

AIP
AERONAUTICAL INFORMATION PUBLICATION
UNITED STATES OF AMERICA

TWENTY-THIRD EDITION

DATED 8 JAN 2015

AMENDMENT 3

26 MAY 2016

CONSULT NOTAM FOR LATEST INFORMATION

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIP Amendment 3

Page Control Chart

26 May 2016

REMOVE PAGES	DATED	INSERT PAGES	DATED
GEN 0.1-1	25 JUN 15	GEN 0.1-1	25 JUN 15
GEN 0.1-2	8 JAN 15	GEN 0.1-2	26 MAY 16
GEN 0.4-1 through GEN 0.4-3	10 DEC 15	GEN 0.4-1 through GEN 0.4-3	26 MAY 16
GEN 1.7-5	8 JAN 15	GEN 1.7-5	8 JAN 15
GEN 1.7-6 and GEN 1.7-7	8 JAN 15	GEN 1.7-6 and GEN 1.7-7	26 MAY 16
GEN 1.7-8	8 JAN 15	GEN 1.7-8	8 JAN 15
GEN 1.7-19	8 JAN 15	GEN 1.7-19	8 JAN 15
GEN 1.7-20 through GEN 1.7-22	8 JAN 15	GEN 1.7-20 through GEN 1.7-22	26 MAY 16
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GEN 3.1-5	8 JAN 15	GEN 3.1-5	26 MAY 16
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GEN 3.2-7	10 DEC 15	GEN 3.2-7	26 MAY 16
GEN 3.2-8	10 DEC 15	GEN 3.2-8	10 DEC 15
GEN 3.2-9	10 DEC 15	GEN 3.2-9	26 MAY 16
GEN 3.2-10	10 DEC 15	GEN 3.2-10	10 DEC 15
GEN 3.3-7 and GEN 3.3-8	8 JAN 15	GEN 3.3-7 and GEN 3.3-8	26 MAY 16
GEN 3.3-11	8 JAN 15	GEN 3.3-11	8 JAN 15
GEN 3.3-12	8 JAN 15	GEN 3.3-12	26 MAY 16
GEN 3.3-13	8 JAN 15	GEN 3.3-13	8 JAN 15
GEN 3.3-14	8 JAN 15	GEN 3.3-14	26 MAY 16
GEN 3.3-17	8 JAN 15	GEN 3.3-17	26 MAY 16
GEN 3.4-1 through GEN 3.4-5	8 JAN 15	GEN 3.4-1 through GEN 3.4-5	26 MAY 16
GEN 3.4-6	8 JAN 15	GEN 3.4-6	8 JAN 15
GEN 3.4-7	10 DEC 15	GEN 3.4-7	10 DEC 15
GEN 3.4-8	10 DEC 15	GEN 3.4-8	26 MAY 16
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GEN 3.5-1 and GEN 3.5-2	10 DEC 15	GEN 3.5-1 and GEN 3.5-2	26 MAY 16
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GEN 3.5-65 through GEN 3.5-70	8 JAN 15	GEN 3.5-65 through GEN 3.5-70	26 MAY 16
GEN 3.5-71 through GEN 3.5-87	8 JAN 15	GEN 3.5-71 through GEN 3.5-85	26 MAY 16
GEN 3.6-3	8 JAN 15	GEN 3.6-3	26 MAY 16
GEN 3.6-4	8 JAN 15	GEN 3.6-4	8 JAN 15
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United States of America

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ENR 1.1–21 through ENR 1.1–35	8 JAN 15	ENR 1.1–21 through ENR 1.1–35	26 MAY 16
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ENR 5.7–11	8 JAN 15	ENR 5.7–11	26 MAY 16
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ENR 7.5-1 and 7.5-2	8 JAN 15	ENR 7.5-1 and 7.5-2	26 MAY 16
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NOTE – A compact disc will no longer accompany the AIP package. This publication is available online at www.faa.gov/air_traffic/publications/.

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; Interception of Civil Aircraft, 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) Time-keeping 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; and Reduced Separation Climb/Descent Procedures.

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-Third Edition	7/24/14	1/8/15
Amendment 1	1/8/15	6/25/15
Amendment 2	6/25/15	12/10/15
Amendment 3	12/10/15	5/26/16

TBL GEN 0.1–2
AIRAC System Effective Dates

2015	2016	2017	2018	2019
8 JAN	7 JAN	5 JAN	4 JAN	3 JAN
5 FEB	4 FEB	2 FEB	1 FEB	31 JAN
5 MAR	3 MAR	2 MAR	1 MAR	28 FEB
2 APR	31 MAR	30 MAR	29 MAR	28 MAR
30 APR	28 APR	27 APR	26 APR	25 APR
28 MAY	26 MAY	25 MAY	24 MAY	23 MAY
25 JUN	23 JUN	22 JUN	21 JUN	20 JUN
23 JUL	21 JUL	20 JUL	19 JUL	18 JUL
20 AUG	18 AUG	17 AUG	16 AUG	15 AUG
17 SEP	15 SEP	14 SEP	13 SEP	12 SEP
15 OCT	13 OCT	12 OCT	11 OCT	10 OCT
12 NOV	10 NOV	9 NOV	8 NOV	07 NOV
10 DEC	8 DEC	7 DEC	6 DEC	05 DEC

GEN 0.4 Checklist of Pages

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GEN 3	
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GEN 0.5 List of Hand Amendments to the AIP – Not applicable

Chapter 6 Reference 6.4.2.6.2	Electrocardiography for applicants for FAA third-class airman (private pilot) medical certification is not required at first issue unless clinically indicated.
Chapter 6 Reference 6.4.2.9.1	Chest radiography for private pilots is not specifically required unless clinically indicated.
Chapter 6 Reference 6.4.3.2 (b)	A specific requirement that a [spare] set of suitable correcting spectacles be kept readily available when exercising the privileges of the license is not established.
Chapter 6 Reference 6.4.3.2.1 (c)	A specific requirement that a set of suitable correcting spectacles be kept readily available when exercising the privileges of the license [with contact lenses] is not established.
Chapter 6 Reference 6.4.3.2.3	The demonstration of compliance with visual acuity by providing a full ophthalmic report is not required.
Chapter 6 Reference 6.4.3.4	The demonstration of compliance with the visual requirements to be made with only one pair of corrective lenses is not specifically required.
Chapter 6 Reference 6.4.3.4.1	A requirement that a second pair of near-correction spectacles be kept available when exercising the privileges of the license is not established.
Chapter 6 Reference 6.5.2.6	Electrocardiography is required for FAA air traffic controllers at first issue but not for non-FAA ATCs unless clinically indicated.
Chapter 6 Reference 6.5.2.6.1	Electrocardiography is required for FAA ATCs but not for non-FAA ATCs unless clinically indicated.
Chapter 6 Reference 6.5.3.2 (b)	A specific requirement that a [spare] set of suitable correcting spectacles be kept readily available when exercising the privileges of the license is not established.
Chapter 6 Reference 6.5.3.2.1 (c)	A specific requirement that a set of suitable correcting spectacles be kept readily available when exercising the privileges of the license [with contact lenses] is not established.
Chapter 6 Reference 6.5.3.2.3	The demonstration of compliance with visual acuity by providing a full ophthalmic report is not required.
Chapter 6 Reference 6.5.3.4	The demonstration of compliance with the visual requirements to be made with only pair of corrective lenses is not required.
Chapter 6 Reference 6.5.3.4.1	A requirement that a second pair of near-correction spectacles be kept available when exercising the privileges of the license is not established.
Chapter 6 Reference 6.5.4.1.2	Applicants are not required to take a practical hearing test.

ANNEX 2 – RULES OF THE AIR

Chapter 1	Definitions
Advisory Airspace	Advisory service is provided in terminal radar areas and the outer areas associated with Class C and Class E airspace areas.
Aerodrome control tower	In the U.S., an “aerodrome control facility” is referred to as a “tower” or “airport traffic control tower”; “aerodrome control” is referred to as “airport traffic control service.”
Aerodrome Traffic Zone	There are no more Control Zones (Airport Traffic Zones) or Airport Traffic Areas (ATA). In the 7110.65, PCG, Controlled Airspace covers the defined dimensions of airspace. Class D was formerly the ATA (normally a 5NM radius around the airport). The old Control Zones were extensions of the ATA to encompass (ILS) Approach Paths.
Airborne Collision Avoidance System (ACAS)	The U.S. uses “traffic alert collision avoidance system (TCAS).” TCAS is an airborne collision avoidance system based on radar beacon signals and operates independent of ground – based equipment. TCAS – I generates traffic advisories only. TCAS – II generates traffic advisories and resolution (collision avoidance) advisories in the vertical plane.
Air-ground Control Radio Station	FAA Pilot Controller Glossary defines a Flight Service Station (FSS) as an air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Airmen, broadcast aviation weather and aeronautical information, and advise Customs and Immigration of trans-border flights. In Alaska, FSSs provide Airport Advisory Services.
Air-taxiing	The U.S. uses “hover taxi” for this maneuver above 100 feet above ground level (AGL) and “air taxi” below 100 feet AGL.
Area control service	The U.S. does not use the term “area control service” to indicate controlled flight in controlled areas.
Area control centre	The U.S. equivalent facility for an Area Control Centre (ACC) is an Air Route Traffic Control Center (ARTCC).
ATS route	In U.S. domestic airspace, the term “ATS route” is not used. Routes in the U.S. include VOR airways, jet routes, substitute routes, and off-airway routes. The U.S. also uses instrument departure procedures (DPs) and standard terminal arrivals (STARs).
Controlled airspace	The U.S. terms for controlled airspace have different parameters than for ICAO.
Current Flight Plan	FAA Pilot Controller Glossary (PCG) defines flight plan as “specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility.” The Pilot Controller Glossary makes a specific distinction between current flight plan and filed flight plans, defining filed flight plans as “filed...without any subsequent changes or clearances.” Therefore, the PCG definition of flight plan includes changes brought about by clearances or amendments
Danger area	The term “danger area” is not used within the U.S. or any of its possessions or territories.
Estimated off-block time	The U.S. uses the term “estimated departure time” for domestic operations.
Flight information centre	The U.S. does not operate flight information centers (FICs). In the U.S., the services provided by FICs are performed by air traffic control (ATC) facilities, flight service stations (FSSs), and rescue coordination centers (RCCs).
Ground Visibility	The U.S. defines Ground Visibility as: Prevailing horizontal visibility near the earth’s surface as reported by the United States National Weather Service or an accredited observer.
Instrument meteorological conditions	The U.S. air traffic service units use the phrase “IFR conditions.”
Level	The U.S. uses “altitude” or “flight level” rather than “level” and “cruising altitude” rather than “cruising level.” The term “level” is not used to mean “height,” “altitude,” or “flight level.”

Movement area	In the U.S., the term “movement area” means “the runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing, hover taxiing, air-taxiing, take-off and landing of aircraft, exclusive of loading ramps and parking areas. At those airport/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.” The U.S. does not use an all-inclusive term to denote the movement area plus loading ramps and parking areas of an airport, nor does the U.S. use the term “maneuvering area” in any related context.
Repetitive flight plan (RPL)	The U.S. uses the term “stored flight plan” for domestic operations.
Terminal control area	In the U.S., “terminal control area” has been replaced by “Class B airspace/area.” Standard IFR services are provided to IFR aircraft operating in Class B airspace. Class B airspace CFR 14 part 71.41, exceeds TCA with more restrictive airman’s qualifications and aircraft certifications.
Total estimated elapsed time	The U.S. uses “estimated time en route” for domestic operations.
Traffic Avoidance Advice	The U.S. uses the term Traffic Advisory
Transition altitude	In U.S. domestic airspace, “transition altitude,” “layer” and “level” are not used; however, in the U.S., flight levels begin at FL 180 where the reference datum of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings. QNH and QFE altimeter settings are not provided in domestic U.S. airspace.
Visibility	The U.S. defines Visibility as: The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visibility is reported as statute miles, hundreds of feet, or meters. The U.S. identifies the following classes of visibility: Flight Visibility, Ground Visibility, Prevailing Visibility, Runway Visibility Value, and Runway Visual Range.
Visual meteorological conditions	The U.S. air traffic service units use the phrase “VFR conditions.”
Chapter 2	Applicability of the Rules of the Air
2.2	See difference under “Movement area.”
2.5	Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft.
Chapter 3	General Rules
3.1.8	In addition, aircraft shall not be flown in formation flight when passengers are carried for hire.
3.2 Note	See difference under “Movement area.”
3.2.2.6.1	See difference under “Movement area.”
3.2.3.2 d)	The U.S. national regulations do not require aircraft on the movement area of an airport, whose engines are running, to display lights which indicate that fact from sunset to sunrise.

3.2.5	Unless otherwise authorized or required by ATC, no person may operate an aircraft within a Class B, C, or D surface area except for the purpose of landing at, or taking off from, an airport within that area. In addition, in the case of a helicopter approaching to land, avoid the flow of fixed-wing aircraft. In addition, no person may, within a Class B, C, or D surface area operate an aircraft to, from, or on an airport having a control tower operated by the U.S. unless two-way radio communications are maintained between that aircraft and the control tower.
3.3.1.2	In the U.S., ATC flight plans are not required for VFR flight in Class C, D, or E airspace.
3.3.1.2.1 d)	Requirements pertaining to filing flight plans for flights operating across U.S. borders and for identification purposes are described in 14 CFR Part 91 (Section 91.84) and Part 99.
3.3.1.2.2	The U.S. requires that domestic flight plans be submitted at least 30 minutes before departure. For international flights, the U.S. recommends that they be transmitted so that they are received by ATC authorities in each Flight Information Region (FIR) to be entered, at least 2 hours prior to entry, unless otherwise provided in that State's requirements.
3.6.1	Air traffic control clearances are not needed for VFR flight in U.S. Class C, D, or E airspace.
3.6.2.4	When meteorological conditions fall below the minimum specified for en route VFR flights, the pilot of the aircraft shall not continue his/her flight in such conditions, except in emergency, beyond the extent necessary to return to his/her departure point or to the nearest suitable landing point.

4.9.2	In the U.S., the word “heavy” is used in all communications with or about heavy jet aircraft in the terminal environment. In the en route environment, “heavy” is used in all communications with or about heavy jet aircraft with a terminal facility, when the en route center is providing approach control service, when the separation from a following aircraft may become less than five miles by approved procedure, and when issuing traffic advisories.
4.10.1.1, 4.10.1.2, 4.10.4.6	Flight levels (at or above 18,000msl, except oceanic) and in feet below 18,000 ft MSL, including around airports (vs. ICAO QFE – height above field/threshold when near airports).
4.11.2.2 4.11.3 d)	Reporting the assigned speed with each frequency change by pilots is not a requirement. Controllers are required to forward this information to the next controller.
4.11.4 Transmission of ADS-C re- ports	The U.S. has not yet published ATS procedures for the use of Automatic Dependent Surveillance-Contract (ADS-C).
4.11 POSITION REPORTING	The U.S. has different criteria to make position reports.5-1-12. POSITION REPORTING
4.13.4	Flight Progress Strips shall be retained for at least 15 days. (7110.3 3-4-4b)
4.12.2 Contents of routine air-re- ports 4.12.3 Contents of special air-re- ports	The U.S. does not normally use the term “air-report.” Pilot weather reports (PIREPs), position, and operational reports are used. PIREPs include reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, and other conditions pertinent to flight safety. They may include information on ceilings, visibility, thunderstorms, icing of light degree or greater, wind shear and its effect on airspeed, or volcanic ash clouds, but do not usually include air temperature.
4.15 DATA LINK COMMUNIC- ATIONS INI- TIATION PROCED- URES	The U.S. has not yet published ATS procedures for the use of Datalink.
CHAPTER 5	SEPARATION METHODS AND MINIMA
5.2.1 General	In U.S. airspace, only conflict resolution (not separation) is provided between IFR and VFR operations. Separation is provided between IFR and Special VFR (SVFR) aircraft only within the lateral boundaries of Class B, C, D, or E control zones (the U.S. term is surface areas) below 10,000 feet MSL.
5.2.1.1	In U.S. Class A and B airspace, separation is provided for all aircraft. In U.S. Class C airspace, separation is provided between IFR and SVFR aircraft; conflict resolution is provided between IFR and VFR operations.
5.3.1 Vertical separation ap- plication 5.3.4 Vertical separation dur- ing climb or descent	U.S. rules allow assignment of altitude to second aircraft after first aircraft has been issued climb/descent and is observed or reports leaving that altitude. 7110.65, Para 6-6-1. APPLICATION 6-6-2. EXCEPTIONS
5.4.1.2.1.2	U.S. Lateral separation criteria and minima values differ somewhat.
5.4.2.1.5	The U.S. uses the term “course” instead of “track.” “Reciprocal” courses are sometimes referred to as “opposite” courses. The wording of the definitions for U.S. <i>same</i> , <i>crossing</i> , or <i>opposite/reciprocal</i> courses differs from the ICAO worded definitions, but the intent appears to be the same.
5.4.2.2.1.1 c/ d	The U.S. uses 22 kt instead of 20 kt and 44 kt instead of 40 kt.

5.4.2.6.4.3.3 Conflict is re- solved within a further 7 minutes.	When an ADS-C periodic or waypoint change event report is overdue by <i>3 minutes</i> , the controller shall take action to obtain an ADS-C report. If no report is received within <i>6 minutes</i> of the time the original report was due, the controller shall take action to apply another form of separation. 7110.65, Para 8-9-3. LONGITUDINAL SEPARATION
5.4.2.7.3.2 d)2).	The FAA's Advanced Technologies 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. This allows the controller to issue a clearance to perform an ADS-B ITP climb/descent maneuver if required separation is maintained or increased and either the reference or maneuvering aircraft has a turn in its flight plan.
5.5.2	Whenever the other aircraft concerned are within <i>5 minutes flying time of the holding area</i> .
5.6 (Separation Between De- parting Air- craft)	U.S. Allows 2 minute separation standard when courses diverge within 5 minutes after departure.
5.7 (Separation of Departing Aircraft from Arriving Air- craft)	U.S. Requires departing aircraft to be established on a course diverging by at least 45 degrees from the reciprocal of the final approach course.
5.8.4	The U.S. includes B757 in heavy category for wake turbulence purposes. DOC 4444 does not stipulate.
CHAPTER 6	<i>SEPARATION IN THE VICINITY OF AERODROMES</i>
6.3.2.4	U.S. aircraft on a SID assigned higher altitudes than specified in SID, may climb to higher assigned altitude.
6.3.2.5 COM- MUNICA- TION FAIL- URE 8.8.3.2 COM- PLETE AIR- CRAFT COM- MUNICA- TION FAIL- URE 15.3 AIR-GROUN D COMMU- NICATIONS FAILURE	In the U.S., if the communications failure occurs in IFR conditions, or if VFR cannot be complied with, each pilot shall continue the flight according to the following requirements: Route a) By the route assigned in the last ATC clearance received; b) If being radar vectored, by the direct route from the point of failure to the fix, route, or airway specified in the vector clearance; c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or d) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan. Altitude - At the highest of the following altitudes or flight levels for the route segment being flown: a) The altitude or flight level assigned in the last ATC clearance received; b) The minimum altitude as prescribed in 14 CFR Part 91 (Section 91.121(c)) for IFR operations; or c) The altitude or flight level ATC has advised may be expected in a further clearance.
6.3.3.3	Arriving aircraft - delay of 10 minutes or more. 7110.65, Para 4-7-11 d 5
6.5.2.4	Aircraft on STAR descended to altitudes lower than specified in a STAR, may descend to assigned altitude.
6.5.3.1	The 7110.65 does not stipulate flight crew concurrence of Controller initiated Visual Approach.
6.5.3.5	U.S. requires ATC to inform following aircraft behind Heavy/B757 aircraft of manufacturer and model information.
6.5.5.2	Onward clearance time. 7110.65 PG EXPECT FURTHER CLEARANCE (TIME)- The time a pilot can expect to receive clearance beyond a clearance limit.
6.7.3.1.2	U.S. has no criteria for separate radar controllers in conducting Parallel approaches.
6.7.3.2.1 (c)	The U.S. has adopted procedures allowing RNAV equipped aircraft to conduct Independent Parallel Approaches.
6.7.3.2.9	U.S. has no parallel approach obstacle assessment surfaces (PAOAS) Criteria.
6.7.3.2.9	The U.S. has no criteria for a "45 degree track".

6.7.3.2.10 (a)	The U.S. has no criteria for both controllers to be advised when visual separation is applied.
6.7.3.4.1 (d)	The U.S. has adopted procedures allowing RNAV equipped aircraft to conduct Dependent Parallel approaches.
6.7.3.4.1 (f)	The U.S. requires that adjacent missed approach procedures do not conflict.
6.7.3.5.3 (b)	The U.S. has no surveillance radar approach (SRA).
6.7.3.5.3 (c)	In the U.S., aircrews may execute visual approaches when the pilot has either the airport or the preceding aircraft in sight and is instructed to follow it. A contact approach is one wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport by visual reference in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.
CHAPTER 7	PROCEDURES FOR AERODROME CONTROL SERVICE
7.4.1.1 START-UP TIME PRO- CEDURES	U.S. has no start up procedures, taxi clearance.
7.4.1.2.1 (f)	U.S. does not require time check prior to taxi.
7.6.3.2.3.2 Light signal from aerodrome control	In the U.S., for movements of other than aircraft traffic (i.e., vehicles, equipment, and personnel), steady green means cleared to cross, proceed, go; flashing green is not applicable; flashing white means return to starting point on airport; and alternating red and green means a general warning signal to exercise extreme caution.
7.6.3.2.3.3 Flashing run- way or taxiway lights	U.S. controllers do not flash runway or taxiway lights to instruct aircraft to “vacate the runway and observe the tower for light signal.”
7.10.2 Clearance to land	In the U.S., landing clearance to a succeeding aircraft in a landing sequence need not be withheld if the controller observes the positions of the aircraft and determines that prescribed runway separation will exist when the aircraft crosses the landing threshold. Controllers issue traffic information to the succeeding aircraft if it has not previously been reported.
7.11.4 and 7.11.6 Reduced Run- way Separation Minima Between Air- craft Using the Same Runway	U.S. category 1, 2, & 3 (SRS) aircraft weights differ. Separation standards are greater, due to increased size and weight categories.
7.12.1.1.2	U.S. does not specify separation standards on taxiways.
7.14 AUTHORIZAT ION OF SPECIAL VFR FLIGHTS	Special VFR operations may be conducted in the U.S. under the following weather minimums and requirements below 10,000 feet MSL within the airspace contained by the upward extension of the lateral boundaries of the controlled airspace designated to the surface for an airport. These minimums and requirements are found in 14 CFR Section 91.157. Special VFR operations may only be conducted: (1) With an ATC clearance; (2) Clear of clouds; (3) Except for helicopters, when flight visibility is at least 1 statute mile; and (4) Except for helicopters, between sunrise and sunset (or in Alaska, when the sun is 6 degrees or more below the horizon) unless: (i) The person being granted the ATC clearance meets the applicable requirements for instrument flight; and (ii) The aircraft is equipped as required in 14 CFR Sec. 91.205(d).

7.14 AUTHORIZ- ATION OF SPECIAL VFR FLIGHTS (continued)	No person may take off or land an aircraft (other than a helicopter) under special VFR: (1) Unless ground visibility is at least 1 statute mile; or (2) If ground visibility is not reported, unless flight visibility is at least 1 statute mile.
CHAPTER 8	ATS SURVEILLANCE SERVICES
8.5.5.1 Verification of Level Informa- tion	U.S. validation of mode C readouts allow up to 300 feet variance from pilot reported altitudes.
8.6.5.2	The U.S. has not implemented cold temperature corrections to the radar minimum vectoring alti- tude.
8.7.3.2 (b)	The U.S. only allows visual observance of runway turn-off points.
8.8.4.2	The U.S. does not specify that  applicable separation can be utilized during emergency situations.
8.9.3.6	U.S. specifies maximum intercept angle of 30 degrees for fixed wing aircraft vectored to final approach course.
CHAPTER 9	FLIGHT INFORMATION SERVICE AND ALERTING SERVICE
9.1.3.7	The U.S. does not have special procedures for the transmission of information to supersonic air- craft.
9.1.4.1.1	Class F airspace is not used in the U.S. Traffic advisories are provided in Class C airspace and, workload permitting, in Class D, Class E, and Class G airspace.
9.2.1.2	The U.S. does not use “operations normal” or ‘QRU’ messages. U.S. controllers are not normally familiar with the term “uncertainty phase.”
CHAPTER 10	COORDINATION
10.1.3.1 DIVISION OF CONTROL	Except for a VFR aircraft practicing an instrument approach, an IFR approach clearance in the U.S. automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. No additional coordination is normally needed between the approach and en route controllers. Once an aircraft commences a missed approach, it may be radar vectored.
10.1.4.2.2	U.S. does not require ETA to be forwarded at least 15 minutes prior to ETA.
CHAPTER 11	AIR TRAFFIC SERVICES MESSAGES
11.1.2 Emergency messages	U.S. uses different emergency messages. 7110.10, Chapter 8. Search and Rescue (SAR) Proced- ures for VFR Aircraft.
11.4.2.3.6 LOGICAL ACKNOW- LEDGEMENT MESSAGES (LAM)	The existing U.S. ATS automation system does not process logical acknowledgment messages (LAMs).
11.4.3.4.2 Aerodrome Conditions	U.S. does not report runway condition as 'DAMP'.

Chapter 2	General
2.3.2	Annex 11, paragraph 2.3.2 directs the flight information service to accomplish objective d) of para 2.2, “to provide advice and information for the safe and efficient conduct of flight.” Details on procedures to accomplish this objective are contained in FAA Order 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order 7110.10, Flight Services. Also, the FAA Pilot Controller Glossary defines a Flight Service Station (FSS) as an air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Airmen, broadcast aviation weather and aeronautical information, and advise Customs and Immigration of trans-border flights. In Alaska, FSSs provide Airport Advisory Services.
2.5.2.2.1	FAA uses the generic term “controlled airspace” and “surface areas”
2.5.2.2.1.1	FAA also provides this service in Class E.
2.5.2.2.2	Annex 11, paragraph 2.3.2 directs the flight information service to accomplish objective d) of para 2.2, “to provide advice and information for the safe and efficient conduct of flight.” Details on procedures to accomplish this objective are contained in FAA Order 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order 7110.10, Flight Services. Also, the FAA Pilot Controller Glossary defines a Flight Service Station (FSS) as an air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Airmen, broadcast aviation weather and aeronautical information, and advise Customs and Immigration of trans-border flights. In Alaska, FSSs provide Airport Advisory Services.
2.6	The Class F airspace is not used in the designation of U.S. airspace.
2.6.1	The U.S. has chosen not to use Class F airspace.
2.10.3.2.2	Class E-5 700/1200-foot airspace areas are used for transitioning aircraft to/from the terminal or en route environment.
2.10.3.3	En Route Domestic Airspace Areas consist of Class E airspace that extends upward from a specified altitude to provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal airway structure is inadequate. En Route Domestic Airspace Areas may be designated to serve en route operations when there is a requirement to provide ATC service but the desired routing does not qualify for airway designation. Offshore/Control Airspace Areas are locations designated in international airspace (between the U.S. 12-mile territorial limit and the CTA/FIR boundary, and within areas of domestic radio navigational signal or ATC radar coverage) wherein domestic ATC procedures may be used for separation purposes.
2.10.5.1	A Class D airspace area shall be of sufficient size to: 1. Allow for safe and efficient handling of operations. 2. Contain IFR arrival operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and the base of adjacent controlled airspace.
2.10.5.2	A Class D airspace area shall be of sufficient size to: 1. Allow for safe and efficient handling of operations. 2. Contain IFR arrival operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and the base of adjacent controlled airspace. Size and shape may vary to provide for 1 and 2. The emphasis is that a Class D area shall be sized to contain the intended operations.
2.10.5.3	Refer to Surface Areas
2.25.5	No time is issued prior to taxi for take-off. Time checks are given to the nearest quarter minute.
2.27.5	Process is described in the FAA Safety Management System Manual and the FAA Order 1100.161.

Chapter 3	Air Traffic Control Service
3.2	Air Route Traffic Control Facilities (ARTCC) are used instead of Area Control Service, and Terminal Control Facilities instead of Approach Control Service.
3.6.2.4	The U.S does not specify notification of 2–way communication. The accepting unit shall not alter the clearance of an aircraft that has not yet reached the transfer of control point without the prior approval of the transferring unit.
3.7.3.1	Air crews are not required to read back clearances, only to acknowledge receipt of clearances.
3.7.3.1.1	Air crews are not required to read back clearances, only to acknowledge receipt of clearances.
3.7.4.3	4–3–8. COORDINATION WITH RECEIVING FACILITY Coordinate with the receiving facility before the departure of an aircraft if the departure point is less than 15 minutes flying time from the transferring facility’s boundary unless an automatic transfer of of data between automated systems will occur, in which case the flying time requirement may be reduced to 5 minutes or replaced with a mileage from the boundary parameter when mutually agreeable to both facilities.
3.7.4.4	4–4–5. CLASS G AIRSPACE Include routes through Class G airspace only when requested by the pilot. NOTE–1. Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot. 2. Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot. Air Traffic Control Clearance means an authorization by air traffic control within controlled airspace.
Chapter 4	Flight Information Service
4.2.2	No Class F airspace. Collision Hazard information is provided between known traffic to aircraft in Class G airspace.

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
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

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
FI/P	flight information (permanent)

FI/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

INTL	international
INTST	intensity
IRU	Inertial Reference Unit
J	
J-bar	jet runway barrier
K	
KHZ	kilohertz
L	
L	left (used only to designate rwys; e.g., rwy 12L)
ICAO:	L – left/runway identification/locator
LAT	latitude
LB	pounds (weight)
LCTD	located
LDA	localizer type directional aid
ICAO:	LDA – landing distance available LLZ – localizer
LGTD	lighted
LMM	compass locator at ILS middle marker
LNDG	landing
ICAO:	LDG – landing
LOC	localizer
ICAO:	LOC–localizer or locally or location or located
LOM	compass locator at ILS outer marker
LONG	longitude
LRCO	limited remote communications outlet
M	
MAA	maximum authorized altitude
MAG	magnetic
MAINT	maintain, maintenance
ICAO:	MNTN – maintain; MAINT – maintenance
MALS	medium intensity approach light system
MALSR	medium intensity approach light system with runway alignment indicator lights
MAP	missed approach point
ICAO:	MAP – aeronautical maps and charts
MAX	maximum
MCA	minimum crossing altitude
MDA	minimum descent altitude
MEA	minimum en route IFR altitude
MHZ	megahertz
MIN	minimum or minute
MIRL	medium intensity runway edge lights
MM	middle marker ILS

MOCA	minimum obstruction clearance altitude
MRA	minimum reception altitude
MSA	minimum safe altitude
MSL	mean sea level
MUNI	municipal
N	
N	north
NA	not authorized
NATL	national
NAVAID	navigational aid
NDB	nondirectional radio beacon
NM	nautical mile(s)
NOPT	no procedure turn required
NR	number
O	
OBSTN	obstruction
ODALS	omnidirectional approach lighting system
OM	outer marker ILS
OPER	operate
OPN	operation
ICAO:	OPR – operator/operate/operative/operating/operational
ORIG	original
OTS	out of service
OVRN	overrun
P	
PAR	precision approach radar
PAT	pattern
PCN	pavement classification number
PERMLY	permanently
POB	persons on board
PPR	prior permission required
PROC	procedure
Q	
QUAD	quadrant
R	
R	right (used only to designate rwys; e.g., rwy 19R)
ICAO:	R – received (acknowledgement of receipt)/red/restricted area (followed by identification)/right (runway identification)
RADAR	radio detection and ranging
RAPCON	radar approach control (USAF)

RCAG	remote communications air/ground
RCLS	runway centerline lights system
ICAO:	RCL – runway centerline
RCO	remote communications outlet
RCV	receive
RCVG	receiving
REIL	runway end identifier lights
REQ	request
RNAV	area navigation
RRP	runway reference point
REL	runway entrance lights
RLLS	Runway Lead-in Light System
RSTRD	restricted
RTS	returned to service
RVR	runway visual range
RVRM	runway visual range midpoint
RVRR	runway visual range rollout
RVRT	runway visual range touchdown
RVV	runway visibility values
RWSL	runway status light
RWY	runway
ICAO:	RWY–runway
S	
S	runway weight bearing capacity for aircraft with single-wheel type landing gear
S	south
ICAO:	S – south/south latitude
SDF	simplified directional facility
SEC	second
SFC	surface
SFL	sequenced flashing lights
SI	straight-in approach
ICAO:	STA – straight-in approach
SM	statute mile(s)
SR	sunrise
SS	sunset
ICAO:	SS – sandstorm
SSALF	simplified short approach lighting system with sequenced flashers
SSALR	simplified short approach lighting system with runway alignment indicator lights
SSALS	simplified short approach lighting system
STOL	short take-off and landing runway

ICAO:	STOL – short takeoff and landing
SVC	service
ICAO:	SVC – service message
T	
T	true (after a bearing)
ICAO:	T – temperature
TAC	terminal area chart
TACAN	UHF navigational facility – omnidirectional course and distance information
ICAO:	TACAN – VHF tactical navigational aid
TAS	true air speed
ICAO:	TMA – TERMINAL CONTROL AREA
TCH	threshold crossing height
TFC	traffic
THL	takeoff hold lights
THR	threshold
THRU	through
ICAO:	THRU – through/I am connecting you to another switchboard
TKOF	take-off
TEMPRLY	temporarily
TMPRY	temporary/temporarily
ICAO:	TEMPO – Temporary/temporarily
TPA	traffic pattern altitude
TRACON	terminal radar approach control
TRML	terminal
TRSA	terminal radar service area
TSNT	transient
TWEB	transcribed weather broadcast
TWR	tower
TWY	taxiway
U	
UAS	Unmanned Aircraft System
UAVBL	unavailable
UHF	ultra high frequency
UNLGTD	unlighted
UNMON	unmonitored
UNSKED	unscheduled
UNUSBL	unusable
ICAO:	U/S – unserviceable
V	
VASI	visual approach slope indicator

VCNTY	vicinity
VDP	visual descent point
VFR	visual flight rules
VHF	very high frequency
VOR	VHF omni-directional radio range
VORTAC	Combined VOR and TACAN system (collocated)
VOT	a VOR Receiver testing facility
VSBY	visibility
ICAO:	VIS – visibility
W	

W	west
WEA	weather
ICAO:	WX – weather
WKDAY	weekday
WKEND	weekend
WPT	waypoint
WS	Weather Service
WT	weight
Z	
Z	Coordinated Universal Time
ICAO:	UTC – Coordinated Universal Time

6. Pre-Flight Information Service at Aerodromes Available to International Flights

6.1 Pre-Flight Information Units in the U.S. are Flight Service Stations (FSS) operated by either FAA (in Alaska) or by federal contract facilities (elsewhere in the U.S.).

6.2 FSSs are air traffic facilities which provide pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Airmen, broadcast aviation weather and aeronautical

information, and advise Customs and Border Protection of transborder flights. In Alaska, designated FSSs also provide TWEB recordings, take weather observations, and provide Airport Advisory Services (AAS).

6.3 FSS locations, services and telephone information are available in the Chart Supplement U.S., Chart Supplement Alaska, and Chart Supplement Pacific.

6.4 Flight Service Stations have telecommunications access to all of the weather and NOTAM information available for preflight briefing to international locations with which the U.S. International NOTAM office exchanges information.

GEN 3.2 Aeronautical Charts

1. General

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

2. Obtaining Aeronautical Charts

2.1 Public sales of charts and publications are available through a network of FAA chart agents primarily located at or near major civil airports. A listing of products, dates of latest editions and agents is available on the AeroNav website at: http://www.faa.gov/air_traffic/flight_info/aeronav.

3. Selected Charts and Products Available

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

4. General Description of Each Chart Series

4.1 VFR Navigation Charts

4.1.1 Sectional Aeronautical Charts. Sectional Charts are designed for visual navigation of slow to medium speed aircraft. The topographic information consists of contour lines, shaded relief, drainage patterns, and an extensive selection of visual checkpoints and landmarks used for flight under

VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special-use airspace, obstructions, and related data. Scale 1 inch = 6.86nm/1:500,000. 60 x 20 inches folded to 5 x 10 inches. Revised biannually, except most Alaskan charts are revised annually. (See FIG GEN 3.2-1 and FIG GEN 3.2-2.)

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

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

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

FIG GEN 3.2-1
Sectional and VFR Terminal Area Charts for the Conterminous U.S.,
Hawaii, Puerto Rico, and Virgin Islands

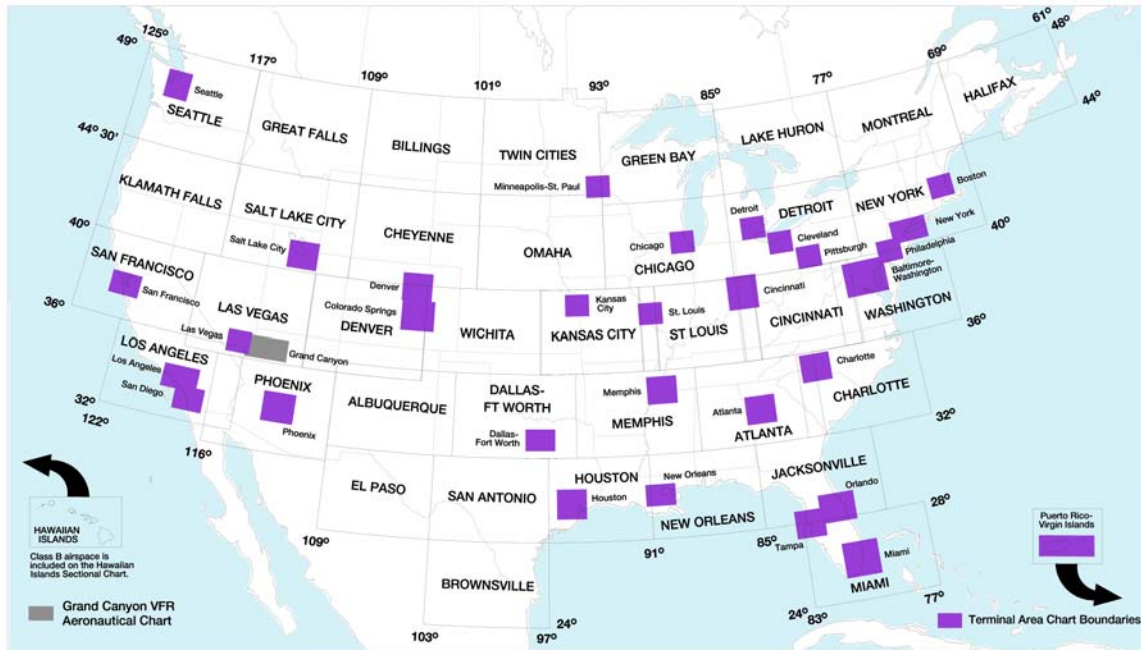
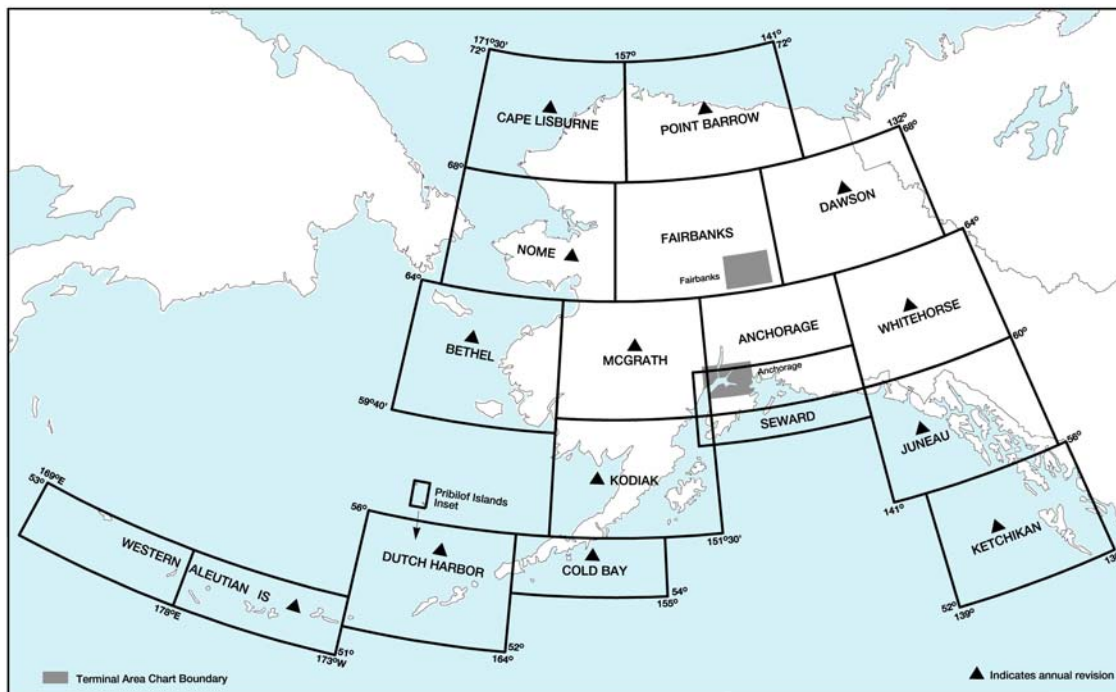


FIG GEN 3.2-2
Sectional and VFR Terminal Area Charts for Alaska



4.3.3 U.S. VFR Wall Planning Chart. This chart is designed for VFR preflight planning and provides aeronautical and topographic information of the conterminous U.S. The aeronautical information includes airports, radio aids to navigation, Class B airspace and special use airspace. The topographic information includes city tint, populated places, principal roads, drainage patterns, and shaded relief. Scale 1 inch = 43 nm/ 1:3,100,000. The one-sided chart is 59 x 36 inches and ships unfolded for wall mounting. Chart is revised biennially. (See FIG GEN 3.2-9)

FIG GEN 3.2-9
U.S. VFR Wall Planning Chart



4.3.4 Charted VFR Flyway Planning Charts. This chart is printed on the reverse side of selected TAC charts. The coverage is the same as the associated TAC. Flyway planning charts depict flight paths and altitudes recommended for use to bypass high traffic areas. Ground references are provided as a guide for visual orientation. Flyway planning charts are designed for use in conjunction with TACs and sectional charts and are not to be used for navigation. Chart scale 1 inch = 3.43nm/1:250,000.

4.4 Supplementary Charts and Publications

4.4.1 Chart Supplement U.S. This 7-volume booklet series contains data on airports, seaplane bases, heliports, NAVAIDs, communications data, weather data sources, airspace, special notices, and operational procedures. Coverage includes the conterminous U.S., Puerto Rico, and the Virgin Islands. The Chart Supplement U.S. shows data that

cannot be readily depicted in graphic form; for example, airport hours of operations, types of fuel available, runway widths, lighting codes, etc. The Chart Supplement U.S. also provides a means for pilots to update visual charts between edition dates (The Chart Supplement U.S. is published every 56 days while Sectional Aeronautical and VFR Terminal Area Charts are generally revised every six months). The Aeronautical Chart Bulletins (VFR Chart Update Bulletins) are available for free download from the AeroNav web site. Volumes are side-bound 5-3/8 x 8-1/4 inches.

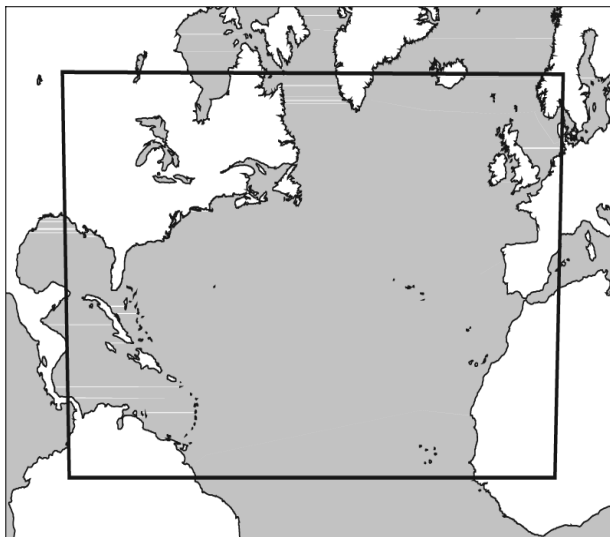
(See FIG GEN 3.2-12.)

4.4.2 Chart Supplement Alaska. This is a civil/military flight information publication issued by FAA every 56 days. It is a single volume booklet designed for use with appropriate IFR or VFR charts. The Chart Supplement Alaska contains airport sketches, communications data, weather data sources, airspace, listing of navigational facilities, and special notices and procedures. Volume is side-bound 5-3/8 x 8-1/4 inches.

4.4.3 Chart Supplement Pacific. This supplement is designed for use with appropriate VFR or IFR en route charts. Included in this one-volume booklet are the chart supplement, communications data, weather data sources, airspace, navigational facilities, special notices, and Pacific area procedures. IAP charts, DP charts, STAR charts, airport diagrams, radar minimums, and supporting data for the Hawaiian and Pacific Islands are included. The manual is published every 56 days. Volume is side-bound 5-3/8 x 8-1/4 inches.

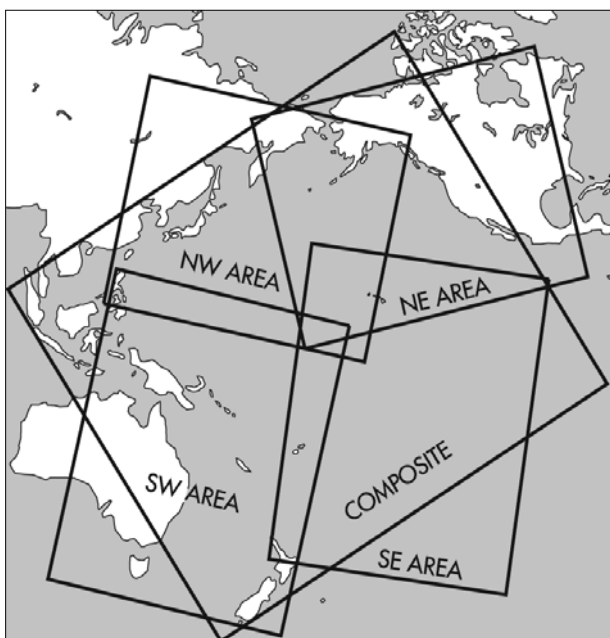
4.4.4 North Atlantic Route Chart. Designed for FAA controllers to monitor transatlantic flights, this 5-color chart shows oceanic control areas, coastal navigation aids, oceanic reporting points, and NAVAID geographic coordinates. Full Size Chart: scale 1 inch = 113.1nm/1:8,250,000. Chart is shipped flat only. Half Size Chart: scale 1 inch = 150.8nm/1:11,000,000. Chart is 29-3/4 x 20-1/2 inches, shipped folded to 5 x 10 inches only. Chart are revised every 56 days. (See FIG GEN 3.2-10.)

FIG GEN 3.2-10
North Atlantic Route Charts



4.4.5 North Pacific Route Charts. These charts are designed for FAA controllers to monitor transoceanic flights. They show established intercontinental air routes, including reporting points with geographic positions. Composite Chart: scale 1 inch = 164NM/1:12,000,000. 48 x 41-1/2 inches. Area Charts: scale 1 inch = 95.9nm/1:7,000,000. 52 x 40-1/2 inches. All charts are shipped unfolded. Charts are revised every 56 days. (See FIG GEN 3.2-11.)

FIG GEN 3.2-11
North Pacific Oceanic Route Charts



4.4.6 Airport Obstruction Charts (OC). The OC is a 1:12,000 scale graphic depicting 14 CFR Part 77, *Objects Affecting Navigable Airspace* surfaces, a representation of objects that penetrate these surfaces, aircraft movement and apron areas, navigational aids, prominent airport buildings, and a selection of roads and other planimetric detail in the airport vicinity. Also included are tabulations of runway and other operational data.

4.4.7 FAA Aeronautical Chart User's Guide. A booklet designed to be used as a teaching aid and reference document. It describes the substantial amount of information provided on FAA's aeronautical charts and publications. It includes explanations and illustrations of chart terms and symbols organized by chart type. The users guide is available for free download at the AeroNav website.

4.5 Digital Products

4.5.1 The Digital Aeronautical Information CD (DAICD). The DAICD is a combination of the NAVAID Digital Data File, the Digital Chart Supplement, and the Digital Obstacle File on one Compact Disk. These three digital products are no longer sold separately. The files are updated every 56 days and are available by subscription only.

4.5.1.1 The NAVAID Digital Data File. This file contains a current listing of NAVAIDs that are compatible with the National Airspace System. This file contains all NAVAIDs including ILS and its components, in the U.S., Puerto Rico, and the Virgin Islands plus bordering facilities in Canada, Mexico, and the Atlantic and Pacific areas.

4.5.1.2 The Digital Obstacle File. This file describes all obstacles of interest to aviation users in the U.S., with limited coverage of the Pacific, Caribbean, Canada, and Mexico. The obstacles are assigned unique numerical identifiers, accuracy codes, and listed in order of ascending latitude within each state or area.

4.5.1.3 The Digital Aeronautical Chart Supplement (DACS). The DACS is specifically designed to provide digital airspace data not otherwise readily available. The supplement includes a *Change Notice* for IAPFIX.dat at the mid-point between revisions. The *Change Notice* is available only by free download from the AeroNav website.

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 National Flight Database (NFD) (ARINC 424 [Ver 13 & 15]). The NFD 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 by subscription only and is distributed on CD-ROM or by ftp download.

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 on DVD-R media and on the AeroNav Products website. The root mean square error of the transformation will not exceed two pixels. Digital-VC DVDs are updated every 28 days and are available by subscription only.

FIG GEN 3.2-12
Chart Supplement U.S. Geographic Areas

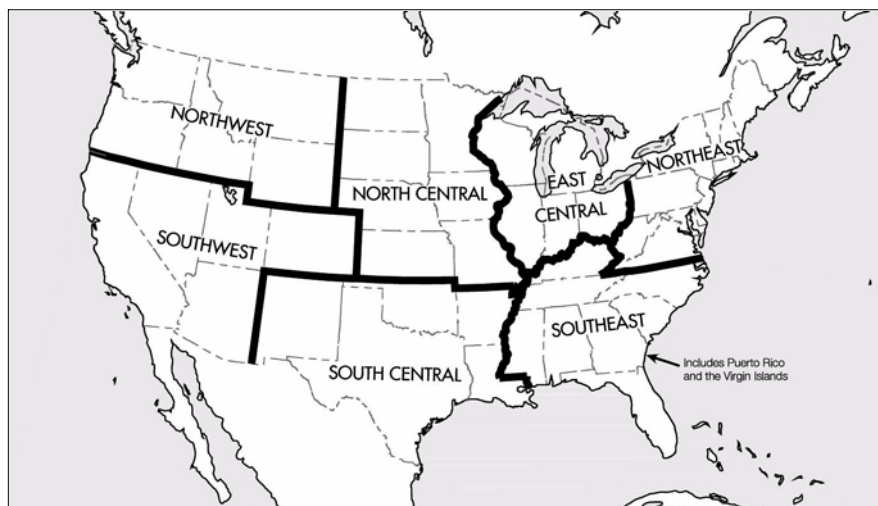
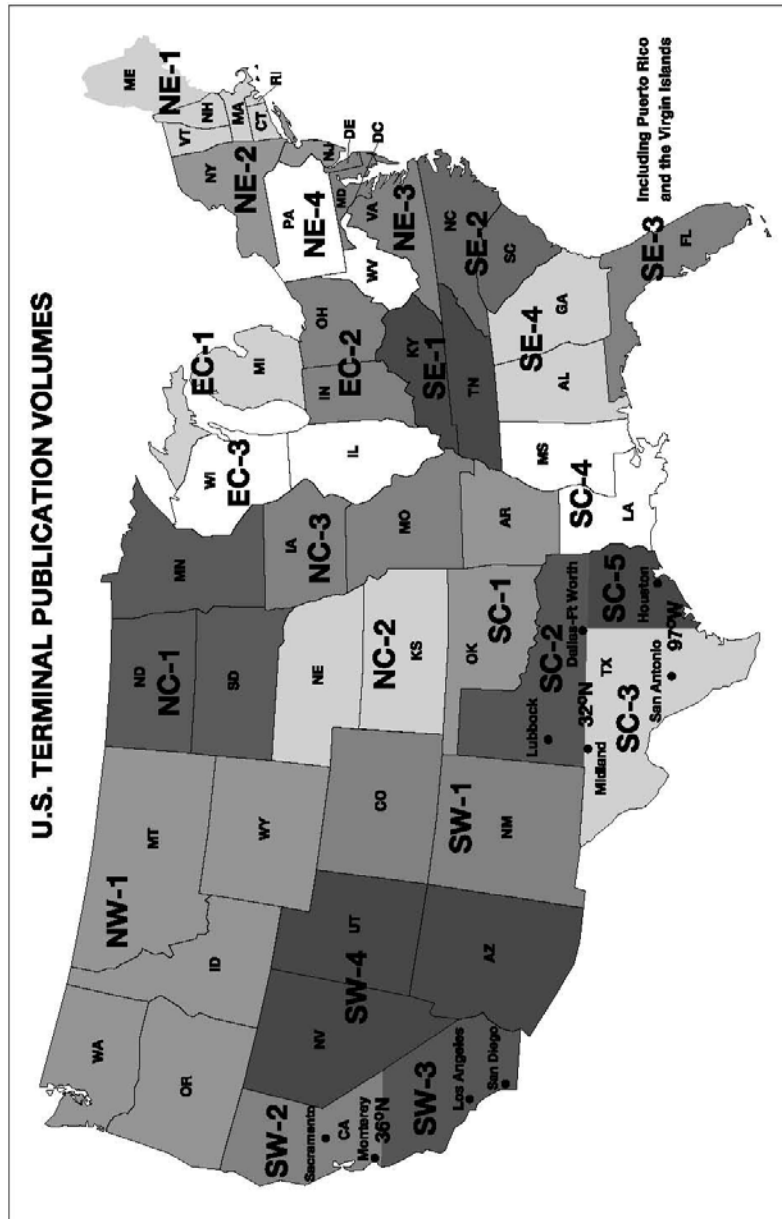


FIG GEN 3.2-13
U.S. Terminal Publication Volumes



both, normally receive priority over other traffic. This applies only to delays encountered because of the situation at the airport of intended landing.

8.9 Pilots/operators are advised to check for flow control advisories which are transmitted to FSSs, to selected airline dispatch offices, and to ARTCCs.

9. Advisory and Air Traffic Information Services

9.1 Approach Control Service for VFR Arriving Aircraft

9.1.1 Numerous approach control facilities have established programs for arriving VFR aircraft to contact approach control for landing information. This information includes: wind, runway, and altimeter setting at the airport of intended landing. This information may be omitted if contained in the ATIS broadcast and the pilot states the appropriate ATIS code.

NOTE—

Pilot use of “have numbers” does not indicate receipt of the ATIS broadcast. In addition, the controller will provide traffic advisories on a workload permitting basis.

9.1.2 Such information will be furnished upon initial contact with the concerned approach control facility. The pilot will be requested to change to the tower frequency at a predetermined time or point, to receive further landing information.

9.1.3 Where available, use of this procedure will not hinder the operation of VFR flights by requiring excessive spacing between aircraft or devious routing. Radio contact points will be based on time or distance rather than on landmarks.

9.1.4 Compliance with this procedure is not mandatory, but pilot participation is encouraged. (See ENR 1.1, paragraph 39, Terminal Radar Services for VFR Aircraft.)

NOTE—

Approach control services for VFR aircraft are normally dependent on air traffic control radar. These services are not available during periods of a radar outage. Approach control services for VFR aircraft are limited when Center Radar ARTS Presentation/ Processing (CENRAP) is in use.

9.2 Traffic Advisory Practices at Airports Without Operating Control Towers

9.2.1 Airport Operations Without an Operating Control Tower

9.2.1.1 There is no substitute for alertness while in the vicinity of an airport. It is essential that pilots be alert and look for other traffic and exchange traffic information when approaching or departing an airport without an operating control tower. This is of particular importance since other aircraft may not have communication capability or, in some cases, pilots may not communicate their presence or intentions when operating into or out of such airports. To achieve the greatest degree of safety, it is essential that all radio-equipped aircraft transmit/receive on a common frequency identified for the purpose of airport advisories.

9.2.1.2 An airport may have a full or part-time tower or FSS located on the airport, a full or part-time UNICOM station or no aeronautical station at all. There are three ways for pilots to communicate their intention and obtain airport/traffic information when operating at an airport that does not have an operating tower: by communicating with an FSS, a UNICOM operator, or by making a self-announce broadcast.

NOTE—

FSS airport advisories are available only in Alaska.

9.2.1.3 Many airports are now providing completely automated weather, radio check capability and airport advisory information on an automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability of the automated UNICOM will be published in the Chart Supplement U.S. and approach charts.

9.2.2 Communicating on a Common Frequency

9.2.2.1 The key to communicating at an airport without an operating control tower is selection of the correct common frequency. The acronym, CTAF, which stands for common traffic advisory frequency, is synonymous with this program. A CTAF is a frequency designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, MULTICOM, FSS, or tower frequency and is identified in appropriate aeronautical publications.

NOTE—

FSS frequencies are available only in Alaska.

9.2.2.2 CTAF (Alaska Only). In Alaska, a CTAF may also be designated for the purpose of carrying out advisory practices while operating in designated areas with a high volume of VFR traffic.

9.2.2.3 The CTAF frequency for a particular airport or area is contained in the Chart Supplement U.S., Chart Supplement Alaska, Alaska Terminal Publication, Instrument Approach Procedure Charts, and Instrument Departure Procedure (DP) Charts. Also, the CTAF frequency can be obtained by contacting any FSS. Use of the appropriate CTAF, combined with a visual alertness and application of the following recommended good operating practices, will enhance safety of flight into and out of all uncontrolled airports.

9.2.3 Recommended Traffic Advisory Practices

9.2.3.1 Pilots of inbound aircraft should monitor and communicate on the designated CTAF from 10 miles to landing. Pilots of departing aircraft should monitor/communicate on the appropriate frequency from start-up, during taxi, and until 10 miles from the airport unless the Code of Federal Regulations (CFR) or local procedures require otherwise.

9.2.3.2 Pilots of aircraft conducting other than arriving or departing operations at altitudes normally used by arriving and departing aircraft should monitor/communicate on the appropriate frequency while within 10 miles of the airport unless required to do otherwise by the CFR or local procedures. Such operations include parachute jumping/dropping (see ENR 5.1, paragraph 2.3, Parachute Jump Aircraft Operations), en route, practicing maneuvers, etc.

9.2.3.3 In Alaska, pilots of aircraft conducting other than arriving or departing operations in designated CTAF areas should monitor/communicate on the appropriate frequency while within the designated area, unless required to do otherwise by CFRs or local procedures. Such operations include parachute jumping/dropping, en route, practicing maneuvers, etc.

9.2.4 Airport Advisory/Information Services Provided by a FSS

9.2.4.1 There are two advisory type services provided at selected airports.

a) Local Airport Advisory (LAA) is available only in Alaska and provided at airports that have a FSS physically located on the airport, which does not have

a control tower or where the tower is operated on a part-time basis. The CTAF for LAA airports is disseminated in the appropriate aeronautical publications.

b) Remote Airport Information Service (RAIS) is provided in support of special events at nontowered airports by request from the airport authority and must be published as a NOTAM D.

9.2.4.2 In communicating with a CTAF FSS, check the airport's automated weather and establish two-way communications before transmitting outbound/inbound intentions or information. An inbound aircraft should initiate contact approximately 10 miles from the airport, reporting aircraft identification and type, altitude, location relative to the airport, intentions (landing or over flight), possession of the automated weather, and request airport advisory or airport information service. A departing aircraft should initiate contact before taxiing, reporting aircraft identification and type, VFR or IFR, location on the airport, intentions, direction of take-off, possession of the automated weather, and request airport advisory or information service, as applicable. Also, report intentions before taxiing onto the active runway for departure. If you must change frequencies for other service after initial report to FSS, return to FSS frequency for traffic update.

a) Inbound

EXAMPLE–

Vero Beach radio, Centurion Six Niner Delta Delta is ten miles south, two thousand, landing Vero Beach. I have the automated weather, request airport advisory.

b) Outbound

EXAMPLE–

Vero Beach radio, Centurion Six Niner Delta Delta, ready to taxi to runway 22, VFR, departing to the southwest. I have the automated weather, request airport advisory.

9.2.4.3 Airport advisory service includes wind direction and velocity, favored or designated runway, altimeter setting, known airborne and ground traffic, NOTAMs, airport taxi routes, airport traffic pattern information, and instrument approach procedures. These elements are varied so as to best serve the current traffic situation. Some airport managers have specified that under certain wind or other conditions designated runways be used. Pilots should advise the FSS of the runway they intend to use.

*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 accor-

dance 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.	

9.4 Designated UNICOM/MULTICOM Frequencies

9.4.1 Frequency Use

9.4.1.1 TBL GEN 3.3–2 depicts UNICOM and MULTICOM frequency uses as designated by the Federal Communications Commission (FCC).

NOTE–

1. In some areas of the country, frequency interference may be encountered from nearby airports using the same UNICOM frequency. Where there is a problem, UNICOM operators are encouraged to develop a “least interference” frequency assignment plan for airports concerned using the frequencies designated for airports without operating control towers. UNICOM licensees are encouraged to apply for UNICOM 25 KHz spaced channel frequencies. Due to the extremely limited number of frequencies with 50 KHz channel spacing, 25 KHz channel spacing should be implemented. UNICOM licensees may then request FCC to assign frequencies in accordance with the plan, which FCC will review and consider for approval.

2. Wind direction and runway information may not be available on UNICOM frequency 122.950.

9.4.1.2 TBL GEN 3.3–3 depicts other frequency uses as designated by the FCC.

9.5 Use of UNICOM for ATC purposes

9.5.1 UNICOM service may be used for air traffic control purposes, only under the following circumstances:

9.5.1.1 Revision to proposed departure time.

9.5.1.2 Takeoff, arrival, or flight plan cancellation time.

9.5.1.3 ATC clearance, provided arrangements are made between the ATC facility and the UNICOM licensee to handle such messages.

TBL GEN 3.3–2
UNICOM/MULTICOM Frequency Usage

Use	Frequency
Airports without an operating control tower.	122.700 122.725 122.800 122.975 123.000 123.050 123.075
(MULTICOM FREQUENCY) Activities of a temporary, seasonal, emergency nature or search and rescue, as well as, airports with no tower, FSS, or UNICOM.	122.900
(MULTICOM FREQUENCY) Forestry management and fire suppression, fish and game management and protection, and environmental monitoring and protection.	122.925
Airports with a control tower or FSS on airport.	122.950

TBL GEN 3.3–3
Other Frequency Usage Designated by FCC

Use	Frequency
Air-to-air communication (private fixed wing aircraft).	122.750
Air-to-air communications (general aviation helicopters).	123.025
Aviation instruction, Glider, Hot Air Balloon (not to be used for advisory service).	123.300 123.500

9.6 Automatic Terminal Information Service (ATIS)

9.6.1 ATIS is the continuous broadcast of recorded noncontrol information in selected high activity terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information. The information is continuously broadcast over a discrete VHF radio frequency or the voice portion of a local NAVAID. ATIS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 60 NM from the ATIS site and a maximum altitude of 25,000 feet AGL. At most locations, ATIS signals may be received on the surface of the airport, but local conditions may limit the maximum ATIS reception distance and/or altitude. Pilots are urged to cooperate in the ATIS program as it relieves frequency congestion on approach control, ground control, and local control frequencies. The Chart Supplement U.S. indicates airports for which ATIS is provided.

9.6.2 ATIS information includes the time of the latest weather sequence, ceiling, visibility, obstructions to visibility, temperature, dew point (if available), wind direction (magnetic), and velocity, altimeter, other pertinent remarks, instrument approach, and runway in use. The ceiling/sky condition, visibility, and obstructions to vision may be omitted from the ATIS broadcast if the ceiling is above 5,000 feet and the visibility is more than 5 miles. The departure runway will only be given if different from the landing runway except at locations having a separate ATIS for departure. The broadcast may include the appropriate frequency and instructions for VFR arrivals to make initial contact with approach control. Pilots of aircraft arriving or departing the terminal area can receive the continuous ATIS broadcast at times when cockpit duties are least pressing and listen to as many repeats as desired. ATIS broadcast must be updated upon the receipt of any official hourly and special weather. A new recording will also be made when there is a change in other pertinent data such as runway change, instrument approach in use, etc.

SAMPLE BROADCAST-

DULLES INTERNATIONAL INFORMATION SIERRA. 1300ZULU WEATHER. MEASURED CEILING THREE THOUSAND OVERCAST. VISIBILITY THREE, SMOKE. TEMPERATURE SIX EIGHT. WIND THREE FIVE ZERO AT EIGHT. ALTIMETER TWO NINER NINER TWO. ILS

RUNWAY ONE RIGHT APPROACH IN USE. LANDING RUNWAY ONE RIGHT AND LEFT. DEPARTURE RUNWAY THREE ZERO. ARMEL VORTAC OUT OF SERVICE. ADVISE YOU HAVE SIERRA.

9.6.3 Pilots should listen to ATIS broadcasts whenever ATIS is in operation.

9.6.4 Pilots should notify controllers on initial contact that they have received the ATIS broadcast by repeating the alphabetical code word appended to the broadcast.

EXAMPLE-

"Information Sierra received."

9.6.5 When the pilot acknowledges receipt of the ATIS broadcast, controllers may omit those items contained on the broadcast if they are current. Rapidly changing conditions will be issued by ATC and the ATIS will contain words as follows:

EXAMPLE-

"Latest ceiling/visibility/altimeter/wind/(other conditions) will be issued by approach control/tower."

NOTE-

The absence of a sky condition/ceiling and/or visibility on ATIS indicates a sky condition/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 5,000 and 5," or the existing weather may be broadcast.

9.6.6 Controllers will issue pertinent information to pilots who do not acknowledge receipt of a broadcast or who acknowledge receipt of a broadcast which is not current.

9.6.7 To serve frequency-limited aircraft, FSSs are equipped to transmit on the omnirange frequency at most en route VORs used as ATIS voice outlets. Such communication interrupts the ATIS broadcast. Pilots of aircraft equipped to receive on other FSS frequencies are encouraged to do so in order that these override transmissions may be kept to an absolute minimum.

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

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 effect 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.

GEN 3.4 Communication Service

1. Responsible Authority

1.1 The authority responsible for the administration of communications services in the U.S. is the Federal Aviation Administration, Communication, Navigation, Surveillance, and Infrastructure.

Postal Address:

Federal Aviation Administration
Communications, Navigation, Surveillance, and
Infrastructure (ARN-1)
400 7th Street, SW
Washington, D.C. 20590

AFTN Address: KDCAYYX

Commercial Telegraphic Address:

ACIVAIR Washington DC

Telex: 892-562

2. Area of Responsibility

2.1 Communications services are available on a continuous basis without charge to the user. The Air Traffic Services Division is responsible for the establishment of the operational requirements of the U.S. communications system. Responsibility for the day to day operation of these services resides with the local air traffic facility. Enquiries or complaints regarding any communications services or facilities should be referred to the relevant air traffic facility or to the Federal Aviation Administration, Air Traffic Operations Services, as appropriate.

3. Types of Services

3.1 Radio Navigation Service

3.1.1 Various types of air navigation aids are in use today, each serving a special purpose. These aids have varied owners and operators, namely: the Federal Aviation Administration, the military services, private organizations; and individual states and foreign governments. The Federal Aviation Administration has the statutory authority to establish, operate, and maintain air navigation facilities and to prescribe standards for the operation of any of these aids which are used by both civil and military aircraft

for instrument flight in federally controlled airspace. These aids are tabulated in the Chart Supplement U.S. by State.

3.1.2 Pilots should be aware of the possibility of momentary erroneous indications on cockpit displays when the primary signal generator for a ground-based navigational transmitter (for example, a glideslope, VOR, or nondirectional beacon) is inoperative. Pilots should disregard any navigation indication, regardless of its apparent validity, if the particular transmitter was identified by NOTAM or otherwise as unusable or inoperative.

3.1.3 The following types of radio navigation aids are provided in the U.S.:

3.1.3.1 VHF Direction-Finding (VHF-DF).

3.1.3.2 LF Non-Directional Beacon (NDB).

3.1.3.3 VHF Omni-Directional Radio Range (VOR).

3.1.3.4 Distance Measuring Equipment (DME).

3.1.3.5 Tactical Air Navigation (TACAN).

3.1.3.6 Instrument Landing System (ILS).

3.1.3.7 Final Approach Simplified Directional Facility (SDF).

3.1.3.8 Precision Approach Radar (PAR) at certain military aerodromes.

3.1.3.9 Global Positioning System (GPS).

3.1.4 NAVAID Service Volumes

3.1.4.1 Most air navigation radio aids which provide positive course guidance have a designated standard service volume (SSV). The SSV defines the reception limits of unrestricted NAVAIDs which are usable for random/unpublished route navigation.

3.1.4.2 A NAVAID will be classified as restricted if it does not conform to flight inspection signal strength and course quality standards throughout the published SSV. However, the NAVAID should not be considered usable at altitudes below that which could be flown while operating under random route IFR conditions; even though these altitudes may lie within the designated SSV.

NOTE—

Refer to Federal Aviation Regulations (14 CFR Section 91.177) for minimum altitudes for IFR operations. Service volume restrictions are first published in the Notices to Airman (NOTAM) and then with the alphabetical listing of the NAVAIDs in the Chart Supplement U.S.

3.1.4.3 Standard service volume limitations do not apply to published IFR routes or procedures.

3.1.4.4 VOR/DME/TACAN Standard Service Volumes (SSV):

a) SSVs are graphically shown in FIG GEN 3.4-1, FIG GEN 3.4-2, FIG GEN 3.4-3, FIG GEN 3.4-4, and FIG GEN 3.4-5. The SSV of a station is indicated by using the class designator as a prefix to the station type designation.

EXAMPLE—

TVOR, LDME, and HVORTAC.

b) Within 25 NM, the bottom of the T service volume is defined by the curve in FIG GEN 3.4-4. Within 40 NM, the bottoms of the L and H service volumes are defined by the curve in FIG GEN 3.4-5.

FIG GEN 3.4-1

Standard High Altitude Service Volume
(See FIG GEN 3.4-5 for altitudes below 1,000 feet.)

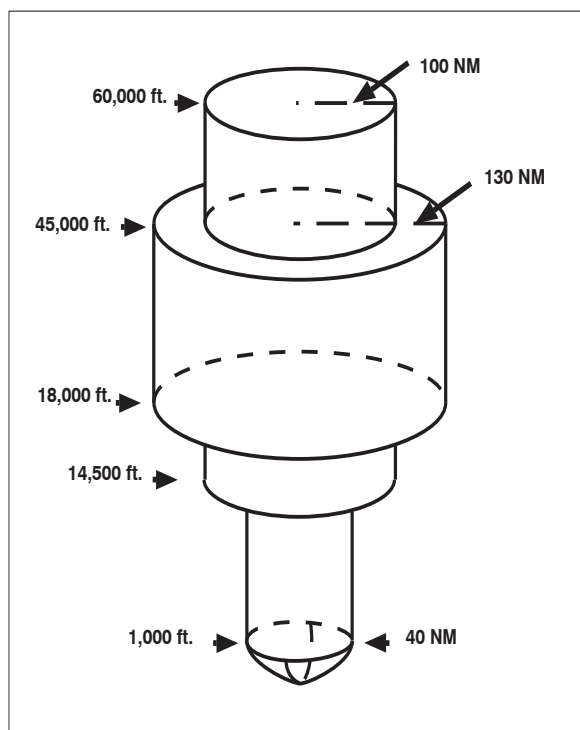


FIG GEN 3.4-2

Standard Low Altitude Service Volume
(See FIG GEN 3.4-5 for altitudes below 1,000 feet.)

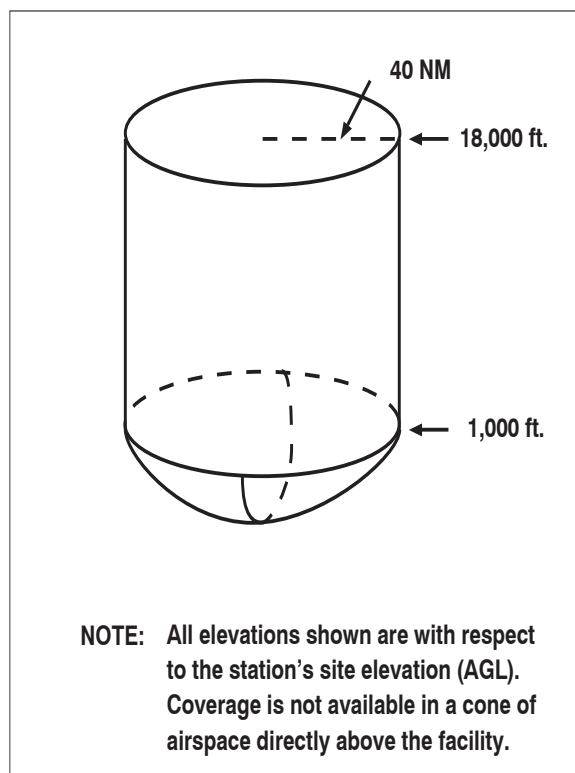
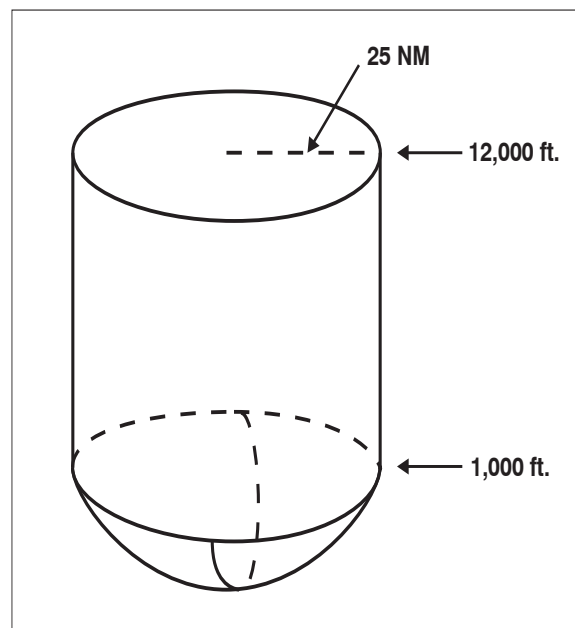


FIG GEN 3.4-3

Standard Terminal Service Volume
(See FIG GEN 3.4-4 for altitudes below 1,000 feet.)



3.1.4.5 Nondirectional Radio Beacon (NDB)

a) NDBs are classified according to their intended use.

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

TBL GEN 3.4-1
VOR/DME/TACAN Standard Service Volumes

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

TBL GEN 3.4-2
NDB Service Volumes

Class	Distance (Radius)
Compass Locator	15 NM
MH	25 NM
H	50 NM*
HH	75 NM

* Service ranges of individual facilities may be less than 50 nautical miles (NM). Restrictions to service volumes are first published as a Notice to Airmen and then with the alphabetical listing of the NAVAID in the Chart Supplement U.S.

FIG GEN 3.4-4
Service Volume Lower Edge Terminal

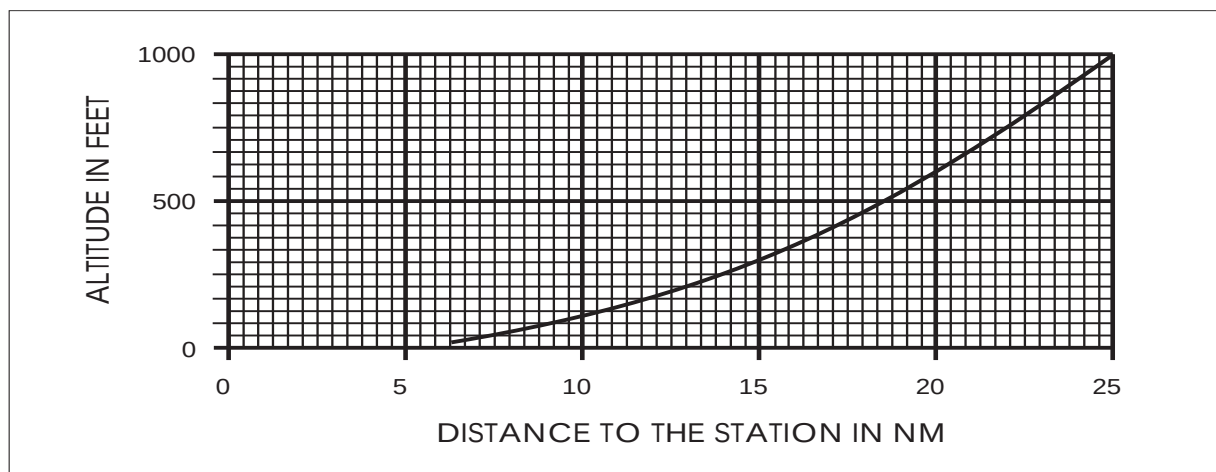
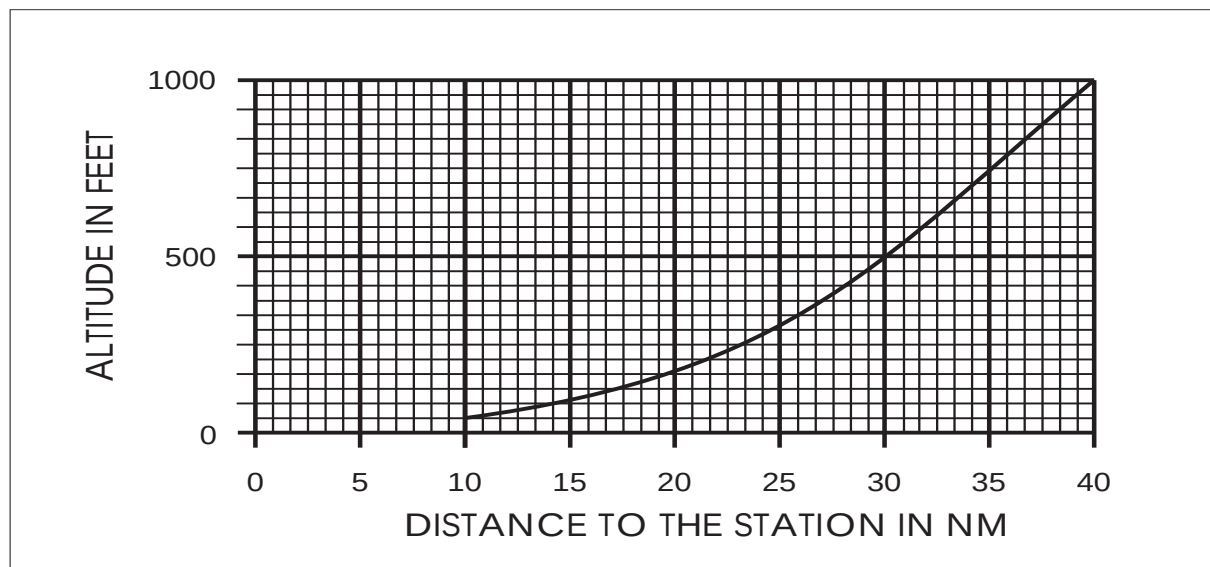


FIG GEN 3.4-5
Service Volume Lower Edge
Standard High and Low



3.1.5 NAVAIDs with Voice

3.1.5.1 Voice equipped en route radio navigational aids are under the operational control of either an FAA Flight Service Station (FSS) or an approach control facility. The voice communication is available on some facilities. Hazardous Inflight Weather Advisory Service (HIWAS) broadcast capability is available on selected VOR sites throughout the conterminous U.S. and does not provide two-way voice communication. The availability of two-way voice communication and HIWAS is indicated in the Chart Supplement U.S. and aeronautical charts.

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

3.2 Mobile Service

3.2.1 The aeronautical stations (Airport Traffic Control Towers, Air Route Traffic Control Centers, and Flight Service Stations) maintain a continuous watch on their assigned frequencies during the published hours of service unless otherwise notified. An aircraft should normally communicate with the

air-ground control radio station which exercises control in the area in which it is flying. Aircraft should maintain continuous watch on the appropriate frequency of the control station and should not abandon watch, except in an emergency, without informing the control radio station.

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

3.3 Fixed Service

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

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

3.3.1.2 Are prepared in the form specified in Annex 10.

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

3.3.2 General aircraft operating messages, Class B traffic, including reservation messages pertaining to flights scheduled to depart within 72 hours, must not be acceptable for transmission over U.S. government operated telecommunications circuits except in those cases where it has been determined by the U.S. that adequate non-government facilities are not available.

3.4 Broadcast Service

3.4.1 The following meteorological broadcasts are available for the use of aircraft in flight:

3.4.1.1 LF Transcribed Weather Broadcast (TWEB).

3.4.1.2 Sub-Area Meteorological Broadcast (Vol-met).

3.4.1.3 VHF RTF Meteorological Broadcasts.

3.4.2 Full details of broadcast service are given in GEN 3.5, Meteorological Services.

3.4.3 All broadcast services to aircraft are provided in the English language only.

4. Aeronautical Fixed Services

4.1 General

4.1.1 All U.S. ATC facilities have the ability to communicate with all other ATS facilities via either telephone or other domestic telecommunications systems. Circuit diagrams depicting these connections are not available for this publication due to the number of ATS facilities available in the U.S.

4.2 The Domestic Telecommunications Network

4.2.1 The U.S. Domestic telecommunications network is an automated system operating through the National Airspace Data Interchange Network (NADIN) in Atlanta, GA, and Salt Lake City, NV. All Flight Service Stations (FSS) and Air Route Traffic Control Centers (ARTCC) connect through the NATCOM. All FSS and ARTCC facilities have both transmit and receive capabilities.

4.2.2 Airport Air Traffic Control Towers (ATCT) and Approach Control (A/C) Facilities do not connect with this system. Messages originating from or destined to these facilities are relayed through the associated FSS. Associated FSSs for these facilities are listed in the Chart Supplement U.S.

4.2.3 Airport administrative offices, airport managers or airport administrative officials do not normally connect with the domestic telecommunications network. Urgent messages destined to these facilities must be forwarded to the associated FSS for relay or the message must be sent through commercial telegraphic systems.

4.3 The International Message Network (Aeronautical Fixed Telecommunications Network–AFTN)

4.3.1 AFTN messages originating from outside the U.S. domestic telecommunications system must be prepared in accordance with ICAO procedures. All incoming messages are received by NADIN and relayed to the addressed facility through automated procedures. The automated system will interpret the international address group and automatically forward the message via the domestic system to the addressee. For example, a message addressed KIKKYFYX will be accepted by AFTN and relayed to IKK (Kankakee FSS). The Kankakee FSS will manually relay this message to the intended recipient when necessary. Intended recipients are to be addressed in the first line of the message text.

4.3.2 All international flight plans entering the U.S. system must adhere to ICAO format. These flight plans are to be forwarded, via AFTN, to each affected, U.S. controlled, Flight Information Region (FIR) or Air Route Traffic Control Center (ARTCC) outside the continental U.S. (e.g., Miami FIR, San Juan, P.R. ARTCC) or the first FIR/ARTCC for flights entering the continental U.S. (e.g., New York FIR/ARTCC). If the flight plan content is acceptable, it is entered into the ARTCC system and is forwarded, automatically, via ARTCC computer, to all subsequently affected domestic ARTCCs. Flight plans which cannot be processed are rejected at the point of entry into the U.S. system and the originator is queried. Format adherence, once the flight plan is in the ARTCC system, is assured since each of the ARTCCs are automated facilities. Each subsequent ARTCC computer, however, will process incoming flight plans according to the requested routing. Flight plans can be rejected by any ARTCC due to errors in routing. Rejected flight plans, regardless of reason or point of rejection, are held in suspense until the needed clarification is received by the ARTCC facility.

4.4 Radio Communications Phraseology and Techniques

4.4.1 General

4.4.1.1 Radio communications are a critical link in the ATC system. The link can be a strong bond between pilot and controller – or it can be broken with surprising speed and disastrous results. Discussion herein provides basic procedures for new pilots and also highlights safe operating concepts for all pilots.

4.4.1.2 The single, most important thought in pilot–controller communications is understanding. It is essential, therefore, that pilots acknowledge each radio communication with ATC by using the appropriate aircraft call sign. Brevity is important, and contacts should be kept as brief as possible, but the controller must know what you want to do before he/she can properly carry out his/her control duties. And you, the pilot, must know exactly what he/she wants you to do. Since concise phraseology may not always be adequate, use whatever words are necessary to get your message across. Pilots are to maintain vigilance in monitoring air traffic control radio communications frequencies for potential traffic conflicts with their aircraft especially when operating on an active runway and/or when conducting a final approach to landing.

4.4.1.3 All pilots will find the Pilot/Controller Glossary very helpful in learning what certain words or phrases mean. Good phraseology enhances safety and is the mark of a professional pilot. Jargon, chatter and “CB” slang have no place in ATC communications. The Pilot/Controller Glossary is the same glossary used in the ATC controller’s handbook. We recommend that it be studied and reviewed from time to time to sharpen your communication skills.

4.4.2 Radio Technique

4.4.2.1 Listen before you transmit. Many times you can get the information you want through ATIS or by monitoring the frequency. Except for a few situations where some frequency overlap occurs, if you hear someone else talking, the keying of your transmitter will be futile and you will probably jam their receivers causing them to repeat their call. If you have just changed frequency, pause for your receiver to tune, listen, and make sure the frequency is clear.

4.4.2.2 Think before keying your transmitter. Know what you want to say and if it is lengthy; e.g., a flight plan or IFR position report, jot it down. (But do not lock your head in the cockpit.)

4.4.2.3 The microphone should be very close to your lips and after pressing the mike button, a slight pause may be necessary to be sure the first word is transmitted. Speak in a normal conversational tone.

4.4.2.4 When you release the button, wait a few seconds before calling again. The controller or FSS specialist may be jotting down your number, looking for your flight plan, transmitting on a different frequency, or selecting his/her transmitter to your frequency.

4.4.2.5 Be alert to the sounds or lack of sounds in your receiver. Check your volume, recheck your frequency, and make sure that your microphone is not stuck in the transmit position. Frequency blockage can, and has, occurred for extended periods of time due to unintentional transmitter operation. This type of interference is commonly referred to as a “stuck mike,” and controllers may refer to it in this manner when attempting to assign an alternate frequency. If the assigned frequency is completely blocked by this type of interference, use the procedures described in paragraph 12., Two-Way Radio Communications Failure.

4.4.2.6 Be sure that you are within the performance range of your radio equipment and the ground station equipment. Remote radio sites do not always transmit and receive on all of a facilities’ available frequencies, particularly with regard to VOR sites where you can hear but not reach a ground station’s receiver. Remember that higher altitude increases the range of VHF “line of sight” communications.

4.4.3 Aircraft Call Signs

4.4.3.1 Improper use of call signs can result in pilots executing a clearance intended for another aircraft. Call signs should never be abbreviated on an initial contact or at any time when other aircraft call signs have similar numbers/sounds or identical letters/numbers, (e.g., Cessna 6132F, Cessna 1622F, Baron 123F, Cherokee 7732F, etc.).

EXAMPLE–

As an example, assume that a controller issues an approach clearance to an aircraft at the bottom of a holding stack and an aircraft with a similar call sign (at the top of the stack) acknowledges the clearance with the last two or three numbers of his/her call sign. If the aircraft at the bottom of

the stack did not hear the clearance and intervene, flight safety would be affected, and there would be no reason for either the controller or pilot to suspect that anything is wrong. This kind of “human factors” error can strike swiftly and is extremely difficult to rectify.

4.4.3.2 Pilots, therefore, must be certain that aircraft identification is complete and clearly identified before taking action on an ATC clearance. ATC specialists will not abbreviate call signs of air carrier or other civil aircraft having authorized call signs. ATC specialists may initiate abbreviated call signs of other aircraft by using the prefix and the last three digits/letters of the aircraft identification after communications are established. The pilot may use the abbreviated call sign in subsequent contacts with the ATC specialist. When aware of similar/identical call signs, ATC specialists will take action to minimize errors by emphasizing certain numbers/letters, by repeating the entire call sign, repeating the prefix, or by asking pilots to use a different call sign temporarily. Pilots should use the phrase “Verify clearance for (your complete call sign)” if doubt exists concerning proper identity.

4.4.3.3 Civil aircraft pilots should state the aircraft type, model or manufacturer’s name followed by the digits/letters of the registration number. When the aircraft manufacturer’s name or model is stated, the prefix “N” is dropped.

EXAMPLE–
“Bonanza Six Five Five Golf,” “Douglas One One Zero,” “Breezy Six One Three Romeo Experimental” (Omit “Experimental” after initial contact).

4.4.3.4 Air taxi or other commercial operators not having FAA authorized call signs should prefix their normal identification with the phonetic word “Tango.”

EXAMPLE–
“Tango Aztec Two Four Six Four Alpha.”

4.4.3.5 Air carriers and commuter air carriers having FAA authorized call signs should identify themselves by stating the complete call sign (using group form for the numbers) and the word “super” or “heavy” if appropriate.

EXAMPLE–
“United Twenty-five, Midwest Commuter Seven Eleven.”

4.4.3.6 Military aircraft use a variety of systems including serial numbers, word call signs and combinations of letters/numbers.

EXAMPLE–
“Army Copter 48931” “Air Force 61782” “REACH 31792” “Pat 157” “AirEvac 17652” “Navy Golf Alpha Kilo 21” “Marine 4 Charlie 36”

4.4.3.7 Air Ambulance Flights. Because of the priority afforded air ambulance flights in the ATC system, extreme discretion is necessary when using the term “MEDEVAC.” It is only intended for those missions of an urgent medical nature and to be utilized only for that portion of the flight requiring expeditious handling. When requested by the pilot, necessary notification to expedite ground handling of patients, etc., is provided by ATC; however, when possible, this information should be passed in advance through non-ATC communications systems.

a) Civilian air ambulance flights responding to medical emergencies (first call to an accident scene, carrying patients, organ donors, organs, or other urgently needed lifesaving medical material) will be expedited by ATC when necessary. When expeditious handling is necessary, include the word “MEDEVAC” in the remarks section of the flight plan. In radio communications, use the call sign “MEDEVAC” followed by the aircraft registration letters/numbers.

EXAMPLE–
“MEDEVAC Two Six Four Six”

b) Similar provisions have been made for the use of AIR EVAC, HOSP, and scheduled air carrier/air taxi flights, except that these flights will receive priority only when specifically requested.

c) Air carrier and air taxi flights responding to medical emergencies will also be expedited by ATC when necessary. The nature of these medical emergency flights usually concerns the transportation of urgently needed lifesaving medical materials or vital organs. IT IS IMPERATIVE THAT THE COMPANY/PILOT DETERMINE, BY THE NATURE/URGENCY OF THE SPECIFIC MEDICAL CARGO, IF PRIORITY ATC ASSISTANCE IS REQUIRED. Pilots must ensure that the word “MEDEVAC” is included in the remarks section of the flight plan and use the call sign “MEDEVAC” followed by the company name and flight number, for all transmissions when expeditious handling is required. It is important for ATC to be aware of

“MEDEVAC” status, and it is the pilot’s responsibility to ensure that this information is provided to ATC.

EXAMPLE–

“MEDEVAC Delta Thirty-seven.”

4.4.3.8 Student Pilots Radio Identification. The FAA desires to help the student pilot in acquiring sufficient practical experience in the environment in which he/she will be required to operate. To receive additional assistance while operating in areas of concentrated air traffic, a student pilot need only identify himself/herself as a student pilot during his/her initial call to an FAA radio facility. For instance, “Dayton Tower, Fleetwing One Two Three Four, Student Pilot.” This special identification will alert FAA air traffic control personnel and enable them to provide the student pilot with such extra assistance and consideration as he/she may need. It is recommended that student pilots identify themselves as such, on initial contact with each clearance delivery prior to taxiing, ground control, tower, approach and departure control frequency, or FSS contact.

4.4.4 Description of Interchange or Leased Aircraft

4.4.4.1 Controllers issue traffic information based on familiarity with airline equipment and color/markings. When an air carrier dispatches a flight using another company’s equipment and the pilot does not advise the terminal ATC facility, the possible confusion in aircraft identification can compromise safety.

4.4.4.2 Pilots flying an “interchange” or “leased” aircraft not bearing the colors/markings of the company operating the aircraft should inform the terminal ATC facility on first contact the name of the operating company and trip number, followed by the company name as displayed on the aircraft, and aircraft type.

EXAMPLE–

AIR CAL 311, United (Interchange/Lease), Boeing 727.

4.4.5 Ground Station Call Signs

4.4.5.1 Pilots, when calling a ground station, should begin with the name of the facility being called followed by the type of the facility being called, as indicated in the following examples.

TBL GEN 3.4-3

Calling a Ground Station

Facility	Call Sign
Airport UNICOM	“Shannon UNICOM”
FAA Flight Service Station	“Chicago Radio”
Airport Traffic Control Tower	“Augusta Tower”
Clearance Delivery Position (IFR)	“Dallas Clearance Delivery”
Ground Control Position in Tower	“Miami Ground”
Radar or Nonradar Approach Control Position	“Oklahoma City Approach”
Radar Departure Control Position	“St. Louis Departure”
FAA Air Route Traffic Control Center	“Washington Center”

4.5 Radio Communications Phraseology

4.5.1 Phonetic Alphabet

4.5.1.1 The International Civil Aviation Organization (ICAO) phonetic alphabet is used by FAA personnel when communications conditions are such that the information cannot be readily received without their use. Air traffic control facilities may also request pilots to use phonetic letter equivalents when aircraft with similar sounding identifications are receiving communications on the same frequency. Pilots should use the phonetic alphabet when identifying their aircraft during initial contact with air traffic control facilities. Additionally, use the phonetic equivalents for single letters and to spell out groups of letters or difficult words during adverse communications conditions.

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

NOTE—

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

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

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

4.5.8 Contact Procedures

4.5.8.1 Initial Contact

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

- 1) Name of facility being called.

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

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

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

5) The word “Over,” if required.

EXAMPLE—

1. “New York Radio, Mooney Three One One Echo.”
2. “Columbia Ground, Cessna Three One Six Zero Foxtrot, south ramp, I–F–R Memphis.”
3. “Miami Center, Baron Five Six Three Hotel, request VFR traffic advisories.”

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

EXAMPLE—

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

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

EXAMPLE—

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

4.5.9 Initial Contact when your Transmitting and Receiving Frequencies are Different

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

EXAMPLE-

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

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

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

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

4.6 Acknowledgement of Frequency Changes

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

4.6.2 At times, a controller/specialist may be working a sector with multiple frequency assignments. In order to eliminate unnecessary verbiage and to free the controller/specialist for higher priority

transmissions, the controller/specialist may request the pilot "(Identification), change to my frequency 123.4." This phrase should alert the pilot that he/she is only changing frequencies, not controller/specialist, and that initial call-up phraseology may be abbreviated.

EXAMPLE-

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

4.6.3 Compliance with Frequency Changes.

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

5. Communications for VFR Flights

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

NOTE-

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

EXAMPLE-

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

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

6. Over-water Flights Radio Procedure

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

equipment limitations, or cockpit duties prevent simultaneous guarding of two channels. Guarding of 121.5 MHz is particularly critical when operating in proximity to flight information region (FIR) boundaries; for example, operations on Route R220 between Anchorage and Tokyo, since it serves to facilitate communications with regard to aircraft which may experience in-flight emergencies, communications, or navigational difficulties. (Reference ICAO Annex 10, Vol II Paras. 5.2.2.1.1.1 and 5.2.2.1.1.2.)

7. Radio Communications and Navigation Facilities

7.1 A complete listing of air traffic radio communications facilities and frequencies and radio navigation facilities and frequencies is contained in the Chart Supplement U.S. Similar information for the Pacific and Alaskan areas is contained in the Pacific and Alaskan Supplements (See GEN 3.2, Aeronautical Charts).

8. U.S. Aeronautical Telecommunications Services

8.1 The following services are available for aircraft engaged in international or overseas flight.

8.2 The aeronautical voice communication stations listed are available to and utilized by the U.S. Federal Aviation Administration Air Traffic Control Centers for air traffic control purposes.

8.3 The frequencies in use will depend upon the time of day or night and conditions which affect radio wave propagation. Voice communications handled on a single channel simplex basis (i.e., with the aircraft and the ground station using the same frequency for transmission and reception) unless otherwise noted in remarks.

8.4 The stations will remain on continuous watch for aircraft within their communications areas and, when practicable, will transfer this watch to another station when the aircraft reaches the limit of the communications area.

8.5 Stations listed below which are designated “FAA” are operated by the U.S. Federal Aviation

Administration. Stations designated “ARINC” are operated by Aeronautical Radio, Incorporated, 2551 Riva Road, Annapolis, MD 21401. Contact the Aviation Voice Services Support Section at 410-266-4430, E:Mail AGOPS@arinc.com or cable HDQXGXA. (See TBL GEN 3.4-6.)

8.6 All users of the North Atlantic HF MWARA services should consult International NOTAMS and ICAO Regional Supplementary Procedures, Document 7030, for current procedures concerning the operational use of the North Atlantic HF families. At present, procedures for the distribution of HF communications traffic in the North Atlantic are:

8.6.1 All aircraft registered in the hemisphere west of 30W should use family alpha on the southern routes and family bravo on the central and northern routes. (Southern routes are those which enter the New York, San Juan and Santa Maria FIRs. The central and northern routes comprise all others).

