel types: 100LL,A
2.4.4 De−icing facilities: None
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
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except 24 Hrs Prior Permission Required Call Airport Manager 340−774−5100.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 10
2.10.1.b Type of obstacle: Pole. Not Lighted or Marked

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Pole (28 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 400 ft from Centerline

AD 2.12 Runway physical characteristics

2.12.1 Designation: 10
2.12.2 True Bearing: 87
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 18−20−12.72N / 64−59−00.00W
2.12.6 Threshold elevation: 24 ft
2.12.6 Touchdown zone elevation: 24 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 267
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.5 Coordinates: 18−20−15.81N / 64−57−47.74W
2.12.6 Threshold elevation: 12 ft
2.12.6 Touchdown zone elevation: 16 ft

AD 2.13 Declared distances

2.13.1 Designation: 10
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 7000
2.13.5 Landing distance available: 7000

2.13.1 Designation: 28
2.13.2 Takeoff run available: 7000
2.13.3 Takeoff distance available: 7000
2.13.4 Accelerate−stop distance available: 6000
2.13.5 Landing distance available: 3700

AD 2.14 Approach and runway lighting

2.14.1 Designation: 10
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.6 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: TMN
2.19.5 Coordinates: 18−20−16.17N / 64−57−39.21W
2.19.6 Site elevation: 16 ft

2.19.1 ILS type: DME for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: TMN
2.19.5 Coordinates: 18−20−18.77N / 64−57−39.48W
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: 18−20−10.75N / 64−58−48.29W
2.19.6 Site elevation: 15.1 ft

General Remarks:

AIRCRAFT THAT BACK TAXI FOR DEP ON RUNWAY 28 SHALL MAKE THEIR 180 DEGREE TURN COUNTERCLOCKWISE.

NOISE SENSITIVE AREA: AVOID OVERFLIGHTS OF WATER ISLAND LOCATED 2 MI SE OF AIRPORT.

PILOTS MAY ENCOUNTER FALSE ILLUSORY INDICATIONS DURING NIGHT VISUAL APPROACHES TO RUNWAY 10 WHEN USING VISUAL CUES FOR VERTICAL GUIDANCE; RECOMMEND USE OF THE ILS GS & FREQUENT CROSS REFERENCE WITH THE AIRCRAFT ALTIMETER TO MAINT THE PROPER APPROACH PROFILE.

LIGHTS ON HILL 4 NAUTICAL MILE SE OF AIRPORT MAY BE MISTAKEN FOR RUNWAY 10/28 WHEN MAKING A VISUAL APPROACH FROM THE SOUTH.

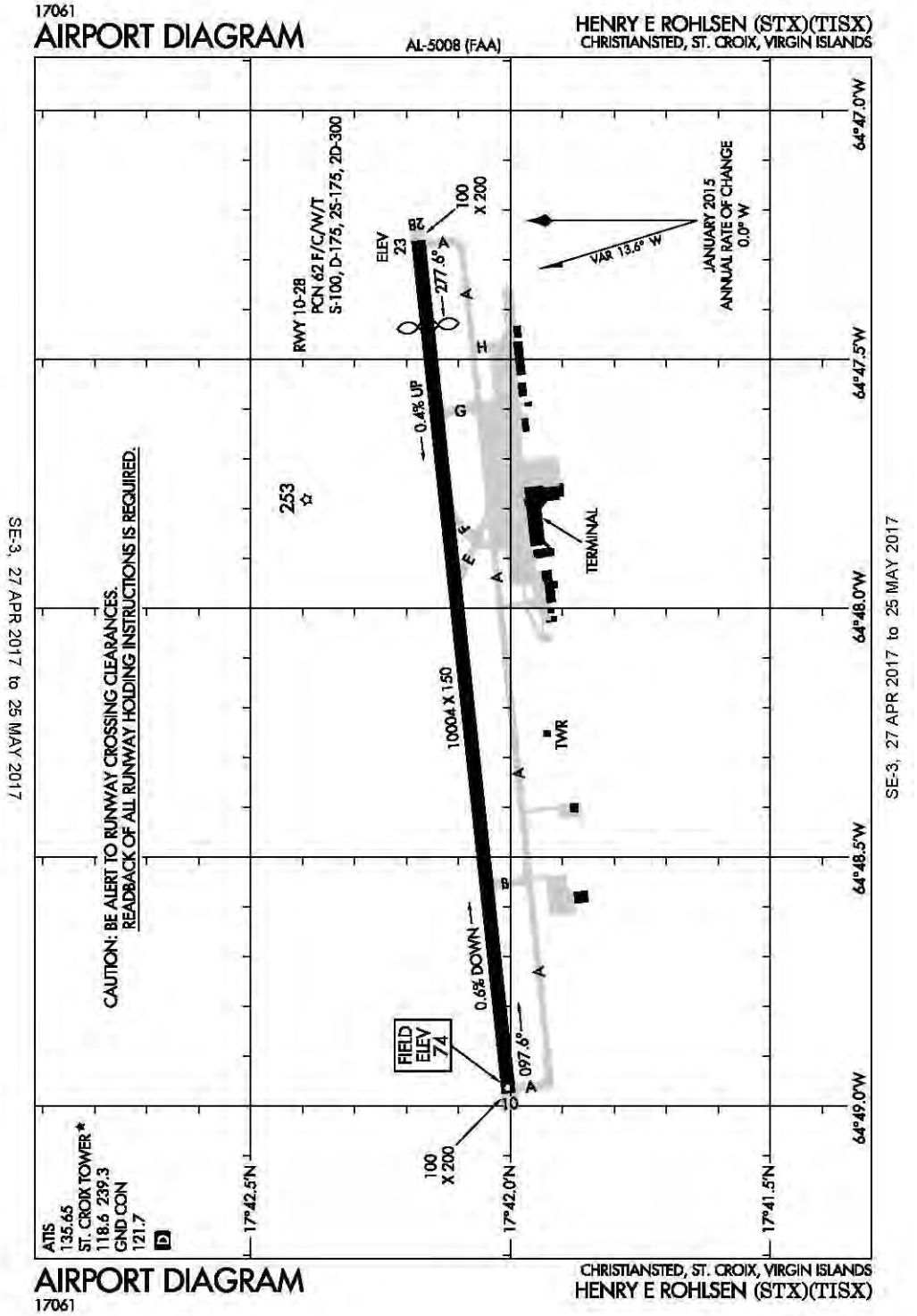
RUNWAY 10 DEPS MAINTAIN RUNWAY HEADING UNTIL REACHING DEP END OF RUNWAY BEFORE TURNING ON COURSE OR ASSIGNED HEADING UNLESS OTHERWISE AUTHORIZED BY ATCT.

AIRCRAFT RESCUE AND FIRE FIGHTING UNAVAILABLE 2300−0630.

PILOTS CONTACT GROUND CONTROL PRIOR TO PUSHBACK.

OBSTRUCTION SAILBOAT MAST 100FT WEST OF APPROACH END OF RUNWAY 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: 17−42−00.00N / 64−48−00.00W
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: David Mapp
P.O. BOX 1134
St Croix, VI 821
(340−778−1012)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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+
2.4.4 De−icing facilities: None
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
2.6.4 Remarks: Closed To Unscheduled Aircraft 0 Operations With More Than 30 Passenger Seats Except 24 Hrs Prior Permission Required Contact Airport Manager 340−778−1012 Or 340−778−1033(Fax). ARFF Service Unavailable 2300−0500.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 28
2.10.1.b Type of obstacle: Bldg (217 ft). Marked
2.10.1.c Location of obstacle: 800 ft from Centerline

AD 2.12 Runway physical characteristics

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: 17−42−00.00N / 64−48−58.45W
2.12.6 Threshold elevation: 74 ft
2.12.6 Touchdown zone elevation: 74 ft

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 / 64−47−15.54W
2.12.6 Threshold elevation: 22 ft
2.12.6 Touchdown zone elevation: 40 ft

AD 2.13 Declared distances

2.13.1 Designation: 10
2.13.2 Takeoff run available: 10004
2.13.3 Takeoff distance available: 10004
2.13.4 Accelerate−stop distance available: 9000
2.13.5 Landing distance available: 9000

2.13.1 Designation: 28
2.13.2 Takeoff run available: 10004
2.13.3 Takeoff distance available: 10004
2.13.4 Accelerate−stop distance available: 10004
2.13.5 Landing distance available: 9000

AD 2.14 Approach and runway lighting

2.14.1 Designation: 10
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 28
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 135.65 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

AD 2.19 Radio navigation and landing aids

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 / 64−53−00.00W
2.19.6 Site elevation: 40 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 / 64−47−00.00W
2.19.6 Site elevation: 26.4 ft

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 / 64−48−45.50W
2.19.6 Site elevation: 63.5 ft

2.19.1 ILS type: Middle Marker for runway 10. Magnetic variation: 13W
2.19.2 ILS identification: STX
2.19.5 Coordinates: 17−41−59.40N / 64−49−00.00W
2.19.6 Site elevation:

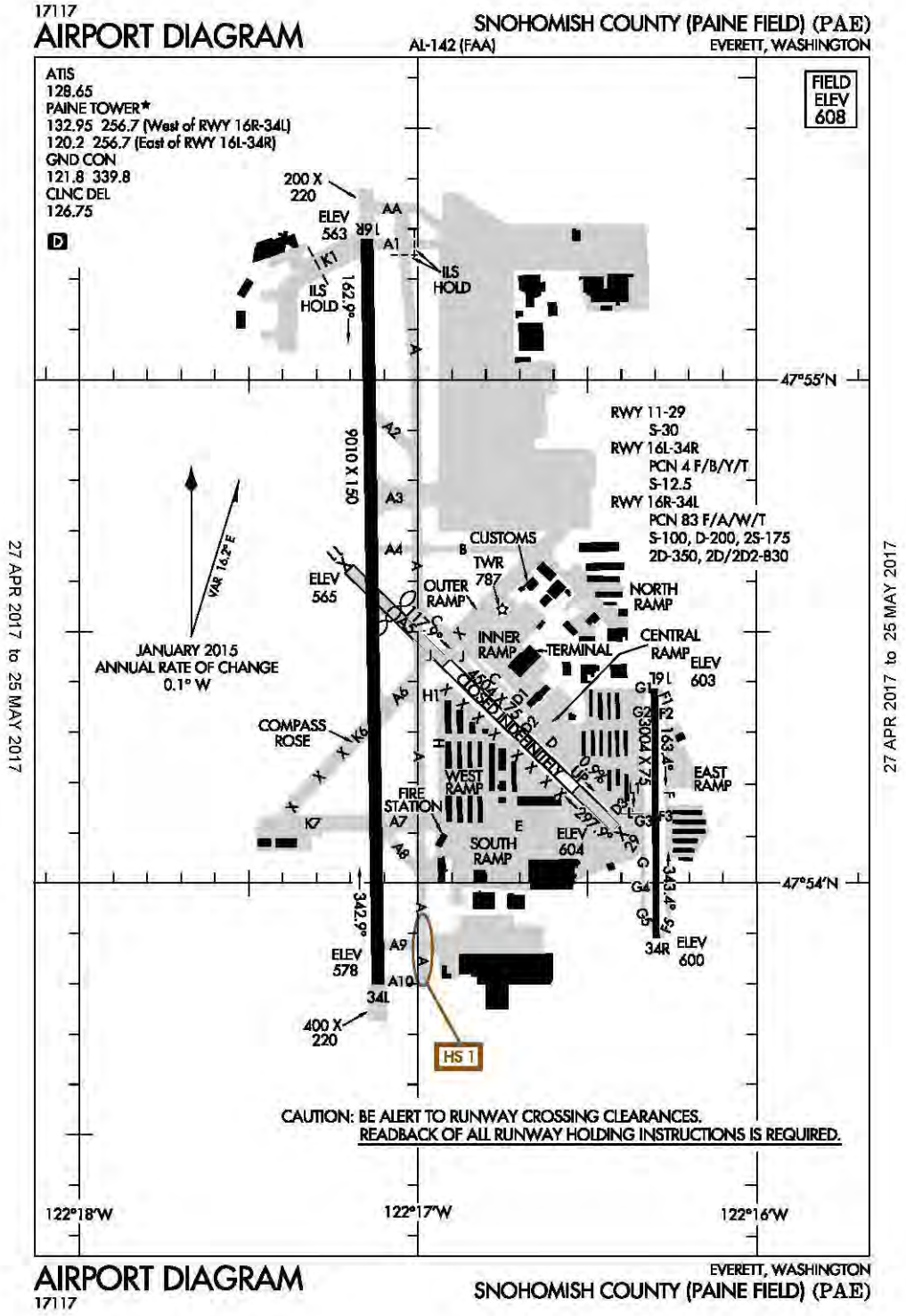
General Remarks:

APPROACH TO RUNWAY 28 SOMETIMES OBSCURED BY SMOKE FROM LANDFILL LOCATED E OF AIRPORT. RUNWAY 10 AND 28 100’ X 200’ BLAST PAD.

BIRDS & WILDLIFE ON & IN THE VICINITY OF AIRPORT.

TAXI INTO POSITION AND HOLD PROCEDURES NO LONGER IN EFFECT.

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: 47−54−25.20N / 122−16−53.70W
2.2.2 From City: 6 Miles SW Of Everett, WA
2.2.3 Elevation: 607.5 ft
2.2.5 Magnetic variation: 17E (2010)
2.2.6 Airport Contact: Arif Ghouse
3220 100TH ST SW
Everett, WA 98204
(425−388−5125)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 − 2.3.11: MAY−OCT 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
2.4.4 De−icing facilities: None
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 Iv A certified on 11/1/1974
2.6.4 Remarks: Airport Closed To Aircraft 0 Operations With More Than 30 Passenger Seats 2100−0700 Except Prior Permission Required Contact Airport Operations 425−388−5110/5480. For Addl ARFF Capability Contact Airport Operations 425−388−5110.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 11
2.10.1.b Type of obstacle: Trees (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 100 ft from Centerline

2.10.1.a. Runway designation: 29
2.10.1.b Type of obstacle: Trees (46 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 0 ft from Centerline

2.10.1.a. Runway designation: 34L
2.10.1.b Type of obstacle: Trees (125 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 930 ft from Centerline

2.10.1.a. Runway designation: 16L
2.10.1.b Type of obstacle: Pole (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 100 ft from Centerline

2.10.1.a. Runway designation: 34R
2.10.1.b Type of obstacle: Pole (25 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 125 ft from Centerline

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
2.12.5 Coordinates: 47−54−37.48N / 122−17−12.35W
2.12.6 Threshold elevation: 565 ft
2.12.6 Touchdown zone elevation: 608 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 314
2.12.3 Dimensions: 4504 ft x 75 ft
2.12.5 Coordinates: 47−54−00.00N / 122−16−24.91W
2.12.6 Threshold elevation: 604 ft
2.12.6 Touchdown zone elevation: 608 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: 47−55−16.81N / 122−17−00.00W
2.12.6 Threshold elevation: 563 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: 47−53−47.90N / 122−17−00.00W
2.12.6 Threshold elevation: 578 ft
2.12.6 Touchdown zone elevation: 584 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: 47−54−23.13N / 122−16−18.09W
2.12.6 Threshold elevation: 603 ft
2.12.6 Touchdown zone elevation: 607 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: 47−53−53.49N / 122−16−17.77W
2.12.6 Threshold elevation: 600 ft
2.12.6 Touchdown zone elevation: 607 ft

AD 2.13 Declared distances

2.13.1 Designation: 16R
2.13.2 Takeoff run available: 9010
2.13.3 Takeoff 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 Takeoff run available: 9010
2.13.3 Takeoff distance available: 9010
2.13.4 Accelerate−stop distance available: 9010
2.13.5 Landing distance available: 9010

2.13.1 Designation: 16L
2.13.2 Takeoff run available: 3004
2.13.3 Takeoff 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 Takeoff run available: 3004
2.13.3 Takeoff distance available: 3004
2.13.4 Accelerate−stop distance available: 3004
2.13.5 Landing distance available: 3004

AD 2.14 Approach and runway lighting

2.14.1 Designation: 11
2.14.4 Visual approach slope indicator system: 2−box VASI on left

2.14.1 Designation: 29
2.14.4 Visual approach slope indicator system: 2−box VASI on right

2.14.1 Designation: 16R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PA-PI on right

2.14.1 Designation: 34L
2.14.4 Visual approach slope indicator system: 4−light PA-PI on left
2.14.1 Designation: 16L
2.14.4 Visual approach slope indicator system: 2−light PA-PI on left

2.14.1 Designation: 34R
2.14.4 Visual approach slope indicator system: 2−light PA-PI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P(ACFT ARR E OF CNTRLN OR DEP RY 16L/34R)
2.18.3 Service designation: 120.2 MHz

2.18.1 Service designation: LCL/P(ACFT ARR W OF CNTRLN OR DEP RY 16R/34L)
2.18.3 Service designation: 132.95 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.75 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 256.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 339.8 MHz

2.18.1 Service designation: AR−OPNS
2.18.3 Service designation: 34.1 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 128.65 MHz
2.18.4 Hours of operation: 24

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 47−55−00.00N / 122−17−13.62W
2.19.6 Site elevation: 566.6 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 48−03−10.00N / 122−17−19.50W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 47−55−53.80N / 122−17−00.00W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: PAE
2.19.5 Coordinates: 47−53−34.03N / 122−17−00.00W
2.19.6 Site elevation: 569.6 ft

General Remarks:

16L/34R CLOSED BETWEEN 2100−0700; LARGE AIRCRAFT FLY W PATTERN OVER WATER; SMALL AIRCRAFT FLY E PATTERN OVER AIRPORT.

NOISE SENSITIVE AIRPORT; FOR NOISE ABATEMENT PROCEDURES & TRAFFIC PROCEDURES CALL AIRPORT OPERATIONS 425−388−5125.

IT IS REQUESTED THAT PILOTS ADHERE TO THE FOLLOWING NOISE ABATEMENT PROCEDURES UNLESS OTHERWISE INSTRUCTED BY ATCT, ITINERANT ARRIVAL AND LOW APPROACH OF SMALL AIRCRAFT OVER 250 HORSEPOWER AUTHORIZED ON RUNWAYS 16L AND 34R.

BE ALERT TO CONVERGE TRAFFIC ON BASE TO FINAL LEGS RUNWAYS 16R/34L 2100−0700.

AVOID OVERFLIGHT OF BOEING RAMP − NE CORNER OF AIRPORT DUE TO JET BLAST.

TRAINING FLIGHTS DISCOURAGED AFTER 2200. RUNWAY 16R−34L TOUCH AND GO LANDING PROHIBITED MON−FRI FORM 0700−0900.

AVOID INTERSECTION DEPS FROM RUNWAYS 16L/34R

FLOCKS OF LARGE & SMALL BIRDS IN THE VICINITY OF AIRPORT.

ITINERANT DEP OF SMALL AIRCRAFT OVER 250 HORSEPOWER ON RUNWAY 34R.

TAXIWAY A−2 RESTRICTED TO 30,000 LBS.

AREAS NOT VISIBLE FROM ATCT INCLUDE E EDGE OF S 1200 FT OF TAXIWAY A, TAXIWAY E FROM SE CORNER OF WEST HANGARS TO TAXIWAY A, MID SECTION OF TAXIWAY C1, TAXIWAY H FROM NW EDGE OF WEST HANGARS TO TAXIWAY E, NE EDGE OF INNER INNER RAMP.

RUNWAYS 16L/34R LIMITED TO HELIPORT 8,000 LBS OR LESS.

TAXIWAY W CLOSED INDEFINITE.

TAXIWAY INTENSE D1, AND D2 CLOSED INDEFINITELY.

FOR NOISE ABATEMENT FROM 0500–1500Z++ IF AIRCRAFT PERFORMANCE/WIND ALLOWS, USE RUNWAY 16R FOR ARRIVALS AND RUNWAY 34L FOR DEPARTURES.

TAXIWAY ECHO LIMITED TO AIRCRAFT WITH A WINGSPAN OF 156 FT AND LESS. AIRCRAFT OVER A WINGSPAN OF 156 FT, TUG OPERATIONS ONLY.

TAXIWAY K6 CLOSED WEST OF COMPASS ROSE.

TAXIWAY C BETWEEN INNER RAMP AND CENTRAL RAMP RESTRICTED TO WINGSPAN OF 68’ OR LESS. TAXIWAY D BETWEEN D1 AND TAXIWAY GOLF RESTRICTED TO WINGSPAN OF 49’ OR LESS. TWYY A4, A5, K7 & B RESTRICTED TO WINGSPAN OF 118’ OR LESS. TAXILANE H RESTRICTED TO WINGSPAN OF 49’ OR LESS.

PAE HAS FACILITY CONSTRAINTS THAT LIMIT ITS ABILITY TO ACCOMMODATE DIVERTED FLIGHTS AND MAINTAIN THE ARPTS SAFE OPERATION DURING IRREGULAR OPERATIONS. AIRCRAFT OPERATORS SHOULD CTCT THE ON–DUTY AIRPORT OPERATIONS PERSONNEL (425–610–8411) TO COORDINATE DIVERTED FLIGHTS EXCEPT IN THE CASE OF A DECLARED IN–FLIGHT EMERGENCY.

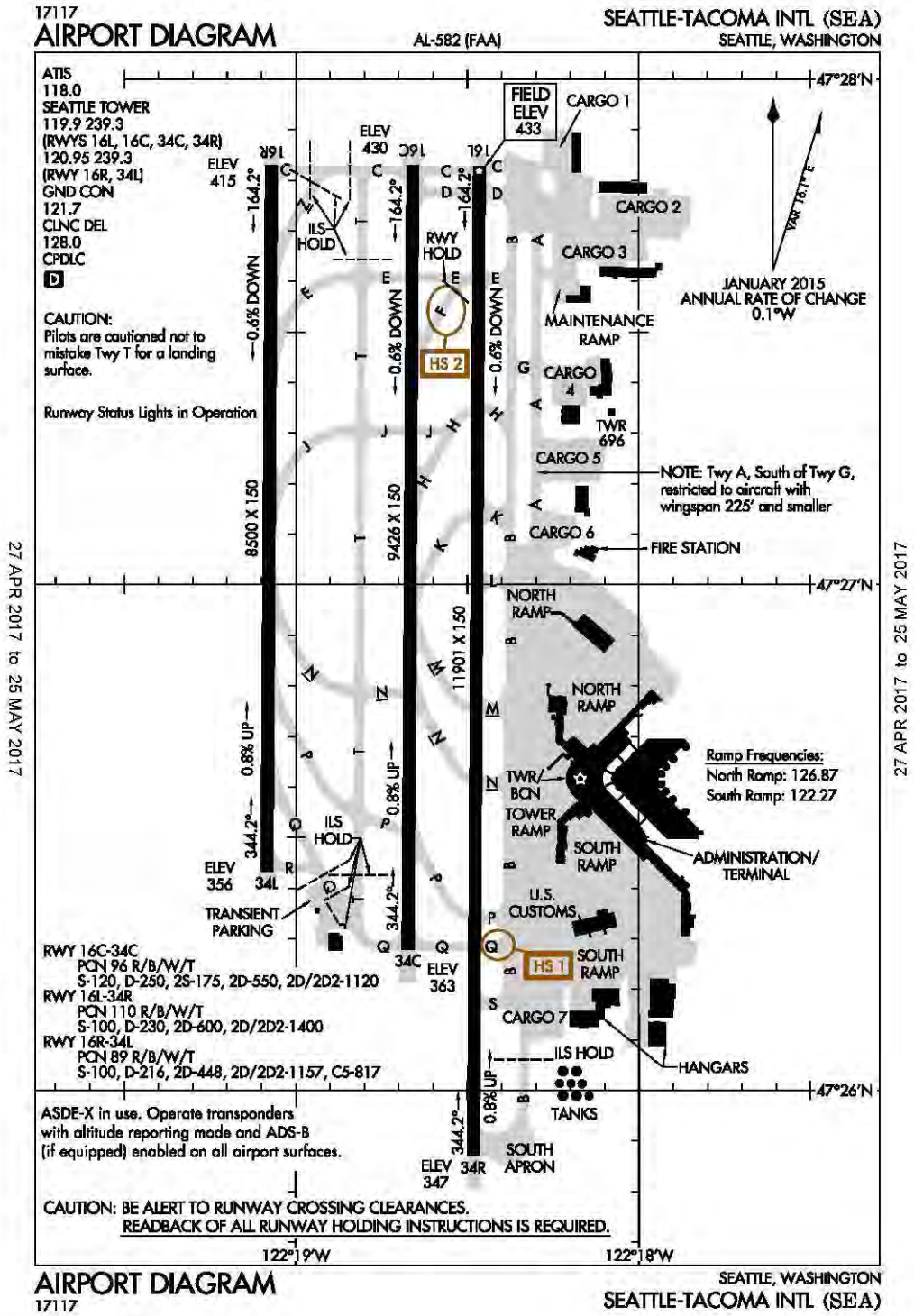
PRIOR PERMISSION REQUIRED FOR ACCESS ON BOEING RAMP. CONTACT BOEING FLIGHT DISPATCH 206–544–5900 FOR APPROVAL. PRIOR TO TAXI ONTO BOEING RAMP CONTACT BOEING RADIO TOWER 123.475 OR CALL 425–342–5900.

TAXIWAY K1 CLOSED TO AIRCRAFT UNDER 30,000 LBS.

TRANSIENT HELICOPTERS EXPECT LANDING/TAKEOFF ON TAXIWAY B

AIRFIELD CONDITIONS NOT MONITORED AFTER BUSINESS HOURS OF 8AM–5PM LOCAL MON–FRI.

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: 47−26−59.60N / 122−18−42.40W
2.2.2 From City: 10 Miles S Of Seattle, WA
2.2.3 Elevation: 432.5 ft
2.2.5 Magnetic variation: 17E (2010)
2.2.6 Airport Contact: Lance Lyttle
BOX 68727
Seattle, WA 98168
(206) 787−5229
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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,A1
2.4.4 De−icing facilities: None
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: ARFF Index I E certified on 5/1/1973

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 34C
2.10.1.b Type of obstacle: Tree (131 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 700 ft from Centerline

AD 2.12 Runway physical characteristics

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: 47−27−49.81N / 122−19−00.00W
2.12.6 Threshold elevation: 415 ft
2.12.6 Touchdown zone elevation: 415 ft
2.12.7 Slope: 0.7DOWN

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: 47−26−25.92N / 122−19−00.00W
2.12.6 Threshold elevation: 356 ft
2.12.6 Touchdown zone elevation: 379 ft
2.12.7 Slope: 0.7UP

2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 11901 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47−27−49.66N / 122−18−27.90W
2.12.6 Threshold elevation: 432 ft
2.12.6 Touchdown zone elevation: 432 ft
2.12.7 Slope: 0.7DOWN

2.12.1 Designation: 34R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11901 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47−25−52.22N / 122−18−28.94W
2.12.6 Threshold elevation: 347 ft
2.12.6 Touchdown zone elevation: 372 ft
2.12.7 Slope: 0.7UP

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: 47−27−49.71N / 122−18−39.55W
2.12.6 Threshold elevation: 430 ft
2.12.6 Touchdown zone elevation: 430 ft
2.12.7 Slope: 0.7DOWN

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: 47−26−16.69N / 122−18−40.36W
2.12.6 Threshold elevation: 363 ft
2.12.6 Touchdown zone elevation: 387 ft
2.12.7 Slope: 0.7UP

AD 2.13 Declared distances

2.13.1 Designation: 16R
2.13.2 Takeoff run available: 8500
2.13.3 Takeoff 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 Takeoff run available: 8500
2.13.3 Takeoff distance available: 8500
2.13.4 Accelerate−stop distance available: 8500

2.13.5 Landing distance available: 8500

2.13.1 Designation: 16L
2.13.2 Takeoff run available: 11901
2.13.3 Takeoff 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 Takeoff run available: 11901
2.13.3 Takeoff distance available: 11901
2.13.4 Accelerate−stop distance available: 11901
2.13.5 Landing distance available: 11901

2.13.1 Designation: 16C
2.13.2 Takeoff run available: 9426
2.13.3 Takeoff 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 Takeoff run available: 9426
2.13.3 Takeoff distance available: 9426
2.13.4 Accelerate−stop distance available: 9426
2.13.5 Landing distance available: 9426

AD 2.14 Approach and runway lighting
2.14.1 Designation: 16R
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on right

2.14.1 Designation: 34L
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 16C
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 34C
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GATE CTL
2.18.3 Service designation: 126.25 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: GND CON
2.18.3 Service designation: 121.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 120.95 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 119.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 239.3 MHz

2.18.1 Service designation: D−ATIS
2.18.3 Service designation: 118 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 128 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Inner Marker for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47–27–58.22N / 122–19–00.00W
2.19.6 Site elevation: 378.5 ft

2.19.1 ILS type: Localizer for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47–26–15.92N / 122–19–00.00W
2.19.6 Site elevation: 343.8 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47–27–38.46N / 122–19–00.00W
2.19.6 Site elevation: 405.5 ft

2.19.1 ILS type: DME for runway 16R. Magnetic variation: 17E
2.19.2 ILS identification: CJL
2.19.5 Coordinates: 47–26–15.62N / 122–18–59.94W
2.19.6 Site elevation: 364.3 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: BEJ
2.19.5 Coordinates: 47–27–59.78N / 122–19–00.00W
2.19.6 Site elevation: 371 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: BEJ
2.19.5 Coordinates: 47–26–34.93N / 122–18–59.99W
2.19.6 Site elevation: 359 ft

2.19.1 ILS type: DME for runway 34L. Magnetic variation: 17E
2.19.2 ILS identification: BEJ
2.19.5 Coordinates: 47–26–15.62N / 122–18–59.94W
2.19.6 Site elevation: 364 ft

2.19.1 ILS type: Localizer for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47–25–42.27N / 122–18–29.03W
2.19.6 Site elevation: 318.1 ft

2.19.1 ILS type: Glide Slope for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47–27–38.94N / 122–18–33.82W
2.19.6 Site elevation: 425.3 ft

2.19.1 ILS type: Outer Marker for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47–31–56.60N / 122–18–25.00W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47–28–20.04N / 122–18–39.69W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47–26–00.00N / 122–18–22.68W
2.19.6 Site elevation: 369.4 ft

2.19.1 ILS type: Inner Marker for runway 16L. Magnetic variation: 17E
2.19.2 ILS identification: SNQ
2.19.5 Coordinates: 47–27–57.65N / 122–18–27.84W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47–26–00.00N / 122–18–22.68W
2.19.6 Site elevation: 369 ft

2.19.1 ILS type: Localizer for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47–27–54.27N / 122–18–27.86W
2.19.6 Site elevation: 428 ft

2.19.1 ILS type: Glide Slope for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47–26–00.00N / 122–18–23.03W
2.19.6 Site elevation: 355 ft

2.19.1 ILS type: Middle Marker for runway 34R. Magnetic variation: 17E
2.19.2 ILS identification: SEA
2.19.5 Coordinates: 47–25–18.10N / 122–18–29.30W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−26−00.00N / 122−18−39.51W
2.19.6 Site elevation: 359 ft

2.19.1 ILS type: Outer Marker for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−31−56.59N / 122−18−25.04W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−26−00.00N / 122−18−40.45W
2.19.6 Site elevation: 351 ft

2.19.1 ILS type: Glide Slope for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−27−38.69N / 122−18−45.46W
2.19.6 Site elevation: 417.7 ft

2.19.1 ILS type: Inner Marker for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−27−58.58N / 122−18−39.29W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 16C. Magnetic variation: 17E
2.19.2 ILS identification: SZI
2.19.5 Coordinates: 47−28−20.04N / 122−18−39.69W
2.19.6 Site elevation:

2.19.1 ILS type: Localizer for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−27−54.35N / 122−18−39.51W
2.19.6 Site elevation: 422 ft

2.19.1 ILS type: DME for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−26−00.00N / 122−18−44.23W
2.19.6 Site elevation: 370 ft

2.19.1 ILS type: Glide Slope for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−26−25.60N / 122−18−46.17W
2.19.6 Site elevation: 367 ft

2.19.1 ILS type: Middle Marker for runway 34C. Magnetic variation: 17E
2.19.2 ILS identification: TUC
2.19.5 Coordinates: 47−25−49.76N / 122−18−42.14W
2.19.6 Site elevation: 289 ft

General Remarks:
BIRD FLOCKS WITHIN AIRPORT VICINITY − CHECK LOCAL ADVISORYS.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

BETWEEN THE HRS OF 2200−0700 THE USE OF EXTENDED REVERSE THRUST IS DISCOURAGED BEYOND WHAT IS NECCESSARY FOR OPERATIONAL OR SAFETY REASONS. NOISE ABATEMENT PROCEDURES IN EFFECT BETWEEN 2200−0600. FOR FURTHER INFORMATION CONTACT SEA NOISE ABATEMENT OFFICE AT 206−787−7496.

HELICOPTERS LANDING & DEPARTING AVOID OVERFLYING FUEL FARM LOCATED AT THE SE CORNER OF THE AIRPORT.

(E110) CONTINUOUS POWER AIRPORT.

(E94) WSO/WSFO.

TAXIWAY A SOUTH OF TAXIWAY G RESTRICTED TO AIRCRAFT WITH WINGSPAN 225 FT AND SMALLER.

DO NOT MISTAKE TAXIWAY T FOR LANDING SURFACE.

ACCESS TO AIR CARGO 4 PARKING AND CARGO AREAS RESTRICTED TO AIRCRAFT WITH WINGSPANS OF

170 FT OR LESS.

TAXIWAY FOR CORPORATE HANGAR RAMP LIMITED TO AIRCRAFT WITH 104 FT OR LESS WINGSPAN FOR TAXI OPERATIONS. GA CUSTOMS PARKING IS VERY LIMITED.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PRIOR PERMISSION REQUIRED FOR ALL GENERAL AVIATION PARKING AND SERVICES, CONTACT 206–433–5481.

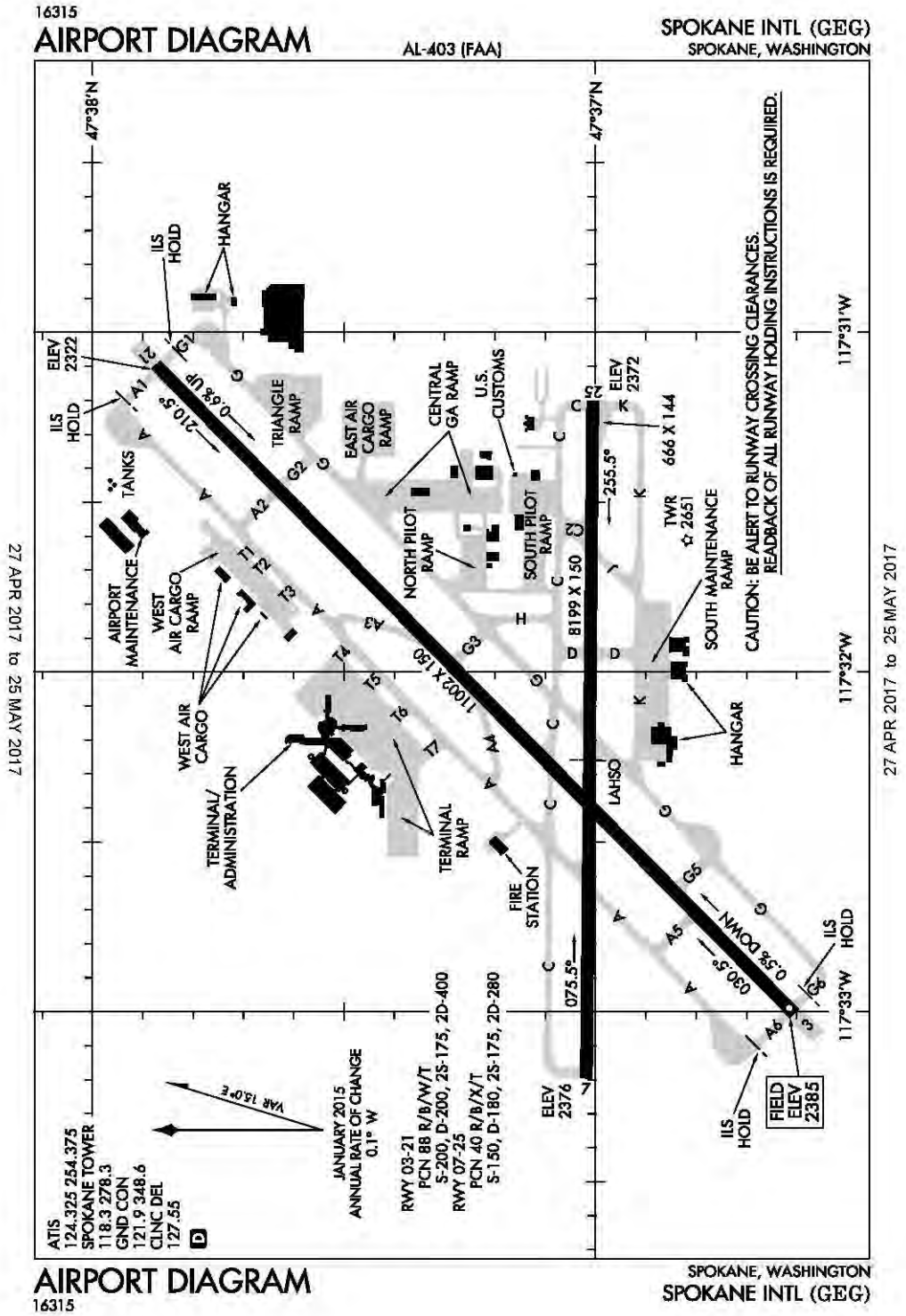
TAXILANE W RESTRICTED TO WINGSPAN OF 135 FT OR LESS NORTH OF TAXIWAY N AND 167 FT OR LESS SOUTH TO TELETYPEWRITER EXCHANGE SERVICE N. SEATTLE RAMP TOWER PROVIDES ADVSY CONTROL ONLY.

GA LANDING FEES PAYABLE BY MAJOR CREDIT CARDS ONLY.

TAXILANE AROUND N SATELLITE RESTRICTED TO AIRCRAFT WITH WINGSPANS OF 135 FT OR LESS. RUNWAY STATUS LIGHTS ARE IN OPN.

CONTACT SEATTLE RAMP TOWER (”SEATTLE RAMP”) ON 122.27 (SOUTH RAMP) OR 126.87 (NORTH RAMP) PRIOR TO ENTRY/PUSHBACK OPERATIONS ON TAXILANE W, NORTH, SOUTH AND CARGO RAMPS/APRONS.

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: 47–37–00.00N / 117–32–00.00W
2.2.2 From City: 5 Miles SW Of Spokane, WA
2.2.3 Elevation: 2385 ft
2.2.5 Magnetic variation: 16E (2010)
2.2.6 Airport Contact: Lawrence J Krauter
9000 W AIRPORT DR.
Spokane, WA 99224
(509–455–6419)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours
2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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 2.10 Aerodrome obstacles
2.10.1.a. Runway designation: 21
2.10.1.b Type of obstacle: Gnd (9 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 500 ft from Centerline

AD 2.12 Runway physical characteristics
2.12.1 Designation: 07
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: 47–37–00.00N / 117–33–11.76W
2.12.6 Threshold elevation: 2376 ft
2.12.6 Touchdown zone elevation: 2376 ft

2.12.1 Designation: 25
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: 47–37–00.00N / 117–31–12.10W
2.12.6 Threshold elevation: 2372 ft
2.12.6 Touchdown zone elevation: 2372 ft

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: 47–36–36.29N / 117–33–00.00W
2.12.6 Threshold elevation: 2385 ft
2.12.6 Touchdown zone elevation: 2385 ft
2.12.7 Slope: 0.5DOWN

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: 47–37–52.38N / 117–31–00.00W
2.12.6 Threshold elevation: 2322 ft
2.12.6 Touchdown zone elevation: 2346 ft
2.12.7 Slope: 0.6UP

AD 2.13 Declared distances
2.13.1 Designation: 07
2.13.2 Takeoff run available: 8199
2.13.3 Takeoff distance available: 8199
2.13.4 Accelerate–stop distance available: 8199
2.13.5 Landing distance available: 8199

2.13.1 Designation: 25
2.13.2 Takeoff run available: 8199
2.13.3 Takeoff distance available: 8199
2.13.4 Accelerate–stop distance available: 8199
2.13.5 Landing distance available: 8199

2.13.1 Designation: 03
2.13.2 Takeoff run available: 11002
2.13.3 Takeoff 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 Takeoff run available: 11002
2.13.3 Takeoff distance available: 11002
2.13.4 Accelerate–stop distance available: 11002
2.13.5 Landing distance available: 11002

AD 2.14 Approach and runway lighting
2.14.1 Designation: 07
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 25

2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 03
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left

2.14.1 Designation: 21
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4−light PAPI on left
2.14.10 Remarks: ALSF 2 May Be Operated As SSALR During Favorable Wx Conditions.

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 123.75 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 124.325 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: CD/P
2.18.3 Service designation: 127.55 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 133.35 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: ATIS
2.18.3 Service designation: 254.375 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 263 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 282.25 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 372.9 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 278.3 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−47.56N / 117−32−51.88W
2.19.6 Site elevation: 2372 ft

2.19.1 ILS type: Middle Marker for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−29.40N / 117−33−10.64W
2.19.6 Site elevation: 2378 ft

2.19.1 ILS type: Localizer for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−37−59.68N / 117−30−54.77W
2.19.6 Site elevation: 2315.7 ft

2.19.1 ILS type: DME for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−32.05N / 117−33−15.10W
2.19.6 Site elevation: 2380.2 ft

2.19.1 ILS type: Inner Marker for runway 03. Magnetic variation: 16E
2.19.2 ILS identification: OLJ
2.19.5 Coordinates: 47−36−30.06N / 117−33−00.00W
2.19.6 Site elevation: 2380.5 ft

2.19.1 ILS type: Outer Marker for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG

2.19.5 Coordinates: 47–40–37.34N / 117–27–00.00W
2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47–36–32.05N / 117–33–15.10W
2.19.6 Site elevation: 2380.2 ft

2.19.1 ILS type: Localizer for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47–36–29.20N / 117–33–10.95W
2.19.6 Site elevation: 2380.1 ft

2.19.1 ILS type: Glide Slope for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47–37–48.96N / 117–31–19.45W
2.19.6 Site elevation: 2324.3 ft

2.19.1 ILS type: Inner Marker for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47–38–00.00N / 117–30–49.60W
2.19.6 Site elevation: 96 ft

2.19.1 ILS type: Middle Marker for runway 21. Magnetic variation: 16E
2.19.2 ILS identification: GEG
2.19.5 Coordinates: 47–38–16.92N / 117–30–28.82W
2.19.6 Site elevation: 2233 ft

General Remarks:

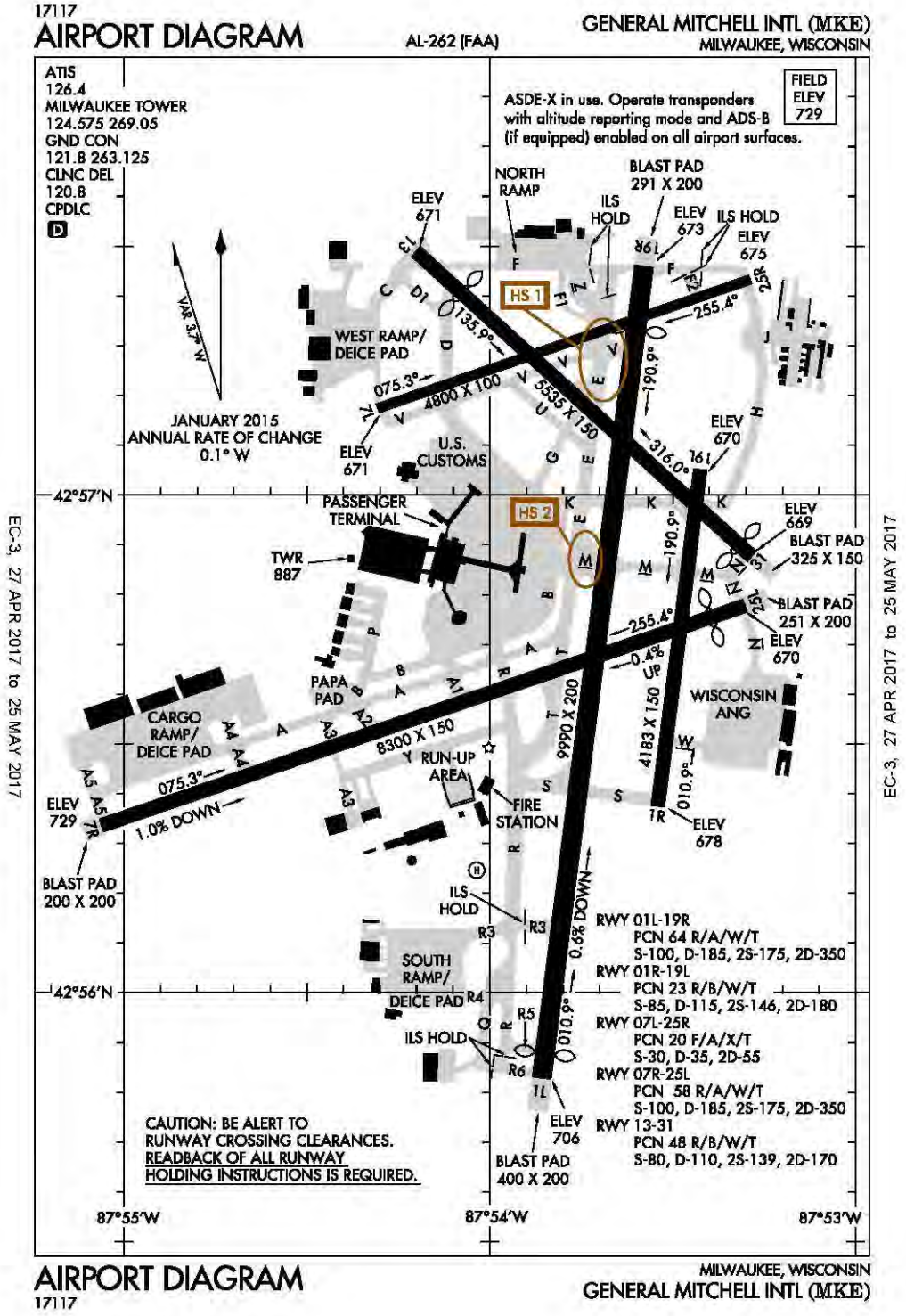
BE ALERT TO TURBULENCE OVER SMOKE STACKS 1 MILE EAST OF AIRPORT.

WATERFOWL & BIRDS ON & IN THE VICINITY OF AIRPORT.

TAXIWAY K UNLIGHTED ON RAMP SIDE ALONG MAINTENANCE RAMP AND IS UNAVAILABLE BELOW 1200 RUNWAY VISUAL RANGE UNLESS UNDER ESCORT BY ”FOLLOW ME”.

PORTIONS OF TAXIWAY K NOT VISIBLE FROM ATCT.

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: 42–56–49.00N / 87–53–49.40W
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: Ismael Bonilla
5300 S HOWELL AVE
Milwaukee, WI 53207
(414–747–5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Operational hours

2.3.1 – 2.3.11: 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
2.4.4 De–icing facilities: None
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
2.6.4 Remarks: ARFF Index D Equip Available Upon Request.

