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UNITED STATES OF AMERICA

TWENTY-SIXTH EDITION DATED 16 JULY 2020

AMENDMENT 3
2 DEC 2021

CONSULT NOTAM FOR LATEST INFORMATION

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
# AIP Amendment 3

## Page Control Chart

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</tr>
</tbody>
</table>
GEN 0.5 List of Hand Amendments to the AIP – Not applicable
GEN 1.2 Flights Into or Over U.S. Territorial Airspace

1. General

1.1 All aircraft operators that conduct flights into or over U.S. territorial airspace must comply with the following:

1.1.1 National security requirements contained in AIP Section ENR 1.12, National Security and Intercept Procedures;

REFERENCE –
FAA Notices to Air Missions (NOTAMS), Special Notices, at (http://www.faa.gov/pilots/flt_plan/notams/).

FAA Prohibitions, Restrictions, and Notices website located at https://www.faa.gov/air_traffic/publications/us_restrictions/

1.1.2 All applicable sections of Title 14, Code of Federal Regulations (CFR), Part 91, General Operating and Flight Rules, particularly Subpart H, Foreign Aircraft Operations and Operations of U.S. Registered Civil Aircraft Outside of the United States; and Rules Governing Persons on Board Such Aircraft;

1.1.3 All applicable sections of Title 49, United States Code (USC), Transportation, particularly Subtitle VII, Aviation Programs (sections 40101 through 50105);

1.1.4 All applicable sections of U.S. Customs and Border Protection (CBP) and Transportation Security Administration (TSA) requirements in Title 19 USC Part 122, Air Commerce Regulations.

1.2 U.S. CBP designates the airport of entry or other location for international aircraft that land or depart within U.S. territorial airspace. For information pertaining to U.S. CBP Service Offices/Ports of Entry, see AIP GEN 1.1, paragraph 2.1.1.

1.3 Subject to the observance of the applicable rules, conditions, and limitations of the Federal Aviation Regulations and the Department of Transportation (DOT)/Office of the Secretary of Transportation (OST), Office of International Aviation, as described below, foreign civil aircraft registered and manufactured in any foreign country which is a member of the International Civil Aviation Organization (ICAO) may be navigated in the U.S. Foreign civil aircraft manufactured in a country which at the time of manufacture was not a member of ICAO may be navigated in the U.S. if the country has notified ICAO that the aircraft meets the standards described in the Chicago Convention or if a notice has been filed with the DOT/OST, Office of International Aviation, through diplomatic channels, that the aircraft meets the standards described in the Chicago Convention.

1.4 Aircraft registered under the laws of foreign countries, not members of the ICAO, may be navigated in U.S. territory only when authorized by the DOT/OST, Office of International Aviation.

1.5 All foreign civil aircraft operated to, from, or within the U.S. must carry on board effective certificates of registration and airworthiness issued by the country of registry. Also, each member of the flight crew must carry a valid airman certificate or license authorizing that member to perform their assigned functions in the aircraft.

1.6 Transportation of firearms by aircraft passengers. Regulations of the Alcohol, Tobacco and Firearms Division of the Internal Revenue Service make it unlawful for any person knowingly to deliver or cause to be delivered to any common or contract carrier for transportation or shipment in interstate or foreign commerce, to persons other than licensed importers, licensed manufacturers, licensed dealers, or licensed collectors, any package or other container in which there is any firearm or ammunition without written notice to the carrier that such firearm or ammunition is being transported or shipped; except that any passenger who owns or legally possesses a firearm or ammunition being transported aboard any common or contract carrier for movement with the passenger in interstate or foreign commerce may deliver said firearm or ammunition into the custody of the pilot, captain, conductor or operator of such common or contract carrier for the duration of the trip.

1.7 Miscellaneous Information

1.7.1 Commercial air transport operators in the U.S. must adhere to Annex 6 – Operation of Aircraft with the proviso that aircraft which have no operators’ local representative available to them will be required to carry a fixed fuel reserve of not less than 45 minutes at the approved fuel consumption rate plus a variable reserve equivalent to 15% of the fuel required from departure to destination and to an alternate if an alternate is required; or where the reserve calculated in accordance with the above...
exceeds two hours at the approved fuel consumption rate – two hours reserve fuel.

2. Public Health

2.1 Public Health Measures Applied to Aircraft

2.1.1 At airports without Public Health Service Quarantine staff, the Customs, Immigration, or Agriculture Officer present will represent the Public Health Service.

2.1.2 No public health measures are required to be carried out with respect to aircraft entering U.S. territory except that disinfection of an aircraft may be required if it has departed from a foreign area that is infected with insect-borne communicable disease, and the aircraft is suspected of harboring insects dangerous to public health. Disinfection is defined as: “The operation in which measures are taken to kill the insect vectors of human disease present in carriers and containers.”

2.1.3 Disinfection must be the responsibility of the air carrier and must be subject to monitoring by the Director of the Public Health Service.

2.1.4 Disinfection of the aircraft must be accomplished immediately after landing and blocking. The cargo compartment must be disinfected before the mail, baggage, and other cargo are discharged, and the rest of the aircraft must be disinfected after passengers and crew deplane.

2.1.5 Disinfection must be performed with an approved insecticide in accordance with the manufacturer’s instructions. The current list of approved insecticides and sources may be obtained from the Division of Quarantine, Center for Prevention Services, Centers for Disease Control, Atlanta, GA 30333.

2.1.6 All food and potable water taken on board an aircraft at any airport and intended for human consumption thereon must be obtained from sources approved in accordance with Title 21 CFR Parts 1240 and 1250.

2.1.7 Aircraft inbound or outbound on an international flight must not discharge over the U.S. any excrement or waste water or other polluting materials. Arriving aircraft must discharge such matter only at servicing areas approved under regulations cited in paragraph 2.1.6 above.

2.1.8 Aircraft on an international voyage (that are in traffic between U.S. airports) must be subject to inspection when there occurs on board, among passengers or crew, any death, or any ill person, or when illness is suspected to be caused by insanitary conditions.

2.2 Public Health Requirements

2.2.1 Disembarking passengers are not required to present a vaccination certificate except when coming directly from an area infected with cholera, yellow fever, or smallpox. Smallpox vaccination is necessary only if, within the 14 days before arrival, the traveler has been in a country reporting smallpox.

2.2.2 The pilot in command of an aircraft destined for a U.S. airport must report immediately to the Quarantine Station at or nearest the airport at which the aircraft will arrive, the occurrence, on board, of any death or an ill person among passengers or crew. Ill person is defined as:

2.2.2.1 Temperature of 100 degrees Fahrenheit (38 degrees Celsius) or greater accompanied by rash, glandular swelling, or jaundice, or which has persisted for more than 48 hours; or

2.2.2.2 Diarrhea, defined as the occurrence in a 24-hour period of three or more loose stools or of a greater than normal (for the person) amount of loose stools.

2.2.3 The pilot in command is responsible for detaining the aircraft and persons and things arriving thereon and keeping them free from unauthorized contact pending release when required by the Foreign Quarantine Regulations of the Public Health Service described in Title 42 CFR Part 71.

3. Scheduled Common Carriage Flights

3.1 General

3.1.1 Generally, when an operator of an aircraft advertises its transportation services to the general public or particular classes or segments of the public for compensation or hire, it is a common carrier. In turn, the transportation service the operator performs is considered to be in common carriage. The scheduled flights into, from and landing in the territory of the U.S. for purposes of loading or unloading passengers, cargo and mail (revenue flights), must first obtain from the U.S. DOT/OST, Office of International Aviation (X—40), a foreign air carrier permit. Applications for common carrier
authority must be filed with X−40. If X−40, with the
President's approval, determines that the carrier is fit,
willing, and able to perform the service it proposes
and that the service is in the public interest, X−40
must issue the carrier a foreign air carrier permit,
subject to the disapproval of the President of the U.S.

3.1.2 The scheduled flights in transit across the
territory of the U.S. or landing for reasons other than
for the purpose of loading and unloading of
passengers, cargo or mail (nonrevenue flights), which
are registered in a State which is a party to the
International Air Services Transit Agreement, must
submit a notice of transit to X−40. The notice of
transit must be submitted at least 15 days prior to the
flight and must include:

3.1.2.1 Name, country of organization and nationality (including the nationality of all ownership
interests) of the operator;

3.1.2.2 Name of the country in which the aircraft to
be used in the service is registered;

3.1.2.3 A full description of the proposed operations
including the type of operations (passenger, property,
mail, or combination), date of commencement,
duration and frequency of flights, and routing
(including each terminal and intermediate point that
will be served);

3.1.2.4 Copies of advertising of the flights, if
advertised in the U.S.

3.1.3 If the notice is timely filed, the flights may be
operated in the absence of a contrary notification
from X−40.

3.1.4 Scheduled flights in transit across the territory
of the U.S. or landing for reasons other than for the
purpose of loading and unloading of passengers,
cargo or mail (nonrevenue flights), which are
registered in a State which is not a party to the
International Civil Aviation Organization (ICAO)
may do so without the necessity of obtaining prior
permission, provided passengers are not permitted to
leave the airport during stopover or provided that
each stopover does not exceed 24 hours. Stopovers
which do exceed 24 hours are permitted only in those
cases where a transfer of passengers, property or mail
to another aircraft is necessary for the safety of the
aircraft, passengers, property, or crew. Stopovers for
the pleasure or convenience of passengers are not
included in the transit authority.

3.2 Documentary Requirements for Clearance of
Aircraft

3.2.1 The undermentioned documents must be
submitted to U.S. authorities for clearance on entry
and departure of aircraft. All documents listed below
must follow the ICAO standard format as set forth in
the relevant appendixes to Annex 9, and are
acceptable only when furnished in English.

3.2.2 Aircraft Documents Required (Arrival and
Departure)

<table>
<thead>
<tr>
<th>Required by</th>
<th>General Declaration</th>
<th>Passenger Manifest</th>
<th>Cargo Manifest</th>
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<tr>
<td>Customs</td>
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<td>1</td>
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</tr>
<tr>
<td>Plant and Quarantine</td>
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<td>0</td>
<td>1</td>
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<tr>
<td>Immigrations</td>
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</tr>
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<td>Total</td>
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</table>

4. Nonscheduled, Noncommon Carriage
Flights

4.1 General

4.1.1 Nonscheduled, noncommon carriage flights
are transportation services for remuneration or hire
that are not offered to the general public.

4.1.2 Nonscheduled flights in transit across the
territory of the U.S. or landing for reasons other than
the purposes of loading and unloading passengers,
cargo or mail (nonrevenue flights) which are
registered in a State which is a member of the
International Civil Aviation Organization (ICAO)
may do so without the necessity of obtaining prior
permission, provided passengers are not permitted to
leave the airport during stopover or provided that
each stopover does not exceed 24 hours. Stopovers
which do exceed 24 hours are permitted only in those
cases where a transfer of passengers, property or mail
to another aircraft is necessary for the safety of the
aircraft, passengers, property, or crew. Stopovers for the pleasure or convenience of passengers are not included in the transit authority.

4.1.3 Nonscheduled flights landing in the territory of the U.S. for reasons of loading or unloading passengers, cargo or mail (revenue flights), must obtain prior permission from the DOT/OST, Office of International Aviation (X−40), at least 15 days prior to the flight. All permission requests must include:

4.1.3.1 Name and address of applicant.
4.1.3.2 Aircraft make, model, and registration or identification marks.
4.1.3.3 Country in which the aircraft is registered.
4.1.3.4 Name and address of registered owner of aircraft.
4.1.3.5 Type of flight(s) (passenger, cargo, or agricultural or industrial operation).
4.1.3.6 Purpose of flight(s).
4.1.3.7 Date of the flight(s).
4.1.3.8 Routing of the flight(s).
4.1.3.9 Number of flights.
4.1.3.10 Name of charterer.
4.1.3.11 Charter price.

4.1.4 Applications should be made on DOT/OST, Office of International Aviation Form 4509; however, if time does not permit, applications by telegram will be accepted as long as they include the information described above. Telegraphic applications must include a prepaid voucher sufficient to allow a sixty word reply. The permit must be carried aboard the aircraft during flight over U.S. territory.

4.2 The following commercial air operations require preflight authorization from X−40:

4.2.1 Agricultural and industrial operations which include, but are not limited to, such services as crop dusting, pest control, pipeline patrols, mapping, surveying, banner towing, or skywriting.
4.2.2 Occasional and infrequent planeload charter flights carrying persons or property to and/or from the U.S. The number of these flights that may be performed is limited to six in any calendar year. Foreign civil aircraft are not permitted to transport persons or property or mail for compensation or hire between points wholly within the U.S.

4.2.3 Continuing cargo operations for one or more contractors. Applicants may be authorized to serve up to 10 different contractors in a 12−month period; however, authorization may be granted only if it is clear that the service is not in common carriage and the carrier and contractor enter into a contract which provides for (a) continuing cargo operations for a period of at least 6 months; (b) an absolute or minimum number of flights or volume of cargo to be transported; and (c) a guarantee by the contractor to the carrier to pay for the minimum number of flights to be performed or volume of cargo to be transported whether or not he/she uses the capacity. Continuing cargo operations wholly within the U.S. cannot be authorized.

4.2.4 Persons wishing to operate foreign civil aircraft from, to, or within the U.S. other than as described in this section may request permission to perform those services by filing an application with X−40. The application should include the information described above in this section. Permission to perform these services may be granted if X−40 finds that the service is consistent with applicable law and is in the interest of the public of the U.S.

4.2.5 Nonscheduled flights in transit across the territory of the U.S. or landing with or without purposes of loading and unloading passengers, cargo or mail (revenue or nonrevenue flights) which are registered in a State which is not a member of the International Civil Aviation Organization (ICAO) must obtain prior permission from X−40 at least 15 days prior to the flight. All permission requests must include the same information as requested in paragraph 4.1.3. (See also paragraph 1.4).

4.3 Documentary Requirements for Clearance of Aircraft

4.3.1 Same requirements as for scheduled flights.
<table>
<thead>
<tr>
<th>Chapter 6 Reference</th>
<th>Routine electrocardiography for applicants for FAA third-class airman (private pilot) medical certification is not required unless clinically indicated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 6 Reference</td>
<td>The demonstration of compliance with the visual requirements to be made with only one pair of corrective lenses is not specifically required.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>A requirement that a second pair of near-correction spectacles be kept available when exercising the privileges of the license is not established.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The United States has not established a specific medical assessment standard for the remote pilot license, therefore a U.S. remote pilot would not undergo specific medical examination unless U.S. regulations are adopted by 2022.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The demonstration of compliance with visual acuity by providing a full ophthalmic report is not required.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>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.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>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.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>Applicants are not required to demonstrate normal hearing against a background noise that reproduces or simulates an air traffic control working environment.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>Applicants are not required to take a practical hearing test.</td>
</tr>
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</table>
### ANNEX 2 – RULES OF THE AIR

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advisory Airspace</strong></td>
<td>A advisory service is provided in terminal radar areas and the outer areas associated with Class C and Class E airspace areas.</td>
</tr>
<tr>
<td><strong>Aerodrome control tower</strong></td>
<td>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.”</td>
</tr>
<tr>
<td><strong>Aerodrome Traffic Zone</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Airborne Collision Avoidance System (ACAS)</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Air–ground Control Radio Station</strong></td>
<td>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 Air Missions, and broadcast aviation weather and aeronautical information. In Alaska, FSSs provide Airport Advisory Services.</td>
</tr>
<tr>
<td><strong>Air–taxiing</strong></td>
<td>The U.S. uses “hover taxi” for this maneuver above 100 feet above ground level (AGL) and “air taxi” below 100 feet AGL.</td>
</tr>
<tr>
<td><strong>Area control service</strong></td>
<td>The U.S. does not use the term “area control service” to indicate controlled flight in controlled areas.</td>
</tr>
<tr>
<td><strong>Area control centre</strong></td>
<td>The U.S. equivalent facility for an Area Control Centre (ACC) is an Air Route Traffic Control Center (ARTCC).</td>
</tr>
<tr>
<td><strong>ATS route</strong></td>
<td>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).</td>
</tr>
<tr>
<td><strong>Controlled airspace</strong></td>
<td>The U.S. terms for controlled airspace have different parameters than for ICAO.</td>
</tr>
<tr>
<td><strong>Current Flight Plan</strong></td>
<td>FAA Pilot Controller Glossary 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.</td>
</tr>
<tr>
<td><strong>Danger area</strong></td>
<td>The term “danger area” is not used within the U.S. or any of its possessions or territories.</td>
</tr>
<tr>
<td><strong>Estimated off–block time</strong></td>
<td>The U.S. uses the term “estimated departure time” for domestic operations.</td>
</tr>
<tr>
<td><strong>Flight Information Centre</strong></td>
<td>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).</td>
</tr>
<tr>
<td><strong>Ground Visibility</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Instrument meteorological conditions</strong></td>
<td>The U.S. air traffic service units use the phrase “IFR conditions.”</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>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.”</td>
</tr>
</tbody>
</table>
There are several substantive differences between the U.S. procedures and those of ICAO, in addition to some minor variations in detail which are not considered significant. These differences are the result of initiatives and/or refinements which the U.S. has effected in the interest of improving the safety and efficiency of air traffic.

<table>
<thead>
<tr>
<th><strong>Advisory Airspace</strong></th>
<th>The U.S. does not define, it refers to Advisory Service.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advisory Route</strong></td>
<td>The U.S. does not define, it refers to Advisory Service.</td>
</tr>
<tr>
<td><strong>Aerodrome Traffic</strong></td>
<td>The U.S. does not define.</td>
</tr>
<tr>
<td><strong>Air Traffic Advisory Service</strong></td>
<td>In the U.S., “Advisory Service” is intended for IFR and VFR aircraft.</td>
</tr>
<tr>
<td><strong>Airborne Collision Avoidance System</strong></td>
<td>The U.S. uses traffic alert and collision avoidance system (TCAS).</td>
</tr>
<tr>
<td><strong>Aircraft</strong></td>
<td>U.S. uses “Aircraft” to mean the airframe, crew members, or both.</td>
</tr>
<tr>
<td><strong>AIRMET</strong></td>
<td>In the U.S., AIRMET stands for Airman’s Meteorological Information which is in-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMETs concern weather of less severity than that covered by SIGMETs or convective SIGMETs. AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 kt or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscuration.</td>
</tr>
<tr>
<td><strong>Air-report</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Air-taxiing</strong></td>
<td>In the U.S., the term “hover taxi” is sometimes used to indicate the ICAO term “air-taxiing.” In the U.S., air-taxiing is the preferred method for helicopter movements on airports provided ground operations/conditions permit. Additionally, in the U.S., air taxi is used to indicate certain commercial aircraft operations. For those operations, usually a special call sign is used, or the prefix “Tango” is added to the aircraft call sign.</td>
</tr>
<tr>
<td><strong>Air Traffic Flow Management</strong></td>
<td>U.S. defines as Air Traffic Control System Command Center.</td>
</tr>
<tr>
<td><strong>Altitude</strong></td>
<td>U.S. uses “Altitude” to mean indicated altitude mean sea level (MSL), flight level (FL), or both.</td>
</tr>
<tr>
<td><strong>Approval Request</strong></td>
<td>U.S. uses “APREQ.”</td>
</tr>
<tr>
<td><strong>Area control service</strong></td>
<td>The U.S. does not use the term “area control service” to indicate controlled flight in controlled areas.</td>
</tr>
<tr>
<td><strong>ATS route</strong></td>
<td>In U.S. domestic airspace, the term “ATS route” is not used. Routes in the U.S. include VOR airways, jet routes, substitute routes, off-airway routes, RNAV routes and colored airways. The U.S. also uses instrument departure procedures (DPs), and standard terminal arrivals (STARS).</td>
</tr>
</tbody>
</table>
Control zone
The U.S. uses “surface area” in place of the ICAO term “control zone.” Surface area is defined as the airspace contained by the lateral boundary of the Class B, C, D or E airspace designated for an airport that begins at the surface and extends upward.

Controlled airspace
The U.S. uses the following definition of controlled airspace found in 14 CFR Section 1.1: “Controlled airspace means an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.”

Course, bearing, azimuth, heading, and wind direction
U.S. uses “Course, bearing, azimuth, heading, and wind direction” information and it shall always be magnetic unless specifically stated otherwise.

Cruising level
The U.S. uses the term “cruising altitude.”

Decision altitude
A approach with vertical guidance (V NAV).

Emergency Phase
The U.S. does not utilize classification system of emergency phases

Expedite
U.S. uses “EXPEDITE” by ATC when prompt compliance is required to avoid the development of an imminent situation. Expedite climb/descent normally indicates to a pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics.

Flight information centre
In the U.S., the services provided by flight information centers (FICs) are conducted by air traffic control (ATC) facilities, flight service stations (FSSs), and rescue coordination centers (RCCs).

Ground Effect
The U.S. does not define, but is referred to in “Hover Taxi.”

Holding procedure
In the U.S., a hold procedure is also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.

Hot Spot
This is a known term, but not specifically defined in 7110.65.

Level
The U.S. uses “altitude” or “flight level” rather than “level.”

Miles
U.S. uses “M iles” to mean nautical miles unless otherwise specified, and means statute miles in conjunction with visibility.

Minute
U.S. uses “minute plus 30 seconds”, except when time checks are given to the nearest quarter minute.

Movement area
In the U.S., the “movement area” is equivalent to the ICAO “maneuvering area” which does not include parking areas.

Near Parallel Runways
In the U.S., these are not defined as non-intersecting runways aligned 15 degrees or less apart

Position Symbol
The U.S. definition differs in that it refers to mode of tracking, rather than position of an aircraft or vehicle

Procedural Control
The U.S. does not define this as method to provide ATC service without data from an ATS surveillance system.

Procedural Separation
The U.S. does not define as separation used when providing “Procedural Control.”

Runway Incursion
This is a well-known term in NAS, but is not defined in the 7110.65

Standard instrument arrival (STAR)
The U.S. uses the acronym STAR to define a standard terminal arrival.

Standard instrument departure (SID)
The U.S. uses the term departure procedure (DP) in lieu of SID.

Stopway
The U.S. does not define a “stopway” as a rectangular area.
| **Taxiway**  
a) Aircraft stand taxilane  
b) Apron taxiway  
c) Rapid exit taxiway | Ref (a), the US does not define as “portion of an apron designated as a taxiway intended to provide access to aircraft stands only.”  
Ref (b), the US does not define as “portion of a taxiway system located on an apron, providing taxi route across an apron.”  
Ref (c), the US defines as High Speed Taxiway. |
<table>
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</thead>
<tbody>
<tr>
<td><strong>Terminal control area</strong></td>
<td>In the U.S., the term “terminal control area” has been replaced by “Class B airspace.” Standard IFR services should be provided to IFR aircraft operating in Class B airspace.</td>
</tr>
<tr>
<td><strong>Transition altitude, transition layer, and transition level</strong></td>
<td>In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL 180 where a barometric altimeter setting of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings.</td>
</tr>
<tr>
<td><strong>Uncertainty Phase</strong></td>
<td>The U.S. does not utilize emergency phase classifications.</td>
</tr>
<tr>
<td><strong>Visibility</strong></td>
<td>Definitions are different.</td>
</tr>
<tr>
<td><strong>Visual Approach</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Will</strong></td>
<td>U.S. uses “Will” means futurity, not a requirement for the application of a procedure.</td>
</tr>
</tbody>
</table>

### CHAPTER 4 GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

4.2 In the U.S., flight information and alerting services are provided by ATC facilities, FSSs, and RCCs.  
4.3.2.1 Transfer of control points vary depending on numerous factors.  
4.3.2.1.1 Transfer of control varies.  
4.3.2.1.3 Transfer of control points vary depending on numerous factors.  
4.3.3.1 Transfer of control varies.  
4.3.3.1a/ b The U.S. does not “release” aircraft. Handoff is used.  
4.4.1 In the U.S., flight information and alerting services are provided by ATC facilities, FSSs, and RCCs.  
4.4.13 The U.S. uses a flight plan format different from the ICAO model discussed in Appendix 2. The U.S. ATS facilities will transmit ICAO repetitive flight plans (RPLs) even though a different format is used for stored flight plans.  
4.4.2.1 Transfer of control varies.  
4.4.2.1.1 The U.S. accepts flight plans up to 24 hours prior to Estimated Off–Block Time (EOBT).  
4.5.6.2 U.S. ATS controllers do not normally include clearance for transonic acceleration in their ATC clearances.  
4.5.7.3 and 4.10.4 In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL 180 where a barometric altimeter setting 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.  
4.5.7.5 The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances.  
4.6.1.5 The U.S. allows speed adjustments to be assigned in 5 knot increments.  
4.6.3.2 The U.S. uses different speed control phraseologies. Specifically, Doc 4444 uses “Maximum Speed” whereas the US uses “Maximum Forward Speed”. Doc 4444 uses “Minimum Clean Speed” whereas the US uses “Slowest Practical Speed.”  
4.6.3.7 In the US, speed control is not to be assigned inside Final Approach Fix or 5 NM from runway end.  
4.8.2 U.S. Controller phraseology differs slightly and does not include a time check.
### 4.8.3
ATS units are not required to advise a pilot who has canceled an IFR flight plan that IMC conditions are likely to be encountered along the route of flight; however, if a pilot informs a controller of a desire to change from IFR to VFR, the controller will request that the pilot contact the appropriate FSS.

### 4.9.1.1
FAA uses different wake turbulence categories and weight groups for wake turbulence separation minimums.

### 4.9.1.2
FAA uses different wake turbulence categories and weight groups for wake turbulence separation minimums.

Not all FAA facilities are authorized to use the provisions of FAA JO 7110.126.

### 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 and 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
The U.S. has not yet published ATS procedures for the use of Automatic Dependent Surveillance-Contract (ADS-C).

### 4.11.1.1, 4.11.1.3
The U.S. has different criteria to make position reports. FAA Order JO 7110.65, 5–1–12. Position Reporting.

### 4.12.2 and 4.12.3
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.

### 4.13.4
The difference is the length of time for retention.

## Chapter 5 Separation Methods and Minima

### 5.2.1
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 and 5.3.4
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, paragraph 6-6-1, APPLICATION, 6-6-2, EXCEPTIONS.

### 5.4.1.2.1.2
U.S. Lateral separation criteria and minima values differ somewhat.

### 5.4.2.1.1 c/ d
The U.S. uses 22 kt instead of 20 kt and 44 kt instead of 40 kt.

### 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.
### Chapter 5

<table>
<thead>
<tr>
<th>Section</th>
<th>Text</th>
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</thead>
<tbody>
<tr>
<td>5.5.2</td>
<td>When the other aircraft concerned are within 5 minutes flying time of the holding area.</td>
</tr>
<tr>
<td>5.6</td>
<td>U.S. Allows 2 minute separation standard when courses diverge within 5 minutes after departure.</td>
</tr>
<tr>
<td>5.7</td>
<td>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.</td>
</tr>
<tr>
<td>5.8.2.1</td>
<td>FAA uses different wake turbulence categories and differing minima.</td>
</tr>
<tr>
<td>5.8.3.1</td>
<td>FAA requires 3 minutes separation for a Large or Heavy aircraft landing behind a Super aircraft.</td>
</tr>
</tbody>
</table>

### Chapter 6

**Separation in the Vicinity of Aerodromes**

<table>
<thead>
<tr>
<th>Section</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3.2.4</td>
<td>U.S. aircraft on a SID assigned higher altitudes than specified in SID, may climb to higher assigned altitude.</td>
</tr>
<tr>
<td>6.3.2.5</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>Route</td>
</tr>
<tr>
<td></td>
<td>a) By the route assigned in the last ATC clearance received;</td>
</tr>
<tr>
<td></td>
<td>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;</td>
</tr>
<tr>
<td></td>
<td>c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Altitude - At the highest of the following altitudes or flight levels for the route segment being flown:</td>
</tr>
<tr>
<td></td>
<td>a) The altitude or flight level assigned in the last ATC clearance received;</td>
</tr>
<tr>
<td></td>
<td>b) The minimum altitude as prescribed in 14 CFR Part 91 (Section 91.121(c)) for IFR operations; or</td>
</tr>
<tr>
<td></td>
<td>c) The altitude or flight level ATC has advised may be expected in a further clearance.</td>
</tr>
<tr>
<td>6.3.3.3</td>
<td>Arriving aircraft - delay of 10 minutes or more.</td>
</tr>
<tr>
<td>6.5.2.4</td>
<td>Aircraft on STAR descended to altitudes lower than specified in a STAR, may descend to assigned altitude.</td>
</tr>
<tr>
<td>6.5.3.1</td>
<td>The 7110.65 does not stipulate flight crew concurrence of Controller initiated Visual Approach.</td>
</tr>
<tr>
<td>6.5.3.5</td>
<td>U.S. requires ATC to inform following aircraft behind Heavy/B757 aircraft of manufacturer and model information.</td>
</tr>
<tr>
<td>6.5.5.2</td>
<td>Onward clearance time. 7110.65 PG EXPECT FURTHER CLEARANCE (TIME) - The time a pilot can expect to receive clearance beyond a clearance limit.</td>
</tr>
<tr>
<td>6.7.3.1.2</td>
<td>U.S. has no criteria for separate radar controllers in conducting Parallel approaches.</td>
</tr>
<tr>
<td>6.7.3.2.1 (c)</td>
<td>The U.S. has adopted procedures allowing RNAV equipped aircraft to conduct Independent Parallel Approaches.</td>
</tr>
<tr>
<td>6.7.3.2.10</td>
<td>U.S. has no parallel approach obstacle assessment surfaces (PAOAS) Criteria.</td>
</tr>
</tbody>
</table>
6.7.3.2.10  The U.S. has no criteria for a “45 degree track”.
6.7.3.2.11 (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.
6.7.3.6.3 (b)  The U.S. has no surveillance radar approach (SRA).
6.7.3.6.3 (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  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.
7.4.3.6.3.2  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.
7.4.3.6.3.3  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  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  U.S. category 1, 2, & 3 (SRS) aircraft weights differ. Separation standards are greater, due to increased size and weight categories.
7.13.1.1.2  U.S. does not specify separation standards on taxiways.
7.15  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).

7.15  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  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 altitude.
8.7.3.2 (b)  The U.S. only allows visual observance of runway turn-off points.
### 8.7.3.4 and 8.7.3.6
Separate a Heavy aircraft operating directly behind a Super aircraft or following a Super aircraft conducting an instrument approach by 6 miles unless the Super aircraft is operating above FL 240 and above 250 knots.

Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake.

### 8.8.3.2
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;
  - 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;
    - c) The altitude or flight level ATC has advised may be expected in a further clearance.

### 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.

### 9.1.3.7
The U.S. does not have special procedures for the transmission of information to supersonic aircraft.

### 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."

### 10.1.3.1
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.

### 11.1.2

### 11.4.2.3.6
The existing U.S. ATS automation system does not process logical acknowledgment messages (LAMs).

### 12.2.7
US ATC does not allow conditional clearances described for example:

> "SAS 941, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND."

Note – This implies the need for the aircraft receiving the conditional clearance to identify the aircraft or vehicle causing the conditional clearance.
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<thead>
<tr>
<th>Section</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>12.3.1.2 m)</td>
<td>General to require action when convenient.</td>
</tr>
<tr>
<td>m) WHEN READY (instructor);</td>
<td></td>
</tr>
<tr>
<td>12.3.1.2 (n)</td>
<td>MAINTAIN OWN SEPARATION AND VMC [FROM (level)] [TO (level)]; and</td>
</tr>
<tr>
<td>(o) MAINTAIN OWN SEPARATION AND VMC ABOVE (or BELOW, or TO) (level);</td>
<td>U.S. does not use &quot;maintain own separation and VMC 'from,' 'above,' or 'below' . . . ,&quot; U.S. controllers say &quot;maintain visual separation 'from' that traffic.&quot; Meteorological conditions are expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima.</td>
</tr>
<tr>
<td>12.3.1.2 aa)</td>
<td>Clearance to cancel level restriction(s) of the vertical profile of a SID during climb.</td>
</tr>
<tr>
<td>(z) CLIMB TO (level) [LEVEL RESTRICTION(S) (SID designator) CANCELLED (or) LEVEL RESTRICTION(S) (SID designator) AT (point) CANCELLED];</td>
<td>The U.S. does not have specific phraseology examples that cover this issue. However, phraseology contained in the 7110.65 covers how to change altitudes and altitude restriction in a SID.</td>
</tr>
<tr>
<td>12.3.1.2 ff)</td>
<td>The U.S. does not have specific phraseology examples that cover this issue. However, phraseology contained in the 7110.65 covers how to amend or cancel altitude restrictions.</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>gg) DESCEND TO (level)</strong> [LEVEL RESTRICTION(S) (STAR designator) CANCELLED (or) LEVEL RESTRICTION(S) (STAR designator) AT (point) CANCELLED].</td>
<td><strong>U.S. uses “MAINTAIN BLOCK (altitude) THROUGH (altitude).”</strong> 7110.65, Para 4-5-7. <strong>g. ALTITUDE INFORMATION</strong></td>
</tr>
<tr>
<td><strong>12.3.1.6 CHANGE OF CALL SIGN</strong></td>
<td><strong>U.S. has no phraseology or approved procedure to advise aircraft to change call signs. The U.S. has procedures for a duplicate aircraft identification watch and notification to airline operators but does not publish national procedures for on-the-spot temporary changes to aircraft call signs in accordance with ICAO guidelines.</strong></td>
</tr>
<tr>
<td><strong>12.3.1.7 TRAFFIC INFORMATION</strong></td>
<td><strong>The U.S. requires issuance of azimuth, distance, direction, type, and altitude.</strong></td>
</tr>
<tr>
<td><strong>12.3.1.8 b) METEOROLOGICAL CONDITIONS</strong></td>
<td><strong>In the U.S., the criterion for a variable wind is: wind speed greater than 6 kt and direction varies by 60 degrees or more. If the wind is &gt;1 kt but &lt;6 kt, the wind direction may be replaced by “VRB” followed by the speed or reported as observed. “VRB” would be spoken as “wind variable at &lt;speed&gt;.”</strong></td>
</tr>
<tr>
<td><strong>12.3.1.8 d), e), and f) METEOROLOGICAL CONDITIONS</strong></td>
<td><strong>U.S. controllers do not give wind speed, visibility, or RVR values in metric terms. RVR values are given in 100- or 200-foot increments while RW values are given in Venule increments.</strong></td>
</tr>
<tr>
<td><strong>12.3.1.8 j) and m) METEOROLOGICAL CONDITIONS</strong></td>
<td><strong>U.S. controllers do not use the term “CAVOK.” However, the ceiling/sky condition, visibility, and obstructions to vision may be omitted if the ceiling is above 5,000 feet and the visibility is more than 5 miles.</strong></td>
</tr>
<tr>
<td><strong>12.3.1.8 l) and m) METEOROLOGICAL CONDITIONS</strong></td>
<td><strong>In the U.S. controllers and pilots exchange altimeter setting by reference to inches Hg. ICAO describes altimeter setting by reference to millibars, QNH or QFE. (where QNH – above mean sea level and QFE – height above aerodrome)</strong></td>
</tr>
</tbody>
</table>
| **12.3.1.11 g) METEOROLOGICAL CONDITIONS** | **U.S. use BRAKING ACTION terms “good,” “fair,” “poor,” “nil,” or combination of these terms. “Braking action fair to poor, reported by a heavy D-C Ten.” 7110.65, Para 3-3-4.**
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
</table>
| 12.3.2.2 | **INDICATION OF ROUTE AND CLEARANCE LIMIT**
- U.S. will issue a clearance "direct" to a point on the previously issued route. **PHRASEOLOGY CLEARED DIRECT (fix).** **NOTE** Clearances authorizing "direct" to a point on a previously issued route do not require the phrase "rest of route unchanged." However, it must be understood where the previously cleared route is resumed. When necessary, "rest of route unchanged" may be used to clarify routing. 7110.65, paragraph 4–4–1. **ROUTE USE & 4–2–5. ROUTE OR ALTITUDE AMENDMENTS 3.**

| 12.3.2.4 | **Specification of Cruise Levels,**
- (c) Cruise climb between.
  - (levels) or above (level)
- The U.S. does not have equivalent cruise climb between levels/altitudes.
  - However, in ICAO regions for supersonic flight 8-8-3a(1), U.S. has adopted ICAO phraseology.

| 12.3.2.5 | **U.S. has no phraseology or instruction for emergency descent:**

| 12.3.2.8 | **Separation Instructions**
- **(b) ADVISE IF ABLE TO CROSS** (significant point) **AT** (time or level)

| 12.3.4.7 | **Taxi procedures, after landing**
- **(n), (o), & (p)**

| 12.3.4.11 | **TAKE-OFF CLEARANCE when take-off clearance has not been complied with**
- **c) Vacate**

| 12.3.4.20 | **RUNWAY VACATING AND COMMUNICATIONS AFTER LANDING**
- **b)**

| 12.3.4.20 | **U.S. uses CLEAR OF THE RUNWAY**
- **a.** Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the U.S. uses aircraft are held short of the applicable runway holding position marking.
- **b.** A pilot or controller may consider an aircraft, which is exiting or crossing a runway, to be clear of the runway when all parts of the aircraft are beyond the runway edge and there are no restrictions to its continued movement beyond the applicable runway holding position marking.
- **c.** Pilots and controllers shall exercise good judgment to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.
| 12.3.4.11 (e) | U.S. uses different phraseology to cancel a take off. |
| HOLD POSITION, CANCEL TAKE-OFF I SAY AGAIN CANCEL TAKE-OFF (reasons); |
| 3-9-10. CANCELLATION OF TAKEOFF CLEARANCE PHRASEOLOGY |
| If circumstances require, cancel a previously issued take-off clearance and, when appropriate, inform the aircraft of the reason. |
| PHRASEOLOGY CANCEL TAKEOFF CLEARANCE (reason) |

| 12.3.5.7 | U.S. has no phraseology to expedite clearance. |
| a) EXPEDITE CLEARANCE (aircraft call sign) EXPEDITED DEPARTURE FROM (place) AT (time); |
| b) EXPEDITE CLEARANCE (aircraft call sign) [ESTIMATED] OVER (place) AT (time) REQUESTS (level or route, etc.). |

| 12.3.5.6 HANDOVER | U.S. does not use radar handover. 7110.65, Para 5-4-3. METHODS PHRASEOLOGY HANDOVER/POINT OUT/TRAFFIC (aircraft position) (aircraft ID), or (discrete beacon code point out only) (altitude, restrictions, and other appropriate information, if applicable). c. When receiving a handoff, point out, or traffic restrictions, respond to the transferring controller as follows: PHRASEOLOGY- (Aircraft ID) (restrictions, if applicable) RADAR CONTACT, or (aircraft ID or discrete beacon code) (restrictions, if applicable) POINT OUT APPROVED, or TRAFFIC OBSERVED. |

| 12.4.1.1 IDENTIFICATION OF AIRCRAFT f) | U.S. controllers do not say “will shortly lose identification” or “identification lost.” 7110.65, Para 5-3-7 |
| IDENTIFICATION STATUS |
| a. Inform an aircraft of radar contact when: 1. Initial radar identification in the ATC system is established. 2. Subsequent to loss of radar contact or terminating radar service, radar identification is re-established. |
| PHRASEOLOGY RADAR CONTACT (position if required). |
| b. Inform an aircraft when radar contact is lost. |
| PHRASEOLOGY RADAR CONTACT LOST (alternative instructions when required). |
12.4.2.1 VECTORING FOR APPROACH
(b) U.S. would use “airport or runway” rather than “field.” 7-4-2. VECTORS FOR VISUAL APPROACH PHRASEOLOGY - (ACID) FLY HEADING OR TURN RIGHT/LEFT HEADING (degrees) VECTOR FOR VISUAL APPROACH TO (airport name).
7110.65, Para 5-11-2, VISUAL REFERENCE REPORT:
Aircraft may be requested to report the runway, approach/runway lights, or airport in sight. Helicopters making a “point-in-space” approach may be requested to report when able to proceed to the landing area by visual reference to a prescribed surface route.

PHRASEOLOGY REPORT:
(runway, approach/runway lights or airport)
IN SIGHT.
REPORT WHEN ABLE TO PROCEED VISUALLY TO AIRPORT/HELIPORT.

12.4.2.4.2 a) COMMENCE DESCENT NOW [TO MAINTAIN A (number) DEGREE GLIDE PATH] The U.S. uses only “begin descent” and does not speak to “Maintain a (number) Degree Glide Path.”

12.4.2.5.1 PAR APPROACH U.S. controllers say “this will be a P-A-R/surveillance approach to runway (number) or airport/runway (number) or airport/heliport.” U.S. controllers do not say “approach completed.” U.S. controllers say “your missed approach procedure is (missed approach procedure)” and, if needed, “execute missed approach.” For PAR approaches, U.S. controllers say “begin descent” and for surveillance approaches, U.S. controllers say “descend to your minimum descent altitude.” 7110.65, Para 5-12-8. APPROACH GUIDANCE TERMINATION lights in sight and requested to or advised that he/she will proceed visually, and has been instructed to proceed visually, all PAR approach procedures shall be discontinued. 6. Continue to monitor final approach and frequency. Pilots shall remain on final controller’s frequency until touchdown or otherwise instructed. 5-12-9. COMMUNICATION TRANSFER PHRASEOLOGY CONTACT (terminal control function) (frequency, if required) AFTER LANDING.

12.4.2.4.4 CHECKS; (a) U.S. uses “CHECK WHEELS DOWN”. 7110.65, Par 2-1-24. WHEELS DOWN CHECK PHRASEOLOGY.

12.4.2.5.8 MISSED APPROACH a) US ATC does not allow conditional clearances described.

12.4.3.12 and 12.4.3.13 U.S., for aircraft above FL 180, U.S. controllers would say, “confirm using two niner niner two as your altimeter setting, verify altitude” or “stop altitude squawk” “stop altitude squawk; altitude differs by (number) feet.” U.S. controllers would not say “stop squawk Charlie.” 7110.6, Para 5-2-22. BEACON TERMINATION Inform an aircraft when you want it to turn off its transponder.

12.3.4.13 - ENTERING AN AERODROME TRAFFIC CIRCUIT b) U.S. uses PHRASEOLOGY: ENTER LEFT/RIGHT BASE. STRAIGHT-IN. MAKE STRAIGHT-IN. STRAIGHT-IN APPROVED. RIGHT TRAFFIC. MAKE RIGHT TRAFFIC. RIGHT TRAFFIC APPROVED. CONTINUE. b. Runway in use. c. Surface wind. d. Altimeter setting. REFERENCE FAA Order 7110.65, Current Settings, Para 2-7-1. e. Any supplementary information. f. Clearance to land. g. Requests for additional position reports. Use prominent geographical fixes which can be easily recognized from the air, preferably those depicted on sectional charts. This does not preclude the use of the legs of the traffic pattern as reporting points.

12.4.3.14 U.S. controllers would say “verify at (altitude)” and/or “verify assigned altitude.” 7110.65 Para, 5-2-17. 1. Issue the correct altimeter setting and confirm the pilot has accurately reported the altitude. PHRASEOLOGY- (Location) ALTIMETER (appropriate altimeter), VERIFY ALTITUDE.

12.6.1 Alerting phraseologies U.S. controllers would issue MEA/MVA/MOCA/MIA instead of QNH. 7110.65.
### CHAPTER 15

#### PROCEEDURES RELATED TO EMERGENCIES, COMMUNICATION FAILURE AND CONTINGENCIES

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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<tbody>
<tr>
<td>15.1.3</td>
<td>Unlawful interference and aircraft bomb threat</td>
</tr>
<tr>
<td>15.3.3 b) 1, 2</td>
<td>7110.65 defers to the AIM for what to expect an aircraft to do when loss of two-way communication has been encountered. The expectations in the AIM differ from what a pilot is expected to do in accordance with PANS-ATM 15.3.3 b) 1 and 2.</td>
</tr>
<tr>
<td>15.3.10</td>
<td>When neither communications nor radar contact can be established for 30 minutes (or prior, if appropriate), U.S. controllers will consider an aircraft overdue and will initiate overdue aircraft procedures including reporting to the ARTCC or FSS.</td>
</tr>
<tr>
<td>15.4.1</td>
<td>U.S. does not use the terms “strayed” or “unidentified” aircraft. 7110.65, paragraph 10-3-1.</td>
</tr>
<tr>
<td>15.7.1.1</td>
<td>The PANS-ATM states: “If, during an emergency situation, it is not possible to ensure that the applicable horizontal separation can be maintained, emergency separation of half the applicable vertical separation minimum may be used” Pilots must be advised that emergency separation is being applied and traffic information must be given.</td>
</tr>
</tbody>
</table>

#### APPENDIX 1

**INSTRUCTIONS FOR AIR-REPORTING BY VOICE COMMUNICATIONS**

**AIREP Form of Air-report**
- U.S. uses Pilot Reports (UAs), or Urgent Pilot Reports (UUAs).

#### APPENDIX 2

**FLIGHT PLAN**

- **A 2-5 Wake**
  - ICAO aircraft wake turbulence categories (heavy, medium, light) and FAA weight classes (heavy, large, small) differ. Also, for landing aircraft, wake turbulence separation is defined differently. The U.S. makes special provisions for any aircraft landing behind a B-757 (4 miles for a large aircraft behind or 5 miles for a small aircraft behind).
- **A 2-8 (Item 15)**
  - U.S. ATS units do not accept cruising speeds nor filed altitudes/flight levels in metric terms. The U.S. accepts filed Mach Number expressed as M followed by 3 figures.
- **2.2 (Item 18)**
  - The U.S. accepts the non-standard indicator IRMK/in filed flight plans.

#### APPENDIX 3

**AIR TRAFFIC SERVICES MESSAGES**

- **1.1.1**
  - See Part XI, ATS Messages, 1.3.
  - 1.3 Composition of the standard types of message. The composition of each standard type of message, expressed as a standardized sequence of fields of data, shall be as prescribed in the reference table on page A3–33. Each message shall contain all the fields prescribed.
- **1.6.2**
  - See Part XII, Phraseologies, 2.8.
- **1.8.1 (Field Type 3), (Field Type 15), and (Field Type 18).**
  - See Appendix 2, Flight Plan, 2.2 (Item 15) and 2.2 (Item 18).
<table>
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<th>2.1, 2.4.5, 2.5</th>
<th>See Part X, ATS Messages 1.3.</th>
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<tr>
<td><strong>APPENDIX 4</strong></td>
<td><strong>AIR TRAFFIC INCIDENT REPORT</strong></td>
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<tr>
<td>Appendix 4</td>
<td>U.S. has their accident/incident report in FAA Order JO 8020.16C.</td>
</tr>
<tr>
<td><strong>APPENDIX 6</strong></td>
<td><strong>ATS INTERFACILITY DATA COMMUNICATIONS (AIDC) MESSAGES</strong></td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td>7110.65; 8-2-3. AIR TRAFFIC SERVICES</td>
</tr>
<tr>
<td>1.1 General</td>
<td>INTERFACILITY DATA COMMUNICATIONS</td>
</tr>
<tr>
<td></td>
<td>(AIDC)</td>
</tr>
<tr>
<td></td>
<td>Where interfacility data communications capability has been implemented, its use for ATC co-ordination should be accomplished in accordance with regional Interface Control Documents, and supported by letters of agreement between the facilities concerned.</td>
</tr>
</tbody>
</table>
# ANNEX – METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

## PART I (Core SARPs)

### Chapter 2 General Provisions

2.2 The U.S. has implemented a quality management system (QMS) for the majority of the meteorological information supplied to users. WAFC Washington and MWO Kansas City (a.k.a. Aviation Weather Center) are ISO 9000. MWOs Anchorage and Honolulu and all 122 Weather Forecast Offices have a QMS that is governed under the following National Weather Service (NWS) directives: NWS Instruction 10−1601 (Verification), NWS Instruction 10−1602 (Service Evaluation), NWS Instruction 10−1606 (Service Assessment), NWS Instruction 10−1607 (Office Evaluation), and NWS Instruction 10−815 (Aviation Meteorologist Training and Competencies). No QMS is in place for the augmentation of the surface observing program.

### Chapter 3 World Area Forecast System and Meteorological Offices

3.4.2 g) U.S. MWOs do not supply information received concerning the accidental release of radioactive material into the atmosphere to associated ACC/FIC.

3.8.1 a) 2) Space weather advisories are not issued for communication via satellite (SATCOM).

### Chapter 4 Meteorological Observations and Reports

4.3.2 a) The U.S. does not issue local routine reports or local special reports. This difference is applicable to subsequent paragraphs that relate to the provision of local routine and special reports in Annex 3. The U.S. provides METAR to departing and arriving aircraft and provides wind and altimeter information in accordance with Federal Aviation Administration (FAA) Order JO 7110.65Y Section 9 (3−9−1) and Section 10 (3−10−1).

4.5.1 d) This field is also used to denote a correction to the METAR/SPECI by “COR.”

4.6.2.1 The U.S. reports visibility in statute miles.

4.6.3.3 RVR values in the METAR/SPECI code forms are reported in feet.

4.6.4.1 The U.S. automated surface observing systems (ASOS, AWOS) do not generate an automated report for the occurrence of drizzle or freezing drizzle. The ASOS does allow the manual augmentation of these elements to the observations.

4.6.7 The U.S. provides atmospheric pressure in inches of mercury. METAR and SPECI contains an Altimeter Setting (A) instead of QNH, for example, A3010 for 30.10 inches of mercury. The U.S. does not provide QFE.

### Chapter 5 Aircraft observations and reports

5.5 Urgent Pilot Reports (UUA) are used in lieu of Special Aircraft Observations, to include Hail, Low Level Wind Shear (within 2,000 ft of surface), severe icing, severe and extreme turbulence, tornado, funnel cloud or waterspout, and volcanic eruption and/or volcanic ash. In addition, Pilot Reports (UA) and UAA identify the location of the weather phenomenon by NAVAIDS. Pilot Reports are used in lieu of Special Aircraft Observations, to include moderate turbulence and moderate icing. Braking action may be included in the remarks section of the UUA/UA, but is reported to air traffic control when worse than reported.

### Chapter 6 Forecasts

6.3.1 Landing forecasts are provided by the TAF.

6.3.3 The U.S. does not provide trend forecasts.

6.5 The U.S. provides an Area Forecast (FA) and Graphical Forecast for Aviation (GFA) in place of a GAMET. The FA is provided by MWOs Anchorage and Honolulu while the GFA is provided by WFO Kansas City. The format and content of the FA and GFA differs from the GAMET. The FA and GFA are valid from the surface up to FL450. The GFA is a web−based interactive information service.

### Chapter 7 SIGMET and AIRMET Information, Aerodrome Warnings and Wind Shear Warnings

7.2.3 AIRMETs over the conterminous U.S. (CONUS) and Hawaii are valid for 6 hours and are issued every 6 hours on a scheduled basis. AIRMETs over Alaska are valid for 8 hours and are issued every 8 hours on a scheduled basis. The vertical domain of AIRMETs is from the surface up to FL450. The U.S. also provides a graphical version of the AIRMET (G−AIRMET) that contains 3−hourly time steps valid from 0−hour to 12−hours.
7.4.1 The U.S. does not provide wind shear warnings. The U.S. believes wind shear alerts are timelier to flight crews in landing and takeoff than wind shear warnings and thus provide a greater level of safety. In addition, the information is duplicative in nature in that wind shear warnings could be delayed while wind shear alerts are provided via automated systems that allow for immediate data link to flight crews through ATS systems.

Chapter 9 Service for operators and flight crew members

9.2.3 & 9.2.4 U.S. meteorological offices have no means to communicate directly to flight crews if there is a divergence in the forecast from what is provided in the flight document folder.

9.3.3 U.S. meteorological offices have no means to provide updates to flight document folders or to contact the operator.

PART II APPENDICES and ATTACHMENTS

APPENDIX 2 Technical specifications related to global systems, supporting centers and meteorological offices

Table A2-2 U.S. TCACs do not provide observed CB clouds in the tropical cyclone advisory message.

5.1.4 U.S. TCACs do not provide observed CB clouds in the tropical cyclone advisory (TCA) message. The U.S. does not provide a graphical version of the TCA.

6.1.3 Space weather advisories are not issued for communication via satellite (SATCOM).

APPENDIX 3 Technical specifications related to meteorological observations and reports

2.1.2 U.S. METARs and SPECIs are not issued in accordance with Table A3–2 due to national practices, which are described in FAA Order JO 7900.5 and Federal Meteorological Handbook No. 1 (FMH–1). Ranges and resolution for numerical elements included in METAR and SPECI differ from Table A3–5.

2.3 The U.S. does not use the term CA VOK in meteorological reports.

U.S. practices require SPECI for wind shift when wind direction changes by 45 degrees or more in less than 15 minutes and the wind speed is 10 knots or more throughout the wind shift. Practices do not require SPECI for increases of mean surface wind speed. Practices require SPECI for squall, where squall is defined as a strong wind characterized by a sudden onset in which the wind speed increases at least 16 knots and is sustained at least 22 knots or more for at least one minute. Practices do not require SPECI for wind direction changes based on local criteria. Practices do not require SPECI for the onset, cessation or change in intensity of: freezing fog; low drifting dust, sand or snow; blowing dust, sand or snow (including snowstorm); dust storm; or sandstorm. Practice provides a SPECI when a layer of clouds or obscurations aloft is present below 1000 ft and no layer aloft was reported below 1000 ft in the preceding report. A SPECI is also reported when the ceiling (ceiling is defined in the U.S. as the lowest broken or overcast layer) decreases or increases at these markers: 3000, 1500, 1000, 500 ft or lowest published instrument approach procedures. SPECI is made when referenced weather phenomena cause changes in the visibility, ceiling, sky condition, freezing precipitation (including intensity), hail, or ice pellets.

2.3.3 c) The U.S. does not issue SPECI for the equivalents in feet of 50, 175, 300, 550 or 600 meters. RVR is measured in increments of 100 feet up to 1,000 feet, increments of 200 feet from 1,000 feet to 3,000 feet, and increments of 500 feet above 3,000 feet to 6,000 feet. SPECI is made when the highest value from the designated RVR runway decreases to less than or if below, increases to equal or exceeds 2,400 feet during the preceding 10 minutes.

3.1.4 Practice to disseminate SPECI for improving conditions as soon as possible after the observation.

4.1.1.2 The U.S. does not provide wind representatives for specific runways but does provide a wind representative for the aerodrome.

4.1.3.1 b) The United States provides a 2-minute average wind observation for the METAR/SPECI.

4.1.5 The wind direction may be considered variable if, during the 2-minute evaluation period, the wind speed is 6 knots or less. Also, the wind direction must be considered variable if, during the 2-minute evaluation period, it varies by 60 degrees or more when the wind speed is greater than 6 knots. Practices define wind gusts as rapid fluctuations in wind speed with a variation of 10 knots or more between peaks and lulls. Wind speed data for the most recent 10 minutes is examined and a gust, the maximum instantaneous wind speed during that 10–minute period, is reported if the definition above is met during that period.
4.2.4.4 Surface visibility is derived from an automated sensor system and is reported as prevailing visibility in the METAR and SPECI. Tower visibility is the prevailing visibility determined from the airport control tower at locations that also report surface visibility. When visibility is reported from both surface and tower, the lower value (if below 4 miles) is reported in the body of the METAR/SPECI and the other value is reported in the remarks section of the METAR/SPECI.

4.3.4b) The U.S. does not report in METAR or SPECI marked discontinuity values when RVR passes through values of 800, 550, 300 and 175 meters.

4.3.6 The U.S. reports RVR in increments of 100 feet up to 1,000 feet, increments of 200 feet from 1,000 feet to 3,000 feet, and increments of 500 feet above 3,000 feet to 6,000 feet. The U.S. reports RVR for a single designated runway in the METAR/SPECI. RVR tendency is not reported.

4.4 The following weather elements are augmented manually at designated automated stations observation sites: FC, TS, GR, GS, and VA. At selected airports, additional present weather elements may be provided. With the exception of volcanic ash, present weather is reported when prevailing visibility is less than 7 statute miles or considered operationally significant. Volcanic ash is always reported when observed.

4.4.2.3 GR refers to all hail. All reports of hail include hailstone size diameter in the Remarks (RMK) section of the METAR/SPECI in increments of 1/4 inch. If no hail size is reported it will be assumed to be small hail. Small hail will result in the issuance of a SPECI. G5 is used only when snow pellets are observed. The U.S. automated surface observing systems (ASOS, AWOS, AWSS) do not generate an automated report for the occurrence of drizzle or freezing drizzle. The ASOS and AWSS do allow the manual augmentation of these elements to the observations.

4.4.2.8 The practice with respect to the proximity indicator VC is between 5 to 10 statute miles from point of observation.

4.4.2.10 The U.S. does not use "///" to denote the present weather is missing at an automated observing site. The U.S. uses "PWINO" in the remarks section of the METAR and SPECI to denote the present weather is unavailable.


4.5.4 The United States reports only up to 3 layers at automated sites and up to 6 layers at manual sites. Cloud layer amounts are a summation of layers at or below a given level, utilizing cumulative cloud amount. In addition, at automated sites, which are unstaffed, cloud layers above 12,000 ft are not reported. At staffed automated sites, clouds above 12,000 ft may be augmented. CA VOK and NSC are not used. In addition, the U.S. does not use "///" when cloud type cannot be observed; "NCD" when no clouds are detected; or "///////" for CB or TCU when not detected by automated observing systems. In the US, the symbol "/", when used in the cloud section of METAR, refers to a mountain station where the layer is below the station level. The US refers to a cloud Ceiling, with the abbreviation CIG, as the lowest layer reported as broken or overcast, or the vertical visibility into an indefinite ceiling. The US refers to a Variable Ceiling in the METAR and SPECI Remarks (RMK) when the ceiling layer is variable and below 3,000 feet. The range of variability (V) between the two values is included in the Remark, for example “CIG 005V010”. This difference is also applicable to Table A3–2, METAR and SPECI.

4.5.4.6 d) The United States does not provide supplemental section for the METAR rather the U.S. provides a Remarks Section (RMK) that contains similar information. U.S. METAR and SPECI contain Remarks that are intended for all operational decision-making. FMH–1 contains the complete description of Remarks. Wind shear is not included in the METAR/SPECI code form in the U.S. remarks. Practice is to not use RE and to use beginning and ending times in the remarks section for only recent precipitation and thunderstorms. Sea–surface temperature, the state of the sea and state of the runway are not provided in the METAR/SPECI code form in the U.S. remarks.
4.8 The United States does not provide supplemental section for the METAR rather the U.S. provides a Remarks Section (RMK) that contains similar information. U.S. METAR and SPECI contain Remarks that are intended for all operational decision-making. FMH–1 contains the complete description of Remarks. Wind shear is not included in the METAR SPECI code form in the U.S. remarks. Practice is to not use RE and to use beginning and ending times in the remarks section for only recent precipitation and thunderstorms. Sea–surface temperature, the state of the sea and state of the runway are not provided in the METAR SPECI code form in the U.S. remarks.

APPENDIX 4 Technical specifications related to aircraft observations and reports
3.1.3 The U.S. MWOs do not disseminate special air observations and reports.

APPENDIX 5 Technical specifications related to forecasts
1.1 NWS TAFS are not issued in accordance with Table A5–1 due to national practices, which are described in National Weather Service Instruction 10–813.

1.2 Forecast visibility increments used consist of 1/4 mile from 0 (zero) to 1 mile, 1/2 mile from 1 to 2 miles, and 1 mile above 2 miles. Note: miles are statute miles. Practice defines light winds as less than or equal to 6 knots for using VRB in TAF. Practices require forecast of non-convective low–level wind shear within 2,000 feet of the ground in the Optional Group. The NWS does not use CAVOK and NSC in the TAF. NWS practices do not include TCU in the TAF.

1.3 Change groups and amendment criteria below 1/2 statute mile (800 meters) are not used. The 100–foot (30 meter) change group and amendment criterion is not used. Practice requires TAF to be amended for a 30–degree change with an accompanying wind of 12 knots or greater; for a 10 knot wind increase only when the original was 12 knots or greater; and for a 10 knot wind gust, regardless of mean wind speed. The NWS does not use the change indicator “BECMG.” The period of time covered by a TEMPO group is normally kept to a minimum but could be up to four (4) hours. Practice does not amend TAFs for moderate or heavy precipitation.

1.4 The NWS does not use “PROB 40” in the TAF. “PROB 30” will not be used in the first nine (9) hours of every TAF’s valid period, including amendments.

APPENDIX 6 Technical specifications related to SIGMET and AIRMET information, aerodrome warnings and wind shear warnings and alerts
1.1 The content and format of U.S. SIGMETs are not in accordance with Table A6–1A due to national practices, which are described in National Weather Service Instruction 10–811. SIGMETs in the conterminous U.S. (CONUS), i.e. except Alaska and Hawaii, are often valid for more than one FIR. The SIGMET sequence number is not restricted to FIRs. U.S. practices are to issue SIGMET for mountain wave only when accompanied by severe turbulence. Within the CONUS and coastal waters, convective SIGMETs are issued in lieu of SIGMETs for thunderstorms. SIGMETs are issued by alphanumeric series, e.g., Kilo 1,2,3 etc. SIGMET messages in the CONUS use VORs in place of lat/long and do not reference FIRs. The U.S. does not use flight level (FL) when describing the altitudes in SIGMETs except for those above FL180. The U.S. does not include a specific forecast position for the end of the SIGMET and AIRMET validity time, other than TC and VA. The U.S. does not issue a SIGMET for radioactive clouds. Within the FIRs over the CONUS and coastal waters, convective SIGMETs are issued in lieu of SIGMETs for Tropical Cyclones (TC).
2.1 The content, order and format of U.S. AIRMETs are not in accordance with Table A6–1A due to national practices, which are described in National Weather Service Instruction 10–811. AIRMETs in the conterminous U.S. are often valid for more than one FIR. The AIRMET sequence number is not restricted to FIRs. AIRMETs in the U.S. are issued on a routine schedule for icing, turbulence, sustained surface winds, ceiling/visibility and mountain obscuration. The U.S. does not issue AIRMETs for thunderstorms. AIRMET information is not restricted to FL100 and below and can be provided up to FL450 depending on the phenomena. The U.S. does not use flight level (FL) when describing the altitudes in AIRMETs except for those above FL180. The U.S. uses VORs instead of latitude and longitude to describe the area within an AIRMET.

4.2 The U.S. issues convective SIGMETs in lieu of SIGMETs for thunderstorms over the CONUS. The U.S. does not issue AIRMETs for thunderstorms. Convective SIGMETs are issued hourly for the East, Central, and Western U.S. and thus they do not indicate the FIR. Connective SIGMETs have an outlook section.

4.2.1 U.S. practices allow for the use of term widespread (WDSPR) for more than 50 percent of the area. Convective SIGMET criteria over the CONUS are:
   a. A line of thunderstorms at least 60 miles long with thunderstorms affecting at least 40 percent of its length.
   b. An area of active thunderstorms judged to have a significant impact on the safety of aircraft operations, covering at least 40 percent of the area concerned, and exhibiting a very strong radar reflectivity intensity or a significant satellite or lightning signature.
   c. Embedded or severe thunderstorm(s) expected to occur for more than 30 minutes during the valid period regardless of the size of the area.

4.2.9 The U.S. criteria for heavy sandstorm and dust storm is visibility less than or equal to 1/4 SM (400 m). The U.S. criteria for moderate sandstorm and dust storm is visibility greater than 1/4 SM and less than or equal to 1/2 SM (800 m).

5.1 The U.S. issues airport warning messages similar to the ICAO format (Table A6–2, Template for aerodrome warnings) only at selected airports based on criteria per a bilateral agreement between the airport authority and the NWS Forecast Office.

6.2.1 The U.S. does not provide wind shear warnings.
### ANNEX 4 – AERONAUTICAL CHARTS

<table>
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<tr>
<th>Chapter 1</th>
<th>Definitions</th>
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<tbody>
<tr>
<td><strong>Air taxiway</strong></td>
<td>The U.S. does not depict defined surfaces for air–taxiing of helicopters.</td>
</tr>
<tr>
<td><strong>Final approach and take–off area (FATO)</strong></td>
<td>The U.S. does not depict final approach and take–off areas (FATOs).</td>
</tr>
<tr>
<td><strong>Prohibited area</strong></td>
<td>The U.S. will employ the terms “prohibited area” and “restricted area” substantially in accordance with the definitions established and, additionally, will use the following terms: “Alert area.” A airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. “Controlled firing area.” A airspace wherein activities are conducted under conditions so controlled as to eliminate the hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. “Warning area.” A airspace which may contain hazards to nonparticipating aircraft in international airspace. “Maneuvering area.” This term is not used by the U.S. “Military operations area (MOA).” A MOA is an airspace assignment of defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. “Movement area.” Movement area is defined by the U.S. as the runways, taxiways, and other areas of an airport which are utilized for taxiing, take–off, and landing of aircraft, exclusive of loading ramp and parking areas.</td>
</tr>
<tr>
<td><strong>Touchdown and lift–off area (TLOF)</strong></td>
<td>The U.S. does not use this term.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 1.1</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aerodrome reference point</strong></td>
<td>Airport Reference Point is the approximate geometric center of all usable runway surfaces.</td>
</tr>
<tr>
<td><strong>Area Minimum Altitude</strong></td>
<td>Off Route Obstruction Clearance Altitude (OROCA) used.</td>
</tr>
<tr>
<td><strong>Air Transit Route</strong></td>
<td>Term “Helicopter Route” used.</td>
</tr>
<tr>
<td><strong>Arrival Routes</strong></td>
<td>Arrival routes are also identified on Standard Terminal Arrival (STAR).</td>
</tr>
<tr>
<td><strong>Danger Area</strong></td>
<td>The term “danger area” will not be used in reference to areas within the U.S. or in any of its possessions or territories.</td>
</tr>
<tr>
<td><strong>Flight Level</strong></td>
<td>Flight level is related to a reference datum of 29.92 inches of mercury.</td>
</tr>
<tr>
<td><strong>Glide Path</strong></td>
<td>Glideslope is used instead of glide path.</td>
</tr>
<tr>
<td><strong>Helicopter Stand</strong></td>
<td>Heliport is used vice helicopter stand.</td>
</tr>
<tr>
<td><strong>Minimum obstacle clearance altitude (MOCA)</strong></td>
<td>MOCA also assures acceptable navigational signal coverage within 22 NM of a VOR.</td>
</tr>
<tr>
<td><strong>Minimum sector altitude</strong></td>
<td>Minimum Sector Altitude is centered on the navigation facility upon which the procedure is predicated.</td>
</tr>
<tr>
<td><strong>Missed approach point</strong></td>
<td>Missed approach point based on acquiring the required visual reference.</td>
</tr>
<tr>
<td><strong>Movement Area</strong></td>
<td>Movement area also includes areas used by helicopters in taxiing. It does not include loading ramps or parking areas.</td>
</tr>
<tr>
<td><strong>Obstacle</strong></td>
<td>Obstacles may include terrain and objects of natural growth.</td>
</tr>
</tbody>
</table>
Obstacle clearance altitude (OCA) or Obstacle clearance height (OCH) — Decision Altitude and Decision Height used vice Obstacle Clearance Altitude and Obstacle Clearance Height.

Terminal arrival altitude (TAA) — Terminal Arrival Areas defined by the extension of the IAF legs and the intermediate segment course.

Touchdown zone — Touchdown zone is the first 3000 feet of the runway beginning at the threshold.

Visual approach procedure — Visual approach procedure is conducted on an IFR flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport.

Chapter 1.2 Applicability
1.2.2 Charts vary in their conformance to ICAO Standards.
1.2.2.1 Charts vary in their conformance to ICAO Recommended Practices.

Chapter 2 General Specifications
2.1.7 Charts are True North oriented except as indicated.
2.1.8 Sheet size of charts varies dependent on chart type.
2.2.1 The marginal note layouts, in some cases, differ from those set forth in Appendices 1, 5, and 6.
2.3.1 Marginal note layouts vary by chart type.
2.4 Symbols do not universally conform to Appendix 2.
2.4.1 Symbols do not universally conform to Appendix 2.
2.5.4 Linear dimensions are expressed in feet.
2.5.7 Conversion scales are not universally used.
2.6.2 Some charts have no linear scale.
2.9.2 Abbreviations used are from FAA Order JO 7340.2, not ICAO Doc 8400.
2.11 Color schemes differ by chart series.
2.12.2 Hypsometric tints differ by chart series.
2.14.1 Airspace depiction differs by chart.
2.15.1 Depiction of magnetic variation differs by chart series and is not always shown.
2.15.4 Each aerodrome has its own magnetic variation assigned. IACC specifications require individually assigned magnetic variation values for each airport.
2.16 Chart typography may vary in conformance to ICAO Standards.
2.18.3.1 Julian Calendar is also used. Local times are used on select charts.

Chapter 3 Aerodrome Obstacle Chart – ICAO Type A (Operating Limitations)
3.1 This data is available digitally and is depicted on other individual flight products to which it is pertinent.
3.2.1 Availability of chart is not dependent on provision of other charts.
3.2.2 Notification is not made when chart is not required.

Chapter 4 Aerodrome Obstacle Chart – ICAO Type B
4.1 This data is available digitally and is depicted on other individual flight products to which it is pertinent.
4.2.1 Availability of chart is not dependent on provision of other charts.

Chapter 5 Aerodrome Obstacle Chart – ICAO Type C
5.1 This data is available digitally and is depicted on other individual flight products to which it is pertinent.

Chapter 6 Precision Approach Terrain Chart – ICAO
<table>
<thead>
<tr>
<th>Chapter 7</th>
<th>En Route Chart – ICAO</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Simplified versions are not created.</td>
</tr>
<tr>
<td>7.6.1</td>
<td>Charts depict only oceanic shorelines and the major lake/river systems forming the U.S./Canadian border.</td>
</tr>
<tr>
<td>7.7</td>
<td>Off Route Obstruction Clearance Altitude (OROCA) is shown.</td>
</tr>
<tr>
<td>7.9.2</td>
<td>Danger Areas do not exist in the U.S. Warning Areas exist and are charted.</td>
</tr>
<tr>
<td>7.9.3.1.1</td>
<td>Coordinates are shown in degrees, minutes and hundredths of minutes. DME antenna elevation is not shown. Vertical limits of airspace are shown in tabulated data form. RNP values are not shown on routes. Coordinates of significant points are not shown. Bearings are shown to the nearest degree and distances to the nearest mile.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 8</th>
<th>Area Chart – ICAO</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>A rea charts produced only where the amount of detail required results in congestion of information on an IFR Enroute Low Altitude chart.</td>
</tr>
<tr>
<td>8.6.1</td>
<td>Charts depict only oceanic shorelines and the major lake/river systems forming the U.S./Canadian border.</td>
</tr>
<tr>
<td>8.6.2</td>
<td>Obstacles are not shown.</td>
</tr>
<tr>
<td>8.7</td>
<td>Magnetic Variation is not shown unless an isogonic line runs through the area.</td>
</tr>
<tr>
<td>8.9.2</td>
<td>Danger Areas do not exist in the U.S. Warning Areas exist and are charted.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 9</th>
<th>Standard Departure Chart – Instrument (SID) – ICAO</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2</td>
<td>Charts are provided only when a procedure has been established.</td>
</tr>
<tr>
<td>9.3.2</td>
<td>Charts are not generally drawn to scale.</td>
</tr>
<tr>
<td>9.3.3</td>
<td>Scale bar is not shown.</td>
</tr>
<tr>
<td>9.4.2</td>
<td>Parallels and meridians are not shown.</td>
</tr>
<tr>
<td>9.4.3</td>
<td>Graduation marks are not shown.</td>
</tr>
<tr>
<td>9.5</td>
<td>Procedure route is identified in accordance with FAA Order 8260.46</td>
</tr>
<tr>
<td>9.6.1</td>
<td>Culture and topography are not shown.</td>
</tr>
<tr>
<td>9.6.2</td>
<td>Contour relief is not shown. Obstacles are listed textually.</td>
</tr>
<tr>
<td>9.7</td>
<td>Magnetic variation is not shown.</td>
</tr>
<tr>
<td>9.8.1</td>
<td>Bearings and tracks are not provided as True values. IACC specifications do not accommodate nor require True values.</td>
</tr>
<tr>
<td>9.8.2</td>
<td>Bearings and tracks are not provided as True values.</td>
</tr>
<tr>
<td>9.8.3</td>
<td>Bearings, tracks, and radials are not provided as True/Grid values.</td>
</tr>
<tr>
<td>9.9.1.2</td>
<td>Any requested secondary airport shown by symbol vs runway pattern.</td>
</tr>
<tr>
<td>9.9.2</td>
<td>Danger Areas do not exist in the U.S. Warning Areas exist and are charted.</td>
</tr>
<tr>
<td>9.9.3.1</td>
<td>Minimum Sector Altitude is not shown.</td>
</tr>
<tr>
<td>9.9.3.2</td>
<td>Area minimum altitudes are not shown.</td>
</tr>
</tbody>
</table>
9.9.4.1.1 Coordinates for NAVAIDs and Significant Points are shown in degrees, minutes and hundredths of minutes. Bearings are shown to the nearest degree and distances to the nearest mile. DME antenna elevation is not shown. Obstacles are depicted textually with position and height, and without regard for penetration of OIS. Minimum vectoring altitudes are not shown.

**Chapter 10 Standard Arrival Chart – Instrument (STAR) – ICAO**

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.2</td>
<td>Charts are provided only when a procedure has been established.</td>
</tr>
<tr>
<td>10.3.2</td>
<td>Charts are not generally drawn to scale.</td>
</tr>
<tr>
<td>10.3.3</td>
<td>Scale bar is not shown.</td>
</tr>
<tr>
<td>10.4.2</td>
<td>Parallels and meridians are not shown.</td>
</tr>
<tr>
<td>10.4.3</td>
<td>Graduation marks are not shown.</td>
</tr>
<tr>
<td>10.5</td>
<td>Procedure route is identified in accordance with FAA Order JO 7100.9</td>
</tr>
<tr>
<td>10.6.1</td>
<td>Culture and topography are not shown.</td>
</tr>
<tr>
<td>10.6.2</td>
<td>Contour relief is not shown. Obstacles are listed textually.</td>
</tr>
<tr>
<td>10.7</td>
<td>Magnetic variation is not shown.</td>
</tr>
<tr>
<td>10.8.1</td>
<td>Bearings and tracks are not provided as True values.</td>
</tr>
<tr>
<td>10.8.2</td>
<td>Bearings, tracks, and radials are not provided as True/Grid values.</td>
</tr>
<tr>
<td>10.9.1.1</td>
<td>Airports are shown by symbol vice pattern.</td>
</tr>
<tr>
<td>10.9.1.2</td>
<td>Airports are shown by symbol vs runway pattern.</td>
</tr>
<tr>
<td>10.9.2</td>
<td>Danger areas are not shown. Vertical limits are not shown.</td>
</tr>
<tr>
<td>10.9.3.1</td>
<td>Minimum Sector Altitude is not shown.</td>
</tr>
<tr>
<td>10.9.3.2</td>
<td>Area minimum altitudes are not shown.</td>
</tr>
<tr>
<td>10.9.4.1.1</td>
<td>Bearings are shown to the nearest degree and distances to the nearest mile. Coordinates for NAVAIDs and Significant Points are shown in degrees, minutes and hundredths of minutes. DME antenna elevation is not shown. Minimum vectoring altitudes are not shown.</td>
</tr>
</tbody>
</table>

**Chapter 11 Instrument Approach Chart – ICAO**

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.3.3</td>
<td>Scale is not shown.</td>
</tr>
<tr>
<td>11.3.3.1</td>
<td>Distance circle is not shown.</td>
</tr>
<tr>
<td>11.3.3.2</td>
<td>Distance between components and between last component and runway shown.</td>
</tr>
<tr>
<td>11.4</td>
<td>Sheet size is 8.25 inches by 5.375 inches</td>
</tr>
<tr>
<td>11.5.2</td>
<td>Graduation marks are not shown.</td>
</tr>
<tr>
<td>11.7.1</td>
<td>Culture information is not shown. Shaded hydrographic features are shown, but not labeled.</td>
</tr>
<tr>
<td>11.7.2</td>
<td>Terrain charting criteria does not include approach gradient steeper than optimal due to terrain.</td>
</tr>
<tr>
<td>11.7.3</td>
<td>Terrain is not charted if Std 11.7.2 is not met.</td>
</tr>
<tr>
<td>11.8.1</td>
<td>Magnetic variation is shown only in areas of compass instability and on charts North of 67 degrees of latitude.</td>
</tr>
<tr>
<td>11.9.1</td>
<td>Bearings, tracks, and radials are not shown as true values for RNAV segments.</td>
</tr>
<tr>
<td>11.9.2</td>
<td>Only magnetic north values are shown.</td>
</tr>
<tr>
<td>11.9.3</td>
<td>Bearings, tracks, and radials are not provided in true/grid values.</td>
</tr>
<tr>
<td>11.10.1.1</td>
<td>Only airports specifically requested for charting are shown.</td>
</tr>
<tr>
<td>11.10.1.2</td>
<td>Only airports specifically requested for charting are shown.</td>
</tr>
<tr>
<td>11.10.2.2</td>
<td>Obstacles that are the determining factor for an OCA/OCH are not necessarily shown.</td>
</tr>
<tr>
<td>11.10.2.4</td>
<td>Obstacle heights are only shown in MSL.</td>
</tr>
<tr>
<td>11.10.2.7</td>
<td>Absence of obstacle free zones are not shown.</td>
</tr>
<tr>
<td>11.10.3</td>
<td>Danger Areas do not exist in the U.S. Warning Areas exist and are charted.</td>
</tr>
<tr>
<td>11.10.4.3</td>
<td>Geographic final approach fix coordinates are not shown.</td>
</tr>
<tr>
<td>11.10.5</td>
<td>Minimum Safe Altitudes vice Minimum Sector Altitudes. Terminal Arrival Areas vice Terminal Arrival Altitude.</td>
</tr>
</tbody>
</table>
**Chapter 11**

**11.10.6.1** Arrowed dotted line is used for MA track. Arrowed dashed line used for Visual track. Times required for the procedure are not shown.

**11.10.6.2** Distance to airport from final approach NAVAID is not shown.

**11.10.6.3** Missed approach segment is shown by arrowed, dotted line. Arrowed, dashed line is used for visual segments. Times required for the procedure are not shown. Distance between components is shown vice a distance scale.

**11.10.6.4** Parentheses are not shown.

**11.10.6.5** Ground profile and shaded altitude blocks are not shown.

**11.10.7.1** Procedure landing minima are shown vice aerodrome operating minima.

**11.10.7.2** Decision Altitude/Height (DA/H) shown vice OCA/H.

**11.10.8.2** Altitude/height table is not shown.

**11.10.8.3** Altitude/height table is not shown.

**11.10.8.4** Rate of descent table is not shown on individual plates, but a combined climb/descent table is available digitally or with printed procedure publication.

**11.10.8.5** Descent gradient not shown, threshold crossing height shown in feet, vertical descent angle shown to hundredths of a degree.

**11.10.8.6** Threshold crossing height shown in feet. Descent angle shown to the nearest hundredth of a degree.

**11.10.8.7** Cautionary note is dependent on multiple criteria.

**11.10.8.8** Simultaneous operations notes do not always contain references to runways or procedures.

**Chapter 12**

**Visual Approach Chart – ICAO**

**12.2** Chart provided only when visual approach procedure has been established.

**12.3.2** The scale can vary and also be not–to–scale.

**12.3.3** Charts are shown at scale of 1:250,000, IAPs at 1:500,000 or smaller.

**12.4** Sheet size is 8.25 inches by 5.375 inches.

**12.5.2** Graduation marks are not shown.

**12.8** Magnetic variation is shown only in areas of compass instability and on charts North of 67 degrees of latitude.

**12.9.2** Bearings, tracks, and radials are not shown as true/grid values.

**12.9.3** Grid meridian is not shown.

**12.10.1.1** Only airports specifically requested for charting are shown.

**12.10.1.2** Airport elevation is not shown.

**12.10.2.3** Height of obstacle above Mean Sea Level is shown.

**12.10.2.3.1** Datum height not shown. Parentheses are not shown.

**12.10.3** Danger areas do not exist in the U.S. Warning areas exist and are charted. Vertical limits are not shown.

**12.10.4** Control zones and Traffic zones are not shown.

**12.10.5.3** VASI, MEHT, and angle of displacement are not shown.

**Chapter 13**

**Aerodrome/Heliport Chart – ICAO**

**13.1** Helicopter movement is supported only with the location of helipads.

**13.3.2** Latitude and longitude graticules are shown vice linear scale.

**13.6.1** Latitude and longitude graticules are shown vice geographical coordinates. Airport elevations and runway end elevations are shown. Runway length and width are shown in feet. Clearways are not shown. Taxiways and identification only are shown. Standard taxi routes are not shown. Boundaries of air traffic service are not shown. RVR observation sites are not shown. Approach and runway lighting are not shown. VASI systems are not shown. VOR checkpoint and frequency are not shown.
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.6.2</td>
<td>Locations accommodating folding wings tips are not shown.</td>
</tr>
<tr>
<td>13.6.3</td>
<td>Helicopter pads only are shown. Touchdown and liftoff areas are not shown. Final approach and takeoff areas are not shown. Safety areas are not shown. Clearways are not shown. Only highest obstacle within parameters of chart is shown. Visual aids are not shown. Declared distances are not shown.</td>
</tr>
<tr>
<td><strong>Chapter 14</strong></td>
<td>Aerodrome Ground Movement Chart – ICAO</td>
</tr>
<tr>
<td>14.1</td>
<td>Chart is not produced.</td>
</tr>
<tr>
<td><strong>Chapter 15</strong></td>
<td>Chart is not produced.</td>
</tr>
<tr>
<td><strong>Chapter 16</strong></td>
<td>World Aeronautical Chart - ICAO 1:1 000 000</td>
</tr>
<tr>
<td>16.2.1</td>
<td>1:1,000,000 Chart Series only produced and made available in areas NOT covered by 1:500,000 Chart Series. (Available in Caribbean area only.)</td>
</tr>
<tr>
<td>16.3.1</td>
<td>Linear scales are shown in the following order: nautical miles, statute miles, kilometers.</td>
</tr>
<tr>
<td>16.4.3</td>
<td>Charts are folded in eleven vertical panels and one horizontal fold.</td>
</tr>
<tr>
<td>16.5.1</td>
<td>Standard parallels are for each 8 degrees and are shown 1 degree and 20 minutes in from the Northern and Southern edges of the chart. Charts are not produced above 80 degrees latitude.</td>
</tr>
<tr>
<td>16.5.2</td>
<td>Distance between parallels is 1 degree. Above 56 degrees North, latitude graduation marks are shown only on every even degree of longitude. Distance between longitude meridians is 1 degree. Above 64 degrees North, meridian graduation marks are shown every 5 minutes.</td>
</tr>
<tr>
<td>16.5.3.1</td>
<td>Lengths of interval marks are as follow: 1 minute – .045 inches; 5 minutes – .065 inches; 10 minutes – .10 inches on both sides.</td>
</tr>
<tr>
<td>16.6</td>
<td>Chart numbering is indicated on Title Panel chart index.</td>
</tr>
<tr>
<td>16.7.2.2</td>
<td>Tunnels, if possible, are shown wherever they exist.</td>
</tr>
<tr>
<td>16.7.9.2</td>
<td>Roads are not shown within outlined populated areas.</td>
</tr>
<tr>
<td>16.7.10.1</td>
<td>Notes will read 'Relief data incomplete' or 'Limits of reliable relief information.'</td>
</tr>
<tr>
<td>16.7.12.1</td>
<td>Wooded areas are not shown.</td>
</tr>
<tr>
<td>16.7.13</td>
<td>Date of topographic information is not shown.</td>
</tr>
<tr>
<td>16.8.2</td>
<td>Date of isogonic information is shown in the chart legend.</td>
</tr>
<tr>
<td>16.9.2.2</td>
<td>Other than hard surface runways are shown by symbol.</td>
</tr>
<tr>
<td>16.9.3.1</td>
<td>Obstacles greater than 500 feet are shown.</td>
</tr>
<tr>
<td>16.9.4</td>
<td>Danger Areas do not exist in the U.S. Alert Areas, Military Operating Areas and Warning Areas are also shown.</td>
</tr>
<tr>
<td>16.9.7.1</td>
<td>Only aeronautical ground lights that operate continuously are shown.</td>
</tr>
<tr>
<td>16.9.7.2</td>
<td>Only marine lights that operate year round, with a range of at least 10 NM, and are omnidirectional are shown.</td>
</tr>
<tr>
<td><strong>Chapter 17</strong></td>
<td>Aeronautical Chart - ICAO 1:500 000</td>
</tr>
<tr>
<td>17.3.1</td>
<td>Linear scales are shown in the following order: nautical miles, statute miles, kilometers.</td>
</tr>
<tr>
<td>17.4.3</td>
<td>Charts are folded in eleven vertical panels and one horizontal fold.</td>
</tr>
<tr>
<td>17.4.4</td>
<td>Relationship of chart to WAC series is not shown.</td>
</tr>
<tr>
<td>17.5.4.1</td>
<td>The 10 minute interval mark is .10 inches on both sides of the graticule line.</td>
</tr>
<tr>
<td>17.6.1.1</td>
<td>Relationship of chart to WAC series is not shown.</td>
</tr>
<tr>
<td>17.7.2.2</td>
<td>Tunnels, if possible, are shown wherever they exist. Prominent tunnels are shown pictorially.</td>
</tr>
<tr>
<td>17.7.3.1</td>
<td>Roads are shown for radar and visual value and for distinct configurations that provide visual checkpoint value.</td>
</tr>
<tr>
<td>17.7.9.2</td>
<td>Coordinates are shown to the nearest minute.</td>
</tr>
<tr>
<td>17.7.10.1</td>
<td>Notes will read 'Relief data incomplete' or 'Limits of reliable relief information.'</td>
</tr>
<tr>
<td>17.7.12.1</td>
<td>Wooded areas are not shown.</td>
</tr>
<tr>
<td>17.7.13</td>
<td>Date of topographic information is not shown.</td>
</tr>
<tr>
<td>17.8.2</td>
<td>Date of isogonic information is shown in the chart legend.</td>
</tr>
</tbody>
</table>
17.9.2.2 Other than hard surface runways are shown by symbol.
17.9.3.1 Obstacles greater than 200 feet are shown, except in built up areas where only those greater than 300 feet are shown.
17.9.4 Danger areas do not exist in the U.S. Alert Areas, Military Operations Areas, and Warning Areas are also shown.
17.9.7.1 Only aeronautical ground lights that operate continuously are shown.
17.9.7.2 Only marine lights that operate year round, with a range of at least 10 NM, and are omnidirectional are shown.

**Chapter 18** Aeronautical Navigation Chart — ICAO Small Scale
18.1 Chart is not produced.

**Chapter 19** Plotting Chart — ICAO
19.1 Chart is not produced.

**Chapter 20** Electronic Aeronautical Chart Display — ICAO
20.1 Charts provided digitally to operators. Digital charts mimic paper products described above and may not be modified.

**Chapter 21** ATC Surveillance Minimum Altitude Chart — ICAO
21.1 Minimum Vectoring Altitude charts are available in electronic format only.

**Appendix 6** Aeronautical Data Quality Requirements

<table>
<thead>
<tr>
<th>Table 5. Bearing used for the formation of an en route and of a terminal fix</th>
<th>Whole degree resolution in charting of bearing used for formation of an en route and terminal fix.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 5. Bearing used for the formation of an instrument approach fix</td>
<td>Whole degree resolution in charting of bearing used for formation of an instrument approach procedure fix.</td>
</tr>
<tr>
<td>Table 6. (Length/distance/dimension Distance used for the formation of an en route fix)</td>
<td>Whole NM resolution in charting of distance used for formation of an en route fix.</td>
</tr>
<tr>
<td>Table 6. (Length/distance/dimension Distance used for formation of an terminal and instrument approach procedure fix)</td>
<td>Whole NM resolution in charting of distance used for formation of an Arrival or Departure fix.</td>
</tr>
</tbody>
</table>
AIP

United States of America

2 DEC 21

DOC 10066, PANS–AIM

Procedures for Air Navigation Services Aeronautical Information Management

Chapter 1 Definitions

ASHTAM The U.S. does not have a series of NOTAM called ASHTAM.

Danger Area The FAA does not have Danger Area airspace within the U.S.

SNOWTAM The U.S. does not use the SNOWTAM format.

Chapter 5 Aeronautical Information Products and Services

5.2.1.3.7 The FAA does not produce an AIP Supplement.

5.2.1.4 The FAA does not produce an AIP Supplement.

5.2.5 The U.S. Does not use SNOWTAM format.

5.2.5 Currently, the U.S. does not utilize the ICAO format for Domestic NOTAMs. The U.S. NOTAMs that are distributed as International NOTAMs may be in ICAO format.

5.4.2 The FAA distribution system does not always match the ICAO standard for formatting, SNOWTAM, and ASHTAM.

Chapter 6 Aeronautical Information Updates

6.1.4 The FAA does not issue Trigger NOTAMs.

Appendix 2 Content of the Aeronautical Information Publication (AIP)

ENR 5.1 The FAA does not have Danger Area airspace within the U.S.

Appendix 3 NOTAM Format

Entire Appendix Currently, the U.S. does not utilize the ICAO format for Domestic NOTAMs. The U.S. NOTAMs that are distributed as International NOTAMs may be in ICAO format.

Appendix 4 SNOWTAM Format

Entire Appendix The U.S. does not use the SNOWTAM format.

Appendix 5 ASHTAM Format

Entire Appendix The U.S. does not have a series of NOTAM called ASHTAM.

Appendix 7 Predetermined Distribution System for NOTAM

Entire Appendix The FAA distribution system does not always match the ICAO standard for formatting, SNOWTAM, and ASHTAM.
ANNEX 5 – UNITS OF MEASUREMENT TO BE USED IN AIR–GROUND COMMUNICATIONS

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th>Standard application of units of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.2</td>
<td>Table 3–4 Ref 1.12, runway length and Ref 1.13 runway visual range, unit of measure is in feet. Table 3–4 Ref 1.16, visibility unit of measure is statute miles (SM). Table 3–4 Ref 3.2, altimeter setting, unit of measure is reported as inches of mercury. Table 3–4, Ref 3.3, atmospheric pressure, unit of measure is in inches of mercury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attachment B</th>
<th>Guidance on the application of System of Units (SI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4.2</td>
<td>Specifications differ from Attachment B, Style and usage, Para 5.4 Numbers. Comma is not acceptable as a decimal marker. Comma is used to separate digits in groups of three.</td>
</tr>
</tbody>
</table>
### ANNEX 6 – OPERATION OF AIRCRAFT

#### Part I

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 3 Reference 3.3.6</td>
<td>The U.S. Flight Quality Assurance Program is a voluntary program.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 4</th>
<th>Flight Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 4 Reference 4.2.2.3</td>
<td>U.S. regulations exempt a single pilot in a 9-or-less seating configuration operation from having a maintenance manual. Rather, U.S. regulations (CFR 135.411) require a single pilot to comply with the maintenance requirements in CFR 91 and 43 in lieu of a maintenance manual or program.</td>
</tr>
<tr>
<td>Chapter 4 Reference 4.3.2</td>
<td>For multiengine, aeroplanes, commuter and on-demand operators are required to maintain fuel and oil records as part of the load manifest for 30 days rather than 3 months. For single engine aeroplanes, commuter and on-demand operators are not required to maintain fuel and oil records.</td>
</tr>
<tr>
<td>Chapter 4 Reference 4.3.4.1.2</td>
<td>The FAA treats takeoff alternates differently. Take off alternate: for airplanes with 3 or more engines SP/S9/4.1 states that the take-off alternate aerodrome must be located within the following flight time distance from the aerodrome of departure: two hours of flight time at an all-engine operating cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass. FAR 121.617 states 2 hours at normal cruising speed with one engine inoperative.</td>
</tr>
<tr>
<td>Chapter 4 Reference 4.3.8.2</td>
<td>The U.S. requires descent within four minutes to 14,000 ft not 13,000 ft, in the event of loss of pressurization. For commuter and on-demand operations, the descent altitude is 15,000 ft.</td>
</tr>
<tr>
<td>Chapter 4 Reference 4.9.2</td>
<td>The U.S. allows turbo-jets that are certificated for single pilot operations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 5</th>
<th>Aeroplane performance operating limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 5 Reference 5.2.8.1</td>
<td>The United States does not have specific regulations that require the loss of Runway length be considered due to alignment of the airplane prior to takeoff. However, the United States does within its aircraft certification regulations require aircraft performance be determined by using the point on the runway where takeoff is started when computing takeoff distance. This same criteria is used when computing runway available for accelerate/stop distance. Accounting for runway loss due to alignment is done within each air carrier’s approved operations manual.</td>
</tr>
<tr>
<td>Chapter 5 Reference 5.4.1</td>
<td>The U.S. does not require turbine engine reliability to have a power loss rate of less than 1 per 100,000 engine hours, a radio altimeter, two attitude indicators, airborne weather radar, a certified navigation system to identify aerodromes as forced landing areas, or an engine fire warning system.</td>
</tr>
<tr>
<td>Chapter 5 Reference 5.4.2</td>
<td>The U.S. does not require an automatic trend monitoring system on aeroplanes certificated after 1 January 2005.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 6</th>
<th>Aeroplane instruments, equipment and flight documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 6 Reference 6.3.2.3.2</td>
<td>Effective 1 January 2021, the United States will not have implemented the referenced standard because 14 CFR part 25 does not include the subject requirement for a 25–hour cockpit voice recorder.</td>
</tr>
<tr>
<td>Chapter 6 Reference 6.17.2</td>
<td>The U.S. does not require an ELT unless operated over water or remote areas.</td>
</tr>
<tr>
<td>Chapter 6 Reference 6.17.3</td>
<td>The U.S. does not require an ELT unless operated over water or remote areas.</td>
</tr>
<tr>
<td>Chapter 6 Reference 6.17.4</td>
<td>The U.S. does not require an ELT unless operated over water or remote areas.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require an ELT unless operated over water or remote areas.</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require pressure altitude information with a resolution of 25 feet or better.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require pressure altitude information with a resolution of 25 feet or better.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require a time piece.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The United States does not require aeroplanes on VFR flights, when operated as controlled flights, to be equipped in accordance with the requirements for aeroplanes operated under instrument flight rules.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>Seaplanes are not required to have equipment for making the sound signals prescribed in the International Regulations for Preventing Collision at Sea. Seaplanes are not required to be equipped with sea anchor.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The United States defines extended over water operations for aircraft other than helicopters as an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The United States does not require equipment to measure cosmic radiation.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require ground prox systems for piston powered airplanes.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require pressure altitude information with a resolution of 25 feet or better.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. does not require pressure altitude information with a resolution of 25 feet or better.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The United States does not require crewmembers on flight deck duty to communicate through boom or throat microphones below the transition level/altitude.</td>
</tr>
<tr>
<td>Chapter 6 Reference</td>
<td>The U.S. requires an autopilot for IFR passenger operations, not for VFR or cargo operations. A) The U.S. does not require a boom microphone. B) The U.S. requires charts to be available and used.</td>
</tr>
</tbody>
</table>

**Chapter 8** **Aeroplane Maintenance**

<table>
<thead>
<tr>
<th>Chapter 8 Reference</th>
<th>The person signing the maintenance release must have a CFR 65 certificate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 8 Reference</td>
<td>The United States requires that records of work be retained until the work is repeated, superseded by other work or for one year after the work is performed, but does not require the records be retained after the unit has been permanently withdrawn from service.</td>
</tr>
<tr>
<td>Chapter 8 Reference</td>
<td>Left Intentionally Blank</td>
</tr>
</tbody>
</table>

**Chapter 9** **Aeroplane flight crew**

<table>
<thead>
<tr>
<th>Chapter 9 Reference</th>
<th>The United States does not have currency requirements for cruise relief pilots.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 9 Reference</td>
<td>The United States requires air carrier pilots “before beginning a flight become familiar with all available information concerning the flight.” It does not require the pilot to demonstrate this knowledge.</td>
</tr>
</tbody>
</table>
Chapter 9 Reference 9.4.3.5
The U.S. does not restrict operators from using a pilot as a pilot-in-command on a route where the pilot has not, within the preceding 12 months, made at least one trip between the terminal points of that route as a pilot member of the flight crew, or as an observer on the flight deck except for special areas and airports.

A list of U.S. Special airports may be found at the following link: http://fsims.faa.gov/PICDetail.aspx?docId=AD20682A64001B665257B71005E5B74

Chapter 9 Reference 9.4.3.6
The U.S. does not have an area/route 12 month currency requirement for pilots in command, except for special areas and airports.

Chapter 9 Reference 9.4.4.1
For PICs, the U.S. requires 1 proficiency checks per 12 months and either proficiency check or an approved simulator training course, for SICs, the U.S. requires 1 proficiency check each 24 months and another proficiency check or an approved simulator training course every 12 months.

PART II
Section I General

Chapter 1.1 Definitions
Continuous descent final approach (CDFA)
The FAA does not believe “circling or visual flight maneuver” needs to be added to the definition of a CDFA. The primary reason for a CDFA is to maintain a continuous rate of descent from the FAF, through the MDA until 50 feet above the threshold in the FAS of an NPA. A circle or visual flight maneuver is contrary to the CDFA, the aircraft must stop at the MDA and transition to level flight in order to accomplish the circling or visual flight maneuver to landing. The FAA does recognize that a constant descent rate, not to exceed 1000 ft/min, is normally used to accomplish the descent from the FAF to the circling MDA where level flight is maintained to accomplish the maneuver. This rate of descent may vary due to the design of the circle and/or category of the aircraft. The procedure for accomplishing a circling maneuver has not changed over time, versus, changing the technique for flying a FAS from a “dive and drive” maneuver to a CDFA.

Low-visibility operations (LVO)
FAA defines LVO only as a condition regarding ground operations; not as it pertains to approach and takeoff operations. Further, the FAA sets the threshold for LVO at an RVR of 1200 feet or 350 meters.

Section II General Aviation Operations

Chapter 2.2 Flight Operations
2.2.2.2.1.1 The FAA allows general aviation operations to 100’ HAT using enhanced flight visions systems when actual visibility is below the newly established ICAO LVO threshold, without a specific approval.

2.2.2.2.5 The FAA allows general aviation instrument approach operations down to MDA or CAT I DA, irrespective of ceiling and visibility, without a specific approval. Further, these operations may be conducted without RVR information.

2.2.2.2.6 The FAA allows general aviation and fractional ownership operators to conduct takeoffs with visibility below the newly established ICAO LVO threshold without a specific approval.

2.2.3.4.3 In addition to the Standard prescribed in Annex 6, Part II, 4.6.4, the U.S. prohibits a pilot from taking of a U.S registered large or turbine-powered multi-engine general aviation aeroplane if there is frost, snow, or ice adhering to critical systems, components, and surfaces of the aircraft.

Chapter 2.4 Aeroplane instruments, equipment and flight documents.
2.4.2.6.1 The United States does not require break-in point markings.
2.4.2.6.2 The United States does not require break-in point markings.
2.4.4.1 The United States does not require all seaplanes on all flights to be equipped with one life jacket or equivalent individual floatation device for each person on board; equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea; and anchor or a sea anchor (drogue).

2.4.5 A iplanes operated over land areas designated as areas in which search and rescue would be especially difficult are not required to be equipped with signaling devices or life-saving equipment. The United States does not designate areas in which search and rescue would be especially difficult, and therefore does not require such additional equipment.

2.4.8 A iplanes operated under visual flight rules at night are not required to be equipped with c) to f): a) a turn and slip indicator; b) an altitude indicator (artificial horizon); c) a heading indicator (directional gyroscope); d) a means of indicating whether the supply of power to the gyroscopic instruments is adequate; 3) a sensitive pressure altimeter; f) a means of indicating the outside air temperature; g) a timepiece with a sweep second hand; h) an airspeed indicating system with a means of preventing malfunctioning due to condensation or icing; i) a rate-of-climb and descent indicator; j) a landing light; k) illumination for flight instruments and equipment; l) lights in passenger compartments; and m) a flashlight (electric torch) for each crew member station.

2.4.11.4 Ground proximity warning systems are not required on general aviation aircraft, including turbine-engine airplanes with a take-off mass greater than 5700 kg or capable of carrying more than nine passengers.

Chapter 2.5 Aeroplane Communication, Navigation and Surveillance Equipment

2.5.1.1 Except when operating under controlled flight, airplanes operated at night are not required to have radio communications equipment capable of conducting two-way communications. United States requirements for radio communications equipment are based upon the type of airspace in which the operation occurs, and not on the time of the day.

2.5.1.2 When more than one radio communications equipment unit is required, the United States has no provision that each unit be independent of any other.

2.5.1.4 Except when operating under controlled flight, airplanes on extended flights over water or on flights over underdeveloped land are not required to have radio communications equipment capable of conducting two-way communications.

2.5.2.1 The United States has no provisions concerning requirement aircraft navigation instruments enabling a flight to proceed in accordance with a flight plan, prescribed RNP types, or the air traffic services provided. The United States does not specify a minimum distance between landmark references used by flight operating under visual flight rules.

2.5.2.7 (b) The FAA monitors RVSM performance on a continual basis via ADS-B.

2.5.2.9 Though the FAA does not have RVSM operational reporting requirements, it does have a quality assurance requirement in 14 CFR appendix G Sections 2.3, and 4. In addition, RVSM operational deviation may be noted by FAA ATC and reported the FAA Office of Aviation Safety for disposition as deemed appropriate.

2.5.2.12 Airplanes are not required to have navigation equipment to ensure that in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the airplane to proceed in accordance with Annex 6, Part II, 2.2.1. to 7.2.3.

Chapter 2.6 Aeroplane Maintenance

2.6.2.2 The FAA established Title 14 Code of Federal Regulations section 43.10, which speaks to the disposition of parts, removed from type-certificated products. After April 15, 2002, each person who removes a life-limited part from a type certificated product must ensure that the part is controlled using: a record keeping system; tag or record attached to part; non-permanent marking; permanent marking; or segregation.
### Chapter 2.7 Aeroplane flight crew

#### 2.7.2.2
Only pilot operating aircraft with TCAS under 14 CFR parts 91 (subpart K), 121, and 135 are required to having on the use of TCAS.

### Appendix 2.4 General aviation specific approvals

#### 2.4. SPECIFIC APPROVAL TEMPLATE
The FAA monitors RVSM performance on a continual basis via ADS-B.

### Section III Large and Turbojet Aeroplanes

#### Chapter 3.6 Aeroplane instruments, equipment and flight documents

#### 3.6.1.2
The United States does not base requirements for flight data recorders on aircraft mass, but on passenger and engine configuration.

### PART III

#### Section I General

##### Chapter 1 Definitions

- **Continuous descent final approach (CDFA).**
  - The FAA does not believe "circling or visual flight maneuver" needs to be added to the definition of a CDFA. The primary reason for a CDFA is to maintain a continuous rate of descent from the FAF, through the MDA up to 50 feet above the threshold in the FAS of an NPA. A circle or visual flight maneuver is contrary to the CDFA, the aircraft must stop at the MDA and transition to level flight in order to accomplish the circling or visual flight maneuver to landing. The FAA does recognize that a constant descent rate, not to exceed 1000 ft/min, is normally used to accomplish the descent from the FAF to the circling MDA where level flight is maintained to accomplish the maneuver. This rate of descent may vary due to the design of the circle and/or category of the aircraft. The procedure for accomplishing a circling maneuver has not changed over time, versus, changing the technique for flying a FAS from a “dive and drive” maneuver to a CDFA.

- **Low-visibility operations (LVO).**
  - FAA defines LVO only as a condition regarding ground operations; not as it pertains to approach and takeoff operations. Further, the FAA sets the threshold for LVO at an RVR of 1200 feet or 350 meters.

### Section II International Commercial Air Transport

#### Chapter 2 Reference

- **2.2.3.1**
  - Intentionally left blank.

- **2.2.4.2**
  - Intentionally left blank

- **2.2.9.1**
  - Helicopter operators are not required to maintain fuel and oil records showing that the requirements of 2.3.6 have been met.

- **2.2.9.2**
  - Helicopter operators are not required to keep fuel and oil records for three months, though there is a requirement that load manifests be retained for 30 days.

- **2.2.12**
  - Intentionally left blank

- **2.3.2**
  - The pilot-in-command is not required to ensure that all persons on board are aware of the location and general manner of use of the principal emergency equipment carried for collective use.

- **2.3.2**
  - The United States requires that flight preparation forms must be retained for 30 days, not three months.

- **2.3.3.2**
  - The United States does not require that the operations manual describe the contents and use of the operational flight plan, but does require establishing procedures for locating each flight.

- **2.3.6.2**
  - Intentionally left blank

- **2.3.6.3**
  - The fuel requirements for commuter and on demand operations are expressed in terms of flight time and do not include a specific altitude requirement.

- **2.3.6.3.1**
  - The United States does not require IFR helicopter operations to maintain a specific altitude above a destination.
<table>
<thead>
<tr>
<th>Chapter 2 Reference</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.6.3.2</td>
<td>Fuel reserves for IFR helicopter operations is 30 minutes at normal cruise speed beyond the alternate heliport.</td>
</tr>
<tr>
<td>2.3.6.3.3</td>
<td>The U.S. has no provisions addressing when a suitable alternate is unavailable. If the destination weather so requires, an alternate must be specified and 30 minute fuel reserved must be carried.</td>
</tr>
<tr>
<td>2.3.6.4</td>
<td>The operations manual does not include procedures for loss of pressurization and other contingencies.</td>
</tr>
<tr>
<td>2.3.8.1</td>
<td>The United States does not require oxygen at all times for passengers experiencing cabin pressure altitudes above 13,000 ft (620hPa). Oxygen for all passengers is not required until 15,000 ft (4,572m).</td>
</tr>
<tr>
<td>2.3.8.2</td>
<td>The United States does not require oxygen at all times for passengers experiencing cabin pressure altitudes above 13,000 ft (620hPa). Oxygen for all passengers is not required until 15,000 ft (4,572m).</td>
</tr>
<tr>
<td>2.4</td>
<td>The pilot-in-command is not specifically required, prior to commencing a flight, to be satisfied that any load carried is safely secured.</td>
</tr>
<tr>
<td>2.4.1.3</td>
<td>The United States does not utilize a 1,000 ft minimum for non-precision approaches.</td>
</tr>
<tr>
<td>2.6.2.2</td>
<td>The United States allows for meteorological conditions at the estimated time of arrival and for one hour after the estimated time of arrival, not two hours.</td>
</tr>
<tr>
<td>2.6.3.2</td>
<td>The United States allows the continuation of an approach regardless of the reported weather.</td>
</tr>
<tr>
<td>2.8.3.1</td>
<td>The United States does not require that a specific altitude above the alternate be maintained.</td>
</tr>
<tr>
<td>2.8.3.2</td>
<td>The United States does not require that a specific altitude above the alternate be maintained.</td>
</tr>
<tr>
<td>2.8.4</td>
<td>The United States does not require that the procedures for loss of pressurization, where applicable, or failure of one power-unit while en route, be part of the required fuel and oil computations.</td>
</tr>
<tr>
<td>2.10</td>
<td>The U.S. requirement for use of breathing oxygen by flight crew members applies only to altitudes above 14000 ft (4,267m).</td>
</tr>
<tr>
<td>2.11</td>
<td>During an emergency, the pilot-in-command is not required to ensure that all persons on board the aircraft are instructed in emergency procedures.</td>
</tr>
<tr>
<td>2.14</td>
<td>The pilot-in-command is not specifically required to discontinue a flight beyond the nearest suitable aerodrome when flight crew member’s capacity to perform functions is significantly reduced by impairment of faculties from causes such as fatigue, sickness, and lack of oxygen.</td>
</tr>
<tr>
<td>3.1.1</td>
<td>US does not specify or restrict helicopter operations based on performance, class or category. (See definition of performance class in Annex 6, Part III, Section 1).</td>
</tr>
<tr>
<td>3.2.1</td>
<td>The United States does not specify or restrict helicopter operations based on performance class or category (see definition of Performance Class in Annex 6, Part III, Section 1).</td>
</tr>
<tr>
<td>3.2.7</td>
<td>US does not require the helicopter weight limitations found in n3.2.7 (a), (c), and (d).</td>
</tr>
<tr>
<td>4.1.2</td>
<td>US does not require carriage of a copy of the air operator’s certificate.</td>
</tr>
<tr>
<td>4.1.4.1</td>
<td>The United States does not require break-in points.</td>
</tr>
<tr>
<td>4.1.4.2</td>
<td>The United States does not require break-in points.</td>
</tr>
<tr>
<td>4.2.2</td>
<td>a) first aid equipment is not required on helicopters b) US has no provisions that fire extinguishers, when discharge, will not cause dangerous contamination of the air within the helicopter c) (3) US has no provisions for a safety harness device to prevent interference with flight controls should a pilot become incapacitated.</td>
</tr>
<tr>
<td>4.2.4.1</td>
<td>The US does not require marking of break-in points.</td>
</tr>
<tr>
<td>4.2.4.2</td>
<td>The U.S. does not require marking of break-in points.</td>
</tr>
<tr>
<td>4.3.2.3</td>
<td>Life-saving rafts are not required on helicopters operating on flights over water.</td>
</tr>
</tbody>
</table>
### Chapter 4 Reference 4.4
Helicopters operated over land areas designated as areas in which search and rescue would be especially difficult are not required to be equipped with signaling devices or life-saving equipment. The U.S. does not designate areas in which search and rescue would be especially difficult and therefore does not require such additional equipment.

### Chapter 4 Reference 4.4.2
Helicopters flown over water in passenger operations are not required to be certified for ditching but only to be equipped with flotation devices.

### Chapter 4 Reference 4.5.2.1
B) and C) Life saving rafts and pyrotechnic devices are only required for extended over-water operations. That is in respect to helicopters in operations over water with a horizontal distance of more than 50 NM from the nearest shore line and more than 50 NM from an off-shore heliport structure.

### Chapter 4 Reference 4.6
The U.S. does not require helicopters to carry a specific document attesting noise certification. However, the helicopter's type certificate is the de facto document that the helicopter complied with the noise certification requirements at the time it received FAA type certification.

### Chapter 6 Reference 6.1.1
All United States helicopters used in commercial air transport are certified as commuter or on demand operations. Maintenance on United States commuter and on demand helicopters may be performed by either an approved maintenance organization, a certified mechanic, or persons under the supervision of a certified mechanic.

### Chapter 6 Reference 6.2.2
The U.S. requires that records of work must be retained until the work is repeated, superseded by other work, or for one year after the work is performed.

### Chapter 6 Reference 6.3.1
The U.S. does not require an operator’s maintenance training program to include training in knowledge and skills related to human performance.

### Chapter 6 Reference 6.4.2
The U.S. requires that records of work be retained until the work is repeated, superseded by other work for one year after the work is performed, but does not require the records be retained after the until has been permanently withdrawn from service.

### Chapter 6 Reference 6.8.2
The U.S. requires that records of work must be retained until the work is repeated, superseded by other work, or for one year after the work is performed.

### Chapter 7 Reference 7.4.2.2
Helicopter pilots are not required to demonstrate to the operator an adequate knowledge of the specific areas described in 7.4.3.2
<table>
<thead>
<tr>
<th>Chapter 7 Reference 7.5</th>
<th>The U.S. practice is to require a spare set of correcting lenses only when a flight crew member’s defective visual acuity necessitates a limitation on the pilot’s medical certificate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 9 Reference 9.5</td>
<td>The U.S. does not require that an operator keep a list of the emergency and survival equipment carried on board any of their helicopters engaged in international air navigation.</td>
</tr>
<tr>
<td>Chapter 11 Reference 11.1</td>
<td>A checklist containing procedures to be followed in searching for a suspected bomb is not required to be aboard the aircraft. The U.S. requires that crew members be trained in dealing with explosives that may be on board an aircraft, but this does not necessarily include training on how to search for an explosive.</td>
</tr>
<tr>
<td>Chapter 11 Reference 11.2.1</td>
<td>The U.S. does not require an operator to establish and maintain a training program that enables crew members to act in the most appropriate manner to minimize the consequences of acts of unlawful interference.</td>
</tr>
<tr>
<td>Chapter 11 Reference 11.2.2</td>
<td>The U.S. does not require an operator to establish and maintain a training program that enables crew members to act in the most appropriate manner to minimize the consequences of acts of unlawful interference.</td>
</tr>
<tr>
<td>Chapter 11 Reference 11.3</td>
<td>The pilot-in-command is not required to submit, without delay, a report of an act of unlawful interference to the designated local authority.</td>
</tr>
</tbody>
</table>

Section III  International General Aviation

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### ANNEX 7 – AIRCRAFT NATIONALITY AND REGISTRATION MARKS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>3.3.1 and 4.2.1</td>
<td>The marks on wing surfaces are not required.</td>
</tr>
<tr>
<td>3.2.5 and Section 8</td>
<td>Identification plates are not required on unmanned, free balloons.</td>
</tr>
<tr>
<td>4.2.2</td>
<td>The minimum height of marks on small (12,500 lb or less), fixed-wing aircraft is 3 inches when none of the following exceeds 180 knots true airspeed: (1) design cruising speed; (2) maximum operating limit speed; (3) maximum structural cruising speed; and (4) if none of the foregoing speeds have been determined for the aircraft, the speed shown to be the maximum cruising speed of the aircraft.</td>
</tr>
<tr>
<td>Section 6</td>
<td>A centralized registry of unmanned free balloons is not maintained. Operators are required to furnish the nearest ATC facility with a prelaunch notice containing information on the date, time, and location of release, and the type of balloon. This information is not maintained for any specified period of time.</td>
</tr>
<tr>
<td>Section 8</td>
<td>United States Identification plate does not have nationality or registration mark. ICAO ID plate information required by Annex 7.8 does not include nationality or registration mark. Also for non Part 121 and commuter aircraft, location must be either adjacent to and aft of the rear-most entrance door or on the fuselage near the tail surfaces.</td>
</tr>
</tbody>
</table>
### ANNEX 8 – AIRWORTHINESS OF AIRCRAFT

**PART II Procedures for Certification and Continued Airworthiness**

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<tr>
<th>Chapter</th>
<th>Type Certification</th>
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</thead>
<tbody>
<tr>
<td>1.2.5</td>
<td>ICAO requires that the design of an aircraft under ICAO Annex 8, Parts IIIB, IVB, and V use alternative fire extinguishing agents to halon in the lavatories, engines, and auxiliary power units. The United States does not have a similar requirement.</td>
</tr>
</tbody>
</table>

**PART III Aeroplanes**

#### Part IIIA

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<thead>
<tr>
<th>Chapter</th>
<th>Design and Construction</th>
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<tbody>
<tr>
<td>4.1.6 (b), 4.1.6 (g), 4.1.6 (h), 4.1.6 (i)</td>
<td>The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Instruments and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4.1</td>
<td>ICAO requires that airplanes operating on the movement area of an airport shall have airplane lights of such intensity, color, fields of coverage and other characteristics to furnish personnel on the ground with as much time as possible for interpretation and for subsequent maneuver necessary to avoid a collision. The FAA has no such requirement.</td>
</tr>
<tr>
<td>8.4.2 (b)</td>
<td>This provision addresses the lights’ affect on outside observers in reference to “harmful dazzle.” The U.S. regulations do not address the affect of aircraft lights on outside observers. However, visibility to other pilots and the lights’ affect on the flight crew is addressed.</td>
</tr>
</tbody>
</table>

**Chapter 9 Operating Limitations and Information**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Operating Limitations and Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3.5</td>
<td>The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.</td>
</tr>
</tbody>
</table>

**Chapter 11 Security**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Security</th>
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</thead>
<tbody>
<tr>
<td>11.2, 11.3, 11.4</td>
<td>With the exception of the door required by 11.3, the United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.</td>
</tr>
</tbody>
</table>

**Part IIIIB Large Aeroplane Certification**

#### Chapter 3 Structure

| 3.8.2 | The corresponding FAA requirement does not specify the use of failsafe principles; however, the FAA does advise the use of failsafe principles. |

#### Chapter 4 Design and Construction

| 4.1.6 | On November 28, 2008, the FAA adopted new regulations that meet the intent of these provisions. However, Part IIIIB applies to airplanes with a date of application of March 2, 2004 or later, but the U.S. requirements apply to airplanes with a date of application of November 28, 2008 or later. |
| D.2 (g) | Paragraph D.2.g.1 of the ICAO standard requires a fire suppression system for each cargo compartment accessible to a crewmember in a passenger–carrying airplane. U.S. requirements permit manual fire fighting in an accessible cargo compartment by a crewmember or members for an all–passenger–carrying airplane or a passenger–cargo combination carrying airplane. Additionally, the FAA does not have specific requirements to consider the effects of explosions or incendiary devices. |
| D.2 (h) | The United States does have provisions to protect against possible instances of cabin depressurization. However, the FAA does not have specific requirements to consider the effects of explosions or incendiary devices. |
ICAO requires that airplanes operating on the movement area of an airport shall have airplane lights of such intensity, color, fields of coverage and other characteristics to furnish personnel on the ground with as much time as possible for interpretation and for subsequent maneuver necessary to avoid a collision. The U.S. has no such requirement.

Chapter 7 Operating Limitations and Information

The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.

Chapter 10 Security

The FAA has a door requirement, but no requirements addressing bulkheads, floors, etc. On January 5, 2007, the FAA published Notice of Proposed Rulemaking that, when adopted, will meet the intent of these provisions.

PART IV Helicopters

Chapter 2 Design and Production

The United States does not have a specific requirement for physical separation of systems. However, physical separation is considered in the means of compliance to various regulations such as 25.1309, 25.901(c) and 25.903(d).

Chapter 6 Rotor and Power Transmissions Systems and Powerplant Installation

These provisions address take-off performance data for all classes of helicopters and require that this performance data include the take-off distance required. However, the United States has adopted the requirements only for Category A helicopters.

Chapter 7 Instruments and Equipment

This provision requires that there be a means for restarting a helicopter’s engine at altitudes up to a declared maximum altitude. In some cases the FAA does not require demonstration of engine restart capability. Since there is a different level of certitude for transport and normal category helicopters in the United States, the engine restart capability is only required for Category A and B helicopters (14 CFR Part 29) and Category A normal helicopters (14 CFR Part 27).

Chapter 6 Systems and Equipment

U.S. regulations do not address electromagnetic interference from external sources. High Intensity Radiated Fields (HIRF) are addressed by Special Conditions but only for flight critical systems, not flight essential systems.
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<th>PART V  Small Aeroplanes</th>
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<tbody>
<tr>
<td><strong>Chapter 8</strong></td>
</tr>
<tr>
<td>8.5 (e)</td>
</tr>
</tbody>
</table>
**ANNEX 9 – FACILITATION**

The list of differences include Guam, Puerto Rico, and the U.S. Virgin Islands. The status of implementation of Annex 9 in Guam with respect to public health quarantine is not covered in the list of differences.

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<tr>
<th>Chapter 2</th>
<th>Entry and Departure of Aircraft</th>
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</thead>
<tbody>
<tr>
<td>2.3</td>
<td>Written crew baggage declaration is required in certain circumstances, and a special Embarkation/Disembarkation Card is required for most alien crew members.</td>
</tr>
<tr>
<td>2.4</td>
<td>A General Declaration for all inbound and for outbound flights with commercial cargo are required. However, the General Declaration outbound flights with commercial cargo shall not be required if the declaratory statement is made on the air cargo manifest. No declaration is required for outbound flights without commercial cargo if Customs clearance is obtained by telephone.</td>
</tr>
<tr>
<td>Remarks</td>
<td>19 CFR 122</td>
</tr>
<tr>
<td>2.4.1</td>
<td>Each crew member must be listed showing surname, given name, and middle initial.</td>
</tr>
<tr>
<td>2.4.4</td>
<td>The signing or stamping of the General Declaration protects the carrier by serving as proof of clearance.</td>
</tr>
<tr>
<td>2.5</td>
<td>The crew list is required by statute.</td>
</tr>
<tr>
<td>2.7</td>
<td>There is a statutory requirement for the Cargo Manifest.</td>
</tr>
<tr>
<td>2.8</td>
<td>In order to combat illicit drug smuggling, the U.S. requires the additional following information: the shipper's and the consignee's name and address, the type of air waybills, weight, and number of house air waybills. The manifest submitted in electronic form may become legally acceptable in the future. However, until the compliance rate for the automated manifest is acceptable, the U.S. must be able to require the written form of the manifest.</td>
</tr>
<tr>
<td>Remarks</td>
<td>19 CFR 122.48</td>
</tr>
<tr>
<td>2.9</td>
<td>Nature of goods information is required.</td>
</tr>
<tr>
<td>2.10</td>
<td>Stores list required in all cases but may be recorded on General Declaration in lieu of a separate list.</td>
</tr>
<tr>
<td>2.17</td>
<td>A cargo manifest is required except for merchandise, baggage and stores arriving from and departing for a foreign country on the same through flight. “All articles on board which must be licensed by the Secretary of State shall be listed on the cargo manifest.” “Company mail shall be listed on the cargo manifest.”</td>
</tr>
<tr>
<td>2.18</td>
<td>Traveling general declaration and manifest, crew purchases and stores list as well as a permit to proceed are required under various conditions when aircraft arrive in the U.S. from a foreign area with cargo shown on the manifest to be traveling to other airports in the U.S. or to foreign areas.</td>
</tr>
<tr>
<td>2.21</td>
<td>There is a statutory requirement that such changes can only be made prior to or at the time of formal entry of the aircraft.</td>
</tr>
<tr>
<td>2.25</td>
<td>The U.S. does not support the use of insecticides in aircraft with passengers present. Pesticides registered for such use should not be inhaled. In effect, the passenger safety issue has precluded the use of such insecticides in the presence of passengers since 1979.</td>
</tr>
<tr>
<td>2.35</td>
<td>Advance notice is required of the number of citizens and aliens on board (non-scheduled flights only).</td>
</tr>
<tr>
<td>2.40</td>
<td>A copy of the contract for remuneration or hire is required to be a part of the application in the case of non-common carrier operations.</td>
</tr>
<tr>
<td>2.41</td>
<td>Single inspection is accorded certain aircraft not by size of aircraft but rather by type of operation. Loads (cargo) of an agricultural nature require inspection by a plant or animal quarantine inspector.</td>
</tr>
<tr>
<td>2.41c</td>
<td>Fees are charged for services provided in connection with the arrival of private aircraft (nonscheduled aircraft).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th>Entry and Departure of Persons and Their Baggage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>Medical reports are required in some cases.</td>
</tr>
<tr>
<td>Remarks</td>
<td>8 CFR 212.7 and INA 234</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>3.4</td>
<td>Documents such as visas with certain security devices serve as identity documents.</td>
</tr>
<tr>
<td>3.4.1</td>
<td>The U.S. has not standardized the personal identification data included in all national passports to conform with the recommendation in Doc 9303.</td>
</tr>
<tr>
<td>3.5.6</td>
<td>U.S. passport fees exceed the cost of the operation.</td>
</tr>
<tr>
<td>3.5.7</td>
<td>U.S. allows separate passports for minor dependents under the age of 16 entering the U.S. with a parent or legal guardian.</td>
</tr>
<tr>
<td>3.7</td>
<td>The U.S. has a pilot program that allows nationals of certain countries which meet certain criteria to seek admission to the U.S. without a visa for up to 90 days as a visitor for pleasure or business.</td>
</tr>
<tr>
<td>Remarks</td>
<td>22 CFR 41.112(d) INA 212(d)(4), INA 238, 8 CFR 214.2(c) INA 217</td>
</tr>
<tr>
<td></td>
<td>The law permits visa waivers for aliens from contiguous countries and adjacent islands or in emergency cases. Visas are also waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.</td>
</tr>
<tr>
<td>3.8</td>
<td>The U.S. charges a fee for visas.</td>
</tr>
<tr>
<td>3.8.3</td>
<td>Duration of stay is determined at port of entry.</td>
</tr>
<tr>
<td>Remarks</td>
<td>INA 217</td>
</tr>
<tr>
<td>3.8.4</td>
<td>A visitor to the U.S. cannot enter without documentation.</td>
</tr>
<tr>
<td>Remarks</td>
<td>INA 212(a) (26)</td>
</tr>
<tr>
<td>3.8.5</td>
<td>Under U.S. law, the duration of stay is determined by the Immigration Authorities at the port of entry and thus cannot be shown on the visa at the time of issuance.</td>
</tr>
<tr>
<td>3.10</td>
<td>Embarkation/Disembarkation Card does not conform to Appendix 4 in some particulars.</td>
</tr>
<tr>
<td>3.10.1</td>
<td>The operator is responsible for passengers' presentation of completed embarkation/disembarkation cards.</td>
</tr>
<tr>
<td>Remarks</td>
<td>8 CFR 299.3</td>
</tr>
<tr>
<td>3.10.2</td>
<td>Embarkation/Disembarkation cards may be purchased from the U.S. Government, Superintendent of Documents.</td>
</tr>
<tr>
<td>Remarks</td>
<td>8 CFR 299.3</td>
</tr>
<tr>
<td>3.14.2</td>
<td>The U.S. fully supports the electronic Advance Passenger Information (API) systems. However, the WCO/IATA Guideline is too restrictive and does not conform to the advancements in the PAXLIST EDIFACT international standard.</td>
</tr>
<tr>
<td>3.15</td>
<td>U.S. Federal Inspection Services' officials see individuals more than once.</td>
</tr>
<tr>
<td>3.16</td>
<td>Written baggage declarations by crew members are required in some instances.</td>
</tr>
<tr>
<td>3.17.1</td>
<td>The U.S. uses a multiple channel system rather than the dual channel clearance system.</td>
</tr>
<tr>
<td>3.23, 3.23.1</td>
<td>Statute requires a valid visa and passport of all foreign crew members.</td>
</tr>
<tr>
<td>3.24, 3.24.1, 3.25, 3.25.1, 3.25.2, 3.25.3</td>
<td>Crew members, except those eligible under Visa Waiver Pilot Program guidelines, are required to have valid passports and valid visas to enter the U.S.</td>
</tr>
<tr>
<td>Remarks</td>
<td>INA 212(a) (26), INA 252 and 253, 8 CFR 214.1(a), 8 CFR 252.1(c)</td>
</tr>
<tr>
<td>3.26, 3.27, 3.28, 3.29</td>
<td>Passports and visas are required for crew and non-U.S. nationals to enter the U.S.</td>
</tr>
<tr>
<td>3.33</td>
<td>Does not apply to landing card.</td>
</tr>
<tr>
<td>3.35</td>
<td>Law requires that the alien shall be returned to the place whence he/she came. Interpretation of this provision requires that he/she be returned to the place where he/she began his/her journey and not only to the point where he/she boarded the last-used carrier.</td>
</tr>
<tr>
<td>3.35.1</td>
<td>Law requires that certain aliens be deported from the U.S. at the expense of the transportation line which brought them to the U.S.</td>
</tr>
<tr>
<td>3.36</td>
<td>Statute provides for a fine if a passenger is not in possession of proper documents.</td>
</tr>
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</table>
### Chapter 4  
**Entry and Departure of Cargo and Other Articles**

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<th>Section</th>
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<tbody>
<tr>
<td>3.39.3</td>
<td><strong>NOTE:</strong> The U.S. considers security for individuals in airline custody to be the carrier’s responsibility.</td>
</tr>
<tr>
<td>3.40.2</td>
<td>Annex 9 recommends that fines and penalties be mitigated if an alien with a document deficiency is eventually admitted to the country of destination.</td>
</tr>
<tr>
<td>3.43</td>
<td>Operator can be held responsible for some detention costs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.20</td>
<td>The Goods Declaration as defined by the Kyoto Convention serves as the fundamental Customs document rather than the commercial invoice.</td>
</tr>
<tr>
<td>4.40</td>
<td>Aircraft equipment and parts, certified for use in civil aircraft, may be entered duty-free by any nation entitled to most-favored nation tariff treatment. Security equipment and parts, unless certified for use in the aircraft, are not included.</td>
</tr>
<tr>
<td>4.41</td>
<td>Customs currently penalizes the exporting carrier for late filing of Shipper’s Export Declarations (SEDs) and inaccuracies on bills of lading with respect to the SEDs.</td>
</tr>
<tr>
<td>4.42</td>
<td>Regulations require entry of such items, most of which are dutiable by law.</td>
</tr>
<tr>
<td>4.44</td>
<td>Certain items in this category are dutiable by law.</td>
</tr>
<tr>
<td>4.48</td>
<td>Carriers are required to submit new documentation to explain the circumstances under which cargo manifest is not unladen. No penalty is imposed if the carrier properly reports this condition.</td>
</tr>
<tr>
<td>4.50</td>
<td>The procedures for adding, deleting, or correcting manifest items require filing a separate document.</td>
</tr>
<tr>
<td>4.55</td>
<td>The U.S. requires a transportation in-bond entry or a special manifest bonded movement for this type of movement.</td>
</tr>
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### Chapter 5  
**Traffic Passing Through the Territory of a Contracting State**

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<tbody>
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<td>5.1</td>
<td>Such traffic must be inspected at airports where passengers are required to disembark from the aircraft and no suitable sterile area is available.</td>
</tr>
<tr>
<td>5.2</td>
<td>Passports and visas are waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.</td>
</tr>
<tr>
<td>5.3</td>
<td>Such traffic must be inspected at airports where no suitable sterile area is available.</td>
</tr>
<tr>
<td>5.4</td>
<td>Passports and visas are waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.</td>
</tr>
<tr>
<td>5.4.1</td>
<td>Passengers will not be required to obtain and present visas if they will be departing from the U.S. within 8 hours of arrival or on the first flight thereafter departing for their destination.</td>
</tr>
<tr>
<td>5.8</td>
<td>Examination of transit traffic is required by law. Transit passengers without visas are allowed one stopover between the port of arrival and their foreign destination.</td>
</tr>
<tr>
<td>5.9</td>
<td>Passports and visas are required generally for transit passengers who are remaining in the U.S. beyond 8 hours or beyond the first available flight to their foreign destinations.</td>
</tr>
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### Chapter 6  
**International Airports – Facilities and Services for Traffic**

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<tr>
<td>6.3.1</td>
<td>Procedures involving scheduling committees raise a number of anti–trust problems under U.S. law.</td>
</tr>
<tr>
<td>6.33</td>
<td>Sterile physical facilities shall be provided, and in–transit passengers within those areas shall be subject to immigration inspection at any time.</td>
</tr>
<tr>
<td>Remarks</td>
<td>OI 214.2(c)</td>
</tr>
<tr>
<td>6.34</td>
<td>The U.S. inspects crew and passengers in transit.</td>
</tr>
<tr>
<td>6.36</td>
<td>The U.S. inspects crew and passengers in transit.</td>
</tr>
</tbody>
</table>
6.56 Operators of aircraft are statutorily required to pay overtime charges for federal inspections conducted outside normal scheduled hours of operation. This requirement places aircraft operators in a less favorable position than operators of highway vehicles and ferries who are statutorily exempt from such charges.

<table>
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<th>Chapter 8</th>
<th>Other Facilitation Provisions</th>
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<tr>
<td>8.1</td>
<td>Separate bonds are required.</td>
</tr>
<tr>
<td>8.3.2</td>
<td>Visas are issued by the Department of State and are not issued at ports of entry.</td>
</tr>
</tbody>
</table>
# Specifications for Radio Navigation Aids

<table>
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<th>Chapter 3</th>
<th>Specifications for Radio Navigation Aids</th>
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<tr>
<td>3.1.4.1, 3.1.4.2</td>
<td>The United States does not require such aircraft ILS equipment immunity. Interference from FM broadcast signals will not adversely affect aircraft navigation and communications systems in the United States airspace.</td>
</tr>
<tr>
<td>3.3.4.2</td>
<td>The US minimum VOR signal strength is -120 dBW/m². The ICAO requirement is -107 dBW/m².</td>
</tr>
<tr>
<td>3.3.8.1, 3.3.8.2</td>
<td>The United States does not require such equipage for aircraft. Interference from FM broadcast signals will not adversely affect aircraft navigation and communications systems in the United States airspace.</td>
</tr>
<tr>
<td>3.7.3.5.3.1</td>
<td>Currently, the service volume of GBAS in FAA Order 6050.32B is 23 NM up to 10,000 feet vs. 15 and 20 NM ICAO standard.</td>
</tr>
<tr>
<td>3.7.3.5.4.1</td>
<td>In the U.S., the LAAS operates on center frequencies from 112.050 to 117.950 MHz vs. ICAO’s 108.0 to 117.975 MHz with the lowest assignable frequency of 112.05 MHz and the last upper assignable frequency of 117.150 MHz vs. ICAO’s 108.025 MHz and 117.900 MHz respectively.</td>
</tr>
<tr>
<td>3.7.3.5.3</td>
<td>Currently, the service volume of GBAS in FAA Order 6050.32B is 23 NM up to 10,000 feet.</td>
</tr>
<tr>
<td>3.7.6.23.5</td>
<td>A solution has been implemented in the US which does not require protection level bounding for rare anomalous ionospheric storms under extreme conditions. The solution requires denial of the approach service when anomalous ionosphere conditions could cause potentially large residual errors and allows operations when estimated residual errors would be below a threshold. The resulting errors under the threshold were found to be acceptable using specific safety assessments and criteria for this equipment.</td>
</tr>
<tr>
<td>3.6.8.2.2.5.3</td>
<td>Currently, the D/U standard for co-channel rejection is the same as the ICAO standard of 26 dB. However, D/U standard for the second adjacent channel rejection is 46 dB, which is 3 dB less than the ICAO standard. In addition, no third adjacent channel rejection standard exists in Order 6050.32B.</td>
</tr>
<tr>
<td>3.6.8.2.2.6</td>
<td>In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/- 75 kHz to +/- 975 kHz is not considered during the frequency assignment process.</td>
</tr>
<tr>
<td>3.6.8.2.2.6.3</td>
<td>In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/- 1 MHz or more is not considered during the frequency assignment process.</td>
</tr>
<tr>
<td>3.6.8.2.2.6.4</td>
<td>In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/- 1 MHz or more is not considered during the frequency assignment process.</td>
</tr>
<tr>
<td>3.7.3.5.3.1</td>
<td>Currently, the service volume of GBAS in FAA Order 6050.32B is 23 NM up to 10,000 feet.</td>
</tr>
</tbody>
</table>

## Technical Specifications for the Global Navigation Satellite System (GNSS)

<table>
<thead>
<tr>
<th>Appendix B</th>
<th>TECHNICAL SPECIFICATIONS FOR THE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6.8.2.2.6.2</td>
<td>In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/- 50 kHz is 46 dB vs. ICAO’s 43 dB.</td>
</tr>
<tr>
<td>3.6.8.2.2.6.3</td>
<td>In the U.S., the LAAS operates above the ILS LOC frequency band on center frequencies from 112.05 to 117.950 MHz.</td>
</tr>
<tr>
<td>3.6.8.2.2.6.4</td>
<td>In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/- 1 MHz or more is not considered during the frequency assignment process.</td>
</tr>
</tbody>
</table>

## Information and Material for Guidance in the Application of the Standards and Recommended Practices for ILS, VOR, PAR, 75 MHz Marker Beacons (En-Route), NDB and DME

<table>
<thead>
<tr>
<th>Attachment C</th>
<th>INFORMATION AND MATERIAL FOR GUIDANCE IN THE APPLICATION OF THE STANDARDS AND RECOMMENDED PRACTICES FOR ILS, VOR, PAR, 75 MHz MARKER BEACONS (EN–ROUTE), NDB AND DME</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6.2.1.2</td>
<td>The US frequency protections for ILS localizers are 3 dB more stringent than the ICAO protections (i.e. 23 dB vs. 20 dB for co-channel, -4 dB vs. -7 dB for interim 1st adjacent channels, -31 dB vs. -34 dB for final 1st adjacent channels, -43 dB vs. -46 dB for 2nd adjacent channels, and -47 dB vs. -50 dB for 3rd adjacent channels).</td>
</tr>
</tbody>
</table>
### 2.6.2.2.1
The US frequency protections for ILS localizers are 3 dB more stringent than the ICAO protections (i.e. 23 dB vs. 20 dB for co-channel, −4 dB vs. −7 dB for interim 1st adjacent channels, −31 dB vs. −34 dB for final 1st adjacent channels, −43 dB vs. −46 dB for 2nd adjacent channels, and −47 dB vs. −50 dB for 3rd adjacent channels).

<table>
<thead>
<tr>
<th>3.4.6.1 a),b),c)</th>
<th>3.4.6.2 a),b),c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The US frequency protections for co–channel, 1st and 2nd adjacent channels for VOR are 3 dB more stringent than the ICAO protections (i.e. 23 dB vs. 20 dB for co–channel, −4 dB vs. −7 dB for interim 1st adjacent channels, −31 dB vs. −34 dB for final 1st adjacent channels, −43 dB vs. −46 dB for 2nd adjacent channels).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.4.6.1 d)</th>
<th>3.4.6.2 d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The US does not provide any VOR frequency protection for 3rd adjacent channels. The ICAO protection provides −50 dB for 3rd adjacent channels.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7.1.8.1 Table C–6</th>
</tr>
</thead>
<tbody>
<tr>
<td>The US frequency protections for co–channel and 1st adjacent channels for DME are 3 dB more stringent than the ICAO protections (i.e. 11 dB vs. 8 dB for co–channel, −39 dB vs. −42 dB for 1st adjacent channels). The US frequency protection for 2nd adjacent channels for DME is 28 dB more stringent than the ICAO protection (i.e. −47 dB vs. −75 dB).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attachment D INFORMATION AND MATERIAL FOR GUIDANCE IN THE APPLICATION OF THE GNSS STANDARDS AND RECOMMENDED PRACTICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2.1.5 and Table D–4 In the U.S., the LAAS/LAAS co–channel geographical separation is 159 nm at 10,000 and 20,000 ft. ICAO separation is 195 nm at 10,000 ft. The first adjacent channel in the U.S. is equivalent to the ICAO second adjacent channel or +/- 50 kHz. The ICAO separation requirement for GBAS/GBAS second adjacent channel separation is 24 NM. In the U.S., geographical separations are not required between LAAS facilities, which differ in frequency by more than 25 kHz.</td>
</tr>
</tbody>
</table>

| 7.2.1.6 and Table D–5 Distances shown in ICAO Table D–5 are different from the distances in FAA Order 6050.32B figures 203 and 204 since in the U.S. the separation distances are calculated using the same method as for VOR described in FAA Order 6050.32B. |
United States of America 2 DEC 21

ANNEX 10 – VOLUME II – COMMUNICATION PROCEDURES INCLUDING THOSE WITH PANS

Chapter 3 General Procedures for the International Aeronautical Telecommunication Service

3.2.2, 3.2.3 US regulations do not have any specific procedures for closing down international aeronautical stations. All international aeronautical stations in the U.S. operate continuously (24 hours a day and seven days a week).

Chapter 5 Aeronautical Mobile Service – Voice Communications

5.1.5 US regulations do not require pilots to wait 10 seconds before making a second call. US regulations only require “a few seconds” instead of “10 seconds.”

5.2.1.4.1.1 The United States directs that, for air carriers and other civil aircraft having FAA authorized call signs, the call sign should be followed by the flight number in group form; and for air carriers of foreign registry, the flight number should be stated in group form, or using separate digits if that is the format used by the pilot.

5.2.1.4.1.1 The United States issues surface wind using the word “wind” followed by the separate digits of the indicated wind direction to the nearest 10-degree multiple, the word “at” and the separate digits of the indicated velocity in knots, to include any gusts.

5.2.1.4.1.3 The United States issues the separate digits of a frequency, inserting the word “point” where the decimal point occurs.

5.2.2.7.1.2 US regulations do not specifically require pilots to send a message twice preceded with the phrase “TRANSMITTING BLIND.”

5.2.2.7.1.3.1 US regulations do not specifically require pilots to make a blind transmission preceded by “TRANSMITTING BLIND DUE TO RECEIVER FAILURE” with respect to the continuation of the flight of the aircraft.

5.2.2.7.2.1, 5.2.2.7.2.2, 5.2.2.7.2.3 US regulations do not specifically require aeronautical stations to get assistance from other aircraft in case of communications failure.

5.2.2.7.2.4 US regulations do not provide this specific standard.

PART I – DIGITAL DATA COMMUNICATION SYSTEMS

Chapter 7 Aeronautical Mobile Airport Communications System (AeroMACS)

7.4.5.1 (d) In the U.S., the power spectral density of any frequency removed from the assigned frequency above 150% of the authorized frequency is 50 dB or 55 + log (P) dB, whichever is the lesser attenuation. ICAO requires 50 dB.

PART II – VOICE COMMUNICATION SYSTEMS

Chapter 2 Aeronautical Mobile Service

2.2.1.2 ICAO recommends a signal—in—space field strength of 75 uv/m (−109dB W/m²), which translates to −82.5 dBm at the input of the receiver assuming 0 dB system losses. In the U.S., per RTCA DO–186a MOPS, the input power to the aircraft receiver should be −87 dBm.
The US does not require aircraft flying within the US airspace to meet the interference immunity performance of paragraphs 2.3.3.1, 2.3.3.2, and 2.3.3.3 and the recommendation of paragraph 2.3.3.4 of Annex 10, Vol 3, Part 2, Chapter 2. The FAA, based on the recommendations of the Aviation Rulemaking Advisory Committee, made a decision, in 1996, not to adopt the FM interference immunity performance standards in the U.S. The U.S. continues to use its own FM immunity standards to avoid FM interference in aircraft.

2.3.3.4 The U.S. does not require airborne VHF communications receiving systems to meet the FM broadcast immunity performance standards recommended by ICAO.

ANNEX 10 – VOLUME IV – SURVEILLANCE AND COLLISION AVOIDANCE SYSTEMS

Chapter 3 – Surveillance Systems

3.1.1.7.13 SPI required to be transmitted for 18 +/− 1 second. US regulations are more stringent than ICAO.

Chapter 4 – Airborne Collision Avoidance System

4.2.3.3.4 The TSO–C118 (RTCA DO–197) implements this requirement. However, the requirement of limiting Mode S power to the level of Mode A/C (paragraph 4.2.3.4) is not implemented.

4.3.1.1.1 Specifies a nominal cycle of 1 second

4.3.2.1.2 The US specifies a false track probability of less than 1.2% for Mode A/C and less than 0.1% for Mode S.

4.3.5.3.1 Software versions 6.04A, version 7.0 and version 7.1 are all approved for operations in U.S. airspace.

4.3.5.3.2 No changes planned to the current U.S. guidance. Per Advisory Circular (AC) 120–55C, Change 1, Section 11 (MAINTENANCE), para c., TCAS Software Updates: “when necessary, operators should ensure that appropriate TCAS software updates are incorporated. The latest version of software for TCAS II is version 7.1. To ensure compatibility with international standards, the FAA encourages the installation of this software as practical. Software version 6.04A, version 7.0 and version 7.1 are all approved for operations in U.S. airspace.”

4.3.5.3.3 No changes planned to the current U.S. guidance. Per Advisory Circular (AC) 120–55C, Change 1, Section 11 (MAINTENANCE), para c., TCAS Software Updates: “when necessary, operators should ensure that appropriate TCAS software updates are incorporated. The latest version of software for TCAS II is version 7.1. To ensure compatibility with international standards, the FAA encourages the installation of this software as practical. Software version 6.04A, version 7.0 and version 7.1 are all approved for operations in U.S. airspace.”

ACAS The US uses the term Traffic Alert and Collision Avoidance System (TCAS). The difference of terminology does not impact interoperability of the systems.

ANNEX 10 – VOLUME V – AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION

Chapter 2 – Distress frequencies

2.1.1 All emergency locator transmitters installed on or after 1 January 2002 and carried in compliance with Standards of Annex 6, Parts I, II and III shall operate on both 406 MHz and 121.500 MHz or on 121.5 MHz.

Chapter 4 – Utilization of frequencies above 30 MHz

4.1.2.4 FAA has not issued a mandatory carriage of VDL Mode 3 and VDL Mode 4. Participation in CPDLC (VDL Mode 2) “is at the discretion of the flight crew and/or operator” (NAS Data Communications Guide, version 8, September 10, 2019).

4.1.2.4.1 FAA has not issued a mandatory carriage of VDL Mode 3 and VDL Mode 4.

4.1.4.1 The US does not provide the 20 dB desired–to–undesired signal protection for VHF frequency assignments. The US provides 14 dB.

4.1.4.2 The US does not require aircraft flying within the US airspace to meet one of the characteristics dealing with the FM interference immunity performance. The U.S. Aviation Rulemaking Committee made a decision not to adopt the FM interference immunity performance standards in the U.S. The U.S. continues to use its own FM immunity standards to avoid FM interference in aircraft.
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.6.2</td>
<td>Assignable frequencies in 25 KHz steps in the US are 121.550 – 123.075 MHz instead of 121.550 – 123.050 MHz, and 123.125 – 136.975 MHz instead of 123.150 – 136.975 MHz.</td>
</tr>
<tr>
<td>4.2.3</td>
<td>The US does not follow the VOR assignment priority as defined in Section 4.2.3. Due to severe frequency congestion in the U.S., the ICAO frequency assignment priority order would result in inefficient use of the radio spectrum.</td>
</tr>
</tbody>
</table>
## ANNEX 11 – AIR TRAFFIC SERVICES

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepting Unit</td>
<td>The term “receiving facility” is used.</td>
</tr>
<tr>
<td>Advisory Airspace</td>
<td>Advisory service is provided in terminal radar service areas and the outer area associated with class C airspace areas as well as Class E airspace.</td>
</tr>
<tr>
<td>Advisory Route</td>
<td>Advisory service is provided in terminal radar service areas and the outer area associated with class C airspace areas as well as Class E airspace.</td>
</tr>
<tr>
<td>ACAS–Airborne Collision Avoidance System</td>
<td>Traffic Alert and Collision Avoidance System (TCAS) – An airborne collision avoidance system based on radar beacon signals which operates independent of ground-based equipment. 14 CFR 1.1 further defines and breaks down TCAS into TCAS 1 – provides traffic advisories 2 – provides traffic advisories and resolution advisories in the vertical plane and 3 – provides traffic advisories and resolution advisories in the vertical and horizontal planes.</td>
</tr>
<tr>
<td>AIRMET</td>
<td>FAA Pilot Controller Glossary defines (in part) AIRMET as “In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment instrumentation or pilot qualifications.” The ICAO definition of AIRMET narrows the purpose of the advisory to “low-level aircraft operations”, where the FAA has a more broad definition to encompass “all aircraft and ... aircraft having limited capability.” Also, ICAO uses the term “forecast ... for the flight information region” where the FAA uses “area forecast”. Difference in character (terminology) for area forecast. FAA uses AIRMETS for broader purpose.</td>
</tr>
<tr>
<td>Air traffic control unit</td>
<td>The U.S. uses the term “air traffic control facility” (i.e. En Route, Terminal, or Flight Service)</td>
</tr>
<tr>
<td>Air traffic services reporting office</td>
<td>FAA Pilot Control Glossary defines (in part) Flight Service Stations (FSS) as “air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft in emergency situations, relay ATC clearances, originate Notices to Air Missions, broadcast aviation weather and NAS information, receive and process IFR flight plans...” FSS’s are available to receive any reports concerning air traffic services as well as accept and file flight plans.</td>
</tr>
<tr>
<td>Air traffic services unit</td>
<td>The U.S. uses “Air Route Traffic Control Center”.</td>
</tr>
<tr>
<td>Airway</td>
<td>A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.</td>
</tr>
<tr>
<td>Alert Phase</td>
<td>Alert – a notification to a position that there is an aircraft-to-aircraft or aircraft-to-airspace conflict as detected by automated problem detection.</td>
</tr>
<tr>
<td>Altitude</td>
<td>Height above ground level (AGL), mean sea level (MSL) or indicate altitude.</td>
</tr>
<tr>
<td>Apron Management Service</td>
<td>Ground control or ramp control provide the same service. There is no formal definition in the Pilot Controller Glossary.</td>
</tr>
<tr>
<td>Area Control Centre</td>
<td>The U.S. uses the terms “Traffic Control Center”, “Radar Approach Control Facility”, and “Tower” to define a facility that provides air traffic control services to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.</td>
</tr>
</tbody>
</table>
### Area Control Service

**Air Traffic Control** – A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

### Controlled Flight

The US uses the term “IFR Clearance”.

### Control Zone

The US uses the term “Surface Area”. Surface area is airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.

### Cruising Level

Cruising Altitude – an altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.

### Downstream Clearance

Same as air traffic control clearance. Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

### Flight Information Centre

In the US, flight information service and alerting service are often provided by flight service stations.

### Level

The term “altitude” is used.

### Maneuvering Area

Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.

### Meteorological Office

No PCG definition. However FSSs perform this duty.

### Movement Area

The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.

### Pilot-in-command

The person who has final authority for the operation and safety of the flight has been designated as pilot in command before or during the flight and hold the appropriate category, class and type rating for the flight.

### Traffic avoidance advice

US uses the term “Safety Alert”

### Traffic Information

US uses the term “Traffic Advisory”

### Waypoint

A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

### 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 J O 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order J O 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 Air Missions, and broadcast aviation weather and aeronautical information. 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 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 Flight Service Stations as “air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Air Missions, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDs. In addition, at selected locations, FSSs provide En Route Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of trans-border flights.”

| 2.6.1 | The U.S. has chosen not to use Class F airspace. |
| 2.11.3.2.2 | Class E—5 700/1200-foot airspace areas are used for transitioning aircraft to/from the terminal or en route environment. |
| 2.11.3.3 | 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. |
| 2.11.5.1 | 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 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. |
| 2.11.5.3 | Refer to Surface Areas |
| 2.26.5 | No time is issued prior to taxi for take-off. Time checks are given to the nearest quarter minute. |

**Chapter 3 Air Traffic Control Service**

<p>| 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. |
| 3.7.3.3 | The U.S. only requires a read back for operations regarding hold short instructions. Controllers may request a read back whenever they feel a read back is necessary. |
| 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. |</p>
<table>
<thead>
<tr>
<th>Clause</th>
<th>Section</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7.4.4</td>
<td>4-4-5. CLASS G AIRSPACE</td>
<td>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.</td>
</tr>
</tbody>
</table>

**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.

**Chapter 6** Air Traffic Services Requirements for Communications

6.1.1.4 6.2.2.3.8  The US uses a 45 day retention period.