8.6.2 All aircraft registered in the hemisphere east of 30W should use family alpha on the southern routes and family charlie on the central and northern routes.

8.6.3 All aircraft should use family alpha on the southern route and family delta on the central and northern routes while outside the organized track system (OTS).

8.6.4 Aircraft registered in Australia will use families designated to aircraft registered east of 30W.

8.7 Aircraft operating in the Anchorage Arctic CTA/FIR beyond line of sight range of remote control VHF air/ground facilities operated from the Anchorage ACC, must maintain communications with Cambridge Bay radio and a listening or SELCAL watch on HF frequencies of the North Atlantic D (NAT D) network (2971 kHz, 4675 kHz, 8891 kHz and 11279 kHz). Additionally, and in view of reported marginal reception of the Honolulu Pacific Volmet broadcasts in that and adjacent Canadian airspace, Cambridge Bay radio can provide Anchorage and Fairbanks surface observations and terminal forecasts to flight crews on request.

TBL GEN 3.4-6

Station and Operating Agency	Radio Call	Transmitting Frequencies	Remarks
HONOLULU (FAA)	Honolulu Radio	122.6 122.2 #121.5 MHz	#Emergency. Frequency 122.1 also available for receiving only.
	Volmet	2863 6679 8828 13282 kHz	Broadcasts at H+00-05 and H+30-35; Aerodrome Forecasts, Honolulu, Hilo, Agana, Honolulu. SIGMET. Hourly Report, Honolulu, Hilo, Kahului, Agana, Honolulu.
			Broadcasts at H+05-10 and H+35-40; Hourly Reports, San Francisco, Los Angeles, Seattle, Portland, Sacramento, Ontario, Las Vegas. SIGMET. Aerodrome Forecasts, San Francisco, Seattle, Los Angeles.
			Broadcasts at H+25-30 and H+55-60; Hourly Reports, Anchorage, Elmendorf, Fairbanks, Cold Bay, King Salmon, Vancouver. SIGMET. Aerodrome Forecasts, Anchorage, Fairbanks, Cold Bay, Vancouver.
MIAMI (FAA)	Miami Radio	126.7 118.4 126.9 122.2 122.4 122.75 123.65 127.9 MHz	Local and Short Range.
		#121.5 MHz	#Emergency.
NEW YORK (FAA)	New York Radio (Volmet)	3485* 6604 10051 13270* kHz	*3485 Volmet broadcasts from 1 hour after sunset to 1 hour before sunrise.
			*13270 Volmet broadcasts from 1 hour before sunrise to 1 hour after sunset.
			Broadcasts at H+00-05; Aerodrome Forecasts, Detroit, Chicago, Cleveland. Hourly Reports, Detroit, Chicago, Cleveland, Niagara Falls, Milwaukee, Indianapolis.
			Broadcasts at H+05-10; SIGMET (Oceanic-New York). Aerodrome Forecasts, Bangor, Pittsburgh, Charlotte. Hourly Reports, Bangor, Pittsburgh, Windsor Locks, St. Louis, Charlotte, Minneapolis.
			Broadcasts at H+10-15; Aerodrome Forecasts, New York, Newark, Boston. Hourly reports, New York, Newark, Boston, Baltimore, Philadelphia, Washington.
			Broadcasts at H+15-20; SIGMET (Oceanic-Miami/San Juan). Aerodrome Forecasts, Bermuda, Miami, Atlanta. Hourly Reports, Bermuda, Miami, Nassau, Freeport, Tampa, West Palm Beach, Atlanta.
			Broadcasts at H+30-35; Aerodrome Forecasts, Niagara Falls, Milwaukee, Indianapolis. Hourly Reports Detroit, Chicago, Cleveland, Niagara Falls, Milwaukee, Indianapolis.
			Broadcasts at H+35-40; SIGMET (Oceanic-New York). Aerodrome Forecasts, Windsor Locks, St. Louis. Hourly Reports, Bangor, Pittsburgh, Windsor Locks, St. Louis, Charlotte, Minneapolis.
			Broadcasts at H+40-45; Aerodrome Forecasts, Baltimore, Philadelphia, Washington. Hourly Reports, New York, Newark, Boston, Baltimore, Philadelphia, Washington.
			Broadcasts at H+45-50; SIGMET (Oceanic-Miami/San Juan). Aerodrome Forecasts, Nassau, Freeport. Hourly Reports, Bermuda, Miami, Nassau, Freeport, Tampa, West Palm Beach, Atlanta.

Station and Operating Agency	Radio Call	Transmitting Frequencies	Remarks
NEW YORK (ARINC)	New York	3016 5598 8906 13306 17946 21964 kHz	North Atlantic Family A Network.
		2962 6628 8825 11309 13354 17952 kHz	North Atlantic Family E Network.
		2887 3455 5550 6577 8846 11396 kHz	Caribbean Family A Network.
		5520 6586 8918 11330 13297 17907 kHz	Caribbean Family B Network.
		3494 6640 8933 11342 13330 17925 kHz	Long Distance Operations Control (LDOC) Service (phone–patch). Communications are limited to operational control matters only. Public correspondence (personal messages) to/from crew or passengers cannot be accepted. Note: New York ARINC can also provide HF communications over South America on these LDOC frequencies through their remote site located in Santa Cruz, Bolivia.
		129.90 MHz	Extended range VHF. Coverage area includes Canadian Maritime Provinces, and oceanic routes to Bermuda and the Caribbean, from Boston, New York and Washington areas to approximately 250 nautical miles from the east coast.
		130.7 MHz	Extended range VHF. Full period service is provided within most of the Gulf of Mexico. Also on routes between Miami and San Juan to a distance of approximately 250 nautical miles from the Florida coast and within approximately 250 nautical miles of San Juan. Note: New York ARINC also provides VHF communications over the Northern two-thirds of Mexico on 130.7 MHz for 14 CFR Section 121.99 compliance.
			Note: Due to the distances involved, signal levels received by aircraft communicating with New York ARINC in the Gulf of Mexico on frequency 130.700 MHz will be weaker than normally encountered in VHF communications. Most aircraft usually have the squelch setup to communicate where signal levels are much higher and to totally eliminate background noise for the flight crew. In order to increase the range and maximize the coverage area, aircraft are asked to utilize the following squelch settings on their VHF radios while monitoring or communicating with New York ARINC. On aircraft with an OPEN/CLOSE squelch switch, the squelch should be set to the OPEN position while communicating or after being SELCAL'ed. Aircraft with an adjustable system should first set their squelch to fully open position and then adjust to where the noise is reduced or just closed. This will allow the weakest signals to be heard. Utilizing this procedure will increase the background noise heard by the flight crew but will allow communications at a much greater range.

Station and Operating Agency	Radio Call	Transmitting Frequencies	Remarks
		436623* 631–244–2492	Aircraft operating within the New York Oceanic FIR.
			*Note: This satellite Voice Air/Ground calling number is available to call ARINC and will be recognized and converted by all Ground Earth Station (GES) service providers to the appropriate Public Service Telephone Network (PTSN) or direct dial number for this communications center.
SAN FRANCISCO (ARINC)	San Francisco	3413 3452 5574 6673 8843 10057 13354 kHz	Central East Pacific One Network.
		2869 5547 11282 13288 21964 kHz	Central East Pacific Two Network.
		2998 4666 6532 8903 11384 13300 17904 21985 kHz	Central West Pacific Network.
		3467 5643 8867 13261 17904 kHz	South Pacific Network.
		2932 5628 5667 6655 8915 8951 10048 11330 13273 13339 17946 21925 kHz	North Pacific Network
		3494 6640 11342 13348 17925 21964 kHz	Long Distance Operations Control (LDOC) Service (phone–patch). Communications are limited to operational control matters only. Public correspondence (personal messages) to/from crew or passengers cannot be accepted. Note: San Francisco ARINC can also provide HF communications along the polar routes on these LDOC frequencies through their remote site located at Barrow, Alaska.
		131.95 MHz	Extended range VHF. Coverage area includes area surrounding the Hawaiian Islands and along the tracks from HNL to the mainland. Coverage extends out approximately 250 NM from Hawaii and from the West coast.
		129.40 MHz	For en route communications for aircraft operating on Seattle/Anchorage/Routes.
		436625* 925–371–3920	Aircraft operating within the Oakland and Anchorage Oceanic FIRs.
			*Note: This satellite Voice Air/Ground calling number is available to call ARINC and will be recognized and converted by all Ground Earth Station (GES) service providers to the appropriate Public Service Telephone Network (PTSN) or direct dial number for this communications center.
OAKLAND (FAA)	Oakland Radio	122.5 122.2 #121.5 MHz	#Emergency.
SAN JUAN P.R. (FAA)	San Juan Radio	#121.5 122.2 126.7 123.65 #243.0 255.4 114.0 113.5 108.2 108.6 109.0 110.6 MHz	Unscheduled broadcasts H+00, H+15, H+30 and H+45 as appropriate, for Weather and Military Activity Advisories, on 110.6, 109.0, 108.6, 108.2, 113.5, and 114.0 MHz. #Emergency. For frequencies 114.0, 113.5, 108.2 and 109.0 MHz use 122.1 MHz for transmissions to San Juan Radio. For frequency 108.6 use 123.6 MHz.

9. Selective Calling System (SELCAL) Facilities Available

9.1 The SELCAL is a communication system which permits the selective calling of individual aircraft over radio-telephone channels from the ground station to properly equipped aircraft, so as to eliminate the need for the flight crew to constantly monitor the frequency in use.

TBL GEN 3.4-7

Location	Operator	HF	VHF
New York	ARINC	X	X
San Francisco	ARINC	X	X

10. Special North Atlantic, Caribbean, and Pacific Area Communications

10.1 VHF air-to-air frequencies enable aircraft engaged on flights 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.

10.2 Frequencies have been designated as follows:

TBL GEN 3.4-8

Area	Frequency
North Atlantic	123.45 MHz
Caribbean	123.45 MHz
Pacific	123.45 MHz

11. Distress and Urgency Communications

11.1 A pilot who encounters a distress or urgency condition can obtain assistance simply by contacting the air traffic facility or other agency in whose area of responsibility the aircraft is operating, stating the nature of the difficulty, pilot's intentions, and assistance desired. Distress and urgency communications procedures are prescribed by the International Civil Aviation Organization (ICAO), however, and have decided advantages over the informal procedure described above.

11.2 Distress and urgency communications procedures discussed in the following paragraphs relate to the use of air ground voice communications.

11.3 The initial communication, and if considered necessary, any subsequent transmissions by an aircraft in distress should begin with the signal MAYDAY, preferably repeated three times. The signal PAN-PAN should be used in the same manner for an urgency condition.

11.4 Distress communications have absolute priority over all other communications, and the word MAYDAY commands radio silence on the frequency in use. Urgency communications have priority over all other communications except distress, and the word PAN-PAN warns other stations not to interfere with urgency transmissions.

11.5 Normally, the station addressed will be the air traffic facility or other agency providing air traffic services, on the frequency in use at the time. If the pilot is not communicating and receiving services, the station to be called will normally be the air traffic facility or other agency in whose area of responsibility the aircraft is operating, on the appropriate assigned frequency. If the station addressed does not respond, or if time or the situation dictates, the distress or urgency message may be broadcast, or a collect call may be used, addressing "Any Station (Tower) (Radio) (Radar)."

11.6 The station addressed should immediately acknowledge a distress or urgency message, provide assistance, coordinate and direct the activities of assisting facilities, and alert the appropriate Search and Rescue coordinator if warranted. Responsibility will be transferred to another station only if better handling will result.

11.7 All other stations, aircraft and ground, will continue to listen until it is evident that assistance is being provided. If any station becomes aware that the station being called either has not received a distress or urgency message, or cannot communicate with the aircraft in difficulty, it will attempt to contact the aircraft and provide assistance.

11.8 Although the frequency in use or other frequencies assigned by ATC are preferable, the following emergency frequencies can be used for distress or urgency communications, if necessary or desirable:

11.8.1 121.5 MHz and 243.0 MHz. Both have a range generally limited to line of sight. 121.5 MHz is guarded by direction finding stations and some military and civil aircraft. 243.0 MHz is guarded by military aircraft. Both 121.5 MHz and 243.0 MHz are

guarded by military towers, most civil towers, flight service stations, and radar facilities. Normally ARTCC emergency frequency capability does not extend to radar coverage limits. If an ARTCC does not respond when called on 121.5 MHz or 243.0 MHz, call the nearest tower or flight service station.

11.8.2 2182 kHz. The range is generally less than 300 miles for the average aircraft installation. It can be used to request assistance from stations in the maritime service. 2182 kHz is guarded by major radio stations serving Coast Guard Rescue Coordination Centers and Coast Guard units along the sea coasts of the U.S. and shores of the Great Lakes. The call “Coast Guard” will alert all Coast Guard Radio Stations within range. 2182 kHz is also guarded by most commercial coast stations and some ships and boats.

12. Two-Way Radio Communications Failure

12.1 It is virtually impossible to provide regulations and procedures applicable to all possible situations associated with two-way radio communications failure. During two-way radio communications failure when confronted by a situation not covered in the regulation, pilots are expected to exercise good judgment in whatever action they elect to take. Should the situation so dictate, they should not be reluctant to use the emergency action contained in 14 CFR Section 91.3(b).

12.2 Whether two-way communications failure constitutes an emergency depends on the circumstances, and in any event is a determination made by the pilot. 14 CFR Section 91.3 authorizes a pilot to deviate from any rule to the extent required to meet an emergency.

12.3 In the event of two-way radio communications failure, ATC service will be provided on the basis that the pilot is operating in accordance with 14 CFR Section 91.185. A pilot experiencing two-way communications failure should (unless emergency authority is exercised) comply with 14 CFR Section 91.185 as indicated below.

12.4 Unless otherwise authorized by ATC, each pilot who has two-way radio communications failure when operating under IFR must comply with the following conditions:

12.4.1 If the failure occurs in VFR conditions, or if VFR conditions are encountered after the failure, each pilot must continue the flight under VFR and land as soon as practicable.

NOTE—

This procedure also applies when two-way radio failure occurs while operating in Class A airspace. The primary objective of this provision in 14 CFR Section 91.185 is to preclude extended IFR operation by these aircraft within the ATC system. Pilots should recognize that operation under these conditions may unnecessarily as well as adversely affect other users of the airspace, since ATC may be required to reroute or delay other users in order to protect the failure aircraft. However, it is not intended that the requirement to “land as soon as practicable” be construed to mean “as soon as possible.” Pilots retain the prerogative of exercising their best judgment and are not required to land at an unauthorized airport, at an airport unsuitable for the type of aircraft flown, or to land only minutes short of their intended destination.

12.4.2 If the failure occurs in IFR conditions, or if VFR conditions cannot be complied with, each pilot must continue the flight according to the following requirements.

12.5 Route requirements:

12.5.1 By the route assigned in the last ATC clearance received.

12.5.2 If being radar vectored, by the direct route from the point of radio failure to the fix, route, or airway specified in the vector clearance.

12.5.3 In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance.

12.5.4 In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan.

12.6 Altitude requirements. At the HIGHEST of the following altitudes or flight levels FOR THE ROUTE SEGMENT BEING FLOWN:

12.6.1 The altitude or flight level assigned in the last ATC clearance received.

12.6.2 The minimum altitude (converted, if appropriate, to minimum flight level as prescribed in 14 CFR Section 91.121(c)) for IFR operations.

12.6.3 The altitude or flight level ATC has advised may be expected in a further clearance.

NOTE–

The intent of the rule is that a pilot who has experienced two–way radio failure should select the appropriate altitude for the particular route segment being flown and make the necessary altitude adjustments for subsequent route segments. If the pilot received an “expect further clearance” containing a higher altitude to expect at a specified time or fix, he/she should maintain the highest of the following altitudes until that time/fix: (1) his/her last assigned altitude, or (2) the minimum altitude/flight level for IFR operations.

Upon reaching the time/fix specified, the pilot should commence his/her climb to the altitude he/she was advised to expect. If the radio failure occurs after the time/fix specified, the altitude to be expected is not applicable and the pilot should maintain an altitude consistent with 1 or 2 above.

If the pilot receives an “expect further clearance” containing a lower altitude, the pilot should maintain the highest of 1 or 2 above until that time/fix specified in paragraph 12.7, Leave Clearance Limit.

EXAMPLE–

1. A pilot experiencing two–way radio failure at an assigned altitude of 7,000 feet is cleared along a direct route which will require a climb to a minimum IFR altitude of 9,000 feet, should climb to reach 9,000 feet at the time or place where it becomes necessary (see 14 CFR Section 91.177(b)). Later while proceeding along an airway with an MEA of 5,000 feet, the pilot would descend to 7,000 feet (the last assigned altitude), because that altitude is higher than the MEA.

2. A pilot experiencing two–way radio failure while being progressively descended to lower altitudes to begin an approach is assigned 2,700 feet until crossing the VOR and then cleared for the approach. The MOCA along the airway is 2,700 feet and MEA is 4,000 feet. The aircraft is within 22 NM of the VOR. The pilot should remain at 2,700 feet until crossing the VOR because that altitude is the minimum IFR altitude for the route segment being flown.

3. The MEA between a and b – 5,000 feet. The MEA between b and c – 5,000 feet. The MEA between c and d – 11,000 feet. The MEA between d and e – 7,000 feet. A pilot had been cleared via a, b, c, d, to e. While flying between a and b the assigned altitude was 6,000 feet and the pilot was told to expect a clearance to 8,000 feet at b. Prior to receiving the higher altitude assignment, the pilot experienced two–way failure. The pilot would maintain 6,000 to b, then climb to 8,000 feet (the altitude the pilot was advised to expect.) The pilot would maintain 8,000 feet, then climb to 11,000 at c, or prior to c if necessary to comply with an MCA at c. (14 CFR Section 91.177(b).) Upon reaching d, the pilot would descend to 8,000 feet (even though the MEA was 7,000 feet), as 8,000 was the highest of the altitude situations stated in the rule 14 CFR Section 91.185.

12.7 Leave Clearance Limit

12.7.1 When the clearance limit is a fix from which an approach begins, commence descent or descent and approach as close as possible to the expect further clearance time if one has been received, or if one has not been received, as close as possible to the estimated time of arrival as calculated from the filed or amended (with ATC) estimated time en route.

12.7.2 If the clearance limit is not a fix from which an approach begins, leave the clearance limit at the expect further clearance time if one has been received, or if none has been received, upon arrival over the clearance limit, and proceed to a fix from which an approach begins and commence descent or descent and approach as close as possible to the estimated time of arrival as calculated from the filed or amended (with ATC) estimated time en route.

13. Transponder Operation During Two–Way Communications Failure

13.1 If an aircraft with a coded radar beacon transponder experiences a loss of two–way radio capability, the pilot should adjust the transponder to reply on Mode 3/A, Code 7600.

13.2 The pilot should understand that the aircraft may not be in an area of radar coverage.

14. Reestablishing Radio Contact

14.1 In addition to monitoring the NAVAID voice feature, the pilot should attempt to reestablish communications by attempting contact:

14.1.1 On the previously assigned frequency.

14.1.2 With an FSS or ARINC.

14.2 If communications are established with an FSS or ARINC, the pilot should advise the aircraft's position, altitude, and last assigned frequency; then

request further clearance from the controlling facility. The preceding does not preclude the use of 121.5 MHz. There is no priority on which action should be attempted first. If the capability exists, do all at the same time.

NOTE—

Aeronautical Radio Incorporated (ARINC) is a commercial communications corporation which designs, constructs, operates, leases or otherwise engages in radio activities serving the aviation community. ARINC has the capability of relaying information to/from ATC facilities throughout the country.

GEN 3.5 Meteorological Services

1. Meteorological Authority

1.1 The meteorological authority for the United States is the Federal Aviation Administration Assistant Administrator for the Next Generation Air Transportation System (NextGen).

Postal Address:

Assistant Administrator, NextGen
Federal Aviation Administration
Orville Wright Building (FOB-10A)
FAA National Headquarters
800 Independence Avenue, SW.
Washington DC 20591
Telephone: 202-267-7111
Fax: 202-267-5456

1.2 Meteorological Information Service Provider

1.2.1 The meteorological services for civil aviation are prepared by the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

Postal Address:

National Weather Service
National Oceanic and Atmospheric Administration
Department of Commerce
1325 East West Highway
Silver Spring, Maryland 20910
Telephone: 301-713-1726
Fax: 301-713-1598

1.3 Meteorological Offices

1.3.1 FAA Flight Service Stations

1.3.1.1 A complete listing of FAA Flight Service Stations and their telephone numbers is contained in the Chart Supplement U.S. Additionally, communications data and en route services provided by FAA Flight Service Stations are contained in the same publication. Similar information for the Pacific and Alaskan areas is contained in the Chart Supplements Pacific and Alaska. (See GEN 3.2, Aeronautical Charts.)

1.4 Climatological Summaries

1.4.1 Requests for copies of climatological summaries are made available through the:

Postal Address:

National Climatic Data Center
Department of Commerce
National Oceanic and Atmospheric Administration

Environmental Data Services Branch
Federal Building
Asheville, North Carolina 28801

2. Area of Responsibility

2.1 The National Weather Service (NWS) is responsible for providing meteorological services for the 50 states of the U.S., its external territories, and possessions.

2.2 International Flight Documentation Sites. Airports listed below are designated as international flight documentation sites.

TBL GEN 3.5-1

Location	Airport Name	Indicator
Anchorage, AK	Anchorage International	PANC
Atlanta, GA	William B. Hartsfield International	KATL
Baltimore, MD	Baltimore-Washington International	KBWI
Boston, MA	General Edward Lawrence Logan International	KBOS
Charlotte, NC	Charlotte/Douglas International	KCLT
Chicago, IL	O'Hare International	KORD
Cincinnati, OH	Cincinnati/Northern Kentucky International	KCVG
Dallas-Ft. Worth, TX	Dallas-Ft. Worth International	KDFW
Detroit, MI	Detroit Metropolitan Wayne County	KDTW
Fairbanks, AK	Fairbanks International	PAFA
Guam	Guam/Agana Naval Air Station	NOCD AGANA
Hartford, CT	Bradley International	KBDL
Houston, TX	George Bush Intercontinental/Houston	KIAH
Kahului, HI	Kahului	PHOG
Las Vegas, NV	McCarran International	KLAS
Los Angeles, CA	Los Angeles International	KLAX
Miami, FL	Miami International	KMIA
Minneapolis, MN	Minneapolis-St. Paul International (Wold-Chamberlain)	KMSP
New Orleans, LA	New Orleans International (Moisant Field)	KMSY
New York, NY	John F. Kennedy International	KJFK
Newark, NJ	Newark International	KEWR
Orlando, FL	Orlando International	KMCO
Pago Pago, American Samoa	Pago Pago International	NSTU

Location	Airport Name	Indicator
Philadelphia, PA	Philadelphia International	KPHL
Pittsburgh, PA	Pittsburgh International	KPIT
Portland, OR	Portland International	KPDX
Raleigh-Durham, NC	Raleigh-Durham International	KRDU
San Francisco, CA	San Francisco International	KSFO
San Juan, PR	Luis Munoz Marin International	TJSJ
Seattle, WA	Seattle-Tacoma International	KSEA
Tampa, FL	Tampa International	KTPA
Washington, DC	Washington Dulles International	KIAD

2.2.1 Climatological information, basically in the form of climatological summaries, is available at all designated international airports in the U.S.

2.2.2 Flight documentation is provided in the form of copies of facsimile charts, copies of teletype-writer forecasts, and airport forecast decode sheets. Flight documentation materials are available at all destination regular airport meteorological stations. English is the language used for all U.S. flight documentation. Briefings can be provided either in person or received by telephone at all airport meteorological offices.

2.2.3 All airport forecasts (TAF) prepared for U.S. international airports cover the following validity periods: 00-24 UTC, 06-06 UTC, 12-12 UTC, and 18-18 UTC. At the present time, specific landing forecasts are not made for any U.S. airport. The portion of the airport's TAF valid closest to the time of landing is used in lieu of a landing forecast.

2.2.4 Supplementary information available at U.S. meteorological airport offices includes extended weather and severe weather outlooks, pilot reports, runway braking action reports (during the winter), relative humidity, times of sunrise and sunset, surface and upper air analyses, radar echo charts, and forecasts of maximum and minimum surface temperatures.

2.2.5 All meteorological offices shown as taking routine aviation observations also take unscheduled special aviation observations when meteorological conditions warrant.

3. Types of Service Provided

3.1 Area Forecast Charts (Facsimile Form)

3.1.1 The U.S. has one Area Forecast Center, the National Center for Environmental Predictions (NCEP), located in Suitland, Maryland. The NCEP

prepares current weather, significant weather, forecast weather, constant pressure, and tropopause-vertical wind shear charts for the U.S., the Caribbean and Northern South America, the North Atlantic, and the North Pacific areas. The NCEP also prepares a constant pressure and tropopause-vertical wind shear chart for Canada.

3.2 Local and Regional Aviation Forecasts (Printed Form)

3.2.1 Numerous forecasts and weather advisories are prepared which serve local and regional areas of the U.S. These forecasts are generally prepared by the NWS on a scheduled basis or, as in the case of severe weather advisories, as needed. These forecasts are Area Forecast (FA), Airport Forecast (TAF), Severe Weather Forecast (WW), Hurricane Advisories (WT), Winds and Temperature Aloft Forecast (FD), Simplified Surface Analyses (AS), 12- and 24-Hour Prognoses (FS), and flight advisory notices, such as SIGMETs (WS), AIRMETs (text bulletins-[WA] and graphics [G-AIRMET]), Center Weather Advisories (CWA), and Radar Weather Reports (SD).

3.3 Preflight Briefing Services

3.3.1 Preflight briefing services and flight documentation are provided through FAA Flight Service Stations (FSS).

3.4 National Weather Service Aviation Weather Service Program

3.4.1 Weather service to aviation is a joint effort of the National Oceanic and Atmospheric Administration (NOAA), the National Weather Service (NWS), the Federal Aviation Administration (FAA), Department of Defense, and various private sector aviation weather service providers. Requirements for all aviation weather products originate from the FAA, which is the Meteorological Authority for the U.S.

3.4.2 NWS meteorologists are assigned to all air route traffic control centers (ARTCC) as part of the Center Weather Service Units (CWSU) as well as the Air Traffic Control System Command Center (ATCSCC). These meteorologists provide specialized briefings as well as tailored forecasts to support the needs of the FAA and other users of the NAS.

3.4.3 Aviation Products

3.4.4 The NWS maintains an extensive surface, upper air, and radar weather observing program; and a nationwide aviation weather forecasting service.

3.4.3.2 Airport observations (METAR and SPECI) supported by the NWS are provided by automated observing systems.

3.4.3.3 Terminal Aerodrome Forecasts (TAF) are prepared by 123 NWS Weather Forecast Offices (WFOs) for over 700 airports. These forecasts are valid for 24 or 30 hours and amended as required.

3.4.3.4 Inflight aviation advisories (for example, Significant Meteorological Information (SIGMETs) and Airmen's Meteorological Information (AIRMETs)) are issued by three NWS Meteorological Watch Offices; the Aviation Weather Center (AWC) in Kansas City, MO, the Alaska Aviation Weather Unit (AAWU) in Anchorage, AK, and the WFO in Honolulu, HI. Both the AWC and the AAWU issue area forecasts (FA) for selected areas. In addition, NWS meteorologists assigned to most ARTCCs as part of the Center Weather Service Unit (CWSU) provide Center Weather Advisories (CWAs) and gather weather information to support the needs of the FAA and other users of the system.

3.4.3.5 Several NWS National Centers for Environmental Prediction (NCEP) provide aviation specific weather forecasts, or select public forecasts which are of interest to pilots and operators.

a) The Aviation Weather Center (AWC) displays a variety of domestic and international aviation forecast products over the Internet at aviationweather.gov.

b) The NCEP Central Operations (NCO) is responsible for the operation of many numerical weather prediction models, including those which

produce the many wind and temperature aloft forecasts.

c) The Storm Prediction Center (SPC) issues tornado and severe weather watches along with other guidance forecasts.

d) The National Hurricane Center (NHC) issues forecasts on tropical weather systems (for example, hurricanes).

e) The Space Weather Prediction Center (SWPC) provides alerts, watches, warnings and forecasts for space weather events (for example, solar storms) affecting or expected to affect Earth's environment.

f) The Weather Prediction Center (WPC) provides analysis and forecast products on a national scale including surface pressure and frontal analyses.

3.4.3.6 NOAA operates two Volcanic Ash Advisory Centers (VAAC) which issue forecasts of ash clouds following a volcanic eruption in their area of responsibility.

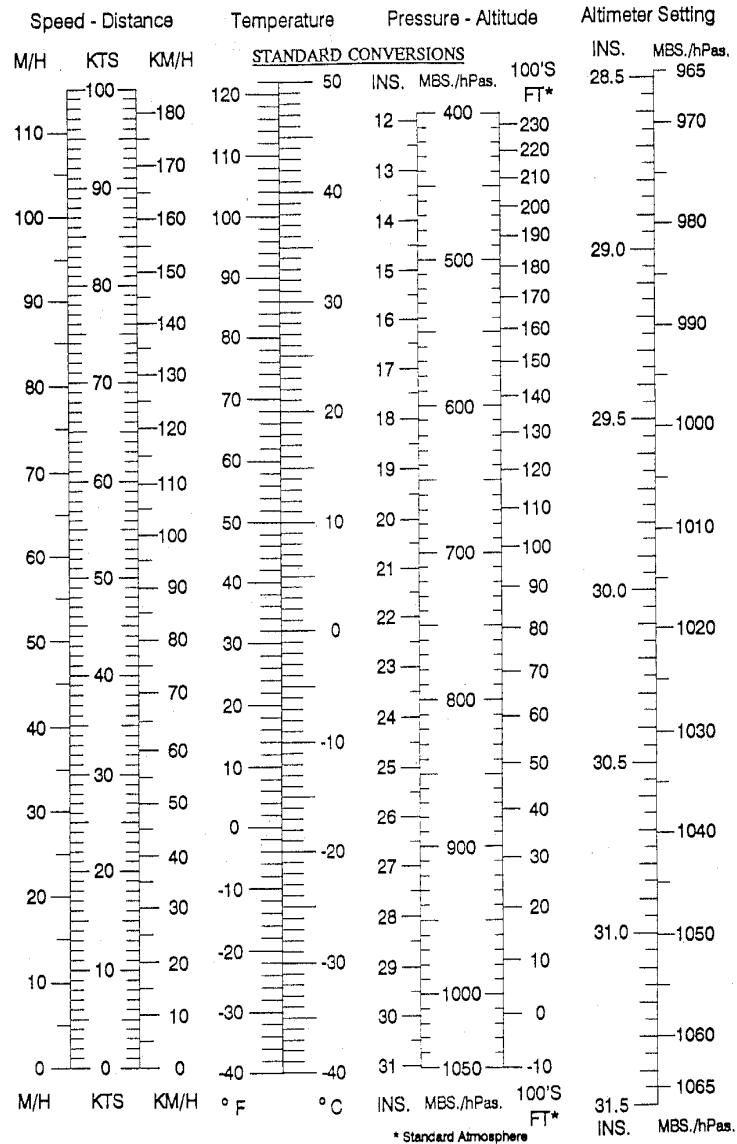
3.4.3.7 Details on the products provided by the above listed offices and centers is available in FAA Advisory Circular 00-45, Aviation Weather Services.

3.4.4 Weather element values may be expressed by using different measurement systems depending on several factors, such as whether the weather products will be used by the general public, aviation interests, international services, or a combination of these users. FIG GEN 3.5-1 provides conversion tables for the most used weather elements that will be encountered by pilots.

FIG GEN 3.5-1
Weather Elements Conversion Tables

TIME	
STANDARD TO UTC	
Eastern	+ 5 hr = UTC
Central	+ 6 hr = UTC
Mountain	+ 7 hr = UTC
Pacific	+ 8 hr = UTC
Alaskan	+ 9 hr = UTC
Hawaii & Aleutian Islands	+ 10 hr = UTC
Subtract one hour for Daylight Time	

WINDSPEED	
MPH	KNOTS
1-2	1-2
3-8	3-7
9-14	8-12
15-20	13-17
21-26	18-22
28-31	23-27
32-37	28-32
38-43	33-37
44-49	38-42
50-54	43-47
55-60	48-52
61-66	53-57
67-71	58-62
72-77	63-67
78-83	68-72
84-89	73-77
119-123	103-107
Knots x 1.15 = Miles Per Hour	
Miles Per Hour x 0.869 = Knots	



3.5 FAA Weather Services

3.5.1 The FAA provides the Flight Service program, which serves the weather needs of pilots through its flight service stations (FSS) (both government and contract via 1-800-WX-BRIEF) and via the Internet, through CSC Direct User Access Terminal System (DUATS) and Lockheed Martin Flight Services (DUATS II).

3.5.2 The FAA maintains an extensive surface weather observing program. Airport observations (METAR and SPECI) in the U.S. are provided by automated observing systems. Various levels of human oversight of the METAR and SPECI reports and augmentation may be provided at select larger airports by either government or contract personnel qualified to report specified weather elements that cannot be detected by the automated observing system.

3.5.3 Other Sources of Weather Information

3.5.3.1 Telephone Information Briefing Service (TIBS) (FSS); and in Alaska, Transcribed Weather Broadcast (TWEB) locations, and telephone access to the TWEB (TEL-TWEB) provide continuously updated recorded weather information for short or local flights. Separate paragraphs in this section give additional information regarding these services.

3.5.3.2 Weather and aeronautical information is also available from numerous private industry sources on an individual or contract pay basis. Information on how to obtain this service should be available from local pilot organizations.

3.5.3.3 Pilots with a current medical certificate can access the DUATS and Lockheed Martin Flight Services via the Internet. Pilots can receive preflight weather data and file domestic VFR and IFR flight plans. The following are the FAA contract vendors:

Computer Sciences Corporation (CSC)
Internet Access: <http://www.duats.com>
For customer service: (800) 345-3828

Lockheed Martin Flight Services
Internet Access: <http://www.1800wxbrief.com>
For customer service: (866) 936-6826

3.6 Use of Aviation Weather Products

3.6.1 Air carriers and operators certificated under the provisions of 14 CFR Part 119 are required to use

the aeronautical weather information systems defined in the Operations Specifications issued to that certificate holder by the FAA. These systems may utilize basic FAA/National Weather Service (NWS) weather services, contractor- or operator-proprietary weather services and/or Enhanced Weather Information System (EWINS) when approved in the Operations Specifications. As an integral part of this system approval, the procedures for collecting, producing and disseminating aeronautical weather information, as well as the crew member and dispatcher training to support the use of system weather products, must be accepted or approved.

3.6.2 Operators not certificated under the provisions of 14 CFR Part 119 are encouraged to use FAA/NWS products through Flight Service Stations, Direct User Access Terminal System (DUATS), Lockheed Martin Flight Services, and/or Flight Information Services-Broadcast (FIS-B).

3.6.3 The suite of available aviation weather product types is expanding, with the development of new sensor systems, algorithms and forecast models. The FAA and NWS, supported by various weather research laboratories and corporations under contract to the Government, develop and implement new aviation weather product types. The FAA's NextGen Aviation Weather Research Program (AWRP) facilitates collaboration between the NWS, the FAA, and various industry and research representatives. This collaboration ensures that user needs and technical readiness requirements are met before experimental products mature to operational application.

3.6.4 The AWRP manages the transfer of aviation weather R&D to operational use through technical review panels and conducting safety assessments to ensure that newly developed aviation weather products meet regulatory requirements and enhance safety.

3.6.5 The AWRP review and decision-making process applies criteria to weather products at various stages. The stages are composed of the following:

3.6.5.1 Sponsorship of user needs.

3.6.5.2 R & D and controlled testing.

3.6.5.3 Experimental application.

3.6.5.4 Operational application.

3.6.6 Pilots and operators should be aware that weather services provided by entities other than FAA, NWS or their contractors (such as the DUATS and Lockheed Martin Flight Services DUATS II) may not meet FAA/NWS quality control standards. Hence, operators and pilots contemplating using such services should request and/or review an appropriate description of services and provider disclosure. This should include, but is not limited to, the type of weather product (for example, current weather or forecast weather), the currency of the product (that is, product issue and valid times), and the relevance of the product. Pilots and operators should be cautious when using unfamiliar products, or products not supported by FAA/NWS technical specifications.

NOTE–

When in doubt, consult with a FAA Flight Service Station Specialist.

3.6.7 In addition, pilots and operators should be aware there are weather services and products available from government organizations beyond the scope of the AWRP process mentioned earlier in this section. For example, governmental agencies such as the NWS and the Aviation Weather Center (AWC), or research organizations such as the National Center for Atmospheric Research (NCAR) display weather “model data” and “experimental” products which require training and/or expertise to properly interpret and use. These products are developmental prototypes that are subject to ongoing research and can change without notice. Therefore, some data on display by government organizations, or government data on display by independent organizations may be unsuitable for flight planning purposes. Operators and pilots contemplating using such services should request and/or review an appropriate description of services and provider disclosure. This should include, but is not limited to, the type of weather product (for example, current weather or forecast weather), the currency of the product (i.e., product issue and valid times), and the relevance of the product. Pilots and operators should be cautious when using unfamiliar weather products.

NOTE–

When in doubt, consult with a FAA Flight Service Station Specialist.

3.6.8 With increased access to weather products via the public Internet, the aviation community has access to an overwhelming amount of weather information and data that support self-briefing. FAA AC 00-45 (current edition) describes the weather products distributed by the NWS. Pilots and operators using the public Internet to access weather from a third party vendor should request and/or review an appropriate description of services and provider disclosure. This should include, but is not limited to, the type of weather product (for example, current weather or forecast weather), the currency of the product (i.e., product issue and valid times), and the relevance of the product. Pilots and operators should be cautious when using unfamiliar weather products and when in doubt, consult with a Flight Service Specialist.

3.6.9 The development of new weather products, coupled with the termination of some legacy textual and graphical products may create confusion between regulatory requirements and the new products. All flight-related, aviation weather decisions must be based on all available pertinent weather products. As every flight is unique and the weather conditions for that flight vary hour by hour, day to day, multiple weather products may be necessary to meet aviation weather regulatory requirements. Many new weather products now have a Precautionary Use Statement that details the proper use or application of the specific product.

3.6.10 The FAA has identified three distinct types of weather information available to pilots and operators.

3.6.10.1 Observations. Raw weather data collected by some type of sensor suite including surface and airborne observations, radar, lightning, satellite imagery, and profilers.

3.6.10.2 Analysis. Enhanced depiction and/or interpretation of observed weather data.

3.6.10.3 Forecasts. Predictions of the development and/or movement of weather phenomena based on meteorological observations and various mathematical models.

3.6.11 Not all sources of aviation weather information are able to provide all three types of weather information. The FAA has determined that operators and pilots may utilize the following approved sources of aviation weather information:

3.6.11.1 Federal Government. The FAA and NWS collect raw weather data, analyze the observations,

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

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

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

NOTE—

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

3.7 Preflight Briefing

3.7.1 Flight Service Stations are the primary source of obtaining preflight briefings and inflight weather information. Flight Service Specialists are qualified and certificated by the NWS as Pilot Weather Briefers. They are not authorized to make original

forecasts, but are authorized to translate and interpret available forecasts (TAF) and reports (METAR/SPECI) directly into terms describing the weather conditions which you can expect along your flight route and at your destination. Available aviation weather reports and forecasts are displayed at each FSS. Some of the larger FSSs provide a separate display for pilot use. Pilots should feel free to use these self-briefing displays where available, or to ask for a briefing or for assistance from the specialist on duty. Three basic types of preflight briefings are available: Standard Briefing, Abbreviated Briefing, and Outlook Briefing. You should specify to the briefer the type of briefing you want, along with appropriate background information. This will enable the briefer to tailor the information to your intended flight. The following paragraphs describe the types of briefings available and the information provided in each.

3.7.2 Standard Briefing. You should request a Standard Briefing any time you are planning a flight and you have not received a previous briefing or have not received preliminary information through mass dissemination media; e.g., TIBS, TWEB (Alaska only), etc. International data may be inaccurate or incomplete. If you are planning a flight outside of U.S. controlled airspace, the briefer will advise you to check data as soon as practical after entering foreign airspace, unless you advise that you have the international cautionary advisory. The briefer will automatically provide the following information in the sequence listed, except as noted, when it is applicable to your proposed flight.

3.7.2.1 Adverse Conditions. Significant meteorological and/or aeronautical information that might influence the pilot to alter or cancel the proposed flight; for example, hazardous weather conditions, airport closures, air traffic delays, etc. Pilots should be especially alert for current or forecast weather that could reduce flight minimums below VFR or IFR conditions. Pilots should also be alert for any reported or forecast icing if the aircraft is not certified for operating in icing conditions. Flying into areas of icing or weather below minimums could have disastrous results.

3.7.2.2 VFR Flight Not Recommended. When VFR flight is proposed and sky conditions or visibilities are present or forecast, surface or aloft, that, in the briefer’s judgment, would make flight under VFR doubtful, the briefer will describe the

conditions, describe the affected locations, and use the phrase “*VFR flight not recommended.*” This recommendation is advisory in nature. The final decision as to whether the flight can be conducted safely rests solely with the pilot. Upon receiving a “*VFR flight not recommended*” statement, the non-IFR rated pilot will need to make a “go or no go” decision. This decision should be based on weighing the current and forecast weather conditions against the pilot’s experience and ratings. The aircraft’s equipment, capabilities and limitations should also be considered.

NOTE-

Pilots flying into areas of minimal VFR weather could encounter unforecasted lowering conditions that place the aircraft outside the pilot’s ratings and experience level. This could result in spatial disorientation and/or loss of control of the aircraft.

3.7.2.3 Synopsis. A brief statement describing the type, location, and movement of weather systems and/or air masses which might affect the proposed flight.

NOTE-

The first 3 elements of a standard briefing may be combined in any order when the briefer believes it will help to describe conditions more clearly.

3.7.2.4 Current Conditions. Reported weather conditions applicable to the flight will be summarized from all available sources; e.g., METARs, PIREPs, RAREPs. This element may be omitted if the proposed time of departure is beyond two hours, unless the information is specifically requested by the pilot.

3.7.2.5 En Route Forecast. En route conditions forecast for the proposed route are summarized in logical order; i.e., departure-climbout, en route, and descent.

3.7.2.6 Destination Forecast. The destination forecast (TAF) for the planned estimated time of arrival (ETA). Any significant changes within 1 hour before and after the planned arrival are included.

3.7.2.7 Winds Aloft. Forecast winds aloft for the proposed route will be provided using degrees of the compass. The briefer will interpolate wind directions and speeds between levels and stations as necessary to provide expected conditions at planned altitudes.

3.7.2.8 Notices to Airmen (NOTAMs)

a) Available NOTAM (D) information pertinent to the proposed flight, including special use airspace (SUA) NOTAMs for restricted areas, aerial refueling, and night vision goggles (NVG).

NOTE-

Other SUA NOTAMs (D), such as military operations area (MOA), military training route (MTR), and warning area NOTAMs, are considered “upon request” briefing items as indicated in paragraph 3.7.2.10.

b) Prohibited Areas P-40, P-49, P-56, and the special flight rules area (SFRA) for Washington, DC.

c) FSS briefers do not provide FDC NOTAM information for special instrument approach procedures unless specifically asked. Pilots authorized by the FAA to use special instrument approach procedures must specifically request FDC NOTAM information for these procedures.

NOTE-

1. NOTAM information may be combined with current conditions when the briefer believes it is logical to do so.

2. NOTAM (D) information and Flight Data Center NOTAMs which have been published in the Notices to Airmen Publication are not included in pilot briefings unless a review of this publication is specifically requested by the pilot. For complete flight information you are urged to review both the Notices to Airmen Publication and the Chart Supplement U.S. in addition to obtaining a briefing.

3.7.2.9 Air Traffic Control (ATC) Delays. Any known ATC delays and flow control advisories which might affect the proposed flight.

3.7.2.10 Pilots may obtain the following from flight service station briefers upon request:

a) Information on Special Use Airspace (SUA) and SUA related airspace, except those listed in paragraph 3.7.2.8.

NOTE-

1. For the purpose of this paragraph, SUA and related airspace includes the following types of airspace: alert area, military operations area (MOA), warning area, and air traffic control assigned airspace (ATCAA). MTR data includes the following types of airspace: IFR training routes (IR), VFR training routes (VR), and slow training routes (SR).

2. Pilots are encouraged to request updated information from ATC facilities while in flight.

b) A review of the Notices to Airmen publication for pertinent NOTAMs and Special Notices.

c) Approximate density altitude data.

d) Information regarding such items as air traffic services and rules, customs/immigration procedures, ADIZ rules, and search and rescue.

e) NOTAMs, available military NOTAMs, runway friction measurement value NOTAMs.

f) GPS RAIM availability for 1 hour before to 1 hour after ETA, or a time specified by the pilot.

g) Other assistance as required.

3.7.3 Abbreviated Briefing. Request an Abbreviated Briefing when you need information to supplement mass disseminated data, to update a previous briefing, or when you need only one or two specific items. Provide the briefer with appropriate background information, the time you received the previous information, and/or the specific items needed. You should indicate the source of the information already received so that the briefer can limit the briefing to the information that you have not received, and/or appreciable changes in meteorological/aeronautical conditions since your previous briefing. To the extent possible, the briefer will provide the information in the sequence shown for a Standard Briefing. If you request only one or two specific items, the briefer will advise you if adverse conditions are present or forecast. Adverse conditions contain both meteorological and aeronautical information. Details on these conditions will be provided at your request.

3.7.4 Outlook Briefing. You should request an Outlook Briefing whenever your proposed time of departure is 6 or more hours from the time of the briefing. The briefer will provide available forecast data applicable to the proposed flight. This type of briefing is provided for planning purposes only. You should obtain a Standard or Abbreviated Briefing prior to departure in order to obtain such items as adverse conditions, current conditions, updated forecasts, winds aloft, and NOTAMs.

3.7.5 Inflight Briefing. You are encouraged to obtain your preflight briefing by telephone or in person before departure. In those cases where you need to obtain a preflight briefing or an update to a previous briefing by radio, you should contact the nearest FSS to obtain this information. After communications have been established, advise the specialist of the type briefing you require and provide appropriate background information. You will be

provided information as specified in the above paragraphs, depending on the type of briefing requested. En Route advisories tailored to the phase of flight that begins after climb-out and ends with descent to land are provided upon pilot request. Pilots are encouraged to provide a continuous exchange of information on weather, winds, turbulence, flight visibility, icing, etc., between pilots and inflight specialists. Pilots should report good weather as well as bad, and confirm expected conditions as well as unexpected. Remember that weather conditions can change rapidly and that a “go or no go” decision, as mentioned in paragraph 3.7.2.2, should be assessed at all phases of flight.

3.7.6 Following any briefing, feel free to ask for any information that you or the briefer may have missed. It helps to save your questions until the briefing has been completed. This way the briefer is able to present the information in a logical sequence and lessens the chance of important items being overlooked.

3.8 Inflight Aviation Weather Advisories

3.8.1 Background

3.8.1.1 Inflight Aviation Weather Advisories are forecasts to advise en route aircraft of development of potentially hazardous weather. Inflight aviation weather advisories in the conterminous U.S. are issued by the Aviation Weather Center (AWC) in Kansas City, MO, as well as 20 Center Weather Service Units (CWSU) associated with ARTCCs. AWC also issues advisories for portions of the Gulf of Mexico, Atlantic and Pacific Oceans, which are under the control of ARTCCs with Oceanic flight information regions (FIRs). The Weather Forecast Office (WFO) in Honolulu issues advisories for the Hawaiian Islands and a large portion of the Pacific Ocean. In Alaska, the Alaska Aviation Weather Unit (AAWU) issues inflight aviation weather advisories along with the Anchorage CWSU. All heights are referenced MSL, except in the case of ceilings (CIG) which indicate AGL.

3.8.1.2 There are four types of inflight aviation weather advisories: the SIGMET, the Convective SIGMET, the AIRMET (text or graphical product), and the Center Weather Advisory (CWA). All of these advisories use the same location identifiers (either VORs, airports, or well-known geographic areas) to describe the hazardous weather areas.

3.8.1.3 The Severe Weather Watch Bulletins (WWs), (with associated Alert Messages) (AWW) supplements these Inflight Aviation Weather Advisories.

3.8.2 SIGMET (WS)/AIRMET(WA or G–AIRMET)

SIGMETs/AIRMET text (WA) products are issued corresponding to the Area Forecast (FA) areas described in FIG GEN 3.5–2 and FIG GEN 3.5–3. The maximum forecast period is 4 hours for SIGMETs and 6 hours for AIRMETs. The G–AIRMET is issued over the CONUS every 6 hours, valid at 3–hour increments through 12 hours, with optional forecasts possible during the first 6 hours. The first 6 hours of the G–AIRMET correspond to the 6–hour period of the AIRMET. SIGMETs and AIRMETs are considered “widespread” because they must be either affecting or be forecasted to affect an area of at least 3,000 square miles at any one time. However, if the total area to be affected during the forecast period is very large, it could be that in actuality only a small portion of this total area would be affected at any one time.

3.8.2.1 SIGMETs/AIRMET (or G–AIRMET) for the conterminous U.S. (CONUS)

SIGMETs/AIRMET text products for the CONUS are issued corresponding to the areas in FIG GEN 3.5–2. The maximum forecast period for a CONUS SIGMET is 4 hours and 6 hours for CONUS AIRMETs. The G–AIRMET is issued over the CONUS every 6 hours, valid at 3–hour increments through 12 hours with optional forecasts possible during the first 6 hours. The first 6 hours of the G–AIRMET correspond to the 6–hour period of the AIRMET. SIGMETs and AIRMETs are considered “widespread” because they must be either affecting or be forecasted to affect an area of at least 3,000 square miles at any one time. However, if the total area to be affected during the forecast period is very large, it could be that in actuality only a small portion of this total area would be affected at any one time. Only SIGMETs for the CONUS are for non-convective weather. The U.S. issues a special category of SIGMETs for convective weather called Convective SIGMETs.

3.8.2.2 SIGMETs/AIRMETs for Alaska

Alaska SIGMETs are valid for up to 4 hours, except for Volcanic Ash Cloud SIGMETs which are valid for

up to 6 hours. Alaska AIRMETs are valid for up to 8 hours.

3.8.2.3 SIGMETs/AIRMETs for Hawaii and U.S. FIRs in the Gulf of Mexico, Caribbean, Western Atlantic and Eastern and Central Pacific Oceans

These SIGMETs are valid for up to 4 hours, except SIGMETs for Tropical Cyclones and Volcanic Ash Clouds, which are valid for up to 6 hours. AIRMETs are issued for the Hawaiian Islands and are valid for up to 6 hours. No AIRMETs are issued for U.S. FIRs in the the Gulf of Mexico, Caribbean, Western Atlantic and Pacific Oceans.

3.8.3 SIGMET

A SIGMET advises of weather that is potentially hazardous to all aircraft. SIGMETs are unscheduled products that are valid for 4 hours. However, SIGMETs associated with tropical cyclones and volcanic ash clouds are valid for 6 hours. Unscheduled updates and corrections are issued as necessary.

3.8.3.1 In the CONUS, SIGMETs are issued when the following phenomena occur or are expected to occur:

- a) Severe icing not associated with thunderstorms.
- b) Severe or extreme turbulence or clear air turbulence (CAT) not associated with thunderstorms.
- c) Widespread dust storms or sandstorms lowering surface visibilities to below 3 miles.
- d) Volcanic ash.

3.8.3.2 In Alaska and Hawaii, SIGMETs are also issued for:

- a) Tornadoes.
- b) Lines of thunderstorms.
- c) Embedded thunderstorms.
- d) Hail greater than or equal to $\frac{3}{4}$ inch in diameter.

3.8.3.3 SIGMETs are identified by an alphabetic designator from November through Yankee excluding Sierra and Tango. (Sierra, Tango, and Zulu are reserved for AIRMET text [WA] products; G–AIRMETs do not use the Sierra, Tango, or Zulu designators.) The first issuance of a SIGMET will be labeled as UWS (Urgent Weather SIGMET). Subsequent issuances are at the forecasters discretion. Issuance for the same phenomenon will be sequentially numbered, using the original designator

until the phenomenon ends. For example, the first issuance in the Chicago (CHI) FA area for phenomenon moving from the Salt Lake City (SLC) FA area will be SIGMET Papa 3, if the previous two issuances, Papa 1 and Papa 2, had been in the SLC FA area. Note that no two different phenomena across the country can have the same alphabetic designator at the same time.

EXAMPLE–

Example of a SIGMET:

BOSR WS 050600

SIGMET ROMEO 2 VALID UNTIL 051000

ME NH VT

FROM CAR TO YSJ TO CON TO MPV TO CAR

OCNL SEV TURB BLW 080 EXP DUE TO STG NWLY

FLOW. CONDS CONTG BYD

1000Z.

3.8.4 Convective SIGMET (WST)

3.8.4.1 Convective SIGMETs are issued in the conterminous U.S. for any of the following:

a) Severe thunderstorm due to:

1) Surface winds greater than or equal to 50 knots.

2) Hail at the surface greater than or equal to $\frac{3}{4}$ inches in diameter.

3) Tornadoes.

b) Embedded thunderstorms.

c) A line of thunderstorms.

d) Thunderstorms producing precipitation greater than or equal to heavy precipitation affecting 40 percent or more of an area at least 3,000 square miles.

3.8.4.2 Any convective SIGMET implies severe or greater turbulence, severe icing, and low-level wind

shear. A convective SIGMET may be issued for any convective situation that the forecaster feels is hazardous to all categories of aircraft.

3.8.4.3 Convective SIGMET bulletins are issued for the western (W), central (C), and eastern (E) United States. (Convective SIGMETs are not issued for Alaska or Hawaii.) The areas are separated at 87 and 107 degrees west longitude with sufficient overlap to cover most cases when the phenomenon crosses the boundaries. Bulletins are issued hourly at H+55. Special bulletins are issued at any time as required and updated at H+55. If no criteria meeting convective SIGMET requirements are observed or forecasted, the message “CONVECTIVE SIGMET... NONE” will be issued for each area at H+55. Individual convective SIGMETs for each area (W, C, E) are numbered sequentially from number one each day, beginning at 00Z. A convective SIGMET for a continuing phenomenon will be reissued every hour at H+55 with a new number. The text of the bulletin consists of either an observation and a forecast or just a forecast. The forecast is valid for up to 2 hours.

EXAMPLE–

CONVECTIVE SIGMET 44C

VALID UNTIL 1455Z

AR TX OK

FROM 40NE ADM-40ESE MLC-10W TXK-50WNW

LFK-40ENE SJT-40NE ADM

AREA TS MOV FROM 26025KT. TOPS ABV FL450.

OUTLOOK VALID 061455-061855

FROM 60WSW OKC-MLC-40N TXK-40WSW

IGB-VUZ-MGM-HRV-60S BTR-40N

IAH-60SW SJT-40ENE LBB-60WSW OKC

WST ISSUANCES EXPD. REFER TO MOST RECENT

ACUS01 KWNS FROM STORM PREDICTION CENTER

FOR SYNOPSIS AND METEOROLOGICAL DETAILS

FIG GEN 3.5-2
SIGMET and AIRMET Locations – Conterminous United States

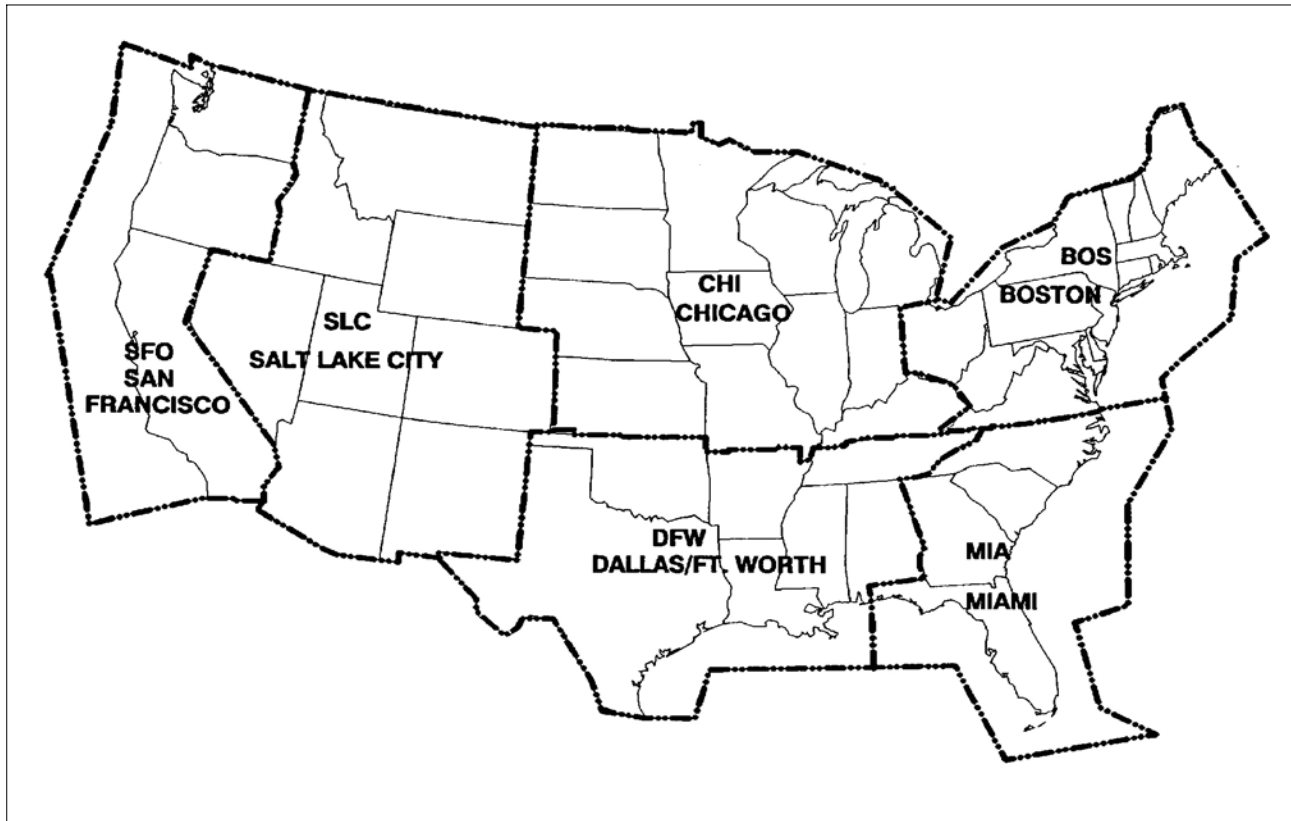
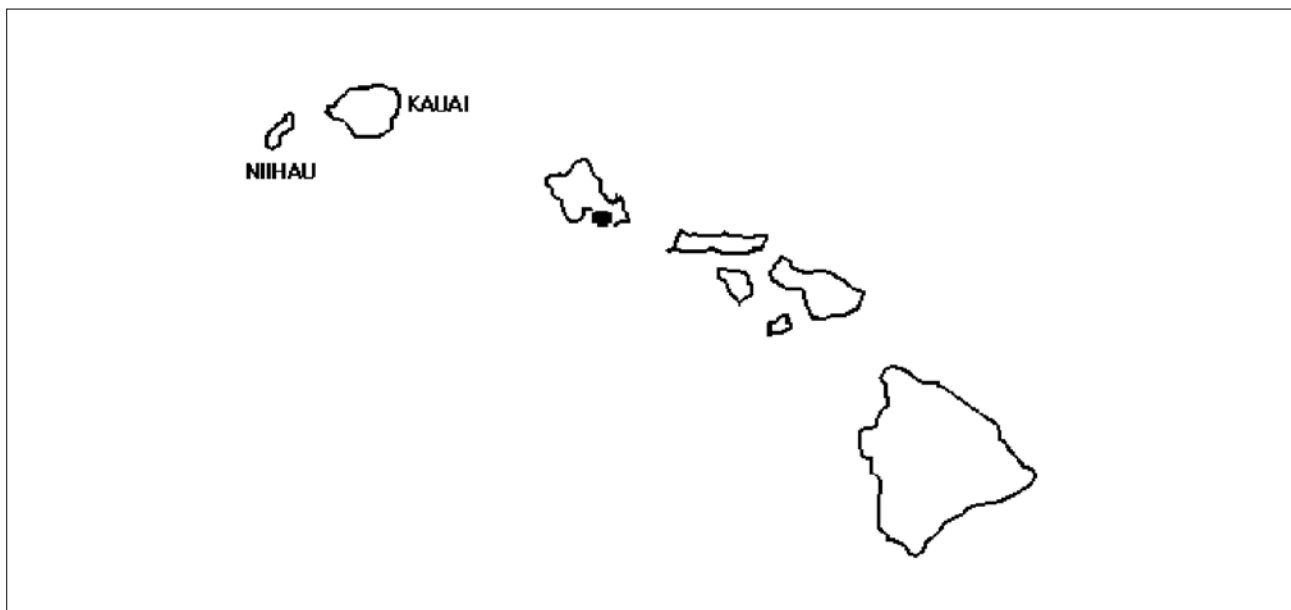


FIG GEN 3.5-3
Hawaii Area Forecast Locations



3.8.5 SIGMET Outside the CONUS

3.8.5.1 Three NWS offices have been designated by ICAO as Meteorological Watch Offices (MWOs). These offices are responsible for issuing SIGMETs for designated areas outside the CONUS that include Alaska, Hawaii, portions of the Atlantic and Pacific Oceans, and the Gulf of Mexico.

3.8.5.2 The offices which issue International SIGMETs are:

- a) The AWC in Kansas City, Missouri.
- b) The AAWU in Anchorage, Alaska.
- c) The WFO in Honolulu, Hawaii.

3.8.5.3 SIGMETs for outside the CONUS are issued for 6 hours for volcanic ash clouds, 6 hours for tropical cyclones (e.g. hurricanes and tropical storms), and 4 hours for all other events. Like the CONUS SIGMETs, SIGMETs for outside the CONUS are also identified by an alphabetic designator from Alpha through Mike and are numbered sequentially until that weather phenomenon ends. The criteria for an international SIGMET are:

- a) Thunderstorms occurring in lines, embedded in clouds, or in large areas producing tornadoes or large hail.
- b) Tropical cyclones.
- c) Severe icing.
- d) Severe or extreme turbulence.
- e) Dust storms and sandstorms lowering visibilities to less than 3 miles.
- f) Volcanic ash.

EXAMPLE–

Example of SIGMET Outside the U.S.:

WSNT06 KKKI 022014
SIGA0F

KZMA KZNY TJZS SIGMET FOXTROT 3 VALID
022015/030015 KKKI– MIAMI OCEANIC FIR NEW
YORK OCEANIC FIR SAN JUAN FIR FRQ TS WI AREA
BOUNDED BY 2711N6807W 2156N6654W 2220N7040W
2602N7208W 2711N6807W. TOPS TO FL470. MOV NE
15KT. WKN. BASED ON SAT AND LTG OBS.
MOSHER

3.8.6 AIRMET

3.8.6.1 AIRMETs (WAs) are advisories of significant weather phenomena but describe conditions at

intensities lower than those which require the issuance of SIGMETs. AIRMETs are intended for dissemination to all pilots in the preflight and en route phase of flight to enhance safety. AIRMET information is available in two formats: text bulletins (WA) and graphics (G–AIRMET). Both formats meet the criteria of paragraph 3.6.9.1 and are issued on a scheduled basis every 6 hours beginning at 0145 UTC during Central Daylight Time and at 0245 UTC during Central Standard Time. Unscheduled updates and corrections are issued as necessary. Each AIRMET Bulletin contains any current AIRMETs in effect and an outlook for conditions expected after the AIRMET valid period. AIRMETs contain details about IFR, extensive mountain obscuration, turbulence, strong surface winds, icing, and freezing levels.

3.8.6.2 There are three AIRMETs: Sierra, Tango, and Zulu. After the first issuance each day, scheduled or unscheduled bulletins are numbered sequentially for easier identification.

- a) AIRMET Sierra describes IFR conditions and/or extensive mountain obscurations.
- b) AIRMET Tango describes moderate turbulence, sustained surface winds of 30 knots or greater, and/or nonconvective low–level wind shear.
- c) AIRMET Zulu describes moderate icing and provides freezing level heights.

EXAMPLE–

Example of AIRMET Sierra issued for the Chicago FA area:

CHIS WA 131445

AIRMET SIERRA UPDT 2 FOR IFR AND MTN OBSCN
VALID UNTIL 132100.

AIRMET IFR...KY

FROM 20SSW HNN TO HMV TO 50ENE DYR TO 20SSW
HNN

CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS
ENDG BY 18Z.

AIRMET IFR....MN LS

FROM INL TO 70W YQT TO 40ENE DLH TO
30WNW DLH TO 50SE GFK TO 20 ENE GFK TO
INL

CIG BLW 010/VIS BLW 3SM BR. CONDS ENDG 15–
18Z.

AIRMET IFR....KS

FROM 30N SLN TO 60E ICT TO 40S ICT TO 50W
LBL TO 30SSW GLD TO 30N SLN

CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS

ENDG 15–18Z.

.
AIRMET MTN OBSCN...KY TN
FROM HNN TO HNV TO GQO TO LOZ TO HNN
MTN OBSC BY CLDS/PCPN/BR. CONDS CONTG
BYD 21Z THRU 03Z.

.....

EXAMPLE–

*Example of AIRMET Tango issued for the Salt Lake City
FA area:*

SLCT WA 131445
AIRMET TANGO UPDT 2 FOR TURB VALID UNTIL
131200.

AIRMET TURB...MT
FROM 40NW HVR TO 50SE BIL TO 60E DLN TO
60SW YQL TO 40NW HVR
MOD TURB BLW 150. CONDS DVLPG 18–21Z.
CONDS CONTG BYD 21Z THRU 03Z.

.
AIRMET TURB....ID MT WY NV UT CO
FROM 100SE MLS TO 50SSW BFF TO 20SW BTY
TO 40SW BAM TO 100SE MLS
MOD TURB BTN FL310 AND FL410. CONDS
CONTG BYD 21Z ENDG 21–00Z.

.
AIRMET TURB...NV AZ NM CA AND CSTL WTRS
FROM 100WSW ENI TO 40W BTY TO 40S LAS TO
30ESE TBE TO INK TO ELP TO 50S TUS TO BZA
TO 20S MZB TO 150SW PYE TO 100WSW ENI
MOD TURB BTWN FL210 AND FL380. CONDS
CONTG BYD 21Z THRU 03Z.

....

EXAMPLE–

*Example of AIRMET Zulu issued for the San Francisco
FA area:*

SFOZ WA 131445
AIRMET ZULU UPDT 2 FOR ICE AND FRZLVL VALID
UNTIL 132100.

NO SGFNT ICE EXP OUTSIDE OF CNVTV ACT.

.
FRZLVL....RANGING FROM SFC–105 ACRS AREA
MULT FRZLVL BLW 080 BOUNDED BY 40SE
YDC–60NNW GEG–60SW MLP–30WSW BKE–
20SW BAM–70W BAM–40SW YKM–40E HUH–
40SE YDC
SFC ALG 20NNW HUH–30SSE HUH–60S SEA
50NW LKV–60WNWOAL–30SW OAL
040 ALG 40W HUH–30W HUH–30NNW SEA–40N
PDX–20NNW DSD
080 ALG 160NW FOT–80SW ONP–50SSW EUG
40SSE OED–50SSE CZQ–60E EHF–40WSW LAS

....

3.8.6.3 Graphical AIRMETs (G-AIRMETs),

found on the Aviation Weather Center webpage at <http://aviationweather.gov>, are graphical forecasts of en-route weather hazards valid at discrete times no more than 3 hours apart for a period of up to 12 hours into the future (for example, 00, 03, 06, 09, and 12 hours). Additional forecasts may be inserted during the first 6 hours (for example, 01, 02, 04, and 05). 00 hour represents the initial conditions, and the subsequent graphics depict the area affected by the particular hazard at that valid time. Forecasts valid at 00 through 06 hours correspond to the text AIRMET bulletin. Forecasts valid at 06 through 12 hours correspond to the text bulletin outlook. G-AIRMET depicts the following en route aviation weather hazards:

- a) Instrument flight rule conditions (ceiling <1000' and/or surface visibility <3 miles)
- b) Mountain obscuration
- c) Icing
- d) Freezing level
- e) Turbulence
- f) Low level wind shear (LLWS)
- g) Strong surface winds.

G-AIRMETs are snap shots at discrete time intervals as defined above. The text AIRMET is the result of the production of the G-AIRMET but provided in a time smear for a 6hr valid period. G-AIRMETs provide a higher forecast resolution than text AIRMET products. Since G-AIRMETs and text AIRMETs are created from the same forecast “production” process, there exists perfect consistency between the two. Using the two together will provide clarity of the area impacted by the weather hazard and improve situational awareness and decision making.

Interpolation of time periods between G-AIRMET valid times: Users must keep in mind when using the G-AIRMET that if a 00 hour forecast shows no significant weather and a 03 hour forecast shows hazardous weather, they must assume a change is occurring during the period between the two forecasts. It should be taken into consideration that the hazardous weather starts immediately after the 00 hour forecast unless there is a defined initiation or ending time for the hazardous weather. The same

would apply after the 03 hour forecast. The user should assume the hazardous weather condition is occurring between the snap shots unless informed otherwise. For example, if a 00 hour forecast shows no hazard, a 03 hour forecast shows the presence of hazardous weather, and a 06 hour forecast shows no hazard, the user should assume the hazard exists from the 0001 hour to the 0559 hour time period.

EXAMPLE–

See FIG GEN 3.5–4 for an example of the G–AIRMET graphical product.

3.8.7 Watch Notification Messages

The Storm Prediction Center (SPC) in Norman, OK, issues Watch Notification Messages to provide an area threat alert for forecast organized severe thunderstorms that may produce tornadoes, large hail, and/or convective damaging winds within the CONUS. SPC issues three types of watch notification messages: Aviation Watch Notification Messages, Public Severe Thunderstorm Watch Notification Messages, and Public Tornado Watch Notification Messages.

It is important to note the difference between a Severe Thunderstorm (or Tornado) Watch and a Severe Thunderstorm (or Tornado) Warning. A watch means severe weather is possible during the next few hours, while a warning means that severe weather has been observed, or is expected within the hour. Only the SPC issues Severe Thunderstorm and Tornado Watches, while only NWS Weather Forecasts Offices issue Severe Thunderstorm and Tornado Warnings.

3.8.7.1 The Aviation Watch Notification Message. The Aviation Watch Notification Message product is an approximation of the area of the Public Severe Thunderstorm Watch or Public Tornado Watch. The area may be defined as a rectangle or parallelogram using VOR navigational aides as coordinates.

The Aviation Watch Notification Message was formerly known as the Alert Severe Weather Watch Bulletin (AWW). The NWS no longer uses that title or acronym for this product. The NWS uses the acronym SAW for the Aviation Watch Notification Message, but retains AWW in the product header for processing by weather data systems.

EXAMPLE–

Example of an Aviation Watch Notification Message:
WWUS30 KWNS 271559
SAW2

SPC AWW 271559

WW 568 TORNADO AR LA MS 271605Z - 280000Z
AXIS..65 STATUTE MILES EAST AND WEST OF LINE..
45ESE HEZ/NATCHEZ MS/ - 50N TUP/TUPELO MS/
..AVIATION COORDS.. 55NM E/W /18WNW MCB - 60E
MEM/
HAIL SURFACE AND ALOFT..3 INCHES. WIND
GUSTS..70 KNOTS. MAX TOPS TO 550. MEAN STORM
MOTION VECTOR 26030.
LAT...LON 31369169 34998991 34998762 31368948
THIS IS AN APPROXIMATION TO THE WATCH AREA.
FOR A COMPLETE DEPICTION OF THE WATCH SEE
WOUS64 KWNS FOR WOU2.

3.8.7.2 Public Severe Thunderstorm Watch Notification Messages describe areas of expected severe thunderstorms. (Severe thunderstorm criteria are 1-inch hail or larger and/or wind gusts of 50 knots [58 mph] or greater). A Public Severe Thunderstorm Watch Notification Message contains the area description and axis, the watch expiration time, a description of hail size and thunderstorm wind gusts expected, the definition of the watch, a call to action statement, a list of other valid watches, a brief discussion of meteorological reasoning and technical information for the aviation community.

3.8.7.3 Public Tornado Watch Notification Messages describe areas where the threat of tornadoes exists. A Public Tornado Watch Notification Message contains the area description and axis, watch expiration time, the term “damaging tornadoes,” a description of the largest hail size and strongest thunderstorm wind gusts expected, the definition of the watch, a call to action statement, a list of other valid watches, a brief discussion of meteorological reasoning and technical information for the aviation community. SPC may enhance a Public Tornado Watch Notification Message by using the words “THIS IS A PARTICULARLY DANGEROUS SITUATION” when there is a likelihood of multiple strong (damage of EF2 or EF3) or violent (damage of EF4 or EF5) tornadoes.

3.8.7.4 Public severe thunderstorm and tornado watch notification messages were formerly known as the Severe Weather Watch Bulletins (WW). The NWS no longer uses that title or acronym for this product but retains WW in the product header for processing by weather data systems.

EXAMPLE–

Example of a Public Tornado Watch Notification Message:
WWUS20 KWNS 050550

SEL2
SPC WW 051750
URGENT - IMMEDIATE BROADCAST REQUESTED
TORNADO WATCH NUMBER 243
NWS STORM PREDICTION CENTER NORMAN OK
1250 AM CDT MON MAY 5 2011
THE NWS STORM PREDICTION CENTER HAS ISSUED
A
*TORNADO WATCH FOR PORTIONS OF
WESTERN AND CENTRAL ARKANSAS
SOUTHERN MISSOURI
FAR EASTERN OKLAHOMA
*EFFECTIVE THIS MONDAY MORNING FROM 1250
AM UNTIL 600 AM CDT.
...THIS IS A PARTICULARLY DANGEROUS SITUATION...
*PRIMARY THREATS INCLUDE
NUMEROUS INTENSE TORNADOES LIKELY
NUMEROUS SIGNIFICANT DAMAGING WIND GUSTS
TO 80 MPH LIKELY
NUMEROUS VERY LARGE HAIL TO 4 INCHES IN
DIAMETER LIKELY
THE TORNADO WATCH AREA IS APPROXIMATELY
ALONG AND 100 STATUTE MILES EAST AND WEST OF
A LINE FROM 15 MILES WEST NORTHWEST OF FORT
LEONARD WOOD MISSOURI TO 45 MILES SOUTH-
WEST OF HOT SPRINGS ARKANSAS. FOR A COM-
plete depiction of the watch see the
associated watch outline update (WOUS64
KWNS WOU2).
REMEMBER...A TORNADO WATCH MEANS CONDI-
TIONS ARE FAVORABLE FOR TORNADOES AND
SEVERE THUNDERSTORMS IN AND CLOSE TO THE
WATCH AREA. PERSONS IN THESE AREAS SHOULD
BE ON THE LOOKOUT FOR THREATENING WEATH-
ER CONDITIONS AND LISTEN FOR LATER STATE-
MENTS AND POSSIBLE WARNINGS.
OTHER WATCH INFORMATION...THIS TORNADO
WATCH REPLACES TORNADO WATCH NUMBER 237.
WATCH NUMBER 237 WILL NOT BE IN EFFECT
AFTER
1250 AM CDT. CONTINUE...WW 239...WW 240...WW
241...WW 242...
DISCUSSION...SRN MO SQUALL LINE EXPECTED TO
CONTINUE EWD...WHERE LONG/HOOKED
HODOGRAPHS SUGGEST THREAT FOR EMBEDDED
SUPERCELLS/POSSIBLE TORNADOES. FARTHER
S...MORE WIDELY SCATTERED
SUPERCELLS WITH A THREAT FOR TORNADOES
WILL PERSIST IN VERY STRONGLY DEEP SHEARED/
LCL ENVIRONMENT IN AR.
AVIATION...TORNADOES AND A FEW SEVERE THUN-
DERSTORMS WITH HAIL SURFACE AND ALOFT TO 4

INCHES. EXTREME TURBULENCE AND SURFACE
WIND GUSTS TO 70 KNOTS. A FEW CUMULONIMBI
WITH MAXIMUM TOPS TO 500. MEAN STORM
MOTION VECTOR 26045.

3.8.7.5 Status reports are issued as needed to show progress of storms and to delineate areas no longer under the threat of severe storm activity. Cancellation bulletins are issued when it becomes evident that no severe weather will develop or that storms have subsided and are no longer severe.

3.8.8 Center Weather Advisories (CWA)

3.8.8.1 CWAs are unscheduled inflight, flow control, air traffic, and air crew advisory. By nature of its short lead time, the CWA is not a flight planning product. It is generally a nowcast for conditions beginning within the next two hours. CWAs will be issued:

a) As a supplement to an existing SIGMET, Convective SIGMET or AIRMET.

b) When an Inflight Advisory has not been issued but observed or expected weather conditions meet SIGMET/AIRMET criteria based on current pilot reports and reinforced by other sources of information about existing meteorological conditions.

c) When observed or developing weather conditions do not meet SIGMET, Convective SIGMET, or AIRMET criteria; e.g., in terms of intensity or area coverage, but current pilot reports or other weather information sources indicate that existing or anticipated meteorological phenomena will adversely affect the safe flow of air traffic within the ARTCC area of responsibility.

3.8.8.2 The following example is a CWA issued from the Kansas City, Missouri, ARTCC. The “3” after ZKC in the first line denotes this CWA has been issued for the third weather phenomena to occur for the day. The “301” in the second line denotes the phenomena number again (3) and the issuance number (01) for this phenomena. The CWA was issued at 2140Z and is valid until 2340Z.

EXAMPLE–

ZKC3 CWA 032140

ZKC CWA 301 VALID UNTIL 032340

ISOLD SVR TSTM over KCOU MOVG SWWD 10
KTS ETC.

4. Categorical Outlooks

4.1 Categorical outlook terms describing general ceiling and visibility conditions for advance planning purposes are used only in area forecasts. They are defined as follows:

4.1.1 LIFR (Low IFR). Ceiling less than 500 feet and/or visibility less than 1 mile.

4.1.2 IFR. Ceiling 500 to less than 1,000 feet and/or visibility 1 to less than 3 miles.

4.1.3 MVFR (Marginal VFR). Ceiling 1,000 or 3,000 feet and/or visibility 3 to 5 miles inclusive.

4.1.4 VFR. Ceiling greater than 3,000 feet and visibility greater than 5 miles; includes sky clear.

4.2 The cause of LIFR, IFR, or MVFR is indicated by either ceiling or visibility restrictions or both. The contraction “CIG” and/or weather and obstruction to vision symbols are used. If winds or gusts of 25 knots or greater are forecast for the outlook period, the word “WIND” is also included for all categories, including VFR.

EXAMPLE–

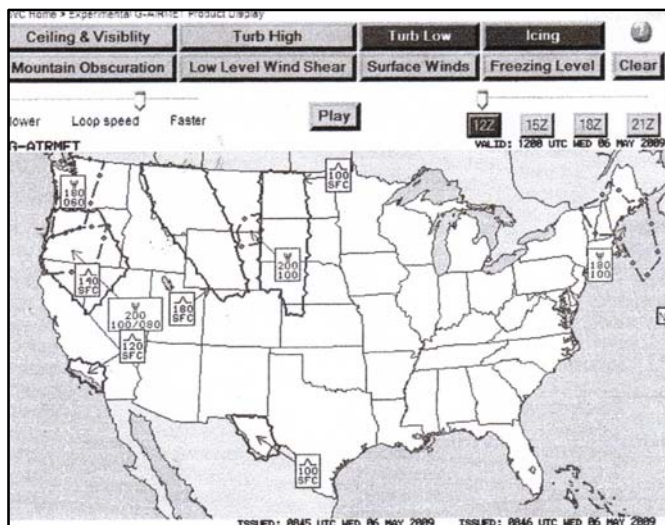
LIFR CIG–low IFR due to low ceiling.

IFR FG–IFR due to visibility restricted by fog.

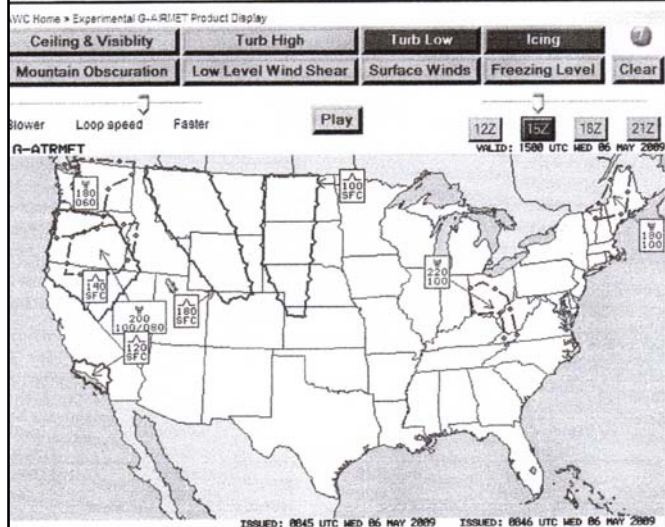
MVFR CIG HZ FU–marginal VFR due both to ceiling and to visibility restricted by haze and smoke.

IFR CIG RA WIND–IFR due both to low ceiling and to visibility restricted by rain; wind expected to be 25 knots or greater.

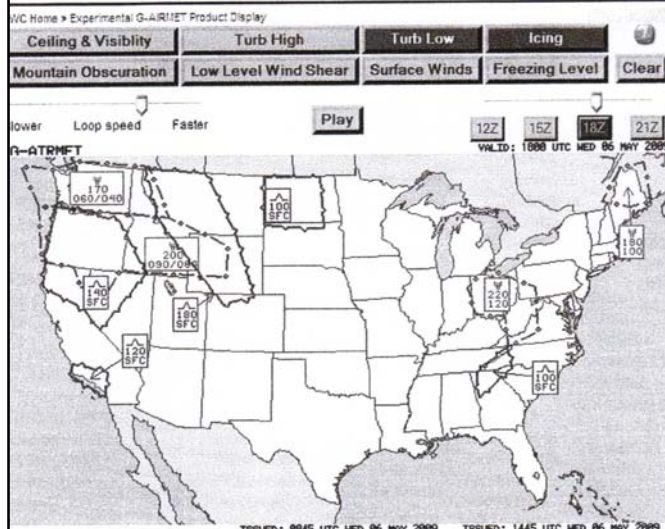
FIG GEN 3.5-4
G-AIRMET Graphical Product



Example G-AIRMET
Valid at 1200Z on May 6, 2009
Displaying:
Low Level Turbulence
Icing



Example G-AIRMET
Valid at 1500Z on May 6, 2009
Displaying:
Low Level Turbulence
Icing



Example G-AIRMET
Valid at 1800Z on May 6, 2009
Displaying:
Low Level Turbulence
Icing

5. Telephone Information Briefing Service (TIBS)

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

6. Inflight Weather Broadcasts

6.1 Weather Advisory Broadcasts. ARTCCs' broadcast a Severe Weather Forecast Alert (AWW), Convective SIGMET, or CWA alert once on all frequencies, except emergency, when any part of the area described is within 150 miles of the airspace under their jurisdiction. These broadcasts contain SIGMET or CWA identification and a brief description of the weather activity and general area affected.

EXAMPLE–

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

EXAMPLE–

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

EXAMPLE–

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

NOTE–

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

2. In areas where HIWAS is available, ARTCC, Terminal ATC, and FSS facilities do not broadcast inflight advisories as described in this paragraph.

6.2 Hazardous Inflight Weather Advisory Service (HIWAS). HIWAS is an automated, continuous broadcast of inflight weather advisories, provided by FSS over select VOR outlets, which include the following weather products: AWW, SIGMET, Convective SIGMET, CWA, AIRMET (text [WA] or graphical [G–AIRMET] products), and urgent PIREP. HIWAS is available throughout the conterminous United States as an additional source of hazardous weather information. HIWAS does not replace preflight or inflight weather briefings from FSS. Pilots should call FSS if there are any questions about weather that is different than forecasted or if the HIWAS broadcast appears to be in error.

NOTE–

In areas where HIWAS is available, ARTCC, Terminal ATC, and FSS facilities do not broadcast inflight advisories as described in the preceding paragraph.

6.2.1 Where HIWAS is available, a HIWAS alert will be broadcast once on all frequencies, except emergency frequencies, upon receipt by ARTCC and terminal facilities, which will include an alert announcement, frequency instruction, number, and type of advisory updated; for example, AWW, SIGMET, Convective SIGMET, or CWA.

EXAMPLE–

Attention all aircraft. Hazardous weather information (SIGMET, Convective SIGMET, AIRMET (text [WA] or graphical [G–AIRMET] product), urgent pilot weather report [UUA], or Center Weather Advisory [CWA]), (number or numbers) for (geographical area) available on HIWAS or Flight Service frequencies.

6.2.2 In HIWAS ARTCC areas, FSSs will broadcast a HIWAS update announcement once on all frequencies, except emergency frequencies, upon the addition of an update to the HIWAS broadcast. Included in the broadcast will be the type of advisory updated; for example, AWW, SIGMET, Convective SIGMET, CWA, etc.

EXAMPLE–

Attention all aircraft. Hazardous weather information for (geographical area) available from Flight Service.

6.2.3 HIWAS availability is notated with VOR listings in the Chart Supplement U.S., and is shown by symbols on IFR Enroute Low Altitude Charts and VFR Sectional Charts. The symbol depiction is identified in the chart legend.

7. Flight Information Services (FIS)

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

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

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

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

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

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

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

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

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

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

7.1.4.1 Before using FIS for inflight operations, pilots and other flight crewmembers should become familiar with the operation of the FIS system to be used, the airborne equipment to be used, including its system architecture, airborne system components, coverage service volume and other limitations of the particular system, modes of operation and indications of various system failures. Users should also be familiar with the specific content and format of the services available from the FIS provider(s). Sources

of information that may provide this specific guidance include manufacturer's manuals, training programs, and reference guides.

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

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

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

7.1.4.5 DLSP offer numerous MET and AI products with information that can be layered on top of each other. Pilots need to be aware that too much information can have a negative effect on their cognitive work load. Pilots need to manage the amount of information to a level that offers the most pertinent information to that specific flight without creating a cockpit distraction. Pilots may need to adjust the amount of information based on numerous

factors including, but not limited to, the phase of flight, single pilot operation, autopilot availability, class of airspace, and the weather conditions encountered.

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

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

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

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

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

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

- 2) **Text:** Pilot Weather Report (PIREP);
- 3) **Text:** Winds and Temperatures Aloft;
- 4) **Text:** Terminal Aerodrome Forecast (TAF) and amendments;
- 5) **Text:** Notice to Airmen (NOTAM) Distant and Flight Data Center;
- 6) **Text/Graphic:** Airmen's Meteorological Conditions (AIRMET);
- 7) **Text/Graphic:** Significant Meteorological Conditions (SIGMET);
- 8) **Text/Graphic:** Convective SIGMET;
- 9) **Text/Graphic:** Special Use Airspace (SUA);
- 10) **Text/Graphic:** Temporary Flight Restriction (TFR) NOTAM; and
- 11) **Graphic:** NEXRAD Composite Reflectivity Products (Regional and National).

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

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

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

f) Prior to using this capability, users should familiarize themselves with the operation of FIS–B

avionics by referencing the applicable User's Guides. Guidance concerning the interpretation of information displayed should be obtained from the appropriate avionics manufacturer.

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

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

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

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

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

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

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

Product	FIS-B Over UAT Service Update Intervals¹	FIS-B Service Transmission Intervals²
AIRMET	As Available	5 minutes
Convective SIGMET	As Available	5 minutes
METARs/SPECIs	1 minute/As Available	5 minutes
NEXRAD Composite Reflectivity (CONUS)	15 minutes	15 minutes
NEXRAD Composite Reflectivity (Regional)	5 minutes	2.5 minutes
NOTAMs-D/FDC/TFR	As Available	10 minutes
PIREP	As Available	10 minutes
SIGMET	As Available	5 minutes
SUA Status	As Available	10 minutes
TAF/AMEND	8 Hours/As Available	10 minutes
Temperatures Aloft	12 Hours	10 minutes
Winds Aloft	12 Hours	10 minutes

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

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

TBL GEN 3.5–3
Product Parameters for Low/Medium/High Altitude Tier Radios

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

8. Weather Observing Programs

8.1 Manual Observations. Aviation Routine Weather Reports (METAR) are taken at more than 600 locations in the U.S. With only a few exceptions, these stations are located at airport sites and most are staffed by FAA personnel who manually observe, perform calculations, and enter the observation into the distribution system. The format and coding of these observations are contained in FIG GEN 3.5–23 and FIG GEN 3.5–24.

8.2 Automated Weather Observing System (AWOS)

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

NOTE–

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

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

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

8.2.3.1 AWOS–A only reports altimeter setting.

NOTE–

Any other information is advisory only.

8.2.3.2 AWOS–AV reports altimeter and visibility;

NOTE–

Any other information is advisory only.

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

8.2.3.4 AWOS–2 provides the information provided by AWOS–I, plus visibility.

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

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

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

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

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

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

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

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

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

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

EXAMPLE–

“Bremerton National Airport automated weather observation one four five six zulu.”

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

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

EXAMPLE–

“Sault Ste. Marie, Chippewa County International Airport automated weather observation.”

“Sandusky, Cowley Field automated weather observation.”

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

EXAMPLE–

“Bremerton National Airport automated weather observation test one four five six zulu.”

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

EXAMPLE–

“Bremerton National Airport automated weather observing system temporarily inoperative.”

8.3.2 Ceiling and Sky Cover

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

EXAMPLE–

“Bremerton National Airport automated weather observation one four five six zulu, ceiling two thousand overcast.”

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

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

EXAMPLE–

“No clouds below one two thousand.”

“Clear below one two thousand.”

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

8.3.3 Visibility

8.3.3.1 The lowest reportable visibility value in AWOS is “less than $\frac{1}{4}$.” It is announced as “VISIBILITY LESS THAN ONE QUARTER.”

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

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

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

8.3.5.1 Automated “remarks.”

- a) Variable visibility.
- b) Density altitude.

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

- a) Type and intensity of precipitation.
- b) Thunderstorms, intensity (if applicable), and direction.
- c) Obstructions to vision when the visibility is less than 7 miles.

EXAMPLE–

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

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

EXAMPLE–

“Ceiling one thousand overcast, visibility three, precipitation, temperature three zero, dew point missing, wind calm, altimeter three zero zero one.”

8.3.5.4 “REMARKS” are announced in the following order of priority:

- a) Automated “REMARKS”:
 - 1) Variable visibility.
 - 2) Density altitude.
- b) Manual Input “REMARKS.” As a general rule, the remarks are announced in the same order as the parameters appear in the basic text of the observation.

EXAMPLE–

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

8.4 Automated Surface Observing System (ASOS)/Automated Weather Sensor System (AWSS)

8.4.1 The ASOS/AWSS is the primary surface weather observing system of the U.S. The program to install and operate these systems throughout the U.S. is a joint effort of the NWS, the FAA and the Department of Defense. AWSS is a follow-on program that provides identical data as ASOS. ASOS/AWSS is designed to support aviation operations and weather forecast activities. The ASOS/AWSS will provide continuous minute-by-minute observations and perform the basic observing functions necessary to generate an aviation routine weather report (METAR) and other aviation weather information. The information may be transmitted over a discrete VHF radio frequency or the voice portion of a local NAVAID. ASOS/AWSS transmissions on a discrete VHF radio frequency are engineered to be receivable to a maximum of 25 NM from the ASOS/AWSS site and a maximum altitude of 10,000 feet AGL. At many locations, ASOS/AWSS signals may be received on the surface of the airport, but local conditions may limit the maximum reception distance and/or altitude. While the automated system and the human may differ in their methods of data collection and interpretation, both produce an observation quite similar in form and content. For the “objective” elements such as pressure, ambient temperature, dew point temperature, wind, and precipitation accumulation, both the automated system and the observer use a fixed location and time-averaging technique. The quantitative differences between the observer and the automated observation of these elements are negligible. For the “subjective” elements, however, observers use a fixed time, spatial averaging technique to describe the visual elements (sky condition, visibility and present weather), while the automated systems use a fixed location, time averaging technique. Although this is a fundamental change, the manual and automated techniques yield remarkably similar results within the limits of their respective capabilities. (See FIG GEN 3.5–23 and

FIG GEN 3.5–24, Key to Decode an ASOS/AWSS (METAR) Observation.

8.4.2 System Description

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

- a) Individual weather sensors.
- b) Data collection and processing units.
- c) Peripherals and displays.

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

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

8.4.3.1 Cloud height indicator (one or possibly three).

8.4.3.2 Visibility sensor (one or possibly three).

8.4.3.3 Precipitation identification sensor.

8.4.3.4 Freezing rain sensor.

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

8.4.3.6 Ambient temperature/dew point temperature sensor.

8.4.3.7 Anemometer (wind direction and speed sensor).

8.4.3.8 Rainfall accumulation sensor.

8.4.4 The ASOS/AWSS data outlets include:

8.4.4.1 Those necessary for on-site airport users.

8.4.4.2 National communications networks.

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

NOTE–

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

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

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

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

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

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

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

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

freezing/frozen precipitation, and/or that are remote airports.

8.6.5 Service Level A, the highest and most demanding category, includes all the data reported in

Service Standard B, plus additional requirements as specified. Service Level A covers major aviation hubs and/or high volume traffic airports with average or worse weather.

TBL GEN 3.5–4
Weather Observing Programs

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

TBL GEN 3.5–5
Weather Observation Service Standards

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

9. Weather Radar Services

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

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

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

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

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

REFERENCE–

Pilot/Controller Glossary Term– Precipitation Radar Weather Descriptions.

AIP, Thunderstorms, GEN 3.5, Paragraph 27.

Chart Supplement U.S., Charts, NWS Upper Air Observing Stations and Weather Network for the location of specific radar sites.

10. ATC Inflight Weather Avoidance Assistance

10.1 ATC Radar Weather Display

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

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

10.1.2.1 “LIGHT” (< 30 dBZ)

10.1.2.2 “MODERATE” (30 to 40 dBZ)

10.1.2.3 “HEAVY” (> 40 to 50 dBZ)

10.1.2.4 “EXTREME” (> 50 dBZ)

NOTE–

Enroute ATC radar's Weather and Radar Processor (WARP) does not display light precipitation intensity.

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

10.1.4 ARTCC facilities normally use a Weather and Radar Processor (WARP) to display a mosaic of data obtained from multiple NEXRAD sites. There is a time delay between actual conditions and those displayed to the controller. For example, the precipitation data on the ARTCC controller's display could be up to 6 minutes old. When the WARP is not available, a second system, the narrowband Air Route Surveillance Radar (ARSR) can display two distinct levels of precipitation intensity that will be described to pilots as “MODERATE” (30 to 40 dBZ) and

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

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

10.2 Weather Avoidance Assistance

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

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

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

NOTE–

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

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

10.2.1.3 Request a new route to avoid the affected area.

10.2.1.4 Request a change of altitude.

10.2.1.5 Request radar vectors around the affected areas.

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

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

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

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

10.2.5.1 Proposed point where detour will commence.

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

10.2.5.3 Point where original route will be resumed.

10.2.5.4 Flight conditions (IFR or VFR).

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

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

10.2.6 To a large degree, the assistance that might be rendered by ATC will depend upon the weather information available to controllers. Due to the extremely transitory nature of severe weather situations, the controller’s weather information may

be of only limited value if based on weather observed on radar only. Frequent updates by pilots giving specific information as to the area affected, altitudes, intensity, and nature of the severe weather can be of considerable value. Such reports are relayed by radio or phone to other pilots and controllers, and they also receive widespread teletypewriter dissemination.

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

10.3 ATC Severe Weather Avoidance Plans

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

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

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

10.4.1 When the pilot initiates communications with ATC, rapid response may be obtained by stating

“WEATHER DEVIATION REQUIRED” to indicate priority is desired on the frequency and for ATC response.

10.4.2 The pilot still retains the option of initiating the communications using the urgency call “PAN–PAN” three times to alert all listening parties of a special handling condition which will receive ATC priority for issuance of a clearance or assistance.

10.4.3 ATC will:

10.4.3.1 Approve the deviation, or

10.4.3.2 Provide vertical separation and then approve the deviation, or

10.4.3.3 If ATC is unable to establish vertical separation, ATC must advise the pilot that standard separation cannot be applied; provide essential traffic information for all affected aircraft, to the extent practicable; and if possible, suggest a course of action. ATC may suggest that the pilot climb or descend to a contingency altitude (1,000 feet above or below that assigned if operating above FL 290; 500 feet above or below that assigned if operating at or below FL 290).

PHRASEOLOGY–

STANDARD SEPARATION NOT AVAILABLE; DEVIATE AT PILOT’S DISCRETION; SUGGEST CLIMB (or descent) TO (appropriate altitude); TRAFFIC (position and altitude); REPORT DEVIATION COMPLETE.

10.4.4 The pilot will follow the ATC advisory altitude when approximately 10 NM from track as well as execute the procedures detailed in paragraph 10.4.5.

10.4.5 If contact cannot be established or a revised ATC clearance or advisory is not available and deviation from track is required, the pilot must take the following actions:

10.4.5.1 If possible, deviate away from an organized track or route system.

10.4.5.2 Broadcast aircraft position and intentions on the frequency in use, as well as on frequency 121.5 MHz at suitable intervals stating: flight identification (operator call sign), flight level, track code or ATS route designator, and extent of deviation expected.