AD 2.10 Aerodrome obstacles

2.10.1.a. Runway designation: 13
2.10.1.b Type of obstacle: Pole (33 ft). Lighted
2.10.1.c Location of obstacle: 69 ft from Centerline

2.10.1.a. Runway designation: 31
2.10.1.b Type of obstacle: Rr (42 ft). Lighted
2.10.1.c Location of obstacle: 295 ft from Centerline

2.10.1.a. Runway designation: 07L
2.10.1.b Type of obstacle: Tree (44 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 187 ft from Centerline

2.10.1.a. Runway designation: 25R
2.10.1.b Type of obstacle: Pole (77 ft). Lighted
2.10.1.c Location of obstacle: 195 ft from Centerline

2.10.1.a. Runway designation: 07R
2.10.1.b Type of obstacle: Tree (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 305 ft from Centerline

2.10.1.a. Runway designation: 25L
2.10.1.b Type of obstacle: Pole (41 ft). Lighted
2.10.1.c Location of obstacle: 464 ft from Centerline

2.10.1.a. Runway designation: 19L
2.10.1.b Type of obstacle: Tree (125 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 463 ft from Centerline

2.10.1.a. Runway designation: 01L
2.10.1.b Type of obstacle: Tree (82 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 985 ft from Centerline

2.10.1.a. Runway designation: 19R
2.10.1.b Type of obstacle: Fence (6 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 404 ft from Centerline

AD 2.12 Runway physical characteristics

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: 42–57–29.26N / 87–54–12.27W
2.12.6 Threshold elevation: 671 ft
2.12.6 Touchdown zone elevation: 670 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: 42–56–52.51N / 87–53–17.18W
2.12.6 Threshold elevation: 669 ft
2.12.6 Touchdown zone elevation: 670 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: 42–57–00.00N / 87–54–19.14W
2.12.6 Threshold elevation: 671 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 / 87−53−17.87W
2.12.6 Threshold elevation: 674 ft
2.12.6 Touchdown zone elevation: 674 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: 42−56−20.67N / 87−55−00.00W
2.12.6 Threshold elevation: 728 ft
2.12.6 Touchdown zone elevation: 728 ft
2.12.7 Slope: 1DOWN

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: 42−56−46.47N / 87−53−18.00W
2.12.6 Threshold elevation: 670 ft
2.12.6 Touchdown zone elevation: 683 ft
2.12.7 Slope: 0.4UP

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: 42−56−21.77N / 87−53−32.50W
2.12.6 Threshold elevation: 678 ft
2.12.6 Touchdown zone elevation: 678 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: 42−57−00.00N / 87−53−25.49W
2.12.6 Threshold elevation: 670 ft
2.12.6 Touchdown zone elevation: 674 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: 42−55−49.80N / 87−53−51.51W
2.12.6 Threshold elevation: 706 ft
2.12.6 Touchdown zone elevation: 704 ft

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: 42−57−27.70N / 87−53−34.77W
2.12.6 Threshold elevation: 673 ft
2.12.6 Touchdown zone elevation: 672 ft

AD 2.13 Declared distances

2.13.1 Designation: 13
2.13.2 Takeoff run available: 5538
2.13.3 Takeoff 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 Takeoff run available: 5538
2.13.3 Takeoff distance available: 5538
2.13.4 Accelerate−stop distance available: 5538
2.13.5 Landing distance available: 5334

2.13.1 Designation: 07L
2.13.2 Takeoff run available: 4800
2.13.3 Takeoff 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 Takeoff run available: 4800
2.13.3 Takeoff distance available: 4800
2.13.4 Accelerate−stop distance available: 4800
2.13.5 Landing distance available: 4800

2.13.1 Designation: 07R
2.13.2 Takeoff run available: 8300
2.13.3 Takeoff distance available: 8300
2.13.4 Accelerate−stop distance available: 8012
2.13.5 Landing distance available: 8012

2.13.1 Designation: 25L
2.13.2 Takeoff run available: 8300
2.13.3 Takeoff distance available: 8300
2.13.4 Accelerate−stop distance available: 8300
2.13.5 Landing distance available: 7868

2.13.1 Designation: 01R
2.13.2 Takeoff run available: 4183
2.13.3 Takeoff 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 Takeoff run available: 4183
2.13.3 Takeoff distance available: 4183
2.13.4 Accelerate−stop distance available: 4183

2.13.5 Landing distance available: 4183

2.13.1 Designation: 01L
2.13.2 Takeoff run available: 9990
2.13.3 Takeoff distance available: 9990
2.13.4 Accelerate–stop distance available: 9380
2.13.5 Landing distance available: 9080

2.13.1 Designation: 19R
2.13.2 Takeoff run available: 9990
2.13.3 Takeoff distance available: 9990
2.13.4 Accelerate–stop distance available: 9990
2.13.5 Landing distance available: 9205

AD 2.14 Approach and runway lighting
2.14.1 Designation: 13
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 31
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 07L
2.14.4 Visual approach slope indicator system: 4–box VASI on left

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 07R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400 feet high intensity approach lighting system with sequenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

2.14.1 Designation: 19R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights
2.14.4 Visual approach slope indicator system: 4–light PAPI on right

AD 2.18 Air traffic services communication facilities
2.18.1 Service designation: APCH/P CLASS C
2.18.3 Service designation: 118 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 120.8 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.8 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 125.35 MHz

2.18.1 Service designation: D–ATIS
2.18.3 Service designation: 126.4 MHz
2.18.4 Hours of operation: 24

2.18.1 Service designation: APCH/P CLASS C IC
2.18.3 Service designation: 126.5 MHz

2.18.1 Service designation: AS ASSIGNED
2.18.3 Service designation: 127.85 MHz

2.18.1 Service designation: OPNS
2.18.3 Service designation: 139.5 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 263.125 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 317.725 MHz

2.18.1 Service designation: OPNS
2.18.3 Service designation: 311 MHz

2.18.1 Service designation: 128ARW (ANG) CMD

POST
2.18.3 Service designation: 321 MHz

2.18.1 Service designation: UPSET CTL
2.18.3 Service designation: 6761 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 127 MHz

2.18.1 Service designation: APCH/P DEP/P
2.18.3 Service designation: 263.075 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 124.575 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 269.05 MHz

2.18.1 Service designation: MAINT OPS (MOCC)
2.18.3 Service designation: 379.85 MHz

2.18.1 Service designation: DEP/P
2.18.3 Service designation: 135.875 MHz

AD 2.19 Radio navigation and landing aids
2.19.1 ILS type: Glide Slope for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−20.49N / 87−54−47.12W
2.19.6 Site elevation: 707.3 ft

2.19.1 ILS type: Outer Marker for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−54−32.56N / 88−02−27.51W
2.19.6 Site elevation:

2.19.1 ILS type: Middle Marker for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−12.13N / 87−55−35.49W
2.19.6 Site elevation: 744 ft

2.19.1 ILS type: Localizer for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−49.09N / 87−53−00.00W
2.19.6 Site elevation: 668.3 ft

2.19.1 ILS type: DME for runway 07R. Magnetic variation: 2W
2.19.2 ILS identification: GMF
2.19.5 Coordinates: 42−56−18.51N / 87−55−23.66W
2.19.6 Site elevation: 729.8 ft

2.19.1 ILS type: DME for runway 25L. Magnetic variation: 2W
2.19.2 ILS identification: PXY
2.19.5 Coordinates: 42−56−18.51N / 87−55−23.66W
2.19.6 Site elevation: 729.8 ft

2.19.1 ILS type: Localizer for runway 25L. Magnetic variation: 2W
2.19.2 ILS identification: PXY
2.19.5 Coordinates: 42−56−16.07N / 87−55−22.78W
2.19.6 Site elevation: 727.9 ft

2.19.1 ILS type: Outer Marker for runway 01L. Magnetic variation: 4W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−50−22.60N / 87−54−46.83W
2.19.6 Site elevation: 678 ft

2.19.1 ILS type: DME for runway 01L. Magnetic variation: 4W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−57−50.94N / 87−53−27.45W
2.19.6 Site elevation: 715.2 ft

2.19.1 ILS type: Localizer for runway 01L. Magnetic variation: 4W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−57−49.96N / 87−53−30.97W
2.19.6 Site elevation: 712.9 ft

2.19.1 ILS type: Glide Slope for runway 01L. Magnetic variation: 4W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−56−00.00N / 87−53−43.05W
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: 42−55−44.66N / 87−53−52.40W
2.19.6 Site elevation: 705.8 ft

2.19.1 ILS type: Middle Marker for runway 01L. Magnetic variation: 4W
2.19.2 ILS identification: MKE
2.19.5 Coordinates: 42−55−26.50N / 87−53−55.50W
2.19.6 Site elevation: 701.2 ft

2.19.1 ILS type: Middle Marker for runway 19R. Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 42−57−46.59N / 87−53−31.53W
2.19.6 Site elevation:

2.19.1 ILS type: Glide Slope for runway 19R. Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 42−57−00.00N / 87−53−32.52W
2.19.6 Site elevation: 666.3 ft

2.19.1 ILS type: Localizer for runway 19R. Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 42−55−38.30N / 87−53−53.48W
2.19.6 Site elevation: 709 ft

2.19.1 ILS type: Outer Marker for runway 19R. Magnetic variation: 2W
2.19.2 ILS identification: BLY
2.19.5 Coordinates: 43−03−36.06N / 87−52−36.26W
2.19.6 Site elevation:

General Remarks:
RUNWAY 07L/25R CLOSED TO ALL JET AIRCRAFT.

TAXIWAY A CLOSED FROM TAXIWAY R TO TAXIWAY E AND TAXIWAY E CLOSED FROM TAXIWAY T TO TAXIWAY M AND TAXIWAY T NORTH OF RUNWAY 07R−25L CLOSED TO AIRCRAFT WITH TAIL HEIGHT GREATER THAN 54.5 FT DURING CAT II AND CAT III OPERATIONS.

RUNWAY 13/31 CLOSED JET AIRCRAFT, UNLESS PERMISSION FROM TOWER OR AIRPORT MANAGER 414−747−5325.

TRAINING FLIGHTS INVOLVING SUCCESSIVE USE OF ANY RUNWAY PROHIBITED 2200−0600.

RUNWAYS 13/31 & 01R/19L & 07L/25R CLOSED EXCEPT LIGHT WEIGHT SINGLE ENGINE AIRCRAFT 0400−1200Z DAILY.

BIRDS ON & IN THE VICINITY OF AIRPORT.

PREFERRED USAGE BY AIRCRAFT BETWEEN 2200−0600 IS TAKE-OFF RUNWAY 19R & LANDING RUNWAY 01L.

ALL APPROACHES ARE OVER NOISE SENSITIVE AREAS; ALL TURBOJET AIRCRAFT SHOULD REFRAIN FROM CONDUCTING MULTI VFR TRAFFIC PATTERN APPROACHES & DEPS WITHOUT PRIOR APPROVAL FROM AIRPORT MANAGER CALL C414−747−5325.

ANG: PRIOR PERMISSION REQUIRED ALL AIRCRAFT, 48HR PRIOR NOTICE, CONTACT AIRFIELD OPERATIONS 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, CLOSED HOLIDAY, SAT−SUN EXCEPT UNIT TMG, CALL FOR AVAILABLE.

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.

ANG: END OF RUNWAY FACILITIES, AIRCRAFT SHELTERS/REVETMENTS, AND ALERT FACILITIES ARE NOT AVAILABLE. AIRFIELD/AIRCRAFT PARKING CONCERNS INCLUDE: LIMITED STATIC GROUNDING POINTS AND NO AIRCRAFT TIE DOWN POINTS.

ANG: NO FLEET SERVICE/HOT CARGO PARKING AVAILABLE. CONTACT UPSET CTRL 20 MIN PRIOR TO ARR TO RECEIVE CURRENT BIRD WATCH CONDITION AND PARKING INFORMATION.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

AIRCRAFT WITH WINGSPAN GREATER THAN 175 FT CANNOT PASS SIMULTANEOUSLY ON TAXIWAY 'E' & TAXIWAY 'Z'.

TAXIWAY B CLOSED BETWEEN TAXIWAY R AND TAXIWAY A1 TO AIRCRAFT WITH WINGSPAN GREATER THAN OR EQUAL TO 118 FT WITHOUT PERMISSION FROM AIRPORT DIRECTOR AT 414–747–5325.

TAXIWAYS D1, F2, H, J, F1, P AND F (EAST OF RUNWAY 19R) AND TAXIWAY K (EAST OF RUNWAY 19L) CLOSED TO AIRCRAFT WTIH WINGSPAN GREATER THAN 78 FT.

TAXIWAY F (WEST OF TAXIWAY Z) CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN OR EQUAL TO 118 FT UNLESS PERMISSION FROM AIRPORT DIRECTOR AT 414–747–5325.

RUNWAY 19R TAKE-OFF DISTANCE AVAILABLE 8,750 FT FROM INTERSECTION TAXIWAY V.

TAXIWAY V BETWEEN TAXIWAY D AND RUNWAY 7L/25R CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 170 FT WHEN RUNWAY 7L/25R IN USE.

TAXIWAY B BETWEEN TAXIWAY V AND TAXIWAY R CLOSED TO AFFECT WITH WINGSPAN GREATER THAN 170 FT.

HOLDING BAY AT RUNWAY 19R WHEN IN USE, TAXIWAY Z ADJACENT TO BAY IS LIMITED TO AIRCRAFT WITH WINGSPAN UP TO 170 FT.

RUNWAY 07L/25R NO AIRCRAFT 65,000 LBS OR GREATER ALLOWED TO TAXI BETWEEN TAXIWAY D & RUNWAY 13/31 AND EAST OF RUNWAY 19R.

RUNWAY 01R–19L AVAILABLE TO AIR CARRIERS FOR TAXI ONLY.

TAXIWAY S & TAXIWAY T BETWEEN TAXIWAY R & RUNWAY 07R/25L AND RUNWAY 07R/25L BETWEEN RUNWAY 1R/19L & TAXIWAY R CLOSED DURING CAT II & III OPERATIONS.

HOLDING BAY AT RUNWAY 01L CLOSED EXCEPT AIRCRAFT WITH WINGSPAN LESS THAN 118 FT.

ANG: NONSTANDARD MRK ON PARK APRON FOR WINGTIP CLEARANCE; SEE AIRFIELD MANAGEMENT FOR DETAILED MAP.

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.

TAXIWAY A CLOSED BETWEEN TAXIWAY A4 AND TAXIWAY A5 TO AIRCRAFT WITH WINGSPAN GREATER THAN OR EQUAL TO 214' UNLESS PERMISSION FROM AIRPORT MANAGER 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.

INDEX

[References are to page numbers]

A

Abbreviations, GEN 2.2–1

Accident and Incident Reporting , ENR 1.16–1
  Items To Be Reported, ENR 1.16–2

Actual Navigation Performance (ANP), ENR 4.1–33

ADS–R. *See* Automatic Dependent Surveillance–Rebroadcast

Aerodrome Forecast (TAF), GEN 3.5–70

Aeronautical Charts, GEN 3.2–1

Aeronautical Fixed Telecommunications Network (AFTN), GEN 3.4–5

Aeronautical Information Publication (AIP)
  Publication Schedule, GEN 0.1–2
  Structure, GEN 0.1–1
  Subscription Information, GEN 0.1–3

Aeronautical Publications, Distribution of, GEN 3.1–1

AFTN. *See* Aeronautical Fixed Telecommunications Network (AFTN)

AHRS. *See* Attitude Heading Reference System

Air Route Traffic Control Center (ARTCC), GEN 3.3–2
  ARTCC Communications, GEN 3.3–2
  ARTCC Radio Frequency Outage, GEN 3.3–3

Air Traffic Clearance. *See* Clearance

Air Traffic Control, Pilot/Controller Roles and Responsibilities, ENR 1.1–65

Aircraft
  Lights, Use of, ENR 1.1–28
  Unmanned, ENR 5.7–2

Aircraft Suffixes, ENR 1.10–11

Airport
  Aircraft Arresting Devices, AD 1.1–29
  Airport Advisory/Information Services, ENR 1.4–13
  Fees and Charges, GEN 4.1–1
  Fire Fighting Requirements, AD 1.1–3
  Local Airport Advisory (LAA), GEN 3.3–8
  Operations, ENR 1.1–1
    Exiting the Runway after Landing, ENR 1.1–23
    VFR Flights in Terminal Areas, ENR 1.1–19
    Low Level Wind Shear/Microburst Detection Systems, ENR 1.1–13
    Signals, Hand, ENR 1.1–24
    Taxiing, ENR 1.1–16
    Traffic Pattern, ENR 1.1–1, ENR 1.1–2, ENR 1.1–7
    With Operating Control Tower, ENR 1.1–1
    Without Operating Control Tower, GEN 3.3–7, GEN 3.3–17, ENR 1.1–7
  Remote Airport Information Service (RAIS), GEN 3.3–8, ENR 1.4–14
  Reservations Procedures, GEN 3.3–15
    Using Enhanced Computer Voice Reservation System (e–CVRS), GEN 3.3–15

Airport Lighting, AD 1.1–4
  Airport Beacons, AD 1.1–18, AD 1.1–20
  Approach Light Systems, AD 1.1–4
  Obstruction Lighting, AD 1.1–20
  Pilot–controlled Lighting, AD 1.1–15
  Precision Approach Path Indicator (PAPI), AD 1.1–4
  Runway Lighting, AD 1.1–5
  Taxiway Lighting, AD 1.1–19
  Visual Approach Slope Indicator (VASI), AD 1.1–4

Airport Markings, AD 1.1–21
  Colors, AD 1.1–21
  Holding Position Markings, AD 1.1–24
  Other Markings, AD 1.1–25
    Nonmovement Area Boundary Markings, AD 1.1–26
    Temporarily Closed Runways and Taxiways, AD 1.1–26
    VOR Checkpoint Markings, AD 1.1–26
  Runway Markings, AD 1.1–22
  Taxiway Markings, AD 1.1–23

Airport Operations
  Intersection Takeoffs, ENR 1.1–18
  Land and Hold Short , ENR 1.1–21

Airport Signs, AD 1.1–26
  Destination Signs, AD 1.1–28
  Direction Signs, AD 1.1–28
  Information Signs, AD 1.1–28
  Location Signs, AD 1.1–27
    ILS Critical Area Boundary Sign, AD 1.1–28
    Runway Boundary Sign, AD 1.1–28
    Runway Location Sign, AD 1.1–27
    Taxiway Location Sign, AD 1.1–27

[References are to page numbers]

Mandatory Instruction Signs, AD 1.1–26
ILS Critical Area Holding Position Sign, AD 1.1–27
No Entry Sign, AD 1.1–27
Runway Approach Area Holding Position Sign, AD 1.1–27
Runway Holding Position Sign, AD 1.1–27
Runway Distance Remaining Signs, AD 1.1–29

Airport Surface Detection Equipment – Model X (ASDE–X), ENR 1.1–45

Airport Surface Surveillance Capability, ENR 1.1–45

Airport Use, AD 1.1–1*See also* Airport, Reservations Procedures

Airspace, ENR 1.4–1
Classes, ENR 1.4–1, ENR 1.4–3, ENR 1.4–4
Controlled, ENR 1.4–3
IFR Requirements, ENR 1.4–3
VFR Requirements, ENR 1.4–3
Operating Rules and Requirements, ENR 1.4–4, ENR 1.4–6, ENR 1.4–11, ENR 1.4–12
Radar Vectors in, ENR 1.1–68, ENR 3.5–2
Speed Adjustments in, ENR 1.1–68
VFR Corridors, ENR 1.4–14
VFR Transition Routes, ENR 1.4–15
Flights Over Charted U.S. Wildlife Refuges, Parks and Forest Service Areas, ENR 5.6–2
National Security Area, ENR 5.1–2
Obstructions to Flight. *See* Flight Hazards, Potential
Parachute Jump Aircraft Operations, ENR 5.1–4
Special Use, ENR 5.1–1
Alert Areas, ENR 5.2–1
Controlled Firing Areas, ENR 5.2–1
Military Operations Area (MOA), ENR 5.2–1
Military Training Routes, ENR 5.2–1
Prohibited Areas, ENR 5.1–1
Restricted Areas, ENR 5.1–1
Warning Areas, ENR 5.1–2
Temporary Flight Restriction, ENR 5.1–2
Terminal Radar Service Area, ENR 1.1–63
Terminal Radar Service Area (TRSA), ENR 1.4–15
VFR Flyways, ENR 1.4–14
VFR Routes, Published, ENR 1.4–14
VFR Weather Minimums, ENR 1.4–2

Airways and Route Systems. *See* Navigation

Altimeter Setting Procedures, ENR 1.7–1

Altitude
Mandatory, ENR 1.5–28
Maximum, ENR 1.5–28
Minimum, ENR 1.5–28

ANP. *See* Actual Navigation Performance

Approach Control Service for VFR Arriving Aircraft, GEN 3.3–7

Approaches, ENR 1.5–10, ENR 1.5–46
Approach and Landing Minimums, ENR 1.5–22
Approach Clearance, ENR 1.5–14
Contact Approach, ENR 1.1–66
Differences between ILS and ILS PRM approaches, ENR 1.5–61
ILS Approaches to Parallel Runways, ENR 1.5–48, ENR 1.5–53
ILS Minimums, ENR 4.1–9
Instrument Approach, ENR 1.1–66
Instrument Approach Procedure Charts, ENR 1.5–25*See also* Aeronautical Charts
Minimum Vectoring Altitudes, ENR 1.5–37
Missed Approach, ENR 1.1–67, ENR 1.5–69
Monitoring of Instrument Approaches, ENR 1.5–47
No–Gyro Approach, ENR 1.5–47
Overhead Approach Maneuver, ENR 1.5–73
Parallel ILS Approaches, ENR 1.5–51
Practice Instrument Approaches, ENR 1.1–19
Precision Approach, ENR 1.5–46
Side–step Maneuver, ENR 1.5–22
Simultaneous Close Parallel ILS PRM Approaches, ENR 1.5–55
Simultaneous Converging Instrument Approaches, ENR 1.5–62
Surveillance Approach, ENR 1.5–46
Timed Approaches From a Holding Fix, ENR 1.5–63
Vertical Descent Angle (VDA), ENR 1.5–39
Visual, ENR 1.1–70
Visual Descent Points, ENR 1.5–39, ENR 1.5–68

Area Navigation (RNAV), ENR 4.1–32, ENR 4.1–33*See also* Area Navigation

Area Navigation (RNAV) Routes, ENR 3.3–1

ARFF (Aircraft Rescue and Fire Fighting) Emergency Hand Signals, GEN 3.7–1

ARFF (Aircraft Rescue and Fire Fighting) Radio Call Sign, GEN 3.7–1

ARTCC. *See* Air Route Traffic Control Center (ARTCC)

ATS Routes, ENR 3.1–1
Lower ATS Routes, ENR 3.1–1
Upper ATS Routes, ENR 3.2–1

[References are to page numbers]

Attitude Heading Reference System (AHRS), ENR 4.1−12

Automated Terminal Information Service (ATIS). *See* Meteorological Services

Automated Weather Observation System (AWOS) . *See* AWOS

Automated Weather Sensor System (AWSS), GEN 3.3−17

Automatic Dependent Surveillance − Contract (ADS−C), Climb Descend Procedure (CDP), ENR 7.12−1

Automatic Dependent Surveillance (ADS−B), In−Trail Procedure (ITP), ENR 7.12−1

Automatic Dependent Surveillance−Rebroadcast, ENR 1.1−85

Automatic Flight Information Service (AFIS) − Alaska FSSs Only. *See* AFIS

Aviation Safety Reporting Program, ENR 1.16−1

B

Bird Activity, ENR 5.6−1
- Reporting Bird and Other Wildlife Activities, ENR 5.6−1
- Reporting Bird Strikes, ENR 5.6−1

C

Call Signs
- Aircraft, GEN 3.4−6
- Ground Station, GEN 3.4−8

Charts. *See* Aeronautical Charts

Class C Airspace, Outer Area, ENR 1.4−6

Clearance
- Adherence to, ENR 1.1−32
- Air Traffic Control, ENR 1.1−29
- Amended, ENR 1.1−30
- Clearance Items, ENR 1.1−29
- Pilot Responsibilities, ENR 1.1−31
- Special VFR, ENR 1.1−30
- VFR−On−Top, ENR 1.1−32
- VFR/IFR Flights, ENR 1.1−32

Cold Temperature Operations, ENR 1.10−2
- Pilot Responsibilities, ENR 1.1−67

Collision Avoidance, ENR 1.15−8

Common Traffic Advisory Frequency (CTAF). *See* Radio Communications

Communications. *See* Radio Communications

Controlled Airspace. *See* Airspace, Controlled

Controller, Responsibility, ENR 1.5−1

Conversion Tables, GEN 2.6−1

Cruising Altitudes, ENR 1.4−2, ENR 1.4−13

Customs. *See* U.S. Customs

D

Data Link Procedures, ENR 7.2−1

Declared Distances, ENR 1.1−9

Density Altitude. *See* Flight Hazards, Potential

Departure Control, ENR 1.5−76
- Abbreviated IFR Departure Clearance Procedures, ENR 1.5−77

Departure Procedures, ENR 1.5−73
- Clearance Void Times, ENR 1.5−75
- Departure Restrictions, ENR 1.5−74, ENR 1.5−75
- Hold for Release, ENR 1.5−76
- Instrument Departure Procedures (DP), ENR 1.5−78
- Pre−Taxi Clearance Procedures, ENR 1.5−73
- Release Times, ENR 1.5−76
- Taxi Clearance, ENR 1.5−74

Departure, Instrument, ENR 1.1−71

Differences From ICAO Standards, Recommended Practices and Procedures, GEN 1.7−1

Discrete Emergency Frequency, GEN 3.7−1

E

EFVS. *See* Enhanced Flight Vision Systems

ELT. *See* Emergency Locator Transmitters

Emergency
- Aircraft Rescue and Fire Fighting Communications, GEN 3.7−1
- Aircraft, Overdue, GEN 3.6−5
- Body Signals, GEN 3.6−6
- Distress and Urgency Communications, GEN 3.6−12
- Ditching Procedures, GEN 3.6−15
- Fuel Dumping, GEN 3.6−19
- Obtaining Assistance, GEN 3.6−13

[References are to page numbers]

VFR Search and Rescue Protection, GEN 3.6–5

Emergency Locator Transmitters, GEN 3.6–2

Enhanced Flight Vision Systems, ENR 1.5–65

EPE. *See* Estimate of Position Error

Estimate of Position Error (EPE), ENR 4.1–33

F

FAROS. *See* Final Approach Runway Occupancy Signal (FAROS); Stand-Alone Final Approach Runway Occupancy Signal (FAROS)

Fees and Charges. *See* Airport

Final Approach Runway Occupancy Signal (FAROS), AD 1.1–12

Final Guard, ENR 1.4–13

FIS–B. *See* Flight Information Service–Broadcast

Flight Hazards, Potential, ENR 5.7–1
- Density Altitude, ENR 5.7–4
- Laser Operations, ENR 5.7–10
- Mountain Flying, ENR 5.7–3
- Mountain Wave, ENR 5.7–5
- Obstructions, ENR 5.7–1
- VFR in Congested Area, ENR 5.7–1

Flight Information Service–Broadcast, ENR 1.1–85

Flight Level Allocation, New York OCA, ENR 7.13–1

Flight Management System (FMS), ENR 1.17–4

Flight Plan, ENR 1.10–1, ENR 1.11–1
- Aircraft Suffixes, ENR 1.10–11
- Airways/Jet Routes Depiction, ENR 1.10–13
- Area Navigation (RNAV), ENR 1.10–15
- Canceling, ENR 1.10–18
- Change, ENR 1.10–18
- Composite (VFR/IFR Flights), ENR 1.10–17
- Direct Flights, ENR 1.10–14
- Flight Plan Form, ENR 1.10–16
- Flight Plan Requirements, ENR 1.10–8
  - Defense VFR, ENR 1.10–12
  - IFR, ENR 1.10–12
  - VFR, ENR 1.10–9
- International Flight Plan, ENR 1.10–20
- Preflight Preparation, ENR 1.10–1

Flight Service Station (FSS), GEN 3.1–4

Forms, Bird Strike Incident/Ingestion Report, ENR 5.6–3

Frequencies. *See* Radio Communications

FSS. *See* Flight Service Station (FSS)

Fuel Advisory, Minimum, ENR 1.1–72

G

GBAS. *See* Ground Based Augmentation System

GBAS Landing System (GLS), ENR 4.1–30

Global Navigation Satellite System (GNSS), ENR 4.1–30

Global Navigation Satellte System (GNSS), ENR 4.1–35

Global Positioning System (GPS), ENR 4.1–12

GLS. *See* GBAS Landing System

GPS IFR Equipment Classes/Categories, ENR 4.1–25

Ground Based Augmentation System (GBAS), ENR 4.1–32

Gulf of Mexico Grid System, ENR 6.1–6

H

Half–Way Signs, ENR 5.7–4

Hazard, Thermal Plumes, ENR 5.7–13

HDTA. *See* High Density Traffic Airports

Helicopter
- IFR Operations, ENR 6.1–1, ENR 7.1–1
- Special Operations, ENR 6.2–1, ENR 7.2–1

High Altitude Destinations. *See* IFR Operations to High Altitude Destinations

High Density Traffic Airports, GEN 3.3–15

Holding Pattern
- Airspeeds, ENR 1.5–2
- Distance Measuring Equipment (DME), ENR 1.5–4
- Entry Procedures, ENR 1.5–4
- Timing, ENR 1.5–4

Holding Procedures, ENR 1.5–1

[References are to page numbers]

I

ICAO Standards, Recommended Practices and Procedures. *See* Differences From ICAO Standards, Recommended Practices and Procedures

IFR Operations to High Altitude Destinations, ENR 1.10−17

Inertial Navigation System, ENR 4.1−12

Inertial Reference Unit (IRU), ENR 4.1−12

INS. *See* Internal Navigation System

Instrument Departure. *See* Departure, Instrument

Instrument Departure Procedures (DP), ENR 1.5−78

Instrument Landing System
- Glide Slope, Critical Area, ENR 4.1−9
- Localizer, Critical Area, ENR 4.1−9
- Locators, Compass, ENR 4.1−5

Instrument Landing System (ILS), ENR 4.1−5*See also* Approaches
- Frequency Table, ENR 4.1−8

Instrument Meteorological Conditions (IMC), ENR 1.5−78

Integrated Terminal Weather System, ENR 1.1−13

Intersection Takeoffs. *See* Airport Operations

IRU. *See* Inertial Reference Unit

ITWS. *See* Integrated Terminal Weater System

J

Jet Route System. *See* Navigation

L

Land and Hold Short Operations. *See* Airport Operations

Law Enforcement Operations by Civil and Military Organizations, ENR 1.12−12

Light Amplification by Stimulated Emission of Radiation (Laser) Operations. *See* Flight Hazards, Potential

Lighting. *See* Airport Lighting

Line Up and Wait, ENR 1.5−74

LLWAS. *See* Low Level Wind Shear Alert System

Local Airport Advisory (LAA), GEN 3.3−8, ENR 1.4−13

LORAN, ENR 4.1−12

Low Level Wind Shear Alert System (LLWAS), ENR 1.1−13

Low Level Wind Shear/Microburst Detection Systems, ENR 1.1−13

Lower ATS Routes, ENR 3.1−1
- Low Altitude ATS Route Structure, ENR 3.1−1

LUAW, ENR 1.5−74

M

Medical Facts for Pilots, ENR 1.15−1
- Carbon Monoxide Poisoning in Flight, ENR 1.15−5
- Certification, ENR 1.15−1
- Decompression Sickness after Scuba Diving, ENR 1.15−4
- Effects of Altitude, ENR 1.15−3
  - Ear Block, ENR 1.15−4
  - Hypoxia, ENR 1.15−3
  - Sinus Block, ENR 1.15−4
- Hyperventilation in Flight, ENR 1.15−4
- Illusions, ENR 1.15−5
- Personal Checklist, ENR 1.15−2
- Scanning for Other Aircraft, ENR 1.15−7
- Vision in Flight, ENR 1.15−6

Meteorological Services, Automatic Terminal Information Service (ATIS), GEN 3.3−14

Meteorology, National Weather Service, Aviation Weather Service, GEN 3.5−2

Military NOTAMs, ENR 1.10−3

Military Training Routes. *See* Airspace, Special Use

Minimum Safe Altitudes, ENR 1.5−28

Minimum Turning Altitude (MTA), ENR 3.5−3

Mountain Flying. *See* Flight Hazards, Potential

Mountain Wave. *See* Flight Hazards, Potential

MSA. *See* Minimum Safe Altitudes

MTA. *See* Minimum Turning Altitude (MTA)

[References are to page numbers]

N

National Security, ENR 1.12–1
ADIZ, ENR 1.12–1
ADIZ Requirements, ENR 1.12–2
Airspace Waivers, ENR 1.12–6
Civil Aircraft Operations, ENR 1.12–3
Defense Area, ENR 1.12–1
ESCAT, ENR 1.12–7
Foreign State Aircraft Operations, ENR 1.12–6
Territorial Airspace, ENR 1.12–1
TSA Aviation Security Programs, ENR 1.12–7

National Security , Requirements, ENR 1.12–1

National Security and Interception Procedures, ENR 1.12–1, ENR 1.12–10

National Security Area. *See* Airspace

NAVAID Identifier Removal During Maintenance, ENR 4.1–34

NAVAID User Reports, ENR 4.1–35

Navigation. *See also* Global Positioning System (GPS)
Adhering to Airways or Routes, ENR 3.5–3
Airway or Route Course Changes, ENR 3.5–2
Airways and Route Systems, ENR 3.5–1
Changeover Points, ENR 3.5–2
LORAN, ENR 4.1–12

Navigation, Radio, GEN 3.4–1
Nondirectional Radio Beacon, GEN 3.4–3

Navigation Aids, ENR 4.1–1

Navigation Reference System (NRS), ENR 1.10–15

Navigation Specifications (Nav Specs), ENR 1.17–4

Navigational, Inertial Navigation System, ENR 4.1–12

Near Midair Collision Reporting, ENR 1.16–2
Investigation, ENR 1.16–3

Notice to Airmen, ENR 1.10–3
NOTAM D, ENR 1.10–3

Notices To Airmen (NOTAM) Service, GEN 3.1–2, ENR 1.10–3

Notices to Airmen Publication, NTAP, ENR 1.10–4

O

Oceanic Airspace, In–flight Contingencies, ENR 7.3–1

Oceanic Operations, ENR 7.1–1
Air–to–Air Frequency, ENR 7.1–5
Beacon Code Requirements, ENR 7.1–3
Flight Plan Filing Requirements, ENR 7.1–1
Flight Plans, ENR 7.1–2
IFR/VFR Operations, ENR 7.1–1
NAT Clearance Procedures, ENR 7.6–1
NAT Safety, ENR 7.8–1
NAT Timekeeping Procedures, ENR 7.7–1
Offshore Routes, ENR 7.11–1
Operational Policy
ADS–C Separation, ENR 7.5–1
Lateral Separation, ENR 7.4–1
Position Reporting, ENR 7.1–3
San Juan FIR Customs, ENR 7.9–1
SATVOICE, ENR 7.1–4
SLOP, ENR 7.1–6
Y Routes, ENR 7.10–1

Operational Information System (OIS), ENR 1.10–12

Overhead Approach Maneuver. *See* Approaches

P

Parachute Jump Aircraft Operations. *See* Airspace

Performance–Based Navigation (PBN), ENR 1.17–1

Phonetic Alphabet. *See* Radio Communications, Phonetic Alphabet

Pilot Visits to Air Traffic Facilities, GEN 3.3–1

Pointer NOTAMs, ENR 1.10–3

Position Reporting, GEN 3.3–4

Position Reporting Requirements, GEN 3.3–4

Pre–departure Clearance Procedures, ENR 1.5–73

Precipitation Static, ENR 5.7–9

Precision Approach Systems, ENR 4.1–31

Procedure Turns, ENR 1.5–15

R

Radar, ENR 1.1–38
Air Traffic Control Radar Beacon System, ENR 1.1–39
Capabilities, ENR 1.1–38
Precision Approach , ENR 1.1–40
Surveillance, ENR 1.1–40

[References are to page numbers]

Radar Services Provided by ATC, ENR 1.1−49
Aircraft Conflict Alert, ENR 1.1−50
Offshore Controlled Airspace, ENR 1.1−65
Radar Assistance to VFR Aircraft, ENR 1.1−52
Radar Traffic Information Service, ENR 1.1−50
Terrain/Obstruction Alert, ENR 1.1−49

Radio Communications, GEN 3.4−6
Common Traffic Advisory Frequency (CTAF), GEN 3.3−7
Contact Procedures, GEN 3.4−11
Directions, GEN 3.4−10
Failure, GEN 3.4−10, GEN 3.4−17
For Aircraft on International or Overseas Flights, GEN 3.4−13, GEN 3.4−17
Phonetic Alphabet, GEN 3.4−8
Phraseology, GEN 3.4−8
Radio Technique, GEN 3.4−6
Speed, GEN 3.4−10
UNICOM/MULTICOM , GEN 3.3−12, GEN 3.3−13

Radio Navigation Aids
Distance Measuring Equipment, ENR 4.1−4, ENR 4.1−7
Nondirectional Radio Beacon, ENR 4.1−1
Tactical Air Navigation, ENR 4.1−5
VHF Omni−directional Radio Range, ENR 4.1−1

Reduced Separation, Climb/Descent Procedures, ENR 7.12−1

REL. *See* Runway Entrance Lights

Remote Airport Advisory (RAA), GEN 3.3−8, ENR 1.4−13

Remote Airport Information Service (RAIS), ENR 1.4−14

Required Navigation Performance (RNP), ENR 4.1−32

Required Navigation Performance (RNP) Operations, ENR 1.10−19, ENR 4.1−33

Reservations. *See* Airport, Reservations Procedures

Responsibility, Controller, ENR 1.5−1

RIL. *See* Runway Intersection Lights (RIL)

RNP. *See* Required Navigation Performance (RNP)

Runway
Entrance Lights, AD 1.1−10
Status Light (RWSL) System, AD 1.1−10

Runway Intersection Lights (RIL), AD 1.1−11

RWSL System, Runway Status Light (RWSL) System. *See* Runway Status Light (RWSL) System

S

SCAT−I DGPS. *See* Special Category I Differential GPS

Seaplane Safety, ENR 5.7−6

Search and Rescue, GEN 3.6−1

Security Identification Display Area, AD 1.1−29

Separation
IFR, Standards, ENR 1.1−34
Runway, ENR 1.1−37
Visual, ENR 1.1−37, ENR 1.1−70

SIDA. *See* Security Identifications Display Area

Signs, Half−Way, ENR 5.7−4

Special Activity Airspace (SAA) NOTAMs, ENR 1.10−3

Special Category I Differential GPS (SCAT−I DGPS), ENR 4.1−31

Special Instrument Approach Procedures, ENR 1.5−46

Spoofing, ENR 1.17−9

Stand-Alone Final Approach Runway Occupancy Signal (FAROS), AD 1.1−13

Standard Terminal Arrival, ENR 1.5−11

STAR. *See* Standard Terminal Arrival

T

Takeoff Hold Lights (THL), AD 1.1−11

TDWR. *See* Terminal Doppler Weather Radar

Temporary Flight Restrictions. *See* Airspace

Terminal Arrival Area (TAA), ENR 1.5−29

Terminal Doppler Weather Radar, ENR 1.1−13

Time, Conversion from UTC to Standard Time, GEN 3.4−10

THL. *See* Takeoff Hold Lights

TLS. *See* Transponder Landing System

Tower En Route Control (TEC), ENR 1.1−64

Traffic Advisories, ENR 1.1−69

Traffic Advisories, At Airports Without Operating Control Towers, GEN 3.3−7

[References are to page numbers]

Traffic Alert and Collision Avoidance System (TCAS I & II), ENR 1.1–72

Traffic Information Service (TIS), ENR 1.1–73, ENR 1.1–80

Traffic Pattern. *See* Airport, Operations

Transponder Landing System (TLS), ENR 4.1–31

Transponder Operation, ENR 1.1–46
- Automatic Altitude Reporting, ENR 1.1–47
- Code Changes, ENR 1.1–47
- Emergency, ENR 1.1–49
- Ident Feature, ENR 1.1–47
- Mode C Requirements, ENR 1.1–47
- Under Visual Flight Rules, ENR 1.1–48

TRSA. *See* Airspace, Terminal Radar Service Area

U

Unidentified Flying Objects (UFO), ENR 1.16–3

Unmanned Aircraft, ENR 5.7–2

Upper ATS Routes, ENR 3.2–1
- High Altitude ATS Route Structure, ENR 3.2–1

U.S. Customs Requirements
- Entry, Transit, and Departure of Aircraft, GEN 1.2–1
- Entry, Transit, and Departure of Cargo, GEN 1.4–1
- Entry, Transit, and Departure of Passengers and Crew, GEN 1.3–1

U.S. Customs Service, Locations, GEN 1.1–2

U.S. Differences From ICAO Standards. *See* Differences From ICAO Standards, Recommended Practices and Procedures

Units of Measurement, GEN 2.1–1

V

VFR Flyways. *See* Airspace

VFR–on–top, ENR 1.1–71

VHF Omni–directional Range, Minimum Operational Network (MON), ENR 4.1–2

Visual Approach. *See* Approaches

Visual Climb Over Airport, ENR 1.5–80

Visual Meteorological Conditions (VMC), ENR 1.5–78

Visual Separation, ENR 1.1–70

VOCA. *See* Visual Climb Over Airport

Volcanic Ash, Flight Operations in, ENR 5.7–7

VOR Receiver Check, ENR 4.1–3

W

Weather Minimums. *See* Airspace, VFR Weather Minimums

Weather System Processor, ENR 1.1–13

Wide Area Augmentation System (WAAS), ENR 4.1–26

Wildlife Refuges, Parks, and Forest Service Areas. *See* Airspace

WSP, ENR 1.1–13

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 5, 2017, Amendment 530 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/.

TABLE OF CONTENTS

Contents	Page
Colored Federal Airways	1
Direct Routes – U.S.	8
(1) Puerto Rico Airways	18
(2) Bahama Airways	19
(3) Atlantic Airways	23
(4) Pacific Airways	40
Low Altitude RNAV Airways	48
High Altitude RNAV Airways	63
Ground–Based High Altitude RNAV Airways	106
VOR Federal Airways	107
Alaska VOR Federal Airways	299
Hawaii VOR Federal Airways	318
Jet Routes	325
VOR Federal Airway Changeover Points	369
(1) Alaska VOR Federal Airway Changeover Points	392
(2) Hawaii VOR Federal Airway Changeover Points	395
Jet Route Changeover Points	396

95.0040 COLORED FEDERAL AIRWAYS

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		

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		

FROM	TO	MEA

95.48 GREEN FEDERAL AIRWAY G8 - CONTINUED

CRACK, AK FIX	CHINOOK, AK NDB	#*3000
*2300 - MOCA		
#VHF/UHF COMMS AVBL 9000 MSL AND BELOW		
#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
#HF COMMS REQURED BELOW 8000		
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		
PORT HEIDEN, AK NDB/DME	WIDTH, AK FIX	9000
	COP 090 PDN	
WIDTH, AK FIX	WOODY ISLAND, AK NDB	*9000
*6300 - MOCA		
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

95.53GREEN FEDERAL AIRWAY G13

ZOLMN, NC FIX	MANTEO, NC NDB	2000

95.55GREEN FEDERAL AIRWAY G15

ST MARYS, AK NDB	ANVIK, AK NDB/DME	4000
ANVIK, AK NDB/DME	TAKOTNA RIVER, AK NDB	*9000
*6000 - MOCA		
*7000 - GNSS MEA		

FROM	TO	MEA

95.56GREEN FEDERAL AIRWAY G16

POINT LAY, AK NDB	WAINWRIGHT VILLAGE, AK NDB	*1700
*1200 - MOCA		
WAINWRIGHT VILLAGE, AK NDB	BROWERVILLE, AK NDB	*1600
*1100 - MOCA		
BROWERVILLE, AK NDB	NUIQSUT VILLAGE, AK NDB	1600
	COP 050 VIR	
NUIQSUT VILLAGE, AK NDB	PUT RIVER, AK NDB	*1700
*1200 - MOCA		

95.57GREEN FEDERAL AIRWAY G17

WAINWRIGHT VILLAGE, AK NDB	ATQASUK, AK NDB	*1600
*1100 - MOCA		

95.58GREEN FEDERAL AIRWAY G18

HOTHAM, AK NDB	POINT LAY, AK NDB	*10000
*6000 - MOCA	COP 096 HHM	
POINT LAY, AK NDB	ATQASUK, AK NDB	2300
	COP 050 PIZ	

95.101 AMBER FEDERAL AIRWAY A1

SANDSPIT, CANADA NDB	U.S. CANADIAN BORDER	5200
U.S. CANADIAN BORDER	SITKA, AK NDB	*5200
*2300 - MOCA		
SITKA, AK NDB	SPARL, AK FIX	5200
SPARL, AK FIX	OCEAN CAPE, AK NDB	*6000
*2200 - MOCA		
OCEAN CAPE, AK NDB	CAPEM, AK FIX	*6000
*2000 - MOCA		
CAPEM, AK FIX	CORVA, AK FIX	*6000
*4400 - MOCA		
CORVA, AK FIX	EGGER, AK FIX	2000
EGGER, AK FIX	ORCA BAY, AK NDB	5000
ORCA BAY, AK NDB	CAMPBELL LAKE, AK NDB	*9000
*8300 - MOCA		
CAMPBELL LAKE, AK NDB	TAKOTNA RIVER, AK NDB	*10000
*9500 - MOCA		
TAKOTNA RIVER, AK NDB	NORTH RIVER, AK NDB	*7000
*6000 - MOCA		
NORTH RIVER, AK NDB	FORT DAVIS, AK NDB	3000

95.102 AMBER FEDERAL AIRWAY A2

U.S. CANADIAN BORDER	NABESNA, AK NDB	*9600
*9000 - MOCA		
NABESNA, AK NDB	DELTA JUNCTION, AK NDB	8000

95.103 AMBER FEDERAL AIRWAY A3

EVANSVILLE, AK NDB	PUT RIVER, AK NDB	10000

FROM	TO	MEA

95.104 AMBER FEDERAL AIRWAY A4

EVANSVILLE, AK NDB	ANAKTUVUK PASS, AK NDB	*10000
*8300 - MOCA		

95.105 AMBER FEDERAL AIRWAY A5

AMBLER, AK NDB/DME	EVANSVILLE, AK NDB	*7500
*6600 - MOCA		

95.106 AMBER FEDERAL AIRWAY A6

ST MARYS, AK NDB	NORTH RIVER, AK NDB	5000

95.107 AMBER FEDERAL AIRWAY A7

CAMPBELL LAKE, AK NDB	MINERAL CREEK, AK NDB	12000
	COP 069 CMQ	

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
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	BURWASH, CANADA NDB	#11000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
BURWASH, CANADA NDB	BEAVER CREEK, CANADA NDB	#9600
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
BEAVER CREEK, CANADA NDB	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		

FROM	TO	MEA

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

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/DME	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

95.601 BLUE FEDERAL AIRWAY B1

WOODY ISLAND, AK NDB	ILIAMNA, AK NDB/DME	*10000
*9100 - MOCA		

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	

FROM	TO	MEA

95.602 BLUE FEDERAL AIRWAY B2 - CONTINUED

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/DME	3700
ANVIK, AK NDB/DME	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		

95.6125 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
GLENNALLEN, AK NDB	*DELTA JUNCTION, AK NDB	**12000
*8000 - MCA DELTA JUNCTION, AK NDB , SE BND		
**11500 - MOCA		

95.6126 BLUE FEDERAL AIRWAY B26

CHENA, AK NDB	YUKON RIVER, AK NDB	7000

FROM	TO	MEA

95.6127 BLUE FEDERAL AIRWAY B27

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

US CANADIAN BORDER	NICHOLS, AK NDB	5000
NICHOLS, AK NDB	SITKA, AK NDB	*6900
*6000 - MOCA		
*6000 - GNSS MEA		

95.6137 BLUE FEDERAL AIRWAY B37

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

ELEPHANT, AK NDB	CHILL, AK FIX	7300
CHILL, AK FIX	HAINES, AK NDB	9000

95.6140 BLUE FEDERAL AIRWAY B40

HAINES, AK NDB	ROBINSON, CANADA NDB	#*10000
*9800 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6179 BLUE FEDERAL AIRWAY B79

SANDSPIT, CANADA NDB	NICHOLS, AK NDB	#5000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.1000 DIRECT ROUTES-U.S.