6.2.3.6  The US has a 45 day or longer retention period, with some exceptions. US en route facilities using system analysis recording tapes as their radar retention media shall retain radar data for 15 days. Facilities using a teletype emulator or console printout must be retained for 30 days unless they are related to an accident or incident. A facility using a console typewriter printout take-up device may retain the printout on the spool for 15 days after the last date on the spool. If a request is received to retain data information following an accident or incident, the printout of the relative data will suffice and the tape/disc may then be returned to service through the normal established rotational program.

6.3.1.3  The US has a 45 day or longer retention period except that those facilities utilizing an analog voice recorder system shall retain voice recordings for 15 days.

6.4.1.2  The US retains surveillance data recordings for 45 days or longer when they are pertinent to an accident or incident investigation, except that en route facilities using system analysis recording tapes as their radar retention media (regardless of the type of voice recorder system being used) shall retain voice recordings for 15 days and those facilities using an analog voice recorder system shall retain voice recordings for 15 days. FAA’s Air Traffic Control System Command Center shall retain voice recordings for 15 days.

**Chapter 7** Air Traffic Services Requirements for Information

7.1.5  The term “communication station” is not used but the flight information is passed.

7.6  Temporary Flight Restrictions (TFRs) are the mechanism that would be implemented in such cases.

**Appendix 2** Principles Governing the Establishment and Identification of Significant Points

3.1  In US, per FAA Order 8260.19D, there are some points not to be named. Fixes used for navigation not to be named include Visual Descent Points (VDPs), radar fixes on PAR and/or PAR procedures, RNAV missed approach point at threshold, and an ATD fix located between the MAP and the landing area marking the visual segment descent point on COPTER RNAV PinS approach annotated “PROCEED VISUALLY.”

Additionally, there are some non-pronounceable points allowed. Order 8260.19 states “Except as noted below, each name must consist of a 5-letter pronounceable word. These non-pronounceable exceptions include: Stepdown fixes between FAF and MAP, Missed Approach Points (MAP), Computer Navigation Fixes (CNFs), and VFR Waypoints.
### Appendix 4  
**ATS Airspace Classifications**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coast line within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL.</td>
</tr>
</tbody>
</table>

Paragraph (a) of § 91.117 of Title 14 of the Code of Federal Regulations (CFR) provides that “Unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots.” Within domestic airspace, a pilot operating at or above 10,000 MSL on an assigned speed adjustment greater than 250 knots is expected to comply with § 91.117(a) when cleared below 10,000 feet MSL without notifying Air Traffic Control (ATC). 

The Federal Aviation Administration has proceeded from an operational perspective that the speed restrictions of § 91.117(a) do not apply to U.S.-registered aircraft, via § 91.703(a)(3), when operating outside the United States (and not within another country’s territorial airspace).

### Appendix 6  
**Fatigue Risk Management System (FRMS) Requirements**

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 f)</td>
<td>Breaks (“relief periods”) required to be “of reasonable duration” (Section 2–5–4c) and “administered in an equitable manner” (2–6–6a). Minimum duration not defined except for a meal break (30 minutes).</td>
</tr>
<tr>
<td>1.2 Note</td>
<td>Variation from prescriptive schedule rules must be entered into the Daily Record of Facility Operation at the time of the deviation.</td>
</tr>
<tr>
<td>3 b)</td>
<td>FAA does not have specific processes for deviations or variations from prescriptive fatigue management regulations.</td>
</tr>
<tr>
<td>ANNEX 12 – SEARCH AND RESCUE</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.</td>
<td></td>
</tr>
</tbody>
</table>
# ANNEX 13 – AIRCRAFT ACCIDENT INVESTIGATION

## Chapter 5  
### Investigation

**5.12** The full exchange of information is vital to effective accident investigation and prevention. The U.S. supports, in principle, measures that are intended to facilitate the development and sharing of information. The laws of the U.S. require the determination and public reporting of the facts, circumstances, and probable cause of every civil aviation accident. This requirement does not confine the public disclosure of such information to an accident investigation. However, the laws of the U.S. do provide some protection against public dissemination of certain information of a medical or private nature. Also, U.S. law prohibits the disclosure of cockpit voice recordings to the public and limits the disclosure of cockpit voice recording transcript to that specific information which is deemed pertinent and relevant by the investigative authority. However, U.S. Courts can order the disclosure of the foregoing information for other than accident investigation purposes. The standard for determining access to this information does not consider the adverse domestic or international effects on investigations that might result from such access.

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**5.25 h)** Investigative procedures observed by the U.S. allow full participation in all progress and investigation planning meetings; however, deliberations related to analysis, findings, probable causes, and safety recommendations are restricted to the investigative authority and its staff. However, participation in these areas is extended through timely written submissions, as specified in paragraph 5.25 i).

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**5.26 b)** The U.S. supports, in principle, the privacy of the State conducting the investigation regarding the progress and the findings of that investigation. However, the laws of the U.S. facilitate the public disclosure of information held by U.S. government agencies and U.S. commercial business. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the expressed consent of the State conducting the investigation.

## Chapter 6  
### Reporting

**6.13** The U.S. supports the principle of not circulating, publishing, or providing access to a draft report or any part thereof unless such a report or document has already been published or released by the State which conducted the investigation. However, the laws of the U.S. facilitate the public disclosure of information held by government agencies and commercial business. The U.S. government may not be able to restrict public access to a draft report or any part thereof on behalf of the State conducting the investigation. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the expressed consent of the State conducting an investigation.
ANNEX 14 – AERODROMES
VOLUME 1 – AERODROME DESIGN AND OPERATIONS

1.2.1 Airports in the U.S. are for the most part owned and operated by local governments and quasi-government organizations formed to operate transportation facilities. The Federal Government provides air traffic control, operates and maintains NAVAIDs, provides financial assistance for airport development, certifies major airports, and issues standards and guidance for airport planning, design, and operational safety.

There is general conformance with the Standards and Recommended Practices of Annex 14, Volume I. At airports with scheduled passenger service using aircraft having more than nine seats, compliance with standards is enforced through regulation and certification. At other airports, compliance is achieved through the agreements with individual airports under which Federal development funds were granted; or, through voluntary actions.

1.3.1 In the U.S., the Airport Reference Code is a two-component indicator relating the standards used in the airport’s design to a combination of dimensional and operating characteristics of the largest aircraft expected to use the airport. The first element, Aircraft Approach Category, corresponds to the ICAO PANS–OPS approach speed groupings. The second, Airplane Design Group, corresponds to the wingspan groupings of code element 2 of the Annex 14, Aerodrome Reference Code. See below:

<table>
<thead>
<tr>
<th>Aircraft Approach Category</th>
<th>Approximate Annex 14 Code Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>–</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Airplane Design Group</th>
<th>Corresponding Annex 14 Code Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>II</td>
<td>B</td>
</tr>
<tr>
<td>III</td>
<td>C</td>
</tr>
<tr>
<td>IV</td>
<td>D</td>
</tr>
<tr>
<td>V</td>
<td>E</td>
</tr>
<tr>
<td>VI</td>
<td>F (proposed)</td>
</tr>
</tbody>
</table>

EXAMPLE: AIRPORT DESIGNED FOR B747–400 ARC D–V.

2.2.1 The airport reference point is recomputed when the ultimate planned development of the airport is changed.

2.9.6 Minimum friction values have not been established to indicate that runways are “slippery when wet.” However, U.S. guidance recommends that pavements be maintained to the same levels indicated in the ICAO Airport Services Manual.

2.11.3 If inoperative fire fighting apparatus cannot be replaced immediately, a NOTAM must be issued. If the apparatus is not restored to service within 48 hours, operations shall be limited to those compatible with the lower index corresponding to operative apparatus.

2.12 e) Where the original VASI is still installed, the threshold crossing height is reported as the center of the on-course signal, not the top of the red signal from the downwind bar.
Chapter 3 Physical Characteristics

3.1.2* The crosswind component is based on the ARC: 10.5 kt for AI and BI; 13 kt for AII and BII; 16 kt for AIII, BIII and CI through DIII; 20 kts for AIV through DVI.

3.1.9* Runway widths (in meters) used in design are shown in the table below:

### Width of Runway in Meters

<table>
<thead>
<tr>
<th>Aircraft Approach Category</th>
<th>Airplane Design Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>A</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>18</td>
</tr>
<tr>
<td>C</td>
<td>30</td>
</tr>
<tr>
<td>D</td>
<td>30</td>
</tr>
</tbody>
</table>

The width of a precision (lower than \(\frac{3}{4}\) statute mile approach visibility minimums) runway is 23 meters for a runway which is to accommodate only small (less than 5,700 kg) airplanes and 30 meters for runways accommodating larger airplanes.

For airplanes with a maximum certificated take-off mass greater than 68,000 kg, the standard runway width is 45 meters.

3.1.12* Longitudinal runway slopes of up to 1.5 percent are permitted for aircraft approach categories C and D except for the first and last quarter of the runway where the maximum slope is 0.8 percent.

3.1.18* Minimum and maximum transverse runway slopes are based on aircraft approach categories as follows:

For categories A and B: 1.0 – 2.0 percent
For categories C and D: 1.0 – 1.5 percent

3.2.2 The U.S. does not require that the minimum combined runway and shoulder widths equal 60 meters. The widths of shoulders are determined independently.

3.2.3* The transverse slope on the innermost portion of the shoulder can be as high as 5 percent.

3.3.3 A strip width of 120 meters is used for code 3 and 4 runways for precision, nonprecision, and non-instrumented operations. For code 1 and 2 precision runways, the width is 120 meters. For non-precision/visual runways, widths vary from 37.5 meters up to 120 meters.

3.3.9* Airports used exclusively by small aircraft (U.S. Airplane Design Group I) may be graded to distances as little as 18 meters from the runway centerline.

3.3.14* The maximum transverse slope of the graded portion of the strip can be 3 percent for aircraft approach categories C and D and 5 percent for aircraft approach categories A and B.

3.3.15* The U.S. does not have standards for the maximum transverse grade on portions of the runway strip falling beyond the area that is normally graded.

3.3.17* Runways designed for use by smaller aircraft under non-instrument conditions may be graded to distances as little as 18 meters from the runway centerline (U.S. Airplane Design Groups I and II).

3.4.2* For certain code 1 runways, the runway end safety areas may be only 72 meters.

3.7.1* The U.S. does not provide Standards or Recommended Practices for radio altimeter operating areas.

3.8.3* The U.S. specifies a 6 meter clearance for Design Group VI airplanes.

3.8.4* The taxiway width for Design Group VI airplanes is 30 meters.

3.8.5* The U.S. also permits designing taxiway turns and intersections using the judgmental oversteering method.
Minimum separations between runway and taxiway centerlines, and minimum separations between taxiways and between taxiway/taxilanes and fixed/moveable objects are shown in the tables that follow. Generally, U.S. separations are larger for non–instrumented runways, and smaller for instrumented runways, than the Annex. Values are also provided for aircraft with wingspans up to 80 meters.

### Minimum Separations Between Runway Centerline and Parallel Taxiway/Taxilane Centerline

<table>
<thead>
<tr>
<th>Operation</th>
<th>Aircraft Approach Category</th>
<th>Airplane Design Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>Visual runways and runways with not lower than 3/4 statute mile (1,200 meters) approach visibility minimums</td>
<td>A and B</td>
<td>150 feet 45 meters</td>
</tr>
<tr>
<td>Runways with lower than 3/4 statute mile (1,200 meters) approach visibility minimums</td>
<td>A and B</td>
<td>200 feet 60 meters</td>
</tr>
<tr>
<td>Visual runways and runways with not lower than 3/4 statute mile (1,200 meters) approach visibility minimums</td>
<td>C and D</td>
<td>—</td>
</tr>
<tr>
<td>Runways with lower than 3/4 statute mile (1,200 meters) approach visibility minimums</td>
<td>C and D</td>
<td>—</td>
</tr>
</tbody>
</table>

1These dimensional standards pertain to facilities for small airplanes exclusively.
2Corrections are made for altitude: 120 meters separation for airports at or below 410 meters; 135 meters for altitudes between 410 meters and 2,000 meters; and, 150 meters for altitudes above 2,000 meters.

### Minimum Taxiway and Taxilane Separations:

<table>
<thead>
<tr>
<th></th>
<th>Aircraft Design Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Taxiway centerline to parallel taxiway/ taxilane centerline</td>
<td>69 feet 21 meters</td>
</tr>
<tr>
<td>Fixed or movable object</td>
<td>44.5 feet 13.5 meters</td>
</tr>
<tr>
<td>Taxiway centerline to parallel taxilane centerline</td>
<td>64 feet 19.5 meters</td>
</tr>
<tr>
<td>Fixed or movable object</td>
<td>39.5 feet 12 meters</td>
</tr>
</tbody>
</table>

### 3.8.10* Line-of-sight standards for taxiways are not provided in U.S. practice, but there is a requirement that the sight distance along a runway from an intersecting taxiway must be sufficient to allow a taxiing aircraft to safely enter or cross the runway.

### 3.8.11* Transverse slopes of taxiways are based on aircraft approach categories. For categories C and D, slopes are 1.0–1.5 percent; for A and B, 1.0–2.0 percent.

### 3.11.5 The runway centerline to taxi–holding position separation for code 1 is 38 meters for non–precision operations and 53 meters for precision. Code 3 and 4 precision operations require a separation of 75 meters, except for “wide bodies,” which require 85 meters.
Dimensions and Slopes for Protective Areas and Surfaces

<table>
<thead>
<tr>
<th>Precision Approach</th>
<th>Non-precision Instrument Approach</th>
<th>Visual Runway</th>
</tr>
</thead>
<tbody>
<tr>
<td>All runways</td>
<td>All runways(^a)</td>
<td></td>
</tr>
<tr>
<td>Width of inner edge</td>
<td>305 meters</td>
<td>305 meters</td>
</tr>
<tr>
<td>Divergency (each side)</td>
<td>15 percent</td>
<td>15 percent</td>
</tr>
<tr>
<td>Final width</td>
<td>4,877 meters</td>
<td>1,219 meters</td>
</tr>
<tr>
<td>Length</td>
<td>15,240 meters</td>
<td>3,048 meters</td>
</tr>
<tr>
<td>Slope: inner</td>
<td>2 percent</td>
<td>2.94 percent</td>
</tr>
<tr>
<td>Slope: beyond</td>
<td>2.5 percent(^c)</td>
<td>2.5 percent(^c)</td>
</tr>
</tbody>
</table>

\(^a\)With visibility minimum as low as 1.2 km; \(^b\)with visibility minimum greater than 1.2 km; \(^c\)criteria less demanding than Annex 14 Table 4–1 dimensions and slopes. \(^d\)Utility runways are intended to serve propeller–driven aircraft having a maximum take–off mass of 5,570 kg.

**Chapter 4**

**Obstacle Restriction and Removal**

4.1 Obstacle limitation surfaces similar to those described in 4.1–4.20 are found in 14 CFR Part 77.

4.1.21 A balked landing surface is not used.

4.1.25 The U.S. does not establish take–off climb obstacle limitation areas and surface, per se, but does specify protective surfaces for each end of the runway based on the type of approach procedures available or planned. The dimensions and slopes for these surfaces and areas are listed in the table above.

4.2 The dimensions and slopes of U.S. approach areas and surfaces are set forth in the above table. Aviation regulations do not prohibit construction of fixed objects above the surfaces described in these sections.

4.2.1 Primary surface is also used as a civil airport imaginary surface. Primary surface is a surface longitudinally centered on a runway. U.S. uses the width of the primary surface of a runway as prescribed in 14 CFR Part 77.25 for the most precise approach existing or planned for either end of that runway.

4.2.8 The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

4.2.9 Approach surfaces are applied to each end of each runway based upon the type of approach available or planned for that runway end.

4.2.10, 4.2.11 A ny proposed construction of or alteration to an existing structure is normally considered to be physically shielded by one or more existing permanent structure(s), natural terrain, or topographic feature(s) of equal or greater height if the structure under consideration is located within the lateral dimensions of any runway approach surface but would not exceed an overall height above the established airport elevation greater than that of the outer extremity of the approach surface, and located within, but would not penetrate, the shadow plane(s) of the shielding structure(s).

4.2.12 The basic principle in applying shielding guidelines is whether the location and height of the structures are such that aircraft, when operating with due regard for the shielding structure, would not collide with that structure.

4.2.16 The size of each imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

4.2.17 Approach surfaces are applied to each end of each runway based upon the type of approach available or planned for that runway end.
### Chapter 5 Visual Aids for Navigation

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.7*</td>
<td>The U.S. does not require unpaved taxiways to be marked.</td>
</tr>
<tr>
<td>5.2.2.2*</td>
<td>The U.S. does not require a runway designator marking for unpaved runways.</td>
</tr>
<tr>
<td>5.2.2.4</td>
<td>Zeros are not used to precede single-digit runway markings. An optional configuration of the numeral 1 is available to designate a runway 1 and to prevent confusion with the runway centerline.</td>
</tr>
<tr>
<td>5.2.4.2*</td>
<td>Threshold markings are not required, but sometimes provided, for non-instrument runways that do not serve international operations.</td>
</tr>
<tr>
<td>5.2.4.5</td>
<td>The current U.S. standard for threshold designation is eight stripes, except that more than eight stripes may be used on runways wider than 45 meters. After 1 January 2008, the U.S. standard will comply with Annex 14.</td>
</tr>
<tr>
<td>5.2.4.6</td>
<td>The width and spacing of threshold stripes will comply with Annex 14 after 1 January 2008.</td>
</tr>
<tr>
<td>5.2.4.10</td>
<td>When a threshold is temporarily displaced, there is no requirement that runway or taxiway edge markings, prior to the displaced threshold, be obscured. These markings are removed only if the area is unsuitable for the movement of aircraft.</td>
</tr>
<tr>
<td>5.2.5.2</td>
<td>Aiming point markings are required on precision instrument runways and code 3 and 4 runways used by jet aircraft.</td>
</tr>
<tr>
<td>5.2.5.3*</td>
<td>The aiming point marking commences 306 meters from the threshold at all runways.</td>
</tr>
<tr>
<td>5.2.5.4</td>
<td>The U.S. pattern for touchdown zone markings, when installed on both runway ends, is only applicable to runways longer than 4,990 feet. On shorter runways, the three pair of markings closest to the runway midpoint are eliminated.</td>
</tr>
<tr>
<td>5.2.6.3</td>
<td>The U.S. standard places the aiming point marking 306 meters from the threshold where it replaces one of the pair of three stripe threshold markings. The 306 meters location is used regardless of runway length.</td>
</tr>
<tr>
<td>5.2.6.5*</td>
<td>Touchdown zone markings are not required at a non-precision approach runway, though they may be provided.</td>
</tr>
<tr>
<td>5.2.7.4*</td>
<td>Runway side stripe markings on a non-instrument runway may have an over-all width of 0.3 meter.</td>
</tr>
<tr>
<td>5.2.8.3</td>
<td>Taxiway centerline markings are never installed longitudinally on a runway even if the runway is part of a standard taxi route.</td>
</tr>
<tr>
<td>5.2.9.5*</td>
<td>The term “ILS” is used instead of CAT I, CAT II, CAT III.</td>
</tr>
<tr>
<td>5.2.11.4</td>
<td>Check-point markings are provided, but the circle is 3 meters in diameter, and the directional line may be of varying width and length. The color is the yellow used for taxiway markings.</td>
</tr>
<tr>
<td>5.2.12</td>
<td>Standards for aircraft stand markings are not provided.</td>
</tr>
<tr>
<td>5.2.13.1*</td>
<td>Apron safety lines are not required although many airports have installed them.</td>
</tr>
<tr>
<td>5.2.14.1</td>
<td>The U.S. does not have standards for holding position markings on roadways that cross runways. Local traffic control practices are used.</td>
</tr>
<tr>
<td>5.3.1.1 5.3.1.2*</td>
<td>The U.S. does not have regulations to prevent the establishment of non-aviation ground lights that might interfere with airport operations.</td>
</tr>
<tr>
<td>5.3.1.3</td>
<td>New approach lighting installations will meet the frangibility requirements. Some existing non-frangible systems may not be replaced before 1 January 2005.</td>
</tr>
<tr>
<td>5.3.2.1*</td>
<td>There is no requirement for an airport to have emergency runway lighting available if it does not have a secondary power source. Some airports do have these systems, and there is an FAA specification for these lights.</td>
</tr>
<tr>
<td>5.3.3.1</td>
<td>Only airports served by aircraft having more than 30 seats are required to have a beacon, though they are available at many others.</td>
</tr>
<tr>
<td>5.3.3.6</td>
<td>Although the present U.S. standard for beacons calls for 24–30 flashes per minute, some older beacons may have flash rates as low as 12 flashes per minute.</td>
</tr>
<tr>
<td>5.3.3.8</td>
<td>Coded identification beacons are not required and are not commonly installed. Typically, airport beacons conforming to 5.3.3.6 are installed at locations served by aircraft having more than 30 seats.</td>
</tr>
</tbody>
</table>
5.3.4.1 While the U.S. has installed an approach light system conforming to the specifications in 5.3.4.10 through 5.3.4.19, it also provides for a lower cost system consisting of medium intensity approach lighting and sequenced flashing lights (MALSF) at some locations.

5.3.4.2 In addition to the system described in 5.3.4.1, a system consisting of omnidirectional strobe lights (ODALS) located at 90 meters intervals extending out to 450 meters from the runway threshold is used at some locations.

5.3.4.10 through 5.3.4.19 The U.S. standard for a precision approach category I lighting system is a medium intensity approach lighting system with runway alignment indicator lights (MALSR). This system consists of 3 meters barrettes at 60 meters intervals out to 420 meters from the threshold and sequenced flashing lights at 60 meters intervals from 480 meters to 900 meters. A crossbar 20 meters in length is provided 300 meters from the threshold. The total length of this system is dependent upon the ILS glide path angle. For angles 2.75° and higher, the length is 720 meters.

5.3.4.16 5.3.4.31 The capacitor discharge lights can be switched on or off when the steady-burning lights of the approach lighting system are operating. However, they cannot be operated when the other lights are not in operation.

5.3.4.20 The U.S. standard for a precision approach category II and III lighting system has a total length dependent upon the ILS glide path angle. For angles 2.75° and higher, the length is 720 meters.

5.3.5.1 5.3.5.3 5.3.5.4 Visual approach slope indicator systems are not required for all runways used by turbojets except runways involved with land and hold short operations that do not have an electronic glideslope system.

5.3.5.2 In addition to PAPI and APAPI systems, VASI and AVASI type systems remain in service at U.S. airports with commercial service. Smaller general aviation airports may have various other approach slope indicators including tri-color and pulsating visual approach slope indicators.

5.3.5.27 The U.S. standard for PAPI allows for the distance between the edge of the runway and the first light unit to be reduced to 9 meters for code 1 runways used by nonjet aircraft.

5.3.5.42 The PAPI obstacle protection surface used is as follows: The surface begins 90 meters in front of the PAPI system (toward the threshold) and proceeds outward into the approach zone at an angle 1 degree less than the aiming angle of the third light unit from the runway. The surface flares 10 degrees on either side of the extended runway centerline and extends 4 statute miles from its point of origin.

5.3.8.4 The U.S. permits the use of omnidirectional runway threshold identification lights.

5.3.13.2 The U.S. does not require the lateral spacing of touchdown zone lights to be equal to that of touchdown zone marking when runways are less that 45 meters wide.

The lateral distance between the markings is 22 meters when installed on runways with a width of 45 meters or greater. The distance is proportionately smaller for narrower runways. The lateral distance between touchdown zone lights is nominally 22 meters but may be reduced to 20 meters to avoid construction problems.

5.3.14 The U.S. has no provision for stopway lights.

5.3.15.1 5.3.15.2* Taxiway centerline lights are required only below 183 meters RVR on designated taxi routes. However, they are generally recommended whenever a taxiing problem exists.

5.3.15.3 8.2.3 Taxiway centerline lights are not provided on runways forming part of a standard taxi route even for low visibility operations. Under these conditions, the taxi path is coincident with the runway centerline, and the runway lights are illuminated.

5.3.15.5 Taxiway centerline lights on exit taxiways presently are green. However, the new U.S. standard which is scheduled to be published by 1 January 98 will comply with the alternating green/yellow standard of Annex 14.

5.3.15.7* The U.S. permits an offset of up to 60 cm.

5.3.16.2 8.2.3 Taxiway edge lights are not provided on runways forming part of a standard taxi route.
Stop bars are required only for runway visual range conditions less than a value of 183 meters at taxiway/runway intersections where the taxiway is lighted during low visibility operations. Once installed, controlled stop bars are operated at RVR conditions less than a value of 350 meters.

Elevated stop bar lights are normally installed longitudinally in line with taxiway edge lights. Where edge lights are not installed, the stop bar lights are installed not more than 3 meters from the taxiway edge.

The beamspread of elevated stop bar lights differs from the in-pavement lights. The inner isocandela curve for the elevated lights is ± 7 horizontal and ± 4 vertical.

The U.S. standard for stop bars, which are switchable in groups, does not require the taxiway centerline lights beyond the stop bars to be extinguished when the stop bars are illuminated. The taxiway centerline lights which extend beyond selectively switchable stop bars are grouped into two segments of approximately 45 meters each. A sensor at the end of the first segment re-illuminates the stop bar and extinguishes the first segment of centerline lights. A sensor at the end of the second segment extinguishes that segment of centerline lights.

Taxiway intersection lights are also used at other hold locations on taxiways such as low visibility holding points.

Taxiway intersection lights are collocated with the taxiway intersection marking. The marking is located at the following distances from the centerline of the intersecting taxiway:

<table>
<thead>
<tr>
<th>Airplane Design Group</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>13.5 meters</td>
</tr>
<tr>
<td>II</td>
<td>20 meters</td>
</tr>
<tr>
<td>III</td>
<td>28.5 meters</td>
</tr>
<tr>
<td>IV</td>
<td>39 meters</td>
</tr>
<tr>
<td>V</td>
<td>48.5 meters</td>
</tr>
<tr>
<td>VI</td>
<td>59 meters</td>
</tr>
</tbody>
</table>

Runway guard lights are required only for runway visual range conditions less than a value of 350 meters.

Runway guard lights are placed at the same distance from the runway centerline as the aircraft holding distance, or within a few feet of this location.

The new U.S. standard for in–pavement runway guard lights complies with Annex 14. However, there may be some existing systems that do not flash alternately.

The U.S. does not set aviation standards for flood lighting aprons.

The U.S. does not provide standards for visual docking guidance systems. U.S. manufacturers of these devices generally adhere to ICAO SARPS.

The U.S. does not have a requirement for providing roadholding position lights during RVR conditions less than a value of 350 meters.

Signs are often installed a few centimeters taller than specified in Annex 14, Volume 1, Table 5–4.

Sign inscriptions are slightly larger, and margins around the sign slightly smaller, than indicated in Annex 14, Volume 1, Appendix 4.

The sign luminance requirements are not as high as specified in Appendix 4. The U.S. does not specify a nighttime color requirement in terms of chromaticity.

All signs used to denote precision approach holding positions have the legend “‘ILS.’”

U.S. practice uses the NO ENTRY sign to prohibit entry by aircraft only.

The second mandatory instruction sign is usually not installed unless added guidance is necessary.
<table>
<thead>
<tr>
<th>5.4.2.15</th>
<th>Signs for holding aircraft and vehicles from entering areas where they would infringe on obstacle limitation surfaces or interfere with NAVAIDs are inscribed with the designator of the approach, followed by the letters “APCH”; for example, “15−APCH.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4.3.13</td>
<td>U.S. practice is to install signs about 3 to 5 meters closer to the taxiway/runway (See Annex 14, Table 5−4).</td>
</tr>
<tr>
<td>5.4.3.15</td>
<td>The U.S. does not have standards for the location of runway exit signs.</td>
</tr>
<tr>
<td>5.4.3.24</td>
<td>A yellow border is used on all location signs, regardless of whether they are stand-alone or collocated with other signs.</td>
</tr>
<tr>
<td>5.4.3.26</td>
<td>U.S. practice is to use Pattern A on runway vacated signs, except that Pattern B is used to indicate that an ILS critical area has been cleared.</td>
</tr>
<tr>
<td>5.4.3.30</td>
<td>The U.S. does not have standards for signs used to indicate a series of taxi−holding positions on the same taxiway.</td>
</tr>
<tr>
<td>5.4.3.36</td>
<td>The inscription, “VOR Check Course,” is placed on the sign in addition to the VOR and DME data.</td>
</tr>
<tr>
<td>5.4.3.41</td>
<td>The U.S. does not have requirements for airport identification signs, though they are usually installed.</td>
</tr>
<tr>
<td>5.4.3.45</td>
<td>Standards are not provided for signs used to identify aircraft stands.</td>
</tr>
<tr>
<td>5.4.3.47</td>
<td>The distance from the edge of road to the road−holding position sign conforms to local highway practice.</td>
</tr>
<tr>
<td>5.4.3.49</td>
<td>Boundary markers may be used to denote the edges of an unpaved runway.</td>
</tr>
<tr>
<td>5.4.5.2</td>
<td>There is no provision for stopway edge markers.</td>
</tr>
</tbody>
</table>

### Chapter 6 Visual Aids for Denoting Obstacles

6.1 Recommended practices for marking and lighting obstacles are found in FAA Advisory Circular 70/7460−1J, Obstruction Marking and Lighting.

6.1.3 Any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet (61m) above ground level or exceeds any obstruction standard contained in 14 CFR Part 77, should normally be marked and/or lighted.

6.2.1 This chapter provides recommended guidelines to make certain structures conspicuous to pilots during daylight hours. One way of achieving this conspicuity is by painting and/or marking these structures.

Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.

6.2.3 The maximum dimension of the rectangles in a checkered pattern is 6 meters on a side.

6.2.7 Markers should be displayed in conspicuous positions on or adjacent to the structure so as to retain the general definition of the structure. They should be recognizable in clear air from a distance of at least 4,000 feet (1219m) and in all directions from which aircraft are likely to approach. Markers should be distinctively shaped, i.e., spherical or cylindrical, so they are not mistaken for items that are used to convey other information. They should be replaced when faded or otherwise deteriorated.

6.2.11 Flag markers should be displayed around, on top, or along the highest edge of the obstruction. When flags are used to mark extensive or closely grouped obstructions, they should be displayed approximately 50 feet (15m) apart. The flag stakes should be of such strength and height that they will support the flags above all surrounding ground, structures, and/or objects of natural growth.

6.2.12 Each side of the flag marker should be at least 2 feet (0.6m) in length.

Standard does not specifically address mobile objects.

6.2.14 Color patterns. Flags should be colored as follows: solid, orange and white, and checkerboard. Standard does not specifically address mobile objects.
### 6.3.1 Obstruction lighting may be displayed on structures as follows: aviation red obstruction lights; medium intensity flashing white obstruction lights, high intensity flashing white obstruction lights, dual lighting, obstruction lights during construction, obstruction lights in urban areas, and temporary construction equipment lighting.

#### 6.3.11 The height of the structure AGL determines the number of light levels.

Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.

#### 6.3.13 When a structure lighted by a high intensity flashing light system is topped with an antenna or similar appurtenance exceeding 40 feet (12m) in height, a medium intensity flashing white light (L−865) should be placed within 40 feet (12m) from the tip of the appurtenance. This light should operate 24 hours a day and flash simultaneously with the rest of the lighting system.

#### 6.3.14 The number of light units recommended depends on the diameter of the structure at the top.

#### 6.3.15 Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.

#### 6.3.16 Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.

#### 6.3.17 Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.

#### 6.3.18 Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.

#### 6.3.19 One or more light units is needed to obtain the desired horizontal coverage. The number of light units recommended per level (except for the supporting structures of catenary wires and buildings) depends upon the average outside diameter of the specific structure, and the horizontal beam width of the light fixture. The light units should be installed in a manner to ensure an unobstructed view of the system by a pilot approaching from any direction. The number of lights recommended is the minimum.

The U.S. does not utilize Type A or Type B obstacle lights. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.

#### 6.3.21* The effective intensity, for daylight–luminance background, of Type A high–intensity obstacle lights is 270,000 cd ± 25 percent.

#### 6.3.22* The effective intensity, for daylight–luminance background, of Type B high–intensity obstacle lights is 140,000 cd ± 25 percent.

#### 6.3.22 The height of the structure AGL determines the number of light levels. The light levels may be adjusted slightly, but not to exceed 10 feet (3m) when necessary to accommodate guy wires and personnel who replace or repair light fixtures. If an adjacent object shields any light, horizontal placement of the lights should be adjusted or additional lights should be mounted on that object to retain or contribute to the definition of the obstruction.

Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
Red obstruction lights are used to increase conspicuity during nighttime. The red obstruction lighting system is composed of flashing omnidirectional beacons (L−864) and/or steady burning (L−810) lights. When one or more levels is comprised of flashing beacon lighting, the lights should flash simultaneously.

The U.S. does not utilize Type A, B, C, or D obstacle lights. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in

When objects within a group of obstructions are approximately the same overall height above the surface and are located a maximum of 150 feet (46m) apart, the group of obstructions may be considered an extensive obstruction. Install light units on the same horizontal plane at the highest portion or edge of prominent obstructions. Light units should be placed to ensure that the light is visible to a pilot approaching from any direction.

The medium intensity flashing white light system is normally composed of flashing omnidirectional lights. Medium intensity flashing white obstruction lights may be used during daytime and twilight with automatically selected reduced intensity for nighttime operation.

The U.S. does not utilize Type A, B, or C obstacle lights. Medium intensity flashing white (L−865) obstruction lights may provide conspicuity both day and night. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of structures and overall layout of design.

Use high intensity flashing white obstruction lights during daytime with automatically selected reduced intensities for twilight and nighttime operations. When high intensity white lights are operated 24 hours a day, other methods of marking and lighting may be omitted.

The U.S. does not utilize Type A obstacle lights. Lighting with high intensity (L−856) flashing white obstruction lights provides the highest degree of conspicuity both day and night. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.

### Chapter 7 Visual Aids for Denoting Restricted Use Areas

7.1.2* A "closed" marking is not used with partially closed runways. See 5.2.4.10, above.

7.1.4 Crosses with shapes similar to figure 7.1, illustration b) are used to indicate closed runways and taxiways. The cross for denoting a closed runway is yellow.

7.1.5 In the U.S. when a runway is permanently closed, only the threshold marking, runway designation marking, and touchdown zone marking need be obliterated. Permanently closed taxiways need not have the markings obliterated.

7.1.7 The U.S. does not require unserviceability lights across the entrance to a closed runway or taxiway when it is intersected by a night–use runway or taxiway.

7.4.4 Flashing yellow lights are used as unserviceability lights. The intensity is such as to be adequate to delineate a hazardous area.

### Chapter 8 Equipment and Installations

8.1.5* A secondary power supply for non–precision instrument and non–instrument approach runways is not required, nor is it required for all precision approach runways.

8.1.6* The U.S. does not provide secondary power specifically for take–off operations below 550 meters RVR.

8.2.1 There is no requirement in the U.S. to interleave lights as described in the Aerodrome Design Manual, Part 5.

8.2.3 See 5.3.15.3 and 5.3.16.2

8.7.4* Glide slope facilities and certain other installations located within the runway strip, or which penetrate obstacle limitation surfaces, may not be frangibly mounted.
8.9.7* A surface movement surveillance system is recommended for operations from 350 meters RV R down to 183 meters. Below 183 meters RV R, a surface movement radar or alternative technology is generally required.

Chapter 9 Emergency and Other Services

9.1.1 Emergency plans such as those specified in this section are required only at airports serving scheduled air carriers using aircraft having more than 30 seats. These airports are certificated under 14 CFR Part 139. In practice, other airports also prepare emergency plans.

9.1.12 Full-scale airport emergency exercises are conducted at intervals, not to exceed three years, at airports with scheduled passenger service using aircraft with more than 30 seats.

9.2.1 Rescue and fire fighting equipment and services such as those specified in this section are required only at airports serving scheduled air carriers in aircraft having more than 30 seats. Such airports generally equate to ICAO categories 4 through 9. Other airports have varying degrees of services and equipment.

9.2.3* There is no plan to eliminate, after 1 January 2005, the current practice of permitting a reduction of one category in the index when the largest aircraft has fewer than an average of five scheduled departures a day.

9.2.4 9.2.5 The level of protection at U.S. airports is derived from the length of the largest aircraft serving the airport similar to the Annex’s procedure, except that maximum fuselage width is not used. U.S. indices A – E are close equivalents of the Annex’s categories 5 – 9. The U.S. does not have an equivalent to category 10.

Fire Extinguishing Agents and Equipment

<table>
<thead>
<tr>
<th>Index</th>
<th>Aircraft length</th>
<th>Total minimum quantities of extinguishing agents</th>
<th>Minimum trucks</th>
<th>Discharge rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>More than</td>
<td>Not more than</td>
<td>Dry chemical</td>
<td>Water for protein foam</td>
</tr>
<tr>
<td>A</td>
<td>27 meters</td>
<td>225 kg</td>
<td>0</td>
<td>1,900 L per minute but not more than 3,800 L per minute</td>
</tr>
<tr>
<td>B</td>
<td>27 meters</td>
<td>38 meters</td>
<td>225 kg</td>
<td>5,700 L per minute</td>
</tr>
<tr>
<td>C</td>
<td>38 meters</td>
<td>48 meters</td>
<td>225 kg</td>
<td>5,700 L per minute</td>
</tr>
<tr>
<td>D</td>
<td>48 meters</td>
<td>60 meters</td>
<td>225 kg</td>
<td>5,700 L per minute</td>
</tr>
<tr>
<td>E</td>
<td>60 meters</td>
<td></td>
<td>225 kg</td>
<td>11,400 L per minute</td>
</tr>
</tbody>
</table>

Truck size

Discharge rate

1,900 L but less than 7,600 at least 1,900 L per minute but not more than 3,800 L per minute
7,600 L or greater at least 2,280 L per minute but not more than 4,560 L per minute

9.2.10 The required firefighting equipment and agents by index are shown in the table above.

9.2.18* There is no specific requirement to provide rescue equipment as distinguished from firefighting equipment.

9.2.19* At least one apparatus must arrive and apply foam within 3 minutes with all other required vehicles arriving within 4 minutes.

Response time is measured from the alarm at the equipment’s customary assigned post to the commencement of the application of foam at the mid–point of the farthest runway.

9.2.29* For ICAO category 6 (U.S. index B), the U.S. allows one vehicle.
At the present time, there is no requirement to perform tests using a continuous friction measuring device with self-wetting features. Some U.S. airports own these devices, while others use less formal methods to monitor build-up of rubber deposits and the deterioration of friction characteristics.

The standard grade for temporary ramps is 15 feet longitudinal per 1 inch of height (0.56 percent slope) maximum, regardless of overlay depth.

There is no U.S. standard for declaring a light unserviceable if it is out of alignment or if its intensity is less than 50 percent of its specified value.

*Indicates ICAO Recommended Practice
### ANNEX 14 – AERODROMES

#### VOLUME II – HELIPORTS

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Declared distances</strong></td>
<td>The U.S. does not use declared distances (take–off distance available, rejected take–off distance available, or landing distance available) in designing heliports.</td>
</tr>
<tr>
<td><strong>Final approach and take–off area (FATO)</strong></td>
<td>The U.S. “take–off and landing area” is comparable to the ICAO FATO, and the U.S. “FATO” is more comparable to the ICAO TLOF. The U.S. definition for the FATO stops with “the take–off manoeuvre is commenced.” This difference in definition reflects a variation in concept. The rejected take–off distance is an operational computation and is not required as part of the design.</td>
</tr>
<tr>
<td><strong>Helicopter stand</strong></td>
<td>The U.S. does not use the term “helicopter stand.” Instead, the U.S. considers paved or unpaved aprons, helipads, and helidecks, all as helicopter parking areas; i.e., helicopter stands.</td>
</tr>
<tr>
<td><strong>Safety area</strong></td>
<td>The U.S. considers the safety area to be part of the take–off and landing area which surrounds the FATO and does not call for or define a separate safety area.</td>
</tr>
<tr>
<td><strong>Touchdown and lift–off area (TLOF)</strong></td>
<td>The U.S. differs in the definition by considering helipads and helidecks to be FATO. The U.S. does not define the load bearing area on which the helicopter may touch down or lift–off as a TLOF.</td>
</tr>
</tbody>
</table>

#### Chapter 2  Heliport Data

2.1 d) | The U.S. does not measure or report a safety area as a separate feature of a heliport. |
2.2 | The U.S. does not “declare” distances for heliports. |

#### Chapter 3  Physical Characteristics

3.1.2 | The U.S. does not distinguish between single–engine and multi–engine helicopters for the purposes of heliport design standards. Neither does the U.S. design or classify heliports on the basis of helicopter performance. The U.S. FATO dimensions are at least equal to the rotor diameter of the design single rotor helicopter and the area must be capable of providing ground effect. The U.S. does not have alternative design standards for water FATOs, elevated heliports, or helidecks. |
3.1.3 | The U.S. has a single gradient standard; i.e., 5 percent, except in fueling areas where the limit is 2 percent, which is applicable for all portions of heliports. |
3.1.6 | The U.S. does not require or provide criteria for clearways in its design standards. It does encourage ownership and clearing of the land underlying the innermost portion of the approach out to where the approach surface is 10.5 meters above the level of the take–off surface. |
3.1.14 to 3.1.21 | Safety areas are considered part of the take–off and landing area (or primary surface) in U.S. heliport design. The take–off and landing area of the U.S. design criteria, based on 2 rotor diameters, provides for the ICAO safety area; however, the surface does not have to be continuous with the FATO or be load bearing. |
3.1.22 | Taxiway widths are twice the undercarriage width of the design helicopter. |
3.1.24 | The U.S. requires 1.25 rotor diameters plus 2 meters of separation between helicopter ground taxiways. |
3.1.32 | The U.S. sets no gradient standards for taxiways. |
3.1.34 | The U.S. requires 1.5 rotor diameters of separation between hover or air taxiways. |
3.1.36 | The U.S. standards for air taxiways and air transit routes are combined as the standards for hover taxiways noted in paragraphs 3.1.23, 3.1.24 and 3.1.33. |
3.1.35 | The U.S. sets no maximum turning angle or minimum radius of turn on hover taxiways. |
3.1.37 | The U.S. criterion for object clearances is 1/3 rotor diameter or 3 meters, whichever is greater. |
3.1.38 | The U.S. standard for helipads (comparable to helicopter stands) is 1.5 times the undercarriage length or width, whichever is greater. |
3.1.39 The U.S. standard for separation between FATO center and the centerline of the runway is 120 meters.

3.2.2 The U.S. does not apply either a performance related or an alternative design standard for elevated heliport facilities.

3.2.5 to 3.2.10 The U.S. does not use safety areas in its heliport design.

3.3 In the U.S., shipboard and relocatable off-shore helicopter “helideck” facilities are under the purview of the U.S. Coast Guard and utilize the International Maritime Organization (IMO) code. Fixed off-shore helideck facilities are under the purview of the Department of Interior based on their document 351DM2. Coastal water helideck facilities are under the purview of the individual affected States.

3.4 Chapter 4 Obstacle Restriction and Removal

4.1.1 The U.S. approach surface starts at the edge of the take--off and landing area.

4.1.2 a) The U.S. approach surface width adjacent to the heliport take--off and landing area is a minimum of 2 rotor diameters.

4.1.2 b) 2) The U.S. precision instrument approach surface flares from a width of 2 rotor diameters to a width of 1,800 meters at the 7,500 meters outer end. The U.S. does not use a note similar to the one that follows 4.1.4, as it does not differentiate between helicopter requirements on the basis of operational performance.

4.1.5 The outer limit of the U.S. transitional surfaces adjacent to the take--off and landing area is 76 meters from the centerline of the VFR approach/departure surfaces. The transitional surface width decreases to zero at a point 1,220 meters from the take--off and landing area. It does not terminate at an inner horizontal surface or at a predetermined height.

4.1.6 The U.S. transitional surfaces have a fixed width, 76 meters less the width of the take--off and landing area, from the approach centerline for visual operations and an outwardly flaring width to 450 meters for precision instrument operations. The U.S. does not use an inner horizontal surface nor terminate the transitional surfaces at a fixed/predetermined height.

4.1.7 b) Since the U.S. includes the safety area in the take--off and landing area, the comparable elevation is at the elevation of the FATO.

4.1.9 through 4.1.20 The U.S. does not use the inner horizontal surface, the conical surface, or take--off climb surface described in these paragraphs or the note following paragraph 4.1.20 for heliport design.

4.1.21 through 4.1.25 The U.S. does not have alternative criteria for floating or fixed--in--place helidecks.

4.2 The U.S. has no requirement for a note similar to the one following the heading “Obstacle limitation requirements.”

4.2.1 The U.S. criteria does not require a take--off climb surface or a conical obstacle limitation surface to establish a precision instrument approach procedure.

4.2.2 The U.S. criteria does not require a take--off climb surface or a conical obstacle limitation surface to establish a non--precision instrument approach procedure.

4.2.3 The U.S. criteria does not require a take--off climb obstacle limitation surface to establish a non--instrument approach procedure.

4.2.4* The U.S. has no requirement for protective surfaces such as an inner horizontal surface or a conical surface.

4.2.5 The U.S. does not have tables for heliport design comparable to the ICAO Tables 4–1 to 4–4.

4.2.6 The U.S. subscribes to the intent of this paragraph to limit object heights in the heliport protective surfaces but uses fewer surfaces with different dimensions for those surfaces.

4.2.7* The U.S. subscribes to the intent of this paragraph but uses different dimensional surfaces.

4.2.8 The U.S. criterion requires that a heliport have at least one approach and departure route and encourages multiple approaches separated by arcs of 90 to 180 degrees.

4.2.9* The U.S. has no requirement that a heliport’s approach surfaces provide 95 percent usability.
4.2.10 Since the U.S. does not differentiate between surface level and elevated heliports, the comments to paragraphs 4.2.1 through 4.2.5 above apply.

4.2.11 The U.S. has no requirement for a take-off climb surface. It does require at least one approach/departure surface and encourages that there be as many approaches as is practical separated by arcs of 90 to 180 degrees.

4.2.12 through 4.2.22 Since the U.S. does not have alternative design criteria for helidecks or shipboard heliports, there are no comparable U.S. protective surface requirements.

<table>
<thead>
<tr>
<th>4.2.10</th>
<th>4.2.11</th>
<th>4.2.12 through 4.2.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since the U.S. does not differentiate between surface level and elevated heliports, the comments to paragraphs 4.2.1 through 4.2.5 above apply.</td>
<td>The U.S. has no requirement for a take-off climb surface. It does require at least one approach/departure surface and encourages that there be as many approaches as is practical separated by arcs of 90 to 180 degrees.</td>
<td>Since the U.S. does not have alternative design criteria for helidecks or shipboard heliports, there are no comparable U.S. protective surface requirements.</td>
</tr>
</tbody>
</table>

Tables 4–1, 4–2, 4–3, 4–4 | The U.S. does not have tables comparable to the ICAO Tables 4–1 to 4–4. |

### Chapter 5 Visual Aids

5.2.1 The U.S. does not have criteria for markings to be used in defining winching areas.

5.2.3.3 The U.S. maximum mass markings are specified in 1,000 pound units rather than tonnes or kilograms.

5.2.4.3 The U.S. criterion requires FATO markers but is not specific on the number or spacing between markers.

5.2.4.4 The U.S. criteria for FATO markers is not dimensionally specific.

5.2.6 The U.S. does not require, or have criteria for, marking an aiming point.

5.2.7.1 The U.S. does not require specific criteria for marking floating or off-shore fixed-in-place helicopter or helideck facilities.

5.2.8 The U.S. does not require marking the touchdown area.

5.2.9 The U.S. does not have criteria for heliport name markings.

5.2.10 The U.S. does not have a requirement to mark helideck obstacle-free sectors.

5.2.12.2 The U.S. criterion places the air taxiway markers along the edges of the routes rather than on the centerline.

5.2.12.3 The U.S. criterion for air taxiway markers does not specify the viewing area or height to width ratio.

5.3.2.3 The U.S. heliport beacon flashes white–green–yellow colors rather than a series of timed flashes.

5.3.2.5* The U.S. criteria is not specific on the light intensity of the flash.

5.3.3.3 The U.S. criterion specifies a 300 meters approach light system configuration. The light bars are spaced at 30 meters intervals. The first two bars of the configuration are single lights, the next two bars are two lights, then two bars with three lights, then two bars with four lights, and finally two bars with five lights.

5.3.3.4 The U.S. approach light system uses aimed PAR=56 lights.

5.3.3.6 The U.S. heliport light system does not contain flashing lights.

5.3.5.2 a) The U.S. requires an odd number of lights, but not less than three lights per side.

5.3.5.2 b) The U.S. requires a minimum of eight lights for a circular FATO and does not specify the distance between lights.

5.3.5.4* The U.S. criteria does not specify light distribution.

5.3.6 The U.S. does not have specific criteria for aiming point lights.

5.3.8 The U.S. does not have standards for winching area lighting.

### Chapter 6 Heliport Services

6.1* The U.S. requirements for rescue and fire fighting services at certificated heliports are found in 14 CFR Part 139. Criteria for other heliports are established by the National Fire Protection Association (NFPA) pamphlets 403 or 418, or in regulations of local fire departments.

*Indicates ICAO Recommended Practice
## ANNEX 15 – Aeronautical Information Services

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASHTAM</td>
<td>The U.S. doesn't have a series of NOTAMs called ASHTAM.</td>
</tr>
<tr>
<td>Danger area</td>
<td>Danger Areas do not exist in the U.S. Equivalent/similar areas are defined, designated &amp; charted as Prohibited, Warning, Alert, and Restricted Areas.”</td>
</tr>
<tr>
<td>Pre-flight Information Bulletin (PIB)</td>
<td>The US does not use the term PIB.</td>
</tr>
<tr>
<td>Prohibited Area</td>
<td>Additional terminology used by the US.</td>
</tr>
<tr>
<td>Restricted Area</td>
<td>Additional terminology used by the US.</td>
</tr>
<tr>
<td>SNOWTAM</td>
<td>The US presents the information via a NOTAM.</td>
</tr>
<tr>
<td>1.1.20</td>
<td>The US does not use the term ASHTAM.</td>
</tr>
<tr>
<td>1.2.2.2</td>
<td>The U.S. utilizes Geoid–03 which is a component of the North American Vertical Datum of 1988 (NAVD 88).</td>
</tr>
</tbody>
</table>

### Chapter 5 Aeronautical Information Products and Services

| 5.2.1 | Currently, the U.S. does not utilize the ICAO format for domestic NOTAMs. The US NOTAMs that are distributed as International NOTAMs are in ICAO format (excluding the L/L). |
| 5.2.5.1. f) | The US does not produce an Aircraft Parking / Docking Chart. |
| 5.2.6 | The U.S. does not use the term SNOWTAM. |

### Chapter 6 Aeronautical Information Updates

| 6.3.2.1 | The U.S. does not routinely issue “trigger NOTAMs” referencing published material when an AIP amendment is issued. |
| 6.3.2.3 | The U.S. does not provide a NOTAM for accidental release of radioactive material, toxic chemicals, or volcanic ash deposition. |
ANNEX 16 – ENVIRONMENTAL PROTECTION

VOLUME I – AIRCRAFT NOISE

Reference: Part 36 of Title 14 of the United States Code of Federal Regulations

Chapter 1

1.7 Each person who applies for a type certificate for an airplane covered by 14 CFR Part 36, irrespective of the date of application for the type certificate, must show compliance with Part 36.

Chapter 2

2.1.1 For type design change applications made after 14 August 1989, if an airplane is a Stage 3 airplane prior to a change in type design, it must remain a Stage 3 airplane after the change in type design regardless of whether Stage 3 compliance was required before the change in type design.

2.3.1 a) Sideline noise is measured along a line 450 meters from and parallel to the extended runway centerline for two- and three-engine aircraft; for four-engine aircraft, the sideline distance is 0.35 NM.

2.4.2 Noise level limits for Stage 2 derivative aircraft depend upon whether the engine by-pass ratio is less than two. If it is, the Stage 2 limits apply. Otherwise, the limits are the Stage 3 limits plus 3 dB or the Stage 2 value, whichever is lower.

2.4.2.2 b) Take-off noise limits for three-engine, Stage 2 derivative airplanes with a by-pass ratio equal to or greater than 2 are 107 EPNdB for maximum weights of 385,000 kg (850,000 lb) or more, reduced by 4 dB per halving of the weight down to 92 EPNdB for maximum weights of 28,700 kg (63,177 lb) or less. Aircraft with a by-pass ratio less than 2 only need meet the Stage 2 limits.

Chapter 3

3.1.1 For type design change applications made after 14 August 1989, if an airplane is a Stage 3 airplane prior to a change in type design, it must remain a Stage 3 airplane after the change in type design regardless of whether Stage 3 compliance was required before the change in type design.

3.3.1 a) 2) The U.S. has no equivalent provision in 14 CFR Part 36.

3.3.2.2 A minimum of two microphones symmetrically positioned about the test flight track must be used to define the maximum sideline noise. This maximum noise may be assumed to occur where the aircraft reaches 305 meters (1,000 feet).

14 CFR Part 36 does not require symmetrical measurements to be made at each and every point for propeller-driven airplane sideline noise determination.

3.6.2.1 c) Under 14 CFR Part 36, during each test take-off, simultaneous measurements should be made at the sideline noise measuring stations on each side of the runway and also at the take-off noise measuring station. If test site conditions make it impractical to simultaneously measure take-off and sideline noise, and if each of the other sideline measurement requirements is met, independent measurements may be made of the sideline noise under simulated flight path techniques. If the reference flight path includes a power cutback before the maximum possible sideline noise level is developed, the reduced sideline noise level, which is the maximum value developed by the simulated flight path technique, must be the certificated sideline noise value.
3.6.2.1 d) 14 CFR Part 36 specifies the day speeds and the acoustic reference speed to be the minimum approved value of $V_2 +10$ kt, or the all-engines operating speed at 35 feet (for turbine-engine powered airplanes) or 50 feet (for reciprocating-engine powered airplanes), whichever speed is greater as determined under the regulations constituting the type certification basis of the airplane. The test must be conducted at the test day speeds $\pm 3$ kt.

3.7.4 If a take-off test series is conducted at weights other than the maximum take-off weight for which noise certification is requested:
   a) at least one take-off test must be at or above that maximum weight;
   b) each take-off test weight must be within $+5$ or $-10$ percent of the maximum weight.

   If an approach test series is conducted at weights other than the maximum landing weight for which certification is requested:
   a) at least one approach test must be conducted at or above that maximum weight;
   b) each test weight must exceed 90 percent of the maximum landing weight.

Total EPNL adjustment for variations in approach flight path from the reference flight path and for any difference between test engine thrust or power and reference engine thrust or power must not exceed 2 EPNdB.

Chapter 5

5.1.1 Applies to all large transport category aircraft (as they do to all subsonic turbojet aircraft regardless of category). Commuter category aircraft, propeller-driven airplanes below 8,640 kg (19,000 lb) are subject to 14 CFR Part 36, Appendix F or to Appendix G, depending upon the date of completion of the noise certification tests.

Chapter 6

6.1.1 Applies to new, all propeller-driven airplane types below 19,000 lb (8,640 kg.) in the normal, commuter, utility, acrobatic, transport, or restricted categories for which the noise certification tests are completed before 22 December 1988.

Chapter 8

General 14 CFR Part 36 (Section 36.1 (h)) defines Stage 1 and Stage 2 noise levels and Stage 1 and Stage 2 helicopters. These definitions parallel those used in 14 CFR Part 36 for turbojets and are used primarily to simplify the acoustical change provisions in Section 36.11.

14 CFR Part 36 (Section 36.805(c)) provides for certain derived versions of helicopters for which there are no civil prototypes to be certificated above the noise level limits.

8.1.1 a) Applicable to new helicopter types for which application for an original type certificate was made on or after 6 March 1988.

8.1.1 b) Applicable only to “acoustical changes” for which application for an amended or supplemental type certificate was made on or after 6 March 1988.

8.4 14 CFR Part 36 Appendix H specifies a slightly different rate of allowable maximum noise levels as a function of helicopter mass. The difference can lead to a difference in the calculated maximum noise limits of 0.1 EPNdB under certain roundoff condition.

8.6.3.1 b) Does not include the $V_{NE}$ speeds.

8.7 14 CFR Part 36 Appendix H does not permit certain negative corrections. Annex 16 has no equivalent provision.

8.7.4 EPNL correction must be less than 2.0 EPNdB for any combination of lateral deviation, height, approach angle and, in the case of flyover, thrust or power.

Corrections to the measured data are required if the tests were conducted below the reference weight.

Corrections to the measured data are required if the tests were conducted at other than reference engine power.

8.7.5 The rotor speed must be maintained within one percent of the normal operating RPM during the take-off procedure.

8.7.8 The helicopter shall fly within $\pm 10^\circ$ from the zenith for approach and take-off, but within $\pm 5^\circ$ from the zenith for horizontal flyover.
### Chapter 10

**General**

Exception from acoustical change rule given for aircraft with flight time prior to 1 January 1955 and land configured aircraft reconfigured with floats or skis.

**10.1.1** Applies to new, amended, or supplemental type certificates for propeller-driven airplanes not exceeding 8,640 kg (19,000 lb) for which noise certification tests have not been completed before 22 December 1988.

**10.4** The maximum noise level is a constant 73 dBA up to 600 kg (1,320 lb). Above that weight, the limit increases at the rate of 1 dBA/75kg (1 dBA/165 lb) up to 85 dBA at 1,500 kg (3,300 lb) after which it is constant up to and including 8,640 kg (19,000 lb).

**10.5.2, second phase, d)** For variable-pitch propellers, the definition of engine power is different in the second segment of the reference path. Maximum continuous installed power instead of maximum power is used.

### Chapter 11

**11.1** 14 CFR Part 36 Appendix J was effective 11 September 1992 and applies to those helicopters for which application for a type certificate was made on or after 6 March 1986.

**11.4** 14 CFR Part 36 Appendix J specifies a slightly different rate of allowable maximum noise levels as a function of helicopter mass. The difference can lead to a difference in the calculated maximum noise limits of 0.1 EPNdB under certain roundoff condition.

**11.6** 14 CFR Part 36 Appendix J prescribes a ±0.15 meter limitation on the allowed vertical deviation about the reference flight path. Annex 16 has no equivalent provision.

### PART V

**General**

No comparable provision exists in U.S. Federal Regulations. Any local airport proprietor may propose noise abatement operating procedures to the FAA which reviews them for safety and appropriateness.

### Appendix 1

**General**

Sections 3, 8, and 9 of Appendix 1 which contain the technical specifications for equipment, measurement and analysis and data correction for Chapter 2 aircraft and their derivatives differ in many important aspects from the corresponding requirements in Appendix 2 which has been updated several times. 14 CFR Part 36 updates have generally paralleled those of Appendix 2 of Annex 16. These updated requirements are applicable in the U.S. to both Stage 2 and Stage 3 aircraft and their derivatives.

**2.2.1** A minimum of two microphones symmetrically positioned about the test flight track must be used to define the maximum sideline noise. This maximum noise may be assumed to occur where the aircraft reaches 305 meters (1,000 feet), except for four-engine, Stage 2 aircraft for which 439 meters (1,440 feet) may be used.

**2.2.2** No obstructions in the cone defined by the axis normal to the ground and the half-angle 80° from the axis.

**2.2.3 c)** Relative humidity and ambient temperature over the sound path between the aircraft and 10 meters above the ground at the noise measuring site is such that the sound attenuation in the 8 kHz one-third octave band is not greater than 12 dB/100 meters and the relative humidity is between 20 and 95 percent. However, if the dew point and dry bulb temperature used for obtaining relative humidity are measured with a device which is accurate to within one-half a degree Celsius, the sound attenuation rate shall not exceed 14 dB/100 meters in the 8 kHz one-third octave band.

**2.2.3 d)** Test site average wind not above 12 kt and average cross-wind component not above 7 kt.

**2.2.4** The aircraft position along the flight path is related to the recorded noise 10 dB downpoints.

**2.2.5** At least one take-off test must be a maximum take-off weight and the test weight must be within +5 or −10 percent of maximum certificated take-off weight.

### Appendix 2

**2.2.1** A minimum of two symmetrically placed microphones must be used to define the maximum sideline noise at the point where the aircraft reaches 305 meters.
### 2.2.2
When a multiple layering calculation is required, the atmosphere between the airplane and the ground shall be divided into layers. These layers are not required to be of equal depth, and the maximum layer depth must be 100 meters.

#### 2.2.2 b)
14 CFR Part 36 specifies that the lower limit of the temperature test window is 36 degrees Fahrenheit (2.2 degrees Celsius). Annex 16 provides 10 degrees Celsius as the lower limit for the temperature test window.

14 CFR Part 36 does not specify that the airport facility used to obtain meteorological condition measurements be within 2,000 meters of the measurement site.

#### 2.2.2 c)
14 CFR Part 36 imposes a limit of 14 dB/100 meters in the 8 kHz one-third octave band when the temperature and dew point are measured with a device which is accurate to within one-half a degree Celsius.

### 2.2.3
14 CFR Part 36 requires that the limitations on the temperature and relative humidity test window must apply over the whole noise propagation path between a point 10 meters above the ground and the helicopter. Annex 16 specifies that the limitations on the temperature and relative humidity test window apply only at a point 10 meters above the ground.

14 CFR Part 36 requires that corrections for sound attenuation must be based on the average of temperature and relative humidity readings at 10 meters and the helicopter. Annex 16 implies that the corrections for sound absorption are based on the temperature and relative humidity measured at 10 meters only.

### 3.2.6
No equivalent requirement.

### 3.4.5
For each detector/integrator the response to a sudden onset or interruption of a constant sinusoidal signal at the respective one-third octave band center frequency must be measured at sampling times 0.5, 1.0, 1.5, and 2.0 seconds after the onset or interruption. The rising responses must be the following amounts before the steady-state level:

- 0.5 seconds: $4.0 \pm 1.0$ dB
- 1.0 seconds: $1.75 \pm 0.75$ dB
- 1.5 seconds: $1.0 \pm 0.5$ dB
- 2.0 seconds: $0.6 \pm 0.5$ dB

#### 3.4.5 (Note 1)
No equivalent provision in 14 CFR Part 36.

### 3.5.2
No equivalent requirement.

### 5.4
14 CFR Part 36 requires that the difference between airspeed and groundspeed shall not exceed 10 kt between the 10 dB down time period.

### 8.4.2
14 CFR Part 36 specifies a value of $-10$ in the adjustment for duration correction. Annex 16 specifies a value of $-7.5$.

### 9.1.2, 9.1.3
14 CFR Part 36 always requires use of the integrated procedure if the corrected take-off or approach noise level is within 1.0 dB of the applicable noise limit.

### Appendix 6

#### 4.4.1
The microphone performance, not its dimensions, is specified. The microphone must be mounted 1.2 meters (4 feet) above ground level. A windscreen must be employed when the wind speed is in excess of 9 km/h (5 kt).

#### 5.2.2 a)
Reference conditions are different. Noise data outside the applicable range must be corrected to 77 degrees F and 70 percent humidity.

#### 5.2.2 c)
There is no equivalent provision in 14 CFR Part 36. Fixed-pitch propeller-driven airplanes have a special provision. If the propeller is fixed-pitch and the test power is not within 5 percent of reference power, a helical tip Mach number correction is required.
The U.S. currently has regulations prohibiting intentional fuel venting from turbojet, turbofan and turboprop aircraft, but we do not now have a regulation preventing the intentional fuel venting from helicopter engines.
ANNEX 17 – SECURITY – SAFEGUARDING INTERNATIONAL CIVIL AVIATION AGAINST ACTS OF UNLAWFUL INTERFERENCE

There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.
## ANNEX 18 – THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.2.2</td>
<td>The U.S. utilizes Geoid–03 which is a component of the North American Vertical Datum of 1988 (NAVD 88).</td>
</tr>
<tr>
<td>1.1 ASHTAM</td>
<td>The U.S. doesn’t have a series of NOTAM called ASHTAM, although notification procedures are written on handling of Volcanic Ash activity.</td>
</tr>
<tr>
<td>1.1 Danger area</td>
<td>“Danger area” is not used in reference to areas within the U.S. or in any of its possessions or territories.</td>
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<tr>
<td>1.1 Maneuvering area</td>
<td>Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.</td>
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<tr>
<td>1.1 Movement area</td>
<td>The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/taxiing, air–taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.</td>
</tr>
<tr>
<td>1.1 Pre–flight Information Bulletin (PIB)</td>
<td>The US does not use the term PIB. However, current NOTAM information is gathered and available through different sources.</td>
</tr>
<tr>
<td>1.1 SNOWTAM</td>
<td>The US presents the information in a different manner via a NOTAM.</td>
</tr>
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</table>

### Chapter 3 Aeronautical Information Management

3.6.1 | Current quality management system applies only to the Aeronautical Informational Services. |

### Chapter 5 Aeronautical Information Products and Services

5.2.2 | The FAA does not use PIBs, but does provide pertinent NOTAM information in plain language form every 28 days in a document called the Notices to Air Missions Publication (NTAP). |

5.2.5.1. f) | The US does not produce an Aircraft Parking / Docking Chart. |

5.3.3.4.1 | The United States does not publish the horizontal extent of obstacles. |

### Chapter 6 Aeronautical Information Updates

6.3.2.1 | The U.S. does not routinely issue “trigger NOTAMs” referencing published material when an AIP amendment is issued. |

6.3.2.3 | The U.S. does not provide a NOTAM for accidental release of radioactive material, toxic chemicals, or volcanic ash deposition. |
### ANNEX 19 – SAFETY MANAGEMENT

<table>
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<th>Chapter 3</th>
<th>State Safety Management Responsibilities</th>
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<tr>
<td>3.3.2.1</td>
<td>U.S. does not currently require the implementation of SMS by approved training organizations that are exposed to safety risks related to aircraft operations during the provision of their services; some operators of aeroplanes or helicopters authorized to conduct international commercial air transport; approved maintenance organizations providing services to operators of aeroplanes or helicopters engaged in international commercial air transport; organizations responsible for the type design or manufacture of aircraft, engines or propellers; and operators of certified aerodromes.</td>
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<tr>
<td>3.3.2.3</td>
<td>The U.S. has not established criteria for international general aviation operators of large or turbojet aeroplanes to implement an SMS.</td>
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</table>
### PART III

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

### PART IV

<p>| 1.2.1 | The airspeeds contained in ENR 1.5 shall be used in U.S. <strong>CONTROLLED AIRSPACE.</strong> |</p>
<table>
<thead>
<tr>
<th>PAN – ABC – DOC 8400</th>
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<tbody>
<tr>
<td>Differences between abbreviations used in U.S. AIP, International NOTAMs Class I and Class II, and Notices to Air Missions Publication and ICAO PANS – ABC are listed in GEN 2.2. For other U.S. listings of abbreviations (contractions) for general use, air traffic control, and National Weather Service (NWS), which differ in some respects, see U.S. publication Contractions Handbook (FAA Order JO 7340.2). In addition, various U.S. publications contain abbreviations of terms used therein, particularly those unique to that publication.</td>
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</table>
5.3 A checklist of NOTAMs currently in force for each international NOTAM classification is issued each month over the Aeronautical Fixed Telecommunications Network (AFTN) to each International NOTAM office which exchanges International NOTAMs with the U.S. International NOTAM Office.

5.4 NOTAM Class I information is exchanged between the U.S. International NOTAM Office and the following International NOTAM Offices.

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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 that 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 Air Missions, and broadcast aviation weather and aeronautical information. In Alaska, designated FSSs also 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 a preflight briefing to international locations with which the U.S. International NOTAM office exchanges information.
1. General

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

2. Obtaining Aeronautical Charts

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

3. Selected Charts and Products Available

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

4. General Description of Each Chart Series

4.1 VFR Navigation Charts

4.1.1 Sectional Aeronautical Charts. Sectional Charts are designed for visual navigation of slow to medium speed aircraft. The topographic information consists of contour lines, shaded relief, drainage patterns, and an extensive selection of visual checkpoints and landmarks used for flight under VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special-use airspace, obstructions, and related data. Scale 1 inch = 6.86nm/1:500,000. 60 x 20 inches folded to 5 x 10 inches. Revised every 56 days. (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. Revised every 56 days. (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 every 56 days.

4.1.4 Grand Canyon VFR Aeronautical Chart. Covers the Grand Canyon National Park area and is designed to promote aviation safety, flight free zones, and facilitate VFR navigation in this popular area. The chart contains aeronautical information for general aviation VFR pilots on one side and commercial VFR air tour operators on the other side. Revised every 56 days.
Sectional and VFR Terminal Area Charts for the Conterminous U.S., Hawaii, Puerto Rico, and Virgin Islands

Sectional and VFR Terminal Area Charts for Alaska
4.1.5 Caribbean VFR Aeronautical Charts. Caribbean 1 and 2 (CAC−1 and CAC−2) are designed for visual navigation to assist familiarization of foreign aeronautical and topographic information. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special-use airspace, obstructions, and related data. The topographic information consists of contour lines, shaded relief, drainage patterns, and a selection of landmarks used for flight under VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. Scale 1 inch = 13.7nm/1:1,000,000. CAC−1 consists of two sides measuring 30” x 60” each. CAC−2 consists of two sides measuring 20” x 60” each. Revised every 56 days. (See FIG GEN 3.2–3.)
4.1.6 Helicopter Route Charts. A three–color chart series which shows current aeronautical information useful to helicopter pilots navigating in areas with high concentrations of helicopter activity. Information depicted includes helicopter routes, four classes of heliports with associated frequency and lighting capabilities, NAVAIDs, and obstructions. In addition, pictorial symbols, roads, and easily identified geographical features are portrayed. Scale 1 inch = 1.71nm/1:125,000. 34 x 30 inches folded to 5 x 10 inches. Revised every 56 days. (See FIG GEN 3.2–4)

FIG GEN 3.2–4
Helicopter Route Charts

4.2 IFR Navigation Charts

4.2.1 IFR En Route Low Altitude Charts (Conterminous U.S. and Alaska). En route low altitude charts provide aeronautical information for navigation under IFR conditions below 18,000 feet MSL. This four–color chart series includes airways; limits of controlled airspace; VHF NAVAIDs with frequency, identification, channel, geographic coordinates; airports with terminal air/ground communications; minimum en route and obstruction clearance altitudes; airway distances; reporting points; special use airspace; and military training routes. Scales vary from 1 inch = 5nm to 1 inch = 20nm. 50 x 20 inches folded to 5 x 10 inches. Charts revised every 56 days. Area charts show congested terminal areas at a large scale. They are included with subscriptions to any conterminous U.S. Set Low (Full set, East or West sets). (See FIG GEN 3.2–5 and FIG GEN 3.2–6.)
4.2.3 U.S. Terminal Procedures Publication (TPP). TPPs are published in 24 loose-leaf or perfect bound volumes covering the conterminous U.S., Puerto Rico and the Virgin Islands. A Change Notice is published at the midpoint between revisions in bound volume format and is available on the internet for free download at the AIS website. (See FIG GEN 3.2–15.) The TPPs include:

4.2.3.1 Instrument Approach Procedure (IAP) Charts. IAP charts portray the aeronautical data that is required to execute instrument approaches to airports. Each chart depicts the IAP, all related navigation data, communications information, and an airport sketch. Each procedure is designated for use with a specific electronic navigational aid, such as ILS, VOR, NDB, RNAV, etc.

4.2.3.2 Instrument Departure Procedure (DP) Charts. DP charts are designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. They furnish pilots’ departure routing clearance information in graphic and textual form.

4.2.3.3 Standard Terminal Arrival (STAR) Charts. STAR charts are designed to expedite ATC arrival procedures and to facilitate transition between en route and instrument approach operations. They depict preplanned IFR ATC arrival procedures in graphic and textual form. Each STAR procedure is presented as a separate chart and may serve either a single airport or more than one airport in a given geographic area.

4.2.3.4 Airport Diagrams. Full page airport diagrams are designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations and provide information for updating geodetic position navigational systems aboard aircraft. Airport diagrams are available for free download at the AIS website.

4.2.4 Alaska Terminal Procedures Publication. This publication contains all terminal flight procedures for civil and military aviation in Alaska. Included are IAP charts, DP charts, STAR charts, airport diagrams, radar minimums, and supplementary support data such as IFR alternate minimums, take–off minimums, rate of descent tables, rate of climb tables and inoperative components tables. Volume is 5–3/8 x 8–1/4 inch top bound. Publication revised every 56 days with provisions for a Terminal Change Notice, as required.

4.3 Planning Charts

4.3.1 U.S. IFR/VFR Low Altitude Planning Chart. This chart is designed for prefight and en route flight planning for IFR/VFR flights. Depiction includes low altitude airways and mileage, NAVAIDs, airports, special use airspace, cities, time zones, major drainage, a directory of airports with their airspace classification, and a mileage table showing great circle distances between major airports. Scale 1 inch = 47nm/ 1:3,400,000. Chart revised annually, and is available either folded or unfolded for wall mounting. (See FIG GEN 3.2–10.)

4.3.2 Gulf of Mexico and Caribbean Planning Chart. This is a VFR planning chart on the reverse side of the Puerto Rico – Virgin Islands VFR Terminal Area Chart. Information shown includes mileage between airports of entry, a selection of special use airspace and a directory of airports with their available services. Scale 1 inch = 85nm/1:6,192,178. 60 x 20 inches folded to 5 x 10 inches. Revised every 56 days. (See FIG GEN 3.2–10.)

4.3.3 Alaska VFR Wall Planning Chart. This chart is designed for VFR prefight planning and chart selection. It includes aeronautical and topographic information of the state of Alaska. The aeronautical information includes public and military airports; radio aids to navigation; and Class B, Class C, TRSA and special–use airspace. The topographic information includes city tint, populated places, principal roads, and shaded relief. Scale 1 inch = 27.4nm/1:2,000,000. The one sided chart is 58.5 x 40.75 inches and is designed for wall mounting. Revised annually. (See FIG GEN 3.2–9.)
4.3.4 **U.S. VFR Wall Planning Chart.** This chart is designed for VFR preflight planning and chart selection. It includes 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. Revised annually. (See FIG GEN 3.2–11)

![U.S. VFR Wall Planning Chart](image)

4.3.5 **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 AIS website. Volumes are side-bound 5–3/8 x 8–1/4 inches. (See FIG GEN 3.2–14.)

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 3.2–12.)
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 3.2–13.)

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 AIS 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.

4.5.2 The Coded Instrument Flight Procedures (CIFP) (ARINC 424 [Ver 13 & 15]). The CIFP is a basic digital dataset, modeled to an international standard, which can be used as a basis to support GPS navigation. Initial data elements included are: Airport and Helicopter Records, VHF and NDB Navigation aids, en route waypoints and airways. Additional data elements will be added in subsequent releases to include: departure procedures, standard terminal arrivals, and GPS/RNAV instrument approach
GEN 3.3 Air Traffic Services

1. Responsible Authority

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

2. Area of Responsibility

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

3. Air Traffic Services

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

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

3.2.1 On all airways.

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

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

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

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

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

3.6 Procedural data and descriptions are found in ENR 1.5.

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

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

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

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

3.11 Pilot Visits to Air Traffic Facilities. Pilots are encouraged to participate in local pilot/air traffic control outreach activities. However, due to security and workload concerns, requests for air traffic facility visits may not always be approved. Therefore, visit requests should be submitted through the air traffic
facility as early as possible. Pilots should contact the facility and advise them of the number of persons in the group, the time and date of the proposed visit, and the primary interest of the group. The air traffic facility will provide further instructions if a request can be approved.

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

4. En Route Procedures

4.1 Air Route Traffic Control Center (ARTCC)

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

4.2 ARTCC Communications

4.2.1 Direct Communications, Controllers and Pilots

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

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

4.2.1.3 Controller Pilot Data Link Communications (CPDLC) is a system that supplements air/ground voice communications. The CPDLC’s principal operating criteria are:

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

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

c) En Route CPDLC Initial Services offer the following services: Altimeter Setting (AS), Transfer of Communications (TOC), Initial Contact (IC), and limited route assignments, including airborne reroutes (ABRR), limited altitude assignments, and emergency messages.

1) Altimeter settings will be uplinked automatically when appropriate after a Monitor TOC. Altimeter settings will also be uplinked automatically when an aircraft receives an uplinked altitude assignment below FL 180. A controller may also manually send an altimeter setting message.

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

2) Initial contact is a safety validation transaction that compares a pilot’s initiated altitude downlink message with an aircraft’s stored altitude in the ATC automation system. When an IC mismatch or Confirm Assigned Altitude (CAA) downlink time-out indicator is displayed in the Full Data Block (FDB) and Aircraft List (ACL), the controller who has track control of the aircraft must use voice communication to verify the assigned altitude of the aircraft, and acknowledge the IC mismatch/time-out indicator.

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

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

5) The CPDLC Message Elements for the Initial Capabilities rollout are contained in TBL GEN 3.3–1 through TBL GEN 3.3–19, CPDLC Message Elements, below.

NOTE – The FAA is not implementing ATN B1; the ATN B1 column in the tables is there for informational purposes only.
NOTE –
ATC will inform pilots that they are in “radar contact” (a) When their aircraft is initially identified in the ATC system; and (b) When radar identification is reestablished after radar service has been terminated or radar contact has been lost. Subsequent to being advised that the controller has established radar contact, this fact will not be repeated to the pilot when handed off to another controller. At times, the aircraft identity will be confirmed by the receiving controller; however, this should not be construed to mean that radar contact has been lost. The identity of transponder-equipped aircraft will be confirmed by asking the pilot to “ident, squawk standby,” or to change codes. Aircraft without transponders will be advised of their position to confirm identity. In this case, the pilot is expected to advise the controller if in disagreement with the position given. If the pilot cannot confirm the accuracy of the position given because of not being tuned to the NAVAID referenced by the controller, the pilot should ask for another radar position relative to the tuned in NAVAID.

6.4.4 Flights in an Oceanic (Non-radar) Environment. Pilots must report over each point used in the flight plan to define the route of flight, even if the point is depicted on aeronautical charts as an “on request” (non-compulsory) reporting point. For aircraft providing automatic position reporting via an Automatic Dependent Surveillance-Contract (ADS-C) logon, pilots should discontinue voice position reports.

6.5 Position Report Items

6.5.1 Position reports should include the following items:

6.5.1.1 Identification.
6.5.1.2 Position.
6.5.1.3 Time.
6.5.1.4 Altitude or flight level (Include actual altitude or flight level when operating on a clearance specifying “VFR–on–top.”).
6.5.1.5 Type of flight plan (not required in IFR position reports made directly to ARTCCs or approach control).
6.5.1.6 ETA and name of next reporting point.
6.5.1.7 The name only of the next succeeding reporting point along the route of flight.

6.5.1.8 Pertinent remarks.

7. Additional Reports

7.1 The following reports should be made to ATC or FSS facilities without a specific request:

7.1.1 At all times, report:

7.1.1.1 When vacating any previously assigned altitude/flight level for a newly assigned altitude/flight level.
7.1.1.2 When an altitude change will be made if operating on a clearance specifying “VFR–on–top.”
7.1.1.3 When unable to climb/descend at a rate of at least 500 feet per minute.
7.1.1.4 When approach has been missed. (Request clearance for specific action; i.e., to alternative airport, another approach, etc.).
7.1.1.5 Change in the average true airspeed (at cruising altitude) when it varies by 5 percent or 10 knots (whichever is greater) from that filed in the flight plan.
7.1.1.6 The time and altitude/flight level reaching a holding fix or point to which cleared.
7.1.1.7 When leaving any assigned holding fix or point.

NOTE – The reports in subparagraphs 7.1.1.6 and 7.1.1.7 may be omitted by pilots of aircraft involved in instrument training at military area facilities when radar service is being provided.
7.1.1.8 Any loss, in controlled airspace, of VOR, TACAN, ADF, low frequency navigation receiver capability, GPS anomalies while using installed IFR–certified GPS/GNSS receivers, complete or partial loss of ILS receiver capability or impairment of air/ground communications capability. Reports should include aircraft identification, equipment affected, degree to which the capability to operate under IFR in the ATC system is impaired, and the nature and extent of assistance desired from ATC.

NOTE –
When reporting GPS anomalies, include the location and altitude of the anomaly. Be specific when describing the location and include duration of the anomaly if necessary.
7.1.1.9 Any information relating to the safety of flight.

NOTE—
Other equipment installed in an aircraft may effectively impair safety and/or the ability to operate under IFR. If such equipment; e.g., airborne weather radar, malfunctions and in the pilot’s judgment either safety or IFR capabilities are affected, reports should be made as above.

7.2 When not in radar contact, report:

7.2.1 When leaving the final approach fix inbound on final approach (nonprecision approach) or when leaving the outer marker or fix used in lieu of the outer marker inbound on final approach (precision approach); or

7.2.2 A corrected estimate at anytime it becomes apparent that an estimate as previously submitted is in error in excess of 2 minutes. For flights in the North Atlantic (NAT), a revised estimate is required if the error is 3 minutes or more.

7.3 Pilots encountering weather conditions which have not been forecast, or hazardous conditions which have been forecast, are expected to forward a report of such weather to ATC.

8. Quota Flow Control

8.1 Quota Flow Control is designed to balance the ATC system demand with system capacity.

8.2 ARTCCs will hold the optimum number of aircraft that their primary and secondary holding fixes will safely accommodate without imposing undue limitations on the control of other traffic operating within the ARTCC’s airspace. This is based on the user’s requirement to continue operating to a terminal regardless of the arrival rate at that terminal. When staffing, equipment, or severe weather will inhibit the number of aircraft the arrival ARTCC may safely hold, a reduction may be necessary.

8.3 When an ARTCC is holding the optimum number of aircraft, the adjacent ARTCCs will be issued quotas concerning aircraft which can be cleared into the impacted ARTCC’s airspace. When the adjacent center’s demand exceeds the quota, aircraft will be held in the adjacent ARTCC’s airspace until they can be permitted to proceed.

8.4 The size of the hourly quota will be based initially on the projected arrival rate and thereafter on the actual landing and diversion totals. Once quotas have been imposed, departures in the arrival and adjacent ARTCC’s area to the affected airport may be assigned ground delay, if necessary, to limit airborne holding to ATC capacity. However, when a forecast of improved arrival rate appears reliable, in the opinion of the arrival ARTCC, additional above-quota flights may be approved based on the expectation that by the time these additional above-quota flights become an operational factor in the affected area, the system will be able to absorb them without undue difficulty.

8.5 Long distance flights, which originate beyond the adjacent ARTCC area, will normally be permitted to proceed to a point just short of the arrival ARTCC boundary where a delay, at least equal to the delays (ground/airborne) being encountered, will be assigned.

8.6 ARTCCs imposing ground delays make efforts to advise the users when lengthy delays are a prospect to preclude unnecessary boarding and subsequent unloading prior to actual takeoff due to lengthy unanticipated ground delays. Users should advise the ARTCC through FSS or operation offices when there is any significant change in the proposed departure time so as to permit more efficient flow control planning. Airborne aircraft holding in the adjacent ARTCC airspace generally receive more benefit than ground delayed aircraft when increases unexpectedly develop in the quota number because the reaction time is less. For this reason, whenever operationally feasible, adjacent ARTCCs may offer airborne delay within their areas instead of ground delay.

8.7 Flights originating beyond the adjacent ARTCC areas may not have sufficient fuel to absorb the total anticipated delay while airborne. Accordingly, the concerned adjacent ARTCC may permit these flights to land in its area while retaining previously accumulated delay for the purpose of quota priority. When the amount of air traffic backlogging in an adjacent ARTCC area is approaching the saturation point, additional en route traffic will be subject to prior approval.

8.8 Generally, movement of arrival aircraft into the impacted airport terminal area will be made on the basis that those flights with the most accumulated delay, either ground, airborne, or a combination of 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:

   a) All radio–equipped aircraft transmit/receive on a common frequency identified for the purpose of airport advisories; and

   b) Pilots use the correct airport name, as identified in appropriate aeronautical publications, to reduce the risk of confusion when communicating their position, intentions, and/or exchanging traffic information.

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

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

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

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

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

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

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

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

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

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

EXAMPLE –
“Information Alpha received.”

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

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

9.2.5 Information Provided by Aeronautical Advisory Stations (UNICOM)

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

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

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

9.2.6 Self-Announce Position and/or Intentions

9.2.6.1 General. Self-announce is a procedure whereby pilots broadcast their position or intended flight activity or ground operation on the designated
CTAF. This procedure is used primarily at airports which do not have an FSS on the airport. The self-announce procedure should also be used if a pilot is unable to communicate with the FSS on the designated CTAF. Pilots stating, “Traffic in the area, please advise” is not a recognized Self–Announce Position and/or Intention phrase and should not be used under any condition.

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

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

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

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

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

c) Upon completion or termination of the approach; and

d) Upon executing the missed approach procedure.

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

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

a) Inbound

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

b) Outbound

EXAMPLE –
Strawn traffic, Queen Air Seven One Five Five Bravo (location on airport) taxiing to runway two six Strawn.
Strawn traffic, Queen Air Seven One Five Five Bravo departing runway two six. “Departing the pattern to the (direction), climbing to (altitude) Strawn.”

c) Practice Instrument Approach

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

9.2.7 UNICOM Communication Procedures

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

a) Select the correct UNICOM frequency.

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

c) Speak slowly and distinctly.

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

e) Report on downwind, base and final approach.

f) Report leaving the runway.

9.2.7.2 Recommended UNICOM Phraseologies:

a) Inbound
PHRASEOLOGY—
FREDERICK UNICOM CESSNA EIGHT ZERO ONE TANGO FOXTROT 10 MILES SOUTHEAST DESCENDING THROUGH (altitude) LANDING FREDERICK, REQUEST WIND AND RUNWAY INFORMATION FREDERICK.

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

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

b) Outbound

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

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

9.3 IFR Approaches/Ground Vehicle Operations

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

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

9.3.3 Radio Control of Airport Lighting Systems. Whenever possible, the CTAF will be used to control airport lighting systems at airports without operating control towers. This eliminates the need for pilots to change frequencies to turn the lights on and allows a continuous listening watch on a single frequency. The CTAF is published on the instrument approach chart and in other appropriate aeronautical information publications.
## Summary of Recommended Communication Procedures

<table>
<thead>
<tr>
<th>Facility at Airport</th>
<th>Frequency Use</th>
<th>Outbound</th>
<th>Inbound</th>
<th>Practice Instrument Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. UNICOM (No Tower or FSS)</td>
<td>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.</td>
<td>Before taxiing and before taxiing onto the runway for departure.</td>
<td>10 miles out; entering downwind, base, and final; leaving the runway.</td>
<td></td>
</tr>
<tr>
<td>2. No Tower, FSS, or UNICOM</td>
<td>Self-announce on MULTICOM frequency 122.9.</td>
<td>Before taxiing and before taxiing onto the runway for departure.</td>
<td>10 miles out; entering downwind, base, and final; leaving the runway.</td>
<td>Departing final approach fix (name) or on final approach segment inbound.</td>
</tr>
<tr>
<td>3. No Tower in operation, FSS open (Alaska only)</td>
<td>Communicate with FSS on CTAF frequency.</td>
<td>Before taxiing and before taxiing onto the runway for departure.</td>
<td>10 miles out; entering downwind, base, and final; leaving the runway.</td>
<td>Approach completed/terminated.</td>
</tr>
<tr>
<td>4. FSS closed (No Tower)</td>
<td>Self-announce on CTAF.</td>
<td>Before taxiing and before taxiing onto the runway for departure.</td>
<td>10 miles out; entering downwind, base, and final; leaving the runway.</td>
<td></td>
</tr>
<tr>
<td>5. Tower or FSS not in operation</td>
<td>Self-announce on CTAF.</td>
<td>Before taxiing and before taxiing onto the runway for departure.</td>
<td>10 miles out; entering downwind, base, and final; leaving the runway.</td>
<td></td>
</tr>
<tr>
<td>6. Designated CTAF Area (Alaska Only)</td>
<td>Self-announce on CTAF designated on chart or Chart Supplement Alaska.</td>
<td>Before taxiing and before taxiing onto the runway for departure until leaving designated area.</td>
<td>When entering designated CTAF area.</td>
<td></td>
</tr>
</tbody>
</table>
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: KDCAYAYX
Commercial Telegraphic Address:
ACIV AIR 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 The FAA publishes Standard Service Volumes (SSVs) for most NAVAIDs. The SSV is a three–dimensional volume within which the FAA ensures that a signal can be received with adequate signal strength and course quality, and is free from interference from other NAVAIDs on similar frequencies (e.g., co–channel or adjacent–channel interference). However, the SSV signal protection does not include potential blockage from terrain or obstructions. The SSV is principally intended for off–route navigation, such as proceeding direct to or from a VOR when not on a published instrument procedure or route. Navigation on published instrument procedures (e.g., approaches or departures) or routes (e.g., Victor routes) may use NAVAIDs outside of the SSV, when Extended Service Volume (ESV) is approved, since adequate signal strength, course quality, and freedom from interference are verified by the FAA prior to the publishing of the instrument procedure or route.
NOTE—
A conical area directly above the NAVAID is generally not usable for navigation.

3.1.4.2 A NAVAID will have service volume restrictions if it does not conform to signal strength and course quality standards throughout the published SSV. Service volume restrictions are first published in Notices to Air Missions (NOTAMs) and then with the alphabetical listing of the NAVAIDs in the Chart Supplement. Service volume restrictions do not generally apply to published instrument procedures or routes unless published in NOTAMs for the affected instrument procedure or route.

3.1.4.3 VOR/DME/TACAN Standard Service Volumes (SSV).

a) The three original SSVs are shown in FIG GEN 3.4–1 and are designated with three classes of NAVAIDs: Terminal (T), Low (L), and High (H). The usable distance of the NAVAID depends on the altitude Above the Transmitter Height (ATH) for each class. The lower edge of the usable distance when below 1,000 feet ATH is shown in FIG GEN 3.4–2 for Terminal NAVAIDs and in FIG GEN 3.4–3 for Low and High NAVAIDs.

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**FIG GEN 3.4-1**

*Original Standard Service Volumes*

![Diagram showing standard service volumes for VOR/DME/TACAN with different zones and their corresponding altitudes and distances.](image-url)
NOTES:

1. In the past, NAVAIDs at one location typically all had the same SSV. For example, a VORTAC typically had a High (H) SSV for the VOR, the TACAN azimuth, and the TACAN DME, or a Low (L) or Terminal (T) SSV for all three. A VOR/DME typically had a High (H), Low (L), or Terminal (T) for both the VOR and the DME. A common SSV may no longer be the case at all locations. A VOR/DME, for example, could have an SSV of VL for the VOR and DH for the DME, or other combinations.

2. The TACAN azimuth will only be classified as T, L, or H.

c) TBL GEN 3.4–1 is a tabular summary of the VOR, DME, and TACAN NAVAID SSVs, not including altitudes below 1,000 feet ATH for VOR and TACAN Azimuth, and not including ranges for altitudes below 12,900 feet for TACAN and DME.
VOR/DME/TACAN Standard Service Volumes

<table>
<thead>
<tr>
<th>SSV Designator</th>
<th>Altitude and Range Boundaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>T (Terminal)</td>
<td>From 1,000 feet ATH up to and including 12,000 feet ATH at radial distances out to 25 NM.</td>
</tr>
<tr>
<td>L (Low Altitude)</td>
<td>From 1,000 feet ATH up to and including 18,000 feet ATH at radial distances out to 40 NM.</td>
</tr>
<tr>
<td>H (High Altitude)</td>
<td>From 1,000 feet ATH up to and including 14,500 feet ATH at radial distances out to 40 NM. From 14,500 ATH up to and including 60,000 feet at radial distances out to 100 NM. From 18,000 feet ATH up to and including 45,000 feet ATH at radial distances out to 130 NM.</td>
</tr>
<tr>
<td>VL (VOR Low)</td>
<td>From 1,000 feet ATH up to but not including 5,000 feet ATH at radial distances out to 40 NM. From 5,000 feet ATH up to but not including 18,000 feet ATH at radial distances out to 70 NM.</td>
</tr>
<tr>
<td>VH (VOR High)</td>
<td>From 1,000 feet ATH up to but not including 5,000 feet ATH at radial distances out to 40 NM. From 5,000 feet ATH up to but not including 14,500 feet ATH at radial distances out to 70 NM. From 14,500 ATH up to and including 60,000 feet at radial distances out to 100 NM. From 18,000 feet ATH up to and including 45,000 feet ATH at radial distances out to 130 NM.</td>
</tr>
<tr>
<td>DL (DME Low)</td>
<td>For altitudes up to 12,900 feet ATH at a radial distance corresponding to the LOS to the NAVAID. From 12,900 feet ATH up to but not including 18,000 feet ATH at radial distances out to 130 NM.</td>
</tr>
<tr>
<td>DH (DME High)</td>
<td>For altitudes up to 12,900 feet ATH at a radial distance corresponding to the LOS to the NAVAID. From 12,900 feet ATH up to and including 60,000 feet at radial distances out to 100 NM. From 12,900 feet ATH up to and including 45,000 feet ATH at radial distances out to 130 NM.</td>
</tr>
</tbody>
</table>

3.1.4.4 Nondirectional Radio Beacon (NDB) SSVs. NDBs are classified according to their intended use. The ranges of NDB service volumes are shown in TBL GEN 3.4–2. The distance (radius) is the same at all altitudes for each class.

### TBL GEN 3.4–2

NDB Service Volumes

<table>
<thead>
<tr>
<th>Class</th>
<th>Distance (Radius) (NM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compass Locator</td>
<td>15</td>
</tr>
<tr>
<td>MH</td>
<td>25</td>
</tr>
<tr>
<td>H</td>
<td>50*</td>
</tr>
<tr>
<td>HH</td>
<td>75</td>
</tr>
</tbody>
</table>

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

3.1.5 NAVAIDs with Voice

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

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

3.2 Mobile Service
5. Communications for VFR Flights

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

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

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

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

6. Over-water Flights Radio Procedure

6.1 Pilots should remember that there is a need to continuously guard the VHF emergency frequency 121.5 MHz when on long over-water flights, except when communications on other VHF channels, 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 “Radio” are operated by Collins Aerospace, Incorporated, (formerly ARINC). Contact the Aviation Voice Services Support Section at IMS–Voice–Svcs@Collins.com. (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, Cambridge Bay radio can provide Anchorage and Fairbanks surface observations and terminal forecasts to flight crews on request.

### TBL GEN 3.4-6

<table>
<thead>
<tr>
<th>Station and Operating Agency</th>
<th>Radio Call</th>
<th>Transmitting Frequencies</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>HONOLULU (FAA)</td>
<td>Honolulu Radio</td>
<td>122.6 122.2 #121.5 MHz</td>
<td>#Emergency. Frequency 122.1 also available for receiving only.</td>
</tr>
<tr>
<td>MIAMI (FAA)</td>
<td>Miami Radio</td>
<td>126.7 118.4 126.9 122.2 122.4 122.75 123.65 127.9 MHz</td>
<td>Local and Short Range.</td>
</tr>
<tr>
<td>NEW YORK (FAA)</td>
<td>New York Radio (Volmet)</td>
<td>3485* 6604 10051 13270* kHz</td>
<td>*3485 Volmet broadcasts from 1 hour after sunset to 1 hour before sunrise.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*13270 Volmet broadcasts from 1 hour before sunrise to 1 hour after sunset.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcasts at H +00–05; Aerodrome Forecasts, Detroit, Chicago, Cleveland. Hourly Reports, Detroit, Chicago, Cleveland, Niagara Falls, Milwaukee, Indianapolis.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcasts at H +30–35; Aerodrome Forecasts, Niagara Falls, Milwaukee, Indianapolis. Hourly Reports Detroit, Chicago, Cleveland, Niagara Falls, Milwaukee, Indianapolis.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Station and Operating Agency</td>
<td>Radio Call</td>
<td>Transmitting Frequencies</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------</td>
<td>--------------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>NEW YORK (RADIO)</strong></td>
<td>New York</td>
<td>3016 5598 8906 13306 17946 21964 kHz</td>
<td>North Atlantic Family A Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2962 6628 8825 11309 13354 17952 kHz</td>
<td>North Atlantic Family E Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2887 3455 5550 6577 8846 11396 kHz</td>
<td>Caribbean Family A Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5520 6586 8918 11330 13297 17907 kHz</td>
<td>Caribbean Family B Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3494 6640 8933 11342 13330 17925 kHz</td>
<td>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. <strong>Note:</strong> New York RADIO can also provide HF communications over South America on these LDOC frequencies through their remote site located in Santa Cruz, Bolivia.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>129.90 MHz</td>
<td>Extended range VHF. Coverage area includes Canadian Maritime Provinces, and oceanic routes to the Caribbean, from Boston, New York and Washington areas to approximately 250 nautical miles from the east coast.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130.7 MHz</td>
<td>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. <strong>Note:</strong> New York RADIO also provides VHF communications over the Northern two−thirds of Mexico on 130.7 MHz for 14 CFR Section 121.99 compliance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>436623</td>
<td>Aircraft operating within the New York Oceanic FIR.</td>
</tr>
<tr>
<td><strong>SAN FRANCISCO (RADIO)</strong></td>
<td>San Francisco</td>
<td>3413 3452 5574 5667 6673 8843 10057 11330 13354 kHz</td>
<td>Central East Pacific One Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2869 5547 11282 13288 21964 kHz</td>
<td>Central East Pacific Two Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2998 4666 6532 8903 11384 13300 17904 21985 kHz</td>
<td>Central West Pacific Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3467 5643 8867 13261 17904 kHz</td>
<td>South Pacific Network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2932 5628 6655 8915 8951 10048 11330 13273 13339 17946 21925 kHz</td>
<td>North Pacific Network.</td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th>TBL GEN 34-7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>New York</td>
</tr>
<tr>
<td>San Francisco</td>
</tr>
</tbody>
</table>

### 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:

<table>
<thead>
<tr>
<th>Area</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Atlantic</td>
<td>123.45 M Hz</td>
</tr>
<tr>
<td>Caribbean</td>
<td>123.45 M Hz</td>
</tr>
<tr>
<td>Pacific</td>
<td>123.45 M Hz</td>
</tr>
</tbody>
</table>

### 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 responsibil-
ity 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 circum-
stances, 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 – 13,000 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, New York Radio, or San Francisco Radio.

14.2 If communications are established with an FSS, New York Radio or San Francisco Radio, 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— New York Radio and San Francisco Radio are operated by Collins Aerospace, Incorporated (formerly ARINC) under contract with the FAA for communications services. These Radio facilities have 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:
A 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.
Airstrips listed below are designated as international flight documentation sites.

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

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

3.8.1 Flight Service is one of the primary sources for obtaining preflight briefings and to file flight plans by phone or the Internet. Flight Service Specialists are qualified and certificated as Pilot Weather Briefers by the FAA. They are not authorized to make original forecasts, but are authorized to translate and interpret available forecasts and reports directly into terms describing the weather conditions which you can expect along your flight route and at your destination. Prior to every flight, pilots should gather all information vital to the nature of the flight. Pilots can receive a regulatory compliant briefing without contacting Flight Service. Pilots are encouraged to use automated resources and review AC 91−92, Pilot’s Guide to a Preflight Briefing, for more information. Pilots who prefer to contact Flight Service are encouraged to conduct a self−brief prior to calling. Conducting a self−brief before contacting Flight Service provides familiarity of meteorological and aeronautical conditions applicable to the route of flight and promotes a better understanding of weather information.

Three basic types of preflight briefings (Standard, Abbreviated, and Outlook) are available to serve the pilot’s specific needs. Pilots should specify to the briefer the type of briefing they want, along with their appropriate background information. This will enable the briefer to tailor the information to the pilot’s intended flight. The following paragraphs describe the types of briefings available and the information provided in each briefing.

3.8.2 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 online resources. 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.

3.8.2.1 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.

3.8.2.2 VFR Flight Not Recommended. When VFR flight is proposed and sky conditions or visibility are present or forecast, surface or aloft, that, in the breifer’s judgment, would make flight under VFR doubtful, the breifer 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.

3.8.2.3 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 breifer believes it will help to describe conditions more clearly.

3.8.2.4 Current Conditions. Reported weather conditions applicable to the flight will be summarized from all available sources; e.g., METARs, PIREPs, R A R E P s. This element may be omitted if the proposed time of departure is beyond two hours, unless the information is specifically requested by the pilot. For more detailed information on PIREPS, users can refer to the current version of AC 00–45, Aviation Weather Services.

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

3.8.2.6 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.

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

3.8.2.8 Notices to Air Missions (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 (NV G).

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 3.8.2.10.

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

NOTE – For information on SFRAs, see ENR 5, Navigation Warnings, Paragraph 2.4.2.

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 breifer believes it is logical to do so.

2. Airway NOTAMs, procedural NOTAMs, and NOTAMs that are general in nature and not tied to a specific airport/facility (for example, flight advisories and restrictions, open duration special security instructions, and special flight rules areas) are briefed solely by pilot request. NOTAMs, graphic notices, and other information published in the Domestic Notices and International Notices are not included in pilot briefings unless the pilot specifically requests a review of these notices. For complete flight information, pilots are urged to review the Domestic Notices and International Notices found in the External Links section of the Federal NOTAM System (FNS) NOTAM Search or Air Traffic Plans and Publications website and the Chart Supplement U.S. in addition to obtaining a briefing.

3.8.2.9 Air Traffic Control (ATC) Delays. Any known ATC delays and flow control advisories which might affect the proposed flight.
5. Inflight Weather Advisory Broadcasts

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

**EXAMPLE**
1. Attention all aircraft, SIGMET Delta Three, from Myton to Tuba City to Milford, severe turbulence and severe clear icing below one zero thousand feet. Expected to continue beyond zero three zero zero zulu.
2. Attention all aircraft, Convective SIGMET Two Seven Eastern. From the vicinity of Elmira to Phillipsburg. Scattered embedded thunderstorms moving east at one zero knots. A few intense level five cells, maximum tops four five zero.
3. Attention all aircraft, Kansas City Center weather advisory one zero three. Numerous reports of moderate to severe icing from eight to 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**
Terminal control facilities have the option to limit hazardous weather information broadcast as follows: Tower cab and approach control positions may opt to broadcast hazardous weather information alerts only when any part of the area described is within 50 miles of the airspace under their jurisdiction.

**REFERENCE**
FAA Order JO 7110.65, Para 2–6–6, Hazardous Inflight Weather Advisory.

6. Flight Information Services (FIS)

**6.1 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.

**6.1.1 Data link Service Providers (DSPs).** DSPs 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. A DSP may provide a free of charge or a for–fee service that permits end users to uplink and downlink AI/MET and other information. The following are examples of DSPs:

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

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

**6.1.2.1 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.

**6.1.2.2 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.

6.1.2.3 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.

6.1.3 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.

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

6.1.4.1 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.

6.1.4.2 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.

6.1.4.3 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.

6.1.4.4 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 decision-making 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.

6.1.4.5 DSPs 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.

6.1.4.6 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.

6.1.4.7 FIS supports better pilot decision–making 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.

6.1.4.8 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) TBL GEN 3.5–2 lists the 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 Air Missions (NOTAM) products can be found in Chapters ENR 1 and ENR 5 of this manual.

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

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

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

e) Where applicable, FIS–B products include a look–ahead range expressed in nautical miles (NM) for three service domains: Airport Surface; Terminal Airspace; and Enroute/Gulf–of–M exico (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, or by sending an email to the ADS–B help desk at adsb@faa.gov. Reports should include:

1) Condition observed;
2) Date and time of observation;
3) Altitude and location of observation;
4) Type and call sign of the aircraft; and
5) Type and software version of avionics system.


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.

6.2.1 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:

6.2.1.1 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.

6.2.1.2 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. 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.
24.6.1.3 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.

24.6.1.4 Low Level Wind Shear Alert System (LLWAS)

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

b) The LLWAS was fielded in 1988 at 110 airports across the nation. Many of these systems have been replaced by new Terminal Doppler Weather Radar (TDWR) and Weather Systems Processor (WSP) technology. While all legacy LLWAS systems will eventually be phased out, 39 airports will be upgraded to LLWAS–NE (Network Expansion) system. The new LLWAS–NE systems not only provide the controller with wind shear warnings and alerts, including wind shear/microburst detection at the airport wind sensor location, but also provide the location of the hazards relative to the airport runway(s). It also has 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.
24.6.1.5 Terminal Doppler Weather Radar (TDWR)

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

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

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

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

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

4) It DOES NOT detect turbulence.

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

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

24.6.1.6 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 installed at 34 airports across the nation, substantially increasing the safety of flying.

24.6.1.7 Operational Aspects of LLWAS, TDWR, and WSP

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

a) MICROBURST ALERTS

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

27A MBA 35K – 2MF 250 20

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

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

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

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

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

b) WIND SHEAR ALERTS

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

27A WSA 20K – 3MF 200 15

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

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

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

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

NOTE –
Threshold wind is at pilot’s request or as deemed appropriate by the controller.
Microburst Alert

MICROBURST ALERT

27A MBA 35K- 2MF 250 20
### Key to Aerodrome Forecast (TAF) and Aviation Routine Weather Report (METAR) (Back)

In **METAR**, Re**Mark** 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

<table>
<thead>
<tr>
<th>FM091930</th>
<th>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</th>
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</thead>
<tbody>
<tr>
<td>TEMPO 0920/0922</td>
<td>TEMPOrary: changes expected for &lt;1 hour and in total, &lt; half of the period between the 2-digit date and 2-digit hour beginning, and 2-digit date and 2-digit hour ending time</td>
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<tr>
<td>PROB30 1004/1007</td>
<td>PROBability and 2-digit percent (30 or 40): probable condition in the period between the 2-digit date &amp; 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time</td>
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<tr>
<td>BECMG 1013/1015</td>
<td>BECoMinG: change expected in the period between the 2-digit date and 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time</td>
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</table>

**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**

<table>
<thead>
<tr>
<th>“-” = Light</th>
<th>No sign = Moderate</th>
<th>“+” = Heavy</th>
</tr>
</thead>
<tbody>
<tr>
<td>“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.</td>
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</tr>
</tbody>
</table>

**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 |

**Obscurcation**

| 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.
30. Meteorological Broadcasts (ATIS, VHF and LF)

30.1 Automatic Terminal Information Service (ATIS) Broadcasts

30.1.1 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.

30.2 Navigational Aids Providing Broadcast Services

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

**TBL GEN 3.5–13**

**Meteorological Broadcasts (VOLMET)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Call Sign</th>
<th>Frequency</th>
<th>Broadcast</th>
<th>Form</th>
<th>Contents</th>
<th>Emission</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>New York</td>
<td>3485, 6604, 10051</td>
<td>H00–05</td>
<td>Aerodrome</td>
<td>KDTW Detroit</td>
<td>Voice</td>
<td>Plain language English</td>
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<td></td>
<td>Radio</td>
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<td>Forecasts</td>
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<td>KPIT Pittsburgh</td>
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<td>H05–10</td>
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All stations operate on A3 emission H24.

All broadcasts are made 24 hours daily, seven days a week.
**Key to Decode an ASOS/AWOS (METAR) Observation (Front)**

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<th>TYPE OF REPORT</th>
<th>METAR: hourly (scheduled report); SPECI: special (unscheduled) report.</th>
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<td>STATION IDENTIFIER</td>
<td>Four alphabetic characters; ICAO location identifiers.</td>
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<tr>
<td>DATE/TIME</td>
<td>All dates and times in UTC using a 24-hour clock; two-digit date and four-digit time; always appended with Z to indicate UTC.</td>
<td>121755Z</td>
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<tr>
<td>REPORT MODIFIER</td>
<td>Fully automated report, no human intervention; removed when observer signed-on.</td>
<td>AUTO</td>
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<tr>
<td>WIND DIRECTION AND SPEED</td>
<td>Direction in tens of degrees from true north (first three digits); next two digits: speed in whole knots; as needed, Gusting (character) followed by maximum observed speed; always appended with KT to indicate knots; 0000KT for calm; if direction varies by 60° or more a Variable wind direction group is reported.</td>
<td>21016G24KT 108V240</td>
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<td>VISIBILITY</td>
<td>Prevailing visibility in statute miles and fractions (space between whole miles and fractions); always appended with SM to indicate statute miles.</td>
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<tr>
<td>RUNWAY VISUAL RANGE</td>
<td>10-minute RVR value in hundreds of feet; reported if prevailing visibility is ≤ one mile or RVR ≤6000 feet; always appended with FT to indicate feet; value prefixed with M or P to indicate value is lower or higher than the reportable RVR value.</td>
<td>R11/P6000FT</td>
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<tr>
<td>WEATHER PHENOMENA</td>
<td>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; &lt;1/4 inch); FZRA (intensity; freezing rain); VA (volcanic ash).</td>
<td>-RA BR</td>
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<tr>
<td>SKY CONDITION</td>
<td>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 (V) followed by height for indefinite ceiling.</td>
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<td>TEMPERATURE/DEW POINT</td>
<td>Each is reported in whole degrees Celsius using two digits; values are separated by a solidus; sub-zero values are prefixed with an M (minus).</td>
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<td>ALTIMETER</td>
<td>Altimeter always prefixed with an A indicating inches of mercury; reported using four digits: tens, units, tenths, and hundredths.</td>
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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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ENR 0.5 List of Hand Amendments to the AIP – Not applicable
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/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/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 JO 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. Pilots are reminded that on composite VFR to IFR flight plan, or on an IFR clearance, while flying unpublished departures via RNAV into uncontrolled airspace, the PIC is responsible for terrain and obstruction clearance until reaching the MEA/MIA/MVA/OROCA.

NOTE – OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.

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

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

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

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

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

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

**NOTE**—

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

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

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

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

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

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

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

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

1. Advise the pilot to “resume normal speed.” Normal speed is used to terminate ATC assigned speed adjustments on segments where no published speed restrictions apply. It does not cancel published restrictions on upcoming procedures. This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.
EXAMPLE –
(An aircraft is flying a SID with no published speed restrictions. ATC issues a speed adjustment and instructs the aircraft where the adjustment ends): “Maintain two two zero knots until BALTR then resume normal speed.”

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CAUTION –
When descending on a STAR, pilots should not speed up excessively beyond the previously issued speed. Otherwise, adequate spacing between aircraft descending on the STAR that was established by ATC with the previous restriction may be lost.
33.8 Approach clearances supersede any prior speed adjustment assignments, and pilots are expected to make their own speed adjustments as necessary to complete the approach. However, under certain circumstances, it may be necessary for ATC to issue further speed adjustments after approach clearance is issued to maintain separation between successive arrivals. Under such circumstances, previously issued speed adjustments will be restated if that speed is to be maintained or additional speed adjustments are requested. Speed adjustments should not be assigned inside the final approach fix on final or a point 5 miles from the runway, whichever is closer to the runway.

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

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

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

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

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

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

34. Runway Separation

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

35. Visual Separation

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

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

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

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

35.2 A pilot’s acceptance of instructions to follow another aircraft or provide visual separation from it is an acknowledgment that the pilot will maneuver the
aircraft as necessary to avoid the other aircraft or to maintain in–trail separation. In operations conducted behind heavy aircraft, or a small aircraft behind a B 757 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.

37.1.2.1 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 Limitations

37.1.2 Limitations

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

**FIG ENR 1.1–25**

**Limitations to Radar Service**

The nearby target absorbs and scatters so much of the outgoing and returning energy that the radar does not detect the distant target.

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

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

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

3) Screened by high terrain features.

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

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

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

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

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

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

37.2 Air Traffic Control Radar Beacon System (ATCRBS)

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

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

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

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

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

37.2.2.1 Reinforcement of radar targets.

37.2.2.2 Rapid target identification.

37.2.2.3 Unique display of selected codes.

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

37.3 Surveillance Radar

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

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

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

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

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

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

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

1. Uncorrelated primary radar target [○] [+]

2. Correlated primary radar target [×]
   ※See note below.

3. Uncorrelated beacon target [ / ]

4. Correlated beacon target [ \ ]

5. Identing beacon target [ ≡ ]

※Note: in Number 2 correlated means the association of radar data with the computer projected track of an identified aircraft.

Position symbols:

6. Free track (no flight plan tracking) [△]

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 ±200’ of assigned altitude.
    ※See note below.

12. Computer ID #191, handoff is to sector 33
    (0 – 33 would mean handoff accepted)
    ※See note below.

13. Assigned altitude 17,000’, aircraft is climbing, Mode C readout was 14,300 when last beacon interrogation was received.

14. Leader line connecting target symbol and data block.

15. Track velocity and direction vector line (projected ahead of target)

16. Assigned altitude 7,000, aircraft is descending, last Mode C readout (or last reported altitude) was 100’ above FL 230

17. Transponder code shows in full data block only when different than assigned code

18. Aircraft is 300’ above assigned altitude

19. Reported altitude (no Mode C readout) same as assigned. (An “n” would indicate no reported altitude.)

20. Transponder set on emergency Code 7700. (EMRG flashes to attract attention.)

21. Transponder Code 1200 (VFR) with no Mode C

22. Code 1200 (VFR) with Mode C and last altitude readout

23. Transponder set on radio failure Code 7600 (RDOF flashes)

24. Computer ID #228, CST indicates target is in coast status

25. Assigned altitude FL 290, transponder code (these two items constitute a “limited data block”)

※Note: numbers 10, 11, and 12 constitute a “full data block”

Other symbols:

26. Navigational aid

27. Airway or jet route

28. Outline of weather returns based on primary radar. “H” represents areas of high density precipitation which might be thunderstorms. Radial lines indicated lower density precipitation.

29. Obstruction

30. Airports
    Major: □
    Small: □
37.5 Airport Surface Detection Equipment (ASDE–X)/Airport Surface Surveillance Capability (ASSC)

37.5.1 ASDE–X/ASSC is a multi-sensor surface surveillance system the FAA is acquiring for airports in the United States. This system provides high resolution, short-range, clutter free surveillance information about aircraft and vehicles, both moving and fixed, located on or near the surface of the airport’s runways and taxiways under all weather and visibility conditions. The system consists of:

37.5.1.1 A Primary Radar System. ASDE–X/ASSC system coverage includes the airport surface and the airspace 5 miles from the arrival and departure ends of the runway and up to 200 feet above the surface. Typically located on the control tower or other strategic location on the airport, the Primary Radar antenna is able to detect and display aircraft that are not equipped with or have malfunctioning transponders or ADS–B.

37.5.1.2 Interfaces. ASDE–X/ASSC contains an automation interface for flight identification via all automation platforms and interfaces with the terminal radar for position information.

37.5.1.3 ASDE–X/ASSC Automation. A Multi-sensor Data Processor (MSDP) combines all sensor reports into a single target which is displayed to the air traffic controller.

37.5.1.4 Air Traffic Control Tower Display. A high resolution, color monitor in the control tower cab provides controllers with a seamless picture of airport operations on the airport surface.

37.5.2 The combination of data collected from the multiple sensors ensures that the most accurate information about aircraft location is received in the tower, thereby increasing surface safety and efficiency.

37.5.3 The following facilities are operational with ASDE–X:

<table>
<thead>
<tr>
<th>Airport Code</th>
<th>Airport Name</th>
</tr>
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<tbody>
<tr>
<td>BWI</td>
<td>Baltimore Washington International</td>
</tr>
<tr>
<td>BOS</td>
<td>Boston Logan International</td>
</tr>
<tr>
<td>BDL</td>
<td>Bradley International</td>
</tr>
<tr>
<td>MDW</td>
<td>Chicago Midway</td>
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<tr>
<td>ORD</td>
<td>Chicago O’Hare International</td>
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<tr>
<td>CLT</td>
<td>Charlotte Douglas International</td>
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<tr>
<td>DFW</td>
<td>Dallas/Fort Worth International</td>
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<tr>
<td>DEN</td>
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<tr>
<td>DTW</td>
<td>Detroit Metro Wayne County</td>
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<tr>
<td>FLL</td>
<td>Fort Lauderdale/Hollywood Intl</td>
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<tr>
<td>MKE</td>
<td>General Mitchell International</td>
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<tr>
<td>IAH</td>
<td>George Bush International</td>
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<tr>
<td>ATL</td>
<td>Hartsfield–Jackson Atlanta Intl</td>
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<tr>
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<td>Honolulu International</td>
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<tr>
<td>JFK</td>
<td>John F. Kennedy International</td>
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<tr>
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This code is reserved for military interceptor operations.

37.7.5.3 Military pilots operating VFR or IFR within restricted/warning areas should adjust their transponders to Code 4000, unless another code has been assigned by ATC.

37.7.6 Mode C Transponder and ADS–B Out Requirements

37.7.6.1 Specific details concerning requirements to carry and operate Mode C transponders and ADS–B Out, as well as exceptions and ATC authorized deviations from those requirements, are found in 14 CFR Sections 91.215, 91.225, and 99.13.

37.7.6.2 In general, the CFRs require aircraft to be equipped with an operable Mode C transponder and ADS–B Out when operating:

a) In Class A, Class B, or Class C airspace areas;

b) Above the ceiling and within the lateral boundaries of Class B or Class C airspace up to 10,000 feet MSL;

c) Class E airspace at and above 10,000 feet MSL within the 48 contiguous states and the District of Columbia, excluding the airspace at and below 2,500 feet AGL;

d) Within 30 miles of a Class B airspace primary airport, below 10,000 feet MSL (commonly referred to as the “Mode C Veil”);

e) For ADS–B Out: Class E airspace at and above 3,000 feet MSL over the Gulf of Mexico from the coastline of the United States out to 12 nautical miles.

NOTE –
The airspace described in (e) above is specified in 14 CFR § 91.225 for ADS–B Out requirements. However, 14 CFR § 91.215 does not include this airspace for ATC transponder requirements.

f) Transponder and ADS–B Out requirements do not apply to any aircraft that was not originally certificated with an electrical system, or that has not subsequently been certified with such a system installed, including balloons and gliders. These aircraft may conduct operations without a transponder or ADS–B Out when operating:

1) Outside any Class B or Class C airspace area; and

2) Below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport, or 10,000 feet MSL, whichever is lower.

37.7.6.3 14 CFR Section 99.13 requires all aircraft flying into, within, or across the contiguous U.S. ADIZ be equipped with a Mode C or Mode S transponder. Balloons, gliders, and aircraft not equipped with an engine–driven electrical system are excepted from this requirement.

REFERENCE –
AIP, ENR 1.1, National Security and Interception Procedures

37.7.6.4 Pilots must ensure that their aircraft transponder/ADS–B is operating on an appropriate ATC–assigned VFR/IFR code with altitude reporting enabled when operating in such airspace. If in doubt about the operational status of either feature of your transponder while airborne, contact the nearest ATC facility or FSS and they will advise you what facility you should contact for determining the status of your equipment.

37.7.6.5 In–flight requests for “immediate” deviation from the transponder requirements may be approved by controllers only for failed equipment, and only when the flight will continue IFR or when weather conditions prevent VFR descent and continued VFR flight in airspace not affected by the CFRs. All other requests for deviation should be made at least 1 hour before the proposed operation by contacting the nearest Flight Service or Air Traffic facility in person or by telephone. The nearest ARTCC will normally be the controlling agency and is responsible for coordinating requests involving deviations in other ARTCC areas.

37.7.6.6 In–flight requests for “immediate” deviation from the ADS–B Out requirements may be approved by ATC only for failed equipment, and may be accommodated based on workload, alternate surveillance availability, or other factors. All other requests for deviation must be made at least 1 hour before the proposed operation, following the procedures contained in Advisory Circular (AC) 90–114, Automatic Dependent Surveillance–Broadcast Operations.

37.7.7 Transponder/ADS–B Operation Under Visual Flight Rules (VFR)

37.7.7.1 Unless otherwise instructed by an ATC facility, adjust transponder/ADS–B to reply on Mode 3/A Code 1200 regardless of altitude.
NOTE—
1. Firefighting aircraft not in contact with ATC may squawk 1255 in lieu of 1200 while en route to, from, or within the designated firefighting area(s).

2. VFR aircraft flying authorized SAR missions for the USAF or USCG may be advised to squawk 1277 in lieu of 1200 while en route to, from, or within the designated search area.

3. VFR gliders should squawk 1202 in lieu of 1200.

REFERENCE—

37.7.7.2 When required to operate their transponder/ADS-B, pilots must always operate that equipment with altitude reporting enabled, unless otherwise instructed by ATC or unless the installed equipment has not been tested and calibrated as required by 14 CFR Section 91.217. If deactivation is required, turn off altitude reporting.

37.7.7.3 When participating in a VFR formation flight that is not receiving ATC services, only the lead aircraft should operate their transponder and ADS-B Out. All other aircraft should disable transponder and ADS-B transmissions once established within the formation.

NOTE—
If the formation flight is receiving ATC services, pilots can expect ATC to direct all non-lead aircraft to STOP SQUAWK, and should not do so until instructed.

37.7.8 Cooperative Surveillance Phraseology

37.7.8.1 Air traffic controllers, both civil and military, will use the following phraseology when referring to operation of cooperative ATC surveillance equipment. Except as noted, the following ATC instructions do not apply to military transponders operating in other than Mode 3/A/C/S.

a) SQUAWK (number). Operate radar beacon transponder/ADS-B on designated code with altitude reporting enabled.

b) IDENT. Engage the “IDENT” feature (military I/P) of the transponder/ADS-B.

c) SQUAWK (number) AND IDENT. Operate transponder/ADS-B on specified code with altitude reporting enabled, and engage the “IDENT” (military I/P) feature.

d) SQUAWK STANDBY. Switch transponder/ADS-B to standby position.

e) SQUAWK NORMAL. Resume normal transponder/ADS-B operation on previously assigned code. (Used after “SQUAWK STANDBY,” or by military after specific transponder tests).

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

g) STOP ALTITUDE SQUAWK. Turn off automatic altitude reporting.

h) STOP SQUAWK (Mode in use). Stop transponder and ADS-B Out transmissions, or switch off only specified mode of the aircraft transponder (military).

i) SQUAWK MAYDAY. Operate transponder/ADS-B in the emergency position (Mode A Code 7700 for civil transponder. Mode 3 Code 7700 and emergency feature for military transponder.)

j) SQUAWK VFR. Operate radar beacon transponder/ADS-B on Code 1200 in the Mode A/3, or other appropriate VFR code, with altitude reporting enabled.

37.8 Emergency Operation

37.8.1 When an emergency occurs, the pilot of an aircraft equipped with a coded radar beacon transponder who desires to alert a ground radar facility to an emergency condition and who cannot establish communications without delay with an ATC facility may adjust the transponder to reply on Mode A/3, Code 7700.

37.8.2 Pilots should understand that they may not be within a radar coverage area and that, even if they are, certain radar facilities are not yet equipped to automatically recognize Code 7700 as an emergency signal. Therefore, they should establish radio communications with an ATC facility as soon as possible.

37.9 Radio Failure Operation

37.9.1 Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two-way radio capability the pilot should:

37.9.1.1 Adjust the transponder to reply on Mode A/3, Code 7600.

37.9.1.2 Understand that the aircraft may not be in an area of radar coverage.

37.9.2 Pilots should understand that they may not be in an area of radar coverage. Also, many radar facilities are not presently equipped to automatically
for Flight in Reduced Vertical Separation Minimum (RVSM) Airspace, and the FAA RVSM Website.

38.3.3 TCAS Equipage. TCAS equipage requirements are contained in 14 CFR Sections 121.356, 125.224, 129.18 and 135.189. Part 91 Appendix G does not contain TCAS equipage requirements specific to RVSM, however, Appendix G does require that aircraft equipped with TCAS II and flown in RVSM airspace be modified to incorporate TCAS II Version 7.0 or a later version.

38.3.4 Aircraft Monitoring. Operators are required to participate in the RVSM altitude-keeping performance monitoring program that is appropriate for the type of operation being conducted. The monitoring programs are described in FAA AC 91−85, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace. Monitoring is a quality control program that enables the FAA and other civil aviation authorities to assess the in-service altitude-keeping performance of aircraft and operators.

38.3.5 RVSM Approvals Databases for U.S. operators can be found on the RVSM Documentation Webpage in the “RVSM Approvals” section.

38.4 Flight Planning into RVSM Airspace

38.4.1 Operators that do not file the correct aircraft equipment suffix on the FAA or ICAO Flight Plan may be denied clearance into RVSM airspace. Policies for the FAA Flight Plan are detailed in subparagraph 38.4.3 below. Policies for the ICAO Flight Plan are detailed in subparagraph 38.4.4.

38.4.2 The operator will annotate the equipment block of the FAA or ICAO Flight Plan with an aircraft equipment suffix indicating RVSM capability only after the responsible civil aviation authority has determined that both the operator and its aircraft are RVSM-compliant and has issued RVSM authorization to the operator.

38.4.3 General Policies for FAA Flight Plan Equipment Suffix. NO TAG, 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 NO TAG.

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 NO TAG 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. Military users, and civilians who file stereo route flight plans, must file the appropriate equipment suffix in the equipment block of the FAA Form 7233−1, Flight Plan, or DD Form 175, Military Flight Plan, or FAA Form 7233−4, International Flight Plan, or DD Form 1801, DOD International Flight Plan. All other users must file the appropriate equipment suffix in the equipment block of FAA Form 7233−4, International Flight Plan. The equipment suffix informs ATC:

38.4.5.1 Whether or not the operator and aircraft are authorized to fly in RVSM airspace.

38.4.5.2 The navigation and/or transponder capability of the aircraft (e.g., advanced RNAV, Transponder with Mode C).

38.4.6 Significant ATC uses of the flight plan equipment suffix information are:

38.4.6.1 To issue or deny clearance into RVSM airspace.

38.4.6.2 To apply a 2,000 foot vertical separation minimum in RVSM airspace to aircraft that are not authorized for RVSM, but are in one of the limited categories that the FAA has agreed to accommodate.
(See paragraphs 38.10, Procedures for Accommodation of Non–RVSM Aircraft, and 38.11, Non–RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off, for policy on limited operation of unapproved aircraft in RVSM airspace).

38.4.7 Improperly changing an aircraft equipment suffix and/or adding ‘NON-RVSM’ in the NOTES or REMARKS section (Field 18) while not removing the ‘W’ from Field 10, will not provide air traffic control with the proper visual indicator necessary to detect Non-RVSM aircraft. To ensure information processes correctly for Non-RVSM aircraft, the ‘W’ in Field 10 must be removed. Entry of information in the NOTES or REMARKS section (Field 18) will not affect the determination of RVSM capability and must not be used to indicate a flight is Non-RVSM.

38.5 Pilot RVSM Operating Practices and Procedures

38.5.1 RVSM Requirement. If either the operator is not authorized for RVSM operations, or the aircraft is not RVSM compliant, the pilot will neither request nor accept a clearance into RVSM airspace unless:

38.5.1.1 The flight is conducted by a non–RVSM DOD, MEDEVAC, certification/development or foreign State (government) aircraft in accordance with Paragraph 38.10, Procedures for Accommodation of Non–RVSM Aircraft.

38.5.1.2 The pilot intends to climb to or descend from FL 430 or above in accordance with Paragraph 38.11, Non–RVSM Aircraft Requesting Climb to and Descent from Flight Levels Above RVSM Airspace Without Intermediate Level Off.

38.5.1.3 An emergency situation exists.

38.5.2 Basic RVSM Operating Practices and Procedures. FAA AC 91–85 contains pilot practices and procedures for RVSM. Operators must incorporate RVSM practices and procedures, as supplemented by the applicable paragraphs of this section, into operator training or pilot knowledge programs and operator documents containing RVSM operational policies.

38.5.3 FAA AC 91–85 contains practices and procedures for flight planning, preflight procedures at the aircraft, procedures prior to RVSM airspace entry, inflight (en route) procedures, contingency procedures and post flight.

38.5.4 The following paragraphs either clarify or supplement FAA AC 91–85 practices and procedures.

38.6 Guidance on Severe Turbulence and Mountain Wave Activity (MWA)

38.6.1 Introduction/Explanation

38.6.1.1 The information and practices in this paragraph are provided to emphasize to pilots and controllers the importance of taking appropriate action in RVSM airspace when aircraft experience severe turbulence and/or MWA that is of sufficient magnitude to significantly affect altitude–keeping.

38.6.1.2 Severe Turbulence. Severe turbulence causes large, abrupt changes in altitude and/or attitude usually accompanied by large variations in indicated airspeed. Aircraft may be momentarily out of control. Encounters with severe turbulence must be remedied immediately in any phase of flight. Severe turbulence may be associated with MWA.

38.6.1.3 Mountain Wave Activity (MWA)

a) Significant MWA occurs both below and above the floor of RVSM airspace, FL 290. MWA often occurs in western states in the vicinity of mountain ranges. It may occur when strong winds blow perpendicular to mountain ranges resulting in up and down or wave motions in the atmosphere. Wave action can produce altitude excursions and airspeed fluctuations accompanied by only light turbulence. With sufficient amplitude, however, wave action can induce altitude and airspeed fluctuations accompanied by severe turbulence. MWA is difficult to forecast and can be highly localized and short lived.

b) Wave activity is not necessarily limited to the vicinity of mountain ranges. Pilots experiencing wave activity anywhere that significantly affects altitude–keeping can follow the guidance provided below.

c) Inflight MWA Indicators (Including Turbulence). Indicators that the aircraft is being subjected to MWA are:

1) Altitude excursions and/or airspeed fluctuations with or without associated turbulence.

2) Pitch and trim changes required to maintain altitude with accompanying airspeed fluctuations.
3) Light to severe turbulence depending on the magnitude of the MWA.

38.6.1.4 Priority for Controller Application of Merging Target Procedures

a) Explanation of Merging Target Procedures. As described in subparagraph 38.6.3.3 below, ATC will use “merging target procedures” to mitigate the effects of both severe turbulence and MWA. The procedures in subparagraph 38.6.3.3 have been adapted from existing procedures published in FAA Order JO 7110.65, Air Traffic Control, paragraph 5−1−4, Merging Target Procedures. paragraph 5−1−4 calls for en route controllers to advise pilots of potential traffic that they perceive may fly directly above or below his/her aircraft at minimum vertical separation. In response, pilots are given the option of requesting a radar vector to ensure their radar target will not merge or overlap with the traffic’s radar target.

b) The provision of “merging target procedures” to mitigate the effects of severe turbulence and/or MWA is not optional for the controller, but rather is a priority responsibility. Pilot requests for vectors for traffic avoidance when encountering MWA or pilot reports of “Unable RVSM due turbulence or MWA” are considered first priority aircraft separation and sequencing responsibilities. (FAA Order JO 7110.65, paragraph 2−1−2, Duty Priority, states that the controller’s first priority is to separate aircraft and issue safety alerts).

c) Explanation of the term “traffic permitting.” The contingency actions for MWA and severe turbulence detailed in Paragraph 38.9, Contingency Actions: Weather Encounters and Aircraft System Failures that Occur After Entry into RVSM Airspace, state that the controller will “vector aircraft to avoid merging targets with traffic at adjacent flight levels, traffic permitting.” The term “traffic permitting” is not intended to imply that merging target procedures are not a priority duty. The term is intended to recognize that, as stated in FAA Order JO 7110.65, paragraph 2−1−2, Duty Priority, there are circumstances when the controller is required to perform more than one action and must “exercise their best judgment based on the facts and circumstances known to them” to prioritize their actions. Further direction given is: “That action which is most critical from a safety standpoint is performed first.”

38.6.1.5 TCAS Sensitivity. For both MWA and severe turbulence encounters in RVSM airspace, an additional concern is the sensitivity of collision avoidance systems when one or both aircraft operating in close proximity receive TCAS advisories in response to disruptions in altitude hold capability.

38.6.2 Pre-flight tools. Sources of observed and forecast information that can help the pilot ascertain the possibility of MWA or severe turbulence are: Forecast Winds and Temperatures Aloft (FD), Area Forecast (FA), Graphical Turbulence Guidance (GTG), SIGMETs and PIREPs.

38.6.3 Pilot Actions When Encountering Weather (for example, Severe Turbulence or MWA)

38.6.3.1 Weather Encounters Inducing Altitude Deviations of Approximately 200 feet. When the pilot experiences weather induced altitude deviations of approximately 200 feet, the pilot will contact ATC and state “Unable RVSM Due (state reason)” (e.g., turbulence, mountain wave). See contingency actions in paragraph 38.9.

38.6.3.2 Severe Turbulence (including that associated with MWA). When pilots encounter severe turbulence, they should contact ATC and report the situation. Until the pilot reports clear of severe turbulence, the controller will apply merging target vectors to one or both passing aircraft to prevent their targets from merging:

EXAMPLE −
“Yankee 123, FL 310, unable RVSM due severe turbulence.”

(Yankee 123, fly heading 290; traffic twelve o’clock, 10 miles, opposite direction; eastbound MD−80 at FL 320” (or the controller may issue a vector to the MD−80 traffic to avoid Yankee 123).

38.6.3.3 MWA. When pilots encounter MWA, they should contact ATC and report the magnitude and location of the wave activity. When a controller makes a merging targets traffic call, the pilot may request a vector to avoid flying directly over or under the traffic. In situations where the pilot is experiencing altitude deviations of 200 feet or greater, the pilot will request a vector to avoid traffic. Until the pilot reports clear of MWA, the controller will apply merging target vectors to one or both passing aircraft to prevent their targets from merging:
EXAMPLE—
“Yankee 123, FL 310, unable RVSM due mountain wave.”

“Yankee 123, fly heading 290; traffic twelve o’clock, 10 miles, opposite direction; eastbound MD−80 at FL 320” (or the controller may issue a vector to the MD−80 traffic to avoid Yankee 123).

38.6.3.4 FL Change or Re-route. To leave airspace where MWA or severe turbulence is being encountered, the pilot may request a FL change and/or re-route, if necessary.

38.7 Guidance on Wake Turbulence

38.7.1 Pilots should be aware of the potential for wake turbulence encounters in RVSM airspace. Experience gained since 1997 has shown that such encounters in RVSM airspace are generally moderate or less in magnitude.

38.7.2 Prior to DRVSM implementation, the FAA established provisions for pilots to report wake turbulence events in RVSM airspace using the NASA Aviation Safety Reporting System (ASRS). A “Safety Reporting” section established on the FAA RVSM Documentation webpage provides contacts, forms, and reporting procedures.

38.7.3 To date, wake turbulence has not been reported as a significant factor in DRVSM operations. European authorities also found that reports of wake turbulence encounters did not increase significantly after RVSM implementation (eight versus seven reports in a ten−month period). In addition, they found that reported wake turbulence was generally similar to moderate clear air turbulence.

38.7.4 Pilot Action to Mitigate Wake Turbulence Encounters

38.7.4.1 Pilots should be alert for wake turbulence when operating:
   a) In the vicinity of aircraft climbing or descending through their altitude.
   b) Approximately 10−30 miles after passing 1,000 feet below opposite−direction traffic.
   c) Approximately 10−30 miles behind and 1,000 feet below same−direction traffic.

38.7.4.2 Pilots encountering or anticipating wake turbulence in DRVSM airspace have the option of requesting a vector, FL change, or if capable, a lateral offset.

NOTE—
1. Offsets of approximately a wing span upwind generally can move the aircraft out of the immediate vicinity of another aircraft’s wake vortex.
2. In domestic U.S. airspace, pilots must request clearance to fly a lateral offset. Strategic lateral offsets flown in oceanic airspace do not apply.

38.8 Pilot/Controller Phraseology

TBL ENR 1.1−4 shows standard phraseology that pilots and controllers will use to communicate in DRVSM operations.
39.2.6.1 500 feet vertical separation.
39.2.6.2 Visual separation.
39.2.6.3 Target resolution (a process to ensure that correlated radar targets do not touch).

39.2.7 Participating pilots operating VFR in a TRSA:

39.2.7.1 Must maintain an altitude when assigned by ATC unless the altitude assignment is to maintain at or below a specified altitude. ATC may assign altitudes for separation that do not conform to 14 CFR Section 91.159. When the altitude assignment is no longer needed for separation or when leaving the TRSA, the instruction will be broadcast, "RESUME APPROPRIATE VFR ALTITUDES." Pilots must then return to an altitude that conforms to 14 CFR Section 91.159 as soon as practicable.

39.2.7.2 When not assigned an altitude, the pilot should coordinate with ATC prior to any altitude change.

39.2.8 Within the TRSA, traffic information on observed but unidentified targets will, to the extent possible, be provided to all IFR and participating VFR aircraft. The pilot will be vectored upon request to avoid the observed traffic, provided the aircraft to be vectored is within the airspace under the jurisdiction of the controller.

39.2.9 Departing aircraft should inform ATC of their intended destination and/or route of flight and proposed cruising altitude.

39.2.10 ATC will normally advise participating VFR aircraft when leaving the geographical limits of the TRSA. Radar service is not automatically terminated with this advisory unless specifically stated by the controller.

39.3 Class C Service. This service provides, in addition to basic radar service, approved separation between IFR and VFR aircraft, and sequencing of VFR arrivals to the primary airport.

39.4 Class B Service. This service provides, in addition to basic radar service, approved separation of aircraft based on IFR, VFR, and/or weight, and sequencing of VFR arrivals to the primary airport(s).

39.5 PILOT RESPONSIBILITY. THESE SERVICES ARE NOT TO BE INTERPRETED AS RELIEVING PILOTS OF THEIR RESPONSIBILITIES TO SEE AND AVOID OTHER TRAFFIC OPERATING IN BASIC VFR WEATHER CONDITIONS, TO ADJUST THEIR OPERATIONS AND FLIGHT PATH AS NECESSARY TO PRECLUDE SERIOUS WAKE ENCOUNTERS, TO MAINTAIN APPROPRIATE TERRAIN AND OBSTRUCTION CLEARANCE, OR TO REMAIN IN WEATHER CONDITIONS EQUAL TO OR BETTER THAN THE MINIMUMS REQUIRED BY 14 CFR SECTION 91.155. WHENEVER COMPLIANCE WITH AN ASSIGNED ROUTE, HEADING AND/OR ALTITUDE IS LIKELY TO COMPROMISE PILOT RESPONSIBILITY RESPECTING TERRAIN AND OBSTRUCTION CLEARANCE, VORTEX EXPOSURE, AND WEATHER MINIMUMS, APPROACH CONTROL SHOULD BE SO ADVISED AND A REVISED CLEARANCE OR INSTRUCTION OBTAINED.

39.6 ATC services for VFR aircraft participating in terminal radar services are dependent on ATC radar. Services for VFR aircraft are not available during periods of radar outage and are limited during CENRAP operations. The pilot will be advised when VFR services are limited or not available.

NOTE - Class B and Class C airspace are areas of regulated airspace. The absence of ATC radar does not negate the requirement of an ATC clearance to enter Class B airspace or two-way radio contact with ATC to enter Class C airspace.

40. Tower En Route Control (TEC)

40.1 TEC is an ATC program to provide a service to aircraft proceeding to and from metropolitan areas. It links designated approach control areas by a network of identified routes made up of the existing airway structure of the National Airspace System. The FAA has initiated an expanded TEC program to include as many facilities as possible. The program's intent is to provide an overflow resource in the low altitude system which would enhance ATC services. A few facilities have historically allowed turbojets to proceed between certain city pairs, such as Milwaukee and Chicago, via tower en route and these locations may continue this service. However, the expanded TEC program will be applied, generally, for nonturbojet aircraft operating at and below 10,000 feet. The program is entirely within the approach control airspace of multiple terminal facilities. Essentially, it is for relatively short flights. Participating pilots are encouraged to use TEC for
flights of 2 hours duration or less. If longer flights are planned, extensive coordination may be required with the multiple complex which could result in unanticipated delays.

40.2 There are no unique requirements upon pilots to use the TEC program. Normal flight plan filing procedures will ensure proper flight plan processing. Pilots should include the acronym “TEC” in the remarks selection of the flight plan when requesting tower en route.

40.3 All approach controls in the system may not operate up to the maximum TEC altitude of 10,000 feet. IFR flight may be planned to any satellite airport in proximity to the major primary airport via the same routing.

41. Services in Offshore Controlled Airspace

41.1 Pilots requesting TEC are subject to the same delay factor at the destination airport as other aircraft in the ATC system. In addition, departure and en route delays may occur depending upon individual facility workload. When a major metropolitan airport is incurring significant delays, pilots in the TEC program may want to consider an alternative airport experiencing no delay.

41.2 Flights which operate between the U.S. 3-mile territorial limit and the adjoining oceanic controlled airspace/flight information region (CTA/FIR) boundaries generally operate in airspace designated by federal regulation as “controlled airspace,” or “offshore controlled airspace.”

41.3 Within the designated areas ATC radar surveillance, ground based navigational signal coverage, and air/ground communications are capable of supporting air traffic services comparable to those provided over U.S. domestic controlled airspace.

41.4 Pilots should be aware that domestic procedures will be applied in offshore controlled airspace to both VFR and IFR aircraft using ATC services.

42. Pilot/Controller Roles/Responsibilities

42.1 General

42.1.1 The roles and responsibilities of the pilot and controller for effective participation in the ATC system are contained in several documents. Pilot responsibilities are in the Federal Aviation Regulations (Title 14 of the U.S. Code of Federal Regulations) and the air traffic controller’s are in FAA Order JO 7110.65, Air Traffic Control, and supplemental FAA directives. Additional and supplemental information for pilots can be found in the current Aeronautical Information Manual, Notices to Air Missions, advisory circulars, and aeronautical charts. Since there are many other excellent publications produced by nongovernment organizations as well as other Government organizations with various updating cycles, questions concerning the latest or most current material can be resolved by cross-checking with the above mentioned documents.

42.1.2 The pilot in command of an aircraft is directly responsible for and is the final authority as to the safe operation of that aircraft. In an emergency requiring immediate action, the pilot in command may deviate from any rule in the General, Subpart A, and Flight Rules, Subpart B, in accordance with 14 CFR Section 91.3.

42.1.3 The air traffic controller is responsible to give first priority to the separation of aircraft and to the issuance of radar safety alerts; second priority to other services that are required, but do not involve separation of aircraft; and third priority to additional services to the extent possible.

42.1.4 In order to maintain a safe and efficient air traffic system, it is necessary that every party fulfill their responsibilities to the fullest.

42.1.5 The responsibilities of the pilot and the controller intentionally overlap in many areas providing a degree of redundancy. Should one or the other fail in any manner, this overlapping responsibility is expected to compensate, in many cases, for failures that may affect safety.

42.1.6 The following, while not intended to be all inclusive, is a brief listing of pilot and controller responsibilities for some commonly used procedures or phases of flight. More detailed explanations are contained in the appropriate Federal Aviation Regulations, Advisory Circulars, and similar publications. The information provided here is an overview of the principles involved and is not meant as an interpretation of the rules nor is it intended to extend or diminish responsibilities.
42.2 Air Traffic Clearance

42.2.1 Pilot

42.2.1.1 Acknowledges receipt and understanding of an ATC clearance.

42.2.1.2 Reads back any hold short of runway instructions issued by ATC.

42.2.1.3 Requests clarification or amendment, as appropriate, any time a clearance is not fully understood, or considered unacceptable from a safety standpoint.

42.2.1.4 Promptly complies with an air traffic clearance upon receipt, except as necessary to cope with an emergency. Advises ATC as soon as possible and obtains an amended clearance if deviation is necessary.

NOTE –
A clearance to land means that appropriate separation on the landing runway will be ensured. A landing clearance does not relieve the pilot from compliance with any previously issued altitude crossing restriction.

42.2.2 Controller

42.2.2.1 Issues appropriate clearances for the operation being, or to be, conducted in accordance with established criteria.

42.2.2.2 Assigns altitudes in IFR clearances that are at or above the minimum IFR altitudes in Classes A, B, C, D, and E airspace.

42.2.2.3 Ensures acknowledgements by the pilot for issued information, clearance, or instructions.

42.2.2.4 Ensures that readbacks by the pilot of altitude, heading, or other items are correct. If incorrect, distorted, or incomplete, makes corrections as appropriate.

42.3 Contact Approach

42.3.1 Pilot

42.3.1.1 This approach must be requested by the pilot and is made in lieu of a standard or special instrument approach.

42.3.1.2 By requesting the contact approach, the pilot indicates that the flight is operating clear of clouds, has at least 1 mile flight visibility, and can reasonably expect to continue to the destination airport in those conditions.

42.3.1.3 Be aware that while conducting a contact approach, the pilot assumes responsibility for obstruction clearance.

42.3.1.4 Advises ATC immediately if you are unable to continue the contact approach or if you encounter less than 1 mile flight visibility.

42.3.1.5 Be aware that, if radar service is being received, it may automatically terminate when the pilot is told to contact the tower. “Radar service terminated” is used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact.

REFERENCE –
The Pilot/Controller Glossary is published in the Aeronautical Information Manual (AIM) and FAA Orders JO 7110.10, Flight Services, and JO 7110.65, Air Traffic Control.

42.3.2 Controller

42.3.2.1 Issues clearance for contact approach only when requested by the pilot. Does not solicit the use of this procedure.

42.3.2.2 Before issuing clearance, ascertains that reported ground visibility at destination airport is at least 1 mile.

42.3.2.3 Provides approved separation between aircraft cleared for contact approach and other IFR or special VFR aircraft. When using vertical separation, does not assign a fixed altitude but clears the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below minimum safe altitudes prescribed in 14 CFR Section 91.119.

42.3.2.4 Issues alternative instructions if, in the controller’s judgment, weather conditions may make completion of the approach impractical.

42.4 Instrument Approach

42.4.1 Pilot

42.4.1.1 Be aware that the controller issues clearance for approach based only on known traffic.

42.4.1.2 Follows the procedures as shown on the instrument approach chart including all restrictive notations, such as:

   a) Procedure not authorized at night.

   b) Approach not authorized when local area altimeter not available.

   c) Procedure not authorized when control tower not in operation.
d) Procedure not authorized when glide slope not used.

e) Straight-in minimums not authorized at night.

f) Radar required.

g) The circling minimums published on the instrument approach chart provide adequate obstruction clearance. The pilot should not descend below the circling altitude until the aircraft is in a position to make final descent for landing. Sound judgment and knowledge of the pilot’s and the aircraft’s capabilities are the criteria for a pilot to determine the exact maneuver in each instance since airport design and the aircraft position, altitude, and airspeed must all be considered. (See ENR 1.5, Paragraph 11.6, Circling Minimums.)

42.4.1.3 Upon receipt of an approach clearance while on an unpublished route or being radar vectored:

a) Complies with the minimum altitude for IFR.

b) Maintains last assigned altitude until established on a segment of a published route or Instrument Approach Procedure (IAP), at which time published altitudes apply.

42.4.1.4 There are currently two temperature limitations that may be published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). The two published temperature limitations are:

a) A temperature range limitation associated with the use of Baro–VNAV that may be published on an United States PBN IAP titled RNAV (GPS) or RNAV (RNP); and/or

b) A Cold Temperature Airport (CTA) limitation designated by a snowflake ICON and temperature in Celsius (C) that is published on every IAP for the airfield.

42.4.1.5 Any planned altitude correction for the intermediate and/or missed approach holding segments must be coordinated with ATC. Pilots do not have to advise ATC of a correction in the final segment.

REFERENCE—
AIP, Section ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).

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 Cold Temperature Airports (CTA) are designated by a snowflake ICON and temperature in Celsius (C) that are published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). Pilots should apply a cold temperature correction to the final missed approach holding altitude when the reported temperature is at or below the CTA temperature limitation, if applicable. Pilots must inform ATC of the correction.

REFERENCE—
AIP, Section ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).
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 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 Except where authorized for radar approaches, radar departures, special VFR, or when operating in accordance with vectors below minimum altitude procedures, vector IFR aircraft at or above minimum vectoring altitudes.

42.6.2.4 May vector aircraft off assigned procedures. When published altitude or speed restrictions are included, controllers must assign an altitude, or if necessary, a speed.

42.6.2.5 May vector VFR aircraft, not at an ATC assigned altitude, at any altitude. In these cases, terrain separation is the pilot’s responsibility.

42.7 Speed Adjustments

42.7.1 Pilot (In U.S. Domestic Class A, B, C, D, and E airspace)

42.7.2 Except as stated in paragraphs 42.7.5 and 42.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

42.7.3 Complies with speed adjustments from ATC unless:

a) The minimum or maximum safe airspeed for any particular operation is greater or less than the requested airspeed. In such cases, advises ATC.

b) Operating at or above 10,000 feet MSL on an ATC assigned SPEED ADJUSTMENT of more than 250 knots IAS and subsequent clearance is received for descent below 10,000 feet MSL. In such cases, pilots are expected to comply with 14 CFR Section 97.117(a).

42.7.4 Controller (In U.S. Domestic Class A, B, C, D, and E Airspaces)

42.7.4.1 Assigns aircraft to speed adjustments when necessary, but not as a substitute for good vectoring technique.

42.7.4.2 Adheres to the restrictions of FAA Order JO 7110.65, Air Traffic Control, as to when speed adjustment procedures may be applied.

42.7.4.3 Avoids speed adjustments requiring alternate decreases and increases.

42.7.4.4 Assigns speed adjustments to a specified IAS knots/Mach number or to increase or decrease speed utilizing increments of 5 knots or multiples thereof.
42.7.4.5 Terminates ATC-assigned speed adjustments when no longer required by issuing further instructions to pilots in the following manner:

a) Advises pilots to “resume normal speed” when the aircraft is on a heading, random routing, charted procedure, or route without published speed restrictions.

b) Instructs pilots to “comply with speed restrictions” when the aircraft is joining or resuming a charted procedure or route with published speed restrictions.

CAUTION

The phraseology “Climb via SID” requires compliance with all altitude and/or speed restrictions depicted on the procedure.

c) Instructs pilots to “resume published speed” when aircraft are cleared via a charted instrument flight procedure that contains published speed restrictions.

d) Advises aircraft to “delete speed restrictions” when ATC assigned or published speed restrictions on a charted procedure are no longer required.

e) Clears pilots for approach without restating previously issued speed adjustments.

42.7.4.6 Gives due consideration to aircraft capabilities to reduce speed while descending.

42.7.5 Pilot (In Oceanic Class A and E Airspace)

42.7.5.1 If ATC has not assigned an airspeed, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by ±10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

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

42.7.6 Controller (In Oceanic Class A and E Airspace)

42.7.6.1 Assigns airspeed when necessary for separation of aircraft to comply with 14 CFR, ICAO regulations and procedures, or letters of agreement.