10.4.5.3 Watch for conflicting traffic both visually and by reference to the Traffic Alert and Collision Avoidance System (TCAS), if equipped.

10.4.5.4 Turn on aircraft exterior lights.

10.4.5.5 Deviations of less than 10 NM or operations within COMPOSITE (NOPAC and CEPAC) Airspace, should REMAIN at ASSIGNED altitude. Otherwise, when the aircraft is approximately 10 NM from track, initiate an altitude change based upon the following criteria:

TBL GEN 3.5–6

Route Centerline/Track	Deviations >10 NM	Altitude Change
East 000 – 179° M	Left Right	Descend 300 Feet Climb 300 Feet
West 180–359° M	Left Right	Climb 300 Feet Descend 300 Feet
Pilot Memory Slogan: “East right up, West right down.”		

10.4.5.6 When returning to track, be at the assigned flight level when the aircraft is within approximately 10 NM of centerline.

10.4.5.7 If contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

11. Notifications Required From Operators

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

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

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

12. Weather Observing Systems and Operating Procedures

For surface wind readings, most meteorological reporting stations have a direct reading, 3-cup anemometer wind system for which a 1-minute mean

wind speed and direction (based on true north) is taken. Some stations also have a continuous wind speed recorder which is used in determining the gustiness of the wind.

13. Runway Visual Range (RVR)

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

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

13.1.1 A transmissometer projector and related items.

13.1.2 A transmissometer receiver (detector) and related items.

13.1.3 An analog recorder.

13.1.4 A signal data converter and related items.

13.1.5 A remote digital or remote display programmer.

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

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

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

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

13.6 Approach categories with the corresponding minimum RVR values are listed in TBL GEN 3.5–7.

TBL GEN 3.5–7

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

* 1,400 feet with special equipment and authorization

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

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

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

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

13.8.1.2 A runway light intensity monitor (RLIM).

13.8.1.3 An ambient light sensor (ALS).

13.8.1.4 A data processor unit (DPU).

13.8.1.5 A controller display (CD).

13.8.2 The forward scatter meter is mounted on a 14-foot frangible pole. Infrared light is emitted from

the transmitter and received by the receiver. Any obscuring matter such as rain, snow, dust, fog, haze, or smoke increases the amount of scattered light reaching the receiver. The resulting measurement along with inputs from the runway light intensity monitor and the ambient light sensor are forwarded to the DPU which calculates the proper RVR value. The RVR values are displayed locally and remotely on controller displays.

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

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

13.8.4.1 100-foot increments for products below 800 feet.

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

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

13.8.4.4 25-meter increments for products below 150 meters.

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

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

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

14. Reporting of Cloud Heights

14.1 Ceiling, by definition in Federal Aviation Regulations, and as used in Aviation Weather Reports and Forecasts, is the height above ground (or water) level of the lowest layer of clouds or obscuring phenomenon that is reported as “broken,” “overcast,” or “the vertical visibility into an obscuration.” For example, an aerodrome forecast which reads “BKN030” refers to heights above ground level (AGL). An area forecast which reads “BKN030” states that the height is above mean sea level (MSL). See FIG GEN 3.5–21 for the Key to Routine Aviation

Weather Reports and Forecasts for the definition of “broken,” “overcast,” and “obscuration.”

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

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

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

15. Reporting Prevailing Visibility

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

15.2 Prevailing visibility is the greatest visibility equaled or exceeded throughout at least one-half the horizon circle, not necessarily contiguous. Segments of the horizon circle which may have a significantly

different visibility may be reported in the remarks section of the weather report; i.e., the southeastern quadrant of the horizon circle may be determined to be 2 miles in mist while the remaining quadrants are determined to be 3 miles in mist.

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

16. Estimating Intensity of Rain and Ice Pellets

16.1 Rain

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

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

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

16.2 Ice Pellets

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

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

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

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

17.1 Light. Visibility more than $\frac{1}{2}$ statute mile.

17.2 Moderate. Visibility from more than $\frac{1}{4}$ statute mile to $\frac{1}{2}$ statute mile.

17.3 Heavy. Visibility $\frac{1}{4}$ statute mile or less.

18. Pilot Weather Reports (PIREPs)

18.1 FAA air traffic facilities are required to solicit PIREPs when the following conditions are reported or forecast: ceilings at or below 5,000 feet, visibility at or below 5 miles (surface or aloft), thunderstorms and related phenomena, icing of a light degree or greater, turbulence of a moderate degree or greater, wind shear, and reported or forecast volcanic ash clouds, including the presence of sulphur gases (SO₂ or H₂S). SO₂ is identifiable as the sharp, acrid odor of a freshly struck match. H₂S, also known as sewer gas, has the odor of rotten eggs. Electrical smoke and fire and SO₂ are two odors described as somewhat similar.

NOTE–

After determining there are no secondary indications that would result from and indicate an electrical fire, the flight crew must establish whether the sulphur odor is transient or not. This is best achieved by flight crew donning oxygen mask(s) and breathing 100 percent oxygen for the period of time that results in a complete change of air within the cockpit and also allows the sense of smell to be regained. After the appropriate time period, the flight crew should remove the oxygen mask and determine if the odor is still present. The detection of sulphur gases are to be reported as SO₂ to conform to ICAO practices.

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

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

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

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

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

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

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

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

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

18.5 The FAA, NWS, and other organizations that enter PIREPs into the weather reporting system use the format listed in TBL GEN 3.5–8, PIREP Element Code Chart. Items 1 through 6 are included in all transmitted PIREPs along with one or more of items 7 through 13. Although the PIREP should be as complete and concise as possible, pilots should not be overly concerned with strict format or phraseology. The important thing is that the information is relayed so other pilots may benefit from your observation. If a portion of the report needs clarification, the ground station will request the information.

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

EXAMPLE–

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

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

EXAMPLE–

KCRW UA/OV KBKW 360015–KCRW/TM 1815/
FL120/TP BE99/SK IMC/WX RA–/TA M08/WV
290030/TB LGT–MDT/IC LGT RIME/RM MDT MXD
ICG DURC KROA NWBND FL080–100 1750Z.

Translation: from 15 miles north of Beckley VOR to

Charleston VOR; time 1815 UTC; altitude 12,000 feet;
type aircraft, BE–99; in clouds; rain; temperature
minus 8 Celsius; wind 290 degrees magnetic at 30 knots;
light to moderate turbulence; light rime icing during climb
northwestbound from Roanoke, VA, between 8,000 and
10,000 feet at 1750 UTC.

TBL GEN 3.5–8**PIREP Element Code Chart**

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

19. Mandatory MET Points

19.1 Within the ICAO CAR/SAM Regions and within the U.S. area of responsibility, several mandatory MET reporting points have been

established. These points are located within the Houston, Miami, and San Juan Flight Information Regions (FIR). These points have been established for flights between the South American and Caribbean Regions and Europe, Canada and the U.S.

19.2 Mandatory MET Reporting Points Within the Houston FIR

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

19.3 Mandatory MET Reporting Points Within the Miami FIR

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

19.4 Mandatory MET Reporting Points Within the San Juan FIR

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

20. PIREPs Relating to Airframe Icing

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

20.2 A pilot can expect icing when flying in visible precipitation, such as rain or cloud droplets, and the temperature is between +02 and –10 degrees Celsius.

When icing is detected, a pilot should do one of two things (particularly if the aircraft is not equipped with deicing equipment). The pilot should get out of the area of precipitation or go to an altitude where the temperature is above freezing. This “warmer” altitude may not always be a lower altitude. Proper preflight action includes obtaining information on the freezing level and the above-freezing levels in precipitation areas. Report the icing to an ATC or FSS facility, and if operating IFR, request new routing or altitude if icing will be a hazard. Be sure to give the type of aircraft to ATC when reporting icing. TBL GEN 3.5–9 describes how to report icing conditions.

TBL GEN 3.5–9

Intensity	Ice Accumulation
Trace	Ice becomes perceptible. Rate of accumulation slightly greater than rate of sublimation. Deicing/anti-icing equipment is not utilized unless encountered for an extended period of time (over 1 hour).
Light	The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.
Moderate	The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment or diversion is necessary.
Severe	The rate of accumulation is such that ice protection systems fail to remove the accumulation of ice, or ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. Immediate exit from the condition is necessary. <i>NOTE—Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any accumulation rate.</i>
Pilot Report: Aircraft Identification, Location, Time (UTC), Intensity of Type ¹ , Altitude/FL, Aircraft Type, Indicated Air Speed (IAS), and Outside Air Temperature (OAT) ² .	
¹ Rime or Clear Ice: Rime ice is a rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets. Clear ice is a glossy, clear, or translucent ice formed by the relatively slow freezing of large supercooled water droplets.	
² The Outside Air Temperature (OAT) should be requested by the FSS or ATC if not included in the PIREP.	

21. Definitions of Inflight Icing Terms

See TBL GEN 3.5–10, Icing Types, and TBL GEN 3.5–11, Icing Conditions.

TBL GEN 3.5–10 Icing Types

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

TBL GEN 3.5–II
Icing Conditions

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

22. PIREPs Relating to Turbulence

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

22.1.1 Aircraft location.

22.1.2 Time of occurrence in UTC.

22.1.3 Turbulence intensity.

22.1.4 Whether the turbulence occurred in or near clouds.

22.1.5 Aircraft altitude, or flight level.

22.1.6 Type of aircraft.

22.1.7 Duration of turbulence.

EXAMPLE–

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

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

22.2 Duration and classification of intensity should be made using TBL GEN 3.5–12, Turbulence Reporting Criteria Table.

TBL GEN 3.5–12
Turbulence Reporting Criteria Table

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

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

23. Wind Shear PIREPs

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

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

EXAMPLE–

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

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

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

EXAMPLE–

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

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

24. Clear Air Turbulence (CAT) PIREPs

24.1 Clear air turbulence (CAT) has become a very serious operational factor to flight operations at all levels and especially to jet traffic flying in excess of 15,000 feet. The best available information on this phenomenon must come from pilots via the PIREP procedures. All pilots encountering CAT conditions are urgently requested to report time, location, and intensity (light, moderate, severe, or extreme) of the element to the FAA facility with which they are maintaining radio contact. If time and conditions permit, elements should be reported according to the standards for other PIREPs and position reports. See TBL GEN 3.5–12, Turbulence Reporting Criteria Table.

25. Microbursts

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

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

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

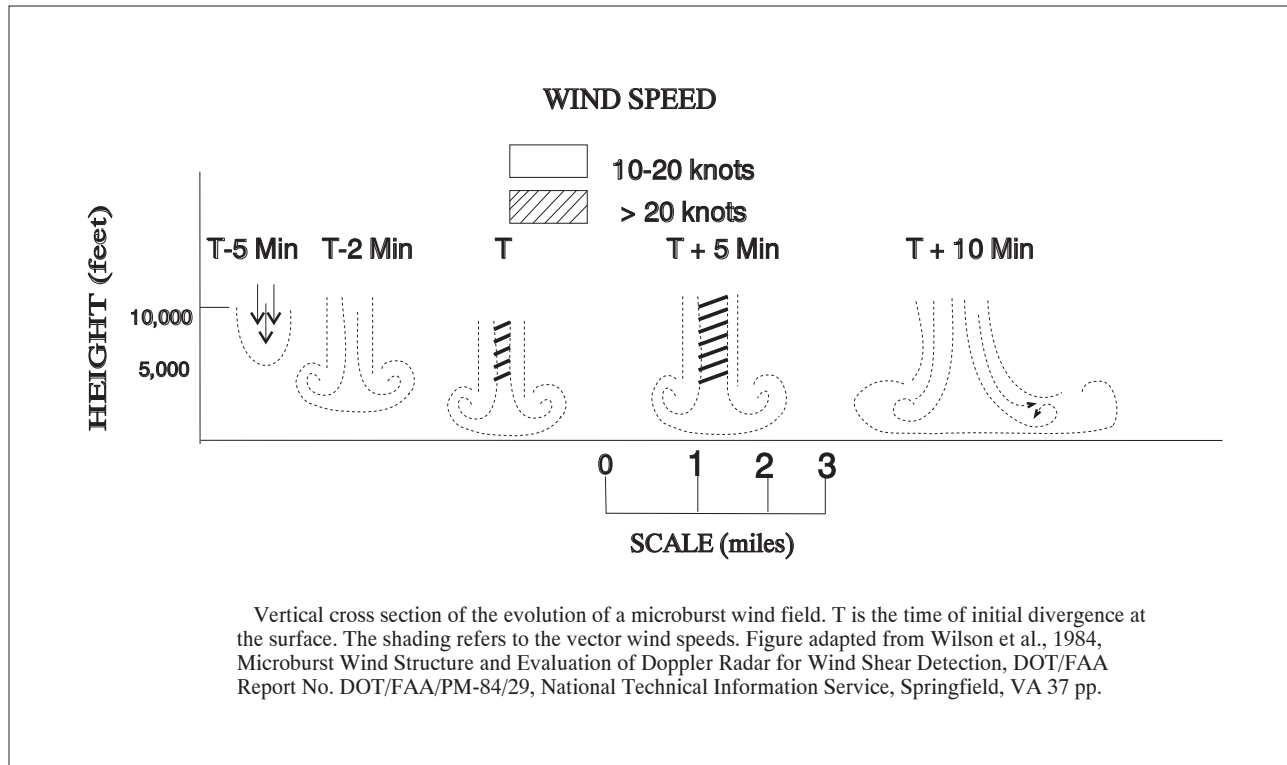
25.4 Characteristics of microbursts include:

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

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

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

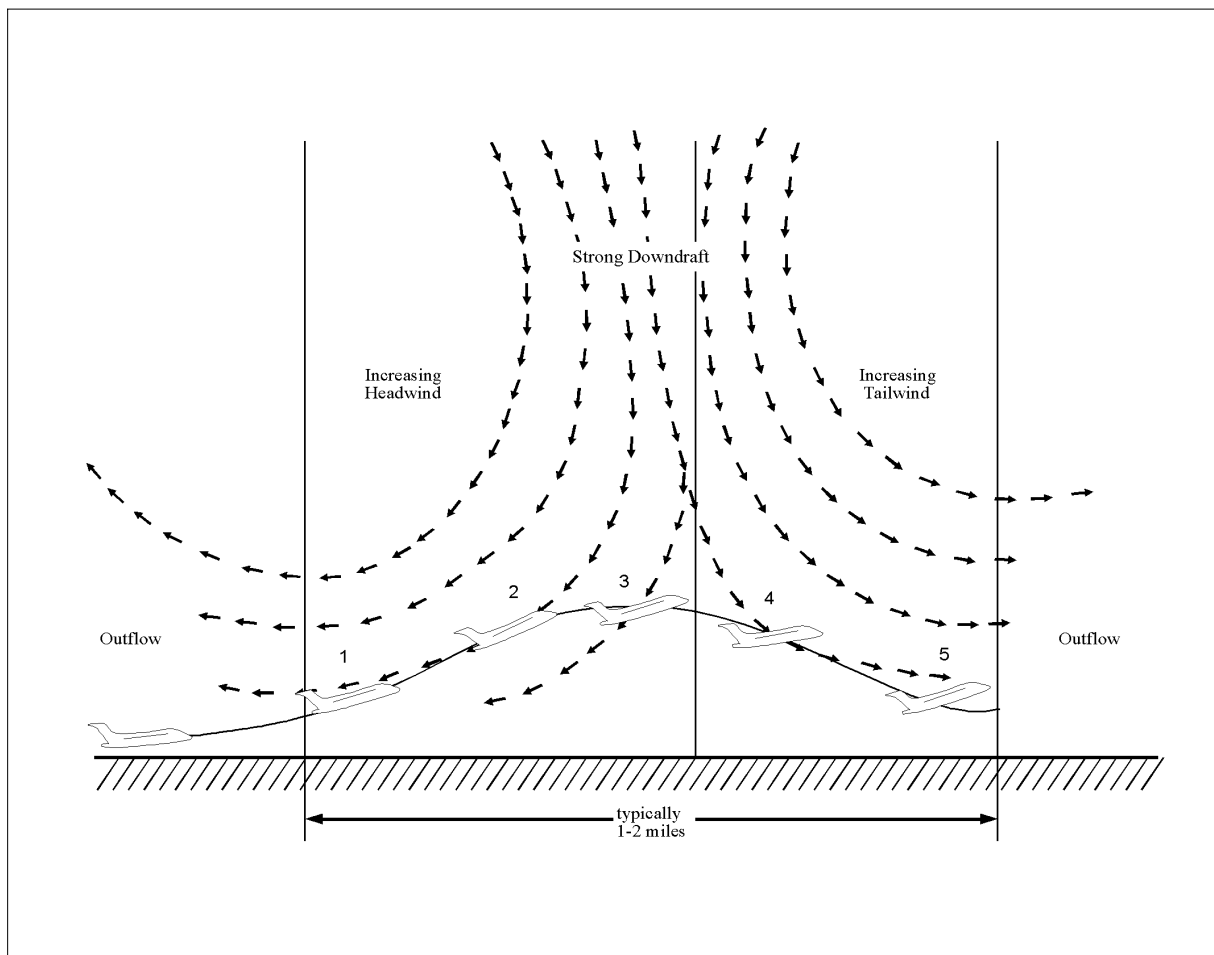
FIG GEN 3.5-5
Evolution of a Microburst



25.4.4 Duration. An individual microburst will seldom last longer than 15 minutes from the time it strikes the ground until dissipation. The horizontal winds continue to increase during the first 5 minutes with the maximum intensity winds lasting approximately 2-4 minutes. Sometimes microbursts are

concentrated into a line structure and, under these conditions, activity may continue for as long as 1 hour. Once microburst activity starts, multiple microbursts in the same general area are not uncommon and should be expected.

FIG GEN 3.5-6
Microburst Encounter During Takeoff



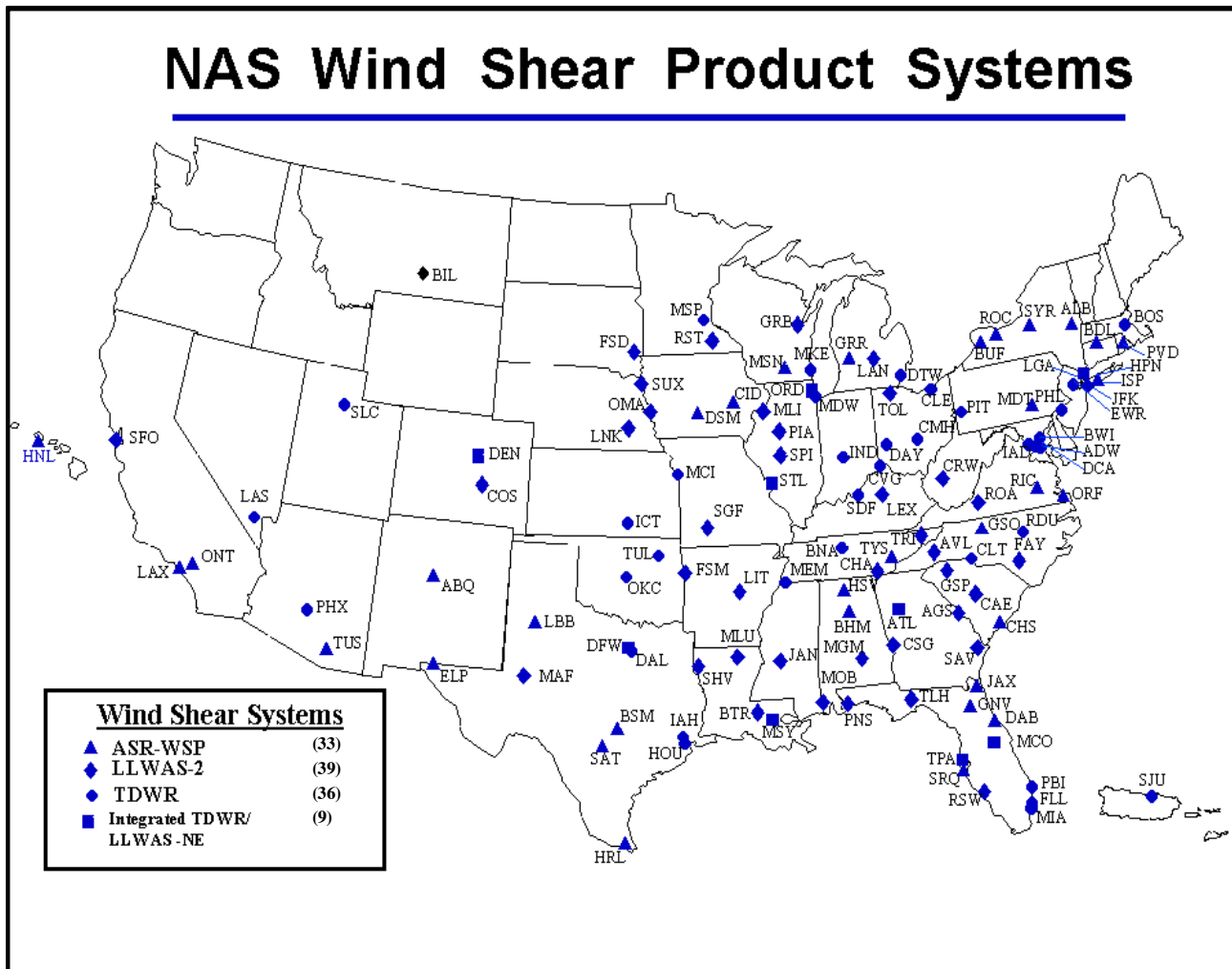
NOTE-

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

25.5 Microburst wind shear may create a severe hazard for aircraft within 1,000 feet of the ground, particularly during the approach to landing and landing and take-off phases. The impact of a microburst on aircraft which have the unfortunate

experience of penetrating one is characterized in FIG GEN 3.5-6. The aircraft may encounter a headwind (performance increasing), followed by a downdraft and a tailwind (both performance decreasing), possibly resulting in terrain impact.

FIG GEN 3.5-7
NAS Wind Shear Product Systems



25.6 Detection of Microbursts, Wind Shear, and Gust Fronts

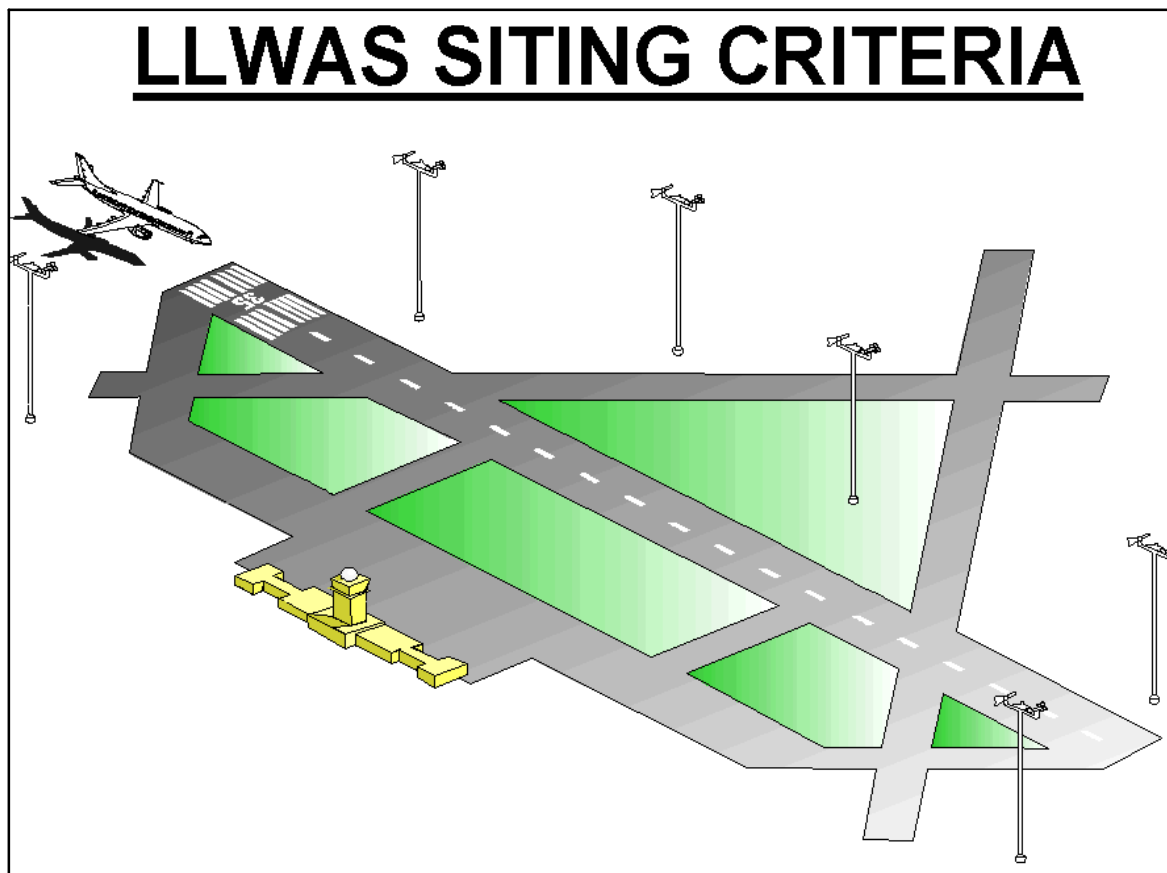
25.6.1 FAA's Integrated Wind Shear Detection Plan

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

concept that significantly improves the aviation weather information in the terminal area.
(See FIG GEN 3.5-7.)

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

FIG GEN 3.5–8
LLWAS Siting Criteria



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

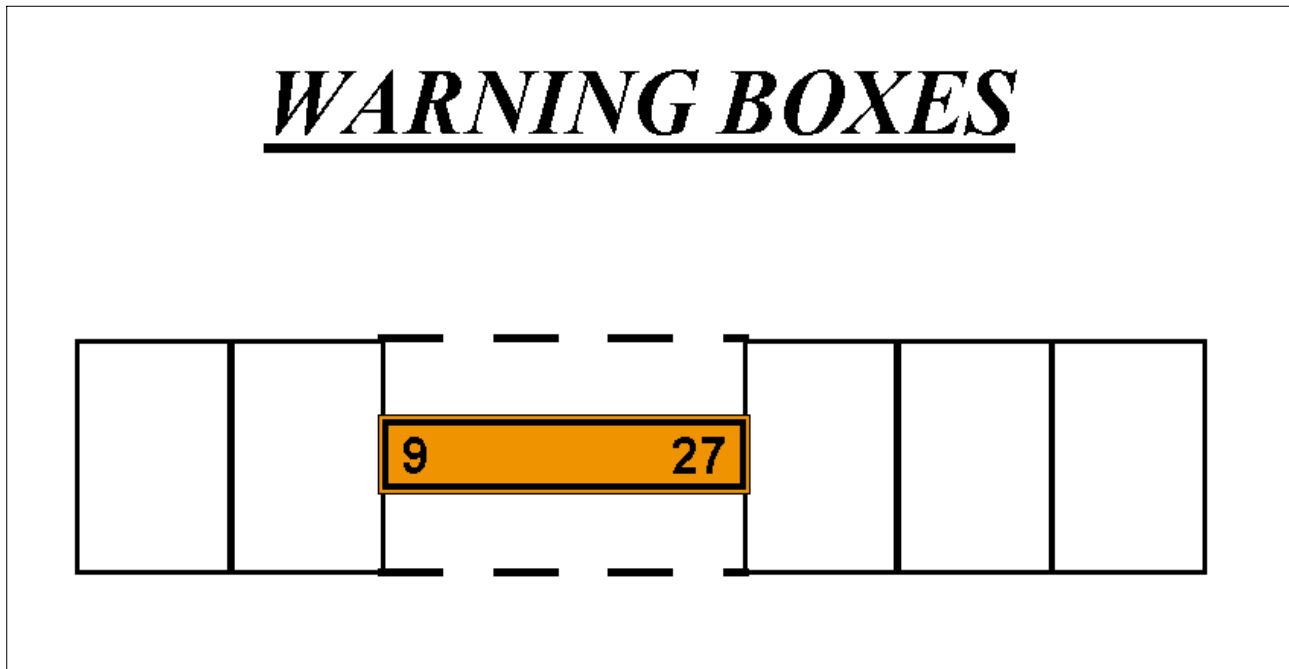
25.6.1.4 Low Level Wind Shear Alert System (LLWAS)

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

the runway. (See FIG GEN 3.5–8.)

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

FIG GEN 3.5–9
Warning Boxes



25.6.1.5 Terminal Doppler Weather Radar (TDWR)

a) TDWRs are being deployed at 45 locations across the U.S. Optimum locations for TDWRs are 8 to 12 miles from the airport proper, and designed to look at the airspace around and over the airport to detect microbursts, gust fronts, wind shifts, and precipitation intensities. TDWR products advise the controller of wind shear and microburst events impacting all runways and the areas $\frac{1}{2}$ mile on either side of the extended centerline of the runways and to a distance of 3 miles on final approach and 2 miles on departure. FIG GEN 3.5–9 is a theoretical view of the runway and the warning boxes that the software uses to determine the location(s) of wind shear or microbursts. These warnings are displayed (as depicted in the examples in subparagraph e) on the ribbon display terminal located in the tower cabs.

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

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

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

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

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

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

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

25.6.1.6 Weather Systems Processor (WSP)

a) The WSP provides the controller, supervisor, traffic management specialist, and ultimately the pilot, with the same products as the terminal doppler weather radar at a fraction of the cost. This is accomplished by utilizing new technologies to access the weather channel capabilities of the existing ASR–9 radar located on or near the airport, thus

eliminating the requirements for a separate radar location, land acquisition, support facilities, and the associated communication landlines and expenses.

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

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

25.6.1.7 Operational Aspects of LLWAS, TDWR, and WSP

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

a) MICROBURST ALERTS

EXAMPLE–

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

27A MBA 35K– 2MF 250 20

NOTE–

(See FIG GEN 3.5–10 to see how the TDWR/WSP determines the microburst location).

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

PHRASEOLOGY–

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

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

NOTE–

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

b) WIND SHEAR ALERTS

EXAMPLE–

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

27A WSA 20K– 3MF 200 15

NOTE–

(See FIG GEN 3.5–11 to see how the TDWR/WSP determines the wind shear location).

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

PHRASEOLOGY–

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

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

NOTE–

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

FIG GEN 3.5-10
Microburst Alert

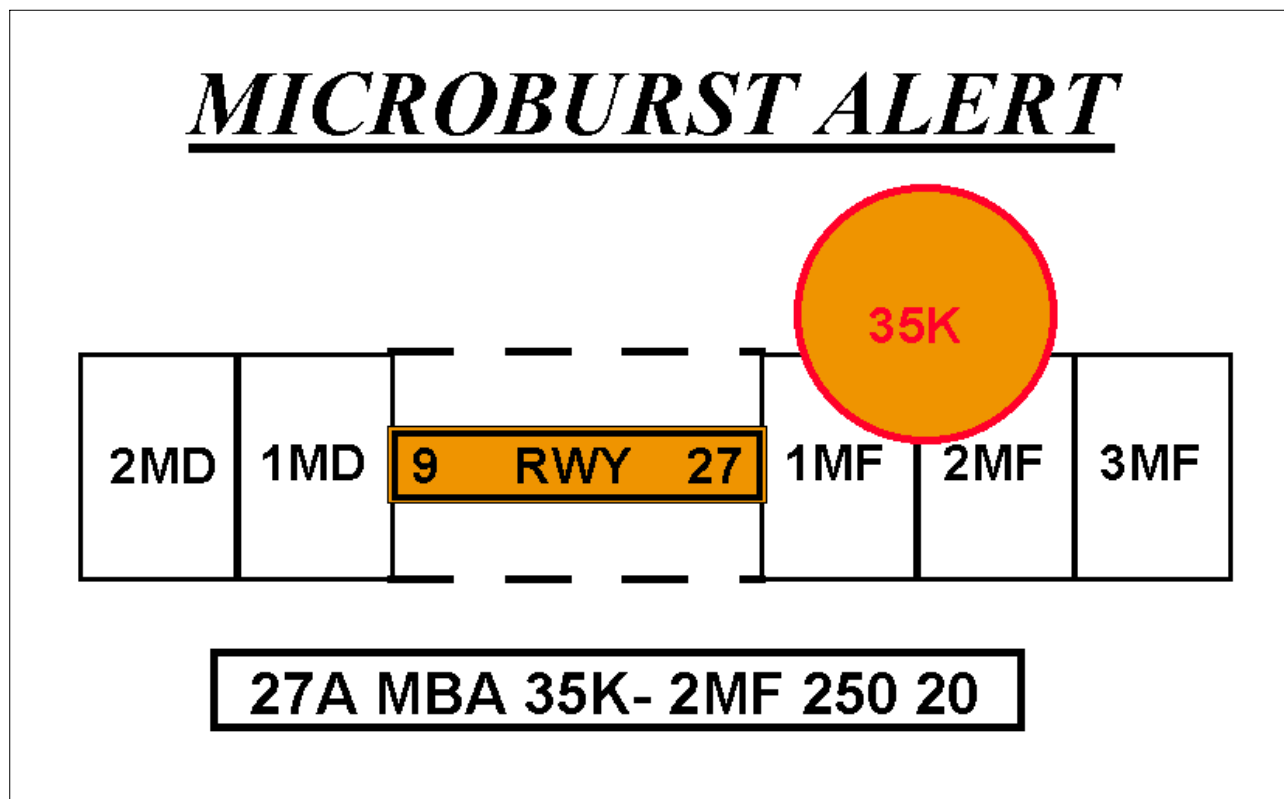


FIG GEN 3.5-11
Weak Microburst Alert

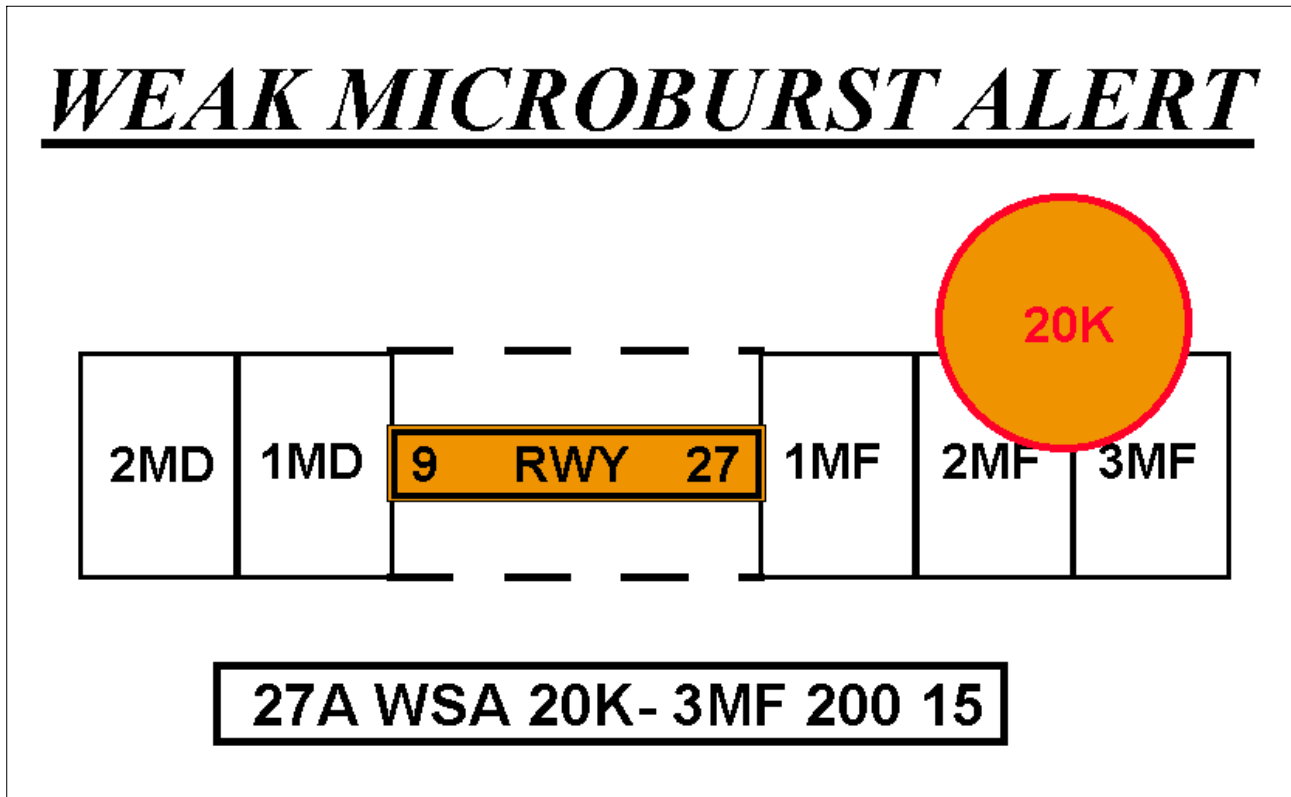
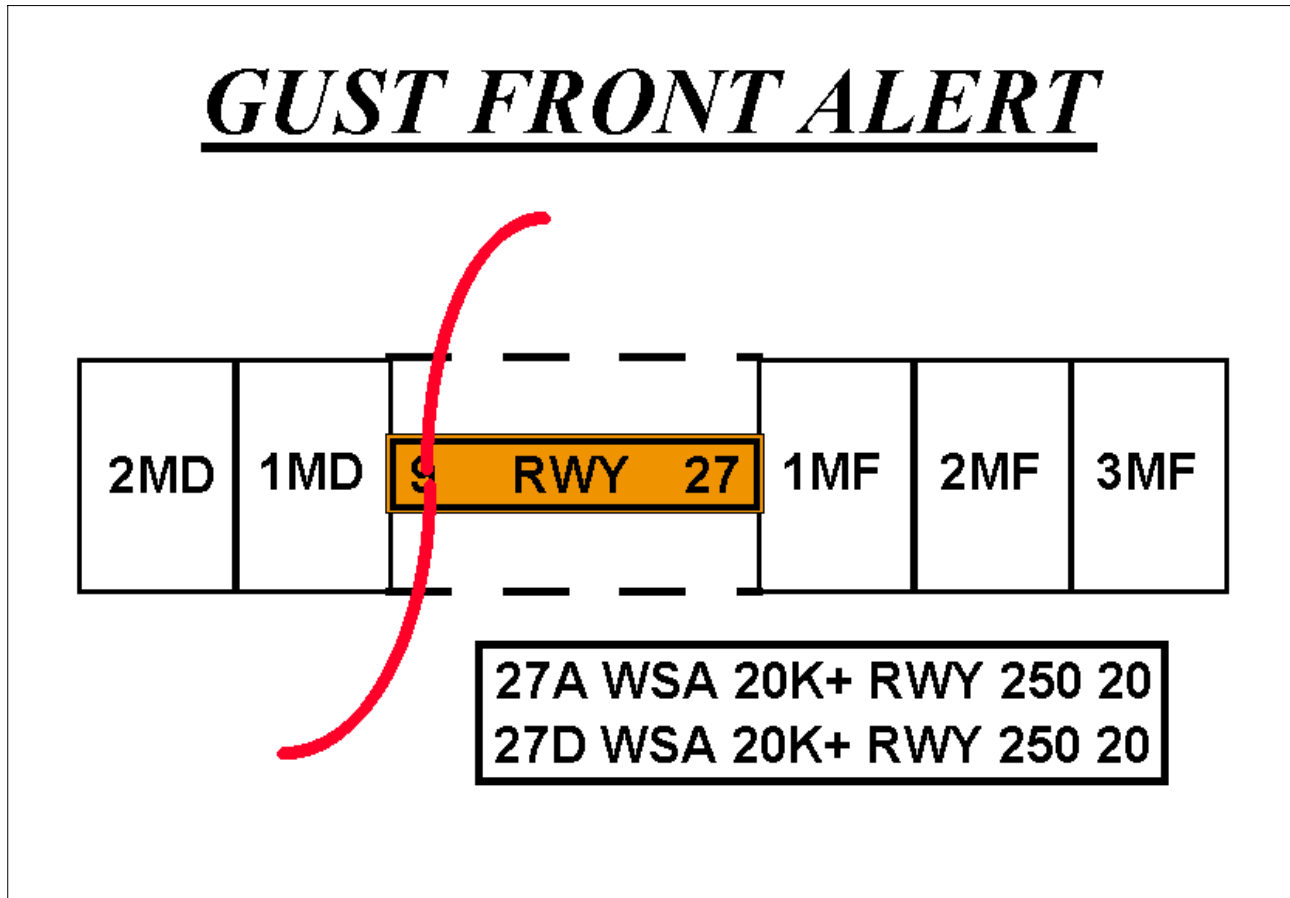


FIG GEN 3.5-12
Gust Front Alert



c) MULTIPLE WIND SHEAR ALERTS

EXAMPLE-

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

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

NOTE-

(See FIG GEN 3.5-12 to see how the TDWR/WSP determines the gust front/wind shear location).

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

PHRASEOLOGY-

MULTIPLE WIND SHEAR ALERTS.

RUNWAY 27 ARRIVAL, WIND SHEAR ALERT, 20 KT GAIN ON RUNWAY;

RUNWAY 27 DEPARTURE, WIND SHEAR ALERT, 20 KT GAIN ON RUNWAY, WINDS 250 AT 20.

EXAMPLE-

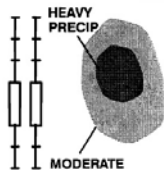
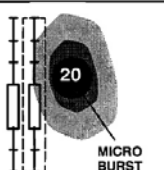
In this example, the controller is advising arriving and departing aircraft that they could encounter a wind shear condition right on the runway due to a gust front (significant change of wind direction) with the possibility of a 20 knot gain in airspeed associated with the gust front. Additionally,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

25.6.1.8 The Terminal Weather Information for Pilots System (TWIP)

a) With the increase in the quantity and quality of terminal weather information available through TDWR, the next step is to provide this information directly to pilots rather than relying on voice communications from ATC. The National Airspace System has long been in need of a means of delivering terminal weather information to the cockpit more efficiently in terms of both speed and accuracy to enhance pilot awareness of weather hazards and reduce air traffic controller workload. With the TWIP

capability, terminal weather information, both alphanumerically and graphically, is now available directly to the cockpit at 43 airports in the U.S. NAS. (See FIG GEN 3.5-13.)

FIG GEN 3.5-13
TWIP Image of Convective Weather
at MCO International

WEATHER SITUATION	TWIP TEXT MESSAGE
 HEAVY PRECIP MODERATE PRECIP	MCO 1800 TERMINAL WEATHER -STORM(S) 3NM N-E MOD PRECIP 4NM NE HVY PRECIP MOVG W AT 15KT .EXPECTED MOD PRECIP BEGIN 1805
 20 MICRO BURST	MCO 1810 TERMINAL WEATHER *MODERATE PRECIP BEGAN 1805 -STORM(S) ARPT ALQDS MOD PRECIP 1NM N-E HVY PRECIP MOVG W AT 15KT .EXPECTED HVY PRECIP BEGIN 1815

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

c) TWIP products include descriptions and character graphics of microburst alerts, wind shear alerts, significant precipitation, convective activity within 30 NM surrounding the terminal area, and expected weather that will impact airport operations. During inclement weather; i.e., whenever a predetermined level of precipitation or wind shear is detected within 15 miles of the terminal area, TWIP products are updated once each minute for text messages and once every 5 minutes for character graphic messages. During good weather (below the predetermined precipitation or wind shear parameters) each message is updated every 10 minutes. These products are intended to improve the situational awareness of the pilot/flight crew, and to aid in flight planning prior to

arriving or departing the terminal area. It is important to understand that, in the context of TWIP, the predetermined levels for inclement versus good weather has nothing to do with the criteria for VFR/MVFR/IFR/LIFR; it only deals with precipitation, wind shears, and microbursts.

TBL GEN 3.5-13
TWIP-Equipped Airports

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

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

26. PIREPs Relating to Volcanic Ash Activity

26.1 Volcanic eruptions which send ash into the upper atmosphere occur somewhere around the world several times each year. Flying into a volcanic ash cloud can be exceedingly dangerous. At least two B747s have lost all power in all four engines after such an encounter. Regardless of the type aircraft, some damage is almost certain to ensue after an encounter with a volcanic ash cloud. Additionally, studies have shown that volcanic eruptions are the only significant source of large quantities of sulphur dioxide (SO₂) gas at jet-cruising altitudes. Therefore, the detection and subsequent reporting of SO₂ is of significant importance. Although SO₂ is colorless, its presence in the atmosphere should be suspected when a sulphur-like or rotten egg odor is present throughout the cabin.

26.2 While some volcanoes in the U.S. are monitored, many in remote areas are not. These unmonitored volcanoes may erupt without prior warning to the aviation community. A pilot observing a volcanic eruption who has not had previous notification of it may be the only witness to the eruption. Pilots are strongly encouraged to transmit a PIREP regarding volcanic eruptions and any observed volcanic ash clouds or detection of sulphur dioxide (SO₂) gas associated with volcanic activity.

26.3 Pilots should submit PIREPs regarding volcanic activity using the Volcanic Activity Reporting form (VAR) as illustrated in FIG GEN 3.5–28. (If a VAR form is not immediately available, relay enough information to identify the position and type of volcanic activity.)

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

27. Thunderstorms

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

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

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

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

27.5 The probability of lightning strikes occurring to aircraft is greatest when operating at altitudes where temperatures are between –5 C and +5 C. Lightning

can strike aircraft flying in the clear in the vicinity of a thunderstorm.

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

REFERENCE–

Pilot/Controller Glossary Term– Precipitation Radar Weather Descriptions.

EXAMPLE–

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

EXAMPLE–

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

■ 28. Thunderstorm Flying

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

28.1.18 Do give a PIREP for the flight conditions.

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

28.1.20 Do contact Flight Service for assistance in avoiding thunderstorms. Flight Service specialists have NEXRAD mosaic radar imagery and NEXRAD single site radar with unique features such as base and

composite reflectivity, echo tops, and VAD wind profiles.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

29. Wake Turbulence

29.1 General

29.1.1 Every aircraft generates a wake while in flight. Initially, when pilots encountered this wake in flight, the disturbance was attributed to "prop wash." It is known, however, that this disturbance is caused by a pair of counterrotating vortices trailing from the wing tips. The vortices from larger aircraft pose problems to encountering aircraft. For instance, the wake of these aircraft can impose rolling moments exceeding the roll control authority of the encountering aircraft. Further, turbulence generated within the vortices can damage aircraft components and equipment if encountered at close range. The pilot must learn to envision the location of the vortex wake generated by larger (transport category) aircraft and adjust the flight path accordingly.

29.1.2 During ground operations and during takeoff, jet engine blast (thrust stream turbulence) can cause damage and upsets if encountered at close range. Exhaust velocity versus distance studies at various thrust levels have shown a need for light aircraft to maintain an adequate separation behind large turbojet aircraft. Pilots of larger aircraft should be particularly careful to consider the effects of their "jet blast" on other aircraft, vehicles, and maintenance equipment during ground operations.

29.2 Vortex Generation

29.2.1 Lift is generated by the creation of a pressure differential over the wing surface. The lowest pressure occurs over the upper wing surface and the highest pressure under the wing. This pressure differential triggers the roll up of the airflow aft of the wing resulting in swirling air masses trailing downstream of the wing tips. After the roll up is completed, the wake consists of two counter rotating cylindrical vortices. Most of the energy is within a few feet of the center of each vortex, but pilots should avoid a region within about 100 feet of the vortex core. (See FIG GEN 3.5–14.)

29.3 Vortex Strength

29.3.1 The strength of the vortex is governed by the weight, speed, and shape of the wing of the generating aircraft. The vortex characteristics of any given aircraft can also be changed by extension of flaps or other wing configuring devices as well as by change in speed. However, as the basic factor is weight, the vortex strength increases proportionately. Peak

vortex tangential speeds up to almost 300 feet per second have been recorded. The greatest vortex strength occurs when the generating aircraft is HEAVY, CLEAN, and SLOW.

29.3.2 Induced Roll

29.3.2.1 In rare instances, a wake encounter could cause inflight structural damage of catastrophic proportions. However, the usual hazard is associated with induced rolling moments which can exceed the roll control authority of the encountering aircraft. In flight experiments, aircraft have been intentionally flown directly up trailing vortex cores of larger aircraft. It was shown that the capability of an aircraft to counteract the roll imposed by the wake vortex primarily depends on the wing span and counter-control responsiveness of the encountering aircraft.

29.3.2.2 Counter-control is usually effective and induced roll minimal in cases where the wing span and ailerons of the encountering aircraft extend beyond the rotational flow field of the vortex. It is more difficult for aircraft with short wing span (relative to the generating aircraft) to counter the imposed roll induced by vortex flow. Pilots of short-span aircraft, even of the high-performance type, must be especially alert to vortex encounters. (See FIG GEN 3.5–15.)

29.3.2.3 The wake of larger aircraft requires the respect of all pilots.

29.4 Vortex Behavior

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

29.4.1.1 An aircraft generates vortices from the moment it rotates on takeoff to touchdown, since trailing vortices are a by-product of wing lift. Prior to takeoff or touchdown pilots should note the rotation or touchdown point of the preceding aircraft. (See FIG GEN 3.5–16.)

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

29.4.1.3 Flight tests have shown that the vortices from larger (transport category) aircraft sink at a rate of several hundred feet per minute, slowing their descent and diminishing in strength with time and distance behind the generating aircraft. Atmospheric turbulence hastens breakup. Pilots should fly at or above the preceding aircraft's flight path, altering course as necessary to avoid the area behind and below the generating aircraft. However, vertical separation of 1,000 feet may be considered safe. (See FIG GEN 3.5–17.)

FIG GEN 3.5-14
Wake Vortex Generation

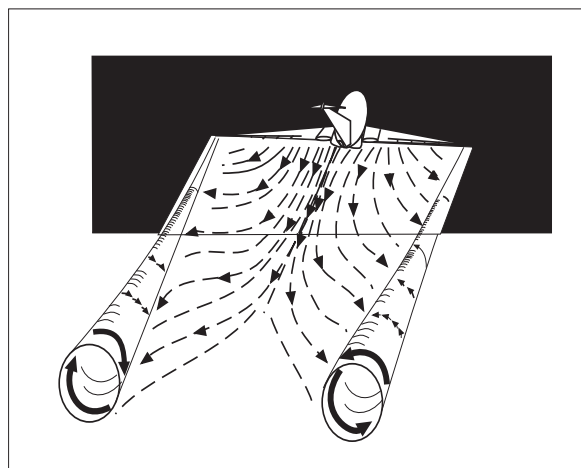


FIG GEN 3.5-15
Wake Encounter Counter Control

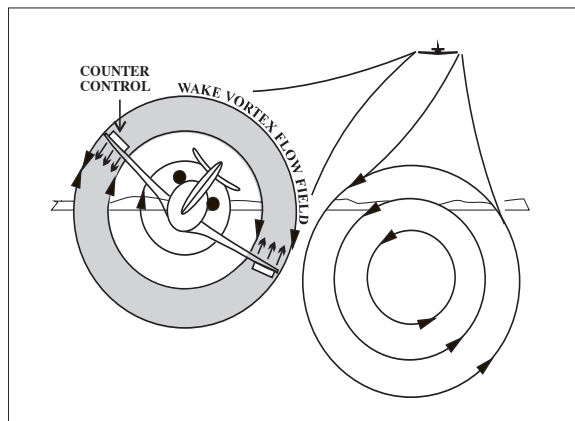


FIG GEN 3.5-16
Wake Ends/Wake Begins

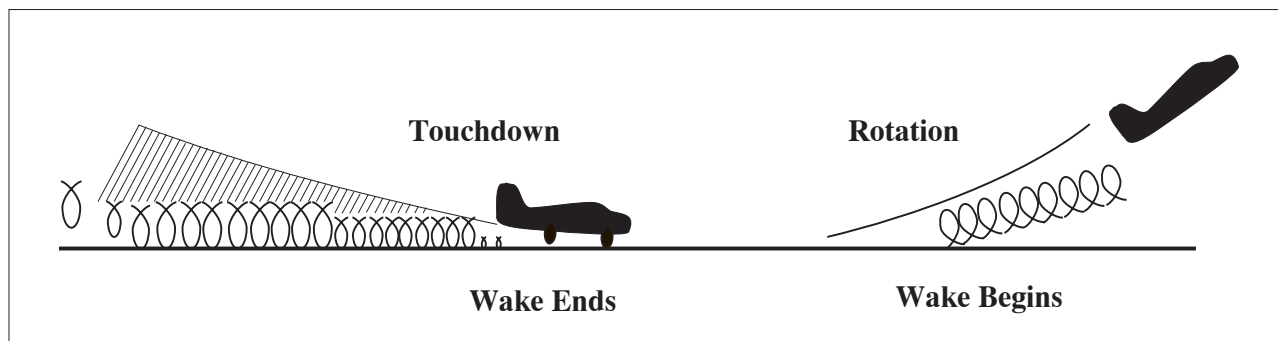


FIG GEN 3.5-17
Vortex Flow Field

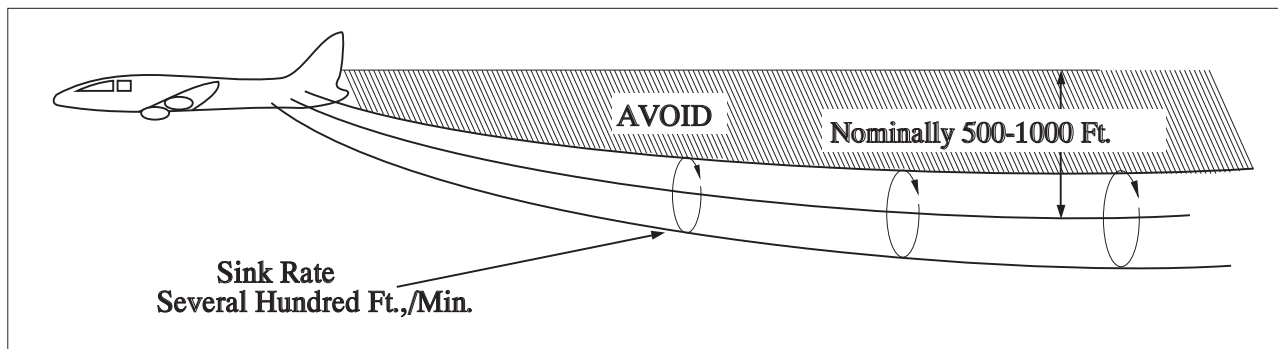
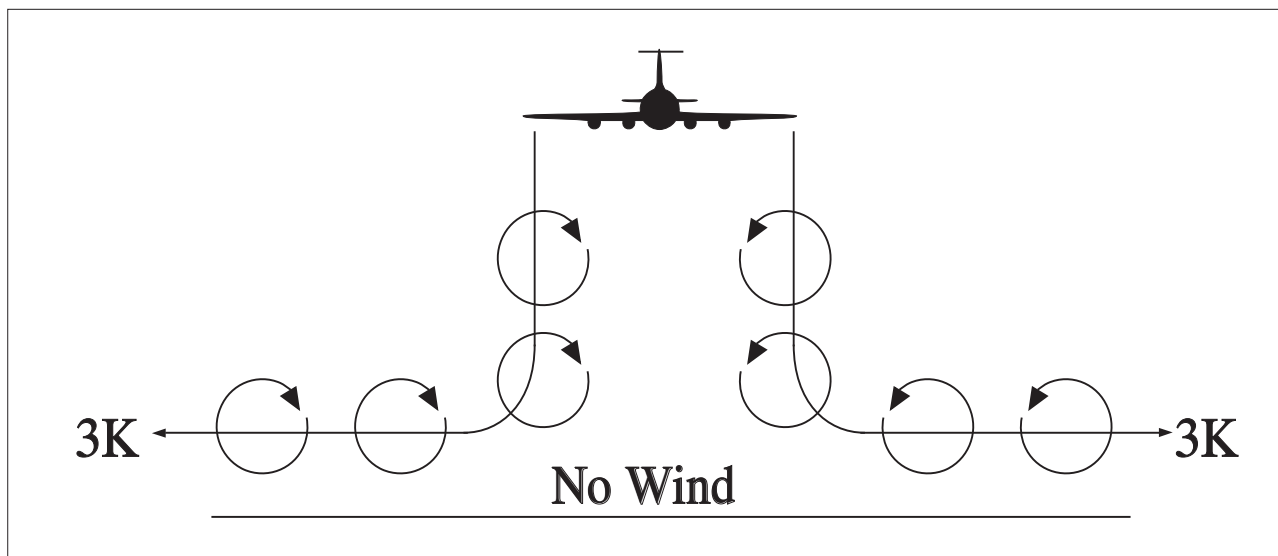


FIG GEN 3.5–18
Vortex Movement Near Ground – No Wind



29.4.1.4 When the vortices of larger aircraft sink close to the ground (within 100 to 200 feet), they tend to move laterally over the ground at a speed of 2 or 3 knots. (See FIG GEN 3.5–18.)

29.4.1.5 There is a small segment of the aviation community that have become convinced that wake vortices may “bounce” up to twice their nominal steady state height. With a 200-foot span aircraft, the “bounce” height could reach approximately 200 feet AGL. This conviction is based on a single unsubstantiated report of an apparent coherent vortical flow that was seen in the volume scan of a research sensor. No one can say what conditions cause vortex bouncing, how high they bounce, at what angle they bounce, or how many times a vortex

may bounce. On the other hand, no one can say for certain that vortices never “bounce.” Test data have shown that vortices can rise with the air mass in which they are embedded. Wind shear, particularly, can cause vortex flow field “tilting.” Also, ambient thermal lifting and orographic effects (rising terrain or tree lines) can cause a vortex flow field to rise. Notwithstanding the foregoing, pilots are reminded that they should be alert at all times for possible wake vortex encounters when conducting approach and landing operations. The pilot has the ultimate responsibility for ensuring appropriate separations and positioning of the aircraft in the terminal area to avoid the wake turbulence created by a preceding aircraft.

FIG GEN 3.5-19
Vortex Movement Near Ground – with Cross Winds

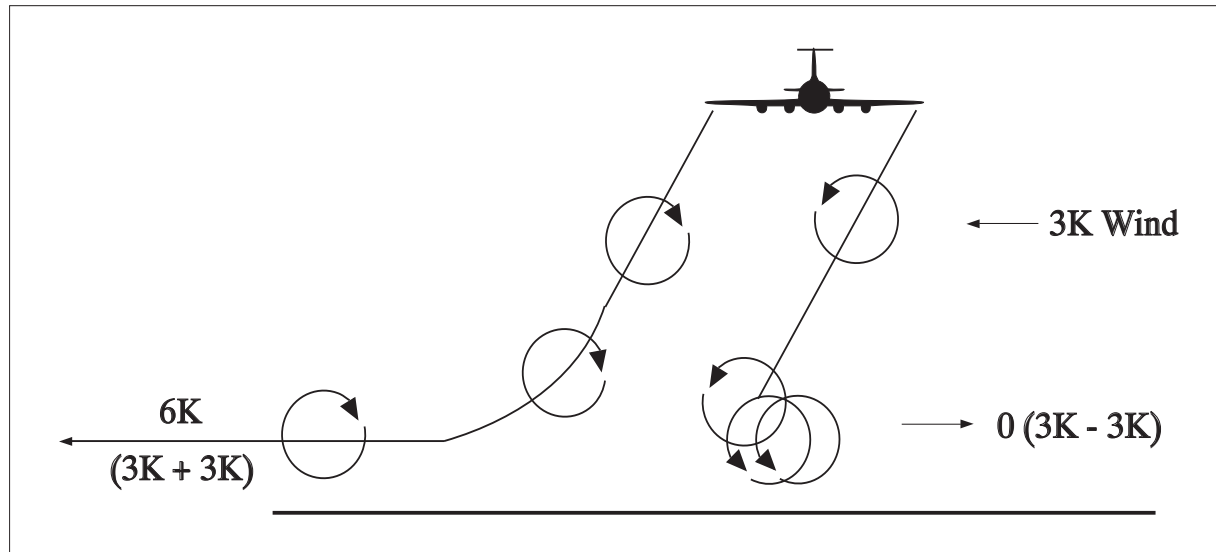
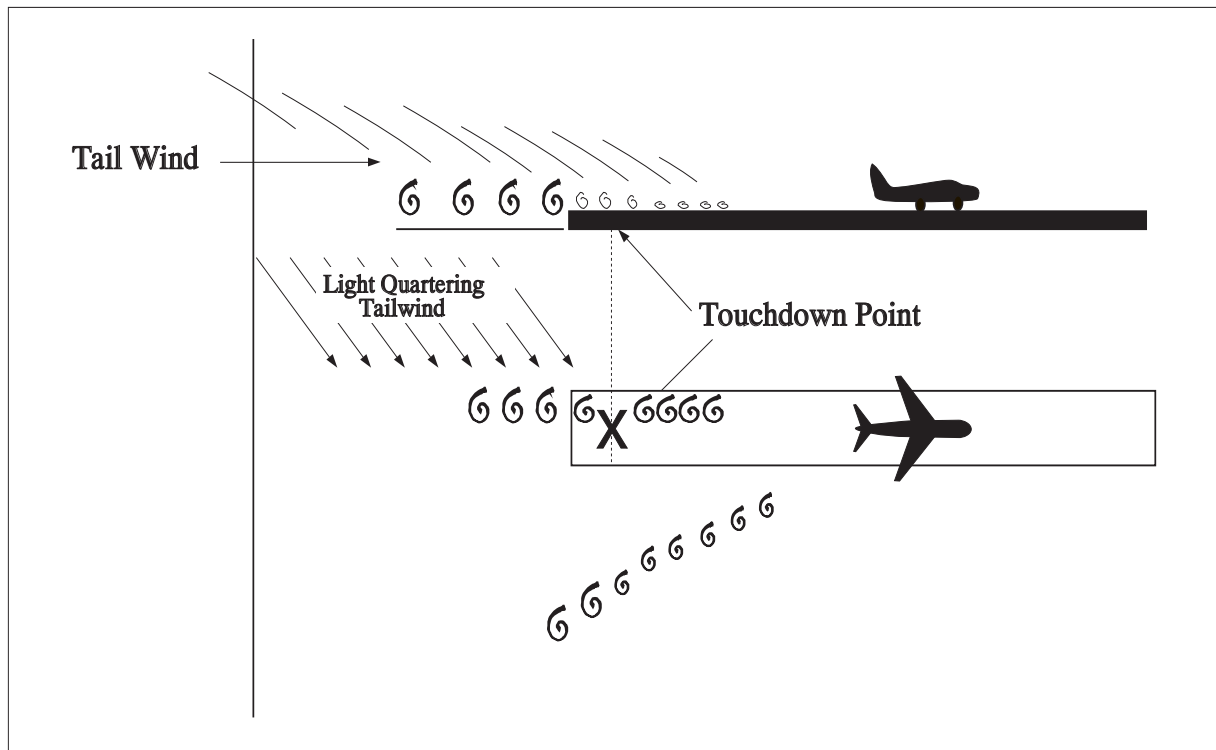


FIG GEN 3.5-20
Vortex Movement in Ground Effect – Tailwind



29.4.2 A crosswind will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex. Thus a light wind with a cross-runway component of 1 to 5 knots could result in the upwind vortex remaining in the touchdown zone for a period of time and hasten the drift of the downwind vortex toward another runway.

(See FIG GEN 3.5-19.) Similarly, a tailwind condition can move the vortices of the preceding aircraft forward into the touchdown zone. **THE LIGHT QUARTERING TAILWIND REQUIRES MAXIMUM CAUTION.** Pilots should be alert to larger aircraft upwind from their approach and takeoff flight paths. (See FIG GEN 3.5-20.)

29.5 Operations Problem Areas

29.5.1 A wake encounter can be catastrophic. In 1972 at Fort Worth, Texas, a DC-9 got too close to a DC-10 (two miles back), rolled, caught a wingtip, and cartwheeled coming to rest in an inverted position on the runway. All aboard were killed. Serious and even fatal general aviation accidents induced by wake vortices are not uncommon. However, a wake encounter is not necessarily hazardous. It can be one or more jolts with varying severity depending upon the direction of the encounter, weight of the generating aircraft, size of the encountering aircraft, distance from the generating aircraft, and point of vortex encounter. The probability of induced roll increases when the encountering aircraft's heading is generally aligned with the flight path of the generating aircraft.

29.5.2 AVOID THE AREA BELOW AND BEHIND THE GENERATING AIRCRAFT, ESPECIALLY AT LOW ALTITUDE WHERE EVEN A MOMENTARY WAKE ENCOUNTER COULD BE HAZARDOUS. This is not easy to do. Some accidents have occurred even though the pilot of the trailing aircraft had carefully noted that the aircraft in front was at a considerably lower altitude. Unfortunately, this does not ensure that the flight path of the lead aircraft will be below that of the trailing aircraft.

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

29.5.3.1 Remain in the touchdown area.

29.5.3.2 Drift from aircraft operating on a nearby runway.

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

29.5.3.4 Sink into the traffic pattern from other airport operations.

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

29.5.4 Pilots of all aircraft should visualize the location of the vortex trail behind larger aircraft and use proper vortex avoidance procedures to achieve safe operation. It is equally important that pilots of larger aircraft plan or adjust their flight paths to minimize vortex exposure to other aircraft.

29.6 Vortex Avoidance Procedures

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

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

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

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

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

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

29.6.2.5 Landing Behind a Departing Larger Aircraft – Crossing Runway. Note the larger aircraft's rotation point – if past the intersection – continue the approach – land prior to the intersection. If

larger aircraft rotates prior to the intersection, avoid flight below the larger aircraft's flight path. Abandon the approach unless a landing is ensured well before reaching the intersection.

29.6.2.6 Departing Behind a Larger Aircraft.

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

29.6.2.7 Intersection Takeoffs – Same Runway.

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

29.6.2.8 Departing or Landing After a Larger Aircraft Executing a Low Approach, Missed Approach, Or Touch-and-go Landing.

Because vortices settle and move laterally near the ground, the vortex hazard may exist along the runway and in your flight path after a larger aircraft has executed a low approach, missed approach, or a touch-and-go landing, particular in light quartering wind conditions. You should ensure that an interval of at least 2 minutes has elapsed before your takeoff or landing.

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

29.7 Helicopters

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

landing helicopters produce a pair of strong, high-speed trailing vortices similar to wing tip vortices of larger fixed-wing aircraft. Pilots of small aircraft should use caution when operating behind or crossing behind landing and departing helicopters.

29.8 Pilot Responsibility

29.8.1 Government and industry groups are making concerted efforts to minimize or eliminate the hazards of trailing vortices. However, the flight disciplines necessary to ensure vortex avoidance during VFR operations must be exercised by the pilot. Vortex visualization and avoidance procedures should be exercised by the pilot using the same degree for concern as in collision avoidance.

29.8.2 Wake turbulence may be encountered by aircraft in flight as well as when operating on the airport movement area.

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

29.8.3.1 Traffic information.

29.8.3.2 Instructions to follow an aircraft.

29.8.3.3 The acceptance of a visual approach clearance.

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

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

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

EXAMPLE–

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

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

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

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

EXAMPLE–

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

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

- a) Pick a point of landing no less than 1,000 feet from the arrival end of the runway.
- b) Establish a line-of-sight to that landing point that is above and in front of the heavier preceding aircraft.
- c) When possible, note the point of landing of the heavier preceding aircraft and adjust point of intended landing as necessary.

EXAMPLE–

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

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

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

29.9 Air Traffic Wake Turbulence Separations

29.9.1 Because of the possible effects of wake turbulence, controllers are required to apply no less than specified minimum separation to all IFR aircraft, to all VFR aircraft receiving Class B or Class C airspace services when operating behind super or heavy aircraft, and to small aircraft operating behind a B757.

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

- a) **Heavy** behind **super** – 6 miles.
- b) **Large** behind **super** – 7 miles.
- c) **Small** behind **super** – 8 miles.
- d) **Heavy** behind **heavy** – 4 miles.
- e) **Small/large** behind **heavy** – 5 miles.
- f) **Small** behind **B757** – 4 miles.

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

- a) **Small** landing behind **heavy** – 6 miles.
- b) **Small** landing behind **large, non-B757** – 4 miles.

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

- a) Three minutes or the appropriate radar separation when takeoff will be behind a super aircraft;
- b) Two minutes or the appropriate radar separation when takeoff will be behind a heavy aircraft.
- c) Two minutes or the appropriate radar separation when a small aircraft will takeoff behind a B757.

NOTE–

Controllers may not reduce or waive these intervals.

29.9.2 A 3-minute interval will be provided for a **small** aircraft taking off:

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

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

NOTE–

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

29.9.3 A 3-minute interval will be provided when a small aircraft will takeoff:

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

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

NOTE–

This 3-minute interval may not be waived.

29.9.4 A 4-minute interval will be provided for all aircraft taking off behind a super aircraft, and a 3-minute interval will be provided for all aircraft taking off behind a heavy aircraft when the operations are as described in subparagraphs 29.9.3.1 and 29.9.3.2 above, and are conducted on either the same runway or parallel runways separated by less than 2,500 feet. Controllers may not reduce or waive this interval.

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

NOTE–

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

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

30. International Civil Aviation Organization (ICAO) Weather Formats

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

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

30.2.1 Type of report.

30.2.2 ICAO station identifier.

30.2.3 Date and time of report.

30.2.4 Modifier (as required).

30.2.5 Wind.

30.2.6 Visibility.

30.2.7 Runway Visual Range (RVR).

30.2.8 Weather phenomena.

30.2.9 Sky conditions.

30.2.10 Temperature/Dew point group.

30.2.11 Altimeter.

30.2.12 Remarks (RMK).

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

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

30.3.1.1 The METAR, an aviation routine weather report.

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

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

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

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

EXAMPLE–

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

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

NOTE–

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

30.3.5 Wind. The wind is reported as a five digit group (six digits if speed is over 99 knots). The first three digits are the direction from which the wind is blowing, in tens of degrees referenced to true north, or “VRB” if the direction is variable. The next two digits is the wind speed in knots, or if over 99 knots, the next three digits. If the wind is gusty, it is reported

as a “G” after the speed followed by the highest gust reported. The abbreviation “KT” is appended to denote the use of knots for wind speed.

EXAMPLE–

13008KT – wind from 130 degrees at 8 knots

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

VRB04KT – wind variable in direction at 4 knots

00000KT – wind calm

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

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

32012G22KT 280V350

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

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

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

EXAMPLE–

7SM seven statute miles

15SM fifteen statute miles

1/2SM one-half statute mile

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

30.3.6.2 Automated Visibility. ASOS/AWSS visibility stations will show visibility 10 or greater than 10 miles as “10SM.” AWOS visibility stations will show visibility less than 1/4 statute mile as “M1/4SM” and visibility 10 or greater than 10 miles as “10SM.”

NOTE–

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

30.3.6.3 Variable Visibility. Variable visibility is shown in remarks when rapid increase or decrease by $\frac{1}{2}$ statute mile or more and the average prevailing visibility is less than 3 statute miles; e.g., VIS 1V2 means “visibility variable between 1 and 2 statute miles.”

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

EXAMPLE–

VIS N2 visibility north two

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

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

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

EXAMPLE–

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

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

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

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

NOTE–

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

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

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

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

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

NOTE–

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

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

RA	rain
DZ	drizzle
SN	snow
GR	hail ($\frac{1}{4}$ " or greater)
GS	small hail/snow pellets
PL	ice pellets
SG	snow grains
IC	ice crystals
UP	unknown precipitation (automated stations only)

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

FG	fog (visibility less than $\frac{5}{8}$ mile)
HZ	haze
FU	smoke
PY	spray
BR	mist (visibility $\frac{5}{8}$ –6 miles)
SA	sand
DU	dust
VA	volcanic ash

NOTE–

Fog (FG) is observed or forecast only when the visibility is less than $\frac{5}{8}$ mile. Otherwise, mist (BR) is observed or forecast.

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

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

EXAMPLES–

TSRA	thunderstorm with moderate rain
+SN	heavy snow
–RA FG	light rain and fog
BRHZ	mist and haze (visibility $\frac{5}{8}$ mile or greater)
FZDZ	freezing drizzle
VCSH	rain shower in the vicinity
+SHRASNPL	heavy rain showers, snow, ice pellets (Intensity indicator refers to the predominant rain.)

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

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

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

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

NOTE–

1. “SKC” will be reported at manual stations. “CLR” will be used at automated stations when no clouds below 12,000 feet are reported.

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

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

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

EXAMPLE–

SCT025TCU BKN080 BKN250 – “two thousand five hundred scattered towering cumulus, ceiling eight thousand broken, two five thousand broken.”

SCT008 OVC012CB – “eight hundred scattered ceiling one thousand two hundred overcast cumulonimbus clouds.”

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

EXAMPLE–

$\frac{1}{8}$ SM FG VV006 – visibility one eighth, fog, indefinite ceiling six hundred.

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

EXAMPLE–

BKN000 (IN BODY) – “sky partially obscured.”

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

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

EXAMPLE–

BKN020 (IN BODY) – “ceiling two thousand broken.”

RMK FU BKN020 – “broken layer of smoke aloft, based at two thousand.”

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

EXAMPLE–

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

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

EXAMPLE–

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

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

EXAMPLE–

SCT V BKN – “scattered layer variable to broken.”

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

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

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

EXAMPLE–

CB W MOVE – “cumulonimbus west moving east.”

CBMAM DSNT S – “cumulonimbus mammatus distant south.”

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

EXAMPLE–

TCU OHD – “towering cumulus overhead.”

TCU W – “towering cumulus west.”

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

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

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

EXAMPLE–

15/08 “temperature one five, dew point 8”

00/M02 “temperature zero, dew point minus 2”

M05/ “temperature minus five, dew point missing”

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

EXAMPLE–

A2995 “altimeter two niner niner five”

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

Except for precipitation, phenomena located within 5 statute miles of the point of observation will be

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

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

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

1) Volcanic Eruptions
2) Tornado, Funnel Cloud, Waterspout
3) Type of Automated Station (AO1 or AO2)
4) Peak Wind
5) Wind Shift
6) Tower or Surface Visibility
7) Variable Prevailing Visibility
8) Sector Visibility
9) Visibility at Second Location
10) Dispatch Visual Range
11) Lightning (freq) LTG (type) (loc)
12) Beginning/Ending Time of Precipitation
13) Beginning/Ending Time of Thunderstorms
14) Thunderstorm Location; Movement Direction
15) Hailstone Size
16) Virga
17) Variable Ceiling
18) Obscurements

19) Variable Sky Condition
20) Significant Cloud Types
21) Ceiling Height at Second Location
22) Pressure Rising or Falling Rapidly
23) Sea–Level Pressure
24) Aircraft Mishap (not transmitted)
25) No SPECI Reports Taken
26) Snow Increasing Rapidly
27) Other Significant Information

30.3.12.2 Additive and Automated Maintenance Data Remarks.

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

EXAMPLE–
METAR report and explanation:

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

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

EXAMPLE–
METAR report and explanation:

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

METAR	Aviation routine weather report
KBNA	Nashville, TN
281250Z	28th day of month; time 1250 UTC
(no modifier)	This is a manually generated report, due to the absence of “AUTO” and “AO1 or AO2” in remarks.
33018KT	Wind three three zero at one eight
290V360	Wind variable between two nine zero and three six zero
1/2SM	Visibility one half statute mile
R31/2700FT	Runway three one RVR two thousand seven hundred feet
SN	Moderate snow
BLSN FG	Visibility obscured by blowing snow and fog
VV008	Indefinite ceiling eight hundred
00/M03	Temperature zero; dew point minus three
A2991	Altimeter two niner niner one
RMK	Remarks
RAE36	Rain ended at three six
SNB42	Snow began at four two

EXAMPLE–
SPECI report and explanation:

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

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

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

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

TAFs are issued in the following format:

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

NOTE–

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

TAF KORD 051130Z 0512/0618 14008KT 5SM BR BKN030

TEMPO 0513/0516 1 1/2SM BR
FM051600 16010KT P6SM SKC
FM052300 20013G20KT 4SM SHRA OVC020
PROB40 0600/0606 2SM TSRA OVC008CB
BECMG 0606/0608 21015KT P6SM NSW
SCT040

TAF format observed in the above example:

TAF = type of report

KORD = ICAO station identifier

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

0512/0618 = valid period date and times

14008KT 5SM BR BKN030 = forecast meteorological conditions

30.4.1 Explanation of TAF elements

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

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

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

30.4.1.4 Valid Period Date and Time. The UTC valid period of the forecast consists of two four-digit sets, separated by a “/”. The first four-digit set is a

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

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

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

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

30.4.1.5 Forecast Meteorological Conditions.

This is the body of the TAF. The basic format is:

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

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

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

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

appended to the wind speed followed by the highest expected gust.

NOTE–

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

EXAMPLE–

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

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

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

EXAMPLE–

1/2SM visibility one-half

4SM visibility four

P6SM visibility more than six

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

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

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

NOTE–

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

d) Sky Condition. TAF sky condition forecasts use the METAR format described in the METAR section. Cumulonimbus clouds (CB) are the only cloud type forecast in TAFs. When clear skies are forecast, the contraction “SKC” will always be used.

The contraction “CLR” is never used in the aerodrome forecast (TAF). When the sky is obscured due to a surface-based phenomenon, vertical visibility (VV) into the obscuration is forecast. The format for vertical visibility is “VV” followed by a three-digit height in hundreds of feet.

NOTE–

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

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

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

WS010/18040KT	“low level wind shear at one thousand, wind one eight zero at four zero”
---------------	--

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

NOTE–

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

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

EXAMPLE–

PROB40 2221/2302 1/2SM +TSRA “chance between 2100Z and 0200Z of visibility one-half statute mile in thunderstorms and heavy rain.”

PROB30 3010/3014 1SM RASN “chance between 1000Z and 1400Z of visibility one statute mile in mixed rain and snow.”

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

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

EXAMPLE–

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

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

NOTE–

The NWS does not use BECMG in the TAF.

EXAMPLE–

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

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

EXAMPLE–

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

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

FIG GEN 3.5–21



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



TAF	KPIT 091730Z 0918/1024 15005KT 5SM HZ FEW020 WS010/31022KT FM091930 30015G25KT 3SM SHRA OVC015 TEMPO 0920/0922 1/2SM +TSRA OVC008CB FM100100 27008KT 5SM SHRA BKN020 OVC040 PROB30 1004/1007 1SM -RA BR FM101015 18005KT 6SM -SHRA OVC020 BECMG 1013/1015 P6SM NSW SKC
NOTE: Users are cautioned to confirm DATE and TIME of the TAF. For example FM100000 is 0000Z on the 10th . Do not confuse with 1000Z !	
METAR	KPIT 091955Z COR 22015G25KT 3/4SM R28L/2600FT TSRA OVC010CB 18/16 A2992 RMK SLP045 T01820159

Forecast	Explanation	Report
TAF	Message type: <u>TAF</u> -routine or <u>TAF AMD</u> -amended forecast, <u>METAR</u> -hourly, <u>SPECI</u> -special or <u>TESTM</u> -non-commissioned ASOS report	METAR
KPIT	ICAO location indicator	KPIT
091730Z	Issuance time: ALL times in UTC “ <u>Z</u> ”, 2-digit date, 4-digit time	091955Z
0918/1024	Valid period, either 24 hours or 30 hours. The first two digits of EACH four digit number indicate the date of the valid period, the final two digits indicate the time (valid from 18Z on the 9 th to 24Z on the 10 th).	
	In U.S. METAR: <u>COR</u> rected ob; or <u>AUTOM</u> ated ob for automated report with no human intervention; omitted when observer logs on.	COR
15005KT	Wind: 3 digit true-north direction, nearest 10 degrees (or <u>VaRiaBle</u>); next 2-3 digits for speed and unit, <u>KT</u> (KMH or MPS); as needed, <u>Gust</u> and maximum speed; 00000KT for calm; for METAR, if direction varies 60 degrees or more, <u>Variability</u> appended, e.g., 180 <u>V</u> 260	22015G25KT
5SM	Prevailing visibility; in U.S., Statute <u>Miles</u> & fractions; above 6 miles in TAF <u>Plus6SM</u> . (Or, 4-digit minimum visibility in meters and as required, lowest value with direction)	¾SM
	Runway Visual Range: <u>R</u> ; 2-digit runway designator <u>L</u> eft, <u>C</u> enter, or <u>R</u> ight as needed; “ <u>L</u> ”, Minus or Plus in U.S., 4-digit value, <u>F</u> ee <u>T</u> in U.S., (usually meters elsewhere); 4-digit value <u>V</u> ariability 4-digit value (and tendency <u>D</u> own, <u>U</u> p or <u>N</u> o change)	R28L/2600FT
HZ	Significant present, forecast and recent weather: see table (on back)	TSRA
FEW020	Cloud amount, height and type: <u>Sky Clear</u> 0/8, <u>FEW</u> >0/8-2/8, <u>ScaT</u> tered 3/8-4/8, <u>BroKeN</u> 5/8-7/8, <u>OverCast</u> 8/8; 3-digit height in hundreds of ft; <u>T</u> owering <u>Cumulus</u> or <u>CumulonimBus</u> in METAR ; in TAF , only <u>CB</u> . <u>V</u> ertical <u>V</u> isibility for obscured sky and height “VV004”. More than 1 layer may be reported or forecast. In automated METAR reports only, <u>CleaR</u> for “clear below 12,000 feet”	OVC 010CB
	Temperature: degrees Celsius; first 2 digits, temperature “ <u>L</u> ” last 2 digits, dew-point temperature; <u>M</u> inus for below zero, e.g., M06	18/16
	Altimeter setting: indicator and 4 digits; in U.S., <u>A</u> -inches and hundredths; (<u>Q</u> -hectoPascals, e.g., Q1013)	A2992
WS010/31022KT	In U.S. TAF , non-convective low-level (≤2,000 ft) <u>W</u> ind <u>S</u> hear; 3-digit height (hundreds of ft); “ <u>L</u> ”; 3-digit wind direction and 2-3 digit wind speed above the indicated height, and unit, <u>KT</u>	

FIG GEN 3.5–22



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



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

Table of Significant Present, Forecast and Recent Weather - Grouped in categories and used in the order listed below; or as needed in TAF, **No Significant Weather**.

Qualifiers

Intensity or Proximity

“-” = Light

No sign = Moderate

“+” = Heavy

“VC” = Vicinity, but not at aerodrome. In the US METAR, 5 to 10 SM from the point of observation. In the US TAF, 5 to 10 SM from the center of the runway complex. Elsewhere, within 8000m.

Descriptor

BC – Patches

BL – Blowing

DR – Drifting

FZ – Freezing

MI – Shallow

PR – Partial

SH – Showers

TS – Thunderstorm

Weather Phenomena

Precipitation

DZ – Drizzle

GR – Hail

GS – Small Hail/Snow Pellets

IC – Ice Crystals

PL – Ice Pellets

RA – Rain

SG – Snow Grains

SN – Snow

UP – Unknown Precipitation in automated observations

Obscuration

BR – Mist (≥5/8SM)

DU – Widespread Dust

FG – Fog (<5/8SM)

FU – Smoke

HZ – Haze

PY – Spray

SA – Sand

VA – Volcanic Ash

Other

DS – Dust Storm

FC – Funnel Cloud

+FC – Tornado or Waterspout

PO – Well developed dust or sand whirls

SQ – Squall

SS – Sandstorm

- Explanations in parentheses “()” indicate different worldwide practices.

- Ceiling is not specified; defined as the lowest broken or overcast layer, or the vertical visibility.

- NWS TAFs exclude BECMG groups and temperature forecasts, NWS TAFs do not use PROB in the first 9 hours of a TAF; NWS METARs exclude trend forecasts. US Military TAFs include Turbulence and Icing groups.

31. Meteorological Broadcasts (ATIS, VHF and LF)

31.1 Continuous Transcribed Weather Broadcasts (TWEB)

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

31.2 Automatic Terminal Information Service (ATIS) Broadcasts

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

31.3 Scheduled Weather Broadcasts (SWB)

31.3.1 Scheduled broadcasts are made only in Alaska at 15 minutes past the hour over en route navigational aids not used for TWEB or ATIS. These broadcasts contain hourly weather reports of selected locations within 150 miles of the station and weather

advisories, pilot weather reports, radar weather reports, and Notices to Airmen (NOTAMs).

31.4 Navigational Aids Providing Broadcast Services

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

31.5 Hazardous Inflight Weather Advisory Service (HIWAS)

31.5.1 A 24-hour continuous broadcast of hazardous inflight weather is available on selected navigational outlets. Broadcasts include: severe weather forecast alerts (AWW), airman's meteorological information (AIRMET—text [WA] or graphical [G-AIRMET] product), significant meteorological information (SIGMET), Convective SIGMET (WST), urgent pilot weather reports (UUA), hazardous portions of the domestic area forecasts (FA), and center weather advisories (CWA). HIWAS broadcast outlets are identified on en route/sectional charts and in the Chart Supplement U.S. For further details, contact your nearest FSS.

TBL GEN 3.5–14

Meteorological Broadcasts (VOLMET)

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

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

FIG GEN 3.5-23

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

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

TYPE OF REPORT	METAR: hourly (scheduled report; SPECI: special (unscheduled) report.	METAR
STATION IDENTIFIER	Four alphabetic characters; ICAO location identifiers.	KABC
DATE/TIME	All dates and times in UTC using a 24-hour clock; two-digit date and four-digit time; always appended with <u>Z</u> to indicate UTC.	121755Z
REPORT MODIFIER	Fully automated report, no human intervention; removed when observer signed-on.	AUTO
WIND DIRECTION AND SPEED	Direction in tens of degrees from true north (first three digits); next two digits: speed in whole knots; as needed <u>G</u> usts (character) followed by maximum observed speed; always appended with <u>K</u> T to indicate knots; 0000KT for calm; if direction varies by 60° or more a <u>V</u> ariable wind direction group is reported.	21016G24KT 108V240
VISIBILITY	Prevailing visibility in statute miles and fractions (space between whole miles and fractions); always appended with <u>S</u> M to indicate statute miles.	1SM
RUNWAY VISUAL RANGE	10-minute RVR value in hundreds of feet; reported if prevailing visibility is ≤ one mile or RVR ≤6000 feet; always appended with <u>FT</u> to indicate feet; value prefixed with <u>M</u> or <u>P</u> to indicate value is lower or higher than the reportable RVR value.	R11/P6000FT
WEATHER PHENOMENA	RA: liquid precipitation that does not freeze; SN: frozen precipitation other than hail; UP: precipitation of unknown type; intensity prefixed to precipitation: light (-), moderate (no sign), heavy (+); FG: fog; FZFG: freezing fog (temperature below 0°C); BR: mist; HZ: haze; SQ: squall; maximum of three groups reported; augmented by observer: FC (funnel cloud/tornado/waterspout); TS(thunderstorm); GR (hail); GS (small hail; <1/4 inch); FZRA (intensity; freezing rain); VA (volcanic ash).	-RA BR
SKY CONDITION	Cloud amount and height: CLR (no clouds detected below 12000 feet); FEW (few); SCT (scattered); BKN (broken); OVC (overcast); followed by 3-digit height in hundreds of feet; or vertical visibility (<u>VV</u>) followed by height for indefinite ceiling.	BKN015 OVC025
TEMPERATURE/DEW POINT	Each is reported in whole degrees Celsius using two digits; values are separated by a solidus; sub-zero values are prefixed with an <u>M</u> (minus).	06/04
ALTIMETER	Altimeter always prefixed with an <u>A</u> indicating inches of mercury; reported using four digits: tens, units, tenths, and hundredths.	A2990

FIG GEN 3.5-24

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

FIG GEN 3.5-25
NEXRAD Coverage

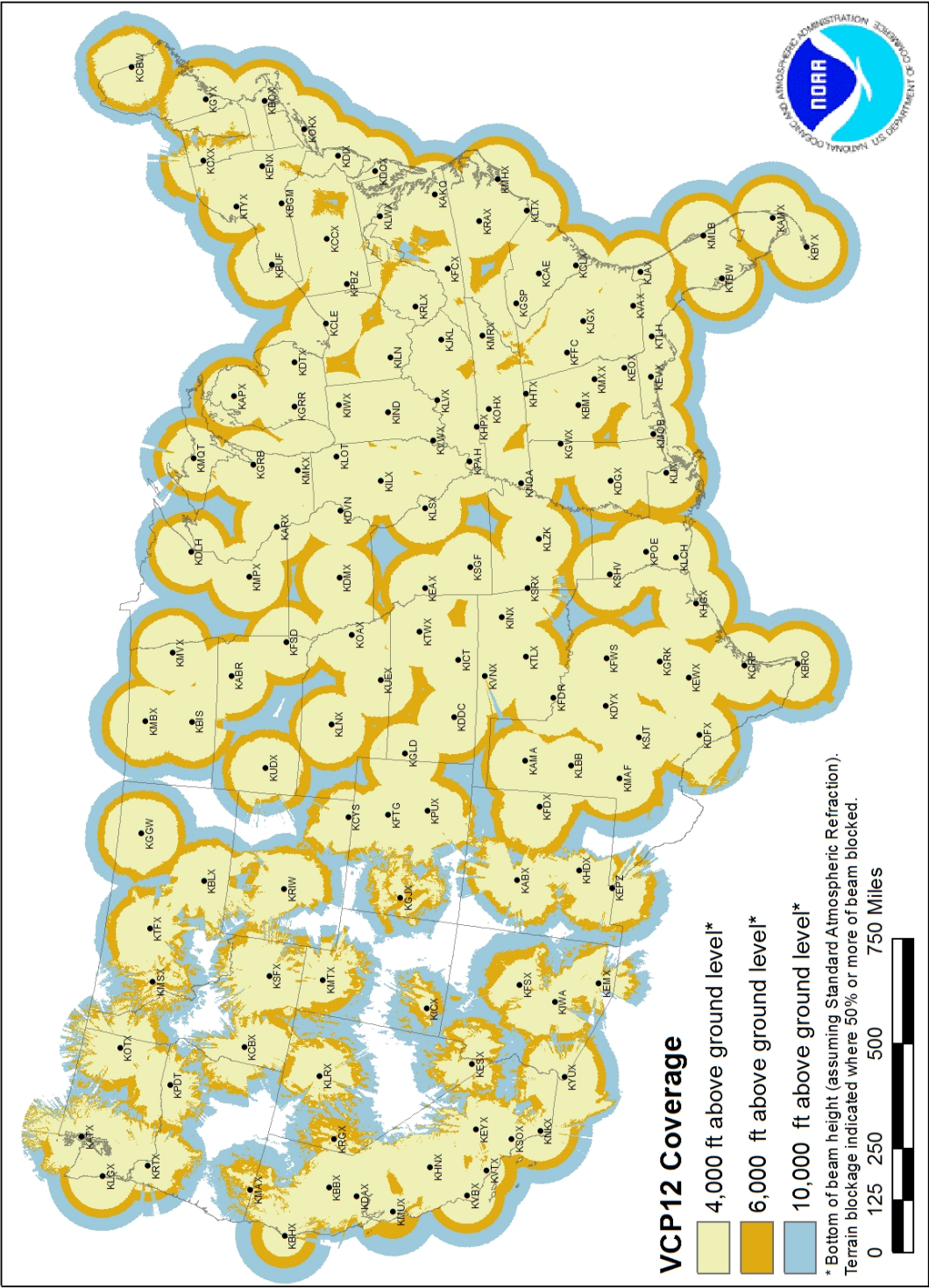


FIG GEN 3.5-26
NEXRAD Coverage

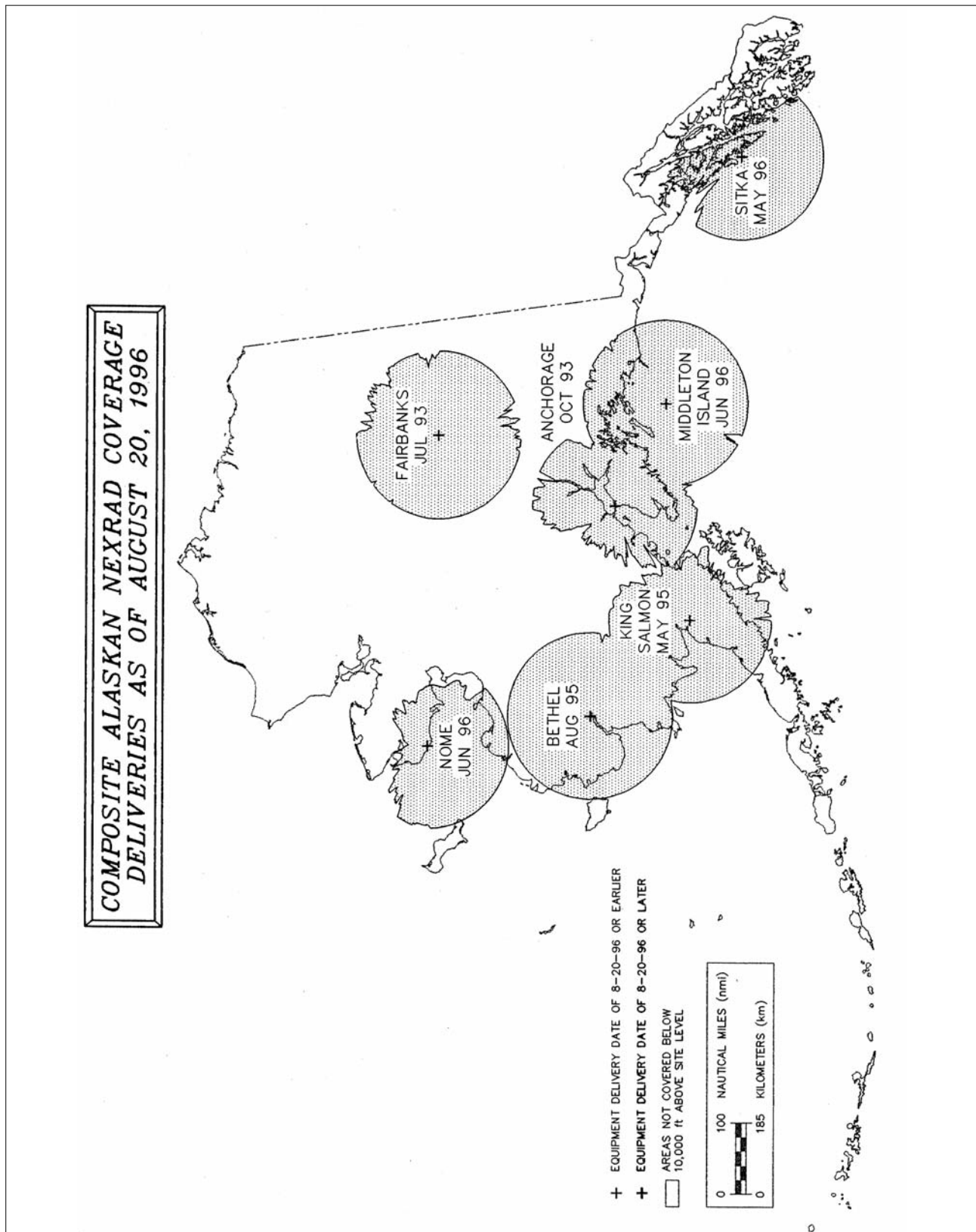


FIG GEN 3.5-27
NEXRAD Coverage

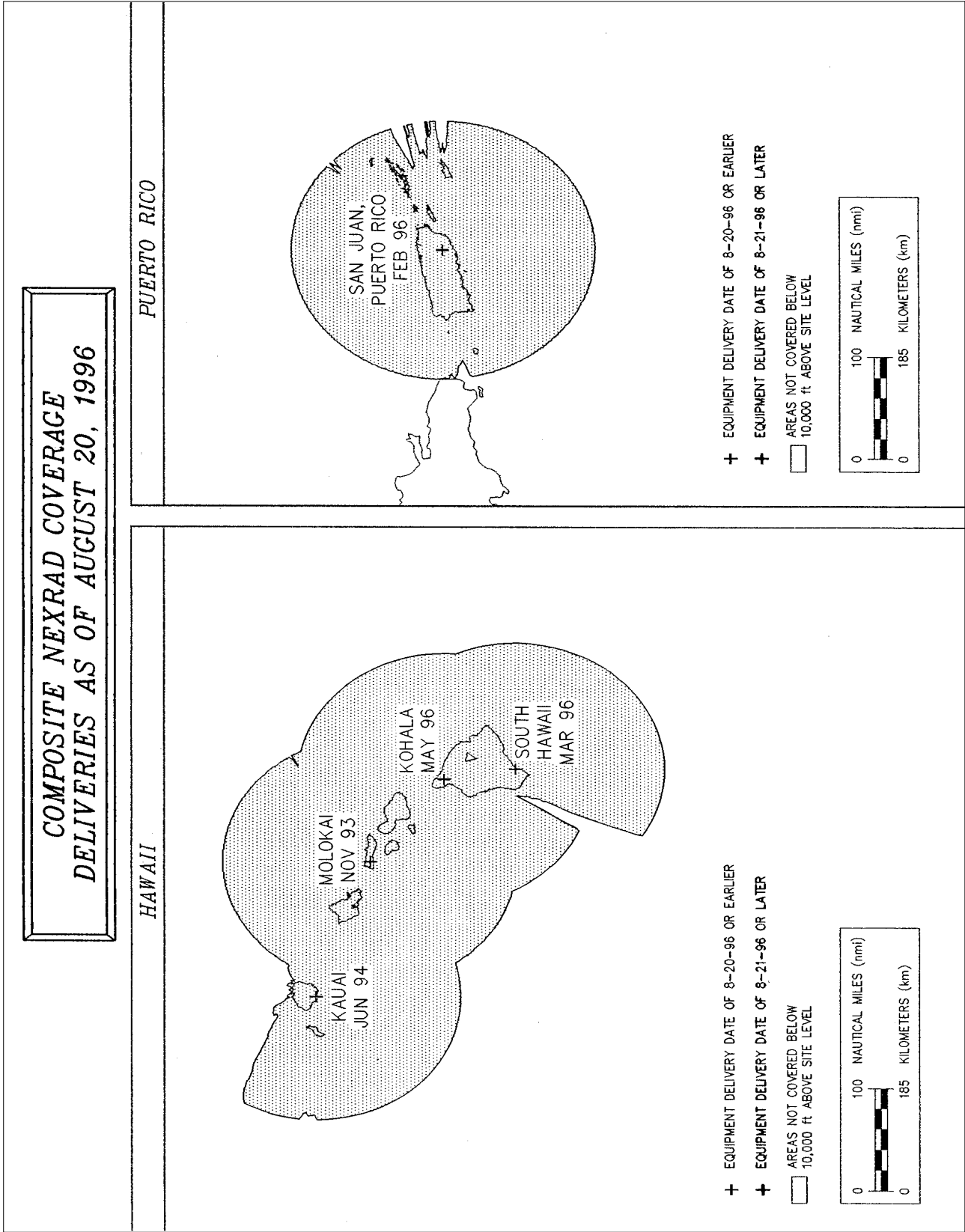


FIG GEN 3.5-28
Volcanic Activity Reporting Form (VAR)

Date _____				
SECTION 1 - Transmit to ATC via radio	1. Aircraft Identification			
	2. Position			
	3. Time (UTC)			
	4. Flight level or altitude			
	5. Position/location of volcanic activity or ash cloud			
	6. Air temperature			
	7. Wind			
	8. Supplementary Information (Brief description of activity including vertical and lateral extent of the ash cloud, horizontal movement, rate of growth, etc., as available.)			
Mark the appropriate box(s)				
SECTION 2 - Complete and forward as directed	9. Density of ash cloud	☐ wispy	☐ moderately dense	☐ very dense
	10. Color of ash	☐ white ☐ black	☐ light gray	☐ dark gray
	11. Eruption	☐ continuous	☐ intermittent	☐ not visible
	12. Position of activity	☐ summit ☐ multiple	☐ side ☐ not observed	☐ single
	13. Other observed features of eruption	☐ lightning ☐ ash fallout	☐ glow ☐ mushroom cloud	☐ large rocks ☐ none
	14. Effect on aircraft	☐ communications ☐ pitot static ☐ none	☐ navigation system ☐ windscreen	☐ engines ☐ other windows
	15. Other effects	☐ turbulence ☐ ash deposits	☐ St. Elmo's fire	☐ fumes
	16. Other information deemed useful			
Forward completed form via mail to: Global Volcanism Program NHB-119 Smithsonian Institution Washington, DC 20560 Or Fax to: Global Volcanism Program (202) 357-2476				

7.1.2.6 Because of the large number of 121.5 MHz ELT false alerts and the lack of a quick means of verifying the actual status of an activated 121.5 MHz or 243.0 MHz analog ELT through an owner registration database, U.S. SAR forces do not respond as quickly to initial 121.5/243.0 MHz ELT alerts as the SAR forces do to 406 MHz ELT alerts. Compared to the almost instantaneous detection of a 406 MHz ELT, SAR forces' normal practice is to wait for either a confirmation of a 121.5/243.0 MHz alert by additional satellite passes or through confirmation of an overdue aircraft or similar notification. In some cases, this confirmation process can take hours. SAR forces can initiate a response to 406 MHz alerts in minutes compared to the potential delay of hours for a 121.5/243.0 MHz ELT.