ABERDEEN, SD VOR/DME	MASON CITY, IA VOR/DME	18000
		MAA - 45000
ABERDEEN, SD VOR/DME	FARGO, ND VOR/DME	18000
		MAA - 45000
ABILENE, TX VORTAC	WACO, TX VORTAC	*6500
*3300 - MOCA		
ABILENE, TX VORTAC	LLANO, TX VORTAC	7000
	COP 75 ABI	
ALBEK, NJ FIX	WOODSTOWN, NJ VORTAC	2000
		MAA - 7000
ALBEK, NJ FIX	INT OOD VORTAC 075 & CYN VORTAC 042	2000
		MAA - 8000
ALEXANDRIA, MN VOR/DME	JAMESTOWN, ND VOR/DME	18000
		MAA - 22000
ALLENDALE, SC VOR	SINCA, GA FIX	11000
		MAA - 23000
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		
APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	18000
		MAA - 45000
ATLANTIC CITY, NJ VORTAC	ATLANTIC CITY, NJ VORTAC 165/20	2000
		MAA - 4000
AUGUSTA, ME VOR/DME	SCUPP, OA FIX	13000
		MAA - 39000
BAGBY, CA FIX	CLOVIS, CA VORTAC	*7000
*5800 - MOCA		
BANGOR, ME VORTAC	*PATTA, ME FIX	**8000
*8000 - MRA		
**5000 - MOCA		
BARNES, MA VORTAC	KIBBE, MA FIX	2200
		MAA - 17500
BARRETTS MOUNTAIN, NC VOR/DME	GREENSBORO, NC VORTAC	*3500
*3000 - 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.		
BAXLY, GA FIX	BRUNSWICK, GA VORTAC	*3000
*1700 - MOCA		
BERLIN, NH VOR/DME	NERNY, ME FIX	*6000
*4300 - MOCA		MAA - 17000
BERLIN, NH VOR/DME	SUGRR, ME FIX	6000
		MAA - 17000
BESGE, NC WP	CAPEX, NC WP	6000
		MAA - 10000
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
BLALY, GA FIX	FLINN, GA FIX	2000
BOOIE, TN NDB	YUMMY, VA FIX	4500
BOZEMAN, MT VOR/DME	BOYSEN RESERVOIR, WY VOR/DME	19000
		MAA – 35000

FROM	TO	MEA
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
BRUSE, FL WP	DEFUN, FL FIX	*2000
*1700 - MOCA		
BULLION, NV VOR/DME	BOISE, ID VORTAC	18000
BUTLER, MO VORTAC	VICHY, MO VOR/DME	18000
VIA BUM VORTAC 84		
& VIH VOR/DME 268		
		MAA - 41000
BUTLER, MO VORTAC	KANSAS CITY, MO VORTAC	3100
		MAA - 35000
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		
CARRA, FL FIX	ORMOND BEACH, FL VORTAC	2000
		MAA - 17500
*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
CHISUM, NM VORTAC	*TRACC, NM FIX	10000
*11000 - MCA TRACC, NM FIX , N BND		
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, MO VOR/DME	SEDALIA, MO NDB	4000
COLUMBIA, SC VORTAC	CHARLESTON, WV VORTAC	18000
		MAA - 45000
CONCORD, NH VORTAC	KHRIS, NH FIX	3000
		MAA - 8000
CORONA, NM VORTAC	TRACC, NM FIX	12000
CORTEZ, CO VOR/DME	PUEBLO, CO VORTAC	#22000
	COP 80 CEZ	
		MAA - 45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
COVEX, LA FIX	BELCHER, LA VORTAC	*3500
*1900 - MOCA		
COVEX, LA FIX	APPIN, TX FIX	*8000
*1800 - MOCA		
CRAIG, FL VORTAC	GATORS, FL VORTAC	24000
		MAA - 45000
CRAIG, FL VORTAC	VALDOSTA, GA VOR/DME	*4000
*1500 - MOCA		
CRAIG, FL VORTAC	LEE COUNTY, FL VORTAC	24000
		MAA - 45000
CRESTVIEW, FL VORTAC	IDGES, FL FIX	2000
VIA 1500 FLOOR CEW VORTAC R-131.		
		MAA - 17500
CUNEY, TX FIX	NACOGDOCHES, TX NDB	*4000
*3000 - MOCA		
DAGGETT, CA VORTAC	PALMDALE, CA VORTAC	7000

FROM	TO	MEA
DAYTON, OH VOR/DME	FORT WAYNE, IN VORTAC	18000 MAA - 43000
DAYTON, OH VOR/DME	APPLETON, OH VORTAC	18000 MAA - 45000
DAYTON, OH VOR/DME	GUNNE, OH FIX	18000 MAA - 39000
DELLS, WI VORTAC	EAU CLAIRE, WI VORTAC	18000 MAA - 29000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	2700 MAA - 35000
DESTN, FL FIX	VARRE, FL FIX	*2000
VIA 1500 FLOOR. NUN VOR R-095.		
*1500 - MOCA		MAA - 17500
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	U.S. CANADIAN BORDER	18000
VIA DIK VORTAC 31		
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	TRAVERSE CITY, MI VOR/DME	24000
DULUTH, MN VORTAC	U.S. CANADIAN BORDER	#*18000
*3100 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
DUNOIR, WY VOR/DME	BILLINGS, MT VORTAC	18000 MAA - 45000
*DUNOIR, WY VOR/DME	WORLAND, WY VOR/DME COP 40 DNW	**16000
*12200 - MCA DUNOIR, WY VOR/DME , E BND		
**15200 - MOCA		
DUPREE, SD VORTAC	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
ELLWOOD CITY, PA VORTAC	INT EWC VORTAC 050 & BFD VORTAC 246	4000
EVELETH, MN VOR/DME	ELY, MN VOR/DME	3400
FARGO, ND VOR/DME	WILLISTON, ND VOR/DME	23000
FAYETTEVILLE, NC VOR/DME	KINSTON, NC VORTAC	2000
FAYETTEVILLE, NC VOR/DME	TAR RIVER, NC VORTAC	*3000
*1600 - MOCA		
FELLOWS, CA VOR/DME	FILLMORE, CA VORTAC COP 42 FLW	9500
FELLOWS, CA VOR/DME	GUADALUPE, CA VOR	7000
FELLOWS, CA VOR/DME	SAN MARCUS, CA VORTAC	9000
FELLOWS, CA VOR/DME	GORMAN, CA VORTAC	11000
FELLOWS, CA VOR/DME	SHAFTER, CA VORTAC	6400
FELLOWS, CA VOR/DME	GAVIOTA, CA VORTAC	8000
FILLMORE, CA VORTAC	CLOVIS, CA VORTAC COP 60 FIM	18000
FILLMORE, CA VORTAC	FELLOWS, CA VOR/DME	9500
FLINT, MI VORTAC	OLTOE, IA WP	2600
FLYING CLOUD, MN VOR/DME	SIOUX FALLS, SD VORTAC	17000 MAA - 25000
FORNEY, MO VOR	COLUMBIA, MO VOR/DME	2900 MAA - 17500
FORT DODGE, IA VORTAC	BRADFORD, IL VORTAC	18000 MAA - 45000
FORT STOCKTON, TX VORTAC	SAN ANGELO, TX VORTAC	7000
FORT STOCKTON, TX VORTAC	ROCKSPRINGS, TX VORTAC	*8000
*6000 - MOCA		
FORT WAYNE, IN VORTAC	KALAMAZOO, MI VOR/DME	18000

FROM	TO	MEA
		MAA - 43000
GATORS, FL VORTAC	CARRA, FL FIX	3000
		MAA - 17500
GATORS, FL VORTAC	BASSS, FL FIX	3000
		MAA - 17500
GATORS, FL VORTAC	ROYES, FL FIX	*3000
*1700 - MOCA		
GEORGETOWN, NY VORTAC	VASTS, NY FIX	3900
GINNA, CA FIX	CAMARILLO, CA VOR/DME	4000
GIPPER, MI VORTAC	LITCHFIELD, MI VOR/DME	#18000
	COP 49 GIJ	
		MAA - 41000
#MAXIMUM CROSSING ALT SBN 075/49 33000.		
GLINA, NM FIX	BOLES, NM VOR/DME	#*13000
VIA BWS VOR/DME		
351		
*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 VORTAC	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
GRAND STRAND, SC VORTAC	KINSTON, NC VORTAC	18000
		MAA - 45000
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		
GUNNE, OH FIX	TIVERTON, OH VOR/DME	18000
		MAA - 39000
HOLSTON MOUNTAIN, TN VORTAC	LONDON, KY VOR/DME	18000
		MAA - 45000
HOMEE, PA FIX	JOHNSTOWN, PA VORTAC	4200
HOMEE, PA FIX	REVLOC, PA VOR/DME	4000
HONEZ, CA FIX	MODESTO, CA VOR/DME	2200
HORIG, TN WP	KIMGE, TN WP	5500
		MAA - 10000
HOVEL, ID FIX	ONTARIO, OR NDB	
	SE BND	7000
	NW BND	9000
HUDSPETH, TX VORTAC	MARFA, TX VOR/DME	9400
HUMBLE, TX VORTAC	QUITMAN, TX VOR/DME	*9000
*2200 - MOCA		MAA - 41000
HURON, SD VORTAC	REDWOOD FALLS, MN VOR/DME	31000
	COP 40 HON	
		MAA - 37000
JAMESTOWN, ND VOR/DME	BISMARCK, ND VOR/DME	18000
		MAA - 24000
JAMESTOWN, ND VOR/DME	GRAND FORKS, ND VOR/DME	18000
		MAA - 35000
JIMMY, VA FIX	INT HPW VORTAC 105 & HCM VORTAC 134	2000
JULIAN, CA VORTAC	PARADISE, CA VORTAC	8000
		MAA - 41000
KAISER, MO NDB	FORNEY, MO VOR	*3000
*2400 - MOCA		
KALAMAZOO, MI VOR/DME	VICTORY, MI VOR/DME	18000
		MAA - 43000
KALISPELL, MT VOR/DME	HELENA, MT VORTAC	*15500
	COP 50 FCA	
*11400 - MOCA		

FROM	TO	MEA
KALISPELL, MT VOR/DME	U.S. CANADIAN BORDER COP 82 FCA	18000 MAA - 45000
KANSAS CITY, MO VORTAC	ST JOSEPH, MO VORTAC	2900 MAA - 35000
KANSAS CITY, MO VORTAC *2900 - MOCA	LINCOLN, NE VORTAC	*3500 MAA - 35000
KEARNEY, NE VOR	MANKATO, KS VORTAC	4200
KENNEDY, NY VOR/DME	COLTS NECK, NJ VOR/DME	2000 MAA - 5000
KHRIS, NH FIX	LAWRENCE, MA VOR/DME	3000 MAA - 8000
KILMA, NJ FIX	COLTS NECK, NJ VOR/DME	2000 MAA - 6000
KIRKSVILLE, MO VORTAC	SPINNER, IL VORTAC	18000 MAA - 41000
LAFAYETTE, LA VORTAC	ORICH, LA FIX	1600
LAKE CHARLES, LA VORTAC *1600 - MOCA	APPIN, TX FIX	*8000
LAKE CHARLES, LA VORTAC *1600 - MOCA	LUFKIN, TX VORTAC	*3000 MAA - 1700
LAKE HUGHES, CA VORTAC	FILLMORE, CA VORTAC	8000
LAMONI, IA VOR/DME	IOWA CITY, IA VORTAC	18000 MAA - 42000
LAUGHLIN, TX VORTAC *3000 - MOCA	SAN ANTONIO, TX VORTAC	*5000
LAWTON, OK VOR/DME VIA LAW VOR/DME 71 & MLC VORTAC 254 *2700 - MOCA	MC ALESTER, OK VORTAC	*6000 MAA - 24000
LEONA, TX VORTAC *1900 - MOCA	GREGG COUNTY, TX VORTAC	*2500
LINCOLN, NE VORTAC	OMAHA, IA VORTAC	3700 MAA - 35000
LINCOLN, NE VORTAC *2700 - MOCA	DES MOINES, IA VORTAC	*5000 MAA - 45000
LONDON, KY VOR/DME	HOLSTON MOUNTAIN, TN VORTAC	18000 MAA - 43000
LUFKIN, TX VORTAC *2100 - MOCA	PALESTINE, TX NDB COP 53 LFK	*3200
LUFKIN, TX VORTAC *2000 - MOCA	MONROE, LA VORTAC COP 82 LFK	*8000
MADISON, WI VORTAC	DELLS, WI VORTAC	18000 MAA - 29000
MANHATTAN, KS VOR/DME	FORBES FIELD, KS- RIPLY LOM COP 35 MHK	3500
MANKATO, KS VORTAC *3100 - MOCA	SALINA, KS VORTAC	*3400
MANTECA, CA VOR/DME	SAN JOSE, CA VOR/DME COP 30 ECA	6000 MAA - 30000
MANTECA, CA VOR/DME	BUSHY, CA FIX	6000
MARATHON, FL NDB VIA CONTROL 1233	TADPO, FL FIX	2500
*MARIC, CA FIX VIA AVE VOR/DME 109 & LHS VORTAC 305 *3400 - MCA MARIC, CA FIX , E BND	LAKE HUGHES, CA VORTAC	7800
MARYSVILLE, CA VOR/DME	CHICO, CA VOR/DME	3000 MAA - 12000
MC ALESTER, OK VORTAC *2700 - MOCA	TULSA, OK VORTAC	*3000
MC GUIRE, NJ VORTAC	ROBBINSVILLE, NJ VORTAC	2000 MAA – 7000

FROM	TO	MEA
MC GUIRE, NJ VORTAC	INT GXU VORTAC 234 & MXE VORTAC 113	2000
		MAA - 8000
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	KALISPELL, MT VOR/DME	18000
		MAA - 45000
MISSOULA, MT VOR/DME	BOZEMAN, MT VOR/DME	20000
		MAA - 35000
MISSOULA, MT VOR/DME	GREAT FALLS, MT VORTAC	18000
		MAA - 24000
MISSOULA, MT VOR/DME	DILLON, MT VOR/DME	16500
		MAA - 35000
MONTEBELLO, VA VOR/DME	ELKINS, WV VORTAC	6600
MONTOUR, PA VORTAC	DU BOIS, PA LOM	5000
	COP 65 MMJ	
MORGANTOWN, WV VORTAC	INT AGC VORTAC 237 & EWC VORTAC 190	3800
MORMON MESA, NV VORTAC	WILSON CREEK, NV VORTAC	18000
MORRO BAY, CA VORTAC	FILLMORE, CA VORTAC	9500
MORRO BAY, CA VORTAC	SHAFTER, CA VORTAC	6000
MORRO BAY, CA VORTAC	FELLOWS, CA VOR/DME	6400
VIA OTO VOR 168		
MUDDY MOUNTAIN, WY VOR/DME	DICKINSON, ND VORTAC	18000
		MAA - 35000
MUSTANG, NV VORTAC	TROSE, CA FIX	22000
NAPOLEON, MO VORTAC	KAISER, MO NDB	*5000
	COP 70 ANX	
*2400 - MOCA		
NERNY, ME FIX	AUGUSTA, ME VOR/DME	6000
		MAA - 17000
NEWMAN, TX VORTAC	TURQE, NM FIX	*8000
*6700 - MOCA		MAA - 17500
NORTH BEND, OR VOR/DME	EUGENE, OR VORTAC	18000
		MAA - 41000
NORTH BEND, OR VOR/DME	NEWPORT, OR VORTAC	18000
		MAA - 45000
NORTH PHILADELPHIA, PA VOR	NORTH PHILADELPHIA, PA VOR 100/40	*4000
*1700 - MOCA		MAA - 5000
NORTH PHILADELPHIA, PA VOR	ROBBINSVILLE, NJ VORTAC	2000
		MAA - 7000
NORTH PLATTE, NE VORTAC	KEARNEY, NE VOR	*5000
*4200 - MOCA		
NORTHBROOK, IL VOR/DME	DES MOINES, IA VORTAC	18000
		MAA - 41000
NORWICH, CT VOR/DME	LAFAY, RI FIX	2000
		MAA - 17500
O'NEILL, NE VORTAC	MASON CITY, IA VOR/DME	24000
VIA ONL VORTAC 68 & MCW VOR/DME 257		
		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	SUNOL, CA FIX	18000
		MAA - 31000

FROM	TO	MEA
PANOCHE, CA VORTAC	*HENCE, CA FIX	**9000
*9000 - MCA HENCE, CA FIX , E BND		
**5800 - MOCA		
PARADISE, CA VORTAC	*CALBE, CA FIX	6000
*8500 - MCA CALBE, CA FIX , NW BND		
		MAA - 17500
PARER, FL FIX	CRESS, FL FIX	*2000
*1400 - MOCA		
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
PECAN, GA VOR/DME	OMAHO, AL FIX	*2500
*1900 - MOCA		
PENDLETON, OR VORTAC	DILLON, MT VOR/DME	#24000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
PHIPS, FL FIX	DESTN, FL FIX	*3000
VIA 1500 FLOOR. PFN VORTAC R-284.		
*1500 - MOCA		MAA - 17500
PINON, NM VOR/DME	*TRACC, NM FIX	10000
*11000 - MCA TRACC, NM FIX , N BND		
POINT REYES, CA VOR/DME	WOODSIDE, CA VOR/DME	*5000
*4400 - MOCA		MAA - 17000
POTTSTOWN, PA VORTAC	BOYER, PA FIX	5000
		MAA - 7000
*PRYOR, OK FIX	DRAKE, AR VOR/DME	**4000
*2900 - MRA		
**3000 - MOCA		MAA - 23000
PUEBLO, CO VORTAC	HILL CITY, KS VORTAC	18000
		MAA - 45000
PUEBLO, CO VORTAC	HAYES CENTER, NE VORTAC	18000
VIA PUB VORTAC 37		
& HCT VORTAC 221		
		MAA - 41000
PYNON, CO FIX	BLACK FOREST, CO VOR/DME	9400
QUITMAN, TX VOR/DME	TULSA, OK VORTAC	*9000
*3000 - MOCA		
RAPID CITY, SD VORTAC	MINOT, ND VORTAC	#18000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
RAPID CITY, SD VORTAC	HURON, SD VORTAC	31000
	COP 165 RAP	
		MAA - 37000
RAPID CITY, SD VORTAC	FARGO, ND VOR/DME	24000
RAPID CITY, SD VORTAC	DUPREE, SD VORTAC	18000
		MAA - 35000
RAVINE, PA VORTAC	HAILS, PA FIX	3400
RAVINE, PA VORTAC	WILKES-BARRE, PA VORTAC	*4000
*3900 - MOCA		
RED BLUFF, CA VORTAC	SCAGGS ISLAND, CA VORTAC	*6000
	COP 60 RBL	
*9000 - MOCA		
RED BLUFF, CA VORTAC	REDDING, CA VOR/DME	3000
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		
REVLOC, PA VOR/DME	GRACE, PA FIX	4000
		MAA - 17000

FROM	TO	MEA
RICHY, CA FIX	MARRI, CA FIX	13000
RIVERTON, WY VOR/DME	GREAT FALLS, MT VORTAC	#*35000
*14800 - MOCA		
#35000 MRA AT COP.		
RIVERTON, WY VOR/DME	LARAMIE, WY VOR/DME	18000
		MAA - 35000
ROCK SPRINGS, WY VOR/DME	JACKSON, WY VOR/DME	*18000
	COP 118 OCS	
*13200 - MOCA		MAA - 45000
ROCK SPRINGS, WY VOR/DME	LARAMIE, WY VOR/DME	*18000
*14000 - MOCA		MAA - 45000
ROGUE VALLEY, OR VORTAC	*ROOTY, OR FIX	11000
*11000 - MRA		
ROLLS, OK FIX	INT GAG VORTAC 143 & SYO	*6000
	VORTAC 079	
*3300 - MOCA		MAA - 17500
ROME, OR VOR/DME	DONNELLY, ID VOR/DME	24000
		MAA - 45000
ROME, OR VOR/DME	DUBOIS, ID VORTAC	31000
	COP 144 REO	
		MAA - 45000
SACRAMENTO, CA VORTAC	KLAMATH FALLS, OR VORTAC	18000
	COP 130 SAC	
SALINA, KS VORTAC	FORBES KS LOM	*4500
*2800 - MOCA		
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
SALT FLAT, TX VORTAC	MARFA, TX VOR/DME	10400
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 ANGELO, TX VORTAC	GOOCH SPRINGS, TX VORTAC	5000
SAN ANGELO, TX VORTAC	ROCKSPRINGS, TX VORTAC	4200
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		
SAUFLEY, FL VOR	VARRE, FL FIX	2000
VIA NUN VOR 104		
		MAA - 17500
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		
SHELBYVILLE, TN VOR/DME	INT BNA VORTAC 130 & SYI	*3000
	VOR/DME 040	
*2400 - MOCA		
SHERIDAN, WY VOR/DME	RAPID CITY, SD VORTAC	18000
		MAA - 45000
SIDNEY, NE VOR/DME	ABERDEEN, SD VOR/DME	29000
		MAA - 45000
SILVER CITY, NM VOR/DME	ALBUQUERQUE, NM VORTAC	14500
	COP 50 SVC	

FROM	TO	MEA
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 VIA GEG VORTAC 139 & DNJ VOR/DME 322	DONNELLY, ID VOR/DME	18000
		MAA - 41000
SQUAW VALLEY, CA VOR/DME	*RICHY, CA FIX	11000
*12000 - MCA RICHY, CA FIX , SE BND		
SQUAW VALLEY, CA VOR/DME	KLAMATH FALLS, OR VORTAC	28000
		MAA - 45000
ST JEAN, CANADA VORTAC VIA YJN VORTAC 160 & LEB VOR/DME 360	LEBANON, NH VOR/DME	#18000
		MAA - 26000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
ST LOUIS, MO VORTAC	MOLINE, IL VORTAC	*8000
*3200 - MOCA		MAA - 30000
ST LOUIS, MO VORTAC	PEORIA, IL VORTAC	*7000
*2100 - MOCA		
ST PETERSBURG, FL VORTAC	ATLANTA, GA VORTAC	30000
		MAA - 41000
SUGRR, ME FIX	AUGUSTA, ME VOR/DME	6000
		MAA - 17000
TAOS, NM VORTAC	*CHARM, CO FIX	15000
*10000 - MCA CHARM, CO FIX , S BND		
		MAA - 45000
TIVERTON, OH VOR/DME	WILMO, OH FIX	18000
		MAA - 41000
TIVERTON, OH VOR/DME	AKRON, OH VOR/DME	18000
		MAA - 39000
TONOPAH, NV VORTAC VIA TPH VORTAC 77 & BCE VORTAC 262	BRYCE CANYON, UT VORTAC	23000
		MAA - 45000
TOPEKA, KS VORTAC	NEOSHO, MO VOR/DME	*5000
*3000 - MOCA		MAA - 35000
TROSE, CA FIX	MODESTO, CA VOR/DME	
	SW BND	5000
	NE BND	22000
		MAA - 39000
TRUER, PA FIX	ELMIRA, NY VOR/DME	4000
TULSA, OK VORTAC	INT TUL VORTAC 189 & OKM VOR 208	*2500
*2200 - MOCA		
TULSA, OK VORTAC	BARTLESVILLE, OK VOR/DME	2500
TURQE, NM FIX	BOLES, NM VOR/DME	#*8000
*6600 - MOCA		MAA - 17500
#ROUTE NOT USABLE WHEN R-5103A OR R-5103B IN USE. RADAR RQRD WHEN IN HOLLOMAN APCH CTL AIRSPACE. #MAA 11000 MSL WHEN R-5103C IN USE		
TUSCOLA, TX VOR/DME	LLANO, TX VORTAC	*4500
*3900 - MOCA		
TWENTYNINE PALMS, CA VORTAC VIA TNP VORTAC 28 & GFS VORTAC 185	GOFFS, CA VORTAC COP 17 TNP	18000
		MAA - 45000
UNBAR, MI FIX	SALEM, MI VORTAC	18000
		MAA - 45000

FROM	TO	MEA
VALDOSTA, GA VOR/DME	WAYCROSS, GA VORTAC	2300
		MAA - 7000
VAN NUYS, CA VOR/DME	STABO, CA FIX	4000
	COP 18 VNY	
*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
VARRE, FL FIX	SAUFLEY, FL VOR	2000
VIA 1500 FLOOR. NUN VOR R-095.		
		MAA - 17500
VEERS, CT FIX	BARNES, MA VORTAC	3300
		MAA - 17500
VICHY, MO VOR/DME	POCKET CITY, IN VORTAC	18000
VIA VIH VOR/DME 87		
& PXV VORTAC 272		
		MAA - 41000
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		
WICHITA, KS VORTAC	WILL ROGERS, OK VORTAC	*6000
*3600 - MOCA		MAA - 17500
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	U.S. CANADIAN BORDER	*8000
VIA ISN VOR/DME		
340		
*3400 - MOCA		MAA - 17500
WILME, FL FIX	*TERES, FL FIX	**7000
*7000 - MRA		
*7000 - MCA TERES, FL FIX , E BND		
**1400 - MOCA		
WILMO, OH FIX	AKRON, OH VOR/DME	18000
		MAA - 41000
WILSON CREEK, NV VORTAC	BULLION, NV VOR/DME	20000
WIREGRASS, AL VORTAC	BLALY, GA FIX	2500
WOLBACH, NE VORTAC	PAWNEE CITY, NE VORTAC	18000
		MAA - 45000
WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	10000
		MAA - 17500
WOLBACH, NE VORTAC	OMAHA, IA VORTAC	3800
		MAA - 35000
WOODRING, OK VOR/DME	STILLWATER, OK VOR/DME	*2900
*2700 - MOCA		
WOODSIDE, CA VOR/DME	*EUGEN, CA FIX	**6000
*7000 - MRA		
**4400 - MOCA		
WRAPS, CA FIX	SACRAMENTO, CA VORTAC	*3000
*2600 - MOCA		

FROM	TO	MEA

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

FROM	TO	MEA
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
ROUTE 9		
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		
MAYAGUEZ, PR VOR/DME	JOSHE, PR FIX	7000
JOSHE, PR FIX	*VARNA, PR FIX	6000
*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

1L

SATELLITE, FL NDB	JOLTS, BS FIX	*2000
*1500 - MOCA		
JOLTS, BS FIX	FREEPORT, BS VOR/DME	*2000
*1500 - MOCA		
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		
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		

FROM	TO	MEA
ORODE, BS WP	RAHAM, IB FIX	*2000
*1200 - MOCA		
RAHAM, IB FIX	STRUD, OA FIX	*2000
*1300 - MOCA		
BIKIN, IB FIX	GRAND TURK, TC VORTAC	*2000
*1300 – MOCA		

9L

GRAND TURK, TC VORTAC	TOMAZ, IB FIX	
TOMAZ, IB FIX	CARAH, OA FIX	*2000
*1300 - MOCA		
CARAH, OA FIX	SKHOT, OA WP	*2000
*1300 – MOCA		

10L

FREEPORT, BS VOR/DME	HAANA, BS FIX	3000
HAANA, BS FIX	MRRSH, BS FIX	3000

21V

FREEPORT, BS VOR/DME	ULAMA, BS FIX	2000
WALIK, FL FIX	PALM BEACH, FL VORTAC	2000

22V

FORT LAUDERDALE, FL VOR/DME	DEKAL, OA FIX	6000
DEKAL, OA FIX	WIERS, BS FIX	6000
WIERS, BS FIX	OYSTA, BS FIX	10000
OYSTA, BS FIX	CAREY, BS FIX	6000
CAREY, BS FIX	MAJUR, OA FIX	3000
MAJUR, OA FIX	NASSAU, BS VOR/DME	*2000
*1500 - MOCA		

49V

DOLPHIN, FL VORTAC	LUVLY, FL FIX	2000
LUVLY, FL FIX	JUNUR, FL FIX	2000
JUNUR, FL FIX	FOWEE, OA FIX	6000
FOWEE, OA FIX	LUCSS, BS FIX	*7000
*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

53V

VIRGINIA KEY, FL VOR/DME	SKIPS, BS FIX	4000
SKIPS, BS FIX	LEEVI, BS FIX	5000
LEEVI, BS FIX	SWIMM, BS FIX	5000
SWIMM, BS FIX	WOOZE, BS FIX	9000
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

FROM	TO	MEA
54V		
PALM BEACH, FL VORTAC	MRLIN, FL FIX	2000
MRLIN, FL FIX	PREDA, FL FIX	4000
PREDA, FL FIX	ISAAC, BS FIX	6000
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		
55V		
PALM BEACH, FL VORTAC	MRLIN, FL FIX	2000
MRLIN, FL FIX	PREDA, FL FIX	4000
PREDA, FL FIX	BEECH, BS FIX	4000
BEECH, BS FIX	BIMINI, BS VORTAC	4000
BIMINI, BS VORTAC	*RAJAY, BS FIX	4000
*11000 - MRA		
RAJAY, BS FIX	PRUNE, BS FIX	4000
PRUNE, BS FIX	HINZY, BS FIX	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		
57V		
FORT LAUDERDALE, FL VOR/DME	DEKAL, OA FIX	6000
DEKAL, OA FIX	WIERS, BS FIX	6000
WIERS, BS FIX	BIMINI, BS VORTAC	3000
BIMINI, BS VORTAC	CAREY, BS FIX	*3000
*1300 - MOCA		
CAREY, BS FIX	MAJUR, OA FIX	3000
MAJUR, OA FIX	NASSAU, BS VOR/DME	*2000
*1500 – MOCA		
58V		
NASSAU, BS VOR/DME	KURAY, BS FIX	*2000
*1500 - MOCA		
KURAY, BS FIX	*MELON, BS FIX	**2000
*8000 - MRA		
**1300 - MOCA		
MELON, BS FIX	HANKX, BS FIX	*2000
*1300 - MOCA		
HANKX, BS FIX	BARTS, BS FIX	*4000
*1300 - MOCA		
BARTS, BS FIX	ANGLL, BS FIX	10000
62V		
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
*1300 - MOCA		
JAKEL, BS FIX	FREEPORT, BS VOR/DME	*4000
*1400 – MOCA		

FROM	TO	MEA
63V		
PALM BEACH, FL VORTAC	TURPS, FL FIX	2000
TURPS, FL FIX	MIXAE, BS FIX	3000
MIXAE, BS FIX	HALBI, BS FIX	4000
HALBI, BS FIX	ULAMA, BS FIX	2000
ULAMA, BS FIX	FREEPORT, BS VOR/DME	2000
FREEPORT, BS VOR/DME *1400 - MOCA	CEGUR, BS FIX	*2000
CEGUR, BS FIX *1300 - MOCA	BURBO, BS FIX	*2000
BURBO, BS FIX *1300 - MOCA	BAYRU, BS FIX	*10000
BAYRU, BS FIX *1300 - MOCA	HANKX, BS FIX	*10000
HANKX, BS FIX *8000 - MRA **1300 - MOCA	*MELON, BS FIX	**2000
MELON, BS FIX *1300 - MOCA	KURAY, BS FIX	*2000
KURAY, BS FIX *1500 - MOCA	NASSAU, BS VOR/DME	*2000
64V		
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
MUNRO, BS FIX	FREEPORT, BS VOR/DME	2000
65V		
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
RAPPS, BS FIX	STIFF, BS FIX	8000
STIFF, BS FIX	ELDER, FL FIX	8000
ELDER, FL FIX	ADOOR, FL FIX	25000
66V		
VIRGINIA KEY, FL VOR/DME	JANUS, OA FIX	2000
JANUS, OA FIX	PADUS, BS FIX	4000
PADUS, BS FIX	FREEPORT, BS VOR/DME	2000
68V		
FORT LAUDERDALE, FL VOR/DME	MRLIN, FL FIX	6000
MRLIN, FL FIX	MUNRO, BS FIX	5000
MUNRO, BS FIX	FREEPORT, BS VOR/DME	2000
69V		
BIMINI, BS VORTAC	BAHMA, BS FIX	3000
BAHMA, BS FIX	MAYKO, OA FIX	3000
MAYKO, OA FIX	FREEPORT, BS VOR/DME	3000
FREEPORT, BS VOR/DME *1400 – MOCA	JAMAX, BS FIX	*2000

FROM	TO	MEA
JAMAX, BS FIX	BENZI, BS FIX	*3000
*1200 - MOCA		
BENZI, BS FIX	JOLTS, BS FIX	4000
JOLTS, BS FIX	BERTH, BS FIX	4000
BERTH, BS FIX	KIXAL, OA FIX	4000
WALIK, FL FIX	PALM BEACH, FL VORTAC	2000

70V

FORT LAUDERDALE, FL VOR/DME	TURBO, OA FIX	2000
TURBO, OA FIX	PADUS, BS FIX	7000
PADUS, BS FIX	FREEPORT, BS VOR/DME	2000
FREEPORT, BS VOR/DME	GRREG, BS FIX	3500
GRREG, BS FIX	MRRSH, BS FIX	3500
MRRSH, BS FIX	NASSAU, BS VOR/DME	6000

71V

FREEPORT, BS VOR/DME	WOPOP, BS FIX	*2000
*1400 - MOCA		
WOPOP, BS FIX	WLKER, BS FIX	*3000
*1200 - MOCA		

ATLANTIC ROUTES

A300

KIKER, OA WP	RAYAS, OA FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED		
RAYAS, OA FIX	DORADO, PR NDB	6000
DORADO, PR NDB	*JAAWS, PR FIX	3000
*7000 - MRA		
JAAWS, PR FIX	PLING, PR FIX	3000
PLING, PR FIX	LENNT, OA WP	*3000
*1200 - MOCA		

A301

*URSUS, OA FIX	ZOLLA, OA FIX	10000
*16000 - MRA		
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	*TINKY, OA FIX	8000
*8000 - MRA		
TINKY, OA FIX	*PEKRE, BS FIX	12500
*12500 - MRA		
PEKRE, BS FIX	*JAYEE, BS FIX	14000
*14000 - MRA		
JAYEE, BS FIX	*HODGY, BS FIX	7000
*16500 – MRA		

FROM	TO	MEA
A315 – CONTINUED		
HODGY, BS FIX	*AMBIS, BS FIX	7000
*16500 - MRA		
AMBIS, BS FIX	DUNNO, BS FIX	7000
A509		
*URSUS, OA FIX	ELLEE, BS FIX	16000
*16000 - MRA		
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
A516		
MILOK, OA FIX	RAYAS, OA FIX	#9000
#MEA EA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
NAVIGATION EQUIPMENT OTHER THAN LF OF VHF REQUIRED.		
RAYAS, OA FIX	RAFEE, OA WP	#9000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
ANNER, OA FIX	*PORQE, VI FIX	#9000
*8000 - MRA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATIONAL SIGNAL COVERAGE.		
NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
PORQE, VI FIX	*DANDE, VI FIX	6000
*3500 - MRA		
DANDE, VI FIX	SAINT MAARTEN, AN VOR/DME	2500
A523		
DORADO, PR NDB	CORAF, PR FIX	*2000
*1500 - MOCA		
CORAF, PR FIX	SAALR, PR FIX	*2000
*1500 - MOCA		
VERMO, PR FIX	THANK, PR WP	*2000
*1300 – MOCA		
A555		
ILURI, OA FIX	*PORQE, VI FIX	#12000
*8000 - MRA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
PORQE, VI FIX	ST CROIX, VI VOR/DME	6000
DORADO, PR NDB	*IDAHO, PR FIX	2000
*15000 - MRA		
IDAHO, PR FIX	HARDE, PR FIX	*2000
*1300 - MOCA		
HARDE, PR FIX	GRADI, IB FIX	*2000
*1300 – MOCA		

FROM	TO	MEA
A555 – CONTINUED		
GRADI, IB FIX	KARRN, OA FIX	*2000
*1300 - MOCA		
COCBU, IB FIX	GRAND TURK, TC VORTAC	*2000
*1500 - MOCA		
GRAND TURK, TC VORTAC	MAYAG, IB 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	LEPAS, BS FIX	*3000
*1300 - MOCA		
LEPAS, BS FIX	NASSAU, BS VOR/DME	*1500
*1500 - MOCA		
NASSAU, BS VOR/DME	HINZY, BS FIX	2000
HINZY, BS FIX	PRUNE, BS FIX	2000
PRUNE, BS FIX	*RAJAY, BS FIX	4000
*11000 - MRA		
RAJAY, BS FIX	BIMINI, BS VORTAC	4000
A636		
BORINQUEN, PR VORTAC	KATOK, PR 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 FIX	GREAT INAGUA, BS NDB	3000
GREAT INAGUA, BS NDB	ROSEA, OA WP	3000
ROSEA, OA WP	DUKKY, BS FIX	3000
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

FROM	TO	MEA
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
AR4		
ASHLY, SC NDB	METTA, OA FIX	9000
AR5		
DINNS, FL NDB	JAWSS, FL FIX	2500
		MAA – 45000
AR6		
ORLANDO, FL VORTAC	MALET, FL FIX	2700
		MAA - 45000
MALET, FL FIX	*APOLO, FL FIX	4000
*4000 - MRA		
		MAA - 45000
APOLO, FL FIX	PETEE, OA WP	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
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
*5000 - GNSS MEA		
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	*APOLO, FL FIX	24000
*4000 - MRA		
		MAA - 60000
APOLO, FL FIX	MALET, FL FIX	4000
		MAA - 60000
MALET, FL FIX	ORLANDO, FL VORTAC	2700
		MAA - 60000

FROM	TO	MEA
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 FIX	24000 MAA - 60000
OZENA, OA FIX	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
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
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 FIX	24000 MAA - 60000
OZENA, OA FIX	LANIE, OA WP	24000 MAA - 60000
LANIE, OA WP	LURKS, OA WP	24000 MAA - 60000

FROM	TO	MEA
AR23 - CONTINUED		
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
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
LURKS, OA WP	OTTNG, OA WP	24000
		MAA - 60000
OTTNG, OA WP	EMQUE, OA WP	24000
		MAA - 60000
EMQUE, OA WP	BANNK, OA WP	18000
		MAA - 60000
		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	*HODGY, BS FIX	6000
*16500 - MRA		
HODGY, BS FIX	NASSAU, BS VOR/DME	7000
B646		
CANOA, FL FIX	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

FROM	TO	MEA
B646 - CONTINUED		
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
BORDO, BS FIX	IMELA, OA FIX	12000
B891		
POKEG, IB FIX	MACKI, OA FIX	4000
GRADI, IB FIX	NOPIT, OA WP	10000
B892		
MAYAGUEZ, PR VOR/DME	ANTEX, PR FIX	4000
G430		
VIRGINIA KEY, FL VOR/DME	EONNS, FL FIX	3000
EONNS, FL FIX	AVION, FL FIX	4000
G432		
ARMUR, PR FIX	CRSTL, PR FIX	6000
CRSTL, PR FIX	ALASK, PR FIX	6000
ALASK, PR FIX	CLAYO, PR FIX	6000
CLAYO, PR FIX	DORADO, PR NDB	6000
DORADO, PR NDB	CORAF, PR FIX	*2000
*1500 - MOCA		
CORAF, PR FIX	SAALR, PR FIX	*2000
*1500 - MOCA		
SAALR, PR FIX	VERMO, PR FIX	*2000
*1500 - MOCA		
VERMO, PR FIX	THANK, PR WP	*2000
*1300 - MOCA		

FROM	TO	MEA
G437		
CIEGO DE AVILA, CU VOR/DME	IMELA, OA FIX	14000
DYNAH, OA FIX	*JAYEE, BS FIX	6000
*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	ELBOW, BS FIX	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	SLEMA, OA WP	5500
G446 - CONTINUED		
LASEE, OA WP	ALUTE, OA WP	5500
ALUTE, OA WP	RENAH, OA WP	5500
GRAND TURK, TC VORTAC	PAMMS, IB FIX	2000
PAMMS, IB FIX	BESAS, IB FIX	6000
G449		
DORADO, PR NDB	VARNA, PR FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
HENLI, PR FIX	ANNER, OA FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OR VHF REQUIRED.		
ANNER, OA FIX	ANADA, OA FIX	#6000
#NAVIGATION EQUIPMENT OTHER THAN LF OF VHF REQUIRED.		
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 FIX *1300 - MOCA	FISH HOOK, FL NDB	*3000 MAA - 45000
L207		
SCHOLES, TX VORTAC	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

FROM	TO	MEA
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
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 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 FIX	5500 MAA – 60000

FROM	TO	MEA
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
ASIVO, DO WP	GABIM, OA WP	5500 MAA - 60000
GABIM, OA WP	VODEL, OA WP	19500 MAA - 60000
VODEL, OA WP	KINUM, OA WP	19500 MAA - 60000
KINUM, OA WP	TEKOL, DO WP	19500 MAA - 60000
L454		
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 FIX	21000
BERGH, OA FIX	WEBBB, OA WP	21000

FROM	TO	MEA
L455		
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 FIX	21000
BERGH, OA FIX	SAVIK, OA WP	21000
L456		
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
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 FIX	21000
BERGH, OA FIX	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 FIX	21000
BERGH, OA FIX	SAVIK, OA WP	21000

FROM	TO	MEA
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
M201		
BAHAA, OA WP	JENKS, OA WP	5500 MAA - 60000
JENKS, OA WP	EMCEE, OA WP	5500 MAA - 60000
EMCEE, OA WP	LANIE, OA WP	5500 MAA - 60000
LANIE, OA WP	PERIE, OA WP	5500 MAA - 60000
PERIE, OA WP	HANRI, OA WP	5500 MAA - 60000
HANRI, OA WP	EMQUE, OA WP	5500 MAA - 60000
EMQUE, OA WP	GALWY, OA WP	5500 MAA - 60000
GALWY, OA WP	PAEPR, OA WP	5500 MAA - 60000
PAEPR, 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

FROM	TO	MEA
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
M219		
MYDIA, OG FIX	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 FIX	4000 MAA - 45000
KENGS, OG FIX	WAHOO, OG FIX	4000 MAA - 45000
WAHOO, OG FIX	TIBBY, LA VORTAC	4000 MAA - 45000
M575		
CLONN, OG FIX	CATFS, OG WP	4000 MAA - 45000
CATFS, OG WP	ANKRR, OG WP	4000 MAA - 45000
ANKRR, OG WP	KENGS, OG FIX	4000 MAA - 45000

FROM	TO	MEA
M575 - CONTINUED		
KENGS, OG FIX	WAHOO, OG FIX	4000 MAA - 45000
WAHOO, OG FIX	TIBBY, LA VORTAC	4000 MAA – 45000
M580		
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
Q100		
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 VORTAC	*6000
Q102		
LEEVILLE, LA VORTAC *1500 - MOCA	BLVNS, OG WP	*6000
BLVNS, OG WP *1500 - MOCA	BUNNZ, OG WP	*6000
BUNNZ, OG WP *1500 - MOCA	BACCA, OG WP	*6000
BACCA, OG WP *1500 - MOCA	CIGAR, OG WP	*6000
CIGAR, OG WP *1500 - MOCA	BAGGS, OG WP	*6000
BAGGS, OG WP *1500 - MOCA	CYPRESS, FL VOR/DME	*6000
Q105		
HARVEY, LA VORTAC *1500 - MOCA	FATSO, OG WP	*6000
FATSO, OG WP *1500 - MOCA	REDFN, OG WP	*6000
REDFN, OG WP *1500 – MOCA	BLVNS, OG WP	*6000

FROM	TO	MEA
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
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
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
MODUX, VI FIX	POINTE A PITRE, GP VOR/DME	14000
Y240		
MYDIA, OG FIX	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

PACIFIC ROUTES

A216

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

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
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, MP FIX	6000 MAA - 60000
LULJY, MP FIX	HEXUG, OP FIX	6000 MAA - 60000
HEXUG, OP FIX	WILLE, CQ 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	POHNPEI, FM NDB/DME	20000 MAA - 60000
POHNPEI, FM NDB/DME	AXTEN, FM FIX	20000 MAA - 60000

FROM	TO	MEA
A222 - CONTINUED		
AXTEN, FM FIX	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
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 FIX	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

FROM	TO	MEA
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
		MAA - 60000
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		
POHNPEI, FM NDB/DME	FENSE, OP FIX	18000
		MAA - 60000
A597		
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
A598		
MARTI, OP FIX	MAJURO, MH NDB/DME	2300

FROM	TO	MEA
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
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 FIX	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
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

FROM	TO	MEA
B581 - CONTINUED		
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
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
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
G467		
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

FROM	TO	MEA
G575		
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
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.		
R332		
MAJURO, MH NDB/DME	VAVEE, OP FIX	6000
R337		
ISGOG, OP FIX	KOROR, PW NDB/DME	6500
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 FIX	5500
ALLBE, OP FIX	*ALCOA, OP FIX	5500
*22000 – MRA		
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 FIX	5500
BAART, OP FIX	BEBOP, OP FIX	5500
R465		
MAGGI, HI FIX	*SHARK, HI FIX	5500
*16000 - MRA		
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, HI FIX	35000
EBBER, HI 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, OP FIX	5500
*26000 - MRA		
R578		
DEREC, HI FIX	BYROW, HI FIX	14000
BYROW, HI FIX	FITES, HI FIX	14000
FITES, HI 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
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	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

FROM	TO	MEA
B584 - CONTINUED		
NIMITZ, GU VORTAC	OTTRE, OP WP	6000
OTTRE, OP WP	MIKYY, OP WP	18000
MIKYY, OP WP	KEITH, OP FIX	18000
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, MP FIX	9000
KATQO, MP FIX	HIRCH, GU FIX	9000
HIRCH, GU FIX	ANEVY, MP FIX	9000
ANEVY, MP FIX	SNAPP, GU FIX	9000
SNAPP, GU FIX	BESSS, OP WP	9000

FROM	TO	MEA	MAA

§95.3000 LOW ALTITUDE RNAV ROUTES

95.3201 RNAV ROUTE T201

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

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

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

TAYLOR, FL VORTAC	BRUNSWICK, GA VORTAC	2100	15000

95.3205 RNAV ROUTE T205

OCALA, FL VORTAC	VALDOSTA, GA VOR/DME	*3000	15000
*2500 - MOCA			

95.3206 RNAV ROUTE T206

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

ORMOND BEACH, FL VORTAC	CARRA, FL FIX	2300	15000
CARRA, FL FIX	MONIA, GA FIX	1900	15000
MONIA, GA FIX	WAYCROSS, GA VORTAC	2300	15000

95.3208 RNAV ROUTE T208

GATORS, FL VORTAC	CARRA, FL FIX	2100	15000
CARRA, FL FIX	ORMOND BEACH, FL VORTAC	2300	15000

95.3209 RNAV ROUTE T209

EHEJO, GA FIX	JAMTA, GA WP	2000	17500
JAMTA, GA WP	COLLIERS, SC VORTAC	2500	17500

95.3210 RNAV ROUTE T210

TAYLOR, FL VORTAC	BRADO, FL FIX	1900	9000

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

FROM	TO	MEA	MAA

95.3212 RNAV ROUTE T212

RASHE, PA FIX	SELINSGROVE, PA VORTAC	4000	17500
SELINSGROVE, PA VORTAC	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	RICHMOND, IN VORTAC	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 VORTAC	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 VORTAC	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			
HEDEN, 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			