42.8 Traffic Advisories (Traffic Information)

42.8.1 Pilot

42.8.1.1 Acknowledges receipt of traffic advisories.

42.8.1.2 Informs controller if traffic is in sight.

42.8.1.3 Advises ATC if a vector to avoid traffic is desired.

42.8.1.4 Does not expect to receive radar traffic advisories on all traffic. Some aircraft may not appear on the radar display. Be aware that the controller may be occupied with high priority duties and unable to issue traffic information for a variety of reasons.

42.8.1.5 Advises controller if service is not desired.

42.8.2 Controller

42.8.2.1 Issues radar traffic to the maximum extent consistent with higher priority duties except in Class A airspace.

42.8.2.2 Provides vectors to assist aircraft to avoid observed traffic when requested by the pilot.

42.8.2.3 Issues traffic information to aircraft in Class D airspace for sequencing purposes.

42.8.2.4 Controllers are required to issue traffic advisories 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
a) 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.

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 terrain/obstruction.

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

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

If a visual approach is not desired, advises ATC.

Complies with controller’s instructions for vectors toward the airport of intended landing or to a visual position behind a preceding aircraft.

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.

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.

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.

Be aware that radar service is automatically terminated, without being advised by ATC, when the pilot is instructed to change to advisory frequency.

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 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.

42.12.2 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.

42.12.3 The pilot also accepts responsibility for wake turbulence separation under these conditions.

42.12.2 Controller Applies Visual Separation Only:

42.12.2.1 Within the terminal area when a controller has both aircraft in sight or by instructing a pilot who sees the other aircraft to maintain visual separation from it.

42.12.2.2 Pilots are responsible to maintain visual separation until flight paths (altitudes and/or courses) diverge.

42.12.2.3 Within en route airspace when aircraft are on opposite courses and one pilot reports having seen the other aircraft and that the aircraft have passed each other.

42.13 VFR-on-top

42.13.1 Pilot

42.13.1.1 This clearance must be requested by the pilot on an IFR flight plan, and if approved, allows the pilot the choice to select (subject to any ATC restrictions) an altitude or flight level in lieu of an assigned altitude.

NOTE –

1. VFR-on-top is not permitted in certain airspace areas, such as Class A airspace, certain restricted areas, etc. Consequently, IFR flights operating VFR-on-top will avoid such airspace.

2. See paragraph 32. of this section, IFR Separation Standards; GEN 3.3, Paragraph 6, Position Reporting; and GEN 3.3, Paragraph 7, Additional Reports.

42.13.1.2 By requesting a VFR-on-top clearance, the pilot assumes the sole responsibility to be vigilant so as to see and avoid other aircraft and to:

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

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

c) Comply with instrument flight rules that are applicable to this flight; i.e., minimum IFR altitudes, position reporting, radio communications, course to be flown, adherence to ATC clearance, etc.

d) Advise ATC prior to any altitude change to ensure the exchange of accurate traffic information.

42.13.2 Controller

42.13.2.1 May clear an aircraft to maintain VFR-on-top if the pilot of an aircraft on an IFR flight plan requests the clearance.

42.13.2.2 Informs the pilot of an aircraft cleared to climb to VFR-on-top the reported height of the tops or that no top report is available; issues an alternate clearance if necessary; and once the aircraft reports reaching VFR-on-top, reclears the aircraft to maintain VFR-on-top.

42.13.2.3 Before issuing clearance, ascertains that the aircraft is not in or will not enter Class A airspace.

42.14 Instrument Departures

42.14.1 Pilot

42.14.1.1 Prior to departure, considers the type of terrain and other obstructions on or in the vicinity of the departure airport.

42.14.1.2 Determines if obstruction avoidance can be maintained visually or that the departure procedure should be followed.

42.14.1.3 Determines whether an obstacle departure procedure (ODP) and/or DP is available for obstruction avoidance. One option may be a Visual Climb Over Airport (VCOA). Pilots must advise ATC as early as possible of the intent to fly the VCOA prior to departure.

42.14.1.4 At airports where instrument approach procedures have not been published, hence no published departure procedure, determines what action will be necessary and takes such action that will assure a safe departure.
42.14.2 Controller

42.14.2.1 At locations with airport traffic control service, when necessary, specifies direction of takeoff, turn, or initial heading to be flown after takeoff, consistent with published departure procedures (DP) or diverse vector areas (DVA), where applicable.

42.14.2.2 At locations without airport traffic control service but within Class E surface area, when necessary to specify direction of takeoff/turn or initial heading to be flown, obtains pilot's concurrence that the procedure will allow him/her to comply with local traffic patterns, terrain, and obstruction avoidance.

42.14.2.3 When the initial heading will take the aircraft off an assigned procedure (for example, an RNAV SID with a published lateral path to a waypoint and crossing restrictions from the departure end of runway), the controller will assign an altitude to maintain with the initial heading.

42.14.2.4 Includes established departure procedures as part of the air traffic control clearance when pilot compliance is necessary to ensure separation.

42.14.2.5 At locations with both SIDs and DVAs, ATC will provide an amended departure clearance to cancel a previously assigned SID and subsequently utilize a DVA or vice versa. The amended clearance will be provided to the pilot in a timely manner so that the pilot may confirm adequate climb performance exists to determine if the amended clearance is acceptable, and brief the changes in advance of entering the runway.

42.14.2.6 At locations with a DVA, ATC is not permitted to utilize a SID and DVA concurrently.

42.15 Minimum Fuel Advisory

42.15.1 Pilot

42.15.1.1 Advises ATC of your “minimum fuel” status when your fuel supply has reached a state where, upon reaching destination, you cannot accept any undue delay.

42.15.1.2 Be aware that this is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur.

42.15.1.3 On initial contact the term “minimum fuel” should be used after stating call sign.

EXAMPLE – Salt Lake Approach, United 621, “minimum fuel.”

42.15.1.4 Be aware a minimum fuel advisory does not imply a need for traffic priority.

42.15.1.5 If the remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, you should declare an emergency due to low fuel, and report the fuel remaining in minutes.

42.15.2 Controller

42.15.2.1 When an aircraft declares a state of “minimum fuel,” relay this information to the facility to whom control jurisdiction is transferred.

42.15.2.2 Be alert for any occurrence which might delay the aircraft.

43. Traffic Alert and Collision Avoidance System (TCAS I & II)

43.1 TCAS I provides proximity warning only, to assist the pilot in the visual acquisition of intruder aircraft. No recommended avoidance maneuvers are provided nor authorized as a direct result of a TCAS I warning. It is intended for use by smaller commuter aircraft holding 10 to 30 passenger seats, and general aviation aircraft.

43.2 TCAS II provides traffic advisories (TA) and resolution advisories (RA). Resolution advisories provide recommended maneuvers in a vertical direction (climb or descend only) to avoid conflicting traffic. Transport category aircraft, and larger commuter and business aircraft holding 31 passenger seats or more, are required to be TCAS II equipped.

43.2.1 When a TA occurs, attempt to establish visual contact with the traffic but do not deviate from an assigned clearance based only on TA information.

43.2.2 When an RA occurs, pilots should respond immediately to the RA displays and maneuver as indicated unless doing so would jeopardize the safe operation of the flight, or the flight crew can ensure separation with the help of definitive visual acquisition of the aircraft causing the RA.

43.2.3 Each pilot who deviates from an ATC clearance in response to an RA must notify ATC of that deviation as soon as practicable, and notify ATC when clear of conflict and returning to their previously assigned clearance.

43.3 Deviations from rules, policies, or clearances should be kept to the minimum necessary to satisfy an
RA. Most RA maneuvering requires minimum excursion from assigned altitude.

43.4 The serving IFR air traffic facility is not responsible to provide approved standard IFR separation to an IFR aircraft, from other aircraft, terrain, or obstructions after an RA maneuver until one of the following conditions exists:

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

43.4.2 Alternate ATC instructions have been issued.

43.4.3 A crew member informs ATC that the TCAS maneuver has been completed.

NOTE—TCAS does not alter or diminish the pilot's basic authority and responsibility to ensure safe flight. Since TCAS does not respond to aircraft which are not transponder equipped or aircraft with a transponder failure, TCAS alone does not ensure safe separation in every case. At this time, no air traffic service nor handling is predicated on the availability of TCAS equipment in the aircraft.

44. Traffic Information Service (TIS)

44.1 Introduction
The Traffic Information Service (TIS) provides information to the cockpit via data link, that is similar to VFR radar traffic advisories normally received over voice radio. Among the first FAA—provided data services, TIS is intended to improve the safety and efficiency of “see and avoid” flight through an automatic display that informs the pilot of nearby traffic and potential conflict situations. This traffic display is intended to assist the pilot in visual acquisition of these aircraft. TIS employs an enhanced capability of the terminal Mode S radar system, which contains the surveillance data, as well as the data link required to “uplink” this information to suitably—equipped aircraft (known as a TIS “client”). TIS provides estimated position, altitude, altitude trend, and ground track information for up to 8 intruder aircraft within 7 NM horizontally, +3,500 and −3,000 feet vertically of the client aircraft (see FIG ENR 1.1–31, TIS Proximity Coverage Volume). The range of a target reported at a distance greater than 7 NM only indicates that this target will be a threat within 34 seconds and does not display a precise distance. TIS will alert the pilot to aircraft (under surveillance of the Mode S radar) that are estimated to be within 34 seconds of potential collision, regardless of distance or altitude. TIS surveillance data is derived from the same radar used by ATC; this data is uplinked to the client aircraft on each radar scan (nominally every 5 seconds).

44.2 Requirements

44.2.1 In order to use TIS, the client and any intruder aircraft must be equipped with the appropriate cockpit equipment and fly within the radar coverage of a Mode S radar capable of providing TIS. Typically, this will be within 55 NM of the sites depicted in FIG ENR 1.1–32, Terminal Mode S Radar Sites. ATC communication is not a requirement to receive TIS, although it may be required by the particular airspace or flight operations in which TIS is being used.

FIG ENR 1.1–31
TIS Proximity Coverage Volume
limitations and quality assurance issues associated with individual products. This includes graphical representation of next generation weather radar (NEXRAD) imagery and Notices to Air Missions (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, or by sending an email to the ADS–B help desk at adsb@faa.gov. Reports should include:

- **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; and
- **47.3.5** Type and software version of avionics system.
### FIS–B Over UAT Product Update and Transmission Intervals

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<thead>
<tr>
<th>Product</th>
<th>Update Interval¹</th>
<th>Transmission Interval (95%)²</th>
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<tr>
<td>AWW/WW</td>
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<td>Temperature Aloft</td>
<td>12 Hours (±15 minutes)</td>
<td>10 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>TWIP</td>
<td>As Available</td>
<td>1 minute</td>
<td>No</td>
</tr>
<tr>
<td>Winds aloft</td>
<td>12 Hours (±15 minutes)</td>
<td>10 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lightning strikes ³</td>
<td>5 minutes</td>
<td>5 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Turbulence ³</td>
<td>1 minute</td>
<td>15 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Icing, Forecast Potential (FIP) ³</td>
<td>60 minutes</td>
<td>15 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cloud tops ³</td>
<td>30 minutes</td>
<td>15 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>1 Minute AWOS ³</td>
<td>1 minute</td>
<td>10 minutes</td>
<td>No</td>
</tr>
<tr>
<td>Graphical–AIRMET ³</td>
<td>As Available</td>
<td>5 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Center Weather Advisory (CWA) ³</td>
<td>As Available</td>
<td>10 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Temporary Restricted Areas (TRA)</td>
<td>As Available</td>
<td>10 minutes</td>
<td>Yes</td>
</tr>
<tr>
<td>Temporary Military Operations Areas (TMOA)</td>
<td>As Available</td>
<td>10 minutes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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 (95%) and the rate or repetition interval at which the product is rebroadcast (95%).
³ The transmission and update intervals for the expanded set of basic meteorological products may be adjusted based on FAA and vendor agreement on the final product formats and performance requirements.
8.2 Limitations on Procedure Turns

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

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

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

NOTE – See paragraph 1.9.2.1, Airspeeds.

8.2.4 The absence of the procedure turn barb in the plan view indicates that a procedure turn is not authorized for that procedure.
9. RNP AR (Authorization Required) Instrument Procedures

9.1 RNP AR procedures require authorization analogous to the special authorization required for Category II or III ILS procedures. All operators require specific authorization from the FAA to fly any RNP AR approach or departure procedure. The FAA issues RNP AR authorization via operations specification (Opspec), management specification (Mspec), or letter of authorization (LOA). There are no exceptions. Operators can find comprehensive information on RNP AR aircraft eligibility, operating procedures, and training requirements in AC 90−101, Approval Guidance for RNP Procedures with AR.

9.2 Unique characteristics of RNP AR Operations Approach title. The FAA titles all RNP AR instrument approach procedures (IAP) as “RNAV (RNP) RWY XX.” All RNP AR procedures will clearly state “Authorization Required” on the procedure chart.

9.3 RNP value. RNP AR procedures are characterized by use of a lateral Obstacle Evaluation Area (OEA) equal to two times the RNP value (2 x RNP) in nautical miles. No secondary lateral OEA or additional buffers are used. RNP AR procedures require a minimum lateral accuracy value of RNP 0.30. Each published line of minima in an RNP AR procedure has an associated RNP value that defines the procedure’s lateral performance requirement in the Final Approach Segment. Each approved RNP AR operator’s FAA−issued authorization will identify a minimum authorized RNP approach value. This value may vary depending on aircraft configuration or operational procedures (e.g., use of flight director or autopilot).

9.4 Radius−to−fix (RF) legs. Many RNP AR IFPs contain RF legs. Aircraft eligibility for RF legs is required in any authorization for RNP AR operations.

9.5 Missed Approach RNP value less than 1.00 NM. Some RNP AR IFPs require an RNP lateral accuracy value of less than 1.00 NM in the missed approach segment. The operator’s FAA−issued RNP AR authorization will specify whether the operator may fly a missed approach procedure requiring a lateral accuracy value less than 1.00 NM. AC 90−101 identifies specific operating procedures and training requirements applicable to this aspect of RNP AR procedures.

9.6 Non−standard speeds or climb gradients. RNP AR approaches may require non−standard approach speeds and/or missed approach climb gradients. RNP AR approach charts will reflect any non−standard requirements and pilots must confirm they can meet those requirements before commencing the approach.

9.7 RNP AR Departure Procedures (RNP AR DP). RNP AR approach authorization is a mandatory prerequisite for an operator to be eligible to perform RNP AR DPs. RNP AR DPs can utilize a minimum RNP value of RNP 0.30, may include higher than standard climb gradients, and may include RF turns. Close in RF turns associated with RNP AR DPs may begin as soon as the departure end of the runway (DER). For specific eligibility guidance, operators should refer to AC 90−101.

FIG ENR 1.5−13 Example of an RNP AR DP

10. Side−step Maneuver

10.1 ATC may authorize a standard instrument approach procedure which serves either one of parallel runways that are separated by 1,200 feet or less followed by a straight-in landing on the adjacent runway.

10.2 Aircraft that will execute a side-step maneuver will be cleared for a specified approach procedure
and landing on the adjacent parallel runway. Example, “cleared ILS runway 7 left approach, side-step to runway 7 right.” Pilots are expected to commence the side-step maneuver as soon as possible after the runway or runway environment is in sight. Compliance with minimum altitudes associated with stepdown fixes is expected even after the side-step maneuver is initiated.

NOTE—
Side-step minima are flown to a Minimum Descent Altitude (MDA) regardless of the approach authorized.

10.3 Landing minimums to the adjacent runway will be based on nonprecision criteria and therefore higher than the precision minimums to the primary runway, but will normally be lower than the published circling minimums.

11. Approach and Landing Minimums

11.1 Landing Minimums. The rules applicable to landing minimums are contained in 14 CFR Section 91.175. TBL ENR 1.5–2 may be used to convert RVR to ground or flight visibility. For converting RVR values that fall between listed values, use the next higher RVR value; do not interpolate. For example, when converting 1800 RVR, use 2400 RVR with the resultant visibility of 1/2 mile.

TBL ENR 1.5–2

<table>
<thead>
<tr>
<th>RVR</th>
<th>Visibility (statute miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600</td>
<td>1/4</td>
</tr>
<tr>
<td>2400</td>
<td>1/2</td>
</tr>
<tr>
<td>3200</td>
<td>3/8</td>
</tr>
<tr>
<td>4000</td>
<td>3/4</td>
</tr>
<tr>
<td>4500</td>
<td>7/8</td>
</tr>
<tr>
<td>5000</td>
<td>1</td>
</tr>
<tr>
<td>6000</td>
<td>1 1/4</td>
</tr>
</tbody>
</table>

11.1.1 Aircraft approach category means a grouping of aircraft based on a speed of $V_{REF}$ at the maximum certified landing weight, if specified, or if $V_{REF}$ is not specified, 1.3 $V_{SO}$ at the maximum certified landing weight. $V_{REF}$, $V_{SO}$, and the maximum certified landing weight are those values as established for the aircraft by the certification authority of the country of registry. A pilot must maneuver the aircraft within the circling approach protected area (see FIG ENR 1.5–14) to achieve the obstacle and terrain clearances provided by procedure design criteria.

11.1.2 In addition to pilot techniques for maneuvering, one acceptable method to reduce the risk of flying out of the circling approach protected area is to use either the minima corresponding to the category determined during certification or minima associated with a higher category. Helicopters may use Category A minima. If it is necessary to operate at a speed in excess of the upper limit of the speed range for an aircraft’s category, the minimums for the higher category should be used. This may occur with certain aircraft types operating in heavy/gusty wind, icing, or non–normal conditions. For example, an airplane which fits into Category B, but is circling to land at a speed of 145 knots, should use the approach Category D minimums. As an additional example, a Category A airplane (or helicopter) which is operating at 130 knots on a straight–in approach should use the approach Category C minimums.

11.1.3 A pilot who chooses an alternative method when it is necessary to maneuver at a speed that exceeds the category speed limit (for example, where higher category minimums are not published) should consider the following factors that can significantly affect the actual ground track flown:

11.1.3.1 Bank angle. For example, at 165 knots groundspeed, the radius of turn increases from 4,194 feet using 30 degrees of bank to 6,654 feet when using 20 degrees of bank. When using a shallower bank angle, it may be necessary to modify the flightpath or indicated airspeed to remain within the circling approach protected area. Pilots should be aware that excessive bank angle can lead to a loss of aircraft control.

11.1.3.2 Indicated airspeed. Procedure design criteria typically utilize the highest speed for a particular category. If a pilot chooses to operate at a higher speed, other factors should be modified to ensure that the aircraft remains within the circling approach protected area.

11.1.3.3 Wind speed and direction. For example, it is not uncommon to maneuver the aircraft to a downwind leg where the groundspeed will be considerably higher than the indicated airspeed. Pilots must carefully plan the initiation of all turns to ensure that the aircraft remains within the circling approach protected area.
11.1.3.4 Pilot technique. Pilots frequently have many options with regard to flightpath when conducting circling approaches. Sound planning and judgment are vital to proper execution. The lateral and vertical path to be flown should be carefully considered using current weather and terrain information to ensure that the aircraft remains within the circling approach protected area.

11.1.4 It is important to remember that 14 CFR Section 91.175(c) requires that “where a DA/DH or MDA is applicable, no pilot may operate an aircraft below the authorized MDA or continue an approach below the authorized DA/DH unless the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers, and for operations conducted under Part 121 or Part 135 unless that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.”

11.1.5 See the following category limits:

11.1.5.1 Category A: Speed less than 91 knots.

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

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

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

11.1.5.5 Category E: Speed 166 knots or more.

NOTE - $V_{REF}$ in the above definition refers to the speed used in establishing the approved landing distance under the airworthiness regulations constituting the type certification basis of the airplane, regardless of whether that speed for a particular airplane is $1.3 V_{SO}$, $1.23 V_{SR}$, or some higher speed required for airplane controllability. This speed, at the maximum certificated landing weight, determines the lowest applicable approach category for all approaches regardless of actual landing weight.

11.2 Published Approach Minimums. Approach minimums are published for different aircraft categories and consist of a minimum altitude (DA, DH, MDA) and required visibility. These minimums are determined by applying the appropriate TERPS criteria. When a fix is incorporated in a nonprecision final segment, two sets of minimums may be published; one for the pilot that is able to identify the fix, and a second for the pilot that cannot. Two sets of minimums may also be published when a second altimeter source is used in the procedure. When a nonprecision procedure incorporates both a step-down fix in the final segment and a second altimeter source, two sets of minimums are published to account for the stepdown fix and a note addresses minimums for the second altimeter source.

11.3 Obstacle Clearance. Final approach obstacle clearance is provided from the start of the final segment to the runway or missed approach point, whichever occurs last. Side-step obstacle protection is provided by increasing the width of the final approach obstacle clearance area.

11.3.1 Circling approach protected areas are defined by the tangential connection of arcs drawn from each runway end (see FIG ENR 1.5–14). Circling approach protected areas developed prior to late 2012 used fixed radius distances, dependent on aircraft approach category, as shown in the table on page B2 of the U.S. TPP. The approaches using standard circling approach areas can be identified by the absence of the “negative C” symbol on the circling line of minima. Circling approach protected areas developed after late 2012 use the radius distance shown in the table on page B2 of the U.S. TPP, dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the “negative C” symbol on the circling line of minima (see FIG ENR 1.5–15).

Because of obstacles near the airport, a portion of the circling area may be restricted by a procedural note; for example, “Circling NA E of RWY 17–35.” Obstacle clearance is provided at the published minimums (MDA) for the pilot who makes a straight-in approach, side-steps, or circles. Once below the MDA the pilot must see and avoid obstacles. Executing the missed approach after starting to maneuver usually places the aircraft beyond the MAP. The aircraft is clear of obstacles when at or above the MDA while inside the circling area, but simply joining the missed approach ground track from the circling maneuver may not provide vertical obstacle clearance once the aircraft exits the circling area. Additional climb inside the circling area may be required before joining the missed approach track. See ENR 1.5–27., Missed Approach,
for additional considerations when starting a missed approach at other than the MAP.

**NOTE**
Circling approach area radii vary according to approach category and MSL circling altitude due to TAS changes – see FIG ENR 1.5–15.
Standard and Expanded Circling Approach Radii in the U.S. TPP

### STANDARD CIRCLING APPROACH MANEUVERING RADIUS

Circling approach protected areas developed prior to late 2012 used the radius distances shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category. The approaches using standard circling approach areas can be identified by the absence of the symbol on the circling line of minima.

<table>
<thead>
<tr>
<th>Circling MDA in feet MSL</th>
<th>CAT A</th>
<th>CAT B</th>
<th>CAT C</th>
<th>CAT D</th>
<th>CAT E</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Altitudes</td>
<td>1.3</td>
<td>1.5</td>
<td>1.7</td>
<td>2.3</td>
<td>4.5</td>
</tr>
</tbody>
</table>

### EXPANDED CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

Circling approach protected areas developed after late 2012 use the radius distance shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the symbol on the circling line of minima.

<table>
<thead>
<tr>
<th>Circling MDA in feet MSL</th>
<th>CAT A</th>
<th>CAT B</th>
<th>CAT C</th>
<th>CAT D</th>
<th>CAT E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 or less</td>
<td>1.3</td>
<td>1.7</td>
<td>2.7</td>
<td>3.6</td>
<td>4.5</td>
</tr>
<tr>
<td>1001-3000</td>
<td>1.3</td>
<td>1.8</td>
<td>2.8</td>
<td>3.7</td>
<td>4.6</td>
</tr>
<tr>
<td>3001-5000</td>
<td>1.3</td>
<td>1.8</td>
<td>2.9</td>
<td>3.8</td>
<td>4.8</td>
</tr>
<tr>
<td>5001-7000</td>
<td>1.3</td>
<td>1.9</td>
<td>3.0</td>
<td>4.0</td>
<td>5.0</td>
</tr>
<tr>
<td>7001-9000</td>
<td>1.4</td>
<td>2.0</td>
<td>3.2</td>
<td>4.2</td>
<td>5.3</td>
</tr>
<tr>
<td>9001 and above</td>
<td>1.4</td>
<td>2.1</td>
<td>3.3</td>
<td>4.4</td>
<td>5.5</td>
</tr>
</tbody>
</table>

**FIG ENR 1.5-16**

Precision Obstacle Free Zone (POFZ)

- **Final Approach "X" Surface**
- **Final Approach "W" Surface**
- **Final Approach "X" Surface**

**NOTE:**

The entire taxiing aircraft must remain clear of the Final Approach Surfaces.

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Twenty–Sixth Edition

Federal Aviation Administration
11.3.2 Precision Obstacle Free Zone (POFZ). A volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline. The POFZ is 200 feet (60m) long and 800 feet (240m) wide. The POFZ must be clear when an aircraft on a vertically guided final approach is within 2 nautical miles of the runway threshold and the official weather observation is a ceiling below 250 feet or visibility less than 3/4 statute mile (SM) (or runway visual range below 4,000 feet). If the POFZ is not clear, the MINIMUM authorized height above touchdown (HAT) and visibility is 250 feet and 3/4 SM. The POFZ is considered clear even if the wing of the aircraft holding on a taxiway waiting for runway clearance penetrates the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ. The POFZ is applicable at all runway ends including displaced thresholds. (See FIG ENR 1.5–16.)

11.4 Straight-In Minimums are shown on the IAP when the final approach course is within 30 degrees of the runway alignment and a normal descent can be made from the IFR altitude shown on the IAP to the runway surface. When either the normal rate of descent or the runway alignment factor of 30 degrees is exceeded, a straight-in minimum is not published and a circling minimum applies. The fact that a straight-in minimum is not published does not preclude pilots from landing straight-in if they have the active runway in sight and have sufficient time to make a normal approach for landing. Under such conditions and when ATC has cleared them for landing on that runway, pilots are not expected to circle even though only circling minimums are published. If they desire to circle, they should advise ATC.

11.5 Side-Step Maneuver Minimums. Landing minimums for a side-step maneuver to the adjacent runway will normally be higher than the minimums to the primary runway.

11.6 Circling Minimums. In some busy terminal areas, ATC may not allow circling and circling minimums will not be published. Published circling minimums provide obstacle clearance when pilots remain within the appropriate area of protection. Pilots should remain at or above the circling altitude until the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers. Circling may require maneuvers at low altitude, at low airspeed, and in marginal weather conditions. Pilots must use sound judgment, have an in-depth knowledge of their capabilities, and fully understand the aircraft performance to determine the exact circling maneuver since weather, unique airport design, and the aircraft position, altitude, and airspeed must all be considered. The following basic rules apply:

11.6.1 Maneuver the shortest path to the base or downwind leg, as appropriate, considering existing weather conditions. There is no restriction from passing over the airport or other runways.

11.6.2 It should be recognized that circling maneuvers may be made while VFR or other flying is in progress at the airport. Standard left turns or specific instruction from the controller for maneuvering must be considered when circling to land.

11.6.3 At airports without a control tower, it may be desirable to fly over the airport to observe wind and turn indicators and other traffic which may be on the runway or flying in the vicinity of the airport.

REFERENCE

11.6.4 The missed approach point (MAP) varies depending upon the approach flown. For vertically guided approaches, the MAP is at the decision altitude/decision height. Non-vertically guided and circling procedures share the same MAP and the pilot determines this MAP by timing from the final approach fix, by a fix, a NAVAID, or a waypoint. Circling from a GLS, an ILS without a localizer line of minima or an RNAV (GPS) approach without an LNAV line of minima is prohibited.

11.7 Instrument Approaches at a Military Field. When instrument approaches are conducted by civil aircraft at military airports, they must be conducted in accordance with the procedures and minimums approved by the military agency having jurisdiction over the airport.

12. Instrument Approach Procedure (IAP) Charts

12.1 14 CFR Section 91.175(a), Instrument approaches to civil airports, requires the use of SIAPs prescribed for the airport in 14 CFR Part 97 unless otherwise authorized by the Administrator (including ATC). If there are military procedures published at a
civil airport, aircraft operating under 14 CFR Part 91 must use the civil procedure(s). Civil procedures are defined with “FAA” in parenthesis; e.g., (FAA), at the top, center of the procedure chart. DOD procedures are defined using the abbreviation of the applicable military service in parenthesis; for example, (USAF), (USN), (USA). 14 CFR Section 91.175(g), Military airports, requires civil pilots flying into or out of military airports to comply with the IAP’s and takeoff and landing minimums prescribed by the authority having jurisdiction at those airports. Unless an emergency exists, civil aircraft operating at military airports normally require advance authorization, commonly referred to as “Prior Permission Required” or “PPR.” Information on obtaining a PPR for a particular military airport can be found in the Chart Supplement U.S.

NOTE –
Civil aircraft may conduct practice VFR approaches using DOD instrument approach procedures when approved by the air traffic controller.

12.1.1 IAPs (standard and special, civil and military) are based on joint civil and military criteria contained in the U.S. Standard for TERPS. The design of IAPs based on criteria contained in TERPS, takes into account the interrelationship between airports, facilities, and the surrounding environment, terrain, obstacles, noise sensitivity, etc. Appropriate altitudes, courses, headings, distances, and other limitations are specified and, once approved, the procedures are published and distributed by government and commercial cartographers as instrument approach charts.

12.1.2 Not all IAPs are published in chart form. Radar IAPs are established where requirements and facilities exist but they are printed in tabular form in appropriate U.S. Government Flight Information Publications.

12.1.3 The navigation equipment required to join and fly an instrument approach procedure is indicated by the title of the procedure and notes on the chart.

12.1.3.1 Straight-in IAPs are identified by the navigational system providing the final approach guidance and the runway to which the approach is aligned (e.g., VOR RWY 13). Circling only approaches are identified by the navigational system providing final approach guidance and a letter (e.g., VOR A). More than one navigational system separated by a slash indicates that more than one type of equipment must be used to execute the final approach (e.g., VOR/DME RWY 31). More than one navigational system separated by the word “or” indicates either type of equipment may be used to execute the final approach (for example, VOR or GPS RWY 15).

12.1.3.2 In some cases, other types of navigation systems including radar may be required to execute other portions of the approach or to navigate to the IAF (e.g., an NDB procedure turn to an ILS, an NDB in the missed approach, or radar required to join the procedure or identify a fix). When radar or other equipment is required for procedure entry from the en route environment, a note will be charted in the planview of the approach procedure chart (for example, RADAR REQUIRED or ADF REQUIRED). When radar or other equipment is required on portions of the procedure outside the final approach segment, including the missed approach, a note will be charted in the notes box of the pilot briefing portion of the approach chart (for example, RADAR REQUIRED or DME REQUIRED). Notes are not charted when VOR is required outside the final approach segment. Pilots should ensure that the aircraft is equipped with the required NAVAID(s) in order to execute the approach, including the missed approach.

NOTE –
Some military (i.e., U.S. Air Force and U.S. Navy) IAPs have these “additional equipment required” notes charted only in the planview of the approach procedure and do not conform to the same application standards used by the FAA.

12.1.3.3 The FAA has initiated a program to provide a new notation for LOC approaches when charted on an ILS approach requiring other navigational aids to fly the final approach course. The LOC minimums will be annotated with the NAVAID required (for example, “DME Required” or “RADAR Required”). During the transition period, ILS approaches will still exist without the annotation.

12.1.3.4 Many ILS approaches having minima based on RVR are eligible for a landing minimum of RVR 1800. Some of these approaches are to runways that have touchdown zone and centerline lights. For many runways that do not have touchdown and centerline lights, it is still possible to allow a landing minimum of RVR 1800. For these runways, the normal ILS minimum of RVR 2400 can be annotated with a single or double asterisk or the dagger symbol.
12.1.4 Approach minimums are based on the local altimeter setting for that airport, unless annotated otherwise; for example, Oklahoma City/Will Rogers World approaches are based on having a Will Rogers World altimeter setting. When a different altimeter source is required, or more than one source is authorized, it will be annotated on the approach chart; e.g., use Sidney altimeter setting, if not received, use Scottsbluff altimeter setting. Approach minimums may be raised when a nonlocal altimeter source is authorized. When more than one altimeter source is authorized, and the minima are different, they will be shown by separate lines in the approach minima box or a note; e.g., use Manhattan altimeter setting; when not available use Salina altimeter setting and increase all MDA’s 40 feet. When the altimeter must be obtained from a source other than air traffic a note will indicate the source; e.g., Obtain local altimeter setting on CTAF. When the altimeter setting(s) on which the approach is based is not available, the approach is not authorized. Baro–VNAV must be flown using the local altimeter setting only. Where no local altimeter is available, the LNAV/VNAV line will still be published for use by WAAS receivers with a note that Baro–VNAV is not authorized. When a local and at least one other altimeter setting source is authorized and the local altimeter is not available Baro–VNAV is not authorized; however, the LNAV/VNAV minima can still be used by WAAS receivers using the alternate altimeter setting source.

NOTE—
Barometric Vertical Navigation (baro–VNAV). An RNAV system function which uses barometric altitude information from the aircraft’s altimeter to compute and present a vertical guidance path to the pilot. The specified vertical path is computed as a geometric path, typically computed between two waypoints or an angle based computation from a single waypoint. Further guidance may be found in Advisory Circular 90–105.

12.1.5 A pilot adhering to the altitudes, flight paths, and weather minimums depicted on the IAP chart or vectors and altitudes issued by the radar controller, is assured of terrain and obstruction clearance and runway or airport alignment during approach for landing.
12.1.6 IAPs are designed to provide an IFR descent from the en route environment to a point where a safe landing can be made. They are prescribed and approved by appropriate civil or military authority to ensure a safe descent during instrument flight conditions at a specific airport. It is important that pilots understand these procedures and their use prior to attempting to fly instrument approaches.

12.1.7 TERPS criteria are provided for the following types of instrument approach procedures:

12.1.7.1 Precision Approach (PA). An instrument approach based on a navigation system that provides course and glidepath deviation information meeting the precision standards of ICAO Annex 10. For example, PAR, ILS, and GLS are precision approaches.

12.1.7.2 Approach with Vertical Guidance (APV). An instrument approach based on a navigation system that is not required to meet the precision approach standards of ICAO Annex 10 but provides course and glidepath deviation information. For example, Baro-VNAV, LDA with glidepath, LNAV/VNAV, and LPV are APV approaches.

12.1.7.3 Nonprecision Approach (NPA). An instrument approach based on a navigation system which provides course deviation information, but no glidepath deviation information. For example, VOR, NDB, and LNAV. As noted in subparagraph 12.10, Vertical Descent Angle (VDA) on Nonprecision Approaches, some approach procedures may provide a Vertical Descent Angle as an aid in flying a stabilized approach, without requiring its use in order to fly the procedure. This does not make the approach an APV procedure, since it must still be flown to an MDA and has not been evaluated with a glideslope.

12.2 The method used to depict prescribed altitudes on instrument approach charts differs according to techniques employed by different chart publishers. Prescribed altitudes may be depicted in four different configurations: minimum, maximum, mandatory, and recommended. The U.S. Government distributes charts produced by National Geospatial-Intelligence Agency (NGA) and FAA. Altitudes are depicted on these charts in the profile view with underscore, overscore, both or none to identify them as minimum, maximum, mandatory or recommended.

12.2.1 Minimum altitude will be depicted with the altitude value underscored. Aircraft are required to maintain altitude at or above the depicted value, for example, 3000.

12.2.2 Maximum altitude will be depicted with the altitude value overscored. Aircraft are required to maintain altitude at or below the depicted value, for example, 4000.

12.2.3 Mandatory altitude will be depicted with the altitude value both underscored and overscored. Aircraft are required to maintain altitude at the depicted value, for example, 5000.

12.2.4 Recommended altitude will be depicted with no overscore or underscore. These altitudes are depicted for descent planning, for example, 6000.

NOTE -
1. Pilots are cautioned to adhere to altitudes as prescribed because, in certain instances, they may be used as the basis for vertical separation of aircraft by ATC. When a depicted altitude is specified in the ATC clearance, that altitude becomes mandatory as defined above.

2. The ILS glide slope is intended to be intercepted at the published glide slope intercept altitude. This point marks the FAA and is depicted by the “lightning bolt” symbol on U.S. Government charts. Intercepting the glide slope at this altitude marks the beginning of the final approach segment and ensures required obstacle clearance during descent from the glide slope intercept altitude to the lowest published decision altitude for the approach. Interception and tracking of the glide slope prior to the published glide slope interception altitude does not necessarily ensure that minimum, maximum, and/or mandatory altitudes published for any preceding fixes will be complied with during the descent. If the pilot chooses to track the glide slope prior to the glide slope interception altitude, they remain responsible for complying with published altitudes for any preceding stepdown fixes encountered during the subsequent descent.

3. Approaches used for simultaneous (parallel) independent and simultaneous close parallel operations procedurally require descending on the glideslope from the altitude at which the approach clearance is issued (refer to ENR 1.5–19. and ENR 1.5–20.). For simultaneous close parallel (PRM) approaches, the Attention All Users Page (AAUP) may publish a note which indicates that descending on the glideslope/glidepath meets all crossing restrictions. However, if no such note is published, and for simultaneous independent approaches (4300 and greater runway separation) where an AAUP is not published, pilots are cautioned to monitor their descent on the glideslope/path outside of the PFAF to ensure compliance with published crossing restrictions during simultaneous operations.

4. When parallel approach courses are less than 2500 feet apart and reduced in-trail spacing is authorized for
simultaneous dependent operations, a chart note will indicate that simultaneous operations require use of vertical guidance and that the pilot should maintain last assigned altitude until established on glide slope. These approaches procedurally require utilization of the ILS glide slope for wake turbulence mitigation. Pilots should not confuse these simultaneous dependent operations with (SOIA) simultaneous close parallel PRM approaches, where PRM appears in the approach title.

12.2.5 Altitude restrictions depicted at stepdown fixes within the final approach segment are applicable only when flying a Non-Precision Approach to a straight-in or circling line of minima identified as a MDA. Stepdown fix altitude restrictions within the final approach segment do not apply to pilots using Precision Approach (ILS) or Approach with Vertical Guidance (LPV, LNAV/ VNAV) lines of minima identified as a DA, since obstacle clearance on these approaches are based on the aircraft following the applicable vertical guidance. Pilots are responsible for adherence to stepdown fix altitude restrictions when outside the final approach segment (i.e., initial or intermediate segment), regardless of which type of procedure the pilot is flying. (See FIG ENR 1.5−17).

**FIG ENR 1.5−17**
Instrument Approach Procedure Stepdown Fixes
12.3 Minimum Safe Altitudes (MSA) are published for emergency use on IAP charts. MSAs provide 1,000 feet of clearance over all obstacles, but do not necessarily assure acceptable navigation signal coverage. The MSA depiction on the plan view of an approach chart contains the identifier of the center point of the MSA, the applicable radius of the MSA, a depiction of the sector(s), and the minimum altitudes above mean sea level which provide obstacle clearance. For conventional navigation systems, the MSA is normally based on the primary omnidirectional facility on which the IAP is predicated, but may be based on the airport reference point (ARP) if no suitable facility is available. For RNAV approaches, the MSA is based on an RNAV waypoint. MSAs normally have a 25 NM radius; however, for conventional navigation systems, this radius may be expanded to 30 NM if necessary to encompass the airport landing surfaces. A single sector altitude is normally established, however when the MSA is based on a facility and it is necessary to obtain relief from obstacles, an MSA with up to four sectors may be established.

12.4 Terminal Arrival Area (TAA)

12.4.1 The TAA provides a transition from the en route structure to the terminal environment with little required pilot/air traffic control interface for aircraft equipped with Area Navigation (RNAV) systems. A TAA provides minimum altitudes with standard obstacle clearance when operating within the TAA boundaries. TAA s are primarily used on RNAV approaches but may be used on an ILS approach when RNAV is the sole means for navigation to the IF; however, they are not normally used in areas of heavy concentration of air traffic.

12.4.2 The basic design of the RNAV procedure underlying the TAA is normally the “T” design (also called the “Basic T”). The “T” design incorporates two IAFs plus a dual purpose IF/IAF that functions as both an intermediate fix and an initial approach fix.
12.4.3 The standard TAA based on the “T” design consists of three areas defined by the Initial Approach Fix (IAF) legs and the intermediate segment course beginning at the IF/IAF. These areas are called the straight-in, left-base, and right-base areas. (See FIG ENR 1.5–20). TAA area lateral boundaries are identified by magnetic courses TO the IF/IAF. The straight-in area can be further divided into pie-shaped sectors with the boundaries identified by magnetic courses TO the (IF/IAF), and may contain stepdown sections defined by arcs based on RNAV distances from the IF/IAF. (See FIG ENR 1.5–21). The right/left-base areas can only be subdivided using arcs based on RNAV distances from the IAFs for those areas.
12.4.4 Entry from the terminal area onto the procedure is normally accomplished via a no procedure turn (NoPT) routing or via a course reversal maneuver. The published procedure will be annotated “NoPT” to indicate when the course reversal is not authorized when flying within a particular TAA sector. Otherwise, the pilot is expected to execute the course reversal under the provisions of 14 CFR Section 91.175. The pilot may elect to use the course reversal pattern when it is not required by the procedure, but must receive clearance from air traffic control before beginning the procedure.

12.4.4.1 ATC should not clear an aircraft to the left base leg or right base leg IAF within a TAA at an intercept angle exceeding 90 degrees. Pilots must not execute the HILPT course reversal when the sector or procedure segment is labeled “NoPT.”

12.4.4.2 ATC may clear aircraft direct to the fix labeled IF/IAF if the course to the IF/IAF is within the straight-in sector labeled “NoPT” and the intercept angle does not exceed 90 degrees. Pilots are expected to proceed direct to the IF/IAF and accomplish a straight-in approach. Do not execute HILPT course reversal. Pilots are also expected to fly the straight-in approach when ATC provides radar vectors and monitoring to the IF/IAF and issues a “straight-in” approach clearance; otherwise, the pilot is expected to execute the HILPT course reversal.

12.4.4.3 On rare occasions, ATC may clear the aircraft for an approach at the airport without specifying the approach procedure by name or by a specific approach (for example, “cleared RNAV Runway 34 approach”) without specifying a particular IAF. In either case, the pilot should proceed direct to the IAF or to the IF/IAF associated with the sector that the aircraft will enter the TAA and join the approach course from that point and if required by that sector (i.e., sector is not labeled “NoPT”), complete the HILPT course reversal.

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

12.4.5 Altitudes published within the TAA replace the MSA altitude. However, unlike MSA altitudes the TAA altitudes are operationally usable altitudes. These altitudes provide at least 1,000 feet of obstacle clearance, more in mountainous areas. It is important that the pilot knows which area of the TAA the aircraft will enter in order to comply with the minimum altitude requirements. The pilot can determine which
area of the TAA the aircraft will enter by determining the magnetic bearing of the aircraft TO the fix labeled IF/IAF. The bearing should then be compared to the published lateral boundary bearings that define the TAA areas. Do not use magnetic bearing to the right-base or left-base IAFs to determine position.

12.4.5.1 An ATC clearance direct to an IAF or to the IF/IAF without an approach clearance does not authorize a pilot to descend to a lower TAA altitude. If a pilot desires a lower altitude without an approach clearance, request the lower TAA altitude from ATC. Pilots not sure of the clearance should confirm their clearance with ATC or request a specific clearance. Pilots entering the TAA with two-way radio communications failure (14 CFR Section 91.185, IFR Operations: Two-Way Radio Communications Failure), must maintain the highest altitude prescribed by Section 91.185(c)(2) until arriving at the appropriate IAF.

12.4.5.2 Once cleared for the approach, pilots may descend in the TAA sector to the minimum altitude depicted within the defined area/subdivision, unless instructed otherwise by air traffic control. Pilots should plan their descent within the TAA to permit a normal descent from the IF/IAF to the FAF. In FIG ENR 1.5–21, pilots within the left or right-base areas are expected to maintain a minimum altitude of 6,000 feet until within 17 NM of the associated IAF. After crossing the 17 NM arc, descent is authorized to the lower charted altitudes. Pilots approaching from the northwest are expected to maintain a minimum altitude of 6,000 feet, and when within 22 NM of the IF/IAF, descend to a minimum altitude of 2,000 feet MSL until crossing the IF/IAF.
12.4.6 U.S. Government charts depict TAA's using icons located in the plan view outside the depiction of the actual approach procedure. (See Fig ENR 1.5–22). Use of icons is necessary to avoid obscuring any portion of the “T” procedure (altitudes, courses, minimum altitudes, etc.). The icon for each TAA area will be located and oriented on the plan view with respect to the direction of arrival to the approach procedure, and will show all TAA minimum altitudes and sector/radius subdivisions. The IAF for each area of the TAA is included on the icon where it appears on the approach to help the pilot orient the icon to the approach procedure. The IAF name and the distance of the TAA area boundary from the IAF are included on the outside arc of the TAA area icon.
12.4.7 TAAs may be modified from the standard size and shape to accommodate operational or ATC requirements. Some areas may be eliminated, while the other areas are expanded. The “T” design may be modified by the procedure designers where required by terrain or ATC considerations. For instance, the “T” design may appear more like a regularly or irregularly shaped “Y,” upside down “L,” or an “I.”

12.4.7.1 FIG ENR 1.5–23 depicts a TAA without a left base leg and right base leg. In this generalized example, pilots approaching on a bearing TO the IF/IAF from 271 clockwise to 089 are expected to execute a course reversal because the amount of turn required at the IF/IAF exceeds 90 degrees. The term “NoPT” will be annotated on the boundary of the TAA icon for the other portion of the TAA.

12.4.7.2 FIG ENR 1.5–24 depicts another TAA modification that pilots may encounter. In this generalized example, the left base area and part of the straight-in area have been eliminated. Pilots operating within the TAA between 210 clockwise to 360 bearing TO the IF/IAF are expected to proceed direct to the IF/IAF and then execute the course reversal in order to properly align the aircraft for entry onto the intermediate segment or to avoid an excessive descent rate. Aircraft operating in areas from 001 clockwise to 090 bearing TO the IF/IAF are expected to proceed direct to the right base IAF and not execute course reversal maneuver. Aircraft cleared direct the IF/IAF by ATC in this sector will be expected to accomplish HILTP. Aircraft operating in areas 091 clockwise to 209 bearing TO the IF/IAF are expected to proceed direct to the IF/IAF and not execute the course reversal. These two areas are annotated “NoPT” at the TAA boundary of the icon in these areas when displayed on the approach chart’s plan view.
12.4.7.3 FIG ENR 1.5–25 depicts a TAA with right base leg and part of the straight-in area eliminated.
12.4.8 When an airway does not cross the lateral TAA boundaries, a feeder route will be established from an airway fix or NAVAID to the TAA boundary to provide a transition from the en route structure to the appropriate IAF. Each feeder route will terminate at the TAA boundary and will be aligned along a path pointing to the associated IAF. Pilots should descend to the TAA altitude after crossing the TAA boundary and cleared for the approach by ATC. (See FIG ENR 1.5–26.)

Each waypoint on the "T" is assigned a pronounceable 5-letter name, except the missed approach waypoint. These names are used for ATC communications, RNAV databases, and aeronautical navigation products. The missed approach waypoint is assigned a pronounceable name when it is not located at the runway threshold.
12.5 Minimum Vectoring Altitudes (MVA’s) are established for use by ATC when radar ATC is exercised. MVA charts are prepared by air traffic facilities at locations where there are numerous different minimum IFR altitudes. Each MVA chart has sectors large enough to accommodate vectoring of aircraft within the sector at the MVA. Each sector boundary is at least 3 miles from the obstruction determining the MVA. To avoid a large sector with an excessively high MVA due to an isolated prominent obstruction, the obstruction may be enclosed in a buffer area whose boundaries are at least 3 miles from the obstruction. This is done to facilitate vectoring around the obstruction. (See FIG ENR 1.5–27.)

12.5.1 The minimum vectoring altitude in each sector provides 1,000 feet above the highest obstacle in nonmountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVA’s are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of ATC Surveillance. The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace.

NOTE –
OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.

12.5.2 Because of differences in the areas considered for MVA, and those applied to other minimum altitudes, and the ability to isolate specific obstacles, some MVA’s may be lower than the nonradar Minimum En Route Altitudes (MEAs), Minimum Obstruction Clearance Altitudes (MOCAs) or other minimum altitudes depicted on charts for a given location. While being radar vectored, IFR altitude assignments by ATC will be at or above MVA.

12.5.3 The MVA/MIA may be lower than the TAA minimum altitude. If ATC has assigned an altitude to an aircraft that is below the TAA minimum altitude, the aircraft will either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.
12.6 Circling. Circling minimums charted on an RNAV (GPS) approach chart may be lower than the LNAV/VNAV line of minima, but never lower than the LNAV line of minima (straight-in approach). Pilots may safely perform the circling maneuver at the circling published line of minima if the approach and circling maneuver is properly performed according to aircraft category and operational limitations.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPV DA</td>
<td></td>
<td>558/24</td>
<td>250 (300 – ½)</td>
<td></td>
</tr>
<tr>
<td>LNAV/VNAV DA</td>
<td></td>
<td>1572 – 5</td>
<td>1264 (1300 – 5)</td>
<td></td>
</tr>
<tr>
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<td>1180 / 40</td>
<td>1180 / 2</td>
<td>1180 / 2 ¼</td>
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<td>872 (900 – ¾)</td>
<td>872 (900 – 2)</td>
<td>872 (900 – 2 ¼)</td>
</tr>
<tr>
<td>CIRCLING</td>
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<td>1180 – 1 ¼</td>
<td>1180 – 2 ½</td>
<td>1180 – 2 ¾</td>
</tr>
<tr>
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<td>870 (900 – 1 ¼)</td>
<td>870 (900 – 2 ½)</td>
<td>870 (900 – 2 ¾)</td>
</tr>
</tbody>
</table>

12.7 FIG ENR 1.5–29 provides a visual representation of an obstacle evaluation and calculation of LNAV MDA, Circling MDA, LNAV/VNAV DA.

12.7.1 No vertical guidance (LNAV). A line is drawn horizontal at obstacle height and 250 feet added for Required Obstacle Clearance (ROC). The controlling obstacle used to determine LNAV MDA can be different than the controlling obstacle used in determining ROC for circling MDA. Other factors may force a number larger than 250 ft to be added to the LNAV OCS. The number is rounded up to the next higher 20 foot increment.
12.7.2 Circling MDA. The circling MDA will provide 300 foot obstacle clearance within the area considered for obstacle clearance and may be lower than the LNAV/VNAV DA, but never lower than the straight in LNAV MDA. This may occur when different controlling obstacles are used or when other controlling factors force the LNAV MDA to be higher than 250 feet above the LNAV OCS. In FIG ENR 1.5–28, the required obstacle clearance for both the LNAV and Circle resulted in the same MDA, but lower than the LNAV/VNAV DA. FIG ENR 1.5–29 provides an illustration of this type of situation.

12.7.3 Vertical guidance (LNAV/VNAV). A line is drawn horizontal at obstacle height until reaching the obstacle clearance surface (OCS). At the OCS, a vertical line is drawn until reaching the glide path. This is the DA for the approach. This method places the offending obstacle in front of the LNAV/VNAV DA so it can be seen and avoided. In some situations, this may result in the LNAV/VNAV DA being higher than the LNA V and/or Circling MDA.

12.8 The Visual Descent Point (VDP) identified by the symbol (V), is a defined point on the final approach course of a nonprecision straight-in approach procedure from which a stabilized visual descent from the MDA to the runway touchdown point may be commenced. The pilot should not descend below the MDA prior to reaching the VDP. The VDP will be identified by DME or RNAV along-track distance to the MAP. The VDP distance is based on the lowest MDA published on the IAP and harmonized with the angle of the visual glide slope indicator (VGSI) (if installed) or the procedure VDA (if no VGSI is installed). A VDP may not be published under certain circumstances which may result in a destabilized descent between the MDA and the runway touchdown point. Such circumstances include an obstacle penetrating the visual surface between the MDA and runway threshold, lack of distance measuring capability, or the procedure design prevents a VDP to be identified.

12.8.1 VGSI systems may be used as a visual aid to the pilot to determine if the aircraft is in a position to make a stabilized descent from the MDA. When the visibility is close to minimums, the VGSI may not be visible at the VDP due to its location beyond the MAP.

12.8.2 Pilots not equipped to receive the VDP should fly the approach procedure as though no VDP had been provided.

12.8.3 On a straight-in nonprecision IAP, descent below the MDA between the VDP and the MAP may be inadvisable or impossible. A aircraft speed, height above the runway, descent rate, amount of turn, and runway length are some of the factors which must be considered by the pilot to determine if a safe descent and landing can be accomplished.

12.9 A visual segment obstruction evaluation is accomplished during procedure design on all IAPs. Obstacles (both lighted and unlighted) are allowed to penetrate the visual segment obstacle identification surfaces. Identified obstacle penetrations may cause restrictions to instrument approach operations which may include an increased approach visibility requirement, not publishing a VDP, and/or prohibiting night instrument operations to the runway. There is no implicit obstacle protection from the MDA/DA to the touchdown point. Accordingly, it is the responsibility of the pilot to visually acquire and avoid obstacles below the MDA/DA during transition to landing.

12.9.1 Unlighted obstacle penetrations may result in prohibiting night instrument operations to the runway. A chart note will be published in the pilot briefing strip “Procedure NA at Night.”

12.9.2 Use of a VGSI may be approved in lieu of obstruction lighting to restore night instrument operations to the runway. A chart note will be published in the pilot briefing strip “Straight-in Rwy XX at Night, operational VGSI required, remain on or above VGSI glidepath until threshold.”

12.10 The highest obstacle (man-made, terrain, or vegetation) will be charted on the planview of an IAP. Other obstacles may be charted in either the planview or the airport sketch based on distance from the runway and available chart space. The elevation of the charted obstacle will be shown to the nearest foot above mean sea level. Obstacles without a verified accuracy are indicated by a ± symbol following the elevation value.

12.11 Vertical Descent Angle (VDA). FAA policy is to publish a VDA/TCH on all nonprecision approaches except those published in conjunction with vertically guided minimums (i.e., ILS or LOC RWY XX) or no-FAF procedures without a step-down fix (i.e., on-airport VOR or NDB). A
VDA does not guarantee obstacle protection below the MDA in the visual segment. The presence of a VDA does not change any nonprecision approach requirements.

12.11.1 Obstacles may penetrate the obstacle identification surface below the MDA in the visual segment of an IAP that has a published VDA/TCH. When the VDA/TCH is not authorized due to an obstacle penetration that would require a pilot to deviate from the VDA between MDA and touchdown, the VDA/TCH will be replaced with the note “Visual Segment-Obstacles” in the profile view of the IAP (See FIG ENR 1.5–30). Accordingly, pilots are advised to carefully review approach procedures to identify where the optimum stabilized descent to landing can be initiated. Pilots that follow the previously published descent angle, provided by the RNAV system, below the MDA on procedures with this note may encounter obstacles in the visual segment. Pilots must visually avoid any obstacles below the MDA.

12.11.1.1 VDA/TCH data is furnished by FAA on the official source document for publication on IAP charts and for coding in the navigation database unless, as noted previously, replaced by the note “Visual Segment - Obstacles.”

12.11.1.2 Commercial chart providers and navigation systems may publish or calculate a VDA/TCH even when the FAA does not provide such data. Pilots are cautioned that they are responsible for obstacle avoidance in the visual segment regardless of the presence or absence of a VDA/TCH and associated navigation system advisory vertical guidance.

12.11.2 The threshold crossing height (TCH) used to compute the descent angle is published with the VDA. The VDA and TCH information are charted on the profile view of the IAP following the fix (FAF/stepdown) used to compute the VDA. If no PA/APV IAP is established to the same runway, the VDA will be equal to or higher than the glide path angle of the VGSI installed on the same runway provided it is within instrument procedure criteria. A chart note will indicate if the VGSI is not coincident with the VDA. Pilots must be aware that the published VDA is for advisory information only and not to be considered instrument procedure derived vertical guidance. The VDA solely offers an aid to help pilots establish a continuous, stabilized descent during final approach.

12.11.3 Pilots may use the published angle and estimated/actual groundspeed to find a target rate of descent from the rate of descent table published in the back of the U.S. Terminal Procedures Publication. This rate of descent can be flown with the Vertical Velocity Indicator (VVI) in order to use the VDA as an aid to flying a stabilized descent. No special equipment is required.

FIG ENR 1.5–30
Example of a Chart Note

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNAV MDA</td>
<td>1740-1</td>
<td>556 (600-1)</td>
<td>1740-1/2</td>
<td>556 (600-3/2)</td>
</tr>
<tr>
<td>CIRCLING</td>
<td>1800-1</td>
<td>616 (700-1/2)</td>
<td>1800-1/2</td>
<td>856 (900-2/3)</td>
</tr>
</tbody>
</table>

WASHINGTON, PENNSYLVANIA
Amch '1C 21AUG14

WASHINGTON COUNTY (AFJ)
RNAV (GPS) RWY 9
12.11.4 A straight-in aligned procedure may be restricted to circling only minimums when an excessive descent gradient necessitates. The descent angle between the FAF/stepdown fix and the Circling MDA must not exceed the maximum descent angle allowed by TERPS criteria. A published VDA on these procedures does not imply that landing straight ahead is recommended or even possible. The descent rate based on the VDA may exceed the capabilities of the aircraft and the pilot must determine how to best maneuver the aircraft within the circling area in order to land safely.

12.12 In isolated cases, an IAP may contain a published visual flight path. These procedures are annotated “Fly Visual to Airport” or “Fly Visual.” A dashed arrow indicating the visual flight path will be included in the profile and plan views with an approximate heading and distance to the end of the runway.

12.12.1 The depicted ground track associated with the “Fly Visual to Airport” segment should be flown as a “Dead Reckoning” course. When executing the “Fly Visual to Airport” segment, the flight visibility must not be less than that prescribed in the IAP; the pilot must remain clear of clouds and proceed to the airport maintaining visual contact with the ground. Altitude on the visual flight path is at the discretion of the pilot, and it is the responsibility of the pilot to visually acquire and avoid obstacles in the “Fly Visual to Airport” segment.

12.12.2 Missed approach obstacle clearance is assured only if the missed approach is commenced at the published MAP. Before initiating an IAP that contains a “Fly Visual to Airport” segment, the pilot should have preplanned climb out options based on aircraft performance and terrain features. Obstacle clearance is the responsibility of the pilot when the approach is continued beyond the MAP.

NOTE – The FAA Administrator retains the authority to approve instrument approach procedures where the pilot may not necessarily have one of the visual references specified in 14 CFR §91.175 and related rules. It is not a function of procedure design to ensure compliance with §91.175. The annotation “Fly Visual to Airport” provides relief from §91.175 requirements that the pilot have distinctly visible and identifiable visual references prior to descent below MDA/DA.

12.13 Area Navigation (RNAV) Instrument Approach Charts. Reliance on RNAV systems for instrument operations is becoming more commonplace as new systems such as GPS and augmented GPS such as the Wide Area Augmentation System (WAAS) are developed and deployed. In order to support full integration of RNAV procedures into the National Airspace System (NAS), the FAA developed a new charting format for IAPs (See FIG ENR 1.5–22). This format avoids unnecessary duplication and proliferation of instrument approach charts. The original stand alone GPS charts, titled simply “GPS,” are being converted to the newer format as the procedures are revised. One reason for the revision is the addition of WAAS based minima to the approach chart. The reformatted approach chart is titled “RNAV (GPS) RWY XX.” Up to four lines of minima are included on these charts. GLS (Ground Based Augmentation System (GBAS) Landing System) was a placeholder for future WAAS and LAAS minima, and the minima was always listed as N/A. The GLS minima line has now been replaced by the WAAS LPV (Localizer Performance with Vertical Guidance) minima on most RNAV (GPS) charts. LNAV/VNAV (lateral navigation/vertical navigation) was added to support both WAAS electronic vertical guidance and Barometric VNAV. LPV and LNAV/VNAV are both APV procedures as described in paragraph 12.1.7. The original GPS minima, titled “S–XX,” for straight runway XX, is retitled LNAV (lateral navigation). Circling minima may also be published. A new type of nonprecision WAAS minima will also be published on this chart and titled LP (localizer performance). LP will be published in locations where vertically guided minima cannot be provided due to terrain and obstacles and therefore, no LPV or LNAV/VNAV minima will be published. GBAS procedures are published on a separate chart and the GLS minima line is to be used only for GBAS. ATC clearance for the RNAV procedure authorizes a properly certified pilot to utilize any minimums for which the aircraft is certified (for example, a WAAS equipped aircraft utilizes the LPV or LP minima but a GPS only aircraft may not). The RNAV chart includes information formatted for quick reference by the pilot or flight crew at the top of the chart. This portion of the chart, developed based on a study by the Department of Transportation, Volpe National Transportation System Center, is commonly referred to as the pilot briefing.
12.13.1 The minima lines are:

12.13.1.1 GLS. “GLS” is the acronym for GBAS Landing System. The U.S. version of GBAS has traditionally been referred to as LAAS. The worldwide community has adopted GBAS as the official term for this type of navigation system. To coincide with international terminology, the FAA is also adopting the term GBAS to be consistent with the international community. This line was originally published as a placeholder for both WAAS and LAAS minima and marked as N/A since no minima was published. As the concepts for GBAS and WAAS procedure publication have evolved, GLS will now be used only for GBAS minima, which will be on a separate approach chart. Most RNAV (GPS) approach charts have had the GLS minima line replaced by a WAAS LPV line of minima.

12.13.1.2 LPV. “LPV” is the acronym for localizer performance with vertical guidance. RNAV (GPS) approaches to LPV lines of minima take advantage of the improved accuracy of WAAS lateral and vertical guidance to provide an approach that is very similar to a Category I Instrument Landing System (ILS). The approach to LPV line of minima is designed for angular guidance with increasing sensitivity as the aircraft gets closer to the runway. The sensitivities are nearly identical to those of the ILS at similar distances. This was done intentionally to allow the skills required to proficiently fly an ILS to readily transfer to flying RNAV (GPS) approaches to the LPV line of minima. Just as with an ILS, the LPV has vertical guidance and is flown to a DA. Aircraft can fly this minima line with a statement in the Aircraft Flight Manual that the installed equipment supports LPV lines of minima. This includes Class 3 and 4 TSO-C146 GPS/WAAS equipment.

12.13.1.3 LNAV/VNAV. LNAV/VNAV identifies APV minimums developed to accommodate an RNAV IAP with vertical guidance, usually provided by approach certified Baro–VNAV, but with lateral and vertical integrity limits larger than a precision approach or LPV. LNAV stands for Lateral Navigation; VNAV stands for Vertical Navigation. This minima line can be flown by aircraft with a statement in the Aircraft Flight Manual that the installed equipment supports GPS approaches and has an approach–approved barometric VNAV, or if the aircraft has been demonstrated to support LNAV/VNAV approaches. This includes Class 2, 3 and 4 TSO-C146 GPS/WAAS equipment. Aircraft using LNAV/VNAV minimums will descend to landing via an internally generated descent path based on satellite or other approach approved VNAV systems. Since electronic vertical guidance is provided, the minima will be published as a DA. Other navigation systems may be specifically authorized to use this line of minima. (See Section A, Terms/Landing Minima Data, of the U.S. Terminal Procedures books.)

12.13.1.4 LP. “LP” is the acronym for localizer performance. Approaches to LP lines of minima take advantage of the improved accuracy of WAAS to provide approaches, with lateral guidance and angular guidance. Angular guidance does not refer to a glideslope angle but rather to the increased lateral sensitivity as the aircraft gets closer to the runway, similar to localizer approaches. However, the LP line of minima is a Minimum Descent Altitude (MDA) rather than a DA (H). Procedures with LP lines of minima will not be published with another approach that contains approved vertical guidance (LNAV/VNAV or LPV). It is possible to have LP and LNAV published on the same approach chart but LP will only be published if it provides lower minima than an LNAV line of minima. LP is not a fail–down mode for LPV. LP will only be published if terrain, obstructions, or some other reason prevent publishing a vertically guided procedure. WAAS avionics may provide GNSS–based advisory vertical guidance during an approach to an LP line of minima. Barometric altimeter information remains the primary altitude reference for complying with any altitude restrictions. WAAS equipment may not support LP, even if it supports LPV, if it was approved before TSO-C145b and TSO-C146b. Receivers approved under previous TSOs may require an upgrade by the manufacturer in order to be used to fly to LP minima. Receivers approved for LP must have a statement in the approved Flight Manual including LP as one of the approved approach types.

12.13.1.5 LNAV. This minima is for lateral navigation only, and the approach minimum altitude will be published as a minimum descent altitude (MDA). LNAV provides the same level of service as the present GPS stand alone approaches. LNAV minimums support the following navigation systems: WAAS, when the navigation solution will not support vertical navigation; and, GPS navigation systems.
which are presently authorized to conduct GPS approaches.

**NOTE**  
GPS receivers approved for approach operations in accordance with: AC 20−138, Airworthiness Approval of Positioning and Navigation Systems, qualify for this minima. WAAS navigation equipment must be approved in accordance with the requirements specified in TSO−C145() or TSO−C146() and installed in accordance with Advisory Circular AC 20−138.

**12.13.2** Other systems may be authorized to utilize these approaches. See the description in Section A of the U.S. Terminal Procedures books for details. Operational approval must also be obtained for Baro−VNAV systems to operate to the LNAV/VNAV mininums. Baro−VNAV may not be authorized on some approaches due to other factors, such as no local altimeter source being available. Baro−VNAV is not authorized on LPV procedures. Pilots are directed to their local Flight Standards District Office (FSDO) for additional information.

**NOTE**  
RNAV and Baro−VNAV systems must have a manufacturer supplied electronic database which must include the waypoints, altitudes, and vertical data for the procedure to be flown. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

**12.13.3 ILS or RNAV (GPS) Charts.**

**12.13.3.1** Some RNAV (GPS) charts will also contain an ILS line of minima to make use of the ILS precision final in conjunction with the RNAV GPS capabilities for the portions of the procedure prior to the final approach segment and for the missed approach. Obstacle clearance for the portions of the procedure other than the final approach segment is still based on GPS criteria.

**NOTE**  
Some GPS receiver installations inhibit GPS navigation whenever ANY ILS frequency is tuned. Pilots flying aircraft with receivers installed in this manner must wait until they are on the intermediate segment of the procedure prior to the PFAF (PFAF is the active waypoint) to tune the ILS frequency and must tune the ILS back to a VOR frequency in order to fly the GPS based missed approach.

**12.13.3.2 Charting.** There are charting differences between ILS, RNAV (GPS), and GLS approaches.

  a) The LAAS procedure is titled “GLS RWY XX” on the approach chart.

  b) The VDB provides information to the airborne receiver where the guidance is synthesized.

  c) The LAAS procedure is identified by a four alpha−numeric character field referred to as the RPI or approach ID and is similar to the IDENT feature of the ILS.

  d) The RPI is charted.

  e) Most RNAV (GPS) approach charts have had the GLS (NA) minima line replaced by an LPV line of minima.

  f) Since the concepts for LAAS and WAAS procedure publication have evolved, GLS will now be used only for LAAS minima, which will be on a separate approach chart.

**12.13.4 Required Navigation Performance (RNP)**

**12.13.4.1** Pilots are advised to refer to the “TERMS/LANDING MINIMUMS DATA” (Section A) of the U.S. Government Terminal Procedures books for aircraft approach eligibility requirements by specific RNP level requirements.

**12.13.4.2** Some aircraft have RNP approval in their AFM without a GPS sensor. The lowest level of sensors that the FAA will support for RNP service is DME/DME. However, necessary DME signal may not be available at the airport of intended operations. For those locations having an RNAV chart published with LNAV/VNAV mininums, a procedure note may be provided such as “DME/DME RNP−0.3 NA.” This means that RNP aircraft dependent on DME/DME to achieve RNP−0.3 are not authorized to conduct this approach. Where DME facility availability is a factor, the note may read “DME/DME RNP−0.3 Authorized; ABC and XYZ Required.” This means that ABC and XYZ facilities have been determined by flight inspection to be required in the navigation solution to assure RNP−0.3. VOR/DME updating must not be used for approach procedures.

**12.13.5 Chart Terminology**

**12.13.5.1** Decision Altitude (DA) replaces the familiar term Decision Height (DH). DA conforms to the international convention where altitudes relate to MSL and heights relate to AGL. DA will eventually be published for other types of instrument approach procedures with vertical guidance, as well. DA indicates to the pilot that the published descent profile is flown to the DA (MSL), where a missed approach
will be initiated if visual references for landing are not established. Obstacle clearance is provided to allow a momentary descent below DA while transitioning from the final approach to the missed approach. The aircraft is expected to follow the missed instructions while continuing along the published final approach course to at least the published runway threshold waypoint or MAP (if not at the threshold) before executing any turns.

12.13.5.2 Minimum Descent Altitude (MDA) has been in use for many years, and will continue to be used for the LNAV only and circling procedures.

12.13.5.3 Threshold Crossing Height (TCH) has been traditionally used in “precision” approaches as the height of the glide slope above threshold. With publication of LNAV/VNAV minimums and RNAV descent angles, including graphically depicted descent profiles, TCH also applies to the height of the “descent angle,” or glidepath, at the threshold. Unless otherwise required for larger type aircraft which may be using the IAP, the typical TCH is 30 to 50 feet.

12.13.6 The MINIMA FORMAT will also change slightly.

12.13.6.1 Each line of minima on the RNAV IAP is titled to reflect the level of service available; e.g., GLS, LPV, LNAV/VNAV, LP, and LNAV. CIRCLING minima will also be provided.

12.13.6.2 The minima title box indicates the nature of the minimum altitude for the IAP. For example:

a) DA will be published next to the minima line title for minimums supporting vertical guidance such as for GLS, LPV or LNAV/VNAV.

b) MDA will be published as the minima line on approaches with lateral guidance only, LNAV, or LP. Descent below the MDA must meet the conditions stated in 14 CFR Section 91.175.

c) Where two or more systems, such as LPV and LNAV/VNAV, share the same minima, each line of minima will be displayed separately.

12.13.7 Chart Symbology changed slightly to include:

12.13.7.1 Descent Profile. The published descent profile and a graphical depiction of the vertical path to the runway will be shown. Graphical depiction of the RNAV vertical guidance will differ from the traditional depiction of an ILS glide slope (feather) through the use of a shorter vertical track beginning at the decision altitude.

a) It is FAA policy to design IAPs with minimum altitudes established at fixes/waypoints to achieve optimum stabilized (constant rate) descents within each procedure segment. This design can enhance the safety of the operations and contribute toward reduction in the occurrence of controlled flight into terrain (CFIT) accidents. Additionally, the National Transportation Safety Board (NTSB) recently emphasized that pilots could benefit from publication of the appropriate IAP descent angle for a stabilized descent on final approach. The RNAV IAP format includes the descent angle to the hundredth of a degree; e.g., 3.00 degrees. The angle will be provided in the graphically depicted descent profile.

b) The stabilized approach may be performed by reference to vertical navigation information provided by WAAS or LNAV/VNAV systems; or for LNAV-only systems, by the pilot determining the appropriate aircraft attitude/groundspeed combination to attain a constant rate descent which best emulates the published angle. To aid the pilot, U.S. Government Terminal Procedures Publication charts publish an expanded Rate of Descent Table on the inside of the back hard cover for use in planning and executing precision descents under known or approximate groundspeed conditions.

12.13.7.2 Visual Descent Point (VDP). A VDP will be published on most RNAV IAPs. VDPs apply only to aircraft utilizing LP or LNAV minima, not LPV or LNAV/VNAV minimums.

12.13.7.3 Missed Approach Symbology. In order to make missed approach guidance more readily understood, a method has been developed to display missed approach guidance in the profile view through the use of quick reference icons. Due to limited space in the profile area, only four or fewer icons can be shown. However, the icons may not provide representation of the entire missed approach procedure. The entire set of textual missed approach instructions are provided at the top of the approach chart in the pilot briefing. (See FIG ENR 1.5–22.)

12.13.7.4 Waypoints. All RNAV or GPS stand-alone IAPs are flown using data pertaining to the particular IAP obtained from an onboard database, including the sequence of all WPs used for the approach and missed approach, except that step down way points may not be included in some TSO–C–129
receiver databases. Included in the database, in most receivers, is coding that informs the navigation system of which WPs are fly–over (FO) or fly–by (FB). The navigation system may provide guidance appropriately – including leading the turn prior to a fly–by WP; or causing overflight of a fly–over WP. Where the navigation system does not provide such guidance, the pilot must accomplish the turn lead or waypoint overflight manually. Chart symbology for the FB WP provides pilot awareness of expected actions. Refer to the legend of the U.S. Terminal Procedures books.

12.13.7.5 TAA s are described in subparagraph 12.4, Terminal Arrival Area (TAA). When published, the RNAV chart depicts the TAA areas through the use of “icons” representing each TAA area associated with the RNAV procedure (See FIG ENR 1.5–22). These icons are depicted in the plan view of the approach chart, generally arranged on the chart in accordance with their position relative to the aircrafts arrival from the en route structure. The WP, to which navigation is appropriate and expected within each specific TAA area, will be named and depicted on the associated TAA icon. Each depicted named WP is the IAF for arrivals from within that area. TAAs may not be used on all RNAV procedures because of airspace congestion or other reasons.

12.13.7.6 Published Temperature Limitations.
There are currently two temperature limitations that may be published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). The two published temperature limitations are:

a) A temperature range limitation associated with the use of Baro–VNAV that may be published on an United States PBN IAP titled RNAV (GPS) or RNAV (RNP); and/or

b) A Cold Temperature Airport (CTA) limitation designated by a snowflake ICON and temperature in Celsius (C) that is published on every IAP for the airfield.

REFERENCE—
AIP, Section ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).

12.13.7.7 WAAS Channel Number/Approach ID.
The WAAS Channel Number is an optional equipment capability that allows the use of a 5–digit number to select a specific final approach segment without using the menu method. The Approach ID is an airport unique 4–character combination for verifying the selection and extraction of the correct final approach segment information from the aircraft database. It is similar to the ILS ident, but displayed visually rather than aurally. The Approach ID consists of the letter W for WAAS, the runway number, and a letter other than L, C or R, which could be confused with Left, Center and Right, e.g., W35A. Approach IDs are assigned in the order that WAAS approaches are built to that runway number at that airport. The WAAS Channel Number and Approach ID are displayed in the upper left corner of the approach procedure pilot briefing.

12.13.7.8 At locations where outages of WAAS vertical guidance may occur daily due to initial system limitations, a negative W symbol (W) will be placed on RNAV (GPS) approach charts. Many of these outages will be very short in duration, but may result in the disruption of the vertical portion of the approach. The W symbol indicates that NOTAMS or Air Traffic advisories are not provided for outages which occur in the WAAS LNAV/VNAV or LPV vertical service. Use LNAV or circling minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required. As the WAAS coverage is expanded, the W will be removed.

NOTE—
Properly trained and approved, as required, TSO–C145() and TSO–C146() equipped users (WAAS users) with and using approved baro-VNAV equipment may plan for LNAV/VNAV DA at an alternate airport. Specifically authorized WAAS users with and using approved baro-VNAV equipment may also plan for RNP 0.3 DA at the alternate airport as long as the pilot has verified RNP availability through an approved prediction program.

13. Special Instrument Approach Procedures

13.1 Instrument Approach Procedure (IAP) charts reflect the criteria associated with the U.S. Standard for Terminal Instrument Approach Procedures (TERPs), which prescribes standardized methods for use in developing IAPs. Standard IAPs are published in the Federal Register (FR) in accordance with Title 14 of the Code of Federal Regulations, Part 97,
and are available for use by appropriately qualified pilots operating properly equipped and airworthy aircraft in accordance with operating rules and procedures acceptable to the FAA. Special IAPs are also developed using TERPS but are not given public notice in the FR. The FAA authorizes only certain individual pilots and/or pilots in individual organizations to use special IAPs, and may require additional crew training and/or aircraft equipment or performance, and may also require the use of landing aids, communications, or weather services not available for public use. Additionally, IAPs that service private use airports or heliports are generally special IAPs. FDC NOTAMs for Specials, FDC T-NOTAMs, may also be used to promulgate safety-of-flight information relating to Specials provided the location has a valid landing area identifier and is serviced by the United States NOTAM system. Pilots may access NOTAMs online or through an FAA Flight Service Station (FSS). FSS specialists will not automatically provide NOTAM information to pilots for special IAPs during telephone pre-flight briefings. Pilots who are authorized by the FAA to use special IAPs must specifically request FDC NOTAM information for the particular special IAP they plan to use.

14. Radar Approaches

14.1 The only airborne radio equipment required for radar approaches is a functioning radio transmitter and receiver. The radar controller vectors the aircraft to align it with the runway centerline. The controller continues the vectors to keep the aircraft on course until the pilot can complete the approach and landing by visual reference to the surface. There are two types of radar approaches, “Precision” (PAR) and “Surveillance” (ASR).

14.2 A radar approach may be given to any aircraft upon request and may be offered to pilots of aircraft in distress or to expedite traffic; however, a surveillance approach might not be approved unless there is an ATC operational requirement, or in an unusual or emergency situation. A acceptance of a precision or surveillance approach by a pilot does not waive the prescribed weather minimums for the airport or for the particular aircraft operator concerned. The decision to make a radar approach when the reported weather is below the established minimums rests with the pilot.

14.3 Precision and surveillance approach minimums are published on separate pages in the Federal Aviation Administration Instrument Approach Procedure charts.

14.3.1 A Precision Approach (PAR) is one in which a controller provides highly accurate navigational guidance in azimuth and elevation to a pilot. Pilots are given headings to fly to direct them to and keep their aircraft aligned with the extended centerline of the landing runway. They are told to anticipate glidepath interception approximately 10 to 30 seconds before it occurs and when to start descent. The published decision height will be given only if the pilot requests it. If the aircraft is observed to deviate above or below the glidepath, the pilot is given the relative amount of deviation by use of terms “slightly” or “well” and is expected to adjust the aircraft’s rate of descent to return to the glidepath. Trend information is also issued with respect to the elevation of the aircraft and may be modified by the terms “rapidly” and “slowly”; e.g., “well above glidepath, coming down rapidly.” Range from touchdown is given at least once each mile. If an aircraft is observed by the controller to proceed outside of specified safety zone limits in azimuth and/or elevation and continues to operate outside these prescribed limits, the pilot will be directed to execute a missed approach or to fly a specified course unless the pilot has the runway environment (runway, approach lights, etc.) in sight. Navigational guidance in azimuth and elevation is provided the pilot until the aircraft reaches the published decision height (DH). Advisory course and glidepath information is furnished by the controller until the aircraft passes over the landing threshold, at which point the pilot is advised of any deviation from the runway centerline. Radar service is automatically terminated upon completion of the approach.

14.3.2 A Surveillance Approach (ASR) is one in which a controller provides navigational guidance in azimuth only. The pilot is furnished headings to fly to align the aircraft with the extended centerline of the landing runway. Since the radar information used for a surveillance approach is considerably less precise than that used for a precision approach, the accuracy of the approach will not be as great, and higher minimums will apply. Guidance in elevation is not possible but the pilot will be advised when to commence descent to the minimum descent altitude (MDA) or, if appropriate, to an intermediate “step
down fix” minimum crossing altitude and subsequently to the prescribed MDA. In addition, the pilot will be advised of the location of the missed approach point (MAP) prescribed for the procedure and the aircraft’s position each mile on final from the runway, airport/heliport, or MAP, as appropriate. If requested by the pilot, recommended altitudes will be issued at each mile, based on the descent gradient established for the procedure, down to the last mile that is at or above the MDA. Normally, navigational guidance will be provided until the aircraft reaches the MAP. Controllers will terminate guidance and instruct the pilot to execute a missed approach unless at the MAP the pilot has the runway, airport/heliport in sight or, for a helicopter point-in-space approach, the prescribed visual reference with the surface is established. Also, if at any time during the approach the controller considers that safe guidance for the remainder of the approach cannot be provided, the controller will terminate guidance and instruct the pilot to execute a missed approach. Similarly, guidance termination and missed approach will be effected upon pilot request, and for civil aircraft only, controllers may terminate guidance when the pilot reports the runway, airport/heliport, or visual surface route (point-in-space approach) in sight or otherwise indicates that continued guidance is not required.

Radar service is automatically terminated at the completion of a radar approach.

NOTE –
1. The published MDA for straight-in approaches will be issued to the pilot before beginning descent. When a surveillance approach will terminate in a circle-to-land maneuver, the pilot must furnish the aircraft approach category to the controller. The controller will then provide the pilot with the appropriate MDA.

2. ASR approaches are not available when an ATC facility is using center radar arts presentation/processing (CENRAP).

14.3.3 A No-Gyro Approach is available to a pilot under radar control who experiences circumstances wherein the directional gyro or other stabilized compass is inoperative or inaccurate. When this occurs, the pilot should so advise ATC and request a No-Gyro vector or approach. Pilots of aircraft not equipped with a directional gyro or other stabilized compass who desire radar handling may also request a No-Gyro vector or approach. The pilot should make all turns at standard rate and should execute the turn immediately upon receipt of instructions. For example, “TURN RIGHT,” “STOP TURN.” When a surveillance or precision approach is made, the pilot will be advised after the aircraft has been turned onto final approach to make turns at half standard rate.

15. Radar Monitoring of Instrument Approaches

15.1 PAR facilities operated by the FAA and the military services at some joint-use (civil/military) and military installations monitor aircraft on instrument approaches and issue radar advisories to the pilot when weather is below VFR minimum (1,000 and 3), at night, or when requested by a pilot. This service is provided only when the PAR final approach course coincides with the final approach of the navigational aid and only during the operational hours of the PAR. The PARs serve only as a secondary aid since the pilot has selected the navigational aid as the primary aid for the approach.

15.2 Prior to starting final approach, the pilot will be advised of the frequency on which the advisories will be transmitted. If, for any reason, radar advisories cannot be furnished, the pilot will be so advised.

15.3 Advisory information, derived from radar observations, includes information on:

15.3.1 Passing the final approach fix inbound (nonprecision approach) or passing the outer marker or the fix used in lieu of the outer marker inbound (precision approach).

15.3.2 Trend advisories with respect to elevation and/or azimuth radar position and movement will be provided.

NOTE – At this point, the pilot may be requested to report sighting the approach lights or the runway.

NOTE – Whenever the aircraft nears the PAR safety limit, the pilot will be advised that the aircraft is well above or below the glidepath or well left or right of course. Glidepath information is given only to those aircraft executing a precision approach, such as ILS. Altitude information is not transmitted to aircraft executing other than precision approaches because the descent portions of these approaches generally do not coincide with the depicted PAR glidepath.

15.3.3 If, after repeated advisories, the aircraft proceeds outside the PAR safety limit or if a radical deviation is observed, the pilot will be advised to execute a missed approach if not visual.
15.4 Radar service is automatically terminated upon completion of the approach.

16. ILS Approach

16.1 Communications should be established with the appropriate FAA control tower or with the FAA FSS where there is no control tower, prior to starting an ILS approach. This is in order to receive advisory information as to the operation of the facility. It is also recommended that the aural signal of the ILS be monitored during an approach as to assure continued reception and receipt of advisory information, when available.

17. Simultaneous Approaches to Parallel Runways

FIG ENR 1.5–31
Simultaneous Approaches
(Approach Courses Parallel and Offset between 2.5 and 3.0 degrees)
17.1 ATC procedures permit ILS/RNAV/GLS instrument approach operations to dual or triple parallel runway configurations. ILS/RNAV/GLS approaches to parallel runways are grouped into three classes: Simultaneous Dependent Approaches; Simultaneous Independent Approaches; and Simultaneous Close Parallel PRM Approaches. RNAV approach procedures that are approved for simultaneous operations require GPS as the sensor for position updating. VOR/DME, DME/DME and IRU RNAV updating is not authorized. The classification of a parallel runway approach procedure is dependent on adjacent parallel runway centerline separation, ATC procedures, and airport ATC final approach radar monitoring and communications capabilities. At some airports, one or more approach courses may be offset up to 3 degrees. ILS approaches with offset localizer configurations result in loss of Category II/III capabilities and an increase in decision altitude/height (50').

17.2 Depending on weather conditions, traffic volume, and the specific combination of runways being utilized for arrival operations, a runway may be used for different types of simultaneous operations, including closely spaced dependent or independent approaches. Pilots should ensure that they understand the type of operation that is being conducted, and ask ATC for clarification if necessary.

17.3 Parallel approach operations demand heightened pilot situational awareness. A thorough Approach Procedure Chart review should be conducted with, as a minimum, emphasis on the following approach chart information: name and number of the approach, localizer frequency, inbound localizer/azimuth course, glideslope/glidepath intercept altitude, glideslope crossing altitude at the final approach fix, decision height, missed approach instructions, special notes/procedures, and the assigned runway location/proximity to adjacent runways. Pilots are informed by ATC or through the ATIS that simultaneous approaches are in use.

17.4 The close proximity of adjacent aircraft conducting simultaneous independent approaches, especially simultaneous close parallel PRM approaches mandates strict pilot compliance with all ATC clearances. ATC assigned airspeeds, altitudes, and headings must be complied with in a timely manner. A utopilot coupled approaches require pilot knowledge of procedures necessary to comply with ATC instructions. Simultaneous independent approaches, particularly simultaneous close parallel PRM approaches necessitate precise approach course tracking to minimize final monitor controller intervention, and unwanted No Transgression Zone (NTZ) penetration. In the unlikely event of a breakout, ATC will not assign altitudes lower than the minimum vectoring altitude. Pilots should notify ATC immediately if there is a degradation of aircraft or navigation systems.

17.5 Strict radio discipline is mandatory during simultaneous independent and simultaneous close parallel PRM approach operations. This includes an alert listening watch and the avoidance of lengthy, unnecessary radio transmissions. Attention must be given to proper call sign usage to prevent the inadvertent execution of clearances intended for another aircraft. Use of abbreviated call signs must be avoided to preclude confusion of aircraft with similar sounding call signs. Pilots must be alert to unusually long periods of silence or any unusual background sounds in their radio receiver. A stuck microphone may block the issuance of ATC instructions on the tower frequency by the final monitor controller during simultaneous independent and simultaneous close parallel PRM approaches. In the case of PRM approaches, the use of a second frequency by the monitor controller mitigates the “stuck mike” or other blockage on the tower frequency.

REFERENCE

− AIP GEN 3.4, Paragraph 4.4, Radio Communications Phraseology and Techniques, gives additional communications information.

17.6 Use of Traffic Collision Avoidance Systems (TCAS) provides an additional element of safety to parallel approach operations. Pilots should follow recommended TCAS operating procedures presented in approved flight manuals, original equipment manufacturer recommendations, professional newsletters, and FAA publications.
18. Simultaneous Dependent Approaches

**FIG ENR 1.5–32**

Simultaneous Approaches  
(Parallel Runways and Approach Courses)

**DEPENDENT APPROACHES**

- Runway centerlines spaced between 2500' and 9000'  
- STAGGERED approaches  
- Final Monitor controllers and NTZ not required  
  "less than 2500' when specifically authorized"

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Diagonal separation  
In-trail separation  

Diagonal separation, may be more than minimum depending on required in-trail spacing.
18.1 Simultaneous dependent approaches are an ATC procedure permitting approaches to airports having parallel runway centerlines separated by at least 2,500 feet up to 9,000 feet. Integral parts of a total system are ILS or other system providing approach navigation, radar, communications, ATC procedures, and required airborne equipment. RNAV equipment in the aircraft or GLS equipment on the ground and in the aircraft may replace the required airborne and ground based ILS equipment. Although non-precision minimums may be published, pilots must only use those procedures specifically authorized by chart note. For example, the chart note “LNAV NA during simultaneous operations,” requires vertical guidance. When given a choice, pilots should always fly a precision approach whenever possible.

18.2 A simultaneous dependent approach differs from a simultaneous independent approach in that, the minimum distance between parallel runway centerlines may be reduced; there is no requirement for radar monitoring or advisories; and a staggered separation of aircraft on the adjacent final course is required.

18.3 A minimum of 1.0 NM radar separation (diagonal) is required between successive aircraft on the adjacent final approach course when runway centerlines are at least 2,500 feet but no more than 3,600 feet apart. A minimum of 1.5 NM radar separation (diagonal) is required between successive aircraft on the adjacent final approach course when runway centerlines are more than 3,600 feet but no more than 8,300 feet apart. When runway centerlines are more than 8,300 feet but no more than 9,000 feet apart a minimum of 2 NM diagonal radar separation is provided. A aircraft on the same final approach course within 10 NM of the runway end are provided a minimum of 3 NM radar separation, reduced to 2.5 NM in certain circumstances. In addition, a minimum of 1,000 feet vertical or a minimum of three miles radar separation is provided between aircraft during turn on to the parallel final approach course.

18.4 Whenever parallel approaches are in use, pilots are informed by ATC or via the ATIS that approaches to both runways are in use. The charted IAP also notes which runways may be used simultaneously. In addition, the radar controller will have the interphone capability of communicating with the tower controller where separation responsibility has not been delegated to the tower.

NOTE—
ATC will not specifically identify these operations as being dependent when advertised on the ATIS.

EXAMPLE—
Simultaneous ILS Runway 19 right and ILS Runway 19 left in use.

18.5 At certain airports, simultaneous dependent approaches are permitted to runways spaced less than 2,500 feet apart. In this case, ATC will provide no less than the minimum authorized diagonal separation with the leader always arriving on the same runway. The trailing aircraft is permitted reduced diagonal separation, instead of the single runway separation normally utilized for runways spaced less than 2,500 feet apart. For wake turbulence mitigation reasons:

18.5.1 Reduced diagonal spacing is only permitted when certain aircraft wake category pairings exist; typically when the leader is either in the large or small wake turbulence category, and

18.5.2 All aircraft must descend on the glideslope from the altitude at which they were cleared for the approach during these operations.

When reduced separation is authorized, the IAP briefing strip indicates that simultaneous operations require the use of vertical guidance and that the pilot should maintain last assigned altitude until intercepting the glideslope. No special pilot training is required to participate in these operations.

NOTE—
Either simultaneous dependent approaches with reduced separation or SOIA PRM approaches may be conducted to Runways 28R and 28L at KSFO spaced 750 feet apart, depending on weather conditions and traffic volume. Pilots should use caution so as not to confuse these operations. Plan for SOIA procedures only when ATC assigns a PRM approach or the ATIS advertises PRM approaches are in use. KSFO is the only airport where both procedures are presently conducted.

REFERENCE—
ENR 1.5, Para 20. Simultaneous Close Parallel PRM Approaches and Simultaneous Offset Instrument Approaches (SOIA)
19. Simultaneous Independent ILS/RNAV/GLS Approaches

19.1 System. An approach system permitting simultaneous approaches to parallel runways with centerlines separated by at least 4,300 feet. Separation between 4,300 and 9,000 feet (9,200’ for airports above 5,000’) utilizing NTZ final monitor controllers. Simultaneous independent approaches require NTZ radar monitoring to ensure separation between aircraft on the adjacent parallel approach course. Aircraft position is tracked by final monitor controllers who will issue instructions to aircraft observed deviating from the assigned final approach course. Staggered radar separation procedures are not utilized. Integral parts of a total system are radar, communications, ATC procedures, and ILS or other required airborne equipment. A chart note identifies that the approach is authorized for simultaneous use. When simultaneous operations are in use, it will be advertised on the ATIS. When advised that simultaneous approaches are in use, pilots must advise approach control immediately of malfunctioning or inoperative receivers, or if a simultaneous approach is not desired. Although non-precision minimums may be published, pilots must only use those procedures specifically authorized by chart note. For example, the chart note “LNAV NA during simultaneous operations,” requires vertical guidance. When given a choice, pilots should always fly a precision approach whenever possible.

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

EXAMPLE –
Simultaneous ILS Runway 24 left and ILS Runway 24 right approaches in use.
19.2 Radar Services. These services are provided for each simultaneous independent approach.

19.2.1 During turn on to parallel final approach, aircraft are normally provided 3 miles radar separation or a minimum of 1,000 feet vertical separation. The assigned altitude must be maintained until intercepting the glideslope, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

NOTE—Some simultaneous operations permit the aircraft to track an RNAV course beginning on downwind and continuing in a turn to intercept the final approach course. In this case, separation with the aircraft on the adjacent final approach course is provided by the monitor controller with reference to an NTZ.

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

19.2.3 Pilots will be instructed to contact the tower frequency prior to the point where NTZ monitoring begins.

19.2.4 Aircraft observed to overshoot the turn-on or to continue on a track which will penetrate the NTZ will be instructed to return to the correct final approach course immediately. The final monitor controller may cancel the approach clearance, and issue missed approach or other instructions to the deviating aircraft.

PHRASEOLOGY—
"(Aircraft call sign) YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,"

or

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

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

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

19.2.6 Radar monitoring will automatically be terminated when visual separation is applied, the aircraft reports the approach lights or runway in sight, or the aircraft is 1 NM or less from the runway threshold. Final monitor controllers will not advise pilots when radar monitoring is terminated.

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

20.1 System

20.1.1 PRM is an acronym for the high update rate Precision Runway Monitor surveillance system which is required to monitor the No Transgression Zone (NTZ) for specific parallel runway separations used to conduct simultaneous close parallel approaches. PRM is also published in the title as part of the approach name for IAPs used to conduct Simultaneous Close Parallel approaches. “PRM” alerts pilots that specific airborne equipment, training, and procedures are applicable.

Because Simultaneous Close Parallel PRM approaches are independent, the NTZ and normal operating zone (NOZ) airspace between the final approach courses is monitored by two monitor controllers, one for each approach course. The NTZ monitoring system (final monitor aid) consists of a high resolution ATC radar display with automated tracking software which provides monitor controllers with aircraft identification, position, speed, and a ten-second projected position, as well as visual and aural NTZ penetration alerts. A PRM high update rate surveillance sensor is a component of this system only for specific runway spacing. Additional procedures for simultaneous independent approaches are described in ENR 1.5, paragraph 19. Simultaneous Independent ILS/RNAV/GLS Approaches.

20.1.2 Simultaneous Close Parallel PRM approaches, whether conducted utilizing a high update rate PRM surveillance sensor or not, must meet all of the following requirements: pilot training, PRM in the approach title, NTZ monitoring utilizing a final
monitor aid, radar display, publication of an AAUP, and use of a secondary PRM communications frequency. PRM approaches are depicted on a separate IAP titled (Procedure type) PRM Rwy XXX (Simultaneous Close Parallel or Close Parallel).

**NOTE**
ATC does not use the word “independent” when advertising these operations on the ATIS.

**EXAMPLE**
Simultaneous ILS PRM Runway 33 left and ILS PRM Runway 33 right approaches in use.

20.1.2.1 The pilot may request to conduct a different type of PRM approach to the same runway other than the one that is presently being used; for example, RNAV instead of ILS. However, pilots must always obtain ATC approval to conduct a different type of approach. Also, in the event of the loss of ground-based NA VAIDS, the ATIS may advertise other types of PRM approaches to the affected runway or runways.

20.1.2.2 The Attention All Users Page (AAUP) will address procedures for conducting PRM approaches.

20.2 Requirements and Procedures. Besides system requirements and pilot procedures as identified in subparagraph 20.1.1 above, all pilots must have completed special training before accepting a clearance to conduct a PRM approach.

20.2.1 Pilot Training Requirement. Pilots must complete special pilot training, as outlined below, before accepting a clearance to conduct a PRM approach.

20.2.1.1 For operations under 14 CFR Parts 121, 129, and 135, pilots must comply with FAA-approved company training as identified in their Operations Specifications. Training includes the requirement for pilots to view the FAA training slide presentation, “Precision Runway Monitor (PRM) Pilot Procedures.” Refer to https://www.faa.gov/training_testing/training/prm/ or search key words “FAA PRM” for additional information and to view or download the slide presentation.

20.2.1.2 For operations under Part 91:

a) Pilots operating transport category aircraft must be familiar with PRM operations as contained in this section of the AIM. In addition, pilots operating transport category aircraft must view the slide presentation, “Precision Runway Monitor (PRM) Pilot Procedures.” Refer to https://www.faa.gov/training_testing/training/prm/ or search key words “FAA PRM” for additional information and to view or download the slide presentation.

b) Pilots not operating transport category aircraft must be familiar with PRM and SOIA operations as contained in this section of the AIM. The FAA strongly recommends that pilots not involved in transport category aircraft operations view the FAA training slide presentation, “Precision Runway Monitor (PRM) Pilot Procedures.” Refer to https://www.faa.gov/training_testing/training/prm/ or search key words “FAA PRM” for additional information and to view or download the slide presentation.

**NOTE**
Depending on weather conditions, traffic volume, and the specific combination of runways being utilized for arrival operations, a runway may be used for different types of simultaneous operations, including closely spaced dependent or independent approaches. Use PRM procedures only when the ATIS advertises their use. For other types of simultaneous approaches, see ENR 1.5 paragraphs 17 and 18.

20.3 ATC Directed Breakout. An ATC directed “breakout” is defined as a vector off the final approach course of a threatened aircraft in response to another aircraft penetrating the NTZ.

20.4 Dual Communications. The aircraft flying the PRM approach must have the capability of enabling the pilot/s to listen to two communications frequencies simultaneously. To avoid blocked transmissions, each runway will have two frequencies, a primary and a PRM monitor frequency. The tower controller will transmit on both frequencies. The monitor controller’s transmissions, if needed, will override both frequencies. Pilots will ONLY transmit on the tower controller’s frequency, but will listen to both frequencies. Select the PRM monitor frequency audio only when instructed by ATC to contact the tower. The volume levels should be set about the same on both radios so that the pilots will be able to hear transmissions on the PRM frequency if the tower is blocked. Site-specific procedures take precedence over the general information presented in this paragraph. Refer to the AAUP for applicable procedures at specific airports.
20.5 Radar Services

20.5.1 During turn on to parallel final approach, aircraft will be provided 3 miles radar separation or a minimum of 1,000 feet vertical separation. The assigned altitude must be maintained until intercepting the glideslope/glidepath, unless cleared otherwise by ATC. Aircraft will not be vectored to intercept the final approach course at an angle greater than thirty degrees.

20.5.2 The final monitor controller will have the capability of overriding the tower controller on the tower frequency as well as transmitting on the PRM frequency.

20.5.3 Pilots will be instructed to contact the tower frequency prior to the point where NTZ monitoring begins. Pilots will begin monitoring the secondary PRM frequency at that time (see Dual VHF Communications Required below).

20.5.4 To ensure separation is maintained, and in order to avoid an imminent situation during PRM approaches, pilots must immediately comply with monitor controller instructions.

20.5.5 Aircraft observed to overshoot the turn or to continue on a track which will penetrate the NTZ will be instructed to return to the correct final approach course immediately. The final monitor controller may cancel the approach clearance, and issue missed approach or other instructions to the deviating aircraft.

PHRASEOLOGY--
“(Aircraft call sign) YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,”
or
“(Aircraft call sign) TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.”

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

20.5.7 Radar monitoring will automatically be terminated when visual separation is applied, or the aircraft reports the approach lights or runway in sight or within 1 NM of the runway threshold. Final monitor controllers will not advise pilots when radar monitoring is terminated.

20.6 Attention All Users Page (AAUP). At airports that conduct PRM operations, the AAUP informs pilots under the “General” section of information relative to all the PRM approaches published at a specific airport, and this section must be briefed in its entirety. Under the “Runway Specific” section, only items relative to the runway to be used for landing need be briefed. (See FIG ENR 1.5–35.) A single AAUP is utilized for multiple PRM approach charts at the same airport, which are listed on the AAUP. The requirement for informing ATC if the pilot is unable to accept a PRM clearance is also presented. The “General” section of AAUP addresses the following:

20.6.1 Review of the procedure for executing a climbing or descending breakout;
20.6.2 Breakout phraseology beginning with the words, “Traffic Alert;”
20.6.3 Descending on the glideslope/glidepath meets all crossing restrictions;
20.6.4 Briefing the PRM approach also satisfies the non-PRM approach briefing of the same type of approach to the same runway; and
20.6.5 Description of the dual communications procedure.

The “Runway Specific” section of the AAUP addresses those issues which only apply to certain runway ends that utilize PRM approaches. There may be no Runway Specific procedures, a single item applicable to only one runway end, or multiple items for a single or multiple runway end/s. Examples of SOIA runway specific procedures are as follows:
20.7 Simultaneous Offset Instrument Approach (SOIA).

20.7.1 SOIA is a procedure used to conduct simultaneous approaches to runways spaced less than 3,000 feet, but at least 750 feet apart. The SOIA procedure utilizes a straight-in PRM approach to one runway, and a PRM offset approach with glide-lope/glidepath to the adjacent runway. In SOIA operations, aircraft are paired, with the aircraft conducting the straight-in PRM approach always positioned slightly ahead of the aircraft conducting the offset PRM approach.

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

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

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

20.7.5 Flight Management System (FMS) coding of the offset RNAV PRM and GLS PRM approaches in a SOIA operation is different than other RNAV and GLS approach coding in that it does not match the initial missed approach procedure published on the charted IAP. In the SOIA design of the offset approach, lateral course guidance terminates at the fictitious threshold point (FTP), which is an extension of the final approach course beyond the offset MAP to a point near the runway threshold. The FTP is designated in the approach coding as the MAP so that vertical guidance is available to the pilot to the runway threshold, just as vertical guidance is provided by the offset LDA glideslope. No matter what type of offset approach is being conducted, reliance on lateral guidance is discontinued at the charted MAP and replaced by visual maneuvering to accomplish runway alignment.

20.7.5.1 As a result of this approach coding, when executing a missed approach at and after passing the charted offset MAP, a heading must initially be flown (either hand-flown or using autopilot “heading mode”) before engaging LNAV. If the pilot engages LNAV immediately, the aircraft may continue to track toward the FTP instead of commencing a turn toward the missed approach holding fix. Notes on the charted IAP and in the AAUP make specific reference to this procedure.

20.7.5.2 Some FMSs do not code waypoints inside of the FAF as part of the approach. Therefore, the depicted MAP on the charted IAP may not be included in the offset approach coding. Pilots utilizing those FMSs may identify the location of the waypoint by noting its distance from the FTP as published on the charted IAP. In those same FMSs, the straight-in SOIA approach will not display a waypoint inside the PFAF. The same procedures may be utilized to identify an uncoded waypoint. In this case, the location is determined by noting its distance from the runway waypoint or using an authorized distance as published on the charted IAP.

20.7.5.3 Because the FTP is coded as the MAP, the FMS map display will depict the initial missed approach course as beginning at the FTP. This depiction does not match the charted initial missed approach procedure on the IAP. Pilots are reminded that charted IAP guidance is to be followed, not the map display. Once the aircraft completes the initial turn when commencing a missed approach, the remainder of the procedure coding is standard and can be utilized as with any other IAP.
**NOTE**

**SAP**

The stabilized approach point is a design point along the extended centerline of the intended landing runway on the glide slope/glide path at 500 feet above the runway threshold elevation. It is used to verify a sufficient distance is provided for the visual maneuver after the offset course approach DA to permit the pilots to conform to approved, stabilized approach criteria. The SAP is not published on the IAP.

**Offset Course DA**

The point along the LDA, or other offset course, where the course separation with the adjacent ILS, or other straight-in course, reaches the minimum distance permitted to conduct closely spaced approaches. Typically that minimum distance will be 3,000 feet without the use of high update radar; with high update radar, course separation of less than 3,000 ft may be used when validated by a safety study. The altitude of the glide slope/glide path at that point determines the offset course approach decision altitude and is where the NTZ terminates. Maneuvering inside the DA is done in visual conditions.

**Visual Segment Angle**

Angle, as determined by the SOIA design tool, formed by the extension of the straight segment of the calculated flight track (between the offset course MAP/DA and the SAP) and the extended runway centerline. The size of the angle is dependent on the aircraft approach categories (Category D or only selected categories/speeds) that are authorized to use the offset course approach and the spacing between the runways.

**Visibility**

Distance from the offset course approach DA to runway threshold in statute mile.
The aircraft on the offset course approach must see the runway-landing environment and, if ATC has advised that traffic on the straight-in approach is a factor, the offset course approach aircraft must visually acquire the straight-in approach aircraft and report it in sight to ATC prior to reaching the DA for the offset course approach.

**Procedure**

The Clear of Clouds point is the position on the offset final approach course where aircraft first operate in visual meteorological conditions below the ceiling, when the actual weather conditions are at, or near, the minimum ceiling for SOIA operations. Ceiling is defined by the Aeronautical Information Manual.

**20.7.6** SOIA PRM approaches utilize the same dual communications procedures as do other PRM approaches.

**NOTE**

At KSFO, pilots conducting SOIA operations select the monitor frequency audio when communicating with the final radar controller, not the tower controller as is customary. In this special case, the monitor controller’s transmissions, if required, override the final controller’s frequency. This procedure is addressed on the AAUP.

**20.7.6.1** SOIA utilizes the same AAUP format as do other PRM approaches. The minimum weather conditions that are required are listed. Because of the more complex nature of instructions for conducting SOIA approaches, the “Runway Specific” items are more numerous and lengthy.

**20.7.6.2** Examples of SOIA offset runway specific notes:

a) Aircraft must remain on the offset course until passing the offset MAP prior to maneuvering to align with the centerline of the offset approach runway.

b) Pilots are authorized to continue past the offset MAP to align with runway centerline when:

1) the straight-in approach traffic is in sight and is expected to remain in sight,

2) ATC has been advised that “traffic is in sight.” (ATC is not required to acknowledge this transmission),

3) the runway environment is in sight. Otherwise, a missed approach must be executed. Between the offset MAP and the runway threshold, pilots conducting the offset PRM approach must not pass the straight-in aircraft and are responsible for separating themselves visually from traffic conducting the straight-in PRM approach to the adjacent runway, which means maneuvering the aircraft as necessary to avoid that traffic until landing, and providing wake turbulence avoidance, if applicable.

Pilots maintaining visual separation should advise ATC, as soon as practical, if visual contact with the aircraft conducting the straight-in PRM approach is lost and execute a missed approach unless otherwise instructed by ATC.

**20.7.6.3** Examples of SOIA straight-in runway specific notes:

a) To facilitate the offset aircraft in providing wake mitigation, pilots should descend on, not above, the glideslope/glidepath.

b) Conducting the straight-in approach, pilots should be aware that the aircraft conducting the offset approach will be approaching from the right/left rear and will be operating in close proximity to the straight-in aircraft.

**20.7.7 Recap.**

The following are differences between widely spaced simultaneous approaches (at least 4,300 feet between the runway centerlines) and Simultaneous PRM close parallel approaches which are of importance to the pilot:

**20.7.7.1 Runway Spacing.** Prior to PRM simultaneous close parallel approaches, most ATC-directed breakouts were the result of two aircraft in–trail on the same final approach course getting too close together. Two aircraft going in the same direction did not mandate quick reaction times. With PRM closely spaced approaches, two aircraft could be alongside each other, navigating on courses that are separated by less than 4,300 feet and as close as 3,000 feet. In the unlikely event that an aircraft “blunders” off its course and makes a worst case turn of 30 degrees toward the adjacent final approach course, closing speeds of 135 feet per second could occur that constitute the need for quick reaction. A blunder has to be recognized by the monitor controller, and breakout instructions issued to the endangered aircraft. The pilot will not have any warning that a breakout is imminent because the blundering aircraft
will be on another frequency. It is important that, when a pilot receives breakout instructions, the assumption is made that a blundering aircraft is about to (or has penetrated the NTZ) and is heading toward his/her approach course. The pilot must initiate a breakout as soon as safety allows. While conducting PRM approaches, pilots must maintain an increased sense of awareness in order to immediately react to an ATC (breakout) instruction and maneuver (as instructed by ATC) away from a blundering aircraft.

20.7.7.2 Communications. Dual VHF communications procedures should be carefully followed. One of the assumptions made that permits the safe conduct of PRM approaches is that there will be no blocked communications.

20.7.7.3 Hand-flown Breakouts. The use of the autopilot is encouraged while flying a PRM approach, but the autopilot must be disengaged in the rare event that a breakout is issued. Simulation studies of breakouts have shown that a hand-flown breakout can be initiated consistently faster than a breakout performed using the autopilot.

20.7.7.4 TCAS. The ATC breakout instruction is the primary means of conflict resolution. TCAS, if installed, provides another form of conflict resolution in the unlikely event other separation standards would fail. TCAS is not required to conduct a closely spaced approach.

The TCAS provides only vertical resolution of aircraft conflicts, while the ATC breakout instruction provides both vertical and horizontal guidance for conflict resolutions. Pilots should always immediately follow the TCAS Resolution Advisory (RA), whenever it is received. Should a TCAS RA be received before, during, or after an ATC breakout instruction is issued, the pilot should follow the RA, even if it conflicts with the climb/descent portion of the breakout maneuver. If following an RA requires deviating from an ATC clearance, the pilot must advise ATC as soon as practical. While following an RA, it is extremely important that the pilot also comply with the turn portion of the ATC breakout instruction unless the pilot determines safety to be factor. Adhering to these procedures assures the pilot that acceptable “breakout” separation margins will always be provided, even in the face of a normal procedural or system failure.

21. Simultaneous Converging Instrument Approaches

21.1 ATC may conduct instrument approaches simultaneously to converging runways; i.e., runways having an included angle from 15 to 100 degrees, at airports where a program has been specifically approved to do so.

21.2 The basic concept requires that dedicated, separate standard instrument approach procedures be developed for each converging runway included. These approaches can be identified by the letter “V” in the title; for example, “ILS V Rwy 17 (CONVERGING)”. Missed approach points must be at least 3 miles apart and missed approach procedures ensure that missed approach protected airspace does not overlap.

21.3 Other requirements are: radar availability, nonintersecting final approach courses, precision approach capability for each runway and, if runways intersect, controllers must be able to apply visual separation as well as intersecting runway separation criteria. Intersecting runways also require minimums of at least 700 foot ceilings and 2 miles visibility. Straight in approaches and landings must be made.

21.4 Whenever simultaneous converging approaches are in use, aircraft will be informed by the controller as soon as feasible after initial contact or via ATIS. Additionally, the radar controller will have direct communications capability with the tower controller where separation responsibility has not been delegated to the tower.

22. Timed Approaches From a Holding Fix

22.1 Timed approaches may be conducted when the following conditions are met:

22.1.1 A control tower is in operation at the airport where the approaches are conducted.

22.1.2 Direct communications are maintained between the pilot and the center/approach controller until the pilot is instructed to contact the tower.

22.1.3 If more than one missed approach procedure is available, none requires a course reversal.

22.1.4 If only one missed approach procedure is available, the following conditions are met:

22.1.4.1 Course reversal is not required.
22.1.4.2 Reported ceiling and visibility are equal to or greater than the highest prescribed circling minimums for the instrument approach procedure.

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

22.2 Although the controller will not specifically state that “timed approaches are in use,” the assigning a time to depart the final approach fix inbound (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker inbound (precision approach) is indicative that timed approach procedures are being utilized, or in lieu of holding, the controller may use radar vectors to the final approach course to establish a mileage interval between aircraft that will insure the appropriate time sequence between the final approach fix/outer marker or the fix used in lieu of the outer marker and the airport.

22.3 Each pilot in an approach sequence will be given advance notice as to the time he/she should leave the holding point on approach to the airport. When a time to leave the holding point has been received, the pilot should adjust his/her flight path to leave the fix as closely as possible to the designated time. (See FIG ENR 1.5–37.)
EXAMPLE –
At 12:03 local time, in the example shown, a pilot holding, receives instructions to leave the fix inbound at 12:07. These instructions are received just as the pilot has completed turn at the outbound end of the holding pattern and is proceeding inbound toward the fix. Arriving back over the fix, the pilot notes that the time is 12:04 and that there are 3 minutes to lose in order to leave the fix at the assigned time. Since the time remaining is more than two minutes, the pilot plans to fly a race track pattern rather than a 360 degree turn, which would use up 2 minutes. The turns at the ends of the race track pattern will consume approximately 2 minutes. Three minutes to go, minus 2 minutes required for the turns, leaves 1 minute for level flight. Since two portions of level flight will be required to get back to the fix inbound, the pilot halves the 1 minute remaining...
and plans to fly level for 30 seconds outbound before starting the turn back to the fix on final approach. If the winds were negligible at flight altitude, this procedure would bring the pilot inbound across the fix precisely at the specified time of 12:07. However, if expecting headwind on final approach, the pilot should shorten the 30 second outbound course somewhat, knowing that the wind will carry the aircraft away from the fix faster while outbound and decrease the ground speed while returning to the fix. On the other hand, compensating for a tailwind on final approach, the pilot should lengthen the calculated 30 second outbound heading somewhat, knowing that the wind would tend to hold the aircraft closer to the fix while outbound and increase the ground speed while returning to the fix.

23. Contact Approach

23.1 Pilots operating in accordance with an IFR flight plan, provided they are clear of clouds and have at least 1 mile flight visibility and can reasonably expect to continue to the destination airport in those conditions, may request ATC authorization for a "contact approach."

23.2 Controllers may authorize a “contact approach” provided:

23.2.1 The contact approach is specifically requested by the pilot. ATC cannot initiate this approach.

EXAMPLE – Request contact approach.

23.2.2 The reported ground visibility at the destination airport is at least 1 statute mile.

23.2.3 The contact approach will be made to an airport having a standard or special instrument approach procedure.

23.2.4 Approved separation is applied between aircraft so cleared and between these aircraft and other IFR or special V FR aircraft.

EXAMPLE – Cleared contact approach (and if required) at or below (altitude) (routing) if not possible (alternative procedures) and advise.

23.3 A contact approach is an approach procedure that may be used by a pilot (with prior authorization from ATC) in lieu of conducting a standard or special instrument approach procedure (IAP) to an airport. It is not intended for use by a pilot on an IFR flight clearance to operate to an airport not having a published and functioning IAP. Nor is it intended for an aircraft to conduct an instrument approach to one airport and then, when “in the clear,” discontinue that approach and proceed to another airport. In the execution of a contact approach, the pilot assumes the responsibility for obstruction clearance. If radar service is being received, it will automatically terminate when the pilot is instructed to change to advisory frequency.


24.1 Introduction. During an instrument approach, an EFVS can enable a pilot to see the approach lights, visual references associated with the runway environment, and other objects or features that might not be visible using natural vision alone. An EFVS uses a head–up display (HUD), or an equivalent display that is a head–up presentation, to combine flight information, flight symbology, navigation guidance, and a real–time image of the external scene to the pilot. Combining the flight information, navigation guidance, and sensor imagery on a HUD (or equivalent display) allows the pilot to continue looking forward along the flightpath throughout the entire approach, landing, and rollout.

An EFVS operation is an operation in which visibility conditions require an EFVS to be used in lieu of natural vision to perform an approach or landing, determine enhanced flight visibility, identify required visual references, or conduct a rollout. There are two types of EFVS operations:

24.1.1 EFVS operations to touchdown and rollout.

24.1.2 EFVS operations to 100 feet above the touchdown zone elevation (TDZE).

24.2 EFVS Operations to Touchdown and Rollout. An EFVS operation to touchdown and rollout is an operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA or DH to touchdown and rollout. (See FIG ENR 1.5–38.) These operations may be conducted only on Standard Instrument Approach Procedures (SIAP) or special IAPs that have a DA or DH (for example, precision or APV approach). An EFVS operation to touchdown and rollout may not be conducted on an approach that has circling minimums. The regulations for EFVS operations to touchdown and rollout can be found in 14 CFR § 91.176(a).
24.3 EFVS Operations to 100 Feet Above the TDZE. An EFVS operation to 100 feet above the TDZE is an operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA/DH or MDA down to 100 feet above the TDZE. (See FIG ENR 1.5–39.) To continue the approach below 100 feet above the TDZE, a pilot must have sufficient flight visibility to identify the required visual references using natural vision and must continue to use the EFVS to ensure the enhanced flight visibility meets the visibility requirements of the IAP being flown. These operations may be conducted on SIAPs or special IAPs that have a DA/DH or MDA. An EFVS operation to 100 feet above the TDZE may not be conducted on an approach that has circling minimums. The regulations for EFVS operations to 100 feet above the TDZE can be found in 14 CFR § 91.176(b).
24.4 EFVS Equipment Requirements. An EFVS that is installed on a U.S.-registered aircraft and is used to conduct EFVS operations must conform to an FAA-type design approval (i.e., a type certificate (TC), amended TC, or supplemental type certificate (STC)). A foreign-registered aircraft used to conduct EFVS operations that does not have an FAA-type design approval must be equipped with an EFVS that has been approved by either the State of the Operator or the State of Registry to meet the requirements of ICAO Annex 6. Equipment requirements for an EFVS operation to touchdown and rollout can be found in 14 CFR § 91.176(a)(1), and the equipment requirements for an EFVS operation to 100 feet above the TDZE can be found in 14 CFR § 91.176(b)(1). An operator can determine the eligibility of their aircraft to conduct EFVS operations by referring to the Airplane Flight Manual, Airplane Flight Manual Supplement, Rotorcraft Flight Manual, or Rotorcraft Flight Manual Supplement as applicable.

24.5 Operating Requirements. Any operator who conducts EFVS operations to touchdown and rollout (14 CFR § 91.176(a)) must have an OpSpec, M Spec, or LOA that specifically authorizes those operations. Parts 91K, 121, 125, 129, and 135 operators who conduct EFVS operations to 100 feet above the TDZE (14 CFR § 91.176(b)) must have an OpSpec, M Spec, or LOA that specifically authorizes the operation. Part 91 operators (other than 91K operators) are not required to have an LOA to conduct EFVS operations to 100 feet above the TDZE in the United States. However, an optional LOA is available to facilitate operational approval from foreign Civil Aviation Authorities (CAA). To conduct an EFVS operation to touchdown and rollout during an authorized Category II or III operation, the operator must have:

24.5.1 An OpSpec, M Spec, or LOA authorizing EFVS operations to touchdown and rollout (14 CFR § 91.176(a)); and

24.5.2 An OpSpec, M Spec, or LOA authorizing Category II or Category III operations.

24.6 EFVS Operations in Rotorcraft. Currently, EFVS operations in rotorcraft can only be conducted on IAPs that are flown to a runway. Instrument
approach criteria, procedures, and appropriate visual references have not yet been developed for straight-in landing operations below DA/DH or MDA under IFR to heliports or platforms. An EFVS cannot be used in lieu of natural vision to descend below published minimums on copter approaches to a point in space (PinS) followed by a “proceed visual flight rules (VFR)” visual segment, or on approaches designed to a specific landing site using a “proceed visually” visual segment.

24.7 EFVS Pilot Requirements. A pilot who conducts EFVS operations must receive ground and flight training specific to the EFVS operation to be conducted. The training must be obtained from an authorized training provider under a training program approved by the FAA. Additionally, recent flight experience and proficiency or competency check requirements apply to EFVS operations. These requirements are addressed in 14 CFR §§ 61.66, 91.1065, 121.441, Appendix F to Part 121, 125.287, and 135.293.

24.8 Enhanced Flight Visibility and Visual Reference Requirements. To descend below DA/DH or MDA during EFVS operations under 14 CFR § 91.176(a) or (b), a pilot must make a determination that the enhanced flight visibility observed by using an EFVS is not less than what is prescribed by the IAP being flown. In addition, the visual references required in 14 CFR § 91.176(a) or (b) must be distinctly visible and identifiable to the pilot using the EFVS. The determination of enhanced flight visibility is a separate action from that of identifying required visual references, and is different from ground-reported visibility. Even though the reported visibility or the visibility observed using natural vision may be less, as long as the EFVS provides the required enhanced flight visibility and a pilot meets all of the other requirements, the pilot can continue descending below DA/DH or MDA using the EFVS. Suitable enhanced flight visibility is necessary to ensure the aircraft is in a position to continue the approach and land. It is important to understand that using an EFVS does not result in obtaining lower minima with respect to the visibility or the DA/DH or MDA specified in the IAP. An EFVS simply provides another means of operating in the visual segment of an IAP. The DA/DH or MDA and the visibility value specified in the IAP to be flown do not change.

24.9 Flight Planning and Beginning or Continuing an Approach Under IFR. A Part 121, 125, or 135 operator’s OpSpec or LOA for EFVS operations may authorize an EFVS operational credit dispatching or releasing a flight and for beginning or continuing an instrument approach procedure. When a pilot reaches DA/DH or MDA, the pilot conducts the EFVS operation in accordance with 14 CFR § 91.176(a) or (b) and their authorization to conduct EFVS operations.

24.10 Missed Approach Considerations. In order to conduct an EFVS operation, the EFVS must be operable. In the event of a failure of any required component of an EFVS at any point in the approach to touchdown, a missed approach is required. However, this provision does not preclude a pilot’s authority to continue an approach if continuation of an approach is considered by the pilot to be a safer course of action.

24.11 Light Emitting Diode (LED) Airport Lighting Impact on EFVS Operations. Incandescent lamps are being replaced with LEDs at some airports in threshold lights, taxiway edge lights, taxiway centerline lights, low intensity runway edge lights, windcone lights, beacons, and some obstruction lighting. Additionally, there are plans to replace incandescent lamps with LEDs in approach lighting systems. Pilots should be aware that LED lights cannot be sensed by infrared-based EFVSs. Further, the FAA does not currently collect or disseminate information about where LED lighting is installed.

24.12 Other Vision Systems. Unlike an EFVS that meets the equipment requirements of 14 CFR § 91.176, a Synthetic Vision System (SVS) or Synthetic Vision Guidance System (SVGS) does not provide a real-time sensor image of the outside scene and also does not meet the equipment requirements for EFVS operations. A pilot cannot use a synthetic vision image on a head-up or a head-down display in lieu of natural vision to descend below DA/DH or MDA. An EFVS can, however, be integrated with an SVS, also known as a Combined Vision System (CVS). A CVS can be used to conduct EFVS operations if all of the requirements for an EFVS are satisfied and the SVS image does not interfere with the pilot’s ability to see the external scene, to identify the required visual references, or to see the sensor image.

25. Visual Approach

25.1 A visual approach is conducted on an IFR flight plan and authorizes a pilot to proceed visually and clear of clouds to the airport. The pilot must have either the airport or the preceding identified aircraft in sight. This approach must be authorized and controlled by the appropriate air traffic control facility. Reported weather at the airport must have a ceiling at or above 1,000 feet and visibility 3 miles or greater. ATC may authorize this type of approach when it will be operationally beneficial. Visual approaches are an IFR procedure conducted under Instrument Flight Rules in visual meteorological conditions. Cloud clearance requirements of 14 CFR Section 91.155 are not applicable, unless required by operation specifications. When conducting visual approaches, pilots are encouraged to use other available navigational aids to assist in positive lateral and vertical alignment with the runway.

25.2 Operating to an Airport Without Weather Reporting Service. ATC will advise the pilot when weather is not available at the destination airport. ATC may initiate a visual approach provided there is a reasonable assurance that weather at the airport is a ceiling at or above 1,000 feet and visibility 3 miles or greater (e.g., area weather reports, PIREPs, etc.).

25.3 Operating to an Airport With an Operating Control Tower. Aircraft may be authorized to conduct a visual approach to one runway while other aircraft are conducting IFR or VFR approaches to another parallel, intersecting, or converging runway. ATC may authorize a visual approach after advising all aircraft involved that other aircraft are conducting operations to the other runway. This may be accomplished through use of the ATIS.

25.3.1 When operating to parallel runways separated by less than 2,500 feet, ATC will ensure approved separation is provided unless the succeeding aircraft reports sighting the preceding aircraft to the adjacent parallel and visual separation is applied.

25.3.2 When operating to parallel runways separated by at least 2,500 feet but less than 4,300 feet, ATC will ensure approved separation is provided until the aircraft are issued an approach clearance and one pilot has acknowledged receipt of a visual approach clearance, and the other pilot has acknowledged receipt of a visual or instrument approach clearance, and aircraft are established on a heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees.

25.3.3 When operating to parallel runways separated by 4,300 feet or more, ATC will ensure approved separation is provided until one of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance, and each aircraft is assigned a heading, or established on a direct course to a fix, or cleared on an RNAV/instrument approach procedure which will allow the aircraft to intercept the extended centerline of the runway at an angle not greater than 30 degrees.

NOTE - The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the final and to preclude side-by-side operations with one or both aircraft in a belly-up configuration during the turn-on.

25.4 Separation Responsibilities. If the pilot has the airport in sight but cannot see the preceding aircraft, ATC may clear the aircraft for a visual approach; however, ATC retains both separation and wake vortex separation responsibility. When visually following a preceding aircraft, acceptance of the visual approach clearance constitutes acceptance of pilot responsibility for maintaining a safe approach interval and adequate wake turbulence separation.

25.5 A visual approach is not an IAP and therefore has no missed approach segment. If a go around is necessary for any reason, aircraft operating at controlled airports will be issued an appropriate advisory/clearance/instruction by the tower. At uncontrolled airports, aircraft are expected to remain clear of clouds and complete a landing as soon as possible. If a landing cannot be accomplished, the aircraft is expected to remain clear of clouds and contact ATC as soon as possible for further clearance. Separation from other IFR aircraft will be maintained under these circumstances.
25.6 Visual approaches reduce pilot/controller workload and expedite traffic by shortening flight paths to the airport. It is the pilot’s responsibility to advise ATC as soon as possible if a visual approach is not desired.

25.7 Authorization to conduct a visual approach is an IFR authorization and does not alter IFR flight plan cancellation responsibility. See ENR 1.10, Paragraph 11.2, Canceling IFR Flight Plan.

25.8 Radar service is automatically terminated, without advising the pilot, when the aircraft is instructed to change to advisory frequency.

26. Charted Visual Flight Procedures (CVFPs)

26.1 CVFPs are charted visual approaches established for environmental/noise considerations, and/or when necessary for the safety and efficiency of air traffic operations. The approach charts depict prominent landmarks, courses, and recommended altitudes to specific runways. CVFPs are designed to be used primarily for turbojet aircraft.

26.2 These procedures will be used only at airports with an operating control tower.

26.3 Most approach charts will depict some NAVAID information which is for supplemental navigational guidance only.

26.4 Unless indicating a Class B airspace floor, all depicted altitudes are for noise abatement purposes and are recommended only. Pilots are not prohibited from flying other than recommended altitudes if operational requirements dictate.

26.5 When landmarks used for navigation are not visible at night, the approach will be annotated “PROCEDURE NOT AUTHORIZED AT NIGHT.”

26.6 CVFPs usually begin within 20 flying miles from the airport.

26.7 Published weather minimums for CVFPs are based on minimum vectoring altitudes rather than the recommended altitudes depicted on charts.

26.8 CVFPs are not instrument approaches and do not have missed approach segments.

26.9 ATC will not issue clearances for CVFPs when the weather is less than the published minimum.

26.10 ATC will clear aircraft for a CVFP after the pilot reports sighting a charted landmark or a preceding aircraft. If instructed to follow a preceding aircraft, pilots are responsible for maintaining a safe approach interval and wake turbulence separation.

26.11 Pilots should advise ATC if at any point they are unable to continue an approach or lose sight of a preceding aircraft. Missed approaches will be handled as a go-around.

26.12 When conducting visual approaches, pilots are encouraged to use other available navigational aids to assist in positive lateral and vertical alignment with the assigned runway.

27. Missed Approach

27.1 When a landing cannot be accomplished, advise ATC and, upon reaching the missed approach point defined on the approach procedure chart, the pilot must comply with the missed approach instructions for the procedure being used or with an alternate missed approach procedure specified by ATC.

27.2 Obstacle protection for missed approach is predicated on the missed approach being initiated at the decision altitude/decision height (DA/DH) or at the missed approach point and not lower than minimum descent altitude (MDA). A climb gradient of at least 200 feet per nautical mile is required, (except for Copter approaches, where a climb of at least 400 feet per nautical mile is required), unless a higher climb gradient is published in the notes section of the approach procedure chart. When higher than standard climb gradients are specified, the end point of the non–standard climb will be specified at either an altitude or a fix. Pilots must preplan to ensure that the aircraft can meet the climb gradient (expressed in feet per nautical mile) required by the procedure in the event of a missed approach, and be aware that flying at a higher than anticipated ground speed increases the climb rate requirement (feet per minute). Tables for the conversion of climb gradients (feet per nautical mile) to climb rate (feet per minute), based on ground speed, are included on page D1 of the U.S. Terminal Procedures booklets. Reasonable buffers are provided for normal maneuvers. However, no consideration is given to an abnormally early turn. Therefore, when an early missed approach is executed, pilots should, unless otherwise cleared by ATC, fly the IAP as specified on the approach plate to the missed approach point at or above the MDA or DH before executing a turning maneuver.
27.3 If visual reference is lost while circling to land from an instrument approach, the missed approach specified for that particular procedure must be followed (unless an alternate missed approach procedure is specified by ATC). To become established on the prescribed missed approach course, the pilot should make an initial climbing turn toward the landing runway and continue the turn until established on the missed approach course. Inasmuch as the circling maneuver may be accomplished in more than one direction, different patterns will be required to become established on the prescribed missed approach course depending on the aircraft position at the time visual reference is lost. Adherence to the procedure will help assure that an aircraft will remain laterally within the circling and missed approach obstruction clearance areas. Refer to paragraph 27.8 concerning vertical obstruction clearance when starting a missed approach at other than the MAP. (See FIG ENR 1.5–40.)
**FIG ENR 1.5–41**

Missed Approach

Portion of a Published Procedure

- Remain within 10 NM
- VOR MISSED APPROACH
- Climbing right turn to 2600 direct to VOR
- 236° 056° 011° 191°

**FIG ENR 1.5–42**

Overhead Maneuver

- INITIAL APPROACH
- 180° TURN
- 3 - 5 NM
- BREAK POINT

- ROLL OUT
- INITIAL POINT
- 180° TURN
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. A bandoning the missed approach prior to reaching the published altitude may not provide adequate terrain clearance. A dditional climb may be required after reaching the holding pattern before proceeding back to the IAF or to an alternate.

27.8 A clearance for an instrument approach procedure includes a clearance to fly the published missed approach procedure, unless otherwise instructed by ATC. The published missed approach procedure provides obstacle clearance only when the missed approach is conducted on the missed approach segment from or above the missed approach point, and assumes a climb rate of 200 feet/NM or higher, as published. If the aircraft initiates a missed approach at a point other than the missed approach point (see paragraph 12.2), from below M DA 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 M DA or DA (H) considering the anticipated weather conditions and available aircraft performance. 14 CFR 91.175(e) authorizes the pilot to fly an appropriate missed approach procedure that ensures obstruction clearance, but it does not necessarily consider separation from other air traffic. The pilot must consider other factors such as the aircraft's geographical location with respect to the prescribed missed approach point, direction of flight, and/or minimum turning altitudes in the prescribed missed approach procedure. The pilot must also consider aircraft performance, visual climb restrictions, charted obstacles, published obstacle departure procedure, takeoff visual climb requirements as expressed by nonstandard takeoff minima, other traffic expected to be in the vicinity, or
other factors not specifically expressed by the approach procedures.

28. Overhead Approach Maneuver

28.1 Pilots operating in accordance with an IFR flight plan in Visual Meteorological Conditions (VMC) may request ATC authorization for an overhead maneuver. An overhead maneuver is not an instrument approach procedure. Overhead maneuver patterns are developed at airports where aircraft have an operational need to conduct the maneuver. An aircraft conducting an overhead maneuver is considered to be VFR and the IFR flight plan is canceled when the aircraft reaches the initial point on the initial portion of the maneuver. (See FIG ENR 1.5−42.) 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.
Air Navigation System (FANS) to the aircraft avionics and requires a response from the flight crew. Both PDC and CPDLC-DCL reduce frequency congestion, controller workload, and are intended to mitigate delivery/read back errors.

30.2 Both services are available only to participating aircraft that have subscribed to the service through an approved service provider.

30.3 In all situations, the pilot is encouraged to contact clearance delivery if a question or concern exists regarding an automated clearance. Due to technical reasons, the following limitations/differences exist between the two services:

30.3.1 PDC

30.3.1.1 Aircraft filing multiple flight plans are limited to one PDC clearance per departure airport within a 24-hour period. Additional clearances will be delivered verbally.

30.3.1.2 If the clearance is revised or modified prior to delivery, it will be rejected from PDC and the clearance will need to be delivered verbally.

30.3.1.3 No acknowledgment of receipt or read back is required for a PDC.

30.3.2 CPDLC–DCL

30.3.2.1 No limitation to the number of clearances received.

30.3.2.2 Allows delivery of revised flight data, including revised departure clearances.

30.3.2.3 A response from the flight crew is required.

30.3.2.4 Requires a logon to the FAA National Single Data Authority – KUSA – utilizing the ATC FANS application.

30.3.2.5 To be eligible, operators must have received CPDLC/FANS authorization from the responsible civil aviation authority, and file appropriate equipment information in ICAO field 10a and in the ICAO field 18 DAT (Other Data Applications) of the flight plan.

31. IFR Clearances Off Uncontrolled Airports

31.1 Pilots departing on an IFR flight plan should consult the Chart Supplement U.S. to determine the frequency or telephone number to use to contact clearance delivery. On initial contact, pilots should advise that the flight is IFR and state the departure and destination airports.

31.2 Air traffic facilities providing clearance delivery services via telephone will have their telephone number published in the Chart Supplement U.S. of that airport’s entry. This same section may also contain a telephone number to use for cancellation of an IFR flight plan after landing.

31.3 Except in Alaska, pilots of MEDEVAC flights may obtain a clearance by calling 1–877–543–4733.

32. Taxi Clearance

32.1 Pilots on IFR flight plans should communicate with the control tower on the appropriate ground control/clearance delivery frequency prior to starting engines to receive engine start time, taxi, and/or clearance information.

33. Line Up and Wait (LUAW)

33.1 Line up and wait is an air traffic control (ATC) procedure designed to position an aircraft onto the runway for an imminent departure. The ATC instruction “LINE UP AND WAIT” is used to instruct a pilot to taxi onto the departure runway and line up and wait.

EXAMPLE –
Tower: “N234AR Runway 24L, line up and wait.”

33.2 This ATC instruction is not an authorization to takeoff. In instances where the pilot has been instructed to “line up and wait” and has been advised of a reason/condition (wake turbulence, traffic on an intersecting runway, etc.) or the reason/condition is clearly visible (another aircraft that has landed on or is taking off on the same runway), and the reason/condition is satisfied, the pilot should expect an imminent takeoff clearance, unless advised of a delay. If you are uncertain about any ATC instruction or clearance, contact ATC immediately.

33.3 If a takeoff clearance is not received within a reasonable amount of time after clearance to line up and wait, ATC should be contacted.

EXAMPLE –
Aircraft: Cessna 234AR holding in position Runway 24L.

Aircraft: Cessna 234AR holding in position Runway 24L at Bravo.
NOTE –
FAA analysis of accidents and incidents involving aircraft holding in position indicate that two minutes or more elapsed between the time the instruction was issued to “line up and wait” and the resulting event (for example, landover or go–around). Pilots should consider the length of time that they have been holding in position whenever they HAVE NOT been advised of any expected delay to determine when it is appropriate to query the controller.

REFERENCE –

33.4 Situational awareness during line up and wait operations is enhanced by monitoring ATC instructions/clearances issued to other aircraft. Pilots should listen carefully if another aircraft is on frequency that has a similar call sign and pay close attention to communications between ATC and other aircraft. If you are uncertain of an ATC instruction or clearance, query ATC immediately. Care should be taken to not inadvertently execute a clearance/instruction for another aircraft.

33.5 Pilots should be especially vigilant when conducting “line up and wait” operations at night or during reduced visibility conditions. They should scan the full length of the runway and look for aircraft on final approach or landing roll out when taxiing onto a runway. ATC should be contacted anytime there is a concern about a potential conflict.

33.6 When two or more runways are active, aircraft may be instructed to “LINE UP AND WAIT” on two or more runways. When multiple runway operations are being conducted, it is important to listen closely for your call sign and runway. Be alert for similar sounding call signs and acknowledge all instructions with your call sign. When you are holding in position and are not sure if the takeoff clearance was for you, ask ATC before you begin takeoff roll. ATC prefers that you confirm a takeoff clearance rather than mistake another aircraft’s clearance for your own.

33.7 When ATC issues intersection “line up and wait” and takeoff clearances, the intersection designator will be used. If ATC omits the intersection designator, call ATC for clarification.

EXAMPLE –
Aircraft: “Cherokee 234AR, Runway 24L at November 4, line up and wait.”

33.8 If landing traffic is a factor during line up and wait operations, ATC will inform the aircraft in position of the closest traffic within 6 flying miles requesting a full–stop, touch–and–go, stop–and–go, or an unrestricted low approach to the same runway. Pilots should take care to note the position of landing traffic. ATC will also advise the landing traffic when an aircraft is authorized to “line up and wait” on the same runway.

EXAMPLE –
TOWER: “Cessna 234AR, Runway 24L, line up and wait. Traffic a Boeing 737, six mile final.”

TOWER: “Delta 1011, continue, traffic a Cessna 210 holding in position Runway 24L.”

NOTE –
Always clarify any misunderstanding or confusion concerning ATC instructions or clearances. ATC should be advised immediately if there is any uncertainty about the ability to comply with any of their instructions.

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

34.1 ATC may assign departure restrictions, clearance void times, hold for release, and release times, when necessary, to separate departures from other traffic or to restrict or regulate the departure flow. Departures from an airport without an operating control tower must be issued either a departure release (along with a release time and/or void time if applicable), or a hold for release.

REFERENCE –

34.1.1 Clearance Void Times. A pilot may receive a clearance, when operating from an airport without a control tower, which contains a provision for the clearance to be void if not airborne by a specific time. A pilot who does not depart prior to the clearance void time must advise ATC as soon as possible of his or her intentions. ATC will normally advise the pilot of the time allotted to notify ATC that the aircraft did not
depart prior to the clearance void time. This time cannot exceed 30 minutes. Failure of an aircraft to contact ATC within 30 minutes after the clearance void time will result in the aircraft being considered overdue and search and rescue procedures initiated.

**NOTE**

1. Other IFR traffic for the airport where the clearance is issued is suspended until the aircraft has contacted ATC or until 30 minutes after the clearance void time or 30 minutes after the clearance release time if no clearance void time is issued.

2. If the clearance void time expires, it does not cancel the departure clearance or IFR flight plan. It withdraws the pilot’s authority to depart IFR until a new departure release/release time has been issued by ATC and is acknowledged by the pilot.

3. Pilots who depart at or after their clearance void time are not afforded IFR separation, and may be in violation of 14 CFR Section 91.173, which requires that pilots receive an appropriate ATC clearance before operating IFR in controlled airspace.

4. Pilots who choose to depart VFR after their clearance void time has expired should not depart using the previously assigned IFR transponder code.

**EXAMPLE**

Clearance void if not off by (clearance void time) and, if required, if not off by (clearance void time) advise (facility) not later than (time) of intentions.

**34.1.2 Hold for Release.** ATC may issue “hold for release” instructions in a clearance to delay an aircraft’s departure for traffic management reasons (i.e., weather, traffic volume, etc.). When ATC states in the clearance, “hold for release,” the pilot may not depart utilizing that IFR clearance until a release time or additional instructions are issued by ATC. In addition, ATC will include departure delay information in conjunction with “hold for release” instructions. The ATC instruction, “hold for release,” applies to the IFR clearance and does not prevent the pilot from departing under VFR. However, prior to takeoff the pilot should cancel the IFR flight plan and operate the transponder/ADS-B on the appropriate VFR code. An IFR clearance may not be available after departure.

**EXAMPLE**

(Aircraft identification) cleared to (destination) airport as filed, maintain (altitude), and, if required (additional instructions or information), hold for release, expect (time in hours and/or minutes) departure delay.

**34.1.3 Release Times.** A “release time” is a departure restriction issued to a pilot by ATC, specifying the earliest time an aircraft may depart. ATC will use “release times” in conjunction with traffic management procedures and/or to separate a departing aircraft from other traffic.

**EXAMPLE**

(Aircraft identification) released for departure at (time in hours and/or minutes).

**34.1.4 Expect Departure Clearance Time (EDCT).** The EDCT is the runway release time assigned to an aircraft included in traffic management programs. A aircraft are expected to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT.

**34.2** If practical, pilots departing uncontrolled airports should obtain IFR clearances prior to becoming airborne when two-way communication with the controlling ATC facility is available.

**35. Departure Control**

**35.1** Departure Control is an approach control function responsible for ensuring separation between departures. So as to expedite the handling of departures, Departure Control may suggest a takeoff direction other than that which may normally have been used under VFR handling. Many times it is preferred to offer the pilot a runway that will require the fewest turns after takeoff to place the pilot on course or selected departure route as quickly as possible. At many locations particular attention is paid to the use of preferential runways for local noise abatement programs, and route departures away from congested areas.

**35.2** Departure Control utilizing radar will normally clear aircraft out of the terminal area using vectors, a diverse vector area (DVA), or published DPs.

**35.2.1** When a departure is to be vectored immediately following takeoff using vectors, a DVA, or published DPs that begins with an ATC assigned heading off the ground, the pilot will be advised prior to takeoff of the initial heading to be flown but may not be advised of the purpose of the heading. When ATC assigns an initial heading with the takeoff clearance that will take the aircraft off an assigned procedure (for example, an RNAV SID with a published lateral path to a waypoint and crossing restrictions from the departure end of runway), the
controller will assign an altitude to maintain with the initial heading and, if necessary, a speed to maintain.

35.2.2 At some airports when a departure will fly an RNAV SID that begins at the runway, ATC may advise aircraft of the initial fix/waypoint on the RNAV route. The purpose of the advisory is to remind pilots to verify the correct procedure is programmed in the FMS before takeoff. Pilots must immediately advise ATC if a different RNAV SID is entered in the aircraft’s FMC. When this advisory is absent, pilots are still required to fly the assigned SID as published.

EXAMPLE –
Delta 345 RNAV to M PASS, Runway 26L, cleared for takeoff.

NOTE –
1. The SID transition is not restated as it is contained in the ATC clearance.
2. Aircraft cleared via RNAV SIDs designed to begin with a vector to the initial waypoint are assigned a heading before departure.

35.2.3 Pilots operating in a radar environment are expected to associate departure headings or an RNAV departure advisory with vectors or the flight path to their planned route or flight. When given a vector taking the aircraft off a previously assigned nonradar route, the pilot will be advised briefly what the vector is to achieve. Thereafter, radar service will be provided until the aircraft has been reestablished “on-course” using an appropriate navigation aid and the pilot has been advised of the aircraft’s position or a handoff is made to another radar controller with further surveillance capabilities.

35.3 Controllers will inform pilots of the departure control frequencies and, if appropriate, the transponder code before takeoff. Pilots must ensure their transponder/ADS-B is adjusted to the “on” or normal operating position as soon as practical and remain on during all operations unless otherwise requested to change to “standby” by ATC. Pilots should not change to the departure control frequency until requested. Controllers may omit the departure control frequency if a DP has or will be assigned and the departure control frequency is published on the DP.

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

36.1 ATC facilities will issue an abbreviated IFR departure clearance based on the ROUTE of flight filed in the IFR flight plan, provided the filed route can be approved with little or no revision. These abbreviated clearance procedures are based on the following conditions:

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

36.1.2 That a pilot will not accept an abbreviated clearance if the route or destination of a flight plan filed with ATC has been changed by him/her or the company or the operations officer before departure.

36.1.3 That it is the responsibility of the company or operations office to inform the pilot when they make a change to the filed flight plan.

36.1.4 That it is the responsibility of the pilot to inform ATC in the initial call–up (for clearance) when the filed flight plan has been either:

36.1.4.1 Amended.

36.1.4.2 Canceled and replaced with a new filed flight plan.

NOTE –
The facility issuing a clearance may not have received the revised route or the revised flight plan by the time a pilot requests clearance.

36.2 Controllers will issue a detailed clearance when they know that the original filed flight plan has been changed or when the pilot requests a full route clearance.

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

36.4 ATC procedures now require the controller to state the DP name, the current number and the DP Transition name after the phrase “Cleared to (destination) airport,” and prior to the phrase, “then as filed,” for ALL departure clearances when the DP or DP Transition is to be flown. The procedure applies whether or not the DP is filed in the flight plan.

36.5 Standard Terminal Arrivals (STARs), when filed in a flight plan, are considered a part of the filed route of flight and will not normally be stated in an initial departure clearance. If the ARTCC’s jurisdictional airspace includes both the departure airport and the fix where a STAR or STAR Transition begins, the STAR name, the current number, and the STAR Transition name MAY be stated in the initial clearance.

36.6 “Cleared to (destination) airport as filed” does NOT include the en route altitude filed in a flight plan.
An en route altitude will be stated in the clearance or the pilot will be advised to expect an assigned/ filed altitude within a given time frame or at a certain point after departure. This may be done verbally in the departure instructions or stated in the DP.

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

36.7.1 If a DP or DP Transition is to be flown, specify the DP name, the current DP number, the DP Transition name, the assigned altitude/flight level, and any additional instructions (departure control frequency, beacon code assignment, etc.) necessary to clear a departing aircraft via the DP/DP Transition and the route filed.

**EXAMPLE**
National Seven Twenty cleared to Miami Airport Intercontinental one departure, Lake Charles transition then as filed, maintain Flight Level two seven zero.

36.7.2 When there is no DP or when the pilot cannot accept a DP, specify the assigned altitude/flight level, and any additional instructions necessary to clear a departing aircraft via an appropriate departure routing and the route filed.

**NOTE**
A detailed departure route description or a radar vector may be used to achieve the desired departure routing.

36.7.3 If necessary to make a minor revision to the filed route, specify the assigned DP/DP Transition (or departure routing), the revision to the filed route, the assigned altitude/flight level, and any additional instructions necessary to clear a departing aircraft.

**EXAMPLE**
Jet Star One Four Two Four cleared to Atlanta Airport, South Boston two departure then as filed except change route to read South Boston Victor 20 Greensboro, maintain one seven thousand.

36.7.4 Additionally, in a nonradar environment, specify one or more fixes as necessary to identify the initial route of flight.

**EXAMPLE**
Cessna Three One Six Zero Foxtrot cleared to Charlotte Airport as filed via Brooke, maintain seven thousand.

36.8 To ensure success of the program, pilots should:

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

36.8.2 State the following information in the initial call-up to the facility when no change has been made to the filed flight plan: Aircraft call sign, location, type operation (IFR), and the name of the airport (or fix) to which you expect clearance.

**EXAMPLE**
"Washington clearance delivery (or ground control if appropriate) American Seventy Six at gate one, IFR Los Angeles."

36.8.3 If the flight plan has been changed, state the change and request a full route clearance.

**EXAMPLE**
"Washington clearance delivery, American Seventy Six at gate one. IFR San Francisco. My flight plan route has been amended (or destination changed). Request full route clearance."

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

36.8.5 When requesting clearance for the IFR portion of a VFR–IFR flight, request such clearance prior to the fix where IFR operation is proposed to commence in sufficient time to avoid delay. Use the following phraseology:

**EXAMPLE**
"Los Angeles center, Apache Six One Papa, VFR estimating Paso Robles VOR at three two, one thousand five hundred, request IFR to Bakersfield."

37. Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP), Standard Instrument Departures (SID), and Diverse Vector Areas (DVA)

37.1 Instrument departure procedures are pre-planned instrument flight rule (IFR) procedures which provide obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DPs, Obstacle Departure Procedures (ODP), printed either textually or graphically, and Standard Instrument Departures (SID), always printed graphically. All DPs, either textual or graphic may be designed using either conventional or RNAV criteria. RNAV procedures will have RNAV printed in the title; for example, SHEAD TWO DEPARTURE (RNAV). ODPs provide obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstruction clearance and may be flown without ATC.
clearance unless an alternate departure procedure (SID or radar vector) has been specifically assigned by ATC. Graphic ODPS will have (OBSTACLE) printed in the procedure title; for example, GEYSR THREE DEPARTURE (OBSTACLE), or, CROWN ONE DEPARTURE (RNAV) (OBSTACLE). Standard Instrument Departures are air traffic control (ATC) procedures printed for pilot/controller use in graphic form to provide obstruction clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement and to reduce pilot/controller workload. ATC clearance must be received prior to flying a SID. All DPs provide the pilot with a way to depart the airport and transition to the en route structure safely.

37.2 A Diverse Vector Area (DVA) is an area in which ATC may provide random radar vectors during an uninterrupted climb from the departure runway until above the MVA/MIA, established in accordance with the TERPS criteria for diverse departures. The DVA provides obstacle and terrain avoidance in lieu of taking off from the runway under IFR using an ODP or SID.

37.3 Pilots operating under 14 CFR Part 91 are strongly encouraged to file and fly a DP at night, during marginal Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC), when one is available. The following paragraphs will provide an overview of the DP program, why DPs are developed, what criteria are used, where to find them, how they are to be flown, and finally pilot and ATC responsibilities.

37.4 Why are DPs necessary? The primary reason is to provide obstacle clearance protection information to pilots. A secondary reason, at busier airports, is to increase efficiency and reduce communications and departure delays through the use of SIDs. When an instrument approach is initially developed for an airport, the need for DPs is assessed. The procedure designer conducts an obstacle analysis to support departure operations. If an aircraft may turn in any direction from a runway within the limits of the assessment area (see paragraph 37.5.3) and remain clear of obstacles, that runway passes what is called a diverse departure assessment and no ODP will be published. A SID may be published if needed for air traffic control purposes. However, if an obstacle penetrates what is called the 40:1 obstacle identification surface, then the procedure designer chooses whether to:

37.4.1 Establish a steeper than normal climb gradient; or
37.4.2 Establish a steeper than normal climb gradient with an alternative that increases takeoff minima to allow the pilot to visually remain clear of the obstacle(s); or
37.4.3 Design and publish a specific departure route; or
37.4.4 A combination or all of the above.

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

37.5.1 Unless specified otherwise, required obstacle clearance for all departures, including diverse, is based on the pilot crossing the departure end of the runway at least 35 feet above the departure end of runway elevation, climbing to 400 feet above the departure end of runway elevation before making the initial turn, and maintaining a minimum climb gradient of 200 feet per nautical mile (FPNM), unless required to level off by a crossing restriction, until the minimum IFR altitude. A greater climb gradient may be specified in the DP to clear obstacles or to achieve an ATC crossing restriction. If an initial turn higher than 400 feet above the departure end of runway elevation is specified in the DP, the turn should be commenced at the higher altitude. If a turn is specified at a fix, the turn must be made at that fix. Fixes may have minimum and/or maximum crossing altitudes that must be adhered to prior to passing the fix. In rare instances, obstacles that exist on the extended runway centerline may make an “early turn” more desirable than proceeding straight ahead. In these cases, the published departure instructions will include the language “turn left(right) as soon as practicable.” These departures will also include a ceiling and visibility minimum of at least 300 and 1. Pilots encountering one of these DPs should preplan the climb out to gain altitude and begin the turn as quickly as possible within the bounds of safe operating practices and operating limitations. This type of departure procedure is being phased out.