7.1.3 The Cospas-Sarsat system has announced the termination of satellite monitoring and reception of the 121.5 MHz and 243.0 MHz frequencies in 2009. The Cospas-Sarsat system will continue to monitor the 406 MHz frequency. What this means for pilots is that after the termination date, those aircraft with only 121.5 MHz or 243.0 MHz ELTs onboard will have to depend upon either a nearby Air Traffic Control facility receiving the alert signal or an overflying aircraft monitoring 121.5 MHz or 243.0 MHz detecting the alert. To ensure adequate monitoring of these frequencies and timely alerts after 2009, all airborne pilots should periodically monitor these frequencies to try and detect an activated 121.5/243.0 MHz ELT.

7.2 ELT Testing

7.2.1 ELTs should be tested in accordance with the manufacturer's instructions, preferably in a shielded or screened room or specially designed test container to prevent the broadcast of signals which could trigger a false alert.

7.2.2 When this cannot be done, aircraft operational testing is authorized as follows:

7.2.2.1 Analog 121.5/243 MHz ELTs should only be tested during the first 5 minutes after any hour. If operational tests must be made outside of this period, they should be coordinated with the nearest FAA Control Tower. Tests should be no longer than three audible sweeps. If the antenna is removable, a dummy load should be substituted during test procedures.

7.2.2.2 Digital 406 MHz ELTs should only be tested in accordance with the unit's manufacturer's instructions.

7.2.2.3 Airborne tests are not authorized.

7.3 False Alarms

7.3.1 Caution should be exercised to prevent the inadvertent activation of ELTs in the air or while they are being handled on the ground. Accidental or unauthorized activation will generate an emergency signal that cannot be distinguished from the real thing, leading to expensive and frustrating searches. A false ELT signal could also interfere with genuine emergency transmissions and hinder or prevent the timely location of crash sites. Frequent false alarms could also result in complacency and decrease the vigorous reaction that must be attached to all ELT signals.

7.3.2 Numerous cases of inadvertent activation have occurred as a result of aerobatics, hard landings, movement by ground crews and aircraft maintenance. These false alarms can be minimized by monitoring 121.5 MHz and/or 243.0 MHz as follows:

7.3.2.1 In flight when a receiver is available.

7.3.2.2 Before engine shut down at the end of each flight.

7.3.2.3 When the ELT is handled during installation or maintenance.

7.3.2.4 When maintenance is being performed near the ELT.

7.3.2.5 When a ground crew moves the aircraft.

7.3.2.6 If an ELT signal is heard, turn off the aircraft's ELT to determine if it is transmitting. If it has been activated, maintenance might be required before the unit is returned to the "ARMED" position. You should contact the nearest Air Traffic facility and notify it of the inadvertent activation.

7.4 Inflight Monitoring and Reporting

7.4.1 Pilots are encouraged to monitor 121.5 MHz and/or 243.0 MHz while in flight to assist in identifying possible emergency ELT transmissions. On receiving a signal, report the following information to the nearest air traffic facility:

7.4.1.1 Your position at the time the signal was first heard.

7.4.1.2 Your position at the time the signal was last heard.

7.4.1.3 Your position at maximum signal strength.

7.4.1.4 Your flight altitudes and frequency on which the emergency signal was heard: 121.5 MHz or 243.0 MHz. If possible, positions should be given relative to a navigation aid. If the aircraft has homing equipment, provide the bearing to the emergency signal with each reported position.

8. National Search and Rescue Plan

8.1 By federal interagency agreement, the National Search and Rescue Plan provides for the effective use of all available facilities in all types of SAR missions. These facilities include aircraft, vessels, pararescue and ground rescue teams, and emergency radio fixing. Under the Plan, the U.S. Coast Guard is responsible for the coordination of SAR in the Maritime Region, and the U.S. Air Force is responsible in the Inland Region. To carry out these responsibilities, the Coast Guard and the Air Force have established RCCs to direct SAR activities within their regions. For aircraft emergencies, distress and urgency information normally will be passed to the appropriate RCC through an air route traffic control center (ARTCC) or flight service station (FSS).

8.2 Coast Guard Rescue Coordination Centers

TBL GEN 3.6-1

Coast Guard Rescue Coordination Centers	
Alameda, CA 510-437-3701	Miami, FL 305-415-6800
Boston, MA 617-223-8555	New Orleans, LA 504-589-6225
Cleveland, OH 216-902-6117	Portsmouth, VA 757-398-6390
Honolulu, HI 808-541-2500	Seattle, WA 206-220-7001
Juneau, AK 907-463-2000	San Juan, PR 787-289-2042

8.3 Coast Guard Rescue Coordination Centers are served by major radio stations which guard 2182 kHz (VOICE). In addition, Coast Guard units along the seacoasts of the U.S. and shores of the Great Lakes guard 2182 kHz. The call "COAST GUARD" will alert all Coast Guard Radio Stations within range. 2182 kHz is also guarded by most commercial coast stations and some ships and boats.

8.4 Air Force Rescue Coordination Centers

TBL GEN 3.6-2

Air Force Rescue Coordination Center	
Tyndall AFB, Florida	Phone
Commercial	850-283-5955
WATS	800-851-3051
DSN	523-5955

TBL GEN 3.6-3

Air Command Rescue Coordination Center Alaska

Alaskan Air Command Rescue Coordination Center	
Elemendorf AFB, Alaska	Phone
Commercial	907-428-7230 or 800-420-7230 (outside Anchorage)
DSN	317-551-7230

8.5 Joint Rescue Coordination Center Hawaii

TBL GEN 3.6-4

Honolulu Joint Rescue Coordination Center	
HQ 14th CG District Honolulu	Phone
Commercial	808-541-2500
DSN	448-0301

FIG GEN 3.6-15
Negative (Aircraft)

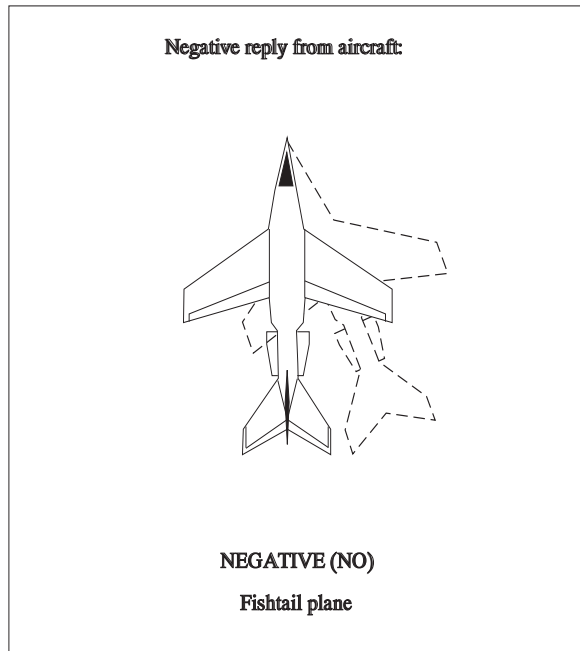


FIG GEN 3.6-16
Message received and understood (Aircraft)

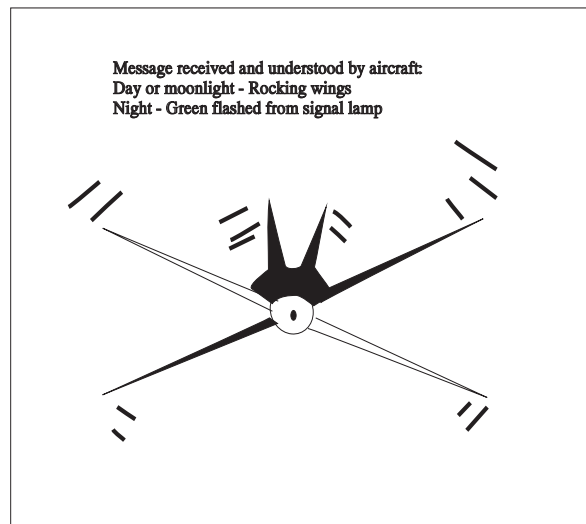
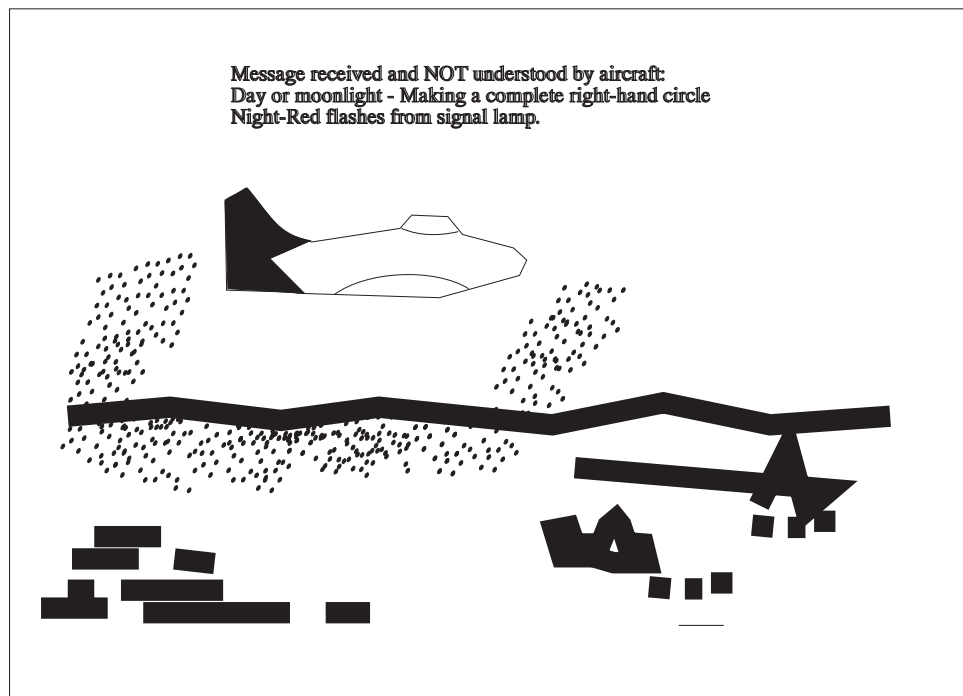


FIG GEN 3.6-17
Message received and NOT understood (Aircraft)



10. Pilot Responsibility and Authority

10.1 The pilot in command of an aircraft is directly responsible for, and is the final authority as to the operation of that aircraft. In an emergency requiring immediate action, the pilot in command may deviate from any rule in Title 14 of the Code of Federal Regulations (CFR), Part 91, Subpart A, General, and Subpart B, Flight Rules, to the extent required to meet that emergency (14 CFR Section 91.3(b)).

10.2 If the emergency authority of 14 CFR Section 91.3(b) is used to deviate from the provisions of an air traffic control clearance, the pilot in command must notify ATC as soon as possible and obtain an amended clearance (14 CFR Section 91.123(c)).

10.3 Unless deviation is necessary under the emergency authority of 14 CFR Section 91.3, pilots of IFR flights experiencing two-way radio communications failure are expected to adhere to the procedures prescribed under “IFR operations; two-way radio communications failure.” (14 CFR Section 91.185)

11. Distress and Urgency Communications

11.1 A pilot who encounters a distress or urgency condition can obtain assistance simply by contacting the air traffic facility or other agency in whose area of responsibility the aircraft is operating, stating the nature of the difficulty, pilot’s intentions, and assistance desired. Distress and urgency communications procedures prescribed by the International Civil Aviation Organization (ICAO), however, have decided advantages over the informal procedure described above.

11.2 Distress and urgency communications procedures discussed in the following paragraphs relate to the use of air–ground voice communications.

11.3 The initial communication, and if considered necessary, any subsequent transmissions by an aircraft in distress should begin with the signal MAYDAY, preferably repeated three times. The signal PAN–PAN should be used in the same manner for an urgency condition.

11.4 Distress communications have absolute priority over all other communications, and the word

MAYDAY commands radio silence on the frequency in use. Urgency communications have priority over all other communications except distress, and the word PAN–PAN warns other stations not to interfere with urgency transmissions.

11.5 Normally, the station addressed will be the air traffic facility or other agency providing air traffic services on the frequency in use at the time. If the pilot is not communicating and receiving services, the station to be called will normally be the air traffic facility or other agency in whose area of responsibility the aircraft is operating on the appropriate assigned frequency. If the station addressed does not respond, or if time or the situation dictates, the distress or urgency message may be broadcast, or a collect call may be used, addressing “Any Station (Tower) (Radio) (Radar).”

11.6 The station addressed should immediately acknowledge a distress or urgency message, provide assistance, coordinate and direct the activities of assisting facilities, and alert the appropriate search and rescue coordinator if warranted. Responsibility will be transferred to another station only if better handling will result.

11.7 All other stations, aircraft and ground, will continue to listen until it is evident that assistance is being provided. If any station becomes aware that the station being called either has not received a distress or urgency message, or cannot communicate with the aircraft in difficulty, it will attempt to contact the aircraft and provide assistance.

11.8 Although the frequency in use or other frequencies assigned by ATC are preferable, the following emergency frequencies can be used for distress or urgency communications, if necessary or desirable:

11.8.1 121.5 MHz and 243.0 MHz – Both have a range generally limited to line of sight. 121.5 MHz is guarded by direction finding stations and some military and civil aircraft. 243.0 MHz is guarded by military aircraft. Both 121.5 MHz and 243.0 MHz are guarded by military towers, most civil towers, and radar facilities. Normally ARTCC emergency frequency capability does not extend to radar coverage limits. If an ARTCC does not respond when called on 121.5 MHz or 243.0 MHz, call the nearest tower.

12. Emergency Condition – Request Assistance Immediately

12.1 Pilots do not hesitate to declare an emergency when they are faced with distress conditions such as fire, mechanical failure, or structural damage. However, some are reluctant to report an urgency condition when they encounter situations which may not be immediately perilous, but are potentially catastrophic. An aircraft is in at least an urgency condition the moment the pilot becomes doubtful about position, fuel endurance, weather, or any other condition that could adversely affect flight safety. This is the time to ask for help, not after the situation has developed into a distress condition.

12.2 Pilots who become apprehensive for their safety for any reason should request assistance immediately. Ready and willing help is available in the form of radio, radar, direction finding stations and other aircraft. Delay has caused accidents and cost lives. Safety is not a luxury. Take action.

13. Obtaining Emergency Assistance

13.1 A pilot in any distress or urgency condition should immediately take the following action, not necessarily in the order listed, to obtain assistance:

13.1.1 Climb, if possible, for improved communications and better radar and direction finding detection. However, it must be understood that unauthorized climb or descent under IFR conditions within CONTROLLED AIRSPACE is prohibited, except as permitted by 14 CFR Section 91.3(b).

13.1.2 If equipped with a radar beacon transponder (civil) or IFF/SIF (military):

13.1.2.1 Continue squawking assigned Mode A/3 discrete code/VFR code and Mode C altitude encoding when in radio contact with an air traffic facility or other agency providing air traffic services, unless instructed to do otherwise.

13.1.2.2 If unable to immediately establish communications with an air traffic facility/agency, squawk Mode A/3, Code 7700/Emergency and Mode C.

13.1.2.3 Transmit a distress or urgency message consisting of as many as necessary of the following elements, preferably in the order listed:

a) If distress, MAYDAY, MAYDAY, MAYDAY; if urgency, PAN–PAN, PAN–PAN, PAN–PAN.

b) Name of station addressed.

c) Aircraft identification and type.

d) Nature of distress or urgency.

e) Weather.

f) Pilots intentions and request.

g) Present position, and heading; or if lost, last known position, time, and heading since that position.

h) Altitude or flight level.

i) Fuel remaining in minutes.

j) Number of people on board.

k) Any other useful information.

13.1.3 After establishing radio contact, comply with advice and instructions received. Cooperate. Do not hesitate to ask questions or clarify instructions when you do not understand or if you cannot comply with clearances. Assist the ground station to control communications on the frequency in use. Silence interfering radio stations. Do not change frequency or change to another ground station unless absolutely necessary. If you do, advise the ground station of the new frequency and station name prior to the change, transmitting in the blind if necessary. If two–way communications cannot be established on the frequency, return immediately to the frequency or station where two–way communications last existed.

13.1.4 When in a distress condition with bailout, crash landing, or ditching imminent, take the following additional actions to assist search and rescue units:

13.1.4.1 Time and circumstances permitting, transmit as many as necessary of the message elements in subparagraph 13.1.2.3 and any of the following you think might be helpful:

a) ELT status.

b) Visible landmarks.

c) Aircraft color.

d) Number of persons on board.

e) Emergency equipment on board.

13.1.4.2 Actuate your ELT if the installation permits.

13.1.4.3 For bailout, and for crash landing or ditching if risk of fire is not a consideration, set your radio for continuous transmission.

13.1.4.4 If it becomes necessary to ditch, make every effort to ditch near a surface vessel. If time permits, an FAA facility should be able to get the position of the nearest commercial or Coast Guard vessel from a Coast Guard Rescue Coordination Center.

13.2 After a crash landing unless you have good reason to believe that you will not be located by search aircraft or ground teams, it is best to remain with your aircraft and prepare means for signalling search aircraft.

14. Radar Service for VFR Aircraft in Difficulty

14.1 Radar equipped air traffic control facilities can provide radar assistance and navigation service (vectors) to VFR aircraft in difficulty when the pilot can talk with the controller, and the aircraft is within radar coverage. 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 is provided on the basis that navigational guidance information is advisory in nature, and the responsibility for flying the aircraft safely remains with the pilot.

14.2 Experience has shown that many pilots who are not qualified for instrument flight cannot maintain control of their aircraft when they encounter clouds or other reduced visibility conditions. In many cases, the controller will not know whether flight into instrument conditions will result from his/her instructions. To avoid possible hazards resulting from being vectored into IFR conditions, a pilot in difficulty should keep the controller advised of the weather conditions in which he/she is operating and the weather along the course ahead, and observe the following:

14.2.1 If a course of action is available which will permit flight and a safe landing in VFR weather conditions, noninstrument rated pilots should choose the VFR condition rather than requesting a vector or

approach that will take them into IFR weather conditions; or

14.2.2 If continued flight in VFR conditions is not possible, the noninstrument rated pilot should so advise the controller and indicating the lack of an instrument rating, declare a distress condition.

14.2.3 If the pilot is instrument rated and current, and the aircraft is instrument equipped, the pilot should so indicate by requesting an IFR flight clearance. Assistance will then be provided on the basis that the aircraft can operate safely in IFR weather conditions.

15. Intercept and Escort

15.1 The concept of airborne intercept and escort is based on the SAR aircraft establishing visual and/or electronic contact with an aircraft in difficulty, providing inflight assistance, and escorting it to a safe landing. If bailout, crash landing or ditching becomes necessary, SAR operations can be conducted without delay. For most incidents, particularly those occurring at night and/or during instrument flight conditions, the availability of intercept and escort services will depend on the proximity of SAR units with suitable aircraft on alert for immediate dispatch. In limited circumstances, other aircraft flying in the vicinity of an aircraft in difficulty can provide these services.

15.2 If specifically requested by a pilot in difficulty or if a distress condition is declared, SAR coordinators will take steps to intercept and escort an aircraft. Steps may be initiated for intercept and escort if an urgency condition is declared and unusual circumstances make such action advisable.

15.3 It is the pilot's prerogative to refuse intercept and escort services. Escort services will normally be provided to the nearest adequate airport. Should the pilot receiving escort services continue on to another location after reaching a safe airport, or decide not to divert to the nearest safe airport, the escort aircraft is not obligated to continue and further escort is discretionary. The decision will depend on the circumstances of the individual incident.

16. Visual Emergency Signals

NOTE—

See FIG GEN 3.6–1 through FIG GEN 3.6–17.

17. Ditching Procedures

17.1 In order to select a proper ditching course for an aircraft, a basic knowledge of sea evaluation and other factors involved is required. Selection of the ditching heading may well determine the difference between survival and disaster.

(See FIG GEN 3.6–18, FIG GEN 3.6–19, FIG GEN 3.6–20, and FIG GEN 3.6–21).

17.2 Common Oceanographic Terminology:

17.2.1 Sea. The condition of the surface that is the result of both waves and swells.

17.2.2 Wave (or Chop). The condition of the surface caused by local winds.

17.2.3 Swell. The condition of the surface which has been caused by a distant disturbance.

17.2.4 Swell Face. The side of the swell toward the observer. The backside is the side away from the observer. These definitions apply regardless of the direction of swell movement.

17.2.5 Primary Swell. The swell system having the greatest height from trough to crest.

17.2.6 Secondary Swells. Those swell systems of less height than the primary swell.

17.2.7 Fetch. The distance the waves have been driven by a wind blowing in a constant direction, without obstruction.

17.2.8 Swell Period. The time interval between the passage of two successive crests at the same spot in the water, measured in seconds.

17.2.9 Swell Velocity. The velocity with which the swell advances with relation to a fixed reference point, measured in knots. There is little movement of water in the horizontal direction. Swells move primarily in a vertical motion, similar to the motion observed when shaking out a carpet.

17.2.10 Swell Direction. The direction from which a swell is moving. This direction is not necessarily the result of the wind present at the scene. The swell encountered may be moving into or across the local wind. Swells, once set in motion, tend to maintain their original direction for as long as they continue in deep water, regardless of changes in wind direction.

17.2.11 Swell Height. The height between crest and trough, measured in feet. The vast majority of ocean swells are lower than 12 to 15 feet, and swells over 25 feet are not common at any spot on the oceans. Successive swells may differ considerably in height.

17.3 Swells

17.3.1 It is extremely dangerous to land into the wind without regard to sea conditions. The swell system, or systems, must be taken into consideration.

FIG GEN 3.6-18
Single Swell (15 knot wind)

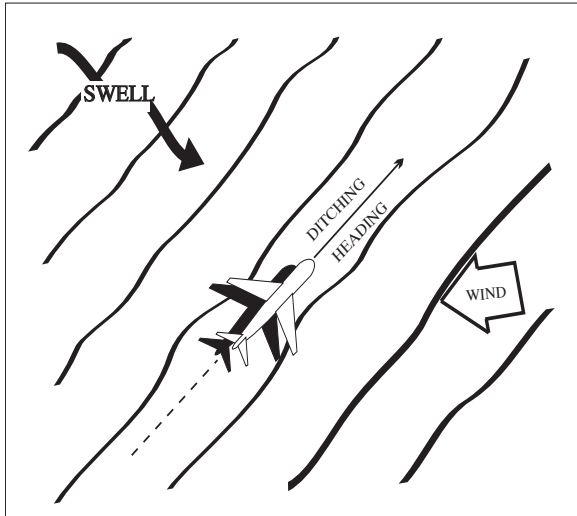


FIG GEN 3.6-20
Double Swell (30 knot wind)

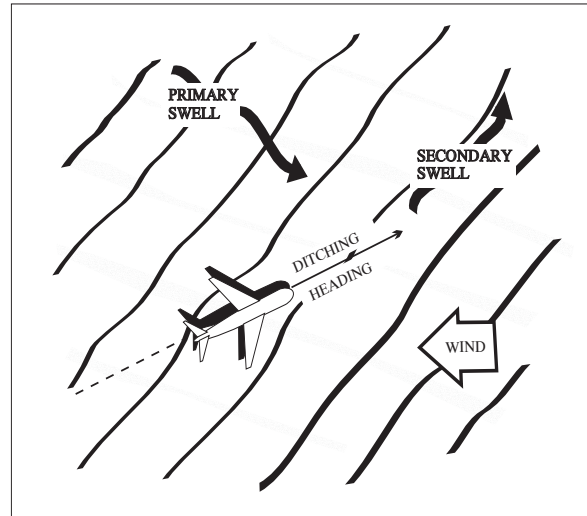


FIG GEN 3.6-19
Double Swell (15 knot wind)

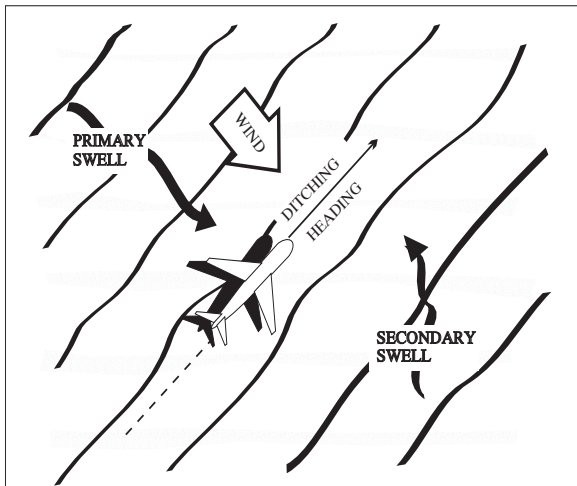
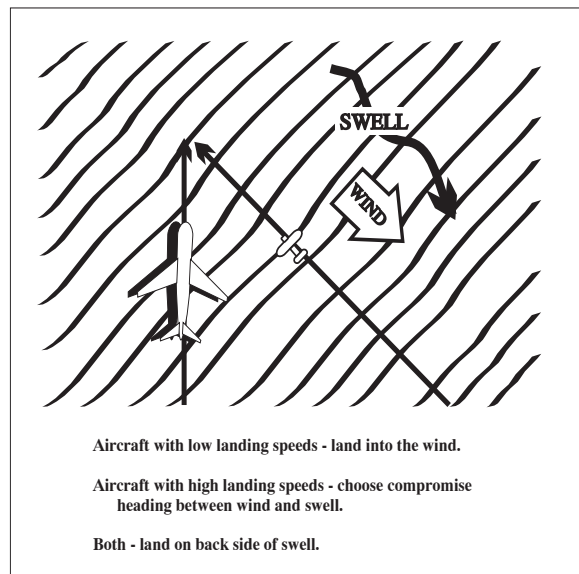


FIG GEN 3.6-21
(50 knot wind)



PART 2 – EN ROUTE (ENR)

ENR 0.

ENR 0.1 Preface – Not applicable

ENR 0.2 Record of AIP Amendments – See GEN 0.2-1

ENR 0.3 Record of AIP Supplements – Not applicable

ENR 0.4 Checklist of Pages

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3.5.4 To provide information and instructions to aircraft operating within Class D airspace. In an example of this situation, the local controller would use the radar to advise a pilot on an extended downwind when to turn base leg.

NOTE–

The above tower radar applications are intended to augment the standard functions of the local control position. There is no controller requirement to maintain constant radar identification and, in fact, such a requirement could compromise the local controller's ability to visually scan the airport and local area to meet FAA responsibilities to the aircraft operating on the runways and within Class D airspace. Normally, pilots will not be advised of being in radar contact since that continued status cannot be guaranteed and since the purpose of the radar identification is not to establish a link for the provision of radar services.

3.6 A few of the radar-equipped towers are authorized to use the radar to ensure separation between aircraft in specific situations, while still others may function as limited radar approach controls. The various radar uses are strictly a function of FAA operational need. The facilities may be indistinguishable to pilots since they are all referred to as tower and no publication lists the degree of radar use. THEREFORE, WHEN IN COMMUNICATION WITH A TOWER CONTROLLER WHO MAY HAVE RADAR AVAILABLE, DO NOT ASSUME THAT CONSTANT RADAR MONITORING AND COMPLETE ATC RADAR SERVICES ARE BEING PROVIDED.

4. Traffic Patterns

4.1 At most airports and military air bases, traffic pattern altitudes for propeller driven aircraft generally extend from 600 feet to as high as 1,500 feet above the ground. Also, traffic pattern altitudes for military turbojet aircraft sometimes extend up to 2,500 feet above the ground. Therefore, pilots of en route aircraft should be constantly on the alert for other aircraft in traffic patterns and avoid these areas whenever possible. Traffic pattern altitudes should be maintained unless otherwise required by the applicable distance from cloud criteria (14 CFR Section 91.155.) (See FIG ENR 1.1–2 and FIG ENR 1.1–3.) Unless otherwise indicated, all turns in the traffic pattern should be made to the left. On Sectional Aeronautical and VFR Terminal Area Charts, right traffic patterns are indicated at

public-use and joint-use airports by the abbreviation “RP” (for Right Pattern), followed by the appropriate runway number(s), at the bottom of the airport data block.

EXAMPLE–
RP 9, 18, 22R

NOTE–

1. *RP* indicates special conditions exist and refers pilots to the Chart Supplement U.S.*

2. *Right traffic patterns are not shown at airports with full-time control towers.*

4.2 Wind conditions affect all airplanes in varying degrees. FIG ENR 1.1–4 is an example of a chart used to determine the headwind, crosswind, and tailwind components based on wind direction and velocity relative to the runway. Pilots should refer to similar information provided by the aircraft manufacturer when determining these wind components.

4.3 Unexpected Maneuvers in the Airport Traffic Pattern

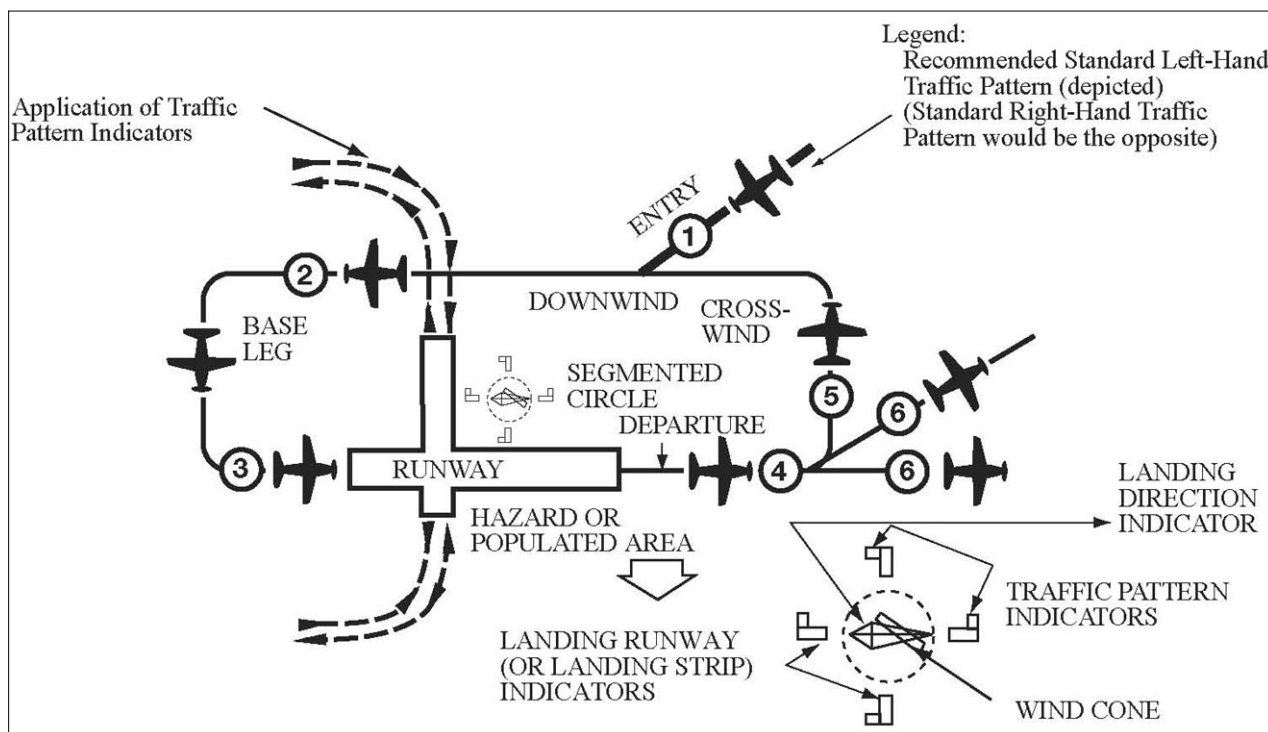
4.3.1 There have been several incidents in the vicinity of controlled airports that were caused primarily by aircraft executing unexpected maneuvers. ATC service is based upon observed or known traffic and airport conditions. Controllers establish the sequence of arriving and departing aircraft by requiring them to adjust flight as necessary to achieve proper spacing. These adjustments can only be based on observed traffic, accurate pilot reports, and anticipated aircraft maneuvers. Pilots are expected to cooperate so as to preclude disruption of traffic flow or creation of conflicting patterns. The pilot in command of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft.

4.3.2 On occasion it may be necessary for pilots to maneuver their aircraft to maintain spacing with the traffic they have been sequenced to follow. The controller can anticipate minor maneuvering such as shallow “S” turns. The controller cannot, however, anticipate a major maneuver such as a 360-degree turn. If a pilot makes a 360-degree turn after obtaining a landing sequence, the result is usually a gap in the landing interval and more importantly it causes a chain reaction which may result in a conflict with following traffic and interruption of the sequence established by the tower or approach controller. Should a pilot decide to make maneuvering turns to maintain spacing behind a preceding aircraft, the pilot should always advise the controller

if at all possible. Except when requested by the controller or in emergency situations, a 360-degree turn should never be executed in the traffic pattern or

when receiving radar service without first advising the controller.

FIG ENR 1.1-2
Traffic Pattern Operations
Single Runway



**EXAMPLE—
KEY TO TRAFFIC PATTERN OPERATIONS**

1. Enter pattern in level flight, abeam the midpoint of the runway, at pattern altitude. (1,000' AGL is recommended pattern altitude unless established otherwise.)

2. Maintain pattern altitude until abeam approach end of the landing runway on downwind leg.

3. Complete turn to final at least $\frac{1}{4}$ mile from the runway.

4. Continue straight ahead until beyond departure end of runway.

5. If remaining in the traffic pattern, commence turn to crosswind leg beyond the departure end of the runway within 300 feet of pattern altitude.

6. If departing the traffic pattern, continue straight out, or exit with a 45 degree turn (to the left when in a left-hand traffic pattern; to the right when in a right-hand traffic pattern) beyond the departure end of the runway, after reaching pattern altitude.

8. Use of Runways/Declared Distances

8.1 Runways are identified by numbers which indicate the nearest 10-degree increment of the azimuth of the runway centerline. For example, where the magnetic azimuth is 183 degrees, the runway designation would be 18; for a magnetic azimuth of 87 degrees, the runway designation would be 9. For a magnetic azimuth ending in the number 5, such as 185, the runway designation could be either 18 or 19. Wind direction issued by the tower is also magnetic, and wind velocity is in knots.

8.2 Airport proprietors are responsible for taking the lead in local aviation noise control. Accordingly, they may propose specific noise abatement plans to the FAA. If approved, these plans are applied in the form of Formal or Informal Runway Use Programs for noise abatement purposes.

8.3 At airports where no runway use program is established, ATC clearance may specify:

8.3.1 The runway most nearly aligned with the wind when it is five knots or more.

8.3.2 The “calm wind” runway when wind is less than five knots.

8.3.3 Another runway if operationally advantageous.

NOTE—

It is not necessary for a controller to specifically inquire if the pilot will use a specific runway or to offer the pilot a choice of runways. If a pilot prefers to use a different runway than that specified or the one most nearly aligned with the wind, the pilot is expected to inform ATC accordingly.

8.4 At airports where a runway use program is established, ATC will assign runways deemed to have the least noise impact. If in the interest of safety a runway different than that specified is preferred, the pilot is expected to advise ATC accordingly. ATC will honor such requests and advise pilots when the requested runway is noise sensitive. When use of a runway other than the one assigned is requested, pilot cooperation is encouraged to preclude disruption of traffic flows or creation of conflicting patterns.

8.5 Declared Distances.

8.5.1 Declared distances for a runway represent the maximum distances available and suitable for meeting takeoff and landing distance performance requirements. These distances are determined in

accordance with FAA runway design standards by adding to the physical length of paved runway any clearway or stopway and subtracting from that sum any lengths necessary to obtain the standard runway safety areas, runway object free areas, or runway protection zones. As a result of these additions and subtractions, the declared distances for a runway may be more or less than the physical length of the runway as depicted on aeronautical charts and related publications, or available in electronic navigation databases provided by either the U.S. Government or commercial companies.

8.5.2 All 14 CFR Part 139 airports report declared distances for each runway. Other airports may also report declared distances for a runway if necessary to meet runway design standards or to indicate the presence of a clearway or stopway. Where reported, declared distances for each runway end are published in the Chart Supplement U.S. For runways without published declared distances, the declared distances may be assumed to be equal to the physical length of the runway unless there is a displaced landing threshold, in which case the Landing Distance Available (LDA) is shortened by the amount of the threshold displacement.

NOTE—

A symbol  is shown on U.S. Government charts to indicate that runway declared distance information is available (See appropriate Chart Supplement U.S., Alaska, or Pacific).

8.5.2.1 The FAA uses the following definitions for runway declared distances (See FIG ENR 1.1-5).

REFERENCE—

Pilot/Controller Glossary Terms: “Accelerate-Stop Distance Available,” “Landing Distance Available,” “Takeoff Distance Available,” “Takeoff Run Available,” “Stopway,” and “Clearway.”

a) Takeoff Run Available (TORA) – The runway length declared available and suitable for the ground run of an airplane taking off.

The TORA is typically the physical length of the runway, but it may be shorter than the runway length if necessary to satisfy runway design standards. For example, the TORA may be shorter than the runway length if a portion of the runway must be used to satisfy runway protection zone requirements.

b) Takeoff Distance Available (TODA) – The takeoff run available plus the length of any remaining runway or clearway beyond the far end of the takeoff run available.

The TODA is the distance declared available for satisfying takeoff distance requirements for airplanes where the certification and operating rules and available performance data allow for the consideration of a clearway in takeoff performance computations.

NOTE—

The length of any available clearway will be included in the TODA published in the entry for the Chart Supplement U.S. for that runway end.

c) Accelerate–Stop Distance Available (ASDA) – The runway plus stopway length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.

The ASDA may be longer than the physical length of the runway when a stopway has been designated available by the airport operator, or it may be shorter than the physical length of the runway if necessary to use a portion of the runway to satisfy runway design standards; for example, where the airport operator uses a portion of the runway to achieve the runway safety area requirement. ASDA is the distance used to satisfy the airplane accelerate–stop distance performance requirements where the certification and operating rules require accelerate–stop distance computations.

NOTE—

The length of any available stopway will be included in the ASDA published in the entry for the Chart Supplement U.S. for that runway end.

d) Landing Distance Available (LDA) – The runway length declared available and suitable for a landing airplane.

The LDA may be less than the physical length of the runway or the length of the runway remaining beyond a displaced threshold if necessary to satisfy runway design standards; for example, where the airport operator uses a portion of the runway to achieve the runway safety area requirement.

Although some runway elements (such as stopway length and clearway length) may be available information, pilots must use the declared distances determined by the airport operator and not attempt to independently calculate declared distances by adding those elements to the reported physical length of the runway.

8.5.2.2 The airplane operating rules and/or the airplane operating limitations establish minimum distance requirements for takeoff and landing and are based on performance data supplied in the Airplane Flight Manual or Pilot's Operating Handbook. The minimum distances required for takeoff and landing obtained either in planning prior to takeoff or in performance assessments conducted at the time of landing must fall **within** the applicable declared distances before the pilot can accept that runway for takeoff or landing.

8.5.2.3 Runway design standards may impose restrictions on the amount of runway available for use in takeoff and landing that are not apparent from the reported physical length of the runway or from runway markings and lighting. The runway elements of Runway Safety Area (RSA), Runway Object Free Area (ROFA), and Runway Protection Zone (RPZ) may reduce a runway's declared distances to less than the physical length of the runway at geographically constrained airports (See FIG ENR 1.1–6). When considering the amount of runway available for use in takeoff or landing performance calculations, the declared distances published for a runway must always be used in lieu of the runway's physical length.

REFERENCE—

AC 150/5300–13, *Airport Design*.

8.5.2.4 While some runway elements associated with declared distances may be identifiable through runway markings or lighting (for example, a displaced threshold or a stopway), the individual declared distance limits are not marked or otherwise identified on the runway. An aircraft is **not prohibited** from operating beyond a declared distance limit during the takeoff, landing, or taxi operation provided the runway surface is appropriately marked as usable runway (See FIG ENR 1.1–6). The following examples clarify the intent of this paragraph.

REFERENCE—

AIM, *Runway Markings*, Paragraph 2–3–3.
AC 150/5340–1, *Standards for Airport Markings*.

EXAMPLE—

1. *The declared LDA for runway 9 must be used when showing compliance with the landing distance requirements of the applicable airplane operating rules and/or airplane operating limitations or when making a before landing performance assessment. The LDA is less than the physical runway length, not only because of the displaced threshold, but also because of the subtractions necessary*

to meet the RSA beyond the far end of the runway. However, during the actual landing operation, it is permissible for the airplane to roll beyond the unmarked end of the LDA.

2. The declared ASDA for runway 9 must be used when showing compliance with the accelerate-stop distance requirements of the applicable airplane operating rules

and/or airplane operating limitations. The ASDA is less than the physical length of the runway due to subtractions necessary to achieve the full RSA requirement. However, in the event of an aborted takeoff, it is permissible for the airplane to roll beyond the unmarked end of the ASDA as it is brought to a full-stop on the remaining usable runway.

FIG ENR 1.1-5
Declared Distances with Full-Standard Runway Safety Areas, Runway Object Free Areas, and Runway Protection Zones

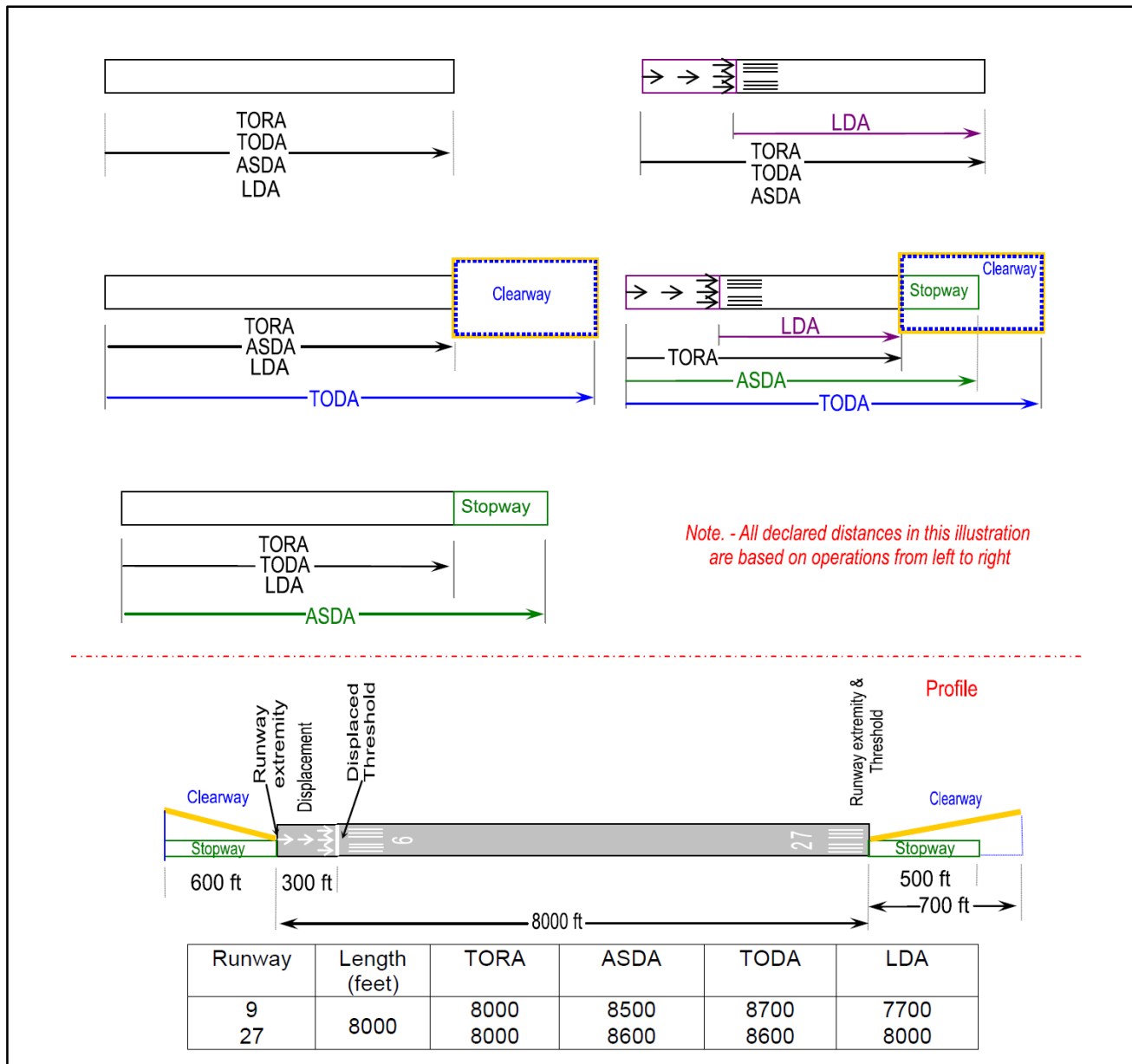
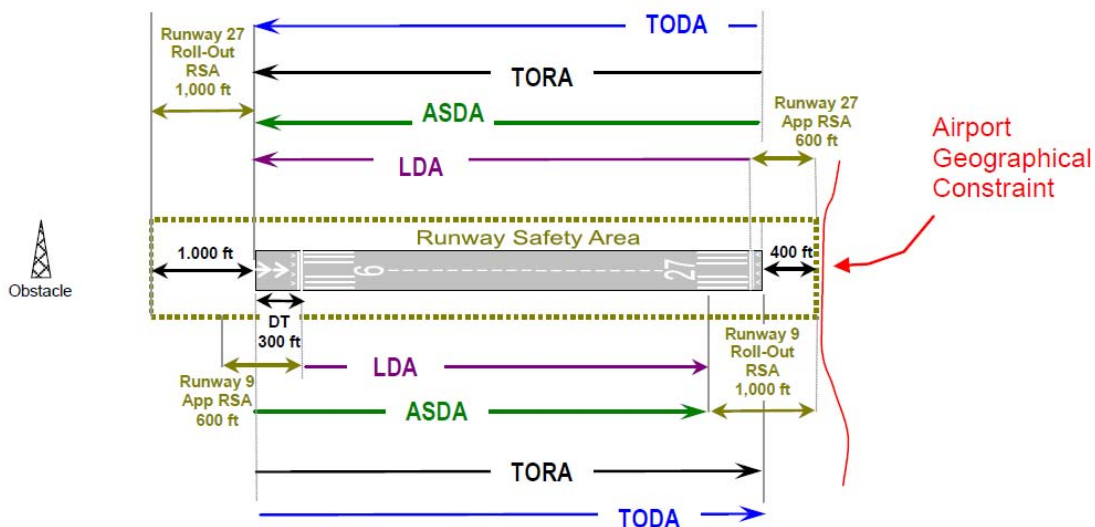


FIG ENR 1.1–6

Effects of a Geographical Constraint on a Runway's Declared Distances

Runway 27 operations: Runway 27 threshold displaced to provide the required RSA at the approach end of the runway. As a result, the LDA is reduced 200 ft.



Runway 9 operations: The ASDA is reduced by 600 ft to achieve the required RSA at the roll-out end of the runway. The LDA is reduced by 900 ft because, 1) the 300 ft displaced threshold located at the approach end of the runway (due to an approach obstacle), and 2) as result of the 600 ft of runway needed to achieve the required RSA at the roll-out end of the runway.

Runway	Length (feet)	TORA	TODA	ASDA	LDA
9	8000	8000	8000	7400	7100
27		8000	8000	8000	7800

NOTE–

A runway's RSA begins a set distance prior to the threshold and will extend a set distance beyond the end of the runway depending on the runway's design criteria. If these required lengths cannot be achieved, the ASDA and/or LDA will be reduced as necessary to obtain the required lengths to the extent practicable.

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 or airport management. The quality of braking action is described by the terms “good,” “fair,” “poor,” and “nil,” or a combination of these terms. Effective October 1, 2016, these terms will be replaced with “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 For NOTAM purposes, braking action reports are classified according to the most critical term (“fair,” “poor,” or “nil”). Effective October 1, 2016, these terms will be replaced with “good,” “good to medium,” “medium,” “medium to poor,” “poor,” and “nil” and issued as a NOTAM (D).

10.3 When tower controllers have received runway braking action reports which include the terms “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 latest 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 volunteered by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

11. Runway Friction Reports and Advisories

11.1 Friction is defined as the ratio of the tangential force needed to maintain uniform relative motion between two contacting surfaces (aircraft tires to the pavement surface) to the perpendicular force holding them in contact (distributed aircraft weight to the aircraft tire area). Simply stated, friction quantifies slipperiness of pavement surfaces.

11.2 The Greek letter MU (pronounced “myew”), is used to designate a friction value representing runway surface conditions.

11.3 MU (friction) values range from 0 to 100 where zero is the lowest friction value and 100 is the maximum friction value obtainable. For frozen contaminants on runway surfaces, a MU value of 40 or less is the level when the aircraft braking performance starts to deteriorate and directional control begins to be less responsive. The lower the MU value, the less effective braking performance becomes and the more difficult directional control becomes.

11.4 At airports with friction measuring devices, airport management should conduct friction measurements on runways covered with compacted snow and/or ice.

11.4.1 Numerical readings may be obtained by using any FAA approved friction measuring device. As these devices do not provide equal numerical readings on contaminated surfaces, it is necessary to designate the type of friction measuring device used.

11.4.2 When the MU value for any one-third zone of an active runway is 40 or less, a report should be given to ATC by airport management for dissemination to pilots. The report will identify the runway, the time of measurement, the type of friction measuring device used, MU values for each zone, and the contaminant conditions; e.g., wet snow, dry snow, slush, deicing chemicals, etc. Measurements for each one-third zone will be given in the direction of takeoff and landing on the runway. A report should also be given when MU values rise above 40 in all zones of a runway previously reporting a MU below 40.

11.4.3 Airport management should initiate a NO-TAM(D) when the friction measuring device is out of service.

11.4.4 When MU reports are provided by airport management, the ATC facility providing approach control or local airport advisory will provide the report to any pilot upon request.

11.4.5 Pilots should use MU information with other knowledge including aircraft performance characteristics, type, weight, previous experience, wind conditions, and aircraft tire type (i.e., bias ply vs. radial constructed) to determine runway suitability.

11.4.6 No correlation has been established between MU values and the descriptive terms “good,” “fair,” “poor,” and “nil.” Effective October 1, 2016, these terms will be replaced with “good,” “good to medium,” “medium,” “medium to poor,” “poor,” and “nil” in braking action reports.

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 conflicts 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

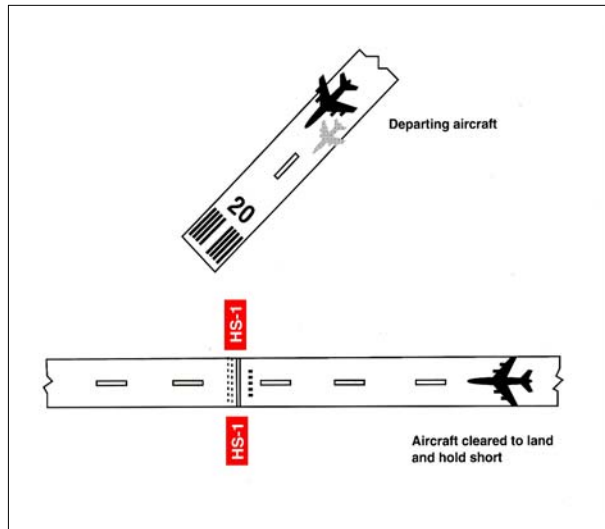
20.1 The “Cleared for the Option” procedure will permit an instructor, flight examiner or pilot the option to make a touch-and-go, low approach, missed approach, stop-and-go, or full stop landing. This procedure can be very beneficial in a training situation in that neither the student pilot nor examinee 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.

markings, signage, and in-pavement lighting when installed.

REFERENCE—
AIP, Part 3 – Aerodromes.

FIG ENR 1.1–9

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 1.1–7, FIG ENR 1.1–8, FIG ENR 1.1–9 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 conflicts 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 1.1-10
Signalman Directs Towing

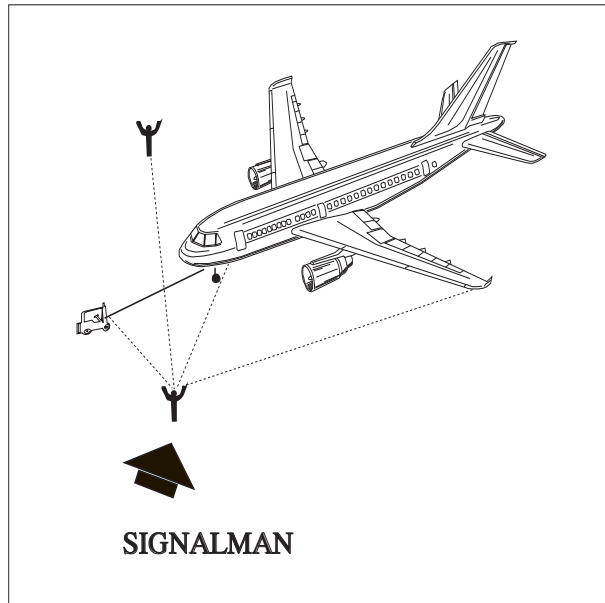


FIG ENR 1.1-12
All Clear
(O.K.)

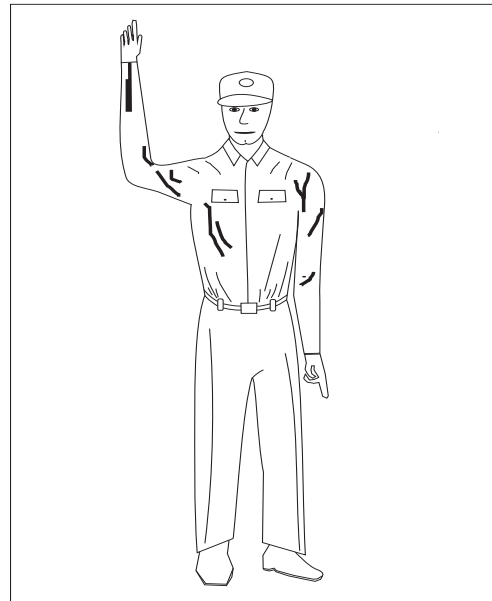


FIG ENR 1.1-11
Signalman's Position

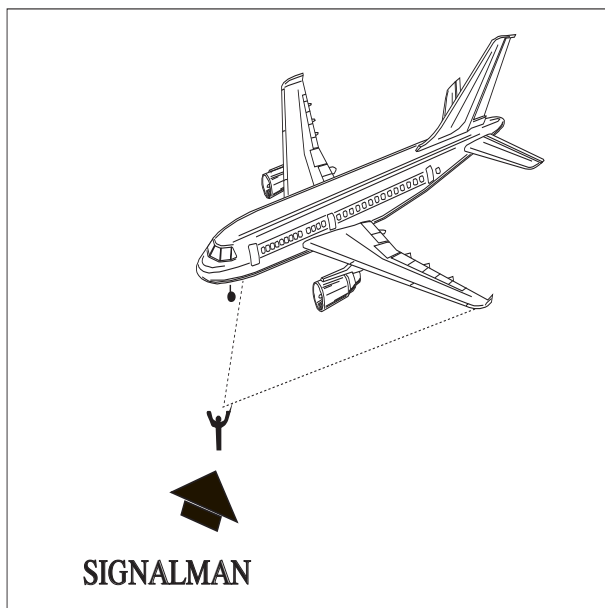


FIG ENR 1.1-13
Start Engine

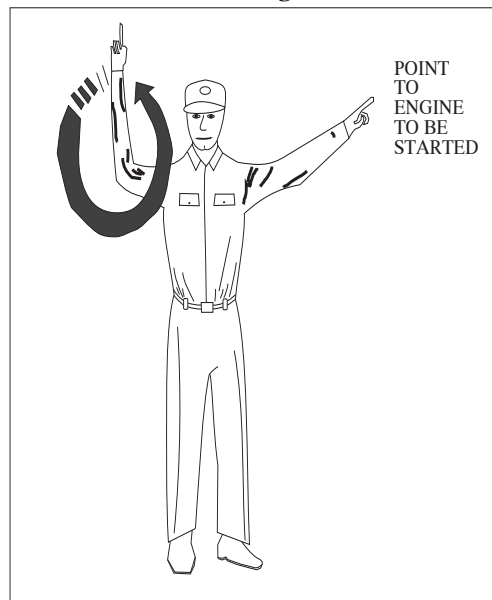


FIG ENR 1.1-14
Pull Chocks

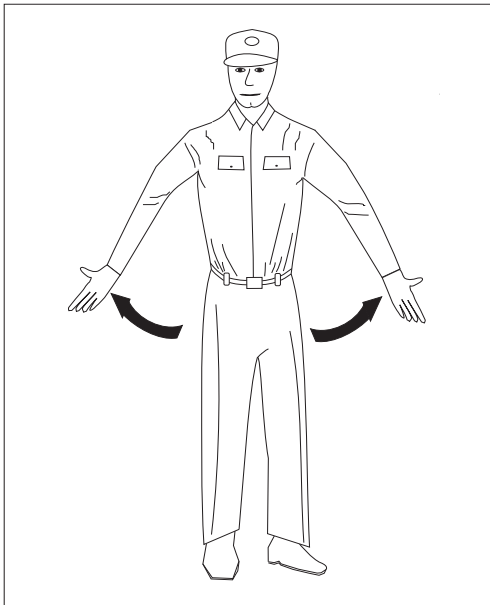


FIG ENR 1.1-16
Left Turn

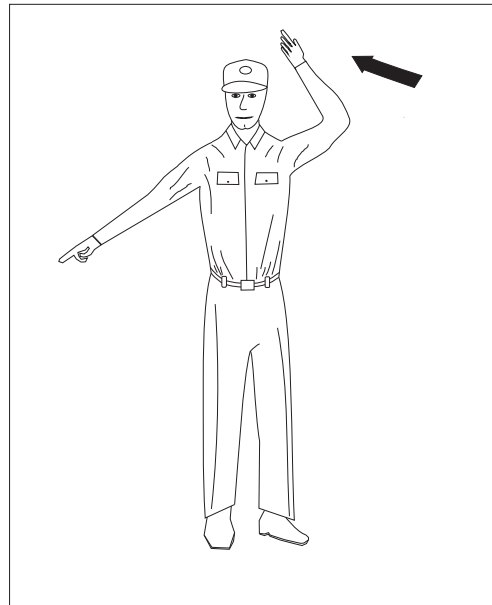


FIG ENR 1.1-15
Proceed Straight Ahead

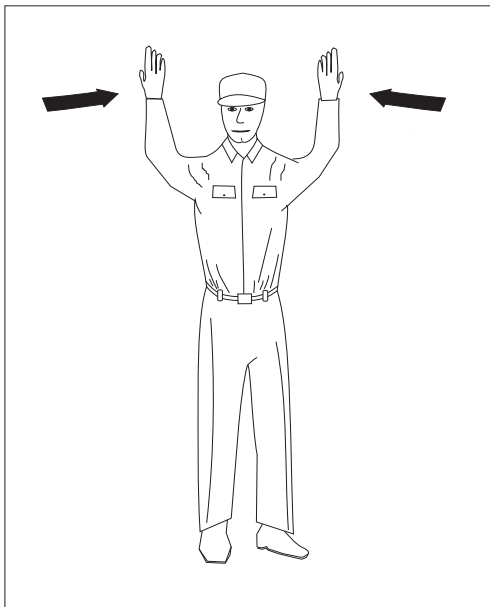


FIG ENR 1.1-17
Right Turn

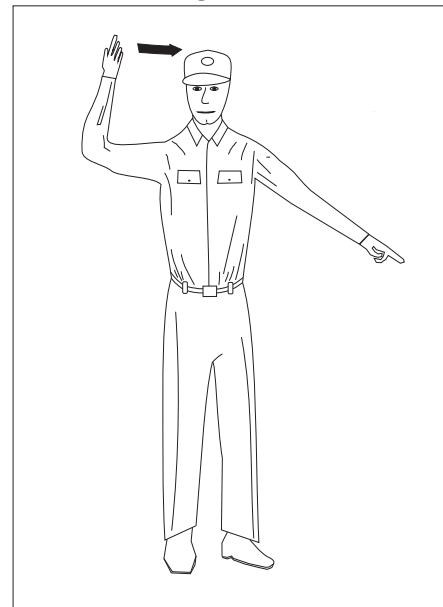


FIG ENR 1.1-18
Slow Down

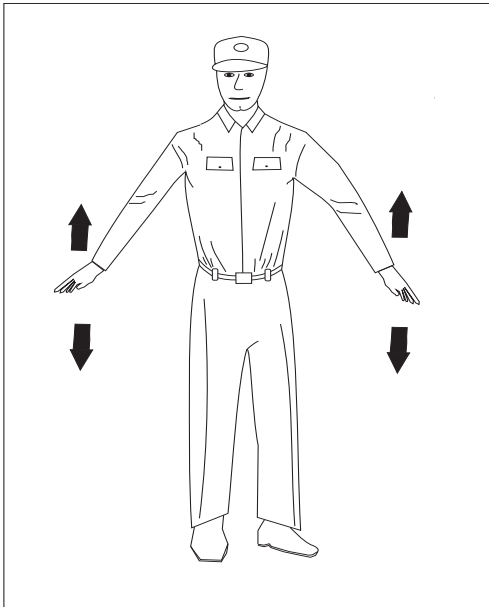


FIG ENR 1.1-20
Insert Chocks

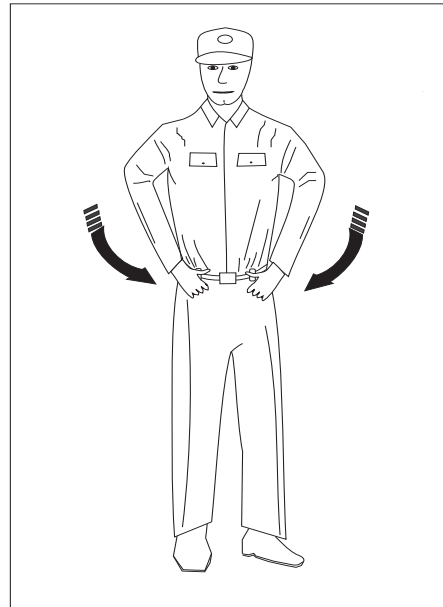


FIG ENR 1.1-19
Flagman Directs Pilot

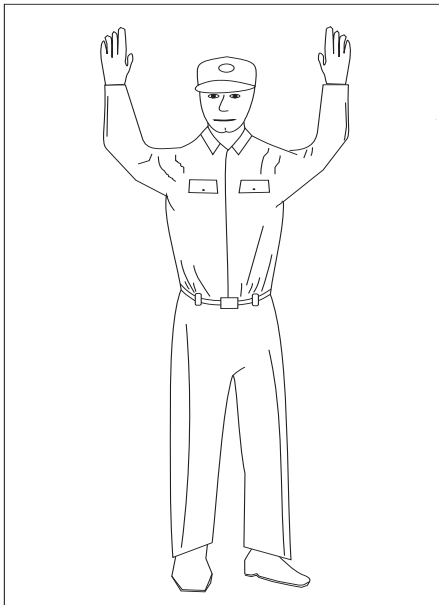


FIG ENR 1.1-21
Cut Engines

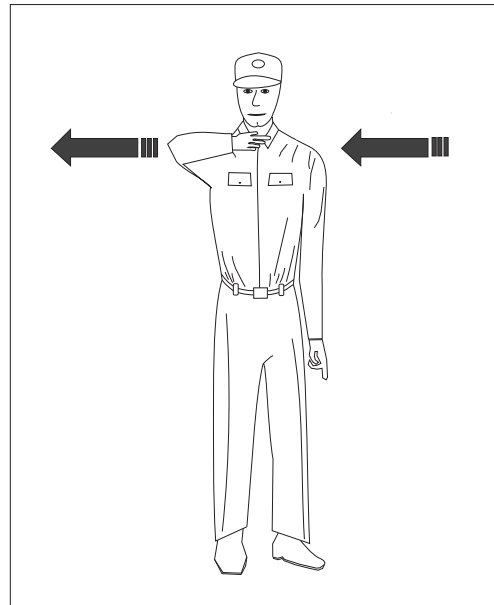


FIG ENR 1.1-22
Night Operation

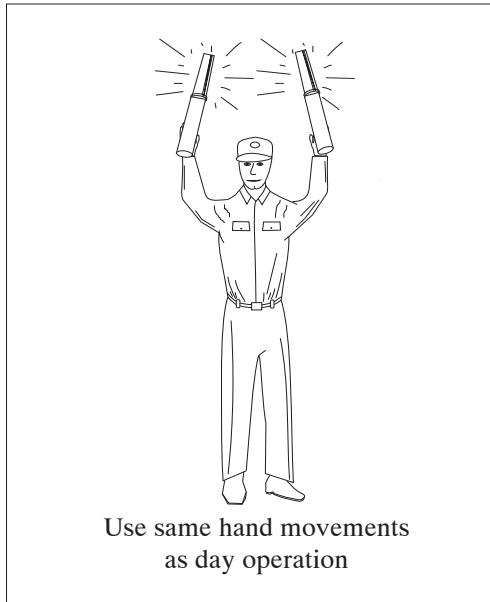
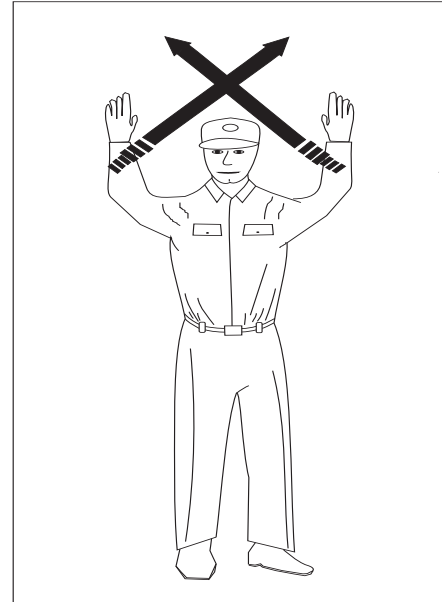


FIG ENR 1.1-23
Stop



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.

27.3.1.5 Holding Instructions

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

b) 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, the controller may omit all holding instructions except the charted holding direction and the statement “AS PUBLISHED;” e.g., “HOLD EAST AS PUB-

LISHED.” Controllers must always issue complete holding instructions when pilots request them.

NOTE–

Only those holding patterns depicted on U.S. government or commercially produced charts which meet FAA requirements should be used.

c) 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 microphones, etc.), hold in a standard pattern on the course on which you 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.

d) 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.

e) 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.

f) 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.

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 10–knot increments except that at or above FL 240 speeds may be expressed in terms of Mach numbers in .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 “comply with restrictions” 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.

33.8 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

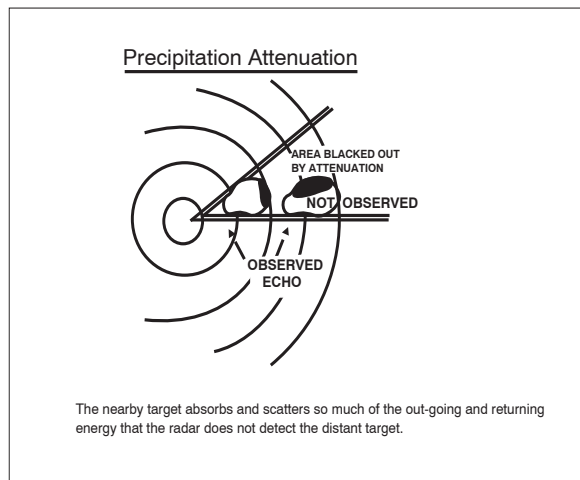
37.1.1.1 Radar is a method whereby radio waves are transmitted into the air and are then received when they have been reflected by an object in the path of the beam. Range is determined by measuring the time it takes (at the speed of light) for the radio wave to go out to the object and then return to 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 1.1–24).

FIG ENR 1.1–24
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 1.1–25 and FIG ENR 1.1–26 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.

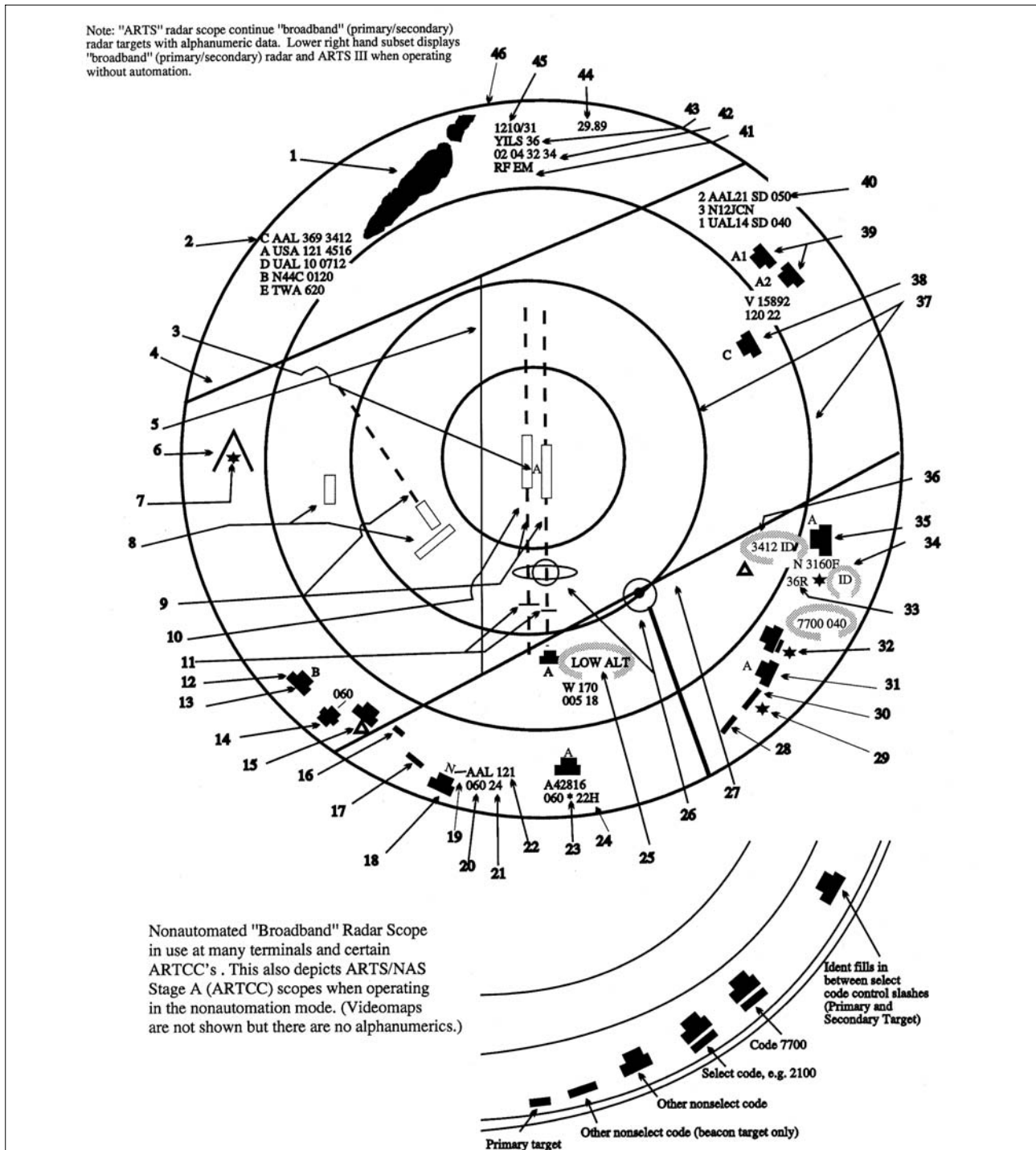
37.3.2 Surveillance radars scan through 360 degrees of azimuth and present target information on a radar display located in a tower or center. This information is used independently or in conjunction with other navigational aids in the control of air traffic.

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 1.1-25
ARTS III Radar Scope With Alphanumeric Data



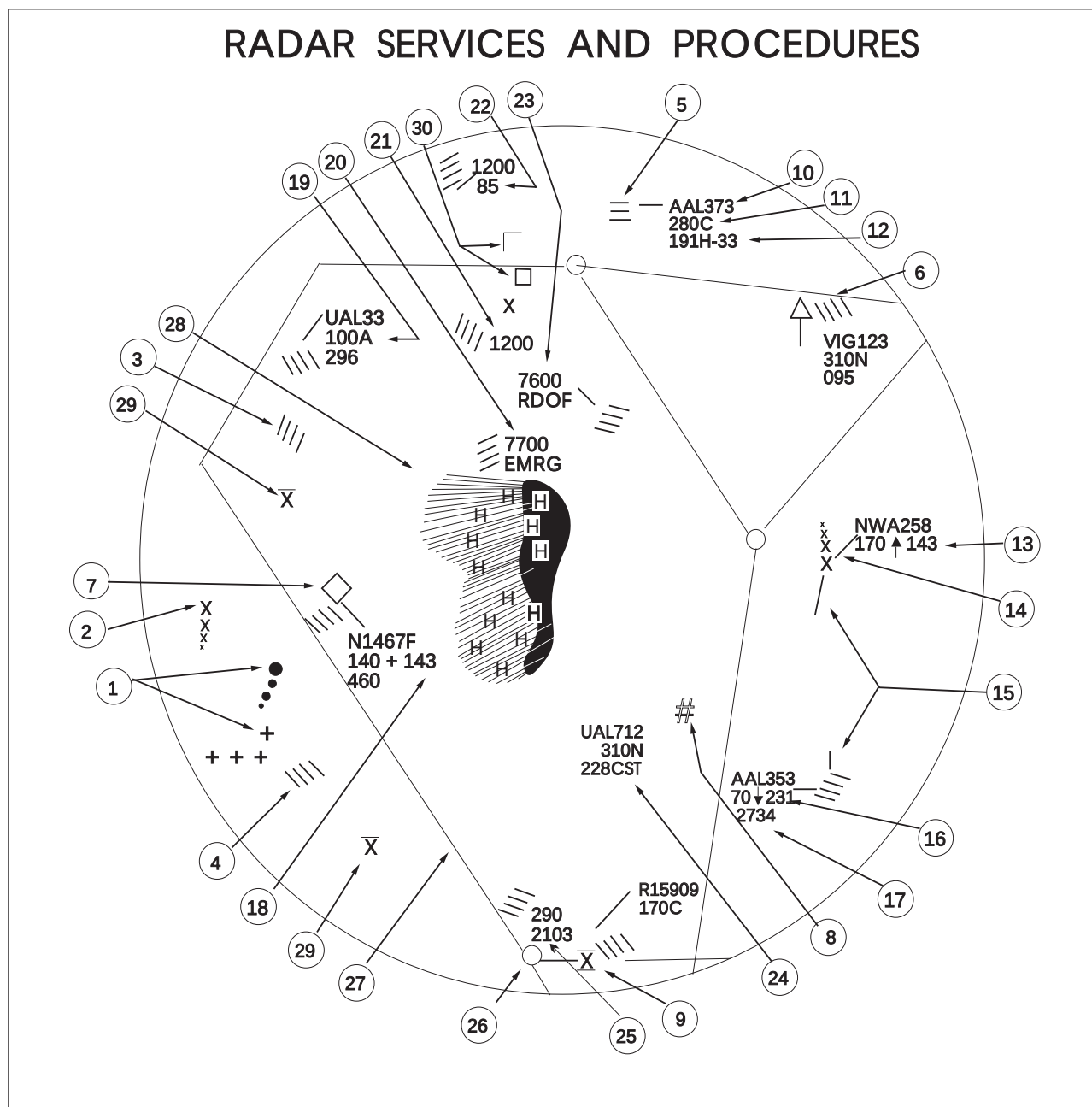
NOTE-

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. Identifying target blossoms
36. Untracked target identifying 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 1.1-26
NAS Stage A Controller's View Plan Display



NOTE-

FIG ENR 1.1-26 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 1.1-25). 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. Identifying 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) [△]

7. Flat track (flight plan tracking) [◇]

8. Coast (beacon target lost) [#]

9. Present position hold [⊗]

Data block information:

10. Aircraft ident

*See note below.

11. Assigned altitude FL 280, Mode C altitude same or within $\pm 200'$ 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 – Model X (ASDE–X)

37.5.1 The Airport Surface Detection Equipment – Model X (ASDE–X) is a multi–sensor surface surveillance system the FAA is acquiring for airports in the United States. This system will provide 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 system coverage includes the airport surface and the airspace 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 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 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 have been projected to receive ASDE–X:

TBL ENR 1.1–2

STL	Lambert–St. Louis International
CLT	Charlotte Douglas International
SDF	Louisville International Standiford
DFW	Dallas/Ft. Worth International
ORD	Chicago O’Hare International
LAX	Los Angeles International
ATL	Hartsfield Atlanta International
IAD	Washington Dulles International
SEA	Seattle–Tacoma International
MKE	General Mitchell International
MCO	Orlando International
PVD	Theodore Francis Green State
PHX	Phoenix Sky Harbor International
MEM	Memphis International
RDU	Raleigh–Durham International
HOU	William P. Hobby (Houston, TX)
BDL	Bradley International
SJC	San Jose International
SAT	San Antonio International
SMF	Sacramento International
FLL	Ft. Lauderdale/Hollywood
HNL	Honolulu International – Hickam AFB
OAK	Metropolitan Oakland International
IND	Indianapolis International
TPA	Tampa International
BUR	Burbank–Glendale–Pasadena
CMH	Port Columbus International
MDW	Chicago Midway
COS	Colorado Springs Municipal
SNA	John Wayne – Orange County
ONT	Ontario International
AUS	Austin–Bergstrom International
RNO	Reno/Tahoe International
ABQ	Albuquerque International Sunport
SJU	San Juan International

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—

FAAO 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.

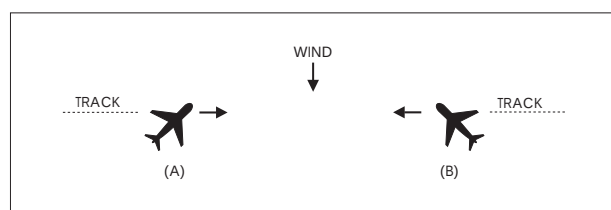
(c) Type of aircraft and altitude if known.

EXAMPLE–

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

(d) The examples depicted in FIG ENR 1.1–27 and FIG ENR 1.1–28 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.

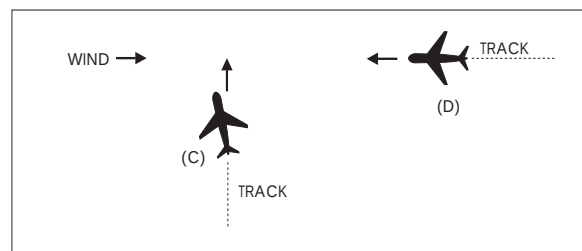
**FIG ENR 1.1–27
Induced Error in Position of Traffic**



EXAMPLE–

In FIG ENR 1.1–27, 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 1.1–28
Induced Error in Position of Traffic**



EXAMPLE–

In FIG ENR 1.1–28, 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. (A chart showing the location of offshore airspace is posted on the Domestic U.S. RVSM (DRVSM) Webpage. See paragraph 38.3.) 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 exceptions, 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 1.1–29.

FIG ENR 1.1–29
Flight Level Orientation Scheme

Flight Level Orientation Scheme	
FL 430	←
FL 410	→
FL 400	←
FL 390	→
FL 380	←
FL 370	→
FL 360	←
FL 350	→
FL 340	←
FL 330	→
FL 320	←
FL 310	→
FL 300	←
FL 290	→

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. The FAA RVSM Website Homepage can be accessed at: http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/rvsm/. The “RVSM Documentation” and “Domestic RVSM” webpages are linked to the RVSM Homepage. “RVSM Documentation” contains guidance and direction for an operator to obtain aircraft and operator approval to conduct RVSM operations. It provides information for DRVSM and oceanic and international RVSM airspace. It is recommended that operators planning to operate in Domestic U.S. RVSM airspace first review the following documents to orient themselves to the approval process.

38.3.2.1 Under “Area of Operations Specific Information,” the document, “Basic Operator Information on DRVSM Programs,” provides an overview of the DRVSM program and the related aircraft and operator approval programs.

38.3.2.2 In the “Getting Started” section, review the “RVSM Approval Checklist – U.S. Operators” or “RVSM Approval Checklist – Non-U.S. Operators” (as applicable). These are job aids or checklists that show aircraft/operator approval process events with references to related RVSM documents published on the website.

38.3.2.3 Under “Documents Applicable to All RVSM Approvals,” review “RVSM Area New to the Operator.” This document provides a guide for operators that are conducting RVSM operations in one or more areas of operation, but are planning to conduct RVSM operations in an area where they have not previously conducted RVSM operations, such as the U.S.

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 Registration on RVSM Approvals Databases. The “Registration on RVSM Approvals Database” section of the RVSM Documentation Webpage provides policies/procedures for operator and aircraft registration on RVSM approvals databases.

38.3.5.1 Purpose of RVSM Approvals Databases. ATC does not use RVSM approvals databases to determine whether or not a clearance can be issued into RVSM airspace. RVSM program managers do regularly review the operators and aircraft that operate in RVSM airspace to identify and investigate those aircraft and operators flying in RVSM airspace, but not listed on the RVSM approvals databases.

38.3.5.2 Registration of U.S. Operators. When U.S. operators and aircraft are granted RVSM authority, the FAA Flight Standards office makes an input to the FAA Program Tracking and Reporting Subsystem (PTRS). The Separation Standards Group at the FAA Technical Center obtains PTRS operator and aircraft information to update the FAA maintained U.S. Operator/Aircraft RVSM Approvals Database. Basic database operator and aircraft information can be viewed on the RVSM Documentation Webpage by clicking on the appropriate database icon.

38.3.5.3 Registration of Non-U.S. Operators. Non-U.S. operators can find policy/procedures for registration on the North American Approvals Registry and Monitoring Organization (NAARMO) database in the “Registration on RVSM Approvals Database” section of RVSM Documentation.

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 4 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 4 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 4 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 4 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 (e.g., 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.

38.7.5 The FAA will track wake turbulence events as an element of its post implementation program. The FAA will advertise wake turbulence reporting procedures to the operator community and publish reporting procedures on the RVSM Documentation Webpage (See address in Paragraph 38.3, Aircraft and Operator Approval Policy/Procedures, RVSM Monitoring and Databases for Aircraft and Operator Approval.

38.8 Pilot/Controller Phraseology

TBL ENR 1.1–3 shows standard phraseology that pilots and controllers will use to communicate in DRVSM operations.

TBL ENR 1.1–3
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– <i>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.</i>	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 1.1–4 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 1.1–4

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: •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 See Paragraph 38.6, Guidance on Severe Turbulence and Mountain Wave Activity (MWA), for detailed guidance.	Controller will: •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 Paragraph 38.6 explains “traffic permitting.”

Mountain Wave Activity (MWA) Encounters – General	
Pilot 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 See paragraph 38.6 for guidance on MWA.	Controller actions: •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 Paragraph 38.6 explains “traffic permitting.”
<i>NOTE–</i> 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: •Contact ATC and request vector, FL change or, if capable, a lateral offset See Paragraph 38.7, Guidance on Wake Turbulence.	Controller should: •Issue vector, FL change or lateral offset clearance, traffic permitting Paragraph 38.6 explains “traffic permitting.”
“Unable RVSM Due Equipment” Failure of Automatic Altitude Control System, Altitude Alerter or All Primary Altimeters	
Pilot will: •Contact ATC and state “Unable RVSM Due Equipment” •Request clearance out of RVSM airspace unless operational situation dictates otherwise	Controller will: •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: •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	Controller will: •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.

38.10.4 Center Phone Numbers. Center phone numbers are posted on the RVSM Documentation Webpage, North American RVSM, Domestic U.S. RVSM section. This address provides direct access to the phone number listing:

http://www.faa.gov/ats/ato/150_docs/Center_Phone_No._Non-RVSM_Acft.doc

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 section 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 10 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 “comply with restrictions” 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.

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 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

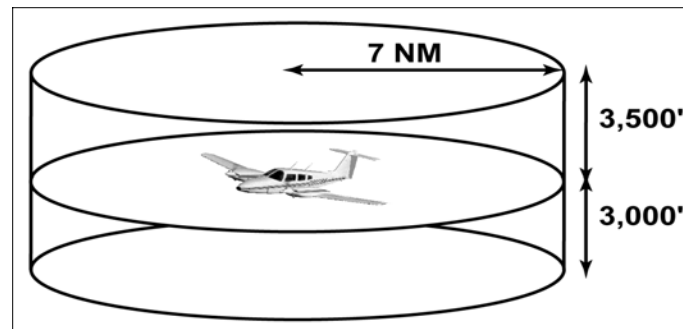
The Traffic Information Service (TIS) provides information to the cockpit via data link, that is similar to VFR radar traffic advisories normally received over voice radio. Among the first FAA–provided data services, TIS is intended to improve the safety and efficiency of “see and avoid” flight through 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 1.1–30, TIS Proximity Coverage

Volume). The range of a target reported at a distance greater than 7 NM only indicates that this target will be a threat within 34 seconds and does not display a precise distance. TIS will alert the pilot to aircraft (under surveillance of the Mode S radar) that are estimated to be within 34 seconds of potential collision, regardless of distance or altitude. TIS surveillance data is derived from the same radar used by ATC; this data is uplinked to the client aircraft on each radar scan (nominally every 5 seconds).

44.2 Requirements

44.2.1 In order to use TIS, the client and any intruder aircraft must be equipped with the appropriate cockpit equipment and fly within the radar coverage of a Mode S radar capable of providing TIS. Typically, this will be within 55 NM of the sites depicted in FIG ENR 1.1–31, 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 1.1–30
TIS Proximity Coverage Volume



TERMINAL MODE S RADAR SITES
(APPROXIMATE LOCATIONS)

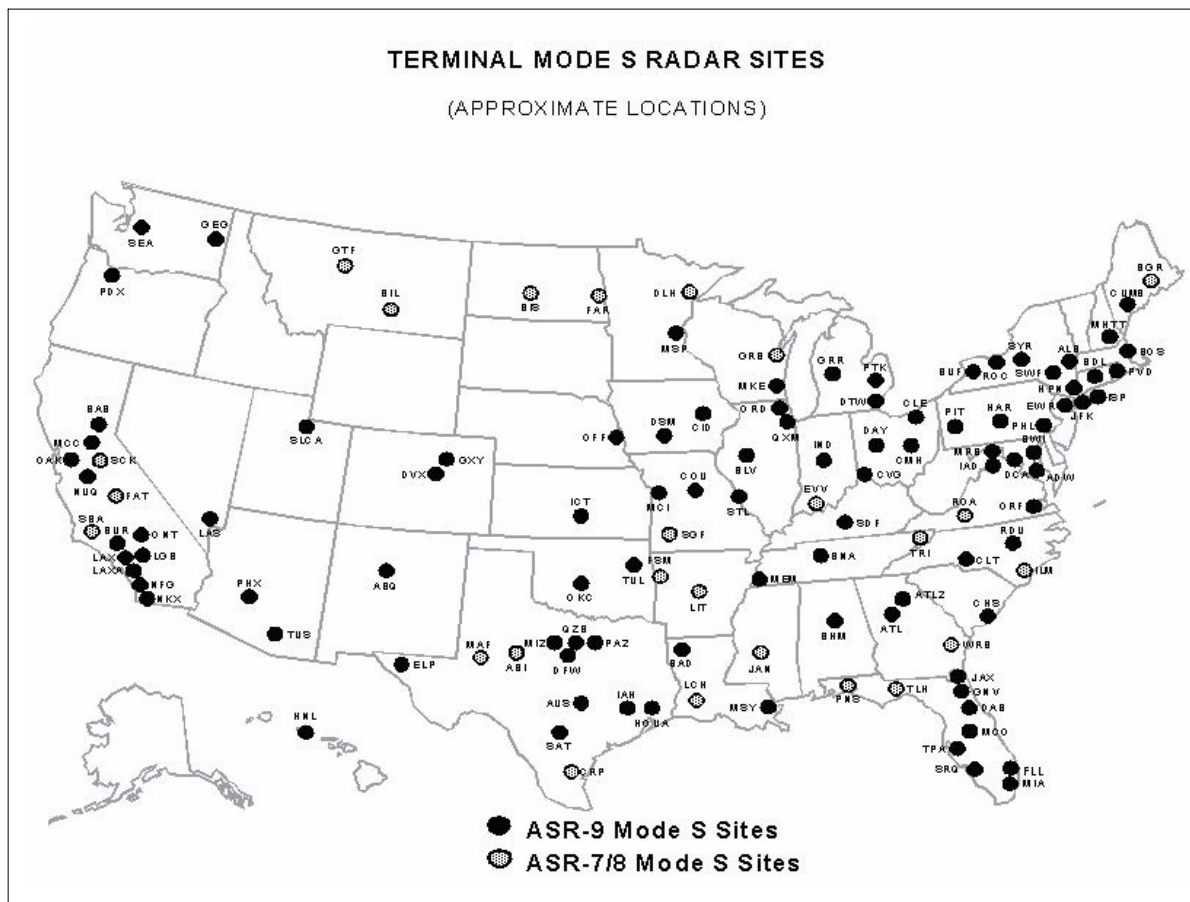
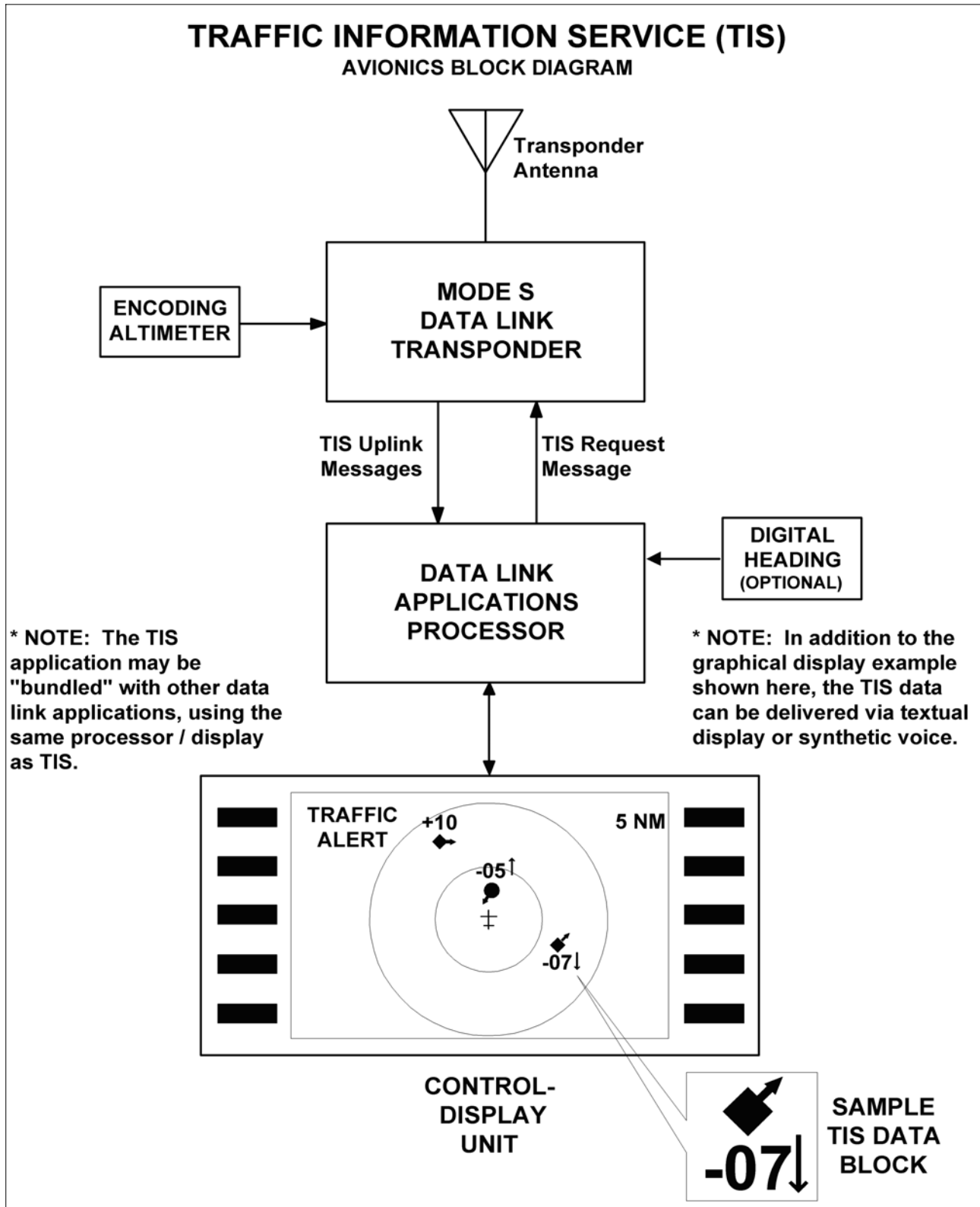


FIG ENR 1.1-32
Traffic Information Service (TIS)
Avionics Block Diagram



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 1.1–32):

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 1.1–31, 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 1.1–32, 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 1.1–32, 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 1.1–30. 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 1.1–31, 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 $\frac{1}{4}$ 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 $\frac{3}{8}$ 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 $\frac{3}{8}$ 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 1.1–33). 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 1.1–34 and FIG ENR 1.1–35.)