FROM	TO	MEA MAA
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	BROUS, AK FIX	*6000 17500
*5400 - MOCA		
BROUS, AK FIX	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	BINGHAMTON, NY VORTAC	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
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	3400 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		

FROM	TO	MEA MAA

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	2900 17500
BAERE, AK WP	ALEUT, AK FIX	3300 17500
ALEUT, AK FIX	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
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

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		

FROM	TO	MEA MAA
95.3228 RNAV ROUTE T228 – CONTINUED		
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		
*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		
ST PAUL ISLAND, AK NDB/DME	CHINOOK, AK NDB	*3000 17500
*2700 - MOCA		
95.3231 RNAV ROUTE T231		
*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
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/DME	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
TOLLO, AK FIX	RAMPA, AK FIX	7000 17500

FROM	TO	MEA MAA

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

95.3240 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	SANTA MONICA, CA VOR/DME	2500 17500
SANTA MONICA, CA VOR/DME	SILEX, CA FIX	4000 17500

FROM	TO	MEA	MAA
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
95.3247 RNAV ROUTE T247			
SEAL BEACH, CA VORTAC	SANTA MONICA, CA VOR/DME	2500	17500
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
SANTA MONICA, CA VOR/DME	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
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			
BIG SUR, CA VORTAC	ISIFU, CA FIX	7300	17500
ISIFU, CA FIX	SUTRO, CA FIX	4900	17500
SUTRO, CA FIX	POINT REYES, CA VOR/DME	4000	17500

FROM	TO	MEA	MAA

95.3259 RNAV ROUTE T259

SAN JOSE, CA VOR/DME	CEDES, CA FIX	6200 17500
CEDES, CA FIX	MOVDD, CA FIX	5900 17500
*5000 - MCA MOVDD, CA FIX , SW BND		
MOVDD, CA FIX	SACRAMENTO, CA VORTAC	3200 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

WOODSIDE, CA VOR/DME	ALTAM, CA FIX	5000 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

SUNOL, CA FIX	SCAGGS ISLAND, CA VORTAC	4600 17500

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		

FROM	TO	MEA	MAA

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

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

HALLSVILLE, MO VORTAC	VANDALIA, IL VORTAC	2700	6000
FAIRBANKS, AK VORTAC	AYKID, AK FIX	6700	17500
AYKID, AK FIX	TUVVO, AK FIX	6000	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			

FROM	TO	MEA	MAA

95.3274 RNAV ROUTE T274

NEWPORT, OR VORTAC	CRAAF, OR FIX	5500	17500
*5000 - MCA CRAAF, OR FIX , SW BND			

95.3275 RNAV ROUTE T275

BETHEL, AK VORTAC	UNALAKLEET, AK VOR/DME	5900	17500

95.3276 RNAV ROUTE T276

COUGA, WA FIX	CARBY, WA FIX	6500	17500

95.3277 RNAV ROUTE T277

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

HAPIT, AK FIX	CSPER, AK FIX	4000	17500
CSPER, AK FIX	SISTERS ISLAND, AK VORTAC	5300	17500

95.3279 RNAV ROUTE T279

ALEUT, AK FIX	BETHEL, AK VORTAC	3200	17500

95.3280 RNAV ROUTE T280

FLIPS, AK FIX	LEVEL ISLAND, AK VOR/DME	*7000	17500
*6300 - MOCA			

95.3281 RNAV ROUTE T281

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

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 VORTAC	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

FROM	TO	MEA MAA
5.3285 RNAV ROUTE T285 - CONTINUED		
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		
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 VORTAC	3300 17500
SELINSGROVE, PA VORTAC	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

FROM	TO	MEA MAA
95.3292 RNAV ROUTE T292		
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		
HEFIN, AL FIX	BBAIT, GA WP	4000 17500
BBAIT, GA WP	JMPPR, GA WP	3500 17500
JMPPR, GA WP	GRANT, GA FIX	3000 17500
95.3295 RNAV ROUTE T295		
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 VORTAC	5000 17500
CONCORD, NH VORTAC	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		
JMPPR, GA WP	BBASS, GA WP	#*3000 17500
*3000 - GNSS MEA		
BBASS, GA WP	TATRS, GA WP	#*2500 17500
*2500 - GNSS MEA		
TATRS, GA WP	TACKL, GA WP	#*2500 17500
*2500 - GNSS MEA		
95.3297 RNAV ROUTE T297		
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

FROM	TO	MEA	MAA
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	7000	17500
JJACE, OR WP	JJETT, OR WP	8000	17500
JJETT, OR WP	JERMM, OR WP	8000	17500
JERMM, OR WP	CUPRI, OR FIX	*7000	17500
*5500 - MOCA			
95.3304 RNAV ROUTE T304			
GLARA, OR FIX	PUTZZ, OR WP	7500	17500
PUTZZ, OR WP	JJETT, OR WP	8000	17500
JJETT, OR WP	WISSL, OR WP	8000	17500
WISSL, OR WP	HERBS, OR FIX	*7000	17500
*6000 - MOCA			
95.3306 RNAV ROUTE T306			
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			

FROM	TO	MEA MAA
95.3306 RNAV ROUTE T306 - CONTINUED		
COLUMBUS, NM VOR/DME	EL PASO, TX VORTAC	9000 17500
95.3310 RNAV ROUTE T310		
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
95.3319 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
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		

FROM	TO	MEA MAA
95.3781 RNAV ROUTE T781		
FLINT, MI VORTAC	KATTY, MI FIX	*3000 17500
*2200 - MOCA		
KATTY, MI FIX	HANKY, MI FIX	*4000 17500
*2900 - MOCA		
HANKY, MI FIX	ADRIE, MI FIX	*4000 17500
*2800 - MOCA		
ADRIE, MI FIX	MARGN, MI FIX	*4000 17500
*2800 - MOCA		
MARGN, MI FIX	BLUEZ, MI FIX	*4000 17500
*2800 - MOCA		
BLUEZ, MI FIX	U.S. CANADIAN BORDER	*4000 17500
*2800 - MOCA		
K502 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
K504 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

FROM	TO	MEA	MAA

§95.4000 HIGH ALTITUDE RNAV ROUTES

95.4001 RNAV ROUTE Q1

POINT REYES, CA VOR/DME	ETCHY, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ETCHY, CA WP	TOCOS, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TOCOS, CA WP	ENVIE, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ENVIE, CA WP	ELENN, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ELENN, CA WP	EBINY, OR WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EBINY, OR WP	EASON, OR WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EASON, OR WP	ERAVE, WA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ERAVE, WA WP	ELMAA, WA FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4002 RNAV ROUTE Q2

BOILE, CA FIX	HEDVI, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HEDVI, AZ WP	HOBOL, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOBOL, AZ WP	ITUCO, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ITUCO, AZ WP	NEWMAN, TX VORTAC	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4003 RNAV ROUTE Q3

FEPOT, WA WP	POINT REYES, CA VOR/DME	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4004 RNAV ROUTE Q4			
BOILE, CA FIX	SKTTR, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SKTTR, AZ WP	EL PASO, TX VORTAC	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
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			

FROM	TO	MEA	MAA
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			
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			

FROM	TO	MEA	MAA
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			
95.4021 RNAV ROUTE Q21			
JONEZ, OK WP	RAZORBACK, AR VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4022 RNAV ROUTE Q22			
GUSTI, LA FIX	OYSTY, LA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OYSTY, LA FIX	ACMES, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ACMES, AL WP	CATLN, AL FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CATLN, AL FIX	TWOUP, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TWOUP, GA WP	SPARTANBURG, SC VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SPARTANBURG, SC VORTAC	NYBLK, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NYBLK, NC WP	MASHI, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MASHI, NC WP	KIDDO, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KIDDO, NC WP	OMENS, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OMENS, VA WP	BEARI, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4023 RNAV ROUTE Q23			
FORT SMITH, AR VORTAC	RAZORBACK, AR VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4024 RNAV ROUTE Q24			
LAKE CHARLES, LA VORTAC	FIGHTING TIGER, LA VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FIGHTING TIGER, LA VORTAC	IRUBE, MS WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IRUBE, MS WP	PAYTN, AL FIX	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4025 RNAV ROUTE Q25			
MEEOW, AR FIX	WALNUT RIDGE, AR VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WALNUT RIDGE, AR VORTAC	POCKET CITY, IN VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4026 RNAV ROUTE Q26			
WALNUT RIDGE, AR VORTAC	DEVAC, AL FIX	*20000	33000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4027 RNAV ROUTE Q27			
FORT SMITH, AR VORTAC	ZALDA, AR WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4028 RNAV ROUTE Q28			
GRAZN, AR WP	POCKET CITY, IN VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4029 RNAV ROUTE Q29			
HARES, LA WP	BAKRE, MS WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BAKRE, MS WP	MEMPHIS, TN VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MEMPHIS, TN VORTAC	OMDUE, TN WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OMDUE, TN WP	SIDAE, KY WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SIDAE, KY WP	CREEP, OH FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CREEP, OH FIX	KLYNE, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KLYNE, OH WP	DUTSH, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4029 RNAV ROUTE Q29 - CONTINUED

DUTSH, OH WP	WWSHR, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WWSHR, OH WP	DORET, OH FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DORET, OH FIX	JAMESTOWN, NY VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAMESTOWN, NY VOR/DME	HANKK, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HANKK, NY FIX	GONZZ, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GONZZ, NY WP	KRAZZ, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KRAZZ, NY WP	NIPPY, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NIPPY, NY FIX	CABCI, VT WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CABCI, VT WP	EBONY, ME FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EBONY, ME FIX	DUNOM, ME WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DUNOM, ME WP	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4030 RNAV ROUTE Q30

SIDON, MS VORTAC	VULCAN, AL VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4031 RNAV ROUTE Q31

DHART, AR FIX	MARVELL, AR VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MARVELL, AR VOR/DME	POCKET CITY, IN VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4032 RNAV ROUTE Q32

EL DORADO, AR VOR/DME	GAGLE, MS WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GAGLE, MS WP	CRAMM, MS FIX	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4032 RNAV ROUTE Q32 - CONTINUED			
CRAMM, MS FIX	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			
95.4033 RNAV ROUTE Q33			
DHART, AR FIX	LITTLE ROCK, AR VORTAC	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LITTLE ROCK, AR VORTAC	PROWL, MO WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
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			

FROM	TO	MEA	MAA
95.4037 RNAV ROUTE Q37 - CONTINUED			
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	WISTA, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4040 RNAV ROUTE Q40			
ALEXANDRIA, LA VORTAC	DOOMS, MS WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DOOMS, MS WP	WINAP, MS WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WINAP, MS WP	MISLE, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MISLE, AL WP	BFOLO, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BFOLO, AL WP	NIOLA, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NIOLA, GA WP	JAARE, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAARE, TN WP	OJESS, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OJESS, TN WP	ALEAN, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ALEAN, VA WP	FEEDS, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FEEDS, VA WP	MAULS, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MAULS, VA WP	FANPO, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4041 RNAV ROUTE Q41			
CAWIN, AK FIX	DEADHORSE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4042 RNAV ROUTE Q42			
KIRKSVILLE, MO VORTAC	DANVILLE, IL VORTAC	*34000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DANVILLE, IL VORTAC	MUNCIE, IN VOR/DME	*34000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MUNCIE, IN VOR/DME	BRNAN, PA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BRNAN, PA WP	HOTEE, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOTEE, PA WP	MIKYG, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MIKYG, PA WP	SPOTZ, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SPOTZ, PA WP	ZIMMZ, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4043 RNAV ROUTE Q43			
ANCHORAGE, AK VOR/DME	BIG LAKE, AK VORTAC	*18000	45000
*GNSS REQUIRED			
BIG LAKE, AK VORTAC	FAIRBANKS, AK VORTAC	*18000	45000
*GNSS REQUIRED			
95.4044 RNAV ROUTE Q44			
NOME, AK VOR/DME	HLBLY, AK WP	*18000	45000
*GNSS REQUIRED			
HLBLY, AK WP	ANCHORAGE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4045 RNAV ROUTE Q45			
DILLINGHAM, AK VOR/DME	NONDA, AK FIX	*18000	45000
*GNSS REQUIRED			
NONDA, AK FIX	AMOTT, AK FIX	*18000	45000
*GNSS REQUIRED			
95.4046 RNAV ROUTE Q46			
POINT HOPE, AK NDB	BARROW, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4047 RNAV ROUTE Q47			
KING SALMON, AK VORTAC	AMOTT, AK FIX	*18000	45000
*GNSS REQUIRED			
95.4048 RNAV ROUTE Q48			
BARROW, AK VOR/DME	DEADHORSE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
DEADHORSE, AK VOR/DME	ROCES, AK WP	*18000	45000
*GNSS REQUIRED			

FROM	TO	MEA	MAA
95.4049 RNAV ROUTE Q49			
KODIAK, AK VOR/DME	AMOTT, AK FIX	*18000	45000
*GNSS REQUIRED			
95.4050 RNAV ROUTE Q50			
LOUISVILLE, KY VORTAC	HELUB, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HELUB, KY WP	ENGRA, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ENGRA, KY WP	IBATE, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IBATE, KY WP	CUBIM, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4051 RNAV ROUTE Q51			
KING SALMON, AK VORTAC	SLIIM, AK WP	*18000	45000
*GNSS REQUIRED			
SLIIM, AK WP	HLBLY, AK WP	*18000	45000
*GNSS REQUIRED			
HLBLY, AK WP	KOTZEBUE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4052 RNAV ROUTE Q52			
CHOPZ, GA WP	IPTAY, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IPTAY, GA WP	AWYAT, SC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AWYAT, SC WP	COLZI, NC FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4053 RNAV ROUTE Q53			
KODIAK, AK VOR/DME	ILIAMNA, AK NDB/DME	*18000	45000
*GNSS REQUIRED			
ILIAMNA, AK NDB/DME	KOTZEBUE, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4054 RNAV ROUTE Q54			
GREENWOOD, SC VORTAC	NYLLA, SC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NYLLA, SC WP	CHYPS, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CHYPS, NC WP	AHOEY, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AHOEY, NC WP	RAANE, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4054 RNAV ROUTE Q54 - CONTINUED			
RAANE, NC WP	NUTZE, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4055 RNAV ROUTE Q55			
KODIAK, AK VOR/DME	SLIIM, AK WP	*18000	45000
*GNSS REQUIRED			
SLIIM, AK WP	NOME, AK VOR/DME	*18000	45000
*GNSS REQUIRED			
95.4056 RNAV ROUTE Q56			
CATLN, AL FIX	KBLER, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KBLER, GA WP	KELLN, SC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KELLN, SC WP	KTOWN, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
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 FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GLOVR, NC FIX	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			

FROM	TO	MEA	MAA
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			
95.4062 RNAV ROUTE Q62			
WATSN, IN FIX	DAIFE, IN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DAIFE, IN WP	NOLNN, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NOLNN, OH WP	WEEVR, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WEEVR, OH WP	PSKUR, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PSKUR, OH WP	FAALS, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FAALS, OH WP	ALEEE, OH WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ALEEE, OH WP	QUARM, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
QUARM, PA WP	BURNI, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BURNI, PA FIX	MCMAN, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MCMAN, PA FIX	VALLO, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VALLO, PA FIX	RAVINE, PA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RAVINE, PA VORTAC	SUZIE, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SUZIE, PA FIX	SARAA, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4063 RNAV ROUTE Q63			
DOOGE, VA WP	HAPKI, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HAPKI, KY WP	TONIO, KY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TONIO, KY FIX	OCASE, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OCASE, KY WP	HEVAN, IN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4064 RNAV ROUTE Q64			
CATLN, AL FIX	FIGEY, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FIGEY, GA WP	GREENWOOD, SC VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GREENWOOD, SC VORTAC	DARRL, SC FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DARRL, SC FIX	IDDAA, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IDDAA, NC WP	TAR RIVER, NC VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4065 RNAV ROUTE Q65			
JEFOI, GA WP	CESKI, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CESKI, GA WP	DAREE, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DAREE, GA WP	LORNN, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LORNN, TN WP	SOGEE, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SOGEE, TN WP	ENGRA, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ENGRA, KY WP	OCASE, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OCASE, KY WP	ROSEWOOD, OH VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

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	COLTZ, OH FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4068 RNAV ROUTE Q68			
CHARLESTON, WV VORTAC	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			
CAPOE, VA WP	OTTTO, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4069 RNAV ROUTE Q69			
BLAAN, SC WP	RYCKI, NC WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RYCKI, NC WP	LUNDD, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LUNDD, VA WP	ILLSA, VA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ILLSA, VA WP	EWESS, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EWESS, WV WP	RICCS, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4070 RNAV ROUTE Q70			
HAILO, CA WP	LAS VEGAS, NV VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LAS VEGAS, NV VORTAC	IFEYE, NV WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IFEYE, NV WP	BLIPP, NV WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BLIPP, NV WP	EEVUN, UT WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EEVUN, UT WP	BLOBB, UT WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BLOBB, UT WP	BAWER, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BAWER, UT WP	SAKES, UT FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4071 RNAV ROUTE Q71			
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			

FROM	TO	MEA	MAA
95.4071 RNAV ROUTE Q71 - CONTINUED			
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			
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			
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95.4073 RNAV ROUTE Q73			
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
*GNSS REQUIRED			
ZZYZX, NV WP	LAKRR, NV WP	*18000	45000
*GNSS REQUIRED			
LAKRR, NV WP	GUNTR, AZ WP	*18000	45000
*GNSS REQUIRED			
GUNTR, AZ WP	ZAINY, AZ WP	*18000	45000
*GNSS REQUIRED			
ZAINY, AZ WP	EEVUN, UT WP	*18000	45000
*GNSS REQUIRED			
EEVUN, UT WP	WINEN, UT WP	*18000	45000
*GNSS REQUIRED			
WINEN, UT WP	CRITO, NV WP	*18000	45000
*GNSS REQUIRED			
CRITO, NV WP	BROPH, ID WP	*18000	45000
*GNSS REQUIRED			
BROPH, ID WP	DERSO, ID FIX	*18000	45000
*GNSS REQUIRED			
DERSO, ID FIX	SAWTT, ID WP	*18000	45000
*GNSS REQUIRED			
SAWTT, ID WP	ZATIP, ID FIX	*18000	45000
*GNSS REQUIRED			
ZATIP, ID FIX	CORDU, ID FIX	*18000	45000
*GNSS REQUIRED			

FROM	TO	MEA	MAA
95.4074 RNAV ROUTE Q74			
NATEE, NV WP	BOULDER CITY, NV VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BOULDER CITY, NV VORTAC	ZAINY, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZAINY, AZ WP	FIZZL, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FIZZL, AZ WP	GARDD, UT WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GARDD, UT WP	DEANN, UT WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4078 RNAV ROUTE Q78			
MARUE, NV WP	DUGGN, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DUGGN, AZ WP	TOADD, AZ WP	*24000	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			

FROM	TO	MEA	MAA
95.4080 RNAV ROUTE Q80 - CONTINUED			
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			
95.4082 RNAV ROUTE Q82			
WWSHR, OH WP	DORET, OH FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DORET, OH FIX	JAMESTOWN, NY VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAMESTOWN, NY VOR/DME	WAYLA, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WAYLA, NY WP	VIEEW, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VIEEW, NY FIX	MEMMS, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MEMMS, NY FIX	LOXXE, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LOXXE, NY FIX	PONCT, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4084 RNAV ROUTE Q84			
JAMESTOWN, NY VOR/DME	AUDIL, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			\
AUDIL, NY FIX	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			
95.4086 RNAV ROUTE Q86			
TTRUE, AZ WP	YORRK, AZ WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YORRK, AZ WP	SCHLS, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4086 RNAV ROUTE Q86 - CONTINUED			
SCHLS, AZ WP	CUTRO, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CUTRO, AZ WP	VALEQ, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VALEQ, AZ WP	PLNDL, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4088 RNAV ROUTE Q88			
HAKMN, NV WP	ZZYZX, NV WP	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZZYZX, NV WP	LAKRR, NV WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LAKRR, NV WP	NOOTN, AZ FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
NOOTN, AZ FIX	GARDD, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GARDD, UT WP	VERKN, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VERKN, UT WP	PROMT, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PROMT, UT WP	CHESZ, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4090 RNAV ROUTE Q90			
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			
95.4094 RNAV ROUTE Q94			
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			

FROM	TO	MEA	MAA
95.4096 RNAV ROUTE Q96			
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			
ROCCY, UT WP	SARAF, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SARAF, UT WP	KIMMR, UT WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4098 RNAV ROUTE Q98			
HAKMN, NV WP	ZZYZX, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZZYZX, NV WP	LAKRR, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LAKRR, NV WP	DUZIT, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DUZIT, AZ WP	EEEZY, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EEEZY, AZ WP	PEEWE, AZ WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4103 RNAV ROUTE Q103			
PULASKI, VA VORTAC	ASBUR, WV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ASBUR, WV FIX	OAKLE, WV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
OAKLE, WV FIX	PERRI, WV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4103 RNAV ROUTE Q103 - CONTINUED			
PERRI, WV FIX	PERKS, WV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PERKS, WV FIX	RICCS, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RICCS, WV WP	EMNEM, WV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EMNEM, WV WP	AIRRA, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4104 RNAV ROUTE Q104			
DEFUN, FL FIX	ST PETERSBURG, FL VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ST PETERSBURG, FL VORTAC	CYPRESS, FL VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4106 RNAV ROUTE Q106			
SMELZ, FL WP	GADAY, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4108 RNAV ROUTE Q108			
GADAY, AL WP	HKUNA, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4110 RNAV ROUTE Q110			
BLANS, IL WP	BETIE, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BETIE, TN WP	SKIDO, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SKIDO, AL WP	BFOLO, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BFOLO, AL WP	JYROD, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JYROD, AL WP	FEONA, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FEONA, GA WP	GULFR, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GULFR, FL WP	BRUTS, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4110 RNAV ROUTE Q110 - CONTINUED			
BRUTS, FL WP	KPASA, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KPASA, FL WP	RVERO, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RVERO, FL WP	JAYMC, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAYMC, FL WP	THNDR, FL FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4112 RNAV ROUTE Q112			
INPIN, FL FIX	DEFUN, FL FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4114 RNAV ROUTE Q114			
NATEE, NV WP	BOULDER CITY, NV VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BOULDER CITY, NV VORTAC	ZAINY, AZ WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZAINY, AZ WP	AHOWW, UT WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AHOWW, UT WP	BAWER, UT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BAWER, UT WP	BUGGG, UT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4116 RNAV ROUTE Q116			
KPASA, FL WP	BRUTS, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BRUTS, FL WP	GULFR, FL WP	*18000	
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GULFR, FL WP	CEEYA, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4118 RNAV ROUTE Q118			
MARION, IN VOR/DME	HEVAN, IN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HEVAN, IN WP	VOSTK, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VOSTK, KY WP	HELUB, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4118 RNAV ROUTE Q118 - CONTINUED			
HELUB, KY WP	JEDER, KY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JEDER, KY WP	GLAZR, TN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GLAZR, TN WP	KAILL, GA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KAILL, GA WP	JOHNN, GA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JOHNN, GA FIX	BRUTS, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BRUTS, FL WP	KPASA, FL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4120 RNAV ROUTE Q120			
ORRCA, CA WP	BETBE, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BETBE, NV WP	ZORUN, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZORUN, NV WP	GALLI, NV WP	*31000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GALLI, NV WP	JAJAY, NV WP	*31000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JAJAY, NV WP	TRAKY, NV WP	*31000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TRAKY, NV WP	PROXI, UT WP	*29000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
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			

FROM	TO	MEA	MAA
95.4121 RNAV ROUTE Q121			
PARZZ, NV WP	POCATELLO, ID VOR/DME	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
POCATELLO, ID VOR/DME	TOUGH, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4122 RNAV ROUTE Q122			
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			
PARZZ, NV WP	COKEE, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
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			

FROM	TO	MEA	MAA
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	GAROT, UT WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GAROT, UT WP	MEEKER, CO VOR/DME	*19000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4128 RNAV ROUTE Q128			
SYRAH, CA WP	JSICA, NV WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JSICA, NV WP	TABLL, UT WP	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TABLL, UT WP	EDLES, UT FIX	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
EDLES, UT FIX	FLOOD, CO FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FLOOD, CO FIX	ZAROS, CO WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZAROS, CO WP	VEGUC, OK WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VEGUC, OK WP	VLUST, AR WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VLUST, AR WP	ECIGE, AR WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ECIGE, AR WP	MUDHO, MS WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MUDHO, MS WP	JILLS, AL WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4130 RNAV ROUTE Q130			
SYRAH, CA WP	JSICA, NV WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JSICA, NV WP	REANA, NV WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
REANA, NV WP	ROCCY, UT WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4130 RNAV ROUTE Q130 - CONTINUED

ROCCY, UT WP	HASSL, UT WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HASSL, UT WP	TAHIB, CO WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TAHIB, CO WP	DIXAN, NM FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DIXAN, NM FIX	MIRME, NM WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MIRME, NM WP	PANHANDLE, TX VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4132 RNAV ROUTE Q132

WEBGO, CA WP	ANAHO, NV FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ANAHO, NV FIX	MYBAD, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MYBAD, NV WP	ZERAM, NV WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZERAM, NV WP	MAGPY, NV WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4134 RNAV ROUTE Q134

DUGLE, CA FIX	TATOO, NV WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TATOO, NV WP	JULIK, UT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JULIK, UT FIX	HERSH, UT WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HERSH, UT WP	VOAXA, CO FIX	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4136 RNAV ROUTE Q136

COALDALE, NV VORTAC	RUMPS, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RUMPS, NV WP	KATTS, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4136 RNAV ROUTE Q136 - CONTINUED			
KATTS, NV WP	WEEMN, UT WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WEEMN, UT WP	VOAXA, CO FIX	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4138 RNAV ROUTE Q138			
WILLIAMS, CA VORTAC	FIMUV, CA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FIMUV, CA WP	JENSA, NV WP	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JENSA, NV WP	PUHGI, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PUHGI, NV WP	ROOHZ, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ROOHZ, NV WP	PARZZ, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PARZZ, NV WP	UROCO, WY WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
UROCO, WY WP	RICCO, WY WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RICCO, WY WP	MOTLY, SD WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MOTLY, SD WP	DKOTA, SD WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DKOTA, SD WP	WELOK, MN WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WELOK, MN WP	CESNA, WI WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CESNA, WI WP	GUUME, WI WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GUUME, WI WP	SNARG, WI WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SNARG, WI WP	SAULT STE MARIE, MI VOR/DME	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4140 RNAV ROUTE Q140			
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 FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SAYOR, MT FIX	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			
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			
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			
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			
KONGO, KY FIX	CHARLESTON, WV VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CHARLESTON, WV VORTAC	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			
CASHS, WA FIX	BLUNT, WA FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BLUNT, WA FIX	DIPHU, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DIPHU, MT FIX	CUSDA, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CUSDA, MT FIX	ZERZO, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZERZO, MT FIX	KIXCO, MT FIX	*22000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KIXCO, MT FIX	TIMMR, ND FIX	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TIMMR, ND FIX	SMERF, SD WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SMERF, SD WP	HUFFR, MN WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4148 RNAV ROUTE Q148			
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	WEDAK, MT FIX	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WEDAK, MT FIX	WAIDE, MT FIX	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WAIDE, MT FIX	JUGIV, WY WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JUGIV, WY WP	MEDICINE BOW, WY VOR/DME	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MEDICINE BOW, WY VOR/DME	MOCTU, WY FIX	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MOCTU, WY FIX	LEWOY, CO WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LEWOY, CO WP	CUGGA, KS FIX	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CUGGA, KS FIX	PENUT, KS WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4148 RNAV ROUTE Q148 - CONTINUED			
PENUT, KS WP	KIRKE, KS FIX	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KIRKE, KS FIX	MORRR, KS WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MORRR, KS WP	BARTLESVILLE, OK VOR/DME	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4150 RNAV ROUTE Q150			
STEVS, WA WP	ZAXUL, WA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZAXUL, WA FIX	LEZLE, WA FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LEZLE, WA FIX	BAXGO, ID FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BAXGO, ID FIX	LAMON, ID FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LAMON, ID FIX	GANNE, WY WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GANNE, WY WP	OPPEE, WY WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4152 RNAV ROUTE Q152			
SUNED, WA FIX	LEZLE, WA FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LEZLE, WA FIX	WEDAK, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WEDAK, MT FIX	IKFOM, WY WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
IKFOM, WY WP	WUVUT, WY FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WUVUT, WY FIX	O'NEILL, NE VORTAC	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4154 RNAV ROUTE Q154			
WANTA, WA FIX	JELTI, OR FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4154 RNAV ROUTE Q154 - CONTINUED

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

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			
UPUGE, MT FIX	HEXOL, MT FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HEXOL, MT FIX	TOUGH, MT WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4156 RNAV ROUTE Q156 - CONTINUED			
TOUGH, MT WP	JELRO, SD FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JELRO, SD FIX	KEKPE, SD WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KEKPE, SD WP	UFFDA, MN WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
UFFDA, MN WP	HSTIN, MN WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HSTIN, MN WP	ZZIPR, IA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4158 RNAV ROUTE Q158			
NTELL, CA WP	PPARK, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
PPARK, CA WP	TRTIS, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TRTIS, CA WP	BIKKR, CA WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BIKKR, CA WP	MYCAL, NV FIX	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MYCAL, NV FIX	JEDNA, NV WP	*24000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4160 RNAV ROUTE Q160			
SHVVR, CA WP	FAANG, CA FIX	*36000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FAANG, CA FIX	RIVVO, CA WP	*36000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RIVVO, CA WP	BIKKR, CA WP	*25000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4162 RNAV ROUTE Q162			
NTELL, CA WP	CABAB, CA WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CABAB, CA WP	VIKSN, CA WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4162 RNAV ROUTE Q162 - CONTINUED			
VIKSN, CA WP	KENNO, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KENNO, NV WP	ESSAA, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ESSAA, NV WP	TUMBE, NV WP	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TUMBE, NV WP	MYCAL, NV FIX	*28000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4164 RNAV ROUTE Q164			
NTELL, CA WP	CABAB, CA WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CABAB, CA WP	KICHI, NV WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KICHI, NV WP	KATTS, NV WP	*26000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KATTS, NV WP	KITTN, NV WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KITTN, NV WP	ROCCY, UT WP	*27000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4166 RNAV ROUTE Q166			
VIKSN, CA WP	UHILL, CA WP	*23000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
UHILL, CA WP	BIKKR, CA WP	*23000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4168 RNAV ROUTE Q168			
FNNDA, CA WP	SHIVA, AZ WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SHIVA, AZ WP	KRINA, AZ WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KRINA, AZ WP	JASSE, AZ WP	*21000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4406 RNAV ROUTE Q406			
BROADWAY, NJ VOR/DME	DBABE, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4406 RNAV ROUTE Q406 - CONTINUED			
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			
TRIBS, CT WP	BIGGO, CT FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BIGGO, CT FIX	BARNES, MA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4436 RNAV ROUTE Q436			
EMMMA, MI FIX	DIXSN, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DIXSN, MI WP	BOOTT, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BOOTT, MI WP	RRONS, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RRONS, MI WP	YARRK, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YARRK, CANADA WP	CHAAP, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CHAAP, CANADA WP	RAAKK, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
RAAKK, NY WP	HERBA, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HERBA, NY WP	REXXY, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
REXXY, NY WP	REBBL, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
REBBL, PA FIX	MTCAF, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MTCAF, PA WP	DGRAF, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
DGRAF, PA FIX	YYOST, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
YYOST, PA WP	LAAYK, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA

95.4436 RNAV ROUTE Q436 - CONTINUED

LAAYK, PA FIX	COATE, NJ FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

95.4438 RNAV ROUTE Q438

RUBYY, 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			

95.4440 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			

FROM	TO	MEA	MAA
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			
TRIBS, CT WP	BIGGO, CT FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BIGGO, CT FIX	BARNES, MA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4480 RNAV ROUTE Q480			
ZANDR, OH FIX	BELLAIRE, OH VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BELLAIRE, OH VOR/DME	LEJOY, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LEJOY, PA FIX	VINSE, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VINSE, PA FIX	BEETS, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BEETS, PA FIX	HOTEE, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HOTEE, PA WP	MIKYG, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MIKYG, PA WP	SPOTZ, PA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SPOTZ, PA WP	CANDR, NJ FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CANDR, NJ FIX	JEFFF, NJ FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
JEFFF, NJ FIX	KINGSTON, NY VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KINGSTON, NY VOR/DME	LESWL, CT WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LESWL, CT WP	BARNES, MA VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4480 RNAV ROUTE Q480 - CONTINUED			
BARNES, MA VORTAC	KENNEBUNK, ME VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4806 RNAV ROUTE Q806			
U.S. CANADIAN BORDER	MILLINOCKET, ME VOR/DME	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MILLINOCKET, ME VOR/DME	CANME, ME WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CANME, ME WP	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4812 RNAV ROUTE Q812			
TIMMR, ND FIX	WELOK, MN WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WELOK, MN WP	CEWDA, WI WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CEWDA, WI WP	ZOHAN, MI WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ZOHAN, MI WP	U.S. CANADIAN BORDER	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	KELTI, NY WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KELTI, NY WP	AHPAH, NY WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AHPAH, NY WP	GOATR, NY WP	*20000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GOATR, NY WP	SYRACUSE, NY VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SYRACUSE, NY VORTAC	FABEN, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
FABEN, NY WP	LOXXE, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
LOXXE, NY FIX	ARKKK, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ARKKK, NY WP	STOMP, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
STOMP, NY FIX	MSLIN, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MSLIN, NY FIX	GAYEL, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4816 RNAV ROUTE Q816			
HOCKE, MI WP	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
US CANADIAN BORDER	KELTI, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KELTI, NY WP	AHPAH, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
AHPAH, NY WP	GOATR, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
GOATR, NY WP	ARNII, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
ARNII, NY FIX	HANAA, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4818 RNAV ROUTE Q818			
FLINT, MI VORTAC	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
U.S. CANADIAN BORDER	US CANADIAN BORDER	*18000	
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
US CANADIAN BORDER	WOZEE, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
WOZEE, NY WP	KELIE, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KELIE, NY FIX	VIEEW, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
VIEEW, NY FIX	BINGHAMTON, NY VORTAC	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BINGHAMTON, NY VORTAC	BUFFY, PA FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
BUFFY, PA FIX	STOMP, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
STOMP, NY FIX	MSLIN, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
MSLIN, NY FIX	GAYEL, NY FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
95.4822 RNAV ROUTE Q822			
FLINT, MI VORTAC	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	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 WP	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			
VAANE, MT WP	KEETA, MT WP	*18000	45000
*GNSS REQUIRED			
KEETA, MT WP	US CANADIAN BORDER	*18000	45000
*GNSS REQUIRED			
95.4844 RNAV ROUTE Q844			
SYRACUSE, NY VORTAC	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4848 RNAV ROUTE Q848			
SLLAP, MI WP	HHIPP, MI WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
HHIPP, MI WP	KARIT, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
KARIT, CANADA WP	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4905 RNAV ROUTE Q905			
HOCKE, MI WP	U.S. CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
95.4907 RNAV ROUTE Q907			
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	US CANADIAN BORDER	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
US CANADIAN BORDER	US CANADIAN BORDER	#*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
GNSS REQUIRED			
95.4913 RNAV ROUTE Q913			
U.S. CANADIAN BORDER	CABCI, VT WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
CABCI, VT WP	TOPPS, ME FIX	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			

FROM	TO	MEA	MAA
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	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	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			
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.			

FROM	TO	MEA	MAA
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			
DAVDA, NY WP	SAVAL, NY WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
SAVAL, NY WP	TALNO, CANADA WP	*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
TALNO, CANADA WP	U.S. CANADIAN BORDER	#*18000	45000
*18000 - GNSS MEA			
*DME/DME/IRU MEA			
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

§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

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	2000
KIMMY, SC FIX	GRAND STRAND, SC VORTAC	2100
GRAND STRAND, SC VORTAC	ASHES, NC FIX	2000
ASHES, NC FIX	YOAST, NC FIX	*5000
*2100 - MOCA		
YOAST, NC FIX	WALLO, NC FIX	*7000
*1600 - MOCA		
WALLO, NC FIX	KINSTON, NC VORTAC	
	NE BND	2000
	SW BND	7000
KINSTON, NC VORTAC	*ZAGGY, NC FIX	2000
*7000 - MRA		
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		

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		

FROM	TO	MEA

95.6002 VOR FEDERAL AIRWAY V2 - CONTINUED

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	LONE ROCK, WI VOR/DME	3000
LONE ROCK, WI VOR/DME	MADISON, WI VORTAC	3000
MADISON, WI VORTAC	*WAITS, WI FIX	2800
*4000 - MRA		
WAITS, WI FIX	BADGER, WI VORTAC	2800
BADGER, WI VORTAC	SUDDS, WI FIX	2900
SUDDS, WI FIX	LYSTR, MI FIX	*4000
*2500 - MOCA		
MUSKEGON, MI VORTAC	LANSING, MI VORTAC	2600
LANSING, MI VORTAC	SALEM, MI VORTAC	#*5000
*3000 - MOCA		
*3000 - GNSS MEA		
#LANSING R-115 UNUSABLE BELOW 5000.		
SALEM, MI VORTAC	DELOW, MI FIX	3000
DELOW, MI FIX	U.S. CANADIAN BORDER	*4000
*2800 – MOCA		

FROM	TO	MEA

95.6002 VOR FEDERAL AIRWAY V2 - CONTINUED

SPICA, CANADA FIX	WOLIS, CANADA FIX	*9000
*2200 - MOCA		
WOLIS, CANADA FIX	DUSUT, CANADA FIX	*3000
*2100 - MOCA		
DUSUT, CANADA FIX	AYLMER, CANADA VOR/DME	*3000
*2200 - MOCA		
AYLMER, CANADA VOR/DME	JARVS, CANADA FIX	*6000
*2200 - MOCA		
JARVS, CANADA FIX	MOAWK, CANADA FIX	*6000
*2300 - MOCA		
MOAWK, CANADA FIX	MYPAL, CANADA FIX	*4500
*2100 - MOCA		
MYPAL, CANADA FIX	WELLA, CANADA FIX	*3000
*2100 - MOCA		
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	*3000
*2400 - MOCA		
BUFFALO, NY VOR/DME	ROCHESTER, NY VOR/DME	#2800
#BUFFALO R-083 UNUSABLE BELOW 11000.		
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		
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

KEY WEST, FL VORTAC	*BIPIN, FL FIX	#15000
*14500 - MCA BIPIN, FL FIX , W BND		
#GNSS MEA		
KEY WEST R-082 UNUSABLE.		
BIPIN, FL FIX	DROWN, FL FIX	#3000
#GNSS 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		

95.6003 VOR FEDERAL AIRWAY V3 - CONTINUED

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		
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	BIGGY, NJ FIX	2500
BIGGY, NJ FIX	SOLBERG, NJ VOR/DME	2000
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		

FROM	TO	MEA

95.6004 VOR FEDERAL AIRWAY V4

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		
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		

FROM	TO	MEA

95.6004 VOR FEDERAL AIRWAY V4 - CONTINUED

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
*4000 - MOCA		
WESAL, KS FIX	SALINA, KS VORTAC	*4000
*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	2500
LAMBS, IN FIX	*APALO, IN FIX	**3000
*4500 - MRA		
**2400 - MOCA		
APALO, IN FIX	DOWNS, IN FIX	*3000
*2400 - MOCA		
DOWNS, IN FIX	LOUISVILLE, KY VORTAC	*2600
*2300 - MOCA		
LOUISVILLE, KY VORTAC	LEXINGTON, KY VORTAC	2800
LEXINGTON, KY VORTAC	CICKE, KY FIX	3000
CICKE, KY FIX	NEWCOMBE, KY VORTAC	3100
NEWCOMBE, KY VORTAC	CHARLESTON, WV VORTAC	3000
CHARLESTON, WV VORTAC	*ITALY, WV FIX	3000
*4000 - MRA		
ITALY, WV FIX	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

FROM	TO	MEA

95.6005 VOR FEDERAL AIRWAY V5

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
*2300 - MOCA		
NEW HOPE, KY VOR/DME	LOUISVILLE, KY VORTAC	2700
LOUISVILLE, KY VORTAC	NERVE, KY FIX	*10000
*2700 - GNSS MEA		
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
APPLETON, OH VORTAC	MANSFIELD, OH VORTAC	3000
MANSFIELD, OH VORTAC	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	U.S. CANADIAN BORDER	#2500
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

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	*11000
*10100 - MOCA		
WELLS, NV VOR	LUCIN, UT VORTAC	10300
LUCIN, UT VORTAC	OGDEN, UT VORTAC	9000

FROM	TO	MEA

95.6006 VOR FEDERAL AIRWAY V6 - CONTINUED

*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 VORTAC	*6000
*5700 - MOCA		
NORTH PLATTE, NE VORTAC	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	*LYMAN, IA FIX	3000
*4500 - MRA		
LYMAN, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	2700
IOWA CITY, IA VORTAC	DAVENPORT, IA VORTAC	2600
DAVENPORT, IA VORTAC	LEECS, IL FIX	2500
LEECS, IL FIX	DUPAGE, IL VOR/DME	*4000
*2700 - GNSS MEA		
NILES, IL FIX	CHETT, MI FIX	*3500
*2500 - MOCA		
CHETT, MI FIX	GIPPER, MI VORTAC	*3000
*2200 - MOCA		
GIPPER, MI VORTAC	BRYTO, IN FIX	*3500
*2400 - MOCA		
BRYTO, IN FIX	*PIONS, OH FIX	**4000
*4000 - MRA		
**2500 - MOCA		
PIONS, OH FIX	WATERVILLE, OH VOR/DME	*3300
*2300 - MOCA		
DRYER, OH VOR/DME	*MOROW, OH FIX	3100
*5000 - MCA MOROW, OH FIX , E BND		
MOROW, OH FIX	*HIRES, OH FIX	**5000
*3500 - MCA HIRES, OH FIX , W BND		
**2700 - MOCA		
**3000 - GNSS MEA		
HIRES, OH FIX	YOUNGSTOWN, OH VORTAC	2900
YOUNGSTOWN, OH VORTAC	MERCY, PA FIX	*5000
*3000 - MOCA		
*3000 - GNSS MEA		
MERCY, PA FIX	CLARION, PA VOR/DME	3600
CLARION, PA VOR/DME	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	SELINSGROVE, PA VORTAC	4000
SELINSGROVE, PA VORTAC	SNOWY, PA FIX	*5000
*3500 - MOCA		
*4000 - GNSS MEA		
SNOWY, PA FIX	ALLENTOWN, PA VORTAC	*4000
*3300 – MOCA		

FROM	TO	MEA

95.6006 VOR FEDERAL AIRWAY V6 - CONTINUED

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

DOLPHIN, FL VORTAC	SWAGS, FL FIX	*2000
*1500 - MOCA		
SWAGS, FL FIX	LEE COUNTY, FL VORTAC	2200
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	CLIOS, AL FIX	*2300
*1900 - MOCA		
CLIOS, AL FIX	MONTGOMERY, AL VORTAC	2400
MONTGOMERY, AL VORTAC	VULCAN, AL VORTAC	3000
VULCAN, AL VORTAC	MUSCLE SHOALS, AL VORTAC	*2800
*2200 - MOCA		
MUSCLE SHOALS, AL VORTAC	GILLE, AL FIX	2500
GILLE, AL FIX	GRAHAM, TN VORTAC	*3000
*2400 - MOCA		
GRAHAM, TN VORTAC	VALER, TN FIX	3000
VALER, TN FIX	CENTRAL CITY, KY VORTAC	*3000
*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	2700
CHICAGO HEIGHTS, IL VORTAC	*NILES, IL FIX	2500
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		
NILES, IL FIX	*LAIRD, IL FIX	3400
*2600 - MCA LAIRD, IL FIX , S BND		
LAIRD, IL FIX	THORR, IL FIX	2500
THORR, IL FIX	PAPPI, IL FIX	*2500
*1800 - MOCA		
PAPPI, IL FIX	TALOR, WI FIX	*4000
*1800 – MOCA		

FROM	TO	MEA

95.6007 VOR FEDERAL AIRWAY V7 - CONTINUED

TALOR, WI FIX	PETTY, WI FIX	*6000
*1900 - MOCA		
PETTY, WI FIX	PROOT, WI FIX	*4500
*1900 - MOCA		
PROOT, WI FIX	FALLS, WI VOR/DME	*3000
*2100 - MOCA		
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

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
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

FROM	TO	MEA

95.6008 VOR FEDERAL AIRWAY V8 - CONTINUED

OMAHA, IA VORTAC	*LYMAN, IA FIX	3000
*4500 - MRA		
LYMAN, IA FIX	DES MOINES, IA VORTAC	3000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	2700
IOWA CITY, IA VORTAC	MOLINE, IL VORTAC	2700
MOLINE, IL VORTAC	TRIDE, IL FIX	3300
TRIDE, IL FIX	JOLIET, IL VORTAC	2600
JOLIET, IL VORTAC	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
FLAG CITY, OH VORTAC	DUSKY, OH FIX	2600
DUSKY, OH FIX	MANSFIELD, OH VORTAC	3000
MANSFIELD, OH VORTAC	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	ATWOO, OH FIX	*4000
*3100 - MOCA		
*3100 - GNSS MEA		
ATWOO, OH FIX	BELLAIRE, OH VOR/DME	*6000
*3000 - MOCA		
BELLAIRE, OH VOR/DME	GALLS, PA FIX	*3600
*3100 - MOCA		
GALLS, PA FIX	GRANTSVILLE, MD VOR/DME	5000
GRANTSVILLE, MD VOR/DME	MARTINSBURG, WV VORTAC	*5000
*4500 - MOCA		
MARTINSBURG, WV VORTAC	WASHINGTON, DC VOR/DME	3300

95.6009 VOR FEDERAL AIRWAY V9

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

FROM	TO	MEA

95.6009 VOR FEDERAL AIRWAY V9 - CONTINUED

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
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
LITCHFIELD, MI VOR/DME	*CRUXX, MI FIX	3000
*7500 - MRA		
CRUXX, MI FIX	CARLETON, MI VORTAC	*3000
*2200 - MOCA		
CARLETON, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2100 - MOCA		
U.S. CANADIAN BORDER	FAILS, OH FIX	*4000
*1800 - MOCA		
*2300 - GNSS MEA		
FAILS, OH FIX	*WONOP, OH FIX	**3000
*5000 - MRA		
**2000 - MOCA		
WONOP, OH FIX	YOUNGSTOWN, OH VORTAC	*5000
*2700 - MOCA		
*3000 - GNSS MEA		

FROM	TO	MEA

95.6010 VOR FEDERAL AIRWAY V10 - CONTINUED

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 VORTAC	2400
CUNNINGHAM, KY VORTAC	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	*GRABI, IN FIX	3000
*4000 - MRA		
GRABI, IN FIX	EDGEE, OH FIX	3000
EDGEE, OH FIX	*PIONS, OH FIX	4000
*4000 - MRA		
PIONS, OH FIX	*HIRED, MI FIX	6000
*6000 - MRA		
HIRED, MI FIX	*CRUXX, MI FIX	7500
*7500 - MRA		