NOTE—“Practical” or “feasible” may exist in some existing departure text instead of “practicable.”

37.5.2 ODPS, SIDs, and DVAs assume normal aircraft performance, and that all engines are
operating. Development of contingency procedures, required to cover the case of an engine failure or other emergency in flight that may occur after liftoff, is the responsibility of the operator. (More detailed information on this subject is available in Advisory Circular AC 120–91, Airport Obstacle Analysis, and in the “Departure Procedures” section of chapter 2 in the Instrument Procedures Handbook, FAA–H–8083–16.)

37.5.3 The 40:1 obstacle identification surface (OIS) begins at the departure end of runway (DER) and slopes upward at 152 FPNM until reaching the minimum IFR altitude or entering the en route structure. This assessment area is limited to 25 NM from the airport in nonmountainous areas and 46 NM in designated mountainous areas. Beyond this distance, the pilot is responsible for obstacle clearance if not operating on a published route, if below (having not reached) the MEA or MOC A of a published route, or an ATC assigned altitude. See FIG ENR 1.5–43. (Ref 14 CFR 91.177 for further information on en route altitudes.)

NOTE—
ODPs are normally designed to terminate within these distance limitations, however, some ODPs will contain routes that may exceed 25/46 NM; these routes will insure obstacle protection until reaching the end of the ODP.

37.5.4 Obstacles that are located within 1 NM of the DER and penetrate the 40:1 OCS are referred to as “low, close-in obstacles.” The standard required obstacle clearance (ROC) of 48 feet per NM to clear these obstacles would require a climb gradient greater than 200 feet per NM for a very short distance, only until the aircraft was 200 feet above the DER. To eliminate publishing an excessive climb gradient, the obstacle AGL/MSL height and location relative to the DER is noted in the “Take-off Minimums and (OBSTACLE) Departure Procedures” section of a given Terminal Procedures Publication (TPP) booklet.

37.5.4.1 Pilots must refer to the TPP booklet or the Graphic ODP for information on these obstacles. These obstacle notes will no longer be published on SIDs. Pilots assigned a SID for departure must refer to the airport entry in the TPP to obtain information on these obstacles.

37.5.4.2 The purpose of noting obstacles in the “Take-off Minimums and (OBSTACLE) Departure Procedures” section of the TPP is to identify the obstacle(s) and alert the pilot to the height and location of the obstacle(s) so they can be avoided. This can be accomplished in a variety of ways; for example, the pilot may be able to see the obstruction and maneuver around the obstacle(s) if necessary; early liftoff/climb performance may allow the aircraft to cross well above the obstacle(s); or if the obstacle(s) cannot be visually acquired during departure, preflight planning should take into account what turns or other maneuvers may be necessary immediately after takeoff to avoid the obstruction(s).
EXAMPLE –
TAKEOFF OBSTACLE NOTES: Rwy 14, trees 2011’ from DER, 29’ left of centerline, 100’ AGL/3829’ MSL. Rwy 32, trees 1009’ from DER, 697’ left of centerline, 100’ AGL/3839’ MSL. Tower 4448’ from DER, 1036’ left of centerline, 165’ AGL/3886’ MSL.

NOTE –
Compliance with 14 CFR Part 121 or 135 one—engine—inoperative (OEI) departure performance requirements, or similar ICAO/State rules, cannot be assured by the sole use of “low, close—in” obstacle data as published in the TPP. Operators should refer to precise data sources (for example, GIS database, etc.) specifically intended for OEI departure planning for those operations.

37.5.5 Climb gradients greater than 200 FPNM are specified when required to support procedure design constraints, obstacle clearance, and/or airspace restrictions. Compliance with a climb gradient for these purposes is mandatory when the procedure is part of the ATC clearance, unless increased takeoff minimums are provided and weather conditions allow compliance with these minimums.

NOTE –
Climb gradients for ATC purposes are being phased out on SIDs.

EXAMPLE –
“Cross ALPHA intersection at or below 4000; maintain 6000.” The pilot climbs at least 200 FPNM to 6000. If 4000 is reached before ALPHA, the pilot levels off at 4000 until passing ALPHA; then immediately resumes at least 200 FPNM climb.

EXAMPLE –
“TAKEOFF MINIMUMS: RWY 27, Standard with a minimum climb of 280’ per NM to 2500.” A climb of at least 280 FPNM is required to 2500 and is mandatory when the departure procedure is included in the ATC clearance.

NOTE –
Some SIDs still retain labeled “ATC” climb gradients published or have climb gradients that are established to meet a published altitude restriction that is not required for obstacle clearance or procedure design criteria. These procedures will be revised in the course of the normal procedure amendment process.

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

An ATC—required altitude restriction published at a fix, will not have an associated climb gradient published with that restriction. Pilots are expected to determine if crossing altitudes can be met, based on the performance capability of the aircraft they are operating.

EXAMPLE –
“Minimum climb 340 FPNM to ALPHA.” The pilot climbs at least 340 FPNM to ALPHA, then at least 200 FPNM to MIA.

37.5.7 A Visual Climb Over Airport (VCOA) procedure is a departure option for an IFR aircraft, operating in visual meteorological conditions equal to or greater than the specified visibility and ceiling, to visually conduct climbing turns over the airport to the published “at or above” altitude. At this point, the pilot may proceed in instrument meteorological conditions to the first en route fix using a diverse departure, or to proceed via a published routing to a fix from where the aircraft may join the IFR en route structure, while maintaining a climb gradient of at least 200 feet per nautical mile. VCOA procedures are developed to avoid obstacles greater than 3 statute miles from the departure end of the runway as an alternative to complying with climb gradients greater than 200 feet per nautical mile. Pilots are responsible to advise ATC as early as possible of the intent to fly the VCOA option prior to departure. Pilots are expected to remain within the distance prescribed by the published visibility minimums during the climb over the airport until reaching the “at or above” altitude for the VCOA procedure. If no additional routing is published, then the pilot may proceed in accordance with their IFR clearance. If additional routing is published after the “at—or—above” altitude, the pilot must comply with the route to a fix that may include a climb—in—holding pattern to reach the MEA/MIA for the en route portion of their IFR flight. These textual procedures are published in the Take—Off Minimums and (Obstacle) Departure Procedures section of the Terminal Procedures Publications and/or appear as an option on a Graphic ODP.

EXAMPLE –
TAKEOFF MINIMUMS: Rwy 32, standard with minimum climb of 410’ per NM to 3000’ or 1100–3 for VCOA.

VCOA: Rwy 32, obtain ATC approval for VCOA when requesting IFR clearance. Climb in visual conditions to cross Broken Bow Muni/Keith Glaze Field at or above 3500’ before proceeding on course.

37.6 Who is responsible for obstacle clearance? DPs are designed so that adherence to the procedure by the pilot will ensure obstacle protection. Additionally:
37.6.1 Obstacle clearance responsibility also rests with the pilot when he/she chooses to climb in visual conditions in lieu of flying a DP and/or depart under increased takeoff minima rather than fly the climb gradient. Standard takeoff minima are one statute mile for aircraft having two engines or less and one-half statute mile for aircraft having more than two engines. Specified ceiling and visibility minima will allow visual avoidance of obstacles during the initial climb with the standard climb gradient. When departing using the VCOA, obstacle avoidance is not guaranteed if the pilot maneuvers farther from the airport than the published visibility minimum for the VCOA prior to reaching the published VCOA altitude. DPs may also contain what are called Low Close in Obstacles. These obstacles are less than 200 feet above the departure end of runway elevation and within one NM of the runway end and do not require increased takeoff minimums. These obstacles are identified on the SID chart or in the Take-off Minimums and (Obstacle) Departure Procedures section of the U.S. Terminal Procedure booklet. These obstacles are especially critical to aircraft that do not lift off until close to the departure end of the runway or which climb at the minimum rate. Pilots should also consider drift following lift-off to ensure sufficient clearance from these obstacles. That segment of the procedure that requires the pilot to see and avoid obstacles ends when the aircraft crosses the specified point at the required altitude. In all cases continued obstacle clearance is based on having climbed a minimum of 200 feet per nautical mile to the specified point and then continuing to climb at least 200 foot per nautical mile during the departure until reaching the minimum en route altitude unless specified otherwise.

37.6.2 ATC may vector the aircraft beginning with an ATC-assigned heading issued with the initial or takeoff clearance followed by subsequent vectors, if required, until reaching the minimum vectoring altitude by using a published Diverse Vector Area (DVA).

37.6.3 The DVA may be established below the Minimum Vectoring Altitude (MVA) or Minimum IFR Altitude (MIA) in a radar environment at the request of Air Traffic. This type of DP meets the TERPS criteria for diverse departures, obstacles, and terrain avoidance in which vectors below the MVA/MIA may be issued to departing aircraft. The DVA has been assessed for departures which do not follow a specific ground track, but will remain within the specified area. Use of a DVA is valid only when aircraft are permitted to climb uninterrupted from the departure runway to the MVA/MIA (or higher). ATC will not assign an altitude below the MVA/MIA within a DVA. At locations that have a DVA, ATC is not permitted to utilize a SID and DVA concurrently.

37.6.3.1 The existence of a DVA will be noted in the Takeoff Minimums and Obstacle Departure Procedure section of the U.S. Terminal Procedures Publication (TPP). The Takeoff Departure procedure will be listed first, followed by any applicable DVA.

EXAMPLE –

DIVERSE VECTOR AREA (RADAR VECTORS)

AMDT 1 14289 (FAA)

Rwy 6R, headings as assigned by ATC; requires minimum climb of 290’ per NM to 400.

Rwys 6L, 7L, 7R, 24R, 25R, headings as assigned by ATC.

37.6.3.2 Pilots should be aware that a published climb gradient greater than the standard 200 FPNM can exist within a DVA. Pilots should note that the DVA has been assessed for departures which do not follow a specific ground track.

37.6.3.3 ATC may also vector an aircraft off a previously assigned DP. If the aircraft is airborne and established on a SID or ODP and subsequently vectored off, ATC is responsible for terrain and obstruction clearance. In all cases, the minimum 200 FPNM climb gradient is assumed.

NOTE –

As is always the case, when used by the controller during departure, the term “radar contact” should not be interpreted as relieving pilots of their responsibility to maintain appropriate terrain and obstruction clearance, which may include flying the obstacle DP.

37.6.4 Pilots must preplan to determine if the aircraft can meet the climb gradient (expressed in feet per nautical mile) required by the departure procedure or DVA, and be aware that flying at a higher than anticipated ground speed increases the climb rate requirement in feet per minute. Higher than standard climb gradients are specified by a note on the departure procedure chart for graphic DPs, or in the Take-Off Minimums and (Obstacle) Departure Procedures section of the U.S. Terminal Procedures booklet for textual DPs. The required climb gradient, or higher, must be maintained to the specified altitude or fix, then the standard climb gradient of 200 ft/NM can be resumed. A table for the
conversion of climb gradient (feet per nautical mile) to climb rate (feet per minute), at a given ground speed, is included on the inside of the back cover of the U.S. Terminal Procedures booklets.

37.7 Where are DPs located? DPs and DVAs will be listed by airport in the IFR Takeoff Minimums and (Obstacle) Departure Procedures Section, Section L, of the Terminal Procedures Publications (TPP). If the DP is textual, it will be described in TPP Section L. SIDs and complex ODPs will be published graphically and named. The name will be listed by airport name and runway in Section L. Graphic ODPs will also have the term “(OBSTACLE)” printed in the charted procedure title, differentiating them from SIDs.

37.7.1 An ODP that has been developed solely for obstacle avoidance will be indicated with the symbol “T” on appropriate Instrument Approach Procedure (IAP) charts and DP charts for that airport. The “T” symbol will continue to refer users to TPP Section C. In the case of a graphic ODP, the TPP Section C will only contain the name of the ODP. Since there may be both a textual and a graphic DP, Section C should still be checked for additional information. The nonstandard minimums and minimum climb gradients found in TPP Section C also apply to charted DPs and radar vector departures unless different minimums are specified on the charted DP. Takeoff minimums and departure procedures apply to all runways unless otherwise specified. New graphic DPs will have all the information printed on the graphic depiction. As a general rule, ATC will only assign an ODP from a nontowered airport when compliance with the ODP is necessary for aircraft to aircraft separation. Pilots may use the ODP to help ensure separation from terrain and obstacles.

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

37.7.3 After an aircraft is established on a SID and subsequently vectored or cleared to deviate off of the SID or SID transition, pilots must consider the SID canceled, unless the controller adds “expect to resume SID;” pilots should then be prepared to rejoin the SID at a subsequent fix or procedure leg. If the SID contains published altitude and/or speed restrictions, those restrictions are canceled and pilots will receive an altitude to maintain and, if necessary, a speed. ATC may also interrupt the vertical navigation of a SID and provide alternate altitude instructions while the aircraft remains established on the published lateral path. Aircraft may be vectored off of an ODP, or issued an altitude lower than a published altitude on an ODP, at which time the ODP is canceled. In these cases, ATC assumes responsibility for terrain and obstacle clearance. In all cases, the minimum 200 FPNM climb gradient is assumed.

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

37.7.4.1 Issued/reissued all applicable restrictions, or

37.7.4.2 Advised to “Climb via SID” or resume published speed.

EXAMPLE -
"Resume the Solar One departure, Climb via SID."
"Proceed direct CIROS, resume the Solar One departure, Climb via SID."

37.7.5 A clearance for a SID which does not contain published crossing restrictions, and/or is a SID with

37.8 Responsibilities

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

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

37.8.1.2 Determine whether an ODP is available;

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

37.8.1.4 Consider the effect of degraded climb performance and the actions to take in the event of an engine loss during the departure. Pilots should notify ATC as soon as possible of reduced climb capability in that circumstance.

NOTE - Guidance concerning contingency procedures that address an engine failure on takeoff after $V_1$ speed on a large or turbine–powered transport category airplane may be found in AC 120–91, Airport Obstacle Analysis.

37.8.1.5 Determine if a DVA is published and whether the aircraft is capable of meeting the published climb gradient. Advise ATC when requesting the IFR clearance, or as soon as possible, if unable to meet the DVA climb gradient.

37.8.1.6 Check for Takeoff Obstacle Notes published in the TPP for the takeoff runway.

37.8.2 After an aircraft is established on a SID and subsequently vectored or cleared to deviate off of the SID or SID transition, pilots must consider the SID canceled, unless the controller adds “expect to resume SID;” pilots should then be prepared to rejoin the SID at a subsequent fix or procedure leg. If the SID contains published altitude and/or speed restrictions, those restrictions are canceled and pilots will receive an altitude to maintain and, if necessary, a speed. ATC may also interrupt the vertical navigation of a SID and provide alternate altitude instructions while the aircraft remains established on the published lateral path. Aircraft may be vectored off of an ODP, or issued an altitude lower than a published altitude on an ODP, at which time the ODP is canceled. In these cases, ATC assumes responsibility for terrain and obstacle clearance. In all cases, the minimum 200 FPNM climb gradient is assumed.

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

37.8.4.1 Issued/reissued all applicable restrictions, or

37.8.4.2 Advised to “Climb via SID” or resume published speed.

EXAMPLE -
"Resume the Solar One departure, Climb via SID."
"Proceed direct CIROS, resume the Solar One departure, Climb via SID."

37.8.5 A clearance for a SID which does not contain published crossing restrictions, and/or is a SID with
a Radar Vector segment or a Radar Vector SID, will be issued using the phraseology “Maintain (altitude).”

37.8.6 A clearance for a SID which contains published altitude restrictions may be issued using the phraseology “climb via.” Climb via is an abbreviated clearance that requires compliance with the procedure lateral path, associated speed and altitude restrictions along the cleared route or procedure. Clearance to “climb via” authorizes the pilot to:

37.8.6.1 When used in the IFR departure clearance, in a PDC, DCL or when cleared to a waypoint depicted on a SID, to join the procedure after departure or to resume the procedure.

37.8.6.2 When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously-assigned altitude at pilot’s discretion to the altitude depicted for the next waypoint.

37.8.6.3 Once established on the depicted departure, to navigate laterally and climb to meet all published or assigned altitude and speed restrictions.

NOTE –
1. When otherwise cleared along a route or procedure that contains published speed restrictions, the pilot must comply with those speed restrictions independent of a climb via clearance.

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

3. If ATC interrupts lateral/vertical navigation while an aircraft is flying a SID, ATC must ensure obstacle clearance. When issuing a “climb via” clearance to join or resume a procedure ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID.

4. ATC will assign an altitude to cross if no altitude is depicted at a waypoint/fix or when otherwise necessary/required, for an aircraft on a direct route to a waypoint/fix where the SID will be joined or resumed.

5. SIDs will have a “top altitude;” the “top altitude” is the charted “maintain” altitude contained in the procedure description or assigned by ATC.

EXAMPLE –
1. Lateral route clearance:
   “Cleared Loop Six departure.”

NOTE –
The aircraft must comply with the SID lateral path, and any published speed restrictions.

2. Routing with assigned altitude:
   “Cleared Loop Six departure, climb and maintain four thousand.”

NOTE –
The aircraft must comply with the SID lateral path, and any published speed restriction while climbing unrestricted to four thousand.

3. A pilot filed a flight plan to the Johnston Airport using the Scott One departure, Jonez transition, then Q-145. The pilot filed for FL350. The Scott One includes altitude restrictions, a top altitude and instructions to expect the filed altitude ten minutes after departure. Before departure ATC uses PDC, DCL or clearance delivery to issue the clearance:

   “Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-OneForty-five. Climb via SID.”

NOTE –
In Example 3, the aircraft must comply with the Scott One departure lateral path and any published speed and altitude restrictions while climbing to the SID top altitude.

4. (Using the Example 3 flight plan, ATC determines the top altitude must be changed to FL180). The clearance will read:

   “Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five, Climb via SID except maintain flight level one eight zero.”

NOTE –
In Example 4, the aircraft must comply with the Scott One departure lateral path and any published speed and altitude restrictions while climbing to FL180. The aircraft must stop climb at FL180 until issued further clearance by ATC.

5. (An aircraft was issued the Suzan Two departure, “climb via SID” in the IFR departure clearance. After departure ATC must change a waypoint crossing restriction). The clearance will be:

   “Climb via SID except cross Mkala at or above seven thousand.”

NOTE –
In Example 5, the aircraft will comply with the Suzan Two departure lateral path and any published speed and altitude restrictions and climb so as to cross Mkala at or
above 7,000; remainder of the departure must be flown as published.

6. (An aircraft was issued the Teddd One departure, “climb via SID” in the IFR departure clearance. An interim altitude of 10,000 was issued instead of the published top altitude of FL 230). After departure ATC is able to issue the published top altitude. The clearance will be:

“Climb via SID.”

NOTE –
In Example 6, the aircraft will track laterally and vertically on the Teddd One departure and initially climb to 10,000; Once re-issued the “climb via” clearance the interim altitude is canceled aircraft will continue climb to FL230 while complying with published restrictions.

7. (An aircraft was issued the Bbear Two departure, “climb via SID” in the IFR departure clearance. An interim altitude of 16,000 was issued instead of the published top altitude of FL 190). After departure, ATC is able to issue a top altitude of FL300 and still requires compliance with the published SID restrictions. The clearance will be:

“Climb via SID except maintain flight level three zero zero.”

NOTE –
In Example 7, the aircraft will track laterally and vertically on the Bbear Two departure and initially climb to 16,000; Once re-issued the “climb via” clearance the interim altitude is canceled and the aircraft will continue climb to FL300 while complying with published restrictions.

8. (An aircraft was issued the Bzee 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 Bzee Two departure.”

NOTE –
In Example 8, the aircraft will join the Bzee Two SID at Rockr at or above 10,000 and then comply with the published lateral path and any published speed or altitude restrictions while climbing to the SID top altitude.

9. (An aircraft was issued the Suzan Two departure, “climb via SID” in the IFR departure clearance. After departure ATC vectors the aircraft off of the SID, and then clears the aircraft to rejoin the SID at Dvine waypoint, which has a published crossing restriction). The clearance will read:

“Proceed direct Dvine, Climb via the Suzan Two departure.”

NOTE –
In Example 9, the aircraft will join the Suzan Two departure at Dvine, at the published altitude, and then comply with the published lateral path and any published speed or altitude restrictions.

37.8.7 Pilots cleared for vertical navigation using the phraseology “climb via” must inform ATC, upon initial contact, of the altitude leaving and any assigned restrictions not published on the procedure.

EXAMPLE –
1. (Cactus 711 is cleared to climb via the Laura Two departure. The Laura Two has a top altitude of FL190):

“Cactus Seven Eleven leaving two thousand, climbing via the Laura Two departure.”

2. (Cactus 711 is cleared to climb via the Laura Two departure, but ATC changed the top altitude to 16,000):

“Cactus Seven Eleven leaving two thousand for one-six thousand, climbing via the Laura Two departure.”

37.8.8 If prior to or after takeoff an altitude restriction is issued by ATC, all previously issued “ATC” altitude restrictions are canceled including those published on a SID. Pilots must still comply with all speed restrictions and lateral path requirements published on the SID unless canceled by ATC.

EXAMPLE –
Prior to takeoff or after departure ATC issues an altitude change clearance to an aircraft cleared to climb via a SID but ATC no longer requires compliance with published altitude restrictions:

“Climb and maintain flight level two four zero.”

NOTE –
The published SID altitude restrictions are canceled; The aircraft should comply with the SID lateral path and begin an unrestricted climb to FL240. Compliance with published speed restrictions is still required unless specifically deleted by ATC.

37.8.9 Altitude restrictions published on an ODP are necessary for obstacle clearance and/or design constraints. Crossing altitudes and speed restrictions on ODPs cannot be canceled or amended by ATC.

37.9 PBN Departure Procedures

37.9.1 All public PBN SIDs and graphic ODPs are normally designed using RNAV 1, RNP 1, or A–RNP NavSpecs. These procedures generally start with an initial track or heading leg near the departure end of runway (DER). In addition, these procedures require system performance currently met by GPS or DME/DME/IRU PBN systems that satisfy the criteria discussed in the latest AC 90–100, U.S. Terminal and En Route Area Navigation (RNAV) Operations.
RNAV 1 and RNP 1 procedures must maintain a total system error of not more than 1 NM for 95 percent of the total flight time. Minimum values for A–RNP procedures will be charted in the PBN box (for example, 1.00 or 0.30).

37.9.2 In the U.S., a specific procedure’s PBN requirements will be prominently displayed in separate, standardized notes boxes. For procedures with PBN elements, the “PBN box” will contain the procedure’s NavSpec(s); and, if required: specific sensors or infrastructure needed for the navigation solution, any additional or advanced functional requirements, the minimum RNP value, and any amplifying remarks. Items listed in this PBN box are REQUIRED for the procedure’s PBN elements.
ENR 1.10 Flight Planning
(Restriction, Limitation or Advisory Information)

1. Preflight Preparation

1.1 Prior to every flight, pilots should gather all information vital to the nature of the flight, assess whether the flight would be safe, and then file a flight plan. Pilots can receive a regulatory compliant briefing without contacting Flight Service. Pilots are encouraged to use automated resources and review Advisory Circular AC 91–92, Pilot’s Guide to a Preflight Briefing, for more information. Pilots who prefer to contact Flight Service are encouraged to conduct a self-brief prior to calling. Conducting a self-brief before contacting Flight Service provides familiarity of meteorological and aeronautical conditions applicable to the route of flight and promotes a better understanding of weather information. Pilots may access Flight Service through www.1800wxbrief.com or by calling 1–800–WX–BRIEF. Flight planning applications are also available for conducting a self-briefing and filing flight plans.

NOTE—Alaska only: Pilots filing flight plans via “fast file” who desire to have their briefing recorded, should include a statement at the end of the recording as to the source of their weather briefing.

1.2 The information required by the FAA to process flight plans is obtained from FAA Form 7233–4, International Flight Plan. Only DOD users, and civilians who file stereo route flight plans, may use FAA Form 7233–1, Flight Plan.

NOTE—FAA and DOD Flight Plan Forms are equivalent. Where the FAA specifies Form 7233–1, Domestic Flight Plan, and FAA Form 7233–4, International Flight Plan, the DOD may substitute their Form DD 175, Military Flight Plan and Form DD–1801, DOD International Flight Plan as necessary. NAS automation systems process and convert data in the same manner, although for computer acceptance, input fields may be adjusted to follow FAA format.

1.3 FSSs are required to advise of pertinent NOTAMs if a standard briefing is requested, but if they are overlooked, do not hesitate to remind the specialist that you have not received NOTAM information. Additionally, FSS briefers do not provide FDC NOTAM information for special instrument approach procedures unless specifically asked. Pilots authorized by the FAA to use special instrument approach procedures must specifically request FDC NOTAM information for these procedures. Pilots who receive the information electronically will receive NOTAMs for special IAPs automatically.

NOTE—Domestic Notices and International Notices are not provided during a briefing unless specifically requested by the pilot since the FSS specialist has no way of knowing whether the pilot has already checked the Federal NOTAM System (FNS) NOTAM Search External links or Air Traffic Plans and Publications website prior to calling. Airway NOTAMs, procedural NOTAMs, and NOTAMs that are general in nature and not tied to a specific airport/facility (for example, flight advisories and restrictions, open duration special security instructions, and special flight rules areas) are briefed solely by pilot request. Remember to ask for these notices if you have not already reviewed this information, and to request all pertinent NOTAMs specific to your flight.

1.4 Pilots are urged to use only the latest issue of aeronautical charts in planning and conducting flight operations. Aeronautical charts are revised and reissued on a periodic basis to ensure that depicted data are current and reliable. In the conterminous U.S., sectional charts are updated each 6 months, IFR en route charts each 56 days, and amendments to civil IFR approach charts are accomplished on a 56-day cycle with a change notice volume issued on the 28-day mid-cycle. Charts that have been superseded by those of a more recent date may contain obsolete or incomplete flight information.

REFERENCE—AIP, GEN 3.2, contains a description of aeronautical charts.

1.5 When requesting a preflight briefing, identify yourself as a pilot and provide the following:

1.5.1 Type of flight planned; e.g., VFR or IFR.
1.5.2 Aircraft number or pilot’s name.
1.5.3 Aircraft type.
1.5.4 Departure airport.
1.5.5 Route of flight.
1.5.6 Destination.
1.5.7 Flight altitude(s).

1.5.8 ETD and ETE.

1.6 Prior to conducting a briefing, briefers are required to have the background information listed above so that they may tailor the briefing to the needs of the proposed flight. The objective is to communicate a “picture” of meteorological and aeronautical information necessary for the conduct of a safe and efficient flight. Briefers use all available weather and aeronautical information to summarize data applicable to the proposed flight. Pilots who have briefed themselves before calling Flight Service should advise the briefer what information has been obtained from other sources.

REFERENCE—See AIP, GEN 3.5 for meteorological services.

1.7 The Federal Aviation Administration has designated High Density Traffic Airports (HDTA) and has prescribed air traffic rules and requirements for operating aircraft (excluding helicopter operations) to and from these airports.


1.8 In addition to the filing of a flight plan, if the flight will traverse or land in one or more foreign countries, it is particularly important that pilots leave a complete itinerary with someone directly concerned and keep that person advised of the flight’s progress. If serious doubt arises as to the safety of the flight, that person should first contact the FSS.

1.9 Pilots operating under the provisions of 14 CFR Part 135 without an FAA assigned 3−letter designator, must prefix the normal registration (N) number with the letter “T” on flight plan filing.

EXAMPLE—TN 1234B.

1.10 Cold Temperature Operations

1.10.1 Pilots should begin planning for cold temperature operations during the preflight planning phase. Cold temperatures produce barometric altimetry errors, which affect instrument flight procedures. There are currently two temperature limitations that may be published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). The two published temperature limitations are:

1.10.1.1 A temperature range limitation associated with the use of baro−VNAV that may be published on a United States PBN IAP titled RNAV (GPS) or RNAV (RNP); and/or

1.10.1.2 A Cold Temperature Airport (CTA) limitation designated by a snowflake ICON and temperature in Celsius (C) that is published on every IAP for the airfield.

1.10.2 Pilots should request the lowest forecast temperature +/- 1 hour for arrival and departure operations. If the temperature is forecast to be outside of the baro−VNAV or at or below the CTA temperature limitation, consider the following:

1.10.2.1 When using baro−VNAV with an aircraft that does not have an automated temperature compensating function, pilots should plan to use the appropriate minima and/or IAP.

1.10.2.2 The RNAV (RNP) procedure may not be accomplished without an approved automated temperature compensating function if the temperature is outside of the baro−VNAV temperature range limitation.

1.10.3 If the temperature is forecast to be at or below the published CTA temperature, pilots should calculate a correction for the appropriate segment/s or a correction for all the segments if using the “All Segments Method.”

Pilots should review the operating procedures for the aircraft’s temperature compensating system when planning to use the system for any cold temperature corrections. Any planned altitude correction for the intermediate and/or missed approach holding segments must be coordinated with ATC. Pilots do not have to advise ATC of a correction in the final segment.

NOTE—The charted baro−VNAV temperature range limitation does not apply to pilots operating aircraft with an airworthiness approval to conduct an RNAV (GPS) approach to LNAV/VNAV minimums with the use of SBAS vertical guidance.

REFERENCE—AIP, ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures and Cold Temperature Airports (CTA).
2. Follow IFR Procedures Even When Operating VFR

2.1 To maintain IFR proficiency, pilots are urged to practice IFR procedures whenever possible, even when operating VFR. Some suggested practices include:

2.1.1 Obtain a complete preflight briefing and check NOTAMs. Prior to every flight, pilots should gather all information vital to the nature of the flight. Pilots can receive a regulatory compliant briefing without contacting Flight Service. Pilots are encouraged to use automated resources and review AC 91−92, Pilot’s Guide to a Preflight Briefing, for more information. NOTAMs are available online from the Federal NOTAM System (FNS) NOTAM Search website (https://notams.aim.faa.gov/notamSearch/), private vendors, or on request from Flight Service.

2.1.2 File a flight plan. This is an excellent low cost insurance policy. The cost is the time it takes to fill it out. The insurance includes the knowledge that someone will be looking for you if you become overdue at your destination. Pilots can file flight plans either by using a website or by calling Flight Service. Flight planning applications are also available to file, activate, and close VFR flight plans.

2.1.3 Use current charts.

2.1.4 Use the navigation aids. Practice maintaining a good course by keeping the needle centered.

2.1.5 Maintain a constant altitude appropriate for direction of flight.

2.1.6 Estimate en route position times.

2.1.7 Make accurate and frequent position reports to the FSSs along your route of flight.

2.2 Simulated IFR flight is recommended (under the hood); however, pilots are cautioned to review and adhere to the requirements specified in 14 CFR Section 91.109 before and during such flight.

2.3 When flying VFR at night, in addition to the altitude appropriate for the direction of flight, pilots should maintain an altitude which is at or above the minimum en route altitude as shown on charts. This is especially true in mountainous terrain, where there is usually very little ground reference. Do not depend on your eyes alone to avoid rising unlighted terrain, or even lighted obstructions such as TV towers.

3. Notice to Air Missions (NOTAM) System

3.1 The NOTAM System provides pilots with time critical aeronautical information that is temporary, or information to be published on aeronautical charts at a later date, or information from another operational publication. The NOTAM is cancelled when the information in the NOTAM is published on the chart or when the temporary condition is returned to normal status. NOTAMs may be disseminated up to 7 days before the start of activity. Pilots can access NOTAM information online via NOTAM Search at: https://notams.aim.faa.gov/notamSearch/ or from an FSS.

3.1.1 14 CFR § 91.103, Preflight Action directs pilots to become familiar with all available information concerning a planned flight prior to departure, including NOTAMs. Pilots may change their flight plan based on available information. Current NOTAM information may affect:

3.1.1.1 Aerodromes.

3.1.1.2 Runways, taxiways, and ramp restrictions.

3.1.1.3 Obstructions.

3.1.1.4 Communications.

3.1.1.5 Airspace.

3.1.1.6 Status of navigational aids or radar service availability.

3.1.1.7 Other information essential to planned en route, terminal, or landing operations.

3.1.2 Pilots should also review NOTAMs for the ARTCC area (for example, Washington Center (ZDC), Cleveland Center (ZOB), etc.) in which the flight will be operating. You can find the 3 letter code for each ARTCC on the FAA’s NOTAM web page. These NOTAMs may affect the planned flight. Some of the operations include Central Altitude Reservation Function (CARF), Special Use Airspace (SUA), Temporary Flight Restrictions (TFR), Global Positioning System (GPS), Flight Data Center (FDC) changes to routes, wind turbine, and Unmanned Aircraft System (UAS).

NOTE− NOTAM information is transmitted using ICAO contractions to reduce transmission time. See TBL ENR 1.10−2 for a listing of the most commonly used contractions, or go online to the following URL: https://www.notams.faa.gov/downloads/contractions.pdf. For a complete listing of approved NOTAM Contractions, see FAA JO Order 7340.2, Contractions.
3.1.3 Pilots should also contact ATC or FSS while en route to obtain updated airfield information for their destination. This is particularly important when flying to the airports without an operating control tower. Pilots should also ensure NOTAMs are updated for locations without an operating control tower. Snow removal, fire and rescue activities, construction, and wildlife encroachment, could provide hazards to pilots. This information may not be available to pilots prior to arrival/departure.

3.1.4 Pilots should check NOTAMs to ensure NAVAIDs required for the flight are in service. A NOTAM is published when a NAVAID is out of service or Unserviceable (U/S). A NOTAM is the primary method of alerting pilots to its unavailability. Although a NAVAID is deemed U/S and planned for removal from service, it may be a long time before that NAVAID is officially decommissioned and removed from charts. It is recommended that pilots using VFR charts should regularly consult the Chart Update Bulletin. This bulletin identifies any updates to the chart that have not yet been accounted for.

3.3 NOTAM information is classified as Domestic NOTAMs (NOTAM D), Flight Data Center (FDC) NOTAMs, International NOTAMs, or Military NOTAMs.

3.3.1 NOTAM (D) information is disseminated for all navigational facilities that are part of the National Airspace System (NAS), all public use aerodromes, seaplane bases, and heliports listed in the Chart Supplement U.S. NOTAM (D) information includes taxiway closures, personnel and equipment near or crossing runways, and airport lighting aids that do not affect instrument approach criteria (i.e., VGS1). All NOTAMs must have one of the keywords listed in TBL ENR 1.10–1, as the first part of the text after the location identifier. These keywords categorize NOTAMs by subject, for example, APRON (ramp), RWY (runway), SVC (Services), etc. There are several types of NOTAMs:

3.3.1.1 Aerodrome activity and conditions, to include field conditions.

3.3.1.2 Airspace to include CARF, SUA, and general airspace activity like UAS or pyrotechnics.

3.3.1.3 Visual and radio navigational aids.

3.3.1.4 Communication and services.

3.3.1.5 Pointer NOTAMs. NOTAMs issued to point to additional aeronautical information. When pointing to another NOTAM, the keyword in the pointer NOTAM must match the keyword in the original NOTAM. Pointer NOTAMs should be issued for, but are not limited to, TFRs, Airshows, Temporary SUA, major NAS system interruptions, etc.

3.3.1.6 NOTAMs that crossover into International NOTAMs. These NOTAMs contain the same data as NOTAMs, 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.

3.3.2 FDC NOTAMs are issued when it is necessary to disseminate regulatory information. FDC NOTAMs include:

3.3.2.1 Amendments to published IAPs and other current aeronautical charts.
3.3.2.2 Temporary Flight Restrictions (TFRs) restrict entrance to a certain airspace at a certain time, however, some TFRs provide relief if ATC permission is given to enter the area when requested. Online preflight resources for TFRs provide graphics and plain language interpretations.

3.3.2.3 High barometric pressure warning.

3.3.2.4 Laser light activity.

3.3.2.5 ADS-B, TIS-B, and FIS-B service availability.

3.3.2.6 Satellite-based systems such as WAAS or GPS.

3.3.2.7 Special Notices.

3.3.3 International NOTAMs.

3.3.3.1 International NOTAMs are published in ICAO format per Annex 15 and distributed to multiple countries. International NOTAMs issued by the U.S. NOTAM Office use Series A followed by 4 sequential numbers, a slant “/” and a 2-digit number representing the year the NOTAM was issued. International NOTAMs basically duplicate data found in a U.S. Domestic NOTAM.

3.3.3.2 Not every topic of a U.S. Domestic NOTAM is issued as an International NOTAM by the U.S. The U.S. International NOTAM will be linked to the appropriate U.S. Domestic NOTAM when possible.

3.3.3.3 International NOTAMs received by the FAA from other countries are stored in the U.S. NOTAM System.

3.3.3.4 The International NOTAM format includes a “Q” Line that can be easily read/parsed by a computer and allows the NOTAM to be displayed digitally.

   a) Field A: ICAO location identifier or FIR affected by the NOTAM.
   b) Field B: Start of Validity.
   c) Field C: End of Validity (both in [Year][Month][Day][Hour][Minute] format).
   d) Field D: (when present) Schedule.
   e) Field E: Full NOTAM description.
   f) Field F: (when present) Lowest altitude, or “SFC.”
   g) Field G: (when present) Highest altitude, or “UNL.”

3.3.3.5 For more on International format, please see Annex 15.

3.3.4 Military NOTAMs. NOTAMs originated by the U.S. Air Force, Army, Marine, or Navy, and pertaining to military or joint-use navigational aids/airports that are part of the NAS. Military NOTAMs are published in the International NOTAM format and should be reviewed by users of a military or joint-use facility.

3.4 Security NOTAMS. U.S. Domestic Security NOTAMS are FDC NOTAMS that inform pilots of curtain U.S. security activities or requirements, such as Special Security Instructions for aircraft operations to, from, within, or transitioning U.S. territorial airspace. These NOTAMS are found on the Federal NOTAM System (FNS) NOTAM Search website under the location designator KZZZ.

3.4.1 United States International Flight Prohibitions, Potential Hostile Situations, and Foreign Notices are issued by the FAA and are found on the Federal NOTAM System (FNS) NOTAM Search website under the location designator KICZ.
### NOTAM Keywords

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<td>TWY</td>
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<td>Obstacle Departure Procedure</td>
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<td>SID</td>
<td>Standard Instrument Departure</td>
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<td>STAR</td>
<td>Standard Terminal Arrival</td>
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<td>CHART</td>
<td>Chart</td>
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<tr>
<td>DATA</td>
<td>Data</td>
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<tr>
<td>IAP</td>
<td>Instrument Approach Procedure</td>
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</table>

#### RWY
Example: BNA BNA RWY 18/36 CLSD YYMMDDHHMM–YYMMDDHHMM

#### TWY
Example: BTV BTV TWY C EDGE LGT OBSC YYMMDDHHMM–YYMMDDHHMM

#### APRON
Example: BNA BNA APRON NORTH APN E 100FT CLSD YYMMDDHHMM–YYMMDDHHMM

#### AD
Example: BET BET AD AP ELK NEAR MOVEMENT AREAS YYMMDDHHMM–YYMMDDHHMM

#### OBST
Example: SJT SJT OBST MOORED BALLOON WI AN AREA DEFINED AS 1NM RADIUS OF SJT 2430FT (510FT AGL) FLAGGED YYMMDDHHMM–YYMMDDHHMM

#### NAV
Example: IWS SHV NAV ILS RWY 32 110.3 COMMISSIONED YYMMDDHHMM–PERM

#### COM
Example: INW INW COM REMOTE COM OUTLET 122.6 U/S YYMMDDHHMM–PERM

#### SVC
Example: ROA ROA SVC TWR COMMISSIONED YYMMDDHHMM–PERM

#### AIRSPACE
Example: MHV MHV AIRSPACE AEROBATIC ACFT WI AN AREA DEFINED AS 4.3NM RADIUS OF MHV 5500FT–10500FT AVOIDANCE ADZ CTC JOSHUA APP DLY YYMMDDHHMM–YYMMDDHHMM

#### ODP
Example: DDI ODP DICKINSON–THEODORE ROOSEVELT RGNL, DICKINSON, ND. TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 1... DEPARTURE PROCEDURE: RWY 25, CLIMB HEADING 250 TO 3500 BEFORE TURNING LEFT, ALL OTHER DATA REMAINS AS PUBLISHED. THIS IS TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 1A. YYMMDDHHMM–PERM

#### SID
Example: DFW SID DALLAS/FORT WORTH INTL, DALLAS, TX. PODDE THREE DEPARTURE... CHANGE NOTES TO READ: RWYS 17C/R, 18L/R: DO NOT EXCEED 240KT UNTIL LARRN. RWYS 35L/C, 36L/R: DO NOT EXCEED 240KT UNTIL KMART YYMMDDHHMM–PERM

#### STAR
Example: DCA STAR RONALD REAGAN WASHINGTON NATIONAL, WASHINGTON, DC. WZRRD TWO ARRIVAL... SHAAR TRANSITION: ROUTE FROM DRAWD INT TO WZRRD INT NOT AUTHORIZED. AFTER DRAWD INT EXPECT RADAR VECTORS TO AML VORTAC YYMMDDHHMM–YYMMDDHHMM

#### CHART
Example: DAL IAP DALLAS LOVE FIELD, DALLAS, TX. ILS OR LOC RWY 31R, AMDT 5... CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 31L. MISSED APPROACH: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 5000 ON HEADING 330 AND CTE R–046 TO FINGR INT/CVE 36.4 DME AND HOLD. CHART LOC RWY 31L. THIS IS ILS OR LOC RWY 31R, AMDT 5A. YYMMDDHHMM–PERM

#### DATA
Example: DDI DATA DALLAS/FORT WORTH INTL, DALLAS, TX. PODDE THREE DEPARTURE... INCREASE NOTES TO READ: RWYS 17C/R, 18L/R: DO NOT EXCEED 240KT UNTIL LARRN. RWYS 35L/C, 36L/R: DO NOT EXCEED 240KT UNTIL KMART YYMMDDHHMM–PERM

#### IAP
Example: DAL IAP DALLAS LOVE FIELD, DALLAS, TX. ILS OR LOC RWY 31R, AMDT 5... CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 31L. MISSED APPROACH: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 5000 ON HEADING 330 AND CTE R–046 TO FINGR INT/CVE 36.4 DME AND HOLD. CHART LOC RWY 31L. THIS IS ILS OR LOC RWY 31R, AMDT 5A. YYMMDDHHMM–PERM
### Keyword Definition

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<th>Keyword</th>
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<tr>
<td><strong>VFP</strong></td>
<td><strong>Visual Flight Procedures</strong></td>
</tr>
<tr>
<td>Example</td>
<td>![FDC X/XXX] JFK VFP JOHN F KENNEDY INTL, NEW YORK, NY. PARKWAY VISUAL RWY 13L/R, ORIG... WEATHER MINIMUMS 3000 FOOT CEILING AND 3 MILES VISIBILITY. YYMMDDHHMM – YYMMDDHHMM</td>
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<tr>
<td><strong>ROUTE</strong></td>
<td><strong>Route</strong></td>
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<tr>
<td>Example</td>
<td>![FDC x/xxxx] ZFW ROUTE ZFW ZKC. V 140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4300. YYMMDDHHMM – YYMMDDHHMM EST</td>
</tr>
<tr>
<td><strong>SPECIAL</strong></td>
<td><strong>Special</strong></td>
</tr>
<tr>
<td>Example</td>
<td>![FDC x/xxxx] JNU SPECIAL JUNEAU INTERNATIONAL, JUNEAU, AK. LDA–2 RWY 8 AMDT 9 PROCEDURE TURN NA. YYMMDDHHMM – YYMMDDHHMM EST</td>
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<tr>
<td><strong>SECURITY</strong></td>
<td><strong>Security</strong></td>
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<tr>
<td>Example</td>
<td>![FDC x/xxxx] FDC ...SPECIAL NOTICE... THIS IS A RESTATEMENT OF A PREVIOUSLY ISSUED ADVISORY NOTICE. IN THE INTEREST OF NATIONAL SECURITY AND TO THE EXTENT PRACTICABLE, PILOTS ARE STRONGLY ADVISED TO AVOID THE AIRSPACE ABOVE, OR IN PROXIMITY TO SUCH SITES AS POWER PLANTS (NUCLEAR, HYDRO–ELECTRIC, OR COAL), DAMS, REFINERIES, INDUSTRIAL COMPLEXES, MILITARY FACILITIES AND OTHER SIMILAR FACILITIES. PILOTS SHOULD NOT CIRCLE AS TO LOITER IN THE VICINITY OVER THESE TYPES OF FACILITIES.</td>
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<tr>
<td><strong>GPS TESTING</strong></td>
<td><strong>Global Positioning System Testing</strong></td>
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<td>Example</td>
<td>![GPS 01/028 ZAB NAV GPS (YPG_AZ GPS 21–06)(INCLUDING WAAS, GBAS, AND ADS–B) MAY NOT BE AVBL WI A 276NM RADIUS CENTERED AT 332347N1142221W (BLH108023) FL400–UNL, 232NM RADIUS AT FL250, 164NM RADIUS AT 100000FT 160NM RADIUS AT 4000FT AGL 126NM RADIUS AT 50FT AGL DLY 1830–2230 2101281830–2101292230</td>
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<td><strong>PRN (GPS)</strong></td>
<td><strong>Pseudo random noise code used differentiate GPS satellites. This code allows any receiver to identify exactly which satellite(s) it is receiving.</strong></td>
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<td>Example</td>
<td>![GPS GPS NAV PRN 16 U/S 2109231600–2109242300EST]</td>
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## Contractions Commonly Found in NOTAMS

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4. Operational Information System (OIS)

4.1 The FAA’s Air Traffic Control System Command Center (ATCSCC) maintains a website with near real-time National Airspace System (NAS) status information. NAS operators are encouraged to access the website at www.fly.faa.gov prior to filing their flight plan.

4.1.1 The website consolidates information from advisories. An advisory is a message that is disseminated electronically by the ATCSCC that contains information pertinent to the NAS.

4.1.1.1 Advisories are normally issued for the following items:
   a) Ground Stops.
   b) Ground Delay Programs.
   c) Route Information.
   d) Plan of Operations.
   e) Facility Outages and Scheduled Facility Outages.
   f) Volcanic Ash Activity Bulletins.
   g) Special Traffic Management Programs.

4.1.1.2 This list is not all-inclusive. Any time there is information that may be beneficial to a large number of people, an advisory may be sent. Additionally, there may be times when an advisory is not sent due to workload or the short length of time of the activity.

4.1.1.3 Route information is available on the website and in specific advisories. Some route information, subject to the 56-day publishing cycle, is located on the “OIS” under “Products,” Route Management Tool (RMT), and “What’s New” Playbook. The RMT and Playbook contain routings for use by Air Traffic and NAS operators when they are coordinated “real-time” and are then published in an ATCSCC advisory.

4.1.1.4 Route advisories are identified by the word “Route” in the header; the associated action is required (RQD), recommended (RMD), planned (PLN), or for your information (FYI). Operators are expected to file flight plans consistent with the Route RQD advisories.

4.1.1.5 Electronic System Impact Reports are on the intranet at http://www.atcscn.faa.gov/ois/ under “System Impact Reports.” This page lists scheduled outages/events/projects that significantly impact the NAS; for example, runway closures, air shows, and construction projects. Information includes anticipated delays and traffic management initiatives (TMI) that may be implemented.

5. Flight Plan – VFR Flights

(See Appendix 2, FAA Form 7233–4 – International Flight Plan)

5.1 The requirements for the filing and activation of VFR flight plans can vary depending in which airspace the flight is operating. Pilots are responsible for activating flight plans with a Flight Service Station. Control tower personnel do not automatically activate VFR flight plans.

5.1.1 Within the continental U.S., a VFR flight plan is not normally required.

5.1.2 VFR flights (except for DOD and law enforcement flights) into an Air Defense Identification Zone (ADIZ) are required to file DVFR flight plans.

NOTE: Detailed ADIZ procedures are found in Section 6, National Security and Interception Procedures, of this chapter. (See 14 CFR Part 99).

5.1.3 Flights within the Washington, DC Special Flight Rules Area have additional requirements that must be met. Visit http://www.faa.safety.gov for the required Special Awareness Training that must be completed before flight within this area.

5.1.4 VFR flight to an international destination requires a filed and activated flight plan.

NOTE: ICAO flight plan guidance is published in ICAO Document 4444 PANS–ATM Appendix 2.

5.2 It is strongly recommended that a VFR flight plan be filed with a Flight Service Station or equivalent flight plan filing service. When filing, pilots must use FAA Form 7233–4, International Flight Plan or DD Form 1801. Only DOD users, and civilians who file stereo route flight plans, may use FAA Form 7233–1, Flight Plan. Pilots may take advantage of advances in technology by filing their flight plans using any available electronic means. Activating the flight plan will ensure that you receive VFR Search and Rescue services.
5.3 When a stopover flight is anticipated, it is recommended that a separate flight plan be filed for each leg of the flight.

5.4 Pilots are encouraged to activate their VFR flight plans with Flight Service by the most expeditious means possible. This may be via radio or other electronic means. VFR flight plan proposals are normally retained for two hours following the proposed time of departure.

5.5 Pilots may also activate a VFR flight plan by using an assumed departure time. This assumed departure time will cause the flight plan to become active at the designated time. This may negate the need for communication with a flight service station or flight plan filing service upon departure. It is the pilot's responsibility to revise his actual departure time, time en route, or ETA with flight service.

**NOTE**

Pilots are strongly advised to remain mindful when using an assumed departure time. If not updated, search and rescue activities will be based on the assumed departure time.

5.6 U.S. air traffic control towers do not routinely activate VFR flight plans. Foreign pilots especially must be mindful of the need to communicate directly with a flight service station, or use an assumed departure time procedure clearly communicated with the flight plan filing service.

5.7 Although position reports are not required for VFR flight plans, periodic reports to FSSs along the route are good practice. Such contacts permit significant information to be passed to the transiting aircraft and also serve to check the progress of the flight should it be necessary for any reason to locate the aircraft.

5.8 Pilots flying VFR should fly an appropriate cruising altitude for their direction of flight.

5.9 When filing a VFR Flight plan, indicate the appropriate aircraft equipment capability as prescribed for an IFR flight plan.

5.10 ATC radar history data can be useful in finding a downed or missing aircraft; therefore, surveillance equipment should be listed in Item 18. Pilots using commercial GPS tracking services are encouraged to note the specific service in Item 19 N/ (survival equip remarks) of FAA Form 7233–4 or DD Form 1801.

6. Flight Plan – IFR Flights
(See Appendix 2, FAA Form 7233–4 - International Flight Plan)

6.1 General

6.1.1 Use of FAA Form 7233–4 or DD Form 1801 is mandatory for:

6.1.1.1 Assignment of RNAV SIDs and STARs or other PBN routing,

6.1.1.2 All IFR flights that will depart U.S. domestic airspace, and

6.1.1.3 Domestic IFR flights except military/DOD and civilians who file stereo route flight plans.

6.1.4 All military/DOD IFR flights that will depart U.S. controlled airspace.

6.1.2 Military/DOD flights using FAA Form 7233–1 or DD Form 175, may not be eligible for assignment of RNAV SIDs or STARs. Military flights desiring assignment of these procedures should file using FAA Form 7233–4 or DD 1801, as described in this section.

6.1.3 When filing an IFR flight plan using FAA Form 7233–4 or DD Form 1801, it is recommended that filers include all operable navigation, communication, and surveillance equipment capabilities by adding appropriate equipment qualifiers as shown in Appendix 2, FAA Form 7233–4, International Flight Plan.

6.1.4 ATC issues clearances based on aircraft capabilities filed in Items 10 and 18 of FAA Form 7233–4. Operators should file all capabilities for which the aircraft and crew is certified, capable, and authorized. PBN/ capability must be filed in Item 18, Other Information. When filing a capability, ATC expects filers to use that capability for example; answer a SATVOICE call from ATC if code M1 or M2 is filed in Item 10.

6.1.5 Prior to departure from within, or prior to entering controlled airspace, a pilot must submit a complete flight plan and receive an air traffic clearance, if weather conditions are below VFR minimums. IFR flight plans may be submitted to an FSS or flight plan filing service.

6.1.6 Pilots should file IFR flight plans at least 30 minutes prior to estimated time of departure to preclude possible delay in receiving a departure clearance from ATC.
6.1.7 In order to provide FAA traffic management units strategic route planning capabilities, nonscheduled operators conducting IFR operations above FL 230 are requested to voluntarily file IFR flight plans at least 4 hours prior to estimated time of departure (ETD).

6.1.8 To minimize your delay in entering Class B, Class C, Class D, and Class E surface areas at destination when IFR weather conditions exist or are forecast at that airport, an IFR flight plan should be filed before departure. Otherwise, a 30 minute delay is not unusual in receiving an ATC clearance because of time spent in processing flight plan data.

6.1.9 Traffic saturation frequently prevents control personnel from accepting flight plans by radio. In such cases, the pilot is advised to contact a flight plan filing service for the purpose of filing the flight plan.

6.1.10 When requesting an IFR clearance, it is highly recommended that the departure airport be identified by stating the city name and state and/or the airport location identifier in order to clarify to ATC the exact location of the intended airport of departure.

6.1.11 Multiple versions of flight plans for the same flight may lead to unsafe conditions and errors within the air traffic system. Pilots must not file more than one flight plan for the same flight without ensuring that the previous flight plan has been successfully removed.

6.1.12 When a pilot is aware that the possibility for multiple flight plans on the same aircraft may exist, ensuring receipt of a full route clearance will help mitigate chances of error.

6.2 Airways and Jet Routes Depiction on Flight Plan

6.2.1 It is vitally important that the route of flight be accurately and completely described in the flight plan. To simplify definition of the proposed route, and to facilitate ATC, pilots are requested to file via airways or jet routes established for use at the altitude or flight level planned.

6.2.2 If flight is to be conducted via designated airways or jet routes, describe the route by indicating the type and number designators of the airway(s) or jet route(s) requested. If more than one airway or jet route is to be used, clearly indicate points of transition. If the transition is made at an unnamed intersection, show the next succeeding NA V AID or named intersection on the intended route and the complete route from that point. Reporting points may be identified by using authorized name/code as depicted on appropriate aeronautical charts. The following two examples illustrate the need to specify the transition point when two routes share more than one transition fix.

EXAMPLE—
1. ALB J37 BUMPY J14 BHM Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at BUMPY intersection, thence via Jet Route 14 to Birmingham, Alabama.
2. ALB J37 ENO J14 BHM Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at Smyrna VORTAC (ENO) thence via Jet Route 14 to Birmingham, Alabama.

6.2.3 The route of flight may also be described by naming the reporting points or NA V AIDs over which the flight will pass, provided the points named are established for use at the altitude or flight level planned.

EXAMPLE—

6.2.4 When the route of flight is defined by named reporting points, whether alone or in combination with airways or jet routes, and the navigational aids (V O R, V OR TA C, TA C A N, NDB) to be used for the flight are a combination of different types of aids, enough information should be included to clearly indicate the route requested.

EXAMPLE—

6.2.5 When filing IFR, it is to the pilot’s advantage to file a preferred route.


6.2.6 ATC may issue a SID or a STAR, as appropriate.
6.3 Direct Flights

6.3.1 All or any portions of the route which will not be flown on the radials or courses of established airways or routes, such as direct route flights, must be defined by indicating the radio fixes over which the flight will pass. Fixes selected to define the route must be those over which the position of the aircraft can be accurately determined. Such fixes automatically become compulsory reporting points for the flight, unless advised otherwise by ATC. Only those navigational aids established for use in a particular structure; i.e., in the low or high structures, may be used to define the en route phase of a direct flight within that altitude structure.

6.3.2 The azimuth feature of VOR aids and the azimuth and distance (DME) features of VORTAC and TACAN aids are assigned certain frequency protected areas of airspace which are intended for application to established airway and route use, and to provide guidance for planning flights outside of established airways or routes. These areas of airspace are expressed in terms of cylindrical service volumes of specified dimensions called “class limits” or “categories.”

6.3.3 An operational service volume has been established for each class in which adequate signal coverage and frequency protection can be assured. To facilitate use of VOR, VORTAC, or TACAN aids, consistent with their operational service volume limits, pilot use of such aids for defining a direct route of flight in controlled airspace should not exceed the following:

6.3.3.1 Operations above FL 450 – Use aids not more than 200 NM apart. These aids are depicted on en route high altitude charts.

6.3.3.2 Operation off established routes from 18,000 feet MSL to FL 450 – Use aids not more than 260 NM apart. These aids are depicted on en route high altitude charts.

6.3.3.3 Operation off established airways below 18,000 feet MSL – Use aids not more than 80 NM apart. These aids are depicted on en route low altitude charts.

6.3.3.4 Operation off established airways between 14,500 feet MSL and 17,999 feet MSL in the conterminous U.S. – (H) facilities not more than 200 NM apart may be used.

6.3.4 Increasing use of self-contained airborne navigational systems which do not rely on the VOR/VORTAC/TACAN system has resulted in pilot requests for direct routes which exceed NA V AID service volume limits.

6.3.5 At times, ATC will initiate a direct route in a surveillance environment which exceeds NA V AID service volume limits. Pilots must adhere to the altitude specified in the clearance.

6.3.6 Appropriate airway or jet route numbers may also be included to describe portions of the route to be flown.


NOTE – When route of flight is described by radio fixes, the pilot will be expected to fly a direct course between the points named.

6.3.7 Pilots are reminded that they are responsible for adhering to obstruction clearance requirements on those segments of direct routes that are outside of controlled airspace and ATC surveillance capability. The MEAs and other altitudes shown on IFR en route charts pertain to those route segments within controlled airspace, and those altitudes may not meet obstruction clearance criteria when operating off those routes.

NOTE – Refer to 14 CFR 91.177 for pilot responsibility when flying random point to point routes.

6.4 Area Navigation (RNAV)/Global Navigation Satellite System (GNSS)

6.4.1 When not being radar monitored, GNSS-equipped RNAV aircraft on random RNAV routes must be cleared via or reported to be established on a point-to-point route.

6.4.1.1 The points must be published NA V AIDs, waypoints, fixes or airports recallable from the
aircraft’s navigation database. The points must be displayed on controller video maps or depicted on the controller chart displayed at the control position. When applying non–radar separation the maximum distance between points must not exceed 500 miles.

6.4.1.2 ATC will protect 4 miles either side of the route centerline.

6.4.1.3 Assigned altitudes must be at or above the highest MIA along the projected route segment being flown, including the protected airspace of that route segment.

6.4.2 Pilots of aircraft equipped with approved area navigational equipment may file for RNAV routes throughout the National Airspace System in accordance with the following procedures:

6.4.2.1 File airport–to–airport flight plans.

6.4.2.2 File the appropriate indication of RNAV and/or RNP capability in the flight plan.

6.4.2.3 Plan the random route portion of the flight plan to begin and end over appropriate arrival and departure transition fixes or appropriate navigation aids for the altitude stratum within which the flight will be conducted. The use of normal preferred departure and arrival routes (DP/STAR), where established, is recommended.

6.4.2.4 File route structure transitions to and from the random route portion of the flight.

6.4.2.5 Define the random route by waypoints. File route description waypoints by using degree distance fixes based on navigational aids which are appropriate for the altitude stratum.

6.4.2.6 File a minimum of one route description waypoint for each ARTCC through whose area the random route will be flown. These waypoints must be located within 200 NM of the preceding center’s boundary.

6.4.2.7 File an additional route description waypoint for each turn point in the route.

6.4.2.8 Plan additional route description waypoints as required to ensure accurate navigation via the filed route of flight. Navigation is the pilot’s responsibility unless ATC assistance is requested.

6.4.2.9 Plan the route of flight so as to avoid prohibited and restricted airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facilities are advised.

NOTE-
To be approved for use in the National Airspace System, RNAV equipment must meet system availability, accuracy, and airworthiness standards. For additional information and guidance on RNAV equipment requirements see Advisory Circular (AC) 20–138, Airworthiness Approval of Positioning and Navigation Systems, and AC 90–100, U.S. Terminal and En Route Area Navigation (RNAV) Operations.

6.4.3 Pilots of aircraft equipped with latitude/longitude coordinate navigation capability, independent of VOR/TACAN references, may file for random RNAV using the following procedures:

6.4.3.1 File airport–to–airport flight plans prior to departure.

6.4.3.2 File the appropriate RNAV capability certification suffix in the flight plan.

6.4.3.3 Plan the random route portion of the flight to begin and end over published departure/arrival transition fixes or appropriate navigation aids for airports without published transition procedures. The use of preferred departure and arrival routes, such as DP and STAR where established, is recommended.

6.4.3.4 Plan the route of flight so as to avoid prohibited and restricted airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facility is advised.

6.4.3.5 Define the route of flight after the departure fix, including each intermediate fix (turnpoint) and the arrival fix for the destination airport in terms of latitude/longitude coordinates plotted to the nearest minute or in terms of Navigation Reference System (NRS) waypoints. For latitude/longitude filing the arrival fix must be identified by both the latitude/longitude coordinates and a fix identifier.

EXAMPLE——

MIA² SRQ³ 3407/10615³ 3407/11546 TNP⁴ LAX⁵

1 Departure airport.
2 Departure fix.
3 Intermediate fix (turning point).
4 Arrival fix.
5 Destination airport.

or

ORD¹ IOW² KP49G³ KD34U⁴ KL16O⁵ OAL⁶ MOD2⁷ SFO²⁸

1 Departure airport.
2 Transition fix.
3 Minneapolis ARTCC waypoint.
4 Denver ARTCC Waypoint.
5 Los Angeles ARTCC waypoint.
6 Transition fix.
7 Arrival.
8 Destination airport.

6.4.3.6 Record latitude/longitude coordinates by two or four figures describing latitude in degrees followed by a N or S, followed by 3 or 5 digits longitude followed by an E or W. Separate latitude and longitude with a solidus “/”. Use leading zeros if necessary.

6.4.3.7 File at FL 390 or above for the random RNAV portion of the flight.

6.4.3.8 Fly all routes/route segments on Great Circle tracks.

6.4.3.9 Make any inflight requests for random RNAV clearances or route amendments to an en route ATC facility.

7. Flight Plan – Defense VFR (DVFR) Flights

VFR flights (except for DOD and law enforcement flights) into an ADIZ are required to file DVFR flight plans for security purposes. Detailed ADIZ procedures are found in section ENR 1.12, National Security and Interception Procedures.

REFERENCE –

7.1 DV FR flight plans must be filed using FAA Form 7233–4 or DD Form 1801.

7.2 Enter the letter “D” in Item 8b of FAA Form 7233–4 or DD Form 1801.

7.3 DVFR flights where pilots decline search and rescue coverage must clearly indicate “NORIV” in Item 18 following the indicator “RMK/”. This flight plan must still be activated in order to properly notify NORAD, however no flight plan cancellation will be expected.

EXAMPLE –
RMK/NORIV

8. Single Flights Conducted With Both VFR and IFR Flight Plans

8.1 Flight plans which combine VFR operation on an active VFR flight plan for one portion of a flight, and IFR for another portion, sometimes known as a composite flight plan, cannot be accepted or processed by current en route automation systems.

8.2 Pilots are free to operate VFR in VFR conditions prior to accepting an IFR clearance from the appropriate control facility, or may cancel an IFR clearance and proceed VFR as desired. However, if a pilot desires to be on an active VFR flight plan, with search and rescue provisions, for the portion of flight not conducted under an IFR clearance, a separate VFR flight plan must be filed, activated, and closed.

8.3 If a pilot desires to be on an active VFR flight plan prior to or following the IFR portion of the flight, that flight plan must be filed and processed as a distinct and separate flight plan. The VFR flight plan must be opened and closed with either a Flight Service Station or other service provider having the capability to open and close VFR flight plans. Air Traffic Control does not have the ability to determine if an aircraft is operating on an active VFR flight plan and cannot process the activation or cancellation of a VFR flight plan.

8.4 Pilots may propose to commence the IFR portion of flight at a defined airborne point. This airborne point, or fix, is entered as the departure point in Item 13 of FAA Form 7233–4 or DD Form 1801.

8.5 Pilots may indicate in the IFR flight plan the intention to terminate the IFR portion of flight at any defined airborne point. The airborne point, or fix, is entered as the destination point in Item 16 of FAA Form 7233–4 or DD Form 1801.

8.6 Prior to beginning the IFR portion of flight, a pilot must receive an IFR clearance from the appropriate control facility.

8.7 If the pilot does not desire further clearance after reaching the clearance limit, he or she must advise ATC to cancel the IFR clearance.

9. Change in Proposed Departure Time

9.1 To prevent computer saturation in the en route environment, parameters have been established to delete proposed departure flight plans which have not been activated. Most centers have this parameter set so as to delete these flight plans a minimum of 2 hours after the proposed departure time or Expect Departure Clearance Time (EDCT). To ensure that a flight plan remains active, pilots whose actual departure time will be delayed 2 hours or more...
beyond their filed departure time, are requested to notify ATC of their new proposed departure time.

9.2 Due to traffic saturation, ATC personnel frequently will be unable to accept these revisions via radio. It is recommended that you forward these revisions to a flight plan service provider or FSS.

10. Other Changes

10.1 In addition to altitude/flight level, destination, and/or route changes, increasing or decreasing the speed of an aircraft constitutes a change in a flight plan. Therefore, at any time the average true airspeed at cruising altitude between reporting points varies or is expected to vary from that given in the flight plan by plus or minus 5 percent, or 10 knots, whichever is greater, air traffic control should be advised.

11. Canceling Flight Plans

11.1 Closing VFR and DVFR Flight Plans

11.1.1 A pilot is responsible for ensuring that his/her VFR or DVFR flight plan is canceled. You should close your flight plan with the nearest FSS, or if one is not available, you may request any ATC facility to relay your cancellation to the FSS. Control towers do not automatically close VFR or DVFR flight plans as they may not be aware that a particular VFR aircraft is on a flight plan. If you fail to report or cancel your flight plan within 1/2 hour after your ETA, search and rescue procedures are started.

11.2 Canceling IFR Flight Plan

11.2.1 14 CFR Section 91.153 includes the statement “When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, must notify an FAA Flight Service Station or ATC facility.”

11.2.2 An IFR flight plan may be canceled at any time the flight is operating in VFR conditions outside Class A airspace by the pilot stating “CANCEL MY IFR FLIGHT PLAN” to the controller or air/ground station with which he/she is communicating. Immediately after canceling an IFR flight plan, a pilot should take necessary action to change to the appropriate air/ground frequency, VFR radar beacon code, and VFR altitude or flight level.

11.2.3 ATC separation and information services will be discontinued, including radar services (where applicable). Consequently, if the canceling flight desires VFR radar advisory service, the pilot must specifically request it.

**NOTE**—Pilots must be aware that other procedures may be applicable to a flight that cancels an IFR flight plan within an area where a special program, such as a designated terminal radar service area, Class C airspace or Class B airspace, has been established.

11.2.4 If a DVFR flight plan requirement exists, the pilot is responsible for filing this flight plan to replace the canceled IFR flight plan. If a subsequent IFR operation becomes necessary, a new IFR flight plan must be filed and an ATC clearance obtained before operating in IFR conditions.

11.2.5 If operating on an IFR flight plan to an airport with a functioning control tower, the flight plan is automatically closed upon landing.

11.2.6 If operating on an IFR flight plan to an airport where there is no functioning control tower, the pilot must initiate cancellation of the IFR flight plan. This can be done after landing if there is a functioning FSS or other means of direct communications with ATC. In the event there is no FSS and air/ground communications with ATC is not possible below a certain altitude, the pilot would, weather conditions permitting, cancel his/her IFR flight plan while still airborne and able to communicate with ATC by radio. This will not only save the time and expense of canceling the flight plan by telephone but will quickly release the airspace for use by other aircraft.

11.3 RNAV and RNP Operations

11.3.1 During the pre-flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non–RNAV contingencies must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed. Pilots are reminded that on composite VFR to IFR flight plan, or on an IFR clearance, while flying unpiloted departures via RNAV into uncontrolled airspace, the PIC is responsible for terrain and obstruction clearance until reaching the MEA/MIA/MVA/OROCA.

**NOTE**—OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air
traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.

11.3.2 If a pilot determines a specified RNP level cannot be achieved, revise the route or delay the operation until appropriate RNP level can be ensured.

11.3.3 The onboard navigation database must be current and appropriate for the region of intended operation and must include the navigation aids, waypoints, and coded terminal airspace procedures for the departure, arrival and alternate airfields.

11.3.4 During system initialization, pilots of aircraft equipped with a Flight Management System or other RNAV-certified system, must confirm that the navigation database is current, and verify that the aircraft position has been entered correctly. Flight crews should crosscheck the cleared flight plan against charts or other applicable resources, as well as the navigation system textual display and the aircraft map display. This process includes confirmation of the waypoints sequence, reasonableness of track angles and distances, any altitude or speed constraints, and identification of fly-by or fly-over waypoints. A procedure must not be used if validity of the navigation database is in doubt.

11.3.5 Prior to commencing takeoff, the flight crew must verify that the RNAV system is operating correctly and the correct airport and runway data have been loaded.

11.3.6 During the pre-flight planning phase RAIM prediction must be performed if TSO–C129() equipment is used to solely satisfy the RNAV and RNP requirement. GPS RAIM availability must be confirmed for the intended route of flight (route and time) using current GPS satellite information. In the event of a predicted, continuous loss of RAIM of more than five (5) minutes for any part of the intended flight, the flight should be delayed, canceled, or re-routed where RAIM requirements can be met. Operators may satisfy the predictive RAIM requirement through any one of the following methods:

11.3.6.1 Operators may monitor the status of each satellite in its plane/slot position, by accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs), and compute RAIM availability using model–specific RAIM prediction software;

11.3.6.2 Operators may use the Service Availability Prediction Tool (SAPT) on the FAA en route and terminal RAIM prediction website;

11.3.6.3 Operators may contact a Flight Service Station to obtain non-precision approach RAIM;

11.3.6.4 Operators may use a third party interface, incorporating FAA/VOLPE RAIM prediction data without altering performance values, to predict RAIM outages for the aircraft’s predicted flight path and times;

11.3.6.5 Operators may use the receiver’s installed RAIM prediction capability (for TSO–C129a/Class A1/B1/C1 equipment) to provide non-precision approach RAIM, accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs). Receiver non-precision approach RAIM should be checked at airports spaced at intervals not to exceed 60 NM along the RNAV 1 procedure’s flight track. “Terminal” or “Approach” RAIM must be available at the ETA over each airport checked; or

11.3.6.6 Operators not using model–specific software or FAA/VOLPE RAIM data will need FAA operational approval.

**NOTE**

If TSO–C145/C146 equipment is used to satisfy the RNAV and RNP requirement, the pilot/operator need not perform the prediction if WAAS coverage is confirmed to be available along the entire route of flight. Outside the U.S. or in areas where WAAS coverage is not available, operators using TSO–C145/C146 receivers are required to check GPS RAIM availability.

12. IFR Operations To High Altitude Destinations

12.1 Pilots planning IFR flights to airports located in mountainous terrain are cautioned to consider the necessity for an alternate airport even when the forecast weather conditions would technically relieve them from the requirement to file one.

12.2 The FAA has identified three possible situations where the failure to plan for an alternate airport when flying IFR to such destination airport could result in a critical situation if the weather is less than forecast and sufficient fuel is not available to proceed to a suitable airport.

12.2.1 An IFR flight to an airport where the Minimum Descent Altitudes (MDAs) or landing visibility minimums for all instrument approaches
are higher than the forecast weather minimums specified in 14 CFR Section 91.167(b). For example, there are 3 high altitude airports in the U.S. with approved instrument approach procedures where all of the MDA's are greater than 2,000 feet and/or the landing visibility minimums are greater than 3 miles (Bishop, California; South Lake Tahoe, California; and Aspen–Pitkin Co/Sardy Field, Colorado). In the case of these airports, it is possible for a pilot to elect, on the basis of forecasts, not to carry sufficient fuel to get to an alternate when the ceiling and/or visibility is actually lower than that necessary to complete the approach.

12.2.2 A small number of other airports in mountainous terrain have MDA's which are slightly (100 to 300 feet) below 2,000 feet AGL. In situations where there is an option as to whether to plan for an alternate, pilots should bear in mind that just a slight worsening of the weather conditions from those forecast could place the airport below the published IFR landing minimums.

12.2.3 An IFR flight to an airport which requires special equipment; i.e., DME, glide slope, etc., in order to make the available approaches to the lowest minimums. Pilots should be aware that all other minimums on the approach charts may require weather conditions better than those specified in 14 CFR Section 91.167(b). An inflight equipment malfunction could result in the inability to comply with the published approach procedures or, again, in the position of having the airport below the published IFR landing minimums for all remaining instrument approach alternatives.
airspace if in compliance with all of the following conditions:

1.7.1.1 File and are on an active flight plan (IFR, VFR, or DVFR);

1.7.1.2 Equipped with an operational transponder with altitude reporting capability and continuously squawk an ATC assigned transponder code;

1.7.1.3 Equipped with an operational ADS–B Out when operating in airspace specified in 14 CFR 91.225;

1.7.1.4 Maintain two-way radio communications with ATC;

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

1.7.1.6 Are operating under an approved TSA aviation security program (see paragraph 1.10 for TSA aviation security program information) or are operating with and in accordance with an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information), if:
   a) The aircraft is not registered in the U.S.; or
   b) The aircraft is registered in the U.S. and its maximum takeoff gross weight is greater than 100,309 pounds (45,500 kgs);

1.7.1.7 Are in receipt of, and are operating in accordance with, an FAA routing authorization if the aircraft is registered in a U.S. State Department–designated special interest country or is operating with the ICAO 3LD of a company in a country listed as a U.S. State Department–designated special interest country, unless the operator holds valid FAA Part 129 operations specifications. VFR and DVFR flight operations are prohibited for any aircraft requiring an FAA routing authorization. (See paragraph 1.11 for FAA routing authorization information.)

1.7.2 Civil aircraft registered in Canada or Mexico, and engaged in operations for the purposes of air ambulance, firefighting, law enforcement, search and rescue, or emergency evacuation are authorized to transit U.S. territorial airspace within 50 NM of their respective borders with the U.S., with or without an active flight plan, provided they have received and continuously transmit an ATC–assigned transponder code.

1.7.3 Civil aircraft registered in Canada, Mexico, Bahamas, Bermuda, Cayman Islands, or the British Virgin Islands with a maximum certificated takeoff gross weight of 100,309 pounds (45,500 kgs) or less are authorized to transit U.S. territorial airspace if in compliance with all of the following conditions:

1.7.3.1 File and are on an active flight plan (IFR, VFR, or DVFR) that enters U.S. territorial airspace directly from any of the countries listed in this subparagraph 1.7.3. Flights that include a stop in a non–listed country prior to entering U.S. territorial airspace must comply with the requirements prescribed by subparagraph 1.7.1 above, including operating under an approved TSA aviation security program (see paragraph 1.10 for TSA aviation program information) or operating with, and in accordance with, an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information);

1.7.3.2 Equipped with an operational transponder with altitude reporting capability and continuously squawk an ATC assigned transponder code;

1.7.3.3 Equipped with an operational ADS–B Out when operating in airspace specified in 14 CFR 91.225;

1.7.3.4 Maintain two-way radio communications with ATC; and

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

1.7.4 Civil aircraft registered in Canada, Mexico, Bahamas, Bermuda, Cayman Islands, or the British Virgin Islands with a maximum certificated takeoff gross weight greater than 100,309 pounds (45,500 kgs) must comply with the requirements in subparagraph 1.7.1, including operating under an approved TSA aviation security program (see paragraph 1.10 for TSA aviation program information) or operating with, and in accordance with, an FAA/TSA airspace waiver (see paragraph 1.9 for FAA/TSA airspace waiver information).

1.7.5 Civil aircraft registered in the U.S., Canada, or Mexico with a maximum certificated takeoff gross weight of 100,309 pounds (45,500 kgs) or less that are operating without an operational transponder and/or the ability to maintain two-way radio communications with ATC, are authorized to transit U.S.
territorial airspace over Alaska if in compliance with all of the following conditions:

1.7.5.1 Enter and exit U.S. territorial airspace over Alaska north of the fifty-fourth parallel;

1.7.5.2 File and are on an active flight plan;

1.7.5.3 Squawk 1200 if VFR and equipped with a transponder; and

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

1.8 Foreign State Aircraft Operations

1.8.1 Foreign state aircraft are authorized to operate in U.S. territorial airspace if in compliance with all of the following conditions:

1.8.1.1 File and are on an active IFR flight plan;

1.8.1.2 Equipped with an operational transponder with altitude reporting capability and continuously squawk an ATC assigned transponder code;

1.8.1.3 Equipped with an operational ADS-B Out when operating in airspace specified in 14 CFR 91.225;

1.8.1.4 Maintain two-way radio communications with ATC;

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

1.8.2 Diplomatic Clearances. Foreign state aircraft may operate to or from, within, or in transit of U.S. territorial airspace only when authorized by the U.S. State Department by means of a diplomatic clearance, except as described in subparagraph 1.8.9 below.

1.8.2.1 Information about diplomatic clearances is available on the U.S. State Department website at https://www.state.gov/diplomatic-aircraft-clearance-procedures-for-foreign-state-aircraft-to-operate-in-united-states-national-airspace/.

1.8.2.2 A diplomatic clearance may be initiated by contacting the U.S. State Department via email at DCAS@state.gov or via phone at (202) 453–8390.

NOTE—A diplomatic clearance is not required for foreign state aircraft operations that transit U.S. controlled oceanic airspace but do not enter U.S. territorial airspace. (See subparagraph 1.8.4 for flight plan information.)

1.8.3 An FAA routing authorization for state aircraft operations of special interest countries listed in subparagraph 1.11.2 is required before the U.S. State Department will issue a diplomatic clearance for such operations. (See paragraph 1.11 for FAA routing authorizations information).

1.8.4 Foreign state aircraft operating with a diplomatic clearance must navigate U.S. territorial airspace on an active IFR flight plan, unless specifically approved for VFR flight operations by the U.S. State Department in the diplomatic clearance.

NOTE—Foreign state aircraft operations to or from, within, or transiting U.S. territorial airspace; or transiting any U.S. controlled oceanic airspace, should enter ICAO code M in Item 8 of the flight plan to assist in identification of the aircraft as a state aircraft.

1.8.5 A foreign aircraft that operates to or from, within, or in transit of U.S. territorial airspace while conducting a state aircraft operation is not authorized to change its status as a state aircraft during any portion of the approved, diplomatically cleared itinerary.

1.8.6 A foreign aircraft described in subparagraph 1.8.5 above may operate from or within U.S. territorial airspace as a civil aircraft operation, once it has completed its approved, diplomatically cleared itinerary, if the aircraft operator is:

1.8.6.1 A foreign air carrier that holds valid FAA Part 129 operations specifications; and

1.8.6.2 Is in compliance with all other requirements applied to foreign civil aircraft operations from or within U.S. territorial airspace. (See paragraphs 1.5 and 1.6.)

1.8.7 Foreign state aircraft operations are not authorized to or from Ronald Reagan Washington National Airport (KDCA).

1.8.8 Foreign state aircraft operating with a U.S. Department of State issued Diplomatic Clearance Number in the performance of official missions are authorized to deviate from the Automatic Dependent Surveillance-Broadcast (ADS-B) Out requirements contained in 14 CFR §§ 91.225 and 91.227. All foreign state aircraft and/or operators associated with Department of Defense missions should contact their respective offices for further information on handling. Foreign state aircraft not associated with Department of Defense should coordinate with
Department of State through the normal diplomatic clearance process.

### 1.8.9 Diplomatic Clearance Exceptions

State aircraft operations on behalf of the governments of Canada and Mexico conducted for the purposes of air ambulance, firefighting, law enforcement, search and rescue, or emergency evacuation are authorized to transit U.S. territorial airspace within 50 NM of their respective borders with the U.S., with or without an active flight plan, provided they have received and continuously transmit an ATC assigned transponder code. State aircraft operations on behalf of the governments of Canada and Mexico conducted under this subparagraph 1.8.9 are not required to obtain a diplomatic clearance from the U.S. State Department.

### 1.9 FAA/TSA Airspace Waivers

#### 1.9.1 Operators may submit requests for FAA/TSA airspace waivers at https://waivers.faa.gov by selecting “international” as the waiver type.

#### 1.9.2 Information regarding FAA/TSA airspace waivers can be found at: http://www.tsa.gov/for-industry/general-aviation or can be obtained by contacting TSA at (571) 227-2071.

#### 1.9.3 All existing FAA/TSA waivers issued under previous FDC NOTAMs remain valid until the expiration date specified in the waiver, unless sooner superseded or rescinded.

### 1.10 TSA Aviation Security Programs

#### 1.10.1 Applicants for U.S. air operator certificates will be provided contact information for TSA aviation security programs by the U.S. Department of Transportation during the certification process.

#### 1.10.2 For information about applicable TSA security programs:

- **1.10.2.1** U.S. air carriers and commercial operators must contact their TSA Principal Security Specialist (PSS); and
- **1.10.2.2** Foreign air carriers must contact their International Industry Representative (IIR).

### 1.11 FAA Flight Routing Authorizations

#### 1.11.1 Information about FAA routing authorizations for U.S. State Department-designated special interest country flight operations to or from, within, or transiting U.S. territorial airspace is available by country at:

- **1.11.1.1** FAA website: http://www.faa.gov/air_traffic/publications/us_restrictions/; or
- **1.11.1.2** Phone by contacting the FAA System Operations Support Center (SOSC) at (202) 267–8115.

### 1.11.2 Special Interest Countries

The U.S. State Department-designated special interest countries are Cuba, Iran, The Democratic People’s Republic of Korea (North Korea), The People’s Republic of China, The Russian Federation, Sudan, and Syria.

**NOTE**

FAA flight routing authorizations are not required for aircraft registered in Hong Kong, Taiwan, or Macau.

#### 1.11.3 Aircraft operating with the ICAO 3LD assigned to a company or entity from a country listed as a State Department-designated special interest country and holding valid FAA Part 129 operations specifications do not require FAA flight routing authorization.

#### 1.11.4 FAA routing authorizations will only be granted for IFR operations. VFR and DVFR flight operations are prohibited for any aircraft requiring an FAA routing authorization.

### 1.12 Emergency Security Control of Air Traffic (ESCAT)

#### 1.12.1 During defense emergency or air defense emergency conditions, additional special security instructions may be issued in accordance with 32 CFR Part 245, Plan for the Emergency Security Control of Air Traffic (ESCAT).

#### 1.12.2 Under the provisions of 32 CFR Part 245, the military will direct the action to be taken in regard to landing, grounding, diversion, or dispersal of aircraft in the defense of the U.S. during emergency conditions.

#### 1.12.3 At the time a portion or all of ESCAT is implemented, ATC facilities will broadcast appropriate instructions received from the Air Traffic Control System Command Center (ATCSCC) over available ATC frequencies. Depending on instructions received from the ATCSCC, VFR flights may be directed to land at the nearest available airport, and IFR flights will be expected to proceed as directed by ATC.
1.12.4 Pilots on the ground may be required to file a flight plan and obtain an approval (through FAA) prior to conducting flight operation.

2. Interception Procedures

2.1 General

2.1.1 In conjunction with the FAA, Air Defense Sectors monitor air traffic and could order an intercept in the interest of national security or defense. Intercepts during peacetime operations are vastly different from those conducted under increased states of readiness. The interceptors may be fighters or rotary wing aircraft. The reasons for aircraft intercept include, but are not limited to:

2.1.1.1 Identify an aircraft.

2.1.1.2 Track an aircraft.

2.1.1.3 Inspect an aircraft.

2.1.1.4 Divert an aircraft.

2.1.1.5 Establish communications with an aircraft.

2.1.2 All aircraft operating in US national airspace are highly encouraged to maintain a listening watch on VHF/UHF guard frequencies (121.5 or 243.0 MHz). If subjected to a military intercept, it is incumbent on civilian aviators to understand their responsibilities and to comply with ICAO standard signals relayed from the intercepting aircraft. Specifically, aviators are expected to contact air traffic control without delay (if able) on the local operating frequency or on VHF/UHF guard. Noncompliance may result in the use of force.

2.1.3 When specific information is required (i.e., markings, serial numbers, etc.) the interceptor pilot(s) will respond only if, in their judgment, the request can be conducted in a safe manner. Intercept procedures are described in some detail in the paragraphs below. In all situations, the interceptor pilot will consider safety of flight for all concerned throughout the intercept procedure. The interceptor pilot(s) will use caution to avoid startling the intercepted crew or passengers and understand that maneuvers considered normal for interceptor aircraft may be considered hazardous to other aircraft.

2.2 Fighter Intercept Phases (See FIG ENR 1.12–2)

2.2.1 Approach Phase

2.2.1.1 As standard procedure, intercepted aircraft are approached from behind. Typically, interceptor aircraft will be employed in pairs; however, it is not uncommon for a single aircraft to perform the intercept operation. Safe separation between interceptors and intercepted aircraft is the responsibility of the intercepting aircraft and will be maintained at all times.

2.2.2 Identification Phase

2.2.2.1 Interceptor aircraft will initiate a controlled closure toward the aircraft of interest, holding at a distance no closer than deemed necessary to establish positive identification and to gather the necessary information. The interceptor may also fly past the intercepted aircraft while gathering data at a distance considered safe based on aircraft performance characteristics.

2.2.3 Post Intercept Phase

2.2.3.1 An interceptor may attempt to establish communications via standard ICAO signals. In time-critical situations where the interceptor is seeking an immediate response from the intercepted aircraft or if the intercepted aircraft remains non-compliant to instruction, the interceptor pilot may initiate a divert maneuver. In this maneuver, the interceptor flies across the intercepted aircraft’s flight path (minimum 500 feet separation and commencing from slightly below the intercepted aircraft altitude) in the general direction the intercepted aircraft is expected to turn. The interceptor will rock its wings (daytime) or flash external lights/select afterburners (night) while crossing the intercepted aircraft’s flight path. The interceptor will roll out in the direction the intercepted aircraft is expected to turn before returning to verify the aircraft of interest is complying. The intercepted aircraft is expected to execute an immediate turn to the direction of the intercepting aircraft. If the aircraft of interest does not comply, the interceptor may conduct a second climbing turn across the intercepted aircraft’s flight path (minimum 500 feet separation and commencing from slightly below the intercepted aircraft altitude) while expending flares as a warning signal to the intercepted aircraft to comply immediately and to turn in the direction indicated and to leave the area. The interceptor is responsible to maintain safe separation during these and all intercept maneuvers. Flight safety is paramount.
NOTE—

1. NORAD interceptors will take every precaution to preclude the possibility of the intercepted aircraft experiencing jet wash/wake turbulence; however, there is a potential that this condition could be encountered.

2. During night/IMC, the intercept will be from below flight path.
2.3 Helicopter Intercept Phases (See FIG ENR 1.12–3)

2.3.1 Approach Phase

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

2.3.2 Identification Phase

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

2.3.3 Post Intercept Phase

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

NOTE—
Intercepted aircraft must not follow directly behind the helicopter thereby allowing the helicopter pilot to maintain visual contact with the intercepted aircraft and ensuring safe separation is maintained.
2.3.4 Summary of Intercepted Aircraft Actions

2.3.4.1 An intercepted aircraft must, without delay:

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

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

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

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

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

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

2.5 Visual Warning System (VWS)

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

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

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

2.5.1.3 Pilots planning to operate aircraft in or near the DC SFRA are to familiarize themselves with aircraft intercept procedures. This information applies to all aircraft operating within the DC SFRA including DOD, Law Enforcement, and aircraft engaged in aeromedical operations and does not
change procedures established for reporting unauthorized laser illumination as published in FAA Advisory Circulars and Notices.

REFERENCE—

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

3. Law Enforcement Operations by Civil and Military Organizations

3.1 Special law enforcement operations

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

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

3.1.3 Additionally, some departments and agencies that perform special missions have been assigned coded identifiers to permit them to apprise ATC of ongoing mission activities and solicit special air traffic assistance.
### TBL ENR 1.12–1

Intercepting Signals

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

**INTERCEPTING SIGNALS**

Signals and Responses During Aircraft Intercept

Signals initiated by intercepted aircraft and responses by intercepting aircraft

(as set forth in ICAO Annex 2-Appendix 1, 2.2)

<table>
<thead>
<tr>
<th>Series</th>
<th>INTERCEPTED Aircraft Signals</th>
<th>Meaning</th>
<th>INTERCEPTING Aircraft Responds</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>AEROPLANES: DAY – Raising landing gear while passing over landing runway at a height exceeding 300m (1,000 ft) but not exceeding 600m (2,000 ft) above the aerodrome level, and continuing to circle the aerodrome. NIGHT – Flashing landing lights while passing over landing runway at a height exceeding 300m (1,000 ft) but not exceeding 600m (2,000 ft) above the aerodrome level, and continuing to circle the aerodrome.</td>
<td>Aerodrome you have designated is inadequate.</td>
<td>DAY or NIGHT – If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear and uses the Series 1 signals prescribed for intercepting aircraft.</td>
<td>Understood, follow me.</td>
</tr>
<tr>
<td>5</td>
<td>AEROPLANES: DAY or NIGHT – Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.</td>
<td>Cannot comply.</td>
<td>DAY or NIGHT – Use Series 2 signals prescribed for intercepting aircraft.</td>
<td>Understood.</td>
</tr>
<tr>
<td>6</td>
<td>AEROPLANES: DAY or NIGHT – Irregular flashing of all available lights. HELICOPTERS: DAY or NIGHT – Irregular flashing of all available lights.</td>
<td>In distress.</td>
<td>DAY or NIGHT – Use Series 2 signals prescribed for intercepting aircraft.</td>
<td>Understood.</td>
</tr>
</tbody>
</table>
navigation solution, any additional or advanced functional requirements, the minimum RNP value, and any amplifying remarks. Items listed in this PBN box are REQUIRED to fly the procedure’s PBN elements. For example, an ILS with an RNAV missed approach would require a specific capability to fly the missed approach portion of the procedure. That required capability will be listed in the PBN box. The separate Equipment Requirements box will list ground-based equipment and/or airport specific requirements. On procedures with both PBN elements and ground-based equipment requirements, the PBN requirements box will be listed first. (See FIG ENR 1.5−17.)

2.3 Other RNP Applications Outside the U.S. The FAA and ICAO member states have led initiatives in implementing the RNP concept to oceanic operations. For example, RNP−10 routes have been established in the northern Pacific (NOPAC) which has increased capacity and efficiency by reducing the distance between tracks to 50 NM. (See AIP Section ENR 7.4.)

2.4 Aircraft and Airborne Equipment Eligibility for RNP Operations. Aircraft eligible for RNP operations will have an appropriate entry including special conditions and limitations in its AFM, avionics manual, or a supplement. Operators of aircraft not having specific RNP eligibility statements in the AFM or avionics documents may be issued operational approval including special conditions and limitations for specific RNP eligibilities.

NOTE− Some airborne systems use Estimated Position Uncertainty (EPU) as a measure of the current estimated navigational performance. EPU may also be referred to as Actual Navigation Performance (ANP) or Estimated Position Error (EPE).

### TBL ENR 1.17−1

#### U.S. Standard RNP Levels

<table>
<thead>
<tr>
<th>RNP Level</th>
<th>Typical Application</th>
<th>Primary Route Width (NM)</th>
<th>Centerline to Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 to 1.0</td>
<td>RNP AR Approach Segments</td>
<td>0.1 to 1.0</td>
<td></td>
</tr>
<tr>
<td>0.3 to 1.0</td>
<td>RNP Approach Segments</td>
<td>0.3 to 1.0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Terminal and En Route</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>En Route</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Projected for oceanic/remote areas where 30 NM horizontal separation is applied.</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oceanic/remote areas where 50 NM lateral separation is applied.</td>
<td>10.0</td>
<td></td>
</tr>
</tbody>
</table>

3. Use of Suitable Area Navigation (RNAV) Systems on Conventional Procedures and Routes

3.1 Discussion. This paragraph sets forth policy, while providing operational and airworthiness guidance regarding the suitability and use of RNAV systems when operating on, or transitioning to, conventional, non−RNAV routes and procedures within the U.S. National Airspace System (NAS):

3.1.1 Use of a suitable RNAV system as a Substitute Means of Navigation when a Very−High Frequency (VHF) Omni−directional Range (VOR), Distance Measuring Equipment (DME), Tactical Air Navigation (TACAN), VOR/TACAN (VORTAC), VOR/DM E, Non−directional Beacon (NDB), or compass locator facility including locator outer marker and locator middle marker is out−of−service (that is, the navigation aid (NAVAID) information is not available); an aircraft is not equipped with an Automatic Direction Finder (ADF) or DME; or the installed ADF or DME on an aircraft is not operational. For example, if equipped with a suitable RNAV system, a pilot may hold over an out−of−service NDB.

3.1.2 Use of a suitable RNAV system as an Alternate Means of Navigation when a VOR, DME, VORTAC, VOR/DME, TACAN, NDB, or compass locator facility including locator outer marker and locator
middle marker is operational and the respective aircraft is equipped with operational navigation equipment that is compatible with conventional nav aids. For example, if equipped with a suitable RNAV system, a pilot may fly a procedure or route based on operational VOR using that RNAV system without monitoring the VOR.

NOTE—
1. Additional information and associated requirements are available in Advisory Circular 90-108 titled “Use of Suitable RNAV Systems on Conventional Routes and Procedures.”

2. Good planning and knowledge of your RNAV system are critical for safe and successful operations.

3. Pilots planning to use their RNAV system as a substitute means of navigation guidance in lieu of an out–of–service NAVAID may need to advise ATC of this intent and capability.

4. 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 instrumental approach procedures were last revised. The amendment date follows the amendment number; for example, Amdt 4 14 Jan 10. 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.

3.2 Types of RNAV Systems that Qualify as a Suitable RNAV System. When installed in accordance with appropriate airworthiness installation requirements and operated in accordance with applicable operational guidance (e.g., aircraft flight manual and Advisory Circular material), the 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, 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: https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs410/media/A C90–100compliance.pdf

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 Air Missions (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, 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
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 basic components of an ILS are the localizer, glide slope, and Outer Marker (OM) and, when installed for use with Category II or Category III instrument approach procedures, an Inner Marker (IM).

6.1.3 The system may be divided functionally into three parts:

6.1.3.1 Guidance information: localizer, glide slope.

6.1.3.2 Range information: marker beacon, DME.

6.1.3.3 Visual information: approach lights, touchdown and centerline lights, runway lights.

6.1.4 The following means may be used to substitute for the OM:

6.1.4.1 Compass locator; or

6.1.4.2 Precision Approach Radar (PAR); or

6.1.4.3 Airport Surveillance Radar (ASR); or

6.1.4.4 Distance Measuring Equipment (DME), Very High Frequency Omni-directional Range (VOR), or Nondirectional beacon fixes authorized in the Standard Instrument Approach Procedure; or

6.1.4.5 A suitable RNAV system with Global Positioning System (GPS), capable of fix identification on a Standard Instrument Approach Procedure.

6.1.5 Where a complete ILS system is installed on each end of a runway (i.e., the approach end of runway 4 and the approach end of runway 22), the ILS systems are not in service simultaneously.

6.2 Localizer

6.2.1 The localizer transmitter, operates on one of 40 ILS channels within the frequency range of 108.10 MHz to 111.95 MHz. Signals provide the pilot with course guidance to the runway centerline.
6.2.2 The approach course of the localizer is called the front course and is used with other functional parts; e.g., glide slope, marker beacons, etc. The localizer signal is transmitted at the far end of the runway. It is adjusted for a course width (full scale fly–left to a full scale fly–right) of 700 feet at the runway threshold.

6.2.3 The course line along the extended centerline of a runway, in the opposite direction to the front course, is called the back course.

CAUTION—
Unless your aircraft's ILS equipment includes reverse sensing capability, when flying inbound on the back course it is necessary to steer the aircraft in the direction opposite of the needle deflection on the airborne equipment when making corrections from off–course to on–course. This “flying away from the needle” is also required when flying outbound on the front course of the localizer. Do not use back course signals for approach unless a back course approach procedure is published for that particular runway and the approach is authorized by ATC.

6.2.4 Identification is in Morse Code and consists of a three–letter identifier preceded by the letter I (●●) transmitted on the localizer frequency.

EXAMPLE—
I–DIA

6.2.5 The localizer provides course guidance throughout the descent path to the runway threshold from a distance of 18 NM from the antenna between an altitude of 1,000 feet above the highest terrain along the course line and 4,500 feet above the elevation of the antenna site. Proper off–course indications are provided throughout the following angular areas of the operational service volume:

6.2.5.1 To 10° either side of the course along a radius of 18 NM from the antenna.

6.2.5.2 From 10° to 35° either side of the course along a radius of 10 NM. (See FIG ENR 4.1–1.)

6.2.6 Unreliable signals may be received outside of these areas. ATC may clear aircraft on procedures beyond the service volume when the controller initiates the action or when the pilot requests, and radar monitoring is provided.

6.2.7 The areas described in paragraph 6.2.5 and depicted in FIG ENR 4.1–1 represent a Standard Service Volume (SSV) localizer. All charted procedures with localizer coverage beyond the 18 NM SSV have been through the approval process for Expanded Service Volume (ESV), and have been validated by flight inspection. (See FIG ENR 4.1–2.)
6.3 Localizer–Type Directional Aid

6.3.1 The localizer–type directional aid (LDA) is of comparable use and accuracy to a localizer but is not part of a complete ILS. The LDA course usually provides a more precise approach course than the similar Simplified Directional Facility (SDF) installation, which may have a course width of 6 degrees or 12 degrees.

6.3.2 The LDA is not aligned with the runway. Straight-in minimums may be published where alignment does not exceed 30 degrees between the course and runway. Circling minimums only are published where this alignment exceeds 30 degrees.

6.3.3 A very limited number of LDA approaches also incorporate a glideslope. These are annotated in the plan view of the instrument approach chart with a note, “LDA/Glideslope.” These procedures fall under a newly defined category of approaches called Approach with Vertical Guidance (APV) described in ENR 1.5, Paragraph 12., Instrument Approach Procedure Charts, subparagraph 12.1.7.2, Approach with Vertical Guidance (APV). LDA minima for and without glideslope is provided and annotated on the minima lines of the approach chart as S–LDA/GS and S–LDA. Because the final approach course is not aligned with the runway centerline, additional maneuvering will be required compared to an ILS approach.

6.4 Glide Slope/Glide Path

6.4.1 The UHF glide slope transmitter, operating on one of the 40 ILS channels within the frequency range 329.15 MHz, to 335.00 MHz radiates its signals in the direction of the localizer front course.

CAUTION–False glide slope signals may exist in the area of the localizer back course approach which can cause the glide slope flag alarm to disappear and present unreliable glide slope information. Disregard all glide slope signal indications when making a localizer back course
approach unless a glide slope is specified on the approach and landing chart.

6.4.2 The glide slope transmitter is located between 750 and 1,250 feet from the approach end of the runway (down the runway) and offset 250–600 feet from the runway centerline. It transmits a glide path beam 1.4 degrees wide (vertically).

NOTE – The term “glide path” means that portion of the glide slope that intersects the localizer.

6.4.3 The glide path projection angle is normally adjusted to 3 degrees above horizontal so that it intersects the middle marker at about 200 feet and the outer marker at about 1,400 feet above the runway elevation. The glide slope is normally usable to the distance of 10 NM. However, at some locations, the glide slope has been certified for an extended service volume which exceeds 10 NM.

6.4.4 Pilots must be alert when approaching glidepath interception. False courses and reverse sensing will occur at angles considerably greater than the published path.

6.4.5 Make every effort to remain on the indicated glide path. Exercise caution: avoid flying below the glide path to assure obstacle/terrain clearance is maintained.

REFERENCE – 14 CFR Section 91.129(e).

6.4.6 A glide slope facility provides descent information for navigation down to the lowest authorized decision height (DH) specified in the approved ILS approach procedure. The glidespath may not be suitable for navigation below the lowest authorized DH and any reference to glidespath indications below that height must be supplemented by visual reference to the runway environment. Glide slopes with no published DH are usable to runway threshold.

6.4.7 The published glide slope threshold crossing height (TCH) DOES NOT represent the height of the actual glide slope on course indication above the runway threshold. It is used as a reference for planning purposes which represents the height above the runway threshold that an aircraft’s glide slope antenna should be, if that aircraft remains on a trajectory formed by the four-mile-to-middle marker glidespace segment.

6.4.8 Pilots must be aware of the vertical height between the aircraft’s glide slope antenna and the main gear in the landing configuration and, at the DH, plan to adjust the descent angle accordingly if the published TCH indicates the wheel crossing height over the runway threshold may be satisfactory. Tests indicate a comfortable wheel crossing height is approximately 20 to 30 feet, depending on the type of aircraft.

NOTE – The TCH for a runway is established based on several factors including the largest aircraft category that normally uses the runway, how airport layout affects the glide slope antenna placement, and terrain. A higher than optimum TCH, with the same glide path angle, may cause the aircraft to touch down further from the threshold if the trajectory of the approach is maintained until the flare. Pilots should consider the effect of a high TCH on the runway available for stopping the aircraft.

6.5 Distance Measuring Equipment (DME)

6.5.1 When installed with an ILS and specified in the approach procedure, DME may be used:

6.5.1.1 In lieu of the outer marker.

6.5.1.2 As a back course final approach fix.

6.5.1.3 To establish other fixes on the localizer course.

6.5.2 In some cases, DME from a separate facility may be used within Terminal Instrument Procedures (TERPS) limitations:

6.5.2.1 To provide ARC initial approach segments.

6.5.2.2 As a final approach fix for back course approaches.

6.5.2.3 As a substitute for the outer marker.

6.6 Marker Beacon

6.6.1 ILS marker beacons have a rated power output of 3 watts or less and an antenna array designed to produce an elliptical pattern with dimensions, at 1,000 feet above the antenna, of approximately 2,400 feet in width and 4,200 feet in length. Airborne marker beacon receivers with a selective sensitivity feature should always be operated in the “low” sensitivity position for proper reception of ILS marker beacons.

6.6.2 ILS systems may have an associated OM. An MM is no longer required. Locations with a Category II ILS also have an Inner Marker (IM). Due to advances in both ground navigation equipment and
airborne avionics, as well as the numerous means that may be used as a substitute for a marker beacon, the current requirements for the use of marker beacons are:

6.6.2.1 An OM or suitable substitute identifies the Final Approach Fix (FAF) for nonprecision approach (NPA) operations (for example, localizer only); and

6.6.2.2 The MM indicates a position approximately 3,500 feet from the landing threshold. This is also the position where an aircraft on the glide path will be at an altitude of approximately 200 feet above the elevation of the touchdown zone. A MM is no longer operationally required. There are some MMs still in use, but there are no MMs being installed at new ILS sites by the FAA; and

6.6.2.3 An IM, where installed, indicates the point at which an aircraft is at decision height on the glide path during a Category II ILS approach. An IM is only required for CAT II operations that do not have a published radio altitude (RA) minimum.

6.6.3 A back course marker, normally indicates the ILS back course final approach fix where approach descent is commenced.

### Marker Passage Indications

<table>
<thead>
<tr>
<th>Marker</th>
<th>Code</th>
<th>Light</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM</td>
<td></td>
<td>BLUE</td>
</tr>
<tr>
<td>MM</td>
<td>●</td>
<td>AMBER</td>
</tr>
<tr>
<td>IM</td>
<td>● ●</td>
<td>WHITE</td>
</tr>
<tr>
<td>BC</td>
<td>● ●</td>
<td>WHITE</td>
</tr>
</tbody>
</table>

### Compass Locator

7.1 Compass locator transmitters are often situated at the middle and outer marker sites. The transmitters have a power of less than 25 watts, a range of at least 15 miles, and operate between 190 and 535 kHz. At some locations, higher–powered radio beacons, up to 400 watts, are used as outer marker compass locators.

7.2 Compass locators transmit two–letter identification groups. The outer locator transmits the first two letters of the localizer identification group, and the middle locator transmits the last two letters of the localizer identification group.

### ILS Frequency

8.1 The frequency pairs in TBL ENR 4.1–2 are allocated for ILS.

<table>
<thead>
<tr>
<th>Frequency Pairs Allocated for ILS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Localizer MHz</strong></td>
</tr>
<tr>
<td>108.10</td>
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<tr>
<td>108.15</td>
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<tr>
<td>108.30</td>
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<td>108.35</td>
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<tr>
<td>111.90</td>
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<tr>
<td>111.95</td>
</tr>
</tbody>
</table>

### ILS Minimums

9.1 The lowest authorized ILS minimums, with all required ground and airborne systems components operative, are:
9.1.1 Category I. Decision Height (DH) 200 feet and Runway Visual Range (RVR) 2,400 feet (with touchdown zone and centerline lighting, RVR 1,800 feet), or (with Autopilot or FD or HUD, RVR 1,800 feet);

9.1.2 Special Authorization Category I. DH 150 feet and Runway Visual Range (RVR) 1,400 feet, HUD to DH;

9.1.3 Category II. DH 100 feet and RVR 1,200 feet (with autoland or HUD to touchdown and noted on authorization, RVR 1,000 feet);

9.1.4 Special Authorization Category II with Reduced Lighting. DH 100 feet and RVR 1,200 feet with autoland or HUD to touchdown and noted on authorization, (touchdown zone, centerline lighting and ALSF−2 are not required);

9.1.5 Category IIIa. No DH or DH below 100 feet and RVR not less than 700 feet;

9.1.6 Category IIIb. No DH or DH below 50 feet and RVR less than 700 feet but not less than 150 feet; and

9.1.7 Category IIIc. No DH and no RVR limitation.

NOTE – Special authorization and equipment are required for Category II and III.

10. Inoperative ILS Components

10.1 Inoperative Localizer. When the localizer fails, an ILS approach is not authorized.

10.2 Inoperative Glide Slope. When the glide slope fails, the ILS reverts to a nonprecision localizer approach.

REFERENCE – See the Inoperative Component Table in the U.S. Government Terminal Procedures Publication (TPP) for adjustments to minimums due to inoperative airborne or ground system equipment.

11. ILS Course Distortion

11.1 All pilots should be aware that disturbance to ILS localizer/glide slope courses may occur when surface vehicles/aircraft are operated near the localizer/glide slope antennas. Most ILS installations are subject to signal interference by either surface vehicles, aircraft, or both. ILS “CRITICAL AREAS” are established near each localizer and glide slope antenna.

11.2 Air traffic control issues control instructions to avoid interfering operations within ILS critical areas at controlled airports during the hours the airport traffic control tower is in operation as follows:

11.2.1 Weather Conditions. Official weather observation is a ceiling of less than 800 feet and/or visibility 2 miles.

11.2.1.1 No critical area protection action is provided.

11.2.1.2 If an aircraft advises the tower that an “AUTOLAND”/“COUPLED” approach will be conducted, an advisory will be promptly issued if a vehicle/aircraft will be in or over a critical area when the arriving aircraft is inside the ILS middle marker.

EXAMPLE – Critical Area not protected.

11.2.2 Weather Conditions. Less than ceiling 800 feet and/or visibility 2 miles.

11.2.2.1 Glide Slope Critical Area. Do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the ILS outer marker (OM), or the fix used in lieu of the OM, unless the arriving aircraft has reported the runway in sight and is circling or side stepping to land on another runway.

11.2.2.2 Localizer Critical Area. Except for aircraft that land, exit a runway, depart, or execute a missed approach, vehicles and aircraft are not authorized in or over the critical area when an arriving aircraft is inside the outer marker (OM), or the fix used in lieu of the OM. Additionally, whenever the official weather observation is a ceiling of less than 200 feet or RVR less than 2,000 feet, do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the MM, or in the absence of a MM, ½ mile final.

11.3 Aircraft holding below 5000 feet between the outer marker and the airport may cause localizer signal variations for aircraft conducting the ILS approach. Accordingly, such holding is not authorized when weather or visibility conditions are less than ceiling 800 feet and/or visibility 2 miles.

11.4 Pilots are cautioned that vehicular traffic not subject to control by ATC may cause momentary deviation to ILS course/glide slope signals. Also, “critical areas” are not protected at uncontrolled airports or at airports with an operating control tower when weather/visibility conditions are above those
requiring protective measures. Aircraft conducting “coupled” or “autoland” operations should be especially alert in monitoring automatic flight control systems. (See FIG ENR 4.1–3.)

**NOTE**

Unless otherwise coordinated through Flight Standards, ILS signals to Category I runways are not flight inspected below the point that is 100 feet less than the decision altitude (DA). Guidance signal anomalies may be encountered below this altitude.
FAA INSTRUMENT LANDING SYSTEMS

STANDARD CHARACTERISTICS AND TERMINOLOGY

ILS approach charts should be consulted to obtain variations of individual systems.

VHF LOCALIZER
Provides horizontal guidance. 108.10 to 111.95 MHz. Radii about 100 nm. Horizontal polarization. Modulation frequencies 90 and 150 Hz. Modulation depth on course 20% for each frequency. Code identification (1020 Hz 95%) and voice communication (modulated 50%) provided on same channel.

1000 ft typical. Localizer transmitter building is offset from center of runway and within 90° +/- 30° from approach end. Antenna is on centerline and normally is under 50' clearance plane.

Rate of Descent Chart

<table>
<thead>
<tr>
<th>Speed (knots)</th>
<th>Angle</th>
<th>2.5°</th>
<th>2.75°</th>
<th>3°</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>400</td>
<td>440</td>
<td>475</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>485</td>
<td>535</td>
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<td>130</td>
<td>575</td>
<td>630</td>
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<td>730</td>
<td>795</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>707</td>
<td>778</td>
<td>849</td>
<td></td>
</tr>
</tbody>
</table>

Compass locators, placed at 25 nmi output 150-355 KHz, are installed at many other and some middle** markers. A 400 Hz or a 1020 Hz tone, modulating the carrier about 29%, is keyed with the first two letters of the localizer frequency. When this is done, the last two letters on the middle locator. At some locations, simultaneous voice transmissions from the control tower are provided, with appropriate restriction in identification percentages.

* Figures marked with an asterisk are typical. Actual figures vary with deviations in distances to markers, glide angles, and localizer widths.

** Although some middle markers are still in use, the middle marker is no longer a required component of an ILS system.

OUTER MARKER
Provides final approach for non-precision approach. Keying, 95 alternating, dots and dashes/tones. Modulation: 3000 Hz, 95%

Flap indicates if facility are on the air or receive malfunctioning.

FAA Instrument Landing Systems

FIG ENR 4.1-3

Twenty-Sixth Edition

Federal Aviation Administration
United States of America
12. Continuous Power Facilities

12.1 In order to ensure that a basic ATC system remains in operation despite an area wide or catastrophic commercial power failure, key equipment and certain airports have been designated to provide a network of facilities whose operational capability can be utilized independent of any commercial power supply.

12.2 In addition to those facilities comprising the basic ATC system, the following approach and lighting aids have been included in this program for a selected runway:

12.2.1 ILS (Localizer, Glide Slope, Compass Locator, Inner, Middle and Outer Markers).

12.2.2 Wind Measuring Capability.

12.2.3 Approach Light System (ALS) or Short ALS (SALS).

12.2.4 Ceiling Measuring Capability.

12.2.5 Touchdown Zone Lighting (TDZL).

12.2.6 Centerline Lighting (CL).

12.2.7 Runway Visual Range (RVR).

12.2.8 High Intensity Runway Lighting (HIRL).

12.2.9 Taxiway Lighting.

12.2.10 Apron Light (Perimeter Only).

12.3 The above have been designated “Continuous Power Airports,” and have independent back up capability for the equipment installed.

NOTE -
The existing CPA runway is listed. Pending and future changes at some locations will require a revised runway designation.
13. Simplified Directional Facility (SDF)

13.1 The SDF provides a final approach course similar to that of the ILS localizer. It does not provide glide slope information. A clear understanding of the ILS localizer and the additional factors listed below completely describe the operational characteristics and use of the SDF.

13.2 The SDF transmits signals within the range of 108.10 to 111.95 MHz.

13.3 The approach techniques and procedures used in an SDF instrument approach are essentially the same as those employed in executing a standard no–glide–slope localizer approach except the SDF course may not be aligned with the runway and the course may be wider, resulting in less precision.

13.4 Usable off–course indications are limited to 35 degrees either side of the course centerline. Instrument indications received beyond 35 degrees should be disregarded.

13.5 The SDF antenna may be offset from the runway centerline. Because of this, the angle of convergence between the final approach course and the runway bearing should be determined by reference to the instrument approach procedure chart. This angle is generally not more than 3 degrees. However, it should be noted that inasmuch as the approach course originates at the antenna site, an approach which is continued beyond the runway threshold will lead the aircraft to the SDF offset position rather than along the runway centerline.

13.6 The SDF signal is fixed at either 6 degrees or 12 degrees as necessary to provide maximum “fly ability” and optimum course quality.

13.7 Identification consists of a three–letter identifier transmitted in Morse Code on the SDF frequency. The appropriate instrument approach chart will indicate the identifier used at a particular airport.

14. LORAN

NOTE – In accordance with the 2010 DHS Appropriations Act, the U.S. Coast Guard (USCG) terminated the transmission of all U.S. LORAN–C signals on 08 Feb 2010. The USCG also terminated the transmission of the Russian American signals on 01 Aug 2010, and the Canadian LORAN–C signals on 03 Aug 2010. For more information, visit http://www.navcen.uscg.gov. Operators should also note that TSO –C60b, AIRBORNE AREA NAVIGATION EQUIPMENT USING LORAN–C INPUTS, has been canceled by the FAA.

15. Inertial Reference Unit (IRU), Inertial Navigation System (INS), and Attitude Heading Reference System (AHRS)

15.1 IRUs are self–contained systems comprised of gyros and accelerometers that provide aircraft attitude (pitch, roll, and heading), position, and velocity information in response to signals resulting from inertial effects on system components. Once aligned with a known position, IRUs continuously calculate position and velocity. IRU position accuracy decays with time. This degradation is known as “drift.”

15.2 INSs combine the components of an IRU with an internal navigation computer. By programming a series of waypoints, these systems will navigate along a predetermined track.

15.3 AHRSs are electronic devices that provide attitude information to aircraft systems such as weather radar and autopilot, but do not directly compute position information.

15.4 Aircraft equipped with slaved compass systems may be susceptible to heading errors caused by exposure to magnetic field disturbances (flux fields) found in materials that are commonly located on the surface or buried under taxiways and ramps. These materials generate a magnetic flux field that can be sensed by the aircraft’s compass system flux detector or “gate”, which can cause the aircraft’s system to align with the material’s magnetic field rather than the earth’s natural magnetic field. The system’s erroneous heading may not self-correct. Prior to take off pilots should be aware that a heading misalignment may have occurred during taxi. Pilots are encouraged to follow the manufacturer’s or other appropriate procedures to correct possible heading misalignment before take off is commenced.

16. Global Positioning System (GPS)

16.1 System Overview

16.1.1 System Description. The Global Positioning System is a space-based radio navigation system used to determine precise position anywhere in the world. The 24 satellite constellation is designed to ensure at least five satellites are always visible to a user worldwide. A minimum of four satellites is
necessary for receivers to establish an accurate three-dimensional position. The receiver uses data from satellites above the mask angle (the lowest angle above the horizon at which a receiver can use a satellite). The Department of Defense (DOD) is responsible for operating the GPS satellite constellation and monitors the GPS satellites to ensure proper operation. Each satellite's orbital parameters (ephemeris data) are sent to each satellite for broadcast as part of the data message embedded in the GPS signal. The GPS coordinate system is the Cartesian earth-centered, earth-fixed coordinates as specified in the World Geodetic System 1984 (WGS–84).

16.1.2 System Availability and Reliability

16.1.2.1 The status of GPS satellites is broadcast as part of the data message transmitted by the GPS satellites. GPS status information is also available by means of the U.S. Coast Guard navigation information service: (703) 313–5907, Internet: http://www.navcen.uscg.gov/. Additionally, satellite status is available through the Notice to Air Missions (NOTAM) system.

16.1.2.2 GNSS operational status depends on the type of equipment being used. For GPS-only equipment TSO–C129 or TSO-C196(), the operational status of non-precision approach capability for flight planning purposes is provided through a prediction program that is embedded in the receiver or provided separately.

16.1.3 Receiver Autonomous Integrity Monitoring (RAIM). RAIM is the capability of a GPS receiver to perform integrity monitoring on itself by ensuring available satellite signals meet the integrity requirements for a given phase of flight. Without RAIM, the pilot has no assurance of the GPS position integrity. RAIM provides immediate feedback to the pilot. This fault detection is critical for performance-based navigation (PBN) (see ENR 1.17, Performance-Based Navigation (PBN) and Area Navigation (RNAV), for an introduction to PBN), because delays of up to two hours can occur before an erroneous satellite transmission is detected and corrected by the satellite control segment.

16.1.3.1 In order for RAIM to determine if a satellite is providing corrupted information, at least one satellite, in addition to those required for navigation, must be in view for the receiver to perform the RAIM function. RAIM requires a minimum of 5 satellites, or 4 satellites and barometric altimeter input (baro–aiding), to detect an integrity anomaly. Baro–aiding is a method of augmenting the GPS integrity solution by using a non-satellite input source in lieu of the fifth satellite. Some GPS receivers also have a RAIM capability, called fault detection and exclusion (FDE), that excludes a failed satellite from the position solution; GPS receivers capable of FDE require 6 satellites or 5 satellites with baro–aiding. This allows the GPS receiver to isolate the corrupt satellite signal, remove it from the position solution, and still provide an integrity-assured position. To ensure that baro–aiding is available, enter the current alimeter 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 1.17, paragraph 2. VFR in Congested Areas, for more information.

16.2.2 IFR Use of GPS

16.2.2.1 General Requirements. A 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(), or TSO–C145(), 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/DM/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 Appendix 2, TBL 2–2, on the ATC flight plan.
If GPS avionics become inoperative, the pilot should advise ATC and amend the equipment suffix.

f) Prior to any GPS IFR operation, the pilot must review appropriate NOTAMs and aeronautical information. (See GPS NOTAMs/Aeronautical Information).

16.2.2.2 Database Requirements. The onboard navigation data must be current and appropriate for the region of intended operation and should include the navigation aids, waypoints, and relevant coded terminal airspace procedures for the departure, arrival, and alternate airfields.

a) Further database guidance for terminal and en route requirements may be found in AC 90-100, U.S. Terminal and En Route Area Navigation (RNAV) Operations.

b) Further database guidance on Required Navigation Performance (RNP) instrument approach operations, RNP terminal, and RNP en route requirements may be found in AC 90-105, Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System.

c) All approach procedures to be flown must be retrievable from the current airborne navigation database supplied by the equipment manufacturer or other FAA-approved source. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints. Manual entry of waypoints using latitude/longitude or place/bearing is not permitted for approach procedures.

d) Prior to using a procedure or waypoint retrieved from the airborne navigation database, the pilot should verify the validity of the database. This verification should include the following preflight and inflight steps:

1) Preflight:

(a) Determine the date of database issuance, and verify that the date/time of proposed use is before the expiration date/time.

(b) Verify that the database provider has not published a notice limiting the use of the specific waypoint or procedure.

2) Inflight:

(a) Determine that the waypoints and transition names coincide with names found on the procedure chart. Do not use waypoints which do not exactly match the spelling shown on published procedure charts.

(b) Determine that the waypoints are logical in location, in the correct order, and their orientation to each other is as found on the procedure chart, both laterally and vertically.

NOTE—There is no specific requirement to check each waypoint latitude and longitude, type of waypoint and/or altitude constraint, only the general relationship of waypoints in the procedure, or the logic of an individual waypoint’s location.

(c) If the cursory check of procedure logic or individual waypoint location, specified in [b] above, indicates a potential error, do not use the retrieved procedure or waypoint until a verification of latitude and longitude, waypoint type, and altitude constraints indicate full conformity with the published data.

e) Air carrier and commercial operators must meet the appropriate provisions of their approved operations specifications.

1) During domestic operations for commerce or for hire, operators must have a second navigation system capable of reversion or contingency operations.

2) Operators must have two independent navigation systems appropriate to the route to be flown, or one system that is suitable and a second, independent backup capability that allows the operator to proceed safely and land at a different airport, and the aircraft must have sufficient fuel (reference 14 CFR 121.349, 125.203, 129.17, and 135.165). These rules ensure the safety of the operation by preventing a single point of failure.

NOTE—An aircraft approved for multi-sensor navigation and equipped with a single navigation system must maintain an ability to navigate or proceed safely in the event that any one component of the navigation system fails, including the flight management system (FMS). Retaining a FMS-independent VOR capability would satisfy this requirement.

3) The requirements for a second system apply to the entire set of equipment needed to achieve the navigation capability, not just the individual components of the system such as the radio navigation receiver. For example, to use two RNAV
systems (e.g., GPS and DME/DME/IRU) to comply with the requirements, the aircraft must be equipped with two independent radio navigation receivers and two independent navigation computers (e.g., flight management systems (FMS)). Alternatively, to comply with the requirements using a single RNAV system with an installed and operable VOR capability, the VOR capability must be independent of the FMS.

4) To satisfy the requirement for two independent navigation systems, if the primary navigation system is GPS-based, the second system must be independent of GPS (for example, VOR or DME/DME/IRU). This allows continued navigation in case of failure of the GPS or WAAS services. Recognizing that GPS interference and test events resulting in the loss of GPS services have become more common, the FAA requires operators conducting IFR operations under 14 CFR 121.349, 125.203, 129.17 and 135.65 to retain a non-GPS navigation capability consisting of either DME/DME, IRU, or VOR for en route and terminal operations, and VOR and ILS for final approach. Since this system is to be used as a reversionary capability, single equipage is sufficient.

16.2.3 Oceanic, Domestic, En Route, and Terminal Area Operations

16.2.3.1 Conduct GPS IFR operations in oceanic areas only when approved avionics systems are installed. TSO–C196 users and TSO–C129 GPS users authorized for Class A1, A2, B1, B2, C1, or C2 operations may use GPS in place of another approved means of long-range navigation, such as dual INS. (See TBL ENR 4.1–4 and TBL ENR 4.1–5.) Aircraft with a single installation GPS, meeting the above specifications, are authorized to operate on short oceanic routes requiring one means of long-range navigation (reference AC 20–138, Appendix 1).

16.2.3.2 Conduct GPS domestic, en route, and terminal IFR operations only when approved avionics systems are installed. Pilots may use GPS via TSO–C129 authorized for Class A1, B1, B3, C1, or C3 operations GPS via TSO–C196; or GPS/WAAS with either TSO–C145 or TSO–C146. When using TSO–C129 or TSO–C196 receivers, the avionics necessary to receive all of the ground–based facilities appropriate for the route to the destination airport and any required alternate airport must be installed and operational. Ground–based facilities necessary for these routes must be operational.

a) GPS en route IFR operations may be conducted in Alaska outside the operational service volume of ground–based navigation aids when a TSO–C145 or TSO–C146 GPS/wide area augmentation system (WAAS) system is installed and operating. WAAS is the U.S. version of a satellite–based augmentation system (SBAS).

1) In Alaska, aircraft may operate on GNSS Q–routes with GPS (TSO–C129 or TSO–C196) equipment while the aircraft remains in Air Traffic Control (ATC) radar surveillance or with GPS/ WAAS (TSO–C145 or TSO–C146) which does not require ATC radar surveillance.

2) In Alaska, aircraft may only operate on GNSS T–routes with GPS/WAAS (TSO–C145 or TSO–C146) equipment.

b) Ground–based navigation equipment is not required to be installed and operating for en route IFR operations when using GPS/WAAS navigation systems. All operators should ensure that an alternate means of navigation is available in the unlikely event the GPS/WAAS navigation system becomes inoperative.

c) Q–routes and T–routes outside Alaska. Q–routes require system performance currently met by GPS, GPS/WAAS, or DME/DME/IRU RNAV systems that satisfy the criteria discussed in AC 90–100, U.S. Terminal and En Route Area Navigation (RNAV) Operations. T–routes require GPS or GPS/WAAS equipment.

REFERENCE–
ENR 3.5, Paragraph 1. Airways and Route Systems.

16.2.3.3 GPS IFR approach/departure operations can be conducted when approved avionics systems are installed and the following requirements are met:

a) The aircraft is TSO–C145 or TSO–C146 or TSO–C196 or TSO–C129 in Class A1, B1, B3, C1, or C3; and

b) The approach/departure must be retrievable from the current airborne navigation database in the navigation computer. The system must be able to retrieve the procedure by name from the aircraft navigation database. Manual entry of waypoints using latitude/longitude or place/bearing is not permitted for approach procedures.

c) The authorization to fly instrument approaches/departures with GPS is limited to U.S. airspace.
d) The use of GPS in any other airspace must be expressly authorized by the FAA Administrator.

e) GPS instrument approach/departure operations outside the U.S. must be authorized by the appropriate sovereign authority.

16.2.4 Departures and Instrument Departure Procedures (DPs)

The GPS receiver must be set to terminal (±1 NM) CDI sensitivity and the navigation routes contained in the database in order to fly published IFR charted departures and DPs. Terminal RAIM should be automatically provided by the receiver. (Terminal RAIM for departure may not be available unless the waypoints are part of the active flight plan rather than proceeding direct to the first destination.) Certain segments of a DP may require some manual intervention by the pilot, especially when radar vectored to a course or required to intercept a specific course to a waypoint. The database may not contain all of the transitions or departures from all runways and some GPS receivers do not contain DPs in the database. It is necessary that helicopter procedures be flown at 70 knots or less since helicopter departure procedures and missed approaches use a 20:1 obstacle clearance surface (OCS), which is double the fixed-wing OCS, and turning areas are based on this speed as well.

16.2.5 GPS Instrument Approach Procedures

16.2.5.1 GPS overlay approaches are designated non-precision instrument approach procedures that pilots are authorized to fly using GPS avionics. Localizer (LOC), localizer type directional aid (LDA), and simplified directional facility (SDF) procedures are not authorized. Overlay procedures are identified by the "name of the procedure" and "GPS" (e.g., VOR or GPS RWY 24, "GPS RWY 24," or "RNAV (GPS) RWY 24") in the title. Authorized procedures must be retrievable from a current onboard navigation database. The navigation database may also enhance position orientation by displaying a map containing information on conventional NAVAID approaches. This approach information should not be confused with a GPS overlay approach (see the receiver operating manual, AFM, or AFM Supplement for details on how to identify these approaches in the navigation database).

NOTE – Overlay approaches do not adhere to the design criteria described in ENR 1.5 Paragraph 12.13, Area Navigation (RNAV) Instrument Approach Charts, for stand-alone GPS approaches. Overlay approach criteria is based on the design criteria used for ground-based NAVAID approaches.

16.2.5.2 Stand-alone approach procedures specifically designed for GPS systems have replaced many of the original overlay approaches. All approaches that contain "GPS" in the title (e.g., "VOR or GPS RWY 24," "GPS RWY 24," or "RNAV (GPS) RWY 24") can be flown using GPS. GPS-equipped aircraft do not need underlying ground-based NAVAIDS or associated aircraft avionics to fly the approach. Monitoring the underlying approach with ground-based NAVAIDS is suggested when able. Existing overlay approaches may be requested using the GPS title; for example, the VOR or GPS RWY 24 may be requested as "GPS RWY 24." Some GPS procedures have a Terminal Arrival Area (TAA) with an underlying RNAV approach.

16.2.5.3 For flight planning purposes, TSO-C129 and TSO-C196-equipped users (GPS users) whose navigation systems have fault detection and exclusion (FDE) capability, who perform a preflight RAIM prediction for the approach integrity at the airport where the RNAV (GPS) approach will be flown, and have proper knowledge and any required training and/or approval to conduct a GPS-based IAP, may file based on a GPS-based IAP at either the destination or the alternate airport, but not at both locations. At the alternate airport, pilots may plan for:

a) Lateral navigation (LNAV) or circling minimum descent altitude (MDA);

b) LNAV/vertical navigation (LNAV/VNAV) DA, if equipped with and using approved barometric vertical navigation (baro-VNAV) equipment;

c) RNP 0.3 DA on an RNAV (RNP) IAP, if they are specifically authorized users using approved baro-VNAV equipment and the pilot has verified required navigation performance (RNP) availability through an approved prediction program.

16.2.5.4 If the above conditions cannot be met, any required alternate airport must have an approved instrument approach procedure other than GPS-based that is anticipated to be operational and available at the estimated time of arrival, and which the aircraft is equipped to fly.
16.2.5.5 Procedures for Accomplishing GPS Approaches

a) An RNAV (GPS) procedure may be associated with a Terminal Arrival Area (TAA). The basic design of the RNAV procedure is the “T” design or a modification of the “T” (See ENR 1.5, Paragraph 12.4, Terminal Arrival Area (TAA), for complete information).

b) Pilots cleared by ATC for an RNAV (GPS) approach should fly the full approach from an Initial Approach Waypoint (IAWP) or feeder fix. Randomly joining an approach at an intermediate fix does not assure terrain clearance.

c) When an approach has been loaded in the navigation system, GPS receivers will give an “arm” annunciation 30 NM straight line distance from the airport/heliport reference point. Pilots should arm the approach mode at this time if not already armed (some receivers arm automatically). Without arming, the receiver will not change from en route CDI and RAIM sensitivity of ±5 NM either side of centerline to ±1 NM terminal sensitivity. Where the IAWP is inside this 30 mile point, a CDI sensitivity change will occur once the approach mode is armed and the aircraft is inside 30 NM. Where the IAWP is beyond 30 NM from the airport/heliport reference point and the approach is armed, the CDI sensitivity will not change until the aircraft is within 30 miles of the airport/heliport reference point. Feeder route obstacle clearance is predicated on the receiver being in terminal (±1 NM) CDI sensitivity and RAIM within 30 NM of the airport/heliport reference point; therefore, the receiver should always be armed (if required) not later than the 30 NM annunciation.

d) The pilot must be aware of what bank angle/turn rate the particular receiver uses to compute turn anticipation, and whether wind and airspeed are included in the receiver’s calculations. This information should be in the receiver operating manual. Over or under banking the turn onto the final approach course may significantly delay getting on course and may result in high descent rates to achieve the next segment altitude.

e) When within 2 NM of the Final Approach Waypoint (FAWP) with the approach mode armed, the approach mode will switch to active, which results in RAIM and CDI changing to approach sensitivity. Beginning 2 NM prior to the FAWP, the full scale CDI sensitivity will smoothly change from ±1 NM to ±0.3 NM at the FAWP. As sensitivity changes from ±1 NM to ±0.3 NM approaching the FAWP, with the CDI not centered, the corresponding increase in CDI displacement may give the impression that the aircraft is moving further away from the intended course even though it is on an acceptable intercept heading. Referencing the digital track displacement information (cross track error), if it is available in the approach mode, may help the pilot remain position oriented in this situation. Being established on the final approach course prior to the beginning of the sensitivity change at 2 NM will help prevent problems in interpreting the CDI display during ramp down. Therefore, requesting or accepting vectors which will cause the aircraft to intercept the final approach course within 2 NM of the FAWP is not recommended.

f) When receiving vectors to final, most receiver operating manuals suggest placing the receiver in the non−sequencing mode on the FAWP and manually setting the course. This provides an extended final approach course in cases where the aircraft is vectored onto the final approach course outside of any existing segment which is aligned with the runway. Assigned altitudes must be maintained until established on a published segment of the approach. Required altitudes at waypoints outside the FAWP or stepdown fixes must be considered. Calculating the distance to the FAWP may be required in order to descend at the proper location.

g) Overriding an automatically selected sensitivity during an approach will cancel the approach mode annunciation. If the approach mode is not armed by 2 NM prior to the FAWP, the approach mode will not become active at 2 NM prior to the FAWP, and the equipment will flag. In these conditions, the RAIM and CDI sensitivity will not ramp down, and the pilot should not descend to MDA, but fly to the MAWP and execute a missed approach. The approach active annunciator and/or the receiver should be checked to ensure the approach mode is active prior to the FAWP.

h) Do not attempt to fly an approach unless the procedure in the onboard database is current and identified as “GPS” on the approach chart. The navigation database may contain information about non−overlay approach procedures that enhances position orientation generally by providing a map, while flying these approaches using conventional NAVAIDs. This approach information should not be
confused with a GPS overlay approach (see the receiver operating manual, AFM, or AFM Supplement for details on how to identify these procedures in the navigation database). Flying point to point on the approach does not assure compliance with the published approach procedure. The proper RAIM sensitivity will not be available and the CDI sensitivity will not automatically change to ±0.3 NM. Manually setting CDI sensitivity does not automatically change the RAIM sensitivity on some receivers. Some existing non-precision approach procedures cannot be coded for use with GPS and will not be available as overlays.

i) Pilots should pay particular attention to the exact operation of their GPS receivers for performing holding patterns and in the case of overlay approaches, operations such as procedure turns. These procedures may require manual intervention by the pilot to stop the sequencing of waypoints by the receiver and to resume automatic GPS navigation sequencing once the maneuver is complete. The same waypoint may appear in the route of flight more than once consecutively (for example, IAWP, FAWP, MAHWP on a procedure turn). Care must be exercised to ensure that the receiver is sequenced to the appropriate waypoint for the segment of the procedure being flown, especially if one or more fly-overs are skipped (for example, FAWP rather than IAWP if the procedure turn is not flown). The pilot may have to sequence past one or more fly-overs of the same waypoint in order to start GPS automatic sequencing at the proper place in the sequence of waypoints.

j) Incorrect inputs into the GPS receiver are especially critical during approaches. In some cases, an incorrect entry can cause the receiver to leave the approach mode.

k) A fix on an overlay approach identified by a DME fix will not be in the waypoint sequence on the GPS receiver unless there is a published name assigned to it. When a name is assigned, the along track distance (ATD) to the waypoint may be zero rather than the DME stated on the approach chart. The pilot should be alert for this on any overlay procedure where the original approach used DME.

l) If a visual descent point (VDP) is published, it will not be included in the sequence of waypoints. Pilots are expected to use normal piloting techniques for beginning the visual descent, such as ATD.

m) Unnamed stepdown fixes in the final approach segment may or may not be coded in the waypoint sequence of the aircraft’s navigation database and must be identified using ATD. Stepdown fixes in the final approach segment of RNAV (GPS) approaches are being named, in addition to being identified by ATD. However, GPS avionics may or may not accommodate waypoints between the FAF and MAP. Pilots must know the capabilities of their GPS equipment and continue to identify stepdown fixes using ATD when necessary.

16.2.5.6 Missed Approach

a) A GPS missed approach requires pilot action to sequence the receiver past the MAWP to the missed approach portion of the procedure. The pilot must be thoroughly familiar with the activation procedure for the particular GPS receiver installed in the aircraft and must initiate appropriate action after the MAWP. Activating the missed approach prior to the MAWP will cause CDI sensitivity to immediately change to terminal (±1NM) sensitivity and the receiver will continue to navigate to the MAWP. The receiver will not sequence past the MAWP. Turns should not begin prior to the MAWP. If the missed approach is not activated, the GPS receiver will display an extension of the inbound final approach course and the ATD will increase from the MAWP until it is manually sequenced after crossing the MAWP.

b) Missed approach routings in which the first track is via a course rather than direct to the next waypoint require additional action by the pilot to set the course. Being familiar with all of the inputs required is especially critical during this phase of flight.

16.2.5.7 Receiver Autonomous Integrity Monitoring (RAIM)

a) RAIM outages may occur due to an insufficient number of satellites or due to unsuitable satellite geometry which causes the error in the position solution to become too large. Loss of satellite reception and RAIM warnings may occur due to aircraft dynamics (changes in pitch or bank angle). Antenna location on the aircraft, satellite position relative to the horizon, and aircraft attitude may affect reception of one or more satellites. Since the relative positions of the satellites are constantly changing, prior experience with the airport does not guarantee reception at all times, and RAIM availability should always be checked.
b) Civilian pilots may obtain GPS RAIM availability information for nonprecision approach procedures by using a manufacturer-supplied RAIM prediction tool, or using the Service Availability Prediction Tool (SAPT) on the FAA en route and terminal RAIM prediction website. Pilots can also request GPS RAIM aeronautical information from a flight service station during preflight briefings. GPS RAIM aeronautical information can be obtained for a period of 3 hours (for example, if you are scheduled to arrive at 1215 hours, then the GPS RAIM information is available from 1100 to 1400 hours) or a 24–hour timeframe at a particular airport. FAA briefers will provide RAIM information for a period of 1 hour before to 1 hour after the ETA hour, unless a specific timeframe is requested by the pilot. If flying a published GPS departure, a RAIM prediction should also be requested for the departure airport.

c) The military provides airfield specific GPS RAIM NOTAMs for nonprecision approach procedures at military airfields. The RAIM outages are issued as M–series NOTAMs and may be obtained for up to 24 hours from the time of request.

d) Receiver manufacturers and/or database suppliers may supply “NOTAM” type information concerning database errors. Pilots should check these sources, when available, to ensure that they have the most current information concerning their electronic database.

e) If RAIM is not available, use another type of navigation and approach system, select another route or destination, or delay the trip until RAIM is predicted to be available on arrival. On longer flights, pilots should consider rechecking the RAIM prediction for the destination during the flight. This may provide an early indication that an unscheduled satellite outage has occurred since takeoff.

f) If a RAIM failure/status annunciation occurs prior to the final approach waypoint (FAWP), the approach should not be completed since GPS no longer provides the required integrity. The receiver performs a RAIM prediction by 2 NM prior to the FAWP to ensure that RAIM is available as a condition for entering the approach mode. The pilot should ensure the receiver has sequenced from “Armed” to “Approach” prior to the FAWP (normally occurs 2 NM prior). Failure to sequence may be an indication of the detection of a satellite anomaly, failure to arm the receiver (if required), or other problems which preclude flying the approach.

g) If the receiver does not sequence into the approach mode or a RAIM failure/status annunciation occurs prior to the FAWP, the pilot must not initiate the approach nor descend, but instead, proceed to the missed approach waypoint (MAWP) via the FAWP, perform a missed approach, and contact ATC as soon as practical. The GPS receiver may continue to operate after a RAIM flag/status annunciation appears, but the navigation information should be considered advisory only. Refer to the receiver operating manual for specific indications and instructions associated with loss of RAIM prior to the FAF.

h) If the RAIM flag/status annunciation appears after the FAWP, the pilot should initiate a climb and execute the missed approach. The GPS receiver may continue to operate after a RAIM flag/status annunciation appears, but the navigation information should be considered advisory only. Refer to the receiver operating manual for operating mode information during a RAIM annunciation.

16.2.5.8 Waypoints

a) GPS receivers navigate from one defined point to another retrieved from the aircraft’s onboard navigational database. These points are waypoints (5-letter pronounceable name), existing VHF intersections, DME fixes with 5–letter pronounceable names and 3-letter NAVAID IDs. Each waypoint is a geographical location defined by a latitude/longitude geographic coordinate. These 5–letter waypoints, VHF intersections, 5–letter pronounceable DME fixes and 3–letter NAVAID IDs are published on various FAA aeronautical navigation products (IFR En Route Charts, VFR Charts, Terminal Procedures Publications, etc.).

b) A Computer Navigation Fix (CNF) is also a point defined by a latitude/longitude coordinate and is required to support Performance-Based Navigation (PBN) operations. The GPS receiver uses CNFs in conjunction with waypoints to navigate from point to point. However, CNFs are not recognized by ATC. ATC does not maintain CNFs in their database and they do not use CNFs for any air traffic control purpose. CNFs may or may not be charted on FAA aeronautical navigation products, are listed in the chart legends, and are for advisory purposes only. Pilots are not to use CNFs for point to point
navigation (proceed direct), filing a flight plan, or in aircraft/ATC communications. CNFs that do appear on aeronautical charts allow pilots increased situational awareness by identifying points in the aircraft database route of flight with points on the aeronautical chart. CNFs are random five-letter identifiers, not pronounceable like waypoints and placed in parenthesis. Eventually, all CNFs will begin with the letters “CF” followed by three consonants (for example, CFWBG). This five-letter identifier will be found next to an “x” on en route charts and possibly on an approach chart. On instrument approach procedures (charts) in the terminal procedures publication, CNFs may represent unnamed DME fixes, beginning and ending points of DME arcs, and sensor (ground-based signal i.e., VOR, NDB, ILS) final approach fixes on GPS overlay approaches. These CNFs provide the GPS with points on the procedure that allow the overlay approach to mirror the ground-based sensor approach. These points should only be used by the GPS system for navigation and should not be used by pilots for any other purpose on the approach. The CNF concept has not been adopted or recognized by the International Civil Aviation Organization (ICAO).

c) GPS approaches use fly–over and fly–by waypoints to join route segments on an approach. Fly–by waypoints connect the two segments by allowing the aircraft to turn prior to the current waypoint in order to roll out on course to the next waypoint. This is known as turn anticipation and is compensated for in the airspace and terrain clearances. The missed approach waypoint (MAWP) will always be a fly–over waypoint. A holding waypoint will always be designed as a fly–over waypoint in the navigational database but may be charted as a fly–by event unless the holding waypoint is used for another purpose in the procedure and both events require the waypoint to be a fly–over event. Some waypoints may have dual use; for example, as a fly–by waypoint when used as an IF for a NoPT route and as a fly–over waypoint when the same waypoint is also used as an IAF/IF hold–in–lieu of PT. Since the waypoint can only be charted one way, when this situation occurs, the fly–by waypoint symbol will be charted in all uses of the waypoint.

d) Unnamed waypoints for each airport will be uniquely identified in the database. Although the identifier may be used at different airports (for example, RW 36 will be the identifier at each airport with a runway 36), the actual point, at each airport, is defined by a specific latitude/longitude coordinate.

e) The runway threshold waypoint, normally the MAWP, may have a five–letter identifier (for example, SNEEZ) or be coded as RW ## (for example, RW 36, RW 36L). MAWPs located at the runway threshold are being changed to the RW ## identifier, while MAWPs not located at the threshold will have a five–letter identifier. This may cause the approach chart to differ from the aircraft database until all changes are complete. The runway threshold waypoint is also used as the center of the Minimum Safe Altitude (MSA) on most GPS approaches.

16.2.5.9 Position Orientation

Pilots should pay particular attention to position orientation while using GPS. Distance and track information are provided to the next active waypoint, not to a fixed navigation aid. Receivers may sequence when the pilot is not flying along an active route, such as when being vectored or deviating for weather, due to the proximity to another waypoint in the route. This can be prevented by placing the receiver in the non-sequencing mode. When the receiver is in the non-sequencing mode, bearing and distance are provided to the selected waypoint and the receiver will not sequence to the next waypoint in the route until placed back in the auto sequence mode or the pilot selects a different waypoint. The pilot may have to compute the ATD to stepdown fixes and other points on overlay approaches, due to the receiver showing ATD to the next waypoint rather than DME to the VOR or ILS ground station.

16.2.5.10 Impact of Magnetic Variation on PBN Systems

a) Differences may exist between PBN systems and the charted magnetic courses on ground–based NAVAID instrument flight procedures (IFP), en route charts, approach charts, and Standard Instrument Departure/Standard Terminal Arrival (SID/STAR) charts. These differences are due to the magnetic variance used to calculate the magnetic course. Every leg of an instrument procedure is first computed along a desired ground track with reference to true north. A magnetic variation correction is then applied to the true course in order to calculate a magnetic course for publication. The type of procedure will
determine what magnetic variation value is added to the true course. A ground-based NAVAID IFP applies the facility magnetic variation of record to the true course to get the charted magnetic course. Magnetic courses on PBN procedures are calculated two different ways. SID/STAR procedures use the airport magnetic variation of record, while IFR en route charts use magnetic reference bearing. PBN systems make a correction to true north by adding a magnetic variation calculated with an algorithm based on aircraft position, or by adding the magnetic variation coded in their navigational database. This may result in the PBN system and the procedure designer using a different magnetic variation, which causes the magnetic course displayed by the PBN system and the magnetic course charted on the IFP plate to be different. It is important to understand, however, that PBN systems, (with the exception of VOR/DME RNAV equipment) navigate by reference to true north and display magnetic course only for pilot reference. As such, a properly functioning PBN system, containing a current and accurate navigational database, should fly the correct ground track for any loaded instrument procedure, despite differences in displayed magnetic course that may be attributed to magnetic variation application. Should significant differences between the approach chart and the PBN system avionics’ application of the navigation database arise, the published approach chart, supplemented by NOTAMs, holds precedence. 

b) The course into a waypoint may not always be 180 degrees different from the course leaving the previous waypoint, due to the PBN system avionics’ computation of geodesic paths, distance between waypoints, and differences in magnetic variation application. Variations in distances may also occur since PBN system distance-to-waypoint values are ATDs computed to the next waypoint and the DME values published on underlying procedures are slant-range distances measured to the station. This difference increases with aircraft altitude and proximity to the NAVAID.

16.2.5.11 GPS Familiarization

Pilots should practice GPS approaches in visual meteorological conditions (VMC) until thoroughly proficient with all aspects of their equipment (receiver and installation) prior to attempting flight in instrument meteorological conditions (IMC). Pilots should be proficient in the following areas:

a) Using the receiver autonomous integrity monitoring (RAIM) prediction function;

b) Inserting a DP into the flight plan, including setting terminal CDI sensitivity, if required, and the conditions under which terminal RAIM is available for departure;

c) Programming the destination airport;

d) Programming and flying the approaches (especially procedure turns and arcs);

e) Changing to another approach after selecting an approach;

f) Programming and flying “direct” missed approaches;

g) Programming and flying “routed” missed approaches;

h) Entering, flying, and exiting holding patterns, particularly on approaches with a second waypoint in the holding pattern;

i) Programming and flying a “route” from a holding pattern;

j) Programming and flying an approach with radar vectors to the intermediate segment;

k) Indication of the actions required for RAIM failure both before and after the FAWP; and

l) Programming a radial and distance from a VOR (often used in departure instructions).
GPS Equipment Classes/Categories

| TSO-C129 | Class A – GPS sensor and navigation capability. |  |
| --- | --- | --- | --- | --- | --- | --- |
| Equipment Class | RAIM | Int. Nav Sys. to Prov. RAIM Equiv. | Oceanic | En Route | Terminal | Nonprecision Approach Capable |
| A1 | yes | yes | yes | yes | yes | yes |
| A2 | yes | yes | yes | yes | yes | no |

Class B – GPS sensor data to an integrated navigation system (i.e. FMS, multi-sensor navigation system, etc.).

| Class B |  |
| --- | --- | --- | --- | --- | --- | --- |
| B1 | yes | yes | yes | yes | yes | yes |
| B2 | yes | yes | yes | yes | yes | no |
| B3 | yes | yes | yes | yes | yes | yes |
| B4 | yes | yes | yes | yes | yes | no |

Class C – GPS sensor data to an integrated navigation system (as in Class B) which provides enhanced guidance to an autopilot, or flight director, to reduce flight tech. errors. Limited to 14 CFR Part 121 or equivalent criteria.

| Class C |  |
| --- | --- | --- | --- | --- | --- | --- |
| C1 | yes | yes | yes | yes | yes | yes |
| C2 | yes | yes | yes | yes | yes | no |
| C3 | yes | yes | yes | yes | yes | yes |
| C4 | yes | yes | yes | yes | yes | no |

GPS Approval Required/Authorized Use

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<th>Equipment Type</th>
<th>Installation Approval Required</th>
<th>Operational Approval Required</th>
<th>IFR En Route</th>
<th>IFR Terminal</th>
<th>IFR Approach</th>
<th>Oceanic Remote</th>
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NOTE –

1To determine equipment approvals and limitations, refer to the AFM, AFM supplements, or pilot guides.

2Requires verification of data for correctness if database is expired.

3Requires current database or verification that the procedure has not been amended since the expiration of the database.

4VFR and hand-held GPS systems are not authorized for IFR navigation, instrument approaches, or as a primary instrument flight reference. During IFR operations they may be considered only an aid to situational awareness.

5Hand-held receivers require no approval. However, any aircraft modification to support the hand-held receiver; i.e., installation of an external antenna or a permanent mounting bracket, does require approval.
17. Wide Area Augmentation System (WAAS)

17.1 General

17.1.1 The FAA developed the WAAS to improve the accuracy, integrity and availability of GPS signals. WAAS will allow GPS to be used, as the aviation navigation system, from takeoff through approach when it is complete. WAAS is a critical component of the FAA’s strategic objective for a seamless satellite navigation system for civil aviation, improving capacity and safety.

17.1.2 The International Civil Aviation Organization (ICAO) has defined Standards and Recommended Practices (SARPs) for satellite-based augmentation systems (SBAS) such as WAAS. India and Europe are building similar systems: EGNOS, the European Geostationary Navigation Overlay System; and India’s GPS and Geo-Augmented Navigation (GAGAN) system. The merging of these systems will create an expansive navigation capability similar to GPS, but with greater accuracy, availability, and integrity.

17.1.3 Unlike traditional ground-based navigation aids, WAAS will cover a more extensive service area. Precisely surveyed wide-area reference stations (WRS) are linked to form the U.S. WAAS network. Signals from the GPS satellites are monitored by these WRSs to determine satellite clock and ephemeris corrections and to model the propagation effects of the ionosphere. Each station in the network relays the data to a wide-area master station (WMS) where the correction information is computed. A correction message is prepared and uplinked to a geostationary earth orbit satellite (GEO) via a GEO uplink subsystem (GUS) which is located at the ground earth station (GES). The message is then broadcast on the same frequency as GPS (L1, 1575.42 MHz) to WAAS receivers within the broadcast coverage area of the WAAS GEO.

17.1.4 In addition to providing the correction signal, the WAAS GEO provides an additional pseudorange measurement to the aircraft receiver, improving the availability of GPS by providing, in effect, an additional GPS satellite in view. The integrity of GPS is improved through real-time monitoring, and the accuracy is improved by providing differential corrections to reduce errors. The performance improvement is sufficient to enable approach procedures with GPS/WAAS glide paths (vertical guidance).