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 1.1–33
ADS–B, TIS–B, and FIS–B:
Broadcast Services Architecture

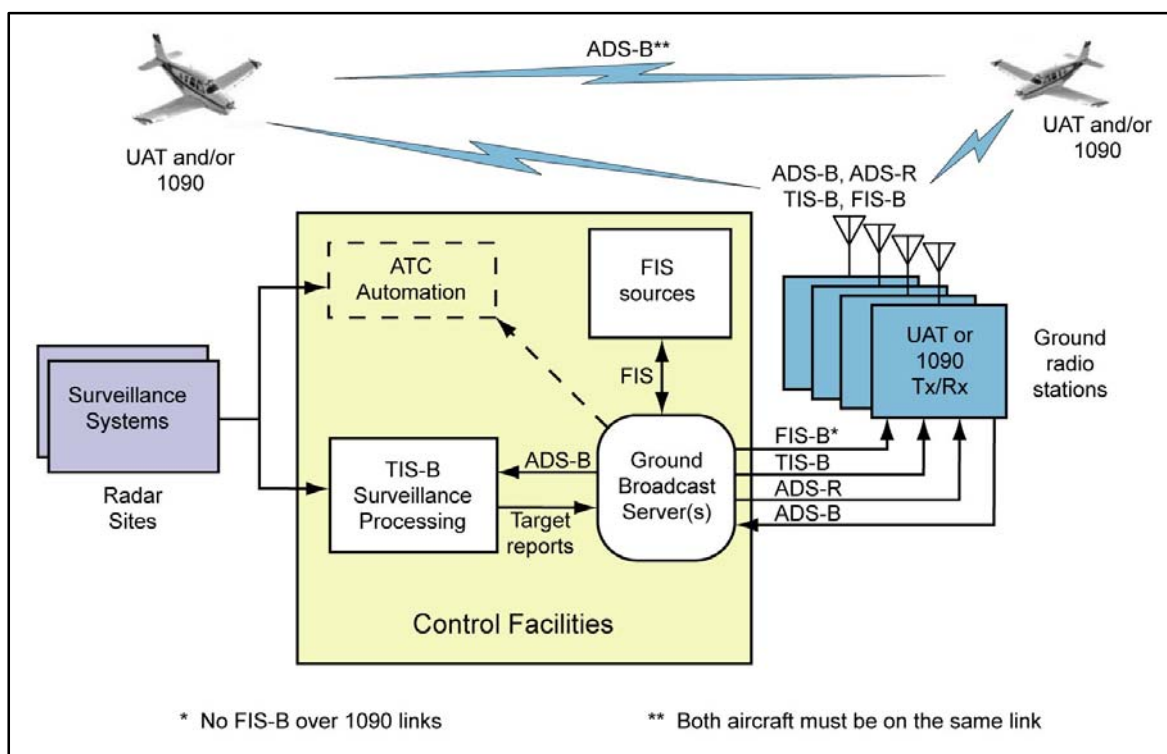


FIG ENR 1.1-34
En Route – ADS-B/ADS-R/TIS-B/FIS-B Service Ceilings/Floors

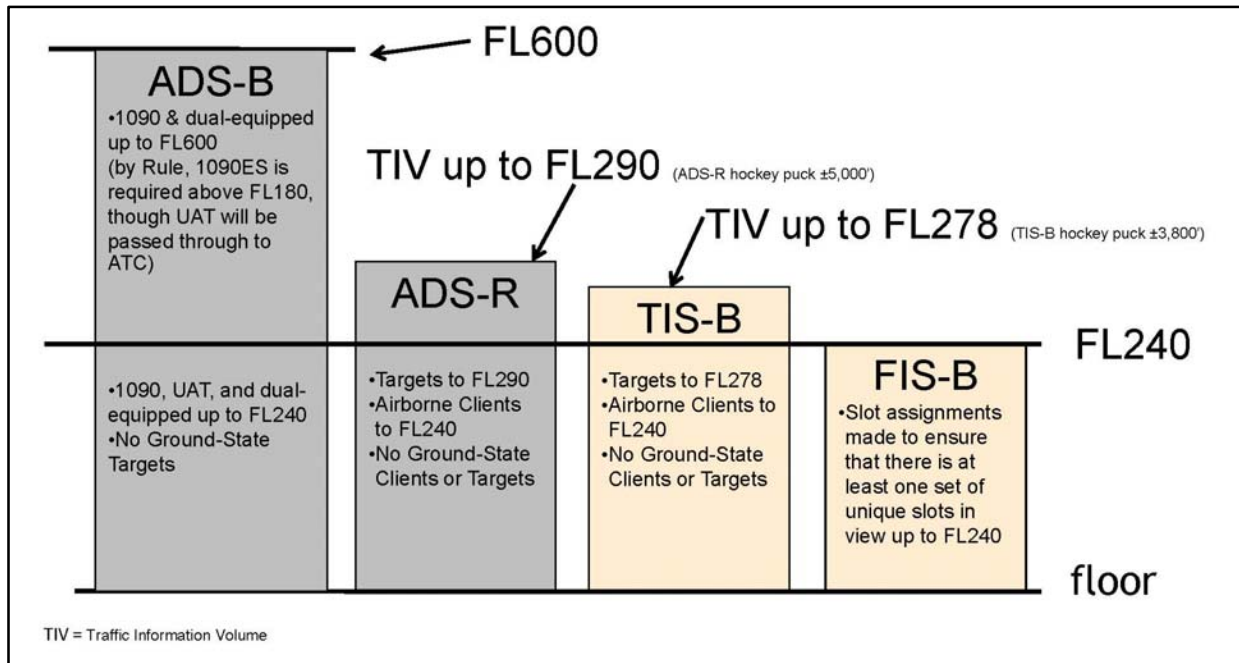
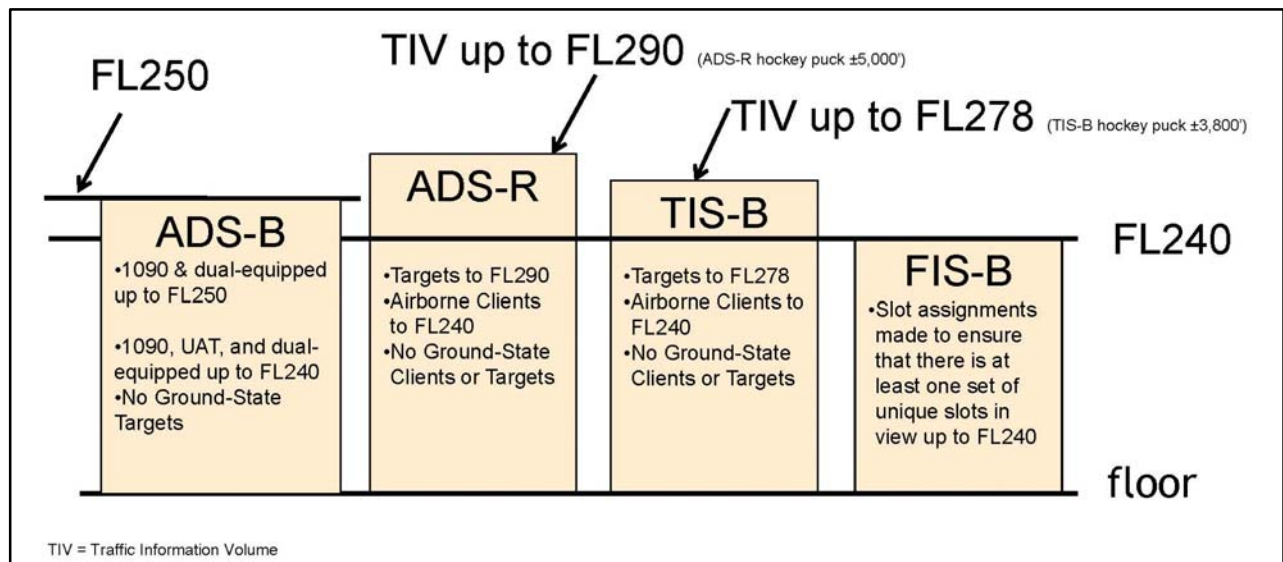


FIG ENR 1.1-35
Terminal – ADS-B/ADS-R/TIS-B/FIS-B Service Ceilings/Floors



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 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 – For Use In Alaska Only

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 "N" number or call-sign as filed in "Block 2" of the Flight Plan must be entered in the ADS-B avionics as the aircraft's flight ID.

45.4.2 Inflight:

When requesting ADS-B services while airborne, pilots should ensure that their ADS-B equipment is transmitting their aircraft's "N" number or call sign prior to contacting ATC. To accomplish this, the pilot must select the ADS-B "broadcast flight ID" function.

NOTE–

The broadcast "VFR" or "Standby" mode built into some ADS-B systems will not provide ATC with the appropriate aircraft identification information. This function should first be disabled before contacting ATC.

45.4.3 Aircraft with an Inoperative/Malfunctioning ADS–B Transmitter or in the Event of an Inoperative Ground Broadcast Transceiver (GBT).

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 when the GBT transceiver becomes inoperative or malfunctioning, as follows:

PHRASEOLOGY–

(Name of facility) GROUND BASED TRANSCEIVER INOPERATIVE/MALFUNCTIONING.

(And if appropriate) RADAR CONTACT LOST.

NOTE–

An inoperative or malfunctioning GBT may also cause a loss of ATC surveillance services.

45.4.3.3 ATC will inform the flight crew if it becomes necessary to turn off the aircraft’s ADS–B transmitter.

PHRASEOLOGY–

STOP ADS–B TRANSMISSIONS.

45.4.3.4 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 1.1–34 and FIG ENR 1.1–35.)

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 1.1–34 and FIG ENR 1.1–35.)

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 1.1–34 and FIG ENR 1.1–35.)

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.

I) San Francisco Intl. Airport, CA.

2.3.2.3 No person may take off or land a civil aircraft at an airport within Class B airspace or operate a civil aircraft within Class B airspace unless:

a) The pilot in command holds at least a private pilot certificate; or

b) The aircraft is operated by a student pilot or recreational pilot who seeks private pilot certification and has met the requirements of 14 CFR Section 61.95.

2.3.2.4 Unless otherwise authorized by ATC, each person operating a large turbine engine–powered airplane to or from a primary airport must operate at or above the designated floors while within the lateral limits of Class B airspace.

2.3.2.5 Unless otherwise authorized by ATC, each aircraft must be equipped as follows:

a) For IFR operations, an operable VOR or TACAN receiver or an operable and suitable RNAV system; and

b) For all operations, a two–way radio capable of communications with ATC on appropriate frequencies for that area.

c) Unless otherwise authorized by ATC, an operable radar beacon transponder with automatic altitude reporting equipment.

NOTE–

ATC may, upon notification, immediately authorize deviations from the altitude reporting equipment requirement; however, a request for deviation from the 4096 transponder equipment requirement must be submitted to the controlling ATC facility at least one hour before the proposed operation. (See ENR 1.1, paragraph 37.7, Transponder Operation).

2.3.2.6 Mode C Veil

a) The airspace within 30 nautical miles of an airport listed in Appendix D, Section 1 of 14 CFR Part 91 (generally primary airports within Class B airspace areas), from the surface upward to 10,000 feet mean sea level (MSL). Unless otherwise authorized by air traffic control, aircraft operating within this airspace must be equipped with automatic pressure altitude reporting equipment having Mode C capability.

b) However, aircraft that was not originally certificated with an engine–driven electrical system or which has not subsequently been certified with a system installed, may conduct operations within a Mode C veil provided the aircraft remains outside Class A, B, or C airspace; and below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport or 10,000 feet MSL, whichever is lower.

2.3.3 Charts. Class B airspace is charted on Sectional Charts, IFR En Route Low Altitude Charts, and Terminal Area Charts.

2.3.4 Flight Procedures

2.3.4.1 Flights. Aircraft within Class B airspace are required to operate in accordance with current IFR procedures. A clearance for a visual approach to a primary airport is not authorization for turbine powered airplanes to operate below the designated floors of the Class B airspace.

2.3.4.2 VFR Flights

a) Arriving aircraft must obtain an ATC clearance prior to entering Class B airspace and must contact ATC on the appropriate frequency, and in relation to geographical fixes shown on local charts. Although a pilot may be operating beneath the floor of the Class B airspace on initial contact, communications with ATC should be established in relation to the points indicated for spacing and sequencing purposes.

b) Departing aircraft require a clearance to depart Class B airspace and should advise the clearance delivery position of their intended altitude and route of flight. ATC will normally advise VFR aircraft when leaving the geographical limits of the Class B airspace. Radar service is not automatically terminated with this advisory unless specifically stated by the controller.

c) Aircraft not landing or departing the primary airport may obtain an ATC clearance to transit the Class B airspace when traffic conditions permit and provided the requirements of 14 CFR Section 91.131 are met. Such VFR aircraft are encouraged, to the extent possible, to operate at altitudes above or below the Class B airspace or transit through established VFR corridors. Pilots operating in VFR corridors are urged to use frequency 122.750 MHz for the exchange of aircraft position information.

2.3.5 ATC Clearances and Separation. An ATC clearance is required to enter and operate within Class B airspace. VFR pilots are provided sequencing and separation from other aircraft while operating within Class B airspace. (See ENR 1.1, paragraph 39., Terminal Radar Service for VFR Aircraft.)

NOTE—

1. *Separation and sequencing of VFR will be suspended in the event of a power outage as this service is dependent on radar. The pilot will be advised that the service is not available and issued wind, runway information, and the time or place to contact the tower.*

2. *Separation of VFR aircraft will be suspended during Center Radar Presentation (CENRAP) Operations. Traffic advisories and sequencing to the primary airport will be provided on a workload permitting basis. The pilot will be advised when CENRAP is in use.*

2.3.5.1 VFR aircraft are separated from all VFR/IFR aircraft which weigh 19,000 pounds or less by a minimum of:

- a) Target resolution; or
- b) 500 feet vertical separation; or
- c) Visual separation.

2.3.5.2 VFR aircraft are separated from all VFR/IFR aircraft which weigh more than 19,000 and turbojets by no less than:

- a) 1 1/2 miles lateral separation; or
- b) 500 feet vertical separation; or
- c) Visual separation.

2.3.5.3 This program is not to be interpreted as relieving pilots of their responsibilities to see and avoid other traffic operating in basic VFR weather conditions, to adjust their operations and flight path as necessary to preclude serious wake encounters, to maintain appropriate terrain and obstruction clearance, or to remain in weather conditions equal to or better than the minimums required by 14 CFR Section 91.155. Approach control should be advised and a revised clearance or instruction obtained when compliance with an assigned route, heading, and/or altitude is likely to compromise pilot responsibility with respect to terrain and obstruction clearance, vortex exposure, and weather minimums.

2.3.5.4 ATC may assign altitudes to VFR aircraft that do not conform to 14 CFR Section 91.159. “RESUME APPROPRIATE VFR ALTITUDES” will be broadcast when the altitude assignment is no longer needed for separation or when leaving Class B airspace. Pilots must return to an altitude that conforms to 14 CFR Section 91.159.

2.3.5.5 Proximity Operations. VFR aircraft operating in proximity to Class B airspace are cautioned against operating too closely to the boundaries, especially where the floor of the Class B airspace is 3,000 feet or less above the surface or where VFR cruise altitudes are at or near the floor of higher levels. Observance of this precaution will reduce the potential for encountering an aircraft operating at the altitudes of Class B floors. Additionally, VFR aircraft are encouraged to utilize the VFR Planning Chart as a tool for planning flight in proximity to Class B airspace. Charted VFR Flyway Planning charts are published on the back of the existing VFR Terminal Area Charts.

2.4 Class C Airspace

2.4.1 Definition. Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, and an outer area with a 10 NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation.

2.4.2 Outer Area. Class C airspace areas have a procedural (nonregulatory) Outer Area. Normally this area is 20 NM from the primary Class C airspace airport. Its vertical limit extends from the lower limits of radio/radar coverage up to the ceiling of the approach control’s delegated airspace, excluding the Class C airspace itself, and other airspace as appropriate. (This outer area is not charted.)

2.4.3 Charts. Class C airspace is charted on Sectional Charts, IFR En Route Low Altitude, and Terminal Area Charts where appropriate.

2.5 Class D Airspace

2.5.1 Definition. Generally, Class D airspace extends upward from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures.

2.5.1.1 Class D surface areas may be designated as full-time or part-time. Part-time Class D effective times are published in the Chart Supplement U.S.

2.5.1.2 Part-time Class D surface areas may default to either a Class E surface area or Class G airspace. When a part-time Class D surface area defaults to Class G, the surface area airspace becomes Class G up to, but not including, the overlying controlled airspace. Normally, the overlying controlled airspace is the Class E transition area airspace that begins at either 700 feet or 1200 feet AGL. This may be determined by consulting the applicable VFR Sectional or Terminal Area Charts.

2.5.2 Operating Rules and Pilot Equipment Requirements

2.5.2.1 Pilot Certification. No specific certification required.

2.5.2.2 Equipment. Unless otherwise authorized by ATC, an operable two-way radio is required.

2.5.2.3 Arrival or Through Flight Entry Requirements. Two-way radio communication must be established with the ATC facility providing ATC services prior to entry and thereafter maintain those communications while in the Class D airspace. Pilots of arriving aircraft should contact the control tower on the publicized frequency and give their position, altitude, destination, and any request(s). Radio contact should be initiated far enough from the Class D airspace boundary to preclude entering the Class D airspace before two-way radio communications are established.

NOTE–

1. *If the controller responds to a radio call with, “(aircraft callsign) standby,” radio communications have been established, and the pilot can enter the Class D airspace.*

2. *If workload or traffic conditions prevent immediate entry into Class D airspace, the controller will inform the*

pilot to remain outside the Class D airspace until conditions permit entry.

EXAMPLE–

1. “[Aircraft callsign] remain outside the Class Delta airspace and standby.”

It is important to understand that if the controller responds to the initial radio call without using the aircraft callsign, radio communications have not been established, and the pilot may not enter the Class D airspace.

2. “Aircraft calling Manassas tower standby.”

At those airports where the control tower does not operate 24 hours a day, the operating hours of the tower will be listed on the appropriate charts and in the Chart Supplement U.S. During the hours the tower is not in operation, the Class E surface area rules or a combination of Class E rules to 700 feet above ground level and Class G rules to the surface will become applicable. Check the Chart Supplement U.S. for specifics.

2.5.2.4 Departures from:

a) A primary or satellite airport with an operating control tower. Two-way radio communications must be established and maintained with the control tower, and thereafter as instructed by ATC while operating in the Class D airspace.

b) A satellite airport without an operating control tower. Two-way radio communications must be established with the ATC facility having jurisdiction over the Class D airspace as soon as practicable after departing.

2.5.2.5 Aircraft Speed. Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class D airspace area at an indicated airspeed of more than 200 knots (230 mph).

2.5.3 Class D airspace areas are depicted on Sectional and Terminal charts with blue segmented lines, and on IFR En Route Low Altitude charts with a boxed [D].

2.5.4 Arrival extensions.

2.5.4.1 Class D airspace arrival extensions for instrument approach procedures may be Class D or Class E airspace. As a general rule, if all extensions are 2 miles or less, they remain part of the Class D surface area. However, if any one extension is greater than 2 miles, then all extensions become Class E.

2.5.4.2 Surface area arrival extensions are effective concurrent with the published times of the Class D

surface area. For example, if a part-time Class D surface area changes to Class E airspace, the arrival extensions will remain in effect as Class E airspace. If a part-time Class D surface area changes to Class G airspace, the associated arrival extensions will become Class G at the same time.

2.5.5 Separation for VFR Aircraft. No separation services are provided to VFR aircraft.

2.6 Class E Airspace

2.6.1 Definition. Class E airspace is a type of controlled airspace that is designated to serve a variety of terminal or en route purposes as described below.

2.6.2 Operating Rules and Pilot/Equipment Requirements.

2.6.2.1 Pilot Certification. No specific certification required.

2.6.2.2 Equipment. No specific equipment required by the airspace.

2.6.2.3 Arrival or Through Flight Entry Requirements. No specific requirements.

2.6.3 Charts. Class E airspace below 14,500 feet MSL is charted on Sectional, Terminal, and IFR Enroute Low Altitude charts.

2.6.4 Vertical limits. Except where designated at a lower altitude, Class E airspace in the United States consists of the airspace extending upward from 14,500 feet MSL to, but not including, 18,000 feet MSL overlying: the 48 contiguous states, including the waters within 12 miles from the coast of the 48 contiguous states; the District of Columbia; Alaska, including the waters within 12 miles from the coast of Alaska, and that airspace above FL 600; excluding:

2.6.4.1 The Alaska peninsula west of longitude 160°00'00"W.; and

2.6.4.2 The airspace below 1,500 feet above the surface of the earth unless specifically designated lower.

NOTE—

Class E airspace above FL 600 has no upper limit.

2.6.5 Types of Class E Airspace

2.6.5.1 Surface area designated for an airport. Class E designated as a surface area for an airport where a control tower is not in operation. The airspace will be configured to contain all instrument

procedures. Class E surface areas normally extend from the surface up to but not including the overlying controlled airspace.

2.6.5.2 Extension to a surface area:

a) Class E airspace areas may be designated as extensions to Class B, Class C, and Class D surface areas. Such extensions provide controlled airspace to contain standard instrument approach procedures without imposing a communications requirement on pilots operating under VFR. Surface area arrival extensions for instrument approach procedures become part of the primary core surface area and are effective concurrent with the times of the primary core surface area.

b) When a part-time Class C or Class D surface area defaults to Class E, the arrival extensions will remain in effect as Class E airspace. When a part-time Class C, Class D, or Class E surface area defaults to Class G, the associated arrival extensions will default to Class G at the same time.

2.6.5.3 Airspace used for transition:

a) Class E airspace areas extending upward from either 700 feet AGL (shown as magenta vignette on sectional charts) or 1,200 feet AGL (blue vignette) are designated in conjunction with an airport with an approved instrument procedure. These areas are used for transitioning aircraft to/from the terminal or en route environment.

b) Unless otherwise specified, 700/1200-foot AGL Class E airspace areas remain in effect continuously, regardless of airport operating hours or surface area status. The 700/1200-foot transition areas should not be confused with surface areas or arrival extensions.

2.6.5.4 En Route Domestic Areas. There are Class E airspace areas that extend upward from a specified altitude and are en route domestic airspace areas that provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services, but the Federal airway system is inadequate.

2.6.5.5 Federal Airways and Low-altitude RNAV Routes. Federal airways and low-altitude RNAV routes are Class E airspace areas and, unless otherwise specified, they extend upward from 1,200 feet AGL to, but not including, 18,000 feet MSL. Federal airways consist of L/MF airways (colored Federal airways) and VOR Federal airways. L/MF

airways are green, red, amber, and blue. VOR Federal airways are classified as Domestic, Alaskan, and Hawaiian. Low-altitude RNAV routes include T-routes and helicopter RNAV routes (TK-routes).

2.6.5.6 Offshore Airspace Areas. There are Class E airspace areas that extend upward from a specified altitude to, but not including, 18,000 feet MSL and are designated as offshore airspace areas. These areas provide controlled airspace beyond 12 nautical miles from the coast of the U.S. in those areas where there is a requirement to provide IFR en route ATC services and within which the U.S. is applying domestic procedures.

2.6.6 Separation for VFR Aircraft. No separation services are provided to VFR aircraft.

3. Class G Airspace

3.1 General

Class G airspace (uncontrolled) is that portion of airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace.

3.2 VFR Requirements

Rules governing VFR flight have been adopted to assist the pilot in meeting his/her responsibility to see and avoid other aircraft. Minimum flight visibility and distance from clouds required for VFR flight are contained in 14 CFR Section 91.155. (See TBL ENR 1.4–1 for a tabular presentation of these rules).

3.3 IFR Requirements

3.3.1 Title 14 CFR specifies the pilot and aircraft equipment requirements for IFR flight. Pilots are reminded that in addition to altitude or flight level requirements, 14 CFR Section 91.177 includes a requirement to remain at least 1,000 feet (2,000 feet in designated mountainous terrain) above the highest

obstacle within a horizontal distance of 4 nautical miles from the course to be flown.

3.3.2 IFR Altitudes. (See TBL ENR 1.4–5.)

4. Other Airspace Areas

4.1 Airport Advisory/Information Services

4.1.1 There are three advisory type services available at selected airports. Airports offering these services are listed in the Chart Supplement U.S. and the published service hours may be changed by NOTAM D.

4.1.1.1 Local Airport Advisory (LAA) service is available only in Alaska and is operated within 10 statute miles of an airport where a control tower is not operating but where a FSS is located on the airport. At such locations, the FSS provides a complete local airport advisory service to arriving and departing aircraft. During periods of fast changing weather the FSS will automatically provide Final Guard as part of the service from the time the aircraft reports “on-final” or “taking-the-active-runway” until the aircraft reports “on-the-ground” or “airborne.”

NOTE–

Current FAA policy, when requesting remote ATC services, requires that a pilot monitor the automated weather broadcast at the landing airport prior to requesting ATC services. The FSS automatically provides Final Guard, when appropriate, during LAA operations. Final Guard is a value added wind/altimeter monitoring service, which provides an automatic wind and altimeter check during active weather situations when the pilot reports on-final or taking the active runway. During the landing or take-off operation when the winds or altimeter are actively changing the FSS will blind broadcast significant changes when the specialist believes the change might affect the operation. Pilots should acknowledge the first wind/altimeter check but due to cockpit activity no acknowledgement is expected for the blind broadcasts. It is prudent for a pilot to report on-the-ground or airborne to end the service.

TBL ENR 1.4–5
IFR Altitudes
Class G Airspace

If your magnetic course (ground track) is:	And you are below 18,000 feet MSL, fly:
0° to 179°	Odd thousands MSL, (3,000; 5,000; 7,000, etc.)
180° to 359°	Even thousands MSL, (2,000; 4,000; 6,000, etc.)

4.1.1.2 Remote Airport Information Service (RAIS) is provided in support of short term special events like small to medium fly-ins. The service is advertised by NOTAM D only. The FSS will not have access to a continuous readout of the current winds and altimeter; therefore, RAIS does not include weather and/or Final Guard service. However, known traffic, special event instructions, and all other services are provided.

NOTE—

The airport authority and/or manager should request RAIS support on official letterhead directly with the manager of the FSS that will provide the service at least 60 days in advance. Approval authority rests with the FSS manager and is based on workload and resource availability.

REFERENCE—

See GEN 3.3, Air Traffic Services, Paragraph 9.2, Traffic Advisory Practices at Airports Without Operating Control Towers.

4.1.1.3 It is not mandatory that pilots participate in the Airport Advisory programs. Participation enhances safety for everyone operating around busy GA airports; therefore, everyone is encouraged to participate and provide feedback that will help improve the program.

4.2 Published VFR Routes. Published VFR routes for transitioning around, under, and through complex airspace such as Class B airspace were developed through a number of FAA and industry initiatives. All of the following terms; i.e., “VFR Flyway,” “VFR Corridor,” “Class B Airspace VFR Transition Route,” and “Terminal Area VFR Route” have been used when referring to the same or different types of routes or airspace. The following paragraphs identify and clarify the functionality of each type of route, and specify where and when an ATC clearance is required.

4.2.1 VFR Flyways

4.2.1.1 VFR Flyways and their associated Flyway Planning charts were developed from the recommendations of a National Airspace Review Task Group. A VFR Flyway is defined as a general flight path not defined as a specific course, for use by pilots in planning flights into, out of, through, or near complex terminal airspace to avoid Class B airspace. An ATC clearance is NOT required to fly these routes.

4.2.1.2 VFR Flyways are depicted on the reverse side of some of the VFR Terminal Area Charts (TAC), commonly referred to as Class B airspace charts. Eventually all TACs will include a VFR Flyway Planning Chart. These charts identify VFR flyways designed to help VFR pilots avoid major controlled traffic flows. They may further depict multiple VFR routings throughout the area which may be used as an alternative to flight within Class B airspace. The ground references provide a guide for improved visual navigation. These routes are not intended to discourage requests for VFR operations within Class B airspace but are designed solely to assist pilots in planning for flights under and around busy Class B airspace without actually entering Class B airspace.

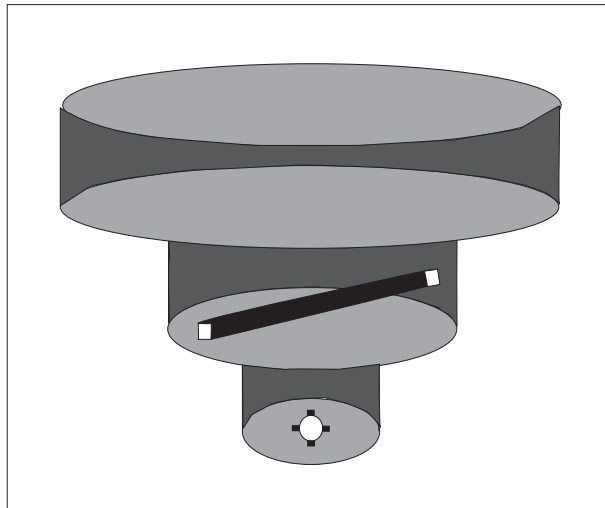
4.2.1.3 It is very important to remember that these suggested routes are not sterile of other traffic. The entire Class B airspace, and the airspace underneath it, may be heavily congested with many different types of aircraft. Pilot adherence to VFR rules must be exercised at all times. Further, when operating beneath Class B airspace, communications must be established and maintained between your aircraft and any control tower while transiting the Class B, Class C, and Class D surface areas of those airports under Class B Airspace.

4.2.2 VFR Corridors

4.2.2.1 The design of a few of the first Class B airspace areas provided a corridor for the passage of uncontrolled traffic. A VFR corridor is defined as airspace through Class B airspace, with defined vertical and lateral boundaries, in which aircraft may operate without an ATC clearance or communication with air traffic control.

4.2.2.2 These corridors are, in effect, a “hole” through Class B airspace. (See FIG ENR 1.4–1.) A classic example would be the corridor through the Los Angeles Class B airspace, which has been subsequently changed to Special Flight Rules airspace (SFR). A corridor is surrounded on all sides by Class B airspace and does not extend down to the surface like a VFR Flyway. Because of their finite lateral and vertical limits, and the volume of VFR traffic using a corridor, extreme caution and vigilance must be exercised.

FIG ENR 1.4–1
Class B Airspace



4.2.2.3 Because of the heavy traffic volume and the procedures necessary to efficiently manage the flow of traffic, it has not been possible to incorporate VFR corridors in the development or modifications of Class B airspace in recent years.

4.2.3 Class B Airspace VFR Transition Routes

4.2.3.1 To accommodate VFR traffic through certain Class B airspace, such as Seattle, Phoenix, and Los Angeles, Class B Airspace VFR Transition Routes were developed. A Class B Airspace VFR Transition Route is defined as a specific flight course depicted on a Terminal Area Chart (TAC) for transiting a specific Class B airspace. These routes include specific ATC assigned altitudes, and pilots must obtain an ATC clearance prior to entering Class B airspace on the route.

4.2.3.2 These routes, as depicted in FIG ENR 1.4–2, are designed to show the pilot where to position his/her aircraft outside of, or clear of, the Class B airspace where an ATC clearance can normally be expected with minimal or no delay. Until ATC authorization is received, pilots must remain clear of Class B airspace. On initial contact, pilots should

advise ATC of their position, altitude, route name desired, and direction of flight. After a clearance is received, the pilot must fly the route as depicted and, most importantly, adhere to ATC instructions.

4.3 Terminal Radar Service Area (TRSA)

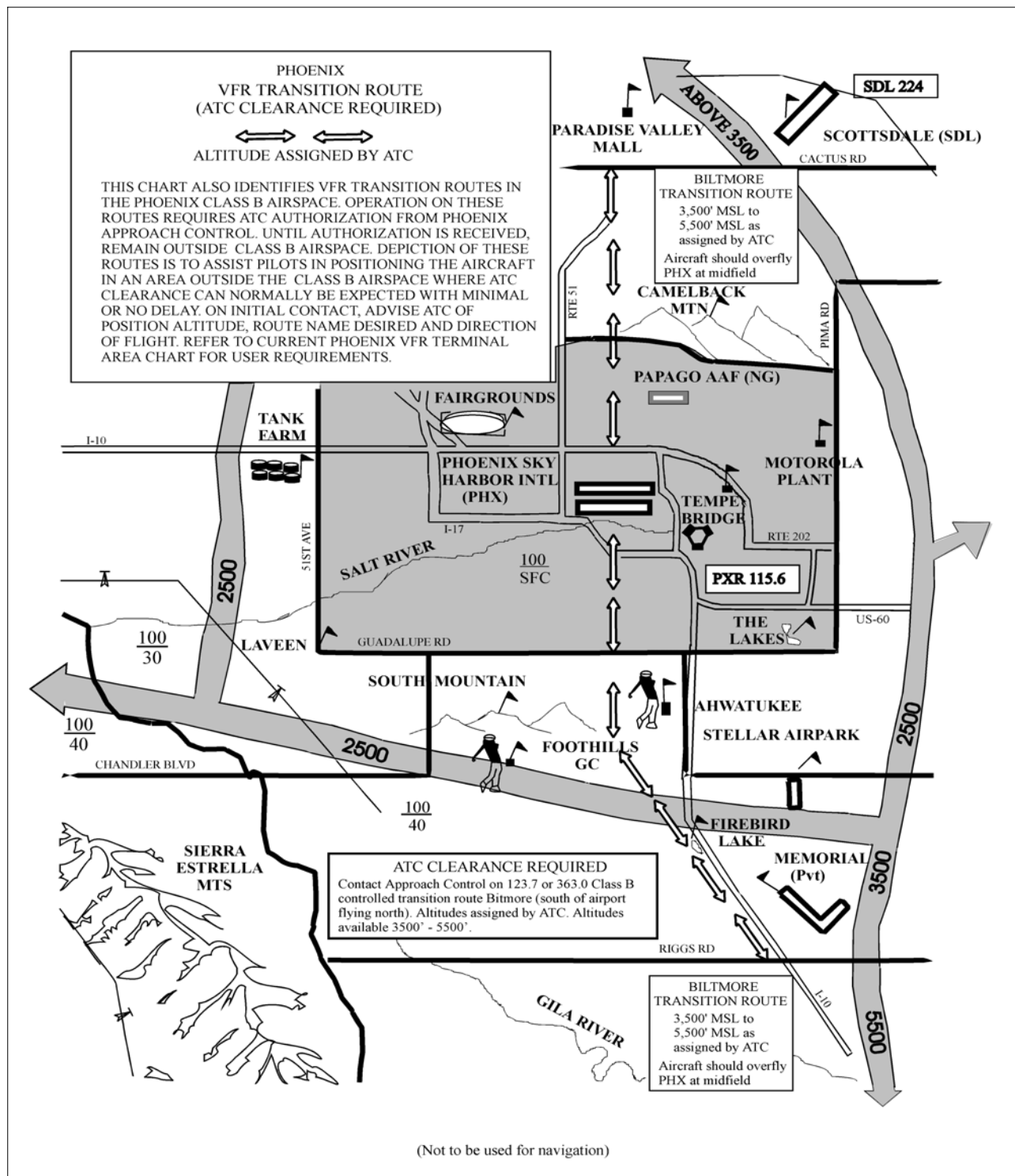
4.3.1 Background. The terminal radar service areas (TRSA) were originally established as part of the Terminal Radar Program at selected airports. TRSAs were never controlled airspace from a regulatory standpoint because the establishment of TRSAs were never subject to the rulemaking process; consequently, TRSAs are not contained in 14 CFR Part 71 nor are there any TRSA operating rules in Part 91. Part of the Airport Radar Service Area (ARSA) program was to eventually replace all TRSAs. However, the ARSA requirements became relatively stringent, and it was subsequently decided that TRSAs would have to meet ARSA criteria before they would be converted. TRSAs do not fit into any of the U.S. Airspace Classes; therefore, they will continue to be non-Part 71 airspace areas where participating pilots can receive additional radar services which have been redefined as TRSA Service.

4.3.2 TRSA Areas. The primary airport(s) within the TRSA become(s) Class D airspace. The remaining portion of the TRSA overlies other controlled airspace which is normally Class E airspace beginning at 700 or 1,200 feet and established to transition to/from the en route/terminal environment.

4.3.3 Participation. Pilots operating under VFR are encouraged to contact the radar approach control and avail themselves of the TRSA Services. However, participation is voluntary on the part of the pilot. See ENR 1.1, paragraph 39.2, for details and procedures.

4.3.4 Charts. TRSAs are depicted on VFR sectional and terminal area charts with a solid black line and altitudes for each segment. The Class D portion is charted with a blue segmented line.

FIG ENR 1.4-2
VFR Transition Route



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 having received a descent clearance 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 than 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 TURN or vectored to intercept the approach segment at any point between THIRD and FORTH because this is the RF leg. (See FIG ENR 1.5–7.)*

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 1.5–8). Newer procedures will simply depict an “at or above” altitude at the PT fix without a chart note (See FIG ENR 1.5–9). Both are there to ensure required obstacle clearance is provided in the procedure turn entry zone (See FIG ENR 1.5–10). 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 1.5-7
Example of an RNAV Approach with RF Leg

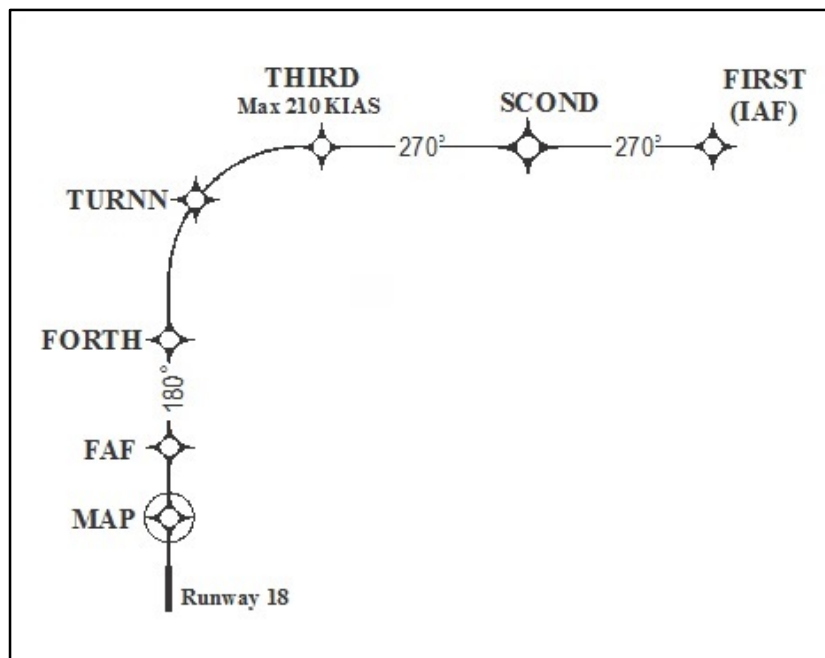


FIG ENR 1.5-8

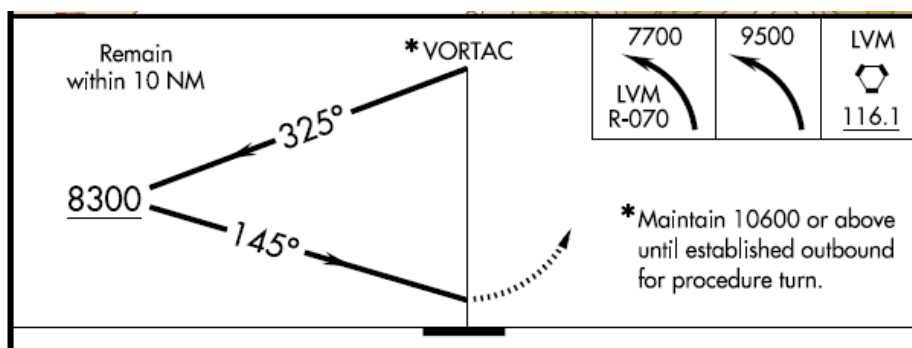
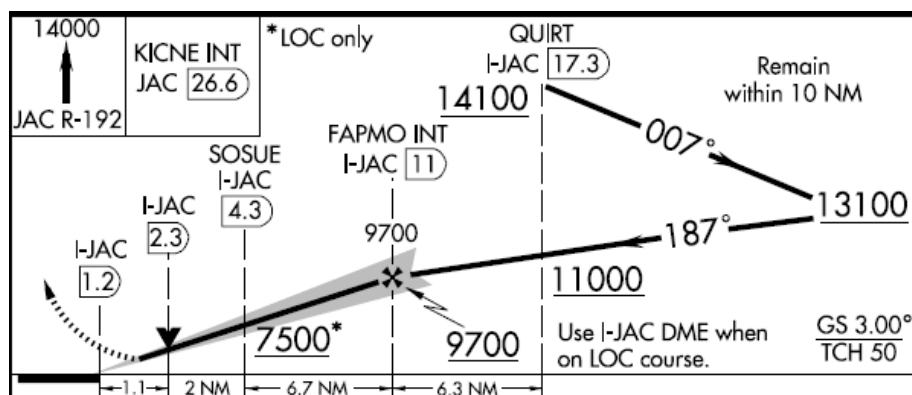


FIG ENR 1.5-9



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; e.g., (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 (e.g., 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 (e.g., 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 (e.g., 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 (e.g., “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; e.g., 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.

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 in-

structed 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 1.5–38.) 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

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 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 comply with restrictions or resume published speed.

EXAMPLE–

“Resume the Solar One departure, comply with restrictions.”

“Proceed direct CIROS, resume the Solar One departure, comply with restrictions.”

36.6.5 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:

36.6.5.1 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.

36.6.5.2 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.

36.6.5.3 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 Bizze 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 Bizze Two departure.”

NOTE–

In Example 8, the aircraft will join the Bizze 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.

36.6.6 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 to 16,000): “Cactus Seven Eleven leaving two thousand for one-six thousand, climbing via the Laura Two departure.”*

36.6.7 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.

36.6.8 Altitude restrictions published on an ODP are necessary for obstacle clearance and/or design constraints. Compliance with these restrictions is mandatory and CANNOT be lowered or cancelled 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

3.2.1 NOTAM (D) information is disseminated for all navigational facilities that are part of the National Airspace System (NAS), all public use airports, seaplane bases, and heliports listed in the Chart Supplement U.S. The complete file of all NOTAM (D) information is maintained in a computer database at the Weather Message Switching Center (WMSC), located in Atlanta, Georgia. This category of information is distributed automatically via Service A telecommunications system. Air traffic facilities, primarily FSSs, with Service A capability have access to the entire WMSC database of NOTAMs. These NOTAMs remain available via Service A for the duration of their validity or until published. Once published, the NOTAM data is deleted from the system. NOTAM (D) information includes such data as taxiway closures, personnel and equipment near or crossing runways, and airport lighting aids that do not affect instrument approach criteria, such as VASI.

All NOTAM Ds must have one of the keywords listed in TBL ENR 1.10-1 as the first part of the text after the location identifier.

3.2.2 NOTAM Ds that crossover into International NOTAMs. These NOTAMs contain the same data as NOTAM Ds, only they are referenced differently. They are categorized, stored, and issued with a series letter preceding them and are distributed via Service A to countries requesting NOTAMs for that airport. The FAA currently uses the Series A (and may use Series K) for this type of NOTAM.

3.2.3 FDC NOTAMs. On those occasions when it becomes necessary to disseminate information which is regulatory in nature, the National Flight Data Center (NFDC), in Washington, DC, will issue an FDC NOTAM. FDC NOTAMs contain such things as amendments to published IAPs and other current aeronautical charts. They are also used to advertise temporary flight restrictions caused by such things as natural disasters or large-scale public events that may generate a congestion of air traffic over a site.

NOTE-

1. *DUATS vendors will provide FDC NOTAMs only upon site-specific requests using a location identifier.*

2. *NOTAM data may not always be current due to the changeable nature of the national airspace system components, delays inherent in processing the information, and occasional temporary outages of the United States NOTAM System. While en route, pilots should contact FSSs*

and obtain updated information for their route of flight and destination.

3.2.4 Pointer NOTAMs. NOTAMs issued by a flight service station to highlight or point out another NOTAM, such as an FDC or NOTAM (D) NOTAM. This type of NOTAM will assist users in cross-referencing important information that may not be found under an airport or NAVAID identifier. Keywords in pointer NOTAMs must match the keywords in the NOTAM that is being pointed out. The keyword in pointer NOTAMs related to Temporary Flight Restrictions (TFR) must be AIRSPACE.

3.2.5 SAA NOTAMs. These NOTAMs are issued when Special Activity Airspace will be active outside the published schedule times and when required by the published schedule. Pilots and other users are still responsible to check published schedule times for Special Activity Airspace as well as any NOTAMs for that airspace.

3.2.6 Military NOTAMs. NOTAMs pertaining to U.S. Air Force, Army, Marine, and Navy navigational aids/airports that are part of the NAS.

3.3 Notices to Airmen Publication (NTAP). The NTAP is published by Mission Support Services, ATC Products and Publications, every 28 days. Data of a permanent nature can be published in the NTAP as an interim step between publication cycles of the Chart Supplement U.S. and aeronautical charts. The NTAP is divided into four parts:

3.3.1 Notices in part 1 are provided by ATC Products and Publications. This part contains selected FDC NOTAMs that are expected to be in effect on the effective date of the publication. This part is divided into three sections:

3.3.1.1 Section 1, Airway NOTAMs, reflects airway changes that fall within an ARTCC's airspace.

3.3.1.2 Section 2, Procedural NOTAMs.

3.3.1.3 Section 3, General NOTAMs, contains NOTAMs that are general in nature and not tied to a specific airport/facility (for example, flight advisories and restrictions, open duration special security instructions, and special flight rules area).

3.3.2 Part 2, provided by NFDC, contains Part 95 Revisions, Revisions to Minimum En Route IFR Altitudes and Changeover Points.

3.3.3 Part 3, International NOTAMs, is divided into two sections:

3.3.3.1 Section 1, International Flight Prohibitions, Potential Hostile Situations, and Foreign Notices.

3.3.3.2 Section 2, International Oceanic Airspace Notices.

3.3.4 Part 4, Graphic Notices, compiled by ATC Products and Publications from data provided by FAA service area offices and other lines of business, contains special notices and graphics pertaining to

almost every aspect of aviation such as: military training areas, large scale sporting events, air show information, Special Traffic Management Programs (STMP), and airport-specific information. This part is comprised of 6 sections: General, Special Military Operations, Airport and Facility Notices, Major Sporting and Entertainment Events, Airshows, and Special Notices.

**TBL ENR 1.10-1
NOTAM Keywords**

Keyword	Definition
RWY <i>Example</i>	Runway !BNA BNA RWY 36 CLSD 1309131300-1309132000EST
TWY <i>Example</i>	Taxiway !BTW BTW TWY C EDGE LGT OBSC 1310131300-1310141300EST
APRON <i>Example</i>	Apron/Ramp !BNA BNA APRON NORTH APRON EAST SIDE CLSD 13111221500-1312220700
AD <i>Example</i>	Aerodrome !BET BET AD ELK NEAR MVMT AREAS 1309251300-1309262200EST
OBST <i>Example</i>	Obstruction !SJT SJT OBST MOORED BALLOON WITHIN AREA DEFINED AS 1NM RADIUS OF SJT 2430FT (510FT AGL) FLAGGED 1309251400-1309261400EST
NAV <i>Example</i>	Navigation Aids !SHV SHV NAV ILS RWY 32 110.3 COMMISSIONED 1311251600-PERM
COM <i>Example</i>	Communications !INW INW COM REMOTE COM OUTLET 122.6 OUT OF SERVICE 1307121330-1307151930EST
SVC <i>Example</i>	Services !ROA ROA SVC TWR COMMISSIONED 1301050001-PERM
AIRSPACE .. <i>Example</i>	Airspace !MIV MIV AIRSPACE AIRSHOW ACFT WITHIN AREA DEFINED AS 5NM RADIUS OF MIV SFC-10000FT AVOIDANCE ADVISED 1308122100-1308122300
ODP <i>Example</i>	Obstacle Departure Procedure !FDC 2/9700 DIK ODP DICKINSON - THEODORE ROOSEVELT RGNL, DICKINSON, ND. TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 1... DEPARTURE PROCEDURE: RWY 25, CLIMB HEADING 250 TO 3500 BEFORE TURNING LEFT. ALL OTHER DATA REMAINS AS PUBLISHED. THIS IS TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 1A. 1305011200-PERM
SID <i>Example</i>	Standard Instrument Departure !FDC x/xxxx DFW SID DALLAS/FORT WORTH INTL, DALLAS, TX. PODDE THREE DEPARTURE... CHANGE NOTES TO READ: RWYS 17C/R, 18L/R: DO NOT EXCEED 240KT UNTIL LARRN. RWYS 35L/C, 36L/R: DONOT EXCEED 240KT UNTIL KMART 1305011200-1312111200EST
STAR <i>Example</i>	Standard Terminal Arrival !FDC x/xxxx DCA STAR RONALD REAGAN WASHINGTON NATIONAL, WASHINGTON, DC. WZRRD TWO ARRIVAL... SHAAR TRANSITION: ROUTE FROM DRUZZ INT TO WZRRD INT NOT AUTHORIZED. AFTER DRUZZ INT EXPECT RADAR VECTORS TO AML VORTAC 1305011200-1312111200ES

following systems qualify as a suitable RNAV system:

3.2.1 An RNAV system with TSO-C129/-C145/-C146 equipment, installed in accordance with AC 20-138, Airworthiness Approval of Global Positioning System (GPS) Navigation Equipment for Use as a VFR and IFR Supplemental Navigation System, or AC 20-130A, Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors, and authorized for instrument flight rules (IFR) en route and terminal operations (including those systems previously qualified for “GPS in lieu of ADF or DME” operations), or

3.2.2 An RNAV system with DME/DME/IRU inputs that is compliant with the equipment provisions of AC 90-100A, U.S. Terminal and En Route Area Navigation (RNAV) Operations, for RNAV routes. A table of compliant equipment is available at the following website:

http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs400/afs470/policy_guidance/

NOTE-

Approved RNAV systems using DME/DME/IRU, without GPS/WAAS position input, may only be used as a substitute means of navigation when specifically authorized by a Notice to Airmen (NOTAM) or other FAA guidance for a specific procedure. The NOTAM or other FAA guidance authorizing the use of DME/DME/IRU systems will also identify any required DME facilities based on an FAA assessment of the DME navigation infrastructure.

3.3 Uses of Suitable RNAV Systems. Subject to the operating requirements, operators may use a suitable RNAV system in the following ways.

3.3.1 Determine aircraft position relative to, or distance from a VOR (see NOTE 6 below), TACAN, NDB, compass locator, DME fix; or a named fix defined by a VOR radial, TACAN course, NDB bearing, or compass locator bearing intersecting a VOR or localizer course.

3.3.2 Navigate to or from a VOR, TACAN, NDB, or compass locator.

3.3.3 Hold over a VOR, TACAN, NDB, compass locator, or DME fix.

3.3.4 Fly an arc based upon DME.

NOTE-

1. *The allowances described in this section apply even*

when a facility is identified as required on a procedure (for example, “Note ADF required”).

2. *These operations do not include lateral navigation on localizer-based courses (including localizer back-course guidance) without reference to raw localizer data.*

3. *Unless otherwise specified, a suitable RNAV system cannot be used for navigation on procedures that are identified as not authorized (“NA”) without exception by a NOTAM. For example, an operator may not use a RNAV system to navigate on a procedure affected by an expired or unsatisfactory flight inspection, or a procedure that is based upon a recently decommissioned NAVAID.*

4. *Pilots may not substitute for the NAVAID (for example, a VOR or NDB) providing lateral guidance for the final approach segment. This restriction does not refer to instrument approach procedures with “or GPS” in the title when using GPS or WAAS. These allowances do not apply to procedures that are identified as not authorized (NA) without exception by a NOTAM, as other conditions may still exist and result in a procedure not being available. For example, these allowances do not apply to a procedure associated with an expired or unsatisfactory flight inspection, or is based upon a recently decommissioned NAVAID.*

5. *Use of a suitable RNAV system as a means to navigate on the final approach segment of an instrument approach procedure based on a VOR, TACAN or NDB signal, is allowable. The underlying NAVAID must be operational and the NAVAID monitored for final segment course alignment.*

6. *For the purpose of paragraph 3.3.1, “VOR” includes VOR, VOR/DME, and VORTAC facilities and “compass locator” includes locator outer marker and locator middle marker.*

3.4 Alternate Airport Considerations. For the purposes of flight planning, 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 that is based upon the use of GPS. For example, these restrictions would apply when planning to use GPS equipment as a substitute means of navigation for an out-of-service VOR that supports an ILS missed approach procedure at an alternate airport. In this case, some other approach not reliant upon the use of GPS must be available. This restriction does not apply to RNAV systems using TSO-C145/-C146 WAAS equipment. For further WAAS guidance see ENR 4.1 paragraph 17.

3.4.1 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 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 applicable alternate airport weather minimums using:

3.4.1.1 Lateral navigation (LNAV) or circling minimum descent altitude (MDA);

3.4.1.2 LNAV/vertical navigation (LNAV/VNAV) DA, if equipped with and using approved barometric vertical navigation (baro-VNAV) equipment;

3.4.1.3 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.

3.4.2 If the above conditions cannot be met, any required alternate airport 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.

3.4.3 This restriction does not apply to TSO-C145() and TSO-C146() equipped users (WAAS users). For further WAAS guidance see ENR 4.1 paragraph 17.

3.5 General Operational Requirements

3.5.1 Pilots must comply with the guidelines contained in their AFM, AFM supplement, operating manual, or pilot's guide when operating their aircraft navigation system.

3.5.2 Pilots may not use their RNAV system as a substitute or alternate means of navigation guidance if their aircraft has an AFM or AFM supplement with a limitation to monitor the underlying navigation aids for the associated operation.

3.5.3 Pilots of aircraft with an AFM limitation that requires the aircraft to have other equipment appropriate to the route to be flown may only use their RNAV equipment as a substitute means of navigation in the contiguous U.S. In addition, pilots of these

aircraft may not use their RNAV equipment as a substitute for inoperable or not-installed equipment.

3.5.4 Pilots must ensure their onboard navigation data is current, appropriate for the region of intended operation, and includes the navigation aids, waypoints, and relevant coded terminal airspace procedures for the departure, arrival, and alternate airfields.

NOTE—

The navigation database should be current for the duration of the flight. If the AIRAC cycle will change during flight, operators and pilots should establish procedures to ensure the accuracy of navigation data, including suitability of navigation facilities used to define the routes and procedures for flight. To facilitate validating database currency, the FAA has developed procedures for publishing the amendment date that instrument approach procedures were last revised. The amendment date follows the amendment number; for example, Amdt 4 14Jan10. Currency of graphic departure procedures and STARs may be ascertained by the numerical designation in the procedure title. If an amended chart is published for the procedure, or the procedure amendment date shown on the chart is on or after the expiration date of the database, the operator must not use the database to conduct the operation.

3.5.5 Pilots must extract procedures, waypoints, nav aids, or fixes by name from the onboard navigation database and comply with the charted procedure or route.

3.5.6 For the purposes described in this paragraph, pilots may not manually enter published procedure or route waypoints via latitude/longitude, place/bearing, or place/bearing/distance into the aircraft system.

3.6 Operational Requirements for Departure and Arrival Procedures

3.6.1 Pilots of aircraft with standalone GPS receivers must ensure that CDI scaling (full-scale deflection) is either ± 1.0 NM or 0.3 NM.

3.6.2 In order to use a substitute means of navigation guidance on departure procedures, pilots of aircraft with RNAV systems using DME/DME/IRU, without GPS input, must ensure their 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. A navigation map may also be used to confirm aircraft position, if pilot

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.

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.

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 $\frac{1}{2}$ 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

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). Equipment 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).

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 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.

22.2 Reporters should identify the NAVAID (for example, VOR) malfunction or GNSS problem, location of the aircraft (i.e., latitude, longitude or bearing/distance from a 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 (i.e., make/model/software revision). For GNSS problems, if possible, please note the number of satellites being tracked at the time of the anomaly. Reports can be made in any of the following ways:

22.2.1 Immediately, by radio communication to the controlling Air Route Traffic Control Center (ARTCC), Control Tower, or FSS.

22.2.2 By telephone to the nearest FAA facility.

22.2.3 For GNSS problems, by internet via the GPS Anomaly Reporting Form at http://www.faa.gov/air_traffic/nas/gps_reports/.

22.3 In aircraft that have more than one receiver, there are many combinations of possible interference between units. This can cause either erroneous navigation indications or, complete or partial blanking out of the communications. Pilots should be familiar enough with the radio installation of particular airplanes they fly to recognize this type of interference.

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.

and State aeronautical agencies). Appropriate authorities for a temporary flight restrictions establishment under 14 CFR Section 91.137(a)(3) are any of those listed above or by State, county, or city government entities.

2.2.5 The type of restrictions issued will be kept to a minimum by the FAA consistent with achievement of the necessary objective. Situations which warrant the extreme restrictions of 14 CFR Section 91.137(a)(1) include, but are not limited to: toxic gas leaks or spills, flammable agents, or fumes which if fanned by rotor or propeller wash could endanger persons or property on the surface, or if entered by an aircraft could endanger persons or property in the air; imminent volcano eruptions which could endanger airborne aircraft and occupants; nuclear accident or incident; and hijackings. Situations which warrant the restrictions associated with 14 CFR Section 91.137(a)(2) include: forest fires which are being fought by releasing fire retardants from aircraft; and aircraft relief activities following a disaster (earthquake, tidal wave, flood, etc.). 14 CFR Section 91.137 (a)(3) restrictions are established for events and incidents that would attract an unsafe congestion of sightseeing aircraft.

2.2.6 The amount of airspace needed to protect persons and property or provide a safe environment for rescue/relief aircraft operations is normally limited to within 2,000 feet above the surface and within a 3-nautical-mile radius. Incidents occurring within Class B, Class C, or Class D airspace will normally be handled through existing procedures and should not require the issuance of a temporary flight restrictions NOTAM. Temporary flight restrictions affecting airspace outside of the U.S. and its territories and possessions are issued with verbiage excluding that airspace outside of the 12-mile coastal limits.

2.2.7 The FSS nearest the incident site is normally the “coordination facility.” When FAA communications assistance is required, the designated FSS will function as the primary communications facility for coordination between emergency control authorities and affected aircraft. The ARTCC may act as liaison for the emergency control authorities if adequate communications cannot be established between the designated FSS and the relief organization. For example, the coordination facility may relay authorizations from the on-scene emergency re-

sponse official in cases where news media aircraft operations are approved at the altitudes used by relief aircraft.

2.2.8 ATC may authorize operations in a temporary flight restrictions area under its own authority only when flight restrictions are established under 14 CFR Section 91.137(a)(2) and (a)(3). The appropriate ARTCC/airport traffic control tower manager will, however, ensure that such authorized flights do not hamper activities or interfere with the event for which restrictions were implemented. However, ATC will not authorize local IFR flights into the temporary flight restrictions area.

2.2.9 To preclude misunderstanding, the implementing NOTAM will contain specific and formatted information. The facility establishing a temporary flight restrictions area will format a NOTAM beginning with the phrase “FLIGHT RESTRICTIONS” followed by: the location of the temporary flight restrictions area; the effective period; the area defined in statute miles; the altitudes affected; the FAA coordination facility and commercial telephone number; the reason for the temporary flight restrictions; the agency directing any relief activities and its commercial telephone number; and other information considered appropriate by the issuing authority.

EXAMPLE—

1. 14 CFR Section 91.137(a)(1):

The following NOTAM prohibits all aircraft operations except those specified in the NOTAM.

FLIGHT RESTRICTIONS MATTHEWS, VIRGINIA, EFFECTIVE IMMEDIATELY UNTIL 9610211200. PURSUANT TO 14 CFR SECTION 91.137(A)(1) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT. RESCUE OPERATIONS IN PROGRESS. ONLY RELIEF AIRCRAFT OPERATIONS UNDER THE DIRECTION OF THE DEPARTMENT OF DEFENSE ARE AUTHORIZED IN THE AIRSPACE AT AND BELOW 5,000 FEET MSL WITHIN A 2-NAUTICAL-MILE RADIUS OF LASER AFB, MATTHEWS, VIRGINIA. COMMANDER, LASER AFB, IN CHARGE (897) 946-5543 (122.4). STEENSON FSS (792) 555-6141 (123.1) IS THE FAA COORDINATION FACILITY .

2. 14 CFR Section 91.137(a)(2):

The following NOTAM permits flight operations in accordance with 14 CFR Section 91.137(a)(2). The on-site emergency response official to authorize media aircraft operations below the altitudes used by the relief aircraft.

FLIGHT RESTRICTIONS 25 MILES EAST OF BRAN-SOME, IDAHO, EFFECTIVE IMMEDIATELY UNTIL 9601202359 UTC. PURSUANT TO 14 CFR SECTION 91.137(A)(2) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 4-NAUTICAL-MILE RADIUS OF THE INTERSECTION OF COUNTY ROADS 564 AND 315 AT AND BELOW 3,500 FEET MSL TO PROVIDE A SAFE ENVIRONMENT FOR FIRE FIGHTING AIRCRAFT OPERATIONS. DAVIS COUNTY SHERIFF'S DEPARTMENT (792) 555-8122 (122.9) IS IN CHARGE OF ON-SCENE EMERGENCY RESPONSE ACTIVITIES. GLIVINGS FSS (792) 555-1618 (122.2) IS THE FAA COORDINATION FACILITY.

3. 14 CFR Section 91.137(a)(3):

The following NOTAM prohibits sightseeing aircraft operations.

FLIGHT RESTRICTIONS BROWN, TENNESSEE, DUE TO OLYMPIC ACTIVITY. EFFECTIVE 9606181100 UTC UNTIL 9607190200 UTC. PURSUANT TO 14 CFR SECTION 91.137(A)(3) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 3-NAUTICAL-MILE RADIUS OF N355783/W835242 AND VOLUNTEER VORTAC 019 DEGREE RADIAL 3.7 DME FIX AT AND BELOW 2,500 FEET MSL. NORTON FSS (423) 555-6742 (126.6) IS THE FAA COORDINATION FACILITY.

4. 14 CFR Section 91.138:

The following NOTAM prohibits all aircraft except those operating under the authorization of the official in charge of associated emergency or disaster relief response activities, aircraft carrying law enforcement officials, aircraft carrying personnel involved in an emergency or legitimate scientific purposes, carrying properly accredited news media, and aircraft operating in accordance with an ATC clearance or instruction.

FLIGHT RESTRICTIONS KAPALUA, HAWAII, EFFECTIVE 9605101200 UTC UNTIL 9605151500 UTC. PURSUANT TO 14 CFR SECTION 91.138 TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 3-NAUTICAL-MILE RADIUS OF N205778/W1564038 AND MAUI /OGG/ VORTAC 275 DEGREE RADIAL AT 14.1 NAUTICAL MILES. JOHN DOE 808-757-4469 OR 122.4 IS IN CHARGE OF THE OPERATION. HONOLULU /HNL/ 808-757-4470 (123.6) FSS IS THE FAA COORDINATION FACILITY.

5. 14 CFR Section 91.141:

The following NOTAM prohibits all aircraft.

FLIGHT RESTRICTIONS STILLWATER, OKLAHOMA, JUNE 21, 1996. PURSUANT TO 14 CFR SECTION 91.141 AIRCRAFT FLIGHT OPERATIONS ARE PROHIBITED WITHIN A 3-NAUTICAL-MILE RADIUS, BELOW 2000 FEET AGL OF N360962/ W970515 AND THE STILLWATER /SWO/ VOR/DME 176 DEGREE RADIAL 3.8-NAUTICAL-MILE FIX FROM 1400 LOCAL TIME TO 1700 LOCAL TIME JUNE 21, 1996 UNLESS OTHERWISE AUTHORIZED BY ATC.

6. 14 CFR Section 91.143:

The following NOTAM prohibits any aircraft of U.S. registry, or pilot of any aircraft under the authority of an airman certificate issued by the FAA.

KENNEDY SPACE CENTER SPACE OPERATIONS AREA EFFECTIVE IMMEDIATELY UNTIL 9610152100 UTC. PURSUANT TO SECTION 91.143, FLIGHT OPERATIONS CONDUCTED BY FAA CERTIFICATED PILOTS OR CONDUCTED IN AIRCRAFT OF U.S. REGISTRY ARE PROHIBITED AT ANY ALTITUDE FROM SURFACE TO UNLIMITED, WITHIN THE FOLLOWING AREA 30-NAUTICAL-MILE RADIUS OF THE MELBOURNE /MLB/ VORTAC 010 DEGREE RADIAL 21-NAUTICAL-MILE FIX. ST. PETERSBURG, FLORIDA, /PIE/ FSS 813-545-1645 (122.2) IS THE FAA COORDINATION FACILITY AND SHOULD BE CONTACTED FOR THE CURRENT STATUS OF ANY AIRSPACE ASSOCIATED WITH THE SPACE SHUTTLE OPERATIONS. THIS AIRSPACE ENCOMPASSES R2933, R2932, R2931, R2934, R2935, W497A AND W158A. ADDITIONAL WARNING AND RESTRICTED AREAS WILL BE ACTIVE IN CONJUNCTION WITH THE OPERATIONS. PILOTS MUST CONSULT ALL NOTAMS REGARDING THIS OPERATION.

2.3 Parachute Jump Aircraft Operations

2.3.1 Procedures relating to parachute jump areas are contained in 14 CFR Part 105. Tabulations of parachute jump areas in the U.S. are contained in the Chart Supplement U.S.

ENR 5.6 Bird Migration and Areas With Sensitive Fauna

1. Migratory Bird Activity

1.1 Bird strike risk increases because of bird migration during the months of March through April and August through November.

1.2 The altitudes of migrating birds vary with winds aloft, weather fronts, terrain elevations, cloud conditions, and other environmental variables. While over 90 percent of the reported bird strikes occur at or below 3,000 feet AGL, strikes at higher altitudes are common during migration. Ducks and geese are frequently observed up to 7,000 feet AGL and pilots are cautioned to minimize en route flying at lower altitudes during migration.

1.3 Considered the greatest potential hazard to aircraft because of their size, abundance, or habit of flying in dense flocks are gulls, waterfowl, vultures, hawks, owls, egrets, blackbirds, and starlings. Four major migratory flyways exist in the U.S. The Atlantic Flyway parallels the Atlantic coast, the Mississippi Flyway stretches from Canada through the Great Lakes and follows the Mississippi River. The Central Flyway represents a broad area east of the Rockies, stretching from Canada through Central America. The Pacific Flyway follows the west coast and overflies major parts of Washington, Oregon, and California. There are also numerous smaller flyways which cross these major north-south migratory routes.

2. Reducing Bird Strike Risks

2.1 The most serious strikes are those involving ingestion into an engine (turboprop and turbine jet engines) or windshield strikes. These strikes can result in emergency situations requiring prompt action by the pilot.

2.2 Engine ingestions may result in sudden loss of power or engine failure. Review engine out procedures, especially when operating from airports with known bird hazards or when operating near high bird concentrations.

2.3 Windshield strikes have resulted in pilots experiencing confusion, disorientation, loss of communications, and aircraft control problems. Pilots are encouraged to review their emergency procedures before flying in these areas.

2.4 When encountering birds en route, climb to avoid collision because birds in flocks generally distribute themselves downward, with lead birds being at the highest altitude.

2.5 Avoid overflight of known areas of bird concentration and flying low altitudes during bird migration. Charted wildlife refuges and other natural areas contain unusually high local concentration of birds which may create a hazard to aircraft.

3. Reporting Bird Strikes

3.1 Pilots are urged to report any bird or other wildlife strike using FAA Form 5200-7, Bird/Other Wildlife Strike Report (FIG ENR 5.6-1). Forms are available at any FSS or any FAA Regional Office. Wildlife strikes can also be reported electronically at: <http://wildlife-mitigation.tc.faa.gov>. The data derived from these reports are used to develop standards to cope with this potential hazard to aircraft and for documentation of necessary habitat control on airports.

4. Reporting Bird and Other Wildlife Activities

4.1 If you observe birds or other animals on or near the runway, request airport management to disperse the wildlife before taking off. Also contact the nearest FAA ARTCC, FSS, or tower (including non-Federal towers) regarding large flocks of birds and report the:

4.1.1 Geographic location.

4.1.2 Bird type (geese, ducks, gulls, etc.).

4.1.3 Approximate numbers.

4.1.4 Altitude.

4.1.5 Direction of bird flight path.

5. Pilot Advisories on Bird and Other Wildlife Hazards

5.1 Many airports advise pilots of other wildlife hazards caused by large animals on the runway through the Chart Supplement U.S. and the NOTAM system. Collisions between landing and departing aircraft with animals on the runway are increasing and are not limited to rural airports. These accidents have also occurred at several major airports. Pilots should exercise extreme caution when warned of the presence of wildlife on and in the vicinity of airports. If in close proximity to movement areas you observe deer or other large animals, advise the FSS, tower, or airport management.

6. Flights Over Charted U.S. Wildlife Refuges, Parks, and Forest Service Areas

6.1 The landing of aircraft is prohibited on lands or waters administered by the National Park Service, U.S. Fish and Wildlife Service, or U.S. Forest Service without authorization from the respective agency. Exceptions include (1) when forced to land due to an emergency beyond the control of the operator, (2) at officially designated landing sites, or (3) an approved official business of the Federal Government.

6.2 All pilots are requested to maintain a minimum altitude of 2,000 feet above the terrain of the following: National Parks, Monuments, Seashores, Lakeshores, Recreation Areas and Scenic Riverways

administered by the National Park Service, National Wildlife Refuges, Big Game Refuges, Game Ranges, and Wildlife Ranges administered by the U.S. Fish and Wildlife Service, and Wilderness and Primitive Areas administered by the U.S. Forest Service.

NOTE-

FAA Advisory Circular 91-36, Visual Flight Rules (VFR) Flight Near Noise-sensitive Areas, defines the surface of a national park area (including parks, forests, primitive areas, wilderness areas, recreational areas, national seashores, national monuments, national lakeshores, and national wildlife refuge and range areas) as: "The highest terrain within 2,000 feet laterally of the route of flight, or the upper-most rim of a canyon or valley."

6.3 Federal statutes prohibit certain types of flight activity and/or provide altitude restrictions over designated U.S. Wildlife Refuges, Parks, and Forest Service Areas. These designated areas are charted on Sectional Charts, for example: Boundary Waters Canoe Wilderness Areas, Minnesota; Haleakala National Park, Hawaii; Yosemite National Park, California; and Grand Canyon National Park, Arizona,

6.4 Federal regulations also prohibit airdrops by parachute or other means of persons, cargo, or objects from aircraft on lands administered by the three agencies without authorization from the respective agency. Exceptions include: (1) emergencies involving the safety of human life or (2) threat of serious property loss.

13.8 When laser activities become known to the FAA, Notices to Airmen (NOTAM) are issued to inform the aviation community of the events. Pilots should consult NOTAMs or the Special Notices Section of the Chart Supplement U.S. for information regarding laser activities.

14. Flying in Flat Light and White Out Conditions

14.1 Flat Light. Flat light is an optical illusion, also known as “sector or partial white out.” It is not as severe as “white out” but the condition causes pilots to lose their depth-of-field and contrast in vision. Flat light conditions are usually accompanied by overcast skies inhibiting any visual clues. Such conditions can occur anywhere in the world, primarily in snow covered areas but can occur in dust, sand, mud flats, or on glassy water. Flat light can completely obscure features of the terrain, creating an inability to distinguish distances and closure rates. As a result of this reflected light, it can give pilots the illusion that they are ascending or descending when they may actually be flying level. However, with good judgment and proper training and planning, it is possible to safely operate an aircraft in flat light conditions.

14.2 White Out. As defined in meteorological terms, white out occurs when a person becomes engulfed in a uniformly white glow. The glow is a result of being surrounded by blowing snow, dust, sand, mud or water. There are no shadows, no horizon or clouds and all depth-of-field and orientation are lost. A white out situation is severe in that there are no visual references. Flying is not recommended in any white out situation. Flat light conditions can lead to a white out environment quite rapidly, and both atmospheric conditions are insidious; they sneak up on you as your visual references slowly begin to disappear. White out has been the cause of several aviation accidents.

14.3 Self Induced White Out. This effect typically occurs when a helicopter takes off or lands on a snow-covered area. The rotor down wash picks up particles and re-circulates them through the rotor down wash. The effect can vary in intensity depending upon the amount of light on the surface. This can happen on the sunniest, brightest day with good contrast everywhere. However, when it

happens, there can be a complete loss of visual clues. If the pilot has not prepared for this immediate loss of visibility, the results can be disastrous. Good planning does not prevent one from encountering flat light or white out conditions.

14.4 Never take off in a white out situation.

14.4.1 Realize that in flat light conditions it may be possible to depart but not to return to that site. During takeoff, make sure you have a reference point. Do not lose sight of it until you have a departure reference point in view. Be prepared to return to the takeoff reference if the departure reference does not come into view.

14.4.2 Flat light is common to snow skiers. One way to compensate for the lack of visual contrast and depth-of-field loss is by wearing amber tinted lenses (also known as blue blockers). Special note of caution: Eyewear is not ideal for every pilot. Take into consideration personal factors – age, light sensitivity, and ambient lighting conditions.

14.4.3 So what should a pilot do when all visual references are lost?

14.4.3.1 Trust the cockpit instruments.

14.4.3.2 Execute a 180 degree turnaround and start looking for outside references.

14.4.3.3 Above all – fly the aircraft.

14.4.4 Landing in Low Light Conditions. When landing in a low light condition – use extreme caution. Look for intermediate reference points, in addition to checkpoints along each leg of the route for course confirmation and timing. The lower the ambient light becomes, the more reference points a pilot should use.

14.4.5 Airport Landings.

14.4.5.1 Look for features around the airport or approach path that can be used in determining depth perception. Buildings, towers, vehicles or other aircraft serve well for this measurement. Use something that will provide you with a sense of height above the ground, in addition to orienting you to the runway.

14.4.5.2 Be cautious of snowdrifts and snow banks – anything that can distinguish the edge of the runway. Look for subtle changes in snow texture or shading to identify ridges or changes in snow depth.

14.4.6 Off-Airport Landings.

14.4.6.1 In the event of an off-airport landing, pilots have used a number of different visual cues to gain reference. Use whatever you must to create the contrast you need. Natural references seem to work best (trees, rocks, snow ribs, etc.)

- a) Over flight.
- b) Use of markers.
- c) Weighted flags.
- d) Smoke bombs.
- e) Any colored rags.
- f) Dye markers.
- g) Kool-aid.
- h) Trees or tree branches.

14.4.6.2 It is difficult to determine the depth of snow in areas that are level. Dropping items from the aircraft to use as reference points should be used as a visual aid only and not as a primary landing reference. Unless your marker is biodegradable, be sure to retrieve it after landing. Never put yourself in a position where no visual references exist.

14.4.6.3 Abort landing if blowing snow obscures your reference. Make your decisions early. Don't assume you can pick up a lost reference point when you get closer.

14.4.6.4 Exercise extreme caution when flying from sunlight into shade. Physical awareness may tell you that you are flying straight but you may actually be in a spiral dive with centrifugal force pressing against you. Having no visual references enhances this illusion. Just because you have a good visual reference does not mean that it's safe to continue. There may be snow-covered terrain not visible in the direction that you are traveling. Getting caught in a no visual reference situation can be fatal.

14.4.7 Flying Around a Lake.

14.4.7.1 When flying along lakeshores, use them as a reference point. Even if you can see the other side, realize that your depth perception may be poor. It is easy to fly into the surface. If you must cross the lake, check the altimeter frequently and maintain a safe altitude while you still have a good reference. Don't descend below that altitude.

14.4.7.2 The same rules apply to seemingly flat areas of snow. If you don't have good references, avoid going there.

14.4.8 Other Traffic. Be on the look out for other traffic in the area. Other aircraft may be using your same reference point. Chances are greater of colliding with someone traveling in the same direction as you, than someone flying in the opposite direction.

14.4.9 Ceilings. Low ceilings have caught many pilots off guard. Clouds do not always form parallel to the surface, or at the same altitude. Pilots may try to compensate for this by flying with a slight bank and thus creating a descending turn.

14.4.10 Glaciers. Be conscious of your altitude when flying over glaciers. The glaciers may be rising faster than you are climbing.

15. Operations in Ground Icing Conditions

15.1 The presence of aircraft airframe icing during takeoff, typically caused by improper or no deicing of the aircraft being accomplished prior to flight has contributed to many recent accidents in turbine aircraft. The General Aviation Joint Steering Committee (GAJSC) is the primary vehicle for government-industry cooperation, communication, and coordination on GA accident mitigation. The Turbine Aircraft Operations Subgroup (TAOS) works to mitigate accidents in turbine accident aviation. While there is sufficient information and guidance currently available regarding the effects of icing on aircraft and methods for deicing, the TAOS has developed a list of recommended actions to further assist pilots and operators in this area.

15.1.1 While the efforts of the TAOS specifically focus on turbine aircraft, it is recognized that their recommendations are applicable to and can be adapted for the pilot of a small, piston powered aircraft too.

15.2 The following recommendations are offered:

15.2.1 Ensure that your aircraft's lift-generating surfaces are COMPLETELY free of contamination before flight through a tactile (hands on) check of the critical surfaces when feasible. Even when otherwise permitted, operators should avoid smooth or polished frost on lift-generating surfaces as an acceptable preflight condition.

15.2.2 Review and refresh your cold weather standard operating procedures.

15.2.3 Review and be familiar with the Airplane Flight Manual (AFM) limitations and procedures necessary to deal with icing conditions prior to flight, as well as in flight.

15.2.4 Protect your aircraft while on the ground, if possible, from sleet and freezing rain by taking advantage of aircraft hangars.

15.2.5 Take full advantage of the opportunities available at airports for deicing. Do not refuse deicing services simply because of cost.

15.2.6 Always consider canceling or delaying a flight if weather conditions do not support a safe operation.

15.3 If you haven't already developed a set of Standard Operating Procedures for cold weather operations, they should include:

15.3.1 Procedures based on information that is applicable to the aircraft operated, such as AFM limitations and procedures;

15.3.2 Concise and easy to understand guidance that outlines best operational practices;

15.3.3 A systematic procedure for recognizing, evaluating and addressing the associated icing risk, and offer clear guidance to mitigate this risk;

15.3.4 An aid (such as a checklist or reference cards) that is readily available during normal day-to-day aircraft operations.

15.4 There are several sources for guidance relating to airframe icing, including:

<http://aircrafticing.grc.nasa.gov/index.html>

<http://www.ibac.org/is-bao/isbao.htm>

http://www.natasafety1st.org/bus_deice.htm

15.4.1 Advisory Circular (AC) 91–74, Pilot Guide, Flight in Icing Conditions.

15.4.2 AC 135–17, Pilot Guide Small Aircraft Ground Deicing.

15.4.3 AC 135–9, FAR Part 135 Icing Limitations.

15.4.4 AC 120–60, Ground Deicing and Anti-icing Program.

15.4.5 AC 135–16, Ground Deicing and Anti-icing Training and Checking.

15.5 The FAA Approved Deicing Program Updates is published annually as a Flight Standards Information Bulletin for Air Transportation and contains detailed information on deicing and anti-icing procedures and holdover times. It may be accessed at the following web site by selecting the current year's information bulletins:

http://www.faa.gov/library/manuals/examiners_inspectors/8400/fsat

16. Avoid Flight in the Vicinity of Exhaust Plumes (Smoke Stacks and Cooling Towers)

16.1 Flight Hazards Exist Around Exhaust Plumes. Exhaust plumes are defined as visible or invisible emissions from power plants, industrial production facilities, or other industrial systems that release large amounts of vertically directed unstable gases (effluent). High temperature exhaust plumes can cause significant air disturbances such as turbulence and vertical shear. Other identified potential hazards include, but are not necessarily limited to: reduced visibility, oxygen depletion, engine particulate contamination, exposure to gaseous oxides, and/or icing. Results of encountering a plume may include airframe damage, aircraft upset, and/or engine damage/failure. These hazards are most critical during low altitude flight in calm and cold air, especially in and around approach and departure corridors or airport traffic areas.

Whether plumes are visible or invisible, the total extent of their turbulent affect is difficult to predict. Some studies do predict that the significant turbulent effects of an exhaust plume can extend to heights of over 1,000 feet above the height of the top of the stack or cooling tower. Any effects will be more pronounced in calm stable air where the plume is very hot and the surrounding area is still and cold. Fortunately, studies also predict that any amount of crosswind will help to dissipate the effects. However, the size of the tower or stack is not a good indicator of the predicted effect the plume may produce. The major effects are related to the heat or size of the plume effluent, the ambient air temperature, and the wind speed affecting the plume. Smaller aircraft can

expect to feel an effect at a higher altitude than heavier aircraft.

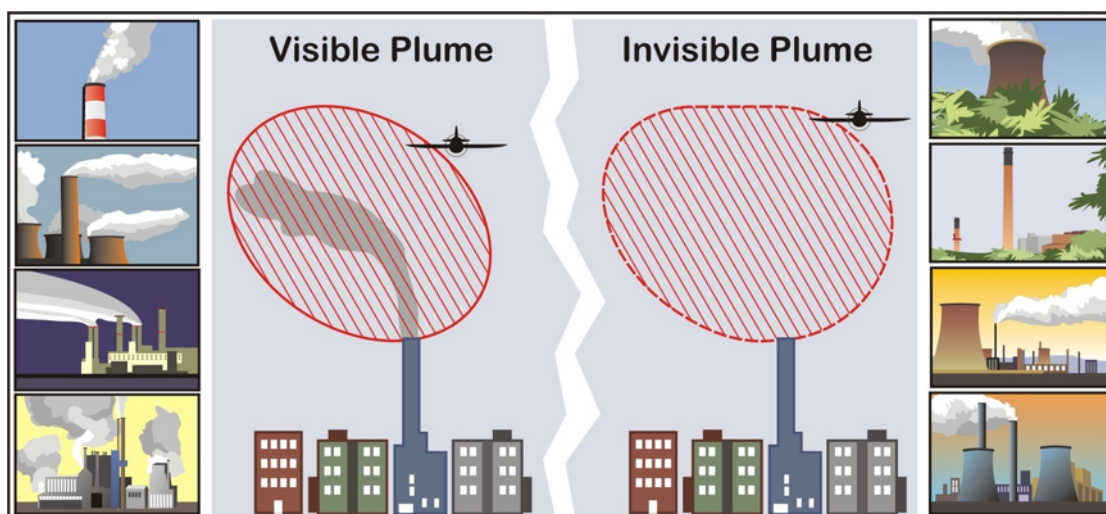
16.2 When able, a pilot should steer clear of exhaust plumes by flying on the upwind side of smokestacks or cooling towers. When a plume is visible via smoke or a condensation cloud, remain clear and realize a plume may have both visible and invisible characteristics. Exhaust stacks without visible plumes may still be in full operation, and airspace in the vicinity should be treated with caution. As with mountain wave turbulence or clear air turbulence, an invisible plume may be encountered unexpectedly. Cooling towers, power plant stacks, exhaust fans, and other similar structures are depicted in FIG ENR 5.7-2.

Pilots are encouraged to exercise caution when flying

in the vicinity of exhaust plumes. Pilots are also encouraged to reference the Chart Supplement U.S. where amplifying notes may caution pilots and identify the location of structure(s) emitting exhaust plumes.

The best available information on this phenomenon must come from pilots via the PIREP reporting procedures. All pilots encountering hazardous plume conditions are urgently requested to report time, location, and intensity (light, moderate, severe, or extreme) of the element to the FAA facility with which they are maintaining radio contact. If time and conditions permit, elements should be reported according to the standards for other PIREPs and position reports see GEN 3.5-22. PIREPS Relating to Turbulence).

FIG ENR 5.7-2
Plumes



ENR 7. Oceanic Operations

ENR 7.1 General Procedures

1. IFR/VFR Operations

1.1 Flights in oceanic airspace must be conducted under Instrument Flight Rule (IFR) procedures when operating:

1.1.1 Between sunset and sunrise.

1.1.2 At or above Flight Level (FL) 055 when operating within the New York, Oakland, and Anchorage Oceanic Flight Information Regions (FIRs).

1.1.3 Above FL180 when operating within the Miami and Houston FIRs and in the San Juan Control Area. Flights between the east coast of the U.S., and Bermuda or Caribbean terminals, and traversing the New York FIR at or above 5,500 feet MSL should be especially aware of this requirement.

1.1.4 At or above FL230 when operating within the Anchorage Arctic FIR.

1.2 San Juan CTA/FIR VFR Traffic.

1.2.1 All VFR aircraft entering and departing the San Juan FIR/CTA will provide San Juan Radio with an ICAO flight plan. All aircraft must establish two-way communications with San Juan Radio on 126.7, 122.2, 123.65, or 255.4.

1.2.2 Communication can also be established by transmitting on 122.1 and receive using the appropriate VOR frequency for Borinquen (BQN), Mayaguez (MAZ), Ponce (PSE), and St. Croix (COY). For St. Thomas (STT), transmit on 123.6 and receive on the VOR frequency. If unable to contact San Juan Radio, the pilot is responsible for notifying adjacent ATS units and request that a position report be relayed to San Juan Radio for search and rescue purposes and flight following.

NOTE–

This is in accordance with ICAO Doc 4444, Part II, paragraphs 14.1.1, 14.1.4; Part VI, paragraphs 1.2.1, 2.2.2; Annex 11, chapter 6, paragraphs 6.1.2.1, 5.1.1, 5.2.1, 5.2.2, 5.2.2.3, 5.3.2.4, 5.4.1.

1.3 Non-RVSM aircraft are not permitted in RVSM airspace unless they meet the criteria of excepted aircraft and are previously approved by the ATS unit

having authority for the airspace. In addition to those aircraft listed in ENR 1.1, General Rules, Paragraph 38, *Operational Policy/Procedures for Reduced Vertical Separation Minimum (RVSM) in the Domestic U.S., Alaska, Offshore Airspace, and the San Juan FIR*, the following aircraft operating within oceanic and offshore airspace are excepted:

1.3.1 Aircraft being initially delivered to the State of Registry or Operator.

1.3.2 Aircraft that was formerly RVSM–approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval.

1.3.3 Aircraft being utilized for mercy or humanitarian purposes.

NOTE–

These exceptions are accommodated on a workload or traffic–permitting basis.

2. Flight Plan Filing Requirements

NOTE–

In addition to the following guidance, operators must also consult current Notices to Airmen (NOTAMs) and chart supplements (Supplement Alaska, Supplement Pacific) to gain a complete understanding of requirements. NOTAMs and supplements may contain guidance that is short term and/or short notice – i.e., having immediate effect.

2.1 If you are eligible for oceanic 50 NM lateral separation:

2.1.1 PBN/A1 or PBN/L1 in Field 18.

2.1.2 R in Field 10a.

2.1.3 See 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*, for guidance on RNP 10 (RNAV 10) authorization.

2.2 If you are eligible for oceanic 50 NM longitudinal and lateral separation:

2.2.1 PBN/A1 or PBN/L1 in Field 18.

2.2.2 D1 in Field 10b.

2.2.3 (J5, J6, or J7) and R in Field 10a.

2.2.4 See FAA Advisory Circular 90-105 for guidance on RNP 10 (RNAV 10) authorization.

2.3 If you are eligible for oceanic 30 NM longitudinal and lateral separation:

2.3.1 PBN/L1 in Field 18.

2.3.2 D1 in Field 10b.

2.3.3 (J5, J6, or J7) and R in Field 10a.

2.3.4 See FAA Advisory Circular 90-105 for guidance on RNP 4 authorization.

2.4 Oakland Oceanic FIR

2.4.1 In accordance with ICAO Doc 4444, flight plans with routes entering the Oakland Oceanic FIR (KZAK) must contain, among the estimated elapsed times (EET) in Field 18, an entry point for KZAK and an estimated time. It is not mandatory to file the boundary crossing point in Field 15 of the route of flight, but it is permitted.

3. Flight Plan Addressing

3.1 In an effort to eliminate erroneous or duplicate flight plans that may be received from diverse locations, and to increase the safety of flight, operators shall adhere to the following procedures when filing flight plans for departing flights from foreign aerodromes entering the United States National Airspace System:

3.1.1 If the filer sends an FPL to an FAA En Route facility in addition to the air traffic service unit (ATSU) responsible for the departure aerodrome, the filer must ensure that the flight plan filed is the same as the flight plan entered by the ATS unit having authority for the departure aerodrome. Note that per ICAO Doc. 4444, an operator may request that movement messages distributed by the responsible ATS unit be routed to the operator.

3.1.2 Changes to IFR flight plans must be submitted as soon as possible, but no more than 24 hours prior to the flight, to ensure proper processing and distribution before departure.

3.1.3 The FAA expects changes to be transmitted using the DLA and CHG messages as outlined in ICAO Doc. 4444. Transmitting changes to the FAA by cancelling (CNL) and refileing an FPL creates the potential for multiple FPLs in the computer system.

3.1.4 If Cancel and Refile is used, it is imperative that the cancellation of the original FPL in the FAA system be verified by computer response or verbal coordination before submitting another FPL.

3.1.5 Changes to an IFR flight plan less than 30 minutes prior to departure must be accomplished via verbal coordination with the ATSU having authority for the departure aerodrome.

NOTE-

These references are contained in ICAO DOC 4444 and FAA Order 7210.3, Facility Operation and Administration. Operators should be aware that failure to adhere to these procedures could result in an operational delay or pilot deviation.

3.2 Oakland Oceanic FIR

3.2.1 All flights that will enter the Oakland Oceanic CTA/FTR shall address flight plans to KZAKZQZX.

3.3 New York FIR

3.3.1 All flights entering the New York Oceanic CTA/FIR shall address flight plans to KZWYZOZX.

3.3.2 All flights entering the New York Oceanic CTA/FIR and a U.S. ARTCC (except Boston) and/or Bermuda airspace shall address flight plans to both KZWYZOZX and the appropriate U.S. ARTCC. (See TBL ENR 7.1-1).

TBL ENR 7.1-1

Airspace to be Entered: New York Oceanic CTA/ FIR and U.S. ARTCCs	Required AFTN Addresses
New York (NY) Oceanic CTA/FIR	KZWYZOZX
Boston ARTCC & NY Oceanic	KZWYZOZX only
NY domestic and/or Ber- muda & NY Oceanic	KZNYZQZX & KZWYZOZX
Washington (KZDC) & NY Oceanic	KZDCZQZX & KZWYZOZX
Jacksonville (KZJX) & NY Oceanic	KZJXZQZX & KZWYZOZX
Miami (KZMA) & NY Oceanic	KZMAZQZX & KZWYZOZX
San Juan & NY Oceanic	TZSUZQZX & KZWYZOZX
Houston (KZHU)	KZHUZRZX

ENR 7.4 Operational Policy 50 NM Lateral Separation

1. Houston and Miami Oceanic Airspace

1.1 On 20 October 2011, the FAA and the Mexican Air Traffic Service provider, SENEAM, implemented 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4 operating in the Gulf of Mexico (GoMex) Oceanic Control Areas (CTA). Existing Air Traffic Services (ATS) routes and route operating policies did not change for this implementation.

1.2 50 NM lateral separation is implemented in the following CTAs/FIRs/Upper Control Areas (UTA):

1.2.1 The Houston Oceanic CTA/FIR and the Gulf of Mexico portion of the Miami Oceanic CTA/FIR; and

1.2.2 The Monterrey CTA and Merida High CTA within the Mexico FIR/UTA.

1.3 On 10 January 2013, a new RNAV route structure was implemented in the Houston Gulf of Mexico (GoMex) oceanic airspace. In oceanic areas the new routes are spaced a minimum of 50 NM apart to support the reduced lateral separation from 100NM to 50NM in the GoMex.

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.

1.5 Lateral Separation Minima Applied

1.5.1 50 NM lateral separation is applied in the GoMex CTAs between aircraft authorized RNP 10 or RNP 4 at all altitudes above the floor of controlled airspace.

1.5.2 The lateral separation minima of 100 NM in the Houston, Monterrey and Merida CTAs, and 90 NM in

the Miami Oceanic CTA will continue to be applied between aircraft not authorized RNP 10 or RNP 4.

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 shall:

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 shall report the lack of authorization by stating “Negative RNP 10”:

1.7.3.1 On initial call to ATC in a GoMex 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 GoMex 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-RNP10 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 GoMex 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 RNP 10 and RNP 4 are the only NavSpecs currently in use in oceanic and remote area operations; however, Edition 4 of the ICAO PBN Manual introduced RNP 2 as a valid oceanic NavSpec, applicable also to en route and terminal operations. This Notice will be updated at the appropriate time. Other RNAV and RNP NavSpecs are applicable exclusively to continental en route, terminal area and approach operations.

1.8.2 The following is ICAO guidance on the state authority responsible for authorizations such as RNP 10, RNP 4 and RVSM:

1.8.2.1 International Commercial Operators:

a) 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)).

1.8.2.2 International General Aviation (IGA) Operators:

a) The State of Registry makes the determination that 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 on 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 (SLRNS) for RNP 10 Operations in GoMex CTAs

1.10.1 S-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 S-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 ICAO PBN Manual Reference. In reference to RNP 10 authorization, the ICAO PBN Manual, Volume II, Part B, Chapter 1, paragraph 1.3.6.2 states that: "A State authority may approve the use of a single LRNS in specific circumstances (e.g., North Atlantic MNPS and 14 CFR 121.351 (c) refer). An RNP 10 approval is still required."

1.10.3 The FAA worked with the ICAO NACC Office (North American, Central American and Caribbean), State regulators and ATS providers in the GoMex and Caribbean areas to implement a policy for S-LRNS equipped aircraft to qualify for RNP 10 for GoMex operations.

1.10.3.1 Allowing S-LRNS equipped aircraft to qualify for RNP 10 enables more operator aircraft to be authorized RNP 10, thereby creating a more uniform operating environment for the application of

50 NM lateral separation. The factors considered were: the shortness of the legs outside the range of ground navigation aids, the availability of radar and VHF coverage in a large portion of GoMex airspace and the absence of events attributed to S–LRNS in GoMex operations.

1.10.4 At this time, S–LRNS qualification for RNP 10 only applies to GoMex operations. Any expansion of this provision will require assessment and agreement by the appropriate State authorities.

1.10.5 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 shall 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 The West Atlantic Route System (WATRS) supports the application of 50NM lateral separation minima between aircraft authorized RNP 10 or RNP 4.

5.2 50 NM lateral separation may be applied in the airspace outside of WATRS between aircraft authorized RNP 10 or RNP 4.

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 paragraph 1.12 of this section, as well as section ENR 7.3.

ENR 7.5 Operational Policy ADS-C Distance-Based Separation

1. Introduction

1.1 Distance-based longitudinal separation minima using Automatic Dependent Surveillance-Contract (ADS-C) is implemented in Oakland Oceanic airspace as specified in TBL ENR 7.5-1.

TBL ENR 7.5-1

Minima	RNP	Maximum ADS-C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	14 minutes

1.2 Distance-based longitudinal separation minima using ADS-C is implemented in the Anchorage Oceanic and New York Oceanic airspace as specified in TBL ENR 7.5-2.

TBL ENR 7.5-2

Minima	RNP	Maximum ADS-C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	10 minutes

1.3 Aircraft Future Air Navigation System (FANS) 1/A communications, navigation and surveillance (CNS) capabilities, interfaced with Ocean21, are required for ADS-C distance based separation to be applied.

NOTE-

1. ADS-C distance based separation standards may not be applied to aircraft utilizing High Frequency Data Link (HFDL).

2. ADS-C distance based separation is not currently authorized in the Anchorage Arctic FIR.

2. Application

2.1 Oakland, New York and Anchorage ARTCCs will apply the following policies to the use of ADS-C distance based separation:

2.1.1 The separation will be applied to pairs of suitably equipped pairs of aircraft;

2.1.2 Published ATS routes and other tracks (e.g. PACOTS) will continue to be laterally separated by a minimum of 50 NM;

2.1.3 Minimum ADS-C based lateral and longitudinal separation between 30 NM eligible aircraft and 50 NM eligible aircraft is 50 NM; and

2.1.4 Lateral and longitudinal separation standards applied between RNP 10 and non-RNP 10 aircraft remains unchanged.

3. Aircraft and Operator Eligibility for 30 NM Distance-Based Separation

3.1 The aircraft and operator must be authorized by the State of the Operator or the State of Registry, as appropriate, for RNP 4 operations;

3.2 The aircraft must be equipped with a minimum of two approved long range navigation systems that will enable the aircraft to maintain RNP 4 for the duration of flight in the applicable airspace;

3.3 The aircraft must be equipped with a FANS1/A package (or equivalent) that includes satellite Controller Pilot Data Link Communication (CPDLC) and ADS-C that meet the standards of RTCA Document 258, Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications;

3.4 Satellite CPDLC communications and ADS-C surveillance must be conducted in accordance with the ICAO Global Operational Data Link Document (GOLD), as amended, and maintained for the duration of the flight in the applicable Pacific FIRs; and

3.5 Pilots and, if applicable, dispatchers must be trained on policies and procedures applicable to ADS-C distance based separation, including the use

of Satellite CPDLC and ADS-C in Pacific oceanic airspace.

3.6 Operators should use the ICAO GOLD to develop policy and procedures for CPDLC and ADS-C operations.

3.6.1 Operators must use one of the following documents to develop policy and procedures for RNP 4 operations:

3.6.1.1 FAA Advisory Circular (AC) 90-105, *Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace*;

3.6.1.2 Australian Civil Aviation Safety Authority (CASA) Advisory Circular 91U3(0); or

3.6.1.3 New ICAO Performance Based Navigation (PBN) Manual (new ICAO Document 9613), Volume II, Part C, Chapter 1.

4. Flight Planning Requirements

See ENR 7.1, Paragraph 2, Flight Plan Filing Requirements.

NOTE—

Other than the flight plan requirements discussed in ENR 7.1, Paragraph 2, Flight Plan Filing Requirements, application of distance based separation does not affect operator planning processes or procedures for filing flight plans. Operators that have filed and flown User Preferred Routes (UPRs) may continue to do so.