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

FROM	TO	MEA

95.6012 VOR FEDERAL AIRWAY V12 - CONTINUED

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
*5000 - MOCA		
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	*2600
*2100 - MOCA		
STITH, MO FIX	FORISTELL, MO VORTAC	2600
FORISTELL, MO VORTAC	TROY, IL VORTAC	2500
TROY, IL VORTAC	BIBLE GROVE, IL VORTAC	2300
BIBLE GROVE, IL VORTAC	WORKE, IL FIX	2300
WORKE, IL FIX	OZMOE, IN FIX	*6000
*2600 - MOCA		
OZMOE, IN FIX	SHELBYVILLE, IN VOR/DME	*2500
*2300 - MOCA		
SHELBYVILLE, IN VOR/DME	RICHMOND, IN VORTAC	*2800
*2600 - MOCA		
RICHMOND, IN VORTAC	DAYTON, OH VOR/DME	2900
DAYTON, OH VOR/DME	*PIZZA, OH FIX	3000
*5000 - MRA		
PIZZA, OH FIX	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	ALLEGHENY, PA VOR/DME	3300
ALLEGHENY, PA VOR/DME	MILWO, PA FIX	4000
MILWO, PA FIX	JOHNSTOWN, PA VORTAC	4900
JOHNSTOWN, PA VORTAC	HARRISBURG, PA VORTAC	5000
HARRISBURG, PA VORTAC	KUPPS, PA FIX	3100
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	1600

FROM	TO	MEA

95.6013 VOR FEDERAL AIRWAY V13 - CONTINUED

CORPUS CHRISTI, TX VORTAC	*WORRY, TX FIX	1700
*2100 - MRA		
WORRY, TX FIX	*AUSTS, TX FIX	1700
*2300 - MRA		
AUSTS, TX FIX	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		
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 VORTAC	#4000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

FROM	TO	MEA

95.6014 VOR FEDERAL AIRWAY V14

CHISUM, NM VORTAC	ONSOM, NM FIX	
	E BND	*7000
	W 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	5000
CHILDRESS, TX VORTAC	HOBART, OK VORTAC	3700
HOBART, OK VORTAC	CARFF, OK FIX	3600
CARFF, 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
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
FLAG CITY, OH VORTAC	OBRLN, OH FIX	*3500
*2400 - MOCA		
OBRLN, OH FIX	DRYER, OH VOR/DME	*3500
*2500 - MOCA		
DRYER, OH VOR/DME	JEFFERSON, OH VOR/DME	3500
JEFFERSON, OH VOR/DME	ERIE, PA VORTAC	2700
ERIE, PA VORTAC	DUNKIRK, NY VORTAC	#3400
#ERIE R-064 UNUSABLE, USE DUNKIRK R-245		
DUNKIRK, NY VORTAC	BUFFALO, NY VOR/DME	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		

FROM	TO	MEA

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 VORTAC	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		
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		

95.6016 VOR FEDERAL AIRWAY V16 - CONTINUED

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
HOLLY SPRINGS, MS VORTAC	JACKS CREEK, TN VOR/DME	*2500
*2000 - MOCA		
JACKS CREEK, TN VOR/DME	SHELBYVILLE, TN VOR/DME	*3000
*2500 - MOCA		
SHELBYVILLE, TN VOR/DME	HINCH MOUNTAIN, TN VORTAC	5000
HINCH MOUNTAIN, TN VORTAC	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
SPEEL, VA FIX	PULASKI, VA VORTAC	5400
PULASKI, VA VORTAC	ROANOKE, VA VORTAC	5300
ROANOKE, VA VORTAC	GOOZE, VA FIX	5000
GOOZE, VA FIX	LYNCHBURG, VA VORTAC	
	W BND	*5000
	E BND	*3000
*2900 - MOCA		
LYNCHBURG, VA VORTAC	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 VORTAC	1800

FROM	TO	MEA

95.6016 VOR FEDERAL AIRWAY V16 - CONTINUED

CEDAR LAKE, NJ VORTAC	COYLE, NJ VORTAC	*1900
*1300 - MOCA		
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
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	CAMAR, OK FIX	*4900
*3600 - MOCA		
CAMAR, OK FIX	MITBEE, OK VORTAC	4300
MITBEE, OK VORTAC	FLACK, KS FIX	*4400
*3900 - MOCA		
FLACK, KS FIX	GARDEN CITY, KS VORTAC	4700
GARDEN CITY, KS VORTAC	*COFFE, KS FIX	**5500
*9000 - MRA		
**4600 - MOCA		
COFFE, KS FIX	GOODLAND, KS VORTAC	5500

FROM	TO	MEA

95.6018 VOR FEDERAL AIRWAY V18

GUTHRIE, TX VORTAC	BEKLE, TX FIX	
	NW BND	*6000
	SE BND	*8000
*3400 - MOCA		
BEKLE, TX FIX	MILLSAP, TX VORTAC	*8000
*3500 - MOCA		
MILLSAP, TX VORTAC	GLEN ROSE, TX VORTAC	3000
GLEN ROSE, TX VORTAC	CEDAR CREEK, TX VORTAC	*3000
*2200 - MOCA		
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	CONNI, GA FIX	*3000
*2500 - MOCA		
CONNI, GA FIX	MADDI, GA FIX	*4000
*2300 - MOCA		
MADDI, GA FIX	CORVI, GA FIX	*5000
*2000 - MOCA		
CORVI, GA FIX	RAFFE, GA FIX	*6000
*2200 - MOCA		
RAFFE, GA FIX	COLLIERS, SC VORTAC	*2500
*2000 - MOCA		
COLLIERS, SC VORTAC	LASHE, SC FIX	2400
LASHE, SC FIX	NORMS, SC FIX	*3000
*2200 - MOCA		
NORMS, SC FIX	SACKS, SC FIX	*4000
*1700 - MOCA		
SACKS, SC FIX	CHARLESTON, SC VORTAC	2100

95.6019 VOR FEDERAL AIRWAY V19

CINCINNATI, KY VORTAC	APPLETON, OH VORTAC	*4000
*2800 - MOCA		
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	1600
CORPUS CHRISTI, TX VORTAC	COPAN, TX FIX	1800
COPAN, TX FIX	BETZY, TX FIX	1700
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

FROM	TO	MEA

95.6019 VOR FEDERAL AIRWAY V19 - CONTINUED

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	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
SMARR, GA FIX	SINCA, GA FIX	*4500
*2500 - MOCA		
*2500 - GNSS MEA		
SINCA, GA FIX	*GLOSS, GA FIX	**3000
*3500 - MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, 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	6000
SUGARLOAF MOUNTAIN, NC VORTAC	VAESE, NC FIX	6000
VAESE, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	*5000
*3600 - MOCA		
BARRETTS MOUNTAIN, NC VOR/DME	PROVE, NC FIX	3500
PROVE, NC FIX	LEAKS, NC FIX	3500
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		
COLIN, VA FIX	NOTTINGHAM, MD VORTAC	*10000
*1800 - MOCA		
*2000 - GNSS MEA		

95.6021 VOR FEDERAL AIRWAY V21

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		

FROM	TO	MEA

95.6021 VOR FEDERAL AIRWAY V21 - CONTINUED

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 VORTAC	6000
CUT BANK, MT VORTAC	U.S. CANADIAN BORDER	6300

95.6023 VOR FEDERAL AIRWAY V23

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

FROM	TO	MEA
	SE BND	6000

95.6023 VOR FEDERAL AIRWAY V23 - CONTINUED

SHAFTER, CA VORTAC	DELNO, CA FIX	3000
DELNO, CA FIX	LATON, CA FIX	*3000
*2000 - MOCA		
LATON, CA FIX	CLOVIS, CA VORTAC	2000
CLOVIS, CA VORTAC	BEREN, CA FIX	2100
BEREN, 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		
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	4000
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.		

FROM	TO	MEA

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		
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		

FROM	TO	MEA

95.6025 VOR FEDERAL AIRWAY V25 - CONTINUED

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	
	S BND	*12000
	N BND	*7000
*6700 - MOCA		
*10000 - GNSS MEA, S BND		
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
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		

95.6026 VOR FEDERAL AIRWAY V26 - CONTINUED

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		
EDGRR, WI FIX	WAUSAU, WI VORTAC	*6000
*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	2700
WHITE CLOUD, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	SALEM, MI VORTAC	#*5000
*3000 - GNSS MEA		
#LANSING R-115 UNUSABLE BELOW 5000.		
SALEM, MI VORTAC	DETROIT, MI VOR/DME	2900
DETROIT, MI VOR/DME	U.S. CANADIAN BORDER	*3400
*2300 - MOCA		
U.S. CANADIAN BORDER	GEMNI, OH FIX	*3400
*2300 - MOCA		
GEMNI, OH FIX	DRYER, OH VOR/DME	*3000
*2200 - MOCA		

FROM	TO	MEA

95.6027 VOR FEDERAL AIRWAY V27

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
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	
	N BND	*8000
	S BND	*3000
*3000 - MOCA		
*4000 - GNSS MEA, N BND		
CUTEL, OR FIX	DANES, OR FIX	
	N BND	*8000
	S BND	*5000
*3600 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6027 VOR FEDERAL AIRWAY V27 - CONTINUED

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

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
*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
*15000 - MCA SPOOK, CA FIX , N BND		
**12000 - MOCA		
RICHY, CA FIX	*MUSTANG, NV VORTAC	13000
*10500 - MCA MUSTANG, NV VORTAC , S BND		

95.6029 VOR FEDERAL AIRWAY V29

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		
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 VORTAC	3600
BINGHAMTON, NY VORTAC	CORTA, NY FIX	*4000
*3600 - MOCA		
CORTA, NY FIX	VESPE, NY FIX	4500
VESPE, NY FIX	SYRACUSE, NY VORTAC	*4000
*3600 - MOCA		

FROM	TO	MEA

95.6029 VOR FEDERAL AIRWAY V29 - CONTINUED

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		
LETUS, NY FIX	MASSENA, NY VORTAC	#3000
#GNSS MEA ONLY		
MASSENA R-255 UNUSABLE. GNSS REQUIRED		

95.6030 VOR FEDERAL AIRWAY V30

BADGER, WI VORTAC	SQUIB, MI FIX	2900
SQUIB, MI FIX	PULLMAN, MI VOR/DME	3500
PULLMAN, MI VOR/DME	LITCHFIELD, MI VOR/DME	2800
LITCHFIELD, MI VOR/DME	*HIRED, MI FIX	3000
*6000 - MRA		
HIRED, MI FIX	WATERVILLE, OH VOR/DME	3000
DRYER, OH VOR/DME	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	CAPEL, OH FIX	3600
CAPEL, OH FIX	VOLAN, PA FIX	*3600
*2800 - MOCA		
VOLAN, PA FIX	CLARION, PA VOR/DME	3600
CLARION, PA VOR/DME	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	SELINSGROVE, PA VORTAC	4000
SELINSGROVE, PA VORTAC	EAST TEXAS, PA VOR/DME	4000
EAST TEXAS, PA VOR/DME	SOLBERG, NJ VOR/DME	2700

95.6031 VOR FEDERAL AIRWAY V31

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	*SUEDE, PA FIX	**12000
*4500 - MRA		
**5000 - GNSS MEA		
SUEDE, PA FIX	GRAMO, PA FIX	*12000
*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 VORTAC	5000
SELINSGROVE, PA VORTAC	WATSO, PA FIX	*3500
*3000 - 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		

FROM	TO	MEA

95.6032 VOR FEDERAL AIRWAY V32

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

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	*SUEDE, PA FIX	**12000
*4500 - MRA		
**5000 - GNSS MEA		
SUEDE, PA FIX	GRAMO, PA FIX	*12000
*5000 - GNSS MEA		
GRAMO, PA FIX	HARRISBURG, PA VORTAC	*7000
*5000 - GNSS MEA		
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	4000
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

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

95.6035 VOR FEDERAL AIRWAY V35

DOLPHIN, FL VORTAC	CURVE, FL FIX	*2000
*1500 - MOCA		
CURVE, FL FIX	*DEEDS, FL FIX	**5000
*4000 - MRA		
**1300 - MOCA		

FROM	TO	MEA

95.6035 VOR FEDERAL AIRWAY V35 - CONTINUED

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	*GLOSS, GA FIX	**3000
*3500 - MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, 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	6000
SUGARLOAF MOUNTAIN, NC VORTAC	*BUSIC, NC FIX	8000
*9000 - MCA BUSIC, NC FIX , N BND		
BUSIC, NC FIX	*ROANS, TN FIX	**9000
*9000 - MCA ROANS, TN FIX , S BND		
**8200 - MOCA		
ROANS, TN FIX	HOLSTON MOUNTAIN, TN VORTAC	7000
HOLSTON MOUNTAIN, TN VORTAC	GLADE SPRING, VA VOR/DME	6700
GLADE SPRING, VA VOR/DME	STACY, VA FIX	6000
STACY, VA FIX	CHARLESTON, WV VORTAC	*4500
*4000 - MOCA		
CHARLESTON, WV VORTAC	BENZO, WV FIX	*4000
*3000 - MOCA		
BENZO, WV FIX	CLARKSBURG, WV VOR/DME	3200
CLARKSBURG, WV VOR/DME	MORGANTOWN, WV VORTAC	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

SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*5000
*2800 - MOCA		
BUFFALO, NY VOR/DME	*BURST, NY FIX	**11000
*11000 - MCA BURST, NY FIX , NW BND		
**4000 - GNSS MEA		
BURST, NY FIX	THINK, NY FIX	4000
THINK, NY FIX	ELMIRA, NY VOR/DME	3500

FROM	TO	MEA

95.6036 VOR FEDERAL AIRWAY V36 – CONTINUED

ELMIRA, NY VOR/DME	HAWLY, PA FIX	#4500
#GNSS MEA.		
ELMIRA R-122 UNUSABLE BELOW FL180 BEYOND 40 NM.		
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

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 VORTAC	*4000
*3200 - MOCA		
ELLWOOD CITY, PA VORTAC	ERIE, PA VORTAC	3000
ERIE, PA VORTAC	U.S. CANADIAN BORDER	3000

95.6038 VOR FEDERAL AIRWAY V38

MOLINE, IL VORTAC	TRIDE, IL FIX	3300
TRIDE, IL FIX	MEDAN, IL FIX	*4000
*2200 - MOCA		
MEDAN, IL FIX	PEOTONE, IL VORTAC	2400

FROM	TO	MEA

95.6038 VOR FEDERAL AIRWAY V38 - CONTINUED

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	FLAG CITY, OH VORTAC	2500
FLAG CITY, OH VORTAC	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	PARKERSBURG, WV VORTAC	3000
PARKERSBURG, WV VORTAC	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	4000
BINNS, PA FIX	*SUEDE, PA FIX	4500
*4500 - MRA		
SUEDE, PA FIX	*DELRO, PA FIX	4500
*10000 - MRA		
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 VORTAC	4000
CONCORD, NH VORTAC	AUGUSTA, ME VOR/DME	3500
AUGUSTA, ME VOR/DME	RINTH, ME FIX	*3000
*2000 - MOCA		
RINTH, ME FIX	MILLINOCKET, ME VOR/DME	*3000
*2400 – MOCA		

FROM	TO	MEA

95.6039 VOR FEDERAL AIRWAY V39 - CONTINUED

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

95.6040 VOR FEDERAL AIRWAY V40

DRYER, OH VOR/DME	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	CUTTA, OH FIX	3000

95.6041 VOR FEDERAL AIRWAY V41

CUTTA, OH FIX	YOUNGSTOWN, OH VORTAC	*5000
*3600 - GNSS MEA		

95.6043 VOR FEDERAL AIRWAY V43

APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	YOUNGSTOWN, OH VORTAC	3000
YOUNGSTOWN, OH VORTAC	ERIE, PA VORTAC	*5000
*3000 - GNSS MEA		
ERIE, PA VORTAC	U.S. CANADIAN BORDER	#
#UNUSABLE		
U.S. CANADIAN BORDER	BUFFALO, NY VOR/DME	*3000
*2400 - MOCA		

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 VORTAC	3300
PARKERSBURG, WV VORTAC	BENDS, WV FIX	3000
BENDS, WV FIX	MORGANTOWN, WV VORTAC	4000
MORGANTOWN, WV VORTAC	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 - MRA		
**1500 - MOCA		
**2000 - GNSS MEA		

FROM	TO	MEA

95.6044 VOR FEDERAL AIRWAY V44 - CONTINUED

KARRS, NJ FIX	*GAMBY, NJ FIX	**7000
*6000 - MRA		
**1300 - MOCA		
**2000 - GNSS MEA		
GAMBY, NJ FIX	*SATES, NJ FIX	**5000
*6000 - MRA		
**1300 - MOCA		
**2000 - GNSS MEA		
SATES, NJ FIX	DEER PARK, NY VOR/DME	*5000
*1600 - MOCA		
*2000 - GNSS MEA		
DEER PARK, NY VOR/DME	*NESSI, CT FIX	2000
*4000 - MRA		
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 VORTAC	6000
BLUEFIELD, WV VORTAC	CHARLESTON, WV VORTAC	*6000
*5000 - MOCA		
CHARLESTON, WV VORTAC	HENDERSON, WV VORTAC	3000
HENDERSON, WV VORTAC	*BREMN, OH FIX	**10000
*10000 - MCA BREMN, OH FIX , S BND		
**3000 - GNSS MEA		
BREMN, OH FIX	APPLETON, OH VORTAC	3000
APPLETON, OH VORTAC	DUSKY, OH FIX	3000
DUSKY, OH FIX	WATERVILLE, OH VOR/DME	2600
WATERVILLE, OH VOR/DME	*HIRED, MI FIX	3000
*6000 - MRA		
HIRED, MI FIX	JACKSON, MI VOR/DME	3000
JACKSON, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	SAGINAW, MI VOR/DME	2600
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

FROM	TO	MEA

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	*2500
*1800 - MOCA		
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 VORTAC	2400
CUNNINGHAM, KY VORTAC	WESON, KY FIX	2600
WESON, KY FIX	POCKET CITY, IN VORTAC	2200
CINCINNATI, KY VORTAC	MIZZA, OH FIX	2800
MIZZA, OH FIX	ROSEWOOD, OH VORTAC	3000
ROSEWOOD, OH VORTAC	FLAG CITY, OH VORTAC	3000
FLAG CITY, OH VORTAC	WATERVILLE, OH VOR/DME	2500

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	2700
*3000 - MRA		
TANDS, TN FIX	BOWLING GREEN, KY VORTAC	2700
BOWLING GREEN, KY VORTAC	MYSTIC, KY VOR	2700

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

FROM	TO	MEA

95.6050 VOR FEDERAL AIRWAY V50 - CONTINUED

TERRE HAUTE, IN VORTAC	BRICKYARD, IN VORTAC	2700
BRICKYARD, IN VORTAC	DAYTON, OH VOR/DME	3000

95.6051 VOR FEDERAL AIRWAY V51

PAHOKEE, FL VORTAC	*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		
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 VORTAC	5000
HINCH MOUNTAIN, TN VORTAC	LIVINGSTON, TN VORTAC	5000
LIVINGSTON, TN VORTAC	LOUISVILLE, KY VORTAC	3200
SHELBYVILLE, IN VOR/DME	OCKEL, IN FIX	*3000
*2900 - MOCA		
OCKEL, IN FIX	BOILER, IN VORTAC	*2500
*2100 - MOCA		
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2700

95.6052 VOR FEDERAL AIRWAY V52

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
CENTRAL CITY, KY VORTAC	*BOWLING GREEN, KY VORTAC	2400
*11000 - MCA BOWLING GREEN, KY VORTAC , SE BND		
BOWLING GREEN, KY VORTAC	LIVINGSTON, TN VORTAC	11000

FROM	TO	MEA

95.6053 VOR FEDERAL AIRWAY V53

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		
CARTT, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6000
SUGARLOAF MOUNTAIN, NC VORTAC	*BUSIC, NC FIX	8000
*9000 - MCA BUSIC, NC FIX , N BND		
BUSIC, NC FIX	*ROANS, TN FIX	**9000
*9000 - MCA ROANS, TN FIX , S BND		
**8200 - MOCA		
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
IRVIN, KY FIX	LEXINGTON, KY VORTAC	3000
LEXINGTON, KY VORTAC	LOUISVILLE, KY VORTAC	2800
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

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		

FROM	TO	MEA

95.6054 VOR FEDERAL AIRWAY V54 - CONTINUED

RAEFO, NC FIX	FAYETTEVILLE, NC VOR/DME	*2800
*1900 - MOCA		
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	STEVENS POINT, WI VORTAC	3000
STEVENS POINT, WI VORTAC	EAU CLAIRE, WI VORTAC	3000
EAU CLAIRE, WI VORTAC	SIREN, WI VOR/DME	*5000
*2800 - MOCA		
*3000 - GNSS MEA		
SIREN, WI VOR/DME	BRAINERD, MN VORTAC	*6000
*2800 - MOCA		
*3000 - GNSS MEA		
BRAINERD, MN VORTAC	PARK RAPIDS, MN VOR/DME	3400
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		
PRATZ, GA FIX	MACON, GA VORTAC	#2500
#GNSS MEA		
MACON R-265 UNUSABLE GNSS REQUIRED		
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	2000
*5000 - MRA		
ROZBO, NC FIX	WALLO, NC FIX	2000

FROM	TO	MEA

95.6056 VOR FEDERAL AIRWAY V56 - CONTINUED

WALLO, NC FIX	KROVE, NC FIX	*3000
*2400 - MOCA		
KROVE, NC FIX	NEW BERN, NC VOR/DME	*2400
*1800 - MOCA		

95.6057 VOR FEDERAL AIRWAY V57

LEXINGTON, KY VORTAC	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 VORTAC	6000
BECKLEY, WV VORTAC	*ITALY, WV FIX	**5000
*4000 - MRA		
**4300 - MOCA		
ITALY, WV FIX	WARDO, WV FIX	*5000
*4300 - MOCA		
WARDO, WV FIX	PARKERSBURG, WV VORTAC	3000
PARKERSBURG, WV VORTAC	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	BRIGGS, 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	JENKY, MO FIX	*4000
*3100 - MOCA		
JENKY, MO FIX	BILIE, MO FIX	3300
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 VORTAC	2600
MOLINE, IL VORTAC	DAVENPORT, IA VORTAC	3000
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 VORTAC	*3000
*3000 - GNSS MEA		
BADGER, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	STEVENS POINT, WI VORTAC	#*4000
*3000 - MOCA		
*3000 - GNSS MEA		
#WAUSAU R-171 UNUSABLE BYD 8 NM, USE STEVENS POINT R-354		
STEVENS POINT, WI VORTAC	TAYUY, WI FIX	3100
TAYUY, WI FIX	WAUSAU, WI VORTAC	#3100
#WAUSAU R-171 UNUSABLE BYD 8 NM, USE STEVENS POINT R-354		

95.6063 VOR FEDERAL AIRWAY V63 - CONTINUED

WAUSAU, WI VORTAC	RHINELANDER, WI VORTAC	#*4000
*4000 - GNSS MEA		
#WAUSAU R-005 UNUSABLE BYD 10 NM. GNSS REQUIRED BEYOND 10 NM.		
RHINELANDER R-185 UNUSABLE BYD 10 NM. GNSS REQUIRED BEYOND 10 NM.		
RHINELANDER, WI VORTAC	HOUGHTON, MI VOR/DME	3500

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
SEAL BEACH, CA VORTAC	TUSTI, CA FIX	
	E BND	3000
	W BND	2500
TUSTI, CA FIX	*COREL, CA FIX	6000
*7400 - MCA COREL, CA FIX , E BND		
COREL, CA FIX	PERIS, CA FIX	8000
PERIS, CA FIX	HEMET, CA FIX	
	E BND	*11000
	W BND	*10000
*6600 - 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

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, AZ VORTAC	3600
BARD, AZ 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		

FROM	TO	MEA

95.6066 VOR FEDERAL AIRWAY V66 - CONTINUED

**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
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	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
SMARR, GA FIX	SINCA, GA FIX	*4500
*2500 - MOCA		
*2500 - GNSS MEA		
SINCA, GA FIX	*GLOSS, GA FIX	**3000
*3500 - MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, 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

FROM	TO	MEA

95.6067 VOR FEDERAL AIRWAY V67

CHOO CHOO, TN VORTAC	SHELBYVILLE, TN VOR/DME	4000
SHELBYVILLE, TN VOR/DME	GRAHAM, TN VORTAC	*4000
*2500 - MOCA		
GRAHAM, TN VORTAC	LANKY, TN FIX	*4000
*2200 - MOCA		
LANKY, TN FIX	CUNNINGHAM, KY VORTAC	*3000
*2200 - MOCA		
CUNNINGHAM, KY VORTAC	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 VORTAC	*2600
*2100 - MOCA		
IOWA CITY, IA VORTAC	CEDAR RAPIDS, IA VOR/DME	2700
CEDAR RAPIDS, IA VOR/DME	*LYERS, IA FIX	2900
*3200 - MRA		
LYERS, IA FIX	WATERLOO, IA VOR/DME	2900
WATERLOO, IA VOR/DME	FOYDE, IA FIX	3000
FOYDE, IA FIX	ROCHESTER, MN VOR/DME	3500

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	6000
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

FROM	TO	MEA

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 VORTAC	*3000
*2200 - MOCA		

95.6070 VOR FEDERAL AIRWAY V70

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	COPAN, TX FIX	1800
COPAN, TX FIX	BETZY, TX FIX	1700
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
*1800 - MOCA		
RUTEL, AL FIX	CRENS, AL FIX	*4500
*1800 - MOCA		
CRENS, 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

95.6070 VOR FEDERAL AIRWAY V70 - CONTINUED

*1900 - MOCA		MAA - 9000
MILEN, GA FIX	ALLENDALE, SC VOR	*3000
*1800 - MOCA		
GRAND STRAND, SC VORTAC	WILMINGTON, NC VORTAC	#*3100
*3100 - GNSS MEA		
#WILMINGTON R-240 UNUSABLE		
WILMINGTON, NC VORTAC	BEULA, NC FIX	*8000
*1600 - MOCA		
*2000 - GNSS MEA		
BEULA, NC FIX	KINSTON, NC VORTAC	2000
KINSTON, NC VORTAC	PEARS, NC FIX	2500
PEARS, NC FIX	COFIELD, NC VORTAC	*3000
*2000 - MOCA		

95.6071 VOR FEDERAL AIRWAY V71

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
*2500 - MOCA		
HAAWK, AR FIX	HARRISON, AR VOR/DME	*10000
*3700 - MOCA		
*4000 - GNSS MEA		
HARRISON, AR VOR/DME	RASON, MO FIX	3200
RASON, 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

FROM	TO	MEA

95.6071 VOR FEDERAL AIRWAY V71 - CONTINUED

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

RAZORBACK, AR VORTAC	EDUGE, AR FIX	3500
EDUGE, AR FIX	REEDS, MO FIX	*4000
*2900 - MOCA		
REEDS, MO FIX	DOGWOOD, MO VORTAC	*3400
*2900 - MOCA		
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	NIKEL, IL FIX	*3000
*2500 - MOCA		
NIKEL, IL FIX	CENTRALIA, IL VORTAC	2300
CENTRALIA, IL VORTAC	BIBLE GROVE, IL VORTAC	2600
BIBLE GROVE, IL VORTAC	MATTOON, IL VOR/DME	2500
MATTOON, IL VOR/DME	BLOOMINGTON, IL VOR/DME	2700

95.6073 VOR FEDERAL AIRWAY V73

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

GARDEN CITY, KS VORTAC	DODGE CITY, KS VORTAC	4600
DODGE CITY, KS VORTAC	*SAFER, KS FIX	4300
*4000 - MRA		
SAFER, KS FIX	ANTHONY, KS VORTAC	3400
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	MALTS, OK FIX	*2800
*1900 - MOCA		
MALTS, OK FIX	FORT SMITH, AR VORTAC	3000
FORT SMITH, AR VORTAC	CHARR, AR FIX	2500
CHARR, AR FIX	MAGGA, AR FIX	4000
MAGGA, AR FIX	DANIL, AR FIX	*4500
*4000 - MOCA		
DANIL, AR FIX	OLLAS, AR FIX	*4500
*2600 - MOCA		
OLLAS, AR FIX	MAUME, AR FIX	*4500
*2700 - MOCA		
MAUME, AR FIX	LITTLE ROCK, AR VORTAC	3500
LITTLE ROCK, AR VORTAC	PINE BLUFF, AR VOR/DME	2500

FROM	TO	MEA

95.6074 VOR FEDERAL AIRWAY V74 - CONTINUED

PINE BLUFF, AR VOR/DME	GREENVILLE, MS VOR/DME	2000
GREENVILLE, MS VOR/DME	MAGNOLIA, MS VORTAC	2000

95.6075 VOR FEDERAL AIRWAY V75

MORGANTOWN, WV VORTAC	BELLAIRE, OH VOR/DME	4000
BELLAIRE, OH VOR/DME	ATWOO, OH FIX	*6000
*3000 - MOCA		
ATWOO, OH FIX	BRIGGS, OH VOR/DME	*4000
*3100 - MOCA		
*3100 - GNSS MEA		
BRIGGS, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	U.S. CANADIAN BORDER	#*4000
*2200 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

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		

FROM	TO	MEA

95.6077 VOR FEDERAL AIRWAY V77 - CONTINUED

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 VORTAC	*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 VORTAC	3700
RHINELANDER, WI VORTAC	IRON MOUNTAIN, MI VOR/DME	4300
IRON MOUNTAIN, MI VOR/DME	VUKFI, MI FIX	3100
VUKFI, MI FIX	ESCANABA, MI VOR/DME	*3000
*2200 - MOCA		
ESCANABA, MI VOR/DME	SCHOOLCRAFT COUNTY, MI VOR/DME	2500
SCHOOLCRAFT COUNTY, MI VOR/DME	PELLSTON, MI VORTAC	2600
PELLSTON, MI VORTAC	*RABBO, MI FIX	2600
*3500 - MRA		
RABBO, MI FIX	ALPENA, MI VORTAC	2600
ALPENA, MI VORTAC	ZABLE, MI FIX	3000
ZABLE, MI FIX	BANJO, MI FIX	*5000
*2900 - MOCA		
BANJO, MI FIX	BENNY, MI FIX	*3000
*2200 - MOCA		
BENNY, MI FIX	SAGINAW, MI VOR/DME	2200

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 VORTAC	*6500
*5000 - MOCA		
NORTH PLATTE, NE VORTAC	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

FROM	TO	MEA

95.6081 VOR FEDERAL AIRWAY V81 - CONTINUED

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
#GNSS MEA		
BLACK FOREST R-325 UNUSABLE		
HOHUM, CO FIX	SIGNE, CO FIX	9200
SIGNE, CO FIX	JEFFCO, CO VOR/DME	*9200
*8600 - MOCA		
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	BRAINERD, MN VORTAC	*7000
*3400 - MOCA		
*3500 - GNSS MEA		
BRAINERD, MN VORTAC	GOPHER, MN VORTAC	3000
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		

FROM	TO	MEA

95.6083 VOR FEDERAL AIRWAY V83 - CONTINUED

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, MI FIX	*2500
*1900 - MOCA		
PIVOT, MI FIX	*JYBEE, MI FIX	**4000
*4000 - MRA		
**1900 - MOCA		
JYBEE, MI FIX	PULLMAN, MI VOR/DME	*4000
*2200 - MOCA		
PULLMAN, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	FLINT, MI VORTAC	2700
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	8000
*11500 - MCA HYGEN, CO FIX , NW BND		
HYGEN, CO FIX	*ALLAN, CO FIX	#**13500
*16000 - MRA		
*15400 - MCA ALLAN, CO FIX , NW BND		
**12900 - MOCA		
#MTA V85 NW TO V361 SW 15800		
MTA V85 SE TO V361 SW 16500		
MTA V85 NW TO V361 NE 15800		
ALLAN, 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

FROM	TO	MEA

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.		
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

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
SCAGGS ISLAND, CA VORTAC	MAXWELL, CA VORTAC	5300
MAXWELL, CA VORTAC	RED BLUFF, CA VORTAC	3000

95.6088 VOR FEDERAL AIRWAY V88

TULSA, OK VORTAC	VINTA, OK FIX	2700
VINTA, OK FIX	NARCI, OK FIX	*4500
*2300 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6088 VOR FEDERAL AIRWAY V88 - CONTINUED

NARCI, OK FIX	*WACCO, MO FIX	**6200
*3700 - MRA		
*6200 - MCA WACCO, MO FIX , SW BND		
**3100 - MOCA		
**4000 - GNSS MEA		
WACCO, MO FIX	*QUALM, MO FIX	**3700
*3700 - MRA		
**3000 - MOCA		
QUALM, MO FIX	*MIRTH, MO FIX	3000
*3700 - MRA		
MIRTH, 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

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

95.6090 VOR FEDERAL AIRWAY V90

SALEM, MI VORTAC	BEWEL, OH FIX	#*4000
*2700 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
BEWEL, OH FIX	DUNKIRK, NY VORTAC	*5000
*3300 - MOCA		

95.6091 VOR FEDERAL AIRWAY V91

SARDI, NY FIX	CALVERTON, NY VOR/DME	*2500
*1900 - MOCA		
CALVERTON, NY VOR/DME	*NESSI, CT FIX	2000
*4000 - MRA		
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

BEBEE, IL FIX	*NILES, IL FIX	3400
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		

FROM	TO	MEA

95.6092 VOR FEDERAL AIRWAY V92 - CONTINUED

NILES, IL FIX	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	BAGEL, IN FIX	2700
BAGEL, IN FIX	EDGEE, OH FIX	*3000
*2400 - MOCA		
EDGEE, OH FIX	WATERVILLE, OH VOR/DME	3000
WATERVILLE, OH VOR/DME	MANSFIELD, OH VORTAC	2900
MANSFIELD, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	NEWCOMERSTOWN, OH VOR/DME	3000
NEWCOMERSTOWN, OH VOR/DME	BELLAIRE, OH VOR/DME	3000
BELLAIRE, OH VOR/DME	GALLS, PA FIX	*3600
*3100 - MOCA		
GALLS, PA FIX	GRANTSVILLE, MD VOR/DME	5000
GRANTSVILLE, MD VOR/DME	ARMEL, VA VOR/DME	5000

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	**4500
*10000 - MRA		
**2600 - MOCA		
ROAST, PA FIX	LANCASTER, PA VOR/DME	*4500
*2600 - MOCA		
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 VORTAC	5000
CONCORD, NH VORTAC	KENNEBUNK, ME VOR/DME	3000
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		

FROM	TO	MEA

95.6094 VOR FEDERAL AIRWAY V94 - CONTINUED

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		
HOLLY SPRINGS, MS VORTAC	JACKS CREEK, TN VOR/DME	*2500
*2000 - MOCA		
JACKS CREEK, TN VOR/DME	VALER, TN FIX	*3000
*2200 - MOCA		
VALER, TN FIX	TEACH, TN FIX	*4000
*2500 - MOCA		
TEACH, TN FIX	BOWLING GREEN, KY VORTAC	2600

95.6095 VOR FEDERAL AIRWAY V95

GILA BEND, AZ VORTAC	*POTER, AZ FIX	5000
*8000 - MRA		
POTER, AZ FIX	PHOENIX, AZ VORTAC	8000
PHOENIX, AZ VORTAC	WINSLOW, AZ VORTAC	10000

FROM	TO	MEA

95.6095 VOR FEDERAL AIRWAY V95 - CONTINUED

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	12000
	N BND	16100
ZEANS, CO FIX	LAZON, CO FIX	16100
LAZON, CO FIX	POWES, CO FIX	
	N BND	15000
	S BND	16100
POWES, CO FIX	*BLUE MESA, CO VOR/DME	
	SW BND	16100
	NE BND	12800
*12600 - MCA BLUE MESA, CO VOR/DME , S BND		
*12900 - MCA BLUE MESA, CO VOR/DME , NE BND		
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

BRICKYARD, IN VORTAC	KOKOMO, IN VORTAC	2700
KOKOMO, IN VORTAC	FORT WAYNE, IN VORTAC	2600
FORT WAYNE, IN VORTAC	ILLIE, OH FIX	*5000
*2200 - MOCA		
ILLIE, OH FIX	ANNTS, OH FIX	*16000
*2100 - MOCA		
ANNTS, OH FIX	DETROIT, MI VOR/DME	*3000
*2000 - MOCA		

95.6097 VOR FEDERAL AIRWAY V97

DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	*3000
*1500 - MOCA		
LA BELLE, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	DARBS, FL FIX	2000
DARBS, FL FIX	PLYER, FL FIX	*6000
*4000 - GNSS MEA		
PLYER, FL FIX	CLAMP, FL FIX	*7000
*1400 - MOCA		
*4000 - GNSS MEA		
CLAMP, FL FIX	HEVVN, FL FIX	*6000
*1400 - MOCA		
*4000 - GNSS MEA		

FROM	TO	MEA

95.6097 VOR FEDERAL AIRWAY V97 - CONTINUED

HEVVN, FL FIX	ADDAX, FL FIX	*3000
*1400 - MOCA		
*2000 - GNSS MEA		
ADDAX, FL FIX	SEMINOLE, FL VORTAC	2000
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 VORTAC	2800
LEXINGTON, KY VORTAC	DARKS, KY FIX	3000
DARKS, KY FIX	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	SHELBYVILLE, IN VOR/DME	*2800
*2400 - MOCA		
SHELBYVILLE, IN VOR/DME	OCKEL, IN FIX	*3000
*2900 - MOCA		
OCKEL, IN FIX	BOILER, IN VORTAC	*2500
*2100 - MOCA		
BOILER, IN VORTAC	CHICAGO HEIGHTS, IL VORTAC	2700
CHICAGO HEIGHTS, IL VORTAC	*NILES, IL FIX	2500
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		
NILES, IL FIX	BEBEE, IL FIX	3400
FARMM, IL FIX	JANESVILLE, WI VOR/DME	2900
JANESVILLE, WI VOR/DME	THEBO, WI FIX	3000
THEBO, WI FIX	LONE ROCK, WI VOR/DME	*3400
*2800 - MOCA		
LONE ROCK, WI VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	PEGGS, MN FIX	3000
PEGGS, MN FIX	GOPHER, MN VORTAC	3400

95.6098 VOR FEDERAL AIRWAY V98

DAYTON, OH VOR/DME	HINES, OH FIX	3000
HINES, OH FIX	*WOCKY, OH FIX	7000
*7000 - MRA		
*7000 - MCA WOCKY, OH FIX , S BND		
WOCKY, OH FIX	*PIONS, OH FIX	10000
*4000 - MRA		
*10000 - MCA PIONS, OH FIX , S BND		
PIONS, OH FIX	MIZAR, MI FIX	3000

FROM	TO	MEA

95.6099 VOR FEDERAL AIRWAY V99

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

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

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
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

FROM	TO	MEA

95.60101 VOR FEDERAL AIRWAY V101 - CONTINUED

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		
LUBBOCK, TX VORTAC	GUTHRIE, TX VORTAC	5000
GUTHRIE, TX VORTAC	*SNEED, TX FIX	**3700
*4000 - MRA		
**3000 - MOCA		
SNEED, TX FIX	*ELECT, TX FIX	2700
*3500 - MRA		
ELECT, TX FIX	WICHITA FALLS, TX VORTAC	2700

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 VORTAC	5600
ROANOKE, VA VORTAC	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
AKRON, OH VOR/DME	U.S. CANADIAN BORDER	*9000
*2700 - MOCA		
U.S. CANADIAN BORDER	DETROIT, MI VOR/DME	*4000
*2700 - MOCA		
DETROIT, MI VOR/DME	PONTIAC, MI VORTAC	*3000
*2400 - MOCA		
PONTIAC, MI VORTAC	LANSING, MI VORTAC	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

FROM	TO	MEA

95.6105 VOR FEDERAL AIRWAY V105

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
*8500 - MCA LAS VEGAS, NV VORTAC , W BND		
LAS VEGAS, NV VORTAC	*HARLS, NV FIX	
	W BND	10500
	E BND	7000
*11000 - MRA		
HARLS, NV FIX	LUCKY, NV FIX	10500
LUCKY, NV FIX	*HIDEN, CA FIX	14000
*14000 - MRA		
HIDEN, CA FIX	BEATTY, NV VORTAC	
	NW BND	*11000
	SE BND	*12000
*8400 - 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

JOHNSTOWN, PA VORTAC	HUDON, PA FIX	*5000
*4500 - MOCA		
HUDON, PA FIX	RASHE, PA FIX	*7000
*4000 - MOCA		
*4000 - GNSS MEA		
RASHE, PA FIX	SELINSGROVE, PA VORTAC	*14000
*4000 - GNSS MEA		
SELINSGROVE, PA VORTAC	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		

FROM	TO	MEA

95.6107 VOR FEDERAL AIRWAY V107

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	IMPLY, CA FIX	
	SE BND	7000
	NW BND	4500
IMPLY, CA FIX	OAKLAND, CA VOR/DME	
	SE BND	7000
	NW BND	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	BOARS, CA FIX	5000

95.6108 VOR FEDERAL AIRWAY V108

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

FROM	TO	MEA

95.6109 VOR FEDERAL AIRWAY V109

PANOCHE, CA VORTAC	VOLTA, CA FIX	5000
VOLTA, CA FIX	MANTECA, CA VOR/DME	#*3000
*3000 - GNSS MEA		
#MANTECA R-147 UNUSABLE		
MANTECA, CA VOR/DME	BYRON, CA FIX	2000
BYRON, CA FIX	ALTAM, CA FIX	
	W BND	4500
	E BND	3500
ALTAM, CA FIX	*SALAD, CA FIX	5000
*4700 - MCA SALAD, CA FIX , NE BND		
SALAD, CA FIX	*OAKLAND, CA VOR/DME	4000
*4700 - MCA OAKLAND, CA VOR/DME , NE BND		

95.6110 VOR FEDERAL AIRWAY V110

DEMING, NM VORTAC	TRUTH OR CONSEQUENCES, NM VORTAC	8000

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	
	E BND	4000
	W BND	5000
*4700 - MCA BATTLE GROUND, WA VORTAC , E BND		
BATTLE GROUND, WA VORTAC	GYMME, WA FIX	
	E BND	7000
	W BND	6500
GYMME, WA FIX	KLICKITAT, OR VOR/DME	*7000
*6400 - 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.		