17.1.5 The FAA has completed installation of 3 GEO satellite links, 38 WRSs, 3 WMSs, 6 GES, and the required terrestrial communications to support the WAAS network including 2 operational control centers. Prior to the commissioning of the WAAS for public use, the FAA conducted a series of test and validation activities. Future dual frequency operations are planned.

17.1.6 GNSS navigation, including GPS and WAAS, is referenced to the WGS-84 coordinate system. It should only be used where the Aeronautical Information Publications (including electronic data and aeronautical charts) conform to WGS-84 or equivalent. Other countries civil aviation authorities may impose additional limitations on the use of their SBAS systems.

17.2 Instrument Approach Capabilities

17.2.1 A class of approach procedures which provide vertical guidance, but which do not meet the ICAO Annex 10 requirements for precision approaches has been developed to support satellite navigation use for aviation applications worldwide. These procedures are not precision and are referred to as Approach with Vertical Guidance (APV), are defined in ICAO Annex 6, and include approaches such as the LNAV/VNAV and localizer performance with vertical guidance (LPV). These approaches provide vertical guidance, but do not meet the more stringent standards of a precision approach. Properly certified WAAS receivers will be able to fly to LPV minima and LNAV/VNAV minima, using a WAAS electronic glide path, which eliminates the errors that can be introduced by using Barometric altimetry.

17.2.2 LPV minima takes advantage of the high accuracy guidance and increased integrity provided by WAAS. This WAAS generated angular guidance allows the use of the same TERPS approach criteria used for ILS approaches. LPV minima may have a decision altitude as low as 200 feet height above touchdown with visibility minimums as low as 1/2 mile, when the terrain and airport infrastructure support the lowest minima. LPV minima is published on the RNAV (GPS) approach charts (see paragraph 12., Instrument Approach Procedure Charts).

17.2.3 A different WAAS-based line of minima, called Localizer Performance (LP) is being added in locations where the terrain or obstructions do not
allow publication of vertically guided LPV minima. LP takes advantage of the angular lateral guidance and smaller position errors provided by WAAS to provide a lateral only procedure similar to an ILS Localizer. LP procedures may provide lower minima than a LNAV procedure due to the narrower obstacle clearance surface.

**NOTE**

WAAS receivers certified prior to TSO–C145b and TSO–C146b, even if they have LPV capability, do not contain LP capability unless the receiver has been upgraded. Receivers capable of flying LP procedures must contain a statement in the Aircraft Flight Manual (AFM), AFM Supplement, or Approved Supplemental Flight Manual stating that the receiver has LP capability, as well as the capability for the other WAAS and GPS approach procedure types.

**17.2.4 WAAS** provides a level of service that supports all phases of flight, including RNAV (GPS) approaches to LNAV, LP, LNAV/VNAV and LPV lines of minima, within system coverage. Some locations close to the edge of the coverage may have a lower availability of vertical guidance.

**17.3 General Requirements**

**17.3.1 WAAS** avionics must be certified in accordance with Technical Standard Order (TSO) TSO–C145, Airborne Navigation Sensors Using the (GPS) Augmented by the Wide Area Augmentation System (WAAS); or TSO–C146, Stand–Alone Airborne Navigation Equipment Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS), and installed in accordance with Advisory Circular (AC) 20–138, Airworthiness Approval of Positioning and Navigation Systems.

**17.3.2 GPS/WAAS** operation must be conducted in accordance with the FAA–approved aircraft flight manual (AFM) and flight manual supplements. Flight manual supplements will state the level of approach procedure that the receiver supports. IFR approved WAAS receivers support all GPS only operations as long as lateral capability at the appropriate level is functional. WAAS monitors both GPS and WAAS satellites and provides integrity.

**17.3.3 GPS/WAAS** equipment is inherently capable of supporting oceanic and remote operations if the operator obtains a fault detection and exclusion (FDE) prediction program.

**17.3.4** Air carrier and commercial operators must meet the appropriate provisions of their approved operations specifications.

**17.3.5 Prior** to GPS/WAAS IFR operation, the pilot must review appropriate Notices to Air Missions (NOTAMs) and aeronautical information. This information is available on request from an Automated Flight Service Station. The FAA will provide NOTAMs to advise pilots of the status of the WAAS and level of service available.

**17.3.5.1** The term **MAY NOT BE AVBL** is used in conjunction with WAAS NOTAMs and indicates that due to ionospheric conditions, lateral guidance may still be available when vertical guidance is unavailable. Under certain conditions, both lateral and vertical guidance may be unavailable. This NOTAM language is an advisory to pilots indicating the expected level of WAAS service (LNAV/VNAV, LPV, LP) may not be available.

**EXAMPLE**

<table>
<thead>
<tr>
<th>FDC</th>
<th>FDC NAV WAAS VNAV/LPV/LP MINIMA MAY NOT BE AVBL 1306111330-1306141930EST or FDC NAV WAAS VNAV/LPV/LP MINIMA MAY NOT BE AVBL, WAAS LP MINIMA MAY NOT BE AVBL 1306021200-1306031200EST</th>
<th>WAAS MAY NOT BE AVBL NOTAMs are predictive in nature and published for flight planning purposes. Upon commencing an approach at locations NOTAMed WAAS MAY NOT BE AVBL, if the WAAS avionics indicate LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the approach, reversion to LNAV minima or an alternate instrument approach procedure may be required. When GPS testing NOTAMs are published and testing is actually occurring, Air Traffic Control will advise pilots requesting or cleared for a GPS or RNAV (GPS) approach that GPS may not be available and request intentions. If pilots have reported GPS anomalies, Air Traffic Control will request the pilot’s intentions and/or clear the pilot for an alternate approach, if available and operational.</th>
</tr>
</thead>
</table>

**17.3.5.2** WAAS area-wide NOTAMs are originated when WAAS assets are out of service and impact the service area. A rea–wide WAAS NOT AVAILABLE (AVBL) NOTAMs indicate loss or malfunction of the WAAS system. In flight, Air Traffic Control will advise pilots requesting a GPS or RNAV (GPS)
approach of WAAS NOT AVBL NOTAMs if not contained in the ATIS broadcast.

**EXAMPLE**–
For unscheduled loss of signal or service, an example NOTAM is: !FDC FDC NAV WAAS NOT AVBL 1311160060–1311191200EST.

For scheduled loss of signal or service, an example NOTAM is: !FDC FDC NAV WAAS NOT AVBL 1312041015–1312082000EST.

17.3.5.3 Site-specific WAAS MAY NOT BE AVBL NOTAMs indicate an expected level of service; for example, LNAV/VNAV, LP, or LPV may not be available. Pilots must request site-specific WAAS NOTAMs during flight planning. In flight, Air Traffic Control will not advise pilots of WAAS MAY NOT BE AVBL NOTAMs.

**NOTE**–
Though currently unavailable, the FAA is updating its prediction tool software to provide this site-service in the future.

17.3.5.4 Most of North America has redundant coverage by two or more geostationary satellites. One exception is the northern slope of Alaska. If there is a problem with the satellite providing coverage to this area, a NOTAM similar to the following example will be issued:

**EXAMPLE**–
!FDC 4/3406 (PAZA A0173/14) ZAN NAV WAAS SIGNAL MAY NOT BE AVBL NORTH OF LINE FROM 7000N150000W TO 6400N16400W. RMK WAAS USERS SHOULD CONFIRM RAIM AVAILABILITY FOR IFR OPERATIONS IN THIS AREA. T-ROUTES IN THIS SECTOR NOT AVBL. ANY REQUIRED ALTERNATE AIRPORT IN THIS AREA MUST HAVE AN APPROVED INSTRUMENT APPROACH PROCEDURE OTHER THAN GPS THAT IS ANTICIPATED TO BE OPERATIONAL AND AVAILABLE AT THE ESTIMATED TIME OF ARRIVAL AND WHICH THE AIRCRAFT IS EQUIPPED TO FLY. 1406030812–1406050812EST.

17.3.6 When GPS–testing NOTAMS are published and testing is actually occurring, Air Traffic Control will advise pilots requesting or cleared for a GPS or RNAV (GPS) approach that GPS may not be available and request intentions. If pilots have reported GPS anomalies, Air Traffic Control will request the pilot’s intentions and/or clear the pilot for an alternate approach, if available and operational.

**EXAMPLE**–
Here is an example of a GPS testing NOTAM: !GPS 06/001 ZAB NAV GPS (INCLUDING WAAS, GBAS, AND ADS-B) MAY NOT BE AVAILABLE WITHIN A 468NM RADIUS CENTERED AT 330702N1062540W (TCS 093044) FL400-UNL DECREASING IN AREA WITH A DECREASE IN ALTITUDE DEFINED AS: 425NM RADIUS AT FL250, 360NM RADIUS AT 10000FT, 354NM RADIUS AT 4000FT AGL, 327NM RADIUS AT 50FT AGL. 1406070300–1406071200.

17.3.7 When the approach chart is annotated with the W symbol, site–specific WAAS MAY NOT BE AVBL NOTAMs or Air Traffic advisories are not provided for outages in WAAS LNAV/VNAV and LPV vertical service. Vertical outages may occur daily at these locations due to being close to the edge of WAAS system coverage. Use LNAV or circling minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then the vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required.

**NOTE**–
Area–wide WAAS NOT AVBL NOTAMs apply to all airports in the WAAS NOT AVBL area designated in the NOTAM, including approaches at airports where an approach chart is annotated with the W symbol.

17.3.8 GPS/WAAS was developed to be used within GEO coverage over North America without the need for other radio navigation equipment appropriate to the route of flight to be flown. Outside the WAAS coverage or in the event of a WAAS failure, GPS/WAAS equipment reverts to GPS–only operation and satisfies the requirements for basic GPS equipment. (See ENR 4.1 paragraph 17. for these requirements).

17.3.9 Unlike TSO–C129 avionics, which were certified as a supplement to other means of navigation, WAAS avionics are evaluated without reliance on other navigation systems. As such, installation of WAAS avionics does not require the aircraft to have other equipment appropriate to the route to be flown. Outside the WAAS coverage or in the event of a WAAS failure, GPS/WAAS equipment reverts to GPS–only operation and satisfies the requirements for basic GPS equipment. (See ENR 4.1 paragraph 17. for more information on equipment requirements.)

17.3.9.1 Pilots with WAAS receivers may flight plan to use any instrument approach procedure authorized for use with their WAAS avionics as the planned approach at a required alternate, with the following restrictions. When using WAAS at an alternate airport, flight planning must be based on flying the...
RNAV (GPS) LNAV or circling minima line, or minima on a GPS approach procedure, or conventional approach procedure with "or GPS" in the title. Code of Federal Regulation (CFR) Part 91 nonprecision weather requirements must be used for planning. Upon arrival at an alternate, when the WAAS navigation system indicates that LNAV/ VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. The FAA has begun removing the △NA (Alternate Minimums Not Authorized) symbol from select RNAV (GPS) and GPS approach procedures so they may be used by approach approved WAAS receivers at alternate airports. Some approach procedures will still require the △NA for other reasons, such as no weather reporting, so it cannot be removed from all procedures. Since every procedure must be individually evaluated, removal of the △NA from RNAV (GPS) and GPS procedures will take some time.

NOTE – Properly trained and approved, as required, TSO-C145 and TSO-C146 equipped users (WAAS users) with and using approved baro-VNAV equipment may plan for LNAV/VNAV DA at an alternate airport. Specifically authorized WAAS users with and using approved baro-VNAV equipment may also plan for RNP 0.3 DA at the alternate airport as long as the pilot has verified RNP availability through an approved prediction program.

17.4 Flying procedures with WAAS

17.4.1 WAAS receivers support all basic GPS approach functions and provide additional capabilities. One of the major improvements is the ability to generate glide path guidance, independent of ground equipment or barometric aiding. This eliminates several problems such as hot and cold temperature effects, incorrect altimeter setting or lack of a local altimeter source. It also allows approach procedures to be built without the cost of installing ground stations at each airport or runway. Some approach certified receivers may only generate a glide path with performance similar to Baro–VNAV and are only approved to fly the LNAV/VNAV line of minima on the RNAV (GPS) approach charts. Receivers with additional capability (including faster update rates and smaller integrity limits) are approved to fly the LPV line of minima. The lateral integrity changes dramatically from the 0.3 NM (556 meter) limit for GPS, LNAV and LNAV/VNAV approach mode, to 40 meters for LPV. It also provides vertical integrity monitoring, which bounds the vertical error to 50 meters for LNAV/VNAV and LPVs with minima of 250’ or above, and bounds the vertical error to 35 meters for LPVs with minima below 250’.

17.4.2 When an approach procedure is selected and active, the receiver will notify the pilot of the most accurate level of service supported by the combination of the WAAS signal, the receiver, and the selected approach, using the naming conventions on the minima lines of the selected approach procedure. For example, if an approach is published with LPV minima and the receiver is only certified for LNAV/VNAV, the equipment would indicate “LNAV/VNAV available,” even though the WAAS signal would support LPV. If flying an existing LNAV/VNAV procedure with no LPV minima, the receiver will notify the pilot “LNAV/VNAV available,” even if the receiver is certified for LPV and the signal supports LPV. If the signal does not support vertical guidance on procedures with LPV and/or LNAV/VNAV minima, the receiver announcement will read “LNAV available.” On lateral only procedures with LP and LNAV minima the receiver will indicate “LP available” or “LNAV available” based on the level of lateral service available. Once the level of service notification has been given, the receiver will operate in this mode for the duration of the approach procedure, unless that level of service becomes unavailable. The receiver cannot change back to a more accurate level of service until the next time an approach is activated.

NOTE – Receivers do not “fail down” to lower levels of service once the approach has been activated. If only the vertical off flag appears, the pilot may elect to use the LNAV minima if the rules under which the flight is operating allow changing the type of approach being flown after commencing the procedure. If the lateral integrity limit is exceeded on an LP approach, a missed approach will be necessary since there is no way to reset the lateral alarm limit while the approach is active.

17.4.3 Another additional feature of WAAS receivers is the ability to exclude a bad GPS signal and continue operating normally. This is normally accomplished by the WAAS correction information. Outside WAAS coverage or when WAAS is not available, it is accomplished through a receiver algorithm called FDE. In most cases this operation will be invisible to the pilot since the receiver will continue to operate with other available satellites.
after excluding the “bad” signal. This capability increases the reliability of navigation.

17.4.4 Both lateral and vertical scaling for the LNAV/VNAV and LPV approach procedures are different than the linear scaling of basic GPS. When the complete published procedure is flown, ±1 NM linear scaling is provided until two (2) NM prior to the FAF, where the sensitivity increases to be similar to the angular scaling of an ILS. There are two differences in the WAAS scaling and ILS: 1) on long final approach segments, the initial scaling will be ±0.3 NM to achieve equivalent performance to GPS (and better than ILS, which is less sensitive far from the runway); 2) close to the runway threshold, the scaling changes to linear instead of continuing to become more sensitive. The width of the final approach course is tailored so that the total width is usually 700 feet at the runway threshold. Since the origin point of the lateral splay for the angular portion of the final is not fixed due to antenna placement like localizer, the splay angle can remain fixed, making a consistent width of final for aircraft being vectored onto the final approach course on different length runways. When the complete published procedure is not flown, and instead the aircraft needs to capture the extended final approach course similar to ILS, the vector to final (VTF) mode is used. Under VTF, the scale is linear at ±1 NM until the point where the ILS angular splay reaches a width of ±1 NM regardless of the distance from the FAWP.

17.4.5 The WAAS scaling is also different than GPS TSO–C129 in the initial portion of the missed approach. Two differences occur here. First, the scaling abruptly changes from the approach scaling to the missed approach scaling, at approximately the departure end of the runway or when the pilot selects missed approach guidance rather than ramping as GPS does. Second, when the first leg of the missed approach is a Track to Fix (TF) leg aligned within 3 degrees of the inbound course, the receiver will change to 0.3 NM linear sensitivity until the turn initiation point for the first waypoint in the missed approach procedure, at which time it will abruptly change to terminal (±1 NM) sensitivity. This allows the elimination of close in obstacles in the early part of the missed approach that may otherwise cause the DA to be raised.

17.4.6 There are two ways to select the final approach segment of an instrument approach. Most receivers use menus where the pilot selects the airport, the runway, the specific approach procedure and finally the IAF, there is also a channel number selection method. The pilot enters a unique 5–digit number provided on the approach chart, and the receiver recalls the matching final approach segment from the aircraft database. A list of information including the available IAFs is displayed and the pilot selects the appropriate IAF. The pilot should confirm that the correct final approach segment was loaded by cross checking the Approach ID, which is also provided on the approach chart.

17.4.7 The Along–Track Distance (ATD) during the final approach segment of an LNAV procedure (with a minimum descent altitude) will be to the M A W P. On LNAV/VNAV and LPV approaches to a decision altitude, there is no missed approach waypoint so the along–track distance is displayed to a point normally located at the runway threshold. In most cases, the M A W P for the LNAV approach is located on the runway threshold at the centerline, so these distances will be the same. This distance will always vary slightly from any ILS DME that may be present, since the ILS DME is located further down the runway.

Initiation of the missed approach on the LNAV/VNAV and LPV approaches is still based on reaching the decision altitude (and better than ILS, which is less sensitive far from the runway). Once the IAF is visible, and must not be delayed while waiting for the ATD to reach zero. The WAAS receiver, unlike a GPS receiver, will automatically sequence past the M A W P if the missed approach procedure has been designed for RNA V. The pilot may also select missed approach prior to the M A W P; however, navigation will continue to the M A W P prior to waypoint sequencing taking place.

18. Ground Based Augmentation System (GBAS) Landing System (GLS)

18.1 A GBAS ground installation at an airport can provide localized, differential augmentation to the Global Positioning System (GPS) signal—in–space enabling an aircraft’s GLS precision approach capability. Through the GBAS service and the aircraft’s GLS installation a pilot may complete an instrument approach offering three–dimensional angular lateral, and vertical guidance for exact alignment and descent to a runway. The operational benefits of a GLS approach are similar to the benefits of an ILS or LPV approach operation.
NOTE –
To remain consistent with international terminology, the FAA will use the term GBAS in place of the former term Local Area Augmentation System (LAAS).

18.2 An aircraft’s GLS approach capability relies on the broadcast from a GBAS Ground Facility (GGF) installation. The GGF installation includes at least four ground reference stations near the airport’s runway(s), a corrections processor, and a VHF Data Broadcast (VDB) uplink antenna. To use the GBAS GGF output and be eligible to conduct a GLS approach, the aircraft requires eligibility to conduct RNP approach (RNP APCH) operations and must meet the additional, specific airworthiness requirements for installation of a GBAS receiver intended to support GLS approach operations. When the aircraft achieves GLS approach eligibility, the aircraft’s onboard navigation database may then contain published GLS instrument approach procedures.

18.3 During a GLS instrument approach procedure, the installation of an aircraft’s GLS capability provides the pilot three-dimensional (3D) lateral and vertical navigation guidance much like an ILS instrument approach. GBAS corrections augment the GPS signal-in-space by offering position corrections, ensures the availability of enhanced integrity parameters, and then transmits the actual approach path definition over the VDB uplink antenna. A single GBAS ground station can support multiple GLS approaches to one or more runways.

18.4 Through the GBAS ground station, a GLS approach offers a unique operational service volume distinct from the traditional ILS approach service volume (see FIG ENR 4.1–4). However, despite the unique service volume, in the final approach segment, a GLS approach provides precise 3D angular lateral and vertical guidance mimicking the precision guidance of an ILS approach.

18.5 Transitions to and segments of the published GLS instrument approach procedures may rely on use of RNAV 1 or RNP 1 prior to an IAF. Then, during the approach procedure prior to the aircraft entering the GLS approach mode, a GLS approach procedure design uses the RNP APCH procedure design criteria to construct the procedural path (the criteria used to publish procedures titled “RNAV (GPS)” in the US). Thus, a GLS approach procedure may include paths requiring turns after the aircraft crosses the IAF, prior to the aircraft’s flight guidance entering the GLS approach flight guidance mode. Likewise, the missed approach procedure for a GLS approach procedure relies exclusively on the same missed approach criteria supporting an RNP APCH.

18.6 When maneuvering the aircraft in compliance with an ATC clearance to intercept a GLS approach prior to the final approach segment (e.g. “being vectored”), the pilot should adhere to the clearance and ensure the aircraft intercepts the extended GLS final approach course within the specified service volume. Once on the GLS final approach course, the pilot should ensure the aircraft is in the GLS approach mode prior to reaching the procedure’s glidepath intercept point. Once the aircraft is in the GLS flight guidance mode and captures the GLS glidepath, the pilot should fly the GLS final approach segment using the same pilot techniques they use to fly an ILS final approach or the final approach of an RNAV (GPS) approach flown to LPV minimums. See also the Instrument Procedures Handbook for more information on how to conduct a GLS instrument approach procedure.
19. Precision Approach Systems Other than ILS and GLS

19.1 General

Approval and use of precision approach systems other than ILS and GLS require the issuance of special instrument approach procedures.

19.2 Special Instrument Approach Procedure

19.2.1 Special instrument approach procedures must be issued to the aircraft operator if pilot training, aircraft equipment, and/or aircraft performance is different than published procedures. Special instrument approach procedures are not distributed for general public use. These procedures are issued to an aircraft operator when the conditions for operations approval are satisfied.

19.2.2 General aviation operators requesting approval for special procedures should contact the local Flight Standards District Office to obtain a letter of authorization. Air carrier operators requesting approval for use of special procedures should contact their Certificate Holding District Office for authorization through their Operations Specification.

19.3 Transponder Landing System (TLS)

19.3.1 The TLS is designed to provide approach guidance utilizing existing airborne ILS localizer, glide slope, and transponder equipment.

19.3.2 Ground equipment consists of a transponder interrogator, sensor arrays to detect lateral and vertical position, and ILS frequency transmitters. The TLS detects the aircraft’s position by interrogating its transponder. It then broadcasts ILS frequency signals to guide the aircraft along the desired approach path.

19.3.3 TLS instrument approach procedures are designated Special Instrument Approach Procedures. Special aircrew training is required. TLS ground equipment provides approach guidance for only one
aircraft at a time. Even though the TLS signal is received using the ILS receiver, no fixed course or glidepath is generated. The concept of operation is very similar to an air traffic controller providing radar vectors, and just as with radar vectors, the guidance is valid only for the intended aircraft. The TLS ground equipment tracks one aircraft, based on its transponder code, and provides correction signals to course and glidepath based on the position of the tracked aircraft. Flying the TLS corrections computed for another aircraft will not provide guidance relative to the approach; therefore, aircrews must not use the TLS signal for navigation unless they have received approach clearance and completed the required coordination with the TLS ground equipment operator. Navigation fixes based on conventional NAVAIDs or GPS are provided in the special instrument approach procedure to allow aircrews to verify the TLS guidance.

19.4 Special Category I Differential GPS (SCAT−I DGPS)

19.4.1 The SCAT−I DGPS is designed to provide approach guidance by broadcasting differential correction to GPS.

19.4.2 SCAT−I DGPS procedures require aircraft equipment and pilot training.

19.4.3 Ground equipment consists of GPS receivers and a VHF digital radio transmitter. The SCAT−I DGPS detects the position of GPS satellites relative to GPS receiver equipment and broadcasts differential corrections over the VHF digital radio.

19.4.4 Category I Ground Based Augmentation System (GBAS) will displace SCAT−I DGPS as the public−use service.

20. Area Navigation

20.1 General

20.1.1 Area Navigation (RNAV) provides enhanced navigational capability to the pilot. RNAV equipment can compute the airplane position, actual track and ground speed and then provide meaningful information relative to a route of flight selected by the pilot. Typical equipment will provide the pilot with distance, time, bearing and crosstrack error relative to the selected “TO” or “active” waypoint and the selected route. Several navigational systems with different navigational performance characteristics are capable of providing area navigational functions. Present day RNAV includes INS, VOR/DME, and GPS systems. Modern multi−sensor systems can integrate one or more of the above systems to provide a more accurate and reliable navigational system. Due to the different levels of performance, area navigational capabilities can satisfy different levels of required navigation performance (RNP).

20.2 RNAV Operations Incorporating RNP

20.2.1 During the past four decades, domestic and international air navigation have been conducted using a system of airways and instrument procedures based upon ground−based navigational systems such as NDB, VOR, and ILS. Reliance on ground−based navigational systems has served the aviation community well, but often results in less than optimal routes or instrument procedures and an inefficient use of airspace. With the widespread deployment of RNAV systems and the advent of GPS−based navigation, greater flexibility in defining routes, procedures, and airspace design is now possible with an associated increase in flight safety. To capitalize on the potential of RNAV systems, both the FAA and International Civil Aviation Organization (ICAO) are affecting a shift toward a new standard of navigation and airspace management called RNP.

20.2.2 Navigational systems are typically described as being sensor specific, such as a VOR or ILS system. By specifying airspace requirements as RNP, various navigation systems or combination of systems may be used as long as the aircraft can achieve the RNP. RNP is intended to provide a single performance standard that can be used and applied by aircraft and aircraft equipment manufacturers, airspace planners, aircraft certification and operations, pilots and controllers, and international aviation authorities. RNP can be applied to obstacle clearance or aircraft separation requirements to ensure a consistent application level.

20.2.3 ICAO has defined RNP values for the four typical navigation phases of flight: oceanic, en route, terminal, and approach. The RNP applicable to a selected airspace, route, or procedure is designated by its RNP Level or Type. As defined in the Pilot/Controller Glossary, the RNP Level or Type is a value typically expressed as a distance, in nautical miles, from the procedure, route or path within which an aircraft would typically operate. RNP applications also provide performance to protect against larger
errors at some multiple of RNP level (e.g., twice the RNP level).

20.3 Standard RNP Levels

20.3.1 U.S. standard values supporting typical RNP airspace are as specified in TBL ENR 4.1–6 below. Other RNP levels as identified by ICAO, other states and the FAA may also be used.

<table>
<thead>
<tr>
<th>RNP Level</th>
<th>Typical Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Approach</td>
</tr>
<tr>
<td>1</td>
<td>Departure, Terminal</td>
</tr>
<tr>
<td>2</td>
<td>En Route</td>
</tr>
</tbody>
</table>

20.3.1.1 Application of Standard RNP Levels. U.S. standard levels of RNP typically used for various routes and procedures supporting RNAV operations may be based on use of a specific navigational system or sensor such as GPS, or on multi-sensor RNAV systems having suitable performance. New RNAV routes and procedures will be FAA’s first public use procedures to include a specified RNP level. These procedures are being developed based on earth referenced navigation and do not rely on conventional ground-based navigational aids. Unless otherwise noted on affected charts or procedures, depiction of a specified RNP level will not preclude the use of other airborne RNAV navigational systems.

20.3.1.2 Depiction of Standard RNP Levels. The applicable RNP level will be depicted on affected charts and procedures. For example, an RNAV departure procedure may contain a notation referring to eligible aircraft by equipment suffix and a phrase “or RNP=1.0.” A typical RNAV approach procedure may include a notation referring to eligible aircraft by specific navigation sensor(s), equipment suffix, and a phrase “or RNP=0.3.” Specific guidelines for the depiction of RNP levels will be provided through chart bulletins and accompany affected charting changes.

20.4 Aircraft and Airborne Equipment Eligibility for RNP Operations. Aircraft meeting RNP criteria will have an appropriate entry including special conditions and limitations, if any, in its Aircraft/Rotorcraft Flight Manual (AFM), or supplement. RNAV installations with AFM—RNP certification based on GPS or systems integrating GPS are considered to meet U.S. standard RNP levels for all phases of flight. Aircraft with AFM—RNP certification without GPS may be limited to certain RNP levels, or phases of flight. For example, RNP based on DME/DME without other augmentation may not be appropriate for phases of flight outside the certified DME service volume. Operators of aircraft not having specific AFM—RNP certification may be issued operational approval including special conditions and limitations, if any, for specific RNP levels. Aircraft navigation systems eligible for RNP airspace will be indicated on charts, or announced through other FAA media such as NOTAMs and chart bulletins.

20.5 Understanding RNP Operations. Pilots should have a clear understanding of the aircraft requirements for operation in a given RNP environment, and advise ATC if an equipment failure or other malfunction causes the aircraft to lose its ability to continue operating in the designated RNP airspace. When a pilot determines a specified RNP level cannot be achieved, he/she should be prepared to revise the route, or delay the operation until an appropriate RNP level can be ensured. Some airborne systems use terms other than RNP to indicate the current level of performance. Depending on the airborne system implementation, this may be displayed, and referred to, as actual navigation performance (ANP), estimate of position error (EPE), or other.

20.6 Other RNP Applications Outside the U.S. The FAA, in cooperation with ICAO member states has led initiatives in implementing the RNP concept to oceanic operations. For example, RNP−10 routes have been established in the Northern Pacific (NOPAC) which has increased capacity and efficiency by reducing the distance between tracks to 50 NM. Additionally, the FAA has assisted those U.S. air carriers operating in Europe where the routes have been designated as RNP−5. TBL ENR 4.1–7 below, shows examples of current and future RNP levels of airspace.
RNP Levels Supported for International Operations

<table>
<thead>
<tr>
<th>RNP Level</th>
<th>Typical Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Projected for oceanic/remote areas where 30 NM horizontal separation is applied</td>
</tr>
<tr>
<td>5</td>
<td>European Basic RNAV (B–RNAV)</td>
</tr>
<tr>
<td>10</td>
<td>Oceanic/remote areas where 50 NM horizontal separation is applied</td>
</tr>
</tbody>
</table>

20.7 RNAV and RNP Operations

20.7.1 Pilot

20.7.1.1 If unable to comply with the requirements of an RNAV or RNP procedure, pilots must advise air traffic control as soon as possible. For example, “N1234, failure of GPS system, unable RNAV, request amended clearance.”

20.7.1.2 Pilots are not authorized to fly a published RNAV or RNP procedure (instrument approach, departure, or arrival procedure) unless it is retrievable by the procedure name from the current aircraft navigation database and conforms to the charted procedure. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

20.7.1.3 Whenever possible, RNAV routes (Q– or T–route) should be extracted from the database in their entirety, rather than loading RNAV route waypoints from the database into the flight plan individually. However, selecting and inserting individual, named fixes from the database is permitted, provided all fixes along the published route to be flown are inserted.

20.7.1.4 Pilots must not change any database waypoint type from a fly–by to fly–over, or vice versa. No other modification of database waypoints or the creation of user–defined waypoints on published RNAV or RNP procedures is permitted, except to:

a) Change altitude and/or airspeed waypoint constraints to comply with an ATC clearance/instruction.

b) Insert a waypoint along the published route to assist in complying with ATC instruction, example, “Descend via the WILMS arrival except cross 30 north of BRUCE at/or below FL 210.” This is limited only to systems that allow along–track waypoint construction.

20.7.1.5 Pilots of FMS–equipped aircraft, who are assigned an RNAV DP or STAR procedure and subsequently receive a change of runway, transition or procedure, must verify that the appropriate changes are loaded and available for navigation.

20.7.1.6 For RNAV 1 DPs and STARS, pilots must use a CDI, flight director and/or autopilot, in lateral navigation mode. Other methods providing an equivalent level of performance may also be acceptable.

20.7.1.7 For RNAV 1 DPs and STARS, pilots of aircraft without GPS, using DME/DME/IRU, must ensure the aircraft navigation system position is confirmed, within 1,000 feet, at the start point of take–off roll. The use of an automatic or manual runway update is an acceptable means of compliance with this requirement. Other methods providing an equivalent level of performance may also be acceptable.

20.7.1.8 For procedures or routes requiring the use of GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.

20.7.1.9 RNAV terminal procedures (DP and STAR) may be amended by ATC issuing radar vectors and/or clearances direct to a waypoint. Pilots should avoid premature manual deletion of waypoints from their active “legs” page to allow for rejoining procedures.

20.7.1.10 RAIM Prediction: If TSO–C129 equipment is used to solely satisfy the RNAV and RNP requirement, GPS RAIM availability must be confirmed for the intended route of flight (route and time). If RAIM is not available, pilots need an approved alternate means of navigation.

REFERENCE – AIP, RNAV and RNP Operations, ENR 1.10 Para 11.3.

20.7.1.11 Definition of “established” for RNAV and RNP operations: An aircraft is considered to be established on-course during RNAV and RNP operations anytime it is within 1 times the required accuracy for the segment being flown. For example, while operating on a Q–Route (RNAV 2), the aircraft is considered to be established on-course when it is within 2 nm of the course centerline.
NOTE –
Pilots must be aware of how their navigation system operates, along with any AFM limitations, and confirm that the aircraft's lateral deviation display (or map display if being used as an allowed alternate means) is suitable for the accuracy of the segment being flown. Automatic scaling and alerting changes are appropriate for some operations. For example, TSO-C129 systems change within 30 miles of destination and within 2 miles of FAF to support approach operations. For some navigation systems and operations, manual selection of scaling will be necessary.

(a) Pilots flying FMS equipped aircraft with barometric vertical navigation (Baro-VNAV) may descend when the aircraft is established on-course following FMS leg transition to the next segment. Leg transition normally occurs at the turn bisector for a fly-by waypoint (reference paragraph 1-2-1 for more on waypoints). When using full automation, pilots should monitor the aircraft to ensure the aircraft is turning at appropriate lead times and descending once established on-course.

(b) Pilots flying TSO-C129 navigation system equipped aircraft without full automation should use normal lead points to begin the turn. Pilots may descend when established on-course on the next segment of the approach.

21. NAVAID Identifier Removal During Maintenance

21.1 During periods of routine or emergency maintenance, coded identification (or code and voice, where applicable) is removed from certain FAA NAVAIDs. Removal of the identification serves as warning to pilots that the facility is officially off the air for tune-up or repair and may be unreliable even though intermittent or constant signals are received.

NOTE –
During periods of maintenance, VHF ranges may radiate a T-E-S-T code (— ● ● ● —).

NOTE –
DO NOT attempt to fly a procedure that is NOTAMed out of service even if the identification is present. In certain cases, the identification may be transmitted for short periods as part of the testing.

22. User Reports Requested on NAVAID Outages

22.1 Users of the National Airspace System (NAS) can render valuable assistance in the early correction of NAVAID malfunctions or GNSS problems and are encouraged to report their observations of undesirable avionics performance. Although NAVAIDs are monitored by electronic detectors, adverse effects of electronic interference, new obstructions or changes in terrain near the NAVAID can exist without detection by the ground monitors. Some of the characteristics of malfunction or deteriorating performance which should be reported are: erratic course or bearing indications; intermittent, or full, flag alarm; garbled, missing or obviously improper coded identification; poor quality communications reception; or, in the case of frequency interference, an audible hum or tone accompanying radio communications or NAVAID identification. GNSS problems are often characterized by navigation degradation or service loss indications. For instance, pilots conducting operations in areas where there is GNSS interference may be unable to use GPS for navigation, and ADS-B may be unavailable for surveillance. Radio frequency interference may affect both navigation for the pilot and surveillance by the air traffic controller. Depending on the equipment and integration, either an advisory light or message may alert the pilot. Air traffic controllers monitoring ADS-B reports may stop receiving ADS-B position messages and associated aircraft tracks.

In addition, malfunctioning, faulty, inappropriately installed, operated, or modified GPS re-radiator systems, intended to be used for aircraft maintenance activities, have resulted in unintentional disruption of aviation GNSS receivers. This type of disruption could result in unflagged, erroneous position information output to primary flight displays/indicators and to other aircraft and air traffic control systems. Since receiver autonomous integrity monitoring (RAIM) is only partially effective against this type of disruption (effectively a “signal spoofing”), the pilot may not be aware of any erroneous navigation indications; ATC may be the only means available for identification of these disruptions and detect unexpected aircraft position while monitoring aircraft for IFR separation.

22.2 Malfunctioning, faulty, inappropriately installed, operated, or modified GPS re-radiator systems, intended to be used for aircraft maintenance activities, have resulted in unintentional disruption of aviation GPS receivers. This type of disruption could result in unflagged, erroneous position information output to primary flight displays/indicators and to other aircraft and air traffic control systems. Since Receiver Autonomous Integrity Monitoring (RAIM) is only partially effective against this type of...
disruption (effectively a “signal spoofing”), the pilot may not be aware of any erroneous navigation indications; ATC may be the only means available to identify these disruptions and detect unexpected aircraft positions while monitoring aircraft for IFR separation.

22.3 Pilots encountering navigation error events should transition to another source of navigation and request amended clearances from ATC as necessary.

22.4 Pilots are encouraged to submit detailed reports of NAVAID or GPS anomaly as soon as practical. Pilot reports of navigation error events should contain the following information:

22.4.1 Date and time the anomaly was observed, and NAVAID ID (or GPS).

22.4.2 Location of the aircraft at the time the anomaly started and ended (e.g., latitude/longitude or bearing/distance from a reference point),

22.4.3 Heading, altitude, type of aircraft (make/model/call sign).

22.4.4 Type of avionics/receivers in use (e.g., make/model/software series or version).

22.4.5 Number of satellites being tracked, if applicable.

22.4.6 Description of the position/navigation/timing condition observed; and duration of the event.

22.4.7 Consequences/operational impact(s) of the NAVAID or GPS loss.

22.4.8 Actions taken to mitigate the anomaly and/or remedy provided by the ATC facility.

22.4.9 Post flight pilot/maintenance actions taken.

22.5 Pilots operating an aircraft in controlled airspace under IFR shall comply with CFR § 91.187 and promptly report as soon as practical to ATC any malfunctions of navigational equipment occurring in-flight; pilots should submit initial reports:

22.5.1 Immediately, by radio to the controlling ATC facility or FSS.

22.5.2 By telephone to the nearest ATC facility controlling the airspace where the disruption was experienced.

22.5.3 Additionally, GPS problems should be reported, post flight, by Internet via the GPS Anomaly Reporting Form at http://www.faa.gov/air_traffic/nas/gps_reports/.

22.6 To minimize ATC workload, GPS interference/outages associated with known testing NOTAMs should NOT be reported in-flight to ATC in detail; EXCEPT when:

22.6.1 GPS degradation is experienced outside the NOTAM ed area.

22.6.2 Pilot observes any unexpected consequences (e.g., equipment failure, suspected spoofing, failure of other aircraft systems not identified in AFM, such as TAWS).

23. Radio Communications and Navigation Facilities

23.1 A complete listing of air traffic radio communications facilities and frequencies and radio navigation facilities and frequencies are contained in the Chart Supplement U.S. Similar information for the Pacific and Alaskan areas is contained in the Chart Supplements Pacific and Alaska.
ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, Restricted, and Other Areas

1. Special Use Airspace

1.1 General

1.1.1 Special use airspace (SUA) consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both. SUA areas are depicted on aeronautical charts, except for controlled firing areas (CFA), temporary military operations areas (MOA), and temporary restricted areas.

1.1.2 Prohibited and restricted areas are regulatory special use airspace and are established in 14 CFR Part 73 through the rulemaking process.

1.1.3 Warning areas, MOAs, alert areas, CFAs, and national security areas (NSA) are nonregulatory special use airspace.

1.1.4 Special use airspace descriptions (except CFAs) are contained in FAA Order JO 7400.10, Special Use Airspace.

1.1.5 Permanent SUA (except CFAs) is charted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route charts, and include the hours of operation, altitudes, and the controlling agency.

1.2 Prohibited Areas

1.2.1 Prohibited areas contain airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft is prohibited. Such areas are established for security or other reasons associated with the national welfare. These areas are published in the Federal Register and are depicted on aeronautical charts.

1.3 Restricted Areas

1.3.1 Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature or limitations imposed upon aircraft operations that are not a part of those activities or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas are published in the Federal Register and constitute 14 CFR Part 73.

1.3.2 ATC facilities apply the following procedures when aircraft are operating on an IFR clearance (including those cleared by ATC to maintain VFR−on−top) via a route which lies within joint−use restricted airspace.

1.3.2.1 If the restricted area is not active and has been released to the controlling agency (FAA), the ATC facility will allow the aircraft to operate in the restricted airspace without issuing specific clearance for it to do so.

1.3.2.2 If the restricted area is active and has not been released to the controlling agency (FAA), the ATC facility will issue a clearance which will ensure the aircraft avoids the restricted airspace unless it is on an approved altitude reservation mission or has obtained its own permission to operate in the airspace and so informs the controlling facility.

NOTE−
The above apply only to joint−use restricted airspace and not to prohibited and nonjoint−use airspace. For the latter categories, the ATC facility will issue a clearance so the aircraft avoids the restricted airspace unless it is on an approved altitude reservation mission or has obtained its own permission to operate in the airspace and so informs the controlling facility.

1.3.3 Permanent restricted areas are charted on Sectional Aeronautical, VFR Terminal Area, and the appropriate En Route charts.

NOTE−
Temporary restricted areas are not charted. For temporary restricted areas, pilots should review the Domestic Notices found in the External Links section of the Federal NOTAM System (FNS) NOTAM Search or Air Traffic Plans and Publications website, the FAA SUA website, and/or contact the appropriate overlying ATC facility to determine the effect of non−depicted SUA areas along their routes of flight.
1.4 Warning Areas

1.4.1 A warning area is airspace of defined dimensions, extending from three nautical miles outward from the coast of the U.S., that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning areas is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

2. Other Airspace Areas

2.1 National Security Areas

2.1.1 NSAs consist of airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security and safety of ground facilities. Pilots are requested to voluntarily avoid flying through the depicted NSA. When it is necessary to provide a greater level of security and safety, flight in NSAs may be temporarily prohibited by regulation under the provisions of 14 CFR Section 99.7. Regulatory prohibitions will be issued by System Operations Security and disseminated via NOTAM. Inquiries about NSAs should be directed to System Operations Security.

2.2 Temporary Flight Restrictions

2.2.1 General. This paragraph describes the types of conditions under which the FAA may impose temporary flight restrictions. It also explains which FAA elements have been delegated authority to issue a temporary flight restrictions NOTAM and lists the types of responsible agencies/offices from which the FAA will accept requests to establish temporary flight restrictions. The 14 CFR is explicit as to what operations are prohibited, restricted, or allowed in a temporary flight restrictions area. Pilots are responsible to comply with 14 CFR Sections 91.137, 91.138, 91.141, and 91.143 when conducting flight in an area where a temporary flight restrictions area is in effect, and should check appropriate NOTAMs during flight planning.

2.2.2 The purpose for establishing a temporary flight restrictions area is to:

2.2.2.1 Protect persons and property in the air or on the surface from an existing or imminent hazard associated with an incident on the surface when the presence of low-flying aircraft would magnify, alter, spread, or compound that hazard (14 CFR Section 91.137(a)(1)).

2.2.2.2 Provide a safe environment for the operation of disaster relief aircraft (14 CFR Section 91.137(a)(2)).

2.2.2.3 Prevent an unsafe congestion of sightseeing aircraft above an incident or event which may generate a high degree of public interest (14 CFR Section 91.137(a)(3)).

2.2.2.4 Protect declared national disasters for humanitarian reasons in the State of Hawaii (14 CFR Section 91.138).

2.2.2.5 Protect the President, Vice President, or other public figures (14 CFR Section 91.141).

2.2.2.6 Provide a safe environment for space agency operations (14 CFR Section 91.143).

2.2.3 Except for hijacking situations, when the provisions of 14 CFR Section 91.137(a)(1) or (a)(2) are necessary, a temporary flight restrictions area will only be established by or through the area manager at the Air Route Traffic Control Center (ARTCC) having jurisdiction over the area concerned. A temporary flight restrictions NOTAM involving the conditions of 14 CFR Section 91.137(a)(3) will be issued at the direction of the service area office director having oversight of the airspace concerned. When hijacking situations are involved, a temporary flight restrictions area will be implemented through the TSA Aviation Command Center. The appropriate FAA air traffic element, upon receipt of such a request, will establish a temporary flight restrictions area under 14 CFR Section 91.137(a)(1).

2.2.4 The FAA accepts recommendations for the establishment of a temporary flight restrictions area under 14 CFR Section 91.137(a)(1) from military major command headquarters, regional directors of the Office of Emergency Planning, Civil Defense State Directors, State Governors, or other similar authority. For the situations involving 14 CFR Section 91.137(a)(2), the FAA accepts recommendations from military commanders serving as regional, subregional, or Search and Rescue (SAR) coordinators; by military commanders directing or coordinating air operations associated with disaster relief; or by civil authorities directing or coordinating organized relief air operations (includes representatives of the Office of Emergency Planning, U.S. Forest Service, and State aeronautical agencies). Appropriate
2.3.2 Pilots of aircraft engaged in parachute jump operations are reminded that all reported altitudes must be with reference to mean sea level, or flight level, as appropriate, to enable ATC to provide meaningful traffic information.

2.3.3 Parachute Operations in the Vicinity of an Airport Without an Operating Control Tower. There is no substitute for alertness while in the vicinity of an airport. It is essential that pilots conducting parachute operations be alert, look for other traffic, and exchange traffic information as recommended in GEN 3.3, paragraph 9.2, Traffic Advisory Practices at Airports Without Operating Control Towers. In addition, pilots should avoid releasing parachutes while in an airport traffic pattern when there are other aircraft in that pattern. Pilots should make appropriate broadcasts on the designated Common Traffic Advisory Frequency (CTAF), and monitor that CTAF until all parachute activity has terminated or the aircraft has left the area. Prior to commencing a jump operation, the pilot should broadcast the aircraft’s altitude and position in relation to the airport, the approximate relative time when the jump will commence and terminate, and listen to the position reports of other aircraft in the area.

2.4 Special Air Traffic Rules (SATR) and Special Flight Rules Area (SFRA)

2.4.1 Background. The Code of Federal Regulations (CFR) prescribes special air traffic rules for aircraft operating within the boundaries of certain designated airspace. These areas are listed in 14 CFR Part 93 and can be found throughout the NAS. Procedures, nature of operations, configuration, size, and density of traffic vary among the identified areas.

2.4.2 SFRA. Airspace of defined dimensions, above land areas or territorial waters, within which the flight of aircraft is subject to the rules set forth in 14 CFR Part 93, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR Part 93 are designated SFRA, but special air traffic rules apply to all areas described in 14 CFR Part 93.

2.4.3 Participation. Each person operating an aircraft to, from, or within airspace designated as a SATR area or SFRA must adhere to the special air traffic rules set forth in 14 CFR Part 93, as applicable, unless otherwise authorized or required by ATC.

2.4.4 Charts. SFRAs are depicted on VFR sectional, terminal area, and helicopter route charts. (See FIG ENR 5.1–1.)

2.5 Weather Reconnaissance Area (WRA)

2.5.1 General. Hurricane Hunters from the United States Air Force Reserve 53rd Weather Reconnaissance Squadron (WRS) and the National Oceanic and Atmospheric Administration (NOAA) Aircraft Operations Center (AOC) operate weather reconnaissance/research aircraft missions, in support of the National Hurricane Operations Plan (NHOP), to gather meteorological data on hurricanes and tropical cyclones. 53rd WRS and NOAA AOC aircraft normally conduct these missions in airspace identified in a published WRA Notice to Air Missions (NOTAM).

2.5.2 WRAs. Airspace with defined dimensions and published by a NOTAM, which is established to support weather reconnaissance/research flights. ATC services are not provided within WRAs. Only participating weather reconnaissance/research aircraft from the 53rd WRS and NOAA AOC are permitted to operate within a WRA. A WRA may only be established in airspace within U.S. Flight Information Regions (FIR) outside of U.S. territorial airspace.

2.5.3 A published WRA NOTAM describes the airspace dimensions of the WRA and the expected activities within the WRA. WRAs may border adjacent foreign FIRs, but are wholly contained within U.S. FIRs. As ATC services are not provided within a WRA, non-participating aircraft should avoid WRAs, and IFR aircraft should expect to be rerouted to avoid WRAs.
ENR 5.7 Potential Flight Hazards

1. Accident Causal Factors

1.1 The ten most frequent cause factors for General Aviation Accidents in 1992 that involve the pilot in command are:

1.1.1 Inadequate preflight preparation and/or planning.
1.1.2 Failure to obtain/maintain flying speed.
1.1.3 Failure to maintain direction control.
1.1.4 Improper level off.
1.1.5 Failure to see and avoid objects or obstructions.
1.1.6 Mismanagement of fuel.
1.1.7 Improper in-flight decisions or planning.
1.1.8 Misjudgment of distance and speed.
1.1.9 Selection of unsuitable terrain.
1.1.10 Improper operation of flight controls.

1.2 The above factors have continued to plague General Aviation pilots over the years. This list remains relatively stable and points out the need for continued refresher training to establish a higher level of flight proficiency for all pilots. As part of the FAA’s continuing effort to promote increased aviation safety is the Aviation Safety Program. For information on the FAA’s Aviation Safety Program, readers can contact their nearest Flight Standards District Office’s Safety Program Manager.

1.3 Be alert at all times, especially when the weather is good. Most pilots pay attention to business when they are operating in full IFR weather conditions, but strangely, air collisions almost invariably have occurred under ideal weather conditions. Unlimited visibility appears to encourage a sense of security which is not at all justified. Considerable information of value may be obtained by listening to advisories being issued in the terminal area, even though controller workload may prevent a pilot from obtaining individual service.

1.4 If you think another aircraft is too close to you, give way instead of waiting for the other pilot to respect the right-of-way angle after you have completed your flight.

2. VFR In Congested Area

2.1 A high percentage of near midair collisions occur below 8,000 feet AGL and within 30 miles of an airport. When operating VFR in highly congested areas, whether you intend to land at an airport within the area or are just flying through, it is recommended that extra vigilance be maintained and that you monitor an appropriate control frequency. Normally the appropriate frequency is an approach control frequency. By such monitoring action you can “get the picture” of the traffic in your area. When the approach controller has radar, traffic advisories may be given to VFR pilots who request them, subject to the provisions included in ENR 1.1, paragraph 37.10.4, Radar Traffic Information Service (RTIS).

3. Obstructions to Flight

3.1 General

3.1.1 Many structures exist that could significantly affect the safety of your flight when operating below 500 feet above ground level (AGL), and particularly below 200 feet AGL. While 14 CFR Section 91.119 allows flight below 500 AGL when over sparsely populated areas or open water, such operations are very dangerous. At and below 200 feet AGL there are numerous power lines, antenna towers, etc., that are not marked and lighted as obstructions and therefore may not be seen in time to avoid a collision. Notices to Air Missions (NOTAM) are issued on those lighted structures experiencing temporary light outages. However, some time may pass before the FAA is notified of these outages, and the NOTAM issued, thus pilot vigilance is imperative.

3.2 Antenna Towers

3.2.1 Extreme caution should be exercised when flying less than 2,000 feet above ground level (AGL) because of numerous skeletal structures, such as radio and television antenna towers, that exceed 1,000 feet AGL with some extending higher than 2,000 feet AGL. Most skeletal structures are supported by guy wires which are very difficult to see in good weather and can be invisible at dusk or during
periods of reduced visibility. These wires can extend about 1,500 feet horizontally from a structure; therefore, all skeletal structures should be avoided horizontally by at least 2,000 feet. Additionally, new towers may not be on your current chart because the information was not received prior to the printing of the chart.

3.3 Overhead Wires

3.3.1 Overhead transmission and utility lines often span approaches to runways, natural flyways such as lakes, rivers, gorges, and canyons, and cross other landmarks pilots frequently follow such as highways, railroad tracks, etc. As with antenna towers, these high voltage/power lines or the supporting structures of these lines may not always be readily visible and the wires may be virtually impossible to see under certain conditions. In some locations, the supporting structures of overhead transmission lines are equipped with unique sequence flashing white strobe light systems to indicate that there are wires between the structures. However, many power lines do not require notice to the FAA and, therefore, are not marked and/or lighted. Many of those that do require notice do not exceed 200 feet AGL or meet the Obstruction Standard of 14 CFR Part 77 and, therefore, are not marked and/or lighted. All pilots are cautioned to remain extremely vigilant for these power lines or their supporting structures when following natural flyways or during the approach and landing phase. This is particularly important for seaplane and/or float equipped aircraft when landing on, or departing from, unfamiliar lakes or rivers.

3.4 Other Objects/Structures

3.4.1 There are other objects or structures that could adversely affect your flight such as construction cranes near an airport, newly constructed buildings, new towers, etc. Many of these structures do not meet charting requirements or may not yet be charted because of the charting cycle. Some structures do not require obstruction marking and/or lighting and some may not be marked and lighted even though the FAA recommended it.

4. Avoid Flight Beneath Unmanned Balloons

4.1 The majority of unmanned free balloons currently being operated have, extended below them, either a suspension device to which the payload or instrument package is attached, or a trailing wire antenna, or both. In many instances these balloon subsystems may be invisible to the pilot until his/her aircraft is close to the balloon, thereby creating a potentially dangerous situation. Therefore, good judgment on the part of the pilot dictates that aircraft should remain well clear of all unmanned free balloons and flight below then should be avoided at all times.

4.2 Pilots are urged to report any unmanned free balloons sighted to the nearest FAA ground facility with which communication is established. Such information will assist FAA ATC facilities to identify and flight follow unmanned free balloons operating in the airspace.

5. Unmanned Aircraft Systems

5.1 Unmanned Aircraft Systems (UAS), formerly referred to as “Unmanned Aerial Vehicles” (UAVs) or “drones,” are having an increasing operational presence in the NAS. Once the exclusive domain of the military, UAS are now being operated by various entities. Although these aircraft are “unmanned,” UAS are flown by a remotely located pilot and crew. Physical and performance characteristics of unmanned aircraft (UA) vary greatly and unlike model aircraft that typically operate lower than 400 feet AGL, UA may be found operating at virtually any altitude and any speed. Sizes of UA can be as small as several pounds to as large as a commercial transport aircraft. UAS come in various categories including airplane, rotorcraft, powered—lift (tilt—rotor), and lighter—than—air. Propulsion systems of UAS include a broad range of alternatives from piston powered and turbojet engines to battery and solar—powered electric motors.

5.2 To ensure segregation of UAS operations from other aircraft, the military typically conducts UAS operations within restricted or other special use airspace. However, UAS operations are now being approved in the NAS outside of special use airspace through the use of FAA—issued Certificates of Waiver or Authorization (COA) or through the issuance of a special airworthiness certificate. COA and special airworthiness approvals authorize UAS flight operations to be conducted within specific geographic boundaries and altitudes, usually require coordination with an ATC facility, and typically require the issuance of a NOTAM describing the operation to be conducted. UAS approvals also require observers to
13.8 When laser activities become known to the FAA, Notices to Air Missions (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, Brown Out Conditions, 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 Brown Out. A brownout (or brown—out) is an in—flight visibility restriction due to dust or sand in the air. In a brownout, the pilot cannot see nearby objects which provide the outside visual references necessary to control the aircraft near the ground. This can cause spatial disorientation and loss of situational awareness leading to an accident.

14.2.1 The following factors will affect the probability and severity of brownout: rotor disk loading, rotor configuration, soil composition, wind, approach speed, and approach angle.

14.2.2 The brownout phenomenon causes accidents during helicopter landing and take—off operations in dust, fine dirt, sand, or arid desert terrain. Intense, blinding dust clouds stirred up by the helicopter rotor downwash during near—ground flight causes significant flight safety risks from aircraft and ground obstacle collisions, and dynamic rollover due to sloped and uneven terrain.

14.2.3 This is a dangerous phenomenon experienced by many helicopters when making landing approaches in dusty environments, whereby sand or dust particles become swept up in the rotor outwash and obscure the pilot’s vision of the terrain. This is particularly dangerous because the pilot needs those visual cues from their surroundings in order to make a safe landing.

14.2.4 Blowing sand and dust can cause an illusion of a tilted horizon. A pilot not using the flight instruments for reference may instinctively try to level the aircraft with respect to the false horizon, resulting in an accident. Helicopter rotor wash also causes sand to blow around outside the cockpit windows, possibly leading the pilot to experience an illusion where the helicopter appears to be turning when it is actually in a level hover. This can also cause the pilot to make incorrect control inputs which can quickly lead to disaster when hovering near the ground. In night landings, aircraft lighting can enhance the visual illusions by illuminating the brownout cloud.

14.3 White Out. A 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.

14.4 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.

14.5 Never take off in a white out situation.

14.5.1 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.

14.5.2 Flat light is common to snow skiers. One way to compensate for the lack of visual contrast and depth—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.

14.5.3 So what should a pilot do when all visual references are lost?

14.5.3.1 Trust the cockpit instruments.

14.5.3.2 Execute a 180 degree turnaround and start looking for outside references.

14.5.3.3 Above all—fly the aircraft.

14.6 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.

14.7 Airport Landings.

14.7.1 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.

14.7.2 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.

14.8 Off—Airport Landings.

14.8.1 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.)

14.8.1.1 Over flight.

14.8.1.2 Use of markers.

14.8.1.3 Weighted flags.

14.8.1.4 Smoke bombs.

14.8.1.5 Any colored rags.

14.8.1.6 Dye markers.

14.8.1.7 Kool—aid.

14.8.1.8 Trees or tree branches.

14.8.2 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.

14.8.3 A bord 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.

14.8.4 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.

14.9 Flying Around a Lake.

14.9.1 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.

14.9.2 The same rules apply to seemingly flat areas of snow. If you don’t have good references, avoid going there.

14.10 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.

14.11 Ceilings. Low ceilings have caught many pilots off guard. Clouds do not always form parallel
17. Space Launch and Reentry Area

Locations where commercial space launch and/or reentry operations occur. Hazardous operations occur in space launch and reentry areas, and for pilot awareness, a rocket–shaped symbol is used to depict them on sectional aeronautical charts. These locations may have vertical launches from launch pads, horizontal launches from runways, and/or reentering vehicles coming back to land. Because of the wide range of hazards associated with space launch and reentry areas, pilots are expected to check NOTAMs for the specific area prior to flight to determine the location and lateral boundaries of the associated hazard area, and the active time. NOTAMs may include terms such as “rocket launch activity,” “space launch,” or “space reentry,” depending upon the type of operation. Space launch and reentry areas are not established for amateur rocket operations conducted per 14 CFR Part 101.

**FIG ENR 5.7-3**
Space Launch and Reentry Area Depicted on a Sectional Chart
ENR 6. Helicopter Operations

ENR 6.1 Helicopter IFR Operations

1. Helicopter Flight Control Systems

1.1 The certification requirements for helicopters to operate under Instrument Flight Rules (IFR) are contained in 14 CFR Part 27, Airworthiness Standards: Normal Category Rotorcraft, and 14 CFR Part 29, Airworthiness Standards: Transport Category Rotorcraft. To meet these requirements, helicopter manufacturers usually utilize a set of stabilization and/or Automatic Flight Control Systems (AFCS).

1.2 Typically, these systems fall into the following categories:

1.2.1 Aerodynamic surfaces, which impart some stability or control capability not found in the basic VFR configuration.

1.2.2 Trim systems, which provide a cyclic centering effect. These systems typically involve a magnetic brake/spring device, and may also be controlled by a four-way switch on the cyclic. This is a system that supports “hands on” flying of the helicopter by the pilot.

1.2.3 Stability Augmentation Systems (SASs), which provide short-term rate damping control inputs to increase helicopter stability. Like trim systems, SAS supports “hands on” flying.

1.2.4 Attitude Retention Systems (ATT), which return the helicopter to a selected attitude after a disturbance. Changes in desired attitude can be accomplished usually through a four-way “beep” switch, or by actuating a “force trim” switch on the cyclic, setting the attitude manually, and releasing. Attitude retention may be a SAS function, or may be the basic “hands off” autopilot function.

1.2.5 Autopilot Systems (AP), which provide for “hands off” flight along specified lateral and vertical paths, including heading, altitude, vertical speed, navigation tracking, and approach. These systems typically have a control panel for mode selection, and system for indication of mode status. Autopilots may or may not be installed with an associated Flight Director System (FD). Autopilots typically control the helicopter about the roll and pitch axes (cyclic control) but may also include yaw axis (pedal control) and collective control servos.

1.2.6 FDs, which provide visual guidance to the pilot to fly specific selected lateral and vertical modes of operation. The visual guidance is typically provided as either a “dual cue” (commonly known as a “cross-pointer”) or “single cue” (commonly known as a “vee-bar”) presentation superimposed over the attitude indicator. Some FDs also include a collective cue. The pilot manipulates the helicopter’s controls to satisfy these commands, yielding the desired flight path, or may couple the flight director to the autopilot to perform automatic flight along the desired flight path. Typically, flight director mode control and indication is shared with the autopilot.

1.3 In order to be certificated for IFR operation, a specific helicopter may require the use of one or more of these systems, in any combination.

1.4 In many cases, helicopters are certificated for IFR operations with either one or two pilots. Certain equipment is required to be installed and functional for two pilot operations, and typically, additional equipment is required for single pilot operation. These requirements are usually described in the limitations section of the Rotorcraft Flight Manual (RFM).

1.5 In addition, the RFM also typically defines systems and functions that are required to be in operation or engaged for IFR flight in either the single or two pilot configuration. Often, particularly in two pilot operation, this level of augmentation is less than the full capability of the installed systems. Likewise, single pilot operation may require a higher level of augmentation.

1.6 The RFM also identifies other specific limitations associated with IFR flight. Typically, these limitations include, but are not limited to:

1.6.1 Minimum equipment required for IFR flight (in some cases, for both single pilot and two pilot operations).
1.6.2 $V_{\text{MINI}}$ (minimum speed – IFR).

NOTE - $V_{\text{MINI}}$ – Instrument flight minimum speed, utilized in complying with minimum limit speed requirements for instrument flight.

NOTE - The manufacturer may also recommend a minimum IFR airspeed during instrument approach.

1.6.3 $V_{\text{NEI}}$ (never exceed speed – IFR).

NOTE - $V_{\text{NEI}}$ – Instrument flight never exceed speed, utilized instead of $V_{\text{NE}}$ for compliance with maximum limit speed requirements for instrument flight.

$V_{\text{NE}}$ – Never exceed speed

1.6.4 Maximum approach angle.

1.6.5 Weight and center of gravity limits.

1.6.6 Aircraft configuration limitations (such as aircraft door positions and external loads).

1.6.7 Aircraft system limitations (generators, inverters, etc.).

1.6.8 System testing requirements (many avionics and AFCS/AP/FD systems incorporate a self-test feature).

1.6.9 Pilot action requirements (such as the pilot must have his/her hands and feet on the controls during certain operations, such as during instrument approach below certain altitudes).

1.7 It is very important that pilots be familiar with the IFR requirements for their particular helicopter. Within the same make, model and series of helicopter, variations in the installed avionics may change the required equipment or the level of augmentation for a particular operation.

1.8 During flight operations, pilots must be aware of the mode of operation of the augmentation systems, and the control logic and functions employed. For example, during an ILS approach using a particular system in the three-cue mode (lateral, vertical and collective cues), the flight director collective cue responds to glideslope deviation, while the horizontal bar of the “cross-pointer” responds to airspeed deviations. The same system, while flying an ILS in the two-cue mode, provides for the horizontal bar to respond to glideslope deviations. This concern is particularly significant when operating using two pilots. Pilots should have an established set of procedures and responsibilities for the control of flight director/autopilot modes for the various phases of flight. Not only does a full understanding of the system modes provide for a higher degree of accuracy in control of the helicopter, it is the basis for crew identification of a faulty system.

1.9 Relief from the prohibition to takeoff with any inoperative instruments or equipment may be provided through a Minimum Equipment List (see 14 CFR Section 91.213 and 14 CFR Section 135.179, Inoperative Instruments and Equipment). In many cases, a helicopter configured for single pilot IFR may depart IFR with certain equipment inoperative, provided a crew of two pilots is used. Pilots are cautioned to ensure the pilot–in–command and second–in–command meet the requirements of 14 CFR Section 61.58, Pilot–in–Command Proficiency Check: Operation of Aircraft Requiring More Than One Pilot Flight Crewmember, and 14 CFR Section 61.55, Second–in–Command Qualifications, or 14 CFR Part 135, Operating Requirements: Commuter and On–Demand Operations, Subpart E, Flight Crewmember Requirements, and Subpart G, Crewmember Testing Requirements, as appropriate.

1.10 Experience has shown that modern AFCS/AP/FD equipment installed in IFR helicopters can, in some cases, be very complex. This complexity requires the pilot(s) to obtain and maintain a high level of knowledge of system operation, limitations, failure indications and reversionary modes. In some cases, this may only be reliably accomplished through formal training.

2. Helicopter Instrument Approaches

2.1 Instrument flight procedures (IFPs) permit helicopter operations to heliports and runways during periods of low ceilings and reduced visibility (e.g. approach/SID/STAR/en route). IFPs can be designed for both public and private heliports using FAA instrument criteria. The FAA does recognize there are non–FAA service providers with proprietary special criteria. Special IFPs are reviewed and approved by Flight Technologies and Procedures Division and may have specified aircraft performance or equipment requirements, special crew training, airport facility equipment, waivers from published standards, proprietary criteria and restricted access. Special IFPs are not published in the Federal Register or printed in government Flight Information Publications.
2.1.1 Helicopters flying conventional (i.e. non-Copter) IAPs may reduce the visibility minima to not less than one-half the published Category A landing visibility minima, or 1/4 statute mile visibility/1200 RVR, whichever is greater, unless the procedure is annotated with "Visibility Reduction by Helicopters NA." This annotation means that there are penetrations of the final approach obstacle identification surface (OIS) and that the 14 CFR Section 97.3 visibility reduction rule does not apply and you must take precaution to avoid any obstacles in the visual segment. No reduction in MDA/DA is permitted at any time. The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest approach category authorized by the procedure, but must be slowed to no more than 90 KIAS at the missed approach point (MAP) in order to apply the visibility reduction. Pilots are cautioned that such a decelerating approach may make early identification of wind shear on the approach path difficult or impossible. If required, use the Inoperative Components and Visual Aids Table provided inside the front cover of the U.S. Terminal Procedures Publication to derive the Category A minima before applying the 14 CFR Section 97.3 rule.

2.1.2 Helicopters flying Copter IAPs should use the published minima, with no reductions allowed. Unless otherwise specified on the instrument procedure chart, 90 KIAS is the maximum speed on the approach.

2.1.3 Pilots flying Area Navigation (RNAV) Copter IAPs should also limit their speed to 90 KIAS unless otherwise specified on the instrument procedure chart. The final and missed approach segment speeds must be limited to no more than 70 KIAS unless otherwise charted. Military RNAV Copter IAPs are limited to no more than 90 KIAS throughout the procedure. Use the published minima; no reductions allowed.

NOTE—
Obstruction clearance surfaces are based on the aircraft speed identified on the approach chart and have been designed on RNAV approaches for 70 knots unless otherwise indicated. If the helicopter is flown at higher speeds, it may fly outside of protected airspace. Some helicopters have a VMIN greater than 70 knots; therefore, they cannot meet the 70 knot limitation to conduct these RNAV approaches. Some helicopter autopilots, when used in the “go-around” mode, are programmed with a VYI greater than 70 knots. Therefore, those helicopters, when using the autopilot “go-around” mode, cannot meet the 70 knot limitation for the RNAV approach. It may be possible to use the autopilot for the missed approach in other than the “go-around” mode and meet the 70 knot limitation. When operating at speeds other than VYI or VY, performance data may not be available in the RFM to predict compliance with climb gradient requirements. Pilots may use observed performance in similar weight/altitude/temperature/speed conditions to evaluate the suitability of performance. Pilots are cautioned to monitor climb performance to ensure compliance with procedure requirements.

NOTE—
VMINI – Instrument flight minimum speed, utilized in complying with minimum limit speed requirements for instrument flight
VYI – Instrument climb speed, utilized instead of VY for compliance with the climb requirements for instrument flight
VY – Speed for best rate of climb

2.1.4 TBL ENR 6.1–1 summarizes these requirements.
Helicopter Use of Standard Instrument Approach Procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Helicopter Visibility Minima</th>
<th>Helicopter MDA/DA</th>
<th>Maximum Speed Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional (non-Copter)</td>
<td>The greater of: one half the Category A visibility minima, 1/4 statute mile visibility, or 1200 RVR</td>
<td>As published for Category A</td>
<td>The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest Approach Category authorized by the procedure, but must be slowed to no more than 90 KIAS at the MAP in order to apply the visibility reduction.</td>
</tr>
<tr>
<td>Copter Procedure</td>
<td>As published</td>
<td>As published</td>
<td>90 KIAS maximum when on a published route/track.</td>
</tr>
<tr>
<td>RNAV (GPS) Copter Procedure</td>
<td>As published</td>
<td>As published</td>
<td>The maximum speed for a Copter approach will be 90 KIAS or as published on the chart. Note: Higher approach angles may require a lower approach speed and aircraft $V_{MINI}$. Military procedures are limited to 90 KIAS for all segments.</td>
</tr>
</tbody>
</table>

**NOTE**
Several factors affect the ability of the pilot to acquire and maintain the visual references specified in 14 CFR Section 91.175(c), even in cases where the flight visibility may be at the minimum derived from the criteria in TBL ENR 6.1–1. These factors include, but are not limited to:

1. Cockpit cutoff angle (the angle at which the cockpit or other airframe structure limits downward visibility below the horizon).
2. Combinations of high MDA/DH and low visibility minimum, such as approaches with reduced helicopter visibility minima (per 14 CFR Section 97.3).
3. Type, configuration, and intensity of approach and runway lighting systems.
4. Type of obscuring phenomenon and/or windshield contamination.

2.1.5 Even with weather conditions reported at or above minimums, under some combinations of reduced cockpit cutoff angle, approach/runway lighting, and high MDA/DH (coupled with a low visibility minima), the pilot may not be able to identify the required visual reference(s), or those references may only be visible in a very small portion of the available field of view. Even if identified by the pilot, the visual references may not support normal maneuvering and normal rates of descent to landing. The effect of such a combination may be exacerbated by other conditions such as rain on the windshield, or incomplete windshield defogging coverage.

2.1.6 Pilots should always be prepared to execute a missed approach even though weather conditions may be reported at or above minimums.

**NOTE**
See Section ENR 1.5, paragraph 27., Missed Approach, for additional information on missed approach procedures.

3. Helicopter Approach Procedures to VFR Heliports

3.1 The FAA may develop helicopter instrument approaches for heliports that do not meet the design standards for an IFR heliport. The majority of IFR approaches to VFR heliports are developed in support of Helicopter Air Ambulance (HAA) operators. These approaches may require use of conventional NAVAIDS or a RNAV system (e.g. GPS). They may be developed either as a special approach (pilot training is required for special procedures due to their unique characteristics) or a public approach (no special training required). These instrument procedures may be designed to guide the helicopter to a specific landing area (Proceed Visually) or to a point-in-space with a “Proceed VFR” segment.
3.1.1 An approach to a specific landing area. This type of approach is aligned to a missed approach point from which a landing can be accomplished with a maximum course change of 30 degrees. The visual segment from the MAP to the landing area is evaluated for obstacle hazards. These procedures are annotated: “PROCEED VISUALLY FROM (named MAP) OR CONDUCT THE SPECIFIED MISSED APPROACH.”

3.1.1.1 “Proceed visually” requires the pilot to acquire and maintain visual contact with the landing area at or prior to the MAP, or execute a missed approach. The visibility minimum is based on the distance from the MAP to the landing area, among other factors.

3.1.1.2 The pilot is required to have the published minimum visibility throughout the visual segment flying the path described on the approach chart.

3.1.1.3 Similar to an approach to a runway, the pilot is responsible for obstacle or terrain avoidance from the MAP to the landing area.

3.1.1.4 Upon reaching the published MAP, or as soon as practicable thereafter, the pilot should advise ATC whether proceeding visually and canceling IFR or complying with the missed approach instructions. See Section ENR 1.10, paragraph 11.2, Canceling IFR Flight Plan.

3.1.1.5 Where any necessary visual reference requirements are specified by the FAA, at least one of the following visual references for the intended heliport is visible and identifiable before the pilot may proceed visually:
   a) FATO or FATO lights.
   b) TLOF or TLOF lights.
   c) Heliport Instrument Lighting System (HILS).
   d) Heliport Approach Lighting System (HALS).
   e) Visual Glideslope Indicator (VGSI).
   f) Windsock or windsock light.
   g) Heliport beacon.
   h) Other facilities or systems approved by the Flight Technologies and Procedures Division (AFS-400).

3.1.2 Approach to a Point-in-Space (PinS). At locations where the MAP is located more than 2 SM from the landing area, or the path from the MAP to the landing area is populated with obstructions which require avoidance actions or requires turn greater than 30 degrees, a PinS Proceed VFR procedure may be developed. These approaches are annotated “PROCEED VFR FROM (named MAP) OR CONDUCT THE SPECIFIED MISSED APPROACH.”

3.1.2.1 These procedures require the pilot, at or prior to the MAP, to determine if the published minimum visibility, or the weather minimums required by the operating rule (e.g. Part 91, Part 135, etc.), or operations specifications (whichever is higher) is available to safely transition from IFR to VFR flight. If not, the pilot must execute a missed approach. For Part 135 operations, pilots may not begin the instrument approach unless the latest weather report indicates that the weather conditions are at or above the authorized IFR minimums or the VFR weather minimums (as required by the class of airspace, operating rule and/or Operations Specifications) whichever is higher.

3.1.2.2 Visual contact with the landing area is not required; however, the pilot must have the appropriate VFR weather minimums throughout the visual segment. The visibility is limited to no lower than that published in the procedure, until canceling IFR.

3.1.2.3 IFR obstruction clearance areas are not applied to the VFR segment between the MAP and the landing area. Pilots are responsible for obstacle or terrain avoidance from the MAP to the landing area.

3.1.2.4 Upon reaching the MAP defined on the approach procedure, or as soon as practicable thereafter, the pilot should advise ATC whether proceeding VFR and canceling IFR, or complying with the missed approach instructions. See Section ENR 1.10, paragraph 11.2, Canceling IFR Flight Plan.

3.1.2.5 If the visual segment penetrates Class B, C, or D airspace, pilots are responsible for obtaining a Special VFR clearance, when required.

4. The Gulf of Mexico Grid System

4.1 On October 8, 1998, the Southwest Regional Office of the FAA, with assistance from the Helicopter Safety Advisory Conference (HSAC), implemented the world’s first Instrument Flight
Rules (IFR) Grid System in the Gulf of Mexico. This navigational route structure is completely independent of ground-based navigation aids (NAVAID) and was designed to facilitate helicopter IFR operations to offshore destinations. The Grid System is defined by over 300 offshore waypoints located 20 minutes apart (latitude and longitude). Flight plan routes are routinely defined by just 4 segments: departure point (lat/long), first en route grid waypoint, last en route grid waypoint prior to approach procedure, and destination point (lat/long). There are over 4,000 possible offshore landing sites. Upon reaching the waypoint prior to the destination, the pilot may execute an Offshore Standard Approach Procedure (OSAP), a Helicopter En Route Descent Areas (HEDA) approach, or an Airborne Radar Approach (ARA). For more information on these helicopter instrument procedures, refer to FAA AC 90–80B, Approval of Offshore Standard Approach Procedures, Airborne Radar Approaches, and Helicopter En Route Descent Areas, on the FAA website http://www.faa.gov under Advisory Circulars. The return flight plan is just the reverse with the requested stand-alone GPS approach contained in the remarks section.

4.2 The large number (over 300) of waypoints in the grid system makes it difficult to assign phonetically pronounceable names to the waypoints that would be meaningful to pilots and controllers. A unique naming system was adopted that enables pilots and controllers to derive the fix position from the name. The five-letter names are derived as follows:

4.2.1 The waypoints are divided into sets of 3 columns each. A three-letter identifier, identifying a geographical area or a NAVAID to the north, represents each set.

4.2.2 Each column in a set is named after its position, i.e., left (L), center (C), and right (R).

4.2.3 The rows of the grid are named alphabetically from north to south, starting with A for the northern most row.

**EXAMPLE**

LCHRC would be pronounced “Lake Charles Romeo Charlie.” The waypoint is in the right-hand column of the Lake Charles VOR set, in row C (third south from the northern most row).

4.3 In December 2009, significant improvements to the Gulf of Mexico grid system were realized with the introduction of ATC separation services using ADS–B. In cooperation with the oil and gas services industry, HSAC and Helicopter Association International (HAI), the FAA installed an infrastructure of ADS–B ground stations, weather stations (AWOS) and VHF remote communication outlets (RCO) throughout a large area of the Gulf of Mexico. This infrastructure allows the FAA’s Houston ARTCC to provide “domestic-like” air traffic control service in the offshore area beyond 12nm from the coastline to hundreds of miles offshore to aircraft equipped with ADS–B. Properly equipped aircraft can now be authorized to receive more direct routing, domestic en route separation minima and real time flight following. Operators who do not have authorization to receive ATC separation services using ADS–B, will continue to use the low altitude grid system and receive procedural separation from Houston ARTCC. Non–ADS–B equipped aircraft also benefit from improved VHF communication and expanded weather information coverage.

4.4 Three requirements must be met for operators to file IFR flight plans utilizing the grid:

4.4.1 The helicopter must be equipped for IFR operations and equipped with IFR approved GPS navigational units.

4.4.2 The operator must obtain prior written approval from the appropriate Flight Standards District Office through a Letter of Authorization or Operations Specification, as appropriate.

4.4.3 The operator must be a signatory to the Houston ARTCC Letter of Agreement.

4.5 Operators who wish to benefit from ADS–B based ATC separation services must meet the following additional requirements:

4.5.1 The Operator’s installed ADS–B Out equipment must meet the performance requirements of one of the following FAA Technical Standard Orders (TSO), or later revisions: TSO–C154c, Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS–B) Equipment, or TSO–C166b, Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS–B) and Traffic Information.

4.5.2 Flight crews must comply with the procedures prescribed in the Houston ARTCC Letter of Agreement dated December 17, 2009, or later.
The unique ADS-B architecture in the Gulf of Mexico depends upon reception of an aircraft's Mode C in addition to the other message elements described in 14 CFR 91.227. Flight crews must be made aware that loss of Mode C also means that ATC will not receive the aircraft's ADS-B signal.

4.6 FAA/AIS publishes the grid system waypoints on the IFR Gulf of Mexico Vertical Flight Reference Chart. A commercial equivalent is also available. The chart is updated annually and is available from an FAA print provider or for free download on the AIS website: http://www.faa.gov/air_traffic/flight_info/aeronav.

5. Departure Procedures

5.1 When departing from a location on a point-in-space (PinS) SID with a visual segment indicated and the departure instruction describes the visual segment the aircraft must cross the initial departure fix (IDF) outbound at—or above the altitude depicted on the chart. The helicopter will initially establish a hover at or above the heliport crossing height (HCH) specified on the chart. The HCH specifies a minimum hover height to begin the climb to assist in avoiding obstacles. The helicopter will leave the departure location on the published outbound heading/course specified, climbing at least 400 ft/per NM (or as depicted on the chart), remaining clear of clouds, crossing at or above the IDF altitude specified, prior to proceeding outbound on the procedure. For example the chart may include these instructions: “Hover at 15 ft AGL, then climb on track 005, remaining clear of clouds, to cross PAWLY at or above 700.”

5.2 When flying a PinS procedure containing a segment with instructions to “proceed VFR,” the pilot must keep the aircraft clear of the clouds and cross the IDF outbound at or above the altitude depicted. Departure procedures that support multiple departure locations will have a proceed VFR segment leading to the IDF. The chart will provide a bearing and distance to the IDF from the heliport. That bearing and distance are for pilot orientation purposes only and are not a required procedure track. The helicopter will leave the departure location via pilot navigation in order to align with the departure route and comply with the altitude specified at the IDF. For example, the chart may include these instructions: “VFR Climb to WEBBB, Cross WEBBB at or above 800.”

5.3 Once the aircraft reaches the IDF, the aircraft should proceed out the described route as specified on the chart, crossing each consecutive fix at or above the indicated altitude(s) until reaching the end of the departure or as directed by ATC.
FIG ENR 6.1-1
Departure Charts

JOELL1, JOELL
JOELL ONE DEPARTURE
JOELLS COUNTY HELIPORT (KJOS)
SOMERSET, OKLAHOMA

DEPARTURE ROUTE DESCRIPTION

VISUAL SEGMENT: Hover at 15 feet AGL, then climb on-course 900 to cross PANLY at or above 780.
IFR SEGMENT: Climb on track 015° to cross JOELL at or above 2500, then via cleared route.

NOTE: Gps required.
NOTE: RNP 1.

SPEAR2, SPEAR
SPEAR TWO DEPARTURE
DOWNTOWN ATLANTA HELIPORT (GA10)
ATLANTA, GA

DEPARTURE ROUTE DESCRIPTION

VFR SEGMENT: VFR climb to WEBBB, cross WEBBB at or above 800.
IFR SEGMENT: Track 030° to cross SPEAR at or above 2000, then via cleared route.

NOTE: Gps required.
NOTE: RNP 1.

AIP
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1. Offshore Helicopter Operations

1.1 Introduction

1.1.1 The offshore environment offers unique applications and challenges for helicopter pilots. The mission demands, the nature of oil and gas exploration and production facilities, and the flight environment (weather, terrain, obstacles, traffic), demand special practices, techniques and procedures not found in other flight operations. Several industry organizations have risen to the task of reducing risks in offshore operations, including the Helicopter Safety Advisory Conference (HSAC) (http://www.hsac.org), and the Offshore Committee of the Helicopter Association International (HAI) (http://www.rotor.com). The following recommended practices for offshore helicopter operations are based on guidance developed by HSAC for use in the Gulf of Mexico, and provided here with their permission. While not regulatory, these recommended practices provide aviation and oil and gas industry operators with useful information in developing procedures to avoid certain hazards of offshore helicopter operations.

NOTE – Like all aviation practices, these recommended practices are under constant review. Any questions or feedback concerning these recommended procedures may be directed to the HSAC through the feedback feature of the HSAC website (http://www.hsac.org).

1.2 Passenger Management on and about Heliport Facilities

1.2.1 Background. Several incidents involving offshore helicopter passengers have highlighted the potential for incidents and accidents on and about the heliport area. The following practices will minimize risks to passengers and others involved in heliport operations.

1.2.2 Recommended Practices

1.2.2.1 Heliport facilities should have a designated and posted passenger waiting area which is clear of the heliport, heliport access points, and stairways.

1.2.2.2 Arriving passengers and cargo should be unloaded and cleared from the heliport and access route prior to loading departing passengers and cargo.

1.2.2.3 Where a flight crew consists of more than one pilot, one crewmember should supervise the unloading/loading process from outside the aircraft.

1.2.2.4 Where practical, a designated facility employee should assist with loading/unloading, etc.

1.3 Crane–Helicopter Operational Procedures

1.3.1 Background. Historical experience has shown that catastrophic consequences can occur when industry safe practices for crane/helicopter operations are not observed. The following recommended practices are designed to minimize risks during crane and helicopter operations.

1.3.2 Recommended Practices

1.3.2.1 Personnel awareness

a) Crane operators and pilots should develop a mutual understanding and respect of the others’ operational limitations and cooperate in the spirit of safety;

b) Pilots need to be aware that crane operators sometimes cannot release the load to cradle the crane boom, such as when attached to wire line lubricators or supporting diving bells; and

c) Crane operators need to be aware that helicopters require warm up before takeoff, a two−minute cool down before shutdown, and cannot circle for extended lengths of time because of fuel consumption.

1.3.2.2 It is recommended that when helicopters are approaching, maneuvering, taking off, or running on the heliport, cranes be shutdown and the operator leave the cab. Cranes not in use must have their booms cradled, if feasible. If in use, the crane’s boom(s) are to be pointed away from the heliport and the crane shutdown for helicopter operations.

1.3.2.3 Pilots will not approach, land on, takeoff, or have rotor blades turning on heliports of structures not complying with the above practice.

1.3.2.4 It is recommended that cranes on offshore platforms, rigs, vessels, or any other facility, which could interfere with helicopter operations (including approach/Departure paths):
a) Be equipped with a red rotating beacon or red high intensity strobe light connected to the system powering the crane, indicating the crane is under power;

b) Be designed to allow the operator a maximum view of the helideck area and should be equipped with wide-angle mirrors to eliminate blind spots; and

c) Have their boom tips, headache balls, and hooks painted with high visibility international orange.

1.4 Helicopter/Tanker Operations

1.4.1 Background. The interface of helicopters and tankers during shipboard helicopter operations is complex and may be hazardous unless appropriate procedures are coordinated among all parties. The following recommended practices are designed to minimize risks during helicopter/tanker operations.

1.4.2 Recommended Practices

1.4.2.1 Management, flight operations personnel, and pilots should be familiar with and apply the operating safety standards set forth in “Guide to Helicopter/Ship Operations”, International Chamber of Shipping, Third Edition, 5–89 (as amended), establishing operational guidelines/standards and safe practices sufficient to safeguard helicopter/tanker operations.

1.4.2.2 Appropriate plans, approvals, and communications must be accomplished prior to reaching the vessel, allowing tanker crews sufficient time to perform required safety preparations and position crew members to receive or dispatch a helicopter safely.

1.4.2.3 Appropriate approvals and direct communications with the bridge of the tanker must be maintained throughout all helicopter/tanker operations.

1.4.2.4 Helicopter/tanker operations, including landings/departures, must not be conducted until the helicopter pilot–in–command has received and acknowledged permission from the bridge of the tanker.

1.4.2.5 Helicopter/tanker operations must not be conducted during product/cargo transfer.

1.4.2.6 Generally, permission will not be granted to land on tankers during mooring operations or while maneuvering alongside another tanker.

1.5 Helideck/Heliport Operational Hazard Warning(s) Procedures

1.5.1 Background

1.5.1.1 A number of operational hazards can develop on or near offshore helidecks or onshore heliports that can be minimized through procedures for proper notification or visual warning to pilots. Examples of hazards include but are not limited to:

a) Perforating operations: subparagraph 1.6.

b) H₂S gas presence: subparagraph 1.7.

c) Gas venting: subparagraph 1.8; or,

d) Closed helidecks or heliports: subparagraph 1.9 (unspecified cause).

1.5.1.2 These and other operational hazards are currently minimized through timely dissemination of a written Notice to Air Missions (NOTAM) for pilots by helicopter companies and operators. A NOTAM provides a written description of the hazard, time and duration of occurrence, and other pertinent information. ANY POTENTIAL HAZARD should be communicated to helicopter operators or company aviation departments as early as possible to allow the NOTAM to be activated.

1.5.1.3 To supplement the existing NOTAM procedure and further assist in reducing these hazards, a standardized visual signal(s) on the helideck/heliport will provide a positive indication to an approaching helicopter of the status of the landing area. Recommended Practice(s) have been developed to reinforce the NOTAM procedures and standardize visual signals.

1.6 Drilling Rig Perforating Operations: Helideck/Heliport Operational Hazard Warning(s)/Procedure(s)

1.6.1 Background. A critical step in the oil well completion process is perforation, which involves the use of explosive charges in the drill pipe to open the pipe to oil or gas deposits. Explosive charges used in conjunction with perforation operations offshore can potentially be prematurely detonated by radio transmissions, including those from helicopters. The following practices are recommended.

1.6.2 Recommended Practices

1.6.2.1 Personnel Conducting Perforating Operations. Whenever perforating operations are scheduled and operators are concerned that radio
transmissions from helicopters in the vicinity may jeopardize the operation, personnel conducting perforating operations should take the following precautionary measures:

a) Notify company aviation departments, helicopter operators or bases, and nearby manned platforms of the pending perforation operation so the Notice to Air Missions (NOTAM) system can be activated for the perforation operation and the temporary helideck closure.

b) Close the deck and make the radio warning clearly visible to passing pilots, install a temporary marking (described in subparagraph 1.9.1.2 with the words “NO RADIO” stenciled in red on the legs of the diagonals. The letters should be 24 inches high and 12 inches wide. (See FIG ENR 6.2−1.)

c) The marker should be installed during the time that charges may be affected by radio transmissions.

1.6.2.2 Pilots

a) When operating within 1,000 feet of a known perforation operation or observing the white X with red “NO RADIO” warning indicating perforation operations are underway, pilots will avoid radio transmissions from or near the helideck (within 1,000 feet) and will not land on the deck if the X is present. In addition to communications radios, radio transmissions are also emitted by aircraft radar, transponders, ADS−B equipment, radar altimeters, and DME equipment, and ELTs.

b) Whenever possible, make radio calls to the platform being approached or to the Flight Following Communications Center at least one mile out on approach. Ensure all communications are complete outside the 1,000 foot hazard distance. If no response is received, or if the platform is not radio equipped, further radio transmissions should not be made until visual contact with the deck indicates it is open for operation (no white “X”).

FIG ENR 6.2−1
Closed Helideck Marking – No Radio

White Diagonals with red "NO RADIO" with letters 24" by 12", diagonals 29" long by 3" wide
Grommet

1.7 Hydrogen Sulfide Gas Helideck/Heliport Operational Hazard Warning(s)/Procedures

1.7.1 Background. Hydrogen sulfide (H₂S) gas: Hydrogen sulfide gas in higher concentrations (300–500 ppm) can cause loss of consciousness within a few seconds and presents a hazard to pilots on/near offshore helidecks. When operating in offshore areas that have been identified to have concentrations of hydrogen sulfide gas, the following practices are recommended.

1.7.2 Recommended Practices

1.7.2.1 Pilots

a) Ensure approved protective air packs are available for emergency use by the crew on the helicopter.

b) If shutdown on a helideck, request the supervisor in charge provide a briefing on location of protective equipment and safety procedures.

c) If while flying near a helideck and the visual red beacon alarm is observed or an unusually strong odor of “rotten eggs” is detected, immediately don the protective air pack, exit to an area upwind, and notify the suspected source field of the hazard.

1.7.2.2 Oil Field Supervisors

a) If presence of hydrogen sulfide is detected, a red rotating beacon or red high intensity strobe light adjacent to the primary helideck stairwell or wind indicator on the structure should be turned on to provide visual warning of hazard. If the beacon is to be located near the stairwell, the State of Louisiana “Offshore Heliport Design Guide” and FAA Advisory Circular AC 150/5390−2A, “Heliport
Design Guide," should be reviewed to ensure proper clearance on the helideck.

b) Notify nearby helicopter operators and bases of the hazard and advise when hazard is cleared.

c) Provide a safety briefing to include location of protective equipment to all arriving personnel.

d) Wind socks or indicator should be clearly visible to provide upwind indication for the pilot.

1.8 Gas Venting Helideck/Heliport Operational Hazard Warning(s)/Procedures – Operations Near Gas Vent Booms

1.8.1 Background. Ignited flare booms can release a large volume of natural gas and create a hot fire and intense heat with little time for the pilot to react. Likewise, unignited gas vents can release reasonably large volumes of methane gas under certain conditions. Thus, operations conducted very near unignited gas vents require precautions to prevent inadvertent ingestion of combustible gases by the helicopter engine(s). The following practices are recommended.

1.8.2 Pilots

1.8.2.1 Gas will drift upwards and downwind of the vent. Plan the approach and takeoff to observe and avoid the area downwind of the vent, remaining as far away as practicable from the open end of the vent boom.

1.8.2.2 Do not attempt to start or land on an offshore helideck when the deck is downwind of a gas vent unless properly trained personnel verify conditions are safe.

1.8.3 Oil Field Supervisors

1.8.3.1 During venting of large amounts of unignited raw gas, a red rotating beacon or red high intensity strobe light adjacent to the primary helideck stairwell or wind indicator should be turned on to provide visible warning of hazard. If the beacon is to be located near the stairwell, the State of Louisiana “Offshore Heliport Design Guide” and FAA Advisory Circular AC 150/5390–2A, Heliport Design Guide, should be reviewed to ensure proper clearance from the helideck.

1.8.3.2 Notify nearby helicopter operators and bases of the hazard for planned operations.

1.8.3.3 Wind socks or indicator should be clearly visible to provide upward indication for the pilot.

1.9 Helideck/Heliport Operational Warning(s)/Procedure(s) – Closed Helidecks or Heliports

1.9.1 Background. A white “X” marked diagonally from corner to corner across a helideck or heliport touchdown area is the universally accepted visual indicator that the landing area is closed for safety of other reasons and that helicopter operations are not permitted. The following practices are recommended.

1.9.1.1 Permanent Closing. If a helideck or heliport is to be permanently closed, X diagonals of the same size and location as indicated above should be used, but the markings should be painted on the landing area.

NOTE: White Decks: If a helideck is painted white, then international orange or yellow markings can be used for the temporary or permanent diagonals.

1.9.1.2 Temporary Closing. A temporary marker can be used for hazards of an interim nature. This marker could be made from vinyl or other durable material in the shape of a diagonal “X.” The marker should be white with legs at least 20 feet long and 3 feet in width. This marker is designed to be quickly secured and removed from the deck using grommets and rope ties. The duration, time, location, and nature of these temporary closings should be provided to and coordinated with company aviation departments, nearby helicopter bases, and helicopter operators supporting the area. These markers MUST be removed when the hazard no longer exists. (See FIG ENR 6.2−2.)

1.10 Offshore (VFR) Operating Altitudes for Helicopters

1.10.1 Background. Mid–air collisions constitute a significant percentage of total fatal offshore helicopter accidents. A method of reducing this risk is the use of coordinated VFR cruising altitudes. To enhance safety through standardized vertical separation of helicopters when flying in the offshore environment, it is recommended that helicopter operators flying in a particular area establish a cooperatively developed Standard Operating Procedure (SOP) for VFR operating altitudes. An example of such an SOP is contained in this example.
1.10.2 Recommended Practice Example

1.10.2.1 Field Operations. Without compromising minimum safe operating altitudes, helicopters working within an offshore field “constituting a cluster” should use altitudes not to exceed 500 feet.

1.10.2.2 En Route Operations

   a) Helicopters operating below 750’ AGL should avoid transitioning through offshore fields.

   b) Helicopters en route to and from offshore locations, below 3,000 feet, weather permitting, should use en route altitudes as outlined in TBL ENR 6.2–1.

   c) Area Agreements. See HSAC Area Agreement Maps for operating procedures for onshore high density traffic locations.

   **NOTE**

   Pilots of helicopters operating VFR above 3,000 feet above the surface should refer to the current Federal Aviation Regulations (14 CFR Part 91), and Section ENR 1.4, Paragraph 1.7, Basic VFR Weather Minimums, of the AIP.

1.11 Offshore Helidecks/Landing Communications

1.11.1 Background. To enhance safety, and provide appropriate time to prepare for helicopter operations, the following is recommended when anticipating a landing on an offshore helideck.

1.11.2 Recommended Practices

   1.11.2.1 Before landing on an offshore helideck, pilots are encouraged to establish communications with the company owning or operating the helideck if frequencies exist for that purpose.

   1.11.2.2 When impracticable, or if frequencies do not exist, pilots or operations personnel should attempt to contact the company owning or operating the helideck by telephone. Contact should be made before the pilot departs home base/point of departure to advise of intentions and obtain landing permission if necessary.

   **NOTE**

   It is recommended that communications be established a minimum of 10 minutes prior to planned arrival time. This practice may be a requirement of some offshore owner/operators.

   **NOTE**

   1. See subparagraph 1.4 for Tanker Operations.
   2. Private use Heliport. Offshore heliports are privately owned/operated facilities and their use is limited to persons having prior authorization to utilize the facility.
1.12 Two (2) Helicopter Operations on Offshore Helidecks

1.12.1 Background. Standardized procedures can enhance the safety of operating a second helicopter on an offshore helideck, enabling pilots to determine/maintain minimum operational parameters. Orientation of the parked helicopter on the helideck, wind and other factors may prohibit multi-helicopter operations. More conservative Rotor Diameter (RD) clearances may be required under differing condition, i.e. temperature, wet deck, wind (velocity/direction/gusts), obstacles, approach/departure angles, etc. Operations are at the pilot's discretion.

1.12.2 Recommended Practice. Helideck size, structural weight capability, and type of main rotor on the parked and operating helicopter will aid in determining accessibility by a second helicopter. Pilots should determine that multi-helicopter deck operations are permitted by the helideck owner/operator.

1.12.3 Recommended Criteria

1.12.3.1 Minimum one-third rotor diameter clearance ($\frac{1}{3}$ RD). The landing helicopter maintains a minimum $\frac{1}{3}$ RD clearance between the tips of its turning rotor and the closest part of a parked and secured helicopter (rotors stopped and tied down).

1.12.3.2 Three foot parking distance from deck edge (3'). Helicopters operating on an offshore helideck land or park the helicopter with a skid/wheel assembly no closer than 3 feet from helideck edge.

1.12.3.3 Tiedowns. Main rotors on all helicopters that are shut down be properly secured (tied down) to prevent the rotor blades from turning.

1.12.3.4 Medium (transport) and larger helicopters should not land on any offshore helideck where a light helicopter is parked unless the light helicopter is property secured to the helideck and has main rotor tied down.

1.12.3.5 Helideck owners/operators should ensure that the helideck has a serviceable anti-skid surface.


NOTE– Some offshore helideck owners/operators have restrictions on the number of helicopters allowed on a helideck. When helideck size permits, multiple (more than two) helicopter operations are permitted by some operators.

1.13 Helicopter Rapid Refueling Procedures (HRR)

1.13.1 Background. Helicopter Rapid Refueling (HRR), engine(s)/rotors operating, can be conducted safely when utilizing trained personnel and observing safe practices. This recommended practice provides minimum guidance for HRR as outlined in National Fire Protection Association (NFPA) and industry practices. For detailed guidance, please refer to National Fire Protection Association (NFPA) Document 407, “Standard for Aircraft Fuel Servicing,” 1990 edition, including 1993 HRR Amendment.

NOTE– Certain operators prohibit HRR, or “hot refueling,” or may have specific procedures for certain aircraft or refueling locations. See the General Operations Manual and/or Operations Specifications to determine the applicable procedures or limitations.

1.13.2 Recommended Practices

1.13.2.1 Only turbine-engine helicopters fueled with JET A or JET A–1 with fueling ports located below any engine exhausts may be fueled while an onboard engine(s) is (are) operating.

1.13.2.2 Helicopter fueling while an onboard engine(s) is (are) operating should only be conducted under the following conditions:

a) A properly certificated and current pilot is at the controls and a trained refueler attending the fuel nozzle during the entire fuel servicing process. The pilot monitors the fuel quantity and signals the refueler when quantity is reached.

b) No electrical storms (thunderstorms) are present within 10 nautical miles. Lightning can travel great distances beyond the actual thunderstorm.

c) Passengers disembark the helicopter and move to a safe location prior to HRR operations. When the pilot—in-command deems it necessary for passenger safety that they remain onboard, passengers should be briefed on the evacuation route to follow to clear the area.

d) Passengers not board or disembark during HRR operations nor should cargo be loaded or unloaded.

e) Only designated personnel, trained in HRR operations should conduct HRR written authoriza-
tion to include safe handling of the fuel and equipment. (See your Company Operations/Safety Manual for detailed instructions.)

f) All doors, windows, and access points allowing entry to the interior of the helicopter that are adjacent to or in the immediate vicinity of the fuel inlet ports kept closed during HRR operations.

g) Pilots ensure that appropriate electrical/electronic equipment is placed in standby–off position, to preclude the possibility of electrical discharge or other fire hazard, such as [i.e., weather radar is on standby and no radio transmissions are made (keying of the microphone/transmitter)]. Remember, in addition to communications radios, radio transmissions are also emitted by aircraft radar, transponders, ADS–B equipment, radar altimeters, DME equipment, and ELTs.

h) Smoking be prohibited in and around the helicopter during all HRR operations.

The HRR procedures are critical and present associated hazards requiring attention to detail regarding quality control, weather conditions, static electricity, bonding, and spill/fires potential.

Any activity associated with rotors turning (i.e., refueling embarking/disembarking, loading/unloading baggage/freight, etc.) personnel should only approach the aircraft when authorized to do so. Approach should be made via safe approach path/walkway or “arc”—remain clear of all rotors.

NOTE—
1. Marine vessels, barges etc.: Vessel motion presents additional potential hazards to helicopter operations (blade flex, aircraft movement).

2. Helicopter Night VFR Operations

2.1 Effect of Lighting on Seeing Conditions in Night VFR Helicopter Operations

NOTE—
This guidance was developed to support safe night VFR helicopter emergency medical services (HEMS) operations. The principles of lighting and seeing conditions are useful in any night VFR operation.

While ceiling and visibility significantly affect safety in night VFR operations, lighting conditions also have a profound effect on safety. Even in conditions in which visibility and ceiling are determined to be visual meteorological conditions, the ability to discern unlighted or low contrast objects and terrain at night may be compromised. The ability to discern these objects and terrain is the seeing condition, and is related to the amount of natural and man made lighting available, and the contrast, reflectivity, and texture of surface terrain and obstruction features. In order to conduct operations safely, seeing conditions must be accounted for in the planning and execution of night VFR operations.

Night VFR seeing conditions can be described by identifying “high lighting conditions” and “low lighting conditions.”

2.1.1 High lighting conditions exist when one of two sets of conditions are present:

2.1.1.1 The sky cover is less than broken (less than 5/8 cloud cover), the time is between the local Moon rise and Moon set, and the lunar disk is at least 50% illuminated; or

2.1.1.2 The aircraft is operated over surface lighting which, at least, provides for the lighting of prominent obstacles, the identification of terrain features (shorelines, valleys, hills, mountains, slopes) and a horizontal reference by which the pilot may control the helicopter. For example, this surface lighting may be the result of:

a) Extensive cultural lighting (man–made, such as a built–up area of a city),

b) Significant reflected cultural lighting (such as the illumination caused by the reflection of a major metropolitan area’s lighting reflecting off a cloud ceiling), or

c) Limited cultural lighting combined with a high level of natural reflectivity of celestial illumination, such as that provided by a surface covered by snow or a desert surface.

2.1.2 Low lighting conditions are those that do not meet the high lighting conditions requirements.

2.1.3 Some areas may be considered a high lighting environment only in specific circumstances. For example, some surfaces, such as a forest with limited cultural lighting, normally have little reflectivity, requiring dependence on significant moonlight to
achieve a high lighting condition. However, when that same forest is covered with snow, its reflectivity may support a high lighting condition based only on starlight. Similarly, a desolate area, with little cultural lighting, such as a desert, may have such inherent natural reflectivity that it may be considered a high lighting conditions area regardless of season, provided the cloud cover does not prevent starlight from being reflected from the surface. Other surfaces, such as areas of open water, may never have enough reflectivity or cultural lighting to ever be characterized as a high lighting area.

2.1.4 Through the accumulation of night flying experience in a particular area, the operator will develop the ability to determine, prior to departure, which areas can be considered supporting high or low lighting conditions. Without that operational experience, low lighting considerations should be applied by operators for both pre-flight planning and operations until high lighting conditions are observed or determined to be regularly available.

2.2 Astronomical Definitions and Background Information for Night Operations

2.2.1 Definitions

2.2.1.1 Horizon. Wherever one is located on or near the Earth’s surface, the Earth is perceived as essentially flat and, therefore, as a plane. If there are no visual obstructions, the apparent intersection of the sky with the Earth’s (plane) surface is the horizon, which appears as a circle centered at the observer. For rise/set computations, the observer’s eye is considered to be on the surface of the Earth, so that the horizon is geometrically exactly 90 degrees from the local vertical direction.

2.2.1.2 Rise, Set. During the course of a day the Earth rotates once on its axis causing the phenomena of rising and setting. All celestial bodies, the Sun, Moon, stars and planets, seem to appear in the sky at the horizon to the East of any particular place, then to cross the sky and again disappear at the horizon to the West. Because the Sun and Moon appear as circular disks and not as points of light, a definition of rise or set must be very specific, because not all of either body is seen to rise or set at once.

2.2.1.3 Sunrise and sunset refer to the times when the upper edge of the disk of the Sun is on the horizon, considered unobstructed relative to the location of interest. Atmospheric conditions are assumed to be average, and the location is in a level region on the Earth’s surface.

2.2.1.4 Moonrise and moonset times are computed for exactly the same circumstances as for sunrise and sunset. However, moonrise and moonset may occur at any time during a 24 hour period and, consequently, it is often possible for the Moon to be seen during daylight, and to have moonless nights. It is also possible that a moonrise or moonset does not occur relative to a specific place on a given date.

2.2.1.5 Transit. The transit time of a celestial body refers to the instant that its center crosses an imaginary line in the sky – the observer’s meridian – running from north to south.

2.2.1.6 Twilight. Before sunrise and again after sunset there are intervals of time, known as “twilight,” during which there is natural light provided by the upper atmosphere, which does receive direct sunlight and reflects part of it toward the Earth’s surface.

2.2.1.7 Civil twilight is defined to begin in the morning, and to end in the evening when the center of the Sun is geometrically 6 degrees below the horizon. This is the limit at which twilight illumination is sufficient, under good weather conditions, for terrestrial objects to be clearly distinguished.

2.2.2 Title 14 of the Code of Federal Regulations applies these concepts and definitions in addressing the definition of night (Section 1.1), the requirement for aircraft lighting (Section 91.209) and pilot recency of night experience (Section 61.67).

2.2.3 Information on Moon Phases and Changes in the Percentage of the Moon Illuminated

From any location on the Earth, the Moon appears to be a circular disk which, at any specific time, is illuminated to some degree by direct sunlight. During each lunar orbit (a lunar month), we see the Moon’s appearance change from not visibly illuminated through partially illuminated to fully illuminated, then back through partially illuminated to not illuminated again. There are eight distinct, traditionally recognized stages, called phases. The phases designate both the degree to which the Moon is illuminated and the geometric appearance of the illuminated part. These phases of the Moon, in the sequence of their occurrence (starting from New Moon), are listed in FIG ENR 6.2–3.

2.2.3.1 The percent of the Moon’s surface illuminated is a more refined, quantitative description of the...
Moon's appearance than is the phase. Considering the Moon as a circular disk, at New Moon the percent illuminated is 0; at First and Last Quarters it is 50%; and at Full Moon it is 100%. During the crescent phases the percent illuminated is between 0 and 50% and during gibbous phases it is between 50% and 100%.

2.2.3.2 For practical purposes, phases of the Moon and the percent of the Moon illuminated are independent of the location on the Earth from where the Moon is observed. That is, all the phases occur at the same time regardless of the observer's position.

2.2.3.3 For more detailed information, refer to the United States Naval Observatory site referenced below.
FIG ENR 6.2-3
Phases of the Moon

New Moon – The Moon's unilluminated side is facing the Earth. The Moon is not visible (except during a solar eclipse).

Waxing Crescent – The Moon appears to be partly but less than one-half illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is increasing.

First Quarter – One-half of the Moon appears to be illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is increasing.

Waxing Gibbous – The Moon appears to be more than one-half but not fully illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is increasing.

Full Moon – The Moon's illuminated side is facing the Earth. The Moon appears to be completely illuminated by direct sunlight.

Waning Gibbous – The Moon appears to be more than one-half but not fully illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is decreasing.

Last Quarter – One-half of the Moon appears to be illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is decreasing.

Waning Crescent – The Moon appears to be partly but less than one-half illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is decreasing.
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 FL 230 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− 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 Air Missions (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.


2.2 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 P2 in Field 10a.

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.
2.2.3 D1 in Field 10b.
2.2.4 (J5, J6, or J7) and R in Field 10a.
2.2.5 SUR/RSP180 in Field 18.
2.2.6 See FAA Advisory Circular 90–117, Data Link Communications, for guidance on Required Communication Performance (RCP) and Required Surveillance Performance (RSP) authorization.
2.2.7 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 P2 in Field 10a.
2.3.3 D1 in Field 10b.
2.3.4 (J5, J6, or J7) and R in Field 10a.
2.3.5 SUR/RSP180 in Field 18.
2.3.6 See FAA Advisory Circular 90–117 for guidance on RCP and RSP authorization.
2.3.7 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.

2.4.2 The use of CPDLC and ADS–C in the Oakland Oceanic FIR (KZAK) is only permitted by Inmarsat and Iridium customers. All other forms of data link connectivity are not authorized. Users must ensure that the proper data link code is filed in Item 10a of the ICAO FPL in order to indicate which satellite medium(s) the aircraft is equipped with. The identifier for Inmarsat is J5 and the identifier for Iridium is J7. If J5 or J7 is not included in the ICAO FPL, then the LOGON will be rejected by KZAK and the aircraft will not be able to connect.

2.5 New York Oceanic FIR
2.5.1 The use of CPDLC and ADS–C in the New York Oceanic FIR (KZWP) is only permitted by Inmarsat and Iridium customers. All other forms of data link connectivity are not authorized. Users must ensure that the proper data link code is filed in Item 10a of the ICAO FPL in order to indicate which satellite medium(s) the aircraft is equipped with. The identifier for Inmarsat is J5 and the identifier for Iridium is J7. If J5 or J7 is not included in the ICAO FPL, then the LOGON will be rejected by KZWP and the aircraft will not be able to connect.

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 must 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 canceling (CNL) and refiling 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 J 0 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.
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 Notices found in the External Links section of the Federal NOTAM System (FNS) NOTAM Search or Air Traffic Plans and Publications website and FAA Advisory Circular 91−70, Oceanic and Remote Continental Airspace Operations.

1.12.4 When pilots suspect a navigation system malfunction, in addition to the actions suggested in ICAO Doc. 4444, Chapter 15, the following actions should be taken:

1.12.4.1 Immediately inform ATC of navigation system malfunction or failure;

1.12.4.2 Accounting for wind drift, fly magnetic compass heading to maintain track; and

1.12.4.3 Request radar vectors from ATC, when available.

1.13 Pilot Report of Non−RNP 10 Status

1.13.1 The pilot must report the lack of RNP 10 or RNP 4 status in accordance with the following:

1.13.1.1 When the operator/aircraft is not authorized RNP 10 or RNP 4 (See paragraph 1.7.)

1.13.1.2 If approval status is requested by the controller:

1.13.1.3 The pilot must communicate approval status using the following phraseology in TBL ENR 7.4−1.
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 Flight planning guidelines for non–RNP 10 aircraft are published in the Pacific Chart Supplement.

3. **Anchorage Oceanic FIR**

3.1 The application of 50 NM lateral separation minima between aircraft authorized RNP 10 or RNP 4 is supported.

3.2 Non–RNP 10 approved aircraft may file via random track, at any altitude, at least 100 NM from the North Pacific (NOPAC) fixed track system. Aircraft entering the NOPAC should flight plan in accordance with Notices contained in the Alaska Chart Supplement.

4. **Anchorage Arctic FIR**

4.1 The application of 50 NM lateral separation minima between aircraft authorized RNP 10 is supported.

5. **New York Oceanic Airspace**

5.1 ATC applies 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4 within New York Oceanic West airspace. ATC similarly applies 50 NM lateral separation in the Atlantic portion of the Miami Oceanic CTA as well as the San Juan CTA/FIR. ATC may apply 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4 in New York Oceanic East.

5.2 Aircraft authorized RNP 10 or RNP 4 will have a better chance of obtaining their preferred routing and altitude in the most densely used airspace (that is, below FL 410) because of their ability to participate in ATC’s use of 50 NM lateral separation. Non–RNP 10 or non–RNP 4 aircraft will be spaced at least 90 NM laterally from other aircraft.

5.3 ATC will not apply 50 NM lateral separation on routes that are defined by reference to ICAO standard ground–based navigation aids. In addition, 50 NM lateral separation is not applied to aircraft on the following route segments, at and above FL 310, because the routes are considered within ATC radar and VHF radio coverage:

5.3.1 M 201 between VIRST and VEGAA, and

5.3.2 L 453 between SAUCR and AZEZU.

**NOTE**–SLOP is not to be used while flying these route segments.

5.4 Flight plan filing and addressing requirements are detailed in ENR 7.1, paragraphs 2 and 3.

5.5 Operators of aircraft not authorized RNP 10 or RNP 4 are expected to follow the procedures in ENR 7.4 paragraphs 1, 7 and 1.13 for alerting ATC of their RNP status. Those operators are expected to indicate their “non–RNP 10” status in Item 18 of their ATC flight plan. In addition, pilots are expected to inform ATC of their “non–RNP 10” status on initial call to ATC on WATRS routes and when reading back a clearance to descend through FL 410.

5.6 Filing a flight plan for, and conducting operations under, RNP 10 or RNP 4 navigation specifications require the aircraft to be equipped with two operable long–range navigation systems (LRNS). Operators who indicate RNP 10 or RNP 4 capability on their ATC flight plans, and subsequently experience a LRNS failure while operating on a WATRS route, must alert ATC to this failure. If the pilot believes the aircraft can continue to be navigated within 10 NM of the cleared route with the single LRNS, ATC should be informed; as such, ATC may continue the aircraft on the cleared route.
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.

<table>
<thead>
<tr>
<th>Minima</th>
<th>Standard</th>
<th>RNP</th>
<th>RCP</th>
<th>RSP</th>
<th>Maximum ADS−C Periodic Reporting Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50 NM</td>
<td>10</td>
<td>240</td>
<td>180</td>
<td>27 minutes</td>
</tr>
<tr>
<td></td>
<td>50 NM</td>
<td>4</td>
<td>240</td>
<td>180</td>
<td>32 minutes</td>
</tr>
<tr>
<td></td>
<td>30 NM</td>
<td>4</td>
<td>240</td>
<td>180</td>
<td>14 minutes</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Minima</th>
<th>Standard</th>
<th>RNP</th>
<th>RCP</th>
<th>RSP</th>
<th>Maximum ADS−C Periodic Reporting Interval</th>
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<tr>
<td></td>
<td>30 NM</td>
<td>4</td>
<td>240</td>
<td>180</td>
<td>10 minutes</td>
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</table>

1.3 Aircraft Future Air Navigation System (FANS) 1/A communications, navigation and surveillance (CNS) capabilities, interfaced with Advanced Technology and Oceanic Procedures (ATOP), are required for ADS−C distance based separation to be applied.

NOTE—1. ADS−C distance based separation standards may not be applied to aircraft utilizing High Frequency Data Link (HFDL).

2. Application

2.1 Oakland, New York and Anchorage ARTCCs will apply the following policies to the use of ADS−C distance based separation:

2.1.1 The separation will be applied to pairs of suitably equipped pairs of aircraft;

2.1.2 Published ATS routes and other tracks (e.g. PACOTS) will continue to be laterally separated by a minimum of 50 NM;

2.1.3 Minimum ADS−C based lateral and longitudinal separation between 30 NM eligible aircraft and 50 NM eligible aircraft is 50 NM; and

2.1.4 Lateral and longitudinal separation standards applied between RNP 10 and non−RNP 10 aircraft remains unchanged.

3. Aircraft and Operator Eligibility for Performance−Based Separation

3.1 The aircraft and operator must be authorized by the State of the Operator or the State of Registry, as appropriate, for 50 NM: at a minimum, RNP 4 or RNAV 10, RCP 240, and RSP 180; and for 30 NM: at a minimum, RNP 4, RCP 240, and RSP 180 operations;

3.2 The aircraft must be equipped with a minimum of two approved long range navigation systems that will enable the aircraft to maintain RNP 4 for the duration of flight in the applicable airspace;

3.3 The aircraft must be equipped with a FANS1/A package (or equivalent) that includes satellite Controller Pilot Data Link Communication (CPDLC) and ADS−C that meet the standards of RTCA Document 258, Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications;

3.4 Satellite CPDLC communications and ADS−C surveillance must be conducted in accordance with the ICAO Global Operational Data Link Document (GOLD), as amended, and maintained for the
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:


3.6.1.2 Australian Civil Aviation Safety Authority (CASA) Advisory Circular 91U3(0); or


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 5 NM track offset when unable to obtain ATC clearance prior to executing maneuvers for contingencies such as rapid descent, turn back, or diversion. This is of particular importance for aircraft to which 30 NM separation can be applied.

5.5 Pilots are required to maneuver (deviate) around convective weather on a regular basis in the course of Pacific operations. The enhanced CNS requirements and capabilities aid pilots and controllers in situations where aircraft are required to maneuver around convective weather. For weather avoidance maneuvers in areas where ADS–C distance based separation is applied, operators should emphasize the following items in pilot training programs:

5.5.1 Pilots should not assume the ATOP system will automatically quickly detect significant changes to the aircraft flight path. Unlike radar, the ATOP system does not receive aircraft position updates in real–time. Aircraft position is updated to the ATOP system at intervals of up to 27 minutes. Controllers may change the update intervals as the situation warrants.

5.5.2 It is imperative that pilots keep ATC advised via CPDLC (or HF voice, if necessary) of their intentions (including significant airspeed changes) during the initial weather avoidance maneuvers 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.
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
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

<table>
<thead>
<tr>
<th>Airport Index</th>
<th>Required Number of Vehicles</th>
<th>Aircraft Length</th>
<th>Agent &amp; Water for Foam</th>
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<tr>
<td>A</td>
<td>1</td>
<td>&lt;90’</td>
<td>500# DC or 450# DC + 100 gal H2O</td>
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<tr>
<td>B</td>
<td>1 or 2</td>
<td>≥90’ &amp; &lt;126’</td>
<td>Index A + 1500 gal H2O</td>
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<tr>
<td>C</td>
<td>2 or 3</td>
<td>≥126’ &amp; &lt;159’</td>
<td>Index A + 3000 gal H2O</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>≥159’ &amp; &lt;200’</td>
<td>Index A + 4000 gal H2O</td>
</tr>
<tr>
<td>E</td>
<td>3</td>
<td>≥200’</td>
<td>Index A + 6000 gal H2O</td>
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> Greater Than; < Less Than; ≥ Equal To or Greater Than; H2O 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 Air Missions (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 lights 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, in normally 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 VASI 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 3.4 NM 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 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 may be a steady white light or alternating RED and 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.
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.

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<th>ICAO ID</th>
<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KFLL</td>
<td>Fort Lauderdale</td>
<td>Fort Lauderdale-Hollywood International</td>
<td>Regular</td>
</tr>
<tr>
<td>KR SW</td>
<td>Fort Myers</td>
<td>Southwest Florida International</td>
<td>Regular</td>
</tr>
<tr>
<td>KMIA</td>
<td>Miami</td>
<td>Miami International</td>
<td>Regular</td>
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<tr>
<td>KMC O</td>
<td>Orlando</td>
<td>Orlando International</td>
<td>Regular</td>
</tr>
<tr>
<td>KTPA</td>
<td>Tampa</td>
<td>Tampa International</td>
<td>Regular</td>
</tr>
<tr>
<td>KPBI</td>
<td>West Palm Beach</td>
<td>Palm Beach International</td>
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**Georgia**

<table>
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<tr>
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<tbody>
<tr>
<td>KATL</td>
<td>Atlanta</td>
<td>Hartsfield – Jackson Atlanta International</td>
<td>Regular</td>
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</table>

**Guam**

<table>
<thead>
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<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
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<tr>
<td>PGUM</td>
<td>Agana</td>
<td>Guam International</td>
<td>Regular</td>
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<tr>
<td>PGUA</td>
<td>Guam Island</td>
<td>Andersen AFB</td>
<td>Alternate</td>
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**Hawaii**

<table>
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<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
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<tr>
<td>PHTO</td>
<td>Hilo</td>
<td>Hilo International</td>
<td>Alternate</td>
</tr>
<tr>
<td>PHNL</td>
<td>Honolulu</td>
<td>Honolulu International</td>
<td>Regular</td>
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<tr>
<td>PHOG</td>
<td>Kahului</td>
<td>Kahului</td>
<td>Regular</td>
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**Illinois**

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<th>Airport Name</th>
<th>Designation</th>
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<tbody>
<tr>
<td>KORD</td>
<td>Chicago</td>
<td>Chicago–O’Hare International</td>
<td>Regular</td>
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**Indiana**

<table>
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<th>Location</th>
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<th>Designation</th>
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<tr>
<td>KIND</td>
<td>Indianapolis</td>
<td>Indianapolis International</td>
<td>Regular</td>
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Federal Aviation Administration  Twenty-Sixth Edition
<table>
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<th>ICAO ID</th>
<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
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<tr>
<td>kict</td>
<td>Kansas</td>
<td>Wichita</td>
<td>Mid-Continent</td>
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<tr>
<td>kcvg</td>
<td>Kentucky</td>
<td>Covington</td>
<td>Regular</td>
</tr>
<tr>
<td>kmsy</td>
<td>Louisiana</td>
<td>New Orleans</td>
<td>Regular</td>
</tr>
<tr>
<td>kbgf</td>
<td>Maine</td>
<td>Bangor</td>
<td>Alternate</td>
</tr>
<tr>
<td>kbwi</td>
<td>Maryland</td>
<td>Baltimore</td>
<td>Regular</td>
</tr>
<tr>
<td>kapos</td>
<td>Massachusetts</td>
<td>Boston</td>
<td>Regular</td>
</tr>
<tr>
<td>kdfw</td>
<td>Michigan</td>
<td>Detroit</td>
<td>Regular</td>
</tr>
<tr>
<td>kmsp</td>
<td>Minnesota</td>
<td>Minneapolis</td>
<td>Regular</td>
</tr>
<tr>
<td>kmci</td>
<td>Missouri</td>
<td>Kansas City</td>
<td>Regular</td>
</tr>
<tr>
<td>kstl</td>
<td>Nevada</td>
<td>Las Vegas</td>
<td>Regular</td>
</tr>
<tr>
<td>kewr</td>
<td>New Jersey</td>
<td>Newark</td>
<td>Regular</td>
</tr>
<tr>
<td>kjfk</td>
<td>New York</td>
<td>John F. Kennedy</td>
<td>Regular</td>
</tr>
<tr>
<td>kiaa</td>
<td>North Carolina</td>
<td>Charlotte</td>
<td>Regular</td>
</tr>
<tr>
<td>krdj</td>
<td>North Carolina</td>
<td>Raleigh-Durham</td>
<td>Regular</td>
</tr>
<tr>
<td>pgsn</td>
<td>Northern Mariana Islands</td>
<td>Saipan Island</td>
<td>Regular</td>
</tr>
<tr>
<td>kphl</td>
<td>Ohio</td>
<td>Philadelphia</td>
<td>Regular</td>
</tr>
<tr>
<td>kpit</td>
<td>Pennsylvania</td>
<td>Pittsburgh</td>
<td>Regular</td>
</tr>
<tr>
<td>tjmy</td>
<td>Puerto Rico</td>
<td>Mayaguez</td>
<td>Regular</td>
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<td>tjsm</td>
<td>Tennessee</td>
<td>Memphis</td>
<td>Regular</td>
</tr>
<tr>
<td>kfn</td>
<td>Texas</td>
<td>Dallas-Fort Worth</td>
<td>Regular</td>
</tr>
<tr>
<td>kelp</td>
<td>Texas</td>
<td>El Paso</td>
<td>Regular</td>
</tr>
<tr>
<td>kiaa</td>
<td>Texas</td>
<td>Houston</td>
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</tr>
<tr>
<td>klrd</td>
<td>Texas</td>
<td>Laredo</td>
<td>Regular</td>
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<tr>
<td>ksat</td>
<td>Texas</td>
<td>San Antonio</td>
<td>Regular</td>
</tr>
</tbody>
</table>

*ICAO* Location Airport Name Designation

AD 2–2 United States of America

**Twenty-Sixth Edition** Federal Aviation Administration
<table>
<thead>
<tr>
<th>ICAO ID</th>
<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSLC</td>
<td>Salt Lake City</td>
<td>Salt Lake City International</td>
<td>Regular</td>
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<tr>
<td></td>
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</tbody>
</table>

**Utah**

**Virgin Islands**

<table>
<thead>
<tr>
<th>ICAO ID</th>
<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIST</td>
<td>Charlotte Amalie</td>
<td>Cyril E King</td>
<td>Regular</td>
</tr>
<tr>
<td></td>
<td>St. Thomas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TISX</td>
<td>Christiansted</td>
<td>Henry E Rohlsen</td>
<td>Regular</td>
</tr>
<tr>
<td></td>
<td>St. Croix</td>
<td></td>
<td></td>
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</table>

**Washington**

<table>
<thead>
<tr>
<th>ICAO ID</th>
<th>Location</th>
<th>Airport Name</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPAE</td>
<td>Everett</td>
<td>Snohomish County (Paine Field)</td>
<td>Alternate</td>
</tr>
<tr>
<td>KSEA</td>
<td>Seattle</td>
<td>Seattle-Tacoma International</td>
<td>Regular</td>
</tr>
<tr>
<td>KGEG</td>
<td>Spokane</td>
<td>Spokane International</td>
<td>Alternate</td>
</tr>
</tbody>
</table>

1.1 Diagrams of these airports, arranged alphabetically by state and in the order listed above, are on the pages following. The most up-to-date diagrams of these and other U.S. airports are in the Terminal Procedures Publication (TPP). For additional information on these airports, see the Chart Supplement U.S.

1.2 Public sales of the Chart Supplement U.S. and TPP are available through a network of FAA approved print providers. A listing of products, dates of latest editions, and print providers is available on the AIS website at: http://www.faa.gov/air_traffic/flight_info/aeronav.
Anchorage, AK
Ted Stevens Anchorage Intl
ICAO Identifier PANC

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 61°10'–26.705N / 149°59'–53.295W
2.2.2 From City: 4 miles SW of ANCHORAGE, AK
2.2.3 Elevation: 151.4 ft
2.2.4 Magnetic Variation: 16E (2020)
2.2.5 Airport Contact: JIM SZCZESNIAK
   BOX 196960
   ANCHORAGE, AK 99519
   (907) 266-2600
2.2.6 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, 100LL, A, A1
2.4.3 Hangar Space: YES
2.4.4 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 4/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10600 ft x 150 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61°10’–11.1539N / 150°0’–29.9998W
2.12.6 Threshold Elevation: 127.6 ft
2.12.6 Touchdown Zone Elevation: 128.2 ft
2.12.1 Designation: 25R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10600 ft x 150 ft
2.12.4 PCN: 81 F/A/W/T
2.12.5 Coordinates: 61°10’–11.3202N / 150°0’–29.9998W
2.12.6 Threshold Elevation: 127.6 ft
2.12.6 Touchdown Zone Elevation: 128.2 ft

AD 2.13 Declared Distances
2.13.1 Designation: 07L
2.13.2 Takeoff Run Available: 10600 ft
2.13.3 Takeoff Distance Available: 10600 ft
2.13.4 Accelerate–Stop Distance Available: 10600 ft
2.13.5 Landing Distance Available: 10600 ft
2.13.1 Designation: 25R
2.13.2 Take-off Run Available: 10600 ft
2.13.3 Take-off Distance Available: 10600 ft
2.13.4 Accelerate–Stop Distance Available: 10600 ft
2.13.5 Landing Distance Available: 10600 ft

2.13.1 Designation: 07R
2.13.2 Take-off Run Available: 10900 ft
2.13.3 Take-off Distance Available: 10900 ft
2.13.4 Accelerate–Stop Distance Available: 10900 ft
2.13.5 Landing Distance Available: 12400 ft

2.13.1 Designation: 25L
2.13.2 Take-off Run Available: 12400 ft
2.13.3 Take-off Distance Available: 12400 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 15
2.13.2 Take-off Run Available: 10865 ft
2.13.3 Take-off Distance Available: 10865 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 33
2.13.2 Take-off Run Available: 10865 ft
2.13.3 Take-off Distance Available: 11965 ft
2.13.4 Accelerate–Stop Distance Available: 10865 ft
2.13.5 Landing Distance Available: 10400 ft

2.14.1 Designation: 25L
2.14.2 Approach Lighting System:

2.14.1 Designation: 15
2.14.2 Approach Lighting System: MALSF

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 07L. Magnetic variation: 16E
2.19.2 ILS Identification: TGN
2.19.5 Coordinates: 61–10–13.93N / 150–0–9.62W
2.19.6 Site Elevation: 122.8 ft

2.19.1 ILS Type: Glide Slope for runway 07L. Magnetic variation: 16E
2.19.2 ILS Identification: TGN
2.19.5 Coordinates: 61–10–11.3329N / 149–56–32.6534W
2.19.6 Site Elevation: 84.7 ft

2.19.1 ILS Type: Localizer for runway 07L. Magnetic variation: 16E
2.19.2 ILS Identification: TGN
2.19.5 Coordinates: 61–10–11.3329N / 149–56–32.6534W
2.19.6 Site Elevation: 84.7 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.5 Coordinates: 61–10–2.0211N / 149–57–58.3996W
2.19.6 Site Elevation: 112 ft
2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.5 Coordinates: 61–10–8.1823N / 150–2–12.4572W
2.19.6 Site Elevation: 124.9 ft

2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 16E
2.19.2 ILS Identification: BSC
2.19.5 Coordinates: 61–11–46.76N / 150–0–54.42W
2.19.6 Site Elevation: 151.3 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 16E
2.19.2 ILS Identification: ANC
2.19.6 Site Elevation: 97.7 ft

2.19.1 ILS Type: Localizer for runway 15. Magnetic variation: 16E
2.19.2 ILS Identification: BSC
2.19.5 Coordinates: 61–9–59.9158N / 149–59–45.6352W
2.19.6 Site Elevation: 120.9 ft

2.19.1 ILS Type: DME for runway 15. Magnetic variation: 16E
2.19.2 ILS Identification: BSC
2.19.5 Coordinates: 61–10–0.0069N / 149–59–40.3379W
2.19.6 Site Elevation: 120.9 ft

General Remarks:

RIGHT TURN OUT OF RAMP PARKING AREA R–2 THROUGH R–4 PROHIBITED.

TWY V, SECURITY GATE EAST OF TWY E, PCL KEY 121.75 5 TIMES TO ACTIVATE. TWY H–2, LAKE SHORE TWY GATES, PCL KEY 121.75 3 TIMES TO ACTIVATE. IF PCL TWY GATES INOPERATIVE, ALLOW 30 SECONDS TO RESET AND TRY AGAIN. IF UNSUCCESSFUL, NOTIFY LHD OPS, 907–266–2600.

UNLGTD 489 FT TWR 2 1/2 MILES NORTHEAST.

NOISE SENSITIVE AREA IN EFFECT; CTC APRT OPNS 907–266–2600 FOR FURTHER INFO.

TWY V RESTRICTED TO ACFT WEIGHING 12500 LBS OR LESS. SUBJECT TO JET BLAST WEST OF TWY E.

MIGRATORY BIRDS INVOF ARPT SPRING THROUGH FALL.


ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NO COMPASS CALIBRATION PAD.


TWY J STOP BAR NON–STANDARD. LEAD ON LIGHTS REMAIN ON WHEN ACTIVATED.

TWY S, EAST OF TWY R NOT LIGHTED.

RWY 07R: BACK–TAXING FM TWY J FOR DEP PROHIBITED.
ANCHORAGE WX CAMERA AVBL ON INTERNET AT HTTPS://WEATHERCAM.S.FAA.GOV.

FOR WSO PHONE 907–266–5105.

ALL TURBOJET/TURBOFAN ACFT DEPARTING RWY S 7R/7L DURING A RWY 15/33 CLOSURE WILL EMPLOY THE FAA CLOSE–IN NADP OR ICAO PROCEDURE B NADP WHEN SAFETY PERMITS.

USE FREQ 122.55 (RCO) FOR FILING, ACTIVATING & CANCELING FLIGHT PLANS IN THE ANCHORAGE BOWL AREA.

RWY END 25L HAS 200 FT BLAST PAD.

PORTIONS OF TWY K BTN TWY H & TWY J NOT VIS FROM ATCT.

ONE HR PPR FOR NON–TRANSPONDER ACFT OPNS. PPR FOR NON–RADIO ACFT OPNS. NO NIGHTTIME NON–RADIO ACFT OPNS PERMITTED. PILOTS MUST PROVIDE AN ETA & REMAIN WITHIN PLUS OR MINUS 15 MINUTES OF ETA.

TRANSIENT MILITARY ACFT PPR.
Anchorage, AK  
Elmendorf AFB  
ICAO Identifier PAED

AD 2.2 Aerodrome geographical and administrative data
2.2.2 From City: 3 miles NE of Anchorage, AK
2.2.3 Elevation: 213 ft
2.2.5 Magnetic Variation: 18E (2015)
2.2.6 Airport Contact: AIRFIELD MGR  
300SS/DOFJ  
ELMENDORF AFB, AK 99506  
(907–552–2444)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types:
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 80
2.12.3 Dimensions: 10000 ft x 200 ft
2.12.4 PCN: 58 R/B/W/T
2.12.5 Coordinates: 61–14–55.08N / 149–50–39.34W
2.12.6 Threshold Elevation: 174.5 ft
2.12.6 Touchdown Zone Elevation: 174.5 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 360
2.12.3 Dimensions: 7493 ft x 150 ft
2.12.4 PCN: 55 F/A/W/T
2.12.5 Coordinates: 61–14–29.64N / 149–47–36.57W
2.12.6 Threshold Elevation: 184.9 ft
2.12.6 Touchdown Zone Elevation: 194.1 ft

2.12.1 Designation: 16
2.12.2 True Bearing: 180
2.12.3 Dimensions: 7493 ft x 150 ft
2.12.4 PCN: 55 F/A/W/T
2.12.5 Coordinates: 61–15–43.43N / 149–47–36.52W

2.12.6 Threshold Elevation: 212.5 ft
2.12.6 Touchdown Zone Elevation: 212.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 24
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 16
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 34
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06
2.14.2 Approach Lighting System: ALSF1

2.14.1 Designation: 24
2.14.2 Approach Lighting System:

2.14.1 Designation: 16
2.14.2 Approach Lighting System:
2.14.1 Designation: 34
2.14.2 Approach Lighting System:

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 18E
2.19.2 ILS Identification: EDF
2.19.5 Coordinates: 61°15’-14.33N / 149°46’-52.29W
2.19.6 Site Elevation: 226.2 ft

2.18 Air Traffic Services Communication Facilities
2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 18E
2.19.2 Navigation Aid Identification: EDF
2.19.5 Coordinates: 61°15’-18.03N / 149°46’-9.03W
2.19.6 Site Elevation: 212.3 ft

General Remarks:
During VMC Deps/Missed Apchs/Go Arounds; Acft shall maintain at or blw 1200 ft MLS until dep end of RWY 06.

RWY 34 has a 500 ft displaced thld allowing 7993 ft usable for Tkfs (RWY 34 TKFS only). Acft reqg to use the additional 500 ft for RWY 34 TKF must ctc ATC.

Extensive svc delay for fuel.

Caution: Unlit terrain 0 ft AGL/341 ft MSL, 1909 ft prior to thld, 1914 ft right of course.

Trans Alert Acft svc ltd to pol servicing, intake inspections, magnetic chip detector inspections and EOR inspections.

Quiet hr 0630-1400Z WKDAYS; 0630-1600Z Wkend & Hols, AMC Acft exempt.


Frequent activity in R2203; when unable to avoid, ctc ATCT.

Limited maintenance capabilities on Wkend.

Joap & low & high presure nitrogen servicing furnished during normal duty hours, OTR times on request.

Unless participating in Majcom sponsored excer at elmendorf; deployed or staged units must ctc 3 WG scheduling at DSN 317-552-2406 or C907-552-2406 as early as possible to coord local area orientation briefing, maint sponsorship if applicable, and submit visiting unit request form for 3 og/cc apvl prior to LCL area ops.

Oil: 0-123, 0-128, 0-133, 0-148, 0-156, JOAP.

HGR space & warm storage extremely ltd Oct-May.

For current RCR/RSC’s on RWY 06/24 and RWY 16/34, and a fld RCRS ctc TWR.

Change jet aircraft starting units (JASU) to, (A/M32A-86), (M-1A), (M-2A), (AM 32A-60A), (AM 32-95)150 +/-5 LBS/MIN (2055 +/-68CFM) at 51 +/-02 PSIA. LASS 150 +/-5 LBS/MIN @ 49 +/-2 PSIA.

If exp to use RWY 16 for dep or RWY 34 for ldg see JBER cartee airspace description in

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NOTICES SEC OF THIS SUPPLEMENT.

ACFT REQUIRING CABLES DE-RIGGED MUST CTC BASE OPS 24 HR PRIOR TO ARR OR MAKE REQ PRIOR TO PPR BEING ISSUED.

ALL FTR ACFT ON ARR EXPECT REDUCED SEPARATION; SAME TYPE ACFT AND DAY 3000 FT; DISSIMILAR ACFT AND/OR NIGHT 6000 FT; AHEAD/BEHIND FORMATION LDG–6000 FT.

ALL NON–AMC ACFT RQR 732 AMS MAINT/SVC MAY EXPERIENCE LOGISTICAL DELAYS DUE TO MISSION NECESSITIES.

SPECIAL AIR TRAFFIC RULES FAR PART 93, SEE REGULATORY NOTICES IN THE SUPPLEMENT.

FLUID: PRESAIR, DE–ICE, NITROGEN–LHNIT.

NORMAL BARRIER CONFIGURATION DUR FTR FLY WINDOW LEAVES 5675 FT BTN CABLES ON RWY 06/24, OUTSIDE OF FTR FLY WINDOWS THERE IS 7658 FT BTN CABLES.

RWY 34 DEPARTURES FOR ACFT WITH WINGSPANS GREATER THAN 98 FT RQR PRIOR COORD WITH AMC, ATC TWR, OR ALD MGT.

DV SPOTS 1 AND 3 LTD TO ACFT WITH WINGSPANS OF 136 FT OR LESS.

ALL VIP ACFT CTC BASE OPS 30 MIN PRIOR TO ARR ON PTD 372.2 OR 134.1 OR C907–552–2107.

UNITS DEPLOYING TO, STAGING OUT OF, OR FLYING LCL SORTIES AT ELMENDORF AFB MUST DEPLOY WITH MAINT PERS REQUIRED TO COMPLETE OPS TO INCLUDE DE-ICE QUALIFIED CREW MEMBERS DUR COLD WX OPS.

ANY DEPLOYED OR STAGED ACFT WILL NOT RCV TA SUPPORT BY D INITIAL BLOCK IN.

C17/C130 OVERT LIGHTS AVBL ON RWY 16/34. C17/C130 COVERT LIGHTS AVBL ON RWY 16.

NO SIGNS ACCOMPANYING HOLD SHORT LINES ON INTERSECTING RWYS.

CAUTION: MOOSE ON & INVOF RWY.

LNDG RWY 16 NOT RCMND FOR JET ACFT EXCPT DURG DAY VFR DUE OBSTRN 337 FT MSL LCTD 1950 FT FM THR & 574 FT W OF CNGLRN.

WX OPR H24; DSN 317–552–4903/4397, C907–552–4903/4397. AUGMENTED SFC VIS RSTD E–SW BY BLDG.

IFF SVC AVBL.


CAUTION: WHEN RWY 16 VGSI INOP, STR–IN TO RWY 16 ONLY AUTHORIZED AT NIGHT WITH MAJCOM A3 APVL.

RWY 16/34 RWY DIST REMAINING (RDR) SIGNS NOT LCTD IN CORRECT LCTN. AT RWY 16 – 2 RDR 2487 FT OF RWY REMAINING. AT RWY 16 –1 RDR 1487 FT OF RWY REMAINING.

NOTICE: A RIDGE EXTENDING FROM APPROXIMATELY 260–020 DEGS ONE TO TWO MILES FROM THE TOWER PREVENTS OBSERVATION OF FOG OVER KNIK ARM. VISIBILITY MAY DROP RAPIDLY AS FOG POURES OVER RIDGE.
FUEL: J8

AFLD MGMT DOES NOT HAVE COMSEC STORAGE AVBL. FOR COMSEC STORAGE CTC COMMAND POST DSN 317–552–3000.

AMC ACFT ON AN AMC ASGN MSN CAN EXP TO HAVE MAINT SVC ACCOMPLISHED BY 732 AMS.

ALL ACFT MAINTAIN IDLE POWER ON OUTBOARD ENG WHILE TAXIING.

NVD OPS ON RWY 16/34 & RWY 06/24 MON–FRI FROM 0400–1000Z++.

JOAP, JOINT OIL ANALYSIS PROGRAM AVBL. LHNIT, LOW & HIGH PRESSURE NITROGEN SERVICING AVBL. DE–ICE, TYPE 1 DE–ICE LIFTOFF P–88; TYPE 4 ANTI–ICE CLARIANT SAFEWING MP–LAUNCH.


PPRS WILL BE ISSUED NO EARLIER THAN 7 DAYS PRIOR TO ARR.

ACFT REQUIRING CUSTOMS AND AG INSPECTIONS ARE RQR TO CTC BASE OPS NO LATER THAN 90 MIN PRIOR TO ARR.

PPR REQUIRED FOR ALL NON JBER ASSIGNED ACFT EXCEPT NON–EXPLOSIVE LADEN AMCC ACFT UNLESS CONDUCTING LCL TRNG.

SUBMIT ALL PPR REQUESTS UTILIZING THE PAED PPR REQUEST FORM LOCATED IN THE PAED GIANT REPORT STIF TO BASEOPS3@US.AF.MIL NO EARLIER THAN 30 DAYS PRIOR AND NO LATER THAN 48 HOURS PRIOR TO ARRIVAL TO BEGIN COORDINATION FOR PPR.

TWYS N2 & N5 PERM CLOSED.
Cold Bay, AK  
Cold Bay  
ICAO Identifier PACD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 55°12′12.3″N / 162°43′0.345″W
2.2.2 From City: 0 miles N of COLD BAY, AK
2.2.3 Elevation: 99.5 ft
2.2.4 Magnetic Variation: 12E (2015)
2.2.5 Airport Contact: HAROLD KREMER  
BOX 97  
COLD BAY, AK 99571  
(907) 532-5000
2.2.6 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, MON – SAT Days, 0700 – 1800 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index  
I B certified on 4/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 95°
2.12.3 Dimensions: 4900 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55°11′57.1589″N / 162°43′56.7308″W
2.12.6 Threshold Elevation: 88.9 ft
2.12.6 Touchdown Zone Elevation: 95.2 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 275°
2.12.3 Dimensions: 10179 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55°13′20.4998″N / 162°44′16.4235″W
2.12.6 Threshold Elevation: 72.5 ft
2.12.6 Touchdown Zone Elevation: 75 ft

2.12.1 Designation: 15
2.12.2 True Bearing: 158°
2.12.3 Dimensions: 10179 ft x 150 ft
2.12.4 PCN: 62 F/B/X/T
2.12.5 Coordinates: 55°11′47.2428″N / 162°43′11.707″W
2.12.6 Threshold Elevation: 93.3 ft
2.12.6 Touchdown Zone Elevation: 93.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take–off Run Available: 4900 ft
2.13.3 Take–off Distance Available: 4900 ft
2.13.4 Accelerate–Stop Distance Available: 4900 ft
2.13.5 Landing Distance Available: 4900 ft

2.13.1 Designation: 26
2.13.2 Take–off Run Available: 4900 ft
2.13.3 Take–off Distance Available: 4900 ft
2.13.4 Accelerate–Stop Distance Available: 4900 ft
2.13.5 Landing Distance Available: 4900 ft

2.13.1 Designation: 15
2.13.2 Take–off Run Available: 10180 ft
2.13.3 Take–off Distance Available: 10180 ft
2.13.4 Accelerate–Stop Distance Available: 10180 ft
2.13.5 Landing Distance Available: 10180 ft

2.13.1 Designation: 33
2.13.2 Take–off Run Available: 10180 ft
2.13.3 Take–off Distance Available: 10180 ft
2.13.4 Accelerate–Stop Distance Available: 10180 ft
2.13.5 Landing Distance Available: 10180 ft

2.13.1 Designation: 15
2.13.2 Take–off Run Available: 10180 ft
2.13.3 Take–off Distance Available: 10180 ft
2.13.4 Accelerate–Stop Distance Available: 10180 ft
2.13.5 Landing Distance Available: 10180 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08
2.14.2 Approach Lighting System:

2.14.1 Designation: 26
2.14.2 Approach Lighting System:

2.14.1 Designation: 15
2.14.2 Approach Lighting System: MALSR
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 33
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 12E
2.19.2 ILS Identification: CDB
2.19.5 Coordinates: 55–13–12.7692N / 162–44–3.6464W
2.19.6 Site Elevation: 98.5 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 10E
2.19.2 Navigation Aid Identification: CDB
2.19.6 Site Elevation: 98.5 ft

General Remarks:
TWR 4.8 NM NW OF ARPT UNLGTD, TWR 0.9 NM S OF ARPT UNLGTD AND TWR 0.4 NM N OF ARPT UNLGTD.


WX CAMERA AVBL ON INTERNET AT HTTP://AVCAM.S.FAA.GOV

BRAKELOCK TURNS NOT ALLOWED ON RYS.

NO CUSTOMS AVBL; WRITTEN PERMISSION REQUIRED FOR REFUELING STOPS 24–48 HRS IN ADVANCE IF ARRIVING FROM A FOREIGN COUNTY; FAX 907–271–2684 OR 907–271–2686.

ROTG BCN OPS UNMONITORED WHEN CDB FSS UNMANNED.

REMARK: NWS WEATHER BALLOON LAUNCH FACILITY LOCATED ON AIRPORT, SEE INSIDE BACK COVER FOR OPERATIONS DETAILS.

PERSONNEL AND EQUIPMENT MAY BE WORKING ON THE RY AT ANY TIME.

LARGE BIRDS NEAR APCH ENDS OF ALL RYS.

CFR INDEX B. INDEX MAY BE REDUCED FOR ACFT LESS THAN 90’.

SNOW & ICE REMOVAL AND ARPT HAZ RPRTG ONLY PERFORMED DURING DUTY HRS UNLESS BY PRIOR ARNGMT IN WRITING WITH AMGR.
**Fairbanks, AK**  
**Eielson AFB**  
**ICAO Identifier PAEI**

### AD 2.2 Aerodrome Geographical and Administrative Data

2.2.1 Reference Point: 64°39′56.32″ N / 147°6′5.18″ W
2.2.2 From City: 17 miles SE of FAIRBANKS, AK
2.2.3 Elevation: 547.5 ft
2.2.5 Magnetic Variation: 19°E (2015)
2.2.6 Airport Contact: CHIEF AIRFIELD MANAGEMENT 343 CSG/OTM EIELSON AFB, AK 99702 (907-377-3201)
2.2.7 Traffic: IFR/VFR

### AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, 1600–0800Z ++ Hours

### AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types:
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

### AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: None

### AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 32
2.12.2 True Bearing: 339
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 61 R/C/W/T
2.12.5 Coordinates: 64°38′49.48″ N / 147°5′5.85″ W
2.12.6 Threshold Elevation: 547.5 ft
2.12.6 Touchdown Zone Elevation: 547.5 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 159
2.12.3 Dimensions: 14530 ft x 150 ft
2.12.4 PCN: 61 R/C/W/T
2.12.5 Coordinates: 64°41′3.14″ N / 147°7′4.52″ W
2.12.6 Threshold Elevation: 533.9 ft
2.12.6 Touchdown Zone Elevation: 536.8 ft

### AD 2.13 Declared Distances

2.13.1 Designation: 32
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft
2.13.1 Designation: 14
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

### AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 32
2.14.2 Approach Lighting System: ALSF1
2.14.1 Designation: 14
2.14.2 Approach Lighting System: ALSF1

### AD 2.18 Air Traffic Services Communication Facilities

### AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: Glide Slope for runway 14. Magnetic variation: 19°E
2.19.2 ILS Identification: EIL
2.19.5 Coordinates: 64°40′51.59″ N / 147°7′6.54″ W
2.19.6 Site Elevation: 532 ft
2.19.1 ILS Type: Localizer for runway 14. Magnetic variation: 19°E
2.19.2 ILS Identification: EIL
2.19.5 Coordinates: 64°48′33.05″ N / 147°4′51.27″ W
2.19.6 Site Elevation: 548 ft
2.19.1 ILS Type: Glide Slope for runway 32. Magnetic variation: 19°E
2.19.2 ILS Identification: EAF
2.19.5 Coordinates: 64°38′58.93″ N / 147°5′25.28″ W
2.19.6 Site Elevation: 528 ft
2.19.1 ILS Type: Localizer for runway 32. Magnetic variation: 19°E
2.19.2 ILS Identification: EAF
2.19.5 Coordinates: 64°41′22.13″ N / 147°7′21.41″ W
2.19.6 Site Elevation: 528 ft
2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 19°E
2.19.2 Navigation Aid Identification: EIL
2.19.5 Coordinates: 64°39′30″N / 147°38′59″W
2.19.6 Site Elevation: 542.4 ft

General Remarks:

DEP ACFT REMAIN AT OR BLW 1500 FT TIL DEP END OF RWY.

SEE AP1 SUPPLEMENTARY ARPT RMKS. LIMITED SECRET AND COMSEC STORAGE AVBL AT AIRFIELD MANAGEMENT.

OVERHEAD TFC PAT ALT 2000 FT MSL; RECTANGULAR TFC PAT ALT 1500 FT MSL.

QUIET HRS DLY 0700–1500Z–, NO TKOF, LDG, LO APCH, OR TGL, EXCEPTIONS RQR OPS GROUP COMMANDER APPROVAL. UNCONTROLLED TKOF/LDG NOT AUTH.

DURING BIRD WATCH CONDITION MODERATE LCL PATTERN WORK LIMITED TO MIN RQR WITH OG/CC APPROVAL, NO TGL, FORMATION TKOF/LNDG PROHIBITED AND LOW APCH LIMITED TO 300 FT AGL. DURING BIRD WATCH CONDITION SEVERE; TKOF, PATTERN, AND LNDG PROHIBITED WITHOUT OG/CC APPROVAL, EXCP FOR EMERG.

ALL CONTINGENCY OPER CTC AMGR FOR COORDINATION.

TRAN ALERT: TRANSIENT MAINT LMTD TO F16 SVCG UPON AIRCREW REQ. THRU FLIGHT/BPO/PRE-FLIGHT ISNP OF F16 NOT AVBL.

NO ENGINE RUNNING ON−LOADS/OFF−LOADS (ERO) SERVICES AVAILABLE FOR AMC AIRCRAFT.

NSTD RWY EDGE LGTS.

FOR FLT ADVISORIES OR STATUS OF RESTRICTED & MOAS CTC EIERSON RANGE CTL ON SAUSIS RADIO 125.3 OR CALL 1−800−758−8723.

AIR TERMINAL AND GROUND HANDLING SVC OPRS 1630−0030Z++ WEEKDAYS. ACFT REQUIRING TERMINAL AND GROUND HANDLING SVC ARE REQUIRED TO PROVIDE ADVANCE NOTICE OR DELAYS IN SVC MAY BE EXPERIENCED. ACFT REQUIRING SVC SHOULD MAKE PRIOR COORDINATION WITH AIRFIELD MANAGEMENT.

N & S BARRIER RUNOUT REDUCED TO 950 FT.

MOOSE HAVE BEEN SPOTTED ON OR NEAR THE RWY ENVIRONMENT ALL HRS OF THE DAY.