5. In-Flight Contingency Actions/Procedures and Emphasis on Situational Awareness

5.1 Pilots should be aware that ADS-C distance based separation can be applied to their aircraft. They should use all available tools to maintain an awareness of other aircraft in their proximity in case an inflight contingency occurs (e.g., aircraft or ATC system malfunction).

5.2 Pilots must advise ATC of a loss of CPDLC and/or ADS-C capability or an inability to continue to meet RNP 4. ATC will transition the aircraft to another form of separation as expeditiously as possible.

5.3 If there is a known malfunction of the CPDLC or ADS-C system, ATC will contact aircraft and

transition the aircraft to another form of separation as expeditiously as possible.

5.4 Pilots should use the guidance in ENR 7.3, Special Procedures for In-Flight Contingencies in Oceanic Airspace. This reflects current ICAO guidance calling for a 15 NM track offset when unable to obtain ATC clearance prior to executing maneuvers for contingencies such as rapid descent, turn back, or diversion. This is of particular importance for aircraft to which 30 NM separation can be applied.

5.5 Pilots are required to maneuver (deviate) around convective weather on a regular basis in the course of Pacific operations. The enhanced CNS requirements and capabilities aid pilots and controllers in situations where aircraft are required to maneuver around convective weather. For weather avoidance maneuvers in areas where ADS-C distance based separation is applied, operators should emphasize the following items in pilot training programs:

5.5.1 Pilots should not assume the Ocean21 system will automatically quickly detect significant changes to the aircraft flight path. Unlike radar, the Ocean21 system does not receive aircraft position updates in real-time. Aircraft position is updated to the Ocean21 system at intervals of up to 27 minutes. Controllers may change the update intervals as the situation warrants.

5.5.2 It is imperative that pilots keep ATC advised via CPDLC (or HF voice, if necessary) of their intentions (including significant airspeed changes) during the initial weather avoidance maneuver and any subsequent maneuvers to avoid convective weather.

5.5.3 Pilots must be aware that other aircraft could be approximately 30 NM ahead or behind on the same track, and inform ATC expeditiously of changes to flight path or airspeed that could erode longitudinal separation.

5.5.4 Pilots must be familiar with ENR 7.3, Special Procedures for In-Flight Contingencies in Oceanic Airspace.

NOTE—

In particular, pilots should be aware of the provision to climb or descend 300 feet (depending on the direction of flight and direction of deviation from track) to mitigate the chance of conflict with other aircraft when forced to deviate without a clearance.

ENR 7.8 North Atlantic (NAT) Safety Information

1. Report Leaving, Report Reaching

1.1 The early discovery of altitude deviations is extremely important to the overall safety of NAT operations. Deferring the required reports of leaving and reaching flight levels until the next routine communication may lead to instances where aircraft fly at the incorrect flight level for long durations. This is not acceptable from a system safety standpoint. While the actual number of vertical errors in the NAT Region is relatively small, some of these errors continue undetected (and therefore uncorrected) for long durations.

1.2 In practical terms:

1.2.1 Report leaving a flight level as soon as the aircraft begins climb or descent;

1.2.2 Report reaching a flight level as soon as the aircraft is level; and

1.2.3 In RVSM airspace, provide the reports even if air traffic control has not specifically requested them.

2. Adherence to Oceanic Clearance

2.1 As a key part of ensuring the overall safety in the NAT Region, pilots are reminded of the importance of strict adherence to the oceanic clearance. The NAT oceanic clearance provides separation from all known aircraft from the oceanic entry point to the oceanic exit point. This separation can only be assured if all aircraft enter oceanic airspace in accordance with their oceanic clearance.

2.2 Although it may be desirable to defer climb or descent to the cleared oceanic flight level, delaying the request to domestic air traffic control for a clearance may result in entering oceanic airspace at a less optimum flight level.

2.3 In practical terms:

2.3.1 Flights must enter oceanic airspace level at the cleared oceanic flight level;

2.3.2 Flights must enter oceanic airspace at the cleared oceanic entry point;

2.3.3 Flights must maintain the assigned true Mach number;

2.3.4 If a pilot cannot comply with any part of the oceanic clearance, air traffic control must be informed immediately;

2.3.5 Pilots must ensure that their aircraft performance enables them to maintain the cleared oceanic flight level for the entire oceanic crossing; and

2.3.6 If a pilot discovers that the aircraft is not able to reach or remain at a cleared flight level, air traffic control must be informed immediately.

3. Turbulence Impact Assessment

3.1 To help in assessing whether moderate or severe turbulence might have an impact on operations in the NAT Region, including the WATRS, when reduced vertical separation minimum of 1,000 feet is applied between FL290 and FL410 inclusive, the frequency and magnitude of altitude deviations from assigned FL caused by moderate to severe turbulence needs to be quantified.

3.2 To this end, air crews operating in the NAT Region, including all of the WATRS areas, are required to include the magnitude of the deviation, in feet, from assigned FL in all required reports of moderate to severe turbulence.

4. Common Procedures for Radio Communications Failure in the North Atlantic (NAT)

NOTE-

The following procedures are intended to provide general guidance for NAT aircraft experiencing a communications failure. These procedures are intended to complement and not supersede state procedures/regulations. It is not possible to provide guidance for all situations associated with a communications failure.

4.1 General.

4.1.1 If so equipped, the pilot of an aircraft experiencing a two-way-radio communications failure shall operate the secondary radar transponder on identity Mode A (Code 7600) and Mode C.

4.1.2 The pilot shall also attempt to contact any ATC facility or another aircraft and inform them of the difficulty and request they relay information to the ATC facility with which communications are intended.

4.2 Communications failure prior to entering NAT oceanic airspace.

4.2.1 If operating with a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the cleared oceanic entry point, level and speed and proceed in accordance with the received and acknowledged oceanic clearance. Any level or speed changes required to comply with the oceanic clearance shall be completed within the vicinity of the oceanic entry point.

4.2.2 If operating without a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the first oceanic entry point, level, and speed, as contained in the filed flight plan and proceed via the filed flight plan route to landfall. That first oceanic level and speed shall be maintained to landfall.

4.3 Communications failure prior to exiting NAT oceanic airspace.

4.3.1 If cleared on flight plan route the pilot shall proceed in accordance with the last received and acknowledged oceanic clearance to the last specified oceanic route point, normally landfall, then continue on the flight plan route. Maintain the last assigned oceanic level and speed to landfall. After passing the last specified oceanic route point, conform to the relevant State procedures/regulations.

4.3.2 If cleared on other than flight plan route the pilot shall proceed in accordance with the last received and acknowledged oceanic clearance to the last specified oceanic route point, normally landfall. After passing this point, rejoin the filed flight plan route by proceeding directly to the next significant point ahead of the track of the aircraft as contained in the filed flight plan. Where possible use published ATS route structures, then continue on the flight plan route. Maintain the last assigned oceanic level and speed to the last specified oceanic route point. After passing this point conform to the relevant State procedures/regulations.

5. When Able Higher (WAH) Reports

5.1 To ensure maximum use of available altitudes, aircraft entering RVSM and/or MNPS airspace in the New York FIR should be prepared to advise ATC of the time or position the aircraft can accept the next higher altitude. WAH reports are also used to plan the altitude for aircraft as they transition from RVSM to CVSM altitudes; therefore, it is important that the altitude capability of the aircraft is known by controllers.

5.1.1 If the aircraft is capable of a higher altitude that is not preferred by the pilot, give the altitude in the WAH report and advise that you prefer not to be assigned that altitude.

5.2 ATC acknowledgment of a WAH report is NOT a clearance to change altitude.

5.3 The procedures will differ for eastbound and westbound aircraft since many of the eastbound aircraft will enter New York MNPS/RVSM airspace from ATC sectors that have direct controller-pilot communications.

5.3.1 Eastbound aircraft entering RVSM or MNPS airspace in the New York FIR:

5.3.1.1 Pilots may be requested by ATC to provide an estimate for when the flight can accept the next higher altitude(s). If requested, pilots should provide this information as soon as possible.

5.3.2 Westbound aircraft entering RVSM or MNPS airspace in the New York FIR:

5.3.2.1 Pilots should include in the initial position report the time or location that the next higher altitude can be accepted.

EXAMPLE–

“Global Air 543, 40 north 40 west at 1010, flight level 350, estimating 40 north 50 west at 1110, 40 north 60 west. Next able flight level 360 at 1035.”

NOTE–

Pilots may include more than one altitude if that information is available.

EXAMPLE–

(After stating initial report) “Able flight level 360 at 1035, able flight level 370 at 1145, able flight level 390 at 1300.”

ENR 7.10 Y–Routes Between Florida and Puerto Rico

1. Background

1.1 The airspace between the State of Florida and the Commonwealth of Puerto Rico is designated Class A airspace in Title 14 of the Code of Federal Regulations (14 CFR). The applicable sections are Part 71, Section 71.1, which incorporates FAA Order 7400.9 (by reference) and Section 71.33. Historically, air traffic capacity within this area is constrained by a route structure based on traditional ground-based navigation aids (NAVAIDs) and non-mosaic radar facilities.

1.2 In 1999, a Special RNAV route structure was developed to better serve the user community that flies between Florida and Puerto Rico. Those routes were designated “T–routes.” They are re-designated as “Y–routes” because the “T” designation is now being used to identify terminal RNAV routes in the National Airspace System (NAS).

1.3 The objective of the Y–routes does not change from that of the original Special RNAV T–routes. The objective is to capture the benefits that Global Navigation Satellite Systems (GNSS) and other approved RNAV systems provide by enabling aircraft to navigate on direct point-to-point routes. These special routes augment the existing conventional airway system and stand as the foundation toward increased efficiency in air traffic management and decreased operating costs for users.

2. Operational Policy and Procedures

2.1 Y–routes remain “special” routes and will not be charted on U.S. government aeronautical charts.

2.1.1 The waypoints are published as standalone waypoints in the National Flight Data Digest (NFDD). The operators obtain the “special” route information from Miami ARTCC, and Jeppesen provides the operator with the FMC data base update and charts for the Y–routes.

2.2 Normally these routes operate under radar surveillance; however, under the conditions detailed below the routes may continue to operate using non-radar procedures during periods of temporary radar outage. The decision to continue RNAV route operation in non-radar situation is based on an

evaluation of the following communications, navigation and surveillance (CNS) factors:

2.2.1 Direct controller–pilot communications via VHF radio is available on the routes;

2.2.2 Aircraft RNAV systems are approved for Instrument Flight Rules (IFR) operation in accordance with existing FAA regulations and Advisory Circulars (ACs); and

2.2.3 In a non-radar environment, an operational Traffic Alert and Collision Avoidance System (TCAS) is required in accordance with paragraph 5 below.

2.3 Pilot requests for track deviations to avoid convective weather and for aircraft contingencies or emergencies will be managed in accordance with existing ATC procedures.

3. Operational Approval

3.1 Operators are considered eligible to conduct operations on the Y–routes provided that aircraft are equipped with the appropriate equipment in accordance with paragraphs 4 and 5 below and operations are conducted in accordance with paragraph 6 below. Title 14 CFR Parts 121, 125, 135 operators are authorized to operate on the Y–routes when they are issued OpSpecs paragraph B034 (Class I Navigation Using Area Navigation Systems). In addition, OpSpecs B034 must be annotated in OpSpecs Paragraph B050 (Enroute Authorizations, Limitations and Procedures), for the Caribbean Sea area of operations.

3.2 Title 14 CFR Part 91 Operators:

3.2.1 Title 14 CFR Part 91 operators are considered eligible to conduct operation on the Y–routes provided aircraft are equipped with approved equipment in accordance with paragraphs 4 and 5 and operations are conducted in accordance with paragraph 6. Title 14 CFR Part 91 operators must review their Airplane Flight Manual (AFM) and verify that the aircraft RNAV system has been approved and installed in accordance with one of the FAA Advisory Circulars listed in paragraph 4.

3.2.2 If the operator is unable to verify that the AFM shows that the aircraft RNAV system is appropriately approved, then it should contact the local Flight

Standards District Office (FSDO) for help in determining eligibility. The FSDO may contact the Flight Technologies and Procedures Division (AFS–400) if further assistance is required. A specific Letter of Authorization is not required.

4. Operator Determination of RNAV Equipment Eligibility

4.1 Operators will not flight plan nor operate on Y–routes unless their aircraft is equipped with RNAV systems that are approved for IFR navigation. Aircraft may be considered eligible to operate on Y–routes if the AFM shows that the navigation system installation has received airworthiness approval in accordance with one of the following ACs:

4.1.1 AC 20–138, as amended (Airworthiness Approval of Positioning and Navigation Systems); or

4.1.2 AC 25–15, as amended (Approval of Flight Management Systems in Transport Category Aircraft).

NOTE–

For Inertial Navigation System (INS) limitation, see paragraph 6.4 below.

5. TCAS Equipage When ATC Radar Temporarily Out of Service

5.1 An operational TCAS is required for commercial operators to dispatch for flight on Y–routes when the Y–routes are not operating under radar surveillance. For general aviation operators, this requirement will be applied when the flight plan is filed. Air Traffic Control will notify operators that applicable ATC radar is inoperative as soon as possible.

6. Operational Requirements

6.1 Pilots in command (PIC) filing a Y–route are certifying that the crew is qualified and the aircraft equipment meets the requirements to conduct RNAV operations.

6.2 The PIC is responsible for navigating along the centerline (as defined by the aircraft navigation systems) in accordance with the requirements of 14 CFR Part 91.181 (course to be flown) and ICAO Annex 2, Paragraph 3.6.2.1.1. (Annex 2, paragraph 3.6.2.1.1 states that flights shall “in so far as practicable, when on an established ATS route, operate along the defined centerline of that route”).

6.3 The PIC shall notify the Miami ARTCC or San Juan CERAP of any loss of navigation capability that affects the aircraft’s ability to navigate within the lateral limits of the route.

6.4 For the purpose of Y–route operation, on routes where Inertial Navigation Systems (INS) or Inertial Reference Systems (IRS) cannot receive automatic position updates (e.g., DME/DME update) for the entire length of the route, aircraft are limited to 1.5 consecutive hours of un–updated operation. In preparation for take–off, this time starts when the INS or IRS is placed in the navigation mode. En route, the maximum time allowed between automatic position updates is 1.5 hours. Systems that perform position updating after the pilot has manually selected the navigation aid are considered to have “automatic update” capability.

6.5 Radar monitoring will normally be provided. In the event of a loss of radar, the flight crew will be advised. ATC will ensure that the appropriate non–radar separation is applied during these time periods.

6.6 Pilots must have and use an en route chart that identifies the Y–routes and their waypoints.

6.6.1 Waypoints shall be identified as compulsory or non–compulsory reporting points. When the ARTCC/CERAP is providing radar service, the operator shall report compulsory points only when requested. In accordance with ICAO documents, routes are identified as Y–routes and all waypoints/fixes are pronounceable five letter names.

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 (FIRs).

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 degrade 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).

PART 3 – AERODROMES (AD)

AD 0.

AD 0.1 Preface – Not applicable

AD 0.2 Record of AIP Amendments – See GEN 0.2-1

AD 0.3 Record of AIP Supplements – Not applicable

AD 0.4 Checklist of Pages

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

8. Maintenance of Aerodrome Movement Areas

8.1 It is the responsibility of the relevant aerodrome authority to maintain the aerodrome in a satisfactory condition.

8.2 Clearance of snow and measurement of snow, ice, standing water, braking action, etc., and the reporting of such pavement conditions is within the responsibility of the aerodrome authority.

9. Dissemination of Information on the Condition of Paved Surface

9.1 Information on surface condition of runways, taxiways and aprons will be published, when available and when necessary.

9.2 At aerodromes where an ATS unit is established, if a runway is affected by standing water, snow, slush or ice during the approach of an aircraft for landing, and such conditions are notified by the aerodrome management to the ATS unit, such conditions will be made available to the aircraft.

10. Rescue and Fire Fighting Facilities

10.1 Adequate rescue and fire-fighting vehicles, equipment and personnel are provided at aerodromes available for international commercial air transport.

10.2 Temporary interruptions to rescue and fire-fighting service, or non-availability of such services, are made known by NOTAM.

10.3 Certificated Aerodromes (14 CFR Part 139)

Aerodromes serving certain air carriers under 14 CFR Part 139 are indicated by a CFR Index which relates to the availability of crash, fire, and rescue equipment. (See TBL AD 1.1-1.)

11. Bird Concentrations in the Vicinity of Aerodromes

11.1 Animal and bird notices are not normally published in aerodrome remarks. Pilots should be aware that animals and birds are frequently found in the vicinity of aerodromes and should exercise due caution. However, selected bird notices may be published, but only after approval by the appropriate Regional Bird Hazard Group.

TBL AD 1.1-1

14 CFR PART 139 CERTIFICATED AIRPORTS

Indexes and Fire Fighting and Rescue Equipment Requirements

Airport Index	Required Number of Vehicles	Aircraft Length	Agent & Water for Foam
A	1	< 90'	500# DC or 450# DC + 100 gal H ₂ O
B	1 or 2	≥ 90' & < 126'	Index A + 1500 gal H ₂ O
C	2 or 3	≥ 126' & < 159'	Index A + 3000 gal H ₂ O
D	3	≥ 159' & < 200'	Index A + 4000 gal H ₂ O
E	3	≥ 200'	Index A + 6000 gal H ₂ O
> Greater Than; < Less Than; ≥ Equal To or Greater Than; H ₂ O Water; DC Dry Chemical			
NOTE- Vehicle and capacity requirements for airports holding limited operating certificates are determined on a case-by-case basis.			

12. Airport Lighting Aids

12.1 Approach Light Systems (ALS)

12.1.1 Approach light systems provide the basic means for transition from instrument flight to visual flight for landing. Operational requirements dictate the sophistication and configuration of the approach light system for a particular runway.

12.1.2 Approach light systems are a configuration of signal lights starting at the landing threshold and extending into the approach area a distance of 2400–3000 feet for precision instrument runways and 1400–1500 feet for nonprecision instrument runways. Some systems include sequenced flashing lights which appear to the pilot as a ball of light traveling towards the runway at high speed (twice each second).

12.2 Visual Glideslope Indicators

12.2.1 Visual Approach Slope Indicator (VASI)

12.2.1.1 The VASI is a system of lights so arranged to provide visual descent guidance information during the approach to a runway. These lights are visible from 3–5 miles during the day and up to 20 miles or more at night. The visual glide path of the VASI provides safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and to 4 NM from the runway threshold. Descent, using the VASI, should not be initiated until the aircraft is visually aligned with the runway. Lateral course guidance is provided by the runway or runway lights. In certain circumstances, the safe obstruction clearance area may be reduced by narrowing the beam width or shortening the usable distance due to local limitations, or the VASI may be offset from the extended runway centerline. This will be noted in the Chart Supplement U.S. and/or applicable notices to airmen (NOTAM).

12.2.1.2 VASI installations may consist of either 2, 4, 6, 12, or 16 light units arranged in bars referred to as near, middle, and far bars. Most VASI installations consist of 2 bars, near and far, and may consist of 2, 4, or 12 light units. Some airports have VASIs consisting of three bars, near, middle, and far, which provide an additional visual glide path to accommodate high cockpit aircraft. This installation may consist of either 6 or 16 light units. VASI installations consisting of 2, 4, or 6 light units are located on one side of the runway, usually the left. Where the

installation consists of 12 or 16 light units, the light units are located on both sides of the runway.

12.2.1.3 Two-bar VASI installations provide one visual glide path which is normally set at 3 degrees. Three-bar VASI installations provide two visual glide paths. The lower glide path is provided by the near and middle bars and is normally set at 3 degrees while the upper glide path, provided by the middle and far bars, is normally $1\frac{1}{4}$ degree higher. This higher glide path is intended for use only by high cockpit aircraft to provide a sufficient threshold crossing height. Although normal glide path angles are three degrees, angles at some locations may be as high as 4.5 degrees to give proper obstacle clearance. Pilots of high performance aircraft are cautioned that use of VASI angles in excess of 3.5 degrees may cause an increase in runway length required for landing and rollout.

12.2.1.4 The basic principle of the VASI is that of color differentiation between red and white. Each light unit projects a beam of light having a white segment in the upper part of the beam and red segment in the lower part of the beam. The light units are arranged so that the pilot using the VASIs during an approach will see the combination of lights shown below.

12.2.1.5 For 2-BAR VASI (4 light units), see FIG AD 1.1–2.

12.2.1.6 For 3-BAR VASI (6 light units), see FIG AD 1.1–3.

12.2.1.7 For other VASI configurations, see FIG AD 1.1–4.

12.2.2 Precision Approach Path Indicator (PAPI). The precision approach path indicator (PAPI) uses light units similar to the VASI but are installed in a single row of either two or four light units. These lights are visible from about 5 miles during the day and up to 20 miles at night. The visual glide path of the PAPI typically provides safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and to 4 SM from the runway threshold. Descent, using the PAPI, should not be initiated until the aircraft is visually aligned with the runway. The row of light units is normally installed on the left side of the runway and the glide path indications are as depicted. Lateral course guidance is provided by the runway or runway lights. In certain circumstances, the safe obstruction clearance area may be reduced by narrowing the

beam width or shortening the usable distance due to local limitations, or the PAPI may be offset from the extended runway centerline. This will be noted in the Chart Supplement U.S. and/or applicable NOTAMs. (See FIG AD 1.1-5.)

12.2.3 Tri-color Systems. Tri-color visual approach slope indicators normally consist of a single light unit, projecting a three-color visual approach path into the final approach area of the runway upon which the indicator is installed. The below glide path indication is red, the above glide path indication is amber, and the on glide path indication is green. These types of indicators have a useful range of approximately $\frac{1}{2}$ to 1 mile during the day and up to 5 miles at night depending upon the visibility conditions. (See FIG AD 1.1-6.)

12.2.4 Pulsating Systems. Pulsating visual approach slope indicators normally consist of a single light unit projecting a two-color visual approach path into the final approach area of the runway upon which the indicator is installed. The on glide path indication is a steady white light. The slightly below glide path indication is a steady red light. If the aircraft descends further below the glide path, the red light starts to pulsate. The above glide path indication is a pulsating white light. The pulsating rate increases as the aircraft gets further above or below the desired glide slope. The useful range of the system is about four miles during the day and up to ten miles at night. (See FIG AD 1.1-7.)

12.2.5 Alignment of Elements Systems. Alignment of elements systems are installed on some small general aviation airports and are a low cost system consisting of painted plywood panels, normally black and white or fluorescent orange. Some of these systems are lighted for night use. The useful range of these systems is approximately $\frac{3}{4}$ mile. To use the system the pilot positions the aircraft so the elements are in alignment. The glide path indications are shown in FIG AD 1.1-8.

12.3 Runway End Identifier Lights (REIL)

12.3.1 REILs are installed at many airfields to provide rapid and positive identification of the approach end of a particular runway. The system consists of a pair of synchronized flashing lights, one of which is located laterally on each side of the runway threshold facing the approach area. They are effective for:

12.3.1.1 Identification of a runway surrounded by a preponderance of other lighting.

12.3.1.2 Identification of a runway which lacks contrast with surrounding terrain.

12.3.1.3 Identification of a runway during reduced visibility.

12.4 Runway Edge Light Systems

12.4.1 Runway edge lights are used to outline the edges of runways during periods of darkness or restricted visibility conditions. These light systems are classified according to the intensity or brightness they are capable of producing: they are the High Intensity Runway Lights (HIRL), Medium Intensity Runway Lights (MIRL), and the Low Intensity Runway Lights (LIRL). The HIRL and MIRL systems have variable intensity controls; whereas, the LIRLs normally have one intensity setting.

12.4.2 The runway edge lights are white; except on instrument runways, yellow replaces white on the last 2,000 feet or half the runway length, whichever is less, to form a caution zone for landings.

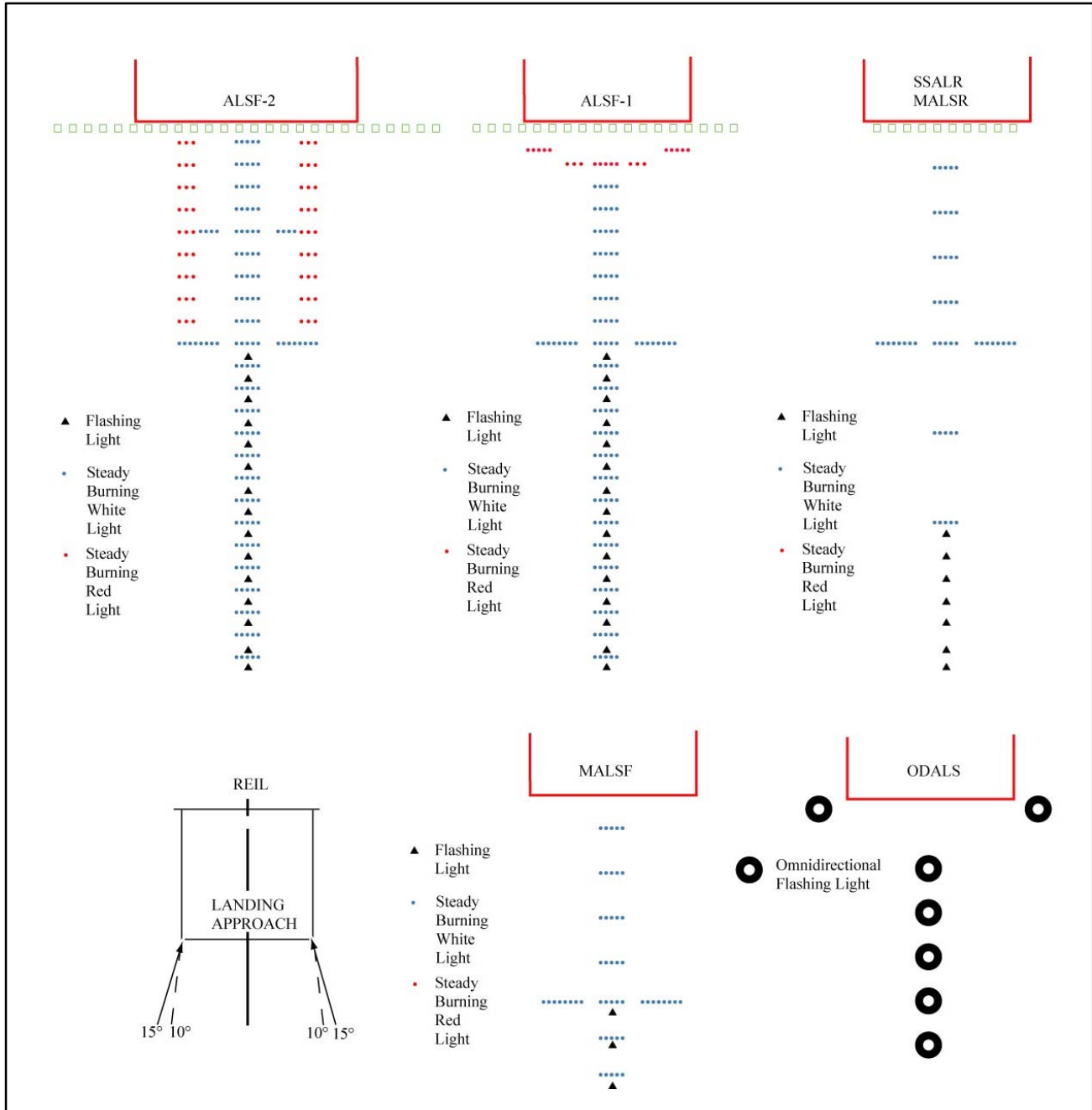
12.4.3 The lights marking the ends of the runway emit red light toward the runway to indicate the end of the runway to a departing aircraft and emit green outward from the runway end to indicate the threshold to landing aircraft.

12.5 In-Runway Lighting

12.5.1 Runway Centerline Lighting System (RCLS). Runway centerline lights are installed on some precision approach runways to facilitate landing under adverse visibility conditions. They are located along the runway centerline and are spaced at 50-foot intervals. When viewed from the landing threshold, the runway centerline lights are white until the last 3,000 feet of the runway. The white lights begin to alternate with red for the next 2,000 feet, and for the last 1,000 feet of the runway, all centerline lights are red.

12.5.2 Touchdown Zone Lights (TDZL). Touchdown zone lights are installed on some precision approach runways to indicate the touchdown zone when landing under adverse visibility conditions. They consist of two rows of transverse light bars disposed symmetrically about the runway centerline. The system consists of steady-burning white lights which start 100 feet beyond the landing threshold and extend to 3,000 feet beyond the landing threshold or to the midpoint of the runway, whichever is less.

FIG AD 1.1-1
Precision & Nonprecision Configurations



NOTE—
Civil ALSF-2 may be operated as SSALR during favorable weather conditions.

FIG AD 1.1-14
Taxiway Lead-On Light Configuration



TBLAD 1.1-2
Runways With Approach Lights

Lighting System	Number of Intensity Steps	Status During Nonuse Period	Intensity Step Selected Per Number of Mike Clicks		
			3 Clicks	5 Clicks	7 Clicks
Approach Lights (Med. Int.)	2	Off	Low	Low	High
Approach Lights (Med. Int.)	3	Off	Low	Med	High
MIRL	3	Off or Low	◆	◆	◆
HIRL	5	Off or Low	◆	◆	◆
VASI	2	Off	★	★	★
NOTES: ◆Predetermined intensity step. ★Low intensity for night use. High intensity for day use as determined by photocell control.					

TBLAD 1.1-3
Runways Without Approach Lights

Lighting System	Number of Intensity Steps	Status During Nonuse Period	Intensity Step Selected Per Number of Mike Clicks		
			3 Clicks	5 Clicks	7 Clicks
MIRL	3	Off or Low	Low	Med.	High
HIRL	5	Off or Low	Step 1 or 2	Step 3	Step 5
LIRL	1	Off	On	On	On
VASI★	2	Off	◆	◆	◆
REIL★	1	Off	Off	On / Off	On
REIL★	3	Off	Low	Med.	High

NOTES: ◆Low intensity for night use. High intensity for day use as determined by photocell control.
★The control of VASI and/or REIL may be independent of other lighting systems.

12.9.4 Suggested use is to always initially key the mike 7 times; this assures that all controlled lights are turned on to the maximum available intensity. If desired, adjustment can then be made, where the capability is provided, to a lower intensity (or the REIL turned off) by keying 5 and/or 3 times. Due to the close proximity of airports using the same frequency, radio controlled lighting receivers may be set at a low sensitivity requiring the aircraft to be relatively close to activate the system. Consequently, even when lights are on, always key mike as directed when overflying an airport of intended landing or just prior to entering the final segment of an approach. This will assure the aircraft is close enough to activate the system and a full 15 minutes lighting duration is available. Approved lighting systems may be activated by keying the mike (within 5 seconds) as indicated in TBLAD 1.1-4.

TBLAD 1.1-4
Radio Control System

Key Mike	Function
7 times within 5 seconds	Highest intensity available
5 times within 5 seconds	Medium or lower intensity (Lower REIL or REIL-off)
3 times within 5 seconds	Lowest intensity available (Lower REIL or REIL-off)

12.9.5 The Chart Supplement U.S. contains the types of lighting, runway, and the frequency that is used to activate the system for all public use airports

with FAA standard systems. Airports with instrument approach procedures include data on the approach chart identifying the light system(s), the runway on which they are installed, and the frequency that is used to activate the system(s).

NOTE-

Although the CTAF is used to activate the lights at many airports, other frequencies may also be used. The appropriate frequency for activating the lights on the airport is provided in the Chart Supplement U.S. and the standard instrument approach procedures publications. It is not identified on the sectional charts.

12.9.6 Where the airport is not served by an instrument approach procedure, it may have either the standard FAA approach control system or an independent type system of different specification installed by the airport sponsor. The Chart Supplement U.S. contains descriptions of pilot-controlled lighting systems for each airport having other than FAA approved systems, and explains the type lights, method of control, and operating frequency in clear text.

13. Airport/Heliport Beacons

13.1 Airport and heliport beacons have a vertical light distribution to make them most effective from one to ten degrees above the horizon; however, they can be seen well above and below this peak spread. The beacon may be an omnidirectional capacitor-discharge device, or it may rotate at a constant speed which produces the visual effect of flashes at regular

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

ICAO ID	Location	Airport Name	Designation
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			
KPDY	Portland	Portland International	Regular
Palau Island			
PTRO	Babelthup Island	Babelthup/ 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

ICAO ID	Location	Airport Name	Designation
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 Chart Supplement U.S. and TPP are available through a network of FAA chart agents primarily located at or near major civil airports. A listing of products, dates of latest editions, and agents is available on the AeroNav website at: http://www.faa.gov/air_traffic/flight_info/aeronav.

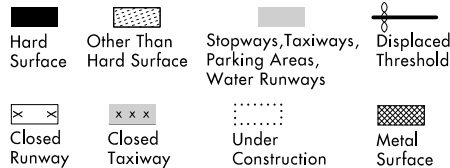
Instrument Approach Procedures (Charts) Airport Diagram/Airport Sketch

12096
LEGEND

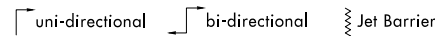
INSTRUMENT APPROACH PROCEDURES (CHARTS)

AIRPORT DIAGRAM/AIRPORT SKETCH

Runways

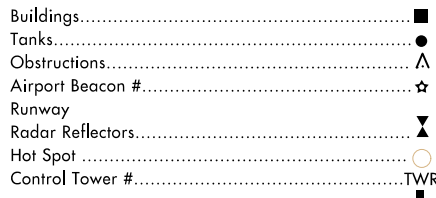


ARRESTING GEAR: Specific arresting gear systems; e.g., BAK12, MA-1A etc., shown on airport diagrams, not applicable to Civil Pilots. Military Pilots refer to appropriate DOD publications.



ARRESTING SYSTEM

REFERENCE FEATURES



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.

Runway Weight Bearing Capacity/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

Helicopter Alighting Areas: Symbols with 'H' and various shapes
Negative Symbols used to identify Copter Procedures landing point: Symbols with 'H' and various shapes

Runway Threshold elevation: THRE 123
Runway TDZ elevation: TDZE 123
Runway Slope: 0.3% DOWN, 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.

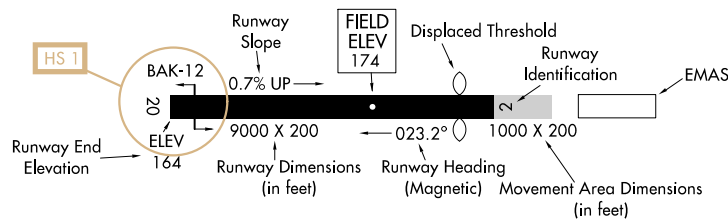
Airport diagram scales are variable.

True/magnetic North orientation may vary from diagram to diagram

Coordinate values are shown in 1 or 1/2 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)



SCOPE

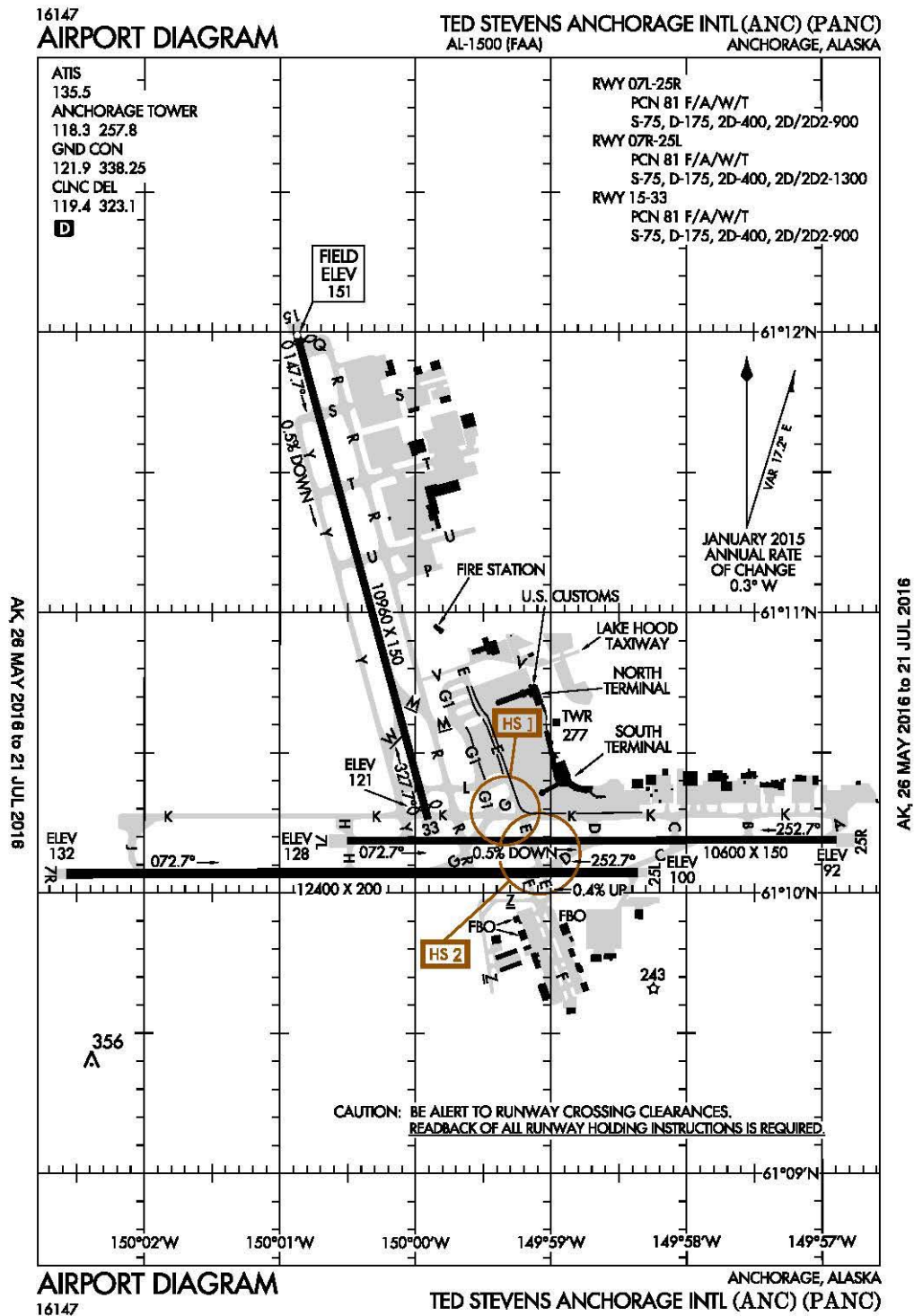
Airport diagrams are specifically designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations. Airport diagrams are not intended to be used for approach and landing or departure operations. For revisions to Airport Diagrams: Consult FAA Order 7910.4.

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 PA-PI on right

2.14.1 Designation: 25R
2.14.4 Visual approach slope indicator system: 4-box VASI on left
2.14.10 Remarks: Upwind Threshold Crossing Height 64.19' GA 3.25 Deg; Dwnwnd Threshold Crossing Height 39.31' GA 3.00 Deg.

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 PA-PI on right

2.14.1 Designation: 25L
2.14.4 Visual approach slope indicator system: 4-light PA-PI on left
2.14.10 Remarks: PAPI, Runway 25L, Upwind Threshold Crossing Height 101 Ft Glide Angle 3.25 Deg; Dwnwnd Threshold Crossing Height 75 Ft Glide Angle 3.00 Deg.

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 PA-PI on left

2.14.1 Designation: 33
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: 118.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC
2.18.3 Service designation: 118.6 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 119.1 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: APCH/P DEP/P CLASS C

2.18.3 Service designation: 123.8 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C

2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: TURNAGAIN 7 SID

2.18.3 Service designation: 126.4 MHz

2.18.1 Service designation: CD/S

2.18.3 Service designation: 128.65 MHz

2.18.1 Service designation: APCH/S

2.18.3 Service designation: 134.1 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: APCH/P DEP/P CLASS C

2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C

2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: TURNAGAIN 7 SID

2.18.3 Service designation: 257.9 MHz

2.18.1 Service designation: RDR

2.18.3 Service designation: 259.1 MHz

2.18.1 Service designation: RDR

2.18.3 Service designation: 271.3 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C IC

2.18.3 Service designation: 290.5 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C

2.18.3 Service designation: 290.5 MHz

2.18.1 Service designation: RDR

2.18.3 Service designation: 320.1 MHz

2.18.1 Service designation: CD/P

2.18.3 Service designation: 323.1 MHz

2.18.1 Service designation: RDR

2.18.3 Service designation: 324.3 MHz

2.18.1 Service designation: RDR

2.18.3 Service designation: 327.1 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C

2.18.3 Service designation: 363.2 MHz

2.18.1 Service designation: APCH/P DEP/P CLASS C

2.18.3 Service designation: 363.2 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: D-ATIS

2.18.3 Service designation: 135.5 MHz

2.18.4 Hours of operation: 24

2.18.1 Service designation: ANG OPNS

2.18.3 Service designation: 140.15 MHz

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: 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: 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: 123.3 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: 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: 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: 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 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: 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

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 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: 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

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](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.

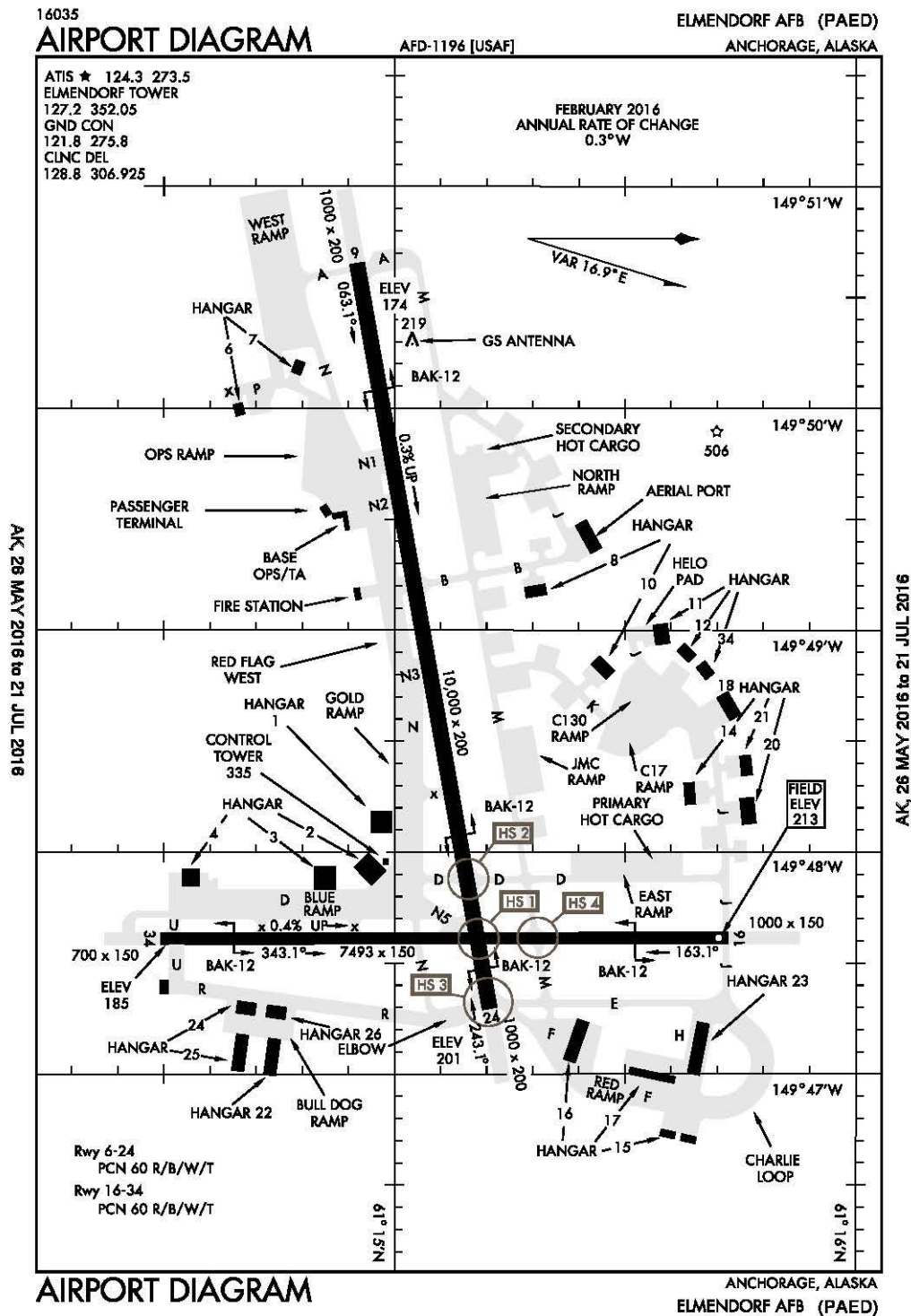
TRANSIENT MILITARY AIRCRAFT PRIOR PERMISSION REQUIRED.

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: 60 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: 60 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: 60 R/B/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: 60 R/B/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
- 2.14.10 Remarks: Non-Standard PAPI Glide Angle 4.2

Degs On Runway 16 Due To High Terrain.

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: AIR MOBILITY CTRL CNTR (CALL "DENALI")

2.18.3 Service designation: 381 MHz

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

2.18.1 Service designation: AIR MOBILITY CTRL CNTR (CALL "DENALI")

2.18.3 Service designation: 134.1 MHz

2.18.1 Service designation: LCL/P

2.18.3 Service designation: 352.05 MHz

2.18.1 Service designation: GND/P

2.18.3 Service designation: 275.8 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

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

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' MSL UNTIL DEP END OF RUNWAY 05.

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.

CONTACT BASE OPERATIONS DSN 317-552-2107/1202 OR C907-552-2107/1202 NO EARLIER THAN 30 DAYS PRIOR AND NO LATER THAN 24 HOURS PRIOR TO ARR TO BEGIN COORD 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.

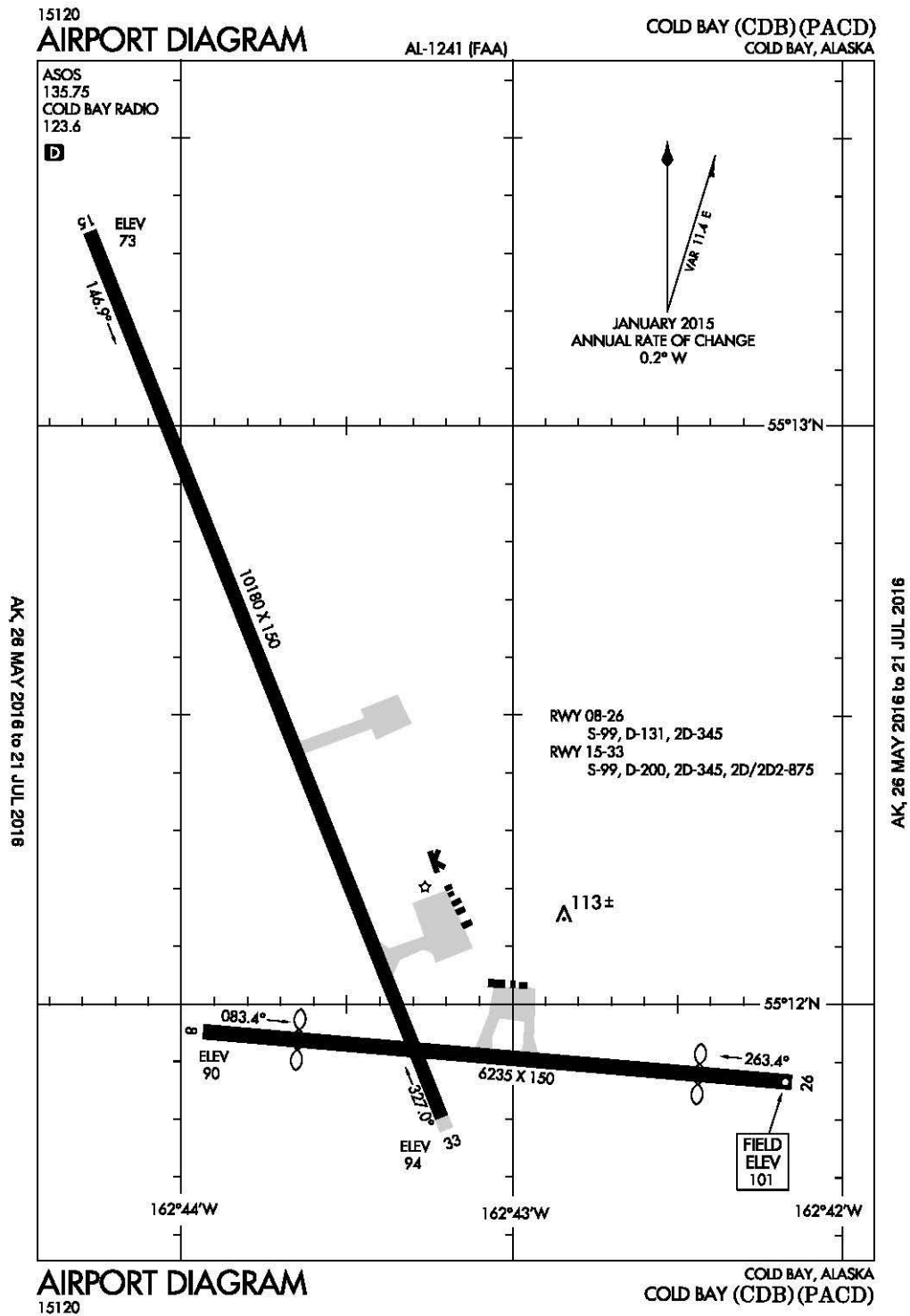
UNITS DEPLOYING TO, STAGING OUT OF, OR FLYING LOCAL SORTIES AT ELMENDORF AFB MUST DEPLOY WITH MAINT PERS REQUIRED TO COMPLETE OPERATIONS TO INCLUDE DE-ICE QUALIFIED CREWMEMBERS DUR COLD WX OPERATIONS.

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.

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 Hrs: 0700 – 1800 Sun Thru
Sat (1 May – 30 Sep); 0530 – 1800 (1 Oct – 30 Apr).

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: 94 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 COUNTRY; 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.

WX CAMERA AVAILABLE ON INTERNET AT [HTTP://AVCAMS.FAA.GOV](http://AVCAMS.FAA.GOV)

ROTATING BEACON OPERATIONS UNMONITORED WHEN CDB FSS UNMANNED.

15344

AFD-1729 [USAF]

EIELSON AFB (PAEI)
FAIRBANKS, ALASKA

ELEV 534

147°07'W

147°06'W

147°05'W

147°04'W

147°03'W

64°41'N

BAK-12

140.6°

BAK-12

THUNDER DOME

RED-FLAG ALASKA

ANG HANGAR

660

ATIS ★ 119.9 273.5
EIELSON TOWER ★ 127.2 352.05
GND CON 121.8 275.8
CLNC DEL 343.7

DECEMBER 2015
ANNUAL RATE OF CHANGE
0.4°W

VAR 18.6°E

64°40'N

FIRE STATION

CONTROL TOWER 668

BASE OPS

14-320 x 150

G

D

HANGARS

JOINT MOBILITY COMPLEX

578

320.4°

BAK-12

FIELD ELEV 547

32

E

HANGAR

H

J

L

HANGARS

TANKS

64°39'N

RWY 14-32
PCN 53/F/A/W/T

FAIRBANKS, ALASKA
EIELSON AFB (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: 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: 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 PRIOR TO LANDING AND 30 MIN PRIOR 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. EXPECT ARRIVAL TIME RESTRICTION FOR ALL AIRCRAFT, EXCEPT AIREVAC & 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++. QUIET HRS 0700-1600Z++, EXCEPTIONS REQUIRE OPERATIONS GROUP COMMANDER APPROVAL.

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 0700-1500Z++ EXCEPTIONS REQUIRE OPERATIONS GROUP COMMANDER APPROVAL.

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; LIGHT SPACING AT THE SOUTH ARRESTING GEAR SYSTEM IS 613 FT AND NORTH AND 3/4-FIELD ARRESTING GEAR SYSTEMS 600 FT.

NONSTANDARD TACAN CHECK PROCEDURE TURN SIZE 3 SIGN LOCATED 25 FT FR TAXIWAY A EDGE.

[illegible]

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: 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
- 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

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: 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

- 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

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: 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

2.14.1 Designation: 02L
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

2.14.1 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 .

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

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 varia-
tion: 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:

MIGRATORY BIRDS IN THE VICINITY OF AIRPORT DURING SPRING THRU FALL.

ATCT LOCATED AT 64-48-39.438N 147-50-55.722W ELEVATION 538' MSL.

SEAPLANE BASE CONTROLLED BY FAIRBANKS INTL ATCT. CONTACT ATCT ON FREQ 118.3 AS SOON AS PRACTICAL AFTER START UP FOR TAXI ON THE POND. FLOAT POND TRAFFIC AS ASSIGNED BY FAIRBANKS ATCT. LIMITED TRANSIENT FLOAT PLANE PARKING AVAILABLE, CONTACT OPERATIONS 907-474-2530 FOR INFORMATION. SURFACE FROZEN IN WINTER, 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 ACTIVITIES.

NOISE ABATEMENT PROCEDURES IN EFFECT FROM 2200-0800 ALL LARGE AIRCRAFT, TURBINE ENGINE, AND HEAVY AIRCRAFT UTILIZE RUNWAY 02L FOR ARRIS AND 20R FOR DEPS WHEN WIND IS NOT AN OPERATIONAL 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.

RUNWAYS 02W & 20W TOUCHDOWN REFERENCE MARKERS 500 FT FROM SHORELINE, MARKED WITH BUOYS DURING FLOAT SEASON.

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.

SEAPLANE BASE REMARKS: NO STEP TAXI EXCEPT IN CHANNEL – RUNWAYS 02W/20W.

WX CAMERA AVAILABLE ON INTERNET AT [HTTP://AVCAMS.FAA.GOV](http://AVCAMS.FAA.GOV)

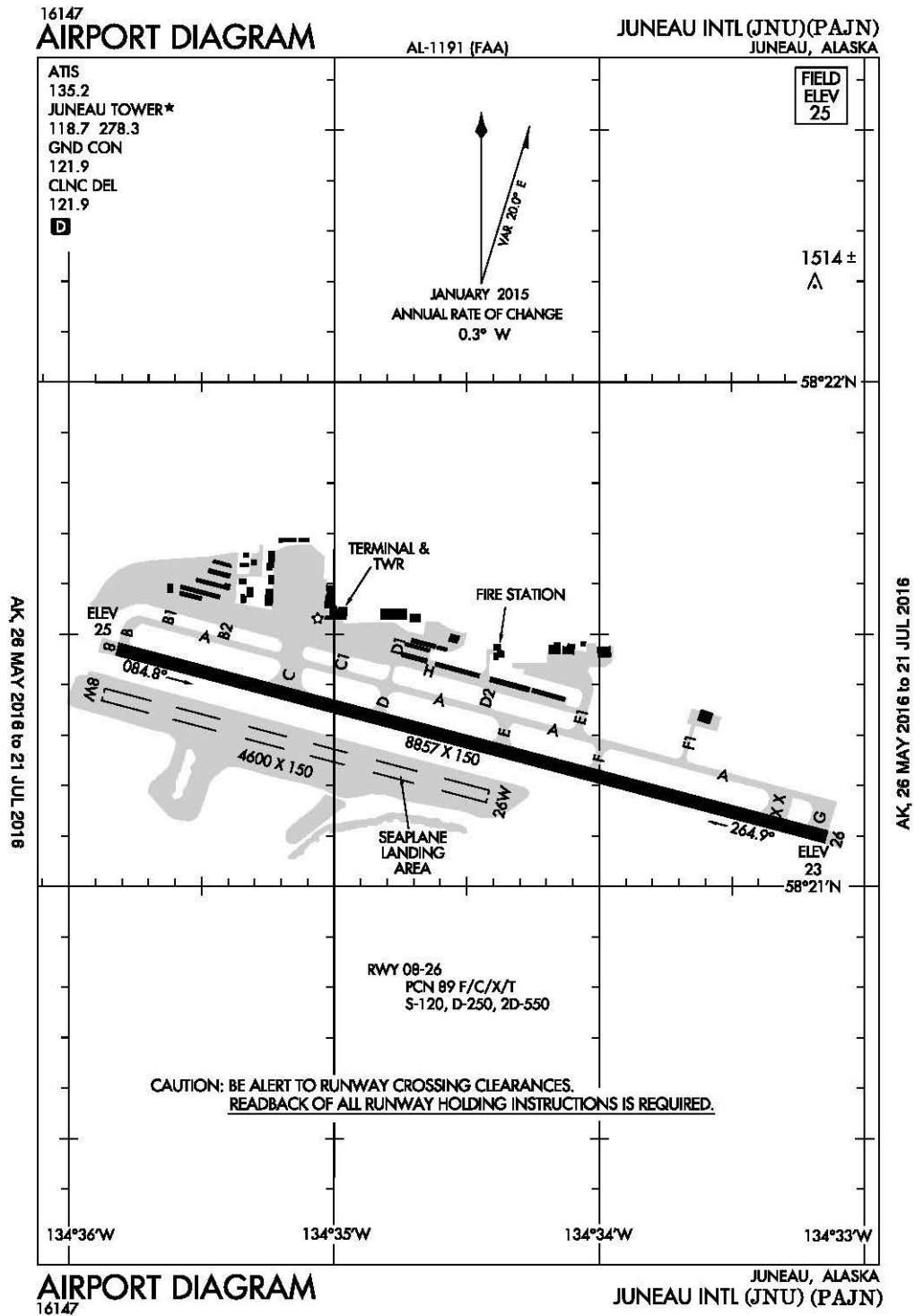
ALL RUNWAY HOLD LINES AND COMPASS ROSE AT TAXIWAY W OBSCURED OCTOBER 1 THRU APRIL 1.

FOR TRANSIENT HELICOPTER PARKING CALL AIRPORT OPERATIONS 907-474-2530.

COLD TEMPERATURE RESTRICTED AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW -20C/-4F.

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
B 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.

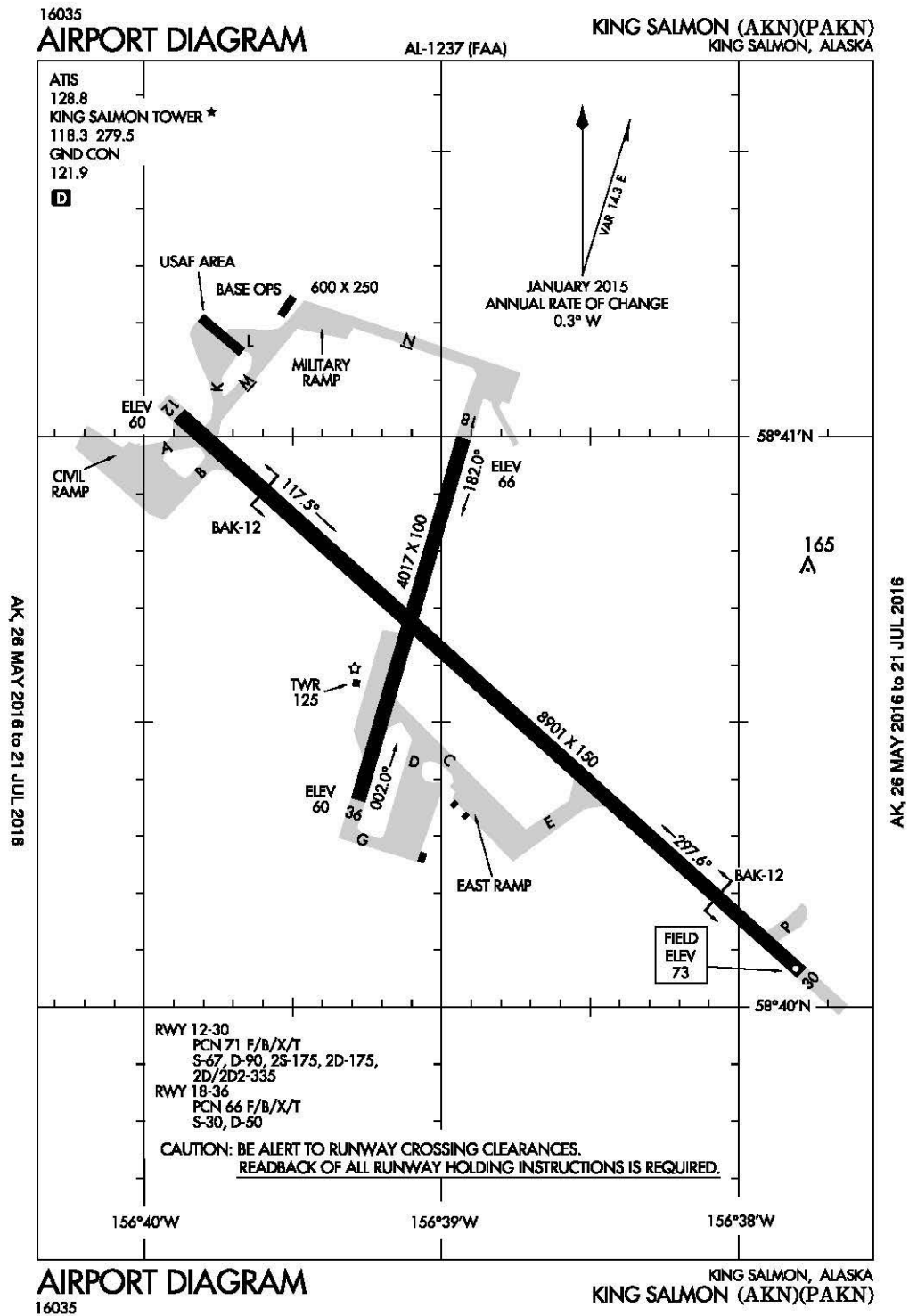
SEE SPECIAL NOTICES AND GENERAL NOTICES FOR ADDITIONAL INFORMATION ON OPERATIONS IN
JUNEAU AREA.

LENA POINT, PEDERSON HILL AND SISTERS ISLAND WX CAMERAS AVAILABLE ON INTERNET AT
[HTTP://AVCAMS.FAA.GOV](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: 71 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: 71 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: EMERG

2.18.3 Service designation: 243 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: 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. Magnet-

ic 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 varia-

tion: 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 vari-

ation: 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.

AIRPORT SAND FINER MATERIAL THAN FAA RECOMMENDED/SEE AC150/5200-30.

GENERAL AVIATION APRON, PAVEMENT CRUMBLING, POSSIBLE FOREIGN OBJECT DAMAGE HAZARD. JET AIRCRAFT BE ALERT DURING RUN-UP TO AVOID DAMAGE WITH JET WASH.

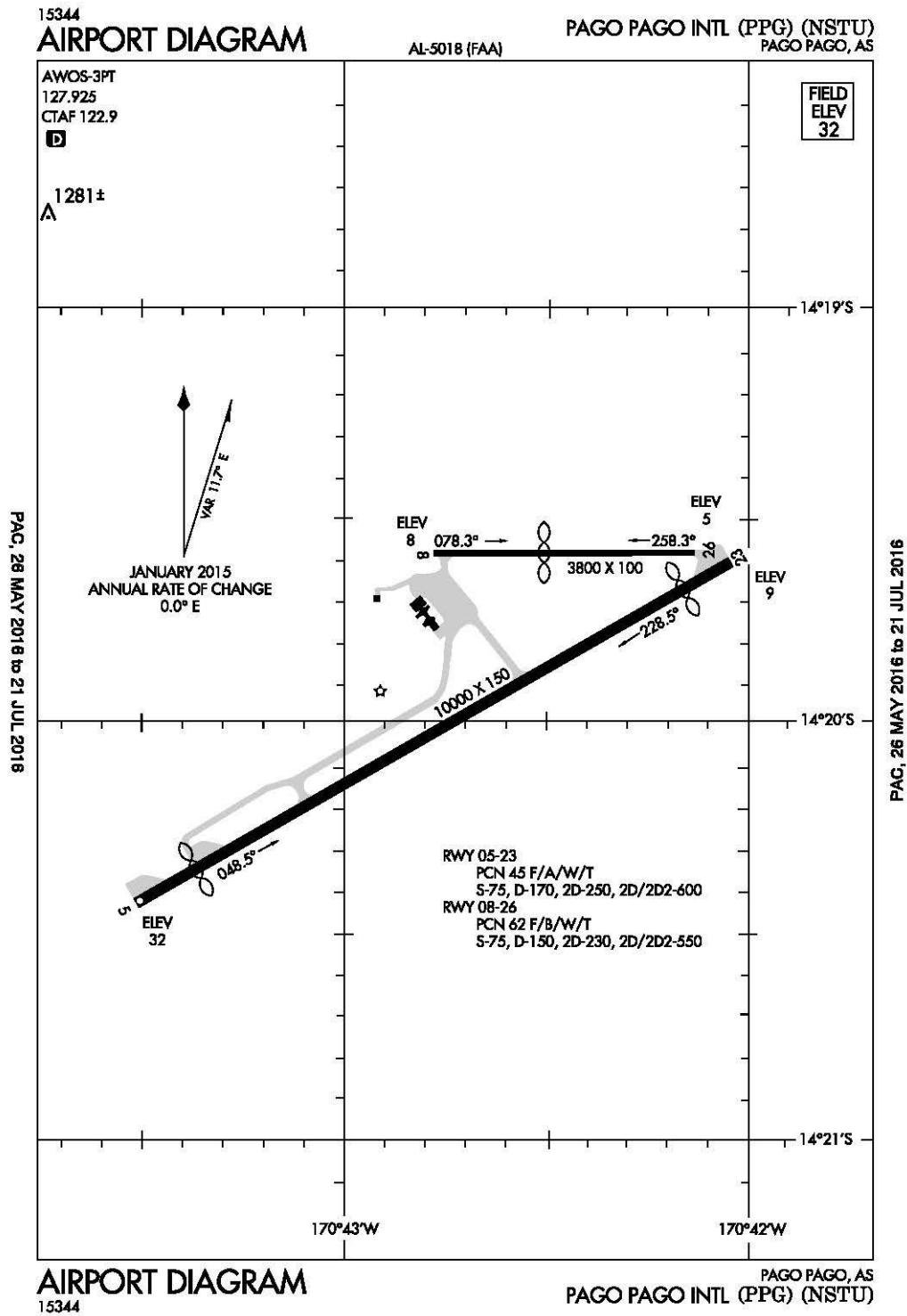
WX CAMERA AVAILABLE ON INTERNET AT [HTTP://AVCAMS.FAA.GOV](http://AVCAMS.FAA.GOV)

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.

[illegible]

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 varia-
tion: 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: 1111.4 ft

2.19.1 ILS type: Localizer for runway 08. Magnetic vari-
ation: 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.

TRANSIENT AIRCRAFT USE FBO SWIFT AVIATION FOR SERVICE C602-273-3770, 132.00.”

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/ABOUT/FORPILOTS.HTML](http://skyharbor.com/about/forpilots.html)

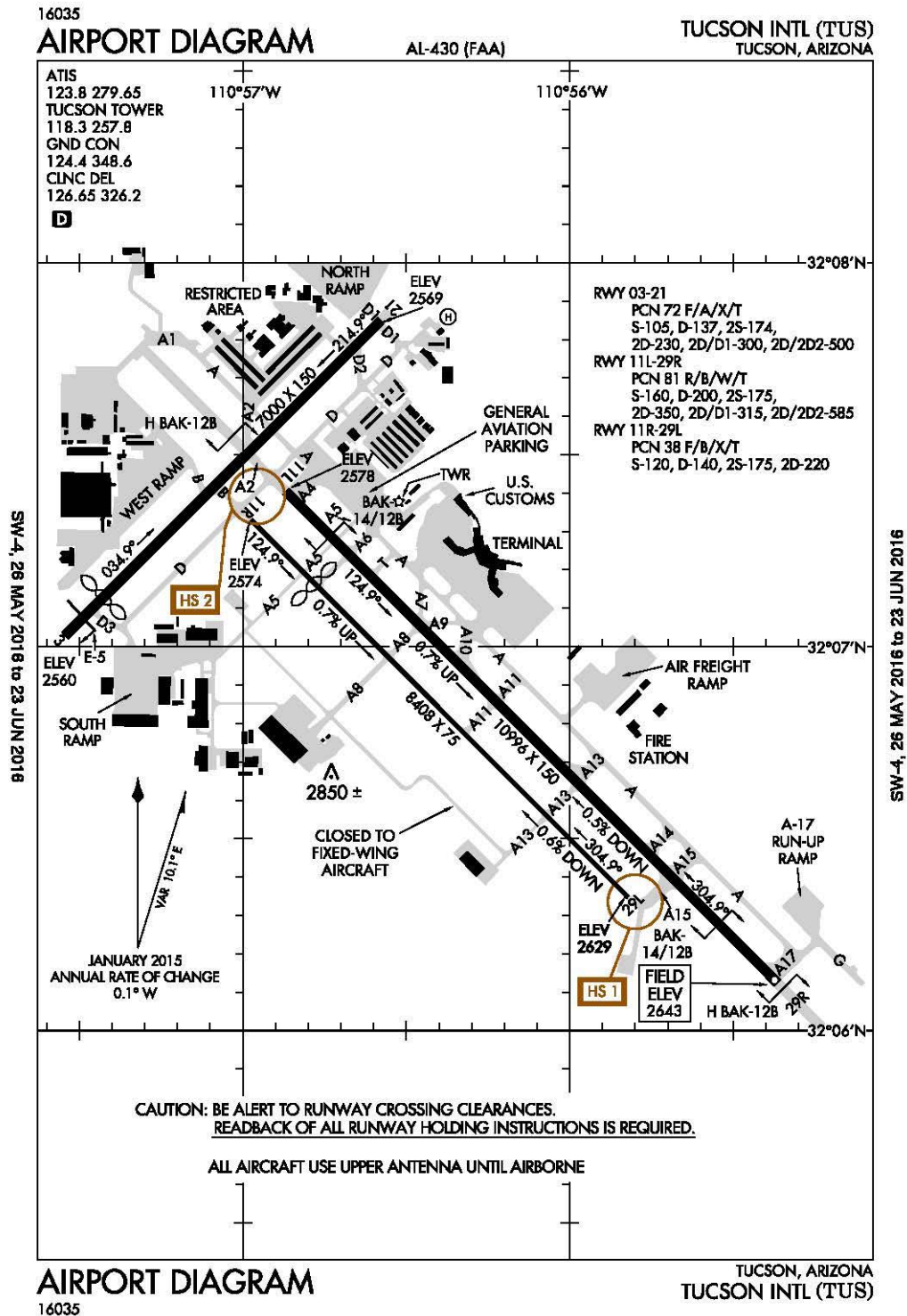
FAA NAVIGATIONAL ANTS LOCATED 114 FT N AND S OF TAXIWAY F CENTERLINE, 525 W TAXIWAY G3 INTERSECTION.

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 TAXIWAYS AND RUNWAYS.

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: 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
- 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

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: 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

- 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

AD 2.13 Declared distances

- 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: 21

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

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. Mag-
netic 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 varia-
tion: 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. Magnet-
ic 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)

E-5 ON DEP END RUNWAY 21 AND APPROACH END RUNWAY 03, SERVICEABLE BUT NOT CERTIFIED.

ARRESTING 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 IN OVERRUN OF DEP END RUNWAY 11L AND THE APPROACH END OF RUNWAY 29R, SERVICEABLE BUT NOT CERTIFIED. BAK-12B IN DEP END RUNWAY 11L OVERRUN 850 FT RUN OUT.

PRIOR PERMISSION REQUIRED 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.

AIRPORT DIAGRAM

AL-162 (FAA)

FRESNO YOSEMITE INTL (FAT)
FRESNO, CALIFORNIA

ATS
121.35 273.6
FRESNO TOWER
118.2 251.1
GND CON
121.7 348.6
CLNC DEL
124.35 348.6

RWY 11L-29R
PCN 75 F/A/X/T
S-70, D-170, 25-175, 2D-250
RWY 11R-29L
PCN 44 F/A/X/T
S-70, D-170, 25-175, 2D-250

VAR 131°E
JANUARY 2015
ANNUAL RATE OF CHANGE
0.1°W

USAF RAMP
MARINE DETACHMENT

AIR CARGO

NG RAMP

Blast Pad 1000 X 150
Elev 333

C10
B10
B11
B12
B14
C12
T11R
112.3°
112.2°
112.3°
BAK 14/128

Field Elev 336

8008 X 130
9539 X 150

B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B14

TWR 445
FIRE STATION

GENERAL AVIATION PARKING
FSDO

PASSENGER TERMINAL
AIR CARRIER

ELEV 328

ANG HANGAR

Blast Pad 1000 X 150
Elev 332

U.S. FORESTRY

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
REARBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

36°47'N
36°46'N
119°44'W
119°43'W
119°42'W

AIRPORT DIAGRAM

FRESNO, CALIFORNIA
FRESNO YOSEMITE INTL (FAT)

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 varia-
tion: 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: 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: Outer Marker for runway 29R. Magnet-
ic 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 varia-

tion: 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: 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-JASU: (AM32A-60) 2(AGPU)

SERVICE-FUEL: SIGNATURE FLIGHT SUPPORT, C559-981-2490

SERVICE - FUEL: LANDMARK AVIATION, C559-251-1555.

[illegible]

Los Angeles, CA
Los Angeles Intl
ICAO Identifier KLAX

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 33–56–33.02N / 118–24–25.61W
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: Jacqueline Yaft
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: 9728 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33-56-49.93N / 118-25-51.17W
2.12.6 Threshold elevation: 110 ft
2.12.6 Touchdown zone elevation: 115 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 9728 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: 12091
2.13.3 Takeoff distance available: 12091
2.13.4 Accelerate-stop distance available: 11259
2.13.5 Landing distance available: 11259

2.13.1 Designation: 25R
2.13.2 Takeoff run available: 12091
2.13.3 Takeoff distance available: 12091
2.13.4 Accelerate-stop distance available: 11792
2.13.5 Landing distance available: 10835

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: 9462
2.13.3 Takeoff distance available: 9462
2.13.4 Accelerate-stop distance available: 9062
2.13.5 Landing distance available: 8323

2.13.1 Designation: 24L
2.13.2 Takeoff run available: 9935
2.13.3 Takeoff distance available: 9935
2.13.4 Accelerate-stop distance available: 8935
2.13.5 Landing distance available: 8362

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
2.14.4 Visual approach slope indicator system: 4–light PAPI on left

2.14.1 Designation: 24L
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 / 118–24–56.44W
2.19.6 Site elevation: 121.7 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 / 118–25–19.71W
2.19.6 Site elevation: 124.8 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 / 118-25-18.03W

2.19.6 Site elevation: 120.9 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 / 118-25-19.71W

2.19.6 Site elevation: 124.8 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: 33-56-00.00N / 118-24-54.84W

2.19.6 Site elevation: 121.1 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 varia-

tion: 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 / 118–23–55.64W

2.19.6 Site elevation: 108.4 ft

2.19.1 ILS type: Glide Slope for runway 06R. Magnetic variation: 12E

2.19.2 ILS identification: GPE

2.19.5 Coordinates: 33–56–52.62N / 118–25–54.10W

2.19.6 Site elevation: 107.4 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.

700 FT X 500 FT CLEARWAY AT W END OF RUNWAY 24R.

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 TAXIWAYS AND RUNWAYS.

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.

WESTBOUND WIDEBODY 4-ENGINE AIRCRAFT ON TAXIWAY C PROHIBITED FROM SOUTHBOUND TURNS ONTO TAXIWAY P.

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.

RUNWAY 24L AT TAXIWAY E8 TAKE-OFF RUN AVAILABLE 9900 FT.

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.

B773, A346 ARE PROHIBITED FROM USING TAXIWAY E7

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

B767 AND LARGER JETS ARE NOT AUTHD TO MAKE THE RIGHT TURN OUT OF TAXILANE C10 ONTO TAXIWAY C UNDER POWER

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.

15344

AIRPORT DIAGRAM

**METROPOLITAN OAKLAND INTL (O.A.K.)
OAKLAND, CALIFORNIA**

ATIS
133.775
OAKLAND TOWER
118.3 291.65 (RWYS 10L-28R, 10R-28L, 15-33)
127.2 256.9 (RWY 12-30)
GND CON
121.75 (RWY 12-30)
121.9 (RWYS 10L-28R, 10R-28L, 15-33)
CINC DEL
121.1

D

NWS

HANGARS

ELEV 5

VAR 13.5° E

JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

HS 3

EMAS

ELEV 6

ELEV 9

C 33

HS 2

GENERAL AVIATION AREA

HS 1

Blast Pad 400 X 220

TWR 257

FEDEX

FIRE STATION

CARGO

OAKLAND MAINTENANCE

TERMINAL

RON PARKING

W1 CAT 2 HOLDING

Blast Pad 400 X 220

FIELD ELEV 9

RWY 10L-28R
PCN 67 F/B/W/T

RWY 10R-28L
PCN 59 F/B/W/T

RWY 12-30
PCN 75 F/A/W/T

S-12.5

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
REDBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

15344

AIRPORT DIAGRAM

**OAKLAND, CALIFORNIA
METROPOLITAN OAKLAND INTL (O.A.K.)**

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: 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: 12
- 2.12.2 True Bearing: 129
- 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: 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: 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: 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: 10R
2.13.2 Takeoff run available: 6212
2.13.3 Takeoff distance available: 6212
2.13.4 Accelerate-stop distance available: 6212
2.13.5 Landing distance available: 6212

2.13.1 Designation: 28L
2.13.2 Takeoff run available: 6212
2.13.3 Takeoff distance available: 6212
2.13.4 Accelerate-stop distance available: 6212
2.13.5 Landing distance available: 6212

AD 2.14 Approach and runway lighting

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: 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 se-
quenced 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
2.14.4 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 28R. Magnet-
ic 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

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

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.

16147

AIRPORT DIAGRAM

AL-965 (FAA)

ONTARIO INTL (ONT)
ONTARIO, CALIFORNIA

ATIS
124.25
ONTARIO TOWER
120.6 360.775
GND CON
121.9 257.8
CLNC DEL
118.1
CPDLC

VAR 12.1° E

JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

TERMINAL 4

TERMINAL 2

INTERNATIONAL
ARRIVALS
TERMINAL

TERMINAL 1

TWR
1024

WEST
CARGO
RAMP

ELEV
943

ELEV
936

ELEV
932

ELEV
926

26R
26L

10200 X 150

12197 X 150

8500 X 150

TRACON

FIRE
STATION

TWR
1039

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

117°35'W

117°36'W

117°37'W

34°04'N

34°03'N

GENERAL
AVIATION
PARKING

RWY 08L-26R
PCN 102 R/B/W/T
S-30, D-200, 25-175, 2D-560, 2D/2D2-850

RWY 08R-26L
PCN 70 R/B/W/T
S-30, D-200, 25-175, 2D-560, 2D/2D2-850

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: Jess Romo

ONTARIO INTERNATIONAL AIRPORT

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 2.14 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: Outer Marker for runway 26R. Magnetic variation: 12E

2.19.2 ILS identification: ONT

2.19.5 Coordinates: 34–03–22.33N / 117–28–17.72W

2.19.6 Site elevation: 1010 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

ic 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.

TAXIWAY H RESTRICTED TO AIRCRAFT WITH WINGSPAN OF 124 FT OR SMALLER WHEN GATE 35A OCCUPIED BY B747 OR LARGER AIRCRAFT.

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.

[illegible]

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: 94 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: 94 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: 73 R/C/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: 73 R/C/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: 132 R/B/W/T
2.12.1 Designation: 252
2.12.3 Dimensions: 6000 ft x 75 ft
2.12.4 PCN: 132 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. Magnet-
ic 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 vari-
ation: 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. COORD USE OF ASSAULT STRIP LANDING ZONE WITH 146 OSF/OSK DSN 893-7590, C805-986-7590.

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. LIMITED TRANSIENT SERVICE DUR NORMAL HR, WEEKEND AND HOLIDAY CAPABILITY EXTREMELY LIMITED AND MAY BE POSTPONED UNTIL NEXT DUTY DAY. 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.

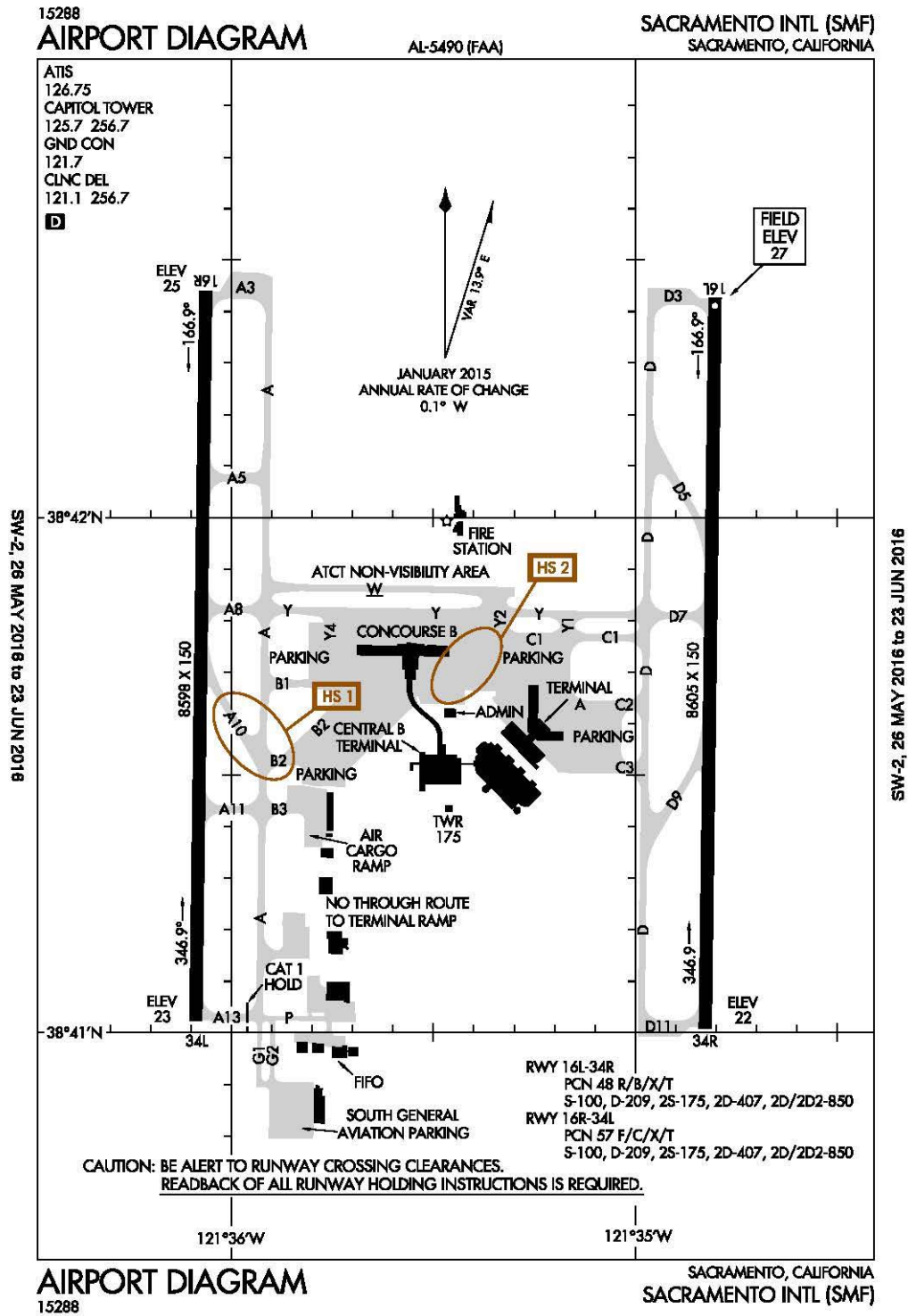
CAUTION: FOREIGN OBJECT DAMAGE HAZARD ON TAXIWAY S; ALL LARGE BODY AIRCRAFT MUST TAXI WITH OUTBOARD MOTORS SHUT OFF.

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: Lance Mccasland
6900 AIRPORT BLVD
Sacramento, CA 95837
(916-874-0566)
- 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: 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

- 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

AD 2.13 Declared distances

- 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

- 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

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
- 2.14.4 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 right
2.14.10 Remarks: ALSF2 Unmonitored.

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

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: 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: 38-40-50.25N / 121-34-49.82W
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

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: 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: 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: 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

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.

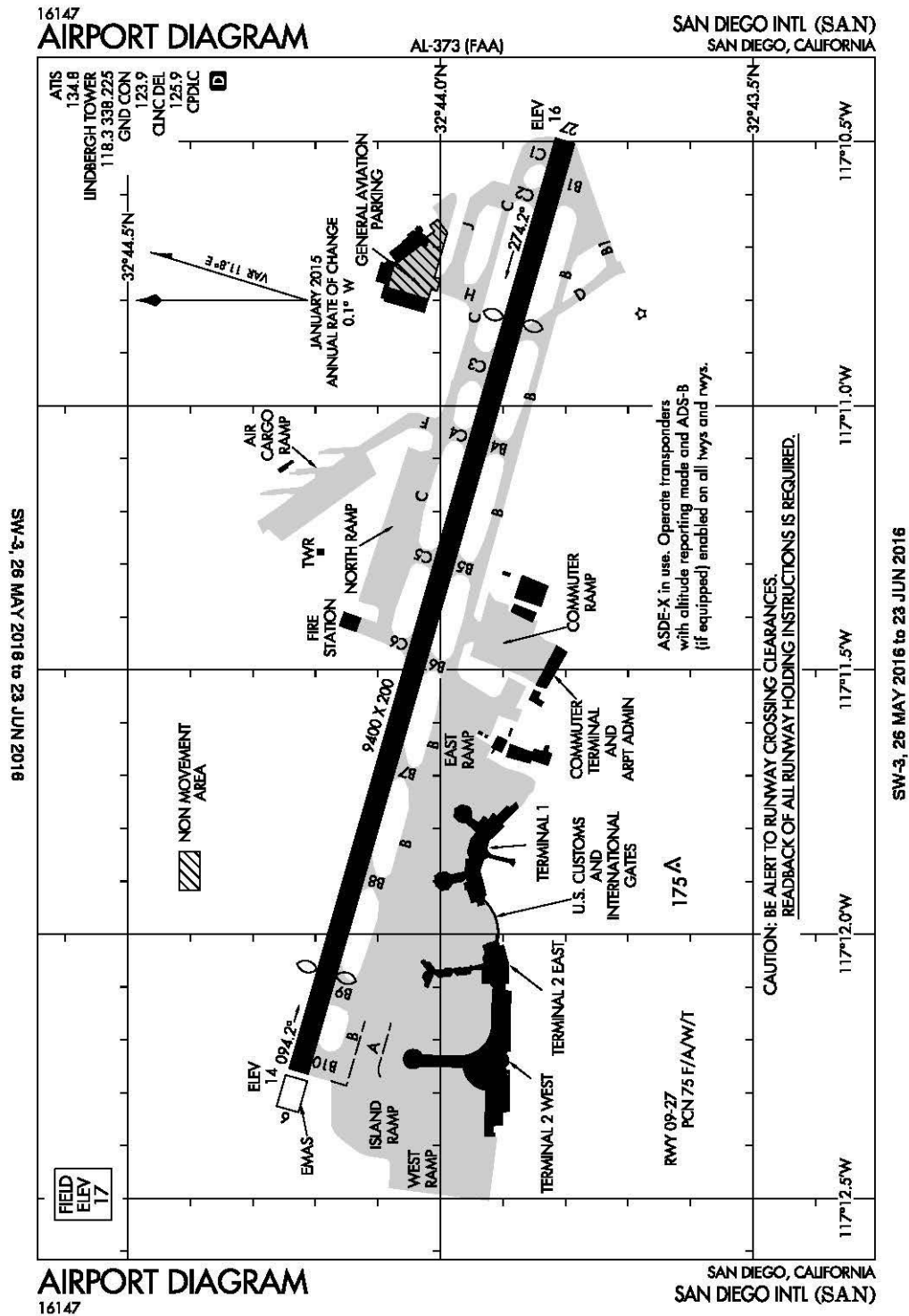
TAXIWAY REMARK #2 CONT'D: AN AIRCRAFT CANNOT EXCEED THE AIRPLANE DESIGN GROUP III CRITERIA AND MUST HAVE A WHEEL BASE OF LESS THAN 60 FT.

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 KSN



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 Rwy 27 Unusable Beyond 5 Degrees Left & Right 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 VEHICLES PROHIBITED ON AIRPORT.

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.

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.

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 TAXIWAYS AND RUNWAYS.

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.

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.

TAXIWAY B RESTRICTED TO AIRCRAFT WITH WINGSPANS GREATER THAN 171 FT BETWEEN TAXIWAY B6 & TAXIWAY D.

AIRCRAFT WITH WINGSPANS GREATER THAN 171 FT (52M) RESTRICTED FROM USING TAXIWAY D SOUTH OF TAXIWAY B, AND WHEN EXITING RUNWAY 9 WESTBOUND ON TAXIWAY B.

16147

AIRPORT DIAGRAM

AL-375 (FAA)

SAN FRANCISCO INTL (SFO)
SAN FRANCISCO, CALIFORNIA

FIELD ELEV 13

ATIS
113.7 115.8
135.45
SAN FRANCISCO TOWER
120.5 249.1
GND CON
121.8
CINC DEL
118.2

ASSC in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all twys and twys.

ANNUAL RATE OF CHANGE
0.1° W

NOTE: Several runway hold position signs are on the right rather than the left side of the taxiways

B/A: BOARDING AREA

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

RWY 01L-19R
PCN 90 F/B/X/T
S-75, D-200, 2D-400, 2D/2D2-877

RWY 07L-25R
PCN 100 F/B/X/T
S-75, D-200, 2D-400, 2D/2D2-877

RWY 10L-28R
PCN 80 F/B/X/T
S-75, D-200, 2D-400, 2D/2D2-877

RWY 12R-36L
PCN 80 F/B/X/T
S-75, D-200, 2D-400, 2D/2D2-877

AIRPORT DIAGRAM

16147

SAN FRANCISCO, CALIFORNIA
SAN FRANCISCO INTL (SFO)

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: 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
- 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

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: 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: 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: 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: 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: 10681

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: 11570

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: 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: 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 se-
quenced flashers, category II or III configuration
2.14.4 Visual approach slope indicator system: 4–light
PAPI on left

2.14.1 Designation: 19R
2.14.4 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: D-ATIS
2.18.3 Service designation: 135.45 MHz
2.18.4 Hours of operation: 24

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

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: 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

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

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.

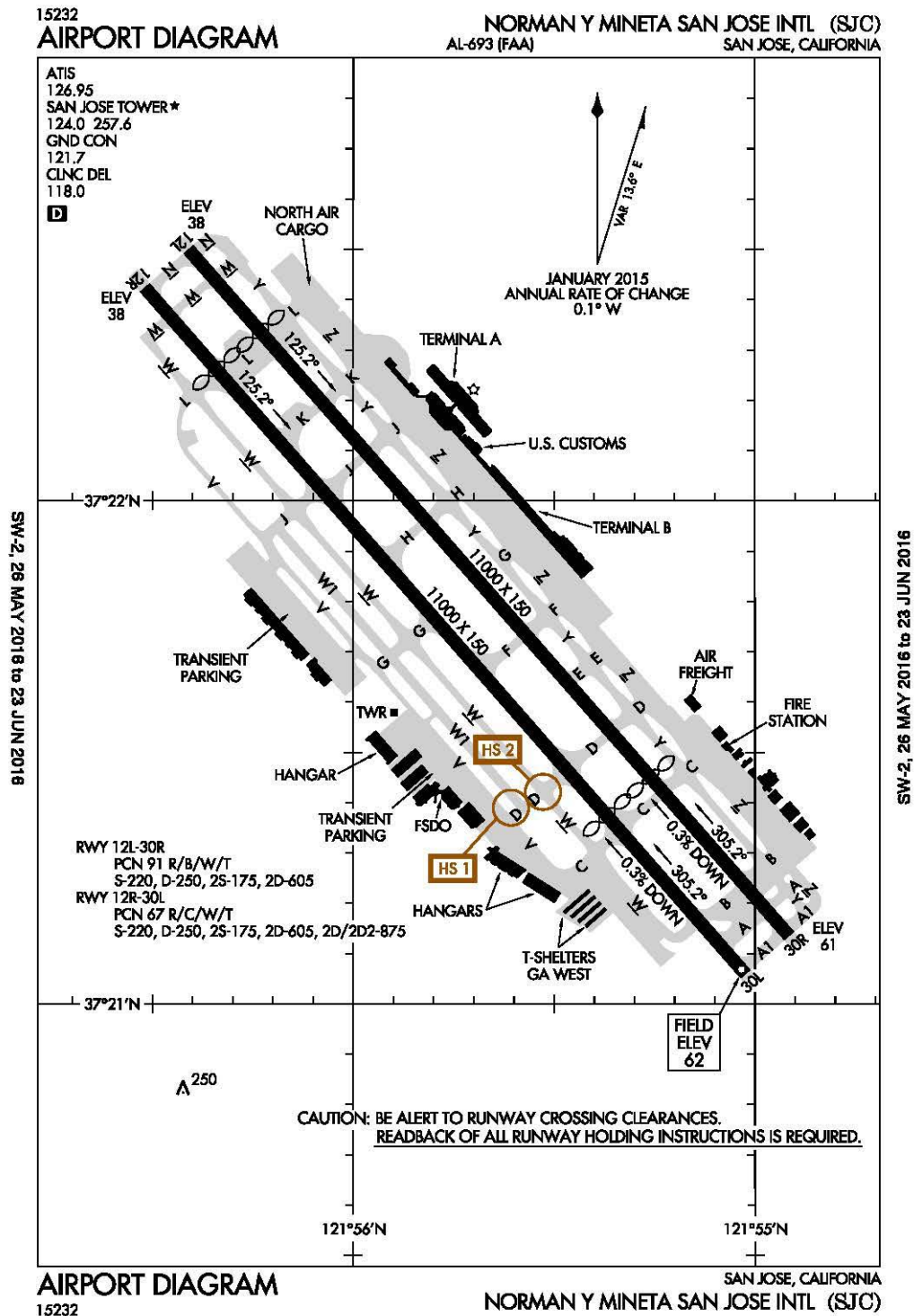
SIMULTANEOUS OPERATIONS IN EFFECT ALL RUNWAYS.

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 TAXIWAYS AND RUNWAYS.

RUNWAY 1L CLOSED TO DEPARTING TRIJET AIRCRAFT WITH WINGSPAN GREATER THAN 155 FT.

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: 37-21-45.60N / 121-55-44.80W
- 2.2.2 From City: 2 Miles NW of San Jose, CA
- 2.2.3 Elevation: 62.2 ft
- 2.2.5 Magnetic variation: 16E (1990)
- 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

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.

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: 16E

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. Mag-
netic variation: 16E

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: 16E

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 varia-
tion: 16E

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: 16E

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: 16E

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 varia-
tion: 16E

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

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).

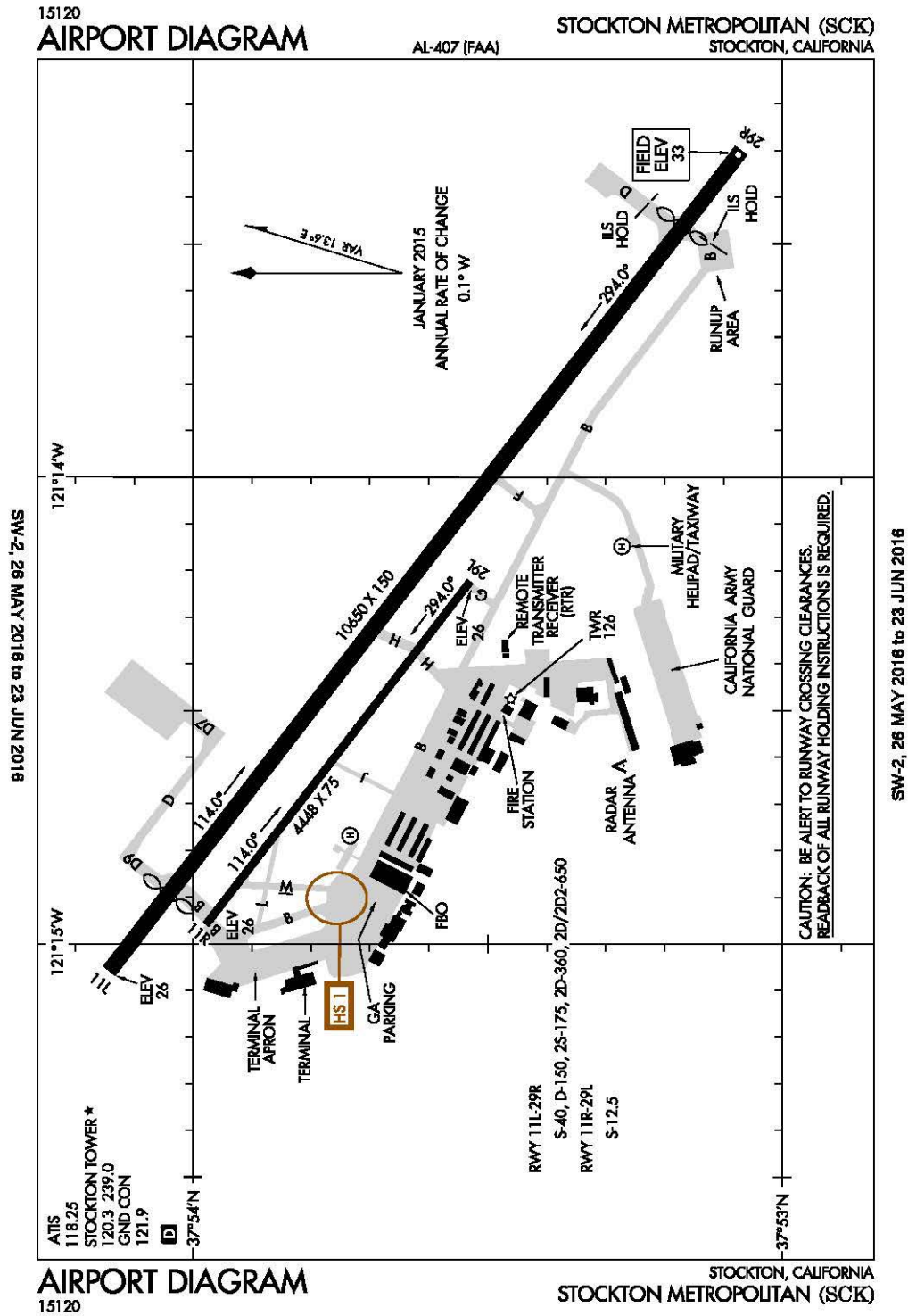
TAXIWAY W BETWEEN TAXIWAY J AND TAXIWAY L CAN SUPPORT GROUP IV AIRCRAFT.