FROM	TO	MEA

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	VOLTA, CA FIX	5000
VOLTA, CA FIX	MANTECA, CA VOR/DME	#*3000
*3000 - GNSS MEA		
#MANTECA R-147 UNUSABLE		
MANTECA, CA VOR/DME	LINDEN, CA VOR/DME	2000
LINDEN, CA VOR/DME	*KATSO, CA FIX	5000
*12400 - MCA KATSO, CA FIX , NE BND		
KATSO, CA FIX	SPOOK, CA FIX	*13000
*12100 - MOCA		
*SPOOK, CA FIX	RICHY, CA FIX	**15000
*15000 - MCA SPOOK, CA FIX , N BND		
**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		
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
*4500 - MOCA		
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		

FROM	TO	MEA

95.60114 VOR FEDERAL AIRWAY V114 - CONTINUED

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
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	WHIRL, WV FIX	4000
WHIRL, WV FIX	CHARLESTON, WV VORTAC	3000
CHARLESTON, WV VORTAC	*MORAN, WV FIX	3000
*3500 - MRA		
MORAN, WV FIX	PARKERSBURG, WV VORTAC	3000
PARKERSBURG, WV VORTAC	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
FRANKLIN, PA VOR	TIDIOUTE, PA VORTAC	3800
TIDIOUTE, PA VORTAC	JAMESTOWN, NY VOR/DME	*4000
*3400 - MOCA		
JAMESTOWN, NY VOR/DME	LANGS, NY FIX	3900
LANGS, NY FIX	BUFFALO, NY VOR/DME	*11000
*3500 - MOCA		
*5000 - GNSS MEA		

95.6116 VOR FEDERAL AIRWAY V116

WILLA, IL FIX	*NEPTS, MI FIX	**4000
*3000 - MRA		
**1800 - MOCA		
NEPTS, MI FIX	KEELER, MI VOR/DME	2400
KEELER, MI VOR/DME	KALAMAZOO, MI VOR/DME	2600
KALAMAZOO, MI VOR/DME	JACKSON, MI VOR/DME	2700
JACKSON, MI VOR/DME	SALEM, MI VORTAC	3000
SALEM, MI VORTAC	WINDSOR, CANADA VOR/DME	#*3000
*2400 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
*1700 – MOCA		

FROM	TO	MEA

95.60116 VOR FEDERAL AIRWAY V116 - CONTINUED

U.S. CANADIAN BORDER	*TRACE, OH FIX	**7000
*11000 - MRA		
**1900 - MOCA		
TRACE, OH FIX	ERIE, PA VORTAC	*3000
*2200 - MOCA		
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 VORTAC	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
*3500 - MRA		
JACEE, WV FIX	PARKERSBURG, WV VORTAC	2700
PARKERSBURG, WV VORTAC	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		
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

*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		

95.60120 VOR FEDERAL AIRWAY V120 - CONTINUED

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 VORTAC	*10000
*6600 - MOCA		
DUPREE, SD VORTAC	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		
**2800 - MOCA		
SEATS, IA FIX	WATERLOO, IA VOR/DME	3000

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	5500
	E BND	7000
*5700 - MCA ROSEBURG, OR VOR/DME , E BND		

FROM	TO	MEA

95.60121 VOR FEDERAL AIRWAY V121 - CONTINUED

ROSEBURG, OR VOR/DME	NORTH BEND, OR VOR/DME	5300
NORTH BEND, OR VOR/DME	*SCOTY, OR FIX	
	NE BND	5000
	SW BND	4200
*5500 - MRA		
SCOTY, OR FIX	*VAUGN, OR FIX	**5000
*7000 - MRA		
**4500 - MOCA		
VAUGN, OR FIX	*EUGENE, OR VORTAC	
	NE BND	4000
	SW BND	5000
*3700 - MCA EUGENE, OR VORTAC , NE BND		
EUGENE, OR VORTAC	DOSEE, OR FIX	
	NE BND	6000
	SW BND	5200
DOSEE, OR FIX	*VIDAS, OR FIX	
	NE BND	8000
	SW BND	6000
*9300 - MCA VIDAS, OR FIX , NE BND		
VIDAS, OR FIX	*WHIFF, OR FIX	
	NE BND	**13000
	SW BND	**9000
*12000 - MCA WHIFF, OR FIX , NE BND		
**7500 - MOCA		
**8000 - GNSS MEA		
WHIFF, OR FIX	SNOKY, OR FIX	*13000
*12300 - MOCA		
SNOKY, OR FIX	*DESCHUTES, OR VORTAC	
	NE BND	8000
	SW BND	13000
*10000 - MCA DESCHUTES, OR VORTAC , SW 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
GNATS, OR FIX	ROGUE VALLEY, OR VORTAC	
	SW BND	8000
	NE BND	5500

FROM	TO	MEA

95.60122 VOR FEDERAL AIRWAY V122 - CONTINUED

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

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		
#ALB R-067 UNUSABLE.		
CAMBRIDGE, NY VOR/DME	GLENS FALLS, NY VORTAC	4500

95.6124 VOR FEDERAL AIRWAY V124

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

FROM	TO	MEA

95.60124 VOR FEDERAL AIRWAY V124 - CONTINUED

LITTLE ROCK, AR VORTAC	TAFTE, AR FIX	*4000
*1700 - MOCA		
TAFTE, AR FIX	*HILLE, AR FIX	**6000
*6000 - MRA		
**1600 - MOCA		
HILLE, AR FIX	GILMORE, AR VOR/DME	*4000
*1700 - MOCA		
GILMORE, AR VOR/DME	JACKS CREEK, TN VOR/DME	*3000
*2300 - MOCA		
JACKS CREEK, TN VOR/DME	GRAHAM, TN VORTAC	2600

95.6125 VOR FEDERAL AIRWAY V125

CAPE GIRARDEAU, MO VOR/DME	NIKEL, IL FIX	3500
NIKEL, IL FIX	BURCK, IL FIX	*4500
*2300 - MOCA		
BURCK, IL FIX	ST LOUIS, MO VORTAC	*3500
*2600 - MOCA		

95.6126 VOR FEDERAL AIRWAY V126

BEARZ, IN FIX	HALIE, IN FIX	3000
HALIE, IN FIX	INKEN, IN FIX	*4000
*2300 - MOCA		
INKEN, IN FIX	GOSHEN, IN VORTAC	2600
GOSHEN, IN VORTAC	BAGEL, IN FIX	2700
BAGEL, IN FIX	EDGEE, OH FIX	*3000
*2400 - MOCA		
EDGEE, OH FIX	WATERVILLE, OH VOR/DME	3000
DRYER, OH VOR/DME	JEFFERSON, OH VOR/DME	3000
JEFFERSON, OH VOR/DME	ERIE, PA VORTAC	2700
ERIE, PA VORTAC	BRADFORD, PA VOR/DME	*5000
*3900 - MOCA		
BRADFORD, PA VOR/DME	STONYFORK, PA VOR/DME	4500

95.6127 VOR FEDERAL AIRWAY V127

BRADFORD, IL VORTAC	*WYNET, IL FIX	2700
*3300 - MRA		
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	*POTES, IN FIX	**4000
*4000 - MRA		
**2300 - MOCA		
POTES, IN FIX	JAKKS, IN FIX	*4000
*2300 - MOCA		
JAKKS, IN FIX	BRICKYARD, IN VORTAC	2700

FROM	TO	MEA

95.60128 VOR FEDERAL AIRWAY V128 - CONTINUED

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	CROUP, OH FIX	*3300
*2300 - MOCA		
CROUP, OH FIX	RULEY, WV FIX	3200
RULEY, WV FIX	CHARLESTON, WV VORTAC	3600
CHARLESTON, WV VORTAC	SWIFT, WV FIX	3400
SWIFT, WV FIX	BITES, WV FIX	*5000
*4400 - MOCA		
*4400 - GNSS MEA		
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 VORTAC	*3600
*3100 - MOCA		
INTERNATIONAL FALLS, MN VORTAC	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

FROM	TO	MEA

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		
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	5400
MULBE, NC FIX	STOVE, VA FIX	7200
STOVE, VA FIX	PINEE, WV FIX	*13000
*7000 - MOCA		
*7000 - GNSS MEA		
PINEE, WV FIX	CHARLESTON, WV VORTAC	*7000
*5000 - MOCA		
*5000 - GNSS MEA		
CHARLESTON, WV VORTAC	ZANESVILLE, OH VOR/DME	3000
ZANESVILLE, OH VOR/DME	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	MANSFIELD, OH VORTAC	3000
SALEM, MI VORTAC	SAGINAW, MI 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		

95.6133 VOR FEDERAL AIRWAY V133 - CONTINUED

U.S. CANADIAN BORDER	INTERNATIONAL FALLS, MN VORTAC	*3000
*2500 - MOCA		
INTERNATIONAL FALLS, MN VORTAC	RED LAKE, CANADA VOR/DME	#*6500
*2800 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

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, AZ VORTAC	*4000
*2700 - MOCA		
BARD, AZ 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	
	NW BND	8000
	SE BND	6300
*8600 - MCA GOFFS, CA VORTAC , NW BND		
GOFFS, CA VORTAC	*WHIGG, CA FIX	**12000
*12000 - MRA		
**9500 - MOCA		
WHIGG, CA FIX	CLARR, CA FIX	*12000
*9900 - MOCA		
CLARR, CA FIX	*HIDEN, CA FIX	**12000
*14000 - MRA		
**8500 - MOCA		
HIDEN, CA FIX	BEATTY, NV VORTAC	
	NW BND	*11000
	SE BND	*12000
*8400 – MOCA		

95.60135 VOR FEDERAL AIRWAY V135 - CONTINUED

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 VORTAC	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
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

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

FROM	TO	MEA

95.60137 VOR FEDERAL AIRWAY V137 - CONTINUED

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

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 VORTAC	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		

FROM	TO	MEA

95.6139 VOR FEDERAL AIRWAY V139 - CONTINUED

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		
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	ZESUS, TX FIX	*5800
*5000 - MOCA		
ZESUS, TX FIX	SAYRE, OK VORTAC	
	E BND	*5000
	W BND	*5800
*4500 - MOCA		
SAYRE, OK VORTAC	ODINS, OK FIX	4000
ODINS, OK FIX	KINGFISHER, OK VORTAC	*3500
*3100 - 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		

FROM	TO	MEA

95.6140 VOR FEDERAL AIRWAY V140 - CONTINUED

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	GOSHN, TN FIX	*3500
*2300 - MOCA		
GOSHN, TN FIX	NASHVILLE, TN VORTAC	3000
NASHVILLE, TN VORTAC	HARME, TN FIX	
	E BND	*3000
	W BND	*6000
*2400 - MOCA		
HARME, TN FIX	LIVINGSTON, TN VORTAC	*6000
*2900 - MOCA		
LIVINGSTON, TN VORTAC	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	5000
*13000 - MRA		
KENYA, WV FIX	BLUEFIELD, WV VORTAC	5400
BLUEFIELD, WV VORTAC	OBERS, WV FIX	5600
OBERS, WV 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

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 VORTAC	*2900
*2100 - MOCA		
CONCORD, NH VORTAC	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		

FROM	TO	MEA

95.6142 VOR FEDERAL AIRWAY V142

*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		
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

GIZMO, NC FIX	GREENSBORO, NC VORTAC	3000
GREENSBORO, NC VORTAC	LEAKS, NC FIX	3000
LEAKS, NC FIX	LYNCHBURG, VA VORTAC	3000
LYNCHBURG, VA VORTAC	*ELLON, VA FIX	
	N BND	5000
	S BND	3200
*4100 - MCA ELLON, VA FIX , N BND		
ELLON, VA FIX	*CLYFF, VA FIX	4600
*6000 - 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	4000
BINNS, PA FIX	*SUEDE, PA FIX	4500
*4500 - MRA		
SUEDE, PA FIX	*DELRO, PA FIX	4500
*10000 - MRA		
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

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		

FROM	TO	MEA

95.6144 VOR FEDERAL AIRWAY V144 - CONTINUED

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 VORTAC	4000
MORGANTOWN, WV VORTAC	KESSEL, WV VOR/DME	5700
KESSEL, WV VOR/DME	LINDEN, VA VORTAC	5500

95.6145 VOR FEDERAL AIRWAY V145

UTICA, NY VORTAC	WEEPY, NY FIX	3400
WEEPY, NY FIX	FLOOR, NY FIX	*3000
*2200 - MOCA		
FLOOR, NY FIX	WATERTOWN, NY VORTAC	3000
WATERTOWN, NY VORTAC	U.S. CANADIAN BORDER	*3000
*1800 - MOCA		

95.6146 VOR FEDERAL AIRWAY V146

ALBANY, NY VORTAC	CHESTER, MA VOR/DME	4100
CHESTER, MA VOR/DME	BARNES, MA VORTAC	*4000
*3200 - MOCA		
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	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	EAST TEXAS, PA VOR/DME	2500
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	*LIMEX, CO FIX	8500
*10000 - MRA		
LIMEX, CO FIX	THURMAN, CO VORTAC	7500
THURMAN, CO VORTAC	MCJEF, NE FIX	*7000
*6500 - MOCA		
MCJEF, NE FIX	HAYES CENTER, NE VORTAC	*7000
*5600 - MOCA		
HAYES CENTER, NE VORTAC	NORTH PLATTE, NE VORTAC	*4900
*4500 - MOCA		
NORTH PLATTE, NE VORTAC	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

FROM	TO	MEA

95.6148 VOR FEDERAL AIRWAY V148 - CONTINUED

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	ALEEN, WI FIX	*5000
*2700 - MOCA		
ALEEN, WI FIX	HAYWARD, WI VOR/DME	#
#UNUSABLE		
HAYWARD, WI VOR/DME	*IRONWOOD, MI VORTAC	10000
*5200 - MCA IRONWOOD, MI VORTAC , SW BND		
IRONWOOD, MI VORTAC	HOUGHTON, MI VOR/DME	*3700
*3100 - MOCA		

95.6149 VOR FEDERAL AIRWAY V149

ALLENTOWN, PA VORTAC	BINGHAMTON, NY VORTAC	*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		

FROM	TO	MEA

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	#
#UNUSABLE		
OCONE, GA FIX	*LOTTS, GA FIX	#
*6000 - MRA		
#UNUSABLE		
LOTTS, GA FIX	SAVANNAH, GA VORTAC	*3000
*1800 - MOCA		

95.6155 VOR FEDERAL AIRWAY V155

COLUMBUS, GA VORTAC	GRANT, GA FIX	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
SMARR, GA FIX	SINCA, GA FIX	*4500
*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	#*9000
*2000 - MOCA		
*2300 - GNSS MEA		
#LAWRENCEVILLE R-042 UNUSABLE		
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		

95.6155 VOR FEDERAL AIRWAY V155 - CONTINUED

FLAT ROCK, VA VORTAC	FALKO, VA FIX	2000
FALKO, VA FIX	BROOKE, VA VORTAC	*6000
*1700 - MOCA		
*2000 - GNSS MEA		

95.6156 VOR FEDERAL AIRWAY V156

CEDAR RAPIDS, IA VOR/DME	MOSCO, IA FIX	3200
MOSCO, IA FIX	MOLINE, IL VORTAC	2600
MOLINE, IL VORTAC	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

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
*6000 - MRA		
**1800 - MOCA		
**2000 - GNSS MEA		
LOTTS, GA FIX	ALLENDALE, SC VOR	*9000
*1700 - MOCA		
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		

FROM	TO	MEA

95.6157 VOR FEDERAL AIRWAY V157 - CONTINUED

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.		
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
NITNY, FL FIX	JUPEM, FL FIX	3000

FROM	TO	MEA

95.6159 VOR FEDERAL AIRWAY V159 - CONTINUED

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	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
*2800 - MRA		
**1800 - MOCA		
SHANY, 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

*BLUE MESA, CO VOR/DME	**MURFE, CO FIX	16200
**15600 - MRA		
*12900 - 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

FROM	TO	MEA

95.6160 VOR FEDERAL AIRWAY V160 - CONTINUED

WITNE, CO FIX	SAYGE, CO FIX	*8000
*7200 - MOCA		
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	3000
NOVEL, OK FIX	OSWEGO, KS VORTAC	2800
OSWEGO, KS VORTAC	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		
GOPHER, MN VORTAC	BRAINERD, MN VORTAC	3000
BRAINERD, MN VORTAC	GRAND RAPIDS, MN VOR/DME	3400
GRAND RAPIDS, MN VOR/DME	SQEAK, MN FIX	*5000
*3100 - MOCA		
SQEAK, MN FIX	*BEBEL, MN FIX	5000
*4000 - MRA		
BEBEL, MN FIX	INTERNATIONAL FALLS, MN VORTAC	3000
INTERNATIONAL FALLS, MN VORTAC	U.S. CANADIAN BORDER	3000

FROM	TO	MEA

95.6162 VOR FEDERAL AIRWAY V162

HARRISBURG, PA VORTAC	BOBSS, PA FIX	3100
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

95.6163 VOR FEDERAL AIRWAY V163

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	1600
CORPUS CHRISTI, TX VORTAC	SINTO, TX FIX	1700
SINTO, TX FIX	THREE RIVERS, TX VORTAC	1900
THREE RIVERS, TX VORTAC	*YENNS, TX FIX	2000
*3000 - MRA		
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

BUFFALO, NY VOR/DME	*BENEE, NY FIX	**11000
*11000 - MRA		
**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

MISSION BAY, CA VORTAC	SARGS, CA FIX	3000
SARGS, CA FIX	OCEANSIDE, CA VORTAC	2500
OCEANSIDE, CA VORTAC	BALBO, CA FIX	4000

FROM	TO	MEA

95.6165 VOR FEDERAL AIRWAY V165 - CONTINUED

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
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		

FROM	TO	MEA

95.6165 VOR FEDERAL AIRWAY V165 - CONTINUED

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
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 VORTAC	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	PEAKE, MA FIX	*2500
*1800 - MOCA		
PEAKE, MA FIX	MARCONI, MA VOR/DME	*3000
*1600 – MOCA		

FROM	TO	MEA

95.6167 VOR FEDERAL AIRWAY V167 - CONTINUED

MARCONI, MA VOR/DME	KENNEBUNK, ME VOR/DME	*5000
*1600 - MOCA		
*4000 - GNSS 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 VORTAC	5000
DUPREE, SD VORTAC	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
WORTHINGTON, MN VOR/DME	FAIRMONT, MN VOR/DME	3300
FAIRMONT, MN VOR/DME	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	DELLS, WI VORTAC	3000
DELLS, WI VORTAC	BADGER, WI VORTAC	3000
BADGER, WI VORTAC	PETTY, WI FIX	2700
PETTY, WI FIX	RAINE, MI FIX	4000
RAINE, MI FIX	PULLMAN, MI VOR/DME	2200
PULLMAN, MI VOR/DME	HEBEL, MI FIX	3000
HEBEL, MI FIX	LESSY, MI FIX	*4500
*3000 - MOCA		
LESSY, MI FIX	SALEM, MI VORTAC	3000
ERIE, PA VORTAC	BRADFORD, PA VOR/DME	*5000
*3900 - MOCA		
BRADFORD, PA VOR/DME	SLATE RUN, PA VORTAC	4000
SLATE RUN, PA VORTAC	SELINSGROVE, PA VORTAC	4000
SELINSGROVE, PA VORTAC	RAVINE, PA VORTAC	*4000
*3300 - MOCA		
RAVINE, PA VORTAC	BOYER, PA FIX	3500
BOYER, PA FIX	MODENA, PA VORTAC	*3000
*2400 – MOCA		

FROM	TO	MEA

95.6170 VOR FEDERAL AIRWAY V170 - CONTINUED

MODENA, PA VORTAC	DUPONT, DE VORTAC	*3000
*1800 - MOCA		
*2000 - GNSS MEA		
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 VORTAC	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 VORTAC	2400
JOLIET, IL VORTAC	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	NODINE, MN VORTAC	3000
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 VORTAC	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

FROM	TO	MEA

95.6172 VOR FEDERAL AIRWAY V172 - CONTINUED

WUNOT, IA FIX	*LINDE, IA FIX	**5500
*5500 - MRA		
**3800 - MOCA		
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
*5500 - MRA		
CARLA, WV FIX	ELKINS, WV VORTAC	5500

95.6175 VOR FEDERAL AIRWAY V175

MALDEN, MO VORTAC	BUNKS, MO FIX	*4000
*2600 - MOCA		
BUNKS, MO FIX	VICHY, MO VOR/DME	3000
VICHY, MO VOR/DME	ZIPUR, MO FIX	3000
ZIPUR, MO FIX	HALLSVILLE, MO VORTAC	2600
HALLSVILLE, MO VORTAC	MACON, MO VOR/DME	2600
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		
**2900 - MOCA		
MADUP, IA FIX	*WELTE, IA FIX	5500
*3900 - MRA		
WELTE, IA FIX	SIOUX CITY, IA VORTAC	3000
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	3500
ALEXANDRIA, MN VOR/DME	PARK RAPIDS, MN VOR/DME	3000
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		
ROSEAU, MN VOR/DME	U.S. CANADIAN BORDER	*3600
*2500 - MOCA		

FROM	TO	MEA

95.6176 VOR FEDERAL AIRWAY V176

CARLETON, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2100 - MOCA		

95.6177 VOR FEDERAL AIRWAY V177

JOLIET, IL VORTAC	NUELG, IL FIX	2600
NUELG, IL FIX	JANESVILLE, WI VOR/DME	*4000
*2300 - MOCA		
JANESVILLE, WI VOR/DME	MADISON, WI VORTAC	3000
MADISON, WI VORTAC	STEVENS POINT, WI VORTAC	2800
STEVENS POINT, WI VORTAC	TAYUY, WI FIX	#3100
#WAUSAU R-171 UNUSABLE BEYOND 8 NM, USE STEVENS POINT R-354		
TAYUY, WI FIX	WAUSAU, WI VORTAC	#3100
#WAUSAU R-171 UNUSABLE BYD 8 NM, USE STEVENS POINT R-354		
WAUSAU, WI VORTAC	BAITS, WI FIX	#*4500
*3600 - MOCA		
*4500 - GNSS MEA		
#WAUSAU R-310 UNUSABLE BYD 10 NM, GNSS REQUIRED BYD 10 NM		
BAITS, WI FIX	HAYWARD, WI VOR/DME	*10000
*3100 - MOCA		
*10000 - GNSS MEA		
HAYWARD, WI VOR/DME	DULUTH, MN VORTAC	*10000
*3000 - MOCA		
DULUTH, MN VORTAC	ELY, MN VOR/DME	3600

95.6178 VOR FEDERAL AIRWAY V178

HALLSVILLE, MO VORTAC	BNTON, MO FIX	2800
BNTON, MO FIX	VICHY, MO VOR/DME	*2800
*2200 - MOCA		
VICHY, MO VOR/DME	FARMINGTON, MO VORTAC	3300
FARMINGTON, MO VORTAC	CAPE GIRARDEAU, MO VOR/DME	3000
CAPE GIRARDEAU, MO VOR/DME	CUNNINGHAM, KY VORTAC	2400
CUNNINGHAM, KY VORTAC	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 VORTAC	3000
LEXINGTON, KY VORTAC	TRENT, KY FIX	3400
TRENT, KY FIX	SLINK, WV FIX	*8000
*4200 - GNSS MEA		
SLINK, WV FIX	BLUEFIELD, WV VORTAC	*6000
*5400 - GNSS MEA		

95.6179 VOR FEDERAL AIRWAY V179

BRUNSWICK, GA VORTAC	DUBLIN, GA VORTAC	2000
DUBLIN, GA VORTAC	HUSKY, GA FIX	*3000
*2100 - MOCA		

FROM	TO	MEA

95.6180 VOR FEDERAL AIRWAY V180

INTERNATIONAL FALLS, MN VORTAC	U.S. CANADIAN BORDER	2900

95.6181 VOR FEDERAL AIRWAY V181

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		
#SIOUX FALLS R-340 UNUSABLE BELOW 4000.		
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

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	4000
*4700 - MCA BATTLE GROUND, WA VORTAC , E BND		
BATTLE GROUND, WA VORTAC	GYMME, WA FIX	
	E BND	7000
	W BND	6500
GYMME, WA FIX	KLICKITAT, OR VOR/DME	*7000
*6400 - 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		

FROM	TO	MEA

95.6183 VOR FEDERAL AIRWAY V183

*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

ERIE, PA VORTAC	TIDIOUTE, PA VORTAC	3500
TIDIOUTE, PA VORTAC	PHILIPSBURG, PA VORTAC	*5000
*4000 - MOCA		
PHILIPSBURG, PA VORTAC	HARRISBURG, PA VORTAC	4000
HARRISBURG, PA VORTAC	*DELRO, PA FIX	3000
*10000 - MRA		
DELRO, PA FIX	MODENA, PA VORTAC	*10000
*3900 - MOCA		
*4000 - GNSS MEA		
MODENA, PA VORTAC	WOODSTOWN, NJ VORTAC	2000
WOODSTOWN, NJ VORTAC	CEDAR LAKE, NJ VORTAC	1900
CEDAR LAKE, NJ VORTAC	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

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

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

FROM	TO	MEA

95.6187 VOR FEDERAL AIRWAY V187

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		
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
*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

FROM	TO	MEA

95.6187 VOR FEDERAL AIRWAY V187 - CONTINUED

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		
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

CARLETON, MI VORTAC	U.S. CANADIAN BORDER	*3000
*2200 - MOCA		
U.S. CANADIAN BORDER	FAILS, OH FIX	*4000
*1800 - MOCA		
*2300 - GNSS MEA		
FAILS, OH FIX	*WONOP, OH FIX	**3000
*5000 - MRA		
**2000 - MOCA		
WONOP, OH FIX	*CLERI, OH FIX	**3000
*5000 - MRA		
**2200 - MOCA		
CLERI, OH FIX	JEFFERSON, OH VOR/DME	*3000
*2400 - MOCA		
JEFFERSON, OH VOR/DME	TIDIOUTE, PA VORTAC	3500
TIDIOUTE, PA VORTAC	SLATE RUN, PA VORTAC	4000
SLATE RUN, PA VORTAC	WILLIAMSPORT, PA VOR/DME	4000
WILLIAMSPORT, PA VOR/DME	SWANK, PA FIX	4500
SWANK, PA FIX	WILKES-BARRE, PA VORTAC	4000
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

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

FROM	TO	MEA

95.6190 VOR FEDERAL AIRWAY V190

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		
ST JOHNS, AZ VORTAC	ACOMA, NM FIX	*11500
*10800 - MOCA		
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 VORTAC	2700
OSWEGO, KS VORTAC	*WACCO, MO FIX	3100
*3700 - MRA		
WACCO, MO FIX	*QUALM, MO FIX	**3700
*3700 - MRA		
**3000 - MOCA		
QUALM, MO FIX	*MIRTH, MO FIX	3000
*3700 - MRA		
MIRTH, 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

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		
**2100 - MOCA		

FROM	TO	MEA

95.6191 VOR FEDERAL AIRWAY V191 - CONTINUED

BOJAK, IL FIX	NORTHBROOK, IL VOR/DME	2500
NORTHBROOK, IL VOR/DME	BADGER, WI VORTAC	2900
BADGER, WI VORTAC	OSHKOSH, WI VORTAC	3000
OSHKOSH, WI VORTAC	RHINELANDER, WI VORTAC	*4500
*3000 - MOCA		
RHINELANDER, WI VORTAC	IRONWOOD, MI VORTAC	*8000
*3100 - MOCA		
IRONWOOD, MI VORTAC	DULUTH, MN VORTAC	3500
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	GRAND RAPIDS, MN VOR/DME	3000

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	2100
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	3000
RALEIGH/DURHAM, NC VORTAC	TAR RIVER, NC VORTAC	2500

FROM	TO	MEA

95.6194 VOR FEDERAL AIRWAY V194 - CONTINUED

TAR RIVER, NC VORTAC	COFIELD, NC VORTAC	1800
COFIELD, NC VORTAC	SUNNS, NC FIX	*2000
*1600 - MOCA		

95.6195 VOR FEDERAL AIRWAY V195

MANTECA, CA VOR/DME	TRACY, CA FIX	*4100
*2900 - MOCA		
TRACY, CA FIX	*SUNOL, CA FIX	5200
*4700 - MCA SUNOL, CA FIX , NE BND		
SUNOL, CA FIX	OAKLAND, CA VOR/DME	4000
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		
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
*7000 - MRA		
*7300 - MCA TOMAD, CA FIX , W BND		
**4600 - MOCA		
TOMAD, CA FIX	YAGER, CA FIX	*11000
*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
*5800 - MCA POMONA, CA VORTAC , NW BND		
POMONA, CA VORTAC	*HASSA, CA FIX	6500
*10000 - MCA HASSA, CA FIX , NW BND		
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

FROM	TO	MEA

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
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	3000
CRESTVIEW, FL VORTAC	DEFUN, FL FIX	2000
DEFUN, FL FIX	CHEWS, FL FIX	*3000
*1600 - 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

FROM	TO	MEA

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	12000
*10500 - MCA FAIRFIELD, UT VORTAC , NW BND		
*12000 - MCA FAIRFIELD, UT VORTAC , E BND		
FAIRFIELD, UT VORTAC	PANEL, UT FIX	
	E BND	13000
	W BND	11000
PANEL, UT FIX	MYTON, UT VOR/DME	13000
MYTON, UT VOR/DME	RACER, CO FIX	*10000
*8600 - MOCA		
RACER, CO FIX	MEEKER, CO VOR/DME	10500
MEEKER, CO VOR/DME	KREMMLING, CO VOR/DME	14500

95.6201 VOR FEDERAL AIRWAY V201

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

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

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		

FROM	TO	MEA

95.6204 VOR FEDERAL AIRWAY V204

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		
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

NAPOLEON, MO VORTAC	KIRKSVILLE, MO VORTAC	3000
KIRKSVILLE, MO VORTAC	OTTUMWA, IA VOR/DME	3000

95.6207 VOR FEDERAL AIRWAY V207

GILL, CO VOR/DME	SCOTTSBLUFF, NE VORTAC	7500

95.6208 VOR FEDERAL AIRWAY V208

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

FROM	TO	MEA

95.6209 VOR FEDERAL AIRWAY V209

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	2400
BROOKWOOD, AL VORTAC	VULCAN, AL VORTAC	2500
VULCAN, AL VORTAC	TRUST, AL FIX	3500
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

LOS ANGELES, CA VORTAC	PIRRO, CA FIX	3500
PIRRO, CA FIX	*POMONA, CA VORTAC	4500
*10300 - MCA POMONA, CA VORTAC , NE BND		
POMONA, CA VORTAC	CALBE, CA FIX	
	NE BND	10800
	SW BND	5300
CALBE, CA FIX	MEANT, CA FIX	
	NE BND	11500
	SW BND	10700
MEANT, CA FIX	*APLES, CA FIX	11500
*9100 - 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
*10500 - MRA		
FULLY, NM FIX	RATTLESNAKE, NM VORTAC	8300
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		

FROM	TO	MEA

95.6210 VOR FEDERAL AIRWAY V210 - CONTINUED

ROLLS, OK FIX	WAXEY, OK FIX	
	W BND	*11000
	E BND	*9300
*3800 - MOCA		
*4000 - GNSS 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
ROSEWOOD, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	BRIGGS, OH VOR/DME	3000
BRIGGS, OH VOR/DME	SEING, OH FIX	3000
SEING, OH FIX	CAPEL, OH FIX	3600
CAPEL, OH FIX	VOLAN, PA FIX	*3600
*2800 - MOCA		
VOLAN, PA FIX	TALLS, PA FIX	*5000
*3200 - MOCA		
*3300 - GNSS MEA		
TALLS, PA FIX	REVLOC, PA VOR/DME	4100
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

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

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

FROM	TO	MEA

95.6212 VOR FEDERAL AIRWAY V212 - CONTINUED

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

GRAND STRAND, SC VORTAC	WILMINGTON, NC VORTAC	#*3100
*3100 - GNSS MEA		
#WILMINGTON R-240 UNUSABLE		
WILMINGTON, NC VORTAC	WALLO, NC FIX	*8000
*1600 - MOCA		
*5000 - GNSS MEA		
WALLO, NC FIX	JOSCH, NC FIX	
	S BND	*8000
	N BND	*6000
*1700 - MOCA		
*2000 - GNSS MEA		
JOSCH, NC FIX	ESTER, NC FIX	
	S BND	*6000
	N BND	*3000
*1700 - MOCA		
*2000 - GNSS MEA		
ESTER, NC FIX	TAR RIVER, NC VORTAC	2000
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		

FROM	TO	MEA

95.6214 VOR FEDERAL AIRWAY V214

KOKOMO, IN VORTAC	MARION, IN VOR/DME	2600
MARION, IN VOR/DME	MUNCIE, IN VOR/DME	2800
MUNCIE, IN VOR/DME	RICHMOND, IN VORTAC	2900
GLOOM, OH FIX	ZANESVILLE, OH VOR/DME	*4000
*2600 - MOCA		
*3000 - GNSS MEA		
ZANESVILLE, OH VOR/DME	BELLAIRE, OH VOR/DME	3000
BELLAIRE, OH VOR/DME	GALLS, PA FIX	*3600
*3100 - MOCA		
GALLS, PA FIX	GRANTSVILLE, MD VOR/DME	5000
GRANTSVILLE, MD VOR/DME	MARTINSBURG, WV VORTAC	*5000
*4500 - MOCA		
MARTINSBURG, WV VORTAC	WOOLY, MD FIX	3200
WOOLY, MD FIX	BALTIMORE, MD VORTAC	2600
BALTIMORE, MD VORTAC	SWANN, MD FIX	2000
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 22 NM.		
DUPONT, DE VORTAC	YARDLEY, PA VOR/DME	*6000
*3000 - GNSS MEA		
YARDLEY, PA VOR/DME	TETERBORO, NJ VOR/DME	*3000
*2000 - MOCA		MAA - 10000

95.6215 VOR FEDERAL AIRWAY V215

*JYBEE, MI FIX	SALES, MI FIX	**3500
*4000 - MRA		
**1700 - MOCA		
SALES, MI FIX	MUSKEGON, MI VORTAC	*3000
*2300 - MOCA		
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

LAMAR, CO VOR/DME	ORION, KS FIX	*6300
*5200 - MOCA		
ORION, KS FIX	HILL CITY, KS VORTAC	*5000
*4300 - MOCA		
HILL CITY, KS VORTAC	MANKATO, KS VORTAC	*4500
*3900 - MOCA		
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 VORTAC	3000
IOWA CITY, IA VORTAC	LOTTE, IA FIX	*3500
*2500 - MOCA		
LOTTE, IA FIX	WACKS, IL FIX	*4000
*2200 - MOCA		
WACKS, IL FIX	JANESVILLE, WI VOR/DME	2800

FROM	TO	MEA

95.6217 VOR FEDERAL AIRWAY V217

FARMM, IL FIX	BESIE, IL FIX	2500
BESIE, IL FIX	BADGER, WI VORTAC	2700
BADGER, WI VORTAC	CHING, WI FIX	3000
CHING, WI FIX	SHOOD, WI FIX	2700
SHOOD, WI FIX	GREEN BAY, WI VORTAC	2500
GREEN BAY, WI VORTAC	CECIL, WI FIX	*2700
*2200 - MOCA		
CECIL, WI FIX	RHINELANDER, WI VORTAC	3600
RHINELANDER, WI VORTAC	DULUTH, MN VORTAC	*6000
*4000 - MOCA		
DULUTH, MN VORTAC	HIBBING, MN VOR/DME	3300
HIBBING, MN VOR/DME	BAUDETTE, MN VOR/DME	*5000
*3100 - MOCA		
BAUDETTE, MN VOR/DME	U.S. CANADIAN BORDER	2800

95.6218 VOR FEDERAL AIRWAY V218

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 VORTAC	*3000
*2500 - MOCA		
WAUKON, IA VORTAC	*BAULK, WI FIX	**4000
*4000 - MRA		
**3000 - MOCA		
BAULK, WI FIX	ROCKFORD, IL VOR/DME	*4000
*2500 - MOCA		
KEELER, MI VOR/DME	HEBEL, MI FIX	4000
HEBEL, MI FIX	LANSING, MI VORTAC	*3000
*2400 - MOCA		

95.6219 VOR FEDERAL AIRWAY V219

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
SIOUX CITY, IA VORTAC	RITTA, IA FIX	
	NE BND	*9000
	SW BND	*4500
*3300 - MOCA		
RITTA, IA FIX	MILSS, IA FIX	9000
MILSS, IA FIX	FAIRMONT, MN VOR/DME	8000
FAIRMONT, MN VOR/DME	MANKATO, MN VOR/DME	*3000
*2500 - MOCA		

95.6220 VOR FEDERAL AIRWAY V220

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

FROM	TO	MEA

95.6220 VOR FEDERAL AIRWAY V220 - CONTINUED

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	*HYGEN, CO FIX	**17000
*17000 - MCA HYGEN, CO FIX , SW BND		
**15600 - MOCA		
HYGEN, CO FIX	NIWOT, CO FIX	
	NE BND	9000
	SW BND	12500
NIWOT, CO FIX	GILL, CO VOR/DME	
	NE BND	7400
	SW BND	10000
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

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	GAREN, IN FIX	2600
GAREN, IN FIX	LITCHFIELD, MI VOR/DME	3000
LITCHFIELD, MI VOR/DME	JACKSON, MI VOR/DME	*3000
*2500 - MOCA		
JACKSON, MI VOR/DME	SALEM, MI VORTAC	3000
SALEM, MI VORTAC	DELOW, MI FIX	3000
DELOW, MI FIX	U.S. CANADIAN BORDER	*4000
*2800 - MOCA		
U.S. CANADIAN BORDER	ERIE, PA VORTAC	#3000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

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

FROM	TO	MEA

95.6222 VOR FEDERAL AIRWAY V222 - CONTINUED

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	2000
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, GA VORTAC	3400
FOOTHILLS, GA VORTAC	SUNET, SC FIX	6100
SUNET, SC FIX	SUGARLOAF MOUNTAIN, NC VORTAC	6100
SUGARLOAF MOUNTAIN, NC VORTAC	VAESE, NC FIX	6000
VAESE, NC FIX	BARRETTS MOUNTAIN, NC VOR/DME	*5000
*3600 - MOCA		
BARRETTS MOUNTAIN, NC VOR/DME	HENBY, VA FIX	5000
HENBY, VA FIX	LYNCHBURG, VA VORTAC	4000
FLAT ROCK, VA VORTAC	*HANEY, VA FIX	2800
*7000 - MRA		
HANEY, VA FIX	FLUKY, VA FIX	2600

95.6224 VOR FEDERAL AIRWAY V224

SAWYER, MI VOR/DME	SCHOOLCRAFT COUNTY, MI VOR/DME	*3500
*2600 - MOCA		

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

FROM	TO	MEA

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	4000
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

STEVENS POINT, WI VORTAC	DELLS, WI VORTAC	3000
DELLS, WI VORTAC	MADISON, WI VORTAC	3300
MADISON, WI VORTAC	*DEBOW, WI FIX	10000
*10000 - MRA		
DEBOW, WI FIX	BESIE, IL FIX	10000
BESIE, IL FIX	FARMM, IL FIX	2500
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		
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		

FROM	TO	MEA

95.6230 VOR FEDERAL AIRWAY V230

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
*3000 - MCA MENDO, CA FIX , SW BND		
MENDO, CA FIX	*CLOVIS, CA VORTAC	2000
*4000 - MCA CLOVIS, CA VORTAC , NE BND		
CLOVIS, CA VORTAC	*FRIANT, CA VORTAC	5000
*9000 - MCA FRIANT, CA VORTAC , NE BND		
FRIANT, CA VORTAC	*CAINS, CA FIX	11000
*13000 - MCA CAINS, CA FIX , NE BND		
CAINS, CA FIX	NIKOL, CA FIX	14300
NIKOL, CA FIX	MINA, NV VORTAC	11000

95.6231 VOR FEDERAL AIRWAY V231

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
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

CHARDON, OH VOR/DME	FRANKLIN, PA VOR	3300
		MAA - 15000
FRANKLIN, PA VOR	COOBE, PA FIX	3500
COOBE, PA FIX	KEATING, PA VORTAC	4000
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

FROM	TO	MEA

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
LITCHFIELD, MI VOR/DME	LANSING, MI VORTAC	3000
LANSING, MI VORTAC	MOUNT PLEASANT, 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
*4000 - MOCA		
KRIER, KS FIX	BYWAY, KS FIX	*7100
*4000 - MOCA		
BYWAY, KS FIX	GABIE, KS FIX	*4300
*3600 - MOCA		
GABIE, KS FIX	HUTCHINSON, KS VOR/DME	3800
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

FROM	TO	MEA

95.6235 VOR FEDERAL AIRWAY V235 - CONTINUED

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

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	3000
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		

FROM	TO	MEA

95.6242 VOR FEDERAL AIRWAY V242

INTERNATIONAL FALLS, MN VORTAC	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	BYRON, CA FIX	
	W BND	4500
	E BND	3500
BYRON, CA FIX	MANTECA, CA VOR/DME	2000
MANTECA, CA VOR/DME	WRAPS, CA FIX	
	E BND	3000
	W BND	2000
WRAPS, CA FIX	*DUCKE, CA FIX	8000
*12000 - MCA DUCKE, CA FIX , E BND		
DUCKE, CA FIX	*NIKOL, CA FIX	15100
*13000 - 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

FROM	TO	MEA

95.6244 VOR FEDERAL AIRWAY V244 - CONTINUED

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
*4000 - MRA		
GLIDE, KS FIX	SALINA, KS VORTAC	*3600
*2900 – 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

JANESVILLE, WI VOR/DME	DUBUQUE, IA VORTAC	3000
DUBUQUE, IA VORTAC	WAUKON, IA VORTAC	3000
WAUKON, IA VORTAC	NODINE, MN VORTAC	3000
NODINE, MN VORTAC	MILTO, WI FIX	3000
MILTO, WI FIX	STEVENS POINT, WI VORTAC	2900

95.6247 VOR FEDERAL AIRWAY V247

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

FROM	TO	MEA

95.6248 VOR FEDERAL AIRWAY V248

SALINAS, CA VORTAC	*SARDO, CA FIX	**6000
*5500 - MRA		
*6000 - MCA SARDO, CA FIX , NW BND		
**5500 - MOCA		
SARDO, CA FIX	PASO ROBLES, CA VORTAC	5000
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

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 VORTAC	3800
BINGHAMTON, NY VORTAC	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

FROM	TO	MEA

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		

95.6254 VOR FEDERAL AIRWAY V254

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

GARDEN CITY, KS VORTAC	HAYS, KS VORTAC	4600

95.6256 VOR FEDERAL AIRWAY V256

TULSA, OK VORTAC	PIONEER, OK VORTAC	3000
PIONEER, OK VORTAC	HUTCHINSON, KS VOR/DME	3300

95.6257 VOR FEDERAL AIRWAY V257

PHOENIX, AZ VORTAC	*AVENT, AZ FIX	
	NW BND	7000
	SE BND	5000
*8000 - MRA		
AVENT, AZ FIX	*BANYO, AZ FIX	
	NW BND	7000
	SE BND	5000
*6000 - MRA		
BANYO, AZ FIX	COYOT, AZ FIX	*9000
*8100 - MOCA		
COYOT, AZ FIX	MAIER, AZ FIX	*10000
*9000 - GNSS MEA		

95.6257 VOR FEDERAL AIRWAY V257 - CONTINUED

MAIER, AZ FIX	DRAKE, AZ VORTAC	10000
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		
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 VORTAC	BECKLEY, WV VORTAC	#*5000
*4900 - MOCA		
#CHARLESTON UNUSABLE 140-142 BYD 20 BLO 9000		
BECKLEY, WV VORTAC	ZOOMS, WV FIX	*10000
*6300 - MOCA		
*6300 - GNSS MEA		

FROM	TO	MEA

95.6258 VOR FEDERAL AIRWAY V258 - CONTINUED

ZOOMS, WV FIX	ROANOKE, VA VORTAC	6400
ROANOKE, VA VORTAC	PIGGS, VA FIX	5000
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		

95.6260 VOR FEDERAL AIRWAY V260

CHARLESTON, WV VORTAC	MONTS, WV FIX	3400
MONTS, WV FIX	RAINELLE, WV VOR	5100
RAINELLE, WV VOR	ROANOKE, VA VORTAC	*6000
*5400 - MOCA		
ROANOKE, VA VORTAC	GOOZE, VA FIX	5000
GOOZE, VA FIX	LYNCHBURG, VA VORTAC	
	W BND	*5000
	E BND	*3000
*2900 - MOCA		
LYNCHBURG, VA VORTAC	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 VORTAC	*3000
*2200 - MOCA		

FROM	TO	MEA

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	*LIMEX, CO FIX	**10000
*10000 - MRA		
**8500 - MOCA		
**9000 - GNSS MEA		
LIMEX, CO FIX	AKRON, CO VOR/DME	*8500
*7200 - MOCA		
PIERRE, SD VORTAC	ABERDEEN, SD VOR/DME	4000

95.6264 VOR FEDERAL AIRWAY V264

LOS ANGELES, CA VORTAC	STABO, CA FIX	2500
STABO, CA FIX	AMTRA, CA FIX	3000
AMTRA, CA FIX	*POMONA, CA VORTAC	4500
*5600 - MCA POMONA, CA VORTAC , E BND		
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

KRANT, MD FIX	WESTMINSTER, MD VORTAC	2600
WESTMINSTER, MD VORTAC	HARRISBURG, PA VORTAC	3400
HARRISBURG, PA VORTAC	PHILIPSBURG, PA VORTAC	4000
PHILIPSBURG, PA VORTAC	KEATING, PA VORTAC	4000
KEATING, PA VORTAC	BRADFORD, PA VOR/DME	4000
BRADFORD, PA VOR/DME	JAMESTOWN, NY VOR/DME	4000
JAMESTOWN, NY VOR/DME	*DUNKIRK, NY VORTAC	4000
*3400 - MCA DUNKIRK, NY VORTAC , S BND		
DUNKIRK, NY VORTAC	U.S. CANADIAN BORDER	*3400
*2000 – MOCA		

FROM	TO	MEA

95.6266 VOR FEDERAL AIRWAY V266

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

95.6267 VOR FEDERAL AIRWAY V267

DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	*2000
*1500 - MOCA		
PAHOKEE, FL VORTAC	DIDDY, FL FIX	*2000
*1500 - MOCA		
DIDDY, FL FIX	ORLANDO, FL VORTAC	2700
ORLANDO, FL VORTAC	PAOLA, FL FIX	1900
PAOLA, FL FIX	WORMS, FL FIX	2800
WORMS, FL FIX	CRAIG, FL VORTAC	*3000
*2100 - MOCA		
CRAIG, FL VORTAC	BAXLY, GA FIX	3000
BAXLY, GA FIX	DUBLIN, GA VORTAC	*3000
*2300 - MOCA		
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		

FROM	TO	MEA

95.6268 VOR FEDERAL AIRWAY V268 – CONTINUED

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	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	11000
WELLS, NV VOR	*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		

FROM	TO	MEA

95.6269 VOR FEDERAL AIRWAY V269 - CONTINUED

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		

95.6270 VOR FEDERAL AIRWAY V270

ERIE, PA VORTAC	JAMESTOWN, NY VOR/DME	4000
JAMESTOWN, NY VOR/DME	*VAIRS, NY FIX	4000
*11000 - MRA		
VAIRS, NY FIX	WELLSVILLE, NY VORTAC	*4500
*4000 - MOCA		
WELLSVILLE, NY VORTAC	WOMAN, NY FIX	*4500
*4000 - MOCA		
WOMAN, NY FIX	ELMIRA, NY VOR/DME	*4000
*3400 - MOCA		
ELMIRA, NY VOR/DME	BINGHAMTON, NY VORTAC	3500
BINGHAMTON, NY VORTAC	DELANCEY, NY VOR/DME	4500
DELANCEY, NY VOR/DME	ATHOS, NY FIX	6300
ATHOS, NY FIX	CHESTER, MA VOR/DME	*4500
*4000 - MOCA		
CHESTER, MA VOR/DME	GLYDE, MA FIX	4000
GLYDE, MA FIX	BOSTON, MA VOR/DME	*4000
*3000 - MOCA		

95.6271 VOR FEDERAL AIRWAY V271

MUSKEGON, MI VORTAC	WELKO, MI FIX	*3000
*2500 - MOCA		
WELKO, MI FIX	MANISTEE, MI VOR/DME	*4000
*2400 - MOCA		
MANISTEE, MI VOR/DME	ESCANABA, MI VOR/DME	*3000
*2100 - MOCA		

95.6272 VOR FEDERAL AIRWAY V272

DALHART, TX VORTAC	BORGER, TX VORTAC	5700
BORGER, TX VORTAC	BRISC, TX FIX	4800
BRISC, TX FIX	SAYRE, OK VORTAC	*5500
*4500 - MOCA		
SAYRE, OK VORTAC	SERTS, OK FIX	3900
SERTS, OK FIX	LIONS, OK FIX	*4500
*3100 - MOCA		
*3700 - GNSS MEA		
LIONS, OK FIX	WILL ROGERS, OK VORTAC	3300
WILL ROGERS, OK VORTAC	MINGG, OK FIX	*4000
*3100 - MOCA		
MINGG, OK FIX	HOLLE, OK FIX	*4000
*2600 - MOCA		
HOLLE, OK FIX	MC ALESTER, OK VORTAC	3000
MC ALESTER, OK VORTAC	FORT SMITH, AR VORTAC	*3500
*2900 - MOCA		

FROM	TO	MEA

95.6273 VOR FEDERAL AIRWAY V273

FALLZ, NJ FIX	HUGUENOT, NY VOR/DME	3000
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

95.6275 VOR FEDERAL AIRWAY V275

CINCINNATI, KY VORTAC	DAYTON, OH VOR/DME	2900
DAYTON, OH VOR/DME	KLINE, OH FIX	*6000
*3000 - 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 - MRA		
**1400 - MOCA		
GAMBY, NJ FIX	MANTA, NJ FIX	*6000
*2000 - MOCA		
*2000 - GNSS MEA		
MANTA, 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
PLAINVIEW, TX VOR/DME	GUTHRIE, TX VORTAC	*5100
*4600 - MOCA		
GUTHRIE, TX VORTAC	*NIFDE, TX FIX	**4500
*6500 - MRA		
**3300 - MOCA		
NIFDE, TX FIX	BOWIE, TX VORTAC	*4500
*2600 - MOCA		
*3300 - GNSS MEA		

FROM	TO	MEA

95.6278 VOR FEDERAL AIRWAY V278 - CONTINUED

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	**6500
*7500 - MRA		
**5900 - MOCA		
FRAIZ, NM FIX	DEBRA, NM FIX	*7500
*5900 - MOCA		
DEBRA, NM FIX	TEXICO, TX VORTAC	
	NE BND	*6500
	SW BND	*7500
*5800 - MOCA		
TEXICO, TX VORTAC	PANHANDLE, TX VORTAC	*5900
*5600 - MOCA		
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	*5500
*5000 - MOCA		
MITBEE, OK VORTAC	CARKO, KS FIX	4000
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

FROM	TO	MEA

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 VORTAC	*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		

FROM	TO	MEA

95.6286 VOR FEDERAL AIRWAY V286 - CONTINUED

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
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		

FROM	TO	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
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		

FROM	TO	MEA

95.6291 VOR FEDERAL AIRWAY V291 - CONTINUED

FLAGSTAFF, AZ VOR/DME	KACEE, AZ FIX	11000
KACEE, AZ FIX	PEACH SPRINGS, AZ VOR/DME	10000

95.6292 VOR FEDERAL AIRWAY V292

HANCOCK, NY VOR/DME	SAGES, NY FIX	6400
SAGES, NY FIX	WIGAN, NY FIX	#
#UNUSABLE		
WIGAN, NY FIX	BARNES, MA VORTAC	#*10000
*4900 - MOCA		
#BARNES R-279 UNUSABLE BYD 50 NM		
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	13000
*12000 - MCA ENOCH, UT VOR/DME , E BND		
ENOCH, UT VOR/DME	BERYL, UT FIX	*9000
*8400 - MOCA		
BERYL, UT FIX	WILSON CREEK, NV VORTAC	11300
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

FROM	TO	MEA

95.6295 VOR FEDERAL AIRWAY V295

VIRGINIA KEY, FL VOR/DME	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
ORLANDO, FL VORTAC	*SHIMM, FL FIX	2000
*3000 - MRA		
SHIMM, FL FIX	OCALA, FL VORTAC	2000
OCALA, FL VORTAC	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		

95.6297 VOR FEDERAL AIRWAY V297

JOHNSTOWN, PA VORTAC	TALLS, PA FIX	4200
TALLS, PA FIX	VOLAN, PA FIX	*5000
*3200 - MOCA		
*3300 - GNSS MEA		
VOLAN, PA FIX	CAPEL, OH FIX	*3600
*2800 - MOCA		
CAPEL, OH FIX	AKRON, OH VOR/DME	3600
AKRON, OH VOR/DME	U.S. CANADIAN BORDER	*6000
*3000 - MOCA		