PRE−COORDINATE WITH MAINT OPS CENTER DSN 317–377–1205 NO LATER THAN 48 HRS FROM ETA. ANY DEPLOYED OR STAGED ACFT WILL NOT RECEIVE TA SUPPORT BYD INITzial BLOCK IN/FINAL BLOCK OUT, UNLESS PARTICIPATING IN MAJCOM SPONSORED EXER AT EIELSON. UHF IS THE PREF PATTERN FREQ.

VHF PTD FREQUENCY IS UNMONITORED.

MILITARY−FLUID DE−ICE AVBL, ANTI−ICE UNAVBL.

CTC AIRFIELD MANAGEMENT DSN 317–377–1861, C907–377–1861 FOR PPR NUMBER NO EARLIER THAN 5 DAYS AND NO LATER THAN 24 HR PRIOR TO ARR. PPR GOOD FOR +/- 30 MIN OF PPR TIME. COORD OF PPR OUTSIDE OF TIME BY PHONE IS REQ OR PPR NR WILL BE CONSIDERED CNL. EXP ARR TIME RESTRICTION FOR ALL ACFT EXC AIR EVAC AND DV CODE 7 OR HIGHER.

TRANS ALERT SVC AVBL 0700–0000 MON–FRI EXCP HOL; OTHER TIMES PPR THROUGH BASOPS.

CAUTION: NSTD LGT, 2000 FT OF RWY EDGE LGT BTN DELTA–CHARLIE TWYS LCTD 12 FT FR RWY EDGE.

PAEW ON RWY 14–32 WHEN TWR UNMANNED.

AUGMENTATION CAPABLE 1600–0800Z+. DUR EVAC OF WX STN CTC OP WX SQDN AT NR ABV. ALT WX LCTN VIS SEVERELY LTD DUE TO BLDG AND PRK ACFT.

TRANS BILLETING EXTREMELY LTD/EXTENSIVE FUEL DELAYS DUR RED FLAG ALASKA EXERCISE (APR–OCT).

AIRPORT RMKS: RWY 300 FT WIDE ENTIRE LENGTH, CENTER 150 FT USABLE.


PORTIONS OF APRON ‘O’ ROW AND SOUTH RAMP NOT VISIBLE FROM TWR.

LOOP TWY EAST OF CORROSION/HANGAR 1348 THROUGH THE 4/8 BAY AREA RESTRICTED TO ACFT W/WINGSPAN OF 45 FT OR SMALLER.

EDGE LGT NSTD RWY 32/14 AT TWY A RWY EDGE LGT AT TWY A ENTRANCE ON THE EAST SIDE OF THE RWY; RESULTING GAP BTN LGT IS 446 FT.

BASE OPS DOES NOT HAVE COMSEC RESPONSIBILITIES. BASE OPS WILL NOT ISSUE COMSEC.

TO AVOID DELAY FILE FLIGHT PLAN AT LEAST 2 HRS PRIOR TO ESTIMATED TIME OF DEPARTURE. ARRIVALS REQUIRING CUSTOMS MUST NOTIFY COMMAND POST 1.5 HRS PRIOR TO LANDING. U.S. IMMIGRATION SVC NOT AVBL. AIR TERMINAL AND GROUND HANDLING SVC OPRS 1630–0030Z++ WEEKDAYS.

CARGO & PSGR CARRYING ACFT CALL COMMAND POST 3 HRS PROIR TO LNDG AND 30 MIN PROIR TO LNDG AND STATE NUMBER OF PASSENGERS.

PM SV: METRO BELOW 3000 FT RECEPTION FROM 300–090 IS LIMITED BEYOND 15NM BY TERRAIN, BELOW 15000 FT LIMITED BEYOND 75NM, NO LIMITATIONS WITHIN 100NM AT 20000 FT.

EDGE LGT NSTD RWY 32/14 AT TWY C RWY EDGE LGT AT TWY C ENTRANCE ON THE EAST SIDE OF THE RWY; RESULTING GAP BTN LGT IS 400 FT.

AIRCREW BE ADVISED FLD COND NOTAM (FICON) AND RWY COND CODE (RWYCC) NOT REPORTED BY AMOPS.

ALL PACAF FTR ACFT ON ARR EXPECT REDUCED RWY SEPARATION; SIMILAR FTR TYPE/DAY – 3000 FT; DISSIMUL AR FTR TYPE AND/OR NGT WET RWY OR RCR RPT LESS THAN 17–6000 FT; BEHIND FORMATION LNDG – 6000 FT; FTR TYPE LDG BEHIND NON–FTR TYPE – 9000 FT; RCR VALIDATED AS CONDITIONS WARRANT.
AVOID SMALL ARMS RANGE LCTD 2.5 NM E OF APCH END RWY 32. SMALL ARM RANGE ACTIVE WKD 1700−0100Z++, SFC TO 3500 FT AGL.

CRYPTO MATERIALS NOT AVBL TRAN CREW. ALL ACFT WITH VIP CTC AIRFIELD MANAGEMENT 20−30 MINUTES PRIOR TO ETA WITH FIRM CHOCK TIME. LTD FLEET SVC AVBL, NO POTABLE WATER.

RWY 14 & 32 PAPI GS NOT COINCIDENTAL WITH ILS GS.

LIMITED SECRET AND COMSEC STORAGE AVBL AT BASE OPS. AIRFIELD MANAGEMENT DOES NOT HAVE COMSEC RESPONSIBILITIES. FOR TOP SECRET AND COMSEC ISSUE/STORAGE CTC COMMAND COMMAND POST DSN 317−377−1500.

PHONE PATCH CAPABILITY THROUGH 354 FW/CP AT 907−377−1500. FMQ19 907−377−5846.

FAIRBANKS FSS LC 474−0137. FOR FLIGHT ADVISORIES OR STATUS OF RESTRICTED AND MILITARY OPERATING AREAS, CTC EIELSON RANGE CONTROL ON SUAIS RADIO 125.3 OR TELEPHONE 1−800−758−8723.

ARFF STATUS CRITICAL LVL OF SVC (CLS) 62% FOR USAF CAT 10; AND REDUCED LVL OF SVC (RLS) 81% FOR USAF CAT 9.

BRIEFING FOR TRANSIENT AIRCREWS BEYOND NORMAL OPERATING HRS VIA 17TH OWS AT JOINT BASE PEARL HARBOR–HICKAM DSN 315−449−8333/7950 C808−449−8333/7950 OR DSN 315−448−3809, C808−448−3809.

RWY 14/32 BAK−12 DEP END CABLES IN RAISED POSITION; BAK−12 AER 14/32 AVBL WITH 20 MIN PRIOR NOTICE. NORTH BARRIER RUNOUT REDUCED TO 950 FT, HOOK EQUIPPED ACFT BE ALERT.

CAUTION: FIRE HYDRANTS LCTD 64 FT NE OF TWY H CNTLN.

AIRPORT RMKS: PRIME KNIGHT NOT AVBL.

ARPT OPR 1600−0800Z++.

RADIO/NAV/WEATHER REMARKS – (F) 1500−0700Z ++DAILY.
Fairbanks, AK  
Fairbanks Intl  
ICAO Identifier PAFA

**AD 2.2 Aerodrome geographical and administrative data**
2.2.1 Reference Point: 64°48′55.2758″ N / 147°51′23.973″ W
2.2.2 From City: 3 miles SW of FAIRBANKS, AK  
2.2.3 Elevation: 439 ft  
2.2.5 Magnetic Variation: 15°E (2025)  
2.2.6 Airport Contact: ANGIE SPEAR  
6450 AIRPORT WAY – SUITE 1  
FAIRBANKS, AK 99709  
(907) 474-2500
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**
2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**
2.4.1 Cargo Handling Facilities: YES  
2.4.2 Fuel Types: 100LL, A1  
2.4.5 Hangar Space: YES  
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**
2.6.1 Aerodrome Category for Firefighting: ARFF Index  
IC certified on 3/1/2005

**AD 2.12 Runway Physical Characteristics**
2.12.1 Designation: 02  
2.12.2 True Bearing: 38  
2.12.3 Dimensions: 2900 ft x 75 ft  
2.12.4 PCN:  ///  
2.12.5 Coordinates: 64°48′57.8002″ N / 147°50′47.5998″ W  
2.12.6 Threshold Elevation: 433 ft  
2.12.6 Touchdown Zone Elevation: 434.6 ft
2.12.1 Designation: 20R  
2.12.2 True Bearing: 218  
2.12.3 Dimensions: 2900 ft x 75 ft  
2.12.4 PCN:  ///  
2.12.5 Coordinates: 64°49′20.2644″ N / 147°50′6.2715″ W  
2.12.6 Threshold Elevation: 433 ft  
2.12.6 Touchdown Zone Elevation: 434.6 ft
2.12.1 Designation: 02R  
2.12.2 True Bearing: 38  
2.12.3 Dimensions: 4510 ft x 75 ft  
2.12.4 PCN:  ///  
2.12.5 Coordinates: 64°48′1.8635″ N / 147°52′32.2371″ W  
2.12.6 Threshold Elevation: 433.2 ft  
2.12.6 Touchdown Zone Elevation: 433.2 ft
2.12.1 Designation: 02L  
2.12.2 True Bearing: 38  
2.12.3 Dimensions: 11800 ft x 150 ft  
2.12.4 PCN: 78 F/A/W/T  
2.12.5 Coordinates: 64°48′9.4756″ N / 147°53′9.1838″ W  
2.12.6 Threshold Elevation: 435.6 ft  
2.12.6 Touchdown Zone Elevation: 438.6 ft
2.12.1 Designation: 20L  
2.12.2 True Bearing: 218  
2.12.3 Dimensions: 4510 ft x 75 ft  
2.12.4 PCN:  ///  
2.12.5 Coordinates: 64°48′35.81″ N / 147°52′28.04″ W  
2.12.6 Threshold Elevation: 434.1 ft  
2.12.6 Touchdown Zone Elevation: 434.1 ft
2.12.1 Designation: 20W  
2.12.2 True Bearing: 218  
2.12.3 Dimensions: 5400 ft x 100 ft  
2.12.4 PCN:  ///  
2.12.5 Coordinates: 64°48′58.0039″ N / 147°51′16.5892″ W  
2.12.6 Threshold Elevation: 423.4 ft  
2.12.6 Touchdown Zone Elevation: 423.4 ft
2.12.1 Designation: 02W  
2.12.2 True Bearing: 38  
2.12.3 Dimensions: 5400 ft x 100 ft  
2.12.4 PCN:  ///  
2.12.5 Coordinates: 64°48′59.2500″ N / 147°47′54.2500″ W  
2.12.6 Threshold Elevation: 423.4 ft  
2.12.6 Touchdown Zone Elevation: 423.4 ft
AD 2.13 Declared Distances

2.13.1 Designation: 02
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 20
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 02L
2.13.2 Take-off Run Available: 11800 ft
2.13.3 Take-off Distance Available: 12800 ft
2.13.4 Accelerate–Stop Distance Available: 11800 ft
2.13.5 Landing Distance Available: 11050 ft

2.13.1 Designation: 20R
2.13.2 Take-off Run Available: 11800 ft
2.13.3 Take-off Distance Available: 12800 ft
2.13.4 Accelerate–Stop Distance Available: 11800 ft
2.13.5 Landing Distance Available: 11050 ft

2.13.1 Designation: 02R
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 20L
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 20W
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 02W
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 02
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 20
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 02L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 20R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 02R
2.14.2 Approach Lighting System:

2.14.1 Designation: 20L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 20W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 02W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

2.18.1 Service Designation: APCH/P DEP/P (360–179)
2.18.3 Channel: 127.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P (360–179)
2.18.3 Channel: 251.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (180–359)
2.18.3 Channel: 125.35
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (180–359)
2.18.3 Channel: 363.2
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/S
2.14.3 Channel: 119.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 124.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 127.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/S
2.14.3 Channel: 327.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RADAR
2.14.3 Channel: 253.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RADAR
2.14.3 Channel: 338.275
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RADAR
2.14.3 Channel: 353.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TRSA (180–359)

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 02L. Magnetic variation: 15E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64–49–50.7376N / 147–50–15.0194W
2.19.6 Site Elevation: 434.8 ft

2.19.1 ILS Type: Glide Slope for runway 02L. Magnetic variation: 15E
2.19.2 ILS Identification: CNA
2.19.6 Site Elevation: 431.4 ft

2.19.1 ILS Type: Inner Marker for runway 02L. Magnetic variation: 15E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64–48–7.6611N / 147–53–12.5267W
2.19.6 Site Elevation: 429.8 ft

2.19.1 ILS Type: Localizer for runway 02L. Magnetic variation: 15E
2.19.2 ILS Identification: CNA
2.19.5 Coordinates: 64–49–49.8419N / 147–50–4.688W
2.19.6 Site Elevation: 438.1 ft

2.19.1 ILS Type: Glide Slope for runway 20R. Magnetic variation: 15E
2.19.2 ILS Identification: FAI
2.19.5 Coordinates: 64–48–2.289N / 147–53–30.754W
2.19.6 Site Elevation: 430 ft
variation: 15E
2.19.2 ILS Identification: FAI
2.19.5 Coordinates: 64–49–24.4215N / 147–50–39.7123W
2.19.6 Site Elevation: 434.3 ft
2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 21E
2.19.2 Navigation Aid Identification: FAI
2.19.5 Coordinates: 64–48–0.2537N / 148–0–43.1132W
2.19.2 ILS Type: Localizer for runway 20R. Magnetic variation: 15E
2.19.2 ILS Identification: FAI
2.19.6 Site Elevation: 1526.4 ft

General Remarks:
NE COMPASS ROSE CLSD TO HELICOPTERS OVER 12500 LBS.

NWS WEATHER BALLOON LAUNCH SITE 2000 FEET WEST OF MIDFIELD RUNWAY 02L/20R. LAUNCHES ARE TWICE DAILY AT 1100 AND 2300 HOURS UTC.

MILITARY CONTRACT FUEL AVBL.

COLD TEMPERATURE AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW –32C.

FOR AVBLTY OF SUMMER GRAVEL STRIP RWY 02/20 AND WINTER SKI STRIP RWY 02/20 CONSULT LOCAL NOTAMS AND CTC TWR PRIOR TO ARRIVAL /DEPARTURE.

FOR TRANSIENT HELICOPTER PARKING CALL ARPT OPS 907–451–2300.

WX CAMERA AVBL ON INTERNET AT HTTP://AVCAMS.FAA.GOV

FOR FLIGHTS IN MOAS EAST OF FAIRBANKS RECOMMEND CONTACTING EIELSON RANGR CONTROL ON 125.3/126.3 OR CALL 1–800–758–8723 FOR INFORMATION ON MILITARY ACTIVITES.

SPB CONTROLLED BY FAIRBANKS INTL ATCT. CTC ATCT ON FREQ 118.3 AS SOON AS PRACTICAL AFTER START UP FOR TAXI ON THE POND. FLOAT POND TFC AS ASSIGNED BY FAIRBANKS ATCT. LIMITED TRANSIENT FLOAT PLANE PARKING AVBL, CTC REPUBLIC PARKING SYSTEM, LLC 907–455–4571 FOR INFORMATION. SFC FROZEN IN WINTER, NOT MONITORED.


BE ALERT FOR SNOW REMOVAL EQUIPMENT OPNS FM 1 OCT TO 15 MAY.

TRANSIENT PARKING EAST RAMP FOR ACFT WITH WINGSPAN LESS THAN 79 FT. NO TRANSIENT ACFT PARKING ON WEST RAMP, CTC APT OPS 907–451–2300 FOR INFO & MEDIVAC PARKING.

ALL RWY HOLD LINES AND COMPASS ROSE AT TWY W OBSCURED OCTOBER 1 THRU APRIL 1.

NOISE ABATEMENT PROCEDURES IN EFFECT FM 2200–0800 ALL LARGE ACFT, TURBINE ENGINE, AND HEAVY ACFT UTILIZE RWY 02L FOR ARRS AND RWY 20R FOR DEPS WHEN WIND IS NOT AN OPERATIONAL FACTOR. CTC APT OPNS FOR ENGINE RUN–UP LOCATIONS.

N/S TAXIWAY (TWY A) IS WEST AND PARALLEL TO RWY 02L/20R. BE ALERT TO AVOID LANDING ON TAXIWAY.
SEE ADDITIONAL PAGES UNDER NOTICES FOR TRSA AND FAIRBANKS AREA INFORMATION.

RWY 02R/20L IS LIMITED FOR USE BY ACFT DESIGN GROUP B II, ACFT OR SMALLER.
Juneau, Alaska
Juneau International
ICAO Identifier PAJN

AIRPORT DIAGRAM

ATIS
135.2
JUNEAU TOWER*
118.7 278.3
GND CON
121.9
CLNC DEL
121.9

JANUARY 2020
ANNUAL RATE OF CHANGE
0.2° W

TERMINAL & TWR

FIRE STATION

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READEBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.
Juneau, AK
Juneau Intl
ICAO Identifier PAJN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 58°21′16.9625″N / 134°34′42.4939″W
2.2.2 From City: 7 miles NW of JUNEAU, AK
2.2.3 Elevation: 25.3 ft
2.2.5 Magnetic Variation: 20°E (2015)
2.2.6 Airport Contact: PATTY WAHTO
1873 SHELL SIMMONS DR,
SUITE 200
JUNEAU, AK 99801
(907-789-7821)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IC certified on 4/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 105°
2.12.3 Dimensions: 8857 ft x 150 ft
2.12.4 PCN: 89 F/C/X/T
2.12.5 Coordinates: 58°21′28.25″N / 134°35′49.09″W
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′5.88″N / 134°33′8.63″W
2.12.6 Threshold Elevation: 23.4 ft
2.12.6 Touchdown Zone Elevation: 23.4 ft

2.12.1 Designation: 08W
2.12.2 True Bearing: 285°
2.12.3 Dimensions: 4800 ft x 150 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take–off Run Available: 8857 ft
2.13.3 Take–off Distance Available: 8857 ft
2.13.4 Accelerate–Stop Distance Available: 8457 ft
2.13.5 Landing Distance Available: 8457 ft

2.13.1 Designation: 26
2.13.2 Take–off Run Available: 8857 ft
2.13.3 Take–off Distance Available: 8857 ft
2.13.4 Accelerate–Stop Distance Available: 8457 ft
2.13.5 Landing Distance Available: 8457 ft

2.13.1 Designation: 26
2.13.2 Take–off Run Available: 8857 ft
2.13.3 Take–off Distance Available: 8857 ft
2.13.4 Accelerate–Stop Distance Available: 8457 ft
2.13.5 Landing Distance Available: 8457 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSF

2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 08W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: 2.19.6 Site Elevation: 179.8 ft
2.14.1 Designation: 26W 2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 20E
2.14.2 Approach Lighting System: 2.19.2 ILS Identification: JDL

AD 2.18 Air Traffic Services Communication Facilities

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: 58–21–33.5717N / 134–41–58.0236W

General Remarks:
FOR LCL CALL TO JUNEAU FSS CALL 907–789–7380.

TRANSIENT DOCK AVBL FOR PUBLIC USE FOR UP TO SIX ACFT, SW CORNER.

RY 08/26 SAND USED TO ENHANCE RY FRICTION MAY NOT MEET FAA SPECS.

TPA 1500 AGL FOR LARGE TURBINE ACFT; 1000 FT AGL FOR FIXED WING ACFT; 500 FT AGL FOR HELICOPTERS.

APRON TERMINAL RAMP CLSD TO TOROCRAT. APRON US CUSTOMS RAMP CLSD TO ACFT WITH WINGSPAN MORE THAN 79 FT INTL ACFT WITH WINGSPAN MORE THAN 79 FT AND ALL INTL ROTORCRAFT USE E–1 RAMP (NTL GUARD RAMP).

WILDLIFE & BIRDS ON & INVOF ARPT.

BATTLESHIP ISLAND RLLS GROUPING; CENTER LIGHT 582132.88N 1344012.22W. IJDL–LOCALIZER RLLS GROUPING; CENTER LIGHT 582132.02N 1343810.39W.

COLD TEMPERATURE AIRPORT. ALTITUDE CORRECTION REQUIRED AT OR BELOW –0C.

PARAGLIDING ACTIVITY 3 MILES N OF ARPT INV OF THUNDER MOUNTAIN & OVER GASTINEAU CHANNEL NEARS DOWNTOWN APR 15–OCT 1 6000 FT & BLO.

INCREASED HELICOPTER/LIGH ACFT ACTIVITY APR 15–OCT 1 ENTIRE LENGTH ON GASTINEAU CHANNEL & WITHIN 5 MILES OF ARPT.

NATIONAL GUARD 24 HR PPR DUE TO LIMITED PARKING C907–789–3366. 0730–1600 WEEKDAYS CONTACT GUARD OPS 10 MIN PRIOR TO LANDING ON 124.65.

SEE SPECIAL NOTICES AND GENERAL NOTICES FOR ADDITIONAL INFORMATION ON OPNS IN JUNEAU AREA.

LENA POINT, PEDERSON HILL AND SISTERS ISLAND WX CAMERAS AVBL ON INTERNET AT HTTP://AVCAMSF.AA.GOV
King Salmon, Alaska
King Salmon
ICAO Identifier PAKN
King Salmon, AK
King Salmon
ICAO Identifier PAKN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 58°40′35.3765N / 156°38′55.2876W
2.2.2 From City: 0 miles SE of KING SALMON, AK
2.2.3 Elevation: 73.4 ft
2.2.5 Magnetic Variation: 11E (2025)
2.2.6 Airport Contact: FLOYD WILSON
PO BOX 65
KING SALMON, AK 99613
(907-246-3325)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0800–1800 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LLA
2.4.5 Repair Facilities: Major

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
IB certified on 3/21/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 12
2.12.2 True Bearing: 132
2.12.3 Dimensions: 8901 ft x 150 ft
2.12.4 PCN: 67 F/B/X/T
2.12.5 Coordinates: 58°41′2.184N / 156°39′53.0154W
2.12.6 Threshold Elevation: 59.9 ft
2.12.6 Touchdown Zone Elevation: 61.8 ft
2.12.1 Designation: 30
2.12.2 True Bearing: 312
2.12.3 Dimensions: 8901 ft x 150 ft
2.12.4 PCN: 67 F/B/X/T
2.12.5 Coordinates: 58°40′3.68N / 156°37′47.63W
2.12.6 Threshold Elevation: 73.4 ft
2.12.6 Touchdown Zone Elevation: 73.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 12
2.13.2 Take–off Run Available: 8901 ft
2.13.3 Take–off Distance Available: 8901 ft
2.13.4 Accelerate–Stop Distance Available: 8501 ft
2.13.5 Landing Distance Available: 8501 ft
2.13.1 Designation: 30
2.13.2 Take–off Run Available: 8901 ft
2.13.3 Take–off Distance Available: 8901 ft
2.13.4 Accelerate–Stop Distance Available: 8501 ft
2.13.5 Landing Distance Available: 8501 ft

Federal Aviation AdministrationTwenty–Sixth Edition
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: NW
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: SE
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

**General Remarks:**

FLOCKS OF LARGE MIGRATORY BIRDS IN VCNTY DURG SEASON.

LANDING AREA RWY NW/SE ALSO USED BY BOATS.

TSA REGULATED ARPT. SEE 49 CFR 1542. ALL GATES AND DOORS MUST BE SECURED AT ALL TIMES. TRANSIENT OR UNFAMILIAR PILOTS CONTACT ARPT MGR WITH QUESTIONS.

PRIVATE JETS MAY PARK ON THE SE SECTION OF E RAMP; CALL AMGR AT 907−246−3325 FOR INFO.

WX CAMERA AVBL ON INTERNET AT HTTP://AVCAM5.FAA.GOV

MILITARY FTRS/EMERGENCY DIVERTS CALL WARRIOR SOF/ELMENDORF SOF ON UHF AT 395.15.NON−EMERG/NON−FTR ACFT CALL KING SALMON OPS; 24 HR POINT NORMALLY MONITORS CTAF DURING OPR HRS.
RCR UPDATED AS REQUIRED DURING 11TH AF FTR FLYING WINDOW. AIRCREWS COORD RCR CHECKS WITH KING SALMON OPS – 907–439–3001 OR 907–439–6000. ACFT OPNS RSTRD TO LOW APCH/FULL STOP LNDG ONLY.

600 FT SAFETY AREA APCH END RWY 12.

ONE INCH DIP ON CNTRLN 1850 FT FM AER 36 EXTDS TO THREE INCH DIP 25 FT WIDE ON WEST EDGE.

ALL FTR ACFT ON ARR EXP REDUCED SEPARATION; SIMILAR APCH CHARACTERISTICS AND DAY – 3000 FT; DISSIMILAR APCH CHARACTERISTICS AND/OR NIGHT – 6000 FT; AHEAD/BEHIND FORMATION LANDING – 6000 FT.

APRON SPOTS 4, 5, 6, 7 NORTH OF MILITARY HANGARS CLSD EXC PROP ACFT. TWY P CLSD.

NWS WEATHER BALLOON LAUNCH FACILITY LOCATED ON AIRPORT, SEE INSIDE BACK COVER FOR OPERATION DETAILS.

OFF PAVEMENT OPERATIONS BY ACFT; INCLUDING HELICOPTERS; NOT AUTHORIZED AT THE ACR APRON. NO LANDING; PARKING OR TKOFS PERMITTED FROM DIRT OR GRASS.

48 HR PPR FOR ALL BUSINESS JETS PARKING LONGER THAN 1 HOUR.

LOCKED WHEEL TURNS PROHIBITED ON ANY SURFACE.

ARFF EQUIPMENT STAFFED DURING PERIODS OF ACR ACTIVITY ONLY.

RWY 18/36 NOT INSPECTED FOR MIL OPERATIONS.

FLIGHTS ORIG OUTSIDE ALASKA REFER TO USAF FCG. NO CSTMS AVBL.

CIVILIAN TRANSIENT PARKING ON SE RAMP ONLY; OTHER PARKING LONGER THAN 48 HRS REQUIRES PERMIT.

GENERAL AVIATION APRON, PAVEMENT CRUMBLING, POSSIBLE FOD HAZARD. JET AIRCRAFT BE ALERT DURING RUN–UP TO AVOID DAMAGE WITH JET WASH.

USAF FACILITIES MINIMALLY OPR BY CIVILIAN CONTRACTORS WITH LIMITED SUPPORT CAPABILITY. CALL TO CONFIRM OPR HRS NOT LATER THAN 24 HRS IN ADVANCE OF EXPECTED ARRIVAL. MIL AIRCRAFT NEED TO CONFIRM FUEL REQUIREMENTS 24–48 HOURS IN ADVANCE.

SNOW, ICE REMOVAL & ARPT HAZ COND PERFORMED & RPRTD DURING ATTENDANCE SCHEDULE.

ARFF IS AVBL FOR PART 121 CARRIERS INVOLVED IN ETOPS OPERATIONS WITH 30 MINUTES NOTICE.
Pago Pago, AS
Pago Pago Intl
ICAO Identifier NSTU

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 14–19–53.984S / 170–42–41.411W
2.2.2 From City: 3 miles SW of PAGO PAGO, AS
2.2.3 Elevation: 31.2 ft
2.2.5 Magnetic Variation: 12E (1990)
2.2.6 Airport Contact: CHRISTOPHER J KING
1539 AIRPORT WAY
P.O. BOX 1539
Pago Pago, AS 96799
((684) 733–3076)
2.2.7 Traffic: IFR/V FR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 05
2.12.2 True Bearing: 60
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 45 F/A/W/T
2.12.6 Threshold Elevation: 31.2 ft
2.12.6 Touchdown Zone Elevation: 29.3 ft

2.12.1 Designation: 23
2.12.2 True Bearing: 240
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 45 F/A/W/T
2.12.6 Threshold Elevation: 8.7 ft
2.12.6 Touchdown Zone Elevation: 8.7 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90

2.12.3 Dimensions: 3801 ft x 100 ft
2.12.4 PCN: 45 F/A/W/T
2.12.6 Threshold Elevation: 8.1 ft
2.12.6 Touchdown Zone Elevation: 8.1 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 3801 ft x 100 ft
2.12.4 PCN: 45 F/A/W/T
2.12.6 Threshold Elevation: 4.8 ft
2.12.6 Touchdown Zone Elevation: 5.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 05
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 23
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 08
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 26
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 05
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 23
2.14.2 Approach Lighting System:

2.14.1 Designation: 08
2.14.2 Approach Lighting System:  
2.14.4 Visual Approach Slope Indicator System:  

2.14.1 Designation: 26  
2.14.2 Approach Lighting System:  
2.14.4 Visual Approach Slope Indicator System:  

2.19.1 ILS Type: Glide Slope for runway 05. Magnetic variation: 12E  
2.19.2 ILS Identification: TUT  
2.19.6 Site Elevation: 19.1 ft

AD 2.18 Air Traffic Services Communication Facilities  

AD 2.19 Radio Navigation and Landing Aids  

General Remarks:  
OLOTELE MT 1617 FT MSL 3.5 MILES WEST OF THLD RY 08.  

ALL ACFT EXCDG 100000 GWT UPON TD TAXI TO THR TURN–ARND BFR TXG TO APRON. ACFT UNDER 100000 MAKE TURN–ARND WHERE FEASIBLE.  

ALL ACFT TRANSITING PAGO PAGO (EXCP COMMERCIAL CARRIERS) MUST MAKE FUEL ARRANGEMENTS WITH PPG AT 684–733–3158.  

<ALL FLT(S (EXCP SKED) PRIOR PMSN FROM AMGR WITH 24 HRS PRIOR NOTICE.  

FOR NOTAM CONTACT NEW ZEALAND (643) 358–1688FSS: NEW ZEALAND  

SEA SPRAY FM SURF & BLOW HOLES MAY DRIFT ACRS RWY 05/23 UNDER ROUGH SEA CONDS.  

PERMLY LGTD & MKD 226’ TWR ATOP MT ALAVA 4.3SM NNE ARPT.
Phoenix, AZ
Phoenix Sky Harbor Intl
ICAO Identifier KPHX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33°26′3.4″N / 112°0′41.7″W
2.2.2 From City: 3 miles E of PHOENIX, AZ
2.2.3 Elevation: 1134.8 ft
2.2.4 Magnetic Variation: 12°E (2000)
2.2.5 Airport Contact: CHAD R. MAKOVSKY
2485 E BUCKEYE RD
PHOENIX, AZ 85034
(602)273-3302
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.3 Hangar Space: YES
2.4.5 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 07L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10300 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 33°26′43.8354″N / 112°0′5.5412″W
2.12.6 Threshold Elevation: 1126.3 ft
2.12.6 Touchdown Zone Elevation: 1126.4 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: 79 R/B/W/T
2.12.5 Coordinates: 33°26′43.8923″N / 112°0′13.5686″W
2.12.6 Threshold Elevation: 1111 ft
2.12.6 Touchdown Zone Elevation: 1115.9 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°26′43.8354″N / 112°0′5.5412″W
2.12.6 Threshold Elevation: 1126.3 ft
2.12.6 Touchdown Zone Elevation: 1126.4 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 11489 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 33°26′47.257″N / 112°0′47.257″W
2.12.6 Threshold Elevation: 1111.1 ft
2.12.6 Touchdown Zone Elevation: 1118 ft

AD 2.13 Declared Distances
2.13.1 Designation: 07L
2.13.2 Take-off Run Available: 10300 ft
2.13.2 Take-off Distance Available: 10300 ft
2.13.4 Accelerate–Stop Distance Available: 10300 ft
2.13.5 Landing Distance Available: 10300 ft

2.13.1 Designation: 25R
2.13.2 Take-off Run Available: 10300 ft
2.13.3 Take-off Distance Available: 10300 ft
2.13.4 Accelerate–Stop Distance Available: 10300 ft
2.13.5 Landing Distance Available: 10300 ft

2.13.1 Designation: 25L
2.13.2 Take-off Run Available: 7800 ft
2.13.3 Take-off Distance Available: 7800 ft
2.13.4 Accelerate–Stop Distance Available: 7800 ft
2.13.5 Landing Distance Available: 7800 ft
2.13.1 Designation: 07R
2.13.2 Take-off Run Available: 7800 ft
2.13.3 Take-off Distance Available: 7800 ft
2.13.4 Accelerate–Stop Distance Available: 7800 ft
2.13.5 Landing Distance Available: 7800 ft

2.13.1 Designation: 26
2.13.2 Take-off Run Available: 11489 ft
2.13.3 Take-off Distance Available: 11489 ft
2.13.4 Accelerate–Stop Distance Available: 11489 ft
2.13.5 Landing Distance Available: 11489 ft

2.13.1 Designation: 08
2.13.2 Take-off Run Available: 11489 ft
2.13.3 Take-off Distance Available: 11489 ft
2.13.4 Accelerate–Stop Distance Available: 11489 ft
2.13.5 Landing Distance Available: 10591 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 07L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 25R
2.14.2 Approach Lighting System:

2.14.1 Designation: 25L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 07R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26
2.14.2 Approach Lighting System:

2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSF

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 07L. Magnetic variation: 12E

2.19.1 ILS Identification: PHX
2.19.5 Coordinates: 33°25′54.0771N / 111°59′19.1054W
2.19.6 Site Elevation: 1143 ft

2.19.1 ILS Type: Glide Slope for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: PHX
2.19.5 Coordinates: 33°25′49.0529N / 112°1′25.2134W
2.19.6 Site Elevation: 1106.5 ft

2.19.1 ILS Type: Localizer for runway 07L. Magnetic variation: 12E
2.19.2 ILS Identification: PHX
2.19.5 Coordinates: 33°25′51.7152N / 111°59′20.367W
2.19.6 Site Elevation: 1133.5 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: AHA
2.19.5 Coordinates: 33°25′41.1847N / 111°59′52.1833W
2.19.6 Site Elevation: 1135.8 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: AHA
2.19.5 Coordinates: 33°25′46.628N / 112°1′25.0931W
2.19.6 Site Elevation: 1107.4 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: AHA
2.19.5 Coordinates: 33°25′43.8252N / 111°59′52.2902W
2.19.6 Site Elevation: 1124.2 ft

2.19.1 ILS Type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: RJG
2.19.5 Coordinates: 33°25′41.1847N / 111°59′52.1833W
2.19.6 Site Elevation: 1117.1 ft

2.19.1 ILS Type: Glide Slope for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: RJG
2.19.5 Coordinates: 33°25′40.9318N / 112°0′16.8722W
2.19.6 Site Elevation: 1120.3 ft
2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: RJG
2.19.5 Coordinates: 33–25–43.8995N / 112–1–49.6368W
2.19.6 Site Elevation: 1103.2 ft

2.19.1 ILS Type: DME for runway 08. Magnetic variation: 12E
2.19.2 ILS Identification: CWJ
2.19.5 Coordinates: 33–26–24.3207N / 112–1–44.4331W
2.19.6 Site Elevation: 1111.7 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 12E
2.19.2 ILS Identification: CWJ
2.19.5 Coordinates: 33–26–27.1078N / 112–1–59.2267W
2.19.6 Site Elevation: 1105.1 ft

General Remarks:

NO EXPERIMENTAL FLT OR GND DMSTRN ON ARPT WO PRIOR WRITTEN CONSENT FM THE AIRSIDE OPS.

NO ENG RUNS ON ARPT WO PRIOR COORDN WITH AIRSIDE OPS. NO ENG RUNS ON ARPT BETWEEN 2300L – 0500L.

RWY STATUS LGTS ARE IN OPN.

FOR GENERAL QUESTIONS CALL AIRPORT COMMUNICATIONS CENTER (602) 273–3302

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY R OVERHEAD TRAIN BRIDGE AT MIDPOINT PROVIDES 82FT–4 IN. CLEARANCE.

TWY H5, H6, H7, TWY H BTN TWY H4 AND TWY H7 CLSD TO ACFT WINGSPAN MORE THAN 171 FT.

TWY F BTN TWY INT G2 AND G3 CLSD TO ACFT WITH WINGSPAN GREATER THAN 135 FT DUE TO FAA NAV EQUIPMENT.

PPR ACFT WITH WINGSPAN 215 FT OR GREATER (GROUP VI) CALL ARPT OPNS 602–272–2008 FOR FOLLOW–ME SERVICES WHILE TAXIING TO AND FROM RAMP AND RWYS.

REVIEW HOT SPOT INFO ON AIRPORT DIAGRAM. ADDITIONAL SAFETY VIDEO @ HTTP://SKYHARBOR.COM/BUSINESS/FORPILOTS/SAFETYVIDEOFORPILOTS
FEE FOR ALL CHARTERS; TRAVEL CLUBS AND CERTAIN REVENUE PRODUCING ACFT.


TWYS C BTN S AND R, D BTN D2 AND D7, D3, D6, H BTN H4 AND H7, H7 RESTRICTED TO WINGSPAN OF LESS THAN 171 FT.

TWY R AND PORTIONS OF TWYS S AND T DIRECTLY BELOW THE ATCT ARE NON VISIBLE AREAS FROM THE ATCT.

NATL GUARD HAS LMTD TSNT MAINTENANCE AND PARKING RON BY PPR (602)302–9119.

INTERNATIONAL GATE USE RQS COORDN WITH ARPT OPS 48 HOURS PRIOR TO ARRIVAL.

NOISE ABATEMENT PROCEDURES ARE IN AFFECT AT ALL TIMES.

INTERNATIONAL LANDING RIGHTS RQRS US CUSTOMS AND BORDER PROTECTION NOTIFICATION 48 HOURS PRIOR TO LANDING.
AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32°-6′-57.849"N / 110°-56′-27.65"W
2.2.2 From City: 6 miles S of TUCSON, AZ
2.2.3 Elevation: 2643 ft
2.2.4 Magnetic Variation: 12°E (1995)
2.2.5 Airport Contact: DANETTE BEWLEY
TUCCSON APT AUTH
7250 S TUCSON BLVD
TUCCSON, AZ 85756
(520) 573-8100
2.2.6 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.3 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R F F Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.4 PCN: 72 F/A/X/T
2.12.5 Coordinates: 32°-7′-1.7975"N / 110°-56′-32.5438"W
2.12.6 Threshold Elevation: 2560.2 ft
2.12.6 Touchdown Zone Elevation: 2572.1 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 7000 ft x 150 ft
2.12.4 PCN: 72 F/A/X/T
2.12.5 Coordinates: 32°-7′-50.7361"N / 110°-56′-34.9535"W
2.12.6 Threshold Elevation: 2568.8 ft
2.12.6 Touchdown Zone Elevation: 2572.4 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 10996 ft x 150 ft
2.12.4 PCN: 81 R/B/W/T
2.12.5 Coordinates: 32°-6′-7.1598"N / 110°-55′-22.1441"W
2.12.6 Threshold Elevation: 2643 ft
2.12.6 Touchdown Zone Elevation: 2643 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take-off Run Available: 7000 ft
2.13.3 Take-off Distance Available: 7000 ft
2.13.4 Accelerate-Stop Distance Available: 7000 ft
2.13.5 Landing Distance Available: 6150 ft

2.13.1 Designation: 21
2.13.2 Take-off Run Available: 6000 ft
2.13.3 Take-off Distance Available: 7000 ft
2.13.4 Accelerate-Stop Distance Available: 6000 ft
2.13.5 Landing Distance Available: 6000 ft

2.13.1 Designation: 11L
2.13.2 Take-off Run Available: 10996 ft
2.13.3 Take-off Distance Available: 10996 ft
2.13.4 Accelerate-Stop Distance Available: 10996 ft
2.13.5 Landing Distance Available: 10996 ft
2.13.1 Designation: 29R
2.13.2 Take-off Run Available: 10996 ft
2.13.3 Take-off Distance Available: 10996 ft
2.13.4 Accelerate–Stop Distance Available: 10996 ft
2.13.5 Landing Distance Available: 10996 ft

2.13.1 Designation: 11R
2.13.2 Take-off Run Available: 6998 ft
2.13.3 Take-off Distance Available: 6998 ft
2.13.4 Accelerate–Stop Distance Available: 6998 ft
2.13.5 Landing Distance Available: 6998 ft

2.13.1 Designation: 29L
2.13.2 Take-off Run Available: 6998 ft
2.13.3 Take-off Distance Available: 6998 ft
2.13.4 Accelerate–Stop Distance Available: 6998 ft
2.13.5 Landing Distance Available: 6998 ft

2.13.1 Designation: 11L
2.13.2 Take-off Run Available: 6998 ft
2.13.3 Take-off Distance Available: 6998 ft
2.13.4 Accelerate–Stop Distance Available: 6998 ft
2.13.5 Landing Distance Available: 6998 ft

2.14.1 Designation: 03
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 21
2.14.2 Approach Lighting System:

2.14.1 Designation: 11L
2.14.2 Approach Lighting System: M ALSR

2.14.1 Designation: 29R
2.14.2 Approach Lighting System:

2.14.1 Designation: 11R
2.14.2 Approach Lighting System:


2.14.1 Designation: 29L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

**AD 2.14 Approach and Runway Lighting**
2.14.1 Designation: 03
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 21
2.14.2 Approach Lighting System:

2.14.1 Designation: 11L
2.14.2 Approach Lighting System: M ALSR

2.14.1 Designation: 29R
2.14.2 Approach Lighting System:

2.14.1 Designation: 11R
2.14.2 Approach Lighting System:

**General Remarks:**
DESIGN GROUP V ACFT TAXI WITH INBOARD ENGINES ONLY.


RWY 11L/29R HAS DSTC REMAINING MKS ON NE SIDE. RWY 03/21 HAS DSTC REMAINING MKRS ON SE SIDE.

ALL ACFT USE UPPER ANTENNA UNTIL AIRBORNE.

MILITARY: HVY MIGRATORY BIRD ACT (PHASE II) 1 JULY–31 AUG MAY POSE A POTENTIAL HAZ TO ACFT.
NO FLT TRNG 2200–0600 EXCP PPR; CALL AIRSIDE OPERATIONS DEPT 520–573–8190.

MILITARY/COMM/BASE–OPS: UPON ARR CTC TITAN OR PUMA ON ANG BASE OPS/COMD POST FREQ.

SERVICE–FUEL: A++(MIL)

PPR REQUIRED FOR ALL CHARTER, SPORTS TEAM, CARGO AND MILITARY AIRCRAFT. CONTACT AIRSIDE OPERATIONS FOR PPR NUMBER AT 520–573–8190. LANDING AND PARKING FEES MAY APPLY FOR ACFT 12500 LBS AND UP.

PORTIONS OF TWY D NOT VISIBLE FROM ATCT DUE TO HANGARS.

AIR CARRIERS USE RWY 11L/29R & RWY 03/21.

TWY A5 LMTD TO 70000 LBS OR LESS.

ACFT DEPG RWY 11R REQD TO ATTAIN AT LEAST 400 FT AGL PRIOR TO STARTING TURN. RWY 29 APPROACHES: DO NOT MISTAKE TWY A FOR A LANDING SURFACE. TWY A IS NORTH AND PARALLEL TO RWY 29R. RWY 29L IS SHORTER AND NARROWER AND SOUTH OF RWY 29R.

MILITARY: AIR NATL GUARD AFLD MGMT PERS DO NOT DETERMINE/RPT A RWY CC NOR ISSUE FAA FORMATTED FLD COND NOTAM (FICON).

REVIEW HOT SPOT INFO ON AIRPORT DIAGRAM AND SAFETY VIDEOS AT HTTPS://WWW.FLYTUCSON.COM/ABOUT–TUS/GENERAL–AVIATION

NO REFUELING ON USCBP INSPECTION RAMP EXCEPT DURING MEDICAL EMERGENCIES.

MILITARY: ANG – OFFL BUS ONLY. PPR DSN 844–6731, C520–295–6731, FAX EXTN 6732. 72 HR PRIOR NOTICE REQ FOR ALL PPR’S. BASE OPS OPR 1300–2200Z++ MON–FRI EXC HOL. NO TRAN ALERT MAINT AVBL. NO CONTRACT FUEL AVBL. TRAN ACFT EXP STR–IN FULL STOP ONLY.

FOR GENERAL QUESTIONS CALL AIRPORT COMMUNICATIONS CENTER (520) 573–8182.
United States of America

Fresno, CA
Fresno Yosemite Intl
ICAO Identifier KFAT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36°46′35.6″N / 119°43′7.8″W
2.2.2 From City: 5 miles NE of Fresno, CA
2.2.3 Elevation: 335.5 ft
2.2.5 Magnetic Variation: 13°E (2020)
2.2.6 Airport Contact: KEVIN R. MEIKLE
4995 E CLINTON WAY
Fresno, CA 93727
(559-621-4500)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, A, A++
2.4.5 Hangar Space: MAJOR
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: 11L
2.12.2 True Bearing: 125
2.12.3 Dimensions: 9539 ft x 150 ft
2.12.4 PCN: 75 F/A/X/T
2.12.5 Coordinates: 36°47′2.406″N / 119°43′48.3081″W
2.12.6 Threshold Elevation: 333 ft
2.12.6 Touchdown Zone Elevation: 335.5 ft
2.12.1 Designation: 29R
2.12.2 True Bearing: 305
2.12.3 Dimensions: 9539 ft x 150 ft
2.12.4 PCN: 75 F/A/X/T
2.12.5 Coordinates: 36°47′2.406″N / 119°43′48.3081″W
2.12.6 Threshold Elevation: 332 ft
2.12.6 Touchdown Zone Elevation: 332.6 ft
2.12.1 Designation: 29L
2.12.2 True Bearing: 305
2.12.3 Dimensions: 8008 ft x 150 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 36°47′2.406″N / 119°43′48.3081″W
2.12.6 Threshold Elevation: 329.9 ft
2.12.6 Touchdown Zone Elevation: 330.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 11L
2.13.2 Take-off Run Available: 9539 ft
2.13.3 Take-off Distance Available: 9539 ft
2.13.4 Accelerate–Stop Distance Available: 9279 ft
2.13.5 Landing Distance Available: 9279 ft
2.13.1 Designation: 29R
2.13.2 Take-off Run Available: 9539 ft
2.13.3 Take-off Distance Available: 9539 ft
2.13.4 Accelerate–Stop Distance Available: 9279 ft
2.13.5 Landing Distance Available: 9279 ft
2.13.1 Designation: 29L
2.13.2 Take-off Run Available: 8008 ft
2.13.3 Take-off Distance Available: 8008 ft
2.13.4 Accelerate–Stop Distance Available: 8008 ft
2.13.5 Landing Distance Available: 8008 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 11L
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 29R
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 29L
2.14.2 Approach Lighting System: ALSF2
2.14.2 Approach Lighting System: P4L
2.14.5 Hours of Operation: 24

2.14.1 Designation: 11R
2.14.2 Approach Lighting System: 124.35
2.14.4 Visual Approach Slope Indicator System:
2.14.5 Hours of Operation: 24

**AD 2.18 Air Traffic Services Communication Facilities**
2.14.1 Service Designation: ANG OPS
2.14.3 Channel: 140
2.14.5 Hours of Operation:
2.14.1 Service Designation: ANG OPS
2.14.3 Channel: 298.3
2.14.5 Hours of Operation:
2.14.1 Service Designation: APCH/P DEP/P (091–239)
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (091–239)
2.14.3 Channel: 323.25
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (091–239)
2.14.3 Channel: 119.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P IC (240–090)
2.14.3 Channel: 119.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P IC (240–090)
2.14.3 Channel: 351.95
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ATIS
2.14.3 Channel: 121.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ATIS
2.14.3 Channel: 273.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 119.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (240–090)
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (240–090)
2.14.3 Channel: 323.25
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (240–090)
2.14.3 Channel: 351.95
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 119.6
2.14.5 Hours of Operation:
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:
2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:
2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.2
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 251.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: NG OPS
2.14.3 Channel: 40.95
2.14.5 Hours of Operation:

2.14.1 Service Designation: NG OPS
2.14.3 Channel: 132
2.14.5 Hours of Operation:

2.14.1 Service Designation: NG OPS
2.14.3 Channel: 255.8
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 11L. Magnetic variation: 13E
2.19.2 ILS Identification: RPW
2.19.5 Coordinates: 36–46–2.54N / 119–42–3.44W
2.19.6 Site Elevation: 331.3 ft

2.19.1 ILS Type: DME for runway 29R. Magnetic variation: 13E
2.19.2 ILS Identification: FAT
2.19.5 Coordinates: 36–47–10.81N / 119–43–56.63W
2.19.6 Site Elevation: 347.1 ft

2.19.1 ILS Type: Glide Slope for runway 29R. Magnetic variation: 13E
2.19.2 ILS Identification: FAT
2.19.5 Coordinates: 36–47–10.81N / 119–43–56.63W
2.19.6 Site Elevation: 333.7 ft

General Remarks:
MILITARY: SVC: RWY 29R AND 11L A—GEAR CABLE AVBL UPON REQ ONLY; DEFAULT POSN DOWN.

MILITARY: ANG: CTC ANG OPS FOR LCL BIRD WATCH COND (BWC).

SERVICE—JET AIR START UNIT (JASU): (AM32A–60) 2(AGPU)

FRESNO YOSEMITE INTL IS NOISE SENSITIVE; NOISE ABATEMENT PROCEDURES IN EFFECT.

SERVICE—FUEL: ROSS AVIATION, C559–251–1555

RETRACTABLE BAK—12/14 ABVBL ON RY 11L AND RY 29R ARE KEPT IN RECESSED POSITION UNTIL REQ FOR USE; TWR MUST BE NOTIFIED AT LEAST 5 SECONDS PRIOR TO ENGAGEMENT SO THAT THE AG CABLE MAY BE RAISED.

POSSIBLE WAKE TURBULENCE OR WIND SHEAR ARR TO RY 29L OR DEP FM RY 11R. JET TESTING CONDUCTED AT AIR NATIONAL GUARD RAMP LCTD AT SE CORNER OF ARPT.

SERVICE—FUEL: SIGNATURE FLIGHT SUPPORT, C559–981–2490


LGTD RY DISTANCE REMAINING MARKERS ON SOUTH SIDE OF RY 11L/29L; LGTD RY DISTANCE REMAINING MARKERS BOTH SIDES OF RY 11L/29R—11L DRM ON NORTH SIDE; 29R DRM ON SOUTH SIDE.

NUMEROUS BIRDS INVF ARPT.
Los Angeles, CA
Los Angeles Intl
ICAO Identifier KLAX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 33–56–32.987N / 118–24–28.975W
2.2.2 From City: 9 miles SW of LOS ANGELES, CA
2.2.3 Elevation: 127.8 ft
2.2.5 Magnetic Variation: 12E (2020)
2.2.6 Airport Contact: VIJI PRASAD
ONE WORLD WAY
LOS ANGELES, CA 90009
(424–646–8251)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 8926 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.5 Coordinates: 33–56–56.8049N / 118–25–52.1755W
2.12.6 Threshold Elevation: 113.1 ft
2.12.6 Touchdown Zone Elevation: 118.8 ft

2.12.1 Designation: 24R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 8926 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.6 Threshold Elevation: 118.9 ft
2.12.6 Touchdown Zone Elevation: 122.4 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 83
2.12.3 Dimensions: 10885 ft x 150 ft

2.12.1 Designation: 07L
2.12.2 True Bearing: 83
2.12.3 Dimensions: 12923 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.6 Threshold Elevation: 114.8 ft
2.12.6 Touchdown Zone Elevation: 127.8 ft

2.12.1 Designation: 07R
2.12.2 True Bearing: 83
2.12.3 Dimensions: 11095 ft x 200 ft
2.12.4 PCN: 75 R/A/W/T
2.12.5 Coordinates: 33–56–1.1378N / 118–25–8.466W
2.12.6 Threshold Elevation: 121.7 ft
2.12.6 Touchdown Zone Elevation: 127.6 ft

2.12.1 Designation: 25L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 11095 ft x 200 ft
2.12.4 PCN: 75 R/A/W/T
2.12.6 Threshold Elevation: 97.8 ft
2.12.6 Touchdown Zone Elevation: 103.7 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 263
2.12.3 Dimensions: 10885 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.6 Threshold Elevation: 109.9 ft
2.12.6 Touchdown Zone Elevation: 116.2 ft

2.12.1 Designation: 25R
2.12.2 True Bearing: 263
2.12.3 Dimensions: 12923 ft x 150 ft
2.12.4 PCN: 70 R/A/W/T
2.12.6 Threshold Elevation: 94.3 ft
2.12.6 Touchdown Zone Elevation: 103.8 ft
AD 2.13 Declared Distances

2.13.1 Designation: 06L
2.13.2 Take-off Run Available: 8926 ft
2.13.3 Take-off Distance Available: 8926 ft
2.13.4 Accelerate–Stop Distance Available: 8566 ft
2.13.5 Landing Distance Available: 8566 ft

2.13.1 Designation: 06R
2.13.2 Take-off Run Available: 10285 ft
2.13.3 Take-off Distance Available: 10285 ft
2.13.4 Accelerate–Stop Distance Available: 10285 ft
2.13.5 Landing Distance Available: 9748 ft

2.13.1 Designation: 07L
2.13.2 Take-off Run Available: 12091 ft
2.13.3 Take-off Distance Available: 12091 ft
2.13.4 Accelerate–Stop Distance Available: 12091 ft
2.13.5 Landing Distance Available: 11134 ft

2.13.1 Designation: 07R
2.13.2 Take-off Run Available: 11095 ft
2.13.3 Take-off Distance Available: 11095 ft
2.13.4 Accelerate–Stop Distance Available: 11095 ft
2.13.5 Landing Distance Available: 11259 ft

2.13.1 Designation: 24L
2.13.2 Take-off Run Available: 10285 ft
2.13.3 Take-off Distance Available: 10285 ft
2.13.4 Accelerate–Stop Distance Available: 10285 ft
2.13.5 Landing Distance Available: 9483 ft

2.13.1 Designation: 24R
2.13.2 Take-off Run Available: 8926 ft
2.13.3 Take-off Distance Available: 8926 ft
2.13.4 Accelerate–Stop Distance Available: 8926 ft
2.13.5 Landing Distance Available: 8926 ft

2.13.1 Designation: 24L
2.13.2 Take-off Run Available: 11095 ft
2.13.3 Take-off Distance Available: 11095 ft
2.13.4 Accelerate–Stop Distance Available: 11095 ft
2.13.5 Landing Distance Available: 11095 ft

2.13.1 Designation: 25R
2.13.2 Take-off Run Available: 12091 ft
2.13.3 Take-off Distance Available: 12091 ft
2.13.4 Accelerate–Stop Distance Available: 12091 ft
2.13.5 Landing Distance Available: 11134 ft

2.13.1 Designation: 25L
2.13.2 Take-off Run Available: 11095 ft
2.13.3 Take-off Distance Available: 11095 ft
2.13.4 Accelerate–Stop Distance Available: 11095 ft
2.13.5 Landing Distance Available: 11095 ft

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 06L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 24R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 24L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 25R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 07L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 07R
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 06L. Magnetic variation: 12E
2.19.2 ILS Identification: UWU
2.19.5 Coordinates: 33°56′50.7522N / 118°26′26.6221W
2.19.6 Site Elevation: 139.3 ft

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 12E
2.19.2 ILS Identification: UWU
2.19.5 Coordinates: 33°56′54.5859N / 118°25′39.8249W
2.19.6 Site Elevation: 110.5 ft
2.19.1 ILS Type: Localizer for runway 06L. Magnetic variation: 12E
2.19.2 ILS Identification: UWU
2.19.5 Coordinates: 33°57′8.5767"N / 118°23′57.1965"W
2.19.6 Site Elevation: 108.5 ft

2.19.1 ILS Type: DME for runway 24R. Magnetic variation: 12E
2.19.2 ILS Identification: OSS
2.19.5 Coordinates: 33°56′50.7522"N / 118°26′26.6221"W
2.19.6 Site Elevation: 139.3 ft

2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 12E
2.19.2 ILS Identification: OSS
2.19.5 Coordinates: 33°57′2.4082"N / 118°24′18.522W
2.19.6 Site Elevation: 116.7 ft

2.19.1 ILS Type: Localizer for runway 24R. Magnetic variation: 12E
2.19.2 ILS Identification: OSS
2.19.5 Coordinates: 33°56′53.1648"N / 118°26′27.6839"W
2.19.6 Site Elevation: 125.5 ft

2.19.1 ILS Type: DME for runway 06R. Magnetic variation: 12E
2.19.2 ILS Identification: GPE
2.19.5 Coordinates: 33°56′49.9191"N / 118°26′22.7714"W
2.19.6 Site Elevation: 134.3 ft

2.19.1 ILS Type: Glide Slope for runway 06R. Magnetic variation: 12E
2.19.2 ILS Identification: GPE
2.19.5 Coordinates: 33°56′53.3646"N / 118°25′47.3623"W
2.19.6 Site Elevation: 123.4 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′49.2874"N / 118°23′49.2874"W
2.19.6 Site Elevation: 90 ft

2.19.1 ILS Type: DME for runway 25R. Magnetic variation: 12E
2.19.2 ILS Identification: CFN
2.19.5 Coordinates: 33°56′49.9191"N / 118°25′24.8206"W
2.19.6 Site Elevation: 104.3 ft

2.19.1 ILS Type: Glide Slope for runway 25R. Magnetic variation: 12E
2.19.2 ILS Identification: CFN
2.19.5 Coordinates: 33°56′17.8773"N / 118°23′10.1796"W
2.19.6 Site Elevation: 97.5 ft

Federal Aviation Administration Twenty—Sixth Edition
2.19.1 ILS Type: Localizer for runway 25R. Magnetic variation: 12E
2.19.2 ILS Identification: CFN
2.19.6 Site Elevation: 119.3 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.6 Site Elevation: 92.5 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.6 Site Elevation: 118.2 ft

2.19.1 ILS Type: Glide Slope for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.6 Site Elevation: 118.2 ft

2.19.1 ILS Type: DME for runway 07R. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.6 Site Elevation: 185 ft

2.19.1 ILS Type: Glide Slope for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: LAX
2.19.6 Site Elevation: 126 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: LAX
2.19.6 Site Elevation: 97.3 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.6 Site Elevation: 118.4 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 15E
2.19.2 Navigation Aid Identification: LAX
2.19.6 Site Elevation: 185 ft

2.19.1 ILS Type: DME for runway 25L. Magnetic variation: 12E
2.19.2 ILS Identification: MKZ
2.19.6 Site Elevation: 92.5 ft

General Remarks:

TWY D BTN TWY D7 AND D8 (N OF TRML ONE) CLSD TO ACFT WITH WINGSPAN GTR THAN 157 FT.

SIMUL ACFT OPNS PROHIBITED ON TWYS L AND H9 BTWN RWYS 07L/25R AND 07R/25L.

MILITARY AF: ALL MIL AIRCREWS MUST CTC 61 ABW/CP FLT OPS FOR PRK LCTN/INSTR. NO GOVT TRANSPORTATION, QTRS OR SECURITY AVBL. VIP NOTIFICATION PRO APPLY. USER FEES ASSESSED USING AVCARD CREDIT. CTC ATLANTIC AVIATION FBO 131.6 INBD. INBD RELAY ETA, VIP CODE, SVC RQ 30 MIN PRIOR TO ARR.

SBND TURN NOT AVBL FROM WEST REMOTE GATE 408 AND WEST REMOTE GATE 409

RWY STATUS LGTS IN OPN.

RWY 7R/25L PREFERRED EMERG RWY.

AMERICAN EAGLE TRML SOUTHBOUND TAXING ACFT USE MNM PWR DUE TO BLAST HAZ.

ANY ACFT THAT COMES TO A STOP OR HAS ITS MOMENTUM INTRPD WHILE TURNING AND TAXING INTO ITS PRKG PSN, MUST STOP AND BE TOWED.

LAX SVC TXL M LAWA RAMP TWR OPN CTC LAWA RAMP TWR 131.975.
TURB MAY BE DEFLECTED UPWARD FM THE BLAST FENCE 180 FT E OF RWY 25R.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PRACTICE INSTRUMENT APPROACHES & TOUCH AND GO LANDINGS ARE PROHIBITED.

NMRS BIRDS ON AND IN VCNTY OF ARPT.

WEST REMOTE GATES: ACFT USE OF OPEN GATES AS TAXI PATH IS PROHIBITED (GATES 406, 407, 408, 409).

NOISE SENS ARPT ON WESTERLY TAKEOFFS NO TURNS BEFORE CROSSING SHORELINE OVER–OCEAN APCHS UTILIZED 0000–0630.

ACFT USE MINIMAL PWR WHEN TXG VCNTY TRMLS DUE BLAST HAZ.

PILOTS SHOULD USE CTN FOR POSS LASER ACT IN THE LAX AREA.


ACFT WITH LEN GTR THAN 240 FT ARE PROHIBITED ON TXLS C7, C8 AND C9 BTN TXL C AND TWY B.

ACFT WITH WINGSPAN GTR THAN 198 FT OBND FM TXL D8 MAY NOT TURN WBND ONTO TXL D.

ACFT WITH WINGSPAN GTR THAN 155 FT WB ON TXL C ARE NOT AUTHD TO MAKE LEFT TURN ON TWY C10 UNDER PWR.

FOR ACFT WITH WINGSPAN GTR THAN 214 FT CTC LAX AIRSIDE OPS (424)–646–5292 FOR ARPT RESTRICTIONS.

MAJOR CONSTRUCTION ON AIRPORT, DAILY.

LAX SVC TXL K AND TXL L LAWA RAMP TWR OPN CTC LAWA RAMP TWR 131.075.

SIMUL ACFT OPNS PROHIBITED ON TWY H2 AND G BTN RWYS 07L/25R AND 07R/25L.
Oakland, CA
Metropolitan Oakland Intl
ICAO Identifier KOAK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37°43′16.5″N / 122°13′16.1″W
2.2.2 From City: 4 miles S of OAKLAND, CA
2.2.3 Elevation: 9 ft
2.2.4 Magnetic Variation: 14E (2015)
2.2.5 Airport Contact: MATT DA VIS
METROPOLITAN OAKLAND INTL ARPT
OAKLAND, CA 94621
(510) 563-6436
2.2.6 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 28R
2.12.2 True Bearing: 292
2.12.3 Dimensions: 5458 ft x 150 ft
2.12.4 PCN: 69 F/C/W/T
2.12.5 Coordinates: 37°43′29.3247″N / 122°12′16.9329″W
2.12.6 Threshold Elevation: 5.8 ft
2.12.6 Touchdown Zone Elevation: 6.8 ft
2.12.1 Designation: 10L
2.12.2 True Bearing: 112
2.12.3 Dimensions: 5458 ft x 150 ft
2.12.4 PCN: 69 F/C/W/T
2.12.5 Coordinates: 37°43′49.6865″N / 122°13′19.8481″W
2.12.6 Threshold Elevation: 5.5 ft
2.12.6 Touchdown Zone Elevation: 6.3 ft
2.12.1 Designation: 28L
2.12.2 True Bearing: 292
2.12.3 Dimensions: 6213 ft x 150 ft
2.12.4 PCN: 97 F/B/W/T
2.12.5 Coordinates: 37°43′20.178N / 122°12′21.6341″W
2.12.6 Threshold Elevation: 8.2 ft
2.12.6 Touchdown Zone Elevation: 8.7 ft
2.12.1 Designation: 10R
2.12.2 True Bearing: 112
2.12.3 Dimensions: 6213 ft x 150 ft
2.12.4 PCN: 97 F/B/W/T
2.12.5 Coordinates: 37°43′43.345N / 122°13′33.2509″W
2.12.6 Threshold Elevation: 8.1 ft
2.12.6 Touchdown Zone Elevation: 9 ft
2.12.1 Designation: 30
2.12.2 True Bearing: 310
2.12.3 Dimensions: 10520 ft x 150 ft
2.12.4 PCN: 71 F/A/W/T
2.12.5 Coordinates: 37°42′5.3735″N / 122°12′51.3251″W
2.12.6 Threshold Elevation: 9 ft
2.12.6 Touchdown Zone Elevation: 9 ft
2.12.1 Designation: 12
2.12.2 True Bearing: 130
2.12.3 Dimensions: 10520 ft x 150 ft
2.12.4 PCN: 71 F/A/W/T
2.12.5 Coordinates: 37°43′25.3735″N / 122°14′31.6133″W
2.12.6 Threshold Elevation: 8.3 ft
2.12.6 Touchdown Zone Elevation: 8.6 ft
2.12.1 Designation: 15
2.12.2 True Bearing: 164
2.12.3 Dimensions: 3376 ft x 75 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 37°44′25.0497″N / 122°13′22.1076″W
2.12.6 Threshold Elevation: 1.5 ft
2.12.6 Touchdown Zone Elevation: 4.6 ft
2.12.1 Designation: 33
2.12.2 True Bearing: 344
2.12.3 Dimensions: 3376 ft x 75 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 37°43′52.9005″N / 122°13′10.826W
2.12.6 Threshold Elevation: 3.9 ft
2.12.6 Touchdown Zone Elevation: 4.6 ft
AD 2.13 Declared Distances

2.13.1 Designation: 28R
2.13.2 Take-off Run Available: 5458 ft
2.13.3 Take-off Distance Available: 5458 ft
2.13.4 Accelerate–Stop Distance Available: 5458 ft
2.13.5 Landing Distance Available: 5458 ft

2.13.1 Designation: 10L
2.13.2 Take-off Run Available: 5458 ft
2.13.3 Take-off Distance Available: 5458 ft
2.13.4 Accelerate–Stop Distance Available: 5458 ft
2.13.5 Landing Distance Available: 5458 ft

2.13.1 Designation: 28L
2.13.2 Take-off Run Available: 6213 ft
2.13.3 Take-off Distance Available: 6213 ft
2.13.4 Accelerate–Stop Distance Available: 6213 ft
2.13.5 Landing Distance Available: 6213 ft

2.13.1 Designation: 10R
2.13.2 Take-off Run Available: 6213 ft
2.13.3 Take-off Distance Available: 6213 ft
2.13.4 Accelerate–Stop Distance Available: 6213 ft
2.13.5 Landing Distance Available: 6213 ft

2.13.1 Designation: 30
2.13.2 Take-off Run Available: 10000 ft
2.13.3 Take-off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 12
2.13.2 Take-off Run Available: 10000 ft
2.13.3 Take-off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 15
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 33
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 10L
2.14.2 Approach Lighting System:

2.14.1 Designation: 28L
2.14.2 Approach Lighting System:

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:

2.14.1 Designation: 30
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 12
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 15
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 33
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: OAK
2.19.6 Site Elevation: 3.3 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: OAK
2.19.5 Coordinates: 37–43–54.55N / 122–13–34.86W
2.19.6 Site Elevation: 5.2 ft


General Remarks:
100 FT LGTD MICROWAVE ANT TWR LCTD 1320 FT WSW OF OAK VORTAC; S OF UPWIND END OF RWY 28L.

TWY A, E, G, H BTN RWY 28R AND TWY C MAX ACFT WT 150,000 LBS.

PREFERENTIAL RWY USE PROGRAM IN EFFECT 2200–0600. NORTH FLD PREF ARR RWY 28L, NORTH FLD PREF DEP RWYS 10R OR 28R. IF THESE RWYS UNACCEPTABLE FOR SAFETY OR ATC INSTRN THEN RWY 12/30 MUST BE USED.

TWY C BTN TWY G & J MAX ACFT WEIGHT 90,000 LBS SINGLE; 144,000 LBS DUAL; 257,000 LBS TANDEM.

400 FT BY 220 FT BLAST PAD RWY 12 AND RWY 30.

TWY P MAX ACFT WT 116,000 LBS SINGLE; 190,000 LBS DUAL; 305,000 LBS DUAL TANDEM; 735,000 LBS DOUBLE DUAL TANDEM.

NOISE ABATEMENT PROC N/A IN EMERGS OR WHENEVER RWY 12/30 IS CLSD DUE TO MAINT, SAFETY, WINDS OR WX.

RWY 15/33 CLSD TO ACR ACFT.

FOR NOISE ABATEMENT INFO CTC NOISE ABATEMENT OFC AT (510) 563–6463.

TWY C BTN RWY 28R & TWY G AND TWY S B, J, AND D MAX ACFT WT 861,000 LBS.

TWY K BTN TWY J AND INT TWYS F, L, K MAX ACFT WT 33000 LBS SINGLE; 45000 LBS DUAL; TANDEM NA.

24 HR NOISE ABATEMENT PROCEDURE – TBJT AND TURBOFAN PWRD ACFT, TURBOROPS OVER 17,000 LBS, FOUR–ENGINE RECIPROCATING PWRD ACFT, AND SURPLUS MIL ACFT OVER 12,500 POUNDS SHOULD NOT DEP RWYS 28L & 28R OR LAND ON RWYS 10R & 10L.

TWY C BTN TWY J & F MAX ACFT WEIGHT 76,000 LBS SINGLE; 115,000 LBS DUAL; 257,000 LBS TANDEM
(DUAL TANDEM NA).

RWYS 30, 28R AND RWY 28L DIST RMNG SIGNS L SIDE.

ACFT WITH EXPERIMENTAL OR LTD CERTIF HAVING OVER 1000 HORSEPOWER OR 4000 LBS ARE RSTRD TO RWY 12/30.

BIRDS ON & INVOF ARPT.

TWY G & H BTN RWY 28L & 28R: MAX ACFT WT 12,500 LBS.

TWY K BTN TWY D & INT TWYS F, L, K MAX ACFT WEIGHT 56,000 LBS SINGLE; 70,000 LBS DUAL; 130,000 LBS TANDEM.
Ontario, CA
Ontario Intl
ICAO Identifier KONT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 34°3″21.651N / 117°36″4.275W
2.2.2 From City: 2 miles E of ONTARIO, CA
2.2.3 Elevation: 944.1 ft
2.2.5 Magnetic Variation: 12°E (2020)
2.2.6 Airport Contact: MARK THORPE
1923 EAST AVION STREET
ONTARIO, CA 91761
(909–544–5300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R F F Index
ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12197 ft x 150 ft
2.12.4 PCN: 102 R/B/W/T
2.12.5 Coordinates: 34°3″24.7651N / 117°37″22.1586W
2.12.6 Threshold Elevation: 943.2 ft
2.12.6 Touchdown Zone Elevation: 944.1 ft
2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 12197 ft x 150 ft
2.12.4 PCN: 102 R/B/W/T
2.12.5 Coordinates: 34°3″24.8259N / 117°34″57.2057W
2.12.6 Threshold Elevation: 926.2 ft
2.12.6 Touchdown Zone Elevation: 926.2 ft
2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10200 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 34°3″17.8579N / 117°36″58.4219W
2.12.6 Threshold Elevation: 936 ft
2.12.6 Touchdown Zone Elevation: 936 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08L
2.13.2 Take–off Run Available: 12197 ft
2.13.3 Take–off Distance Available: 12197 ft
2.13.4 Accelerate–Stop Distance Available: 12197 ft
2.13.5 Landing Distance Available: 11200 ft
2.13.1 Designation: 26R
2.13.2 Take–off Run Available: 12197 ft
2.13.3 Take–off Distance Available: 12197 ft
2.13.4 Accelerate–Stop Distance Available: 12197 ft
2.13.5 Landing Distance Available: 11200 ft
2.13.1 Designation: 08R
2.13.2 Take–off Run Available: 10200 ft
2.13.3 Take–off Distance Available: 10200 ft
2.13.4 Accelerate–Stop Distance Available: 10200 ft
2.13.5 Landing Distance Available: 10200 ft
2.13.1 Designation: 26L
2.13.2 Take–off Run Available: 10200 ft
2.13.3 Take–off Distance Available: 10200 ft
2.13.4 Accelerate–Stop Distance Available: 10200 ft
2.13.5 Landing Distance Available: 10200 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08L
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 26R
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 08R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: ALSF2

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 12E
2.19.2 ILS Identification: AOD
2.19.5 Coordinates: 34°3′−21.2425N / 117°36′−59.9428W
2.19.6 Site Elevation: 935.9 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 12E
2.19.2 ILS Identification: AOD
2.19.5 Coordinates: 34°3′−23.9048N / 117°35′−11.0216W
2.19.6 Site Elevation: 925.2 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 12E
2.19.2 ILS Identification: ONT
2.19.5 Coordinates: 34°3′−24.7824N / 117°37′−34.8618W
2.19.6 Site Elevation: 923.6 ft

General Remarks:
ALL MILITARY AND GENERAL AVIATION (FIXED OR ROTOR WING) ACFT OPS ARE RESTRICTED TO FBO FACILITIES WITH ADVANCE COORDINATION; OVERNIGHT TIEDOWN AND PARKING FEE.

PILOTS SHOULD USE JUDGEMENTAL OVERSTEER ON TWY S−4.

ACFT PRKG AND CONTR GND SVCS ARE LTD FOR UNSKED OPS. FOR SKED INFO CALL AIRFIELD OPS (909) 214−7682/7683.

EASTBOUND B747, B777, A330, A340 OR LARGER ACFT ON TWY S PROHIBITED FROM NORTHBOUND TURNS ONTO TWY K.

TWY S−4 RSTD TO ACFT WITH WINGSPAN 117 FT OR SMALLER.

FBO ON FREQ 130.75.

B747, B777, A330, A340 OR LARGER ACFT ON TWY S PROHIBITED FROM NORTHBOUND TURNS ONTO TWY
NOISE ABATEMENT PROCEDURES IN EFFECT; FULL-LENGTH TURBOJET DEP ENCOURAGED, NIGHTLY PREFERENTIAL RWY USAGE, 2200–0700.

TWY Y EAST OF TWY W IS A NON-MOVEMENT AREA; ALL ACFT CTC RAMP CTL 131.325 FOR ACCESS.

PTNS OF TWY S IN THE VCY OF TWY F ARE NOT VSB FM ATCT; PILOTS USE CTN ENTERING TWY F SOUTH OF TWY S.

WILDLIFE HAZARD MGT PLAN IN EFFECT; POTENTIAL BIRD HAZARDS MAY EXIST ON AND INVOF ARPT; BE ALERT TO LARGE NUMBERS OF STARLINGS AND CROWS POSSIBLE ON APCH TO RY 26L AND RY 26R, HAWKS, EAGLES, FALCONS AND OWLS SPOTTED ON OCCASION.

ACFT ACCESS TO TWY R FROM RWY 26R PROHIBITED

TWY F SOUTH OF TWY S RSTRD TO ACFT WITH 117 FT WINGSPAN AND SMALLER. TWY F SOUTH OF RWY 26L RSTRD TO ACFT WITH 180 FT WINGSPAN.
Palmdale, CA  
Palmdale Rgnl/USAF Plant 42  
ICAO Identifier KPMD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 34°37′45.8″N / 118°5′4.39″W
2.2.2 From City: 3 miles NE of PALMDALE, CA
2.2.3 Elevation: 2542.5 ft
2.2.5 Magnetic Variation: 12E (2020)
2.2.6 Airport Contact: MATT FISHER  
2503 E AVE P  
PALMDALE, CA 93550  
(661)275-9342
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 1330−0600Z++ Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types:
2.4.5 Hangar Space:
2.4.6 Repair Facilities: None

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 52
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 53 R/B/W/T
2.12.5 Coordinates: 34°38′0.842″N / 118°5′29.802″W
2.12.6 Threshold Elevation: 2542.5 ft
2.12.6 Touchdown Zone Elevation: 2542.5 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 232
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 53 R/B/W/T
2.12.5 Coordinates: 34°38′14.236″N / 118°3′36.966″W
2.12.6 Threshold Elevation: 2491.1 ft
2.12.6 Touchdown Zone Elevation: 2497.9 ft

2.12.1 Designation: 25
2.12.2 True Bearing: 266
2.12.3 Dimensions: 12002 ft x 200 ft
2.12.4 PCN: 71 R/B/W/T
2.12.5 Coordinates: 34°37′57.991″N / 118°4′23.743″W
2.12.6 Threshold Elevation: 2498.7 ft
2.12.6 Touchdown Zone Elevation: 2503.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 04
2.13.2 Take−off Run Available: 12000 ft
2.13.3 Take−off Distance Available: 1500 ft
2.13.4 Accelerate−Stop Distance Available: 2491 ft
2.13.5 Landing Distance Available: 2497.9 ft

2.13.1 Designation: 22
2.13.2 Take−off Run Available: 12000 ft
2.13.3 Take−off Distance Available: 1500 ft
2.13.4 Accelerate−Stop Distance Available: 2491 ft
2.13.5 Landing Distance Available: 2497.9 ft

2.13.1 Designation: 25
2.13.2 Take−off Run Available: 12000 ft
2.13.3 Take−off Distance Available: 1500 ft
2.13.4 Accelerate−Stop Distance Available: 2491 ft
2.13.5 Landing Distance Available: 2497.9 ft
2.13.1 Designation: 252
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 072
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04
2.14.2 Approach Lighting System:

2.14.1 Designation: 22
2.14.2 Approach Lighting System:

2.14.1 Designation: 25
2.14.2 Approach Lighting System:

2.14.1 Designation: 07
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 25. Magnetic variation: 12E
2.19.2 ILS Identification: PMD
2.19.5 Coordinates: 34°38′1.256″N / 118°4′40.078″W
2.19.6 Site Elevation: 2491.8 ft

2.19.1 ILS Type: Localizer for runway 25. Magnetic variation: 12E
2.19.2 ILS Identification: PMD
2.19.5 Coordinates: 34°37′48.786″N / 118°7′10.911″W
2.19.6 Site Elevation: 2552.2 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 15E
2.19.2 Navigation Aid Identification: PMD
2.19.5 Coordinates: 34°37′53.0341″N / 118°3′49.7607″W
2.19.6 Site Elevation: 2498 ft

General Remarks:
PRKG RAMP LCTD S OF RWY 22 & TWY V NOT VSB FM ATCT.

MISC: COMSEC STORAGE UNAVBL.

MISC: WINDS ARE EST DUE TO FMQ–13 WIND SENSORS BEING ACCURATE TO WITHIN ONLY +/− 2 KT. ATC/WX WILL NOT INCL/RELAY WIND CORR INTO FCST/PHRASEOLOGY. THEREFORE, AIRCREWS WILL INCORPORATE A +/− 2 KT ACCURACY INTO THEIR DECISION MAKING PROCESS FOR FLYING OPR.

CAUTION: RWY 25 NSTD MRK: SPOT LDG ZONE MRK LCTD AT 6000 FT REMAINING MRK. RWY 07–25 DECEPTIVE SFC MRK EXCEED STANDARD BY APPROX 50 FT.

ALL DEPT ACFT MUST FILE FPL WITH P42 AFLD MGMT OPS.

MISC: BASE OPS OPR 1330–0600Z++, CLSD FEDERAL HOL.

CAUTION: USE EXTREME CAUTION FOR UNMANNED AERIAL SYSTEMS (UAS) OPS IN VCNTY.

MILITARY USE: ASSAULT LDG ZONE LCTD 1ST 6,000 EAST END OF TWY B. RWY 252 MRK ONLY FOR C–130
ASSAULT OPR; ONE-WAY LDG ONLY.

RSTD: OVERNIGHT PRK UNAUTHD ON C-RAMP.

TRAN ALERT (2 OF 2): UNABLE TO SVC ACFT WITH ORDNANCE. LTD GRD SUPPORT EQUIPMENT AVBL. NO POTABLE WATER SVC. NO TRAN MAINT AVBL. GND SVC UNAVBL WHEN LIGHTNING WITHIN 5 NM.

CAUTION: CONTRACTOR LEASED SITES ARE INTENDED FOR ACFT BASED THEREIN; ENTRY GATES AND APRONS MAY NOT MEET AF OBST STDS.

BIRD HAZ POTENTIAL EXISTS. MIGRATORY SEASON PHASE II 1 OCT – 31 MAR. DURG BWC MODERATE, TKOF AND LNDG PERMITTED. DURG BWC SEVERE, TKOF AND LNDG PROHIBITED.

FUEL: A++ AVBL. NO TRANS ACFT FUEL SVC AVBL. LTD FUELING AVBL; GOVT ACFT ONLY 1600–2300Z++ MON–FRI. 24 HR PN WITH AFLD MGR RQR; NO SAME DAY REQ; GAS AND GO UNAVBL. EXPECT 2+ HR DELAY FOR FUEL.

RSTD – OFFL BUS ONLY. MIL ARPT. CIVIL USE RQR USAF APVL AND DD FORM 2400/01/02. PPR RQR FOR FULL STOP LDG ONLY. CALL C661–275–9342.

SERVICE–JASU: POWER CARS UNAVBL.

DRAINAGE DITCHES PARL RWY 22 FM TWY S TO TWY U.

MISC: FLT PLANS MUST BE FILED AND ACTIVATED WITH P42 AFLD MGMT. USE FLT SVC WHEN P42 AFLD MGMT CLSD.

CAUTION: VARIOUS ACFT TEST OPS MARKINGS PAINTED IN WHITE ON TAXIWAY UNIFORM.

CAUTION: CIV ACFT MAY NOT BE GRANTED ACCESS TO KPMD CLASS D FOR PRACTICE APCH OR TRSN OVER ARPT BDRYS.

TRAN ALERT (1 OF 2): NO FLEET SVC AVBL. NO FLW ME SVC AVBL. EXP PROGRESSIVE TAXI TO PRK. AIRCREW RESPONSIBLE FOR ACFT PINNING/SAFING.

UNLGT OBSTN SURROUND AFLD.

MISC: INDUS INSTLN – NO TRNSPN, LODGING OR NML SVC AVBL ON SITE.

RSTD: TWY L BTN RWY 04/22 AND PAX TRML UNLGTD AND USABLE FOR DAYLT VFR ONLY.
Sacramento, CA
Sacramento Intl
ICAO Identifier KSMF

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38°41′43.6″N / 121°35′26.8″W
2.2.2 From City: 10 miles NW of SACRAMENTO, CA
2.2.3 Elevation: 26.9 ft
2.2.5 Magnetic Variation: 13E (2020)
2.2.6 Airport Contact: SHERI THOMPSON–DUA RTE
6900 AIRPORT BLVD
SACRAMENTO, CA 95837
(916) 874–0560
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 17L
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′–26.4236N / 121°36′–3.8961W
2.12.6 Threshold Elevation: 24.8 ft
2.12.6 Touchdown Zone Elevation: 25.3 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.4 PCN: 70 R/B/W/U
2.12.5 Coordinates: 38°41′–1.439N / 121°36′–5.3075W
2.12.6 Threshold Elevation: 22.5 ft
2.12.6 Touchdown Zone Elevation: 23.9 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8605 ft x 150 ft
2.12.4 PCN: 48 R/B/X/T
2.12.5 Coordinates: 38°41′–0.6506N / 121°34′–48.2125W
2.12.6 Threshold Elevation: 22.1 ft
2.12.6 Touchdown Zone Elevation: 23.8 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 181
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.4 PCN: 70 R/B/W/U
2.12.5 Coordinates: 38°42′–26.4236N / 121°36′–3.8961W
2.12.6 Threshold Elevation: 24.8 ft
2.12.6 Touchdown Zone Elevation: 25.3 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 8598 ft x 150 ft
2.12.4 PCN: 70 R/B/W/U
2.12.5 Coordinates: 38°41′–1.439N / 121°36′–5.3075W
2.12.6 Threshold Elevation: 22.5 ft
2.12.6 Touchdown Zone Elevation: 23.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 17L
2.13.2 Take–off Run Available: 8605 ft
2.13.3 Take–off Distance Available: 8605 ft
2.13.4 Accelerate–Stop Distance Available: 8605 ft
2.13.5 Landing Distance Available: 8605 ft

2.13.1 Designation: 35R
2.13.2 Take–off Run Available: 8605 ft
2.13.3 Take–off Distance Available: 8605 ft
2.13.4 Accelerate–Stop Distance Available: 8605 ft
2.13.5 Landing Distance Available: 8605 ft

2.13.1 Designation: 17R
2.13.2 Take–off Run Available: 8598 ft
2.13.3 Take–off Distance Available: 8598 ft
2.13.4 Accelerate–Stop Distance Available: 8598 ft
2.13.5 Landing Distance Available: 8598 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 17L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 35R
2.14.2 Approach Lighting System:

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35L
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 17L. Magnetic variation: 13E
2.19.2 ILS Identification: MDK
2.19.5 Coordinates: 38–42–15.18N / 121–34–43.22W
2.19.6 Site Elevation: 21.7 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 13E
2.19.2 ILS Identification: MDK
2.19.5 Coordinates: 38–42–15.18N / 121–34–43.22W
2.19.6 Site Elevation: 21.7 ft

2.19.1 ILS Type: Localizer for runway 17L. Magnetic variation: 13E
2.19.2 ILS Identification: MDK
2.19.5 Coordinates: 38–40–50.68N / 121–34–49.81W
2.19.6 Site Elevation: 17.4 ft

2.19.1 ILS Type: DME for runway 17R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38–42–30.378N / 121–35–2.156W
2.19.6 Site Elevation: 22.9 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38–42–12.5012N / 121–36–0.0807W
2.19.6 Site Elevation: 22 ft

2.19.1 ILS Type: Inner Marker for runway 17R. Magnetic variation: 13E
2.19.2 ILS Identification: SMF
2.19.5 Coordinates: 38–42–36.65N / 121–36–3.72W
2.19.6 Site Elevation: 22 ft

General Remarks:
WEST RAMP SPOTS 56–60 & F1 RSTRD TO TOW IN AND TOW OUT ONLY FROM TXL B2. WHEN PUSHING BACK FOR DEP FROM WEST RAMP SPOTS 56–60 & F1 EACH ACFT IS TO PUSH BACK ON TO TXL B2 AND PULL FWD TO THE “ENGINE START LINE” PRIOR TO STARTING ENGS.

CROP DUSTERS OPER INV OF ARPT AT OR BELOW 200 FT AGL.

MILITARY AIRCRAFT PARKING LIMITED. CONTACT ARPT OPNS IF PARKING IS REQUIRED (916) 806–5309.

NOISE SENSITIVE AREAS W OF ARPT ON SAC RIVER. LCL TURN DISCOURAGED FOR JET ACFT. WHEN CONDUCTING IFR APCH IN VFR CONDITIONS EXECUTE MISSED APCH AT DEP END OF RYS. PLAN VFR PATTERNS TO E. USE MIN POWER SETTINGS.

UNPAVED SFC NORTH OF TWY P AND EAST OF TWY A AND SOUTH OF CARGO 1 RAMP CLSD TO HEL.
TWY B1 CLSD TO CARGO ACFT.

PORTION OF TWY W 500 FT EAST OF TWY A TO 2100 FT EAST OF TWY A IS NOT VISIBLE FROM ATCT.

TWY Y4 RESTRICTED TO AIRCRAFT WITH A WINGSPAN OF LESS THAN 118 FT (GROUP III).

ALL ACFT CTC ATC GND CTL PRIOR TO MOVEMENT ON RAMP.

TWY RMK #2: THE MAXIMUM ALLOWABLE GROSS AIRCRAFT LOAD FOR TWYS G1, G2, AND THE GENERAL AVIATION PARKING APRON IS: 70,000 LBS FOR SINGLE GEAR AIRCRAFT; 170,000 LBS FOR DUAL GEAR AIRCRAFT; AND 250,000 LBS FOR DUAL TANDEM GEAR AIRCRAFT.

FAA GWT STRENGTH EVALUATION MD–11 = 590,000 LBS.

ACFT MUST PUSH BACK TAIL TO THE NORTH FROM TRML GATES A1, A3 AND A5.

GND VEHICLE SURVEILLANCE SYS IN USE. OPR TRANSPONDERS WITH ALT RPRTG MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AP SFCS.

BIRDS ON AND IN VICINITY OF ARPT.

TWY RMK #2 CONT’D: AN AIRCRAFT CANNOT EXCEED THE AIRPLANE DESIGN GROUP III CRITERIA AND MUST HAVE A WHEEL BASE OF LESS THAN 60 FT.
San Diego, CA  
San Diego Intl  
ICAO Identifier KSAN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 32°44′0.8″N / 117°11′22.8″W
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  
(619–400–2718)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index  
ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 27  
2.12.2 True Bearing: 286
2.12.3 Dimensions: 9400 ft x 200 ft
2.12.4 PCN: 75 F/A/W/T  
2.12.5 Coordinates: 32°43′48.0086″N / 
117°10′29.9018″W
2.12.6 Threshold Elevation: 16.4 ft
2.12.6 Touchdown Zone Elevation: 16.7 ft
2.1.1 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′13.6413″N / 
117°12′15.6841″W
2.12.6 Threshold Elevation: 13.7 ft
2.12.6 Touchdown Zone Elevation: 16.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 27  
2.13.2 Take-off Run Available: 9401 ft
2.13.3 Take-off Distance Available: 9401 ft
2.13.4 Accelerate–Stop Distance Available: 9401 ft
2.13.5 Landing Distance Available: 7591 ft
2.13.1 Designation: 09  
2.13.2 Take-off Run Available: 8280 ft
2.13.3 Take-off Distance Available: 9401 ft
2.13.4 Accelerate–Stop Distance Available: 8280 ft
2.13.5 Landing Distance Available: 7280 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 27  
2.14.2 Approach Lighting System: MALS  
2.14.1 Designation: 09  
2.14.2 Approach Lighting System: MALSR  

AD 2.18 Air Traffic Services Communication Facilities

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′47.6019″N / 
117°10′28.237″W
2.19.6 Site Elevation: 16 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′10.76″N / 
117°11′52.14″W
2.19.6 Site Elevation: 16 ft
2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 11E
2.19.2 ILS Identification: SAN  
2.19.5 Coordinates: 32°43′47.6019″N / 
117°10′28.237″W
2.19.6 Site Elevation: 25.9 ft
2.19.1 ILS Type: DME for runway 27. Magnetic variation: 11E
2.19.2 ILS Identification: UBR  
2.19.5 Coordinates: 32°44′11.4624″N / 
117°12′20.064″W
2.19.6 Site Elevation: 22.7 ft
2.19.5 Coordinates: 32°44′14.7891N / 117°12′20.4337W
2.19.6 Site Elevation: 10.9 ft

**General Remarks:**

CROSS-BLEED ENGINE STARTS PERMITTED ONLY ON PARALLEL TWY WITH ACFT ALIGNED ON TWY CNTRLN.

RWY STATUS LGTS IN OPN.

747 AND LARGER ACFT ARE PROHIBITED FM MAKING INTERSECTION TKOFS.

INTERMITTENT PRESENCE OF BIRDS ON AND INV OF ARPT.

ACFT WITH WINGSPANS GTR THAN 171 FT (52M) RSTD FROM USING TWY D SOUTH OF TWY B, AND WHEN EXITING RWY 09 WB ON TWY B.

DUE TO PAEW ON RY 09–27, 30 MINUTE PPR 0830–1230Z FOR ALL LANDINGS AND DEPARTURES CALL 619–400–2710.

IN THE EVENT OF A DIVERSION OR IRREGULAR OPERATIONS EVENTS, ACFT OPERATORS CONTACT THE APT DUTY MGR (619) 400–2710 FOR PPR DUE TO LIMITATIONS ASSOCIATED WITH HANDLING DIVERTED FLTS. LIMITATIONS INCLUDE RESTRICTED GATE SPACE, CUSTOMS SERVICES AS WELL AS ACFT SERVICING & PARKING.

MILITARY ACFT ON OFFICIAL BUSINESS ONLY CONTACT ARPT OPS AT 619–400–2710 FOR PPR.

TERRAIN & BLDGS TO 500’ MSL N & E WITHIN 1 1/2 MI.

ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PILOTS REQUIRED TO CTC ATCT GROUND CONTROLLER PRIOR TO PUSHBACK, TOW OUT AND TAXI FOR TRAFFIC ADVISORIES.

30 MIN PPR (619–400–2710) FOR ACFT WITH OVER 171 FT WINGSPAN.

ACFT CROSSING RY 09/27 ON TWY C6, HOLD SHORT OF TWY C6 FACING WEST ON TWY C, PARALLEL TO RY.

ULTRALIGHT ACFT PROHIBITED ON AP.

TAXIING ACFT ARE PROHIBITED FROM PASSING TO THE SOUTH OF ACFT LCTD ON TWY B INTO ALLEY LCTD BTWN GATES 7 AND 14.

TAXILANE A RSTRD TO ACFT WITH WINGSPANS OF 135 FT OR LESS.

TWY C EDGE LGTS OTS INDEFLY.

OUTBOARD ENGINES OF FOUR-ENGINE ACFT ARE TO BE KEPT AT IDLE POWER FOR ALL GND MANEUVERING.

TAXIING ACFT SHALL FOLLOW LEAD-IN LINES UNTIL THE NOSE WHEEL OF THE ACFT HAS ENTERED THE NON-MOVEMENT AREA OF THE ALLEY.
TO REDUCE JET BLAST IMPACT AT N END OF TWY F ACFT WILL NOT START ENG UNTIL 800 FT FM N END OF TWY F; ABEAM THE SECOND PARKING PAD.

PRACTICE APPROACHES AND TGL PROHIBITED.

San Francisco, CA
San Francisco Intl
ICAO Identifier KSFO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37°37'–7.7″N / 122°22'–31.5″W
2.2.2 From City: 8 miles SE of SAN FRANCISCO, CA
2.2.3 Elevation: 13.1 ft
2.2.5 Magnetic Variation: 14E (2015)
2.2.6 Airport Contact: IVAR SATERO
PO BOX 8097
SAN FRANCISCO, CA 94128
((650) 821–3355)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01L
2.12.2 True Bearing: 28
2.12.3 Dimensions: 7650 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37°36'–22.7876N / 122°22'–51.7467W
2.12.6 Threshold Elevation: 11.4 ft
2.12.6 Touchdown Zone Elevation: 11.2 ft
2.12.1 Designation: 19L
2.12.2 True Bearing: 208
2.12.3 Dimensions: 8650 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37°37'–38.4319N / 122°22'–1.599W
2.12.6 Threshold Elevation: 10.5 ft
2.12.6 Touchdown Zone Elevation: 11 ft
2.12.1 Designation: 01R
2.12.2 True Bearing: 28
2.12.3 Dimensions: 8650 ft x 200 ft
2.12.4 PCN: 100 F/B/X/T
2.12.5 Coordinates: 37°36'–42.163N / 122°21'–30.057W
2.12.6 Threshold Elevation: 12.6 ft
2.12.6 Touchdown Zone Elevation: 12.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01L
2.13.2 Take–off Run Available: 7650 ft
2.13.3 Take–off Distance Available: 7650 ft
2.13.4 Accelerate–Stop Distance Available: 7650 ft
2.13.5 Landing Distance Available: 7010 ft

2.13.1 Designation: 19R
2.13.2 Take–off Run Available: 7650 ft
2.13.3 Take–off Distance Available: 7650 ft
2.13.4 Accelerate–Stop Distance Available: 7650 ft
2.13.5 Landing Distance Available: 7650 ft

2.13.1 Designation: 01R
2.13.2 Take–off Run Available: 8650 ft
2.13.3 Take–off Distance Available: 8650 ft
2.13.4 Accelerate–Stop Distance Available: 8650 ft
2.13.5 Landing Distance Available: 8090 ft

2.13.1 Designation: 19L
2.13.2 Take–off Run Available: 8650 ft
2.13.3 Take–off Distance Available: 8650 ft
2.13.4 Accelerate–Stop Distance Available: 8650 ft
2.13.5 Landing Distance Available: 8650 ft

2.13.1 Designation: 10L
2.13.2 Take–off Run Available: 11870 ft
2.13.3 Take–off Distance Available: 11870 ft
2.13.4 Accelerate–Stop Distance Available: 11193 ft
2.13.5 Landing Distance Available: 11193 ft

2.13.1 Designation: 28R
2.13.2 Take–off Run Available: 11870 ft
2.13.3 Take–off Distance Available: 11870 ft
2.13.4 Accelerate–Stop Distance Available: 10704 ft
2.13.5 Landing Distance Available: 10704 ft

2.13.1 Designation: 10R
2.13.2 Take–off Run Available: 11381 ft
2.13.3 Take–off Distance Available: 11381 ft
2.13.4 Accelerate–Stop Distance Available: 10704 ft
2.13.5 Landing Distance Available: 10704 ft

2.13.1 Designation: 28L
2.13.2 Take–off Run Available: 11381 ft
2.13.3 Take–off Distance Available: 11381 ft
2.13.4 Accelerate–Stop Distance Available: 10981 ft
2.13.5 Landing Distance Available: 10275 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 01L
2.14.2 Approach Lighting System:

2.14.1 Designation: 19R
2.14.2 Approach Lighting System:

2.14.1 Designation: 01R
2.14.2 Approach Lighting System:

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: MALSF

2.14.1 Designation: 10L
2.14.2 Approach Lighting System:

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 14E
2.19.2 ILS Identification: SIA
2.19.6 Site Elevation: 20.6 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 14E
2.19.2 ILS Identification: SIA
2.19.6 Site Elevation: 6.3 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 14E
2.19.2 ILS Identification: SIA
2.19.5 Coordinates: 37−36−16.2796N / 122−22−56.0614W
2.19.6 Site Elevation: 19 ft
2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−37−48.1978N / 122−23−40.6085W
2.19.6 Site Elevation: 20.3 ft
2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−36−51.3989N / 122−21−43.1171W
2.19.6 Site Elevation: 8.2 ft
2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 14E
2.19.2 ILS Identification: GWQ
2.19.5 Coordinates: 37−36−46.1575N / 122−21−19.7418W
2.19.6 Site Elevation: 13 ft
2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 17E
2.19.2 Navigation Aid Identification: SFO
2.19.5 Coordinates: 37−37−10.1465N / 122−22−26.0165W
2.19.6 Site Elevation: 6 ft

General Remarks:

SEVERAL RY HOLD POSITION SIGNS ARE ON THE RIGHT RATHER THAN THE LEFT SIDE OF THE TWYS.

NOISE SENSITIVE ARPT; FOR NOISE ABATEMENT PROCEDURES CTC ARPT NOISE OFFICE MON−FRI 0800−1700 BY CALLING 650−821−5100.

RWY STATUS LGTS IN OPN.

PAEW APCH END RYS 28L, 28R, 19L INDEFLY.

ALL OUBD TWY ZULU 2 HVY ACFT WITH A WINGSPAN OF 171 FT OR GTR UNDER PWR PROHIBITED FROM ENTERING WB TWY ZULU.

RWY 1L CLSD TO DEPARTING TRIJET ACFT WITH WINGSPAN GREATER THAN 155 FT.

AIRLINE PILOTS SHALL STRICTLY FOLLOW THE PAINTED NOSE GEAR LINES AND NO OVERSTEERING ADJUSTMENT IS PERMITTED.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

FLOCKS OF BIRDS FEEDING ALONG SHORELINE ADJ TO ARPT; ON OCCASIONS FLY ACROSS VARIOUS
PARTS OF THE ARPT.
TWY S2 BTN TWY Z AND TWY S3 CLSD TO ACFT WITH WINGSPAN OVER THAN 215 FT.
HIGH SPEED TWY (T) GRVD FULL WIDTH BTN RWY 28R AND 28L.
RY 10 PREFERRED RY BTWN 0100–0600 WEATHER AND FLIGHT CONDITIONS PERMITTING.
SIMULTANEOUS OPERATIONS IN EFFECT ALL RYS.
San Jose, CA
Norman Y. Mineta San Jose Intl
ICAO Identifier KSJC

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 37°21′46.781″ N / 121°55′43.034″ W
2.2.2 From City: 2 miles NW of SAN JOSE, CA
2.2.3 Elevation: 62.2 ft
2.2.5 Magnetic Variation: 13°E (2020)
2.2.6 Airport Contact: JOHN AITKEN
1701 AIRPORT BLVD., SUITE B–1130
SAN JOSE, CA 95110
((408) 277–5100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 12L
2.12.2 True Bearing: 139
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 67 R/C/W/T
2.12.5 Coordinates: 37°22′29.9801″ N / 121°56′24.6377″ W
2.12.6 Threshold Elevation: 37.7 ft
2.12.6 Touchdown Zone Elevation: 43.8 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 319
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 67 R/C/W/T
2.12.5 Coordinates: 37°21′3.5766″ N / 121°55′1.4432″ W
2.12.6 Threshold Elevation: 61.1 ft
2.12.6 Touchdown Zone Elevation: 55.2 ft

2.12.1 Designation: 12R
2.12.2 True Bearing: 139
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 82 R/B/W/T
2.12.5 Coordinates: 37°21′25.4266″ N / 121°56′31.1597″ W
2.12.6 Threshold Elevation: 38.2 ft
2.12.6 Touchdown Zone Elevation: 45.6 ft

2.12.1 Designation: 30L
2.12.2 True Bearing: 319
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 67 R/C/W/T
2.12.5 Coordinates: 37°21′1.4432″ N / 121°55′31.1597″ W
2.12.6 Threshold Elevation: 62.1 ft
2.12.6 Touchdown Zone Elevation: 57 ft

AD 2.13 Declared Distances
2.13.1 Designation: 12L
2.13.2 Take-off Run Available: 10139 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 10139 ft
2.13.5 Landing Distance Available: 8831 ft

2.13.1 Designation: 30R
2.13.2 Take-off Run Available: 10134 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 10134 ft
2.13.5 Landing Distance Available: 7597 ft

2.13.1 Designation: 12R
2.13.2 Take-off Run Available: 9883 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 9883 ft
2.13.5 Landing Distance Available: 8587 ft

2.13.1 Designation: 30L
2.13.2 Take-off Run Available: 10152 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 10152 ft
2.13.5 Landing Distance Available: 7614 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 12L
2.14.2 Approach Lighting System:

2.14.1 Designation: 30R
2.14.2 Approach Lighting System:
2.14.1 Designation: 12R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 30L
2.14.2 Approach Lighting System: MALSR

2.18 Air Traffic Services Communication Facilities

2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 12R. Magnetic variation: 13E
2.19.2 ILS Identification: SLV
2.19.5 Coordinates: 37–21–2.6639N / 121–55–1.3459W
2.19.6 Site Elevation: 81.4 ft

2.19.1 ILS Type: Glide Slope for runway 12R. Magnetic variation: 13E
2.19.2 ILS Identification: SJC
2.19.6 Site Elevation: 36.8 ft

2.19.1 ILS Type: Localizer for runway 12R. Magnetic variation: 13E
2.19.2 ILS Identification: SLV
2.19.6 Site Elevation: 36.8 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 16E
2.19.2 Navigation Aid Identification: SJC
2.19.6 Site Elevation: 34.5 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 13E
2.19.2 ILS Identification: SJC
2.19.5 Coordinates: 37–21–3.0434N / 121–55–0.8585W
2.19.6 Site Elevation: 75.1 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 13E
2.19.2 ILS Identification: SJC
2.19.5 Coordinates: 37–22–27.575N / 121–56–32.6145W
2.19.6 Site Elevation: 56 ft

General Remarks:
UNSCHEDULED OPNS BY GROUP 5 ACFT (B747) AND LARGER NOT AUTH EXCEPT WITH PRIOR ARPT APPROVAL CTC AMGR (408) 392–3500.
CURFEW HRS 2300–0700 FAR 36 STAGE II, 2330–0630 FAR 36 STAGE III ACFT LISTED ON THE SCHEDULE OF AUTHORIZED AIRCRAFT ISSUED BY THE DIRECTOR OF AVIATION. DELAYED SCHEDULED FLIGHTS, AND ALTERNATE/EMERGENCY OPERATIONS MAY BE EXEMPT FROM CURFEW HOUR RESTRICTIONS.
PRIOR AIRPORT NOTIFICATION IS REQUIRED FOR ALL LATE/EARLY ARRIVALS. CONTACT MANAGER ON DUTY AT (408) 392–3500.
FIRST 400 FT RY 30R & RY 30L CLSD FOR TKOF DC10, MD11, L1011.
TWY V LTD TO ACFT WITH WINGSPAN OF LESS THAN 118 FT (B–737–900 OR SMALLER).
TWY W BETWEEN TWY J AND TWY L CAN SUPPORT GROUP IV ACFT.
RRP RQRD FM FBO FOR TSNT HEL OPS.
FOR CD WHEN ATCT IS CLSD CTC NORCAL APCH AT 916–361–3748.
TWY Y WILL BE PERIODICALLY RSTRD TO ACFT WITH A WINGSPAN OF LESS THAN 171 FT (MD–11 OR
SMALLER) DRG B–787 AND B–747 OPNS ON RWY 12L/30R.

TWY D BETWEEN TWY W AND TWY V LIMITED TO ACFT WITH A WINGSPAN OF LESS THAN 118 FT (B–737–900 OR SMALLER).

TWY Z WILL BE PERIODICALLY RSTRD TO ACFT WITH A WINGSPAN OF LESS THAN 118 FT (B–737–900 OR SMALLER) DRG B–787 AND B–747 OPNS. TWY Z BTN 200 FT NW OF TWY H AND 200 FT NW OF TWY K LTD TO ACFT WITH WINGSPAN OF LESS THAN 135 FT (B–757–300 OR SMALLER).

HIGH INTENSITY LIGHT ACTIVITY: HIGH INTENSITY LIGHTS (LASERS AND LARGE MEDIA SCREENS) MAY BE VISIBLE TO ARR AND DEP ACFT TO SAN JOSE INTERNATIONAL AIRPORT DURING EVENTS AT THE LEVI STADIUM COMPLEX (37–24–15N/121–58–14W, SJC VORTAC R–303/2.1 DME). FLIGHT CREWS SHOULD USE CAUTION WHEN OPERATING IN THIS AREA DURING STADIUM EVENTS. COCKPIT ILLUMINATION AND GLARE EFFECT REDUCING VIS MAY BE INTENSIFIED DURING ARR AND DEP OPS ESPECIALLY AT NIGHT.

BIRDS FREQUENTLY ON OR IN VICINITY OF AIRPORT.

ALL TURBINE ENGINE RUN–UPS REQUIRE PRIOR AIRPORT APPROVAL, CONTACT MGR ON DUTY (408) 392–3500.

NOISE ABATEMENT PROCEDURE: RY 30L/12R IS PREFERRED ARRIVAL RY FOR JET ACFT AND RY 12L/30R IS THE PREFERRED DEP RY FOR JET ACFT. ALL JET ACFT TKOFS ARE TO BE INITIATED FM EOR UNLESS DIRECTED OTHERWISE BY ATCT.
Stockton, California
Stockton Metropolitan
ICAO Identifier KSCK

Airport Diagram

January 2023
Annual Rate of Change
0.1° W

Federal Aviation Administration
Twenty-Sixth Edition
Stockton, CA
Stockton Metropolitan
ICAO Identifier KSCK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37°53′39.877″N / 121°14′19.464″W
2.2.2 From City: 3 miles SE of STOCKTON, CA
2.2.3 Elevation: 33.2 ft
2.2.4 Magnetic Variation: 14°E (2010)
2.2.6 Airport Contact: RUSSELL STARK
5000 S. AIRPORT WAY
ROOM 202
STOCKTON, CA 95206
(209-468-4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100,100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R FF Index I B certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 29R
2.12.2 True Bearing: 308
2.12.3 Dimensions: 10249 ft x 150 ft
2.12.4 PCN: 46 F/C/X/T
2.12.5 Coordinates: 37°53′6.64N / 121°13′21.88W
2.12.6 Threshold Elevation: 33.2 ft
2.12.6 Touchdown Zone Elevation: 32.3 ft

2.12.1 Designation: 11L
2.12.2 True Bearing: 128
2.12.3 Dimensions: 10249 ft x 150 ft
2.12.4 PCN: 46 F/C/X/T
2.12.5 Coordinates: 37°53′45.27N / 121°14′47.57W
2.12.6 Touchdown Zone Elevation: 26.2 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 29L
2.12.2 True Bearing: 308
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.4 PCN: 10 F/C/X/T
2.12.5 Coordinates: 37°53′31.8561N / 121°14′13.4466W
2.12.6 Threshold Elevation: 25.9 ft
2.12.6 Touchdown Zone Elevation: 26.6 ft

2.12.1 Designation: 11R
2.12.2 True Bearing: 128
2.12.3 Dimensions: 4448 ft x 75 ft
2.12.4 PCN: 10 F/C/X/T
2.12.5 Coordinates: 37°53′58.6715N / 121°14′57.4211W
2.12.6 Threshold Elevation: 26.2 ft
2.12.6 Touchdown Zone Elevation: 26.4 ft

2.13.1 Designation: 29R
2.13.2 Take-off Run Available: 8856 ft
2.13.3 Take-off Distance Available: 9856 ft
2.13.4 Accelerate–Stop Distance Available: 9210 ft
2.13.5 Landing Distance Available: 8650 ft

2.13.1 Designation: 11L
2.13.2 Take-off Run Available: 8474 ft
2.13.3 Take-off Distance Available: 9474 ft
2.13.4 Accelerate–Stop Distance Available: 8604 ft
2.13.5 Landing Distance Available: 8650 ft

2.13.1 Designation: 29L
2.13.2 Take-off Run Available: 4448 ft
2.13.3 Take-off Distance Available: 4448 ft
2.13.4 Accelerate–Stop Distance Available: 4448 ft
2.13.5 Landing Distance Available: 3386 ft

2.13.1 Designation: 11R
2.13.2 Take-off Run Available: 4448 ft
2.13.3 Take-off Distance Available: 4448 ft
2.13.4 Accelerate–Stop Distance Available: 4448 ft
2.13.5 Landing Distance Available: 4448 ft

2.13.1 Designation: H1
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 29R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 11L
2.14.2 Approach Lighting System:

2.14.1 Designation: 29L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 11R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: H1
2.14.2 Approach Lighting System: ODALS
2.14.4 Visual Approach Slope Indicator System:

**General Remarks:**

PRACTICE CIRCLING APPROACHES TO RWYS 11L/11R NA FOR ANY TURBINE POWERED ACFT/PROP DRIVEN ACFT EXCEEDING 12500 LBS EXCP BY PPR FM AMGR.

TSNT PILOTS USE CTN; DO NOT ENTER THE TSA RSTRD AREA ADJ TO THE TSNT PRKG AREA.

BE ALERT TO ELEV'D MALSR APCH END RWY 29R LCTD ON BLAST PAD.

PAVEMENT PRIOR TO THLD OF RWY 11L NOT AVBL FOR TAXI BACK OPS.

ARPT CLSD TO TGL & PLANNED LOW APCHS FOR TURBOJET ACFT 2200–0700 EXCEPT BY PPR FM AMGR PART 36 STAGE 3 ACFT.

TRANSIENT PARKING AVBL AT FBO.

THE FLWG AREAS NOT VISIBLE FM ATCT: TWY B FM TRML APN TO INT AT TWY M; TWY B FM 300 FT W OF TWY J TO 375 FT E OF TWY J; NON MOVEMENT AREA S OF TWY B FROM TRML APN TO 200 FT W OF TWY H; SE HALF OF TRML APN; TSNT PRKG APN.

AVOID OVERFLYING SAN JOAQUIN GENERAL HOSPITAL & THE CITY OF MANTECA.

TWY F RSTRD TO ACFT WINGSPAN LESS THAN 118 FT.

FOR CD WHEN ATCT CLSD CTC NORCAL APCH AT 916–361–0516.

SEAGULLS ON AND IN VICINITY OF ARPT MOSTLY DURING RAINY WEATHER.

TRML APN, CARGO APN, TWYS B, B2, B3, F, D, D7, D9, AND H FOR ACFT OVER 12500 LBS. ALL OTR TWYS RSTRD TO ACFT LESS THAN 12500 LBS.
Denver, CO  
Denver Intl  
ICAO Identifier KDEN

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 39°51′42″ N / 104°37′10″ W

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: PHIL WASHINGTON
ADMIN BLDG,  
8500 PENA BLVD  
DENVER, CO 80249  
((303) 342−2206)

2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: NO

2.4.2 Fuel Types: 100LL,A

2.4.5 Hangar Space: YES

2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 2/1/1995

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 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°−51′−38.0769N / 104−37′−10.1479W

2.12.6 Threshold Elevation: 5294.4 ft  
2.12.6 Touchdown Zone Elevation: 5309.4 ft

2.12.1 Designation: 08  
2.12.2 True Bearing: 91

2.12.3 Dimensions: 12000 ft x 150 ft

2.12.4 PCN: 92 R/B/W/T

2.12.5 Coordinates: 39°−52′−39.2099N / 104−39′−44.0267W

2.12.6 Threshold Elevation: 5353.4 ft  
2.12.6 Touchdown Zone Elevation: 5354.3 ft

2.12.1 Designation: 16L  
2.12.2 True Bearing: 181

2.12.3 Dimensions: 12000 ft x 150 ft

2.12.4 PCN: 92 R/B/W/T

2.12.5 Coordinates: 39°−53′−49.3301N / 104−41′−12.4998W

2.12.6 Threshold Elevation: 5349.9 ft  
2.12.6 Touchdown Zone Elevation: 5357.1 ft

2.12.1 Designation: 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′−50.7743N / 104−41′−13.8782W

2.12.6 Threshold Elevation: 5321.8 ft  
2.12.6 Touchdown Zone Elevation: 5326.3 ft

2.12.1 Designation: 34L  
2.12.2 True Bearing: 1

2.12.3 Dimensions: 16000 ft x 200 ft

2.12.4 PCN: 92 R/B/W/T

2.12.5 Coordinates: 39°−51′−6.7926N / 104−41′−47.7166W

2.12.6 Threshold Elevation: 5327 ft  
2.12.6 Touchdown Zone Elevation: 5327 ft
2.12.1 Designation: 17L
2.12.2 True Bearing: 181
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.6 Threshold Elevation: 5328.1 ft
2.12.6 Touchdown Zone Elevation: 5338.5 ft

2.12.1 Designation: 35R
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.6 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
2.12.6 Threshold Elevation: 5377.9 ft
2.12.6 Touchdown Zone Elevation: 5391.9 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 1
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.6 Threshold Elevation: 5433.8 ft
2.12.6 Touchdown Zone Elevation: 5433.8 ft

2.13.1 Designation: 25
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 13000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 07
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 26
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 08
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 13000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 16L
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 34R
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 13000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 16000 ft

2.13.1 Designation: 16R
2.13.2 Take–off Run Available: 16000 ft
2.13.3 Take–off Distance Available: 16000 ft
2.13.4 Accelerate–Stop Distance Available: 16000 ft
2.13.5 Landing Distance Available: 16000 ft

2.13.1 Designation: 34L
2.13.2 Take–off Run Available: 16000 ft
2.13.3 Take–off Distance Available: 16000 ft
2.13.4 Accelerate–Stop Distance Available: 16000 ft
2.13.5 Landing Distance Available: 16000 ft

2.13.1 Designation: 17L
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 35R
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 17R
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 35L
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 25
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 07
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: ALSF2

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 07. Magnetic variation: 8E
2.19.2 ILS Identification: DZG
2.19.5 Coordinates: 39°50′23.6632N / 104°40′48.6232W
2.19.6 Site Elevation: 5359.1 ft

2.19.1 ILS Type: Glide Slope for runway 07. Magnetic variation: 8E
2.19.2 ILS Identification: DZG
2.19.5 Coordinates: 39°50′22.4098N / 104°41′15.7881W
2.19.6 Site Elevation: 5344.2 ft

2.19.1 ILS Type: Localizer for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP
2.19.5 Coordinates: 39°50′26.2755N / 104°40′49.0613W
2.19.6 Site Elevation: 5354.9 ft

2.19.1 ILS Type: DME for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP
2.19.5 Coordinates: 39°50′23.6632N / 104°40′48.6232W
2.19.6 Site Elevation: 5359.1 ft

2.19.1 ILS Type: Glide Slope for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP
2.19.5 Coordinates: 39°50′22.4098N / 104°41′15.7881W
2.19.6 Site Elevation: 5344.2 ft

2.19.1 ILS Type: Localizer for runway 25. Magnetic variation: 8E
2.19.2 ILS Identification: ERP

2.19.5 Coordinates: 39–50–27.4883N / 104–43–49.0723W  
2.19.6 Site Elevation: 5348.9 ft

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: FUI
2.19.5 Coordinates: 39–52–41.8784N / 104–39–57.5078W  
2.19.6 Site Elevation: 5360.2 ft

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.6 Site Elevation: 5347.6 ft

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.5 Coordinates: 39–53–59.5473N / 104–41–17.8695W  
2.19.6 Site Elevation: 5346.5 ft

2.19.1 ILS Type: Glide Slope for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.6 Site Elevation: 5357 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.5 Coordinates: 39–52–43.1529N / 104–36–57.0352W  
2.19.6 Site Elevation: 5283.1 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5343.2 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5360.2 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.6 Site Elevation: 5342.2 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: JOY
2.19.6 Site Elevation: 5360.2 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.5 Coordinates: 39–53–59.5473N / 104–41–17.8695W  
2.19.6 Site Elevation: 5346.5 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.6 Site Elevation: 5346.4 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.6 Site Elevation: 5345 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.6 Site Elevation: 5349.7 ft

2.19.1 ILS Type: Localizer for runway 08. Magnetic variation: 8E
2.19.2 ILS Identification: OUF
2.19.6 Site Elevation: 5323.5 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5357 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5343.2 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5346.4 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5345 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 8E
2.19.2 ILS Identification: LTT
2.19.6 Site Elevation: 5345 ft
2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 8E
2.19.2 ILS Identification: DQQ
2.19.5 Coordinates: 39–53–34.8236N / 104–41–51.2764W
2.19.6 Site Elevation: 5316.8 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 8E
2.19.2 ILS Identification: DXU
2.19.5 Coordinates: 39–53–55.7414N / 104–41–52.8493W
2.19.6 Site Elevation: 5317.6 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 8E
2.19.2 ILS Identification: DQQ
2.19.5 Coordinates: 39–50–56.7831N / 104–41–47.8336W
2.19.6 Site Elevation: 5320.8 ft

2.19.1 ILS Type: Localizer for runway 34L. Magnetic variation: 8E
2.19.2 ILS Identification: DXU
2.19.5 Coordinates: 39–50–56.7831N / 104–41–47.8336W
2.19.6 Site Elevation: 5320.8 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 8E
2.19.2 ILS Identification: BXP
2.19.5 Coordinates: 39–49–45.1652N / 104–38–30.282W
2.19.6 Site Elevation: 5362.9 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 8E
2.19.2 ILS Identification: BXP
2.19.5 Coordinates: 39–52–4.266N / 104–38–25.1893W
2.19.6 Site Elevation: 5345.1 ft

2.19.1 ILS Type: DME for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39–50–6.3585N / 104–38–24.7651W
2.19.6 Site Elevation: 5359.9 ft

2.19.1 ILS Type: Glide Slope for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39–50–6.3585N / 104–38–24.7651W
2.19.6 Site Elevation: 5359.9 ft

2.19.1 ILS Type: Inner Marker for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39–50–6.3585N / 104–38–24.7651W
2.19.6 Site Elevation: 5359.9 ft

2.19.1 ILS Type: Localizer for runway 35R. Magnetic variation: 8E
2.19.2 ILS Identification: DPP
2.19.5 Coordinates: 39–50–6.3585N / 104–38–24.7651W
2.19.6 Site Elevation: 5359.9 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.5 Coordinates: 39–51–54.875N / 104–39–33.0513W
2.19.6 Site Elevation: 5335.5 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.5 Coordinates: 39–51–54.875N / 104–39–33.0513W
2.19.6 Site Elevation: 5335.5 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.6 Site Elevation: 5378 ft
2.19.1 ILS Type: Localizer for runway 17R. Magnetic variation: 8E
2.19.2 ILS Identification: ACX
2.19.6 Site Elevation: 5388 ft

2.19.1 ILS Type: Localizer for runway 35L. Magnetic variation: 8E
2.19.2 ILS Identification: AQD
2.19.5 Coordinates: 39–51–50.9244N / 104–39–33.6643W
2.19.6 Site Elevation: 5452.1 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 8E
2.19.2 Navigation Aid Identification: DEN
2.19.6 Site Elevation: 5422.6 ft

2.19.1 ILS Type: Glide Slope for runway 35L. Magnetic variation: 8E
2.19.2 ILS Identification: AQD
2.19.6 Site Elevation: 5422.6 ft

General Remarks:
TWY F7 CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

OVERHEAD PSGR BRIDGE ON SOUTH SIDE OF CONCOURSE ’A’ PRVDS 42 FT TAIL & 118 FT WINGSPAN CLNC WHEN ON TWY CNTRLN.

WATERFOWL AND MIGRATORY BIRD ACTIVITY INV OF ARPT YEAR ROUND.

ARPT MAINTAINS CLEARWAYS (500 FT X 1,000 FT, 1.25% SLOPE) ON DEP RY 08, RY 25, & RY 34R.

CUSTOMS AVBL WITH PRIOR PERMISSION.

INFORMAL RY USE PROGRAM IS IN EFFECT 24 HRS A DAY. FOR ADDITIONAL NOISE ABATEMENT INFORMATION CONTACT AIRPORT MANAGEMENT AT 303–342–4200.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
**Pueblo, CO**  
**Pueblo Memorial**  
**ICAO Identifier KPUB**

**AD 2.2 Aerodrome geographical and administrative data**

- **Reference Point:** 38°17′23.811″N / 104°29′52.901″W
- **From City:** 5 miles E of PUEBLO, CO
- **Elevation:** 4729.3 ft
- **Magnetic Variation:** 8E (2015)
- **Airport Contact:** GREG PEDROZA  
  31201 BRYAN CIRCLE  
  PUEBLO, CO 81001  
  (719) 553-2744
- **Traffic:** IFR/VFR

**AD 2.3 Attendance Schedule**

- **All Months, All Days, 0500–2200 Hours**

**AD 2.4 Handling Services and Facilities**

- **Cargo Handling Facilities:** NO
- **Fuel Types:** 100LL,A
- **Hangar Space:** YES
- **Repair Facilities:** MAJOR

**AD 2.6 Rescue and Firefighting Services**

- **Aerodrome Category for Firefighting:** ARFF Index I
- **A certified on 5/1/1973**

**AD 2.12 Runway Physical Characteristics**

- **Designation:** 08L
- **True Bearing:** 88
- **Dimensions:** 4690 ft x 75 ft
- **PCN:** ///
- **Coordinates:** 38°17′24.3081″N / 104°30′36.6451″W
- **Threshold Elevation:** 4681.2 ft
- **Touchdown Zone Elevation:** 4681.2 ft

- **Designation:** 26R
- **True Bearing:** 268
- **Dimensions:** 4690 ft x 75 ft
- **PCN:** ///
- **Coordinates:** 38°17′25.7014″N / 104°29′37.865″W
- **Threshold Elevation:** 4677 ft
- **Touchdown Zone Elevation:** 4678.1 ft

- **Designation:** 08R
- **True Bearing:** 88
- **Dimensions:** 10498 ft x 150 ft
- **PCN:** ///
- **Coordinates:** 38°18′13.6348″N / 104°30′36.2409″W
- **Threshold Elevation:** 4669.4 ft
- **Touchdown Zone Elevation:** 4671.4 ft

- **Designation:** 35
- **True Bearing:** 358
- **Dimensions:** 8310 ft x 150 ft
- **PCN:** ///
- **Coordinates:** 38°16′52.9717″N / 104°30′11.6348″W
- **Threshold Elevation:** 4648.1 ft
- **Touchdown Zone Elevation:** 4676.9 ft

**AD 2.13 Declared Distances**

- **Designation:** 08L
- **Take-off Run Available:** 4690 ft
- **Take-off Distance Available:** 4690 ft
- **Accelerate–Stop Distance Available:** 4690 ft
- **Landing Distance Available:** 4690 ft

- **Designation:** 26R
- **Take-off Run Available:** 4690 ft
- **Take-off Distance Available:** 4690 ft
- **Accelerate–Stop Distance Available:** 4690 ft
- **Landing Distance Available:** 4690 ft

- **Designation:** 08R
- **Take-off Run Available:** 10496 ft
- **Take-off Distance Available:** 10496 ft
2.13.4 Accelerate–Stop Distance Available: 10496 ft
2.13.5 Landing Distance Available: 10496 ft

2.13.1 Designation: 26L
2.13.2 Take–off Run Available: 10496 ft
2.13.3 Take–off Distance Available: 10496 ft
2.13.4 Accelerate–Stop Distance Available: 10496 ft
2.13.5 Landing Distance Available: 10496 ft

2.13.1 Designation: 17
2.13.2 Take–off Run Available: 8308 ft
2.13.3 Take–off Distance Available: 8308 ft
2.13.4 Accelerate–Stop Distance Available: 8308 ft
2.13.5 Landing Distance Available: 8308 ft

2.13.1 Designation: 35
2.13.2 Take–off Run Available: 8308 ft
2.13.3 Take–off Distance Available: 8308 ft
2.13.4 Accelerate–Stop Distance Available: 8308 ft
2.13.5 Landing Distance Available: 8308 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08L
2.14.2 Approach Lighting System:

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:

2.14.1 Designation: 08R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26L
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities
AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 8E
2.19.2 ILS Identification: PUB
2.19.5 Coordinates: 38–17–18.9334N / 104–30–21.5794W
2.19.6 Site Elevation: 4672.8 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 8E
2.19.2 ILS Identification: PUB
2.19.6 Site Elevation: 4653.1 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 8E
2.19.2 ILS Identification: TFR
2.19.5 Coordinates: 38–17–21.3596N / 104–30–52.5582W
2.19.6 Site Elevation: 4649.4 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 8E
2.19.2 ILS Identification: TFR
2.19.6 Site Elevation: 4688 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 8E
2.19.2 Navigation Aid Identification: PUB
2.19.6 Site Elevation: 4755.5 ft

General Remarks:

BE ALERT; INTENSIVE USAF STUDENT TRAINING IN VICINITY OF COLORADO SPRINGS & PUEBLO COLORADO.

CONDITIONS NOT MONITORED 2200L–0500L.
SEE FLIP AP/1 SUPPLEMENTARY ARPT INFO.

RAMP–TAXI LANE E EXTD 30 FT WIDE FM EAST RAMP TO TWY E7.

TWY A BTN TWY A2 AND A6 50 FT WID.

Windsor Locks, CT  
Bradley Intl  
ICAO Identifier KBDDL

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 41°56″−20.516N / 72°41″−3.537W
2.2.2 From City: 3 miles W of WINDSOR LOCKS, CT  
2.2.3 Elevation: 173.3 ft  
2.2.4 Magnetic Variation: 14W (1980)

2.2.6 Airport Contact: KEVIN DILLON, AAE  
BRADLEY INTL AIRPORT  
WINDSOR LOCKS, CT 6096  
(860)−292−2003

2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES  
2.4.2 Fuel Types: 100LL, A

2.4.5 Hangar Space: YES  
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: A RFF Index  
IC certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 06  
2.12.2 True Bearing: 44  
2.12.3 Dimensions: 9510 ft x 200 ft  
2.12.4 PCN: 71 F/B/X/T  
2.12.5 Coordinates: 41°55″−55.25N / 72°41″−47.6885W  
2.12.6 Threshold Elevation: 173 ft  
2.12.6 Touchdown Zone Elevation: 173.3 ft

2.12.1 Designation: 24  
2.12.2 True Bearing: 224  
2.12.3 Dimensions: 9510 ft x 200 ft  
2.12.4 PCN: 71 F/B/X/T  
2.12.5 Coordinates: 41°55″−2.3952N / 72°40″−19.6697W  
2.12.6 Threshold Elevation: 160.9 ft  
2.12.6 Touchdown Zone Elevation: 170 ft

2.12.1 Designation: 15  
2.12.2 True Bearing: 134  
2.12.3 Dimensions: 6847 ft x 150 ft  
2.12.4 PCN: 64 F/A/X/T  
2.12.5 Coordinates: 41°56″−32.6254N /  
2.12.6 Threshold Elevation: 168.5 ft  
2.12.6 Touchdown Zone Elevation: 171.4 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 06  
2.13.2 Take−off Run Available: 9509 ft  
2.13.3 Take−off Distance Available: 9509 ft  
2.13.4 Accelerate−Stop Distance Available: 9509 ft  
2.13.5 Landing Distance Available: 9509 ft

2.13.1 Designation: 24  
2.13.2 Take−off Run Available: 9509 ft  
2.13.3 Take−off Distance Available: 9509 ft  
2.13.4 Accelerate−Stop Distance Available: 9509 ft  
2.13.5 Landing Distance Available: 9509 ft

2.13.1 Designation: 15  
2.13.2 Take−off Run Available: 6847 ft  
2.13.3 Take−off Distance Available: 6847 ft  
2.13.4 Accelerate−Stop Distance Available: 6847 ft  
2.13.5 Landing Distance Available: 6847 ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 06  
2.14.2 Approach Lighting System: ALSF2  
2.14.3 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 24  
2.14.2 Approach Lighting System: MALSR  
2.14.3 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 15  
2.14.2 Approach Lighting System:
2.14.1 Designation: 33
2.14.2 Approach Lighting System: MALSF

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41°57′17.2894N / 72°39′56.5118W
2.19.6 Site Elevation: 163.8 ft
2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41°57′17.2894N / 72°39′56.5118W
2.19.6 Site Elevation: 163.8 ft
2.19.1 ILS Type: Inner Marker for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41°55′49.4746N / 72°41′41.8869W
2.19.6 Site Elevation: 169.3 ft
2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 14W
2.19.2 ILS Identification: BDL
2.19.5 Coordinates: 41°57′17.8499N / 72°39′59.4045W
2.19.6 Site Elevation: 149.5 ft
2.19.1 ILS Type: DME for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41°57′17.2894N / 72°39′56.5118W
2.19.6 Site Elevation: 163.8 ft
2.19.1 ILS Type: Glide Slope for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41°57′12.0728N / 72°40′6.9772W
2.19.6 Site Elevation: 156.7 ft
2.19.1 ILS Type: Inner Marker for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41°57′12.0728N / 72°40′6.9772W
2.19.6 Site Elevation: 156.7 ft
2.19.1 ILS Type: Localizer for runway 24. Magnetic variation: 14W
2.19.2 ILS Identification: MYQ
2.19.5 Coordinates: 41°57′12.0728N / 72°40′6.9772W
2.19.6 Site Elevation: 156.7 ft
2.19.1 ILS Type: DME for runway 33. Magnetic variation: 14W
2.19.2 ILS Identification: IKX
2.19.5 Coordinates: 41°56′37.9724N / 72°41′47.432W
2.19.6 Site Elevation: 181.8 ft
2.19.1 ILS Type: Glide Slope for runway 33. Magnetic variation: 14W
2.19.2 ILS Identification: IKX
2.19.5 Coordinates: 41°56′37.9724N / 72°41′47.432W
2.19.6 Site Elevation: 181.8 ft
2.19.1 ILS Type: Localizer for runway 33. Magnetic variation: 14W
2.19.2 ILS Identification: IKX
2.19.5 Coordinates: 41°56′37.9724N / 72°41′47.432W
2.19.6 Site Elevation: 181.8 ft

General Remarks:
ASDE-X IN USE. OPR TRANSPONDERS WITH ALT RPRTG MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL ARPT SFCS.

CAUTION: ANG RAMP MRK MAY NOT BE APPROPRIATE FOR LARGE ACFT: FLW MARSHALLERS INSTR.
NMRS BIRDS FQTLY ON OR INV OF ARPT.
MILITARY: ANG: WHEN CKG ATIS, BIRDS IN VCY MAY INDC HEIGHTENED BIRD WATCH CONDITION (BWC). USAF ACFT CTC ANG AIRFIELD OPS ON UHF FOR CURRENT BWC & ANY ASSOCD RSTRNS.


MILITARY: ANG: AFLD MGR DOES NOT ISSUE OR STORE COMSEC FOR TRAN CREWS.


LGTD OBST ANT 36 FT AGL/205 FT MSL (RWY 24 ILS/GS ANT) 162 FT NW OF TWY C CNTRLN MARKING BTN TWY B & TWY H.

FUEL: A++ (MIL).

MILITARY: ARNG: OPR 1200–2030Z++ MON, TUE, FRI; 1200–0400++ WED, THU. 41.9 149.825 335.775 (HAV-OCC OPS).

NO DE-ICING AVBL AT ANG.

MILITARY: ANG: NSTD YELLOW AEROSPACE GND EQPT AND FIRE BOTTLE BOXES PAINTED ON ANG RAMP.

RWY 6 DE-ICE PAD CLSD TO ACFT WITH WINGSPAN 171 FT OR GTR EXC WITH FOLLOW-ME ESCORT BY ARPT OPS.

NO TRNG FLTS, NO PLAS, NO TGLS BTN: 2300 – 0700 MON THRU SAT & 2300 – 1200 SUN.


TWY J CLSD BTN S & R TO ACFT WITH WING SPANS IN EXCESS OF 170 FT.

TWY S HOLD PAD AT RWY 33 CLSD.

FIXED WING ACFT USE LOW IDLE FOR TAXI, NO ENGINE CHECKS OR POWER RUNS ALLOWED ON THE ARNG RAMP DUE TO POSSIBLE FOD HAZARD.

TWY C BTN TWY B & TWY H ACFT TAXI SPD RSTRN OF 8 KTS/10 MPH MAX FOR ACFT WITH WINGSPAN 214 FT OR GTR.

BASH PHASE II INCRD BIRD ACTVTY SEP–OCT AND MAR–APR.

PARL TWY OPS ON TWY C & TWY B RSTRD TO ACFT WITH WINGSPANS OF 171 FT OR LESS.

(E117) CT ANG AND U.S. ARMY NG.

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 38°56′−50.8N / 77°27′−35.8W
2.2.2 From City: 20 miles W of WASHINGTON, VA
2.2.3 Elevation: 313 ft
2.2.5 Magnetic Variation: 10W (2000)
2.2.6 Airport Contact: RICHARD GOLINOWSKI
1 SAARINEN CIRCLE
DULLES, VA 20166
(703−572−2730)
2.2.7 Traffic: IFR/VFR

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: A RFF Index
I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 19C
2.12.2 True Bearing: 181
2.12.3 Dimensions: 11500 ft x 150 ft
2.12.4 PCN: 81 R/C/W/T
2.12.5 Coordinates: 38°56′−41.88N / 77°28′−29.3151W
2.12.6 Threshold Elevation: 296 ft
2.12.6 Touchdown Zone Elevation: 296.1 ft

AD 2.13 Declared Distances

2.13.1 Designation: 19C
2.13.2 Take−off Run Available: 11500 ft
2.13.3 Take−off Distance Available: 11500 ft
2.13.4 Accelerate–Stop Distance Available: 11500 ft
2.13.5 Landing Distance Available: 11089 ft

2.13.1 Designation: 01C
2.13.2 Take–off Run Available: 11500 ft
2.13.3 Take–off Distance Available: 11500 ft
2.13.4 Accelerate–Stop Distance Available: 11500 ft
2.13.5 Landing Distance Available: 11500 ft

2.13.1 Designation: 01L
2.13.2 Take–off Run Available: 9400 ft
2.13.3 Take–off Distance Available: 9400 ft
2.13.4 Accelerate–Stop Distance Available: 9400 ft
2.13.5 Landing Distance Available: 9400 ft

2.13.1 Designation: 19R
2.13.2 Take–off Run Available: 9400 ft
2.13.3 Take–off Distance Available: 9400 ft
2.13.4 Accelerate–Stop Distance Available: 9400 ft
2.13.5 Landing Distance Available: 9400 ft

2.13.1 Designation: 01R
2.13.2 Take–off Run Available: 11500 ft
2.13.3 Take–off Distance Available: 11500 ft
2.13.4 Accelerate–Stop Distance Available: 11500 ft
2.13.5 Landing Distance Available: 11500 ft

2.13.1 Designation: 19L
2.13.2 Take–off Run Available: 11500 ft
2.13.3 Take–off Distance Available: 11500 ft
2.13.4 Accelerate–Stop Distance Available: 11500 ft
2.13.5 Landing Distance Available: 11500 ft

2.13.1 Designation: 30
2.13.2 Take–off Run Available: 10501 ft
2.13.3 Take–off Distance Available: 10501 ft
2.13.4 Accelerate–Stop Distance Available: 10501 ft
2.13.5 Landing Distance Available: 10501 ft

2.13.1 Designation: 12
2.13.2 Take–off Run Available: 10501 ft
2.13.3 Take–off Distance Available: 10501 ft
2.13.4 Accelerate–Stop Distance Available: 10501 ft
2.13.5 Landing Distance Available: 10501 ft

2.14.1 Designation: 01C
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 19R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 01R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 30
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 12
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 01C. Magnetic variation: 10W
2.19.2 ILS Identification: OSZ
2.19.6 Site Elevation: 283.3 ft

2.19.1 ILS Type: Localizer for runway 01C. Magnetic variation: 10W
2.19.2 ILS Identification: OSZ
2.19.5 Coordinates: 38–58–24.6686N / 77–27–33.3933W
2.19.6 Site Elevation: 263.2 ft

2.19.1 ILS Type: Glide Slope for runway 19C. Magnetic variation: 10W
2.19.2 ILS Identification: DLX
2.19.5 Coordinates: 38–58–4.1832N / 77–27–37.9999W
2.19.6 Site Elevation: 266.3 ft
2.19.1 ILS Type: Inner Marker for runway 19C. Magnetic variation: 10W
2.19.2 ILS Identification: DLX
2.19.5 Coordinates: 38°58′−22.9443N / 77°27′−33.4218W
2.19.6 Site Elevation: 263.4 ft
2.19.1 ILS Type: Localizer for runway 19C. Magnetic variation: 10W
2.19.2 ILS Identification: DLX
2.19.5 Coordinates: 38°56′−14.614N / 77°27′−35.2866W
2.19.6 Site Elevation: 283.9 ft
2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38°58′−25.0778N / 77°28′−31.1627W
2.19.6 Site Elevation: 279.3 ft
2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38°56′−52.8723N / 77°28′−34.3495W
2.19.6 Site Elevation: 279.6 ft
2.19.1 ILS Type: Inner Marker for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38°56′−33.3915N / 77°28′−29.4465W
2.19.6 Site Elevation: 275 ft
2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 10W
2.19.2 ILS Identification: OIU
2.19.5 Coordinates: 38°56′−35.845N / 77°26′−9.357W
2.19.6 Site Elevation: 301.8 ft
2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38°58′−24.7673N / 77°27′−27.8426W
2.19.6 Site Elevation: 276.9 ft
2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38°57′−30.868N / 77°26′−9.268N
2.19.6 Site Elevation: 291.1 ft
2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38°56′−31.8979N / 77°29′−27.8426W
2.19.6 Site Elevation: 306.5 ft
2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38°58′−25.0778N / 77°28′−31.1627W
2.19.6 Site Elevation: 272 ft
2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38°58′−4.4568N / 77°28′−33.3233W
2.19.6 Site Elevation: 276 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°56′−23.5142N / 77°28′−27.8585W
2.19.6 Site Elevation: 276 ft
2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 10W
2.19.2 ILS Identification: ISU
2.19.5 Coordinates: 38°56′−31.8979N / 77°29′−27.8426W
2.19.6 Site Elevation: 298.2 ft
2.19.1 ILS Type: DME for runway 01R. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38°55′−11.0826N / 77°26′−8.8302W
2.19.6 Site Elevation: 313.9 ft
2.19.1 ILS Type: Glide Slope for runway 01R. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38°55′−35.845N / 77°26′−4.749W
2.19.6 Site Elevation: 306.5 ft
2.19.1 ILS Type: Localizer for runway 01R. Magnetic variation: 10W
2.19.2 ILS Identification: IAD
2.19.5 Coordinates: 38°57′−30.868N / 77°26′−9.357W
2.19.6 Site Elevation: 301.8 ft
2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38°58′−24.7673N / 77°27′−27.8426W
2.19.6 Site Elevation: 276.9 ft
2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38°57′−9.268N / 77°26′−4.613W
2.19.6 Site Elevation: 291.1 ft
2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 10W
2.19.2 ILS Identification: SGC
2.19.5 Coordinates: 38°–55′–11.807N / 77°–26′–11.427W
2.19.6 Site Elevation: 315.3 ft

2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 10W
2.19.2 ILS Identification: AJU
2.19.5 Coordinates: 38°–55′–57.27N / 77°–27′–8.47W
2.19.6 Site Elevation: 279.8 ft

2.19.2 ILS Identification: AJU
2.19.5 Coordinates: 38°–56′–30.399N / 77°–29′–15.535W
2.19.6 Site Elevation: 303.5 ft

General Remarks:
TAXILANE ‘C’ ACTIVE; PUSHBACK CLNCS ON NORTH SIDE OF MIDFIELD TERMINAL ARE ONTO TAXILANE ‘D’ ONLY UNLESS OTHERWISE AUTH.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

ENGINE RUN–UPS BTW 2200L & 0700L REQUIRE PRIOR APPROVAL FM ARPT OPS.

LARGE FLOCKS OF BIRDS ON & INVOF ARPT/DEER INVOF ARPT.
B747–8 RESTRICTED TO MAXIMUM TAXI SPEED 17 KTS (20 MPH) ON TWY J.

RUNUP BLX FOR RWY 30 DSGND AS NON–MOVEMENT AREA.

DURING PERIODS OF ACFT SATURATION LONG TERM PARKING MAY NOT BE AVAILABLE. SERVICES FOR FUEL AND GO ONLY WILL BE AVAILABLE.

ACR PUSH BACKS & PWR FM ALL APRON PSNS REQUIRE CLNC FM MWAA RAMP TWR.

RY STATUS LGTS ARE IN OPN.

ALL AIRCRAFT WITH WINGSPAN EXCEEDING 118 FT ARE RESTRICTED FROM USING TAXILANE A BTN A1 & A5.

ALL 180 DEG TURNS OUT OF APRON POSITIONS SHALL BE MADE USING MINIMUM POWER.

RY 30 DEPARTURES USE UPPER ANTENNA FOR ATC COMMUNICATION.

TWY E1 RESTRICTED TO ACFT WITH A WINGSPAN LESS THAN 79 FT.
FLIGHT TRAINING BETWEEN 2200–0700 IS PROHIBITED.

ITNRNT ACFT CTC FBO ON 122.95 OR 129.77 FOR SVCS.
LDG FEE. FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL. NOTE: SEE SPECIAL NOTICES ——CONTINUOUS POWER FACILITIES.
Fort Lauderdale, Florida
Fort Lauderdale–Hollywood International
ICAO Identifier KFLL

ASDE-X in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all airport surfaces.
Runway Status Lights in operation.

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.
AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26°4′18″N / 80°8′58.9″W
2.2.2 From City: 3 miles SW of FORT LAUDERDALE, FL
2.2.3 Elevation: 65 ft
2.2.5 Magnetic Variation: 6W (2015)
2.2.6 Airport Contact: MARK GALE
320 TERMINAL DRIVE
SUITE 200
FORT LAUDERDALE, FL
33315 (954–359–6100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R FF Index I E certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 95 R/B/W/T
2.12.5 Coordinates: 26°4′–37.0166″N / 80°9′–59.5381″W
2.12.6 Threshold Elevation: 5.6 ft
2.12.6 Touchdown Zone Elevation: 7.1 ft
2.12.1 Designation: 28R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 95 R/B/W/T
2.12.5 Coordinates: 26°4′–36.4507″N / 80°8′–20.835W
2.12.6 Threshold Elevation: 5.3 ft
2.12.6 Touchdown Zone Elevation: 6.7 ft
2.12.1 Designation: 10R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 26°3′–57.1919″N / 80°9′–30.056W
2.12.6 Threshold Elevation: 10.1 ft
2.12.6 Touchdown Zone Elevation: 14.3 ft
2.12.1 Designation: 28L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8000 ft x 150 ft
2.12.4 PCN: 74 R/B/W/T
2.12.5 Coordinates: 26°3′–56.6718″N / 80°8′–2.3388W
2.12.6 Threshold Elevation: 65 ft
2.12.6 Touchdown Zone Elevation: 65 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10L
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 8424 ft
2.13.1 Designation: 28R
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 8394 ft
2.13.1 Designation: 10R
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft
2.13.1 Designation: 28L
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 10R
2.14.2 Approach Lighting System: MALSF
2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSF

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: LHI
2.19.5 Coordinates: 26°4′39.6411N / 80°9′18.5896W
2.19.6 Site Elevation: 5.7 ft
2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: LHI
2.19.5 Coordinates: 26°4′36.4066N / 80°8′13.1434W
2.19.6 Site Elevation: 4.3 ft
2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: LHI
2.19.5 Coordinates: 26°4′37.0351N / 80°10′2.8297W
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: ADI
2.19.5 Coordinates: 26°4′39.627N / 80°8′39.0644W
2.19.6 Site Elevation: 5 ft
2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: ADI
2.19.5 Coordinates: 26°4′37.0351N / 80°10′2.8297W
2.19.6 Site Elevation: 4.6 ft
2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: ADI
2.19.5 Coordinates: 26°4′39.627N / 80°8′39.0644W
2.19.6 Site Elevation: 5 ft
2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 6W
2.19.2 Navigation Aid Identification: FLL
2.19.5 Coordinates: 26°4′26.1833N / 80°9′59.1921W
2.19.6 Site Elevation: 5.6 ft

General Remarks:
PPR FOR ACFT WITH EXPLOSIVES.

ASDE–X IN USE; OPR PARROT WITH ALT RPRTG MODE & ADS–B (IF EQUIPPED) ENABLED ON ARPT SFCS.
ARR FM N & W MNTN 6000 FT UNTIL ABM RWY 28R ON DOWNWIND; ARR FM N MNTN 6000 FT UNTIL ABM RWY 10L ON DOWNWIND.

EAST SIDE OF CONCOURSE B AVBL TO ACFT WITH WINGSPEAN LESS THAN 124.9 FT.

ALL RWYS NOISE SENSITIVE; NOISE ABATEMENT IN EFCT – 954–359–6181.

RWY STATUS LIGHTS IN OPRN.

NO VFR APCHS OR BASE LEGS UNTIL OFFSHORE.

TURB BLW 1000 FT OVR LANDFILL LCTD 2 NM W.

PPR FOR ACFT WITH WINGSPANS GTR THAN 118 FT ON TWY E BTN TWY C & TWY L.

JET RUNUPS NA 2300–0700.

ACFT OPRG FROM TRML 1, 2, 3, 4 MUST CTC RAMP CTL. RAMP CTL EFF – CTC ARPT OPS FOR HRS.

IR CARRIER ACFT USE RAMP PUSH BACK PROCs PRESCRIBED BY ARPT OPS.

TWY J BGN TO ELEV 900 FT EAST OF TWY Q. DUE TO ELEV ALL ACFT REMAIN ON CNTRLN; TWY T8 & TAXILANE T NOT ACCESSIBLE FM TWY J.

ACFT LDG RWY 10R & EXITING J9 FOLLOW TWY LEAD OFF LINE ONTO J9.

NMRS TREES SW QUADRANT OF ARPT.

BIRDS ON & INVOLF ARPT; CONCENTRATION OF BIRDS BLW 500 FT 2.0 NM W OF 10L & 10R AER.

CLSD TO ACR TRAINING; LRG ACFT TRNG OVER 58000 LBS MAX CERTD GROSS TKOF WEIGHT; ALL TRNG 2300–0700.

PREFERENTIAL RWY USE PROGRAM IN EFCT; CTC NOISE ABATEMENT OFFICE.

TWY B EAST OF TWY B12 & TAXILANE T EAST OF TWY T1 CLSD TO ACFT WITH WINGSPAN GTR THAN 126 FT & TAIL HGT GTR THAN 46 FT.

PPR FOR ACFT WITH WINGSPAN GTR THAN 171 FT & TAIL HGT GTR THAN 60 FT ON TWY N BTN TWY Q & TWY T6.

HIGH LIGHT MASTS WNW APCH END RWY 28L.
AIP AD 2
United States of America
2 DEC 21
Fort Myers, FL
Southwest Florida Intl
ICAO Identifier KRSW

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 26°32′−10.2N / 81°45′−18.6W
2.2.2 From City: 10 miles SE of FORT MYERS, FL
2.2.3 Elevation: 29.7 ft
2.2.5 Magnetic Variation: 4W (2000)
2.2.6 Airport Contact: BEN SIEGEL
11000 TERMINAL ACCESS RD.
FORT MYERS, FL 33913
(239)−590−4400
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0700−0100 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A, A+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index ID certified on 5/1/1983

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 24
2.12.2 True Bearing: 234
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 65 F/A/W/T
2.12.5 Coordinates: 26°32′−45.0236N / 81°44′−25.0345W
2.12.6 Threshold Elevation: 29.7 ft
2.12.6 Touchdown Zone Elevation: 29.7 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 54
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: 65 F/A/W/T
2.12.5 Coordinates: 26°31′−35.3468N / 81°46′−12.0693W
2.12.6 Threshold Elevation: 26.5 ft
2.12.6 Touchdown Zone Elevation: 26.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 24
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 06
2.13.2 Take−off Run Available: ft
2.13.3 Take−off Distance Available: ft
2.13.4 Accelerate−Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 24
2.14.2 Approach Lighting System:

2.14.1 Designation: 06
2.14.2 Approach Lighting System: M A L S R

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: ALICO DP (RWY 06)
2.18.3 Channel: 126.8
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: ALICO DP (RWY 24)
2.18.3 Channel: 134.425
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: ALICO DP (RWY 06/24)
2.18.3 Channel: 306.2
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: APCH/P DEP/P (121−240)
2.18.3 Channel: 124.125
2.18.5 Hours of Operation: 0600−0000

2.18.1 Service Designation: APCH/P DEP/P (241−300)
2.18.3 Channel: 134.425
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: APCH/P DEP/P DEP/P (241–120)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: APCH/P DEP/P (121–240)
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: APCH/P IC (RWY 06)
2.14.3 Channel: 125.15
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: APCH/P IC (RWY 24)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CD/P
2.14.3 Channel: 132.075
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CLASS C (121–240)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CLASS C (001–120)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CLASS C (301–360)
2.14.3 Channel: 127.05
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CLASS C (241–300)
2.14.3 Channel: 134.425
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CLASS C (241–120)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CLASS C (121–240)
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CSHEL DP (RWY 06)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CSHEL DP (RWY 24)
2.14.3 Channel: 134.425
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: CSHEL DP (RWY 06/24)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 124.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: GND/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: JOSFF STAR
2.14.3 Channel: 134.425
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: MOOKY DP (RWY 06)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: MOOKY DP (RWY 24)
2.14.3 Channel: 134.425
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: MOOKY DP (RWY 24)
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: MOOKY DP (RWY 24)
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 0600–0000
2.14.1 Service Designation: MOOKY DP (RWY 06)
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: SCUBY DP
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: SCUBY DP
2.14.3 Channel: 371.85
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: TYNEE STAR
2.14.3 Channel: 134.425
2.14.5 Hours of Operation: 0600–0000

2.14.1 Service Designation: TYNEE STAR
2.14.3 Channel: 306.2
2.14.5 Hours of Operation: 0600–0000

2.19.1 ILS Type: DME for runway 06. Magnetic variation: 4W
2.19.2 ILS Identification: RSW
2.19.5 Coordinates: 26–32–53.21N / 81–44–17.42W
2.19.6 Site Elevation: 26 ft

2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 4W
2.19.2 ILS Identification: RSW
2.19.5 Coordinates: 26–31–43.49N / 81–46–4.32W
2.19.6 Site Elevation: 26 ft

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 4W
2.19.2 ILS Identification: RSW
2.19.5 Coordinates: 26–31–51.1216N / 81–44–15.6633W
2.19.6 Site Elevation: 27.6 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 2W
2.19.2 Navigation Aid Identification: RSW
2.19.5 Coordinates: 26–31–47.5508N / 81–46–32.7643W
2.19.6 Site Elevation: 25 ft

**General Remarks:**

ACR USE RAMP PROC PRESCRIBED BY ARPT OPS.