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.

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: 33.1 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

- 2.12.1 Designation: 11L
- 2.12.2 True Bearing: 128
- 2.12.3 Dimensions: 10650 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: 10650 ft x 150 ft
- 2.12.5 Coordinates: 37-53-00.00N / 121-13-17.91W
- 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: 26 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: 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: 37-54-14.45N / 121-15-13.08W

2.19.6 Site elevation: 31.4 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: 37-53-20.81N / 121-13-36.95W

2.19.6 Site elevation: 29 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 REQUIRED. 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.

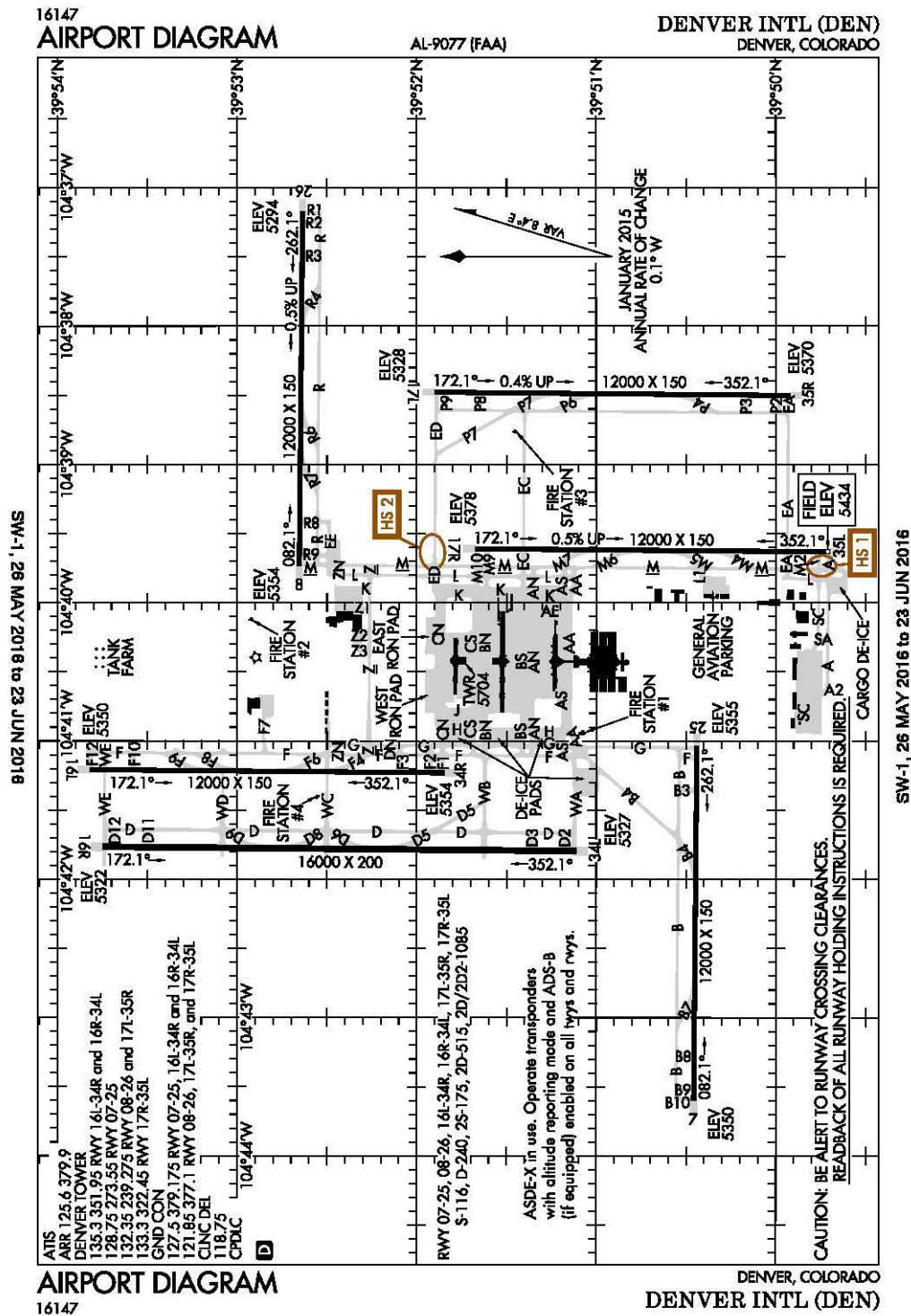
BE ALERT TO ELEVATED MALSR APPROACH END RUNWAY 29R LOCATED AT DSPLCD THRESHOLD DEMARCATION BAR WHEN USING FULL LENGTH OF RUNWAY 29R.

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 TURBO JET 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 se-
quenced 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 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: 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 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: 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 se-
quenced 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: 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: 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: 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 TAXIWAYS AND RUNWAYS.

AIRPORT DIAGRAM

AL-334 (FAA)

PUEBLO MEMORIAL (PUB)
PUEBLO, COLORADO

FIELD
ELEV
4729

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

VAR 8.1°E

JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

ELEV 4649

260.2°
← 0.4% UP →

RWY 08L-26R
S-20
RWY 08R-26L
S-75, D-170, 2D-250
RWY 17-35
S-93, D-110, 2S-140, 2D-170

HANGAR
GENERAL AVIATION PARKING
TWR
TERMINAL NWS
GENERAL AVIATION PARKING

NON MOVEMENT AREA

ATIS
125.25
PUEBLO TOWER *
119.1 257.8
GND CON
121.9
CINC DEL
120.9

Z1
ELEV 4729
170.2°
1.0% DOWN

8310 X 150

474.1 A

LAHSO
4690 X 75
260.2°
← 0.80.2° →

ELEV 4681
BL
B1
B2
B3
B4

LAHSO
10496 X 150
260.2°
← 0.80.2° →

ELEV 4677
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12

0.9% UP

350.2°
C1
C2
C3
C4
C5

ELEV 35
4648

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: John Vigil
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 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. Magnet-
ic 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. Mag-
netic 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

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. Mag-
netic 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

ic 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: Outer Marker for runway 08R. Magnet-

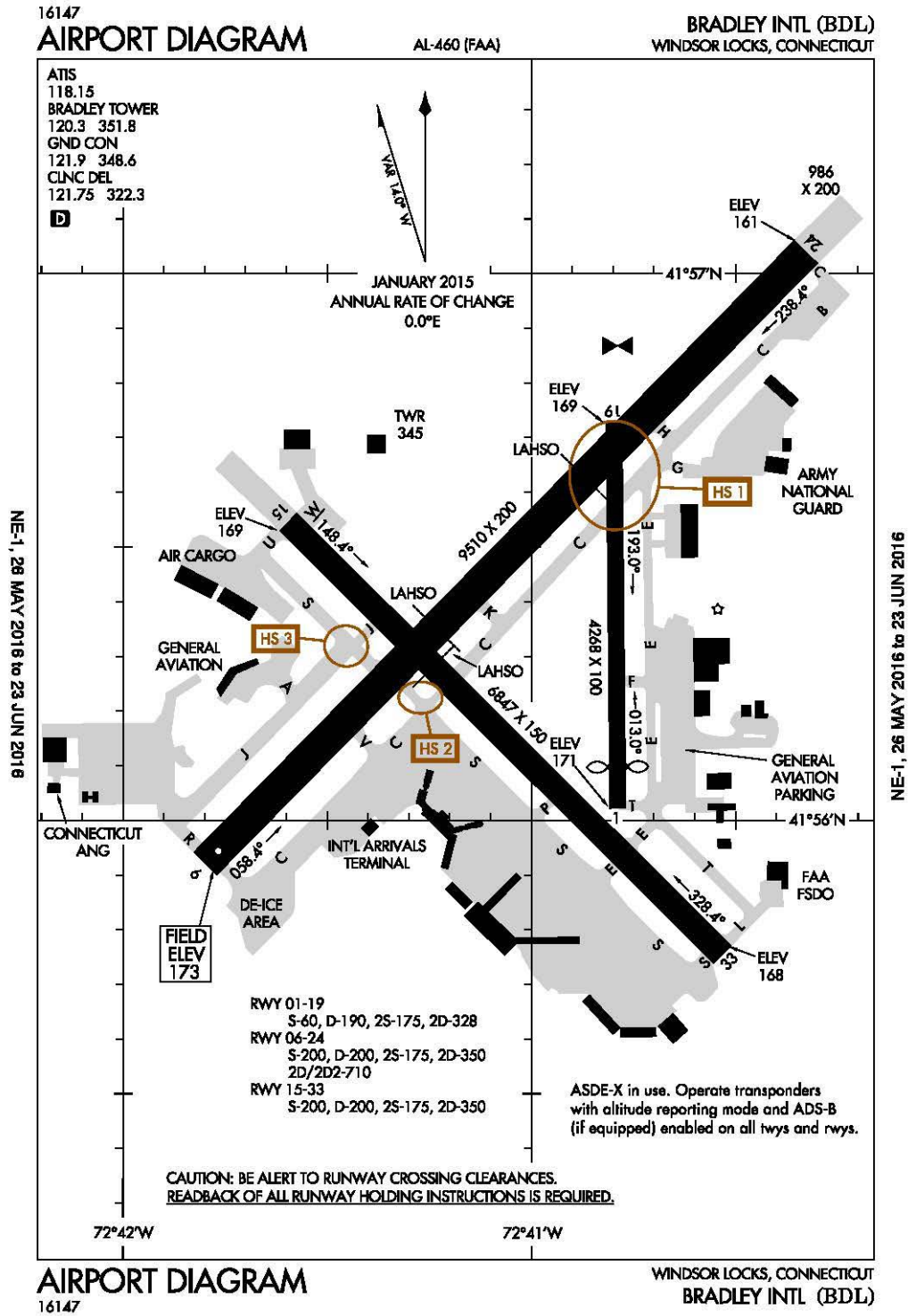
General Remarks:

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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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.

2.14.1 Designation: 06

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: 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.

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 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

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: Middle Marker for runway 06. Magnet-

General Remarks:

NUMEROUS BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

ic 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: 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: 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

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 TAXIWAYS & RUNWAYS.

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.

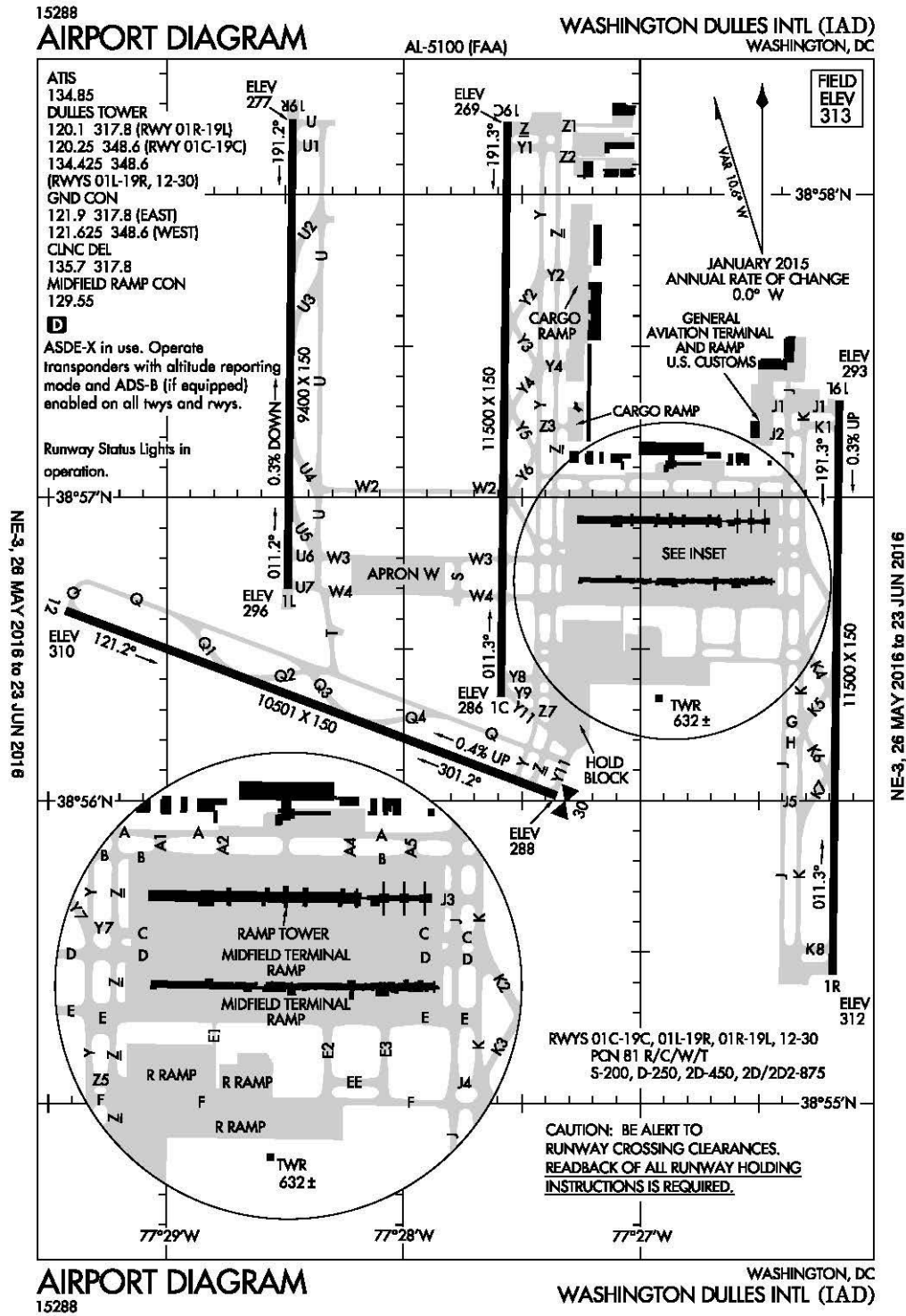
AIRCRAFT REQUESTING US CUSTOMS SERVICES MUST PARK ON THE CUSTOMS SPOT WITH THE NOSE OF THE AIRCRAFT FACING SOUTHWEST. CONTACT CUSTOMS AT 860-292-1314 WHEN PARKED.

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.

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: 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

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

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: 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

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

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: 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

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

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: 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

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

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.

DEER/LARGE FLOCKS OF BIRDS ON & 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 TAXIWAYS AND RUNWAYS.

TAXIWAY E1 RESTRICTED TO AIRCRAFT WITH A WINGSPAN LESS THAN 79 FT.

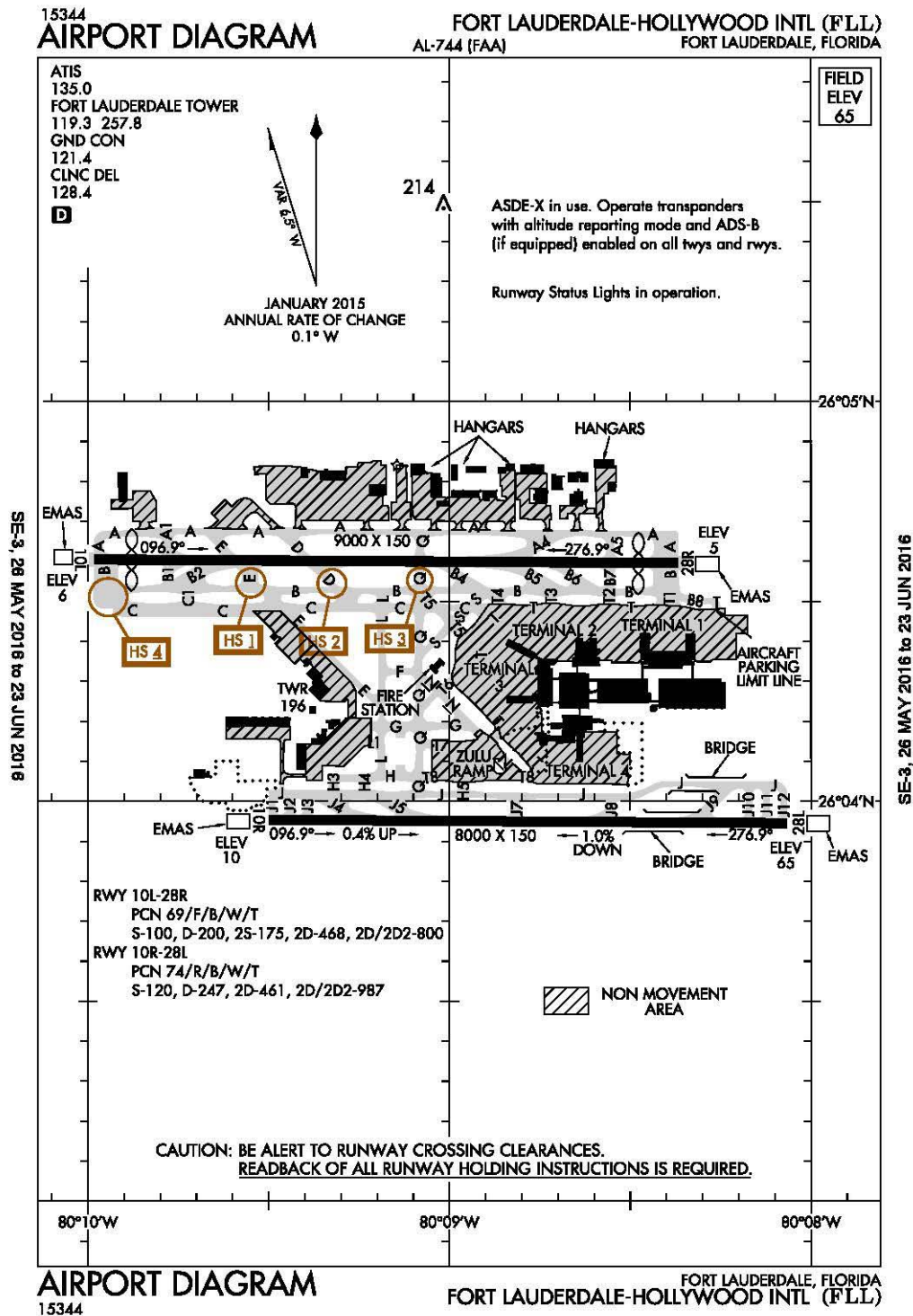
B747-8 RESTRICTED TO MAXIMUM TAXI SPEED 17 KTS (20 MPH) ON TAXIWAY J.

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 KFLI



Fort Lauderdale, FL
Fort Lauderdale/Hollywood Intl
ICAO Identifier KFLI

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: 64.9 ft
- 2.2.5 Magnetic variation: 6W (2015)
- 2.2.6 Airport Contact: Kent George
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
- D 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: 26-03-56.67N / 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: 8423

- 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: 8396

- 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: 26-03-58.83N / 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: 26-03-53.11N / 80-09-18.59W

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 AVAILABLE 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 TAXIWAYS AND RUNWAYS.

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 OFFICE FOR DETAILS.

15344

AIRPORT DIAGRAM

AL-6757 (FAA)

SOUTHWEST FLORIDA INTL (RSW)
FORT MYERS, FLORIDA

ATIS
124.65
FORT MYERS TOWER ★
128.75 257.8
GND CON
121.9 348.6
CLNC DEL
132.075

VOR 53° W
JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

26°33'N

187
NORTH RAMP

FUEL TANKS

BLAST PAD
400 X 200

FIELD
ELEV
30

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**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, 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: 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

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

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: 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

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

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: MALSR: 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: 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: 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

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 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: 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:

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:

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.

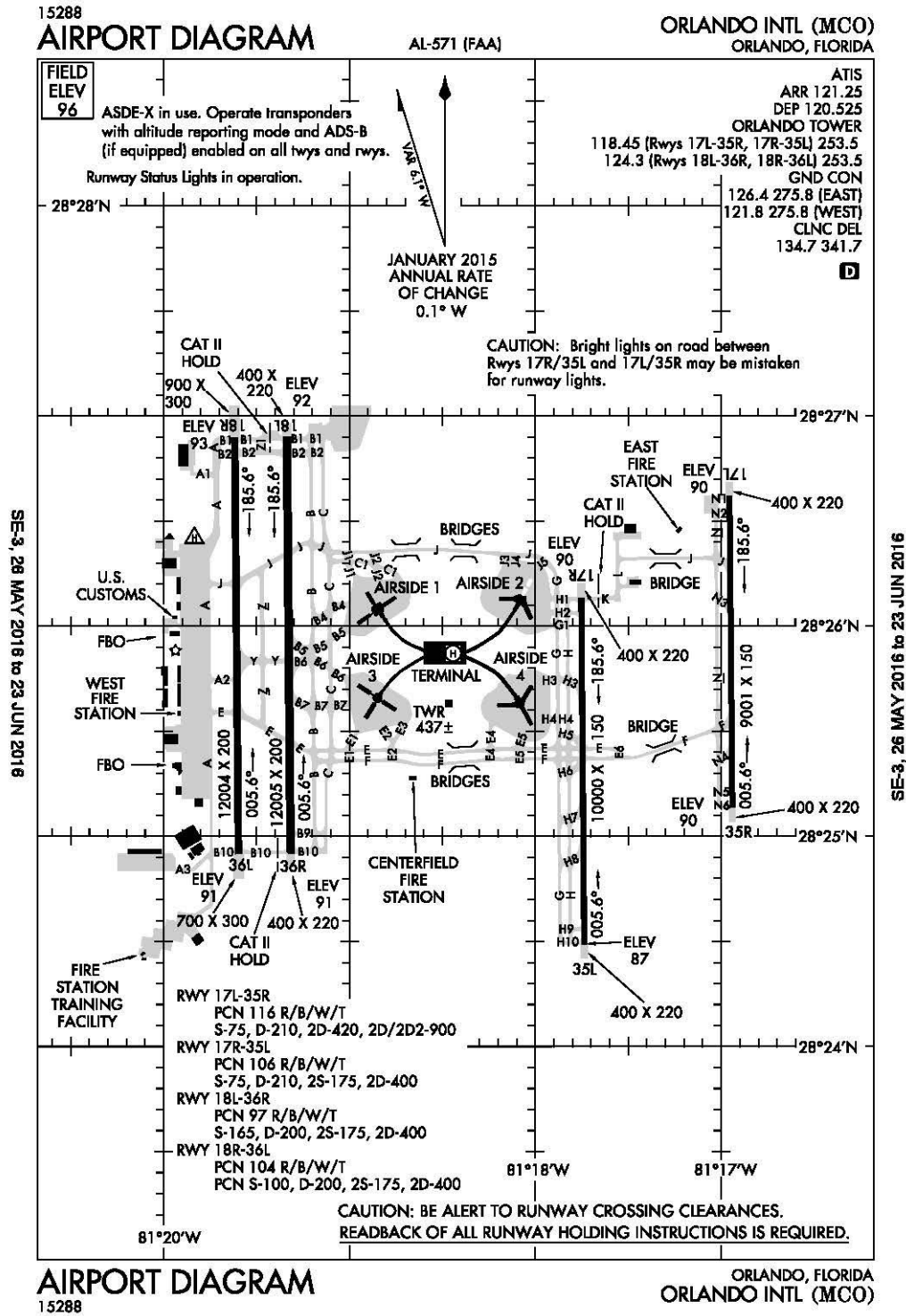
ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL TAXIWAYS AND RUNWAYS.

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: 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: 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: 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: 18L
- 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: 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: 18R
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: 36L
2.13.2 Takeoff run available: 12005
2.13.3 Takeoff distance available: 12005
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: 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: 18L
2.14.4 Visual approach slope indicator system: 6-box VASI on left
2.14.10 Remarks: VASI Upwind Threshold Crossing Height 103.3 Ft GA 3.25 Degs Downwind Threshold

Crossing Height 70.8 Ft GA 3.00 Degs.

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: 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: 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: CD/P

2.18.3 Service designation: 134.7 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

AD 2.19 Radio navigation and landing aids

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: 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: 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: 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: 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: 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: 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: 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 / 81-16-56.15W

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 TAXIWAYS AND RUNWAYS.

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 REQUIRED FOR WINGSPAN 118 FT OR GREATER.

RUNWAY 17L-35R UNLIT 0400-1100Z.

[illegible]

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
- E 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: 67 F/B/X/U
- 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: 20 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: 67 F/B/X/U
- 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: 01R
- 2.12.2 True Bearing: 2
- 2.12.3 Dimensions: 8300 ft x 150 ft
- 2.12.4 PCN: 62 R/B/X/U
- 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: 62 R/B/X/U
- 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

- 2.12.1 Designation: 01L
- 2.12.2 True Bearing: 2
- 2.12.3 Dimensions: 11002 ft x 150 ft
- 2.12.4 PCN: 62 R/B/X/U
- 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: 62 R/B/X/U
- 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

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: 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

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

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: 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 se-
quenced flashers, category II or III configuration

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 se-
quenced 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

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: 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

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: 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: 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: 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:

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.

[illegible]

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: 19.5 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: 10000 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: 10000 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
- 2.12.5 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
- 2.12.5 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: 6931 ft x 150 ft
- 2.12.5 Coordinates: 26-41-30.60N / 80-06-14.48W
- 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: 6931 ft x 150 ft
- 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: 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

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: DEP/P CLASS C
2.18.3 Service designation: 343.6 MHz

2.18.1 Service designation: APCH/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: 26-40-54.27N / 80-04-28.92W
2.19.6 Site elevation: 12.8 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: 14.4 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: 26-40-51.40N / 80-04-28.90W
2.19.6 Site elevation: 13 ft

2.19.1 ILS type: Glide Slope for runway 28R. Magnetic variation: 6W

2.19.2 ILS identification: PWB
2.19.5 Coordinates: 26-40-53.09N / 80-05-00.00W
2.19.6 Site elevation: 13.4 ft

2.19.1 ILS type: Localizer for runway 28R. Magnetic variation: 6W

2.19.2 ILS identification: PWB
2.19.5 Coordinates: 26-40-59.98N / 80-06-39.96W
2.19.6 Site elevation: 18.3 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.

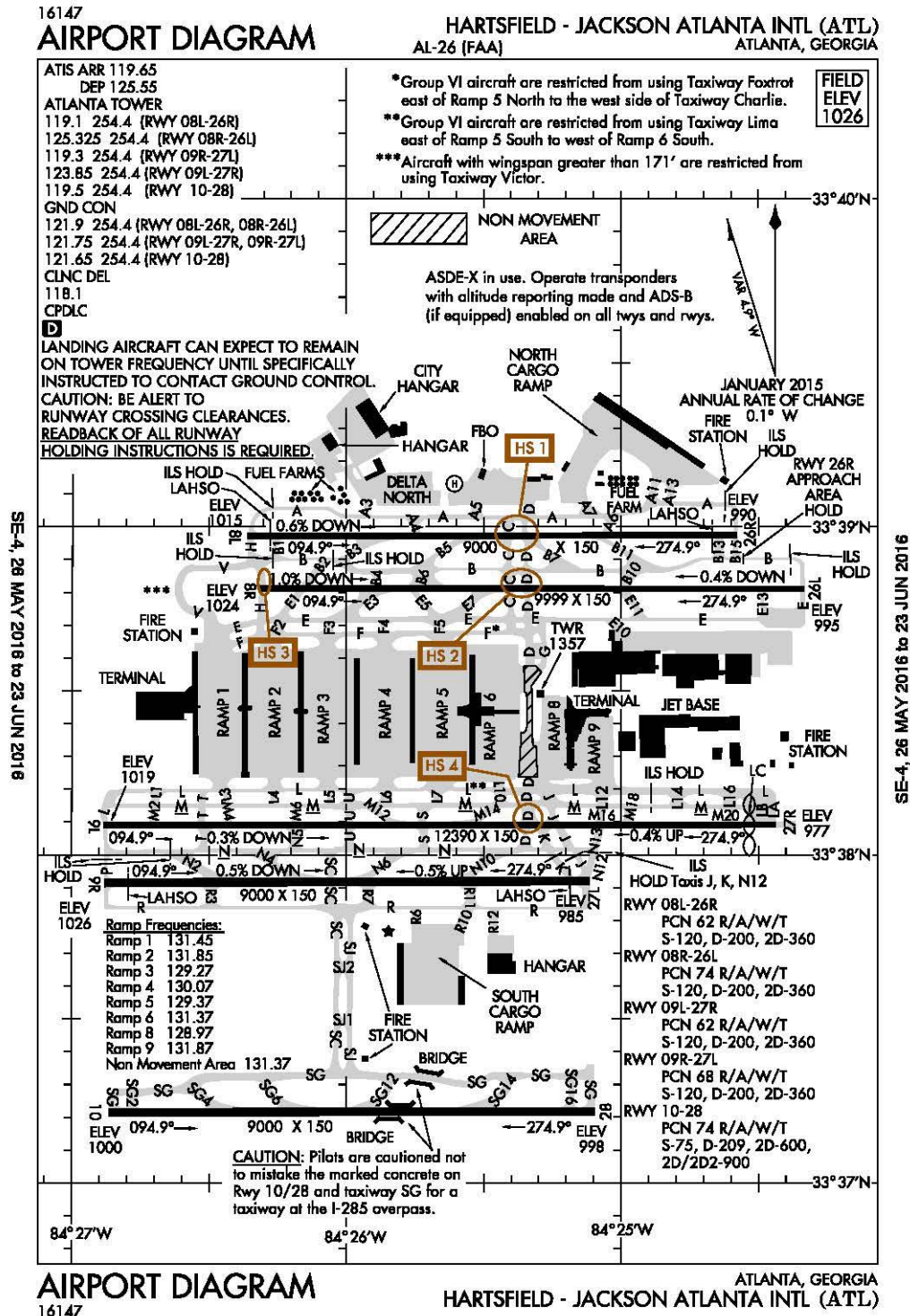
BE ALERT: TAXIWAY L IS LOCATED BETWEEN RUNWAYS 10L/28R & 10R/28L. TAXIWAY L IS WIDER AND LONGER THAN RUNWAY 10R/28L - DO NOT CONFUSE TAXIWAY L FOR RUNWAY. AIRCRAFT WITH WINGSPAN OF 118 FT OR GREATER IS PROHIBITED ON TAXIWAY L.

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: Miguel Southwell
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: 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

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

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: 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

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

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: 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

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

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 PA-PI 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 PA-PI 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 PA-PI 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 PA-PI on right

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

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 PA-PI 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.

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 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

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

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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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 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 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

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: 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: 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: 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: 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: 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 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 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: 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: 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

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 TAXIWAYS AND RUNWAYS.

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.

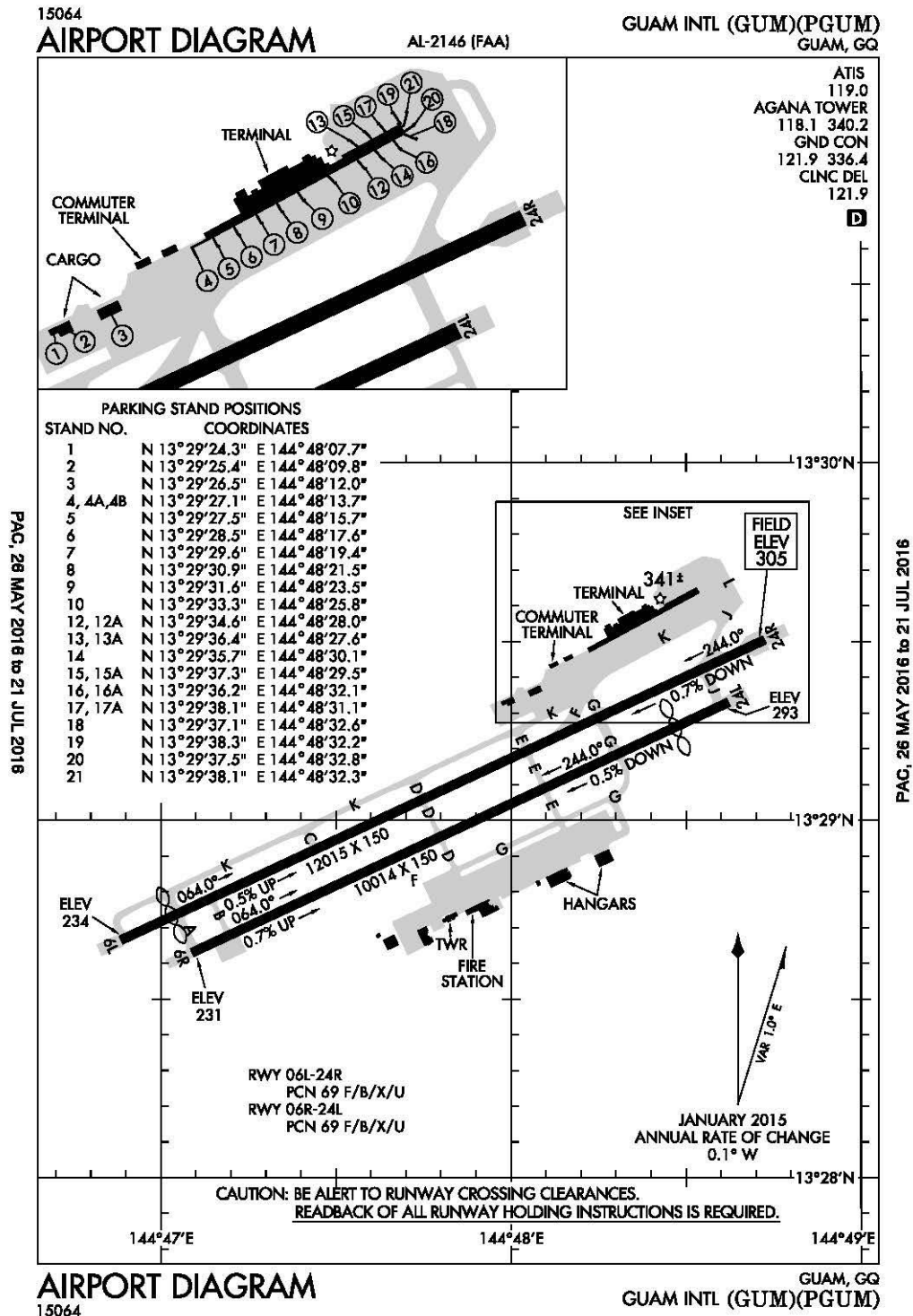
AIRCRAFT WITH WINGSPAN GREATER THAN 214 FT SHOULD EXPECT TO USE RUNWAYS 09L/27R AND 9R/27L.

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.

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

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

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.

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

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.

AIRPORT DIAGRAM

AFD-2147 [USAF]

GUAM I., MARIANA ISLANDS

ATIS 118.175 254.325
ANDERSEN TOWER
126.2 233.7
GND CON
121.7 275.8

FIELD ELEV 618

VAR 1.1°E

MAY 2013
ANNUAL RATE OF CHANGE 0.0°

360 x 1000
TANKS

ENGINE RUN-UP PADS

ELEV 540

ELEV 557

1000 x 200

BAK-12

ELEV 525

BAK-12

ELEV 515

ELEV 515 NORTH RAMP

144°55'E

SOUTH RAMP

ELEV 525

FIRE STATION

ELEV 525

AIRFIELD MANAGEMENT OPERATIONS

CONTROL TOWER

735

ELEV 555

11,200 x 200

ELEV 525

10,527 x 200

ELEV 576

0.7% UP

0.5% DOWN

BAK-12

ELEV 600

HOT CARGO

ELEV 600

24L x 200

ELEV 618

ELEV 608

24R x 200

1013

13°34'N

13°35'N

RWY 6L-24R
PCN 88 R/B/W/T
RWY 6R-24L
PCN 99 R/A/W/T

AIRPORT DIAGRAM

GUAM I., MARIANA ISLANDS
ANDERSEN AFB (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: 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

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

AD 2.14 Approach and runway lighting

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

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.

AD 2.19 Radio navigation and landing aids

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

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 DUE TO 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 IDENTIFIED 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 EXTENDED VFR 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 FROM 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 DIRECT 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.

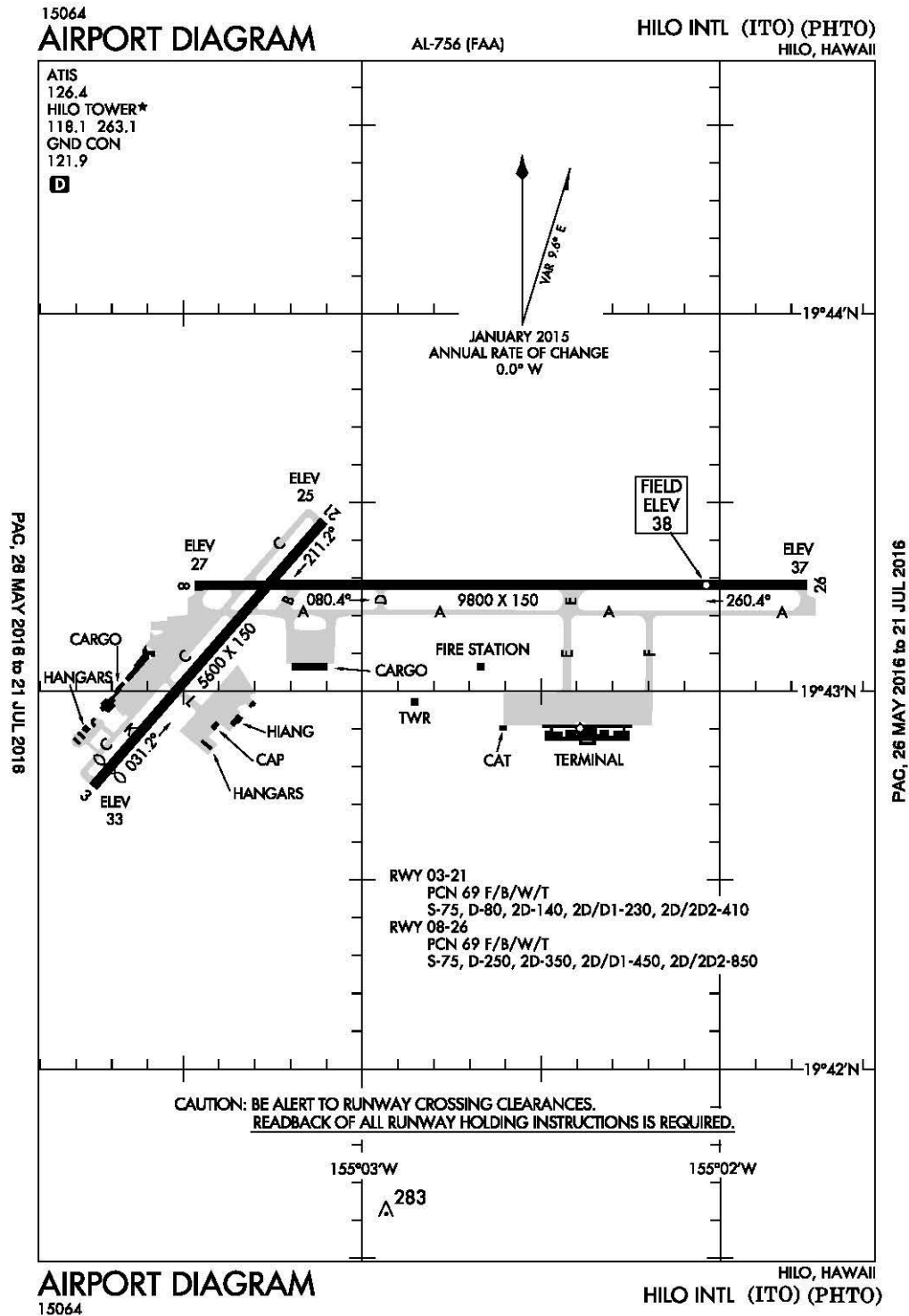
RESTRICTED: ALL OPR MUST OBTAIN APPROVAL FROM GROUND AND AMOPS PRIOR TO ENGINE START/RUN.

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

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.

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 vari-
ation: 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 varia-
tion: 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. Magnet-
ic 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

(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.

[illegible]

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: 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 / 157-56-45.07W
- 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: 21-18-24.48N / 157-54-38.15W
- 2.12.6 Threshold elevation: 10 ft
- 2.12.6 Touchdown zone elevation: 10 ft
- 2.12.1 Designation: 08L
- 2.12.2 True Bearing: 89
- 2.12.3 Dimensions: 12312 ft x 150 ft
- 2.12.4 PCN: 79 R/B/W/T
- 2.12.5 Coordinates: 21-19-30.88N / 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: 9 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 / 157-55-37.69W
- 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: 9 ft
- 2.12.6 Touchdown zone elevation: 9 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
2.12.1 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

2.12.1 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

2.12.1 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

2.12.1 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: 8 ft
2.12.6 Touchdown zone elevation: 10 ft

AD 2.13 Declared distances

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: 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: 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: 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 Unusable Beyond 5 Degrees R Of Rwy Centerline .

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: 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: DEP/P
2.18.3 Service designation: 118.3 MHz

2.18.1 Service designation: APCH/P
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 ADVI-
SORY
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: 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: DEP/P
2.18.3 Service designation: 269 MHz

2.18.1 Service designation: APCH/P
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 ASGND
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: DEP/P CLASS B
2.18.3 Service designation: 317.6 MHz

2.18.1 Service designation: APCH/P 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: 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 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

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 / 157-54-14.86W

2.19.6 Site elevation: 5 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.

2.19.1 ILS type: Glide Slope for runway 08L. Magnetic variation: 11E

2.19.2 ILS identification: HNL

2.19.5 Coordinates: 21-19-26.68N / 157-56-22.59W

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:

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

PRIOR PERMISSION REQUIRED FROM AIRPORT MANAGER FOR TRANSPORTATION 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 CONDITIONS, 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: ALL TRANSIENT AIRCRAFT, NOT ON AN AIR MOBILITY COMMAND MSN, WILL PROVIDE A 2-3 HR OUT CALL, AS WELL AS 20-30 MIN OUT CALL ON 292.5 TO THE 15 AW/CP (KOA CONTROL). 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 TAXIWAYS AND RUNWAYS.

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-AUGMENTED 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.

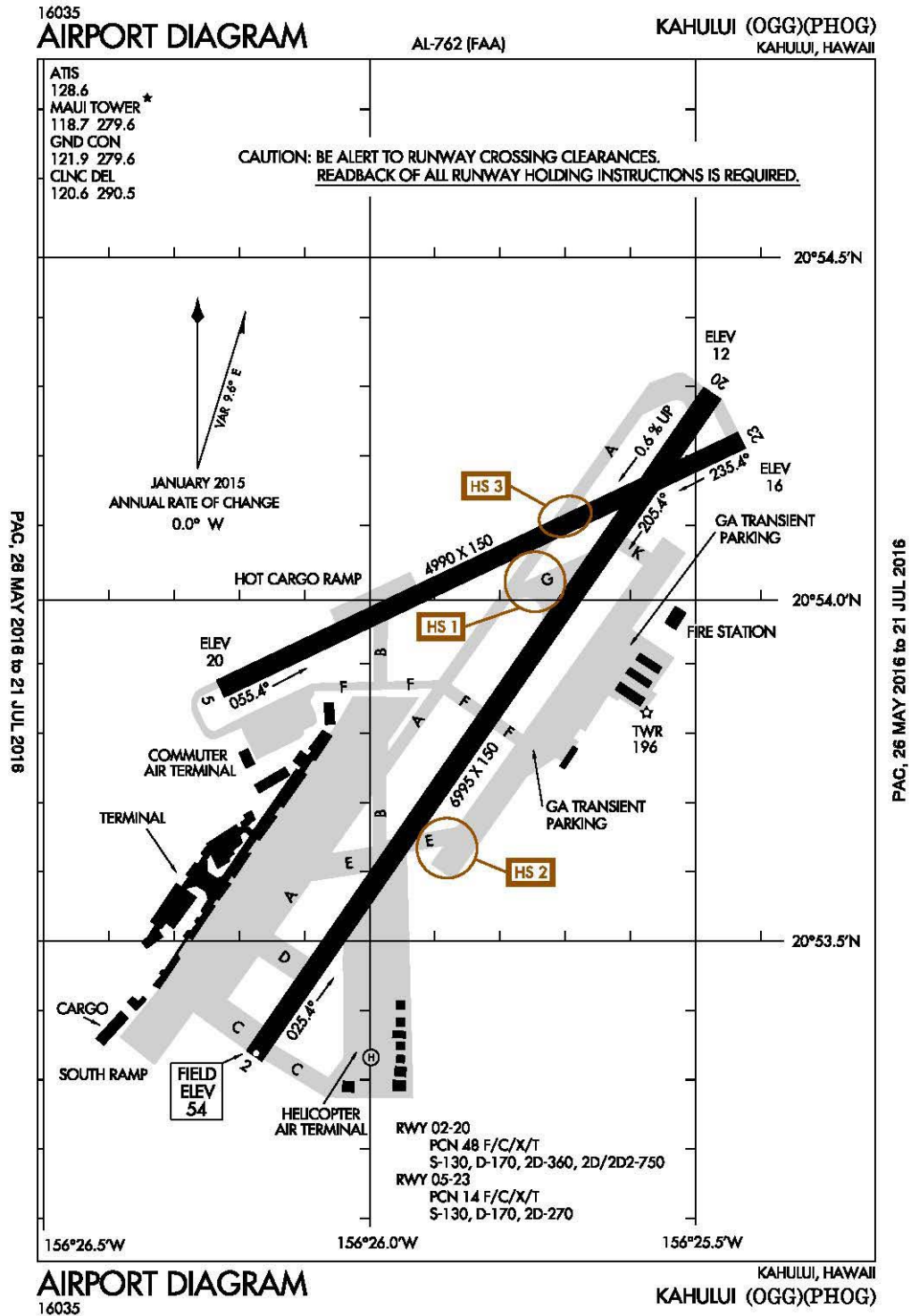
MILITARY RESTRICTED: ALL TRANSIENT AIRCRAFT NOT ON AN AMC/TWCF MSN AND HOME STATION AIRCRAFT TERMINATING AT JBPH-H, WILL PROVIDE A 3 HR OUT CALL (COMM 808-448-6900) AS WELL AS A 20-30 MIN OUT CALL ON 292.5 TO THE 15 WG/CP (KOA CONTROL).

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.

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 HAZMAT AREA 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.

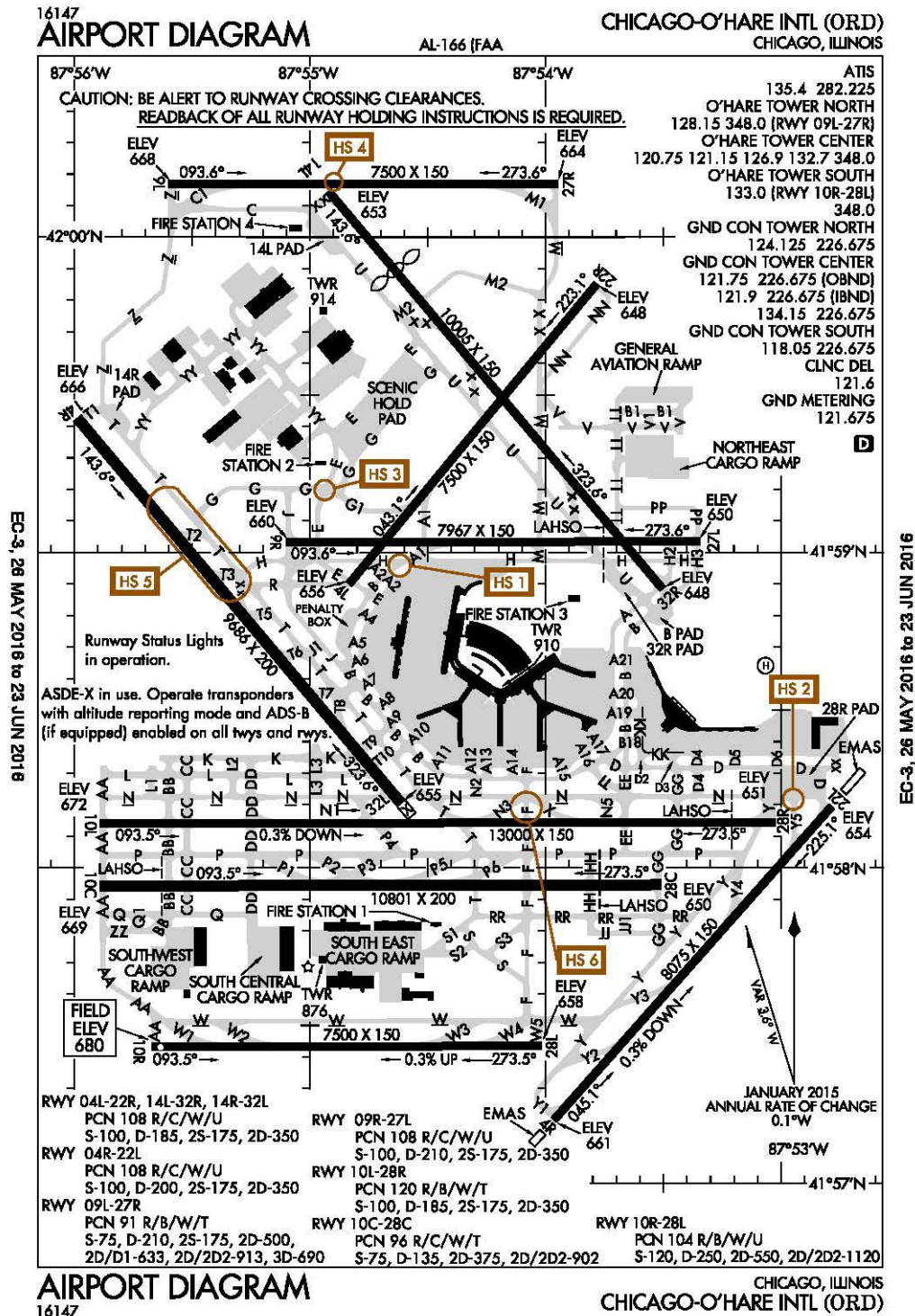
TRANSIENT PARKING LOCATED ON NE SECTION OF E RAMP.

RUNWAY 02/20 SINGLE-BELLY TWIN TANDEM (SBTT) GROSS WEIGHT 460,000 LBS.

TAXIWAY G CLOSED TO AIRCRAFT OVER 52,000 LBS.

AIRCRAFT OVER 30,000 LB LANDING ON RUNWAY 02/20 UNABLE TO TURN OFF ONTO TAXIWAY F OR 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: 32R
2.10.1.b Type of obstacle: Pole (43 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 725 ft from Centerline

2.10.1.a. Runway designation: 14R
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: 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: 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: 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: 10R
2.10.1.b Type of obstacle: Tree (78 ft). Lighted
2.10.1.c Location of obstacle: 817 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

AD 2.12 Runway physical characteristics

2.12.1 Designation: 14L
2.12.2 True Bearing: 140
2.12.3 Dimensions: 10005 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 42-00-00.00N / 87-54-55.33W
2.12.6 Threshold elevation: 653 ft
2.12.6 Touchdown zone elevation: 653 ft

2.12.1 Designation: 32R
2.12.2 True Bearing: 320
2.12.3 Dimensions: 10005 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41-58-53.06N / 87-53-30.17W
2.12.6 Threshold elevation: 648 ft
2.12.6 Touchdown zone elevation: 653 ft

2.12.1 Designation: 14R

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: 32L
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: 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: 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: H1
2.12.3 Dimensions: 200 ft x 100 ft
2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 7967 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41-59-00.00N / 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: 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

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

AD 2.13 Declared distances

2.13.1 Designation: 14L
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: 8007

2.13.1 Designation: 32R
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: 10005

2.13.1 Designation: 14R
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: 32L

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: 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: 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: 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: 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

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

AD 2.14 Approach and runway lighting

2.14.1 Designation: 14L
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: 32R
2.14.2 Approach lighting system: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

2.14.1 Designation: 14R

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: 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: 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: 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	2.18.1 Service designation: GND METERING 2.18.3 Service designation: 121.675 MHz
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	2.18.1 Service designation: VFR ADV 2.18.3 Service designation: 126.8 MHz
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	2.18.1 Service designation: D-ATIS 2.18.3 Service designation: 135.4 MHz 2.18.4 Hours of operation: 24
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	2.18.1 Service designation: EMERG 2.18.3 Service designation: 243 MHz
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	2.18.1 Service designation: ALCP 2.18.3 Service designation: 252.1 MHz
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	2.18.1 Service designation: O'HARE TWR CENTER LCL/P 2.18.3 Service designation: 126.9 MHz
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	2.18.1 Service designation: O'HARE TWR CENTER LCL/P 2.18.3 Service designation: 120.75 MHz
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	2.18.1 Service designation: O'HARE TWR CENTER LCL/P 2.18.3 Service designation: 132.7 MHz
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	2.18.1 Service designation: O'HARE TWR CENTER LCL/S 2.18.3 Service designation: 127.925 MHz
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: PRE-TAXI CLNC 2.18.3 Service designation: 121.6 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: CD/P 2.18.3 Service designation: 121.6 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: 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 10R PRM

2.18.3 Service designation: 128.05 MHz

2.18.1 Service designation: ORD TWR CENTER RY
10C PRM

2.18.3 Service designation: 119.625 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 14L. Magnetic
variation: 3W

2.19.2 ILS identification: OHA

2.19.5 Coordinates: 41-58-44.36N / 87-53-20.39W

2.19.6 Site elevation: 650.5 ft

2.19.1 ILS type: Glide Slope for runway 14L. Magnetic
variation: 3W

2.19.2 ILS identification: OHA

2.19.5 Coordinates: 41-59-48.18N / 87-54-25.13W

2.19.6 Site elevation: 647.8 ft

2.19.1 ILS type: Middle Marker for runway 14L. Mag-
netic variation: 3W

2.19.2 ILS identification: OHA

2.19.5 Coordinates: 42-00-29.46N / 87-55-18.64W

2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 14L. Magnetic varia-
tion: 3W

2.19.2 ILS identification: OHA

2.19.5 Coordinates: 41-58-43.19N / 87-53-23.65W

2.19.6 Site elevation: 666.7 ft

2.19.1 ILS type: Outer Marker for runway 14L. Magnet-
ic variation: 3W

2.19.2 ILS identification: OHA

2.19.5 Coordinates: 42-04-00.00N / 87-59-27.18W

2.19.6 Site elevation:

2.19.1 ILS type: Inner Marker for runway 14L. Magnetic
variation: 3W

2.19.2 ILS identification: OHA

2.19.5 Coordinates: 42-00-00.00N / 87-54-43.27W

2.19.6 Site elevation: 647.3 ft

2.19.1 ILS type: Glide Slope for runway 32R. Magnetic
variation: 3W

2.19.2 ILS identification: IDN

2.19.5 Coordinates: 41-59-00.00N / 87-53-36.78W

2.19.6 Site elevation: 646.2 ft

2.19.1 ILS type: Middle Marker for runway 32R. Mag-
netic variation: 3W

2.19.2 ILS identification: IDN

2.19.5 Coordinates: 41-58-33.83N / 87-53-00.00W

2.19.6 Site elevation: 645 ft

2.19.1 ILS type: Localizer for runway 32R. Magnetic
variation: 3W

2.19.2 ILS identification: IDN

2.19.5 Coordinates: 42-00-17.03N / 87-55-00.00W

2.19.6 Site elevation: 648.8 ft

2.19.1 ILS type: Outer Marker for runway 32R. Magnet-
ic variation: 3W

2.19.2 ILS identification: IDN

2.19.5 Coordinates: 41-54-17.50N / 87-48-24.90W

2.19.6 Site elevation:

2.19.1 ILS type: Inner Marker for runway 32R. Magnetic
variation: 3W

2.19.2 ILS identification: IDN

2.19.5 Coordinates: 42-00-16.11N / 87-55-00.00W

2.19.6 Site elevation:

2.19.1 ILS type: DME for runway 14R. Magnetic varia-

tion: 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 14R. 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 14R. 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 14R. 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 14R. 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 14R. 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: 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: 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 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: 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

ic 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: 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: 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: 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. Mag-

netic 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: 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: 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: 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: 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: DME for runway 10R. Magnetic varia-

tion: 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: 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

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

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.

DURING PERIODS OF COLD WEATHER; THE APPROACH CONTROL END OF RUNWAY 32R MAY NOT BE VISIBLE FROM THE ATCT DUE TO STEAM PLUME FROM AIRPORT HEATING PLANT.

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 32L 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 RUNWAYS 14L & 14R 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 TAXIWAYS AND RUNWAYS.

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 32L CLOSED TO ARRIVALS. RUNWAY 14R/32L DUAL USE RWY/TWY. EDGE/TDZL AVAILABLE FOR RUNWAY OPERATIONS; GREEN CL AVAILABLE FOR TAXI OPERATIONS. RUNWAY 14L-32R CLOSED EXCEPT TAXI BETWEEN RUNWAY 9R-27L AND TAXIWAY B.

ATCT IS AUTHORIZED TO CONDUCT SIMULTANEOUS DEPS FROM RUNWAY 14R/14L, RUNWAY 32L/32R, 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.

[illegible]

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: 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: 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: 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: 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: 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: 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

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

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.

AIRPORT DIAGRAM

WICHITA DWIGHT D EISENHOWER NATIONAL (ICT)
AL-987 (FAA) WICHITA, KANSAS

ATIS
125.15
WICHITA TOWER
118.2 257.8
GND CON
121.9 348.6
CLNC DEL
125.7

LEAR JET

ILS HOLD

ELEV 1330

CARGO RAMP

GENERAL AVIATION PARKING

CUSTOMS

ELEV 1320

ILS HOLD

JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

NWS

ELEV 1332

TWR 1446

FIRE STATION

AIR CARRIER GATES RAMP

ELEV 1322

ELEV 1321

ILS HOLD

SERVICE CENTER

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

RWY 01L-19R
S-100, D-210, 2S-175, 2D-300

RWY 01R-19L
S-125, D-240, 2D-400

RWY 14-32
S-100, D-190, 2S-175, 2D-280

WICHITA, KANSAS
WICHITA DWIGHT D EISENHOWER NATIONAL (ICT)

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: 14
2.12.2 True Bearing: 150
2.12.3 Dimensions: 6301 ft x 150 ft
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
2.12.5 Coordinates: 37–38–33.22N / 97–25–45.10W
2.12.6 Threshold elevation: 1322 ft
2.12.6 Touchdown zone elevation: 1322 ft

2.12.1 Designation: 01R
2.12.2 True Bearing: 20
2.12.3 Dimensions: 7301 ft x 150 ft
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
2.12.5 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: 01L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 10301 ft x 150 ft
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
2.12.5 Coordinates: 37–39–41.76N / 97–26–00.00W
2.12.6 Threshold elevation: 1330 ft
2.12.6 Touchdown zone elevation: 1330 ft

AD 2.13 Declared distances

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

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: 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

AD 2.14 Approach and runway lighting

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

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: 01L
2.14.2 Approach lighting system: ALSF2: Standard 2400
feet high intensity approach lighting system with se-
quenced flashers, category II or III configuration

2.14.1 Designation: 19R
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: 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 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: 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: 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 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

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: 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: 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: 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

General Remarks:

MIGRATORY BIRDS ON & IN THE VICINITY OF AIRPORT.

PRIOR PERMISSION REQUIRED 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 R BETWEEN A AND C, F, G, H, J, P AND ALL PARKING RAMPS ARE NON-MOVEMENT AREAS.

ATTENDED CONTINUOUSLY.

RUNWAY VISUAL RANGE TOUCHDOWN, MIDPOINT AND ROLLOUT RUNWAY 01L AND RUNWAY 19R AVAILABLE.

RUNWAY VISUAL RANGE TOUCHDOWN AND ROLLOUT RUNWAY 01R AND 19L AVAILABLE.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVAILABLE.

16147

AIRPORT DIAGRAM

CINCINNATI/NORTHERN KENTUCKY INTL (CVG)
AL-655 (FAA) COVINGTON, KENTUCKY

ATIS ARR 134.375
DEP 135.3
CINCINNATI TOWER
118.3 (RWYS 18C/36C, 09/27)
118.975 360.85 (RWY 18L/36R)
133.325 (RWY 18R/36L)
GND CON
121.7
CLNC DEL
127.175
D

RWYS 09-27, 18C-36C, 18L-36R
S-75, D-210, 25-175, 2D-400, 2D/2D2-850
RWY 18R-36L
S-75, D-210, 2D-400, 2D/2D2-850

8000 X 150
ELEV 865
185.8°
B6
B5
B4
B3
B2
B1
ELEV 873
36L
005.8°
095.8°
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K8
K7
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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: 4W (1995)
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
2.12.5 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
2.12.5 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: 09
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12000 ft x 150 ft
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
2.12.5 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: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 10000 ft x 150 ft
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
2.12.5 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: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8000 ft x 150 ft
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
2.12.5 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: 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: 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: 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: 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: 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: 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: 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: 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: Localizer for runway 09. Magnetic variation: 4W

2.19.2 ILS identification: URN

2.19.5 Coordinates: 39-02-46.53N / 84-39-00.00W

2.19.6 Site elevation: 874 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: 874 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: 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: 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: 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: 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: 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: 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: 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: 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 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: 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: 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: 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: 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.

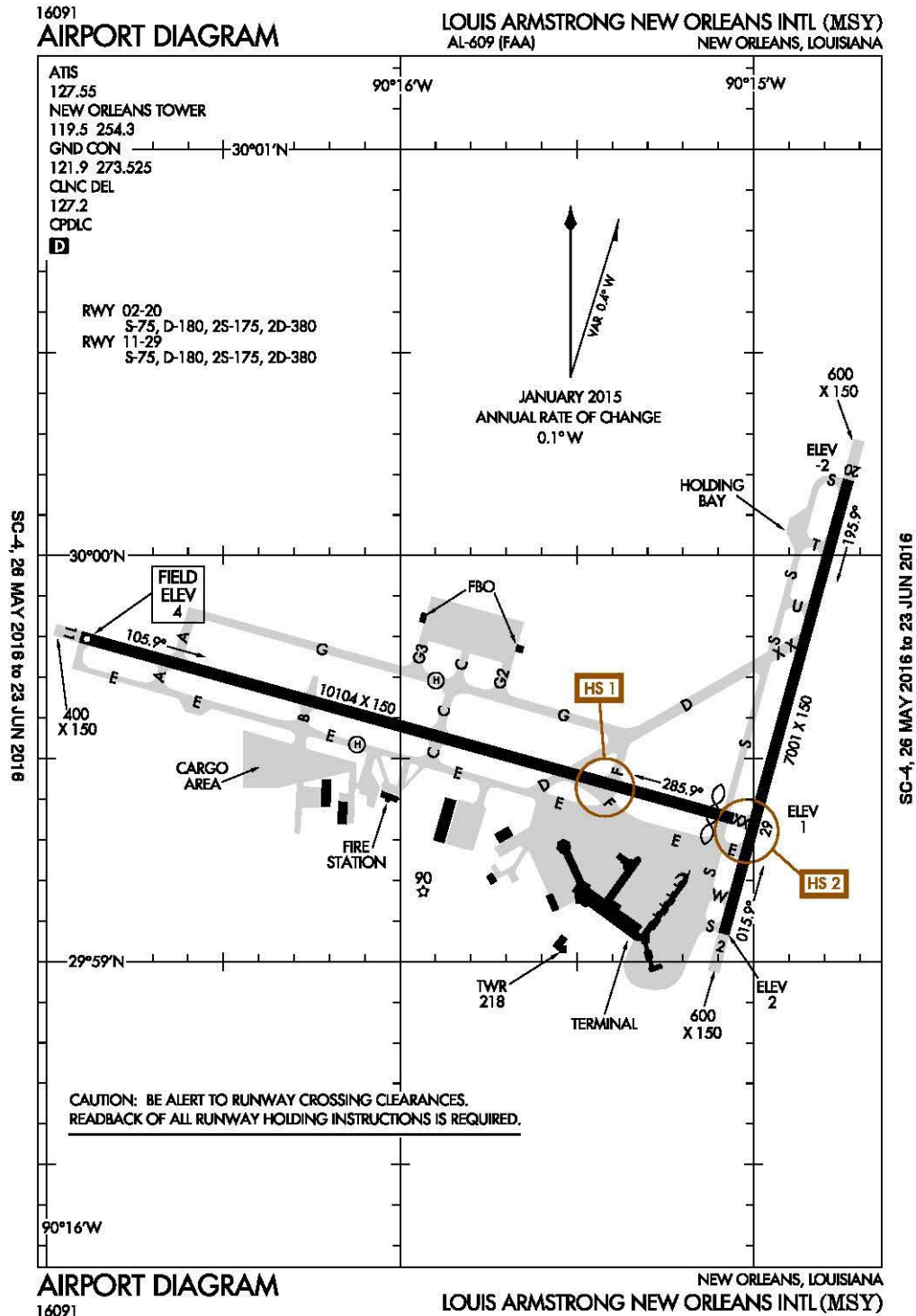
LARGE FLOCKS OF BIRDS ON AND IN THE VICINITY OF THE AIRPORT.

TAXIWAY N A NON-MOVEMENT AREA

RAMP CONTROL EFFECTIVE 0800-0400Z. RAMP CONTROL 130.375 130.900 DHL RAMP CONTROL 129.475

MULTIPLE CRANES 135 FT AGL OPERATING.56NM NW OF RW36R THRESHOLD DAILY MON-SAT FROM SR-SS.

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: Iftikhar Ahmad
PO BOX 20007
New Orleans, LA 70141
((504) 628-1160)

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
2.18.3 Service designation: 125.5 MHz

2.18.1 Service designation: 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: 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: APCH/P DEP/P CLASS B
2.18.3 Service designation: 290.3 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: 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: 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: 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: 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: 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: 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.

15232

AIRPORT DIAGRAM

AL-39 (FAA)

BANGOR INTL (BGR)
BANGOR, MAINE

ATIS
127.75
BANGOR TOWER
120.7 233.7
GND CON
121.9 348.6
CLNC DEL
135.9 348.6

D

FIELD
ELEV
192

CAT 2
HOLD

1000
X 200

150.6°

0.4% DOWN

WHISKEY
APRON

339

ANG
APRON

FIRE
STATION

TWR
322

11440 X 200

INTL
TERMINAL

DOMESTIC
TERMINAL

COMMERCIAL
APRON

AASF
APRON

GENERAL
AVIATION
TERMINAL

327

ELEV
163

1000
X 200

CAT 2
HOLD

330.6°

33

327

44°49'N

44°48'N

68°50'W

68°49'W

RWY 15-33
S-100, D-210, 2S-175, 2D-400

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

AIRPORT DIAGRAM

BANGOR, MAINE
BANGOR INTL (BGR)

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: 19W (1985)
- 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: 17W

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: 17W

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: 17W

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: Middle Marker for runway 15. Magnetic variation: 17W

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: Inner Marker for runway 15. Magnetic variation: 17W

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: Outer Marker for runway 15. Magnetic variation: 17W

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: 19W

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: 19W

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: 19W

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: DME for runway 33. Magnetic variation: 19W

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

2.19.1 ILS type: Middle Marker for runway 33. Magnetic variation: 19W

2.19.2 ILS identification: BGR
2.19.5 Coordinates: 44-47-30.62N / 68-48-20.24W
2.19.6 Site elevation:

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 REQUIRED 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 DURING OPERATING HRS.

ANG: FEE REQUIRED. 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. ALL HAZARD CARGO SHOULD BE PRE-COORD FOR SAFETY REASONS, NO HOT CARGO PAD AVAILABLE.

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/CMDR POST/SOF FOR CURRENT BIRDWATCH CONDITION.

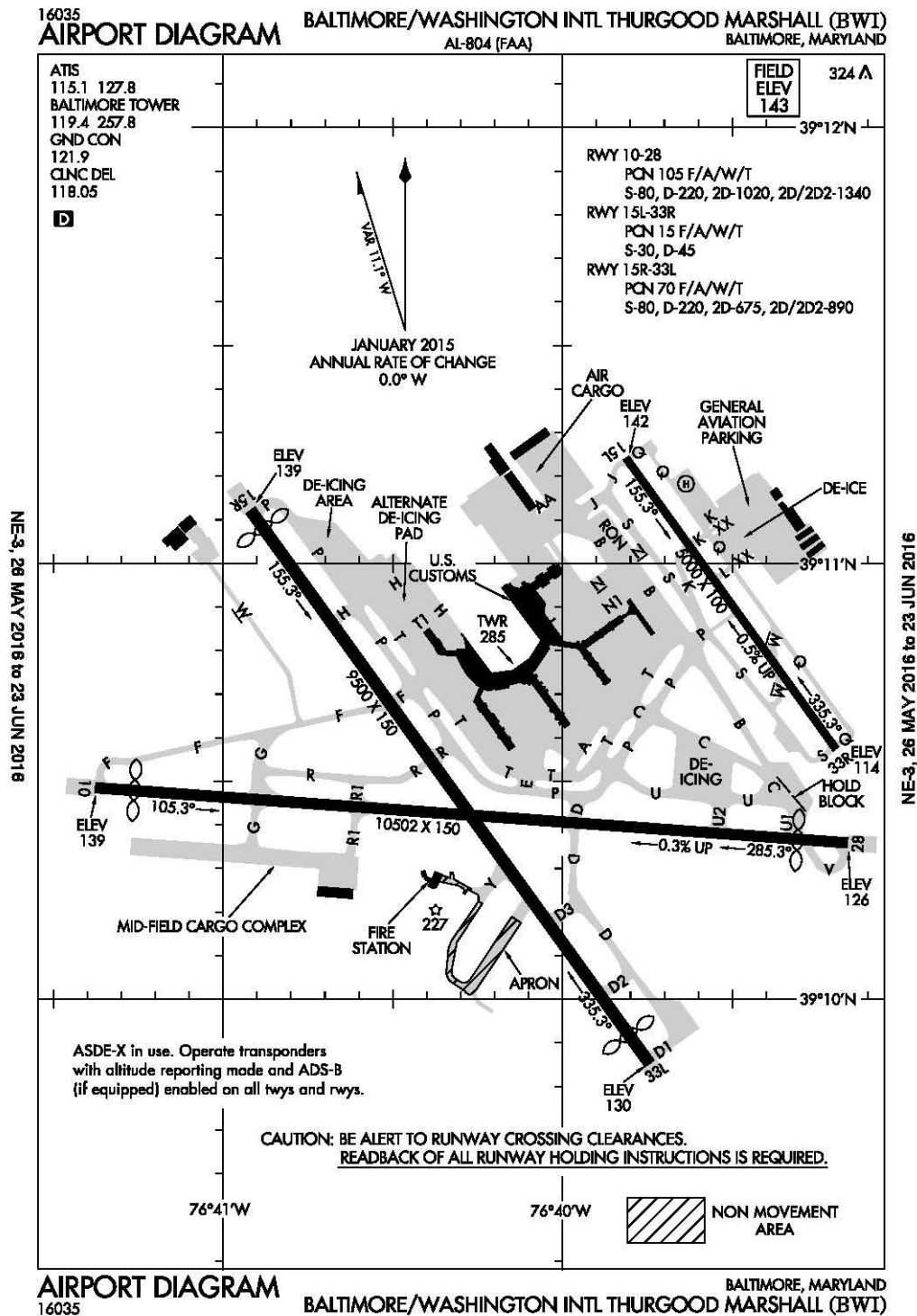
SERVICE-FLUID: REMARKS: FOREIGN MILITARY ONLY: ON BASE LOX SERVICE UNAVAILABLE.

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 Unavail-
able. Lanes 4, 5 & 6 Are R Standard To Aircraft Wing-
span 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
C certified on 5/1/1973
2.6.4 Remarks: BWI Is Officially An Index C Airport,
As Determined By FAA. ARFF Index D Equipment
Coverage Provided.

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 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: 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: 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 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: 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

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: 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: 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

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.

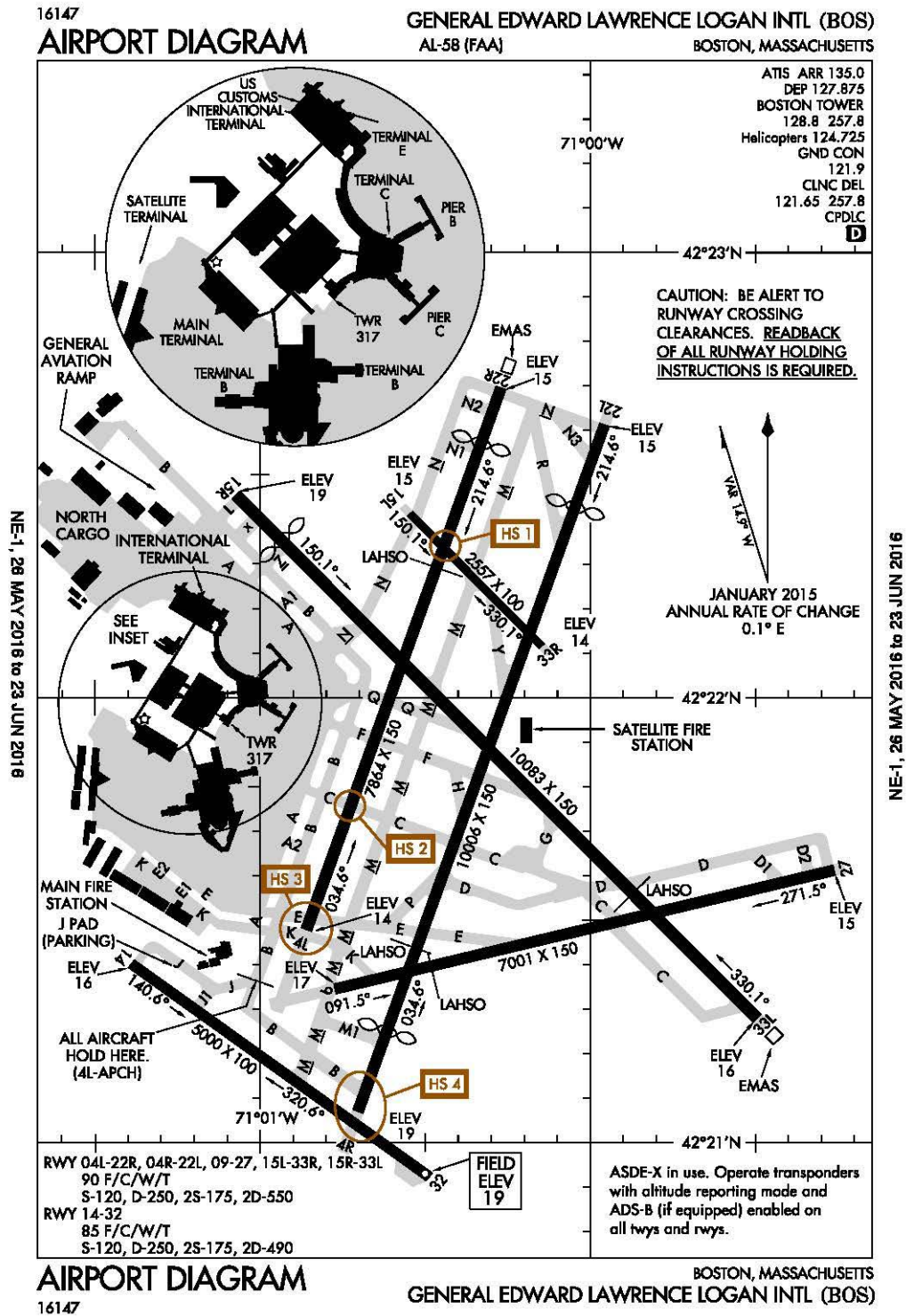
TAXIWAY T BETWEEN TAXIWAY H AND TAXIWAY E RESTRICTED TO GROUP IV AIRCRAFT WITH WINGSPAN LESS THAN 171'. TAXIWAY T BETWEEN TAXIWAY E AND TAXIWAY B RESTRICTED TO GROUP V AIRCRAFT WITH WINGSPAN LESS THAN 214'; WHEN GROUP V AIRCRAFT ARE ON TAXIWAY T, TAXIWAY A IS RESTRICTED TO MAX WINGSPANS OF 110'.

ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL TAXIWAYS AND RUNWAYS.

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.

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: 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

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

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: 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

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

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 se-
quenced 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 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: 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: 127.875 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: 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: 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: 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: 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 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: 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 – 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.

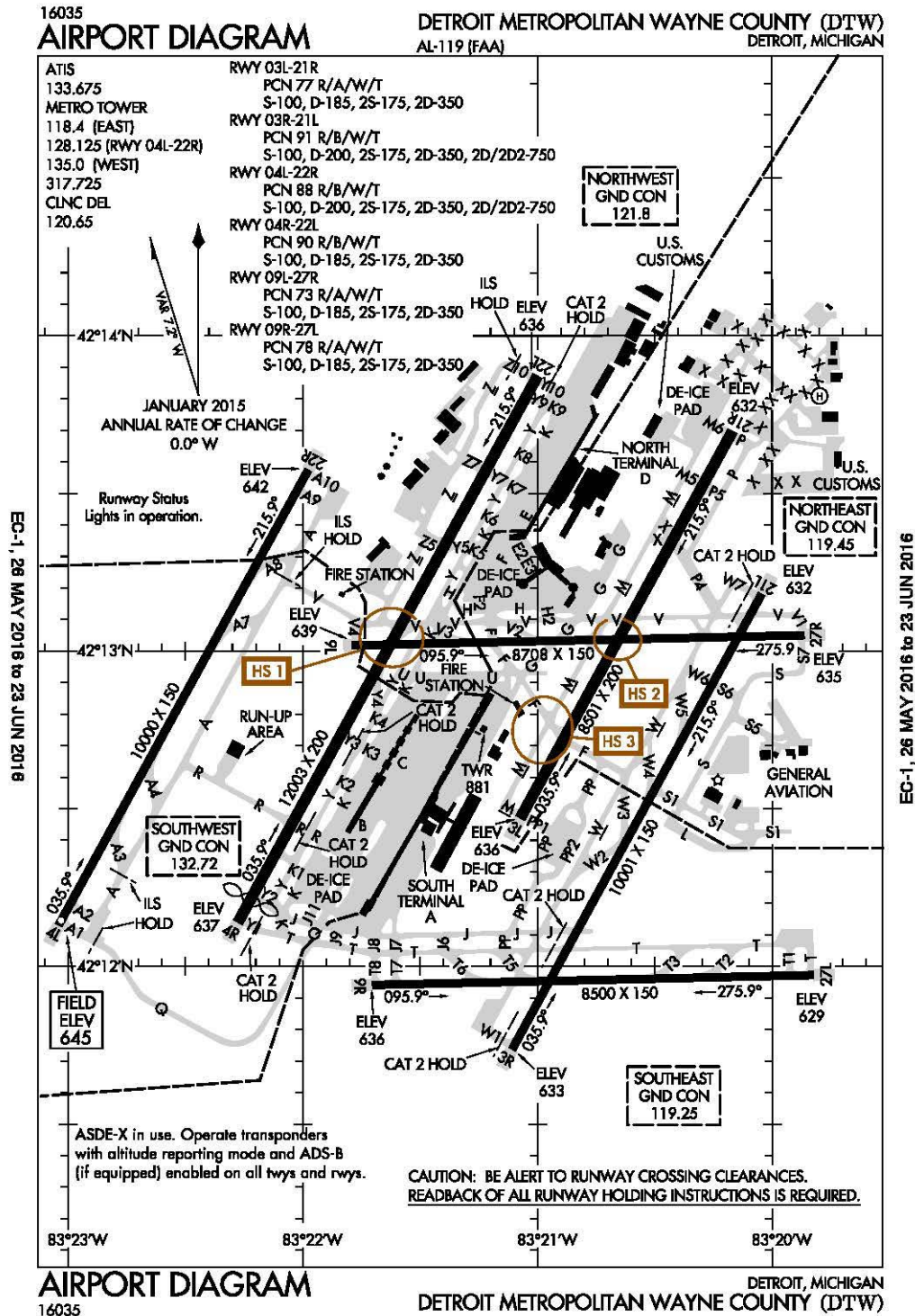
NUMEROUS CRANES ON & IN THE VICINITY OF OF AIRPORT UP TO & INCLUDING 250 FT. MSL.

RY14/32 UNIDIRECTIONAL; NO LANDINGS RUNWAY 14; NO TAKEOFFS RUNWAY 32.

ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IFEQUIPPED) ENABLED ON ALL TAXIWAYS & RUNWAYS.

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: 6W (1990)
2.2.6 Airport Contact: Thomas Naughton
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: 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: 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: 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: 90 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: 90 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: 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: 04L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 88 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: 88 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: 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: 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: 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: 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: 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. Runway 03R, PAPI 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: 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: 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: 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: 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: PRM RY 4L/22R
2.18.3 Service designation: 127.05 MHz

2.18.1 Service designation: PRM RY 4R/22L
2.18.3 Service designation: 135.775 MHz

2.18.1 Service designation: PRM RY 3R/21L
2.18.3 Service designation: 128.35 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.4 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: 6W

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: 6W

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: 6W

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: 6W

2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42-14-00.00N / 83-20-53.38W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: DME for runway 04R. Magnetic variation: 6W

2.19.2 ILS identification: DTW
2.19.5 Coordinates: 42-13-59.69N / 83-20-50.36W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Inner Marker for runway 04R. Magnetic variation: 6W

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: 6W

2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42-13-59.69N / 83-20-50.36W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Outer Marker for runway 22L. Magnetic variation: 6W

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: 6W

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: 6W

2.19.2 ILS identification: DWC
2.19.5 Coordinates: 42-13-43.86N / 83-21-12.29W
2.19.6 Site elevation: 636 ft

2.19.1 ILS type: Middle Marker for runway 22L. Magnetic variation: 6W

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: 6W

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: 6W

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: 6W

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: 6W

2.19.2 ILS identification: HUU
2.19.5 Coordinates: 42-11-34.31N / 83-21-00.00W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Glide Slope for runway 03R. Magnetic variation: 6W

2.19.2 ILS identification: HUU

2.19.5 Coordinates: 42-11-51.13N / 83-20-54.98W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: Inner Marker for runway 03R. Magnetic variation: 6W

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: 6W

2.19.2 ILS identification: EJR

2.19.5 Coordinates: 42-11-34.94N / 83-21-13.32W
2.19.6 Site elevation: 631 ft

2.19.1 ILS type: Glide Slope for runway 21L. Magnetic variation: 6W

2.19.2 ILS identification: EJR

2.19.5 Coordinates: 42-12-58.50N / 83-20-00.00W
2.19.6 Site elevation: 629 ft

2.19.1 ILS type: Middle Marker for runway 21L. Magnetic variation: 6W

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: 6W

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: 6W

2.19.2 ILS identification: EJR

2.19.5 Coordinates: 42-11-34.31N / 83-21-00.00W
2.19.6 Site elevation: 630 ft

2.19.1 ILS type: DME for runway 04X. Magnetic variation: 6W

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: 6W

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: 6W

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: 6W

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: 6W

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: 6W

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

2.19.1 ILS type: DME for runway 04L. Magnetic variation: 6W

2.19.2 ILS identification: HJT

2.19.5 Coordinates: 42-13-41.92N / 83-21-48.73W
2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Glide Slope for runway 04L. Magnetic variation: 6W

2.19.2 ILS identification: HJT

2.19.5 Coordinates: 42-12-18.95N / 83-23-00.00W
2.19.6 Site elevation: 641 ft

2.19.1 ILS type: Localizer for runway 04L. Magnetic variation: 6W

2.19.2 ILS identification: HJT

2.19.5 Coordinates: 42-13-43.23N / 83-21-52.16W
2.19.6 Site elevation: 642 ft

2.19.1 ILS type: Inner Marker for runway 04L. Magnetic variation: 6W

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: 6W

2.19.2 ILS identification: JKI

2.19.5 Coordinates: 42-13-41.92N / 83-21-48.73W

2.19.6 Site elevation: 650 ft

2.19.1 ILS type: Glide Slope for runway 22R. Magnetic variation: 6W

2.19.2 ILS identification: JKI

2.19.5 Coordinates: 42-13-27.23N / 83-22-10.00W

2.19.6 Site elevation: 637 ft

2.19.1 ILS type: Localizer for runway 22R. Magnetic variation: 6W

2.19.2 ILS identification: JKI

2.19.5 Coordinates: 42-11-59.07N / 83-23-00.00W

2.19.6 Site elevation: 645 ft

2.19.1 ILS type: Outer Marker for runway 27R. Magnetic variation: 6W

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: 6W

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: 6W

2.19.2 ILS identification: DMI

2.19.5 Coordinates: 42-13-00.00N / 83-22-00.00W

2.19.6 Site elevation: 639 ft

2.19.1 ILS type: Glide Slope for runway 27R. Magnetic

variation: 6W

2.19.2 ILS identification: DMI

2.19.5 Coordinates: 42-12-58.36N / 83-20-00.00W

2.19.6 Site elevation: 629 ft

2.19.1 ILS type: Outer Marker for runway 27L. Magnetic variation: 6W

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: 6W

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: 6W

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: 6W

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: 6W

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

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 TAXIWAYS AND RUNWAYS.

UNIDIRECTIONAL STOPBARS ON RUNWAY 27R WHEN BEING USED FOR TAXI.

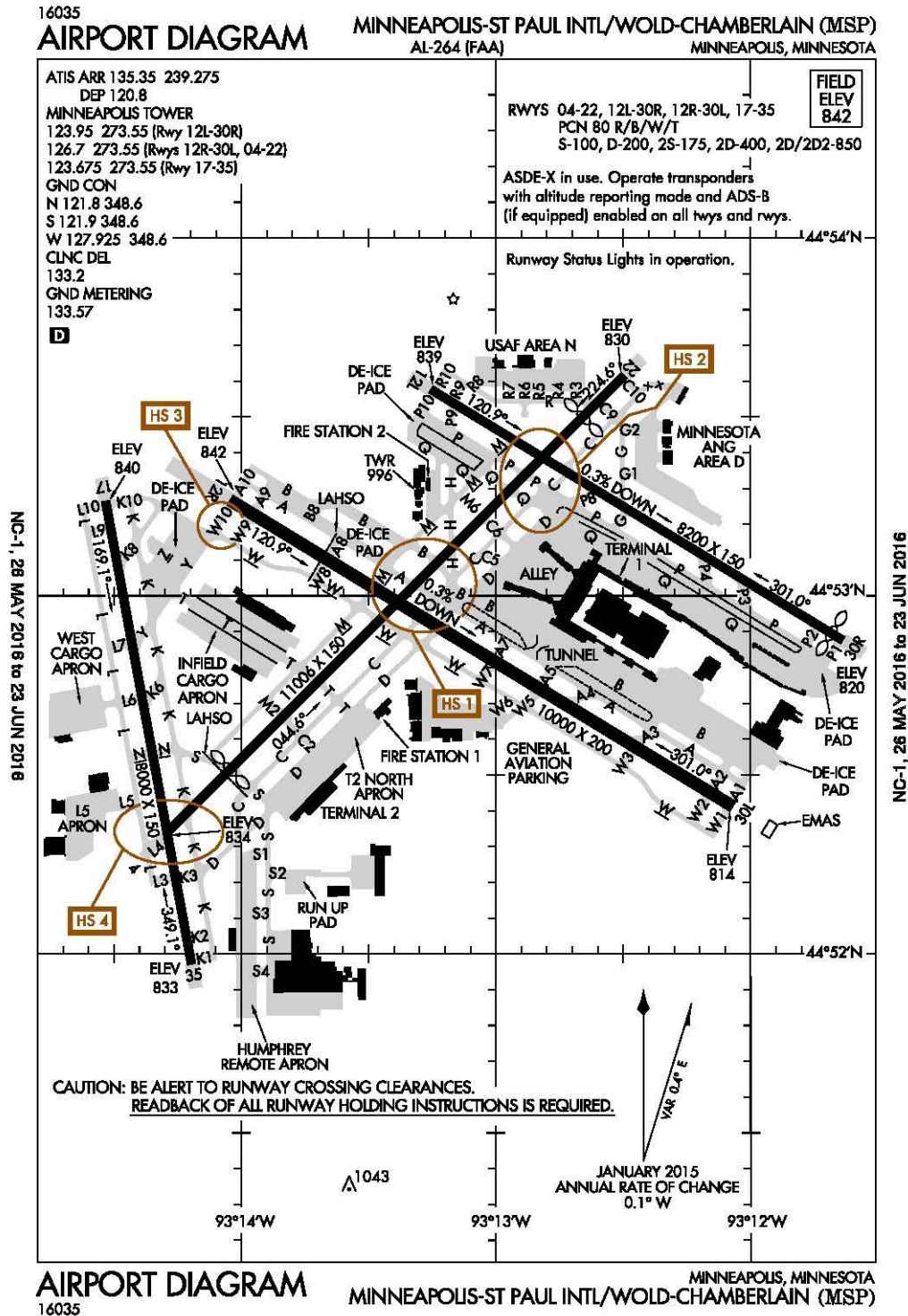
TAXIWAY H OPEN BETWEEN TAXIWAY H2 AND TAXIWAY G, BUT IS RESTRICTED TO AIRCRAFT WITH

WINGSPAN OF 118 FT OR LESS.

TAXIWAY 'G' N OF TAXIWAY 'V' CLOSED TO AIRCRAFT WITH WINGSPAN MORE THAN 171 FT. TAXILANE 'G' CLOSED TO AIRCRAFT WITH WINGSPAN MORE THAN 171 FT.

RUNWAY STATUS LIGHTS ARE IN OPN.

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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 44-52-00.00N / 93-14-20.13W
2.19.6 Site elevation: 843.5 ft

2.19.1 ILS type: Localizer for runway 17. Magnetic variation: 0E
2.19.2 ILS identification: TJZ
2.19.5 Coordinates: 44-51-48.43N / 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: 44-52-00.00N / 93-14-20.13W
2.19.6 Site elevation: 843.5 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 OR 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 TAXIWAYS AND RUNWAYS.

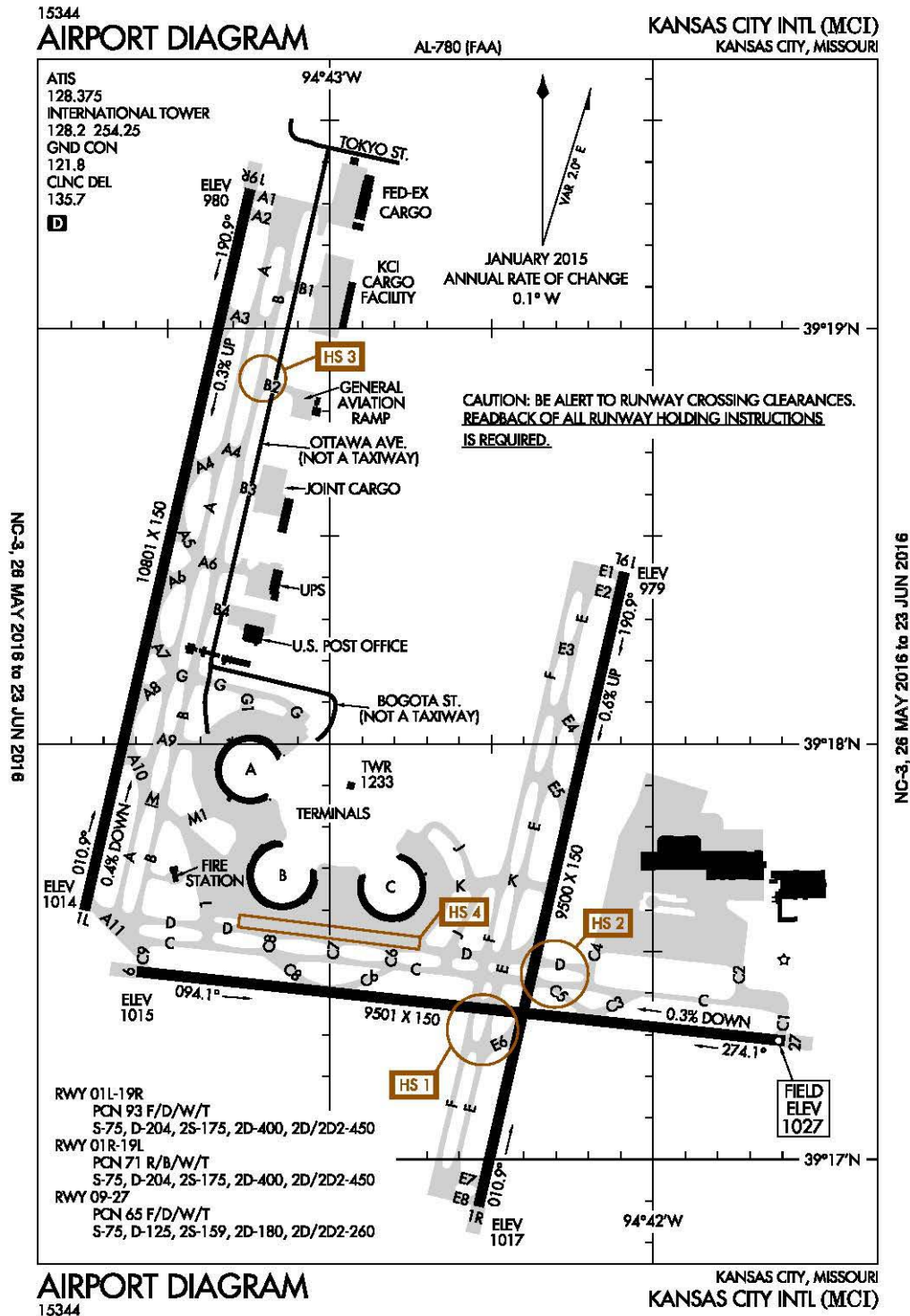
ALL UNSCHEDULED AIRCRAFT AT TERMINAL 2-HUMPHREY ARE REQUIRED TO CONTACT TERMINAL 2 GATE CONTROL ON 122.95 OR CALL 612-726-5742 PRIOR TO ARR.

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: 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: 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: 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: 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: 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: 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.

[illegible]

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: 30X
- 2.12.3 Dimensions: 0 ft x 0 ft
- 2.12.1 Designation: 12R
- 2.12.2 True Bearing: 122
- 2.12.3 Dimensions: 11019 ft x 200 ft
- 2.12.4 PCN: 85 R/B/W/T

2.12.5 Coordinates: 38–45–14.05N / 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

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 sequenced 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 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: 29

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

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: 546 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: 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: 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: 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: 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: 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: 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 TAXIWAYS AND RUNWAYS.

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, 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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 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: 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: 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 01R/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 TAXIWAYS AND RUNWAYS.