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		

FROM	TO	MEA

95.6298 VOR FEDERAL AIRWAY V298 - CONTINUED

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		
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

*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

U.S. CANADIAN BORDER	AVALE, MI FIX	#*9000
*2400 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
AVALE, MI FIX	SAULT STE MARIE, MI VOR/DME	#*3000
*2400 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
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		

FROM	TO	MEA

95.6300 VOR FEDERAL AIRWAY V300 - CONTINUED

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		

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	5000

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 VORTAC	2500
CUNNINGHAM, KY VORTAC	WESON, KY FIX	2600

FROM	TO	MEA

95.6305 VOR FEDERAL AIRWAY V305 - CONTINUED

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
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	3800
AMUSE, TX FIX	CENTEX, TX VORTAC	3100
CENTEX, TX VORTAC	NAVASOTA, TX VOR/DME	2300
NAVASOTA, TX VOR/DME	ZMSKL, TX FIX	2000
ZMSKL, TX FIX	CLEEP, TX FIX	*5000
*2300 - MOCA		
CLEEP, TX FIX	DAISETTA, TX VORTAC	3000
DAISETTA, TX VORTAC	*KUUPR, TX FIX	2300
*2800 - MRA		
KUUPR, TX FIX	OFERS, LA FIX	2300
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 VORTAC	3000
OSWEGO, KS VORTAC	CHANUTE, KS VOR/DME	*3000
*2400 - MOCA		
CHANUTE, KS VOR/DME	EMPORIA, KS VORTAC	3000
EMPORIA, KS VORTAC	ALMAS, KS FIX	3000
ALMAS, KS FIX	PAWNEE CITY, NE VORTAC	*5000
*2800 - 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

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

CHARLESTON, WV VORTAC	RANDE, WV FIX	*5000
*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

LOUISVILLE, KY VORTAC	LONDON, KY VOR/DME	*3300
*2900 - MOCA		
LONDON, KY VOR/DME	ROSAR, KY FIX	*5500
*3800 - MOCA		
ROSAR, KY FIX	*HOLSTON MOUNTAIN, TN VORTAC	6400
*6600 - MCA HOLSTON MOUNTAIN, TN VORTAC , E BND		
HOLSTON MOUNTAIN, TN VORTAC	*STAIN, TN FIX	6700
*7000 - MCA STAIN, TN FIX , E BND		
STAIN, TN FIX	*MULBE, NC FIX	7800
*7100 - MCA MULBE, NC FIX , W BND		
MULBE, NC FIX	BURCH, NC FIX	6000
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	2500
TAR RIVER, NC VORTAC	ELIZABETH CITY, NC VOR/DME	*4000
*1600 - MOCA		
*2000 - GNSS MEA		

FROM	TO	MEA

95.6311 VOR FEDERAL AIRWAY V311

HINCH MOUNTAIN, TN VORTAC	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	2300
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	2000
		MAA - 8000
COYLE, NJ VORTAC	*DRIFT, NJ FIX	2000
*6000 - MRA		
DRIFT, NJ FIX	*PREPI, OA FIX	**4800
*8000 - MRA		
**2000 - 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
*8000 - MRA		
**3900 - MOCA		
PATTA, ME FIX	MILLINOCKET, ME VOR/DME	*6000
*3900 - MOCA		

95.6315 VOR FEDERAL AIRWAY V315

PARIS, TX VOR/DME	RICH MOUNTAIN, OK VORTAC	4200

FROM	TO	MEA

95.6316 VOR FEDERAL AIRWAY V316

IRONWOOD, MI VORTAC	SAWYER, MI VOR/DME	*6000
*3600 - MOCA		
SAWYER, MI VOR/DME	UZMEF, MI FIX	*3500
*2600 - MOCA		
UZMEF, MI FIX	NEWBERRY, MI VOR/DME	*6000
*2500 - MOCA		
NEWBERRY, MI VOR/DME	SAULT STE MARIE, MI VOR/DME	*3000
*2400 - MOCA		

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	HOULTON, ME VOR/DME	*9000
*3900 - MOCA		
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	*PREST, GA FIX	2600
*5000 - MCA PREST, GA FIX , NW BND		
PREST, GA FIX	*COLUMBUS, GA VORTAC	**5000
*5000 - MCA COLUMBUS, GA VORTAC , SE BND		
**3300 - MOCA		
COLUMBUS, GA VORTAC	LAGRANGE, GA VORTAC	2500
LAGRANGE, GA VORTAC	HEFIN, AL FIX	*4000
*3400 - MOCA		
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 VORTAC	3800

FROM	TO	MEA

95.6322 VOR FEDERAL AIRWAY V322

CONCORD, NH VORTAC	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

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	HUSKY, GA FIX	*3000
*2100 - MOCA		

95.6324 VOR FEDERAL AIRWAY V324

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

COLUMBIA, SC VORTAC	VESTO, GA FIX	2400
VESTO, GA FIX	ATHENS, GA VOR/DME	*2500
*2200 - MOCA		
ATHENS, GA VOR/DME	WOMAC, GA FIX	3700
WOMAC, GA FIX	LOGEN, GA FIX	*4600
*3700 - MOCA		
DALAS, GA FIX	CARAN, GA FIX	#*5000
*3700 - MOCA		
#GNSS MEA		
CARAN, GA FIX	GADSDEN, AL VOR/DME	#*5000
*4200 - MOCA		
#GADSDEN R-089 UNUSABLE BYD 47NM EXCEPT FOR ACFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS.		
GADSDEN, AL VOR/DME	MASHA, AL FIX	3500
MASHA, AL FIX	MUSCLE SHOALS, AL VORTAC	2500

FROM	TO	MEA

95.6326 VOR FEDERAL AIRWAY V326

FILLMORE, CA VORTAC	VAN NUYS, CA VOR/DME	5000

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		

FROM	TO	MEA

95.6330 VOR FEDERAL AIRWAY V330 - CONTINUED

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
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 VORTAC	5000
HINCH MOUNTAIN, TN VORTAC	JELLO, TN FIX	5000
JELLO, TN FIX	DOLLY, KY FIX	4000
DOLLY, KY FIX	LEXINGTON, KY VORTAC	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

FROM	TO	MEA

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

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
FORT WAYNE, IN VORTAC	RICHMOND, 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

FROM	TO	MEA

95.6344 VOR FEDERAL AIRWAY V344

DUPREE, SD VORTAC	ABERDEEN, SD VOR/DME	*6500
*4100 - MOCA		
ABERDEEN, SD VOR/DME	FARGO, ND VOR/DME	*3900
*3000 – MOCA		

95.6345 VOR FEDERAL AIRWAY V345

DELLS, WI VORTAC	MILTO, WI FIX	*3500
*2800 - MOCA		
MILTO, WI FIX	EAU CLAIRE, WI VORTAC	3500
EAU CLAIRE, WI VORTAC	HAYWARD, WI VOR/DME	#*5200
*3100 - MOCA		
*4000 - GNSS MEA		
#HAYWARD R-178 UNUSABLE USE EAU CLAIRE R-357		

95.6346 VOR FEDERAL AIRWAY V346

U.S. CANADIAN BORDER	MILLINOCKET, ME VOR/DME	*6000
*5100 - MOCA		

95.6347 VOR FEDERAL AIRWAY V347

LONDON, KY VOR/DME	HINCH MOUNTAIN, TN VORTAC	*4700
*4600 - MOCA		

95.6348 VOR FEDERAL AIRWAY V348

THUNDER BAY, CANADA VORTAC	SAULT STE MARIE, MI VOR/DME	#*15000
*2800 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		

95.6349 VOR FEDERAL AIRWAY V349

WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	*3000
*2600 - MOCA		

95.6350 VOR FEDERAL AIRWAY V350

LIBERAL, KS VORTAC	WICHITA, KS VORTAC	*8000
*4500 - MOCA		
WICHITA, KS VORTAC	CHANUTE, KS VOR/DME	3600

95.6352 VOR FEDERAL AIRWAY V352

U.S. CANADIAN BORDER	*PATTA, ME FIX	6300
*8000 - MRA		
PATTA, ME FIX	HOULTON, ME VOR/DME	6300
HOULTON, ME VOR/DME	U.S. CANADIAN BORDER	2000

FROM	TO	MEA

95.6353 VOR FEDERAL AIRWAY V353

JACKSON, MI VOR/DME	FLINT, MI VORTAC	2800

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

BOWIE, TX VORTAC	WICHITA FALLS, TX VORTAC	3100

95.6356 VOR FEDERAL AIRWAY V356

RED TABLE, CO VOR/DME	FISTR, CO FIX	
	NE BND	15200
	SW BND	14000
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

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

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

U.S. MEXICAN BORDER	LAREDO, TX VORTAC	*3000
*2500 - MOCA		

FROM	TO	MEA

95.6360 VOR FEDERAL AIRWAY V360

SAULT STE MARIE, MI VOR/DME	U.S. CANADIAN BORDER	*6000
*2600 - MOCA		

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	
	SW BND	10000
	NE 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	*ALLAN, CO FIX	#**1600 0
*16000 - MRA		
**15400 - MOCA		
#MTA V361 SW TO V85 SE 14700		
MTA V361 SW TO V85 NW 16500		
ALLAN, CO FIX	*BARGR, CO FIX	15000
*11800 - MCA BARGR, CO FIX , SW BND		
BARGR, CO FIX	CHEYENNE, WY VORTAC	9000

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		

FROM	TO	MEA

95.6363 VOR FEDERAL AIRWAY V363 - CONTINUED

OFREE, CA FIX	EL TORO, CA VOR/DME	4000
EL TORO, CA VOR/DME	POMONA, CA VORTAC	4000

95.6364 VOR FEDERAL AIRWAY V364

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

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 VORTAC	7000

95.6366 VOR FEDERAL AIRWAY V366

HUGO, CO VOR/DME	FALCON, CO VORTAC	8500

95.6367 VOR FEDERAL AIRWAY V367

INTERNATIONAL FALLS, MN VORTAC	U.S. CANADIAN BORDER	3000

95.6368 VOR FEDERAL AIRWAY V368

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 VORTAC	GAYEL, NY FIX	*10000
*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

FROM	TO	MEA

95.6374 VOR FEDERAL AIRWAY V374 - CONTINUED

KURTY, CT FIX	GROTON, CT VOR/DME	3000
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

ROANOKE, VA VORTAC	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

RICHMOND, VA VORTAC	GRUBY, VA FIX	2000
GRUBY, VA FIX	IRONS, MD FIX	*2500
*1700 - MOCA		

95.6377 VOR FEDERAL AIRWAY V377

MONTEBELLO, VA VOR/DME	KESSEL, WV VOR/DME	*6000
*5500 - MOCA		
KESSEL, WV VOR/DME	TOMAC, WV FIX	4300
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

BALTIMORE, MD VORTAC	BELAY, MD FIX	2300
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

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

O'NEILL, NE VORTAC	WOLBACH, NE VORTAC	*4000
*3500 - MOCA		
WOLBACH, NE VORTAC	GRAND ISLAND, NE VOR/DME	*4000
*3300 - MOCA		
GRAND ISLAND, NE VOR/DME	HASTINGS, NE VOR/DME	4000
HASTINGS, NE VOR/DME	MANKATO, KS VORTAC	3900

95.6381 VOR FEDERAL AIRWAY V381

BISHOP, CA VOR/DME	*NIKOL, CA FIX	**13000
*13000 - MCA NIKOL, CA FIX , SE BND		
**12300 - MOCA		

95.6382 VOR FEDERAL AIRWAY V382

GRAND JUNCTION, CO VOR/DME	*CONES, CO VOR/DME	12000
*14000 - MCA CONES, CO VOR/DME , SE BND		
CONES, CO VOR/DME	*DURANGO, CO VOR/DME	15300
*12000 - MCA DURANGO, CO VOR/DME , NW BND		

95.6383 VOR FEDERAL AIRWAY V383

ROSEWOOD, OH VORTAC	YOGGI, OH FIX	3100
YOGGI, OH FIX	*CHOOT, OH FIX	**6500
*6500 - MRA		
**3100 - MOCA		
CHOOT, OH FIX	DETROIT, MI VOR/DME	3100

95.6384 VOR FEDERAL AIRWAY V384

LIVINGSTON, TN VORTAC	VOLUNTEER, TN VORTAC	6100

95.6385 VOR FEDERAL AIRWAY V385

LUBBOCK, TX VORTAC	*WAGUN, TX FIX	**8000
*8000 - MRA		
**4600 - MOCA		
WAGUN, TX FIX	ABILENE, TX VORTAC	*8000
*3800 - MOCA		

95.6386 VOR FEDERAL AIRWAY V386

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	*SAUGS, CA FIX	6000
*6300 - MCA SAUGS, CA FIX , NE BND		
SAUGS, CA FIX	PALMDALE, CA VORTAC	7000
PALMDALE, CA VORTAC	APLES, CA FIX	7000

FROM	TO	MEA

95.6386 VOR FEDERAL AIRWAY V386 - CONTINUED

APLES, CA FIX	SOGGI, CA FIX	
	E BND	11000
	W BND	9000
SOGGI, CA FIX	YUCCA, CA FIX	*11000
*9400 - MOCA		
YUCCA, CA FIX	*PALM SPRINGS, CA VORTAC	**9000
*7600 - MCA PALM SPRINGS, CA VORTAC , NW BND		
**8200 - MOCA		

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

FROM	TO	MEA

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
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

*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		

95.6394 VOR FEDERAL AIRWAY V394

SEAL BEACH, CA VORTAC	AHEIM, CA FIX	*3000
*2200 - MOCA		
AHEIM, CA FIX	*POMONA, CA VORTAC	4000
*10300 - MCA POMONA, CA VORTAC , NE BND		
POMONA, CA VORTAC	CALBE, CA FIX	
	SW BND	5300
	NE BND	10800
CALBE, CA FIX	MEANT, CA FIX	
	SW BND	10700
	NE BND	11500
MEANT, CA FIX	*APLES, CA FIX	11500
*9100 - 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

*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		

FROM	TO	MEA

95.6396 VOR FEDERAL AIRWAY V396

U.S. CANADIAN BORDER	CHARDON, OH VOR/DME	*8000
*2700 - MOCA		

95.6397 VOR FEDERAL AIRWAY V397

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

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 VORTAC	3000
WAUKON, IA VORTAC	LONE ROCK, WI VOR/DME	3000

95.6399 VOR FEDERAL AIRWAY V399

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

PRESQUE ISLE, ME VOR/DME	U.S. CANADIAN BORDER	*6000
*4000 - MOCA		

95.6401 VOR FEDERAL AIRWAY V401

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

TUCUMCARI, NM VORTAC	MOSER, TX FIX	6300
MOSER, TX FIX	PANHANDLE, TX VORTAC	*6000
*5500 - MOCA		
PANHANDLE, TX VORTAC	*BRISC, TX FIX	**7000
*7000 - MCA BRISC, TX FIX , SW BND		
**5000 - MOCA		

FROM	TO	MEA

95.6402 VOR FEDERAL AIRWAY V402 - CONTINUED

BRISC, TX FIX	MITBEE, OK VORTAC	*5500
*4500 - MOCA		

95.6403 VOR FEDERAL AIRWAY V403

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		

95.6404 VOR FEDERAL AIRWAY V404

CHILDRESS, TX VORTAC	*SNEED, TX FIX	4000
*4000 - MRA		
SNEED, TX FIX	*ELECT, TX FIX	2700
*3500 - MRA		
ELECT, TX FIX	WICHITA FALLS, TX VORTAC	2700

95.6405 VOR FEDERAL AIRWAY V405

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
*2200 - MOCA		
LANNA, NJ FIX	SOLBERG, NJ VOR/DME	2700
SOLBERG, NJ VOR/DME	CARMEL, NY VOR/DME	2500
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		

95.6406 VOR FEDERAL AIRWAY V406

SALEM, MI VORTAC	U.S. CANADIAN BORDER	*4000
*2700 - MOCA		

FROM	TO	MEA

95.6407 VOR FEDERAL AIRWAY V407

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	*WORRY, TX FIX	1700
*2100 - MRA		
WORRY, TX FIX	*AUSTS, TX FIX	1700
*2300 - MRA		
AUSTS, TX FIX	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

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	3000

95.6410 VOR FEDERAL AIRWAY V410

PONTIAC, MI VORTAC	U.S. CANADIAN BORDER	*4000
*2500 – MOCA		

95.6411 VOR FEDERAL AIRWAY V411

LONE ROCK, WI VOR/DME	WAUKON, IA VORTAC	3000
WAUKON, IA VORTAC	ROCHESTER, MN VOR/DME	3000
ROCHESTER, MN VOR/DME	FARMINGTON, MN VORTAC	3000

FROM	TO	MEA

95.6412 VOR FEDERAL AIRWAY V412

REDWOOD FALLS, MN VOR/DME	FLYING CLOUD, MN VOR/DME	2800

95.6413 VOR FEDERAL AIRWAY V413

IRONWOOD, MI VORTAC	*RUSSH, WI FIX	8000
*10000 - MRA		
RUSSH, WI FIX	EAU CLAIRE, WI VORTAC	*6000
*2900 - MOCA		
EAU CLAIRE, WI VORTAC	BITLR, WI FIX	*3500
*2800 - MOCA		
BITLR, WI FIX	GOPHER, MN VORTAC	3400
GOPHER, MN VORTAC	BRAINERD, MN VORTAC	4000

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, GA VORTAC	5000
FOOTHILLS, GA VORTAC	PELAM, SC FIX	4000
PELAM, SC FIX	SPARTANBURG, SC VORTAC	*3000
*2400 - MOCA		
SPARTANBURG, SC VORTAC	LOCKS, SC FIX	2300

95.6416 VOR FEDERAL AIRWAY V416

ROSEWOOD, OH VORTAC	*LAWTO, OH FIX	**4000
*4000 - MRA		
**2500 - MOCA		
LAWTO, OH FIX	MANSFIELD, OH VORTAC	*4000
*2500 - MOCA		
MANSFIELD, OH VORTAC	JAKEE, OH FIX	3000

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
*2100 - MOCA		
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

FROM	TO	MEA

95.6418 VOR FEDERAL AIRWAY V418

SALEM, MI VORTAC	BEWEL, OH FIX	#*4000
*2700 - MOCA		
#FOR THAT AIRSPACE OVER U.S. TERRITORY.		
BEWEL, OH FIX	JAMESTOWN, NY VOR/DME	*4000
*3300 - MOCA		

95.6419 VOR FEDERAL AIRWAY V419

WESTMINSTER, MD VORTAC	MODENA, PA VORTAC	*3000
*2400 - MOCA		
MODENA, PA VORTAC	BIGGY, NJ FIX	2500
BIGGY, NJ FIX	SOLBERG, NJ VOR/DME	2000
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	3000

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	
	S BND	12000
	N BND	16100
ZEANS, CO FIX	LAZON, CO FIX	16100
LAZON, CO FIX	POWES, CO FIX	
	S BND	16100
	N BND	15000
POWES, CO FIX	*BLUE MESA, CO VOR/DME	
	SW BND	16100
	NE BND	12800
*12600 - MCA BLUE MESA, CO VOR/DME , S BND		
*12900 - MCA BLUE MESA, CO VOR/DME , N BND		
BLUE MESA, CO VOR/DME	WENDT, CO FIX	
	N BND	16300
	S BND	13000
WENDT, CO FIX	CAZUU, CO FIX	*16300
*14600 - MOCA		
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		

FROM	TO	MEA

95.6422 VOR FEDERAL AIRWAY V422

BEBEE, IL FIX	*NILES, IL FIX	3400
*3500 - MRA		
*3000 - MCA NILES, IL FIX , N BND		
NILES, IL FIX	CHICAGO HEIGHTS, IL VORTAC	2500
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 VORTAC	*4300
*3800 - MOCA		
BINGHAMTON, NY VORTAC	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

95.6426 VOR FEDERAL AIRWAY V426

CARLETON, MI VORTAC	SALFE, OH FIX	*4000
*3000 - GNSS MEA		
SALFE, OH FIX	AMRST, OH FIX	#
#UNUSABLE		
AMRST, OH FIX	DRYER, OH VOR/DME	*3000
*2200 - MOCA		

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		

FROM	TO	MEA

95.6429 VOR FEDERAL AIRWAY V429 - CONTINUED

BIBLE GROVE, IL VORTAC	MATTOON, IL VOR/DME	2500
MATTOON, IL VOR/DME	CHAMPAIGN, IL VORTAC	2400
CHAMPAIGN, IL VORTAC	ROBERTS, IL VOR/DME	2600
ROBERTS, IL VOR/DME	MEDAN, IL FIX	2500
MEDAN, IL FIX	JOLIET, IL VORTAC	2400

95.6430 VOR FEDERAL AIRWAY V430

CUT BANK, MT VORTAC	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 VORTAC	*5000
*3900 - MOCA		
MINOT, ND VORTAC	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 VORTAC	3500
IRONWOOD, MI VORTAC	DINER, MI FIX	*3500
*3400 - MOCA		
DINER, MI FIX	IRON MOUNTAIN, MI VOR/DME	*5000
*3500 - MOCA		
*4000 - GNSS MEA		
IRON MOUNTAIN, MI VOR/DME	VUKFI, MI FIX	3100
VUKFI, MI FIX	ESCANABA, MI VOR/DME	*3000
*2200 - 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	#*2500
*1700 - MOCA		
#UNUSABLE		

FROM	TO	MEA

95.6433 VOR FEDERAL AIRWAY V433 - CONTINUED

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	METRO, NJ FIX	*3000
*2000 - MOCA		MAA - 10000
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

OTTUMWA, IA VOR/DME	MOLINE, IL VORTAC	*3000
*2500 - MOCA		
MOLINE, IL VORTAC	PEORIA, IL VORTAC	2600
PEORIA, IL VORTAC	CHAMPAIGN, IL VORTAC	2800
CHAMPAIGN, IL VORTAC	BRICKYARD, IN VORTAC	2700

95.6435 VOR FEDERAL AIRWAY V435

ROSEWOOD, OH VORTAC	OBRLN, OH FIX	*6000
*2700 - MOCA		
OBRLN, OH FIX	DRYER, OH VOR/DME	*3500
*2500 - MOCA		

95.6436 VOR FEDERAL AIRWAY V436

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

FROM	TO	MEA

95.6437 VOR FEDERAL AIRWAY V437

DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	*2000
*1500 - MOCA		
PAHOKEE, FL VORTAC	MELBOURNE, FL VOR/DME	2100
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		
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

GRANTSVILLE, MD VOR/DME	*FLINT, MD FIX	#5300
*4300 - MCA FLINT, MD FIX , W BND		
#GRANTSVILLE DME UNUSABLE BEYOND 20NM, BELOW 6000		
FLINT, MD FIX	HAGERSTOWN, MD VOR	4000
HAGERSTOWN, MD VOR	LUCKE, VA FIX	*3800
*3300 - MOCA		

95.6439 VOR FEDERAL AIRWAY V439

DICKINSON, ND VORTAC	WILLISTON, ND VOR/DME	4500

95.6440 VOR FEDERAL AIRWAY V440

PANHANDLE, TX VORTAC	*BRISC, TX FIX	**7000
*7000 - MCA BRISC, TX FIX , SW BND		
**5000 - MOCA		
BRISC, TX FIX	SAYRE, OK VORTAC	*5500
*4500 - MOCA		
SAYRE, OK VORTAC	CARFF, OK FIX	4000
CARFF, OK FIX	WILL ROGERS, OK VORTAC	3000

95.6441 VOR FEDERAL AIRWAY V441

MELBOURNE, FL VOR/DME	LAKELAND, FL VORTAC	2600
LAKELAND, FL VORTAC	ST PETERSBURG, FL VORTAC	2000
ST PETERSBURG, FL VORTAC	BAYPO, FL FIX	2000

FROM	TO	MEA

95.6441 VOR FEDERAL AIRWAY V441 - CONTINUED

BAYPO, FL FIX	NITTS, FL FIX	*4000
*1700 - MOCA		
NITTS, FL FIX	OCALA, FL VORTAC	2000
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		

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

95.6443 VOR FEDERAL AIRWAY V443

WISKE, WV FIX	NEWCOMERSTOWN, OH VOR/DME	3300
NEWCOMERSTOWN, OH VOR/DME	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	DRYER, OH VOR/DME	3000
DRYER, OH VOR/DME	FAILS, OH FIX	2500
FAILS, OH FIX	U.S. CANADIAN BORDER	*3000
*1700 - MOCA		

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		

FROM	TO	MEA

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

95.6447 VOR FEDERAL AIRWAY V447

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

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		

95.6448 VOR FEDERAL AIRWAY V448 - CONTINUED

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		

95.6450 VOR FEDERAL AIRWAY V450

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		
FLINT, MI VORTAC	KATTY, MI FIX	3000
KATTY, MI FIX	U.S. CANADIAN BORDER	*4000
*2800 - MOCA		

95.6451 VOR FEDERAL AIRWAY V451

LA GUARDIA, NY VOR/DME	*NESSI, CT FIX	**4000
*4000 - MRA		
**1700 - MOCA		
**2000 - GNSS MEA		
NESSI, CT FIX	KEYED, NY FIX	2500
KEYED, NY FIX	CREAM, NY FIX	2000
CREAM, NY FIX	GROTON, CT VOR/DME	*6000
*4000 - GNSS MEA		

95.6452 VOR FEDERAL AIRWAY V452

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.

FROM	TO	MEA

95.6452 VOR FEDERAL AIRWAY V452 - CONTINUED

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

GORDONSVILLE, VA VORTAC	CASANOVA, VA VORTAC	4500
CASANOVA, VA VORTAC	LINDEN, VA VORTAC	5000

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
*1800 - MOCA		
RUTEL, AL FIX	CRENS, AL FIX	*4500
*1800 - MOCA		
CRENS, AL FIX	BANBI, AL FIX	2400
BANBI, AL FIX	COLUMBUS, GA VORTAC	*2400
*2000 - MOCA		
COLUMBUS, GA VORTAC	GRANT, GA FIX	2800
GRANT, GA FIX	SMARR, GA FIX	*4000
*2500 - MOCA		
*2500 - GNSS MEA		
SMARR, GA FIX	SINCA, GA FIX	*4500
*2500 - MOCA		
*2500 - GNSS MEA		
SINCA, GA FIX	*GLOSS, GA FIX	**3000
*3500 - MRA		
**2000 - MOCA		
GLOSS, GA FIX	MADDI, GA FIX	*3000
*2200 - MOCA		
MADDI, GA FIX	VESTO, GA FIX	*4000
*2100 - MOCA		
VESTO, GA FIX	GREENWOOD, SC VORTAC	2500
GREENWOOD, SC VORTAC	LOCKS, SC FIX	2300
GIZMO, NC FIX	LIBERTY, NC VORTAC	3000
LIBERTY, NC VORTAC	*NOKIY, VA FIX	**6000
*9000 - MCA NOKIY, VA FIX , NE BND		
**3000 - GNSS MEA		
NOKIY, VA FIX	LAWRENCEVILLE, VA VORTAC	*9000
*3000 - GNSS MEA		

FROM	TO	MEA

95.6454 VOR FEDERAL AIRWAY V454 - CONTINUED

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	**4500
*10000 - MRA		
**2600 - MOCA		
ROAST, PA FIX	VINNY, PA FIX	*4500
*2600 - MOCA		
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, AZ 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

FROM	TO	MEA

95.6459 VOR FEDERAL AIRWAY V459 - CONTINUED

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	5000
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
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

GILA BEND, AZ VORTAC	BUCKEYE, AZ VORTAC	4000

95.6462 VOR FEDERAL AIRWAY V462

FORT DODGE, IA VORTAC	SIOUX FALLS, SD VORTAC	4400

95.6463 VOR FEDERAL AIRWAY V463

WOMAC, GA FIX	*ANNYE, GA FIX	**5000
*5900 - MCA ANNYE, GA FIX , N BND		
**4100 - MOCA		
ANNYE, GA FIX	HARRIS, GA VORTAC	7000

95.6464 VOR FEDERAL AIRWAY V464

SALEM, MI VORTAC	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER	DUNKIRK, NY VORTAC	3300
DUNKIRK, NY VORTAC	LANGS, NY FIX	3300
LANGS, NY FIX	GENESEO, NY VOR/DME	4000

FROM	TO	MEA

95.6465 VOR FEDERAL AIRWAY V465

BULLION, NV VOR/DME	*WELLS, NV VOR	13000
*11800 - MCA WELLS, NV VOR , SW BND		
WELLS, NV VOR	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

95.6467 VOR FEDERAL AIRWAY V467

RICHMOND, IN VORTAC	WATERVILLE, OH VOR/DME	*10000
*3000 - MOCA		
WATERVILLE, OH VOR/DME	DETROIT, MI VOR/DME	*3000
*2100 - MOCA		

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		

FROM	TO	MEA

95.6468 VOR FEDERAL AIRWAY V468 - CONTINUED

*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 VORTAC	3000
LYNCHBURG, VA VORTAC	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 VORTAC	4000
MORGANTOWN, WV VORTAC	OTOWN, PA FIX	*5000
*4100 - MOCA		
OTOWN, PA FIX	NESTO, PA FIX	*4000
*3100 - MOCA		
NESTO, PA FIX	QUARY, PA FIX	4000
QUARY, PA FIX	JOHNSTOWN, PA VORTAC	*5000
*4400 - MOCA		
JOHNSTOWN, PA VORTAC	ST THOMAS, PA VORTAC	#*5000
*4500 - MOCA		
#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
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 VORTAC	
	W BND	*4000
	E BND	*3000
*2900 - MOCA		

FROM	TO	MEA

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 - MRA		
**2100 - MOCA		
**2100 - GNSS MEA		
ZAGGY, NC FIX	KINSTON, NC VORTAC	*2000
*1600 - MOCA		

95.6473 VOR FEDERAL AIRWAY V473

ROANOKE, VA VORTAC	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		
ST THOMAS, PA VORTAC	NOENO, PA FIX	*5000
*4000 - MOCA		
NOENO, PA FIX	*DELRO, PA FIX	**5000
*10000 - MRA		
**3400 - MOCA		
**3400 - GNSS MEA		
DELRO, PA FIX	MODENA, PA VORTAC	*10000
*3900 - MOCA		
*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		

FROM	TO	MEA

95.6475 VOR FEDERAL AIRWAY V475 - CONTINUED

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 VORTAC	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 VORTAC	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

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

FROM	TO	MEA

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
*6200 - 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

95.6486 VOR FEDERAL AIRWAY V486

LEBRN, OH FIX	CHARDON, OH VOR/DME	3000
CHARDON, OH VOR/DME	ALLCO, PA FIX	3300
ALLCO, PA FIX	JAMESTOWN, NY VOR/DME	*3700
*3200 - MOCA		

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		

FROM	TO	MEA

95.6487 VOR FEDERAL AIRWAY V487 - CONTINUED

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 VORTAC	*6000
*4300 - MOCA		

95.6492 VOR FEDERAL AIRWAY V492

ST PETERSBURG, FL VORTAC	LA BELLE, FL VORTAC	2000
LA BELLE, FL VORTAC	PAHOKEE, FL VORTAC	*2000
*1500 - MOCA		
PAHOKEE, FL VORTAC	PALM BEACH, FL VORTAC	*2000
*1500 – MOCA		

FROM	TO	MEA

95.6492 VOR FEDERAL AIRWAY V492 - CONTINUED

PALM BEACH, FL VORTAC	STOOP, FL FIX	*3000
*2000 - MOCA		
STOOP, FL FIX	MELBOURNE, FL VOR/DME	3000

95.6493 VOR FEDERAL AIRWAY V493

LIVINGSTON, TN VORTAC	LEXINGTON, KY VORTAC	3600
LEXINGTON, KY VORTAC	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
APPLETON, OH VORTAC	DUSKY, OH FIX	3000
DUSKY, OH FIX	WATERVILLE, OH VOR/DME	2600
WATERVILLE, OH VOR/DME	CARLETON, MI VORTAC	*3000
*2100 - MOCA		
MENOMINEE, MI VOR/DME	RHINELANDER, WI VORTAC	3500

95.6494 VOR FEDERAL AIRWAY V494

CRESCENT CITY, CA VORTAC	FORTUNA, CA VORTAC	*6000
*3500 - MOCA		
FORTUNA, CA VORTAC	MENDOCINO, CA VORTAC	*13000
*6100 - MOCA		
MENDOCINO, CA VORTAC	SANTA ROSA, CA VOR/DME	6000
SANTA ROSA, CA VOR/DME	POPES, CA FIX	5000
POPES, CA FIX	*RAGGS, CA FIX	5100
*8500 - MRA		
RAGGS, CA FIX	SACRAMENTO, CA VORTAC	5100
SACRAMENTO, CA VORTAC	ROZZY, CA FIX	*3500
*2300 - MOCA		
ROZZY, CA FIX	HAGAN, CA FIX	4000
HAGAN, CA FIX	*AUDIO, CA FIX	**6000
*9000 - MCA AUDIO, CA FIX , NE BND		
**4500 - MOCA		
AUDIO, CA FIX	SQUAW VALLEY, CA VOR/DME	11000
SQUAW VALLEY, CA VOR/DME	*VIKES, NV FIX	12000
*11000 - MCA VIKES, NV FIX , SW BND		
VIKES, NV FIX	*HAZEN, NV VORTAC	**10000
*9000 - MCA HAZEN, NV VORTAC , SW BND		
**9300 – MOCA		

95.6495 VOR FEDERAL AIRWAY V495

ABBOTSFORD, CANADA NDB	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER	WHATCOM, WA VORTAC	*3000
*1900 - MOCA		
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	3000
U.S. CANADIAN BORDER	JAWBN, WA FIX	#*5400
*4300 - MOCA		
#V495 SE TO V4 W 8000		
JAWBN, WA FIX	LOFAL, WA FIX	*5400
*4300 - MOCA		
LOFAL, WA FIX	SEATTLE, WA VORTAC	*4000
*2800 – MOCA		

95.6495 VOR FEDERAL AIRWAY V495 - CONTINUED

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
*8500 - MRA		
*5900 - MCA TOUTL, WA FIX , N BND		
**6800 - MOCA		
**7000 - GNSS MEA		
TOUTL, WA FIX	BATTLE GROUND, WA VORTAC	
	N BND	*9000
	S BND	*5000
*5000 - MOCA		
*5000 - GNSS MEA, N BND		
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

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

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
MOSES LAKE, WA VOR/DME	EPHRATA, WA VORTAC	4000

FROM	TO	MEA

95.6499 VOR FEDERAL AIRWAY V499

BALTIMORE, MD VORTAC	BELAY, MD FIX	2300
BELAY, MD FIX	LANCASTER, PA VOR/DME	2500
LANCASTER, PA VOR/DME	BINGHAMTON, NY VORTAC	4500

95.6500 VOR FEDERAL AIRWAY V500

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
*14000 - MCA REAPS, ID FIX , W BND		
**8000 - MOCA		
REAPS, ID FIX	BETRE, ID FIX	*9500
*7000 - MOCA		
BETRE, ID FIX	POCATELLO, ID VOR/DME	7500

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		

FROM	TO	MEA

95.6502 VOR FEDERAL AIRWAY V502

DODGE CITY, KS VORTAC	DISKS, KS FIX	*4500
*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
*4000 - MRA		
BEBEL, MN FIX	INTERNATIONAL FALLS, MN VORTAC	3000

95.6506 VOR FEDERAL AIRWAY V506

TULSA, OK VORTAC	VINTA, OK FIX	2600
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

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

FROM	TO	MEA

95.6507 VOR FEDERAL AIRWAY V4507 - CONTINUED

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

HILL CITY, KS VORTAC	HAYS, KS VORTAC	*4500
*3900 - MOCA		
HAYS, KS VORTAC	*GLIDE, KS FIX	3900
*4000 - MRA		
GLIDE, KS FIX	SALINA, KS VORTAC	*3600
*2900 - 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

ST PETERSBURG, FL VORTAC	*CROWD, FL FIX	**5000
*5000 - MRA		
**2600 - MOCA		
CROWD, FL FIX	HALLR, FL FIX	*6000
*1800 - MOCA		

95.6510 VOR FEDERAL AIRWAY V510

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		
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
OSHKOSH, WI VORTAC	FALLS, WI VOR/DME	3000
FALLS, WI VOR/DME	*GAYLE, MI FIX	3500
*3500 - MRA		
GAYLE, MI FIX	MUSKEGON, MI VORTAC	3500
MUSKEGON, MI VORTAC	VICTORY, MI VOR/DME	2700

FROM	TO	MEA

95.6510 VOR FEDERAL AIRWAY V510 - CONTINUED

VICTORY, MI VOR/DME	LANSING, MI VORTAC	2700
BUFFALO, NY VOR/DME	*EHMAN, NY FIX	#**1100 0
*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

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

POCKET CITY, IN VORTAC	HOLAN, IN FIX	2600
HOLAN, IN FIX	SACKO, IN FIX	*3500
*2100 - MOCA *3000 - GNSS MEA		
SACKO, IN FIX	LOUISVILLE, KY VORTAC	2700
LOUISVILLE, KY VORTAC	CLEGG, KY FIX	*10000
*2700 - MOCA		
CLEGG, KY FIX	LEXINGTON, KY VORTAC	2800

95.6513 VOR FEDERAL AIRWAY V513

LIVINGSTON, TN VORTAC	NEW HOPE, KY VOR/DME	4000
NEW HOPE, KY VOR/DME	LOUISVILLE, KY VORTAC	2700

95.6514 VOR FEDERAL AIRWAY V514

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		
*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

FROM	TO	MEA

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 VORTAC	2700

95.6517 VOR FEDERAL AIRWAY V517

SNOWBIRD, TN VORTAC	MIAMI, TN FIX	6900
MIAMI, TN FIX	LONDON, KY VOR/DME	*5500
*4700 - MOCA		
LONDON, KY VOR/DME	LOGIC, KY FIX	2900
LOGIC, KY FIX	FALMOUTH, KY VOR/DME	2800
FALMOUTH, KY VOR/DME	CINCINNATI, KY VORTAC	2700
CINCINNATI, KY VORTAC	RICHMOND, IN VORTAC	2800
RICHMOND, IN VORTAC	DAYTON, OH VOR/DME	2900

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 VORTAC	6100
BLUEFIELD, WV VORTAC	BECKLEY, WV VORTAC	#*9000
*5900 - MOCA		
*5900 - GNSS MEA		
#BECKLEY R-193 UNUSABLE BELOW 9000.		

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

FROM	TO	MEA

95.6520 VOR FEDERAL AIRWAY V520 - CONTINUED

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.		
HEVVN, FL FIX	*TERES, FL FIX	#**2000
*7000 - MRA		
**1300 - MOCA		
#*GNSS MEA		
*GNSS REQUIRED		
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	CLIOS, AL FIX	*2300
*1900 - MOCA		
CLIOS, AL FIX	MONTGOMERY, AL VORTAC	2400
MONTGOMERY, AL VORTAC	KYLEE, AL FIX	3000
KYLEE, AL FIX	VULCAN, AL VORTAC	3800

95.6522 VOR FEDERAL AIRWAY V522

DRYER, OH VOR/DME	FAILS, OH FIX	2500
ERIE, PA VORTAC	DUNKIRK, NY VORTAC	#3400
#ERIE R-064 UNUSABLE USE DUNKIRK R-245		
DUNKIRK, NY VORTAC	U.S. CANADIAN BORDER	3000

95.6523 VOR FEDERAL AIRWAY V523

APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	YOUNGSTOWN, OH VORTAC	3000

FROM	TO	MEA

95.6523 VOR FEDERAL AIRWAY V523 - CONTINUED

YOUNGSTOWN, OH VORTAC	ERIE, PA VORTAC	*5000
*3000 - GNSS 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 VORTAC	7000

95.6525 VOR FEDERAL AIRWAY V525

APPLETON, OH VORTAC	TIVERTON, OH VOR/DME	3000
TIVERTON, OH VOR/DME	DRYER, OH VOR/DME	3000

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	3000
HIDER, AR FIX	ROVER, AR FIX	*5500
*3100 - MOCA		
ROVER, AR FIX	DANIL, AR FIX	*9500
*2500 - MOCA		
DANIL, AR FIX	*SCRAN, AR FIX	**9500
*3300 - MRA		
**3100 - MOCA		
SCRAN, AR FIX	CASKS, AR FIX	*6500
*3500 - MOCA		
CASKS, AR FIX	RAZORBACK, AR VORTAC	4000
RAZORBACK, AR VORTAC	GAMPS, AR FIX	3500
GAMPS, AR FIX	JENKY, MO FIX	*4000
*3100 - MOCA		
JENKY, MO FIX	BILIE, MO FIX	3300
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		

FROM	TO	MEA

95.6528 VOR FEDERAL AIRWAY V528 - CONTINUED

EAGUL, AZ FIX	*PAYSO, AZ FIX	**16000
*16000 - MRA		
**9800 - MOCA		
PAYSO, AZ FIX	ST JOHNS, AZ VORTAC	*13000
*9800 - MOCA		

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		

FROM	TO	MEA

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

LITTLE ROCK, AR VORTAC	BIBBS, AR FIX	3500
BIBBS, AR FIX	HAAWK, AR FIX	*4500
*2500 - MOCA		
HAAWK, AR FIX	*SCRAN, AR FIX	**4500
*3300 - MRA		
**3100 - MOCA		
SCRAN, AR FIX	*DRANO, AR FIX	**3500
*3000 - MRA		
**3000 - MOCA		
DRANO, AR FIX	FORT SMITH, AR VORTAC	*2600
*2100 - MOCA		

95.6535 VOR FEDERAL AIRWAY V535

SIDON, MS VORTAC	HOLLY SPRINGS, MS VORTAC	*3000
*2100 - MOCA		

95.6536 VOR FEDERAL AIRWAY V536

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

FROM	TO	MEA

95.6536 VOR FEDERAL AIRWAY V536 - CONTINUED

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
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

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

*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

FROM	TO	MEA

95.6539 VOR FEDERAL AIRWAY V539

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

CUNNINGHAM, KY VORTAC	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

ROSEWOOD, OH VORTAC	*LAWTO, OH FIX	4000
*4000 - MRA		
LAWTO, OH FIX	MANSFIELD, OH VORTAC	*4000
*2500 - MOCA		
MANSFIELD, OH VORTAC	AKRON, OH VOR/DME	3000
AKRON, OH VOR/DME	YOUNGSTOWN, OH VORTAC	*3000
*2600 - MOCA		
YOUNGSTOWN, OH VORTAC	HAGAR, PA FIX	3000
HAGAR, PA FIX	TIDIOUTE, PA VORTAC	3600
TIDIOUTE, PA VORTAC	BRADFORD, PA VOR/DME	*4000
*3500 - MOCA		
BRADFORD, PA VOR/DME	EXALL, PA FIX	4500
EXALL, PA FIX	ELMIRA, NY VOR/DME	4000
ELMIRA, NY VOR/DME	BINGHAMTON, NY VORTAC	3500
BINGHAMTON, NY VORTAC	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		

FROM	TO	MEA

95.6543 VOR FEDERAL AIRWAY V543 - CONTINUED

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

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	2800

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		

FROM	TO	MEA

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

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	JUNCTION, TX VORTAC	4000
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

FROM	TO	MEA

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

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
*14000 - MCA DRAKE, AZ VORTAC , NE BND		
**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

FROM	TO	MEA

95.6565 VOR FEDERAL AIRWAY V565

LLANO, TX VORTAC	AMUSE, TX FIX	3300
AMUSE, TX FIX	CENTEX, TX VORTAC	3100
CENTEX, TX VORTAC	COLLEGE STATION, TX VORTAC	2200
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
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	#
#UNUSABLE		
WRACK, LA FIX	VEILS, LA FIX	*3000
*2100 - MOCA		
VEILS, LA FIX	RESERVE, LA VOR/DME	2000

95.6567 VOR FEDERAL AIRWAY V567

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

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

FROM	TO	MEA

95.6568 VOR FEDERAL AIRWAY V568 - CONTINUED

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

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

ALEXANDRIA, LA VORTAC	NATCHEZ, MS VOR/DME	2000
NATCHEZ, MS VOR/DME	MC COMB, MS VORTAC	2000

95.6571 VOR FEDERAL AIRWAY V571

HUMBLE, TX VORTAC	NAVASOTA, TX VOR/DME	2000
NAVASOTA, TX VOR/DME	LEONA, TX VORTAC	3000
LEONA, TX VORTAC	ALLMO, TX FIX	2100
ALLMO, TX FIX	CEDAR CREEK, TX VORTAC	*2300
*1700 - MOCA		

95.6572 VOR FEDERAL AIRWAY V572

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

WILL ROGERS, OK VORTAC	*ALEXX, OK FIX	3100
*7000 - MRA		
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
*5500 - MCA MARKI, AR FIX , SW BND		
**2600 - MOCA		
MARKI, AR FIX	HOT SPRINGS, AR VOR/DME	*3500
*2700 - MOCA		
HOT SPRINGS, AR VOR/DME	LITTLE ROCK, AR VORTAC	3000

FROM	TO	MEA

95.6574 VOR FEDERAL AIRWAY V574

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

95.6575 VOR FEDERAL AIRWAY V575

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

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

CEDAR LAKE, NJ VORTAC	BRIGS, NJ FIX	1700

95.6578 VOR FEDERAL AIRWAY V578

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

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
*1700 - MOCA		
NITTS, FL FIX	GATORS, FL VORTAC	*3000
*2000 - 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

FROM	TO	MEA

95.6580 VOR FEDERAL AIRWAY V580

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		

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		

95.6584 VOR FEDERAL AIRWAY V584

WATERVILLE, OH VOR/DME	DRYER, OH VOR/DME	*3000
*2200 - MOCA		

95.6585 VOR FEDERAL AIRWAY V585

CLOVIS, CA VORTAC	*MENDO, CA FIX	2000
*3000 - MCA MENDO, CA FIX , SW BND		
MENDO, CA FIX	PANOCHE, CA VORTAC	4500
PANOCHE, CA VORTAC	VOLTA, CA FIX	5000
VOLTA, CA FIX	MANTECA, CA VOR/DME	#*3000
*3000 - GNSS MEA		
#MANTECA R-147 UNUSABLE		
MANTECA, CA VOR/DME	LODDI, CA FIX	2000
LODDI, CA FIX	SACRAMENTO, CA VORTAC	3000

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

FROM	TO	MEA

95.6586 VOR FEDERAL AIRWAY V586 - CONTINUED

PEORIA, IL VORTAC	MAROC, IL FIX	*3000
*2400 - MOCA		
MAROC, IL FIX	PONTIAC, IL VOR/DME	2500
PONTIAC, IL VOR/DME	JOLIET, IL VORTAC	*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		

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	14500

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		

FROM	TO	MEA

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 VORTAC	*DEEDS, FL FIX	**3000
*4000 - MRA		
**1600 - MOCA		
**2000 - GNSS MEA		
DEEDS, FL FIX	KEY WEST, FL VORTAC	*7000
*1400 - MOCA		
*2000 - GNSS MEA		

95.6605 VOR FEDERAL AIRWAY V605

SPARTANBURG, SC VORTAC	*GENOD, NC FIX	**15000
*15000 - MRA		
**4600 - MOCA		
**5000 - GNSS MEA		
GENOD, NC FIX	*HOLSTON MOUNTAIN, TN VORTAC	8500
*6600 - MCA HOLSTON MOUNTAIN, TN VORTAC , S BND		

95.6607 VOR FEDERAL AIRWAY V607

MENDOCINO, CA VORTAC	YAGER, CA FIX	9000
YAGER, CA FIX	ARCATA, CA VOR/DME	8000

95.6609 VOR FEDERAL AIRWAY V609

SAGINAW, MI VOR/DME	BENNY, MI FIX	2200
BENNY, MI FIX	BANJO, MI FIX	*3000
*2200 - MOCA		
BANJO, MI FIX	ZABLE, MI FIX	*5000
*2900 - MOCA		
ZABLE, MI FIX	*RONDO, MI FIX	3000
*5000 – MRA		

FROM	TO	MEA

95.6609 VOR FEDERAL AIRWAY V609 - CONTINUED

RONDO, MI FIX	OTREE, MI FIX	*3000
*2400 - MOCA		
OTREE, MI FIX	PELLSTON, MI VORTAC	*3000
*2400 - MOCA		

95.6611 VOR FEDERAL AIRWAY V611

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		
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		
BLACK FOREST, CO VOR/DME	LUFSE, CO FIX	#10000
#GNSS MEA		
#BLACK FOREST R-023 UNUSABLE		
LUFSE, CO FIX	JEFEL, CO FIX	#10500
#GNSS MEA		
JEFEL, CO FIX	*LIMEX, CO FIX	#8500
*10000 - MRA		
#GNSS MEA		
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

FROM	TO	MEA

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		

95.6629 VOR FEDERAL AIRWAY V629

SHUSS, NV FIX	BOULDER CITY, NV VORTAC	7600

§95.6301 ALASKA VOR FEDERAL AIRWAYS

FROM	TO	MEA

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

FROM	TO	MEA

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

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		
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

U.S. CANADIAN BORDER	ANNETTE ISLAND, AK VOR/DME	5000
ANNETTE ISLAND, AK VOR/DME	GESTI, AK FIX	5000
GESTI, AK FIX	LEVEL ISLAND, AK VOR/DME	*7000
*5000 - MOCA		
*5000 - GNSS MEA		
LEVEL ISLAND, AK VOR/DME	HOODS, AK FIX	*9000
*5900 - MOCA		
*7000 - GNSS MEA		
HOODS, AK FIX	SISTERS ISLAND, AK VORTAC	*7000
*5500 - MOCA		
*6000 - GNSS MEA		
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		

FROM	TO	MEA

95.6318 ALASKA VOR FEDERAL AIRWAY V318

ANNETTE ISLAND, AK VOR/DME	LEVEL ISLAND, AK VOR/DME	6000

95.6319 ALASKA VOR FEDERAL AIRWAY V319

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
*6800 - MCA EDELE, AK FIX , W BND		
EDELE, AK FIX	*SNRIS, AK FIX	10000
*10000 - MRA		
SNRIS, AK FIX	*ANCHORAGE, AK VOR/DME	8200
*6100 - 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

95.6320 ALASKA VOR FEDERAL AIRWAY V320 - CONTINUED

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

95.6321 ALASKA VOR FEDERAL AIRWAY V321

CAPE NEWENHAM, AK NDB/DME	KING SALMON, AK VORTAC	*5000
*4300 - MOCA		
KING SALMON, AK VORTAC	BATTY, AK FIX	
	NE BND	7000
	SW BND	6000
BATTY, AK FIX	AUGEY, AK FIX	7000
AUGEY, AK FIX	HOMER, AK VOR/DME	*4000
*3000 - MOCA		

95.6322 ALASKA VOR FEDERAL AIRWAY V322

KING SALMON, AK VORTAC	KONIC, AK FIX	*5000
*5000 - MOCA		
KONIC, AK FIX	WORRI, AK FIX	*9000
*7700 - MOCA		
*7700 - GNSS MEA		
WORRI, AK FIX	MALLT, AK FIX	*9000
*8500 - MOCA		
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	FAIRE, AK FIX	*8000
*2300 - MOCA		
FAIRE, AK FIX	NOME, AK VOR/DME	3000
NOME, AK VOR/DME	GAITS, AK FIX	
	N BND	10000
	S BND	4000
GAITS, AK FIX	SHISHMAREF, AK NDB	*10000
*6700 - MOCA		

FROM	TO	MEA

95.6334 ALASKA VOR FEDERAL AIRWAY V334

AUGEY, AK FIX	CLAMS, AK FIX	*7000
*2000 - MOCA		
*2000 - GNSS MEA		
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	EMMONAK, AK VOR/DME	*3600
*3000 - MOCA		
*3000 - GNSS MEA		
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	MOCHO, AK FIX	*4000
*3000 - MOCA		
MOCHO, AK FIX	GERKS, AK FIX	*7500
*2300 - MOCA		
*7000 - GNSS MEA		
GERKS, AK FIX	SANER, AK FIX	*9000
*3700 - MOCA		
*7000 - GNSS MEA		
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	UNALAKLEET, AK VOR/DME	*3500
*2800 - MOCA		
*3000 - GNSS MEA		

95.6388 ALASKA VOR FEDERAL AIRWAY V388

ANCHORAGE, AK VOR/DME	NAPTO, AK FIX	2300
NAPTO, AK FIX	KENAI, AK VOR/DME	2400

FROM	TO	MEA

95.6401 ALASKA VOR FEDERAL AIRWAY V401

AMBLER, AK NDB/DME	FARME, AK FIX	*5500
*4700 - MOCA		
FARME, AK FIX	KOTZEBUE, AK VOR/DME	2000
KOTZEBUE, AK VOR/DME	SHISHMAREF, AK NDB	*2500
*2000 - MOCA		

95.6414 ALASKA VOR FEDERAL AIRWAY V414

GAMBELL, AK NDB/DME	KUKULIAK, AK VOR/DME	3000

95.6427 ALASKA VOR FEDERAL AIRWAY V427

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

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

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

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		

95.6436 ALASKA VOR FEDERAL AIRWAY V436 - CONTINUED

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		
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

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	**7000
*7000 - MRA		
**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

95.6438 ALASKA VOR FEDERAL AIRWAY V438 - CONTINUED

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		
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	OTONY, AK FIX	*6000
*5300 - MOCA		
OTONY, 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

95.6440 ALASKA VOR FEDERAL AIRWAY V440 - CONTINUED

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.		
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		

95.6444 ALASKA VOR FEDERAL AIRWAY V444 - CONTINUED

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.