CAUTION: OPEN BAGGAGE BAYS & CONST WITHIN TERMINAL RAMP AREA. AIRCREWS USE MINIMUM THRUST SETTINGS IN THESE AREAS, SPCLY DURG SINGLE ENG TAXI. CROSS-BLEED STARTS ONLY ALLOWED AFT REACHING THE TUG RELEASE POINT.

TWY A5 BTN FBO RAMP AND TWY A CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

FOR CD IFUN TO CTC ON MIAMI CTR FREQ, CTC MIAMI ARTCC AT 305–716–1731 (0100–0700).

GND CLNC RQRD PRIOR TO ENTERING TWY G.

OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY F6 EXIT SIGN LCTD IMT BFR TWY F5.

DEP ACFT OBTAIN APVL FM GND CTL PRIOR TO PUSHBACK FM GATES B7, B9, C8, C9 & D10A. PILOTS ADVISE TUG OPR OF OBTAINED CLNC FM GND CTL PRIOR TO ENTERING TWY G. DEP CTC GND CTL PRIOR TO LEAVING THE COMMuter RAMP FROM GATES D9A & D9B.

GATES B7 & B9 EXP CALL SPOT #7. GATES C8 & C9 EXP CALL SPOT #4. GATE D10A EXP CALL SPOT #2.

LGTS ON PARALLEL ROAD & PARKING LOT NW OF RWY 06/24 CAN BE MISTAKEN FOR RWY & APCH ENVIRONMENT.

ALL ACFT ON RAMP EXP CLOCKWISE FLOW. OUTBOUND TRAFFIC FROM GATES D2, D4, D6, D8 & D10 PROCEED TO CALL SPOT 1; OUTBOUND TRAFFIC FROM GATES C2, C4, C6, D1, D3, D5 & D7 PROCEED TO
CALL SPOT 3; OUTBOUND TRAFFIC FROM GATES B2, B4, B6, B8, C1, C3, C5 & C7 PROCEED TO CALL SPOT 5; OUTBOUND TRAFFIC FROM GATES B1, B3 & B5 PROCEED TO CALL SPOT 9; ALL OUTBOUND TRAFFIC REQUEST TAXI INSTRUCTIONS.

NO HELI OPS PERMITTED ON TRML APRON.

TFC PROCED DRCTLY TO GATE UNLESS DRCTD BY ATC; ADVISE ATC IF GATE IS NOT AVBL.


RWY USE PROGRAM IN EFFECT; USE DISTANT NOISE ABATEMENT DEP PROFILE. VISUAL APCH TO RWY 06 W OF FORT MYERS BEACH MAINTAIN 3000 FT UNTIL CROSSING SHORELINE 12 NM SW OF ARPT. RWY 24 PREFERRED BTN 2200–0600. FOR NOISE ABATEMENT PROC CTC AMGR.
MIAMI, FL
MIAMI INTL
ICAO IDENTIFIER KMIA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 25°47′43.3N / 80°17′24.17W
2.2.2 From City: 8 miles NW of MIAMI, FL
2.2.3 Elevation: 9.3 ft
2.2.5 Magnetic Variation: 5W (2000)
2.2.6 Airport Contact: LESTER SOLA
MIAMI-DADE AVIATION DEPARTMENT
MIAMI, FL 33102
(305) 876-7077
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 26R
2.12.2 True Bearing: 267
2.12.3 Dimensions: 8600 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25°47′–25.177N / 80°18′–5.1588W
2.12.6 Threshold Elevation: 8.5 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 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′–25.177N / 80°18′–5.1588W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 87
2.12.3 Dimensions: 10506 ft x 200 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25°48′–25.177N / 80°18′–5.1588W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 09
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′–9.9421N / 80°18′–53.4173W
2.12.6 Threshold Elevation: 8.1 ft
2.12.6 Touchdown Zone Elevation: 8.2 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 267
2.12.3 Dimensions: 13016 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25°47′–15.8328N / 80°16′–31.1711W
2.12.6 Threshold Elevation: 9 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

2.12.1 Designation: 12
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9360 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25°47′–11.8224N / 80°16′–39.0805W
2.12.6 Threshold Elevation: 8.7 ft
2.12.6 Touchdown Zone Elevation: 9.3 ft

2.12.1 Designation: 30
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9360 ft x 150 ft
2.12.4 PCN: 70 F/A/X/T
2.12.5 Coordinates: 25°47′–57.4262N / 80°18′–8.2439W
2.12.6 Threshold Elevation: 9.1 ft
2.12.6 Touchdown Zone Elevation: 9.2 ft

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°47′–7.2652N / 80°16′–10.3282W
2.12.6 Threshold Elevation: 8.5 ft
2.12.6 Touchdown Zone Elevation: 9 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′–25.177N / 80°18′–5.1588W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 9.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 26R
2.13.2 Take–off Run Available: 8600 ft
2.13.3 Take−off Distance Available: 8600 ft
2.13.4 Accelerate−Stop Distance Available: 8600 ft
2.13.5 Landing Distance Available: 8600 ft

2.13.1 Designation: 08L
2.13.2 Take−off Run Available: 8600 ft
2.13.3 Take−off Distance Available: 8600 ft
2.13.4 Accelerate−Stop Distance Available: 8600 ft
2.13.5 Landing Distance Available: 8600 ft

2.13.1 Designation: 08R
2.13.2 Take−off Run Available: 10506 ft
2.13.3 Take−off Distance Available: 10506 ft
2.13.4 Accelerate−Stop Distance Available: 10220 ft
2.13.5 Landing Distance Available: 10220 ft

2.13.1 Designation: 26L
2.13.2 Take−off Run Available: 10506 ft
2.13.3 Take−off Distance Available: 10506 ft
2.13.4 Accelerate−Stop Distance Available: 10220 ft
2.13.5 Landing Distance Available: 10220 ft

2.13.1 Designation: 09
2.13.2 Take−off Run Available: 13016 ft
2.13.3 Take−off Distance Available: 13016 ft
2.13.4 Accelerate−Stop Distance Available: 12755 ft
2.13.5 Landing Distance Available: 11937 ft

2.13.1 Designation: 27
2.13.2 Take−off Run Available: 13016 ft
2.13.3 Take−off Distance Available: 13016 ft
2.13.4 Accelerate−Stop Distance Available: 12755 ft
2.13.5 Landing Distance Available: 11937 ft

2.13.1 Designation: 30
2.13.2 Take−off Run Available: 9355 ft
2.13.3 Take−off Distance Available: 9355 ft
2.13.4 Accelerate−Stop Distance Available: 8853 ft
2.13.5 Landing Distance Available: 7913 ft

2.13.1 Designation: 12
2.13.2 Take−off Run Available: 9355 ft
2.13.3 Take−off Distance Available: 9355 ft
2.13.4 Accelerate−Stop Distance Available: 8579 ft
2.13.5 Landing Distance Available: 8579 ft

2.14.1 Designation: 08L
2.14.2 Approach Lighting System:
2.14.3 Visual Approach Slope Indicator System: P4L

2.14.1 Designation: 08R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSF

2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 12
2.14.2 Approach Lighting System: MALSR

2.18.1 Service Designation: AARPS DP
2.18.3 Channel: 119.45
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: AARPS DP
2.18.3 Channel: 290.325
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ANNEY STAR
2.18.3 Channel: 125.75
2.18.5 Hours of Operation: 24

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:

2.14.1 Designation: ANNEY STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ANNEY STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/S
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/S (270–089)
2.14.3 Channel: 263.025
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (090–269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (090–269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (270–089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (270–089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (090–269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (090–269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P (270–089)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (270–089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/S
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/S (270–089)
2.14.3 Channel: 263.025
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BLUFI STAR
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BNGOS DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BNGOS DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BNGOS DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BNGOS DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (270−089)
2.14.3 Channel: 322.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (090−269)
2.14.3 Channel: 379.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CSTAL STAR
2.14.3 Channel: 263.025
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CSTAL STAR
2.14.3 Channel: 263.025
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D−ATIS (ARRIVAL)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D−ATIS (ARRIVAL)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D−ATIS (DEPART)
2.14.3 Channel: 133.675
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D−ATIS (DEPART)
2.14.3 Channel: 133.675
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P (270−089)
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P (270−089)
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P (090−269)
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P IC (270−089)
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P IC (270−089)
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DEP/P IC (270−089)
2.14.1 Service Designation: DV ALL STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DV ALL STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DV ALL STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOLZZ DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOLZZ DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FOWEE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FROGZ STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FROGZ STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FROGZ STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GLADZ DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GLADZ DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GLADZ DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 08L/26R, 08R/26L, 12)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P IC (RWY 08L/26R, 08R/26L, 12)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 09/27, 30)
2.14.3 Channel: 127.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC (RWY 09/27, 30)
2.14.3 Channel: 127.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P IC
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HURCN DP
2.14.3 Channel: 290.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HUSIL DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HUSIL DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HUSIL DP
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HUSIL DP
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HUSIL DP
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLADA DP
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLADA DP
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLADA DP
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLADA DP
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLADA DP
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KLADA DP
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (090–269)
<table>
<thead>
<tr>
<th>Service Designation</th>
<th>Channel</th>
<th>Hours of Operation</th>
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<tbody>
<tr>
<td>LCL/P (090–269)</td>
<td>123.9</td>
<td>24</td>
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<tr>
<td>LCL/P IC (270–089)</td>
<td>118.3</td>
<td>24</td>
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<td>LCL/P IC</td>
<td>256.9</td>
<td>24</td>
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<tr>
<td>LCL/P IC (270–089)</td>
<td>118.3</td>
<td>24</td>
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<tr>
<td>LUUCE STAR (7000 FT)</td>
<td>126.05</td>
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<tr>
<td>LUUCE STAR (9000 FT)</td>
<td>126.05</td>
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<td>LUUCE STAR (7000 FT)</td>
<td>133.775</td>
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<td>LUUCE STAR (7000 FT)</td>
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<td>LUUCE STAR (7000 FT)</td>
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<td>371.9</td>
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<td>LUUCE STAR (7000 FT)</td>
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<tr>
<td>LUUCE STAR (9000 FT)</td>
<td>256.9</td>
<td>24</td>
</tr>
<tr>
<td>LUUCE STAR (9000 FT)</td>
<td>371.9</td>
<td>24</td>
</tr>
</tbody>
</table>

MHITO DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MHITO DP

AARPS, BNGOS, FIVEN, FREEPORT, HURCN, VACAY

MIAMI DP

SKIPS, EONNS, MNATE TRANSITIONS

MIAMI DP

SKIPS, EONNS, MNATE TRANSITIONS

MIAMI DP

SKIPS, EONNS, MNATE TRANSITIONS

MIAMI DP

SKIPS, EONNS, MNATE TRANSITIONS

MIAMI DP

SKIPS, EONNS, MNATE TRANSITIONS

MIAMI DP

SKIPS, EONNS, MNATE TRANSITIONS
2.14.1 Service Designation: MIAMI DP (SKIPS, EONNS, MNATE TRANSITIONS)
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: NNOCE DP
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: NNOCE DP
2.14.3 Channel: 354.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PALMZ STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PALMZ STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RAMP CTL
2.14.3 Channel: 120.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RTIS (120–300 WITHIN 25 NM)
2.14.3 Channel: 125.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RTIS (120–300 WITHIN 25 NM)
2.14.3 Channel: 125.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SLFSH STAR
2.14.3 Channel: 124.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SNDBR STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (9000 FT)
2.14.3 Channel: 126.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (9000 FT)
2.14.3 Channel: 126.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (7000 FT)
2.14.3 Channel: 133.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (7000 FT)
2.14.3 Channel: 133.775
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: TARPN STAR (7000 FT)
2.14.3 Channel: 133.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (9000 FT)
2.14.3 Channel: 251.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (9000 FT)
2.14.3 Channel: 251.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TARPN STAR (7000 FT)
2.14.3 Channel: 371.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VACAY DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VACAY DP
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VIICE STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VIICE STAR
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VIICE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VIICE STAR
2.14.3 Channel: 350.225
2.14.5 Hours of Operation: 24

2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: ROY
2.19.6 Site Elevation: 20.1 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 5W
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
2.19.6 Site Elevation: 20.3 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 5W
2.19.6 Site Elevation: 7.4 ft

2.19.1 ILS Type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: MFA
2.19.5 Coordinates: 25–48–5.0878N / 80–16–0.575W
2.19.6 Site Elevation: 15.6 ft

2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: MFA
2.19.6 Site Elevation: 5 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 5W
2.19.5 Coordinates: 25–48–7.688N / 80–16–0.0426W
2.19.6 Site Elevation: 6.3 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: VIN
2.19.6 Site Elevation: 14.3 ft
2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: VIN
2.19.5 Coordinates: 25−48−9.7347N / 80−16−22.5043W
2.19.6 Site Elevation: 5.9 ft
2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: VIN
2.19.5 Coordinates: 25−48−2.1576N / 80−18−13.7966W
2.19.6 Site Elevation: 7.6 ft
2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 5W
2.19.2 ILS Identification: BUL
2.19.5 Coordinates: 25−47−15.8249N / 80−16−17.2451W
2.19.6 Site Elevation: 20.1 ft
2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 5W
2.19.2 ILS Identification: BUL
2.19.5 Coordinates: 25−47−16.4165N / 80−16−17.1006W
2.19.6 Site Elevation: 7.5 ft
2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 5W
2.19.2 ILS Identification: MIA
2.19.5 Coordinates: 25−47−11.7269N / 80−16−45.3981W
2.19.6 Site Elevation: 4.7 ft
2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 5W
2.19.2 ILS Identification: MIA
2.19.5 Coordinates: 25−47−9.3891N / 80−19−6.6406W
2.19.6 Site Elevation: 7.1 ft
2.19.1 ILS Type: Glide Slope for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−50.78N / 80−17−58.58W
2.19.6 Site Elevation: 7 ft
2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−9.6403N / 80−16−34.8108W
2.19.6 Site Elevation: 8.3 ft
2.19.1 ILS Type: Glide Slope for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−59.8764N / 80−18−13.0372W
2.19.6 Site Elevation: 8.9 ft
2.19.1 ILS Type: Localizer for runway 12. Magnetic variation: 5W
2.19.2 ILS Identification: GEM
2.19.5 Coordinates: 25−47−17.643N / 80−16−59.572W
2.19.6 Site Elevation: 7.1 ft
2.19.1 ILS Type: Glide Slope for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−17.643N / 80−16−59.572W
2.19.6 Site Elevation: 7.1 ft
2.19.1 ILS Type: Localizer for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−57.7789N / 80−18−14.5127W
2.19.6 Site Elevation: 14.7 ft
2.19.1 ILS Type: Glide Slope for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−9.6403N / 80−16−34.8108W
2.19.6 Site Elevation: 8.3 ft
2.19.1 ILS Type: Localizer for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−17.643N / 80−16−59.572W
2.19.6 Site Elevation: 7.1 ft
2.19.1 ILS Type: Glide Slope for runway 30. Magnetic variation: 5W
2.19.2 ILS Identification: DCX
2.19.5 Coordinates: 25−47−9.6403N / 80−16−34.8108W
2.19.6 Site Elevation: 8.9 ft

General Remarks:
ACFT WITH A WINGSPAN GTR THAN 171 FT ARE PROHIBITED FM TXG ON TWY P EAST OF TWY U.
ALL MEDICAL EMERGENCIES ARRIVALS, WITH THE EXCEPTION OF AIR AMBULANCE FLIGHTS, MUST SECURE DOORS UNTIL ARFF IS ON SCENE.
ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
ALL DIVERSION CTC FREQ 130.5 UPON ARR.

ALL TURBOJET ACFT USE DSNT NOISE ABATEMENT DEP PROFILE FROM ALL RYS EXC A320, B727, B737–800, B767–400, AND DC9 WHICH SHOULD USE CLOSE–IN NOISE ABATEMENT ABATEMENT PROFILE.

B757, HEAVY AND SUPER ACFT ARE NOT AUTH INT DEP FOR ANY RWY UNLESS A PTN IS CLSD OR UNUNSL.

PPR 3 HRS PRIOR TO ALL ARRIVALS ON THE GENERAL AVIATION CENTER (GAC) RAMP 305–876–7550 CTC RAMP CONTROL UPON ARRIVAL ON FREQUENCY 131.600. ACFT WITH WINGSPAN GREATER THAN 78 FT ARE PROHIBITED FROM ENTERING THE GAC RAMP.

CLSD NON ENG ACFT.

BIRDS ON & INV OF ARPT.

PPR FOR INBOUND MILITARY FLIGHTS 100 NM ON FREQ 130.5.
Orlando, FL
Orlando Intl
ICAO Identifier KMCO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 28°25′45.8″N / 81°18′32.4″W
2.2.2 From City: 6 miles SE of ORLANDO, FL
2.2.3 Elevation: 96.4 ft
2.2.4 Magnetic Variation: 6W (2015)
2.2.5 Airport Contact: PHILLIP N. BROWN, A.A.E.
1 JEFF FUQUA BLVD
ORLANDO, FL 32827
(407) 825-7445

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 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′37.308″N / 81°17′57.2924″W
2.12.6 Threshold Elevation: 89.7 ft
2.12.6 Touchdown Zone Elevation: 89.9 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 10900 ft x 150 ft
2.12.4 PCN: 106 R/B/W/T
2.12.5 Coordinates: 28°25′8.1974″N / 81°16′56.3802″W
2.12.6 Threshold Elevation: 89.7 ft
2.12.6 Touchdown Zone Elevation: 89.8 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°25′8.8.2029″N / 81°17′45.1656″W
2.12.6 Threshold Elevation: 90.1 ft
2.12.6 Touchdown Zone Elevation: 90.2 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°26′54.0038″N / 81°19′20.3022″W
2.12.6 Threshold Elevation: 91 ft
2.12.6 Touchdown Zone Elevation: 92.3 ft

2.12.1 Designation: 18L
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′53.8569″N / 81°19′37.1091″W
2.12.6 Threshold Elevation: 92.4 ft
2.12.6 Touchdown Zone Elevation: 96.4 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°25′55.007″N / 81°19′35.8294″W
2.12.6 Threshold Elevation: 91.1 ft
2.12.6 Touchdown Zone Elevation: 93.3 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 12004 ft x 200 ft
2.12.4 PCN: 104 R/B/W/T
2.12.5 Coordinates: 28°25′55.007″N / 81°19′35.8294″W
2.12.6 Threshold Elevation: 91.1 ft
2.12.6 Touchdown Zone Elevation: 93.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 17L
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 35R
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 17R
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 35L
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 36L
2.13.2 Take–off Run Available: 12004 ft
2.13.3 Take–off Distance Available: 12004 ft
2.13.4 Accelerate–Stop Distance Available: 11621 ft
2.13.5 Landing Distance Available: 11621 ft

2.14 Approach and Runway Lighting

2.14.1 Designation: 35R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 35R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28°24′57.9921N / 81°16′51.737W
2.19.6 Site Elevation: 97 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28°26′45.819N / 81°16′57.3985W
2.19.6 Site Elevation: 94.4 ft

2.19.1 ILS Type: Inner Marker for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28°24′57.9921N / 81°16′51.737W
2.19.6 Site Elevation: 97 ft

2.19.1 ILS Type: Glide Slope for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: ARK
2.19.5 Coordinates: 28°26′45.819N / 81°16′57.3985W
2.19.6 Site Elevation: 94.4 ft
2.19.6 Site Elevation: 89.6 ft

2.19.1 ILS Type: Localizer for runway 17L. Magnetic variation: 6W
2.19.2 ILS Identification: A.R.K
2.19.5 Coordinates: 28°24′57.8892″N / 81°16′56.2728″W
2.19.6 Site Elevation: 89.1 ft

2.19.1 ILS Type: L. ME for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: C.E.R.
2.19.5 Coordinates: 28°26′48.2377″N / 81°16′52.8447″W
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: C.E.R.
2.19.5 Coordinates: 28°25′18.6301″N / 81°16′51.8726″W
2.19.6 Site Elevation: 87.3 ft

2.19.1 ILS Type: Inner Marker for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: C.E.R.
2.19.5 Coordinates: 28°24′59.6772″N / 81°16′56.2924″W
2.19.6 Site Elevation: 89.2 ft

2.19.1 ILS Type: Localizer for runway 35R. Magnetic variation: 6W
2.19.2 ILS Identification: C.E.R.
2.19.5 Coordinates: 28°24′59.6772″N / 81°16′56.2924″W
2.19.6 Site Elevation: 89.6 ft

2.19.1 ILS Type: Glide Slope for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: D.I.Z.
2.19.5 Coordinates: 28°26′47.6103″N / 81°17′45.2712″W
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: D.I.Z.
2.19.5 Coordinates: 28°24′1.5295″N / 81°17′43.8604″W
2.19.6 Site Elevation: 84.9 ft

2.19.1 ILS Type: D.M.E. for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: D.I.Z.
2.19.5 Coordinates: 28°26′18.9549″N / 81°17′44.0255″W
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: D.I.Z.
2.19.5 Coordinates: 28°25′18.6301″N / 81°17′40.5783″W
2.19.6 Site Elevation: 82.1 ft

2.19.1 ILS Type: Localizer for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: D.I.Z.
2.19.5 Coordinates: 28°24′18.7729″N / 81°17′44.0255″W
2.19.6 Site Elevation: 87.7 ft

2.19.1 ILS Type: Inner Marker for runway 17R. Magnetic variation: 6W
2.19.2 ILS Identification: D.I.Z.
2.19.5 Coordinates: 28°24′18.7729″N / 81°17′44.0255″W
2.19.6 Site Elevation: 82.4 ft

2.19.1 ILS Type: Middle Marker for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: D.D.O.
2.19.5 Coordinates: 28°24′39.5307″N / 81°17′39.7618″W
2.19.6 Site Elevation: 83.7 ft

2.19.1 ILS Type: Glide Slope for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: D.D.O.
2.19.5 Coordinates: 28°24′18.3948″N / 81°17′48.1528″W
2.19.6 Site Elevation: 95.5 ft

2.19.1 ILS Type: Inner Marker for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: D.D.O.
2.19.5 Coordinates: 28°24′20.5349″N / 81°17′44.0395″W
2.19.6 Site Elevation: 82.1 ft

2.19.1 ILS Type: Middle Marker for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: D.D.O.
2.19.5 Coordinates: 28°24′20.5349″N / 81°17′44.0395″W
2.19.6 Site Elevation: 82.4 ft

2.19.1 ILS Type: Localizer for runway 35L. Magnetic variation: 6W
2.19.2 ILS Identification: D.D.O.
2.19.5 Coordinates: 28°24′18.3948″N / 81°17′48.1528″W
2.19.6 Site Elevation: 87.7 ft

2.19.1 ILS Type: D.M.E. for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: O.J.P.
2.19.5 Coordinates: 28°27′0.7626″N / 81°19′18.0064″W 2.19.6 Site Elevation: 96.2 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28°25′5.5139″N / 81°19′23.6289″W
2.19.6 Site Elevation: 87.7 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: TFE
2.19.5 Coordinates: 28°24′42.2043″N / 81°19′38.5819″W
2.19.6 Site Elevation: 94.7 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28°24′41.97″N / 81°19′35.69″W
2.19.6 Site Elevation: 86 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°27′1.4488″N / 81°19′20.3839″W
2.19.6 Site Elevation: 90.8 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: OJP
2.19.5 Coordinates: 28°24′31.8917″N / 81°19′18.7794″W
2.19.6 Site Elevation: 87.4 ft

General Remarks:

WHEN ORL ILS RY 7 AND MCO ILS RYS 17 & 18R SIMULTANEOUS OPERATIONS ARE CONDUCTED, ATC RADAR REQUIRED.

WEST RAMP CUSTOMS INSPECTION PRKG AREA RSTD TO ACFT WINGSPAN LESS THAN 118′

ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

UNLESS ADV BY ATIS, DEP FLTS ON INITIAL CTC WITH GND CTL: ACFT ON WEST RAMP, AIRSIDE 1 & 3 (GATES 1−59) USE GND CTL 121.8. ACFT AT AIRSIDE 2 & 4 (GATES 60 AND HIGHER), USE GND CTL 126.4.

TWY A, BTN W RAMP S END AND TWY B10, RSTRD TO ACFT WINGSPAN LESS THAN 171 FT. PPR FOR ACFT WINGSPAN 171 FT OR GTR.

TWY J3 AND TWY J4 RSTD TO WINGSPAN OF LESS THAN 118 FT.

RUNWAY STATUS LIGHTS ARE IN OPERATION.

BRIGHT LGTS ON ROAD BTN RY 17R/35L AND RY 17L/35R MAY BE MISTaken FOR RY LGTS.

AVoID CONTACT WITH TAXIWAY EDGE LIGHTS; ALL AIRCRAFT DETERMINED TO BE FAA DESIGN GROUP IV AND ABOVE MUST PERFORM JUDGEMENTAL OVERSTEERING INSTEAD OF COCKPIT CENTERLINE STEERING WHEN TAXIING.

TWY A, SOUTH OF TWY A3 RSTD TO WINGSPAN OF LESS THAN 118 FT. PPR REQUIRED FOR WINGSPAN 118
FT OR GREATER.

RY 17L–35R UNLIT 0400–1100Z.

USE CAUTION IN VCNTY OF TWY "A" ALONG WEST RAMP.

BIRDS & DEER ON & INVOF ARPT.

ACFT WITH WINGSPAN GREATER THAN 214 FT MUST ADHERE TO SPECIFIC RY AND TAXI ROUTES. CONTACT AIRFIELD OPS AT 407–825–2036 FOR DETAILS.
AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 27°58′−31.7N / 82°31′−59.7W
2.2.2 From City: 6 miles W of TAMPA, FL
2.2.3 Elevation: 26.4 ft
2.2.5 Magnetic Variation: 5W (2010)
2.2.6 Airport Contact: JOHN TILIACOS
   PO BOX 22287
   TAMPA, FL 33622
   (813) 870−8700
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
   ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 19R
2.12.2 True Bearing: 182
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 27°58′−36.7423N / 82°32′−28.7801W
2.12.6 Threshold Elevation: 21 ft
2.12.6 Touchdown Zone Elevation: 21 ft

2.12.1 Designation: 01L
2.12.2 True Bearing: 2
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 27°57′−51.5169N / 82°31′−44.3687W
2.12.6 Threshold Elevation: 17.7 ft
2.12.6 Touchdown Zone Elevation: 20.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 19R
2.13.2 Take−off Run Available: 11002 ft
2.13.3 Take−off Distance Available: 11002 ft
2.13.4 Accelerate−Stop Distance Available: 11002 ft
2.13.5 Landing Distance Available: 11002 ft

2.13.1 Designation: 01L
2.13.2 Take−off Run Available: 11002 ft
2.13.3 Take−off Distance Available: 11002 ft
2.13.4 Accelerate−Stop Distance Available: 10800 ft
2.13.5 Landing Distance Available: 10800 ft

2.13.1 Designation: 19L
2.13.2 Take−off Run Available: 8300 ft
2.13.3 Take−off Distance Available: 8300 ft
2.13.4 Accelerate−Stop Distance Available: 8300 ft
2.13.5 Landing Distance Available: 8300 ft
2.13.1 Designation: 01R
2.13.2 Take-off Run Available: 8300 ft
2.13.3 Take-off Distance Available: 8300 ft
2.13.4 Accelerate–Stop Distance Available: 8300 ft
2.13.5 Landing Distance Available: 8300 ft

2.13.1 Designation: 10
2.13.2 Take-off Run Available: 6999 ft
2.13.3 Take-off Distance Available: 6999 ft
2.13.4 Accelerate–Stop Distance Available: 6999 ft
2.13.5 Landing Distance Available: 6501 ft

2.13.1 Designation: 28
2.13.2 Take-off Run Available: 6999 ft
2.13.3 Take-off Distance Available: 6999 ft
2.13.4 Accelerate–Stop Distance Available: 6501 ft
2.13.5 Landing Distance Available: 6501 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 19R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 01R
2.14.2 Approach Lighting System:

2.14.1 Designation: 10
2.14.2 Approach Lighting System:

2.14.1 Designation: 28
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P DEP/P (220–360)
2.18.3 Channel: 118.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P (151–219)
2.18.3 Channel: 119.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P (001–150)
2.18.3 Channel: 285.625
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P (220–360)
2.18.3 Channel: 269.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC
2.18.3 Channel: 118.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: BAYPO DP
2.18.3 Channel: 118.8
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: BAYPO DP
2.18.3 Channel: 239.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: BLF RG STAR
2.18.3 Channel: 119.65
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: BLF RG STAR
2.18.3 Channel: 353.575
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: BLOND STAR
2.18.3 Channel: 118.8
2.18.5 Hours of Operation: 24
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BLOND STAR
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BRIDGE STAR
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BRIDGE STAR
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BRIDGE STAR
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BRIDGE STAR
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (151–219)
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (001–150)
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (001–150)
2.14.3 Channel: 119.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (220–360)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (001–150)
2.14.3 Channel: 290.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (220–360)
2.14.3 Channel: 316.05
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B (151–219)
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CROWD DP
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CROWD DP
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D–ATIS (ARR)
2.14.3 Channel: 126.45
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D–ATIS (ARR)
2.14.3 Channel: 128.475
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DADES STAR
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DADES STAR
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DARBS STAR
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DARBS STAR
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DORMR DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: DORMR DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ENDED DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ENDED DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GANDY DP
2.14.3 Channel: 119.65
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GANDY DP
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GANDY DP
2.14.3 Channel: 353.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 269.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNOST DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNOST DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 119.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 269.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 119.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LGTNG DP
2.14.3 Channel: 118.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LGTNG DP
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LZARD STAR
2.14.3 Channel: 135.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LZARD STAR
2.14.3 Channel: 279.6
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.3 Coordinates: 27°59'43.4N / 82°32'25.65W
2.19.4 Site Elevation: 20 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.3 Coordinates: 27°57'58.2392N / 82°32'36.5897W
2.19.4 Site Elevation: 7.6 ft

2.19.1 ILS Type: Inner Marker for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP

Federal Aviation Administration Twenty-Sixth Edition
2.19.5 Coordinates: 27°57'39.6244"N / 82°32'32.7564"W  
2.19.6 Site Elevation: 6.4 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 5W
2.19.2 ILS Identification: AMP
2.19.5 Coordinates: 27°59'44.7869"N / 82°32'28.5048"W  
2.19.6 Site Elevation: 20.6 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°57'37.34"N / 82°32'31.94"W  
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°57'37.46"N / 82°32'32.84"W  
2.19.6 Site Elevation: 17.2 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 5W
2.19.2 ILS Identification: JRT
2.19.5 Coordinates: 27°57'37.46"N / 82°32'32.84"W  
2.19.6 Site Elevation: 5 ft

2.19.1 ILS Type: DME for runway 01R. Magnetic variation: 5W
2.19.2 ILS Identification: TWJ
2.19.5 Coordinates: 27°59'22.9831"N / 82°32'30.8942"W  
2.19.6 Site Elevation: 42.5 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 27°59'23.6601"N / 82°31'41.2251"W  
2.19.6 Site Elevation: 25.7 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°59'3.1644"N / 82°31'37.4636"W  
2.19.6 Site Elevation: 23.8 ft

2.19.1 ILS Type: Inner Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 27°59'23.9328"N / 82°31'41.2197"W  
2.19.6 Site Elevation: 25.6 ft

2.19.1 ILS Type: Outer Marker for runway 19L. Magnetic variation: 5W
2.19.2 ILS Identification: TPA
2.19.5 Coordinates: 27°59'22.9831"N / 82°32'30.8942"W  
2.19.6 Site Elevation: 42.5 ft

General Remarks:

RWY 19L IS NOISE SENSITIVE TO TBJT DEPARTURES. RWY 01R IS NOISE SENSITIVE TO TBJT ARRIVALS. PUBLD NOISE ABATEMENT PROCES IN EFCT.

BIRD ACT ON AND INVOF ARPT.

TWY F AND TWY R ARE NON-MOVEMENT AREAS. BOTH LOCATIONS ARE UNAVBL FOR GROUP IV ACFT WITH A WINGSPAN GTR THAN 117 FT WO PPR FM ARPT OPS. TWY T PPR FROM ARPT OPS RQRD FOR ACFT WITH A WINGSPAN GTR THAN 90 FT.

ONLY ACFT WITH PRIOR PMSN MAY USE TRML APN; ALL OTRS USE GA APN.

RSTRS TO DESIGN GROUP V OR LGR; TWY J BTN TWY J1 AND TWY J2; TWY N WEST OF TWY L AND TWY E NORTH OF TWY J UNAVBL; TAXILANE Z CLSD TO WINGSPAN GTR THAN 171 FT – PPR ARPT OPS.
West Palm Beach, FL
Palm Beach Intl
ICAO Identifier KPBI

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 26–40–59.382N / 80–5–44.131W
2.2.2 From City: 3 miles W of WEST PALM BEACH, FL
2.2.3 Elevation: 19.6 ft
2.2.5 Magnetic Variation: 6W (2010)
2.2.6 Airport Contact: LAURA BEEBE
846 PALM BEACH INTL AIRPORT
WEST PALM BEACH, FL 33406
(561−471−7420)
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: A RFF Index
IC certified on 5/21/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 10L
2.12.2 True Bearing: 93
2.12.3 Dimensions: 10001 ft x 150 ft
2.12.4 PCN: 93 F/B/W/T
2.12.6 Threshold Elevation: 19.6 ft
2.12.6 Touchdown Zone Elevation: 16.3 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 93
2.12.3 Dimensions: 3214 ft x 75 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 26–40–52.282N / 80–6–22.6416W
2.12.6 Threshold Elevation: 17.7 ft
2.12.6 Touchdown Zone Elevation: 17.7 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 3214 ft x 75 ft
2.12.4 PCN: 44 F/A/X/T
2.12.5 Coordinates: 26–40–54.7438N / 80–5–47.2501W
2.12.6 Threshold Elevation: 13.6 ft
2.12.6 Touchdown Zone Elevation: 16.9 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 273
2.12.3 Dimensions: 3214 ft x 75 ft
2.12.4 PCN: 67 F/A/W/T
2.12.6 Threshold Elevation: 15.8 ft
2.12.6 Touchdown Zone Elevation: 15.9 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 6931 ft x 150 ft
2.12.4 PCN: 67 F/A/W/T
2.12.5 Coordinates: 26–41–30.596N / 80–6–14.482W
2.12.6 Threshold Elevation: 17 ft
2.12.6 Touchdown Zone Elevation: 17.3 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 93
2.12.3 Dimensions: 6931 ft x 150 ft
2.12.4 PCN: 67 F/A/W/T
2.12.6 Threshold Elevation: 17 ft
2.12.6 Touchdown Zone Elevation: 17.3 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 273
2.12.3 Dimensions: 3214 ft x 75 ft
2.12.4 PCN: 67 F/A/W/T
2.12.6 Threshold Elevation: 17 ft
2.12.6 Touchdown Zone Elevation: 17.3 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 10L
2.13.2 Take–off Run Available: 10001 ft
2.13.3 Take–off Distance Available: 10001 ft
2.13.4 Accelerate–Stop Distance Available: 10001 ft
2.13.5 Landing Distance Available: 8800 ft

2.13.1 Designation: 28R
2.13.2 Take–off Run Available: 10001 ft
2.13.3 Take–off Distance Available: 10001 ft
2.13.4 Accelerate–Stop Distance Available: 10001 ft
2.13.5 Landing Distance Available: 9189 ft

2.13.1 Designation: 10R
2.13.2 Take–off Run Available: 3214 ft
2.13.3 Take–off Distance Available: 3214 ft
2.13.4 Accelerate–Stop Distance Available: 3214 ft
2.13.5 Landing Distance Available: 3214 ft

2.13.1 Designation: 28L
2.13.2 Take–off Run Available: 3214 ft
2.13.3 Take-off Distance Available: 3214 ft
2.13.4 Accelerate–Stop Distance Available: 3214 ft
2.13.5 Landing Distance Available: 3214 ft
2.13.1 Designation: 14
2.13.2 Take-off Run Available: 6926 ft
2.13.3 Take-off Distance Available: 6926 ft
2.13.4 Accelerate–Stop Distance Available: 6000 ft
2.13.5 Landing Distance Available: 6000 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 28R
2.14.2 Approach Lighting System:

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 28L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 14
2.14.2 Approach Lighting System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P DEP/P (SOUTH)
2.18.3 Channel: 125.2
2.18.5 Hours of Operation: 24
2.18.1 Service Designation: APCH/P DEP/P (SOUTH)
2.18.3 Channel: 343.6
2.18.5 Hours of Operation: 24
2.18.1 Service Designation: CPTAN STAR
2.18.3 Channel: 124.6
2.18.5 Hours of Operation: 24
2.18.1 Service Designation: CPTAN STAR
2.18.3 Channel: 317.4
2.18.5 Hours of Operation: 24
2.18.1 Service Designation: D–ATIS
2.14.3 Channel: 123.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: MELBOURNE STAR
2.14.3 Channel: 124.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FEBAD STAR
2.14.3 Channel: 127.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FEBAD STAR
2.14.3 Channel: 317.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 284.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 119.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 118.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 384.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MAHHI STAR
2.14.3 Channel: 125.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MAHHI STAR
2.14.3 Channel: 343.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: RASAE STAR
2.14.3 Channel: 124.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: RASAE STAR
2.14.3 Channel: 317.4
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: SHRVY STAR
2.14.3 Channel: 127.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: SLIDZ DP
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: STOOP STAR
2.14.3 Channel: 317.4
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: TTLYR STAR
2.14.3 Channel: 127.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: WELLY DP
2.14.3 Channel: 125.2
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: PBI
2.19.3 Coordinates: 26–40–51.4319N / 80–4–29.0092W
2.19.4 Site Elevation: 23.3 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: PBI
2.19.3 Coordinates: 26–40–55.9795N / 80–6–6.0748W
2.19.4 Site Elevation: 14.5 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 6W
2.19.2 ILS Identification: PBI
2.19.4 Site Elevation: 13 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: PWB
2.19.3 Coordinates: 26–40–53.0853N / 80–5–1.7298W
2.19.4 Site Elevation: 13.5 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 6W
2.19.2 ILS Identification: PWB
2.19.4 Site Elevation: 18.5 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 3W
2.19.2 Navigation Aid Identification: PBI
2.19.3 Coordinates: 26–40–48.198N / 80–5–11.3586W
2.19.4 Site Elevation: 15.7 ft

**General Remarks:**
BE ALERT: TWY L IS LCTD BTWN RYS 10L/28R & 10R/28L. TWY L IS WIDER AND LONGER THAN RY 10R/28L – DO NOT CONFUSE TWY L FOR RY. AIRCRAFT WITH WINGSPAN OF 118 FT OR GREATER IS PROHIBITED ON TWY L.
24 HR PPR FOR ACFT WITH WINGSPANS GTR THAN 171 FT.

RWY 10R/28L NOT AVBL FOR SKED ACR OPS WITH MORE THAN 9 PAX SEATS OR UNSKED ACR AT LEAST 31 PAX SEATS.

NOISE ABATEMENT PROCEDURES IN EFFECT. MULTIENGINE FLIGHT TRAINING PROHIBITED SS TO SR SUN AND HOLIDAY; STRICT ENVIRONMENTAL OPERATING STAGE 2 ACFT 0300–1200Z CALL NOISE ABATEMENT OFFICER 561–471–7467.

BE ALERT; RYS 28L & 28R THLDS STAGGERED BY 5400 FT.

MIGRATORY BIRDS ON AND INV OF ARPT.
AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 33-38-12.1186N / 84-25-40.3104W
2.2.2 From City: 7 miles S of ATLANTA, GA
2.2.3 Elevation: 1026.2 ft
2.2.5 Magnetic Variation: 5W (2015)
2.2.6 Airport Contact: BALRAM BHEODARI
   PO BOX 20509
   ATLANTA, GA 30320
   (404-530-6600)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index
   I E certified on 5/1/1973
2.6.2 Threshold Elevation: 995.4 ft
2.6.3 Dimensions: 9999 ft x 150 ft
2.6.4 PCN: 62 R/A/W/T
2.6.5 Coordinates: 33-38-4.929N / 84-24-52.6768W
2.6.6 Threshold Elevation: 977.2 ft
2.6.7 Touchdown Zone Elevation: 995.5 ft

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12390 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33-38-4.936N / 84-26-52.6807W
2.12.6 Threshold Elevation: 1018.7 ft
2.12.7 Touchdown Zone Elevation: 1018.7 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 12390 ft x 150 ft
2.12.4 PCN: 62 R/A/W/T
2.12.5 Coordinates: 33-38-4.936N / 84-26-52.6807W
2.12.6 Threshold Elevation: 1018.7 ft
2.12.7 Touchdown Zone Elevation: 1018.7 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 68 R/A/W/T
2.12.5 Coordinates: 33-37-54.5282N / 84-26-52.6768W
2.12.6 Threshold Elevation: 1026.1 ft
2.12.6 Touchdown Zone Elevation: 1026.2 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 68 R/A/W/T
2.12.6 Threshold Elevation: 984.7 ft
2.12.6 Touchdown Zone Elevation: 998.9 ft

2.12.6 Touchdown Zone Elevation: 998.9 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.6 Threshold Elevation: 997.5 ft
2.12.6 Touchdown Zone Elevation: 997.5 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 74 R/A/W/T
2.12.5 Coordinates: 33–37–12.9808N / 84–26–52.3574W
2.12.6 Threshold Elevation: 1000.3 ft
2.12.6 Touchdown Zone Elevation: 1000.3 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 08L
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 8800 ft
2.13.5 Landing Distance Available: 8800 ft

2.13.1 Designation: 26R
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

2.13.1 Designation: 08R
2.13.2 Take–off Run Available: 9999 ft
2.13.3 Take–off Distance Available: 10999 ft

2.13.4 Accelerate–Stop Distance Available: 9999 ft
2.13.5 Landing Distance Available: 9999 ft

2.13.1 Designation: 26L
2.13.2 Take–off Run Available: 9999 ft
2.13.3 Take–off Distance Available: 9999 ft
2.13.4 Accelerate–Stop Distance Available: 9999 ft
2.13.5 Landing Distance Available: 9999 ft

2.13.1 Designation: 27R
2.13.2 Take–off Run Available: 12390 ft
2.13.3 Take–off Distance Available: 12390 ft
2.13.4 Accelerate–Stop Distance Available: 11730 ft
2.13.5 Landing Distance Available: 11730 ft

2.13.1 Designation: 09L
2.13.2 Take–off Run Available: 12390 ft
2.13.3 Take–off Distance Available: 12390 ft
2.13.4 Accelerate–Stop Distance Available: 11730 ft
2.13.5 Landing Distance Available: 11730 ft

2.13.1 Designation: 09R
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 27L
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 8865 ft
2.13.5 Landing Distance Available: 8865 ft

2.13.1 Designation: 28
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 10
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft
**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 08L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 26R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 27R
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 09L
2.14.2 Approach Lighting System:

2.14.1 Designation: 09R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 27L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 28
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 10
2.14.2 Approach Lighting System: ALSF2

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**AD 2.18 Air Traffic Services Communication Facilities**

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**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33°39′1.782N / 84°24′24.7032W
2.19.6 Site Elevation: 977.2 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33°39′2.288N / 84°26′6.3042W
2.19.6 Site Elevation: 1001.7 ft

2.19.1 ILS Type: Inner Marker for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33°38′58.3145N / 84°26′30.5173W
2.19.6 Site Elevation: 1017.7 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 5W
2.19.2 ILS Identification: HFW
2.19.5 Coordinates: 33°38′58.3506N / 84°24′23.3901W
2.19.6 Site Elevation: 985.2 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: GXZ
2.19.5 Coordinates: 33°39′2.3139N / 84°24′47.6304W
2.19.6 Site Elevation: 983.8 ft

2.19.1 ILS Type: Glide Slope for runway 26R. Magnetic variation: 5W
2.19.2 ILS Identification: GXZ
2.19.5 Coordinates: 33°39′2.3139N / 84°24′47.6304W
2.19.6 Site Elevation: 983.8 ft

2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 5W
2.19.1 ILS Type: DME for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: GTX
2.19.3 Coordinates: 33–38–58.32N / 84–26–30.19W
2.19.4 Site Elevation: 1016 ft

2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: ATL
2.19.3 Coordinates: 33–38–45.7727N / 84–26–26.2431W
2.19.4 Site Elevation: 992.1 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 5W
2.19.2 ILS Identification: ATL
2.19.4 Site Elevation: 986.8 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: BRU
2.19.3 Coordinates: 33–38–49.0988N / 84–26–30.1749W
2.19.4 Site Elevation: 1030.3 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: BRU
2.19.3 Coordinates: 33–38–52.4111N / 84–26–32.8404W
2.19.4 Site Elevation: 993.7 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 5W
2.19.2 ILS Identification: BRU
2.19.3 Coordinates: 33–38–49.0988N / 84–26–30.1749W
2.19.4 Site Elevation: 1030.3 ft

2.19.1 ILS Type: DME for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.3 Coordinates: 33–38–7.48N / 84–24–44.38W
2.19.4 Site Elevation: 978 ft

2.19.1 ILS Type: Glide Slope for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.3 Coordinates: 33–38–2.42N / 84–26–39.67W
2.19.4 Site Elevation: 1014.6 ft

2.19.1 ILS Type: Localizer for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.4 Site Elevation: 949.5 ft

2.19.1 ILS Type: Glide Slope for runway 09L. Magnetic variation: 5W
2.19.2 ILS Identification: HZK
2.19.4 Site Elevation: 995.5 ft

2.19.1 ILS Type: DME for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.4 Site Elevation: 995.5 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.4 Site Elevation: 995.5 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.4 Site Elevation: 995.5 ft

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Twenty-Sixth Edition
2.19.5 Coordinates: 33°37′58.482″N / 84°26′39.0507″W
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′54.5222″N / 84°27′2.5364″W
2.19.6 Site Elevation: 1029.2 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 5W
2.19.2 ILS Identification: FUN
2.19.5 Coordinates: 33°37′54.5664″N / 84°24′52.6064″W
2.19.6 Site Elevation: 976.2 ft

2.19.1 ILS Type: DME for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33°37′53.7N / 84°27′3.53″W
2.19.6 Site Elevation: 1003.8 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33°37′58.5048″N / 84°25′18.9643″W
2.19.6 Site Elevation: 986.7 ft

2.19.1 ILS Type: Inner Marker for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33°37′54.59N / 84°27′3.03″W
2.19.6 Site Elevation: 983 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 5W
2.19.2 ILS Identification: FSQ
2.19.5 Coordinates: 33°37′54.53N / 84°27′3.03″W
2.19.6 Site Elevation: 1015.7 ft

2.19.1 ILS Type: DM E for runway 10. Magnetic variation: 5W
2.19.2 ILS Identification: OMO
2.19.5 Coordinates: 33°37′12.4016N / 84°27′5.3143″W
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′17.0569″N / 84°25′18.9449″W
2.19.6 Site Elevation: 989.2 ft

2.19.1 ILS Type: Inner Marker for runway 28. Magnetic variation: 5W
2.19.2 ILS Identification: PKU
2.19.5 Coordinates: 33°37′13.0192N / 84°24′53.9594″W
2.19.6 Site Elevation: 1001 ft

2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 5W
2.19.2 ILS Identification: OMO
2.19.5 Coordinates: 33°37′12.9816N / 84°24′53.9594″W
2.19.6 Site Elevation: 991.1 ft
2.19.2 ILS Identification: PKU  
2.19.5 Coordinates: 33°37'12.9761"N / 84°27'5.3149"W

2.19.2 Navigation Aid Identification: ATL  
2.19.5 Coordinates: 44°44.6758"N / 84°26'5.3149"W

2.19.6 Site Elevation: 994.5 ft  
2.19.6 Site Elevation: 1040.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 5W

General Remarks:
ALL RWYS, TOUCH AND GO OPERATIONS, LOW APPROACHES, AND PRACTICE INSTRUMENT APPROACHES NOT PERMITTED.

ACFT WITH WINGSPAN GREATER THAN 214 FT SHOULD EXPECT TO USE RWY 09L/27R AND 9R/27L.

NO ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 225 FT MAY TAXI ON TWY M BETWEEN L14 AND L16, TWY N BETWEEN P AND SC, AND TWY N BETWEEN U AND K.

ALL ACFT WITH WINGSPANS GREATER THAN 214 FT ARE REQUIRED TO USE TAXI SPEEDS NOT GREATER THAN 15 MPH ON TWYS A, L, M, AND SJ.

WHEN ACFT WITH WINGSPANS GREATER THAN 214 FT ARE PRESENT ON THE FIELD, ALL OTHER ACFT MUST ADHERE TO THE TWY CENTERLINE ON TWYS L AND M, TWYS E AND F, AND TWYS SC AND SJ BETWEEN SG AND R DUE TO SEPARATION BETWEEN THE PARALLEL TWYS.

RUNUPS ARE PERMITTED AT VARIOUS SITES; COORD USE OF CITY FACILITIES, MOVEMENT AREAS, ALLOWABLE NON-MOVEMENT AREAS WITH DEPT OF AVN OPNS, 404-787-6095; AND COORD THE USE OF THE AIRLINES FACILITIES WITH THEM.

NOISE & OPNS MONITORING SYSTEM (NOMS) PROGRAM IN EFFECT; CALL THE ATLANTA DEPT OF AVIATION 770-43-NOISE OR 770-436-6473 FOR MORE INFO.

BE ALERT TO RWY CROSSING CLEARANCES. READBACK OF ALL RWY HOLDING INSTRUCTIONS IS REQUIRED.

GROUP VI ACFT (LOCKHEED GALAXY C-5; ANTONOV AN-124 & AN-125) WITH A WINGSPAN OF GREATER THAN 214 FT ARE RESTRICTED FROM USING TWY F EAST OF RAMP 5 NORTH AND WEST OF TWY D.

RWY 9L DEPARTURES CAN EXPECT INTERSECTION DEPARTURE FM M2 WITH RWY REMAINING 11,440 FT (TORA/TODA) AND 10,780 (ASDA).

TWO ACFT WITH WINGSPANS GREATER THAN OR EQUAL TO 225 FT MAY NOT TAXI SIMULTANEOUSLY ON ADJACENT PARALLEL RWYS L/M EXCEPT WEST OF L7 AT SPEEDS LESS THAN 15 MPH.

PREFERENTIAL RWY USE IN EFFECT, EXPECT TO USE RWY S 08R/26L, 09L/27R FOR DEPS; RWYS 08L/26R, 09R/27L ARE USED PRIMARILY FOR ARRIVALS.

NO ACFT WITH WINGSPAN GREATER THAN 213 FT MAY PASS ANOTHER ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 225 FT ON TWY L/M EAST OF L7.

ACFT WITH WINGSPAN GREATER THAN 171 FT ARE RSTRD FROM USING TWY V. ACFT WITH WINGSPAN GREATER THAN 171 FT ARE REQUIRED TO USE TAXI SPEEDS LESS THAN 15 MPH WHEN PASSING ACFT WITH WINGSPAN GREATER THAN 214FT ON TXWY L/M (EAST OF L7).

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
Agana, GU
Guam Intl
ICAO Identifier PGUM

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 13°29′2.2224″ N / 144°47′49.6576″ E
2.2.2 From City: 3 miles NE of GUAM, GU
2.2.3 Elevation: 304.5 ft
2.2.5 Magnetic Variation: 2E (2000)
2.2.6 Airport Contact: TOM ADA
P.O. BOX 8770
TAMUNING, GU 96931
(671)646-0300
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A1
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R F F Index I E certified on 4/1995

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 65°
2.12.3 Dimensions: 12017 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13°28′39.8522″ N / 144°46′53.1231″ E
2.12.6 Threshold Elevation: 233.6 ft
2.12.6 Touchdown Zone Elevation: 256.3 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 245°
2.12.3 Dimensions: 12017 ft x 150 ft
2.12.4 PCN: 69 F/B/X/U
2.12.5 Coordinates: 13°29′19.8177″ N / 144°48′37.2722″ E
2.12.6 Threshold Elevation: 300.7 ft
2.12.6 Touchdown Zone Elevation: 293.1 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′37.7713″ N / 144°47′5.3307″ E
2.12.6 Threshold Elevation: 231.1 ft
2.12.6 Touchdown Zone Elevation: 258 ft

2.12.1 Designation: 24R
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′19.8177″ N / 144°48′37.2722″ E
2.12.6 Threshold Elevation: 300.7 ft
2.12.6 Touchdown Zone Elevation: 293.1 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′37.7713″ N / 144°47′5.3307″ E
2.12.6 Threshold Elevation: 231.1 ft
2.12.6 Touchdown Zone Elevation: 258 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take-off Run Available: 12015 ft
2.13.3 Take-off Distance Available: 12015 ft
2.13.4 Accelerate–Stop Distance Available: 12015 ft
2.13.5 Landing Distance Available: 11015 ft

2.13.1 Designation: 24R
2.13.2 Take-off Run Available: 12015 ft
2.13.3 Take-off Distance Available: 12015 ft
2.13.4 Accelerate–Stop Distance Available: 12015 ft
2.13.5 Landing Distance Available: 12015 ft

2.13.1 Designation: 06R
2.13.2 Take-off Run Available: 10014 ft
2.13.3 Take-off Distance Available: 10014 ft
2.13.4 Accelerate–Stop Distance Available: 10014 ft
2.13.5 Landing Distance Available: 10014 ft

2.13.1 Designation: 24L
2.13.2 Take-off Run Available: 10014 ft
2.13.3 Take-off Distance Available: 10014 ft
2.13.4 Accelerate–Stop Distance Available: 10014 ft
2.13.5 Landing Distance Available: 9014 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 24R
2.14.2 Approach Lighting System:
2.14.1 Designation: 06R
2.14.2 Approach Lighting System: MALSR

2.19.1 ILS Type: Localizer for runway 06L. Magnetic variation: 2E
2.19.2 ILS Identification: GUM
2.19.5 Coordinates: 13–29–34.7116N / 144–48–53.0934E
2.19.6 Site Elevation: 312.6 ft

2.14.1 Designation: 24L
2.14.2 Approach Lighting System:

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 2E
2.19.2 ILS Identification: GUM
2.19.5 Coordinates: 13–28–53.073N / 144–47–8.508E
2.19.6 Site Elevation: 246.1 ft

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 2E
2.19.2 ILS Identification: GUM
2.19.5 Coordinates: 13–28–53.073N / 144–47–8.508E
2.19.6 Site Elevation: 246.1 ft

2.19.1 ILS Type: Localizer for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: AWD
2.19.5 Coordinates: 13–28–38N / 144–47–15.4E
2.19.6 Site Elevation: 236.5 ft

General Remarks:
<1000' OVRN S END & 450' OVRN N END RWY 6L–24R.
CLASS III ACFT ARE PROHIBITED FROM MAKING ANY TURNS ONTO OR OFF TWY GOLF (SOUTH) WHILE UTILIZING TWY ECHO.

THE FIRST 500 FT OF THE LEFT SHOULDER OF RWY 24L IS NOT VISIBLE FROM THE TWR. PILOTS ARE ADVISED TO CAUTION FOR ANY PRESENCE OF WILDLIFE IN THAT AREA.


FOR PARKING INFORMATION ALL ACFT CTC RAMP CTL. ALL ACFT DEP TERMINAL PARKING CTC RAMP CTL FOR ENGINE START AND PUSHBACK.

ADG–VI AIRPLANES MAY DEPART ON RWY 6L AND RWY 24R WITH ACFT ON PARL TWY K AS LONG AS NO ADG–VI ACFT OCCUPIES THE PARL TWY BYD 1500 FT OF THE POINT OF TKOF ROLL.

FOR TAXG B747–8 ACFT ON TWY K FRONTING THE ACFT PRKG APN FROM GATES 5 – 16 AT THE MAIN TRML, MAX TAXG SPEED SHALL BE NO MORE THAN 15 MPH.

DRG TAXG OF THE B747–8 BTN GATES 5 – 16, ALL VEHICLES SHALL YIELD AND RMN CLEAR OF THE VEHICLE TFC PAT AND ARE RSTRD TO A MAX HGT OF 14 FT.

EFFECTIVE RY GRADIENT RY 06L 0.46% UP NE; RY 24R 0.70% DOWN SW; RY 06R 0.80 % UP NE; RY 24L 0.52% DOWN SW.
RISING TERRAIN 75 FT FM RY 24L THLD 140 FT EAST OF CNTRLN EXTENDED +8 FT.
DEP VFR ACFT MAINT RY HDG TIL PAST DEP END OF RY AND REACHING 1000 FT AGL; RGT PAT 24L/R DO NOT EXCEED 1500 FT AGL IN TFC PAT.


LGTD TWR 780 FT 1.3 NM ENE OF RY 24L THLD.

FOR THE B747–8, DRG RWY 24L & 24R OPS AND DUE TO JET BLAST EFCTS AT GATES 14, 16 & 18, THE B747–8 WILL BE TOWED FROM GATE 4 ON TWY K TO TWY J WITH THE ACFT PSND ON TWY J FACING TWD RWY 24R.
Andersen, Mariana Island, GU
Andersen AFB
ICAO Identifier PGUA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 13–35–1.99N / 144–55–48.2E
2.2.2 From City: 0 miles N of YIGO, GU
2.2.3 Elevation: 617.4 ft
2.2.5 Magnetic Variation: 2E (1980)
2.2.6 Airport Contact: MAJOR BILLY G TOWLES
3 AD ANDERSEN AFB, GUAM, 69912 ( )
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing:
2.12.3 Dimensions: 10528 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.5 Coordinates: 13–34–49.281N / 144–54–56.32E
2.12.6 Threshold Elevation: 539.1 ft
2.12.6 Touchdown Zone Elevation: 539.3 ft

2.12.1 Designation: 24R
2.12.2 True Bearing:
2.12.3 Dimensions: 10528 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.5 Coordinates: 13–35–49.93N / 144–56–33.74E
2.12.6 Threshold Elevation: 617.4 ft
2.12.6 Touchdown Zone Elevation: 617.4 ft

2.12.1 Designation: 06R
2.12.2 True Bearing:
2.12.3 Dimensions: 11200 ft x 200 ft
2.12.4 PCN: 98 R/A/W/T
2.12.6 Threshold Elevation: 556.8 ft

2.12.6 Touchdown Zone Elevation: 556.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 24R
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 06R
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: SALS

2.14.1 Designation: 24R
2.14.2 Approach Lighting System: ALSF1

2.14.1 Designation: 06R
2.14.2 Approach Lighting System: ALSF1

2.14.1 Designation: 24L
2.14.2 Approach Lighting System: SALS

2.18 Air Traffic Services Communication Facilities

2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 2E
2.19.2 ILS Identification: YIG
2.19.5 Coordinates: 13° 34' 25.7" N / 144° 54' 46.9" E
2.19.6 Site Elevation: 533.6 ft

2.19.1 ILS Type: Glide Slope for runway 06R. Magnetic variation: 2E
2.19.2 ILS Identification: YIG
2.19.5 Coordinates: 13° 34' 43.23" N / 144° 54' 42.5" E
2.19.6 Site Elevation: 533.6 ft

General Remarks:
FREQUENT RAIN SHOWERS OF SHORT DURATION, EXPECT WET RWY BRAKEING ACTION.

RSTD: ALL ACFT CTC 36 WG COMD POST 90 MIN OUT AND AT 30 MIN OUT PRIOR TO ARR.

CAUTION: NSTD DSPLCD THLD MARKINGS FOR RYS 06R, 06L, AND 24R.

MISC: AIRCRAFT EXCEEDING AFLD WEIGHTS MUST REQUEST WEIGHT BEARING CAPACITY WAIVER WITH 24 HR NOTICE TO AIRFIELD OPS TO PROCESS ANY APPROVALS NEEDED. IF REQUESTS ARE NOT MADE WITHIN 24 HRS EXPECT DELAYS.

RSTD: ACFT MUST ADHERE TO PPR ARR +/- 30 MIN. ACFT WITH WINGSPANS GREATER THAN 261’ NOT AUTHORIZED.

HAZUS AIR TURB FINAL APCH RWYS 24L/24R. NO VSBY REF AVBL ON NGT TKOF BY END RWY 6.

SERVICE-LGT: RAMP LGT UNAVBL FOR NGT TIME OPS, AND UNSAFE ACFT MVMT COND EXIST ON NORTH RAMP 3; ACFT TAXI AT THEIR OWN RISK. ALL AFLD ILS STOP LGT UNSVC. VEGETATION OBST RWY 24R/L APCH LGT SY S.

ILS/RADAR–ILS: ILS CRITICAL AREAS NOT PROTECTED.

MISC: ANDERSEN AFB DOES NOT HAVE CAPABILITY TO STORE REFRIGERATED CARGO.

RSTD: RESTRICTIONS TO FLT OPNS DUR EA BWC. MOD: NO TOUCH AND GO LDG. RSTD LOW APPCH NO LOWER THAN 200’ OR AS DETERMINED BY SOF. SEVERE: RSTD LOW APPCH NO LOWER THAN 200’ OR AS DETERMINED BY SOF. EMERG LDG AND 36 OG/CC APV DEP ONLY. PHASE I: PHASE I: 1 APR – 31 JUL. PHASE II: 1 AUG – 31 MAR.
SERVICE—LGT: ARPT BCN 763 FT MSL LCTD 1.4 NM SSW OF AFLD.
MISC: “NO VHF CAPABILITIES WITH AFLD MGMT.”
A—GEAR BAK—12 RWYS 06L & 06R 30 MIN NTC RQR.
TWY B AND C BTN TWY J AND K CLSD DUE TO CONSTRUCTION.
CAUTION: TACAN CK PT SIGN ON TWY J SOUTH INCORRECT; CORRECT VERBIAGE: BRG 224 DIST 0.7 NM.
ACFT WASH RACK ON NR 3 CLSD DUE TO CONST.
RSTD: PPR NR NOT RQRD FOR GDSS LOADED MSN. C130 MSNS LOADED IN GDSS RQR A PPR NR FROM AFLD MGMT. ALL AEROMEDICAL EVAC MSN ARE RQRD TO CTC COMD POST (DSN 366–2961, C671–366–2961) BY ANY MEANS AVAIL 3 HRS PRIOR TO ARR. ALL ACFT RQRD TO MAKE CALL 30 MIN PRIOR TO ARR.
RSTD: ALL OPR MUST OBTAIN APVL FR GND AND AMOPS PRIOR TO ENG START/RUN.
MISC: RWY 06L AND 06R UNDERRUNS 1000’ AVBL FOR TWY/TKOF. RWY 24R UNDERRUN AVBL 500’ FOR TAXI/TKOF.
CAUTION: USE EXTREME CAUTION FOR EXTV UAS OPS IN VCNTY OF ANDERSEN AFB.
SERVICE—FLUID: C—5 NITROGEN SVC CAPABILITY UNAVBL.
CAUTION: POTENTIAL FOR REDUCED BRAKING CAPABILITY AND/OR DIREC CTL EXISTS, PARTICULARLY DURING WET RSC FOR RWY 06L.
MAINT AVBL 0100–0400 WEEKDAY ONLY; CLOSED WEEKEND & HOL.
NO ARRESTING GEAR MARKERS LOCATED ON THE LEFT SIDE OF ALL APPROACH END BARRIERS.
MISC: ALL AIRCrews TO RON MUST CK INTO AFLD MGT OPS AND PROVIDE POC INFO UPON ARR.
MISC: PAVEMENT PRIOR TO RY 06R AND RY 06L THLDS AVBL FOR TKOF RUN WHEN NECESSARY FOR MSN ACHIEVEMENT.
MISC: ATTN: ALL DRY ICE REQ MUST BE MADE THRU 734TH MS/ATOC DSN 315–366–3125/3137/3162 OR C671–366–3125/3137/3162. REQ MUST BE MADE AT LEAST 24 HR IN ADVANCE FOR ACFT LDG TUE–FRI AND 72 HR IN ADVANCE FOR ACFt LDG SAT–MON. DUR HOL, ADD 2 HR TO COORD TIME.
RSTD: PPR DSN 366–4188/1010.
NS ABTMT: QUIET HR 1200–2000Z (2200–0600L) DLY. NO AFTERBURNER, OR OVR FLT OF BASE AND LCL POPULATED AREAS. OTHER RESTRICTIONS BY NOTAM.
CAUTION: 47’ TACAN ANTENNAE LCTD 1,300 FT NE OF RY 24L & 1,300 FT SE OF RY 24R THLDS.
MISC: AFLD MGT HAS NO COMSEC STORAGE AVBL FOR TRAN AIRCREWS. TRANS AIRCREWS CAN STORE COMSEC UP TO TOP—SECRET AT 36 WG CP.
SERVICE—A—GEAR: CONTACT CONTROL TOWER 30 MIN PRIOR FOR DEPARTURE END BAK12 CABLE CONFIGURATION. 30 MIN PRIOR NOTICE REQ FOR CHANGE CONFIGURATION. BAK12 HOUSING LCTD 317’ FROM RY CENTERLINE, 217’ FROM RY EDGE, MAX HEIGHT 8’. NO ARRESTING—GEAR MARKER LCTD ON
LEFT SIDE OF ALL APPROACH END BARRIERS.


RSTD 1 OF 2: THERE WILL BE NO OVFT OF MARIANA CROW TERRITORIES BLW 1,000 FT AGL FROM SEP–MAY. OVFT BLW 1,000 FT AGL IS ALLOWED BTN JUNE AND AUG, THE CROW NON–BREEDING SEASON.

RSTD: PPR REQ MUST BE MADE 24 HR PRIOR EXC FOR WX–EVAC OPS.

AREA BTN 1000’ ROLL BAR AND THU LGT RWY 06R AND 06L UNLGTED. LAST 642’ PRIOR TO THU LGT 24R UNLGTED.


CAUTION: FAA SIZE 3 SIGNS LCTD GREATER THAN 60 FT FROM TWY EDGES TO ACCOM B–52 ACFT.

RSTD: BA ON BOTH RWYS MAY BE LESS THAN EXP DUE TO RUBBER BUILD–UP; PROBABILITY OF HYDROPLANING EXISTS.

RSTD: PPR NOT ISSUED MORE THAN 14 DAYS PRIOR TO ARR/DEP.

AFLD SIGNS ARE NOT FRANGIBLE.
Hilo, HI
Hilo Intl
ICAO Identifier PHTO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 19–43–12.9468N / 155–2–54.4925W
2.2.2 From City: 2 miles E of HILO, HI
2.2.3 Elevation: 37.6 ft
2.2.5 Magnetic Variation: 11E (1985)
2.2.6 Airport Contact: STEVEN J. SANTIAGO
ASSISTANT AIRPORT
DISTRICT MANAGER
HILO, HI 96720  (808–961–9300)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0700–2030 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 41
2.12.3 Dimensions: 5600 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 19–42–44.9639N / 155–3–44.7803W
2.12.6 Threshold Elevation: 33.3 ft
2.12.6 Touchdown Zone Elevation: 33.7 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 221
2.12.3 Dimensions: 5600 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.6 Threshold Elevation: 25.4 ft
2.12.6 Touchdown Zone Elevation: 31.4 ft

2.12.1 Designation: 08
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9800 ft x 150 ft

2.12.4 PCN: 69 F/B/W/T
2.12.6 Threshold Elevation: 27.3 ft
2.12.6 Touchdown Zone Elevation: 30.1 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9800 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 19–43–16.9196N / 155–1–45.4051W
2.12.6 Threshold Elevation: 37 ft
2.12.6 Touchdown Zone Elevation: 37.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take–off Run Available: 5600 ft
2.13.3 Take–off Distance Available: 5600 ft
2.13.4 Accelerate–Stop Distance Available: 5600 ft
2.13.5 Landing Distance Available: 5251 ft

2.13.1 Designation: 21
2.13.2 Take–off Run Available: 5251 ft
2.13.3 Take–off Distance Available: 5251 ft
2.13.4 Accelerate–Stop Distance Available: 5510 ft
2.13.5 Landing Distance Available: 5510 ft

2.13.1 Designation: 08
2.13.2 Take–off Run Available: 9800 ft
2.13.3 Take–off Distance Available: 9800 ft
2.13.4 Accelerate–Stop Distance Available: 9800 ft
2.13.5 Landing Distance Available: 9800 ft

2.13.1 Designation: 26
2.13.2 Take–off Run Available: 9800 ft
2.13.3 Take–off Distance Available: 9800 ft
2.13.4 Accelerate–Stop Distance Available: 9800 ft
2.13.5 Landing Distance Available: 9800 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03
2.14.2 Approach Lighting System:

2.14.1 Designation: 21
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:
2.14.1 Designation: 08
2.14.2 Approach Lighting System: ODALS
2.14.1 Designation: 26
2.14.2 Approach Lighting System: MALSR

**AD 2.18 Air Traffic Services Communication Facilities**

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 119.7
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 120.25
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 323
2.14.5 Hours of Operation: 0600−2200

2.14.1 Service Designation: ATIS
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 26. Magnetic variation: 11E
2.19.2 ILS Identification: ITO
2.19.3 Channel: 118.1
2.19.5 Coordinates: 19°43′13.742″N / 155°3′0.505″W
2.19.6 Site Elevation: 32.5 ft

2.19.1 ILS Type: Glide Slope for runway 26. Magnetic variation: 11E
2.19.2 ILS Identification: ITO
2.19.3 Channel: 263.1
2.19.5 Coordinates: 19°43′20.887″N / 155°1′58.099″W
2.19.6 Site Elevation: 32.5 ft

2.19.1 ILS Type: Localizer for runway 26. Magnetic variation: 11E
2.19.2 ILS Identification: ITO
2.19.3 Channel: 121.9
2.19.5 Coordinates: 19°43′16.933″N / 155°3′38.784″W
2.19.6 Site Elevation: 25.8 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 11E
2.19.2 Navigation Aid Identification: ITO
2.19.3 Channel: 243
2.19.5 Coordinates: 19°43′16.862″N / 155°0′39.435″W
2.19.6 Site Elevation: 23 ft

**General Remarks:**

ATCT CTLS ENTRY/EXIT TFC ON TWYS F&E TO EAST TRML RAMP.

BE ALERT OCNL BIRD FLOCKS ON ARPT AND IN FLT ACROSS RWY 08/26 AND 03/21.

PPR FROM ARPT MGR FOR TRANSIENT PARKING.

FOR CD IF UNA TO CTC ON FSS FREQ, CTC HONOLULU CONTROL FACILITY AT 808−840−6262.

181' LGTD SMOKE STACK 1/2 SM SOUTH OF FLD.

RY 08/26 SINGLE−BELLY TWIN TANDEM (SBTT) GWT 450,000 LBS.

RY 03/21 SINGLE−BELLY TWIN TANDEM (SBTT) GWT 230,000 LBS.
NOISE ABATEMENT: AVOID OVERFLIGHT OF NOISE SENSITIVE RESIDENTIAL AREAS N, W AND SW OF AIRPORT.

RY 3/21 CLSD TO TURBINE ACFT 1800–0600.

TWY E BTN TWY A AND RWY 08/26 PONDING DRG HVY RAINS.

RWY 08 PVD 1325' MKD BY CHEVRONS, UNUSBL FOR LNDG/TKOF/OVBN/STY; CANNOT BE USED IN COMPUTING TKOF DATA.

DIVISION 1.1, 1.2, 1.3 EXPLOSIVES PROHIBITED.

RWYS 8, 21 AND 26 WIND CONES ARE LCTD IN THE ROFA.

(A70A) JET FUEL AVBL MON–SAT 0800–1700 CALL (808) 935–6881/6122 OR 961–6601.

(E93) NO MKD PAD, HEL OPER FM FBO HANGER AREA.

PPR FROM AIRPORT MANAGER FOR TRANSPORTATION OF DIVISION 1.4 EXPLOSIVES AND HAZARDOUS MATERIAL IN OR OUT OF AIRPORT.
Honolulu, HI  
Honolulu Intl  
ICAO Identifier PHNL

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 21–19–4.142N / 157–55–12.819W
2.2.2 From City: 3 miles NW of HONOLULU, HI
2.2.3 Elevation: 12.6 ft
2.2.5 Magnetic Variation: 11E (1990)
2.2.6 Airport Contact: ROY SAKATA  
300 RODGERS BLVD. #12  
HONOLULU, HI 96819  
(808) 836–6533
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, A, A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 04L
2.12.2 True Bearing: 53
2.12.3 Dimensions: 9002 ft x 150 ft
2.12.4 PCN: 57 F/B/X/T
2.12.5 Coordinates: 21–18–50.1044N / 157–55–37.685W
2.12.6 Threshold Elevation: 8.1 ft
2.12.6 Touchdown Zone Elevation: 8.4 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 233
2.12.3 Dimensions: 9002 ft x 150 ft
2.12.4 PCN: 57 F/B/X/T
2.12.5 Coordinates: 21–19–43.7762N / 157–54–21.6299W
2.12.6 Threshold Elevation: 8.5 ft
2.12.6 Touchdown Zone Elevation: 8.6 ft

2.12.1 Designation: 04W
2.12.2 True Bearing: 51
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 21–18–53.099N / 157–54–46.444W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 22W
2.12.2 True Bearing: 231
2.12.3 Dimensions: 3000 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 21–19–11.7999N / 157–54–21.78W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 89
2.12.3 Dimensions: 12312 ft x 150 ft
2.12.4 PCN: 79 R/B/W/T
2.12.5 Coordinates: 21–19–30.8826N / 157–56–35.6573W
2.12.6 Threshold Elevation: 11.8 ft
2.12.6 Touchdown Zone Elevation: 12.6 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
2.12.6 Threshold Elevation: 8.4 ft
2.12.6 Touchdown Zone Elevation: 8.8 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 53
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: 21–18–24.4938N / 157–56–45.061W
2.12.6 Threshold Elevation: 9.9 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: 21–18–24.4867N / 157–54–38.152W
2.12.6 Threshold Elevation: 9.8 ft
2.12.6 Touchdown Zone Elevation: 9.8 ft

2.12.1 Designation: 08W
2.12.2 True Bearing: 91
2.12.3 Dimensions: 5090 ft x 300 ft
2.12.4 PCN: //
2.12.5 Coordinates: 21–18–40.85N / 157–55–0W
2.12.6 Threshold Elevation: 0 ft
2.12.6 Touchdown Zone Elevation: ft

2.13.1 Designation: 04L
2.13.2 Take–off Run Available: 6952 ft
2.13.3 Take–off Distance Available: 6952 ft
2.13.4 Accelerate–Stop Distance Available: 6952 ft
2.13.5 Landing Distance Available: 6952 ft

2.13.1 Designation: 22L
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 8937 ft
2.13.5 Landing Distance Available: 8937 ft

2.13.1 Designation: 04R
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 08R
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 26L
2.13.2 Take–off Run Available: 12000 ft
2.13.3 Take–off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 08W
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 04W
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 22R
2.13.2 Take–off Run Available: 6952 ft
2.13.3 Take–off Distance Available: 6952 ft
2.13.4 Accelerate–Stop Distance Available: 6952 ft
2.13.5 Landing Distance Available: 6952 ft

2.13.1 Designation: 08W
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft
2.13.1 Designation: 26W
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

**AD 2.14 Approach and Runway Lighting**
2.14.1 Designation: 04L
2.14.2 Approach Lighting System:

2.14.1 Designation: 22R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 22L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 04W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 08L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:

2.14.1 Designation: 26L
2.14.2 Approach Lighting System: MALSF

2.14.1 Designation: 08W
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

**AD 2.18 Air Traffic Services Communication Facilities**
2.18.1 Service Designation: 15 AW COM D POST
2.18.3 Channel: 121.8
2.18.5 Hours of Operation:

2.18.1 Service Designation: ADZY (HONOLULU RAMP ADZY)
2.18.3 Channel: 121.8
2.18.5 Hours of Operation:

2.18.1 Service Designation: ADZY (HICKAM RAMP ADZY)
2.18.3 Channel: 133.6
2.18.5 Hours of Operation:

2.18.1 Service Designation: ADZY (HICKAM RAMP ADZY)
2.18.3 Channel: 254.4
2.18.5 Hours of Operation:

2.18.1 Service Designation: ANG OPS
2.18.3 Channel: 293.7
2.18.5 Hours of Operation:

2.18.1 Service Designation: APCH/P
2.18.3 Channel: 317.6
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (WEST)
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC (WEST)
2.18.3 Channel: 269
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: BANZI RNA V DP
2.18.3 Channel: 118.3
2.18.5 Hours of Operation: 24
2.14.1 Service Designation: BANZI RNAV DP
2.14.3 Channel: 269
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 281.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (ARR E/NW DEP NW)
2.14.3 Channel: 119.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: COM D POST
2.14.3 Channel: 141.8
2.14.5 Hours of Operation:

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 127.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P CLASS B (EAST)
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KEAHI DP (JORDA, LANAI, UPOLU TRNS.)
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KEOLA DP (KATHS, LILIA, NONNI, PUPPI, SOUTH KAUAI TRNS.)
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KEOLA DP (KATHS, LILIA, PUPPI, SOUTH KAUAI TRNS.)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KEOLA DP (KATHS, LILIA, NONNI, PUPPI, SOUTH KAUAI TRNS.)
2.14.3 Channel: 269
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 08R/26L)
2.14.3 Channel: 123.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MOLOKAI DP (APACK, CLUTS, EBBER, FITES, PULPS, ZIGIE TRNS.)
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MOLOKAI DP (APACK, CLUTS, EBBER, FITES, PULPS, ZIGIE TRNS.)
2.14.3 Channel: 269
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: MOLOKAI DP (APACK, CLUTS, EBBER, FITIES, PULPS, ZIGIE TRNS.)
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS (SHAKA OPS)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation:

2.14.1 Service Designation: PALAY DP (LANAI, MOLOKAI TRNS.)
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PIPLN RNAV DP
2.14.3 Channel: 124.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PTD (HICKAM)
2.14.3 Channel: 133.6
2.14.5 Hours of Operation:

2.14.1 Service Designation: PIPLN RNAV DP
2.14.3 Channel: 317.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PTD
2.14.3 Channel: 372.2
2.14.5 Hours of Operation:

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 11E
2.19.2 ILS Identification: IUM
2.19.6 Site Elevation: 5.6 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.6 Site Elevation: 5.4 ft

2.19.1 ILS Type: Outer Marker for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.6 Site Elevation: 43.5 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 11E
2.19.2 ILS Identification: IUM
2.19.5 Coordinates: 21–19–49.8152N / 157–54–13.0662W
2.19.6 Site Elevation: 5.1 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
2.19.5 Coordinates: 21–19–27.8674N / 157–54–17.1566W
2.19.6 Site Elevation: 21.2 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 11E
2.19.2 ILS Identification: IUM
2.19.6 Site Elevation: 19.5 ft

2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 11E
2.19.2 ILS Identification: HNL
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
2.19.6 Site Elevation: 24 ft
2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 11E
2.19.2 ILS Identification: EPC
2.19.5 Coordinates: 21°19′35.0845N / 157°54′29.9581N / 157°55′49.4801W
2.19.6 Site Elevation: 6.5 ft

General Remarks:
MILITARY RSTD: JBPH-H IS PPR TO ALL NON-TFWC MSN, AMC TRNG MSN AND KC-135 8 UN & 8 EN MSN CALL 735TH MOC AT DSN (315) 499-6970 FOR PPR. ALL AMC PPR WILL BE COORD MON-FRI 1700-0400Z ONLY. ALL NON-AMC ACFT SUCH AS FOREIGN, SISTER SVC, TRAN ACFT OR KC-135 AND, QDN, QEN, PEN, KEN, CJZ, DV1, DV7, DC5, AND C-130 MSN MUST CTC 15 OSS/OSA (AMOPS) AT DSN (315) 449-0046 FOR PPR. ALL PPR WILL BE APVD NO EARLIER THAN 72 HR BUT NO LATER THAN 24 HR PRIOR.

CAUTION: DURING PERIODS OF REPEATED PRECIPITATION ANTICIPATE WET RWY CONDITIONS, IF CURRENT CONDITIONS RQR CONFIRMATION CTC HONOLULU TWR ON INITIAL CONTACT.

CAUTION: RECREATIONAL BOATING ACTIVITIES ON AND INVOF WATERWAYS.

MILITARY: ALL MIL ACFT RQR CSTMS/AG/IMG INSPECTION MUST CTC 15WG COMMAND POST OR IF AMC CTC HICKAM AMC, NLT 3 HRS PRIOR TO ARR WITH DEPARTURE LOCATION, EST BLOCK TIME, NR OF AIRCREW, CIV/MIL PAX, FOREIGN NATIONALS, AND DV CODES.*

ALL JET ACFT CTC RAMP CONTROL PRIOR TO ENGINE START AT GATE OR HARD STAND.

MILITARY CAUTION: NO FIGHTER TRANSIENT SUPPORT AVAILABLE IN ACCORDANCE WITH ACC LSET FLASH SAFETY 06-02. TRANSIENT FIGHTER UNITS SHOULD PROVIDE THEIR OWN MAINTENANCE SUPPORT.

BIRD STRIKE HAZARD ALL RUNWAYS.

MILITARY/COMMUNICATIONS: BEDTIME (ALL CORONET W TANKERS USE 311.0 FOR TANKER-FTR INTER-PLANE ON LAUNCH DAY. AFT DUTY HR DSN 448-8888 613AOC/AMD, FLT MGMT).

MILITARY MISC: WX OPR H24, DSN 449-2251, C808-658-9961.

PPR FM AMGR FOR TRANSPORTATION OF CLASS A OR B EXPLOS IN AND/OR OUT OF HNL.

TFC PAT OVHD ALT 2000 FT, RESTRICTED TO HIANG AND SENTRY ALOHA ACFT.

MILITARY RSTD: TWR APVL RQRD TO USE TWT KILO FROM RWY 4R. TWY R HOLD SHORT APCH ZONE RWY 04L/R AT HOLD LINE. TWY P CLSD TO ACFT OVER 12500 LBS.

APRON TAXILANE 2 EAST END 360 FT CLSD.

MILITARY MISC: ANG – HI ANG AFLD OPS OPR 1500-0300Z MON-FRI AND UTA WKENDS; CLSD SAT, SUN AND HOL.

MILITARY CAUTION: FOD HAZARD EXISTS ON ALL MOVEMENT AREAS E OF TWY S. FIGHTER AIRCRAFT EXERCISE EXTREME CTN WHEN TAXIING.

MILITARY MISC 2 OF 2: WAIVERS WILL BE GRANTED ON EXTREME NEC. IF SHORT NOTICE MSN ESSENTIAL WAIVERS ARE NEC, CTC 150G/CC BY FONE THRU 15 WG COMD POST (15 WG/CP) OR 154 OG/CC FOR HIANG AIRCRAFT. 15 WG COMMAND POST WILL PASS APVL TO HICKAM FLT SVC AND HICKAM RAMP ADZY.
MILITARY RSTD: MIL ACFT OPR DUR BIRD WATCH COND MODERATE (INITIAL TKOF OR FULL STOP LDG ONLY, NO MULTIPLE IFR/VFR APCH) AND SEVERE (TKOF AND LDG PROH WO 15 OG/CC APVL OR 154 OG/CC APVL FOR HIANG ACFT) CTC HIK RAMP, PTD, 15 WG COMD POST, 735 AMC COMD POST, 154 WG COMD POST FOR CURRENT COND.

MILITARY A–GEAR: HOOK MB100(B) LCTD 200 FT FM THLD RY 26R.

MILITARY TRAN ALERT: 15 WG CAN PROVIDE EQPT BUT CREWS MUST PROVIDE OWN PERS WHEN NEEDED.

MILITARY: TO MINIMIZE FOD POTENTIAL, ALL AIRCRAFT SHOULD USE MINIMUM THRUST, SPCLY OUTBOARD ENGINES, WHEN TAXIING PAST THE F–22 ALERT FAC ON TWY T.

TWYS G ADG V AND BELOW POWER IN W/PPR.

MILITARY: ALL ACFT INBD TO HICKAM SHOULD ADDRESS FLT PLAN TO PHIKYXYX.

MILITARY CAUTION: A FOD HAZARD EXISTS ON ALL TAXIWAYS AND RUNWAYS BUT ESPECIALLY ON RUNWAY 4L/22R AND TAXIWAYS NORTH OF RUNWAY 8L/26R.

DUE TO NON–VISIBILITY TWR UNA TO DTRM IF THE FLWG AREAS ARE CLEAR OF OBSTNS AND/OR TFC: PTNS OF TWY J BTN TWY B & RWY 08R; PTNS OF INTER–ISLAND ACFT PRKG RAMP.


RYS 04W/22W AND 08W/26W RECREATIONAL BOATING ACTIVITIESON AND INVOF WATERWAYS.

MILITARY RSTD: UPON ARRIVAL, CREWS WILL PROCEED DIRECTLY TO COMMAND POST (BLDG 2050) AND COMPLETE AN OUTBOUND SETUP SHEET TO FACILITATE DEPARTURE REQUIREMENTS.

MILITARY MISC 1 OF 2: DUE TO SENSITIVITIES OF CITIZENS, FTR ACFT DEP ONLY AUTHORIZED FR 1700–0700Z MON–SAT, AND 1800–0700Z SUN AND HOL. ALL REQ FOR WAIVERS WILL BE SENT TO THE 15/OG/CC OR 154 OG/CC FOR HIANG AIRCRAFT AT LEAST 5 WORKING DAYS IN ADVANCE.

MILITARY MISC: NO COMSEC MATERIAL AVBL THRU HICKAM AIRFIELD OPS.

RMN AT LEAST 1 MILE OFF SHORE OF WAIKIKI DIAMOND HEAD KOKO HEAD & EWA BEACH. ARR RWY 08L; FLY ILS APCH PROC OR A CLOSE–IN BASE LEG RMNG OVER CNTR OF PEARL HARBOR CHNL. ARR 26L/R; RMN AT TFC PAT ALTS AS LONG AS PSBL BFR BNG DSCNT FOR LNDG.

MILITARY RSTD: ALL TRAN ACFT NOT ON AN AMC/TWCF MSN AND HOME STN ACFT TERMINATING AT JBPH–H, WILL PROVIDE A 3 HR OUT CALL (COMM 808–448–6900) AS WELL AS A 20–30 MIN OUT CALL ON 292.5 TO THE 15 WG/CP (KOA CONTROL).

DUE TO LOCATION OF ATCT, CONTROLLERS UNABLE TO DETERMINE WHETHER ACFT ARE ON CORRECT FINAL APCH TO RYS 04L–04R AND 22L–22R.

MILITARY SERVICE–A–GEAR: RWY 4R/22L AND 8R/26L SFC GROOVED WITHIN 10 FT OF A–G SYSTEM. POTENTIAL FOR FTR ACFT TAIL HOOK SKIP EXISTS.

MILITARY SERVICE–FUEL: A++ (MIL; AVBL H24).

WIDE BODY AND 4 ENGINE TBJS LDG ON RY 04R ROLL TO END OF RY, NO LEFT TURN AT TWY K WO APVL. ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF
EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

MILITARY: ALL MIL ACFT WITH VIP CODE 7 OR ABV CTC 15WG COMMAND POST OR RELAY THRU HF/SSB AWY 1 HR OUT TO CFM BLOCKTIME.

MILITARY REMARKS: SEE FLIP AP/3 SUPPLEMENTARY APRT INFO, RTE AND AREA RSTD, AND OAKLAND FIR FLT HAZ.

MILITARY MISC (2 OF 2 CONT’D): LTD WX BRIEF SUPPORT. REMOTE FLT WX BRIEFINGS CTC 17TH WX SQ H24, DSN 315–449–7950/8333, FAX DSN 315–449–8336; 2 HR PN RQR FOR TIMELY BRIEF. OFFICIAL OBSN TAKEN BY FAA. COOPERATIVE WX WATCH PROCEDURES DO NOT EXIST BTW WX AND ATC.

APRON TAXILANE 6 BTWN TWY C AND SOUTH RAMP CLSD EXCEPT GA/FIXED WING LOADING/UNLOADING ONLY.
Kahului, HI
ICAO Identifier PHOG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 20°53′55.135N / 156°25′49.651W
2.2.2 From City: 3 miles E of KAHULUI, HI
2.2.3 Elevation: 55.4 ft
2.2.5 Magnetic Variation: 11E (1990)
2.2.6 Airport Contact: MARVIN MONIZ
1 KAHULUI AIRPORT ROAD, UNIT 5
KAHULUI, HI 96732
(808–872–3808)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 35
2.12.3 Dimensions: 4980 ft x 150 ft
2.12.4 PCN: 48 F/C/X/T
2.12.5 Coordinates: 20°53′–20.9058N / 156°26′–10.7497W
2.12.6 Threshold Elevation: 55.3 ft
2.12.6 Touchdown Zone Elevation: 55.4 ft
2.12.1 Designation: 20
2.12.2 True Bearing: 215
2.12.3 Dimensions: 6998 ft x 150 ft
2.12.4 PCN: 48 F/C/X/T
2.12.5 Coordinates: 20°54′–20.9058N / 156°26′–10.7497W
2.12.6 Threshold Elevation: 14.3 ft
2.12.6 Touchdown Zone Elevation: 27 ft
2.12.1 Designation: 05
2.12.2 True Bearing: 65
2.12.3 Dimensions: 4980 ft x 150 ft
2.12.4 PCN: 14 F/C/X/T
2.12.5 Coordinates: 20°53′–20.9058N / 156°26′–10.7497W
2.12.6 Threshold Elevation: 22.1 ft
2.12.6 Touchdown Zone Elevation: 22.2 ft
2.12.1 Designation: 23
2.12.2 True Bearing: 245
2.12.3 Dimensions: 4980 ft x 150 ft
2.12.4 PCN: 14 F/C/X/T
2.12.5 Coordinates: 20°54′–13.7155N / 156°25′–25.928W
2.12.6 Threshold Elevation: 17.6 ft
2.12.6 Touchdown Zone Elevation: 18.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 02
2.13.2 Take–off Run Available: 6995 ft
2.13.3 Take–off Distance Available: 6995 ft
2.13.4 Accelerate–Stop Distance Available: 6995 ft
2.13.5 Landing Distance Available: 6995 ft
2.13.1 Designation: 20
2.13.2 Take–off Run Available: 6995 ft
2.13.3 Take–off Distance Available: 6995 ft
2.13.4 Accelerate–Stop Distance Available: 6995 ft
2.13.5 Landing Distance Available: 6995 ft
2.13.1 Designation: 05
2.13.2 Take–off Run Available: 4990 ft
2.13.3 Take–off Distance Available: 4990 ft
2.13.4 Accelerate–Stop Distance Available: 4990 ft
2.13.5 Landing Distance Available: 4990 ft
2.13.1 Designation: 23
2.13.2 Take–off Run Available: 4990 ft
2.13.3 Take–off Distance Available: 4990 ft
2.13.4 Accelerate–Stop Distance Available: 4990 ft
2.13.5 Landing Distance Available: 4990 ft
2.13.1 Designation: H1
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 05
2.14.2 Approach Lighting System:

2.14.1 Designation: 20
2.14.2 Approach Lighting System:

2.14.1 Designation: 23
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P DEP/P IC (SOUTH)
2.18.3 Channel: 119.5
2.18.5 Hours of Operation: 0600–2300

2.18.1 Service Designation: APCH/P DEP/P IC (NORTH)
2.18.3 Channel: 120.2
2.18.5 Hours of Operation: 0600–2300

2.18.1 Service Designation: APCH/P DEP/P IC (SOUTH)
2.18.3 Channel: 225.4
2.18.5 Hours of Operation: 0600–2300

2.18.1 Service Designation: APCH/P DEP/P IC (NORTH)
2.18.3 Channel: 322.4
2.18.5 Hours of Operation: 0600–2300
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 279.6

AD 2.19 Radio Navigation and Landing Aids

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′29.5489N / 156°25′22.344W
2.19.6 Site Elevation: 49.5 ft

2.19.1 ILS Type: Localizer for runway 02. Magnetic variation: 11E
2.19.2 ILS Identification: OGG
2.19.5 Coordinates: 20°54′22.344W
2.19.6 Site Elevation: 11.1 ft

General Remarks:
ACCESS TO HELIPAD FM TWY C ONLY.

ACFT OVR 30,000 LB LDG ON RY 02/20 UNA TO TURN OFF ONTO RY 05/23 DUE TO PAVEMENT COND.

MIGRATORY BIRD ACTIVITY BLO 1500 FT WI 5 NM RADIUS OF ARPT DURG AUG–MAY.

570’ LGTD TWR APRX 3 MI. W.

COMMUTER AIR TRML RSTRD TO PART 121 AND PART 135 OPRS ONLY. ACFT AT THE TRML SHALL CALL THE TWR ON 121.9 PRIOR TO PUSHBACK.

RY 02/20 SINGLE–BELLY TWIN TANDEM (SBTT) GWT 460,000 LBS.

PPR FOR FIXED WING ACFT OPNS ON HELIPAD DURG NON–OPERATIONAL HRS CALL (808) 872–3880 5:15A –10:00P.

COMMUTER TERMINAL RAMP RESTRICTED TO ACFT 140000 LBS OR LESS.

DUE TO NONVISIBILITY ATCT UNABLE TO DETERMINE IF FLWG AREA IS CLEAR OF OBSTNS AND/OR TFC: PORTION OF TWY F BTN THE COMMUTER AIR TERMINAL & APCH END RY 05.

DUE TO NONVISIBILITY ATCT UNABLE TO PROVIDE ATC SVC BTN ACFT & GROUND VEHICLES ON THE COMMUTER AIR TERMINAL S OF TWY F AND THE HELICOPTER AIR TERMINAL E OF APCH END RY 02.

AREA E OF APCH END RY 02 DESIGNATED AS HELICOPTER OPER AREA. NO FIXED WING ACFT MAY OPER ON HELIPAD DURG OPNL HRS SR–SS.

RAMP AREA E SIDE RY 02 UNDER STATE AUTHORITY. FAA NOT RESPONSIBLE FOR DIRECTION & CTL GND TFC IN AREA.

MIL HEL OPS WITH PPR RSTRD TO THE SW CORNER OF HOT CARGO APRON (HAZMAT) N OF RWY 05/23.
24 HRS PPR FOR DIVISION 1.1,1.2,1.3 EXPLOSIVES AND 4 HRS PPR FOR OTHER HAZARDOUS CARGO IN/OUT OF ARPT; CTC (808) 872–3830 0745–1630 OTHER TIMES (808) 872–3888.
Chicago, IL
Chicago O’Hare Intl
ICAO Identifier KORD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41°58’36.985N / 87°54’29.339W
2.2.2 From City: 14 miles NW of CHICAGO, IL
2.2.3 Elevation: 680 ft
2.2.5 Magnetic Variation: 3W (2010)
2.2.6 Airport Contact: JAMIE RHEE
10510 WEST ZEMKE RO
CHICAGO, IL 60666
(773) 686-8060
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: MAJOR
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IE certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 39
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41°58’53.9601N / 87°54’50.1039W
2.12.6 Threshold Elevation: 655.7 ft
2.12.6 Touchdown Zone Elevation: 658.2 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 222
2.12.3 Dimensions: 8075 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.5 Coordinates: 41°58’–11.718N / 87°52’47.0759W
2.12.6 Threshold Elevation: 654.4 ft
2.12.6 Touchdown Zone Elevation: 654.4 ft

2.12.1 Designation: 09C
2.12.2 True Bearing: 90
2.12.3 Dimensions: 11245 ft x 200 ft
2.12.4 PCN: 131 R/C/W/T
2.12.5 Coordinates: 41°59’–17.9172N / 87°53’24.754W
2.12.6 Threshold Elevation: 673.2 ft
2.12.6 Touchdown Zone Elevation: 673.2 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 11260 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 41°59’–10.1909N / 87°55’36.039W
2.12.6 Threshold Elevation: 668 ft
2.12.6 Touchdown Zone Elevation: 668 ft
2.12.1 Designation: 27L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 11260 ft x 150 ft
2.12.4 PCN: 108 R/C/W/U
2.12.6 Threshold Elevation: 668.2 ft
2.12.6 Touchdown Zone Elevation: 668.2 ft

2.12.1 Designation: 10C
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10800 ft x 200 ft
2.12.4 PCN: 96 R/C/W/T
2.12.6 Threshold Elevation: 650.1 ft
2.12.6 Touchdown Zone Elevation: 650.1 ft

2.12.1 Designation: 28C
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10800 ft x 200 ft
2.12.4 PCN: 96 R/C/W/T
2.12.6 Threshold Elevation: 650.1 ft
2.12.6 Touchdown Zone Elevation: 650.1 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 13000 ft x 150 ft
2.12.4 PCN: 120 R/B/W/T
2.12.5 Coordinates: 41–58–8.6529N / 87–55–1.4244W
2.12.6 Threshold Elevation: 672.1 ft
2.12.6 Touchdown Zone Elevation: 672.1 ft

2.12.1 Designation: 28L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 104 R/B/W/U
2.12.5 Coordinates: 41–57–26.0865N / 87–54–1.0355W
2.12.5 Coordinates: 41–57–26.0865N / 87–54–1.0355W
2.12.6 Threshold Elevation: 658 ft
2.12.6 Threshold Zone Elevation: 658 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: 96 R/C/W/T
2.12.6 Threshold Elevation: 680 ft
2.12.6 Touchdown Zone Elevation: 680 ft

2.12.1 Designation: 10X
2.12.2 True Bearing: 90
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN: ///
2.12.5 Coordinates: --- / ---
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

2.13.1 Designation: 04L
2.13.2 Take–off Run Available: 7500 ft
2.13.3 Take–off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft

2.13.1 Designation: 22R
2.13.2 Take–off Run Available: 8075 ft
2.13.3 Take–off Distance Available: 8075 ft
2.13.4 Accelerate–Stop Distance Available: 8075 ft
2.13.5 Landing Distance Available: 8075 ft

2.13.1 Designation: 04R
2.13.2 Take–off Run Available: 8075 ft
2.13.3 Take–off Distance Available: 8075 ft
2.13.4 Accelerate–Stop Distance Available: 8075 ft
2.13.5 Landing Distance Available: 8075 ft

2.13.1 Designation: 22L
2.13.2 Take–off Run Available: 8075 ft
2.13.3 Take–off Distance Available: 8075 ft
2.13.4 Accelerate–Stop Distance Available: 8075 ft
2.13.5 Landing Distance Available: 8075 ft

2.13.1 Designation: 09C
2.13.2 Take–off Run Available: 11245 ft
2.13.3 Take–off Distance Available: 11245 ft
2.13.4 Accelerate–Stop Distance Available: 11245 ft
2.13.5 Landing Distance Available: 11245 ft

2.13.1 Designation: 27C
2.13.2 Take–off Run Available: 11245 ft
2.13.3 Take–off Distance Available: 11245 ft
2.13.4 Accelerate–Stop Distance Available: 11245 ft
2.13.5 Landing Distance Available: 11245 ft

2.13.1 Designation: 27R
2.13.2 Take–off Run Available: 7500 ft
2.13.3 Take–off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft

2.13.1 Designation: 09L
2.13.2 Take–off Run Available: 7500 ft
2.13.3 Take–off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft

2.13.1 Designation: 09R
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 27L
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 10C
2.13.2 Take–off Run Available: 10801 ft
2.13.3 Take–off Distance Available: 10801 ft
2.13.4 Accelerate–Stop Distance Available: 10801 ft
2.13.5 Landing Distance Available: 10801 ft

2.13.1 Designation: 28C
2.13.2 Take–off Run Available: 10801 ft
2.13.3 Take–off Distance Available: 10801 ft
2.13.4 Accelerate–Stop Distance Available: 10801 ft
2.13.5 Landing Distance Available: 10801 ft

2.13.1 Designation: 28R
2.13.2 Take–off Run Available: 13000 ft
2.13.3 Take–off Distance Available: 13000 ft
2.13.4 Accelerate–Stop Distance Available: 13000 ft
2.13.5 Landing Distance Available: 13000 ft

2.13.1 Designation: 10L
2.13.2 Take–off Run Available: 13000 ft
2.13.3 Take–off Distance Available: 13000 ft
2.13.4 Accelerate–Stop Distance Available: 13000 ft
2.13.5 Landing Distance Available: 13000 ft

2.13.1 Designation: 28L
2.13.2 Take–off Run Available: 12246 ft
2.13.3 Take–off Distance Available: 12246 ft
2.13.4 Accelerate–Stop Distance Available: 12246 ft
2.13.5 Landing Distance Available: 12246 ft

2.13.1 Designation: 10X
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: H1
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.14 Approach and Runway Lighting

2.14.1 Designation: 04L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 09C
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 27C
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 09L
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 09R
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 27R
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 28C
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 10C
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 10X
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 10R
2.14.2 Approach Lighting System: ALSF2
AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALCP
2.14.3 Channel: 252.1
2.14.5 Hours of Operation:
2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 121.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 121.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/S
2.14.3 Channel: 119.25
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D – ATIS
2.14.3 Channel: 135.4
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: D – ATIS
2.14.3 Channel: 282.225
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:
2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:
2.14.1 Service Designation: GND METERING
2.14.3 Channel: 121.675
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P (TWR SOUTH)
2.14.3 Channel: 118.05
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P (TWR CENTER OUTBOUND)
2.14.3 Channel: 121.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (TWR CENTER INBOUND)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 126.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR NORTH)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (TWR NORTH)
2.14.3 Channel: 124.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 134.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 126.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 132.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (TWR CENTER)
2.14.3 Channel: 133
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 348
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S (TWR CENTER)
2.14.3 Channel: 127.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR CENTER)
2.14.3 Channel: 119.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR CENTER RWY 10C)
2.14.3 Channel: 119.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR SOUTH RWY 10R)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (TWR SOUTH RWY 28L)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: VFR ADZY
2.14.3 Channel: 126.8
2.14.5 Hours of Operation: 24

2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 3W
2.19.2 ILS Identification: RXZ
2.19.5 Coordinates: 41°58′50.5114N / 87°53′59.027W
2.19.6 Site Elevation: 645.1 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 3W
2.19.2 ILS Identification: RXZ
2.19.5 Coordinates: 41°58′50.729N / 87°54′56.987W
2.19.6 Site Elevation: 656.5 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 3W
2.19.2 ILS Identification: FJU
2.19.5 Coordinates: 41°57′16.8552N / 87°53′44.3489W
2.19.6 Site Elevation: 654.1 ft
<table>
<thead>
<tr>
<th>ILS Type</th>
<th>Magnetic variation</th>
<th>ILS Identification</th>
<th>Coordinates</th>
<th>Site Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glide Slope for runway 22L</td>
<td>3W</td>
<td>FJU</td>
<td>41°58′16.1967N / 87°52′41.7631W</td>
<td>646.6 ft</td>
</tr>
<tr>
<td>Localizer for runway 22L</td>
<td>3W</td>
<td>LQQ</td>
<td>41°58′0.7989N / 87°52′52.6077W</td>
<td>645.9 ft</td>
</tr>
<tr>
<td>Glide Slope for runway 09C</td>
<td>3W</td>
<td>OYG</td>
<td>41°59′22.8017N / 87°56′7.1564W</td>
<td>673 ft</td>
</tr>
<tr>
<td>Localizer for runway 09C</td>
<td>3W</td>
<td>OYG</td>
<td>41°59′21.8838N / 87°56′5.4506W</td>
<td>666.9 ft</td>
</tr>
<tr>
<td>Glide Slope for runway 09C</td>
<td>3W</td>
<td>OYG</td>
<td>41°59′17.8887N / 87°56′5.0459W</td>
<td>680.3 ft</td>
</tr>
<tr>
<td>Inner Marker for runway 09C</td>
<td>3W</td>
<td>OYG</td>
<td>41°59′17.9166N / 87°53′10.9825W</td>
<td>656.2 ft</td>
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<td>Glide Slope for runway 27C</td>
<td>3W</td>
<td>OYG</td>
<td>41°59′22.2017N / 87°56′7.1564W</td>
<td>673 ft</td>
</tr>
<tr>
<td>DME for runway 27C</td>
<td>3W</td>
<td>UYJ</td>
<td>41°59′21.9035N / 87°53′38.9229W</td>
<td>645.3 ft</td>
</tr>
<tr>
<td>Localizer for runway 27C</td>
<td>3W</td>
<td>UYJ</td>
<td>41°59′17.9169N / 87°56′7.0322W</td>
<td>681.9 ft</td>
</tr>
<tr>
<td>Glide Slope for runway 09L</td>
<td>3W</td>
<td>SAJ</td>
<td>42°0′14.0985N / 87°55′48.2323W</td>
<td>669.5 ft</td>
</tr>
<tr>
<td>Inner Marker for runway 09L</td>
<td>3W</td>
<td>SAJ</td>
<td>42°0′10.1874N / 87°53′43.3254W</td>
<td>660.9 ft</td>
</tr>
<tr>
<td>Glide Slope for runway 09L</td>
<td>3W</td>
<td>SAJ</td>
<td>42°0′10.188N / 87°56′38.906W</td>
<td>666.6 ft</td>
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<tr>
<td>Localizer for runway 09L</td>
<td>3W</td>
<td>SAJ</td>
<td>42°0′10.1934N / 87°56′47.4231W</td>
<td>668.8 ft</td>
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<tr>
<td>Glide Slope for runway 27R</td>
<td>3W</td>
<td>ABU</td>
<td>42°0′14.0985N / 87°55′48.2323W</td>
<td>669.5 ft</td>
</tr>
<tr>
<td>DME for runway 27R</td>
<td>3W</td>
<td>ABU</td>
<td>42°0′10.1874N / 87°53′43.3254W</td>
<td>660.9 ft</td>
</tr>
<tr>
<td>Glide Slope for runway 27R</td>
<td>3W</td>
<td>ABU</td>
<td>42°0′14.0985N / 87°55′48.2323W</td>
<td>669.5 ft</td>
</tr>
</tbody>
</table>
2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–53.0321N / 87°–53°–44.3196W
2.19.6 Site Elevation: 642.4 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–34.3515N / 87°–53°–34.3515W
2.19.6 Site Elevation: 646.5 ft

2.19.1 ILS Type: Inner Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–1.8506N / 87°–53°–9.1944W
2.19.6 Site Elevation: 641.5 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.5 Coordinates: 41°–59°–7.8117N / 87°–54°–51.2862W
2.19.6 Site Elevation: 658.2 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.6 Site Elevation: 642.8 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
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°–7.8117N / 87°–54°–51.2862W
2.19.6 Site Elevation: 658.2 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.6 Site Elevation: 653.7 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 3W
2.19.2 ILS Identification: JAV
2.19.6 Site Elevation: 653.7 ft

2.19.1 ILS Type: DME for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–53.0321N / 87°–53°–44.3196W
2.19.6 Site Elevation: 642.4 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–34.3515N / 87°–53°–34.3515W
2.19.6 Site Elevation: 646.5 ft

2.19.1 ILS Type: Inner Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–1.8506N / 87°–53°–9.1944W
2.19.6 Site Elevation: 641.5 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.6 Site Elevation: 653.7 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–6.8111N / 87°–53°–34.3515W
2.19.6 Site Elevation: 646.5 ft

2.19.1 ILS Type: Inner Marker for runway 27L. Magnetic variation: 3W
2.19.2 ILS Identification: IAC
2.19.5 Coordinates: 41°–59°–1.8506N / 87°–53°–9.1944W
2.19.6 Site Elevation: 641.5 ft

2.19.1 ILS Type: Localizer for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.6 Site Elevation: 663 ft

2.19.1 ILS Type: Glide Slope for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.6 Site Elevation: 674.3 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°–56.803N / 87°–52°–57.2925W
2.19.6 Site Elevation: 646.3 ft

2.19.1 ILS Type: Localizer for runway 10C. Magnetic variation: 3W
2.19.2 ILS Identification: SXH
2.19.5 Coordinates: 41°–57°–56.803N / 87°–52°–57.2925W
2.19.6 Site Elevation: 674.3 ft

2.19.1 ILS Type: DME for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41°–58°–0.9714N / 87°–56°–9.15W
2.19.6 Site Elevation: 689.3 ft

2.19.1 ILS Type: Glide Slope for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41°–57°–58.7451N / 87°–53°–19.1677W
2.19.6 Site Elevation: 648 ft

2.19.1 ILS Type: Inner Marker for runway 28C. Magnetic variation: 3W
2.19.2 ILS Identification: VZE
2.19.5 Coordinates: 41°–57°–58.7451N / 87°–53°–19.1677W
2.19.6 Site Elevation: 648 ft
<table>
<thead>
<tr>
<th>2.19.1 ILS Type</th>
<th>Localizer for runway 28C. Magnetic variation: 3W</th>
<th>2.19.5 Coordinates: 41−58−6.356N / 87−56−6.8801W</th>
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<tbody>
<tr>
<td>2.19.2 ILS Identification</td>
<td>VZE</td>
<td>2.19.6 Site Elevation: 679.1 ft</td>
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<tr>
<td>2.19.5 Coordinates</td>
<td>41−57−56.5013N / 87−56−6.8848W</td>
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<tr>
<td>2.19.6 Site Elevation</td>
<td>676.4 ft</td>
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<tr>
<td>2.19.1 ILS Type</td>
<td>Localizer for runway 10L. Magnetic variation: 3W</td>
<td>2.19.5 Coordinates: 41−58−8.356N / 87−56−6.8801W</td>
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<tr>
<td>2.19.2 ILS Identification</td>
<td>MED</td>
<td>2.19.6 Site Elevation: 669.6 ft</td>
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<tr>
<td>2.19.5 Coordinates</td>
<td>41−58−5.6721N / 87−52−41.6854W</td>
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<td>2.19.6 Site Elevation</td>
<td>665.3 ft</td>
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<td>2.19.1 ILS Type</td>
<td>Glide Slope for runway 10L. Magnetic variation: 3W</td>
<td>2.19.5 Coordinates: 41−58−8.356N / 87−56−6.8801W</td>
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<tr>
<td>2.19.2 ILS Identification</td>
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<td>2.19.5 Coordinates</td>
<td>41−58−4.3877N / 87−55−38.7659W</td>
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<td>2.19.6 Site Elevation</td>
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<tr>
<td>2.19.1 ILS Type</td>
<td>Inner Marker for runway 10L. Magnetic variation: 3W</td>
<td>2.19.5 Coordinates: 41−58−8.356N / 87−56−6.8801W</td>
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<tr>
<td>2.19.2 ILS Identification</td>
<td>MED</td>
<td>2.19.6 Site Elevation: 649.9 ft</td>
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<td>2.19.5 Coordinates</td>
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<tr>
<td>2.19.1 ILS Type</td>
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<td>2.19.5 Coordinates: 41−58−8.356N / 87−56−6.8801W</td>
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<tr>
<td>2.19.2 ILS Identification</td>
<td>MED</td>
<td>2.19.6 Site Elevation: 649.9 ft</td>
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<td>2.19.5 Coordinates</td>
<td>41−58−8.6818N / 87−52−39.6951W</td>
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<tr>
<td>2.19.6 Site Elevation</td>
<td>644.9 ft</td>
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<tr>
<td>2.19.1 ILS Type</td>
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<td>2.19.5 Coordinates: 41−58−8.356N / 87−56−6.8801W</td>
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<td>2.19.2 ILS Identification</td>
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<td>2.19.6 Site Elevation: 656.1 ft</td>
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<td>2.19.5 Coordinates</td>
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<td>2.19.6 Site Elevation</td>
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<tr>
<td>2.19.1 ILS Type</td>
<td>Localizer for runway 28R. Magnetic variation: 4W</td>
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<td>2.19.2 ILS Identification</td>
<td>VQX</td>
<td>2.19.6 Site Elevation: 654 ft</td>
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<tr>
<td>2.19.5 Coordinates</td>
<td>41−58−22.2258N / 87−54−14.1801W</td>
<td></td>
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<tr>
<td>2.19.6 Site Elevation</td>
<td>680.2 ft</td>
<td></td>
</tr>
</tbody>
</table>
General Remarks:
TXL BB2 CLSD TO WINGS PAN MORE THAN 118 FT

BE ALERT: TWY S–1 OUTBD OR EASTBOUND ONLY, TWY S–2 INBOUND OR WESTBOUND ONLY, TWYS P1, P2, P3, P5, AND P6 NORTHBOUND ONLY, TWY E1, E2, AND E4 SOUTHBOUND ONLY, TWY E3 WESTBOUND ONLY FROM 9C–27C.


BIRDS ON & INVOF ARPT; PYROTECHNICS & BIRD CANNONS IN USE.

LINE UP AND WAIT AUTHORIZATION IN EFFECT BTN SS AND SR AT THE FLWG INTS: RWY 28R AT TWY GG, TWY EE AND TWY N5; RWY 10L AT TWY DD, TWY CC AND TWY BB; RWY 27C AT TWY TT; RWY 9C AT TWY FF; RWY 27L AT TWY TT; RWY 9R AT TWY BB AND TWY FF. THESE RWYS WILL BE USED FOR DEPS ONLY WHEN EXERCISING THE PROVISIONS OF THIS AUTHORIZATION.

BE ALERT: THE NORTHEAST/SOUTHWEST PORTION OF TWY YY IS NOT VSBL FM THE CENTER ATCT.

RWY STATUS LGTS ARE IN OPN.

MAG DEVIATION PSBL IMT W OF TWY Y & RWY 22L APCH ON TWY N.

EAST AND WEST GATES ARE MANNED 24 HRS A DAY.

ACFT ARE NOT PMTD TO STOP ON EITHER TWY A OR B BRIDGES.


SEE LND & HOLD SHORT OPS SECTION.


PAEW NEAR VARIOUS TWYS.


ATCT IS AUTH TO CONDUCT SIMUL DEPS FM RWY 04L/04R, RWY 22L/22R, RWY 09R WITH RWY 09L OR RWY 10L, RWY 09C WITH RWY 09L OR RWY 10L, RWY 10C WITH RWY 09R OR RWY 09C, RWY 27L WITH RWY 27R
OR RWY 28R, RWY 27C WITH RWY 27R OR RWY 28R, RWY 28C WITH RWY 27L OR RWY 27C WITH CRS DIVERGENCE BEGINNING NO LATER THAN 4 MILES FM RWY END.

B747–8 OPS NOT AUTHORIZED ON RWY 09R/27L, 09L/27R & 10R/28L.

PERIODIC FIRE DEPT TRNG AT N SECTOR OF THE ARPT.

NOISE ABATEMENT PROC IN EFFECT FM 2200 TO 0700; CTC AMGR – 773–686–2255.

DVRSN ACRS WO A PRESENCE AT ORD SHOULD CTC ARPT OPNS 773–686–2255 PRIOR TO DIVERTING TO THE EXTENT PRACTICAL AND PRVD: CO, FLIGHT OPS CTC INFO, ACFT TYPE, PERSONS OB, INTL OR DOMESTIC, ANY GND HANDLER AGRMTS IN PLACE.


ALL PART 91 & UNSKED PART 125, 133 & 135 CHARTER OPERATORS CTC SIGNATURE FLIGHT SUPPORT AT 773–686–7000 REGARDING NEW SECURITY REGULATIONS PRIOR TO DEP.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
Indianapolis, IN
Indianapolis Intl
ICAO Identifier KIND

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39°43′2.3″N / 86°17′40.7″W
2.2.2 From City: 7 miles SW of INDIANAPOLIS, IN
2.2.3 Elevation: 796.2 ft
2.2.5 Magnetic Variation: 5W (2015)
2.2.6 Airport Contact: MARIO RODRIGUEZ
7800 COL. H. WEIR COOK
MEMORIAL DR.
INDIANAPOLIS, IN 46241
(317) 487-9594
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R FF Index
ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11200 ft x 150 ft
2.12.4 PCN: 103 R/B/W/T
2.12.5 Coordinates: 39°42′–39.8737N / 86°18′–15.906W
2.12.6 Threshold Elevation: 788.8 ft
2.12.6 Touchdown Zone Elevation: 790.7 ft

2.12.1 Designation: 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′–11.2875N / 86°16′–46.1248W
2.12.6 Threshold Elevation: 787.6 ft
2.12.6 Touchdown Zone Elevation: 790.1 ft

AD 2.13 Declared Distances
2.13.1 Designation: 05L
2.13.2 Take–off Run Available: 11200 ft
2.13.3 Take–off Distance Available: 11200 ft
2.13.4 Accelerate–Stop Distance Available: 11200 ft
2.13.5 Landing Distance Available: 11200 ft

2.13.1 Designation: 23R
2.13.2 Take–off Run Available: 11200 ft
2.13.3 Take–off Distance Available: 11200 ft
2.13.4 Accelerate–Stop Distance Available: 11200 ft
2.13.5 Landing Distance Available: 11200 ft

2.13.1 Designation: 05R
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft
2.13.1 Designation: 23L
2.13.2 Take-off Run Available: 10000 ft
2.13.3 Take-off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 14
2.13.2 Take-off Run Available: 7278 ft
2.13.3 Take-off Distance Available: 7278 ft
2.13.4 Accelerate–Stop Distance Available: 7278 ft
2.13.5 Landing Distance Available: 7278 ft

2.13.1 Designation: 32
2.13.2 Take-off Run Available: 7278 ft
2.13.3 Take-off Distance Available: 7278 ft
2.13.4 Accelerate–Stop Distance Available: 7278 ft
2.13.5 Landing Distance Available: 7278 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 05L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 23R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 05R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 23L
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P (WEST OF ACTIVE RWY)
2.18.3 Channel: 124.65

2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (EAST OF ACTIVE RWY)
2.14.3 Channel: 127.15

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 317.8

2.14.1 Service Designation: APCH/P IC
2.14.3 Channel: 128.175

2.14.1 Service Designation: CD/DEP/P
2.14.3 Channel: 257.8

2.14.1 Service Designation: CLASS C (WEST OF ACTIVE RWY)
2.14.3 Channel: 124.65

2.14.1 Service Designation: CLASS C (EAST)
2.14.3 Channel: 124.95

2.14.1 Service Designation: CLASS C (EAST OF ACTIVE RWY)
2.14.3 Channel: 127.15

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 134.25

2.14.1 Service Designation: DEP/P (WEST)
2.14.3 Channel: 119.05

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 124.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5

2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243

2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9

2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.8

2.14.5 Hours of Operation:

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8

2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39°43′−49°.0283N / 86°−17′−25.2797W
2.19.6 Site Elevation: 787.8 ft

2.19.1 ILS Type: Glide Slope for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39°42′−51.3513N / 86°−17′−27.5671W
2.19.6 Site Elevation: 797.6 ft

2.19.1 ILS Type: Inner Marker for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39°42′−15.7098N / 86°−19′−24.4367W
2.19.6 Site Elevation: 735.4 ft

2.19.1 ILS Type: Localizer for runway 05L. Magnetic variation: 5W
2.19.2 ILS Identification: IND
2.19.5 Coordinates: 39°42′−18.3778N / 86°−16′−37.0825W
2.19.6 Site Elevation: 785.5 ft

2.19.1 ILS Type: DME for runway 23R. Magnetic variation: 5W
2.19.2 ILS Identification: UZK
2.19.5 Coordinates: 39°43′−51.3513N / 86°−17′−25.2797W
2.19.6 Site Elevation: 797.6 ft

2.19.1 ILS Type: Glide Slope for runway 23R. Magnetic variation: 5W
2.19.2 ILS Identification: UZK
2.19.5 Coordinates: 39°43′−36.5113N / 86°−19′−48.4342W
2.19.6 Site Elevation: 772.4 ft

2.19.1 ILS Type: Localizer for runway 23R. Magnetic variation: 5W
2.19.2 ILS Identification: UZK
2.19.5 Coordinates: 39°42′−15.9186N / 86°−19′−23.9666W
2.19.6 Site Elevation: 736.6 ft

2.19.1 ILS Type: DME for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39°43′−20.1868N / 86°−16′−39.5353W
2.19.6 Site Elevation: 802 ft

2.19.1 ILS Type: Glide Slope for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39°43′−15.9186N / 86°−19′−23.9666W
2.19.6 Site Elevation: 788.5 ft

2.19.1 ILS Type: Inner Marker for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39°41′−52.0586N / 86°−18′−27.1359W
2.19.6 Site Elevation: 776.4 ft

2.19.1 ILS Type: Localizer for runway 05R. Magnetic variation: 5W
2.19.2 ILS Identification: OQV
2.19.5 Coordinates: 39°43′−18.3778N / 86°−16′−37.0825W
2.19.6 Site Elevation: 785.5 ft
2.19.1 ILS Type: DME for runway 23L. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.6 Site Elevation: 802 ft

2.19.1 ILS Type: Glide Slope for runway 23L. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.5 Coordinates: 39–43–2.4585N / 86–16–54.2858W
2.19.6 Site Elevation: 785 ft

2.19.1 ILS Type: Localizer for runway 23L. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.5 Coordinates: 39–41–53.5322N / 86–18–25.2565W
2.19.6 Site Elevation: 777.3 ft

2.19.1 ILS Type: Glide Slope for runway 14. Magnetic variation: 5W
2.19.2 ILS Identification: FVJ
2.19.5 Coordinates: 39–43–2.4585N / 86–16–54.2858W
2.19.6 Site Elevation: 768.5 ft

2.19.1 ILS Type: Localizer for runway 14. Magnetic variation: 5W
2.19.2 ILS Identification: BJP
2.19.5 Coordinates: 39–43–5.64N / 86–16–4.06W
2.19.6 Site Elevation: 768.5 ft

2.19.1 ILS Type: Glide Slope for runway 32. Magnetic variation: 5W
2.19.2 ILS Identification: COA
2.19.6 Site Elevation: 781.7 ft

2.19.1 ILS Type: Localizer for runway 32. Magnetic variation: 5W
2.19.2 ILS Identification: COA
2.19.6 Site Elevation: 782.3 ft

**General Remarks:**
TWY V IS NOT AVBL FOR ACR OPS.

TWY H RUNS CONTIGUOUS AT NORTHEAST RAMP.

LARGE FLOCKS OF BIRDS ON & INV OF ARPT.

NOISE ABATEMENT PROCEDURES IN EFFECT CTC ARPT MGR.

PRIM STUDENT TGL NOT PMTD.

BE ALERT TO CLOSE PROXIMITY OF RWY 14/32 TO NORTHEAST RAMP.
Wichita, KS
Wichita Mid-Continent
ICAO Identifier KICT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 37–38–59.8N / 97–25–59W
2.2.2 From City: 5 miles SW of WICHITA, KS
2.2.3 Elevation: 1332.5 ft
2.2.5 Magnetic Variation: 4E (2015)
2.2.6 Airport Contact: MR. VICTOR WHITE, A.A.E.
2173 AIR CARGO ROAD
WICHITA, KS 67209
(316–946–4700)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 10301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 37–38–6.0674N / 97–26–45.5905W
2.12.6 Threshold Elevation: 1312.6 ft
2.12.6 Touchdown Zone Elevation: 1314.2 ft

2.12.1 Designation: 19R
2.12.2 True Bearing: 20
2.12.3 Dimensions: 10301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 37–38–41.763N / 97–26–1.7928W
2.12.6 Threshold Elevation: 1329.7 ft
2.12.6 Touchdown Zone Elevation: 1329.7 ft

2.12.1 Designation: 19L
2.12.2 True Bearing: 200
2.12.3 Dimensions: 7301 ft x 150 ft
2.12.4 PCN: 66 R/B/W/T
2.12.6 Threshold Elevation: 1319.8 ft
2.12.6 Touchdown Zone Elevation: 1319.9 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 330
2.12.3 Dimensions: 6301 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.6 Threshold Elevation: 1332.1 ft
2.12.6 Touchdown Zone Elevation: 1332.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01L
2.13.2 Take-off Run Available: 10301 ft
2.13.3 Take-off Distance Available: 10301 ft
2.13.4 Accelerate–Stop Distance Available: 10301 ft
2.13.5 Landing Distance Available: 10301 ft

2.13.1 Designation: 19R
2.13.2 Take-off Run Available: 10301 ft
2.13.3 Take-off Distance Available: 10301 ft
2.13.4 Accelerate–Stop Distance Available: 10301 ft
2.13.5 Landing Distance Available: 10301 ft

2.13.1 Designation: 19L
2.13.2 Take-off Run Available: 7301 ft
2.13.3 Take-off Distance Available: 7301 ft
2.13.4 Accelerate–Stop Distance Available: 7301 ft
2.13.5 Landing Distance Available: 7301 ft

2.13.1 Designation: 01R
2.13.2 Take–off Run Available: 7301 ft
2.13.3 Take–off Distance Available: 7301 ft
2.13.4 Accelerate–Stop Distance Available: 7301 ft
2.13.5 Landing Distance Available: 7301 ft

2.13.1 Designation: 32
2.13.2 Take–off Run Available: 6301 ft
2.13.3 Take–off Distance Available: 6301 ft
2.13.4 Accelerate–Stop Distance Available: 6301 ft
2.13.5 Landing Distance Available: 6301 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Service Designation: APCH/P (E IAB BLW 5000 FT)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P DEP/P (010–190)
2.18.3 Channel: 290.275
2.18.5 Hours of Operation: 24

Federal Aviation Administration Twenty–Sixth Edition
2.14.3 Channel: 134.85
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (010–190 A B V 4000 FT)
2.14.3 Channel: 290.275
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (191–009)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:
2.14.1 Service Designation: GND/P
2.14.3 Channel: 243
2.14.5 Hours of Operation:
2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.2
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 4E
2.19.2 ILS Identification: TWI
2.19.5 Coordinates: 37–38–16.7093N / 97–26–46.0112W
2.19.6 Site Elevation: 1310.4 ft

2.19.1 ILS Type: Outer Marker for runway 01L. Magnetic variation: 4E
2.19.2 ILS Identification: TWI
2.19.5 Coordinates: 37–33–33.9515N / 97–28–51.777W
2.19.6 Site Elevation: 1310 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 4E
2.19.2 ILS Identification: HOV
2.19.5 Coordinates: 37–39–33.86N / 97–26–10.83W
2.19.6 Site Elevation: 1325.7 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 4E
2.19.2 ILS Identification: HOV
2.19.5 Coordinates: 37–37–54.74N / 97–26–50.78W
2.19.6 Site Elevation: 1319.4 ft

2.19.1 ILS Type: Outer Marker for runway 19R. Magnetic variation: 4E
2.19.2 ILS Identification: HOV
2.19.5 Coordinates: 37–44–16.6132N / 97–24–0.9938W
2.19.6 Site Elevation: 1325.7 ft

2.19.1 ILS Type: DME for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.6 Site Elevation: 1326.6 ft

2.19.1 ILS Type: Glide Slope for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.6 Site Elevation: 1326.6 ft

2.19.1 ILS Type: Glide Slope for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.6 Site Elevation: 1326.6 ft

2.19.1 ILS Type: Localizer for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.6 Site Elevation: 1307 ft
2.19.1 ILS Type: Outer Marker for runway 01R. Magnetic variation: 4E
2.19.2 ILS Identification: ICT
2.19.5 Coordinates: 37°34′41.4971″N / 97°27′21.0931″W
2.19.6 Site Elevation: 

2.19.1 ILS Type: DME for runway 19L. Magnetic variation: 4E
2.19.2 ILS Identification: MVP
2.19.5 Coordinates: 37°38′21.53N / 97°25′43.26W
2.19.6 Site Elevation: 1320 ft

2.19.1 ILS Type: Glide Slope for runway 19L. Magnetic variation: 4E
2.19.2 ILS Identification: MVP
2.19.5 Coordinates: 37°39′30.78N / 97°25′31.79W
2.19.6 Site Elevation: 1312.1 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 4E
2.19.2 ILS Identification: MVP
2.19.5 Coordinates: 37°38′21.32N / 97°25′40.42W
2.19.6 Site Elevation: 1318.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 7E
2.19.2 Navigation Aid Identification: ICT
2.19.5 Coordinates: 37°44′42.9245N / 97°35′1.79W
2.19.6 Site Elevation: 1470.5 ft

General Remarks:
CALL FOR PUSHBACK NOT REQUIRED.

TWY L AND L1 CLSD TO ACFT WITH WINGSPAN MORE THAN 118FT.

TWY H CLSD TO ACFT WITH WINGSPAN MORE THAN 75 FT. TWY H CONGESTED AND NOT VISIBLE FROM ATCT; USE CAUTION.

NOTE: SEE SPECIAL NOTICES—CONTINUOUS POWER FACILITIES.

ACFT ENG RUNS ABV IDLE NOT APPROVED ON ACFT PRKG RAMPS.

TWYS F, G, H, J, P AND ALL PARKING RAMPS ARE NON–MOVEMENT AREAS.

PPR REQUIRED FOR ACFT CARRYING CLASS 1 – DIVISION 1.1; 1.2 OR 1.3 EXPLOSIVES AS DEFINED BY 49 CFR 173.50 OR AS AMENDED.

TWY P CLSD TO ACFT WITH WINGSPAN MORE THAN 79FT.

MIGRATORY BIRDS ON AND INV OF ARPT.

ATCT HAS LIMITED VISIBILITY OF TERMINAL GATES 1–8.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL.
**Covington, KY**
**Cincinnati/Northern Kentucky Intl**
**ICAO Identifier KCVG**

**AD 2.2 Aerodrome geographical and administrative data**
- **2.2.1 Reference Point:** 39°2′55.815″N / 84°40′4.155″W
- **2.2.2 From City:** 8 miles SW of COVINGTON, KY
- **2.2.3 Elevation:** 896.1 ft
- **2.2.5 Magnetic Variation:** 6W (2020)
- **2.2.6 Airport Contact:** CANDACE MCGRAW
  PO BOX 752000
  CINCINNATI, OH 45275
  (859) 767-3151
- **2.2.7 Traffic:** IFR/VFR

**AD 2.3 Attendance Schedule**
- **2.3.1 All Months, All Days, All Hours**

**AD 2.4 Handling Services and Facilities**
- **2.4.1 Cargo Handling Facilities:** YES
- **2.4.2 Fuel Types:** 100LL,A
- **2.4.5 Hangar Space:** YES
- **2.4.6 Repair Facilities:** MAJOR

**AD 2.6 Rescue and Firefighting Services**
- **2.6.1 Aerodrome Category for Firefighting:** ARFF Index
  I C certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**
- **2.12.1 Designation:** 09
- **2.12.2 True Bearing:** 90°
- **2.12.3 Dimensions:** 12001 ft x 150 ft
- **2.12.4 PCN:** 101 R/B/W/T
- **2.12.5 Coordinates:** 39°2′–46.9049″N / 84°41′–42.3528″W
- **2.12.6 Threshold Elevation:** 883.1 ft
- **2.12.6 Touchdown Zone Elevation:** 883.2 ft

- **2.12.1 Designation:** 27
- **2.12.2 True Bearing:** 270°
- **2.12.3 Dimensions:** 12001 ft x 150 ft
- **2.12.4 PCN:** 101 R/B/W/T
- **2.12.5 Coordinates:** 39°2′–46.5417″N / 84°39′–10.2436″W
- **2.12.6 Threshold Elevation:** 874.8 ft
- **2.12.6 Touchdown Zone Elevation:** 874.8 ft

- **2.12.1 Designation:** 36C
- **2.12.2 True Bearing:** 0°
- **2.12.3 Dimensions:** 11000 ft x 150 ft
- **2.12.4 PCN:** 112 F/C/W/T
- **2.12.5 Coordinates:** 39°2′–4.3552″N / 84°40′–7.4709″W
- **2.12.6 Threshold Elevation:** 840.7 ft
- **2.12.6 Touchdown Zone Elevation:** 850.3 ft

- **2.12.1 Designation:** 18C
- **2.12.2 True Bearing:** 180°
- **2.12.3 Dimensions:** 11000 ft x 150 ft
- **2.12.4 PCN:** 112 F/C/W/T
- **2.12.5 Coordinates:** 39°3′–53.0734″N / 84°40′–7.0233″W
- **2.12.6 Threshold Elevation:** 874.6 ft
- **2.12.6 Touchdown Zone Elevation:** 874.6 ft

- **2.12.1 Designation:** 18L
- **2.12.2 True Bearing:** 180°
- **2.12.3 Dimensions:** 10000 ft x 150 ft
- **2.12.4 PCN:** 127 R/B/W/T
- **2.12.5 Coordinates:** 39°1′–21.0781″N / 84°38′–48.0048″W
- **2.12.6 Threshold Elevation:** 886.3 ft
- **2.12.6 Touchdown Zone Elevation:** 889.1 ft

- **2.12.1 Designation:** 36R
- **2.12.2 True Bearing:** 0°
- **2.12.3 Dimensions:** 10000 ft x 150 ft
- **2.12.4 PCN:** 127 R/B/W/T
- **2.12.5 Coordinates:** 39°1′–42.2406″N / 84°38′–48.4562″W
- **2.12.6 Threshold Elevation:** 896.1 ft
- **2.12.6 Touchdown Zone Elevation:** 896.1 ft

- **2.12.1 Designation:** 36L
- **2.12.2 True Bearing:** 0°
- **2.12.3 Dimensions:** 8000 ft x 150 ft
- **2.12.4 PCN:** 170 R/B/W/T
- **2.12.5 Coordinates:** 39°2′–56.1037″N / 84°41′–1.7608″W
- **2.12.6 Threshold Elevation:** 872.6 ft
- **2.12.6 Touchdown Zone Elevation:** 872.7 ft

- **2.12.1 Designation:** 36R
- **2.12.2 True Bearing:** 0°
- **2.12.3 Dimensions:** 8000 ft x 150 ft
- **2.12.4 PCN:** 170 R/B/W/T
- **2.12.5 Coordinates:** 39°4′–15.1736″N / 84°41′–1.4552″W
- **2.12.6 Threshold Elevation:** 864.7 ft
- **2.12.6 Touchdown Zone Elevation:** 867.8 ft

**AD 2.13 Declared Distances**
- **2.13.1 Designation:** 09
- **2.13.2 Take-off Run Available:** ft
- **2.13.3 Take-off Distance Available:** ft
- **2.13.4 Accelerate–Stop Distance Available:** ft
- **2.13.5 Landing Distance Available:** ft
2.13.1 Designation: 27
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 36C
2.13.2 Take-off Run Available: 11000 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 11000 ft
2.13.5 Landing Distance Available: 11000 ft

2.13.1 Designation: 36L
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 09
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 36C
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 18C
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: ALSF2

AD 2.15 Air Traffic Services Communication Facilities
2.15.1 Service Designation: APCH/P (090–269)
2.15.3 Channel: 119.7
2.15.5 Hours of Operation: 24

2.15.1 Service Designation: APCH/P (270–089)
2.15.3 Channel: 123.875
2.15.5 Hours of Operation: 24

2.15.1 Service Designation: CLASS B (001–180)
2.15.3 Channel: 121
2.15.5 Hours of Operation: 24

2.15.1 Service Designation: CLASS B (181–360)
2.15.3 Channel: 128.7
2.15.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS B
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS (ARR)
2.14.3 Channel: 134.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS (DEP)
2.14.3 Channel: 135.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (001–180)
2.14.3 Channel: 126.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (181–360)
2.14.3 Channel: 128.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JAKIE STAR
2.14.3 Channel: 119.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JAKIE STAR
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 09/27, 18C/36C)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 118.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18R/36L)
2.14.3 Channel: 360.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 118.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 360.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JAKIE STAR
2.14.3 Channel: 119.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JAKIE STAR
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 09/27, 18C/36C)
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 118.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18R/36L)
2.14.3 Channel: 360.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 118.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 18L/36R)
2.14.3 Channel: 360.85
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 09. Magnetic variation: 4W
2.19.2 ILS Identification: URN
2.19.5 Coordinates: 39°−42.9147N / 84°−39.20835W
2.19.6 Site Elevation: 886.8 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°−42.9226N / 84°−38.2646W
2.19.6 Site Elevation: 873.4 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 4W
2.19.2 ILS Identification: URN
2.19.5 Coordinates: 39°−46.5213N / 84°−39.20181W
2.19.6 Site Elevation: 877.4 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 6W
2.19.2 ILS Identification: JDP
2.19.5 Coordinates: 39°−46.9321N / 84°−39.25.1643W
2.19.6 Site Elevation: 866.4 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 6W
2.19.2 ILS Identification: JDP
2.19.5 Coordinates: 39°−46.9321N / 84°−39.25.1643W
2.19.6 Site Elevation: 883.3 ft

2.19.1 ILS Type: DME for runway 18C. Magnetic variation: 6W
2.19.2 ILS Identification: SIC
2.19.5 Coordinates: 39°−54.1461N / 84°−40.8213W
2.19.6 Site Elevation: 843.6 ft

2.19.1 ILS Type: Glide Slope for runway 18C. Magnetic variation: 6W
2.19.1 ILS Type: Localizer for runway 18C. Magnetic variation: 6W
2.19.2 ILS Identification: SIC
2.19.5 Coordinates: 39°3′42.6496N / 84°40′12.1363W
2.19.6 Site Elevation: 868 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°4′3.9117N / 84°40′10.1702W
2.19.6 Site Elevation: 883.2 ft

2.19.1 ILS Type: Inner Marker for runway 36C. Magnetic variation: 6W
2.19.2 ILS Identification: CVG
2.19.5 Coordinates: 39°1′54.1433N / 84°40′7.5139W
2.19.6 Site Elevation: 838.2 ft

2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 6W
2.19.2 ILS Identification: CVG
2.19.5 Coordinates: 39°1′15.4827N / 84°40′12.493W
2.19.6 Site Elevation: 834.2 ft

2.19.1 ILS Type: DME for runway 18L. Magnetic variation: 4W
2.19.2 ILS Identification: CIZ
2.19.5 Coordinates: 39°1′31.5713N / 84°38′45.4036W
2.19.6 Site Elevation: 910.4 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°1′10.8831N / 84°38′42.976W
2.19.6 Site Elevation: 881.2 ft

2.19.1 ILS Type: Localizer for runway 18L. Magnetic variation: 4W
2.19.2 ILS Identification: CIZ
2.19.5 Coordinates: 39°1′31.787N / 84°38′48.5019W
2.19.6 Site Elevation: 899 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39°3′30.8826N / 84°38′51.18W
2.19.6 Site Elevation: 900.1 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°1′33.5681N / 84°38′47.5005W
2.19.6 Site Elevation: 898.7 ft

2.19.1 ILS Type: Inner Marker for runway 36R. Magnetic variation: 6W
2.19.2 ILS Identification: EEI
2.19.5 Coordinates: 39°1′31.4843N / 84°38′47.9544W
2.19.6 Site Elevation: 892.1 ft

2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39°2′41.52N / 84°41′5.2W
2.19.6 Site Elevation: 869 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39°2′43.91N / 84°41′6.57W
2.19.6 Site Elevation: 860.5 ft

2.19.1 ILS Type: Inner Marker for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39°2′23.57N / 84°41′1.42W
2.19.6 Site Elevation: 856 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 6W
2.19.2 ILS Identification: CJN
2.19.5 Coordinates: 39°2′41.27N / 84°41′1.83W
2.19.6 Site Elevation: 871 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 6W
2.19.2 ILS Identification: VAC
2.19.5 Coordinates: 39–4–25.0237N / 84–41–4.7924W
2.19.6 Site Elevation: 854.5 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 6W
2.19.5 Coordinates: 39–4–25.5032N / 84–41–6.7898W
2.19.6 Site Elevation: 865.8 ft

2.19.1 ILS Type: Inner Marker for runway 36L. Magnetic variation: 6W
2.19.5 Coordinates: 39–2–44.323N / 84–41–1.8019W
2.19.6 Site Elevation: 878 ft

2.19.1 ILS Identification: VAC
2.19.6 Site Elevation: 868.2 ft

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 6W
2.19.5 Coordinates: 39–4–25.5032N / 84–41–1.4165W
2.19.6 Site Elevation: 860.3 ft

General Remarks:
NOISE SENS AREA N & S OF ARPT; RWY ASGN 2200–0700 BASED ON NOISE ABATEMENT.

SUCCESSIVE OR SIMUL DEP FM RWY 18L, 18C, 36L, 36C & 36R APVD WITH COURSE DVRG BGN NO FURTHER THAN 2 MI FM EOR DUE TO NOISE ABATEMENT RSTR.

ALL TWYS RSTRD TO 15 MPH OR LESS WITH WINGSPAN 214 FT OR GREATER.

ASSC IN USE: OPR TRANSPONDERS WITH ALT REPORTING MODE & ADS–B IF EQUIPPED ENABLED ON ARPT SFCS.

BIRDS ON & INV OF THE ARPT.

RAMP CTL: RAMP 1N / 1S TXL & RAMP 2N / 2S TXL – 130.90; RAMP 3 TXL & N TXL – 130.375; DHL RAMP – 129.475.
New Orleans, Louisiana
Louis Armstrong New Orleans International
ICAO Identifier KMSY

AIRPORT DIAGRAM

Louis Armstrong New Orleans Intl (MSY)

AL-009 (FAA)

21168

NEW ORLEANS TOWER
127.55
199.5 254.3
GND CON
121.9 273.525
CINC DEL
120.925
CPSC
PDC

RWY 02-20
PCN 64 R/C/W/T
S-75, D-180, 2D-380

RWY 11-29
PCN 133 R/C/W/T
S-75, D-180, 2D-380

ASSC in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all airport surfaces.

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.
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′35.88N / 90°15′32.5W
2.2.2 From City: 10 miles W of NEW ORLEANS, LA
2.2.3 Elevation: 3.7 ft
2.2.5 Magnetic Variation: 1W (2020)
2.2.6 Airport Contact: KEVIN DOLLIOLE
PO BOX 20007
NEW ORLEANS, LA 70141
((504) 303-7652)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 02
2.12.2 True Bearing: 15
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 64 R/C/W/T
2.12.5 Coordinates: 29°59′-4.2055N / 90°15′-5.094W
2.12.6 Threshold Elevation: 1.8 ft
2.12.6 Touchdown Zone Elevation: 2.1 ft

2.12.1 Designation: 20
2.12.2 True Bearing: 195
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 64 R/C/W/T
2.12.5 Coordinates: 30°-0′10.9924N / 90°14′-43.8363W
2.12.6 Threshold Elevation: -2.4 ft
2.12.6 Touchdown Zone Elevation: -0.6 ft

2.12.1 Designation: 11
2.12.2 True Bearing: 105
2.12.3 Dimensions: 10104 ft x 150 ft
2.12.4 PCN: 123 R/C/W/T
2.12.5 Coordinates: 29°59′-47.8556N / 90°15′-3.4894W

2.12.6 Threshold Elevation: 3.7 ft
2.12.6 Touchdown Zone Elevation: 3.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 02
2.13.2 Take-off Run Available: 7001 ft
2.13.3 Take-off Distance Available: 7001 ft
2.13.4 Accelerate-Stop Distance Available: 7001 ft
2.13.5 Landing Distance Available: 7001 ft

2.13.1 Designation: 20
2.13.2 Take-off Run Available: 7001 ft
2.13.3 Take-off Distance Available: 7001 ft
2.13.4 Accelerate-Stop Distance Available: 7001 ft
2.13.5 Landing Distance Available: 7001 ft

2.13.1 Designation: 11
2.13.2 Take-off Run Available: 10104 ft
2.13.3 Take-off Distance Available: 10104 ft
2.13.4 Accelerate-Stop Distance Available: 9800 ft
2.13.5 Landing Distance Available: 9800 ft

2.13.1 Designation: 29
2.13.2 Take-off Run Available: 10104 ft
2.13.3 Take-off Distance Available: 10104 ft
2.13.4 Accelerate-Stop Distance Available: 10104 ft
2.13.5 Landing Distance Available: 9800 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02
2.14.2 Approach Lighting System: RLLS

2.14.1 Designation: 20
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 11
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 29
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P (WEST)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (EAST)
2.14.3 Channel: 133.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (WEST)
2.14.3 Channel: 290.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (EAST)
2.14.3 Channel: 350.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (WEST)
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 120.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 120.925
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE & SOUTH)
2.14.3 Channel: 123.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST)
2.14.3 Channel: 125.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NORTH & EAST)
2.14.3 Channel: 133.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE & SOUTH)
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NORTH & EAST)
2.14.3 Channel: 290.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D—ATIS
2.14.3 Channel: 127.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EM ERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EM ERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 254.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 273.525
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 02. Magnetic variation: 1W
2.19.2 ILS Identification: JFI
2.19.5 Coordinates: 30°–09–24.6777N / 90°–14–42.2465W
2.19.6 Site Elevation: 1.3 ft

2.19.1 ILS Type: Glide Slope for runway 02. Magnetic variation: 1W
2.19.2 ILS Identification: JFI
2.19.5 Coordinates: 29°–59–39.6093N /
90–14–58.5588W
2.19.6 Site Elevation: −0.9 ft
2.19.1 ILS Type: Localizer for runway 02. Magnetic variation: 1W
2.19.2 ILS Identification: JFI
2.19.5 Coordinates: 30°0′20.5102″N / 90°14′40.8078″W
2.19.6 Site Elevation: −4.2 ft

2.19.1 ILS Type: DME for runway 20. Magnetic variation: 1W
2.19.2 ILS Identification: ONW
2.19.5 Coordinates: 30°0′21.6577″N / 90°14′43.2465″W
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′55.148″N / 90°15′7.973″W
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′27.9656″N / 90°16′39.2497″W
2.19.6 Site Elevation: 0.1 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′48.6197″N / 90°16′39.2497″W
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′50.5168″N / 90°17′5.2703″W
2.19.6 Site Elevation: 4.4 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′27.9656″N / 90°16′39.2497″W
2.19.6 Site Elevation: 12.4 ft

2.19.1 ILS Type: Glide Slope for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: HOX
2.19.5 Coordinates: 29°59′27.9656″N / 90°16′39.2497″W
2.19.6 Site Elevation: 0.1 ft

2.19.1 ILS Type: Localizer for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: HOX
2.19.5 Coordinates: 29°59′50.5168″N / 90°17′5.2703″W
2.19.6 Site Elevation: 4.4 ft

General Remarks:
180 DEG & LOCKED WHEEL TURNS PROHIBITED ON ASPH SFC ACFT 12500 LBS & OVER.

FLOCK OF BIRDS ON & IN VICINITY OF ARPT.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY G BTN RWY 11/29 AND TWY S SFC MOV GUIDANCE AND CTL SYSTEM U/S PERM

RY 11 NOISE SENSITIVE FOR DEP; AVBL FOR OPNL NECESSITY. ALL RYS NOISE SENSITIVE FOR ARR. ARRIVING TURBOJETS MUST MAKE 5 MILE FINAL APCH TO MINIMIZE NOISE.
**Bangor, ME**  
**Bangor Intl**  
**ICAO Identifier KBGR**

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 44°48′26.8N / 68°49′41.3W  
2.2.2 From City: 3 miles W of BANGOR, ME  
2.2.3 Elevation: 192.1 ft  
2.2.5 Magnetic Variation: 16W (2020)  
2.2.6 Airport Contact: TONY CARUSO  
**BANGOR INTERNATIONAL ARPT**  
BANGOR, ME 4401  
(207–992–4600)

2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES  
2.4.2 Fuel Types: 100LL, A  
2.4.5 Hangar Space: YES  
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: ARFF Index  
IB certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 15  
2.12.2 True Bearing: 134  
2.12.3 Dimensions: 11440 ft x 200 ft  
2.12.4 PCN: 120 R/A/W/T  
2.12.5 Coordinates: 44°49′6.1369N / 68°50′38.1522W  
2.12.6 Threshold Elevation: 192.1 ft  
2.12.6 Touchdown Zone Elevation: 192.1 ft

2.12.1 Designation: 33  
2.12.2 True Bearing: 314  
2.12.3 Dimensions: 11440 ft x 200 ft  
2.12.4 PCN: 120 R/A/W/T  
2.12.5 Coordinates: 44°47′47.4136N / 68°48′44.3618W  
2.12.6 Threshold Elevation: 162.9 ft  
2.12.6 Touchdown Zone Elevation: 162.9 ft

2.12.1 Designation: H1  
2.12.2 True Bearing:  
2.12.3 Dimensions: 100 ft x 100 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 15  
2.13.2 Take-off Run Available: 11440 ft  
2.13.3 Take-off Distance Available: 11440 ft  
2.13.4 Accelerate–Stop Distance Available: 11440 ft  
2.13.5 Landing Distance Available: 11440 ft

2.13.1 Designation: 33  
2.13.2 Take-off Run Available: 11440 ft  
2.13.3 Take-off Distance Available: 11440 ft  
2.13.4 Accelerate–Stop Distance Available: 11440 ft  
2.13.5 Landing Distance Available: 11440 ft

2.13.1 Designation: H1  
2.13.2 Take-off Run Available:  
2.13.3 Take-off Distance Available:  
2.13.4 Accelerate–Stop Distance Available:  
2.13.5 Landing Distance Available:

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 15  
2.14.2 Approach Lighting System: ALSF2  

2.14.1 Designation: 33  
2.14.2 Approach Lighting System: MALSR  

2.14.1 Designation: H1  
2.14.2 Approach Lighting System:  
2.14.4 Visual Approach Slope Indicator System:

**AD 2.18 Air Traffic Services Communication Facilities**

2.18.1 Service Designation: APCH/P DEP/P IC  
2.18.3 Channel: 118.925  
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P IC  
2.18.3 Channel: 239.3  
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 124.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ATIS
2.14.3 Channel: 127.75
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C
2.14.3 Channel: 118.925
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C
2.14.3 Channel: 239.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C/S
2.14.3 Channel: 124.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 120.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 233.7
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44°47′42.4986N / 68°48′31.8082W
2.19.6 Site Elevation: 166.2 ft
2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44°47′42.4986N / 68°48′31.8082W
2.19.6 Site Elevation: 166.2 ft

2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44°49′21.756N / 68°50′22.4761W
2.19.6 Site Elevation: 187.7 ft

2.19.1 ILS Type: Glide Slope for runway 15. Magnetic variation: 16W
2.19.2 ILS Identification: JVH
2.19.5 Coordinates: 44°49′21.756N / 68°50′22.4761W
2.19.6 Site Elevation: 184 ft

2.19.1 ILS Type: Glide Slope for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44°47′53.7039N / 68°48′59.7081W
2.19.6 Site Elevation: 161.7 ft

2.19.1 ILS Type: Glide Slope for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44°47′53.7039N / 68°48′59.7081W
2.19.6 Site Elevation: 158 ft

2.19.1 ILS Type: Glide Slope for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44°47′53.7039N / 68°48′59.7081W
2.19.6 Site Elevation: 166.2 ft
2.19.6 Site Elevation: 148.8 ft

2.19.1 ILS Type: Localizer for runway 33. Magnetic variation: 16W
2.19.2 ILS Identification: BGR
2.19.5 Coordinates: 44°49'13.6222N / 68°52'26.2752W
2.19.6 Site Elevation: 181.7 ft

General Remarks:
TRANSIENT ACFT MAY BE DIVERTED TO CIVILIAN SIDE DURING NON-DUTY HRS & WEEKENDS. FEE REQUIRED; NO ANG TRANSIENT ALERT.