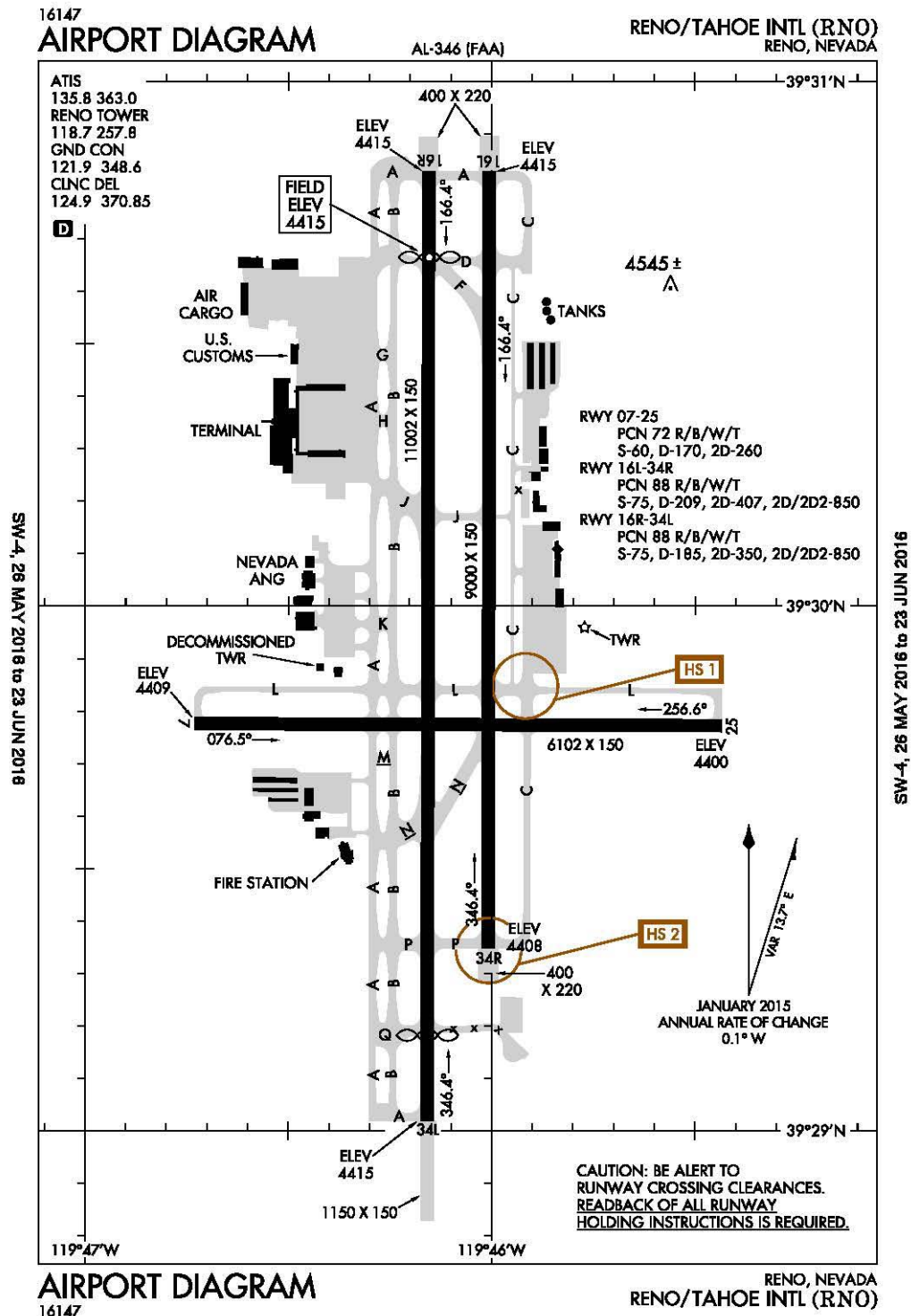
GENERAL AVIATION CBP RESERVATIONS ARE REQUIRED TO BE SUBMITTED A MINIMUM OF 12 HOURS IN ADVANCE (OTHER CONDITIONS APPLY). RESERVATIONS MUST BE MADE ONLINE AT .MCCARRAN.COM/GACBP. QUESTIONS CAN BE DIRECTED TO CBP559@MCCARRAN.COM. GENERAL AVIATION AIRCRAFT USING THE WEST SIDE CUSTOMS FACILITY MUST CONTACT 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: Marilyn 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 / 119-45-25.99W
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: 39-30-49.82N / 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: 11002 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: 11002 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: 4415 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: PAPI Not To Be Used Beyond 6 Nm
Due To High Terrain.

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 - Caprock.

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 - Caprock.

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: 39-28-49.52N / 119-46-00.00W
2.19.6 Site elevation: 4419.6 ft

2.19.1 ILS type: DME for runway 16R. Magnetic vari-
ation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39-28-48.05N / 119-46-00.00W
2.19.6 Site elevation: 4410.3 ft

2.19.1 ILS type: Outer Marker for runway 16R. Magnet-
ic 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:

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: 4418.2 ft

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: DME for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39-31-00.00N / 119-46-12.58W
2.19.6 Site elevation: 4419.6 ft

2.19.1 ILS type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS identification: RNO
2.19.5 Coordinates: 39-30-28.10N / 119-46-00.00W
2.19.6 Site elevation: 4408.4 ft

2.19.1 ILS type: Glide Slope for runway 34L. Magnetic variation: 16E
2.19.2 ILS identification: AGY
2.19.5 Coordinates: 39-29-19.55N / 119-46-00.00W
2.19.6 Site elevation: 4402.2 ft

2.19.1 ILS type: Localizer for runway 34L. Magnetic

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 1330-0200Z++ 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 -18C/0F.

AIRPORT DIAGRAM

NEWARK LIBERTY INTL (EWR)
NEWARK, NEW JERSEY

ATIS
115.7 134.825
NEWARK TOWER
118.3 257.6
GND CON
121.8
CLNC DEL
118.85
CPDCL

P.A. ADMINISTRATION
FIRE STATION EQUIPMENT

GENERAL AVIATION PARKING

AREA 340 AIRCRAFT PARKING

PARKING AREA 15

ELEV 17

EMAS

NW 107.9°

6726 X 150

HS 1

ELEV 9

ELEV 10

EMAS

NW 287.9°

40°42'N

BALL PARK

TERMINAL C

TWR 348

TERMINAL B

TERMINAL A

LAHSA

VAR 12.5° N

JANUARY 2015 ANNUAL RATE OF CHANGE 0.0° E

410

40°41'N

RWY 04L-22R
PCN 96 R/B/X/T
D-210, 2D-520, 2D/2D2-1000

RWY 04R-22L
PCN 96 R/B/W/T
D-210, 2D-520, 2D/2D2-1000

RWY 11-29
PCN 96 R/B/W/T
D-210, 2D-520, 2D/2D2-1000

Runway Status Lights In Operation.

ASDE-X in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all twys and rwys.

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

74°11'W 74°10'W

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: Richard V. Heslin
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: 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

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: 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

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 PA-
PI on right

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 PA-
PI on left
2.14.10 Remarks: Runway 04L P4L Unusable 5 Degs L Of
Centerline .

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 PA-
PI on left

2.14.1 Designation: 04R
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 PA-
PI on right

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 PA-PI 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 / 74–10–22.50W

2.19.6 Site elevation: 7.8 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 TAXIWAYS & RUNWAYS.

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.

[illegible]

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 Course.

2.14.1 Designation: 13L
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: 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

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 varia-

tion: 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 TAXIWAYS & RUNWAYS.

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.

AIRPORT DIAGRAM

AL-614 (FAA)

NIAGARA FALLS INTL (IAG)
NIAGARA FALLS, NEW YORK

ATIS
120.8 269.4
★ NIAGARA TOWER
118.5 349.0
GND CON
121.7 275.8
CINC DEL
119.25 251.1

D

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
REARBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

JANUARY 2015
ANNUAL RATE OF CHANGE
0.0° E

VAR 10.6° W

RWY 06-24
PCN 69 F/B/W/T
S-120, D-250, 2D-462
RWY 10L-28R
PCN 74 R/B/W/T
S-120, D-240, 2D-447, 2D/2D2-957
RWY 10R-28L
PCN 29 F/C/X/T
S-73, D-97

ELEV 588

10L

9826 X 150

BLAST PAD
1000 X 150

ELEV 588

ELEV 584

5188 X 150

3972 X 78

ELEV 583

10R

ELEV 584

C

H

D

TWR

651

GENERAL AVIATION PARKING

WEST RAMP

NEW YORK ARNG

USAF RESERVE

NEW YORK ANG

USAF RESERVE

TERMINAL

694 A

43°07'N

43°06'N

78°58'W

78°57'W

78°56'W

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 Pro-
vided.

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: 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

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

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: 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

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

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: 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

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

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: 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

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

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 WHEN DEP/ARR ROUTE AVOIDS IDENTIFIED BIRD ACTIVITY; NO LOCAL IFR/VFR TRAFFIC PATTERN ACTIVITY. SEVERE – TAKE-OFF & LANDING PROHIBITED WITHOUT 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.

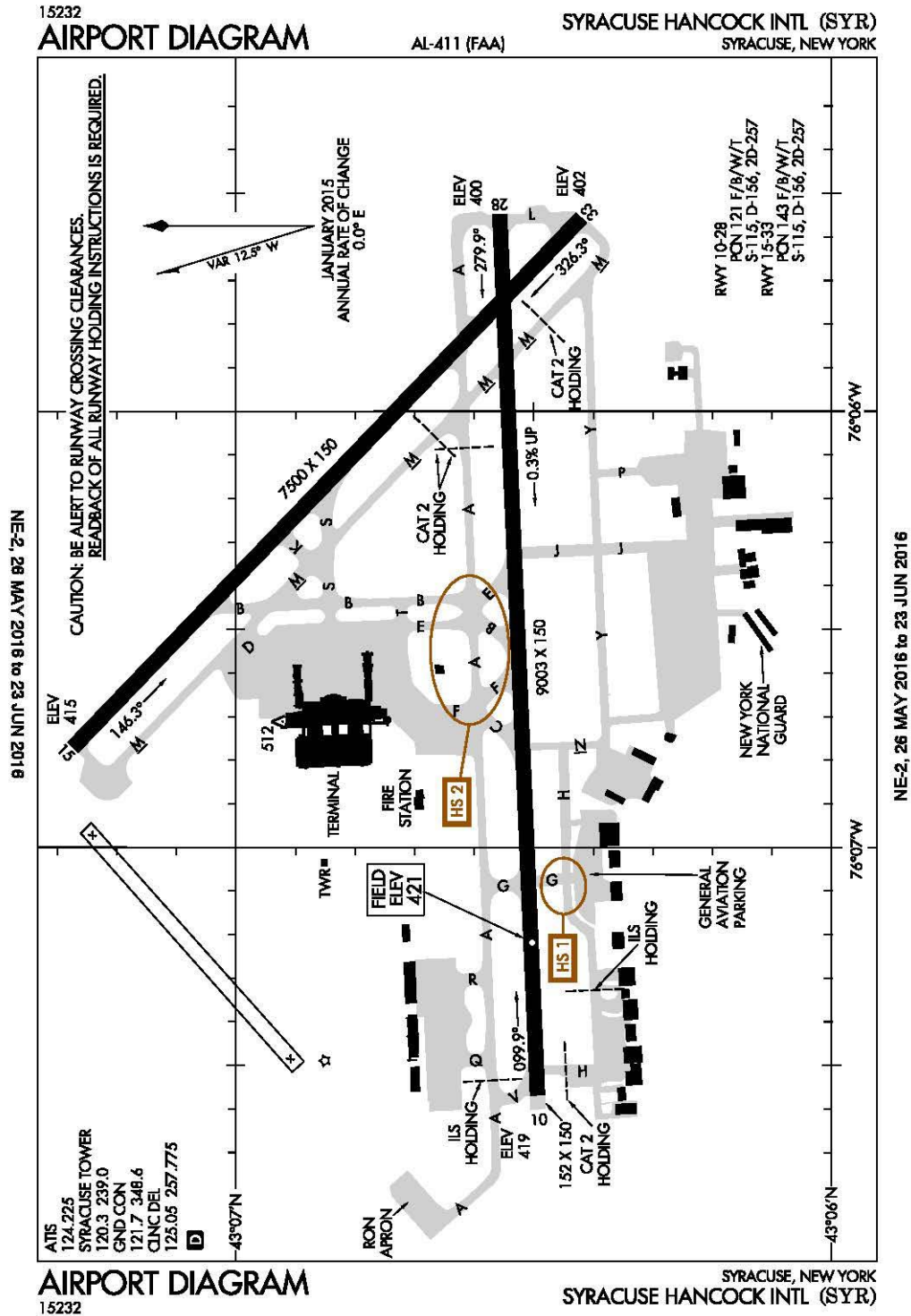
AFRC/ANG: NONSTANDARD APRON MARKS IDENTIFYING PARK ROWS & PARK LIGHTS.

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 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: MALSR: 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. Magnet-

ic 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.

AIRPORT DIAGRAM

16091

ATIS ARR 121.15
DEP 132.1

CHARLOTTE TOWER
118.1 257.8 (RWYS 18L-36R, 05-23)
126.4 257.8 (RWY 18C-36C)
133.35 257.8 (RWY 18R-36L)

GND CON
121.8 348.6 (180°-359°)
121.9 348.6 (360°-179°)

CLNC DEL
127.15 348.6

ASDE-X in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all twys and rwys.

Runway Status Lights in operation.

BLAST PAD 200 X 150

ELEV 744

BLAST PAD 400 X 150

JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

BRIDGE

35°13'N

9000 X 150

003.5°

ELEV 744

BLAST PAD 400 X 150

36L

35°12'N

BLAST PAD 36C
200 X 150

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

RWY 05-23
PCN 73 R/B/W/T
S-93, D-170, 2S-175, 2D-350, 2D/2D2-650

RWY 18C-36C
PCN 75 R/B/W/T
S-93, D-200, 2S-175, 2D-350, 2D/2D2-650

RWY 18L-36R
PCN 68 R/B/W/T
S-93, D-200, 2S-175, 2D-350, 2D/2D2-650

RWY 18R-36L
PCN 75 R/B/W/T
S-93, D-200, 2S-175, 2D-350, 2D/2D2-650

80°58'W

80°57'W

80°56'W

CHARLOTTE, NORTH CAROLINA
CHARLOTTE/DOUGLAS INTL (CLT)

Charlotte, NC
Charlotte/Douglas Intl
ICAO Identifier KCLT

AD 2.2 Aerodrome geographical and administrative data

- 2.2.1 Reference Point: 35-12-49.47N / 80-56-56.65W
- 2.2.2 From City: 4 Miles W Of Charlotte, NC
- 2.2.3 Elevation: 748 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
D 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 / 80-56-59.81W
- 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: 8676 ft x 150 ft
- 2.12.4 PCN: 68 R/B/W/T
- 2.12.5 Coordinates: 35-13-29.04N / 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: 8676 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: 724 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 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: 36L
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

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P (RYS 18L/36R &
05/23)

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: APCH/P DEP/P CLASS B
IC

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: APCH/P DEP/P CLASS B
IC

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: LILLS 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: 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: APCH/P DEP/P CLASS B
IC

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: APCH/P DEP/P CLASS B
IC

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: APCH/P DEP/P CLASS B
IC

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: LC/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: 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: CHSLY STAR
2.18.3 Service designation: 282.325 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: 35–12–24.08N / 80–57–11.01W

2.19.6 Site elevation: 703.4 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: 719.1 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: 743.6 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 / 80–57–00.00W

2.19.6 Site elevation: 731.7 ft

2.19.1 ILS type: Localizer for runway 36R. Magnetic variation: 7W

2.19.2 ILS identification: BQC

2.19.5 Coordinates: 35–13–33.71N / 80–56–10.57W

2.19.6 Site elevation: 741.1 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 / 80–55–58.90W

2.19.6 Site elevation: 717.4 ft

2.19.1 ILS type: DME for runway 36R. Magnetic variation: 7W

2.19.2 ILS identification: BQC

2.19.5 Coordinates: 35–13–33.06N / 80–56–00.00W

2.19.6 Site elevation: 741 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: 35-11-48.62N / 80-57-00.00W

2.19.6 Site elevation: 684 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 / 80-57-15.23W

2.19.6 Site elevation: 731.3 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: 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: 749.6 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: 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: 680 ft

2.19.1 ILS type: Inner Marker for runway 36L. Magnetic variation: 7W

2.19.2 ILS identification: XUW

2.19.5 Coordinates: 35-11-54.43N / 80-57-54.41W

2.19.6 Site elevation: 739.2 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 18C. Magnetic variation: 7W

2.19.2 ILS identification: PEP

2.19.5 Coordinates: 35-11-50.19N / 80-56-58.61W

2.19.6 Site elevation: 731.7 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: 691.2 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: DME for runway 18R. Magnetic variation: 7W

2.19.2 ILS identification: RGS

2.19.5 Coordinates: 35-12-13.28N / 80-58-00.00W

2.19.6 Site elevation: 731.7 ft

2.19.1 ILS type: Glide Slope for runway 18R. Magnetic variation: 7W

2.19.2 ILS identification: RGS

2.19.5 Coordinates: 35-13-20.08N / 80-58-00.00W

2.19.6 Site elevation: 733.1 ft

2.19.1 ILS type: Localizer for runway 18R. Magnetic variation: 7W

2.19.2 ILS identification: RGS

2.19.5 Coordinates: 35-11-51.86N / 80-57-54.19W

2.19.6 Site elevation: 738 ft

2.19.1 ILS type: Inner Marker for runway 18R. Magnetic variation: 7W

2.19.2 ILS identification: RGS

2.19.5 Coordinates: 35-13-38.82N / 80-58-00.00W

2.19.6 Site elevation: 739.2 ft

2.19.1 ILS type: DME for runway 36L. Magnetic variation: 7W

2.19.2 ILS identification: XUU

2.19.5 Coordinates: 35-13-19.81N / 80-58-00.00W

2.19.6 Site elevation: 733.1 ft

2.19.1 ILS type: Glide Slope for runway 36L. Magnetic variation: 7W

2.19.2 ILS identification: XUU

2.19.5 Coordinates: 35-12-12.99N / 80-58-00.00W

2.19.6 Site elevation: 731.7 ft

2.19.1 ILS type: Localizer for runway 36L. Magnetic variation: 7W

2.19.2 ILS identification: XUU

2.19.5 Coordinates: 35-13-41.39N / 80-58-00.00W

2.19.6 Site elevation: 738 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 TAXIWAYS AND RUNWAYS.

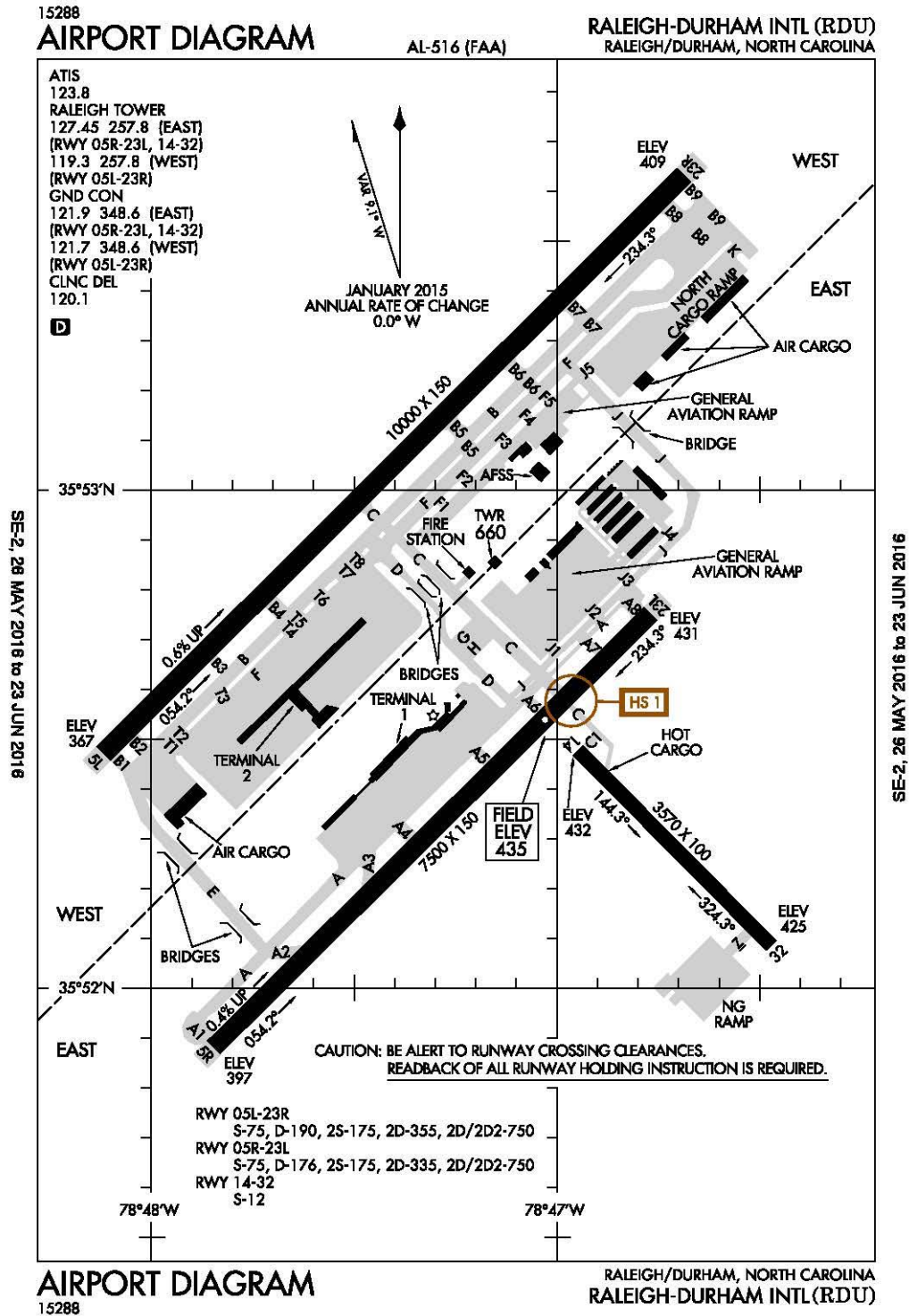
ANG: CONTACT NEWSREEL 292.25 30 MIN PRIOR LANDING. AMOPS/COMD POST - 292.25 (CALL NEWSREEL).

SUCCESSIVE OR SIMULTANEOUS DEPARTURES FROM RUNWAY 18L AND RUNWAY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 3 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: 7W (1985)
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: 05R
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7500 ft x 150 ft
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
2.12.5 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: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 10000 ft x 150 ft
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
2.12.5 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: 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: 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

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

AD 2.14 Approach and runway lighting

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: 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: 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: APCH/P

2.18.3 Service designation: 124.95 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: 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: 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: GND/P

2.18.3 Service designation: 348.6 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 392.1 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: 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: 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

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: 35-52-21.03N / 78-48-15.70W
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

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.

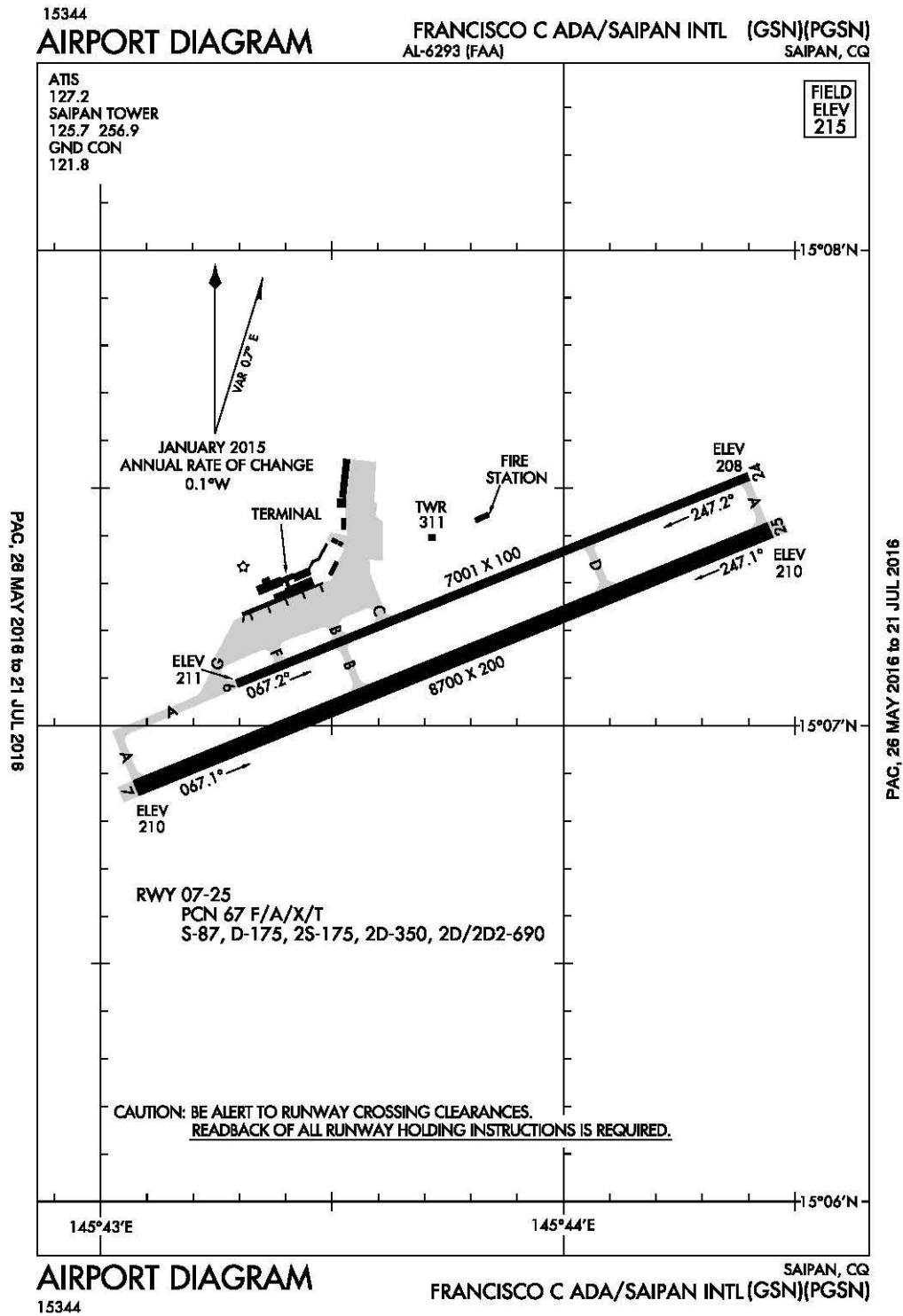
AIRPORT CLOSED TO AIRSHIPS.

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.

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: 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: 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: 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:

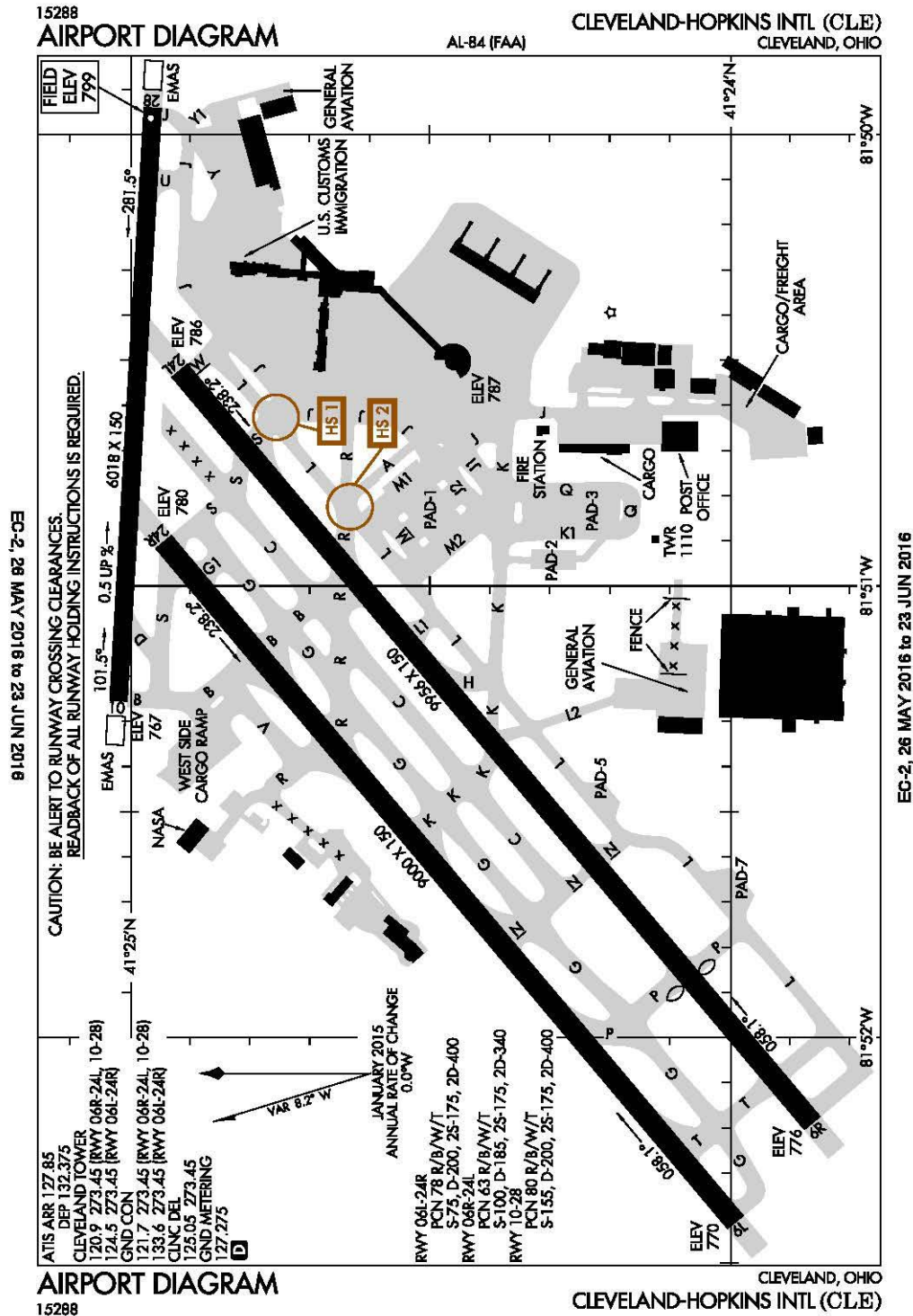
IMMIGRATION & CUSTOMS AVAILABLE DURING SCHEDULED OPERATIONS. OTHER TIMES PRIOR ARRANGEMENTS MUST BE MADE WITH CBP PORT DIRECTOR CALL (670)288-0025/26.

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 se-
quenced 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 se-
quenced 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: GROUND METERING
2.18.3 Service designation: 127.275 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: Outer Marker for runway 06R. Magnetic

ic 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: 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: 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: 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 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 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: 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 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

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: 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

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.

TAXIWAY 'L2' PAVEMENT HAS BEEN REMOVED.

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.

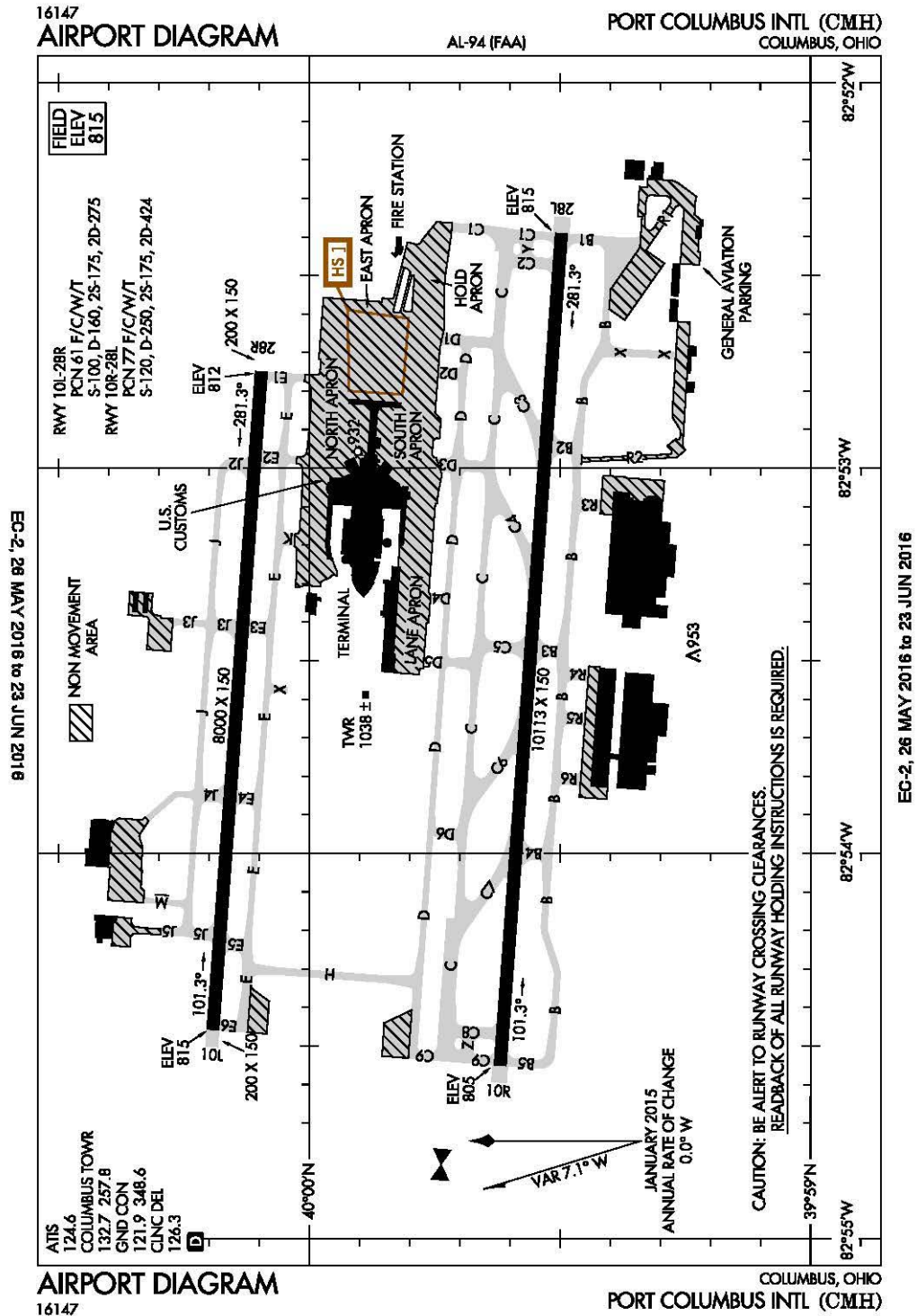
RAMP AREA CONCOURSE D BETWEEN GATES D1, D28 CLOSED EXCEPT AIRCRAFT WINGSPAN LESS THAN 86 FT.

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.

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: APCH/S DEP/S
2.18.3 Service designation: 120.2 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: 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 IC
2.18.3 Service designation: 125.95 MHz

2.18.1 Service designation: CLASS C
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

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: 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: 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: 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: 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: 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

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 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

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 J2 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 E2 AND TAXIWAY K RESTRICTED TO AIRCRAFT WITH WINGSPAN LESS THAN 118 FT.

[illegible]

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 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: 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: 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: DEP/P CLASS C
2.18.3 Service designation: 118.1 MHz

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 Mcminville
(Mmv).

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 DEP/S
2.18.3 Service designation: 124.35 MHz

2.18.1 Service designation: APCH FINAL CTL
2.18.3 Service designation: 126.9 MHz

2.18.1 Service designation: DEP/S RDR
2.18.3 Service designation: 127.85 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: APCH/P DEP/P C
2.18.3 Service designation: 284.6 MHz

2.18.1 Service designation: DEP/S

2.18.3 Service designation: 290.3 MHz

2.18.1 Service designation: APCH/S RDR

2.18.3 Service designation: 294.7 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: APCH/P DEP/P CLASS C
IC

2.18.3 Service designation: 299.2 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 varia-
tion: 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 ft

2.19.1 ILS type: DME for runway 21. Magnetic varia-
tion: 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 varia-
tion: 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. Mag-
netic 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 varia-
tion: 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.

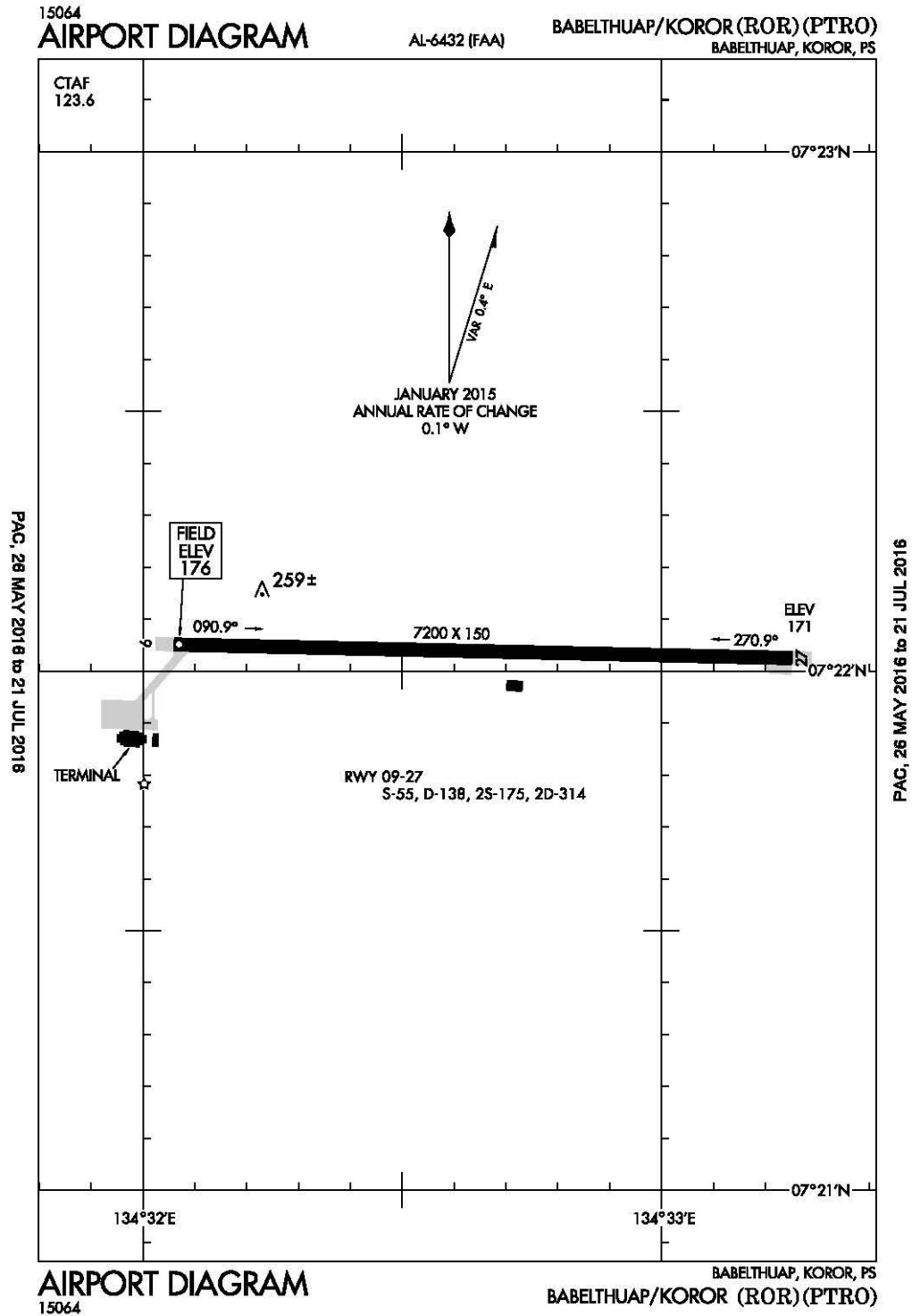
TAXIWAY C3 CLOSED TO AIRCRAFT WITH WINGSPAN EQUAL TO OR GREATER THAN 79 FT.

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.

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

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.

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

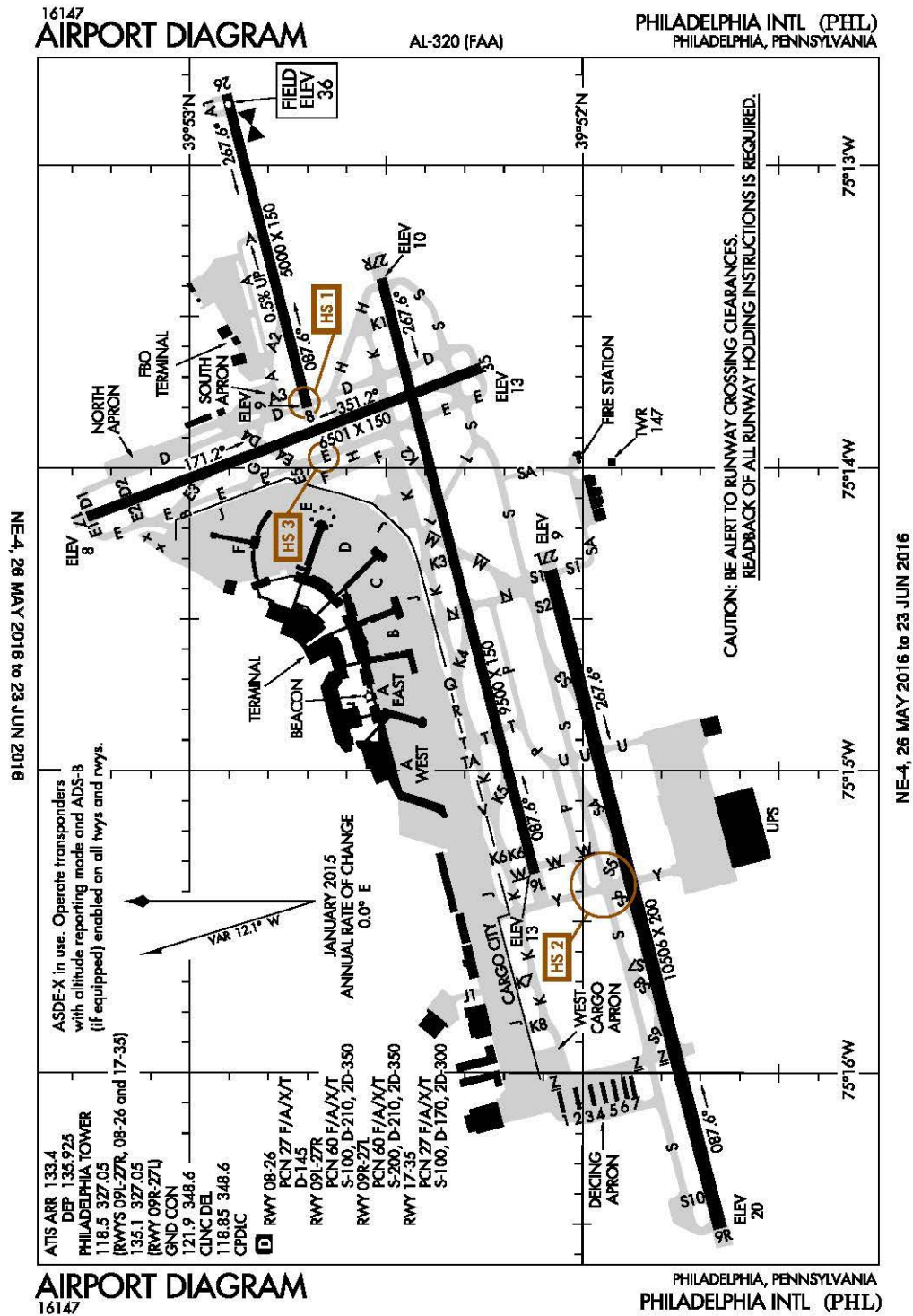
2.12.1 Designation: 27
2.12.2 True Bearing: 271
2.12.3 Dimensions: 7200 ft x 150 ft
2.12.5 Coordinates: 07-22-00.00N / 134-33-15.17E
2.12.6 Threshold elevation: 171 ft
2.12.6 Touchdown zone elevation: 176 ft

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

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: Mark Gale
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 (80 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 802 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: Gnd (15 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 442 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 (26 ft). Not Lighted or Marked
2.10.1.c Location of obstacle: 318 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 Degr 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: CLASS B

2.18.3 Service designation: 123.8 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: 291.7 MHz
2.18.3 Service designation: 128.4 MHz	
2.18.1 Service designation: CLASS B	2.18.1 Service designation: 5500 & BLO
2.18.3 Service designation: 128.4 MHz	2.18.3 Service designation: 291.7 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: APCH/P
2.18.3 Service designation: 128.4 MHz	2.18.3 Service designation: 317.55 MHz
2.18.1 Service designation: BUNTS 1 STAR	2.18.1 Service designation: CLASS B
2.18.3 Service designation: 128.4 MHz	2.18.3 Service designation: 317.55 MHz
2.18.1 Service designation: SPUDS 3 STAR	2.18.1 Service designation: CLASS B
2.18.3 Service designation: 128.4 MHz	2.18.3 Service designation: 317.55 MHz
2.18.1 Service designation: EMERG	2.18.1 Service designation: CEDAR LAKE 8 ARR
2.18.3 Service designation: 243 MHz	2.18.3 Service designation: 317.55 MHz
2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.	2.18.1 Service designation: APCH/P AT & BLO 5,000
2.18.3 Service designation: 263.125 MHz	2.18.3 Service designation: 317.55 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: CLASS B
2.18.3 Service designation: 263.125 MHz	2.18.3 Service designation: 317.55 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: CLASS B
2.18.3 Service designation: 269.25 MHz	2.18.3 Service designation: 319.15 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: PHL ONE DP
2.18.3 Service designation: 269.25 MHz	2.18.3 Service designation: 319.15 MHz
2.18.1 Service designation: DEP/P	2.18.1 Service designation: APCH/P DEP/P IC
2.18.3 Service designation: 269.25 MHz	2.18.3 Service designation: 319.15 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: DEP/P
2.18.3 Service designation: 269.25 MHz	2.18.3 Service designation: 319.15 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz	2.18.3 Service designation: 319.15 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: CLASS B
2.18.3 Service designation: 273.575 MHz	2.18.3 Service designation: 323.1 MHz
2.18.1 Service designation: APCH/P ABOVE 5000 FT	2.18.1 Service designation: CD/P GND/P
2.18.3 Service designation: 273.575 MHz	2.18.3 Service designation: 348.6 MHz
2.18.1 Service designation: CLASS B	2.18.1 Service designation: D-ATIS
2.18.3 Service designation: 291.7 MHz	2.18.3 Service designation: 133.4 MHz
2.18.1 Service designation: APCH/P AT OR BLO 5000 FT.	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: 39-52-00.00N / 75-14-00.00W

2.19.6 Site elevation: 7.4 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: DME for runway 09R. Magnetic variation: 12W

2.19.2 ILS identification: PHL

2.19.5 Coordinates: 39-52-00.00N / 75-14-00.00W

2.19.6 Site elevation: 17.8 ft

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: 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:

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 / 75-14-00.00W

2.19.6 Site elevation: 17.8 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

2.19.5 Coordinates: 39-52-49.37N / 75-12-58.35W
2.19.6 Site elevation: 21.7 ft

2.19.1 ILS type: Glide Slope for runway 26. Magnetic variation: 10W
2.19.2 ILS identification: LLH

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 TAXIWAYS & RUNWAYS.

[illegible]

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: 10C
- 2.10.1.b Type of obstacle: Pole (35 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 308 ft from Centerline

- 2.10.1.a. Runway designation: 28C
- 2.10.1.b Type of obstacle: Tree (13 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 225 ft from Centerline

- 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: 508 ft from Centerline

- 2.10.1.a. Runway designation: 32
- 2.10.1.b Type of obstacle: Trees (27 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 511 ft from Centerline

- 2.10.1.a. Runway designation: 10L
- 2.10.1.b Type of obstacle: Trees (52 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 577 ft from Centerline

- 2.10.1.a. Runway designation: 28R
- 2.10.1.b Type of obstacle: Tree (62 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 152 ft from Centerline

- 2.10.1.a. Runway designation: 10R
- 2.10.1.b Type of obstacle: Tree (17 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 545 ft from Centerline

- 2.10.1.a. Runway designation: 28L
- 2.10.1.b Type of obstacle: Trees (149 ft). Not Lighted or Marked
- 2.10.1.c Location of obstacle: 181 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 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/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: 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: 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: 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 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: 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: 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: 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: 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: 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).

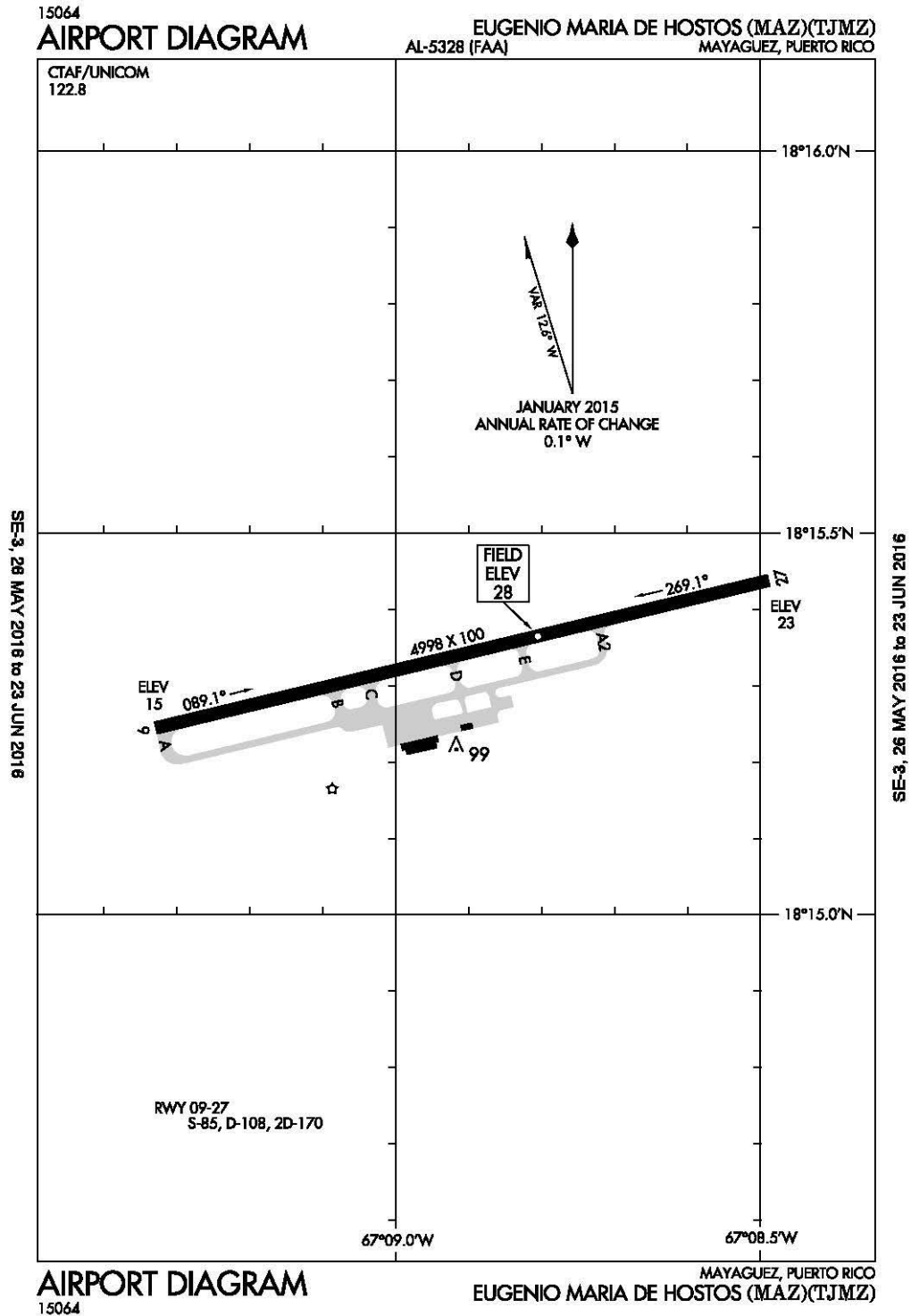
ANG: OPR 1130-2030Z++MON-FRI EXCEPT HOLIDAY. CLOSED EVERY OTHER MON. OFFICIAL BUSINESS ONLY. PRIOR PERMISSION REQUIRED 48 HR PRIOR NOTICE REQUIRE. CALL DSN 294-7374/7260, C412-776-7374/7260.

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).

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

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.

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

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: 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

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

AD 2.12 Runway physical characteristics

- 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

- 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

AD 2.13 Declared distances

- 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

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

AD 2.14 Approach and runway lighting

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

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

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: 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:

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

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.

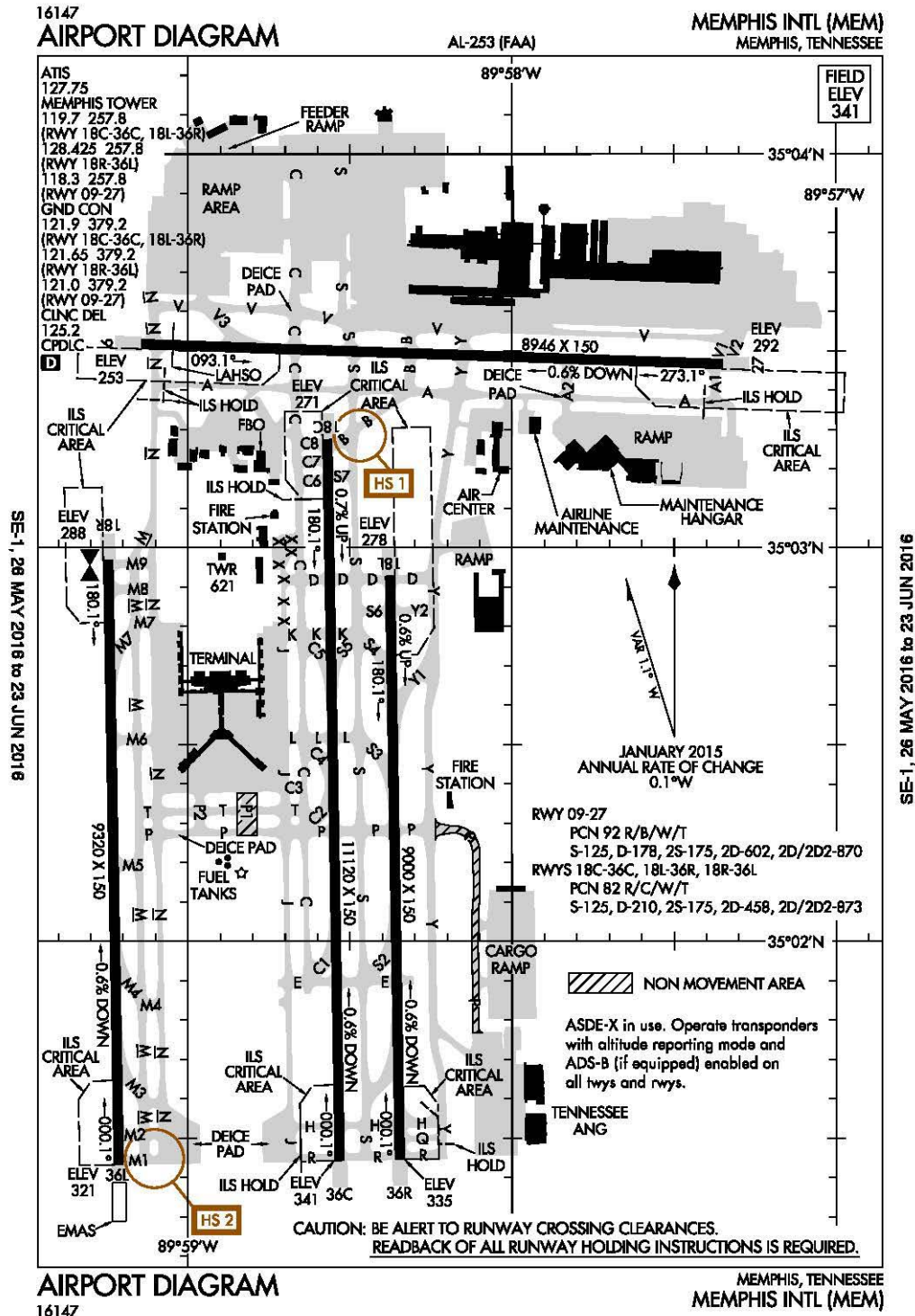
ENGINE RUNUPS PROHIBITED ON GATES AREA.

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.

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: 1E (2000)
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
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: Ant (18 ft). Lighted
2.10.1.c Location of obstacle: 400 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: 600 ft from Centerline

2.10.1.a. Runway designation: 18C
2.10.1.b Type of obstacle: Pole (65 ft). Not Lighted or
Marked
2.10.1.c Location of obstacle: 803 ft from Centerline

2.10.1.a. Runway designation: 09
2.10.1.b Type of obstacle: Pole (28 ft). Not Lighted or
Marked
2.10.1.c Location of obstacle: 600 ft from Centerline

2.10.1.a. Runway designation: 27
2.10.1.b Type of obstacle: Pole (34 ft). Not Lighted or
Marked
2.10.1.c Location of obstacle: 300 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: 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

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

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: 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: 11120
2.13.5 Landing distance available: 11120

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

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: 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

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

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: 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: 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: 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 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 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 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: 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

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: 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: 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: 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: 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 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 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 TAXIWAY B 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 REQUIRED.

AIRCRAFT WITH WINGSPANS GREATER THAN 171 FT RESTRICTED FROM TAXI ON TAXIWAY 'N' BETWEEN TAXIWAY 'M7' & TAXIWAY 'T' NOR ON TAXIWAY 'J' NORTH OF TAXIWAY 'C3'.

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 TRANSPONDER WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED WHILE ON ALL TAXIWAYS AND RUNWAYS.

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 AND TAXIWAY P2 ARE DESIGNATED AS NON-MOVEMENT AREAS.

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.

[illegible]

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: 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

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: 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

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: 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

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: 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

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: 02L
2.14.2 Approach lighting system: ALSF2: Standard 2400
feet high intensity approach lighting system with se-
quenced flashers, category II or III configuration

2.14.1 Designation: 20R
2.14.4 Visual approach slope indicator system: 4–light
PAPI on right

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: 02R
2.14.2 Approach lighting system: ALSF2: Standard 2400
feet high intensity approach lighting system with se-
quenced flashers, category II or III configuration

2.14.1 Designation: 20L
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: DEP/P
2.18.3 Service designation: 118.4 MHz

2.18.1 Service designation: APCH/P CLASS C IC
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: DEP/P

2.18.3 Service designation: 360.7 MHz

2.18.1 Service designation: APCH/P CLASS C IC
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: 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: 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: 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: 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

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: 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

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.

[illegible]

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: 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: 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: 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

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

AD 2.13 Declared distances

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: 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: 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

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

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
2.14.2 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: 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 PA-PI on left

2.14.1 Designation: 31L
2.14.4 Visual approach slope indicator system: 4-light PA-PI 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 PA-PI 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 PA-PI 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 PA-PI 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 PA-PI on left

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 PA-PI 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 PA-PI 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 PA-PI 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 PA-PI 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 PA-PI 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 PA-PI on right

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: 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: 509 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: 32-54-48.11N / 97-01-20.75W

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: 32-54-46.09N / 97-01-22.58W

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: 577 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: 588 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: 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: 590 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: 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: 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: 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: 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: 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: 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 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: 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: 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: 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

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:

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. APRON ENTRANCE/EXIT POINT 122 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

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.

AIRCRAFT USING GATES D6-D17 MUST OBTAIN APPROVAL FROM DFW RAMP TOWER 129.95 PRIOR TO ENTERING RAMP & PRIOR TO PUSHBACK 0615-2200. USE EXTREME CARE AT OTHER TIMES.

APRON ENTRANCE/EXIT POINTS 32, 33, 34, 35, 36, 37, 38, 39 & 53 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 135 FT.

ASDE-X IN USE. OPERATE TRANSPONDER WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED WHILE ON ALL TAXIWAYS AND RUNWAYS.

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.

APRON ENTRANCE/EXIT POINTS 5 & 7 CLOSED TO AIRCRAFT WITH WINGSPAN 118 FT & GREATER.

APRON ENTRANCE/EXIT POINTS 42 & 44 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

APRON ENTRANCE/EXIT POINT 52 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

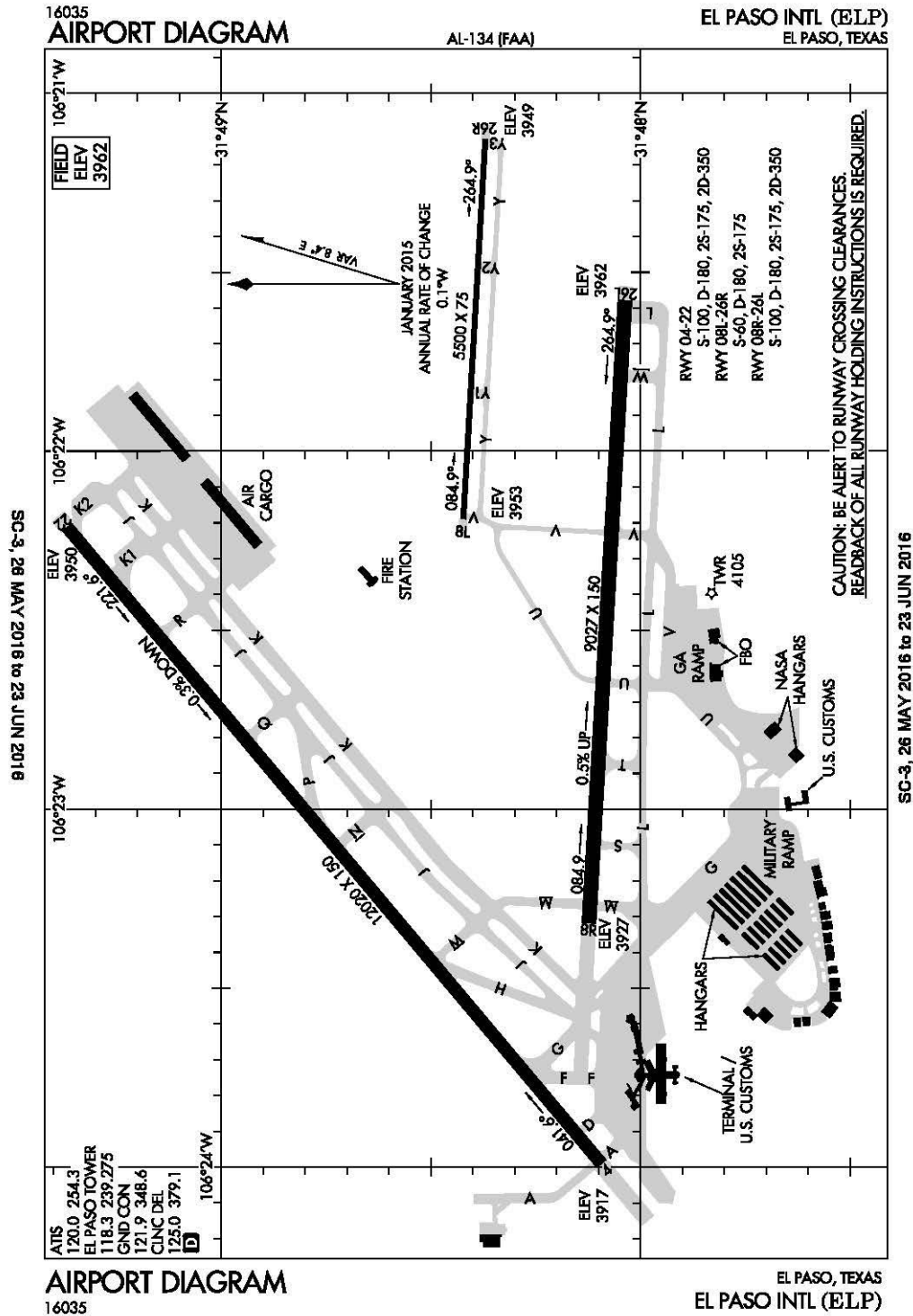
APRON ENTRANCE/EXIT POINT 49 & 51 CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

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.

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: 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

- 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

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: 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

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

AD 2.14 Approach and runway lighting

2.14.1 Designation: 04
2.14.4 Visual approach slope indicator system: 4–light PA-PI 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 PA-PI on right

2.14.1 Designation: 08R
2.14.4 Visual approach slope indicator system: 4–light PA-PI 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 PA-PI 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.

SAILPLANE & ULTRALIGHT OPERATIONS IN THE VICINITY OF HORIZON AIRPORT 8 NAUTICAL MILE ESE.

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.

[illegible]

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 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: 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. HELICOPTER HOVER/TAXI RESTRICTED TO HARD SURFACE MOVEMENT AREAS ONLY.

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.

FOR FLIGHT PLAN FILING CALL 1-800-WX-BRIEF.

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 TRANSPONDER WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED WHILE ON ALL TAXIWAYS AND RUNWAYS.

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.

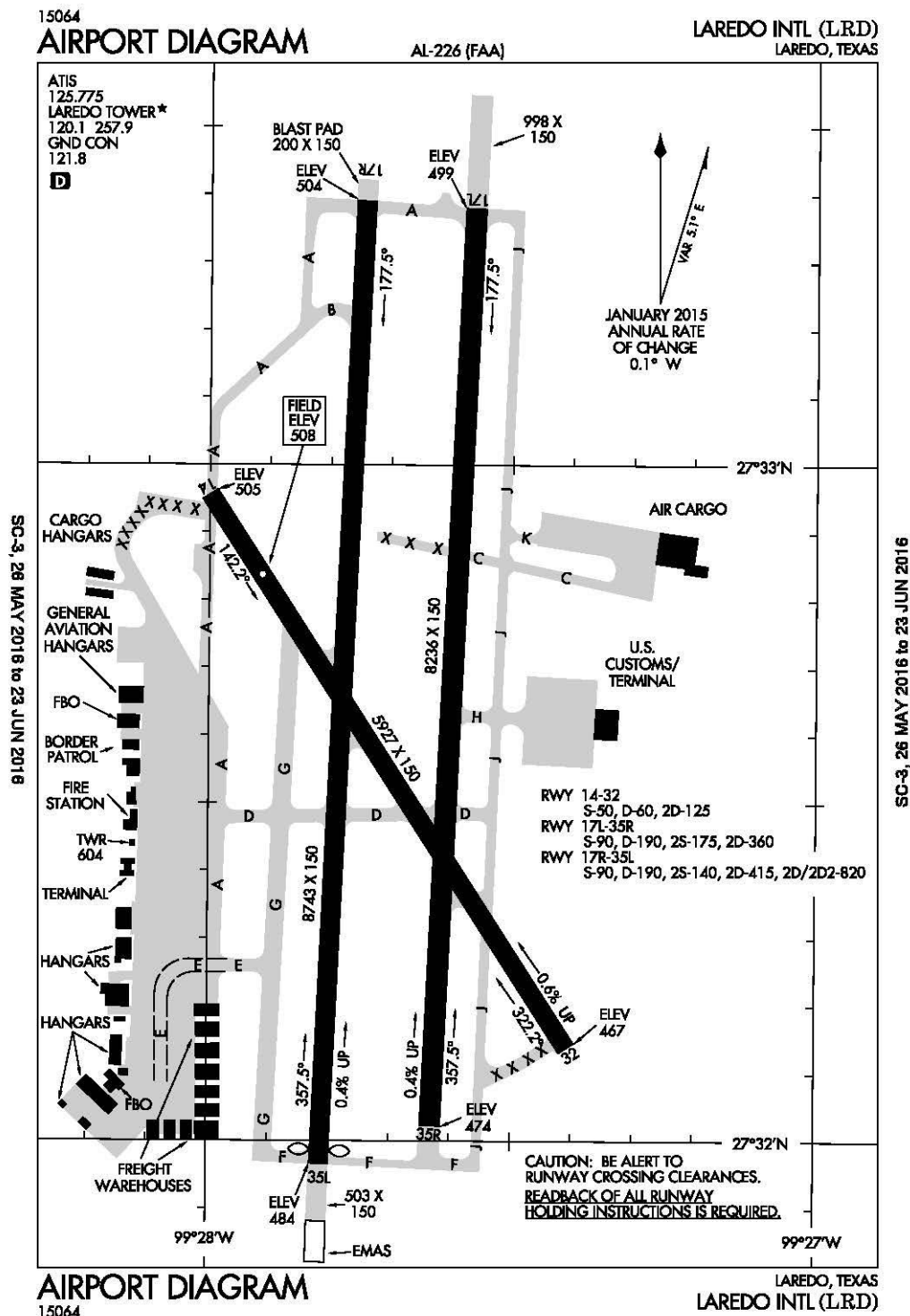
TAXIWAY SEVERE WEATHER FORECAST BETWEEN TAXIWAY NR AND TAXIWAY WESTBOUND CLOSED TO AIRCRAFT WINGSPAN MORE THAN 214 FT.

TAXILANE NR BETWEEN TAXIWAY SEVERE WEATHER FORECAST AND WESTBOUND IS DESIGNATED NON-MOVEMENT AREA.

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.

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: Jose Flores
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 PA-

PI on left

2.14.1 Designation: 35L
2.14.4 Visual approach slope indicator system: 4-light PA-
PI on left

2.14.1 Designation: 17L
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: 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 vari-
ation: 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:

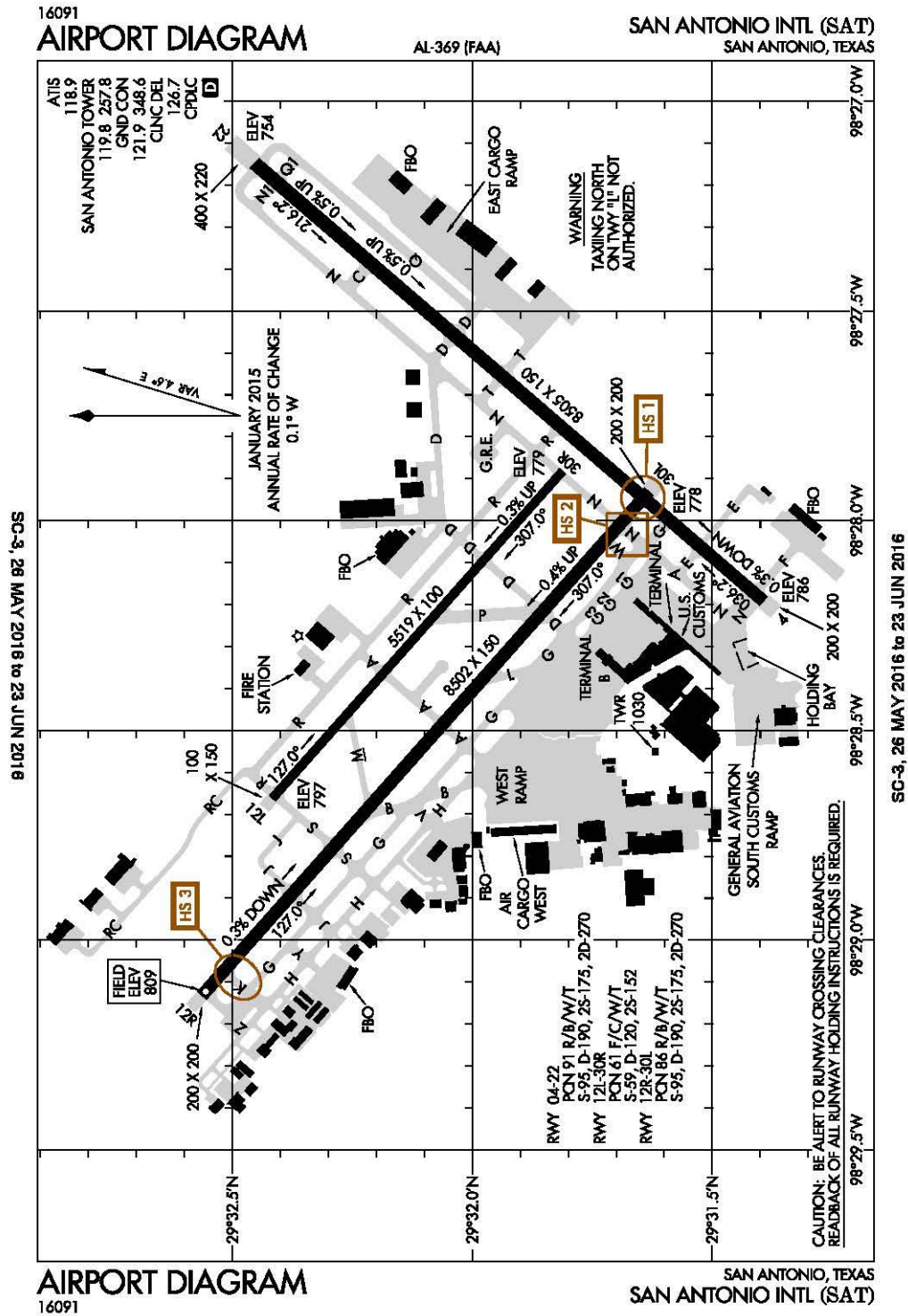
RUNWAY 14/32 RESTRICTED TO AIRCRAFT LESS THAN 60,000 LBS DTW.

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: 8E (1980)
2.2.6 Airport Contact: Noel T. Jones
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: 30L
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: 12L
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: 30R
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: 12R
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: 30L
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: 12L

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: 30R

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: 12R

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: 30L

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: 12L

2.14.4 Visual approach slope indicator system: 4–light PA-PI on left

2.14.1 Designation: 30R

2.14.4 Visual approach slope indicator system: 4–light PA-PI 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 PA-PI 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 PA-PI on left

2.14.1 Designation: 04

2.14.2 Approach lighting system: MALSR: 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: LEJON TWO
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 121.9 MHz

2.18.1 Service designation: MILET TWO
2.18.3 Service designation: 125.7 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: THX TWO
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: 125.1 MHz

2.18.1 Service designation: CD/P
2.18.3 Service designation: 126.7 MHz

2.18.1 Service designation: SETZR ONE
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: ALAMO NINE
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: ALOMO NINE
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: ALISS TWO
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: BOWIE FIVE
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: BOWIE FIVE
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: THX TWO
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: LEJON TWO
2.18.3 Service designation: 125.1 MHz

2.18.1 Service designation: SETZR ONE
2.18.3 Service designation: 127.1 MHz

2.18.1 Service designation: MILET TWO
2.18.3 Service designation: 125.1 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: APCH/S DEP/S
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: EMERG
2.18.3 Service designation: 243 MHz

2.18.1 Service designation: MILET THREE
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 251.125 MHz

2.18.1 Service designation: SETZR ONE
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 257.8 MHz

2.18.1 Service designation: ALISS TWO
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: BOWIE FIVE
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: ALAMO NINE
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: BOWIE FIVE
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 239.025 MHz

2.18.1 Service designation: THX TWO
2.18.3 Service designation: 269.1 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: SETZR ONE
2.18.3 Service designation: 269.1 MHz

2.18.1 Service designation: APCH/S DEP/S
2.18.3 Service designation: 290.225 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: SETZR ONE
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: ALAMO NINE
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: ALISS TWO
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: SETZR ONE
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: BOWIE FIVE
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: ALISS TWO
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: LEJON TWO
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: BOWIE FIVE
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: MILET TWO
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: LEJON TWO
2.18.3 Service designation: 307 MHz

2.18.1 Service designation: THX TWO
2.18.3 Service designation: 290.225 MHz

2.18.1 Service designation: MILET TWO
2.18.3 Service designation: 307 MHz

AD 2.19 Radio navigation and landing aids

2.19.1 ILS type: Localizer for runway 12R. Magnetic variation: 5E

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 317.5 MHz

2.19.2 ILS identification: ANT

2.19.5 Coordinates: 29-31-31.31N / 98-27-47.38W

2.19.6 Site elevation: 771 ft

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 318.1 MHz

2.19.1 ILS type: DME for runway 12R. Magnetic variation: 5E

2.18.1 Service designation: GND/P
2.18.3 Service designation: 348.6 MHz

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

2.18.1 Service designation: APCH/P DEP/P CLASS C
2.18.3 Service designation: 353.5 MHz

2.19.1 ILS type: Glide Slope for runway 12R. Magnetic variation: 5E

2.18.1 Service designation: AS ASGND
2.18.3 Service designation: 285.45 MHz

2.19.2 ILS identification: ANT

2.19.5 Coordinates: 29-32-28.99N / 98-28-54.82W

2.19.6 Site elevation: 801 ft

2.19.1 ILS type: Middle Marker for runway 12R. Magnetic variation: 5E

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: Inner Marker for runway 12R. Magnetic variation: 5E

2.19.2 ILS identification: ANT

2.19.5 Coordinates: 29-32-38.99N / 98-29-14.51W

2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 12R. Magnetic variation: 5E

2.19.2 ILS identification: ANT

2.19.5 Coordinates: 29-36-27.45N / 98-34-10.92W

2.19.6 Site elevation:

2.19.1 ILS type: Outer Marker for runway 30L. Magnetic variation: 8E

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: Middle Marker for runway 30L. Magnetic variation: 8E

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 30L. Magnetic variation: 8E

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 30L. Magnetic variation: 8E

General Remarks:

TAXIWAY L CLOSED NORTHBOUND.

NUMEROUS FLOCKS OF BIRDS IN THE VICINITY OF AIRPORT.

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 30L. Magnetic variation: 8E

2.19.2 ILS identification: IZR

2.19.5 Coordinates: 29-31-47.90N / 98-28-00.00W

2.19.6 Site elevation: 778 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:

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 30L.

AIRCRAFT TAXIING ON TAXIWAY N SW BOUND LOOK FOR HOLD SHORT TO RUNWAY 30R.

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 12L/30R 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 12R-30L, 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 118 FT 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 30L.

A BARRICADED PAVEMENT ELEVATION CHANGE EXISTS ALONG THE EASTERN SIDE OF THE WEST RAMP.

FREQUENT RUBBER ACCUMULATION NW 2500 RUNWAY 12R/30L

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 TERMINALS A & B IS CLOSED TO AIRCRAFT WITH WINGSPAN GREATER THAN 118 FT.

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.

15344

AIRPORT DIAGRAM

AL-365 (FAA)

SALT LAKE CITY INTL (SLC)

SALT LAKE CITY, UTAH

ASDE-X in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all twys and rwy.

JANUARY 2015
ANNUAL RATE OF CHANGE
0.1° W

VAR 11.8° E

ATIS 124.75 125.625
SALT LAKE CITY TOWER 119.05 257.8 (RWY 16L-34R)
118.3 257.8 (RWYS 14-32, 17-35)
132.65 336.4 (RWY 16R-34L)
GND CON 121.9 348.6 (RWYS 14-32, 17-35)
123.775 348.6 (RWYS 16L-34R, 16R-34L)
CLNC DEL 127.3 379.975
CPDLC

112°00'W
111°59'W
111°58'W
111°57'W

AIRPORT DIAGRAM

15344

SALT LAKE CITY, UTAH

SALT LAKE CITY INTL (SLC)

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: 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: 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: 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: 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

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

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 se-

quenced 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: 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

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

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: FINAL 2.18.3 Service designation: 284.6 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 120.9 MHz	2.18.1 Service designation: APCH/S DEP/S 2.18.3 Service designation: 284.6 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 120.9 MHz	2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 319.25 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 121.1 MHz	2.18.1 Service designation: CLASS B 2.18.3 Service designation: 319.25 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 121.1 MHz	2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 307.05 MHz
2.18.1 Service designation: EMERG 2.18.3 Service designation: 121.5 MHz	2.18.1 Service designation: APCH/P DEP/P IC 2.18.3 Service designation: 322.3 MHz
2.18.1 Service designation: APCH/P DEP P IC 2.18.3 Service designation: 124.3 MHz	2.18.1 Service designation: GND/P 2.18.3 Service designation: 348.6 MHz
2.18.1 Service designation: APCH/P 2.18.3 Service designation: 124.9 MHz	2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 353.6 MHz
2.18.1 Service designation: DEP/P 2.18.3 Service designation: 126.25 MHz	2.18.1 Service designation: LCL/P 2.18.3 Service designation: 336.4 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: AS ASGND 2.18.3 Service designation: 377.2 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 128.1 MHz	2.18.1 Service designation: DEP/P 2.18.3 Service designation: 316.15 MHz
2.18.1 Service designation: LCL/P 2.18.3 Service designation: 132.65 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 2.18.3 Service designation: 135.5 MHz	2.18.1 Service designation: CD/P 2.18.3 Service designation: 379.975 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: 353.825 MHz
2.18.1 Service designation: APCH/P 2.18.3 Service designation: 257.2 MHz	2.18.1 Service designation: ANG COMD POST 2.18.3 Service designation: 303 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 257.2 MHz	2.18.1 Service designation: ANG COMD POST 2.18.3 Service designation: 311 MHz
2.18.1 Service designation: LCL/P 2.18.3 Service designation: 257.8 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: APCH/P DEP/P
2.18.3 Service designation: 233.7 MHz

2.18.1 Service designation: GND/P
2.18.3 Service designation: 123.775 MHz

2.18.1 Service designation: FINAL
2.18.3 Service designation: 125.7 MHz

2.18.1 Service designation: APCH/P
2.18.3 Service designation: 269.625 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: 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: 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: 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: Middle Marker for runway 16R. Mag-

netic 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: 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: 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: 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.

ACCESS TO NORTH CARGO BY WAY OF TAXIWAY V AND SPOT 97.

RUNWAY 16L RUNUP AREA CLOSED PERMANENTLY.

TAXIWAY G CLOSED N OF TAXIWAY V.

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 TAXIWAYS AND RUNWAYS.

AIRCRAFT DEP RUNWAY 16L MUST BE ALIGNED WITH RUNWAY PRIOR TO APPLYING TAKE-OFF POWER.

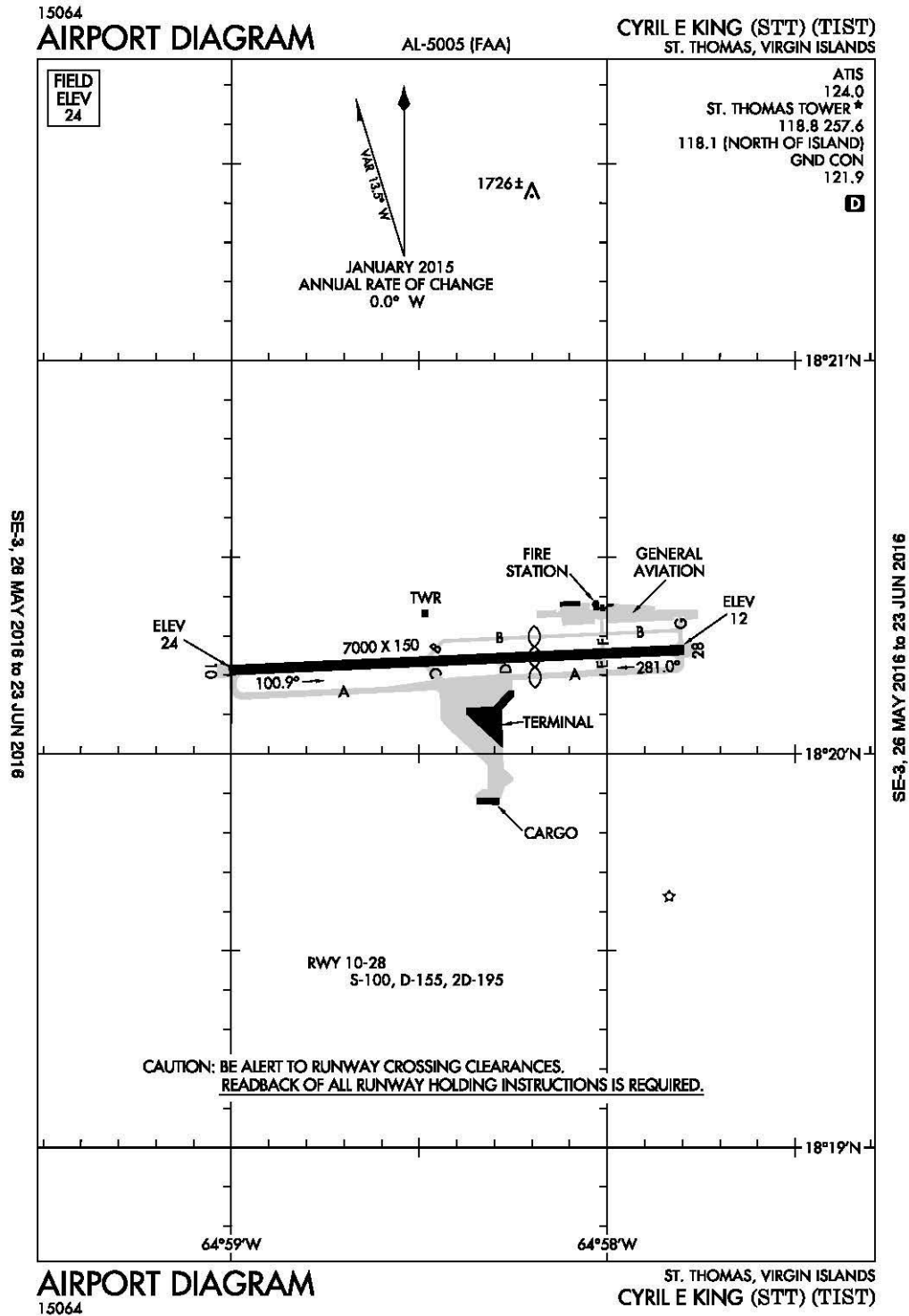
RUNWAY 34L DE-ICE PAD 128.975

RUNWAY 34R DE-ICE PAD 129.975

TAXIWAY L DE-ICE PAD 131.975

EFFECTIVE MARCH 2016 RUNWAY 16L DEPARTURES FROM H12 - DISTANCE REMAINING 11439'.

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 PA-
PI on left

AD 2.18 Air traffic services communication facilities

2.18.1 Service designation: LCL/P
2.18.3 Service designation: 118.1 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 MAINTAIN 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.

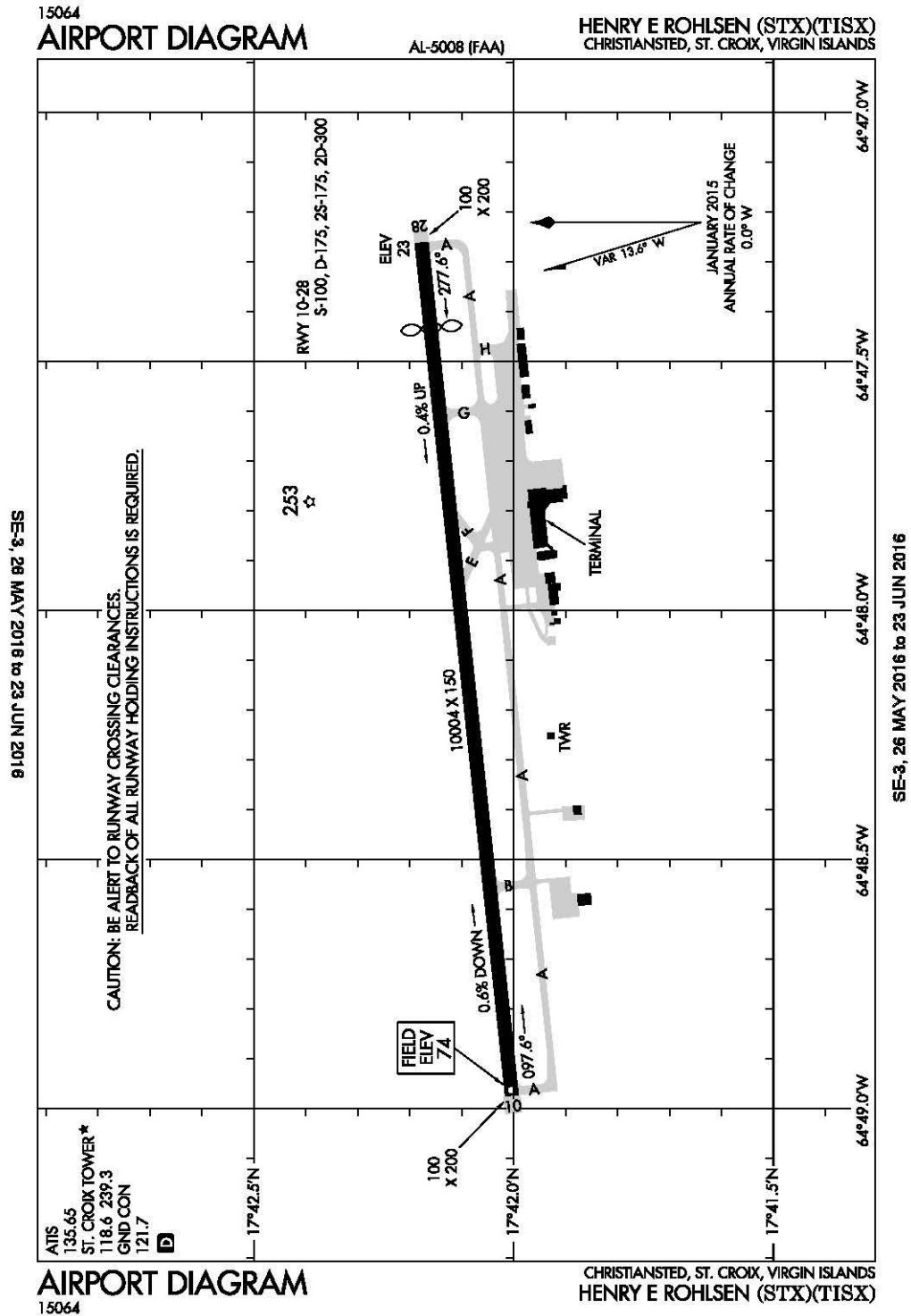
RUNWAY 10 DEPS MAINTAIN RUNWAY HEADING UNTIL REACHING DEP END OF RUNWAY BEFORE TURNING ON COURSE OR ASSIGNED HEADING UNLESS OTHERWISE AUTHORIZED BY ATCT.

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
2.12.5 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
2.12.5 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:

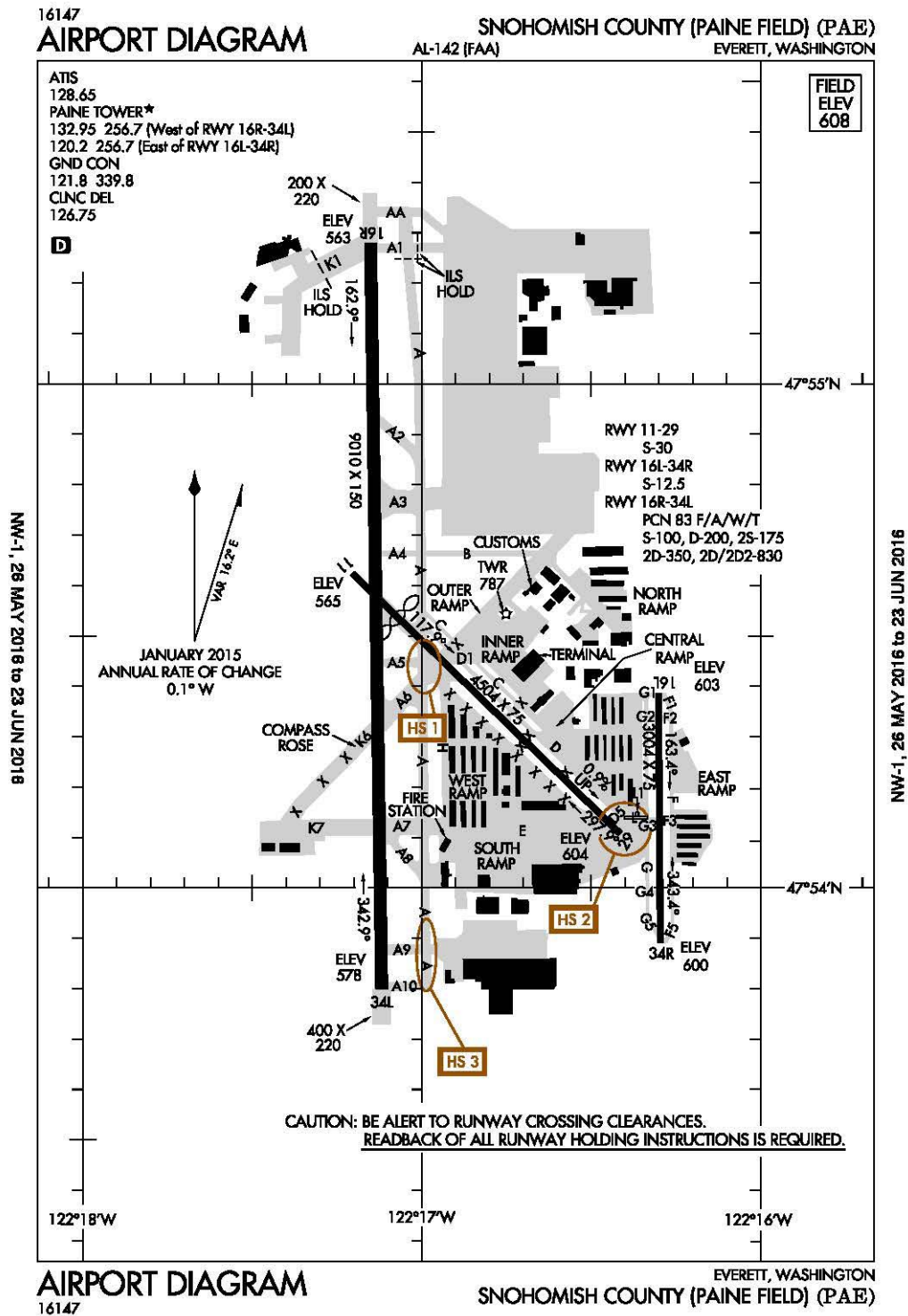
APPROACH TO RUNWAY 28 SOMETIMES OBSCURED BY SMOKE FROM LANDFILL LOCATED E OF AIRPORT.

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
2.12.5 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
2.12.5 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

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:

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: 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:

RUNWAYS 11/29 & 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 29, 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 & 29. AVOID INTERSECTION DEPS FROM RUNWAY 11 EXCEPT FROM TAXIWAY DELTA 1 INTERSECTION.

FLOCKS OF LARGE & SMALL BIRDS IN THE VICINITY OF AIRPORT.

ITINERANT DEP OF SMALL AIRCRAFT OVER 250 HORSEPOWER ON RUNWAYS 11 AND 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 OUTER TERMINAL RAMP, TAXIWAY H FROM NW EDGE OF WEST HANGARS TO TAXIWAY E, NE EDGE OF INNER TERMINAL RAMP.

RUNWAYS 16L/34R AND 11/29 LIMITED TO HELIPORT 8,000 LBS OR LESS.
TAXIWAY W CLOSED INDEFINITE.

TAXIWAY INTENSE D2, D3, AND D4 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 RESTRICTED TO WINGSPAN OF 68' OR LESS. TAXIWAY D BETWEEN D2 AND ALPHA RESTRICTED TO WINGSPAN OF 118' OR LESS. TAXIWAY D BETWEEN D2 AND GOLF RESTRICTED TO WINGSPAN OF 49' OR LESS. TWY 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.

16147
SEATTLE-TACOMA INTL (SEA)
AL-582 (FAA)
SEATTLE, WASHINGTON

ATIS
 118.0
 SEATTLE TOWER
 119.9 239.3
 (RWYS 16L, 16C, 34R)
 120.95 239.3
 (RWY 16R, 34C, 34L)
 GND CON
 121.7
 CLNC DEL
 128.0

D

CAUTION:
 Pilots are cautioned not to mistake Twy T for a landing surface.

Runway Status Lights in Operation

NOTE: Twy A, South of Twy G, restricted to aircraft with wingspan 225' and smaller

ASDE-X in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all twys and rwys.

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
 READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.

122°19'W 122°18'W

SEATTLE, WASHINGTON
 SEATTLE-TACOMA INTL (SEA)

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: Mark Reis
BOX 68727
Seattle, WA 98168

(206–787–4682)

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: 71 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: 71 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: CLASS B

2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: CLASS B

2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: DEP/P SUMMA

2.18.3 Service designation: 119.2 MHz

2.18.1 Service designation: APCH/P DEP/P

2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: CLASS B

2.18.3 Service designation: 120.1 MHz

2.18.1 Service designation: CLASS B

2.18.3 Service designation: 120.4 MHz

2.18.1 Service designation: APCH/P DEP/P

2.18.3 Service designation: 120.4 MHz

2.18.1 Service designation: DEP/P SUMMA

2.18.3 Service designation: 120.4 MHz

2.18.1 Service designation: EMERG

2.18.3 Service designation: 121.5 MHz

2.18.1 Service designation: APCH/S DEP/S

2.18.3 Service designation: 123.9 MHz

2.18.1 Service designation: APCH/P DEP/P

2.18.3 Service designation: 125.9 MHz

2.18.1 Service designation: CLASS B 2.18.3 Service designation: 125.9 MHz	2.18.1 Service designation: CLASS B 2.18.3 Service designation: 269.125 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 125.9 MHz	2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 269.125 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 125.9 MHz	2.18.1 Service designation: APCH/S DEP/S 2.18.3 Service designation: 269.125 MHz
2.18.1 Service designation: GATE CTL 2.18.3 Service designation: 126.25 MHz	2.18.1 Service designation: SUMMA; DEP/P 2.18.3 Service designation: 269.125 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 126.5 MHz	2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 125.6 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 126.5 MHz	2.18.1 Service designation: GND CON 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: NORTH RAMP/CARGO 2.18.3 Service designation: 126.87 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 284.7 MHz	2.18.1 Service designation: SOUTH RAMP 2.18.3 Service designation: 122.27 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 284.7 MHz	2.18.1 Service designation: APCH/P 2.18.3 Service designation: 133.65 MHz
2.18.1 Service designation: SUMMA; DEP/P 2.18.3 Service designation: 284.7 MHz	2.18.1 Service designation: APCH/P 2.18.3 Service designation: 273.45 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 290.9 MHz	2.18.1 Service designation: LCL/P 2.18.3 Service designation: 120.95 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 290.9 MHz	2.18.1 Service designation: LCL/P 2.18.3 Service designation: 119.9 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 290.9 MHz	2.18.1 Service designation: LCL/P 2.18.3 Service designation: 239.3 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 290.9 MHz	2.18.1 Service designation: LCL/P 2.18.3 Service designation: 239.3 MHz
2.18.1 Service designation: CLASS B 2.18.3 Service designation: 290.9 MHz	2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 377.15 MHz
2.18.1 Service designation: APCH/P DEP/P 2.18.3 Service designation: 290.9 MHz	2.18.1 Service designation: CLASS B 2.18.3 Service designation: 377.15 MHz
2.18.1 Service designation: APCH/S DEP/S 2.18.3 Service designation: 338.2 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 NECESSARY 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 TAXIWAYS AND RUNWAYS.

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 200 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.

[illegible]

Spokane, WA
Spokane Intl
ICAO Identifier KEGG

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: 18E (2000)
- 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
- 2.12.5 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
- 2.12.5 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
- 2.12.5 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
- 2.12.5 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 varia-

tion: 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.

[illegible]

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: 2W (1995)
2.2.6 Airport Contact: B. Dranzik
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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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: 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/REVTMENTS, 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 TAXIWAYS AND RUNWAYS.

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 WITH 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.

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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.

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