95.6445 ALASKA VOR FEDERAL AIRWAY V445

*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

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

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		

FROM	TO	MEA

95.6453 ALASKA VOR FEDERAL AIRWAY V453

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		

95.6454 ALASKA VOR FEDERAL AIRWAY V454

KING SALMON, AK VORTAC	DILLINGHAM, AK VOR/DME	*5000
*4300 - MOCA		

95.6456 ALASKA VOR FEDERAL AIRWAY V456

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		

95.6456 ALASKA VOR FEDERAL AIRWAY V456 - CONTINUED

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	6000
*7800 - MCA SANKA, AK FIX , NE BND		
SANKA, AK FIX	NORTHWAY, AK VORTAC	*11000
*10400 - MOCA		

95.6457 ALASKA VOR FEDERAL AIRWAY V457

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

EMMONAK, AK VOR/DME	ST MARYS, AK NDB	3000

95.6462 ALASKA VOR FEDERAL AIRWAY V462

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

LEVEL ISLAND, AK VOR/DME	FLIPS, AK FIX	*7000
*6300 - MOCA		
FLIPS, AK FIX	BIORKA ISLAND, AK VORTAC	
	W BND	6100
	E BND	7500

FROM	TO	MEA

95.6477 ALASKA VOR FEDERAL AIRWAY V477

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/DME	
	NE BND	5000
	SW BND	4000

95.6480 ALASKA VOR FEDERAL AIRWAY V480

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

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

95.6481 ALASKA VOR FEDERAL AIRWAY V481 - CONTINUED

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.		

95.6482 ALASKA VOR FEDERAL AIRWAY V482

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

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

FROM	TO	MEA

95.6488 ALASKA VOR FEDERAL AIRWAY V488 - CONTINUED

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

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

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		

95.6498 ALASKA VOR FEDERAL AIRWAY V498 - CONTINUED

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

CJAYY, AK FIX	KODIAK, AK VOR/DME	4000
*KODIAK, AK VOR/DME	BAILY, AK FIX	
	W BND	#**1200
		0
	E BND	#**7000
**4900 - MOCA		
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.		
BAILY, AK FIX	BREMI, AK FIX	*12000
*9700 - MOCA		
*10000 - GNSS MEA		
BREMI, AK FIX	*KING SALMON, AK VORTAC	
	E BND	**12000
	W BND	**5000
*2400 - MCA KING SALMON, AK VORTAC , E BND		
**4600 - MOCA		
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

95.6506 ALASKA VOR FEDERAL AIRWAY V506 - CONTINUED

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

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		
ESKAR, AK FIX	KOTZEBUE, AK VOR/DME	
	SW BND	*13000
	NE BND	*2100
*2100 - MOCA		

95.6508 ALASKA VOR FEDERAL AIRWAY V508

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		

FROM	TO	MEA

95.6508 ALASKA VOR FEDERAL AIRWAY V508 - CONTINUED

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

EMMONAK, AK VOR/DME	ANVIK, AK NDB/DME	3900
ANVIK, AK NDB/DME	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		

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		

FROM	TO	MEA

95.6531 ALASKA VOR FEDERAL AIRWAY V531 - CONTINUED

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		

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

FROM	TO	MEA

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	5000
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
*1200 - MOCA		
HARPO, HI FIX	UPOLU POINT, HI VORTAC	5000
UPOLU POINT, HI VORTAC	WAPIO, HI FIX	*7000
*6000 - MOCA		
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

FROM	TO	MEA

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	5000
*4100 - MCA MYNAH, HI FIX , SE BND		
MYNAH, HI FIX	HEFTI, HI FIX	*2000
*1300 - MOCA		
HEFTI, HI FIX	MAKEN, HI FIX	6000

95.6406 HAWAII VOR FEDERAL AIRWAY V6

BLUSH, HI FIX	PLUMB, HI FIX	*5000
*1200 - MOCA		
PLUMB, HI FIX	MAUI, HI VORTAC	5000

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		
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		

FROM	TO	MEA

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	OPANA, HI FIX	*5000
*3000 - MOCA		
OPANA, HI FIX	MAUI, HI VORTAC	5000

95.6412 HAWAII VOR FEDERAL AIRWAY V12

*KATHS, HI FIX	**NONNI, HI FIX	29000
*29000 - MRA		
**29000 - MRA		
NONNI, HI 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
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, HI FIX	
	W BND	32000
	E BND	8000
*32000 - MRA		
LILIA, HI 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

FROM	TO	MEA

95.6415 HAWAII VOR FEDERAL AIRWAY V15 – CONTINUED

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	7000
BARBY, HI FIX	*RABAT, HI FIX	**10000
*10000 - MRA		
**1200 - 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
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, HI FIX	**PUPPI, HI FIX	
	W BND	32000
	E BND	14000
*32000 - MRA		
**14000 - MRA		
PUPPI, HI 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		

95.6416 HAWAII VOR FEDERAL AIRWAY V16 – CONTINUED

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

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		

FROM	TO	MEA
ALANA, HI FIX	JULLE, HI FIX	5000

95.6421 HAWAII VOR FEDERAL AIRWAY V21 - CONTINUED

JULLE, HI FIX	GRAMY, HI FIX	2000
GRAMY, HI FIX	LANAI, HI VORTAC	4000
LANAI, HI VORTAC	KEIKI, HI FIX	5000
KEIKI, HI FIX	CAMPS, HI FIX	*5000
*1200 - MOCA		
CAMPS, HI FIX	*HARPO, HI FIX	**5000
*8100 - MCA HARPO, HI FIX , E BND		
**1200 - 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, HI 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	5000
MAUI, HI VORTAC	*BARBY, HI FIX	7000
*10500 - 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, HI FIX	22000

95.6423 HAWAII VOR FEDERAL AIRWAY V23

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

*LANAI, HI VORTAC	MAUI, HI VORTAC	**9000
*5100 - MCA LANAI, HI VORTAC , NE BND		
**7800 - MOCA		

95.6425 HAWAII VOR FEDERAL AIRWAY V25

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

FROM	TO	MEA
*1200 - MOCA		

FROM	TO	MEA	MAA

§95.7001 JET ROUTES

95.7001 JET ROUTE J1

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

MISSION BAY, CA VORTAC	IMPERIAL, CA VORTAC	18000	45000
IMPERIAL, CA VORTAC	BARD, AZ VORTAC	18000	45000
BARD, AZ 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

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

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

FROM	TO	MEA	MAA
95.7004 JET ROUTE J4 - CONTINUED			
MAGNOLIA, MS VORTAC	MERIDIAN, MS VORTAC	18000	45000
MERIDIAN, MS VORTAC	MONTGOMERY, AL VORTAC	18000	45000
MONTGOMERY, AL VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	FLORENCE, SC VORTAC	18000	45000
FLORENCE, SC VORTAC	WILMINGTON, NC 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	VANCOUVER, CANADA VOR/DME	#18000	
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
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 VORTAC	18000	45000
CHARLESTON, WV VORTAC	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 VORTAC	18000	45000
CHARLESTON, WV VORTAC	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 VORTAC	18000	45000
NORTH PLATTE, NE VORTAC	WOLBACH, NE VORTAC	18000	41000
WOLBACH, NE VORTAC	DES MOINES, IA VORTAC	18000	45000
DES MOINES, IA VORTAC	IOWA CITY, IA VORTAC	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

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

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

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

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 VORTAC	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUPREE, SD VORTAC	SIOUX FALLS, SD VORTAC	18000	45000
SIOUX FALLS, SD VORTAC	MASON CITY, IA VOR/DME	18000	45000
MASON CITY, IA VOR/DME	BADGER, WI VORTAC	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, AZ VORTAC	18000	45000
BARD, AZ 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 VORTAC	18000	35000
MOLINE, IL VORTAC	JOLIET, IL VORTAC	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.			
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
MONTGOMERY, AL VORTAC	SEMINOLE, FL VORTAC	18000	45000
SEMINOLE, FL VORTAC	ORLANDO, FL VORTAC	18000	45000

FROM	TO	MEA	MAA
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 VORTAC	18000	45000
CHARLESTON, WV VORTAC	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
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

FROM	TO	MEA	MAA
95.7025 JET ROUTE J25 - CONTINUED			
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
GOPHER, MN VORTAC	BRAINERD, MN VORTAC	18000	45000
BRAINERD, MN VORTAC	U.S. CANADIAN BORDER	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 VORTAC	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 VORTAC	18000	45000
JOLIET, IL VORTAC	APPLETON, OH VORTAC	18000	45000
APPLETON, OH VORTAC	BUCKO, WV FIX	20000	39000
BUCKO, WV FIX	KESSEL, WV VOR/DME	18000	45000
KESSEL, WV VOR/DME	TRIXY, VA FIX	19000	29000

FROM	TO	MEA	MAA
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 VORTAC	18000	45000
DUPREE, SD VORTAC	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 VORTAC	#20000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
DUPREE, SD VORTAC	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 VORTAC	18000	45000
BADGER, WI VORTAC	VICTORY, MI VOR/DME	18000	45000
VICTORY, MI VOR/DME	CARLETON, MI VORTAC	18000	45000
CARLETON, MI VORTAC	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
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

FROM	TO	MEA	MAA
95.7035 JET ROUTE J35 - CONTINUED			
PONTIAC, IL VOR/DME	JOLIET, IL VORTAC	18000	35000
JOLIET, IL VORTAC	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 VORTAC	18000	45000
BADGER, WI VORTAC	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	45000
MONTGOMERY, AL VORTAC	SPARTANBURG, SC VORTAC	18000	45000
LYNCHBURG, VA VORTAC	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	18000	45000
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
95.7041 JET ROUTE J41			
KEY WEST, FL VORTAC	LEE COUNTY, FL VORTAC	18000	45000
LEE COUNTY, FL VORTAC	ST PETERSBURG, FL VORTAC	18000	45000

FROM	TO	MEA	MAA
95.7041 JET ROUTE J41 - CONTINUED			
ST PETERSBURG, FL VORTAC	SEMINOLE, FL VORTAC	#*25000	45000
*18000 - GNSS MEA			
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
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 VORTAC	18000	35000
BECKLEY, WV VORTAC	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			
DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	18000	45000
LA BELLE, FL VORTAC	ST PETERSBURG, FL VORTAC	18000	45000
ST PETERSBURG, FL VORTAC	SEMINOLE, FL VORTAC	#*25000	45000
*18000 - GNSS MEA			
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
SEMINOLE, FL VORTAC	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 VORTAC	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

FROM	TO	MEA	MAA
95.7045 JET ROUTE J45			
VIRGINIA KEY, FL VOR/DME	TREASURE, FL VORTAC	18000	45000
TREASURE, FL VORTAC	ORMOND BEACH, FL VORTAC	18000	45000
ORMOND BEACH, FL VORTAC	CRAIG, FL VORTAC	18000	45000
CRAIG, FL VORTAC	ALMA, GA VORTAC	18000	45000
ALMA, GA VORTAC	MACON, GA VORTAC	18000	45000
#ALMA R-320 UNUSABLE USE MACON R-139			
MACON, GA VORTAC	ATLANTA, GA VORTAC	18000	45000
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
VOLUNTEER, TN VORTAC	ATHENS, GA VOR/DME	18000	45000
ATHENS, GA VOR/DME	ALMA, GA VORTAC	18000	45000
95.7047 JET ROUTE J47			
CHARLESTON, SC VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000
95.7048 JET ROUTE J48			
LANNA, NJ FIX	POTTSTOWN, PA VORTAC	18000	45000
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, GA VORTAC	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

FROM	TO	MEA	MAA
95.7050 JET ROUTE J50 - CONTINUED			
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
95.7051 JET ROUTE J51			
CRAIG, FL VORTAC	SAVANNAH, GA VORTAC	18000	45000
SAVANNAH, GA VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	TUBAS, NC FIX	18000	45000
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
COLUMBIA, SC VORTAC	TUBAS, NC FIX	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			
DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	18000	45000
PAHOKEE, FL VORTAC	ORLANDO, FL VORTAC	18000	45000
ORLANDO, FL VORTAC	CRAIG, FL VORTAC	18000	45000
CRAIG, FL VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7053 JET ROUTE J53 - CONTINUED

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

DOLPHIN, FL VORTAC	LLAKE, FL FIX	18000	45000
LLAKE, FL FIX	INPIN, FL FIX	23000	45000
INPIN, FL FIX	LOULO, FL FIX	18000	45000
LOULO, FL FIX	CRAIG, FL VORTAC	18000	45000
CRAIG, FL VORTAC	SAVANNAH, GA VORTAC	18000	45000
SAVANNAH, GA VORTAC	CHARLESTON, SC VORTAC	18000	45000
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
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

OAKLAND, CA VOR/DME	MANTECA, CA VOR/DME	18000	45000
MANTECA, CA VOR/DME	COALDALE, NV VORTAC	18000	45000
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

FROM	TO	MEA	MAA
95.7058 JET ROUTE J58 - CONTINUED			
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 VORTAC	18000	45000
IOWA CITY, IA VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	GOSHEN, IN VORTAC	18000	45000
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

FROM	TO	MEA	MAA
95.7064 JET ROUTE J64 - CONTINUED			
FORT WAYNE, IN VORTAC	ELLWOOD CITY, PA VORTAC	18000	45000
ELLWOOD CITY, PA VORTAC	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
SHAFTER, CA VORTAC	CLOVIS, CA VORTAC	18000	45000
CLOVIS, CA VORTAC	SACRAMENTO, 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.			
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	GEEYY, AR WP	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 VORTAC	18000	45000
BADGER, WI VORTAC	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

FROM	TO	MEA	MAA
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 VORTAC	18000	45000
BADGER, WI VORTAC	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
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			
DOLPHIN, FL VORTAC	LA BELLE, FL VORTAC	18000	45000
LA BELLE, FL VORTAC	LAKELAND, FL VORTAC	18000	45000
LAKELAND, FL VORTAC	SEMINOLE, FL VORTAC	18000	45000
SEMINOLE, FL VORTAC	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

FROM	TO	MEA	MAA
95.7075 JET ROUTE J75			
DOLPHIN, FL VORTAC	LEE COUNTY, FL VORTAC	18000	45000
LEE COUNTY, FL VORTAC	TAYLOR, FL VORTAC	18000	45000
TAYLOR, FL VORTAC	COLUMBIA, SC VORTAC	18000	45000
COLUMBIA, SC VORTAC	GREENSBORO, NC VORTAC	18000	45000
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
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 VORTAC	18000	45000
95.7079 JET ROUTE J79			
KEY WEST, FL VORTAC	DOLPHIN, FL VORTAC	18000	45000
DOLPHIN, FL VORTAC	PALM BEACH, FL VORTAC	18000	45000
PALM BEACH, FL VORTAC	TREASURE, FL VORTAC	18000	45000
TREASURE, FL VORTAC	ORMOND BEACH, FL VORTAC	18000	45000
ORMOND BEACH, FL VORTAC	CHARLESTON, SC VORTAC	18000	45000
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	MARCONI, MA VOR/DME	18000	45000
MARCONI, MA VOR/DME	BANGOR, ME VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7080 JET ROUTE J80

OAKLAND, CA VOR/DME	MANTECA, CA VOR/DME	18000	45000
MANTECA, CA VOR/DME	COALDALE, NV VORTAC	18000	45000
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

DOLPHIN, FL VORTAC	PAHOKEE, FL VORTAC	18000	45000
PAHOKEE, FL VORTAC	ORLANDO, FL VORTAC	18000	45000
ORLANDO, FL VORTAC	CECIL, FL VOR	18000	45000
CECIL, FL VOR	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
SIOUX FALLS, SD VORTAC	FORT DODGE, IA VORTAC	18000	45000
FORT DODGE, IA VORTAC	DUBUQUE, IA VORTAC	18000	45000
DUBUQUE, IA VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	GOSHEN, IN VORTAC	18000	45000

95.7083 JET ROUTE J83

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

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.			

FROM	TO	MEA	MAA
95.7084 JET ROUTE J84 - CONTINUED			
DUBUQUE, IA VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	DANVILLE, IL VORTAC	18000	35000
95.7085 JET ROUTE J85			
DOLPHIN, FL VORTAC	LLAKE, FL FIX	18000	45000
LLAKE, FL FIX	INPIN, FL FIX	23000	45000
INPIN, FL FIX	GATORS, FL VORTAC	18000	45000
GATORS, FL VORTAC	TAYLOR, FL VORTAC	18000	45000
TAYLOR, FL VORTAC	ALMA, GA VORTAC	18000	45000
ALMA, GA VORTAC	COLLIERS, SC VORTAC	18000	45000
COLLIERS, SC VORTAC	SPARTANBURG, SC VORTAC	18000	45000
SPARTANBURG, SC VORTAC	CHARLESTON, WV VORTAC	18000	45000
CHARLESTON, WV VORTAC	DRYER, OH VOR/DME	18000	45000
95.7086 JET ROUTE J86			
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
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 VORTAC	18000	35000
MOLINE, IL VORTAC	JOLIET, IL VORTAC	18000	35000
JOLIET, IL VORTAC	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			
HITTR, FL FIX	VALDOSTA, GA VOR/DME	18000	45000
VALDOSTA, GA VOR/DME	ATLANTA, GA VORTAC	18000	45000
ATLANTA, GA VORTAC	LOUISVILLE, KY VORTAC	18000	45000

FROM	TO	MEA	MAA

95.7089 JET ROUTE J89 - CONTINUED

LOUISVILLE, KY VORTAC	BOILER, IN VORTAC	18000	45000
BOILER, IN VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	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

INPIN, FL FIX	CROSS CITY, FL VORTAC	18000	45000
CROSS CITY, FL VORTAC	ATLANTA, GA VORTAC	24000	45000
#ATLANTA R-169 DME UNUSABLE			
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
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

OAKLAND, CA VOR/DME	MANTECA, CA VOR/DME	18000	45000
MANTECA, CA VOR/DME	MUSTANG, NV VORTAC	19000	45000
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

FROM	TO	MEA	MAA
95.7094 JET ROUTE J94 - CONTINUED			
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 VORTAC	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 VORTAC	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
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

FROM	TO	MEA	MAA

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 VORTAC	18000	35000
JOLIET, IL VORTAC	NORTHBROOK, IL VOR/DME	18000	45000
NORTHBROOK, IL VOR/DME	BADGER, WI VORTAC	18000	45000
BADGER, WI VORTAC	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

95.7103 JET ROUTE J103

ORMOND BEACH, FL VORTAC	SAVANNAH, GA 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
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

FROM	TO	MEA	MAA
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 VORTAC	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 VORTAC	18000	45000
DUPREE, SD VORTAC	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			
OAKLAND, CA VOR/DME	SALINAS, CA VORTAC	18000	45000
SALINAS, CA VORTAC	CLOVIS, CA VORTAC	18000	45000
CLOVIS, CA VORTAC	BOULDER CITY, NV VORTAC	#29000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			
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
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

FROM	TO	MEA	MAA

95.7110 JET ROUTE J110- CONTINUED

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

95.7113 JET ROUTE J113

VIRGINIA KEY, FL VOR/DME	CRAIG, FL 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
95.7119 JET ROUTE J119			
ST PETERSBURG, FL VORTAC	TAYLOR, FL 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			
CRAIG, FL VORTAC	CHARLESTON, SC VORTAC	18000	45000
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.

FROM	TO	MEA	MAA
95.7124 JET ROUTE J124			
BIG LAKE, AK VORTAC	GULKANA, AK VOR/DME	18000	45000
GULKANA, AK VOR/DME	NORTHWAY, AK VORTAC	18000	45000
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
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

FROM	TO	MEA	MAA

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
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, GA VORTAC	CHARLESTON, WV VORTAC	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 VORTAC	18000	45000
IOWA CITY, IA VORTAC	JOLIET, IL VORTAC	18000	45000
JOLIET, IL VORTAC	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.			

95.7147 JET ROUTE J147

BECKLEY, WV VORTAC	GREENBRIER, WV VOR/DME	18000	45000
GREENBRIER, WV VOR/DME	CASANOVA, VA VORTAC	18000	45000

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

FROM	TO	MEA	MAA

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	18000	45000
MARCONI, MA VOR/DME	STOOL, MA FIX	18000	45000

95.7151 JET ROUTE J151

CROSS CITY, FL VORTAC	VULCAN, AL VORTAC	26000	45000
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

ROSEWOOD, OH VORTAC	JOHNSTOWN, PA VORTAC	18000	45000
JOHNSTOWN, PA VORTAC	HARRISBURG, PA VORTAC	18000	40000

95.7153 JET ROUTE J153

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

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

CHANDALAR LAKE, AK NDB	NENANA, AK VORTAC	18000	45000

95.7156 JET ROUTE J156

WILSON CREEK, NV VORTAC	MEEKER, CO VOR/DME	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

FROM	TO	MEA	MAA

95.7157 JET ROUTE J157

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
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 VORTAC	18000	45000
MORGANTOWN, WV VORTAC	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

CHARLESTON, SC VORTAC	RICHMOND, VA VORTAC	#18000	45000
#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.			

FROM	TO	MEA	MAA

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
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

CRAIG, FL VORTAC	CHARLESTON, SC VORTAC	18000	45000
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	18000	45000
MARCONI, MA VOR/DME	HERIN, MA FIX	18000	45000

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, GA VORTAC	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 VORTAC	SLATE RUN, PA VORTAC	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			
SLATE RUN, PA VORTAC	BINGHAMTON, NY VORTAC	18000	45000
#USE SLATE RUN R-072 TO BINGHAMTON			
BINGHAMTON, NY VORTAC	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 VORTAC	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 VORTAC	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			
SAVANNAH, GA VORTAC	FLORENCE, SC VORTAC	24000	45000
FLORENCE, SC VORTAC	RALEIGH/DURHAM, NC VORTAC	31000	45000
RALEIGH/DURHAM, NC VORTAC	FRANKLIN, VA VORTAC	18000	45000
95.7208 JET ROUTE J208			
ATHENS, GA VOR/DME	LIBERTY, NC VORTAC	18000	45000
LIBERTY, NC VORTAC	HOPEWELL, VA VORTAC	18000	45000
95.7209 JET ROUTE J209			
GREENWOOD, SC VORTAC	RALEIGH/DURHAM, NC VORTAC	18000	45000
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			
DUNKN, GA FIX	VANCE, SC VORTAC	18000	45000
VANCE, SC VORTAC	WILMINGTON, NC VORTAC	18000	45000
95.7211 JET ROUTE J211			
YOUNGSTOWN, OH VORTAC	JOHNSTOWN, PA VORTAC	18000	45000
#YOUNGSTOWN R-130 UNUSABLE ABOVE 24000.			
JOHNSTOWN, PA VORTAC	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 VORTAC	ARMEL, VA VOR/DME	#*18000	45000
*18000 - GNSS MEA			

FROM	TO	MEA	MAA
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
95.7223 JET ROUTE J223			
LA GUARDIA, NY VOR/DME	CORDS, PA FIX	18000	25000
95.7225 JET ROUTE J225			
CEDAR LAKE, NJ VORTAC	KENNEDY, NY VOR/DME	18000	33000
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 VORTAC	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	45000

FROM	TO	MEA	MAA

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

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
MINOT, ND VORTAC	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	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.			

FROM	TO	MEA	MAA

95.7503 JET ROUTE J503

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7505 JET ROUTE J505

SEATTLE, WA VORTAC	U.S. CANADIAN BORDER	#24000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7506 JET ROUTE J506

MILLINOCKET, ME VOR/DME	U.S. CANADIAN BORDER	18000	45000

95.7507 JET ROUTE J507

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

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

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

FARGO, ND VOR/DME	HUMBOLDT, MN VORTAC	18000	45000
HUMBOLDT, MN VORTAC	WHITEHORSE, CANADA VOR/DME	18000	45000
WHITEHORSE, CANADA VOR/DME	NORTHWAY, AK VORTAC	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

#MEA IS ESTABLISHED WITH GAP 110 NM FROM NORTHWAY, 100 NM FROM WHITEHORSE.

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

GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	#18000	45000

#FOR THAT AIRSPACE OVER U.S. TERRITORY.

FROM	TO	MEA	MAA

95.7517 JET ROUTE J517

BOISE, ID VORTAC	SPOKANE, WA VORTAC	18000	45000
SPOKANE, WA VORTAC	CRANBROOK, CANADA VOR/DME	18000	45000

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 VORTAC	LOUISVILLE, KY VORTAC	18000	45000

95.7530 JET ROUTE J530

GREAT FALLS, MT VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7533 JET ROUTE J533

DULUTH, MN VORTAC	U.S. CANADIAN BORDER	18000	45000

95.7534 JET ROUTE J534

IWACK, WA FIX	WHATCOM, WA VORTAC	18000	45000
WHATCOM, WA VORTAC	WILLIAMS LAKE, CANADA VORTAC	18000	45000

95.7536 JET ROUTE J536

SISTERS ISLAND, AK VORTAC	U.S. CANADIAN BORDER	#18000	45000

#MEA IS ESTABLISHED WITH A GAP IN NAVIGATION SIGNAL COVERAGE.

95.7537 JET ROUTE J537

ROME, OR VOR/DME	MULLAN PASS, ID VOR/DME	22000	45000
MULLAN PASS, ID VOR/DME	U.S. CANADIAN BORDER	18000	45000

#GNSS MEA, GNSS REQUIRED
MULLAN PASS R-357 UNUSABLE

FROM	TO	MEA	MAA
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 VORTAC	18000	45000
95.7539 JET ROUTE J539			
GLASGOW, MT VOR/DME	U.S. CANADIAN BORDER	18000	45000
95.7540 JET ROUTE J540			
MULLAN PASS, ID VOR/DME	U.S. CANADIAN BORDER	18000	45000
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
95.7554 JET ROUTE J554			
GIPPER, MI VORTAC	CARLETON, MI VORTAC	18000	45000
CARLETON, MI VORTAC	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

FROM	TO	MEA	MAA

95.7563 JET ROUTE J563

ALBANY, NY VORTAC	SHERBROOKE, CANADA VOR/DME	18000	45000

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	MIRABEL, CANADA VOR/DME	#18000	45000
#FOR THAT AIRSPACE OVER U.S. TERRITORY.			

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	YARMOUTH, CANADA VOR/DME	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 VORTAC	18000	45000
CARLETON, MI VORTAC	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.			

FROM	TO	MEA	MAA
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
95.7591 JET ROUTE J591			
WHATCOM, WA VORTAC	U.S. CANADIAN BORDER	18000	45000
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
95.7614 JET ROUTE J614			
SARASOTA, FL VOR/DME	LEE COUNTY, FL VORTAC	18000	45000
LEE COUNTY, FL VORTAC	DOLPHIN, FL VORTAC	18000	45000
95.7616 JET ROUTE J616			
SARASOTA, FL VOR/DME	LA BELLE, FL VORTAC	18000	45000
LA BELLE, FL VORTAC	DOLPHIN, FL VORTAC	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

FROM	TO	MEA	MAA
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
BADGER, WI VORTAC	MUSKEGON, MI VORTAC	56	BADGER
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 VORTAC	ELKINS, WV VORTAC	27	CHARLESTON

V5

DUBLIN, GA VORTAC	ATHENS, GA VOR/DME	47	DUBLIN
CINCINNATI, KY VORTAC	APPLETON, OH VORTAC	64	CINCINNATI
APPLETON, OH VORTAC	MANSFIELD, OH VORTAC	28	APPLETON
DRYER, OH VOR/DME	LONDON, CA VOR/DME	55	DRYER

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
DRYER, OH VOR/DME	YOUNGSTOWN, OH VORTAC	39	DRYER
YOUNGSTOWN, OH VORTAC	CLARION, PA VOR/DME	20	YOUNGSTOWN

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
BELLAIRE, OH VOR/DME	GRANTSVILLE, MD VOR/DME	39	BELLAIRE
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
DAYTON, OH VOR/DME	APPLETON, OH VORTAC	41	DAYTON
APPLETON, OH VORTAC	NEWCOMERSTOWN, OH VOR/DME	26	APPLETON
JOHNSTOWN, PA VORTAC	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
JACKS CREEK, TN VOR/DME	SHELBYVILLE, TN VOR/DME	50	JACKS CREEK
VOLUNTEER, TN VORTAC	HOLSTON MOUNTAIN, TN VORTAC	38	VOLUNTEER
	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
SHAFTER, CA VORTAC	CLOVIS, CA VORTAC	49	SHAFTER
CLOVIS, CA VORTAC	LINDEN, CA VOR/DME	42	CLOVIS
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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	V30		
SELINSGROVE, PA VORTAC	EAST TEXAS, PA VOR/DME	20	SELINSGROVE
	V31		
HARRISBURG, PA VORTAC	SELINSGROVE, PA VORTAC	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
CHARLOTTE, NC VOR/DME	PULASKI, VA VORTAC	74	CHARLOTTE
	V38		
ELKINS, WV VORTAC	GORDONSVILLE, VA VORTAC	46	ELKINS
	V44		
MORGANTOWN, WV VORTAC	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		
BRAINERD, MN VORTAC	PARK RAPIDS, MN VOR/DME	6	BRAINERD
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 VORTAC	PARKERSBURG, WV VORTAC	46	BECKLEY
	V62		
SANTA FE, NM VORTAC	ANTON CHICO, NM VORTAC	30	SANTA FE
ANTON CHICO, NM VORTAC	TEXICO, TX VORTAC	61	ANTON CHICO
	V63		
STEVENS POINT, WI VORTAC	WAUSAU, WI VORTAC	12	STEVENS POINT

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V64		
SEAL BEACH, CA VORTAC	THERMAL, CA VORTAC	59	SEAL BEACH
THERMAL, CA VORTAC	BLYTHE, CA VORTAC	29	THERMAL
	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
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V87		
SAN FRANCISCO, CA VOR/DME	SCAGGS ISLAND, CA VORTAC	19	SAN FRANCISCO
	V92		
BELLAIRE, OH VOR/DME	GRANTSVILLE, MD VOR/DME	39	BELLAIRE
	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
JACKS CREEK, TN VOR/DME	BOWLING GREEN, KY VORTAC	70	JACKS CREEK
	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
SHELBYVILLE, IN VOR/DME	BOILER, IN VORTAC	50	SHELBYVILLE
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 VORTAC	28	GREENSBORO
	V104		
MONTPELIER, VT VOR/DME	BERLIN, NH VOR/DME	39	MONTPELIER
BERLIN, NH VOR/DME	BANGOR, ME VORTAC	25	BERLIN

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	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 VORTAC	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 VORTAC	90	MILES CITY
SIOUX FALLS, SD VORTAC	MASON CITY, IA VOR/DME	82	SIOUX FALLS

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V121		
KIMBERLY, OR VOR/DME	BAKER CITY, OR VOR/DME	67	KIMBERLY
	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 VORTAC	29	YORK
CHARLESTON, WV VORTAC	CASANOVA, VA VORTAC	114	CHARLESTON
	V133		
BARRETTS MOUNTAIN, NC VOR/DME	CHARLESTON, WV VORTAC	77	BARRETTS MOUNTAIN
CHARLESTON, WV VORTAC	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V137		
PALM SPRINGS, CA VORTAC	PALMDALE, CA VORTAC	30	PALM SPRINGS
GORMAN, CA VORTAC	AVENAL, CA VOR/DME	31	GORMAN
	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	SAYRE, OK VORTAC	42	PANHANDLE
	V142		
MALAD CITY, ID VOR/DME	FORT BRIDGER, WY VOR/DME	32	MALAD CITY
	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 VORTAC	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
	V161		
NAPOLEON, MO VORTAC	LAMONI, IA VOR/DME	40	NAPOLEON
INTERNATIONAL FALLS, MN VORTAC	WINNIPEG, CA VORTAC	77	INTERNATIONAL FALLS

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	V170		
PULLMAN, MI VOR/DME	SALEM, MI VORTAC	61	PULLMAN
	V177		
JOLIET, IL VORTAC	JANESVILLE, WI VOR/DME	40	JOLIET
STEVENS POINT, WI VORTAC	WAUSAU, WI VORTAC	12	STEVENS POINT
WAUSAU, WI VORTAC	HAYWARD, WI VOR/DME	59	WAUSAU
HAYWARD, WI VOR/DME	DULUTH, MN VORTAC	42	HAYWARD
	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
	V183		
SAN MARCUS, CA VORTAC	SHAFTER, CA VORTAC	20	SAN MARCUS
	V184		
PHILIPSBURG, PA VORTAC	HARRISBURG, PA VORTAC	21	PHILIPSBURG

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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 VORTAC	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
	V214		
BELLAIRE, OH VOR/DME	GRANTSVILLE, MD VOR/DME	39	BELLAIRE
	V217		
RHINELANDER, WI VORTAC	DULUTH, MN VORTAC	49	RHINELANDER

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V218		
GRAND RAPIDS, MN VOR/DME	GOPHER, MN VORTAC	46	GRAND RAPIDS
KEELER, MI VOR/DME	LANSING, MI VORTAC	39	KEELER
	V219		
SIOUX CITY, IA VORTAC	FAIRMONT, MN VOR/DME	74	SIOUX CITY
	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 VORTAC	62	BARRETTS MOUNTAIN
	V228		
MADISON, WI VORTAC	NORTHBROOK, IL VOR/DME	56	MADISON
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V240		
HARVEY, LA VORTAC	BROOKLEY, AL VORTAC	61	HARVEY
	V243		
WAYCROSS, GA VORTAC	VIENNA, GA VORTAC	30	WAYCROSS
	V244		
MANTECA, CA VOR/DME	COALDALE, NV VORTAC	96	MANTECA
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 VORTAC	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
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V264		
POMONA, CA VORTAC	TWENTYNINE PALMS, CA VORTAC	37	POMONA
DRAKE, AZ VORTAC	WINSLOW, AZ VORTAC	39	DRAKE
	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	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		
SAYRE, OK VORTAC	WILL ROGERS, OK VORTAC	40	SAYRE
	V273		
HANCOCK, NY VOR/DME	GEORGETOWN, NY VORTAC	31	HANCOCK
	V277		
FORT WAYNE, IN VORTAC	KEELER, MI VOR/DME	38	FORT WAYNE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V278		
GUTHRIE, TX VORTAC	BOWIE, TX VORTAC	64	GUTHRIE
	V280		
PANHANDLE, TX VORTAC	MITBEE, OK VORTAC	46	PANHANDLE
	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
	V293		
ELY, NV VOR/DME	BULLION, NV VOR/DME	26	ELY
BULLION, NV VOR/DME	TWIN FALLS, ID VORTAC	66	BULLION
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V299		
LOS ANGELES, CA VORTAC	VENTURA, CA VOR/DME	18	LOS ANGELES
	V300		
THUNDER BAY, CANADA VORTAC	SAULT STE MARIE, MI VOR/DME	142	THUNDER BAY
SHERBROOKE, CANADA VOR/DME	MILLINOCKET, ME VOR/DME	61	SHERBROOKE
	V306		
DAISETTA, TX VORTAC	LAKE CHARLES, LA VORTAC	30	DAISETTA
	V316		
IRONWOOD, MI VORTAC	SAWYER, MI VOR/DME	64	IRONWOOD
SAWYER, MI VOR/DME	NEWBERRY, MI VOR/DME	50	SAWYER
	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 VORTAC	40	SHELBYVILLE
	V323		
MONTGOMERY, AL VORTAC	EUFAULA, AL VORTAC	32	MONTGOMERY
	V324		
CRAZY WOMAN, WY VOR/DME	WORLAND, WY VOR/DME	15	CRAZY WOMAN
	V328		
JACKSON, WY VOR/DME	BIG PINEY, WY VOR/DME	20	JACKSON

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V330		
IDAHO FALLS, ID VOR/DME	JACKSON, WY VOR/DME	48	IDAHO FALLS
DUNOIR, WY VOR/DME	RIVERTON, WY VOR/DME	15	DUNOIR
	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 VORTAC	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 VORTAC	GORDONSVILLE, VA VORTAC	48	ROANOKE
	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		
IRONWOOD, MI VORTAC	EAU CLAIRE, WI VORTAC	45	IRONWOOD
	V419		
MODENA, PA VORTAC	SOLBERG, NJ VOR/DME	10	MODENA
	V428		
ITHACA, NY VOR/DME	GEORGETOWN, NY VORTAC	20	ITHACA
	V430		
MINOT, ND VORTAC	DEVILS LAKE, ND VOR/DME	56	MINOT
DULUTH, MN VORTAC	IRONWOOD, MI VORTAC	55	DULUTH
IRONWOOD, MI VORTAC	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
	V438		
GRANTSVILLE, MD VOR/DME	HAGERSTOWN, MD VOR	39	GRANTSVILLE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V442		
HECTOR, CA VORTAC	PARKER, CA VORTAC	#41	HECTOR
#USE THE NEEDLES (EED) VORTAC FROM THE COP TO THE CLIPP INT.			
	V444		
BAKER CITY, OR VOR/DME	BOISE, ID VORTAC	25	BAKER CITY
BOISE, ID VORTAC	POCATELLO, ID VOR/DME	66	BOISE
	V448		
YAKIMA, WA VORTAC	MOSES LAKE, WA VOR/DME	15	YAKIMA
SPOKANE, WA VORTAC	KALISPELL, MT VOR/DME	105	SPOKANE
	V452		
EUGENE, OR VORTAC	KLAMATH FALLS, OR VORTAC	67	EUGENE
	V454		
LIBERTY, NC VORTAC	LAWRENCEVILLE, VA VORTAC	82	LIBERTY
	V458		
SANTA CATALINA, CA VORTAC	OCEANSIDE, CA VORTAC	31	SANTA CATALINA
	V465		
BULLION, NV VOR/DME	WELLS, NV VOR	25	BULLION
WELLS, NV VOR	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
	V467		
RICHMOND, IN VORTAC	WATERVILLE, OH VOR/DME	56	RICHMOND
	V469		
HARRISBURG, PA VORTAC	DUPONT, DE VORTAC	32	HARRISBURG
	V475		
LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA
MADISON, CT VOR/DME	NORWICH, CT VOR/DME	16	MADISON

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	V484		
TWIN FALLS, ID VORTAC	WASATCH, UT VORTAC	59	TWIN FALLS
WASATCH, UT VORTAC	MYTON, UT VOR/DME	28	WASATCH
	V487		
LA GUARDIA, NY VOR/DME	BRIDGEPORT, CT VOR/DME	9	LA GUARDIA
	V490		
CAMBRIDGE, NY VOR/DME	MANCHESTER, NH VOR/DME	37	CAMBRIDGE
	V493		
LEXINGTON, KY VORTAC	YORK, KY VORTAC	41	LEXINGTON
	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	VICTORIA, CA VOR/DME	50	SEATTLE
BATTLE GROUND, WA VORTAC	SEATTLE, WA VORTAC	20	BATTLE GROUND
	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
	V505		
GOPHER, MN VORTAC	SIREN, WI VOR/DME	38	GOPHER
	V510		
GAYLE, MI FIX	MUSKEGON, MI VORTAC	#47	GAYLE

#COP MEASURED FROM MUSKEGON VORTAC.

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	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
	V542		
YOUNGSTOWN, OH VORTAC	TIDIOUTE, PA VORTAC	21	YOUNGSTOWN
	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	RED TABLE, CO VOR/DME	#56	GRAND JUNCTION
#THE COP IS AT THE SLOLM INT			

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	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/DME	KOTZEBUE, AK VOR/DME	40	AMBLER
KOTZEBUE, AK VOR/DME	SHISHMAREF, AK NDB	60	KOTZEBUE

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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/DME	69	EMMONAK
ANVIK, AK NDB/DME	MC GRATH, AK VORTAC	87	ANVIK
	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	55	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			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM

§95.8005 JET ROUTES CHANGEOVER POINT

J1

ROGUE VALLEY, OR VORTAC	BATTLE GROUND, WA VORTAC	90	ROGUE VALLEY

J2

BARD, AZ 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

J18

PHOENIX, AZ VORTAC	ST JOHNS, AZ VORTAC	88	PHOENIX
MOLINE, IL VORTAC	JOLIET, IL VORTAC	45	MOLINE

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	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 VORTAC	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
	J48		
CASANOVA, VA VORTAC	MONTEBELLO, VA VOR/DME	58	CASANOVA

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
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 VORTAC	112	FORT WAYNE
J68			
DELLS, WI VORTAC	GOPHER, MN VORTAC	115	DELLS
J70			
DICKINSON, ND VORTAC	ABERDEEN, SD VOR/DME	60	DICKINSON

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	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
	J87		
MOLINE, IL VORTAC	JOLIET, IL VORTAC	45	MOLINE

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	J88		
SAN MARCUS, CA VORTAC	SALINAS, CA VORTAC	71	SAN MARCUS
	J89		
ATLANTA, GA VORTAC	LOUISVILLE, KY VORTAC	126	ATLANTA
	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
	J115		
CHANDALAR LAKE, AK NDB	DEADHORSE, AK VOR/DME	15	CHANDALAR LAKE
	J116		
MEEKER, CO VOR/DME	FALCON, CO VORTAC	60	MEEKER

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	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
	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

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	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 VORTAC	HARRISBURG, PA VORTAC	62	JOHNSTOWN
	J153		
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
	J163		
POCATELLO, ID VOR/DME	ROCK SPRINGS, WY VOR/DME	82	POCATELLO
	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

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	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	45	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
	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

AIRWAY SEGMENT FROM	TO	DISTANCE	CHANGEOVER POINTS FROM
	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
	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

AIRWAY SEGMENT			CHANGEOVER POINTS
FROM	TO	DISTANCE	FROM
	J523		
BRYCE CANYON, UT VORTAC	ELY, NV VOR/DME	119	BRYCE CANYON
	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