ANG: PPR VALID +/- 1 HR UNLESS PRIOR CDN. 3 HR OUT CALL, 30 MIN OUT CALL 311.0 TO CFM CSTM$AG AND TRAN SVC. COMMAND POST C207-404-7788 H24.

FUEL: A++ (MIL).

CAUTION: BASH PHASE II PERIOD SEP-NOV, APR-MAY. EXPECT INCREASED BIRD ACTIVITY. CONTACT BASE OPS/COMMAND POST/SOF FOR CURRENT BIRDWATCH COND.

ANG: OPR 1100-1930Z++ MON-FRI, CLSD WKEND AND HOL. PPR RQRD FOR ANG RAMP. CTC AFLD MGMT DSN 698-7232, C207-404-7232 FOR PPR DURG OPR HRS. PRE-COORD ALL TRNSPN RQMNTS AND HAZ CARGO WITH PPR REQ.

SVC TRAN ALERT: OPR 1130-0200Z++ MON-THU, 1130-1900Z++ FRI, CLSD WKEND AND HOL. UNAVBL OUTSIDE OF ANG TRAN ALERT OPR HRS WITHOUT PRIOR CDN.

SERVICE-FLUID: RMKS: FOREIGN MILITARY ONLY: ON BASE LOX SVC UNAVBL.

MISC: RWY 15-33 GROOVED.

SVC MIL-FLUID: OFF-BASE CONTRACTED LOX AVBL H24-RQR 24 HR NOTICE.

TFC PAT: RWY 33 LEFT TFC, TURBO JET TFC 2000’ MSL UNLESS OTHERWISE INSTR.

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39°10′32.622N / 76°40′8.368W
2.2.2 From City: 9 miles S of BALTIMORE, MD
2.2.3 Elevation: 143.4 ft
2.2.5 Magnetic Variation: 11W (2000)
2.2.6 Airport Contact: JOHN STEWART
PO BOX 8766
BWI AIRPORT, MD 21240
(410) 859-7018
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 94
2.12.3 Dimensions: 10503 ft x 150 ft
2.12.4 PCN: 105 F/A/W/T
2.12.5 Coordinates: 39°10′–39.0895N / 76°41′–22.6248W
2.12.6 Threshold Elevation: 139 ft
2.12.6 Touchdown Zone Elevation: 143.4 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 274
2.12.3 Dimensions: 10503 ft x 150 ft
2.12.4 PCN: 105 F/A/W/T
2.12.5 Coordinates: 39°10′–21.4754N / 76°39′–9.6234W
2.12.6 Threshold Elevation: 126.4 ft
2.12.6 Touchdown Zone Elevation: 142.7 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 324
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 15 F/A/W/T
2.12.5 Coordinates: 39°10′–30.4468N / 76°39′–11.6307W
2.12.6 Threshold Elevation: 114 ft
2.12.6 Touchdown Zone Elevation: 124.4 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 144
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39°10′–51.1311N / 76°39′–44.6134W
2.12.6 Threshold Elevation: 129.6 ft
2.12.6 Touchdown Zone Elevation: 142.7 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 324
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39°10′–7.3007N / 76°40′–55.1704W
2.12.6 Threshold Elevation: 139 ft
2.12.6 Touchdown Zone Elevation: 138.3 ft

2.12.1 Designation: 15R
2.12.2 True Bearing: 144
2.12.3 Dimensions: 9501 ft x 150 ft
2.12.4 PCN: 70 F/A/W/T
2.12.5 Coordinates: 39°10′–30.4468N / 76°39′–11.6307W
2.12.6 Threshold Elevation: 114 ft
2.12.6 Touchdown Zone Elevation: 124.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10
2.13.2 Take-off Run Available: 10503 ft
2.13.3 Take-off Distance Available: 10503 ft
2.13.4 Accelerate–Stop Distance Available: 10503 ft
2.13.5 Landing Distance Available: 9953 ft

2.13.1 Designation: 28
2.13.2 Take-off Run Available: 10503 ft
2.13.3 Take-off Distance Available: 10503 ft
2.13.4 Accelerate–Stop Distance Available: 10503 ft
2.13.5 Landing Distance Available: 9803 ft

2.13.1 Designation: 33R
2.13.2 Take-off Run Available: 5000 ft
2.13.3 Take-off Distance Available: 5000 ft
2.13.4 Accelerate–Stop Distance Available: 5000 ft
2.13.5 Landing Distance Available: 5000 ft

2.13.1 Designation: 15L
AD 2.13.2 Take-off Run Available: 5000 ft
AD 2.13.3 Take-off Distance Available: 5000 ft
AD 2.13.4 Accelerate–Stop Distance Available: 5000 ft
AD 2.13.5 Landing Distance Available: 5000 ft
AD 2.13.1 Designation: 33L
AD 2.13.2 Take-off Run Available: 9501 ft
AD 2.13.3 Take-off Distance Available: 9501 ft
AD 2.13.4 Accelerate–Stop Distance Available: 8801 ft
AD 2.13.5 Landing Distance Available: 8301 ft
AD 2.13.1 Designation: 15R
AD 2.13.2 Take-off Run Available: 9501 ft
AD 2.13.3 Take-off Distance Available: 9501 ft
AD 2.13.4 Accelerate–Stop Distance Available: 8601 ft
AD 2.13.5 Landing Distance Available: 8301 ft

**AD 2.14 Approach and Runway Lighting**

AD 2.14.1 Designation: 10
AD 2.14.2 Approach Lighting System: ALSF2

AD 2.14.1 Designation: 28
AD 2.14.2 Approach Lighting System: MALSR
AD 2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.14.1 Designation: 33R
AD 2.14.2 Approach Lighting System: MALSR
AD 2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.14.1 Designation: 15L
AD 2.14.2 Approach Lighting System:
AD 2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.14.1 Designation: 33L
AD 2.14.2 Approach Lighting System: MALSR
AD 2.14.4 Visual Approach Slope Indicator System: P4L

AD 2.14.1 Designation: 15R
AD 2.14.2 Approach Lighting System: MALSR

**AD 2.18 Air Traffic Services Communication Facilities**

**AD 2.19 Radio Navigation and Landing Aids**

AD 2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 11W
AD 2.19.2 ILS Identification: BAL
AD 2.19.5 Coordinates: 39–10–23.557N / 76–41–3.233W
AD 2.19.6 Site Elevation: 137.6 ft

AD 2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 11W
AD 2.19.2 ILS Identification: OEH
AD 2.19.5 Coordinates: 39–10–20.5919N / 76–38–54.2857W
AD 2.19.6 Site Elevation: 129.2 ft

AD 2.19.1 ILS Type: Glide Slope for runway 33L. Magnetic variation: 11W
AD 2.19.2 ILS Identification: BWI
AD 2.19.6 Site Elevation: 110.3 ft

Twenty-Sixth Edition
Federal Aviation Administration
76–39–53.5728W
2.19.6 Site Elevation: 133 ft

2.19.1 ILS Type: Glide Slope for runway 15R. Magnetic variation: 11W
2.19.2 ILS Identification: FND
2.19.5 Coordinates: 39–10–53.6N / 76–40–48.9W
2.19.6 Site Elevation: 125 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 11W
2.19.2 ILS Identification: FND
2.19.5 Coordinates: 39–9–39.11N / 76–39–33.48W
2.19.6 Site Elevation: 133 ft

**General Remarks:**

ACFT ON VISUAL APCHS EXPECT TO MAINTAIN 3,000 FT UNTIL 10 DME FM BAL VORTAC; DEPART ACFT SHOULD EXPECT TURNS BASED ON BALTIMORE DME.

NO APRON PARKING FOR UNSKED ACR.

GENERAL AVIATION ACFT CTC UNICOM PRIOR TO ARRIVING AT GENERAL AVIATION RAMP FOR SECURITY PURPOSES.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RWY STATUS LGTS IN OPN.

MAJOR CONSTRUCTION ON ARPT DLY; ACFT MOVEMENT & PARKING AREAS SUBJECT TO SHORT NOTICE CHANGE/CLOSURE. FOR CURRENT INFORMATION PHONE BWI OPNS CENTER 410–859–7018.

TWY “S”, SOUTH OF TWY “P”, RESTRICTED TO AIRCRAFT 60,000 LBS. & LESS.

RY 28 DE–ICE PAD LANE 1 RSTD TO ACFT WITH WINGSPAN 171 FT OR LESS, LANE 2 RSTD TO ACFT WITH WINGSPAN 135 FT OR LESS, LANE 3 IS USED BY LARGE ACFT MAX WINGSPAN 215 FT AND WHEN IN USE–LANES 2 AND 4 ARE UNAVBL. LANES 4, 5 & 6 ARE RSTD TO ACFT WINGSPAN 135 FT OR LESS.

ACFT DEPARTING RWY 28 EXP DEP FM TWY U1.

DEER & BIRDS OCNLLY ON & INVF ARPT.

PRACTICE LNDG & APCH BY TURBO–PWRD ACFT PROHIBITED 2200–0600; PRACTICE LNDG & TKOF BY B–747 ACFT PROHIBITED RWY 15R/33L.

TWY T BTN TWY H AND TWY E RSTD TO GROUP IV ACFT WITH WINGSPAN LESS THAN 171’. TWY T BTN TWY E AND TWY B RSTD TO GROUP V ACFT WITH WINGSPAN LESS THAN 214’; WHEN GROUP V ACFT ARE ON TWY T, TWY A IS RSTD TO MAX WINGSPANS OF 110’.

TAXILANES ‘T–1’ & “H” RESTRICTED TO GROUP III ACFT WITH MAX WINGSPAN OF 118 FEET.

RWY LEN AVBL FOR RWY 28 DEPS FM TWY U1 IS 9802 FT.

TAXIING PROHIBITED BTN CONCOURSE C & ADJ BLDG STRUCTURE SW OF CONCOURSE C. ACCESS TO GATE C12 MUST BE VIA TWY A.
RY 15R DEICE PAD, POSITION #1, RESTRICTED TO ACFT WITH WINGSPAN OF 156 FT 1 INCH OR LESS & LENGTH OF 180 FT 3 INCHES OR LESS. PSN’S #2 & #3 ARE RSTD TO ACFT WITH A WINGSPAN OF 156 FT 1 INCH OR LESS, POSITION #3 IS RSTD TO ACFT WITH A WINGSPAN OF 156 FT 1 INCH OR LESS & LENGTH OF 180 FT 3 INCHES OR LESS; POSITION 4 RESTRICTED TO ACFT WITH WINGSPAN OF 213 FT OR LESS & LENGTH OF 229 FT 2 INCHES OR LESS.

TWY ‘A’ IS RSTD TO GROUP IV ACFT WINGSPAN 171 FT OR LESS.

NOISE ABATEMENT PROCEDURES IN EFFECT – RESTRICTION FOR RY 15L/33R EXCEPT FOR EMERGENCIES OR MERCY FLIGHTS CTC AMGR FOR INFORMATION.

CONCOURSE A ALT DEICING AREA IS RSTD TO B737−800 SIZE ACFT WITH WINGLETS OR SMLR ON SPOTS 6, 7 AND 8.

DISTRACTING LGTS (GOLF DRIVING RANGE) RIGHT SIDE EXTDD CNTRLN RY 33L FM AER TO 1/4 MI FINAL.

CONT MOWING OPERATIONS ADJ ALL RYS & TXYS – APR THRU NOV.

DUAL PARALLEL TAXILANCES HAVE BEEN ADDED TO THE ‘D’/ ‘E’ ALLEYWAY; TAXILANE ‘N’ AND TAXILANE ‘N1’. TAXILANE ‘N’ IS DESIGNATED A “GROUP V” TAXILANE WITH MAX WINGSPAN OF 213 FT. TAXILANE ‘N1’ IS DESIGNATED A “GROUP IV” TAXILANE WITH MAX WINGSPAN OF 170 FT.
Boston, MA
General Edward Lawrence Logan Intl
ICAO Identifier KBOS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 42°21′46.6N / 71°0′23W
2.2.2 From City: 1 miles E of BOSTON, MA
2.2.3 Elevation: 19.1 ft
2.2.5 Magnetic Variation: 15°W (2020)
2.2.6 Airport Contact: EDWARD FRENI
LOGAN INTERNATIONAL
AIRPORT
EAST BOSTON, MA 2128
(617-567-5400)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R FF Index
I E certified on 9/1/1972

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 20
2.12.3 Dimensions: 7864 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°21′28.7577N / 71°0′36.6187W
2.12.6 Threshold Elevation: 13.9 ft
2.12.6 Touchdown Zone Elevation: 13.9 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 200
2.12.3 Dimensions: 7864 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°21′28.7577N / 71°0′36.6187W
2.12.6 Threshold Elevation: 13.9 ft
2.12.6 Touchdown Zone Elevation: 13.9 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′36.8399N / 70°59′57.4473W
2.12.6 Threshold Elevation: 19.8 ft
2.12.6 Touchdown Zone Elevation: 17.6 ft

2.12.5 Coordinates: 42°21′3.8094N / 71°0′42.458W
2.12.6 Threshold Elevation: 18.8 ft
2.12.6 Touchdown Zone Elevation: 17.6 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 200
2.12.3 Dimensions: 10006 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°22′36.8399N / 70°59′57.4473W
2.12.6 Threshold Elevation: 14.5 ft
2.12.6 Touchdown Zone Elevation: 15.6 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 77
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°21′20.715N / 71°0′46.4187W
2.12.6 Threshold Elevation: 16.7 ft
2.12.6 Touchdown Zone Elevation: 16.8 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 257
2.12.3 Dimensions: 7001 ft x 150 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°21′20.715N / 71°0′46.4187W
2.12.6 Threshold Elevation: 14.8 ft
2.12.6 Touchdown Zone Elevation: 17.2 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 125
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 85 F/C/W/T
2.12.5 Coordinates: 42°21′36.7767N / 70°59′15.7276W
2.12.6 Threshold Elevation: 16 ft
2.12.6 Touchdown Zone Elevation: 19.1 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 305
2.12.3 Dimensions: 5000 ft x 100 ft
2.12.4 PCN: 85 F/C/W/T
2.12.5 Coordinates: 42°20′54.9565N / 71°0′29.6841W
2.12.6 Threshold Elevation: 19.1 ft
2.12.6 Touchdown Zone Elevation: 19.1 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 2557 ft x 100 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°22′23.5008N / 71°0′31.0047W

2.12.1 Designation: 15L
2.12.2 True Bearing: 135
2.12.3 Dimensions: 2557 ft x 100 ft
2.12.4 PCN: 90 F/C/W/T
2.12.5 Coordinates: 42°22′23.5008N / 71°0′31.0047W
2.12.6 Threshold Elevation: 14.8 ft  
2.12.6 Touchdown Zone Elevation: 15.8 ft  

2.12.1 Designation: 33R  
2.12.2 True Bearing: 315  
2.12.3 Dimensions: 2557 ft x 100 ft  
2.12.4 PCN: 90 F/C/W/T  
2.12.5 Coordinates: 42°22′5.5791N / 71°0′7.0008W  
2.12.6 Threshold Elevation: 14 ft  
2.12.6 Touchdown Zone Elevation: 15 ft

2.12.6 Threshold Elevation: 15.8 ft  

2.12.1 Designation: 15R  
2.12.2 True Bearing: 135  
2.12.3 Dimensions: 10083 ft x 150 ft  
2.12.4 PCN: 90 F/C/W/T  
2.12.5 Coordinates: 42°22′27.3749N / 71°1′4.4117W  
2.12.6 Threshold Elevation: 18.9 ft  
2.12.6 Touchdown Zone Elevation: 17 ft

2.12.6 Touchdown Zone Elevation: 15.8 ft  

2.12.1 Designation: 33L  
2.12.2 True Bearing: 315  
2.12.3 Dimensions: 10083 ft x 150 ft  
2.12.4 PCN: 90 F/C/W/T  
2.12.5 Coordinates: 42°21′16.7428N / 70°59′29.7098W  
2.12.6 Threshold Elevation: 15.7 ft  
2.12.6 Touchdown Zone Elevation: 16.2 ft

AD 2.13 Declared Distances

2.13.1 Designation: 04L  
2.13.2 Take-off Run Available: 7864 ft  
2.13.3 Take-off Distance Available: 7864 ft  
2.13.4 Accelerate–Stop Distance Available: 7864 ft  
2.13.5 Landing Distance Available: 7864 ft  

2.13.1 Designation: 22R  
2.13.2 Take-off Run Available: 7864 ft  
2.13.3 Take-off Distance Available: 7864 ft  
2.13.4 Accelerate–Stop Distance Available: 7864 ft  
2.13.5 Landing Distance Available: 7046 ft

2.13.1 Designation: 04R  
2.13.2 Take-off Run Available: 10006 ft  
2.13.3 Take-off Distance Available: 10006 ft  
2.13.4 Accelerate–Stop Distance Available: 10006 ft  
2.13.5 Landing Distance Available: 8851 ft

2.13.1 Designation: 22L  
2.13.2 Take-off Run Available: 10006 ft  
2.13.3 Take-off Distance Available: 10006 ft

2.13.1 Designation: 09  
2.13.2 Take-off Run Available: 7001 ft  
2.13.3 Take-off Distance Available: 7001 ft  
2.13.4 Accelerate–Stop Distance Available: 7001 ft  
2.13.5 Landing Distance Available: 7001 ft

2.13.1 Designation: 14  
2.13.2 Take-off Run Available: 5000 ft  
2.13.3 Take-off Distance Available: 5000 ft  
2.13.4 Accelerate–Stop Distance Available: 5000 ft  
2.13.5 Landing Distance Available: 5000 ft

2.13.1 Designation: 32  
2.13.2 Take-off Run Available: 5000 ft  
2.13.3 Take-off Distance Available: 5000 ft  
2.13.4 Accelerate–Stop Distance Available: 5000 ft  
2.13.5 Landing Distance Available: 5000 ft

2.13.1 Designation: 15L  
2.13.2 Take-off Run Available: 2557 ft  
2.13.3 Take-off Distance Available: 2557 ft  
2.13.4 Accelerate–Stop Distance Available: 2557 ft  
2.13.5 Landing Distance Available: 2557 ft

2.13.1 Designation: 33R  
2.13.2 Take-off Run Available: 2557 ft  
2.13.3 Take-off Distance Available: 2557 ft  
2.13.4 Accelerate–Stop Distance Available: 2557 ft  
2.13.5 Landing Distance Available: 2557 ft

2.13.1 Designation: 33L  
2.13.2 Take-off Run Available: 10083 ft  
2.13.3 Take-off Distance Available: 10083 ft  
2.13.4 Accelerate–Stop Distance Available: 10083 ft  
2.13.5 Landing Distance Available: 10083 ft

2.13.1 Designation: 32  
2.13.2 Take-off Run Available: 10083 ft  
2.13.3 Take-off Distance Available: 10083 ft  
2.13.4 Accelerate–Stop Distance Available: 10083 ft  
2.13.5 Landing Distance Available: 10083 ft
AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 04L
2.14.2 Approach Lighting System:

2.14.1 Designation: 22R
2.14.2 Approach Lighting System:

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: MALSF

2.14.1 Designation: 09
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 27
2.14.2 Approach Lighting System:

2.14.1 Designation: 14
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System:

2.14.1 Designation: 15L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 33R
2.14.2 Approach Lighting System:

2.14.1 Designation: 15R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 33L
2.14.2 Approach Lighting System: ALSF2

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 15W
2.19.2 ILS Identification: BOS
2.19.3 Coordinates: 42°21′21.8231″N / 71°0′48.1884″W
2.19.6 Site Elevation: 10.1 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 15W
2.19.2 ILS Identification: BOS
2.19.5 Coordinates: 42°21′17.0026″N / 71°0′11.9878″W
2.19.6 Site Elevation: 14.6 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 15W
2.19.2 ILS Identification: BOS
2.19.5 Coordinates: 42°21′0.0409″N / 71°0′44.2844″W
2.19.6 Site Elevation: 14.6 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic variation: 15W
2.19.2 ILS Identification: LQN
2.19.3 Coordinates: 42°21′15.6955″N / 71°0′55.7791″W
2.19.6 Site Elevation: 30.5 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 15W
2.19.2 ILS Identification: LQN
2.19.5 Coordinates: 42°21′17.0026″N / 71°0′11.9878″W
2.19.6 Site Elevation: 11.1 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 15W
2.19.2 ILS Identification: LQN
2.19.5 Coordinates: 42°21′0.0409″N / 71°0′44.2844″W
2.19.6 Site Elevation: 14.6 ft

2.19.1 ILS Type: DME for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.3 Coordinates: 42°21′17.0026″N / 71°0′48.1884″W
2.19.6 Site Elevation: 34.5 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42°21′15.6955″N / 71°0′55.7791″W
2.19.6 Site Elevation: 30.5 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42°21′17.0026″N / 71°0′48.1884″W
2.19.6 Site Elevation: 34.5 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42°21′31.2953N / 70°59′28.3545W
2.19.6 Site Elevation: 12.3 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: DGU
2.19.5 Coordinates: 42°21′18.4751N / 71°0′59.0489W
2.19.6 Site Elevation: 16.5 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42°21′26.5111N / 70°59′35.0574W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42°22′14.6947N / 71°0′42.4209W
2.19.6 Site Elevation: 11.2 ft

2.19.1 ILS Type: Glide Slope for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42°22′14.6947N / 71°0′42.4209W
2.19.6 Site Elevation: 11.2 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42°21′26.5111N / 70°59′35.0574W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: DME for runway 15R. Magnetic variation: 15W
2.19.2 ILS Identification: MDC
2.19.5 Coordinates: 42°21′26.5111N / 70°59′35.0574W
2.19.6 Site Elevation: 11.3 ft

2.19.1 ILS Type: Glide Slope for runway 33L. Magnetic variation: 15W
2.19.2 ILS Identification: LIP
2.19.5 Coordinates: 42°21′26.5111N / 70°59′35.0574W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: Localizer for runway 33L. Magnetic variation: 15W
2.19.2 ILS Identification: LIP
2.19.5 Coordinates: 42°21′26.5111N / 70°59′35.0574W
2.19.6 Site Elevation: 11.3 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 16W
2.19.2 Navigation Aid Identification: BOS
2.19.5 Coordinates: 42°21′26.5111N / 70°59′35.0574W
2.19.6 Site Elevation: 18.4 ft

General Remarks:
RWY STATUS LGTS IN OPN.

NOISE SENSITIVE AREA – HELS OPNG WITHIN THE CTZL ARE REQD TO MAINT THE HIGHEST POSSIBLE ALT.

NO RON PARKING FOR NON–TENANT CHARTER AIRCRAFT WITHOUT PRIOR MASSPORT PERMISSION.

PILOTS SHOULD COMPLETE ALL CALCULATIONS PRIOR TO PUSHBACK FROM GATE.

BTN 0000–0600 LCL – RY 15R IS PREFERENTIAL NGT RY FOR TKOF & RY 33L IS PREFERENTIAL NGT RY FOR LNDG.

RWY 14/32 UNIDIRECTIONAL; NO LDGS RWY 14; NO TKOFS RWY 32.

NMRS CRANES ON AND INV OF ARPT.

TERMINAL E; NORTH & SOUTH CARGO ARRIVALS CTC MASSPORT GATE CONTROL ON FREQ 131.1 BEFORE ENTERING/DEPARTING RAMP AREA.

FOR NOISE ABATEMENT PROCEDURES CALL 617–561–1636 0900–1700 MON–FRI.

BIRDS ON & INV OF ARPT.
ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
Detroit, MI
Detroit Metropolitan Wayne County
ICAO Identifier KDTW

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 42°12′44.8″N / 83°21′12.2″W
2.2.2 From City: 15 miles S of DETROIT, MI
2.2.3 Elevation: 645.2 ft
2.2.4 Magnetic Variation: 7W (2020)
2.2.5 Airport Contact: CHAD NEWTON, INTERIM AMGR
11050 ROGELL DR #602
DETROIT, MI 48242
(734) 942-3685

2.2.6 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: NONE

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: A RFF Index I E certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 03L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 8501 ft x 150 ft
2.12.4 PCN: 86 R/B/W/T
2.12.5 Coordinates: 42°12′28.207″N / 83°21′4.3869″W
2.12.6 Threshold Elevation: 635.7 ft
2.12.6 Touchdown Zone Elevation: 636.8 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′10.8552″N / 83°20′2.6517″W
2.12.6 Threshold Elevation: 631.8 ft
2.12.6 Touchdown Zone Elevation: 633.1 ft

2.12.1 Designation: 04L
2.12.2 True Bearing: 29
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42°12′7.8216″N / 83°23′2.4003″W
2.12.6 Threshold Elevation: 645.2 ft
2.12.6 Touchdown Zone Elevation: 645.2 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 209
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42°13′34.4821″N / 83°21′58.6115″W
2.12.6 Threshold Elevation: 642.1 ft
2.12.6 Touchdown Zone Elevation: 642.1 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 209
2.12.3 Dimensions: 12003 ft x 200 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42°13′52.3644″N / 83°21′59.9655″W
2.12.6 Threshold Elevation: 637.4 ft
2.12.6 Touchdown Zone Elevation: 637.4 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 29
2.12.3 Dimensions: 12003 ft x 200 ft
2.12.4 PCN: 126 R/B/W/T
2.12.5 Coordinates: 42°12′16.5697″N / 83°22′16.5697″W
2.12.6 Threshold Elevation: 639.5 ft
2.12.6 Touchdown Zone Elevation: 639.5 ft

2.12.1 Designation: 22X
2.12.2 True Bearing: 209
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN:  
2.12.5 Coordinates: --- / ---
2.12.6 Threshold Elevation: \( \text{ft} \)
2.12.6 Touchdown Zone Elevation: \( \text{ft} \)

2.12.1 Designation: 04X
2.12.2 True Bearing: 29
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN: ///
2.12.5 Coordinates: --- / ---
2.12.6 Threshold Elevation: \( \text{ft} \)
2.12.6 Touchdown Zone Elevation: \( \text{ft} \)

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°13'0.0821N / 83°21'47.4044W
2.12.6 Threshold Elevation: 638 ft
2.12.6 Touchdown Zone Elevation: 639.6 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8708 ft x 150 ft
2.12.4 PCN: 73 R/A/W/T
2.12.5 Coordinates: 42°13'−3.0219N / 83°19'−51.7146W
2.12.6 Threshold Elevation: 634.3 ft
2.12.6 Touchdown Zone Elevation: 634.7 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 89
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 78 R/A/W/T
2.12.5 Coordinates: 42°11'−56.4542N / 83°21'−42.2248W
2.12.6 Threshold Elevation: 636 ft
2.12.6 Touchdown Zone Elevation: 636.1 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 78 R/A/W/T
2.12.5 Coordinates: 42°11'−58.3372N / 83°19'−49.3276W
2.12.6 Threshold Elevation: 629 ft
2.12.6 Touchdown Zone Elevation: 630.1 ft

2.12.1 Designation: 04L
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'−58.3372N / 83°19'−49.3276W
2.12.6 Threshold Elevation: 629 ft
2.12.6 Touchdown Zone Elevation: 630.1 ft

2.12.1 Designation: 22R
2.12.2 True Bearing: 269
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 78 R/A/W/T
2.12.5 Coordinates: 42°11'−58.3372N / 83°19'−49.3276W
2.12.6 Threshold Elevation: 629 ft
2.12.6 Touchdown Zone Elevation: 630.1 ft

2.12.1 Designation: 04X
2.12.2 True Bearing: 29
2.12.3 Dimensions: 0 ft x 0 ft
2.12.4 PCN: ///
2.12.5 Coordinates: --- / ---
2.12.6 Threshold Elevation: \( \text{ft} \)
2.12.6 Touchdown Zone Elevation: \( \text{ft} \)

2.13.5 Landing Distance Available: 8501 ft
2.13.1 Designation: 21R
2.13.2 Take‐off Run Available: 8501 ft
2.13.3 Take‐off Distance Available: 8501 ft
2.13.4 Accelerate–Stop Distance Available: 8501 ft

2.13.1 Designation: 03R
2.13.2 Take‐off Run Available: 10001 ft
2.13.3 Take‐off Distance Available: 10001 ft
2.13.4 Accelerate–Stop Distance Available: 10001 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03L
2.13.2 Take‐off Run Available: 8501 ft
2.13.3 Take‐off Distance Available: 8501 ft
2.13.4 Accelerate–Stop Distance Available: 8501 ft

2.13.1 Designation: 04R
2.13.2 Take‐off Run Available: 12003 ft
2.13.3 Take‐off Distance Available: 12003 ft
2.13.4 Accelerate–Stop Distance Available: 12003 ft

2.13.1 Designation: 22X
2.13.2 Take‐off Run Available:  ft
2.13.3 Take‐off Distance Available:  ft
2.13.4 Accelerate–Stop Distance Available:  ft

2.13.5 Landing Distance Available:  ft

2.13.1 Designation: 04X
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 09L
2.13.2 Take-off Run Available: 8708 ft
2.13.3 Take-off Distance Available: 8708 ft
2.13.4 Accelerate–Stop Distance Available: 8618 ft
2.13.5 Landing Distance Available: 8618 ft

2.13.1 Designation: 27R
2.13.2 Take-off Run Available: 8708 ft
2.13.3 Take-off Distance Available: 8708 ft
2.13.4 Accelerate–Stop Distance Available: 8708 ft
2.13.5 Landing Distance Available: 8708 ft

2.13.1 Designation: 09R
2.13.2 Take-off Run Available: 8500 ft
2.13.3 Take-off Distance Available: 8500 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

2.13.1 Designation: 27L
2.13.2 Take-off Run Available: 8500 ft
2.13.3 Take-off Distance Available: 8500 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

2.14.1 Designation: 03L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: MALSR

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 03R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 04L
2.14.2 Approach Lighting System: ALSF2

AD 2.18 Air Traffic Services Communication Facilities

2.18.1 Service Designation: APCH/P (RWY 04L/22R, 04R/22L, 27L)
2.18.3 Channel: 124.05
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P (RWY 03R, 21L, 27R)
2.18.3 Channel: 125.15
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P DEP/P
2.18.3 Channel: 284
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARII DP (RWY 04L/22R, 04R/22L)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARII DP (RWY 03L/21R, 03R/21L, 27L, 27R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BONZZ STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 120.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SW)
2.14.3 Channel: 118.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NW/NE)
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE)
2.14.3 Channel: 134.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLVIN DP (RWY 04L/22R, 04R/22L)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLVIN DP (RWY 03L/21R, 03R/21L, 27L, 27R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CRA KN STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CUUGR STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (DEP)
2.14.3 Channel: 118.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS (ARR)
2.14.3 Channel: 133.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (PROPS/TURBO−PROPS−WEST)
2.14.3 Channel: 118.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (TURBOJETS−WEST)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (TURBOJETS−EAST)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (PROPS/TURBO−PROPS−EAST)
2.14.3 Channel: 134.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EM ERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EM ERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FERRL STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GEMNI STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (SOUTHEAST)
2.14.3 Channel: 119.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (NORTHEAST)
2.14.3 Channel: 119.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (NORTHWEST)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (SOUTHWEST)
2.14.3 Channel: 132.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GRAY T STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HANBL STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HAY LL STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 27L, 27R)
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 03L/21R, 03R/21L, 27R)
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 03R/21L, 27R)
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 04L/22R)
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HHOWE DP (RWY 04R/22L)
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: HTROD STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KAY LN DP
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KI SS STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 03L/21R, 03R/21L, 27R)
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 04L/22R, 04R/22L)
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 04R/22L)
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 03L/21R, 03R/21L, 27R)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 04R/22L)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 04R/22L)
2.14.3 Channel: 128.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 03R/21L, 27R)
2.14.3 Channel: 128.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 04L/22R)
2.14.3 Channel: 135
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (ARRIVAL RWY 04R/22L)
2.14.3 Channel: 135
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 27L)
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 04L/22R)
2.14.3 Channel: 128.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (DEP, ARPT DIAG RWY 04L/22R, 04R/22L)
2.14.3 Channel: 135
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LIDDS DP
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MEDDEVAC
2.14.3 Channel: 259.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: METRO DP (WEST-BOUND)
2.14.3 Channel: 118.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: METRO DP (EAST-BOUND)
2.14.3 Channel: 134.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MIGGY DP
2.14.3 Channel: 125.525
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MIZAR STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PA VYL DP
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: POLAR STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 04L/22R)
2.14.3 Channel: 127.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 04R/22L)
2.14.3 Channel: 135.775
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RKCTY STAR
2.14.3 Channel: 124.975
2.14.5 Hours of Operation: 24

2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SPICA STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TPGUN STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TRMML DP (RWY 03L, 03R, 04L, 04R, 21L, 21R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WEEDA STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WNGNT STAR
2.14.3 Channel: 126.225
2.14.5 Hours of Operation: 24

2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ZETTR DP (RWY 03L, 03R, 04L, 04R, 21L, 21R)
2.14.3 Channel: 132.025
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42–11–34.2185N / 83–21–9.5792W
2.19.6 Site Elevation: 638.7 ft

2.19.1 ILS Type: Glide Slope for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42–11–51.1266N / 83–20–54.979W
2.19.6 Site Elevation: 630.1 ft

2.19.1 ILS Type: Inner Marker for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.5 Coordinates: 42–11–36.5551N / 83–21–12.137W
2.19.6 Site Elevation: 631.1 ft

2.19.1 ILS Type: Localizer for runway 03R. Magnetic variation: 7W
2.19.2 ILS Identification: HUU
2.19.6 Site Elevation: 634.0 ft

2.19.1 ILS Type: DME for runway 21L. Magnetic variation: 7W
2.19.2 ILS Identification: EJR
2.19.5 Coordinates: 42–11–34.2185N / 83–21–9.5792W
2.19.6 Site Elevation: 638.7 ft

2.19.1 ILS Type: Glide Slope for runway 21L. Magnetic variation: 7W
2.19.2 ILS Identification: EJR
2.19.5 Coordinates: 42–12–58.4945N / 83–20–5.1867W
2.19.6 Site Elevation: 628.9 ft

2.19.1 ILS Type: Localizer for runway 21L. Magnetic variation: 7W
2.19.2 ILS Identification: EJR
2.19.5 Coordinates: 42–11–34.9459N / 83–21–13.3158W
2.19.6 Site Elevation: 631.1 ft

2.19.1 ILS Type: DME for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42–12–34.9459N / 83–21–13.3158W
2.19.6 Site Elevation: 649.7 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42–12–41.8988N / 83–20–10.0062W
2.19.6 Site Elevation: 649.7 ft

2.19.1 ILS Type: Inner Marker for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42–12–59.7252N / 83–20–50.3339W
2.19.6 Site Elevation: 645.3 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42–12–23.21N / 83–22–11.85W
2.19.6 Site Elevation: 633.1 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic variation: 7W
2.19.2 ILS Identification: HJT
2.19.5 Coordinates: 42–12–18.9498N / 83–23–0.2665W
2.19.6 Site Elevation: 640.6 ft
2.19.6 Site Elevation: 637.1 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 7W
2.19.2 ILS Identification: DTW
2.19.5 Coordinates: 42°14'1.3028"N / 83°20'53.3772"W
2.19.6 Site Elevation: 636.5 ft

2.19.6 Site Elevation: 636.5 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 7W
2.19.2 ILS Identification: DWC
2.19.5 Coordinates: 42°13'59.7252"N / 83°20'50.3339"W
2.19.6 Site Elevation: 645.3 ft

2.19.6 Site Elevation: 635.6 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 7W
2.19.2 ILS Identification: DWC
2.19.5 Coordinates: 42°13'43.8552"N / 83°21'12.2894"W
2.19.6 Site Elevation: 636.1 ft

2.19.6 Site Elevation: 637.1 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic variation: 7W
2.19.2 ILS Identification: DWC
2.19.5 Coordinates: 42°13'56.2259"N / 83°23'1.9618"W
2.19.6 Site Elevation: 636.8 ft

2.19.6 Site Elevation: 640.7 ft

2.19.1 ILS Type: Glide Slope for runway 04X. Magnetic variation: 7W
2.19.2 ILS Identification: ALA
2.19.5 Coordinates: 42°11'57.1056"N / 83°23'6.1821"W
2.19.6 Site Elevation: 656.5 ft

2.19.6 Site Elevation: 639.8 ft

2.19.1 ILS Type: Glide Slope for runway 22X. Magnetic variation: 7W
2.19.2 ILS Identification: BZB
2.19.5 Coordinates: 42°12'47.2915"N / 83°21'59.9856"W
2.19.6 Site Elevation: 646.3 ft

2.19.6 Site Elevation: 636.5 ft

2.19.1 ILS Type: Localizer for runway 22X. Magnetic variation: 7W
2.19.2 ILS Identification: BZB
2.19.5 Coordinates: 42°12'58.3552"N / 83°20'4.8574"W
2.19.6 Site Elevation: 629 ft

2.19.6 Site Elevation: 625.9 ft

2.19.1 ILS Type: Glide Slope for runway 27R. Magnetic variation: 7W
2.19.2 ILS Identification: DMI
2.19.5 Coordinates: 42°11'53.6723"N / 83°21'55.0763"W
2.19.6 Site Elevation: 634.8 ft

2.19.6 Site Elevation: 639.3 ft

2.19.1 ILS Type: Localizer for runway 27R. Magnetic variation: 7W
2.19.2 ILS Identification: DMI
2.19.5 Coordinates: 42°11'54.6653"N / 83°20'2.5117"W
2.19.6 Site Elevation: 625.9 ft

2.19.6 Site Elevation: 629 ft

2.19.1 ILS Type: Glide Slope for runway 27L. Magnetic variation: 7W
2.19.2 ILS Identification: EPA
2.19.5 Coordinates: 42°11'54.6653"N / 83°20'2.5117"W
2.19.6 Site Elevation: 625.9 ft

2.19.6 Site Elevation: 636.5 ft
2.19.6 Site Elevation: 634.1 ft

**General Remarks:**
BRIGHTLY LIGHTED PARKING LOT 2.6 NM SW OF ARPT.

RWY VISUAL SCREEN 20 FT AGL 1150 FT S. AER 04R

TURNING RESTRICTION TWY B TO TWY K RESTRICTED TO AIRCRAFT WITH WINGSPAN 171 FT OR LESS.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PPR FOR B747–8 OPRS DUE TO CONSTRAINTS ON RWYS, TWYS AND RAMPS CTC AIRFIELD OPRS AT 734–942–3685.

TAXI ON RWY 09L/27R LTD TO: EXITING FM RWY 04R/22L, 03L/21R, & 03R/21L EXC NO TAXI BTN RWY 03L/21R & TWY W; TWO-WAY TAXI BTN TWY Y & TWY M WHEN RED STOP BAR LGTS ARE LGTD AT RWY 04R/22L & 03L/21R OR WHEN BARRICADES ARE USED INSTEAD AT THE RESPECTIVE INTS. TAXI BTN 55–SR OR IN CONDS WITH VIS LESS THAN 1 SM RQRS GREEN CNTRLN LGT TO BE OPR.

BE ALERT BIRDS, WATERFOWL, ON & INVOF ARPT.

RY STATUS LGTS ARE IN OPN.

ACFT WITH WINGSPAN GTR THAN 171 FT ARE RSTRD FM USING TWY P BTN TWY J & TWY P3.

TURNING RSTRD TO WINGSPAN 135 FT OR LESS TWY G NORTH TO TWY V EAST.

ACFT WITH WINGSPAN GTR THAN 171 FT ARE RSTRD FM USING TWY H BTN TWY B & TWY F.

AIRCRAFT WITH WINGSPAN GREATER THAN 171 FT CANNOT PASS EACH OTHER ON TWYS Y AND K BETWEEN TWYS U AND K6 INSUFFICIENT WINGTIP CLEARANCE.

ACFT ON TWY ‘F’ AND TWY ‘V’ DO NOT BLOCK FIRE STATION EXITS.

DIVERSIONAIR CARRIERS WITHOUT A PRESENCE AT DTW SHOULD CTC AIRFIELD OPRS 734–942–3685 PRIOR TO DIVERTING TO THE EXTENT PRACTICAL AND PROVIDE COMPANY, FLT OPRS, CTC INFO, AIRCRAFT TYPE, PERSONS ONBOARD, INTERNATIONAL OR DOMESTIC, ANY GRND HANDLER AGREEMENTS IN PLACE.

AUTH TO CONDUCT SIMUL INDEPENDENT INSTR APCHS TO PARL RWY 04L/22R & 03R/21L WO FINAL MONITORS, RWY CNTRLNS SEPARATED BY 8800 FT.
M inneapolis, M N
M inneapolis–St Paul Intl/Wold–Chamberlain
ICAO Identifier KMSP

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 44°52’55.1”N / 93°13’18.4”W
2.2.2 From City: 6 miles S of MINNEAPOLIS, M N
2.2.3 Elevation: 841.8 ft
2.2.5 Magnetic Variation: 0E (2015)
2.2.6 Airport Contact: BRIAN RYK S
6040 28TH A VE SOUTH
MINNEAPOLIS, M N 55450
(612−726−8100)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A,A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R FF Index
I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11006 ft x 150 ft
2.12.4 PCN: 105 R/B/W/T
2.12.5 Coordinates: 44°52’–20.158”N / 93°14’–17.9427”W
2.12.6 Threshold Elevation: 833.5 ft
2.12.6 Touchdown Zone Elevation: 831.7 ft

2.12.1 Designation: 22
2.12.2 True Bearing: 225
2.12.3 Dimensions: 11006 ft x 150 ft
2.12.4 PCN: 105 R/B/W/T
2.12.5 Coordinates: 44°53’–36.9917”N / 93°12’–29.8434”W
2.12.6 Threshold Elevation: 830.3 ft
2.12.6 Touchdown Zone Elevation: 828.3 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 301
2.12.3 Dimensions: 8200 ft x 150 ft
2.12.4 PCN: 105 R/B/W/T

AD 2.13 Declared Distances
2.13.1 Designation: 04
2.13.2 Take−off Run Available: 11006 ft
2.13.3 Dimensions: 8200 ft x 150 ft
2.13.4 PCN: 118 R/B/W/T
2.13.5 Coordinates: 44°51’–58.2366”N / 93°14’–11.9205”W
2.13.6 Threshold Elevation: 833.3 ft
2.13.6 Touchdown Zone Elevation: 831.7 ft

2.13.1 Designation: 12L
2.13.2 True Bearing: 121
2.13.3 Dimensions: 8200 ft x 150 ft
2.13.4 PCN: 105 R/B/W/T
2.13.5 Coordinates: 44°53’–16.0438”N / 93°12’–4.2689”W
2.13.6 Threshold Elevation: 838.6 ft
2.13.6 Touchdown Zone Elevation: 840.7 ft

2.13.1 Designation: 12R
2.13.2 True Bearing: 121
2.13.3 Dimensions: 10000 ft x 200 ft
2.13.4 PCN: 106 R/B/W/T
2.13.5 Coordinates: 44°53’–16.0438”N / 93°12’–4.2689”W
2.13.6 Threshold Elevation: 841.8 ft
2.13.6 Touchdown Zone Elevation: 841.8 ft

2.13.1 Designation: 30L
2.13.2 True Bearing: 301
2.13.3 Dimensions: 10000 ft x 200 ft
2.13.4 PCN: 106 R/B/W/T
2.13.5 Coordinates: 44°53’–16.0438”N / 93°12’–4.2689”W
2.13.6 Threshold Elevation: 841.8 ft
2.13.6 Touchdown Zone Elevation: 841.8 ft

2.13.1 Designation: 35
2.13.2 True Bearing: 350
2.13.3 Dimensions: 8000 ft x 150 ft
2.13.4 PCN: 118 R/B/W/T
2.13.5 Coordinates: 44°51’–58.2366”N / 93°14’–11.9205”W
2.13.6 Threshold Elevation: 833.3 ft
2.13.6 Touchdown Zone Elevation: 834.4 ft

2.13.1 Designation: 17
2.13.2 True Bearing: 170
2.13.3 Dimensions: 8000 ft x 150 ft
2.13.4 PCN: 118 R/B/W/T
2.13.5 Coordinates: 44°53’–15.9127”N / 93°−14’−32.1137”W
2.13.6 Threshold Elevation: 840.4 ft
2.13.6 Touchdown Zone Elevation: 840.4 ft

2.13.1 Designation: 35
2.13.2 True Bearing: 350
2.13.3 Dimensions: 8000 ft x 150 ft
2.13.4 PCN: 118 R/B/W/T
2.13.5 Coordinates: 44°53’–15.9127”N / 93°−14’−32.1137”W
2.13.6 Threshold Elevation: 840.4 ft
2.13.6 Touchdown Zone Elevation: 840.4 ft

2.13.1 Designation: 17
2.13.2 True Bearing: 170
2.13.3 Dimensions: 8000 ft x 150 ft
2.13.4 PCN: 118 R/B/W/T
2.13.5 Coordinates: 44°53’–15.9127”N / 93°−14’−32.1137”W
2.13.6 Threshold Elevation: 840.4 ft
2.13.6 Touchdown Zone Elevation: 840.4 ft
2.13.3 Take-off Distance Available: 11006 ft
2.13.4 Accelerate–Stop Distance Available: 11006 ft
2.13.5 Landing Distance Available: 9456 ft

2.13.1 Designation: 22
2.13.2 Take-off Run Available: 11006 ft
2.13.3 Take-off Distance Available: 11006 ft
2.13.4 Accelerate–Stop Distance Available: 11006 ft
2.13.5 Landing Distance Available: 10006 ft

2.13.1 Designation: 30R
2.13.2 Take-off Run Available: 8200 ft
2.13.3 Take-off Distance Available: 8200 ft
2.13.4 Accelerate–Stop Distance Available: 8200 ft
2.13.5 Landing Distance Available: 8000 ft

2.13.1 Designation: 12L
2.13.2 Take-off Run Available: 8200 ft
2.13.3 Take-off Distance Available: 8200 ft
2.13.4 Accelerate–Stop Distance Available: 7620 ft
2.13.5 Landing Distance Available: 7620 ft

2.13.1 Designation: 12R
2.13.2 Take-off Run Available: 10000 ft
2.13.3 Take-off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 30L
2.13.2 Take-off Run Available: 10000 ft
2.13.3 Take-off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 17
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft

2.13.1 Designation: 35
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft

2.14.1 Designation: 22
2.14.2 Approach Lighting System: MALS R

2.14.1 Designation: 30R
2.14.2 Approach Lighting System: MALS R

2.14.1 Designation: 12L
2.14.2 Approach Lighting System: ALSF 2

2.14.1 Designation: 12R
2.14.2 Approach Lighting System: ALSF 2

2.14.1 Designation: 30L
2.14.2 Approach Lighting System: ALSF 2

2.14.1 Designation: 17
2.14.2 Approach Lighting System: MALS R

2.14.1 Designation: 35
2.14.2 Approach Lighting System: ALSF 2

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Localizer for runway 04. Magnetic variation: 0E
2.19.2 ILS Identification: APL
2.19.5 Coordinates: 44–53–44.0038N / 93–12–19.9688W
2.19.6 Site Elevation: 832.1 ft

2.19.1 ILS Type: Localizer for runway 22. Magnetic variation: 0E
2.19.2 ILS Identification: SIJ
2.19.5 Coordinates: 44–52–12.792N / 93–14–28.3006W
2.19.6 Site Elevation: 831.4 ft

2.19.1 ILS Type: DME for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44–53–3.674N / 93–11–48.8687W
2.19.6 Site Elevation: 824 ft

2.19.1 ILS Type: Glide Slope for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44°53′31.1153″N / 93°12′56.6941″W
2.19.6 Site Elevation: 831 ft

2.19.1 ILS Type: Inner Marker for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44°53′39.694N / 93°13′25.8963″W
2.19.6 Site Elevation: 845.3 ft

2.19.1 ILS Type: Localizer for runway 12L. Magnetic variation: 0E
2.19.2 ILS Identification: PJL
2.19.5 Coordinates: 44°52′50.3312″N / 93°11′33.2418″W
2.19.6 Site Elevation: 813 ft

2.19.1 ILS Type: DME for runway 30R. Magnetic variation: 0E
2.19.2 ILS Identification: INN
2.19.5 Coordinates: 44°53′3.674N / 93°11′33.2418″W
2.19.6 Site Elevation: 824 ft

2.19.1 ILS Type: Glide Slope for runway 30R. Magnetic variation: 0E
2.19.2 ILS Identification: INN
2.19.5 Coordinates: 44°53′3.4471″N / 93°11′29.92″W
2.19.6 Site Elevation: 843.1 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′3.40.8411″N / 93°13′13.29.92″W
2.19.6 Site Elevation: 808.1 ft

2.19.1 ILS Type: DME for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44°53′26.9244N / 93°12′20.5476″W
2.19.6 Site Elevation: 840 ft

2.19.1 ILS Type: Glide Slope for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44°53′7.28N / 93°13′13.53.62″W
2.19.6 Site Elevation: 832.5 ft

2.19.1 ILS Type: Inner Marker for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44°53′20.8698N / 93°14′12.7019″W
2.19.6 Site Elevation: 840 ft

2.19.1 ILS Type: Localizer for runway 12R. Magnetic variation: 0E
2.19.2 ILS Identification: HKZ
2.19.5 Coordinates: 44°53′19.4377″N / 93°11′52.1826″W
2.19.6 Site Elevation: 808.1 ft

2.19.1 ILS Type: DME for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44°52′26.9244N / 93°12′20.5476″W
2.19.6 Site Elevation: 825.4 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44°52′27.0021N / 93°12′20.2067″W
2.19.6 Site Elevation: 812.1 ft

2.19.1 ILS Type: Inner Marker for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44°53′19.4377″N / 93°11′52.1826″W
2.19.6 Site Elevation: 808.1 ft

2.19.1 ILS Type: Localizer for runway 30L. Magnetic variation: 0E
2.19.2 ILS Identification: MSP
2.19.5 Coordinates: 44°53′19.4377″N / 93°11′52.1826″W
2.19.6 Site Elevation: 808.1 ft

2.19.1 ILS Type: DME for runway 17. Magnetic variation: 0E
2.19.2 ILS Identification: TJZ
2.19.5 Coordinates: 44°53′22.4589N / 93°14′17.688W
2.19.6 Site Elevation: 840 ft

2.19.1 ILS Type: Glide Slope for runway 17. Magnetic variation: 0E
2.19.2 ILS Identification: TJZ
2.19.5 Coordinates: 44°53′24.6166N / 93°14′38.0356″W
2.19.6 Site Elevation: 832.5 ft

2.19.1 ILS Type: Localizer for runway 17. Magnetic variation: 0E
2.19.2 ILS Identification: TJZ
2.19.5 Coordinates: 44°53′24.6166N / 93°14′38.0356″W
2.19.6 Site Elevation: 832.5 ft
General Remarks:

NOISE ABATEMENT PROCEDURES – 612–726–9411. NO STAGE 1 CAT CIVIL ACFT. NIGHT HR 2230–0600.

TRNG FLTS PROHIBITED. GA FLTS MUST TRMT AT THE FBO OR US CUSTOMS UNLESS APVD BY AMGR.

MILITARY RSTD: NO HAZ CL/DIV 1.1 OR 1.2 EXPLOSIVES PERMITTED. LOADING OR UNLOADING OF HAZ CL/DIV 1.3, 1.4, 1.5 OR 1.6 MUST BE APV BY ARPT DRCT PRIOR TO FLT.

MILITARY: ARFC 934 AW OPS 1300–0400Z++ MON–FRI; CLSD WKEND AND HOL. UNIT TRNG ASSEMBLY WKEND 1330–2200Z++. ALL TRANS ACFT MUST RECEIVE PPR 48 HR PRIOR TO ETA – CTC AIRFIELD MGMT.

ASDE–X IN USE; OPR TRANSPONDERS WITH ALT RPRT MODE & ADS–B ENABLED ON ALL ARPT SFCS.

RWY STATUS LGTS IN OPRN.

TWY J CLSD TO ACFT WINGSPAN MORE THAN 85.5 FT.

133 AW AFLD MGMT – 324.1 REMARKS: CALL LIGHTHOUSE.

UNSKED ACFT AT TRML 2–HUMPHREY REQ TO CTC TRML 2 GATE CONTROL ON 122.95 OR CALL 612–726–5742 PRIOR TO ARR.

SIGNATURE FLIGHT SUPPORT 128.95

COMMUNICATIONS: MINNEAPOLIS AIR RESERVE STATION JOINT COMD POST – 252.1 REMARKS: CALL NORTHSTAR.

REMARKS: AFRC 934 AW CTC PTD VIKING OPS 20 M IN PRIOR LDG.

ALL GROUP VI ACFT WITH WINGSPAN GREATER THAN 214 FT PPR Req PRIOR TO ARR – CTC AIRSIDE OPS 612–726–5111.

934 AW AFLD MGMT – PTD 282.675 REMARKS: CALL VIKING OPS.
BIRDS ON & INV OF ARPT.

ALL GA ACFT WITH LESS THAN 20 PAX THAT NEED TO CLEAR US CUSTOMS SHOULD CTC SIGNATURE FLT SUPPORT 128.95 OR 612–726–5700 PRIOR TO ARR.
Kansas City, MO  
Kansas City Intl  
ICAO Identifier KMCI

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 39°17′51.4″N / 94°42′50″W  
2.2.2 From City: 15 miles NW of KANSAS CITY, MO  
2.2.3 Elevation: 1026.9 ft  
2.2.5 Magnetic Variation: 2°E (2015)  
2.2.6 Airport Contact: MR. BOB JOHNSON  
P.O. BOX 20047  
KANSAS CITY, MO 64195  
(816) 243-5248  
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES  
2.4.2 Fuel Types: 100LL,A  
2.4.5 Hangar Space:  
2.4.6 Repair Facilities: NONE

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: ARFF Index  
IC certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 01L  
2.12.2 True Bearing: 13  
2.12.3 Dimensions: 10801 ft x 150 ft  
2.12.4 PCN: 93 R/B/W/T  
2.12.5 Coordinates: 39°17′36.0029″N / 94°43′45.5433″W  
2.12.6 Threshold Elevation: 1014.4 ft  
2.12.6 Touchdown Zone Elevation: 1014.4 ft  
2.12.1 Designation: 19R  
2.12.2 True Bearing: 193  
2.12.3 Dimensions: 10801 ft x 150 ft  
2.12.4 PCN: 65 F/D/W/T  
2.12.5 Coordinates: 39°17′17.0716″N / 94°41′35.5978″W  
2.12.6 Threshold Elevation: 1026.9 ft  
2.12.6 Touchdown Zone Elevation: 1026.9 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′24.7369″N / 94°42′32.3935″W  
2.12.6 Threshold Elevation: 978.5 ft  
2.12.6 Touchdown Zone Elevation: 995.2 ft  
2.12.1 Designation: 01R  
2.12.2 True Bearing: 13  
2.12.3 Dimensions: 9500 ft x 150 ft  
2.12.4 PCN: 71 R/B/W/T  
2.12.5 Coordinates: 39°16′53.2341″N / 94°42′32.3935″W  
2.12.6 Threshold Elevation: 995.2 ft  
2.12.6 Touchdown Zone Elevation: 995.2 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′17.0716″N / 94°41′35.5978″W  
2.12.6 Threshold Elevation: 1026.9 ft  
2.12.6 Touchdown Zone Elevation: 1026.9 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 01L  
2.13.2 Take–off Run Available: 10801 ft  
2.13.3 Take–off Distance Available: 10801 ft  
2.13.4 Accelerate–Stop Distance Available: 10801 ft  
2.13.5 Landing Distance Available: 10801 ft  
2.13.1 Designation: 19R  
2.13.2 Take–off Run Available: 10801 ft  
2.13.3 Take–off Distance Available: 10801 ft  
2.13.4 Accelerate–Stop Distance Available: 10801 ft  
2.13.5 Landing Distance Available: 10801 ft  
2.13.1 Designation: 19L  
2.13.2 Take–off Run Available: 9500 ft  
2.13.3 Take–off Distance Available: 9500 ft  
2.13.4 Accelerate–Stop Distance Available: 9500 ft  
2.13.5 Landing Distance Available: 9500 ft

Twenty-Sixth Edition  
Federal Aviation Administration
2.13.1 Designation: 01R
2.13.2 Take-off Run Available: 9500 ft
2.13.3 Take-off Distance Available: 9500 ft
2.13.4 Accelerate–Stop Distance Available: 9500 ft
2.13.5 Landing Distance Available: 9500 ft

2.13.2 Take-off Run Available: 9501 ft
2.13.3 Take-off Distance Available: 9501 ft
2.13.4 Accelerate–Stop Distance Available: 9501 ft
2.13.5 Landing Distance Available: 9501 ft

2.13.1 Designation: 27
2.13.2 Take-off Run Available: 9501 ft
2.13.3 Take-off Distance Available: 9501 ft
2.13.4 Accelerate–Stop Distance Available: 9501 ft
2.13.5 Landing Distance Available: 9501 ft

2.13.1 Designation: 09
2.13.2 Take-off Run Available: 9501 ft
2.13.3 Take-off Distance Available: 9501 ft
2.13.4 Accelerate–Stop Distance Available: 9501 ft
2.13.5 Landing Distance Available: 9501 ft

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 135.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHIEF DP
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (EAST OF RWY 01/19)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P
2.14.3 Channel: 128.375
2.14.5 Hours of Operation: 24
2.14.3 Channel: 123.95
2.14.1 Service Designation: RACER DP (BUTLER/SPRINGFIELD TRANSITION)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (191–009)
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (191–009)
2.14.3 Channel: 284.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (010–190)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/S
2.14.3 Channel: 121.65
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LAKES DP
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LAKES DP
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 128.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 254.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/S
2.14.3 Channel: 125.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RACER DP (BUTLER/SPRINGFIELD TRANSITION)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RACER DP (DOSOA TRANSITION)
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RACER DP (DOSOA TRANSITION)
2.14.3 Channel: 284.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RACER DP (BUTLER/SPRINGFIELD TRANSITION)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ROYAL DP (ARENZ/BO-DYN TRANSITION)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ROYAL DP (TONCE TRANSITION)
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ROYAL DP (TONCE TRANSITION)
2.14.3 Channel: 284.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ROYAL DP (ARENZ/BO-DYN TRANSITION)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TIFTO DP
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: TIFTO DP
2.14.3 Channel: 284.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: WILDCAT DP
2.14.3 Channel: 124.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: WILDCAT DP
2.14.3 Channel: 284.7
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 2E
2.19.2 ILS Identification: DOT
2.19.5 Coordinates: 39°19′30.0746N / 94°43′8.2388W
2.19.6 Site Elevation: 988.8 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 2E
2.19.2 ILS Identification: DOT
2.19.5 Coordinates: 39°17′48.2654N / 94°43′47.1321W
2.19.6 Site Elevation: 1002.8 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 2E
2.19.2 ILS Identification: DOT
2.19.5 Coordinates: 39°19′31.1181N / 94°43′11.5232W
2.19.6 Site Elevation: 972.3 ft

2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39°18′35.6272N / 94°42′5.4664W
2.19.6 Site Elevation: 960 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°17′3.1905N / 94°42′24.2292W
2.19.6 Site Elevation: 1010.8 ft

2.19.1 ILS Type: Inner Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39°16′45.0995N / 94°42′34.8009W
2.19.6 Site Elevation: 1011.1 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39°18′34.4013N / 94°42′2.4648W
2.19.6 Site Elevation: 963.3 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39°19′30.1157N / 94°43′11.8201W
2.19.6 Site Elevation: 972.4 ft

2.19.1 ILS Type: Inner Marker for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39°16′49.2587N / 94°43′6.2032W
2.19.6 Site Elevation: 965.1 ft

2.19.1 ILS Type: Localizer for runway 19R. Magnetic variation: 2E
2.19.2 ILS Identification: PAJ
2.19.5 Coordinates: 39°18′39.9534N / 94°42′3.2934W
2.19.6 Site Elevation: 1017.6 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°17′26.5596N / 94°42′2.4648W
2.19.6 Site Elevation: 994.9 ft

2.19.1 ILS Type: Inner Marker for runway 19L. Magnetic variation: 2E
2.19.2 ILS Identification: DYH
2.19.5 Coordinates: 39°16′34.5327N / 94°42′38.5532W
2.19.6 Site Elevation: 1017.5 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 2E
2.19.2 ILS Identification: DYH
2.19.5 Coordinates: 39°18′39.9534N / 94°42′3.2934W

Federal Aviation Administration Twenty-Sixth Edition
2.19.6 Site Elevation: 977.9 ft

2.19.1 ILS Type: Localizer for runway 19L. Magnetic variation: 2E
2.19.2 ILS Identification: DYH
2.19.5 Coordinates: 39–16–43.575N / 94–42–35.2495W
2.19.6 Site Elevation: 1011.1 ft

2.19.1 ILS Type: DME for runway 09. Magnetic variation: 2E
2.19.2 ILS Identification: RNI
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
2.19.6 Site Elevation: 1010.7 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 2E
2.19.2 ILS Identification: RNI
2.19.6 Site Elevation: 1020.2 ft

2.19.1 ILS Type: DME for runway 27. Magnetic variation: 2E
2.19.2 ILS Identification: UQY
2.19.6 Site Elevation: 1024.3 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 2E
2.19.2 ILS Identification: UQY
2.19.6 Site Elevation: 1021.4 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 2E
2.19.2 ILS Identification: UQY
2.19.6 Site Elevation: 1015.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 5E
2.19.2 Navigation Aid Identification: MCI
2.19.6 Site Elevation: 1017 ft

**General Remarks:**
PPR TO PARK AT AIRLINE GATES CTC RESPECTIVE AIRLINE.

WHEN USING HIGH–SPEED EXITS C5 & C6 CONTINUE UNTIL FIRST PARALLEL TWY, THEN USE EXTREME CARE WHEN TURNING IN EXCESS OF 90 DEGREES.

NOISE ABATEMENT PROCEDURES IN EFFECT 2200–0600 WITH LANDING ON RYS 01L & 19L; TAKEOFFS ON RYS 01R & 19R.

PUSHBACK CLNC RQRD AT GATES 43 THRU 57 IN TRML B AND GATES 68 THRU 77 IN TRML C, PUSHBACK FROM THESE GATES ENTERS TWY D.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

DESIGN GROUP V AND VI ACFT RQR AN ARPT ESCORT ON TWY DELTA BTN TWYS JULIET AND LIMA.

NO ACFT PARKING ON POSTAL APRON.

MIL ACFT MAY BE CHARGED RAMP/PARKING FEES.

TWY B1 BTN TWY B AND FEDEX APN COCKPIT OVER CNTRLN STEERING RQRD

TWY L BTN TWY L1 AND TWY D WINGSPAN RESTRICTION OF 118 FT. TWY C2 BTN TWY C3 AND TWY C1 WINGSPAN RESTRICTION OF 118 FT.
WINDSHEAR ALERT SYSTEM ON ARPT.

WATERFOWL ON AND INVOF ARPT.

FLIGHT NOTIFICATION SVC (ADCUS) AVBL AT GATE 90.
St Louis, MO
Lambert–St Louis Intl
ICAO Identifier KSTL

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 38–44–55.3136N / 90–22–12.0926W
2.2.2 From City: 10 miles NW of ST LOUIS, MO
2.2.3 Elevation: 617.3 ft
2.2.5 Magnetic Variation: 1W (2020)
2.2.6 Airport Contact: MS. RHONDA HAMM–NIEBRUEGGE
BOX 10212
ST LOUIS, MO 63145
(314–426–8000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
ID certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 63
2.12.3 Dimensions: 7603 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38–44–48.0621N / 90–22–52.3834W
2.12.6 Threshold Elevation: 550.6 ft
2.12.6 Touchdown Zone Elevation: 550.9 ft

2.12.1 Designation: 29
2.12.2 True Bearing: 302
2.12.3 Dimensions: 9013 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38–44–18.9859N / 90–20–22.5077W
2.12.6 Threshold Elevation: 604.3 ft
2.12.6 Touchdown Zone Elevation: 604.5 ft

2.12.1 Designation: 12L
2.12.2 True Bearing: 122
2.12.3 Dimensions: 9013 ft x 150 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38–45–14.0539N / 90–22–44.9719W
2.12.6 Threshold Elevation: 541.3 ft
2.12.6 Touchdown Zone Elevation: 539.7 ft

2.12.1 Designation: 30R
2.12.2 True Bearing: 302
2.12.3 Dimensions: 9013 ft x 200 ft
2.12.4 PCN: 85 R/B/W/T
2.12.5 Coordinates: 38–44–16.0145N / 90–20–47.272W
2.12.6 Threshold Elevation: 585.3 ft
2.12.6 Touchdown Zone Elevation: 582.5 ft
AD 2.13 Declared Distances

2.13.1 Designation: 06
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 24
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 24
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 29
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 11
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 29
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 30R
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 12L
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 12R
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 30L
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 12L
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 30L
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 06
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 24
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 29
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 30R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 12L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 12R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 30L
2.14.2 Approach Lighting System: ALSF2

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 06. Magnetic variation: 1W
2.19.2 ILS Identification: JAK
2.19.5 Coordinates: 38–44–40.533N / 90–22–58.4278W
2.19.6 Site Elevation: 555.1 ft

2.19.1 ILS Type: Glide Slope for runway 06. Magnetic variation: 1W
2.19.2 ILS Identification: JAK
2.19.5 Coordinates: 38–44–54.582N / 90–22–40.1291W
2.19.6 Site Elevation: 537.6 ft

2.19.1 ILS Type: Localizer for runway 06. Magnetic variation: 1W
2.19.2 ILS Identification: JAK
2.19.5 Coordinates: 38–45–27.2803N / 90–21–14.821W
2.19.6 Site Elevation: 547.5 ft

2.19.1 ILS Type: DME for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38–44–40.533N / 90–22–58.4278W
2.19.6 Site Elevation: 555.1 ft

2.19.1 ILS Type: Glide Slope for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38–45–13.5951N / 90–21–37.573W
2.19.6 Site Elevation: 528.6 ft

2.19.1 ILS Type: Localizer for runway 24. Magnetic variation: 1W
2.19.2 ILS Identification: STL
2.19.5 Coordinates: 38–44–43.5036N / 90–23–3.7184W
2.19.6 Site Elevation: 545.7 ft

2.19.1 ILS Type: DME for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38–44–36.5929N / 90–22–41.4734W
2.19.6 Site Elevation: 562.6 ft

2.19.1 ILS Type: Glide Slope for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38–45–26.0348N / 90–24–25.3788W
2.19.6 Site Elevation: 598.2 ft

2.19.1 ILS Type: Inner Marker for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.5 Coordinates: 38–45–40.3474N / 90–24–44.7374W
2.19.6 Site Elevation: 613.3 ft

2.19.1 ILS Type: Localizer for runway 11. Magnetic variation: 1W
2.19.2 ILS Identification: OGZ
2.19.6 Site Elevation: 544.8 ft

2.19.1 ILS Type: DME for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: RQN
2.19.5 Coordinates: 38–45–14.1233N / 90–22–7.9077W
2.19.6 Site Elevation: 541 ft

2.19.1 ILS Type: Glide Slope for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: RQN
2.19.5 Coordinates: 38–44–49.8126N / 90–23–11.853W
2.19.6 Site Elevation: 555.6 ft

2.19.1 ILS Type: Localizer for runway 29. Magnetic variation: 1W
2.19.2 ILS Identification: RQN
2.19.5 Coordinates: 38–45–41.3528N / 90–24–46.7635W
2.19.6 Site Elevation: 612.3 ft

2.19.1 ILS Type: DME for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38–44–10.3827N / 90–20–12.0493W
2.19.6 Site Elevation: 614.1 ft

2.19.1 ILS Type: Glide Slope for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38–45–58.2183N / 90–21–50.3412W
2.19.6 Site Elevation: 533.8 ft

2.19.1 ILS Type: Inner Marker for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38–45–11.9417N / 90–22–9.8845W
2.19.6 Site Elevation: 531.1 ft

2.19.1 ILS Type: Localizer for runway 12L. Magnetic variation: 1W
2.19.2 ILS Identification: LDZ
2.19.5 Coordinates: 38–44–13.6664N / 90–20–11.7277W
2.19.6 Site Elevation: 601.7 ft

2.19.1 ILS Type: DME for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38–45–14.1233N / 90–22–7.9077W
2.19.6 Site Elevation: 541 ft
2.19.1 ILS Type: Glide Slope for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−44−21.9637N / 90−20−38.0149W
2.19.6 Site Elevation: 592.5 ft

2.19.1 ILS Type: Localizer for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−44−14.6573N / 90−20−13.7268W
2.19.6 Site Elevation: 600.9 ft

2.19.1 ILS Type: Inner Marker for runway 30R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−44−10.2182N / 90−20−35.5392W
2.19.6 Site Elevation: 595.6 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−45−12.1188N / 90−22−10.2369W
2.19.6 Site Elevation: 531.7 ft

2.19.1 ILS Type: Glide Slope for runway 30L. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−45−7.6656N / 90−20−39.8597W
2.19.6 Site Elevation: 606.5 ft

2.19.1 ILS Type: Glide Slope for runway 12R. Magnetic variation: 1W
2.19.2 ILS Identification: SJW
2.19.5 Coordinates: 38−44−11.3841N / 90−22−55.7958W
2.19.6 Site Elevation: 550.8 ft

General Remarks:
TWY DELTA OR TAXILANE CHARLIE FM TWY SIERRA TO TWY GOLF, B−747S ARE NOT AUTH TO PASS OR BE PASSED BY B767 OR OTR LRGR ACFT OPRG ON THE PARL TWY/TAXILANE.

TWY ALPHA EAST OF TWY TANGO, TWY SIERRA AND RWY 6/24 SOUTH OF TWY BRAVO, NO ACFT OR VEHICLE OPNS WHEN ARRIVING OR DEPG RWY 11 OR ARRIVING RWY 29.

TWY LIMA, NORTH OF RWY 12L/30R, ACFT LRGR THAN A GULFSTREAM VI TAX NBND ARE PROHIBITED FM MAKING A RIGHT TURN EBND ON TWY FOXTROT.

TWY KILO 1 IS UNAVBL TO B−767 OR LRGR ACFT (WINGSPAN 118 FT OR GTR).

WG TIP CLNC WITH GND VEH NOT ADEQUATE A LONG N SIDE OF MAIN TRML APN.

TWY VICTOR 2 IS UNAVBL TO B−767 OR LRGR ACFT (WINGSPAN 118 FT OR GTR).

WAIVER TO CONDUCT SIMULTANEOUS APCHS TO PARALLEL RYS SEPARATED BY 1,300 FT IN EFFECT.

TAXILANE CHARLIE, FM TWY SIERRA TO TWY ROMEO, RSTRD TO B−767 OR SMLR ACFT (156 FT AVBL) WHEN ACFT ARE PARKED IN THE CHARLIE PAD. RSTRN IS FOR TAX ACFT, LRGR ACFT MAY BE TOWED THRU THE AREA.
TWY VICTOR, UNDERLYING THE RWY 12L FNA CRS, IS RSTRD TO ACFT WITH A TAIL HGT OF 25 FT OR LESS (CRJ−700 OR SMLR) WHEN ACFT ARE LNDG ON RWY 12L.

TWY ECHO, BTN TWY PAPA AND TWY NOVEMBER, RSTRD TO B−767 OR SMLR ACFT (WINGSPAN LESS THAN 171 FT) WHEN ACFT ARE PARKED ON THE ECHO PAD.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

A−GEAR: A−G ARE KEPT IN RECESSED POSN TIL REQ FOR USE. TWR MUST BE NOTIFIED AT LEAST 5 SEC PRIOR TO ENGAGEMENT SO THAT CABLE MAY BE RAISED.

TWY PAPA, EAST OF THE PAPA PAD TO TWY FOXTROT, RSTRD TO ACFT WITH A WINGSPAN OF LESS THAN 79 FT (CRJ−900 OR SMLR), WHEN ACFT ARE PARKED ON THE PAPA PAD. THIS AREA IS RSTRD TO ALL OPNS WHEN ACFT ARE PERFORMING ENG RUN−UPS IN THE PAPA PAD

TAXILANE/TWY CHARLIE, EAST OF TWY DELTA ONE TO THE AER 30L, RSTRD TO B−737 OR SMLR ACFT (WINGSPAN LESS THAN 118 FT) WHEN ACFT ARE PARKED ON THE HOTEL PAD.

TAXILANE CHARLIE, FROM TWY PAPA TO TWY QUEBEC, RSTRD TO A B757−300 SERIES OR SMLR.

TAXILANE CHARLIE, FROM TWY PAPA TO TWY DELTA FOUR, RSTRD TO B757−300 SERIES OR SMLR WHEN PASSING BHND ACFT THAT HAVE MADE THE INITIAL 10 FT PUSHBACK.

TWY VICTOR 2, B−737 (WINGSPAN GTR THAN 79 FT BUT LESS THAN 118 FT) MUST PERFORM JUDGMENTAL OVERSTEERING INSTEAD OF COCKPIT OVR CNTRLN STEERING WHEN TAX.
Las Vegas, NV  
McCarran Intl  
ICAO Identifier KLAS

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 36°4′48.158″N / 115°9′8.045″W
2.2.2 From City: 5 miles S of LAS VEGAS, NV
2.2.3 Elevation: 2181.2 ft
2.2.5 Magnetic Variation: 11E (2020)
2.2.6 Airport Contact: ROSEMARY A. VASSILIADIS  
5757 WAYNE NEWTON BLVD  
LAS VEGAS, NV 89119  
(702) 261-4525
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, 100LL, A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index  
IE certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 01L
2.12.2 True Bearing: 25
2.12.3 Dimensions: 8988 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36°–4′31.1684″N / 115°–10′13.3148″W
2.12.6 Threshold Elevation: 2181.2 ft
2.12.6 Touchdown Zone Elevation: 2176.1 ft
2.12.1 Designation: 19L
2.12.2 True Bearing: 205
2.12.3 Dimensions: 9771 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36°–5′54.8814″N / 115°–9′12.8055″W
2.12.6 Threshold Elevation: 2077.6 ft
2.12.6 Touchdown Zone Elevation: 2112.1 ft

2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 14515 ft x 150 ft
2.12.4 PCN: 77 R/B/W/T
2.12.5 Coordinates: 36°–4′34.9211″N / 115°–10′12.6889″W
2.12.6 Threshold Elevation: 2179.2 ft
2.12.6 Touchdown Zone Elevation: 2154.9 ft

2.12.1 Designation: 26R
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.4 PCN: 77 R/B/W/T
2.12.5 Coordinates: 36°–4′35.0633″N / 115°–7′15.8989″W
2.12.6 Threshold Elevation: 2033 ft
2.12.6 Touchdown Zone Elevation: 2067.1 ft

2.12.1 Designation: 08R
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36°–4′25.0637″N / 115°–9′41.1617″W
2.12.6 Threshold Elevation: 2156.9 ft
2.12.6 Touchdown Zone Elevation: 2156.9 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10526 ft x 150 ft
2.12.4 PCN: 100 R/B/W/T
2.12.5 Coordinates: 36°–4′25.1671″N / 115°–7′32.9665″W
2.12.6 Threshold Elevation: 2069 ft
2.12.6 Touchdown Zone Elevation: 2069 ft

AD 2.13 Declared Distances
2.13.1 Designation: 01L
2.13.2 Take–off Run Available: 8988 ft
2.13.3 Take–off Distance Available: 8988 ft
2.13.4 Accelerate–Stop Distance Available: 8988 ft
2.13.5 Landing Distance Available: 8401 ft
2.13.1 Designation: 19R
2.13.2 Take-off Run Available: 8988 ft
2.13.3 Take-off Distance Available: 9400 ft
2.13.4 Accelerate–Stop Distance Available: 8417 ft
2.13.5 Landing Distance Available: 8417 ft

2.13.1 Designation: 01R
2.13.2 Take-off Run Available: 9771 ft
2.13.3 Take-off Distance Available: 10168 ft
2.13.4 Accelerate–Stop Distance Available: 9400 ft
2.13.5 Landing Distance Available: 9400 ft

2.13.1 Designation: 19L
2.13.2 Take-off Run Available: 9771 ft
2.13.3 Take-off Distance Available: 10171 ft
2.13.4 Accelerate–Stop Distance Available: 9686 ft
2.13.5 Landing Distance Available: 9686 ft

2.13.1 Designation: 08L
2.13.2 Take-off Run Available: 14515 ft
2.13.3 Take-off Distance Available: 15099 ft
2.13.4 Accelerate–Stop Distance Available: 14099 ft
2.13.5 Landing Distance Available: 14099 ft

2.13.1 Designation: 26R
2.13.2 Take-off Run Available: 14515 ft
2.13.3 Take-off Distance Available: 15037 ft
2.13.4 Accelerate–Stop Distance Available: 14037 ft
2.13.5 Landing Distance Available: 14037 ft

2.13.1 Designation: 08R
2.13.2 Take-off Run Available: 10526 ft
2.13.3 Take-off Distance Available: 10526 ft
2.13.4 Accelerate–Stop Distance Available: 10526 ft
2.13.5 Landing Distance Available: 10526 ft

2.13.1 Designation: 26L
2.13.2 Take-off Run Available: 10526 ft
2.13.3 Take-off Distance Available: 10526 ft
2.13.4 Accelerate–Stop Distance Available: 10526 ft
2.13.5 Landing Distance Available: 10526 ft


2.14.1 Designation: 01R
2.14.2 Approach Lighting System:

2.14.1 Designation: 19L
2.14.2 Approach Lighting System:

2.14.1 Designation: 08R
2.14.2 Approach Lighting System:

2.14.1 Designation: 26L
2.14.2 Approach Lighting System:

2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 11E
2.19.5 Coordinates: 36–6–1.7244N / 115–9–25.0625W
2.19.6 Site Elevation: 2089.4 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 11E
2.19.5 Coordinates: 36–4–49.142N / 115–10–6.5151W
2.19.6 Site Elevation: 2158.4 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 11E
2.19.5 Coordinates: 36–6–0.8259N / 115–9–22W
2.19.6 Site Elevation: 2078.9 ft

2.19.1 ILS Type: DME for runway 26R. Magnetic variation: 11E
2.19.2 ILS Identification: LAS
2.19.3 Coordinates: 36°4′30.5228N / 115°10′19.1659W
2.19.4 Site Elevation: 2201.5 ft
2.19.1 ILS Type: Glide Slope for runway 26R. Magnetic variation: 11E

2.19.5 Coordinates: 36°4′32.0826N / 115°7′46.6759W
2.19.6 Site Elevation: 2046.5 ft
2.19.1 ILS Type: Localizer for runway 26R. Magnetic variation: 11E

2.19.2 ILS Identification: LAS
2.19.3 Coordinates: 36°4′34.9114N / 115°10′19.1797W
2.19.4 Site Elevation: 2186.3 ft
2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 11E

2.19.5 Coordinates: 36°4′22.2517N / 115°9′53.2672W
2.19.6 Site Elevation: 2182.2 ft
2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 11E

2.19.2 ILS Identification: RLE
2.19.3 Coordinates: 36°4′25.0515N / 115°9′53.3413W
2.19.4 Site Elevation: 2168.2 ft
2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 11E

2.19.5 Coordinates: 36°4′25.0515N / 115°9′53.3413W
2.19.6 Site Elevation: 2136 ft
2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 15E

2.19.2 Navigation Aid Identification: LAS
2.19.3 Coordinates: 36°4′39.2153N / 115°9′35.2725W
2.19.4 Site Elevation: 2136 ft
2.19.1 Navigation Aid Identification: RLE

General Remarks:
ACFT OPER NEAR THE INT OF TWYS S, D, G AND THE N END OF TWY Z SHOULD BE ALERT AS THERE ARE CLOSELY ALIGNED TWY CNTRLN AND RADIUS TURNS.

ACFT WITH WINGSPAN GTR THAN 135 FT PPR FM DEPT OF AVN TO USE TWY H.

ACFT THAT DEP FULL LENGTH OF RWYS 01L AND 08L MUST HOLD AT THE SAME HOLD LINE AS THERE IS NO ROOM TO HOLD BTN THE RWY ENDS AND SUCH ACFT SHOULD VERIFY THAT THEY ARE ON THE CORRECT RWY.

ALL ACFT CTC RAMP CTL ON FREQ 124.4 FOR OPNS AT A, B, AND C GATES; CTC RAMP CTL FREQ 127.9 FOR OPNS AT D & E GATES AND CARGO RAMP PRIOR TO ENTERING RAMP OR PUSHING BACK FM GATE OR PRKG SPOT. RAMP CTL OPR HRS 0530–2400. CTC ATC FM 0800–0530 FOR RAMP OPNS.

GA CUST AND IMG LCTD WEST SIDE OF AFDL BTWN FBO’S.

ACFT TAX WB ON TWY B NEAR TWY E USE CARE NOT TO ENTER THE RWY ON TWY Y, ACFT TAX WB ON TWY W NEAR TWY E USE CARE NOT TO ENTER THE RWY ON TWY U.

ACFT MAY EXPERIENCE REFLECTION OF SUN FM GLASS HOTELS LCTD NW OF ARPT. REFLECTION MAY OCCUR AT VARIOUS ALTS, HDGS, & DSTCS FM ARPT.

ALL NON–STD RWY OPNS PPR FM DEPT OF AVN.

RWY STS LGTS ARE IN OPN.

ACFT DEPG RWY 19R USE MINIMAL PWR UNTIL PASSING THE RWY THLD. RWY 19R THLD HAS STD RWY MARKINGS AND IS 780 FT S OF THE BLAST PAD.

PLA AUZD BTN 0200 & 0600.

LGTD GOLF RANGE 1400 FT S OF RWYS 01L/19R AND 01R/19L.
RWY 08L 589 FT CWY; RWY 26R 645 FT CWY.

LRG NR OF BIRDS AND BATS INV OF ARPT BTWN SS AND SR.

TBJT DEPS NOT PMTD ON RWY 01R/19L OR RWY 01L/19R 2000–0800. XCPNS FOR WX OR OPNL NECESSITY.

EXT SV GLDR/SOARING OPNS WKENDS & HOLS; SR–SS; LAS R187/020; ALTS UP TO BUT NOT INCLG FL180. GLDRS RMN CLEAR OF THE TCA BUT OTHERWISE OPR WI THE ENTIRE SW QUAD OF THE TCA VEIL.

(E98) PLUS 64 SHELTERS & 24 SHEDS.

GA CBP RSVNS ARE RQRD TO BE SMTD A MIN OF 12 HOURS IN ADVN (OTHER CONDS APPLY). RSVNS MUST BE MADE ONLINE AT WWW.MCCARRAN.COM/GACBP. QNS CAN BE DCTD TO CBP559@MCCARRAN.COM.

GA ACFT USING THE WEST SIDE CUST FAC MUST CTC RAMP CONTROL 124.4.

TIEDOWN FEE.

GA PRKG VERY LTD. FOR PRKG AVAILABILITY CTC EITHER FBO (702) 736–1830 OR (702) 739–1100.

ACFT USING FULL LEN DEP ON RWY 08L USE MINIMAL PWR TIL PASSING THE PWR–UP POINT ON RWY. PWR–UP POINT IS 348 FT EAST OF BLAST PAD AND MKD WITH SIGN AND STD MARKINGS FOR BGNG OF RWY.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NMRS HOP ON WEST SIDE OF ARPT.

CTN PAJA INV OF ARPT.
AIP
United States of America

Reno, NV
Reno/Tahoe Intl
ICAO Identifier KRNO

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39°29′56.8N / 119°46′5.2W
2.2.2 From City: 3 miles SE of RENO, NV
2.2.3 Elevation: 4414.9 ft
2.2.5 Magnetic Variation: 16E (1985)
2.2.6 Airport Contact: DAREN GRIFFIN, A.A.E.
P O BOX 12490
RENO, NV 89510
(775) 328-6550
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 07
2.12.2 True Bearing: 90
2.12.3 Dimensions: 6102 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 39°29′46.6299N / 119°46′43.822W
2.12.6 Threshold Elevation: 4409.2 ft
2.12.6 Touchdown Zone Elevation: 4409.3 ft
2.12.1 Designation: 25
2.12.2 True Bearing: 270
2.12.3 Dimensions: 6102 ft x 150 ft
2.12.4 PCN: 72 R/B/W/T
2.12.5 Coordinates: 39°29′46.3739N / 119°45′25.9978W
2.12.6 Threshold Elevation: 4399.6 ft
2.12.6 Touchdown Zone Elevation: 4401.8 ft
2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 88 R/B/W/T
2.12.5 Coordinates: 39°30′49.8258N / 119°46′0.266W
2.12.6 Threshold Elevation: 4414.8 ft
2.12.6 Touchdown Zone Elevation: 4414.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 07
2.13.2 Take-off Run Available: 5854 ft
2.13.3 Take-off Distance Available: 5854 ft
2.13.4 Accelerate–Stop Distance Available: 6102 ft
2.13.5 Landing Distance Available: 5854 ft
2.13.1 Designation: 25
2.13.2 Take-off Run Available: 6102 ft
2.13.3 Take-off Distance Available: 6102 ft
2.13.4 Accelerate–Stop Distance Available: 6102 ft
2.13.5 Landing Distance Available: 6102 ft
2.13.1 Designation: 16L
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft
2.13.1 Designation: 34R
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 16R
2.13.2 Take–off Run Available: 11001 ft
2.13.3 Take–off Distance Available: 11001 ft
2.13.4 Accelerate–Stop Distance Available: 11001 ft
2.13.5 Landing Distance Available: 11001 ft

2.13.1 Designation: 34L
2.13.2 Take–off Run Available: 11001 ft
2.13.3 Take–off Distance Available: 11001 ft
2.13.4 Accelerate–Stop Distance Available: 11001 ft
2.13.5 Landing Distance Available: 10011 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 07
2.14.2 Approach Lighting System:

2.14.1 Designation: 25
2.14.2 Approach Lighting System:

2.14.1 Designation: 16L
2.14.2 Approach Lighting System:

2.14.1 Designation: 34R
2.14.2 Approach Lighting System:

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: RNO
2.19.5 Coordinates: 39–28–49.3183N / 119–46–6.1675W
2.19.6 Site Elevation: 4433.4 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: RNO
2.19.6 Site Elevation: 4408.4 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: RNO
2.19.6 Site Elevation: 4419.7 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: AGY
2.19.5 Coordinates: 39–31–0.2724N / 119–46–12.5676W
2.19.6 Site Elevation: 4434.8 ft

2.19.1 ILS Type: Glide Slope for runway 34L. Magnetic variation: 16E
2.19.2 ILS Identification: AGY
2.19.6 Site Elevation: 4433.1 ft

General Remarks:
INTENSIVE GLIDER ACTIVITY INVOF ARPT AND SURROUNDING AREAS UP TO 18000 FT.

MIL ACFT: TSNT ACFT EXECUTE STRAIGHT–IN FULL STOP APCH. OVERHEAD PAT NOT AUTH FOR TSNT ACFT.
MILITARY: ANG OPS 1500–0100Z++ MON–FRI EXC HOL, OTHER TIMES BY NOTAM; DSN 830–4709.

NOISE SENSITIVE AREA ALL QUADS. PILOTS OF TBJT ACFT USE RCMDD NOISE ABATEMENT PROCS; AVBL ON REQ.

TWY C BTN TWY L & TWY D RESTRICTED TO ACFT 100000 LBS OR LESS.

WATERFOWL ALL QUADRANTS ALL SEASONS. CONCENTRATED NW OF RWY 16R AND E OF RWY 16L.

TWY A BETWEEN NORTH TWY B AND TWY D CLSD TO ACFT WITH WINGS PAN GREATER THAN 149 FT.

MIL ACFT: NOISE ABTMT CRITICAL TERMINATE AFTERBURNER ASAP THEN CLIMB TO 6500 FT MSL ASAP.

TWY M CLSD TO AIR CARRIER ACFT.

ALL COMMERCIAL AIRCRAFT CONTACT GROUND CONTROL FOR ADVISORIES PRIOR TO PUSH BACK ON THE TERMINAL RAMP.

NOISE NOTE CONT: PILOTS OF NON–TBJT ACFT USE BEST ABATEMENT PROCS AND SETTINGS. AVOID AS MUCH AS FEASIBLE FLYING OVER POPULATED AREAS.

TWY J EAST OF RY 16L/34R CLSD TO AIR CARRIER ACFT.

ACFT OVR 12500 LBS: WRITTEN PPR FOR TRG FLIGHTS; FOR FTHR INFO CTC ARPT OPS 1–877–736–6359.

TWY C BETWEEN TWY L AND TWY D CLSD TO AIR CARRIER ACFT.

24 HRS PPR FOR TSNT ACFT PARKING WITH WINGSPANS GREATER THAN 75 FT.

GLIDER/SOARING OPER 30–50 MILES SOUTH OF ARPT DURING VFR WEATHER & MOUNTAIN WAVE WIND CONDITIONS 1100 TO SS.
Newark, NJ
Newark Liberty Intl
ICAO Identifier KEWR

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40°41′32.9274″N / 74°10′7.2724″W
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: JAMES GILL
BUILDING #1 –
CONRAD ROAD
NEWARK, NJ 7114
(973) 961-6161)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.5 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IE certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 26
2.12.3 Dimensions: 11000 ft x 150 ft
2.12.4 PCN: 96 R/B/X/T
2.12.5 Coordinates: 40°42′9.2091″N / 74°9′43.8255″W
2.12.6 Threshold Elevation: 8.9 ft
2.12.6 Touchdown Zone Elevation: 10.4 ft

2.12.1 Designation: 22L
2.12.2 True Bearing: 206
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 40°42′8.2438″N / 74°9′30.7308″W
2.12.6 Threshold Elevation: 9.4 ft
2.12.6 Touchdown Zone Elevation: 10.7 ft

2.12.1 Designation: 04R
2.12.2 True Bearing: 26
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 40°42′39.2984″N / 74°10′27.2835″W
2.12.6 Threshold Elevation: 11.1 ft
2.12.6 Touchdown Zone Elevation: 11.3 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′4.3181″N / 74°9′23.5515″W
2.12.6 Threshold Elevation: 9.7 ft
2.12.6 Touchdown Zone Elevation: 9.8 ft

2.12.1 Designation: H1
2.12.2 True Bearing:
2.12.3 Dimensions: 54 ft x 54 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°42′15.85″N / 74°10′5W
2.12.6 Threshold Elevation: 8 ft
2.12.6 Touchdown Zone Elevation: ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 04L
2.13.2 Take–off Run Available: 11000 ft
2.13.3 Take–off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 11000 ft
2.13.5 Landing Distance Available: 8460 ft

2.13.1 Designation: 22R
2.13.2 Take–off Run Available: 11000 ft
2.13.3 Take–off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 11000 ft
2.13.5 Landing Distance Available: 9560 ft

2.13.1 Designation: 22L
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 8207 ft

2.13.1 Designation: 04R
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 8810 ft

2.13.1 Designation: 29
2.13.2 Take–off Run Available: 6726 ft
2.13.3 Take–off Distance Available: 6726 ft
2.13.4 Accelerate–Stop Distance Available: 6726 ft
2.13.5 Landing Distance Available: 6502 ft

2.13.1 Designation: 11
2.13.2 Take–off Run Available: 6726 ft
2.13.3 Take–off Distance Available: 6726 ft
2.13.4 Accelerate–Stop Distance Available: 6726 ft
2.13.5 Landing Distance Available: 6726 ft

2.13.1 Designation: H1
2.13.2 Take–off Run Available: ft
2.13.3 Take–off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 04L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 22L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 29
2.14.2 Approach Lighting System:

2.14.1 Designation: 11
2.14.2 Approach Lighting System:

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

**AD 2.18 Air Traffic Services Communication Facilities**

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: EWR
2.19.5 Coordinates: 40°42′15.686N / 74°9′33.736W
2.19.6 Site Elevation: 34.3 ft

2.19.1 ILS Type: Glide Slope for runway 04L. Magnetic
2.19.1 ILS Type: Localizer for runway 04L. Magnetic variation: 13W
2.19.2 ILS Identification: EWR
2.19.5 Coordinates: 40–41–2.167N / 74–10–22.759W
2.19.6 Site Elevation: 7.4 ft

2.19.1 ILS Identification: EWR
2.19.5 Coordinates: 40–42–18.192N / 74–9–38.112W
2.19.6 Site Elevation: 8.7 ft

2.19.1 ILS Type: DME for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JNN
2.19.5 Coordinates: 40–42–15.686N / 74–9–33.736W
2.19.6 Site Elevation: 34.3 ft

2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JNN
2.19.5 Coordinates: 40–41–47.5592N / 74–9–53.883W
2.19.6 Site Elevation: 8 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JNN
2.19.5 Coordinates: 40–40–22.392N / 74–10–51.726W
2.19.6 Site Elevation: 9.1 ft

2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.5 Coordinates: 40–41–43.5471N / 74–9–41.6275W
2.19.6 Site Elevation: 33.5 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.5 Coordinates: 40–40–57.598N / 74–10–9.8776W
2.19.6 Site Elevation: 6 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: EZA
2.19.6 Site Elevation: 8.1 ft

2.19.1 ILS Type: DME for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40–41–43.5471N / 74–9–41.6275W
2.19.6 Site Elevation: 33.5 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40–41–43.6732N / 74–9–41.7368W
2.19.6 Site Elevation: 7.4 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: LSQ
2.19.5 Coordinates: 40–40–28.9529N / 74–10–33.8654W
2.19.6 Site Elevation: 9.4 ft

2.19.1 ILS Type: Glide Slope for runway 11. Magnetic variation: 13W
2.19.2 ILS Identification: GPR
2.19.5 Coordinates: 40–42–9.5406N / 74–10–4.0694W
2.19.6 Site Elevation: 7.1 ft

2.19.1 ILS Type: Localizer for runway 11. Magnetic variation: 13W
2.19.2 ILS Identification: GPR
2.19.5 Coordinates: 40–42–10.837N / 74–10–35.03W
2.19.6 Site Elevation: 9.5 ft

2.19.1 ILS Type: Glide Slope for runway 11. Magnetic variation: 13W
2.19.2 ILS Identification: GPR
2.19.5 Coordinates: 40–42–9.2938N / 74–10–4.9852W
2.19.6 Site Elevation: 7 ft

2.19.1 Navigation Aid Type: FAN MARKER. Magnetic variation: 11W
2.19.2 Navigation Aid Identification: EWR
2.19.5 Coordinates: 40°42′12.824″N / 74°11′14.7211″W
2.19.6 Site Elevation: 9.5 ft

**General Remarks:**
HIGH VOLUME OF LOW LEVEL HEL TFC ARR AND DEP HELO KEARNY HELI (65NJ) LCTD 3.5 MILES NE OF ARPT.

TWY Z5 CLSD TO ACFT WITH WINGSPANS IN EXCESS OF 118 FT.

TWY Z BTN TWY Z2 & Z4 CLSD TO ACFT WITH WINGSPANS IN EXCESS OF 171 FT.

TWY A11 W OF TWY A ACFT SPD RSTR OF 17 KTS/20 MPH MAX FOR ALL ACFT WITH WINGSPANS IN EXCESS OF 171 FT.

ADG IV ACFT RSTR FM PSG TWY Z3 ON Z

TWY EE BTN RWY 4R–22L AND RWY 11–29 CLSD TO ACFT WITH WINGSPANS IN EXCESS OF 171 FT.

NOISE RSTR CALL 212–435–3784 DRG NML BUS HRS.

FLOCKS OF BIRDS ON & INVOF ARPT.

TWY A BTN TWY AA AND RAMP CLSD TO ACFT WITH WINGSPANS IN EXCESS OF 171 FT.

RWY STATUS LIGHTS IN OPR

TWY Y BTN RM AND TWY U, SPEED RESTRICTION OF 17KT (20MPH).

PARA–SAIL & BANNER TOWING OPS 1000 FT & BLO IN UPPER & LOWER NY BAYS INCLUDING ROCKAWAY INLET INDEF.

CPDLC DEPARTURE CLEARANCE SERVICE AVAILABLE.

ACFT WITH WINGSPANS IN EXCESS OF 118 FEET PROHIBITED FROM TURNING S ON TWY R FROM TWY B1.


RWY 4R & 4L DEP USE UPPER ANT FOR ATC COM.

ASDE–X IN USE. OPER TRANSPONDER WITH ALT REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL ARPT SFCS.

TWY Z EAST OF TWY U ACFT SPEED RSTR OF 17 KTS/20 MPH MAX FOR ALL ACFT WITH WINGSPANS IN EXCESS OF 171 FT.
New York, NY  
John F Kennedy Intl  
ICAO Identifier KJFK

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40°38′23.74″N / 73°46′43.29″W
2.2.2 From City: 13 miles SE of NEW YORK, NY
2.2.3 Elevation: 13 ft
2.2.5 Magnetic Variation: 13W (2020)
2.2.6 Airport Contact: CHARLES EVERETT  
BLDG 14  
JAMAICA, NY 11430  
((718) 244−3501)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04L
2.12.2 True Bearing: 31
2.12.3 Dimensions: 12079 ft x 200 ft
2.12.4 PCN: 90 R/B/W/T
2.12.5 Coordinates: 40°37′19.2759″N / 73°46′13.25″W
2.12.6 Threshold Elevation: 11.9 ft
2.12.6 Touchdown Zone Elevation: 12.7 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′42.849″N / 73°45′17.509″W
2.12.6 Threshold Elevation: 11.8 ft
2.12.6 Touchdown Zone Elevation: 11.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 04L
2.13.2 Take−off Run Available: 11351 ft
2.13.3 Take−off Distance Available: 11351 ft
2.13.4 Accelerate−Stop Distance Available: 11470 ft
2.13.5 Landing Distance Available: 11010 ft
AD 2.13.1 Designation: 22R
2.13.2 Take–off Run Available: 12079 ft
2.13.3 Take–off Distance Available: 12079 ft
2.13.4 Accelerate–Stop Distance Available: 11219 ft
2.13.5 Landing Distance Available: 7794 ft

2.13.1 Designation: 04R
2.13.2 Take–off Run Available: 8400 ft
2.13.3 Take–off Distance Available: 8400 ft
2.13.4 Accelerate–Stop Distance Available: 8400 ft
2.13.5 Landing Distance Available: 8400 ft

2.13.1 Designation: 22L
2.13.2 Take–off Run Available: 8400 ft
2.13.3 Take–off Distance Available: 8400 ft
2.13.4 Accelerate–Stop Distance Available: 8400 ft
2.13.5 Landing Distance Available: 8400 ft

2.13.1 Designation: 13L
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 9093 ft
2.13.5 Landing Distance Available: 9093 ft

2.13.1 Designation: 31R
2.13.2 Take–off Run Available: 14511 ft
2.13.3 Take–off Distance Available: 14511 ft
2.13.4 Accelerate–Stop Distance Available: 9513 ft
2.13.5 Landing Distance Available: 12468 ft

2.13.1 Designation: 13R
2.13.2 Take–off Run Available: 14511 ft
2.13.3 Take–off Distance Available: 14511 ft
2.13.4 Accelerate–Stop Distance Available: 9513 ft
2.13.5 Landing Distance Available: 12468 ft

2.13.1 Designation: 31L
2.13.2 Take–off Run Available: 14511 ft
2.13.3 Take–off Distance Available: 14511 ft
2.13.4 Accelerate–Stop Distance Available: 11248 ft
2.13.5 Landing Distance Available: 11248 ft

2.14.1 Designation: 04L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 04R
2.14.2 Approach Lighting System: ALSF2

AD 2.14 Approach and Runway Lighting

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 04L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 22R
2.14.2 Approach Lighting System: ALSF2
2.19.1 ILS Type: Glide Slope for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JOC
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W
2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Localizer for runway 22R. Magnetic variation: 13W
2.19.2 ILS Identification: JOC
2.19.5 Coordinates: 40−37−44.5024N / 73−46−43.0851W
2.19.6 Site Elevation: 9.5 ft

2.19.1 ILS Type: DME for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−38−51.57N / 73−45−10.684W
2.19.6 Site Elevation: 12.7 ft

2.19.1 ILS Type: Glide Slope for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−37−23.9N / 73−46−19.1W
2.19.6 Site Elevation: 12 ft

2.19.1 ILS Type: Inner Marker for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−37−23.9N / 73−46−19.1W
2.19.6 Site Elevation: 12 ft

2.19.1 ILS Type: Localizer for runway 04R. Magnetic variation: 13W
2.19.2 ILS Identification: JFK
2.19.5 Coordinates: 40−37−44.5024N / 73−46−43.0851W
2.19.6 Site Elevation: 10.5 ft

2.19.1 ILS Type: DME for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−14.1N
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: Glide Slope for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−14.1N
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: Localizer for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−14.1N
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: DME for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W
2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Glide Slope for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W
2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−38−32.9529N / 73−45−19.9899W
2.19.6 Site Elevation: 13.1 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−38−32.9529N / 73−45−19.9899W
2.19.6 Site Elevation: 13.1 ft

2.19.1 ILS Type: DME for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−14.1N
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: Glide Slope for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−14.1N
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: Localizer for runway 13L. Magnetic variation: 13W
2.19.2 ILS Identification: TLK
2.19.5 Coordinates: 40−38−30.687N / 73−45−14.1N
2.19.6 Site Elevation: 14.1 ft

2.19.1 ILS Type: DME for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W
2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Glide Slope for runway 31R. Magnetic variation: 13W
2.19.2 ILS Identification: RTH
2.19.5 Coordinates: 40−38−53.286N / 73−45−13.179W
2.19.6 Site Elevation: 29 ft

2.19.1 ILS Type: Glide Slope for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−38−32.9529N / 73−45−19.9899W
2.19.6 Site Elevation: 13.1 ft

2.19.1 ILS Type: Localizer for runway 22L. Magnetic variation: 13W
2.19.2 ILS Identification: IWY
2.19.5 Coordinates: 40−38−32.9529N / 73−45−19.9899W
2.19.6 Site Elevation: 13.1 ft
General Remarks:
PERIODIC FIRE DEPT TRNG ADJACENT APCH END OF RWYS 22L & 22R.

CONTINUOUS TAXIWAY MAINTENANCE ACTIVITIES AT NUMEROUS LOCATIONS

NON-STD MARKINGS IN GA APN, CTC SHELTAIR/FBO ON UNICOM OR 347-566-6620 FOR WING WALKERS.

RY 13R HAS TWO (2) PAPI – P4L SYSTEMS. (RY 13R) OFFSET PAPI SUPPORTS VOR OR GPS RWY 13R & PARKWAY VISUAL RY 13R.

METERING PROCEDURES IN EFFECT — CONTACT RAMP CONTROL PRIOR TO PUSHBACK 1200Z–1500Z DAILY/1900Z–0300Z DAILY.

TWY ‘H’ CL LGTS BTN TWY ‘A’ & RWY 4L/22R OTS.

FOR NOISE ABATEMENT RESTRICTIONS CALL 212–435–3747 DURING NORMAL BUSINESS HOURS.

TWY Q3 CNTRLN LGTS OTS.

ACFT ARE NOT PMTD TO STOP ON EITHER TWY A OR B BRIDGES.

CONVERGING OPNS ON RYS 13R AND 22L CONDUCTED VIA ARRIVAL DISTANCE WINDOW.

PARA-SAIL & BANNER TOWING OPNS 1000 FT & BLO IN UPPER & LOWER NEW YORK BAYS INCLUDING ROCKAWAY INLET INDEFLY.

FLOCKS OF BIRDS ON & INVOF ARPT.

NON-STANDARD ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 393 FT IN LENGTH BY 226 FT IN WIDTH LCTD AT THE DER 4R.

NON-STANDARD ENGINEERED MATERIALS ARRESTING SYSTEM (EMAS) 405 FT IN LENGTH BY 226 FT IN WIDTH LCTD AT THE DER 22L.

A380 AND B747–800 ACFT TAX SPD RESTRICTED TO MAX 17KTS/20MPH ON ALL TWYS.

GAT HELIPAD NON-STANDARD MARKINGS & LIGHTING.

HIGH VOLUME OF LOW LEVEL VFR TRAFFIC, 500 FT AND BLO, ALONG SHORELINE SOUTH OF JFK.

SPECIAL AIR TFC RULES—PART 93 HIGH DENSITY ARPT. PROR RESERVATION REQUIRED. SEE AERONAUTICAL INFORMATION MANUAL.
TWY ‘H’ CL LGTS BTN TERMINAL 4 RAMP AND TWY A OTS.

RY 31R HOLDING POSITION MARKINGS AT RY 4L/22R ‘SE’ SIDE OBSC.

TWY NB CLSD TO SB TURNS AT TWY A.

UFN TWY ‘D’ BTN TWY ‘C’ AND HANGAR 7 CLOSED.

OBST BLDG LGT OTS 6.3 NM ESE JFK 222 FT MSL (220 FT AGL).

OBST PARKED ACFT (ASN 2020–AEA–1302–NRA) 403933 N0734749W (1.4NM NW JFK) 74 (64FT AGL) U/S 1200–0100 DLY.

RWY 31R 1000 FT DIST REMAINING SIGN MISG.

RWY STATUS LGTS IN OPS.

RLLS RY 13L USES 1000 FT LGT STN OF THE ALS ONLY WITH CRI VOR APCHS & IS ANGLED TOWARD AQUEDUCT; ALSO 5 SFL FM 1200–2000 FT & A 5 SFL GROUPING APROXLY 1 MI FM RY +1 ADJ FORMING APCH. APCH GATE ANGLED 35 DEGS S OF RY 13L CNTRLN DESIGNED TO PRVD EARLIER IDENT OF RY ENVI.

ACFT OPS & TWY RESTRICTIONS EXIST FOR A380, B747–800, B777–300ER, A340–600 AND A350–1000. PLEASE CTC JFK ARPT OPS FOR MORE INFO.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.


RY 13L HOLDING POSITION MARKINGS AT RY 4L/22R ‘NW’ SIDE OBSC.
Niagara Falls, NY
Niagara Falls Intl
ICAO Identifier KIAG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 43°6′27.2065 N / 78°56′45.048 W
2.2.2 From City: 4 miles E of NIAGARA FALLS, NY
2.2.3 Elevation: 592.3 ft
2.2.5 Magnetic Variation: 10°W (1985)
2.2.6 Airport Contact: MR. ROBERT STONE
   2035 NIAGARA FALLS BLVD
   NIAGARA FALLS, NY 14304
   (716) 297−4494
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A, A+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index IB certified on 7/1/1974

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
2.12.2 True Bearing: 50
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 43°6′−6.3587 N / 78°56′−44.2955 W
2.12.6 Threshold Elevation: 584.3 ft
2.12.6 Touchdown Zone Elevation: 585.8 ft

2.12.1 Designation: 24
2.12.2 True Bearing: 230
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 43°6′−39.1997 N / 78°55′−50.6072 W
2.12.6 Threshold Elevation: 592.2 ft
2.12.6 Touchdown Zone Elevation: 592.3 ft

2.12.1 Designation: 06
2.12.2 True Bearing: 230
2.12.3 Dimensions: 5188 ft x 150 ft
2.12.4 PCN: 69 F/B/W/T
2.12.5 Coordinates: 43°6′−39.1997 N / 78°55′−50.6072 W
2.12.6 Threshold Elevation: 592.2 ft
2.12.6 Touchdown Zone Elevation: 592.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
2.13.2 Take−off Run Available: 5188 ft
2.13.3 Take−off Distance Available: 5188 ft
2.13.4 Accelerate−Stop Distance Available: 5188 ft
2.13.5 Landing Distance Available: 5188 ft
2.13.6 Take−off Run Available: 5188 ft
2.13.3 Take−off Distance Available: 5188 ft
2.13.4 Accelerate−Stop Distance Available: 5108 ft
2.13.5 Landing Distance Available: 5108 ft

2.13.1 Designation: 10L
2.13.2 Take−off Run Available: 9829 ft
2.13.3 Take−off Distance Available: 10829 ft
2.13.4 Accelerate−Stop Distance Available: 9829 ft
2.13.5 Landing Distance Available: 9129 ft

2.13.1 Designation: 28R
2.13.2 Take−off Run Available: 9829 ft
2.13.3 Take−off Distance Available: 10529 ft
2.13.4 Accelerate−Stop Distance Available: 9129 ft
2.13.5 Landing Distance Available: 9129 ft

2.13.1 Designation: 10R
2.13.2 Take−off Run Available: 3973 ft
2.13.3 Take−off Distance Available: 3973 ft
2.13.4 Accelerate−Stop Distance Available: 3973 ft
2.13.5 Landing Distance Available: 3973 ft

2.13.1 Designation: 28L
2.13.2 Take−off Run Available: 3973 ft
2.13.3 Take−off Distance Available: 3973 ft
2.13.4 Accelerate−Stop Distance Available: 3973 ft
2.13.5 Landing Distance Available: 3973 ft

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 10R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P2L

2.14.1 Designation: 28L
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System: P2L

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 10W
2.19.2 ILS Identification: IAG
2.19.3 Coordinates: 43−6−30.0921N / 78−56−16.6451W
2.19.6 Site Elevation: 582.8 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 10W
2.19.2 ILS Identification: IAG
2.19.5 Coordinates: 43−6−34.3589N / 78−58−18.8146W
2.19.6 Site Elevation: 585.1 ft

2.19.1 ILS Type: Outer Marker for runway 28R. Magnetic variation: 10W
2.19.2 ILS Identification: IAG
2.19.5 Coordinates: 43−6−32.5184N / 78−50−18.2195W
2.19.6 Site Elevation: 614.9 ft

2.19.1 Navigation Aid Type: TACAN. Magnetic variation: 10W
2.19.2 Navigation Aid Identification: IAG
2.19.5 Coordinates: 43−6−45.1638N / 78−57−36.8623W
2.19.6 Site Elevation: 591.5 ft

General Remarks:
CAUTION: HEAVY CONCENTRATIONS OF GULLS−BLACKBIRDS−STARLINGS UP TO 5000 AGL ON & INV OF ARPT. BASH PHASE II OPERATIONS AT KIAG MAR−MAY AND SEP−NOV.
FLUID: SP.

JASU: 2(A/M32A −86) 1(A M32A −60) 1(M A−1A).

FUEL: J8, A++ (MIL).

MISC: LOCAL MISSION AIRCRAFT HAVE PRIORITY FOR DEICING; FULL AIRCRAFT DEICING FOR C−17 AND C−5 AIRCRAFT NOT AVAILABLE.

ALL MIL ACFT ONLY MINIMAL CLASSIFIED MATERIALS AVBL; AIRCREWS SHOULD ARRIVE WITH APPROPRIATE AMOUNT TO COMPLETE THEIR MISSION.

EXTSV ACFT ACTIVITY OPERATING INVOF US/CANADIAN FALLS ALL ALTS.

INT DEPS RWY 2 AT TWY D NOT AUTH.

RWY 28R 1000 FT BY 150 FT BLAST PAD

AFLD MGMT DOES NOT ISSUE OR STORE COMSEC, FOR COMSEC STORAGE CTC COMMAND POST DSN 238−2150, C716−236−2150.

TWY "E" CLSD INDEFLY FM RY 10L/28R TO RY 06/24.

OIL: O−148(MIL).

BEARING STRENGTH RWY 06/24: ST110 TT145 SBT281TDT415 TRT252.

REMARKS: SEE FLIP AP/1 SUPPLEMENTARY ARPT RMK.

AFRC/ANG: NSTD OPS APN MRKS IDENTIFYING PRKG ROW AND PRKG LCTN, NSTD MAIN APN MRKS PRKG STOP BAR AND ACFT GND EQPT (AGE) BOX.

ALL MIL ACFT ONLY OPNS RESTRICTED DURING BIRD WATCH CONDITIONS. MODERATE − TKOF & LDG PERMISSION ONLY WHEN DEP/ARR RTE AVOIDS IDENTIFIED BIRD ACTIVITY; NO LCL IFR/VFR TFC PAT ACTIVITY. SEVERE − TKOF & LDG PROHIBITED WO OG/CC APPROVAL; CTC COMMAND POST FOR CURRENT BIRD WATCH CONDITIONS.

TWY D3 RSTRD TO 12500 LBS OR LESS.

AFRC/ANG: CSTMS/AG/IMG SVC NOT LCTD ON NIAGARA FALLS ARS. RQR COORD 72 HR ADVANCE NTC TO ARRANGE U.S. CSTMS PERS FM ONE OF CROSSING BRIDGES TO PROVIDE SVC. SVC AVBL H24.

MILITARY: MISC: FOR CURRENT MIL RWY CONDITION READING (RCR) CALL OR CTC 914 ARW COMD POST OR 914TH ARW AFLD MANAGEMENT.

TWY "E" CLSD PERMLY BETWEEN TWY'S "C" AND "D".

RWY 10R/28L CLSD TO SKED ACR OPS MORE THAN 9 PAX SEATS AND NON SKED ACR OPS MORE THAN 30 PAX SEATS EXC TAX.

PPR CTC AFLD MGT DSN: 238−2175, C716−236−2175.

MILITARY: AFRC/ANG: AIRFIELD OPS SVC 1200−0400Z++ MON−FRI EXC HOL. TWYS A, A1, A2, AND A3 PAINTED MRK FADED AND RETRO−REFLECTIVITY INEFFECTIVE.
Syracuse, NY
Syracuse Hancock Intl
ICAO Identifier KSYR

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 43°–6′–40.3″N / 76°–6′–22.7″W
2.2.2 From City: 4 miles NE of SYRACUSE, NY
2.2.3 Elevation: 421.4 ft
2.2.5 Magnetic Variation: 13W (2000)
2.2.6 Airport Contact: JASON TERRERI
1000 COL EILEEN COLLINS BLVD
SYRACUSE, NY 13212
(315) 454-3263
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 10
2.12.2 True Bearing: 87
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 121 F/B/W/T
2.12.5 Coordinates: 43°–6′–29.5196″N / 76°–7′–34.1499″W
2.12.6 Threshold Elevation: 419.2 ft
2.12.6 Touchdown Zone Elevation: 421.4 ft
2.12.1 Designation: 28
2.12.2 True Bearing: 267
2.12.3 Dimensions: 9003 ft x 150 ft
2.12.4 PCN: 121 F/B/W/T
2.12.5 Coordinates: 43°–6′–33.5075″N / 76°–5′–32.9118″W
2.12.6 Threshold Elevation: 400.4 ft
2.12.6 Touchdown Zone Elevation: 409.3 ft
2.12.1 Designation: 15
2.12.2 True Bearing: 134
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 143 F/B/W/T
2.12.5 Coordinates: 43°–7′–16.4186″N / 76°–6′–46.2014″W
2.12.6 Threshold Elevation: 415.4 ft
2.12.6 Touchdown Zone Elevation: 416.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10
2.13.2 Take-off Run Available: 9003 ft
2.13.3 Take-off Distance Available: 9003 ft
2.13.4 Accelerate–Stop Distance Available: 9003 ft
2.13.5 Landing Distance Available: 9003 ft
2.13.1 Designation: 28
2.13.2 Take-off Run Available: 9003 ft
2.13.3 Take-off Distance Available: 9003 ft
2.13.4 Accelerate–Stop Distance Available: 9003 ft
2.13.5 Landing Distance Available: 9003 ft
2.13.1 Designation: 15
2.13.2 Take-off Run Available: 7500 ft
2.13.3 Take-off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft
2.13.1 Designation: 33
2.13.2 Take-off Run Available: 7500 ft
2.13.3 Take-off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 28
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 15
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 33  
2.14.2 Approach Lighting System:  

**AD 2.18 Air Traffic Services Communication Facilities**

2.14.1 Service Designation: ANG OPS  
2.14.3 Channel: 379.5  
2.14.5 Hours of Operation: 

2.14.1 Service Designation: APCH/P DEP/P  
2.14.3 Channel: 134.275  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC  
2.14.3 Channel: 126.125  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC  
2.14.3 Channel: 269.125  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: AR OPS  
2.14.3 Channel: 245.3  
2.14.5 Hours of Operation: 

2.14.1 Service Designation: ATIS  
2.14.3 Channel: 124.225  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P  
2.14.3 Channel: 125.05  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P  
2.14.3 Channel: 257.775  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C  
2.14.3 Channel: 126.125  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C  
2.14.3 Channel: 269.125  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG  
2.14.3 Channel: 121.5  
2.14.5 Hours of Operation: 

2.14.1 Service Designation: EMERG  
2.14.3 Channel: 243  
2.14.5 Hours of Operation: 

2.14.1 Service Designation: GND/P  
2.14.3 Channel: 121.7  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P  
2.14.3 Channel: 348.6  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P  
2.14.3 Channel: 120.3  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P  
2.14.3 Channel: 239  
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 10. Magnetic variation: 13W  
2.19.2 ILS Identification: MRZ  
2.19.5 Coordinates: 43°6′31.27″N / 76°5′20.92″W  
2.19.6 Site Elevation: 390.5 ft

2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 13W  
2.19.2 ILS Identification: MRZ  
2.19.5 Coordinates: 43°6′33.96″N / 76°5′19.01″W  
2.19.6 Site Elevation: 395.6 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 13W  
2.19.2 ILS Identification: SYR  
2.19.5 Coordinates: 43°6′31.27″N / 76°5′20.92″W  
2.19.6 Site Elevation: 390.5 ft
2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 13W
2.19.2 ILS Identification: SY R
2.19.5 Coordinates: 43–6–39.474N / 76–5–46.433W
2.19.6 Site Elevation: 404.1 ft

2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 13W
2.19.2 ILS Identification: SY R
2.19.5 Coordinates: 43–6–28.943N / 76–7–51.655W
2.19.6 Site Elevation: 416.8 ft

2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 13W
2.19.2 ILS Identification: SY R
2.19.5 Coordinates: 43–9–37.8684N / 76–12–16.4106W
2.19.6 Site Elevation: 453.2 ft

**General Remarks:**
DEER/Coyote/Birds on INV OF ARPT.
NON-STD MKG ON MIL RAMP.

ANG: HVY ACFT CTC ARPT COMMISSIONER FOR PRK AVBL AT C315–455–3666. ALL TRAN ACFT RQR NS ABTMT BRIEFING.

UAS OPS IN SYRACUSE APCH/DEP AIRSPACE WILL BE CONTROLLED BY SYR ATC AT ALL TIMES.

NO TSNT ACFT PARKING ON MAIN TERMINAL RAMP.

DIRECT CUSTOM NOTIFICATION IS REQUIRED. HOURS OF NOTIFICATION ARE MON–SAT 0800–1700. ARRIVALS OUTSIDE OF THESE HRS MUST MAKE ARRANGEMENTS DURING REGULAR WORK HRS; CALL 315–455–2271.


NO CHARTER OPER THRU PASSENGER TERMINAL BLDG WITHOUT PRIOR PERMISSION.

RSTD: TWY J AND P SOUTH OF TWY Y CLSD TO CIV OPS.

NOISE ABATEMENT PROCEDURES IN EFFECT.

FIELD CONDITION REPORTS RECORDING AVAILABLE CALL 315–455–3444.

MILITARY: COMMUNICATIONS – ANG – OPS – 140.425 379.5 REMARKS: (COBRA OPS) CTC ANG OPS 15 MIN PRIOR TO ARR.

NO JET ENGINE MAINT RUNS ABOVE IDLE BTWN 2300–0600.

CAUTION: TWY J AND P SOUTH OF TWY Y AND ANG RAMP HAVE UNCTL VEH AND EQPT TFC.

UAS OPERATE WITHIN THE CONFINES OF THE SYRACUSE CLASS C, TIMES VARY.

Charlotte, North Carolina
Charlotte/Douglas International
ICAO Identifier KCLT

D-ATIS ARR 121.15
DEP 132.1

CHARLOTTE TOWER
118.1 257 B (RWY 1BL-36R, 05-23)
126.4 257 B (RWY 18C-36C)
135.5 257 B (RWY 18R-36L)
GND CON
121.8 348.6 (WEST)
121.9 348.6 (EAST)
CINC DEL
127.15 348.6

CDLC
PDLC

ASDE-X in use. Operate transponders with altitude reporting mode and ADS-B (if equipped) enabled on all airport surfaces.

Runway Status Lights in operation.

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.
Charlotte, NC
Charlotte/Douglas Intl
ICAO Identifier KCLT

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35°12’49.5N / 80°56’56.6W
2.2.2 From City: 5 miles W of CHARLOTTE, NC
2.2.3 Elevation: 747.9 ft
2.2.5 Magnetic Variation: 7W (2000)
2.2.6 Airport Contact: HALEY GENTRY
5601 WILKINSON BLVD.
CHARLOTTE, NC 28208
(704−359−4000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space:
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 23
2.12.2 True Bearing: 228
2.12.3 Dimensions: 7502 ft x 150 ft
2.12.4 PCN: 73 R/B/W/T
2.12.5 Coordinates: 35°13’−38.6269N / 80°57’−11.4094W
2.12.6 Threshold Elevation: 742 ft
2.12.6 Touchdown Zone Elevation: 742 ft
2.12.1 Designation: 05
2.12.2 True Bearing: 48
2.12.3 Dimensions: 7502 ft x 150 ft
2.12.4 PCN: 73 R/B/W/T
2.12.5 Coordinates: 35°12’−32.2287N / 80°56’−59.8045W
2.12.6 Threshold Elevation: 705.9 ft
2.12.6 Touchdown Zone Elevation: 715.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 23
2.13.2 Take−off Run Available: 7502 ft
2.13.3 Take–off Distance Available: 7502 ft
2.13.4 Accelerate–Stop Distance Available: 7502 ft
2.13.5 Landing Distance Available: 7502 ft

2.13.1 Designation: 05
2.13.2 Take–off Run Available: 7502 ft
2.13.3 Take–off Distance Available: 7502 ft
2.13.4 Accelerate–Stop Distance Available: 7502 ft
2.13.5 Landing Distance Available: 7502 ft

2.13.1 Designation: 18C
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 36C
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 18L
2.13.2 Take–off Run Available: 8676 ft
2.13.3 Take–off Distance Available: 8676 ft
2.13.4 Accelerate–Stop Distance Available: 8676 ft
2.13.5 Landing Distance Available: 8676 ft

2.13.1 Designation: 36R
2.13.2 Take–off Run Available: 8676 ft
2.13.3 Take–off Distance Available: 8676 ft
2.13.4 Accelerate–Stop Distance Available: 8390 ft
2.13.5 Landing Distance Available: 8390 ft

2.13.1 Designation: 18R
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 36L
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALCP
2.14.3 Channel: 292.25
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24
AIP
United States of America

AD 2−291
2 DEC 21

(075−245 ABV 8000 FT)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

36C)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
(001−119 8000 FT & BLW)
2.14.3 Channel: 128.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 05, 18R,
18L, 18C, 23, 36R)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
(296−360 8000 FT & BLW)
2.14.3 Channel: 134.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOBZY DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
(180−359)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P DEP/P IC
(360−179)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BANKR STAR
2.14.3 Channel: 135.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BANKR STAR
2.14.3 Channel: 377.15
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BARMY DP
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOBZY DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: BTSEY STAR
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 127.15
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CHARLOTTE DP
(BUCKL, HARAY & PITTY TRANSITIONS. RWY
36L, 36C)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BARMY DP
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (RWY
05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 36L,
36C)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP
(BUCKL, GANTS, LILLS & RUNIE TRANSITIONS.)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 05, 18L,
18R, 18C, 23, 36R)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP
(BUCKL, HARAY & PITTY TRANSITION. RWY 36L,
36C)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BEAVY DP (RWY 36L,

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2.14.1 Service Designation: CHARLOTTE DP (GANTS, LILLS & RUNIE TRANSITIONS)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHARLOTTE DP (BUCKL TRANSITION, RWY 05, 18L, 18R, 18C, 23, 36R)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHPTR STAR
2.14.3 Channel: 135.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHSLY STAR
2.14.3 Channel: 126.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHSLY STAR
2.14.3 Channel: 282.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (120–295 8000 FT & BLW)
2.14.3 Channel: 120.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (246–074 ABV 8000 FT)
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (075–245 ABV 8000 FT)
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001–119 8000 FT & BLW)
2.14.3 Channel: 128.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (296–360 8000 FT & BLW)
2.14.3 Channel: 134.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (180–359)
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (360–179)
2.14.3 Channel: 307.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS (ARR)
2.14.3 Channel: 121.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS (DEP)
2.14.3 Channel: 132.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ESTRR DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ESTRR DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FILPZ STAR
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FILPZ STAR
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (WEST)
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P (EAST)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CHSLY STAR
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ICONS DP (RWY 36L, 36C)  
2.14.3 Channel: 120.5  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 05, 18L, 18R, 18C, 23, 36R)  
2.14.3 Channel: 124  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 36L, 36C)  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ICONS DP (RWY 05, 18L, 18R, 18C, 23, 36R)  
2.14.3 Channel: 307.8  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JOJJO DP  
2.14.3 Channel: 120.5  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JOJJO DP  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JONZE STAR  
2.14.3 Channel: 135.6  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JONZE STAR  
2.14.3 Channel: 377.15  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KABEE STAR  
2.14.3 Channel: 126.15  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KABEE STAR  
2.14.3 Channel: 282.325  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KERMIT DP (235–055)  
2.14.3 Channel: 120.5  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KERMIT DP (055–235)  
2.14.3 Channel: 307.8  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KILNS DP  
2.14.3 Channel: 124  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KILNS DP  
2.14.3 Channel: 307.8  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (DEBIE, NEANO TRANSITIONS)  
2.14.3 Channel: 120.05  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (FLYYN, CEGAL TRANSITIONS, RWY 23, 18L, 18C, 18R)  
2.14.3 Channel: 120.05  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (FLYYN, CEGAL TRANSITIONS RWY 05, 36L, 36C, 36R)  
2.14.3 Channel: 120.5  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (PEKKN, LILLS, HAMLN, ANDYS TRANSITIONS)  
2.14.3 Channel: 128.325  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (235–055)  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KNIGHTS DP (055–235)  
2.14.3 Channel: 307.8  
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: KRITR DP  
2.14.3 Channel: 124  
2.14.5 Hours of Operation: 24
2.14.3 Channel: 120.5  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LIINN STAR  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: KRITR DP  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: KWEN DP (RWY 36L, 36C)  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: KWEN DP (RWY 36L, 36C)  
2.14.3 Channel: 257.2  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: KWEN DP (RWY 05, 18L, 18R, 18C, 23, 36R)  
2.14.3 Channel: 257.8  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LCL/P (RWY 05/23, 18L/36R)  
2.14.3 Channel: 118.1  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LCL/P (RWY 18C/36C)  
2.14.3 Channel: 257.8  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LCL/P (RWY 18R/36L)  
2.14.3 Channel: 133.35  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LCL/P  
2.14.3 Channel: 257.8  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LIILS DP  
2.14.3 Channel: 124  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: LIINN STAR  
2.14.3 Channel: 125.35  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: PARQR STAR  
2.14.3 Channel: 125.35  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: PARQR STAR  
2.14.3 Channel: 125.35  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: RASLN STAR  
2.14.3 Channel: 135.6  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: STOCR STAR  
2.14.3 Channel: 135.6  
2.14.5 Hours of Operation: 24  
2.14.1 Service Designation: UNARM STAR  
2.14.3 Channel: 135.6  
2.14.5 Hours of Operation: 24
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: UNARM STAR
2.14.3 Channel: 377.15
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: WEAZL DP
2.14.3 Channel: 120.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: WEAZL DP
2.14.3 Channel: 257.2
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 05. Magnetic variation: 7W
2.19.2 ILS Identification: CLT
2.19.5 Coordinates: 35°12′43.05″N / 80°55′52.18″W
2.19.6 Site Elevation: 695.1 ft
2.19.1 ILS Type: Localizer for runway 05. Magnetic variation: 7W
2.19.2 ILS Identification: CLT
2.19.5 Coordinates: 35°13′26.34″N / 80°55′45.36″W
2.19.6 Site Elevation: 738.2 ft
2.19.1 ILS Type: GLIDE for runway 23. Magnetic variation: 7W
2.19.2 ILS Identification: APU
2.19.5 Coordinates: 35°12′21.8333″N / 80°55′10.052″W
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′26.34″N / 80°55′45.36″W
2.19.6 Site Elevation: 737.7 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′9.1687″N / 80°57′8.5431″W
2.19.6 Site Elevation: 691.1 ft
2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 7W
2.19.2 ILS Identification: DQG
2.19.5 Coordinates: 35°11′48.7253″N / 80°57′1.9507″W
2.19.6 Site Elevation: 682.9 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°11′48.5979″N / 80°57′1.9439″W
2.19.6 Site Elevation: 683.3 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′48.5979″N / 80°57′1.9439″W
2.19.6 Site Elevation: 683.3 ft
2.19.1 ILS Type: Glide Slope for runway 18C. Magnetic variation: 7W
2.19.2 ILS Identification: PEP
2.19.5 Coordinates: 35°11′48.5979″N / 80°57′1.9439″W
2.19.6 Site Elevation: 683.3 ft
2.19.1 ILS Type: Glide Slope for runway 36C. Magnetic variation: 7W
2.19.2 ILS Identification: DQG
2.19.5 Coordinates: 35°13′26.9102″N / 80°57′15.2356″W
2.19.6 Site Elevation: 731.4 ft
2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 7W
2.19.2 ILS Identification: DQG
2.19.5 Coordinates: 35°11′48.7253″N / 80°57′1.9507″W
2.19.6 Site Elevation: 682.9 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°11′50.25″N / 80°56′4.63″W
2.19.6 Site Elevation: 710 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′50.25″N / 80°56′4.63″W
2.19.6 Site Elevation: 710 ft
2.19.1 ILS Type: Glide Slope for runway 18L. Magnetic variation: 7W
2.19.2 ILS Identification: VKQ
2.19.5 Coordinates: 35°11′50.5994″N / 80°56′1.7186″W
2.19.6 Site Elevation: 719.2 ft
2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 7W
2.19.2 ILS Identification: BQC
2.19.5 Coordinates: 35–13–33.1089N / 80–56–6.903W
2.19.6 Site Elevation: 752.3 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 7W
2.19.2 ILS Identification: BQC
2.19.5 Coordinates: 35–12–14.0034N / 80–55–58.8923W
2.19.6 Site Elevation: 717.3 ft

2.19.1 ILS Type: Localizer for runway 36R. Magnetic variation: 7W
2.19.2 ILS Identification: BQC
2.19.5 Coordinates: 35–13–33.7034N / 80–56–10.5664W
2.19.6 Site Elevation: 741.2 ft

2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35–12–13.2565N / 80–58–1.0908W
2.19.6 Site Elevation: 743.8 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35–12–13.2565N / 80–58–1.0908W
2.19.6 Site Elevation: 743.8 ft

2.19.1 ILS Type: Inner Marker for runway 18R. Magnetic variation: 7W
2.19.2 ILS Identification: RGS
2.19.5 Coordinates: 35–13–38.8124N / 80–58–3.3825W
2.19.6 Site Elevation: 736.6 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35–13–33.1089N / 80–56–6.903W
2.19.6 Site Elevation: 752.3 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35–12–14.0034N / 80–55–58.8923W
2.19.6 Site Elevation: 738.9 ft

2.19.1 ILS Type: Inner Marker for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35–13–38.8124N / 80–58–3.3825W
2.19.6 Site Elevation: 736.6 ft

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35–13–19.8318N / 80–58–6.8193W
2.19.6 Site Elevation: 738.1 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35–12–12.9817N / 80–58–0.9403W
2.19.6 Site Elevation: 732.3 ft

2.19.1 ILS Type: Inner Marker for runway 36L. Magnetic variation: 7W
2.19.2 ILS Identification: XUU
2.19.5 Coordinates: 35–13–38.8124N / 80–58–3.3825W
2.19.6 Site Elevation: 736.6 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 5W
2.19.2 Navigation Aid Identification: CLT
2.19.5 Coordinates: 35–11–25.0392N / 80–57–6.3124W
2.19.6 Site Elevation: 731.7 ft

General Remarks:
TWY C10 RSTRD TO ACFT WITH WINGSPAN LESS THAN 171 FT WHEN EXITING RWY.

CLT RAMP, NON-MOVMT AREA, IS CTLD RAMP; CTC RAMP CTL PRIOR TO ENTERING.

TWY C10 UNUSBL FOR TXG ONTO RWY 18L/36R.

MILITARY: ANG: CTC COMD POST 30 MIN PRIOR LDG. AMOPS/COMD POST — 292.25 (CALL NEWSREEL).

SUCCESSIVE OR SIMULTANEOUS DEPARTURES FROM RWY 18L AND RWY 18C ARE APPROVED WITH COURSE DIVERGENCE BEGINNING NO FURTHER THAN 4 MILES FROM END OF RWY.

DUAL TAXI BTN DEP CALL SPOTS 11/12 AND 13N/13S RSTRD TO ONE ACFT LESS THAN 214 FT AND ONE
ACFT LESS THAN 118 FT OR TWO ACFT LESS THAN 171 FT.

NOISE ABATEMENT PROCEDURE IN EFFECT 2300–0700; LAND ON RY 05 TKOF RY 23.

DUAL TAXI BTN DEP CALL SPOTS 22/23 AND 24N/24S RSTRD TO ACFT WITH WINGSPANS LESS THAN 118 FT.

RY SFC COND INFO DURG DUTY HRS PHONE ANG OPS V583–9177/9144 OR AIRBORNE 292.2.

GROUP V ACFT WITH A WINGSPAN GTR THAN 171 FT ARE PROHIBITED FM EXITING RWY 18L/36R AT TWY C10.

RWY STATUS LGTS IN OPR.

TWY C4 AND C6: WHEN TAXIING AIRCRAFT WITH COCKPIT TO MAIN GEAR DISTANCE GREATER THAN 90 FT, PILOT MUST PERFORM JUDGEMENTAL OVERSTEERING INSTEAD OF COCKPIT OVER CENTERLINE STEERING.

TWY D, RESTRICTED TO 15 MPH OR LESS WITH WINGSPAN 171 FT AND GREATER.

GROUP III ACFT WITH A WINGSPAN GTR THAN 79 FT ARE PROHIBITED FM MAKING A NBND TURN ONTO TWY C WHEN TAXIING WB ON TWY A.

BE ALERT FOR FLOCKS OF MIGRATORY BIRDS ON & INVOF ARPT.

GROUP III ACFT WITH A WINGSPAN GTR THAN 79 FT ARE PROHIBITED FM MAKING A SBND TURN ONTO TWY C WHEN TAXIING NWBND ON TWY R.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.
Raleigh/Durham, NC
Raleigh–Durham Intl
ICAO Identifier KRDU

**AD 2.2 Aerodrome geographical and administrative data**
2.2.1 Reference Point: 35°52'39.5N / 78°47'14.9W
2.2.2 From City: 9 miles NW of RALEIGH/DURHAM, NC
2.2.3 Elevation: 435.2 ft
2.2.5 Magnetic Variation: 9W (2020)
2.2.6 Airport Contact: MICHAEL LANDGUTH
RALEIGH–DURHAM ARPT AUTH
RDU AIRPORT, NC 27623
((919) 840-7701)
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**
2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**
2.6.1 Aerodrome Category for Firefighting: ARFF Index ID certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**
2.12.1 Designation: 05L
2.12.2 True Bearing: 45
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 33 R/B/X/T
2.12.5 Coordinates: 35°52'28.016N / 78°48'7.069W
2.12.6 Threshold Elevation: 366.8 ft
2.12.6 Touchdown Zone Elevation: 384.3 ft

2.12.1 Designation: 23R
2.12.2 True Bearing: 225
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 33 R/B/X/T
2.12.5 Coordinates: 35°52'30.119N / 78°46'57.6427W
2.12.6 Threshold Elevation: 432.1 ft
2.12.6 Touchdown Zone Elevation: 432.1 ft

2.12.1 Designation: 05R
2.12.2 True Bearing: 45
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 89 F/A/X/T
2.12.5 Coordinates: 35°52'5.0792N / 78°46'27.0499W
2.12.6 Threshold Elevation: 419.8 ft
2.12.6 Touchdown Zone Elevation: 419.8 ft

2.12.1 Designation: 23L
2.12.2 True Bearing: 225
2.12.3 Dimensions: 7500 ft x 150 ft
2.12.4 PCN: 89 F/A/X/T
2.12.5 Coordinates: 35°52'44.9832N / 78°46'45.8171W
2.12.6 Threshold Elevation: 430.7 ft
2.12.6 Touchdown Zone Elevation: 430.7 ft

2.12.1 Designation: 14
2.12.2 True Bearing: 135
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.4 PCN: 16 F/A/X/T
2.12.5 Coordinates: 35°52'30.1119N / 78°46'57.6427W
2.12.6 Threshold Elevation: 432.1 ft
2.12.6 Touchdown Zone Elevation: 432.1 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 315
2.12.3 Dimensions: 3570 ft x 100 ft
2.12.4 PCN: 16 F/A/X/T
2.12.5 Coordinates: 35°52'30.1119N / 78°46'57.6427W
2.12.6 Threshold Elevation: 432.1 ft
2.12.6 Touchdown Zone Elevation: 432.1 ft

**AD 2.13 Declared Distances**
2.13.1 Designation: 05L
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 23R
2.13.2 Take–off Run Available: 10000 ft
2.13.3 Take–off Distance Available: 10000 ft
2.13.4 Accelerate–Stop Distance Available: 10000 ft
2.13.5 Landing Distance Available: 10000 ft

2.13.1 Designation: 05R
2.13.2 Take–off Run Available: 7500 ft
2.13.3 Take–off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft
2.13.1 Designation: 23L
2.13.2 Take-off Run Available: 7500 ft
2.13.3 Take-off Distance Available: 7500 ft
2.13.4 Accelerate–Stop Distance Available: 7500 ft
2.13.5 Landing Distance Available: 7500 ft

2.13.1 Designation: 14
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 05L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 23R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 05R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 23L
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities
2.18.1 Service Designation: APCH/P (055–229)
2.18.3 Channel: 318.2
2.18.5 Hours of Operation: 24
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<th>Channel</th>
<th>Hours of Operation</th>
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<td>FINAL CTI</td>
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2.14.1 Service Designation: LWOOD DP
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LWOOD DP
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MALNR STAR
2.14.3 Channel: 127.675
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: MALNR STAR
2.14.3 Channel: 307.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OXFRD DP
2.14.3 Channel: 132.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OXFRD DP
2.14.3 Channel: 256.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PACKK DP (055−229)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PACKK DP (230−054)
2.14.3 Channel: 125.3
2.14.5 Hours of Operation: 24

2.19.1 ILS Type: DME for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 403 ft

2.19.1 ILS Type: Glide Slope for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 365.5 ft

2.19.1 ILS Type: Localizer for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 365.5 ft

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 403 ft

2.19.1 ILS Type: Glide Slope for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 365.5 ft

2.19.1 ILS Type: Localizer for runway 05L. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 365.5 ft

2.19.1 ILS Type: DME for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: GKK
2.19.5 Coordinates: 35−53−46.25N / 78−46−25.87W
2.19.6 Site Elevation: 408.6 ft
2.19.1 ILS Type: Glide Slope for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.6 Site Elevation: 358 ft

2.19.1 ILS Type: Glide Slope for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35–53–32.4744N / 78–46–37.0152W
2.19.6 Site Elevation: 402.1 ft

2.19.1 ILS Type: Inner Marker for runway 23R. Magnetic variation: 9W
2.19.2 ILS Identification: DMP
2.19.5 Coordinates: 35–53–32.7552N / 78–46–33.5065W
2.19.6 Site Elevation: 396.2 ft

2.19.1 ILS Type: Glide Slope for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: RDU
2.19.5 Coordinates: 35–52–21.0761N / 78–47–59.1266W
2.19.6 Site Elevation: 429.2 ft

2.19.1 ILS Type: Glide Slope for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: RDU
2.19.5 Coordinates: 35–51–43.52N / 78–47–54.49W
2.19.6 Site Elevation: 386 ft

2.19.1 ILS Type: Glide Slope for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–52–20.84N / 78–48–15.93W
2.19.6 Site Elevation: 358.8 ft

2.19.1 ILS Type: Glide Slope for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–51–43.752N / 78–46–37.0152W
2.19.6 Site Elevation: 430.2 ft

2.19.1 ILS Type: Localizer for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–52–36.18N / 78–46–52.21W
2.19.6 Site Elevation: 423.6 ft

2.19.1 ILS Type: Localizer for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–52–54.388N / 78–46–41.19W
2.19.6 Site Elevation: 412 ft

2.19.1 ILS Type: Localizer for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–51–45.6108N / 78–47–59.1266W
2.19.6 Site Elevation: 381 ft

2.19.1 ILS Type: Glide Slope for runway 23L. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–52–20.84N / 78–48–15.93W
2.19.6 Site Elevation: 358.8 ft

2.19.1 ILS Type: Glide Slope for runway 05R. Magnetic variation: 9W
2.19.2 ILS Identification: LEI
2.19.5 Coordinates: 35–52–36.18N / 78–46–52.21W
2.19.6 Site Elevation: 423.6 ft

**General Remarks.**

**NO APPROVAL REQUIRED FOR PUSHBACK AT TERMINAL GATES UNLESS ACFT REQUIRES USE OF TWY. CTC ATC PRIOR TO PUSHING ONTO TWY.**

TWY B BTN TWY C AND TWY B5 CLSD.

TWY F2 AND F5 CLOSED UNTIL FURTHER NOTICE.

ALL TDG V AIRCRAFT TXG ON TWY A ARE RSTD TO TAXI SPD OF 15 MPH

NG 24 HR PPR FOR JET ACFT & TRANS MIL ACFT – 919–840–7510.
TWY E BEHIND SOUTH CARGO 4 & TWY J BEHIND CORPORATE HANGARS NOT VSBL FM ATCT.


NO JET ENGINE MAINTENANCE RUNS BETWEEN 0000–0600.

ARPT CLSD TO AIRSHIPS.


TAXIWAY F1 IS CLOSED UNTIL FURTHER NOTICE.


TWY D CLSD TO ACFT WITH WINGSPAN MORE THAN 171 FT WHEN TWY G AND H ARE OCCUPIED.

CRAN 75 FT AGL .76 NM FM AER 05R.

APN TXL F BTN TWY T1 AND TWY T7 CLSD TO ACFT WITH WINGSPAN MORE THAN 171 FT.

TWY C BTN TWY G AND TWY F CLSD TO ACFT WINGSPAN MORE THAN 118 FT.
North Mariana Islands, Saipan Island
Francisco C. Ada/Saipan International
ICAO Identifier PGSN

AIRPORT DIAGRAM
FRANCISCO C ADA/SAIPAN INTL (GSN)(PGSN)

ATIS 127.2
SAIPAN TOWER 125.7 256.9
GND CON 121.8

20086

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES.
READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.
Saipan Island, CQ
Francisco C. Ada/Saipan Intl
ICAO Identifier PGSN

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 15°7′12.918″N / 145°43′47.9427″E
2.2.2 From City: 4 miles SW of SAIPAN ISLAND, MP
2.2.3 Elevation: 215.1 ft
2.2.5 Magnetic Variation: 2E (1985)
2.2.6 Airport Contact: CHRISTOPHER S. TENORIO
   PO BOX 501055
   SAIPAN, MP 96950
   ((670) 483–2447)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, 100LL, A1+
2.4.5 Hangar Space:
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
   I D certified on 1/1/1978

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06
   2.12.2 True Bearing: 68
   2.12.3 Dimensions: 7001 ft x 100 ft
   2.12.4 PCN: 67 R/A/X/T
   2.12.5 Coordinates: 15°7′–5.4841″N / 145°43′–17.6384″E
   2.12.6 Touchdown Zone Elevation: 210.9 ft
2.12.2 Designation: 24
   2.12.2 True Bearing: 248
   2.12.3 Dimensions: 7001 ft x 100 ft
   2.12.4 PCN: 67 R/A/X/T
   2.12.5 Coordinates: 15°7′–31.5709″N / 145°44′–23.8646″E
   2.12.6 Touchdown Zone Elevation: 207.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06
   2.13.2 Take–off Run Available: 7000 ft
   2.13.3 Take–off Distance Available: 6800 ft
   2.13.4 Accelerate–Stop Distance Available: 6645 ft
   2.13.5 Landing Distance Available: 6700 ft
2.13.1 Designation: 24
   2.13.2 Take–off Run Available: 6400 ft
   2.13.3 Take–off Distance Available: 7000 ft
   2.13.4 Accelerate–Stop Distance Available: 6302 ft
   2.13.5 Landing Distance Available: 6700 ft
2.13.1 Designation: 07
   2.13.2 Take–off Run Available: 8700 ft
   2.13.3 Take–off Distance Available: 8700 ft
   2.13.4 Accelerate–Stop Distance Available: 8520 ft
   2.13.5 Landing Distance Available: 8700 ft
2.13.1 Designation: 25
   2.13.2 Take–off Run Available: 8500 ft
   2.13.3 Take–off Distance Available: 8500 ft
   2.13.4 Accelerate–Stop Distance Available: 8250 ft
   2.13.5 Landing Distance Available: 8700 ft
AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 06
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 24
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 07
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 25
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

General Remarks:
FOR ARPT SECURITY CALL (670) 237–6529.

RWY 06/24 OPEN FOR TAXIING ONLY (NOT AVBL FOR LDG AND TKOF). OPEN FOR LDG AND TKOF WHEN RWY 7/25 CLSD.


IMMIGRATION & CUSTOMS AVBL DURING SCHEDULED OPNS. OTHER TIMES PRIOR ARRANGEMENTS MUST BE MADE WITH CBP PORT DIRECTOR CALL (670) 288–0025/26.

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 07. Magnetic variation: 2E
2.19.2 ILS Identification: GSN
2.19.6 Site Elevation: 220 ft

2.19.1 ILS Type: Glide Slope for runway 07. Magnetic variation: 2E
2.19.2 ILS Identification: GSN
2.19.5 Coordinates: 15–6–58.69N / 145–43–13.05E
2.19.6 Site Elevation: 207.6 ft

2.19.1 ILS Type: Localizer for runway 07. Magnetic variation: 2E
2.19.2 ILS Identification: GSN
2.19.6 Site Elevation: 207 ft
Cleveland, OH
Cleveland–Hopkins Intl
ICAO Identifier KCLE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 41–24–33.865N / 81–51–16.888W
2.2.2 From City: 9 miles SW of CLEVELAND, OH
2.2.3 Elevation: 799.5 ft
2.2.5 Magnetic Variation: 8W (2020)
2.2.6 Airport Contact: KHALID BAHHUR
PO BOX 81009
CLEVELAND, OH 44181
(216–664–5030)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL, A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A R FF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 06L
2.12.2 True Bearing: 50
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 78 R/B/W/T
2.12.6 Threshold Elevation: 770.1 ft
2.12.6 Touchdown Zone Elevation: 772.6 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
2.12.6 Threshold Elevation: 781.1 ft
2.12.6 Touchdown Zone Elevation: 781.1 ft

2.12.1 Designation: 06R
2.12.2 True Bearing: 50

2.12.3 Dimensions: 9953 ft x 150 ft
2.12.4 PCN: 63 R/B/W/T
2.12.5 Coordinates: 41–23–51.8742N / 81–52–11.3519W
2.12.6 Threshold Elevation: 775.5 ft
2.12.6 Touchdown Zone Elevation: 776.5 ft

2.12.1 Designation: 24L
2.12.2 True Bearing: 230
2.12.3 Dimensions: 9953 ft x 150 ft
2.12.4 PCN: 63 R/B/W/T
2.12.6 Threshold Elevation: 785.7 ft
2.12.6 Touchdown Zone Elevation: 785.8 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 93
2.12.3 Dimensions: 6018 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.6 Threshold Elevation: 767.1 ft
2.12.6 Touchdown Zone Elevation: 782.8 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 273
2.12.3 Dimensions: 6018 ft x 150 ft
2.12.4 PCN: 80 R/B/W/T
2.12.5 Coordinates: 41–24–57.8208N / 81–49–56.4392W
2.12.6 Threshold Elevation: 799.5 ft
2.12.6 Touchdown Zone Elevation: 799.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 06L
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 24R
2.13.2 Take–off Run Available: 9000 ft
2.13.3 Take–off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 06R
2.13.2 Take–off Run Available: 9956 ft
2.13.3 Take–off Distance Available: 9956 ft
2.13.4 Accelerate–Stop Distance Available: 9956 ft
2.13.5 Landing Distance Available: 8029 ft

Federal Aviation Administration
Twenty–Sixth Edition
2.13.1 Designation: 24L
2.13.2 Take-off Run Available: 9956 ft
2.13.3 Take-off Distance Available: 9956 ft
2.13.4 Accelerate–Stop Distance Available: 9956 ft
2.13.5 Landing Distance Available: 9956 ft
2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 346.325
2.14.5 Hours of Operation: 24

2.13.1 Designation: 28
2.13.2 Take-off Run Available: 6018 ft
2.13.3 Take-off Distance Available: 6018 ft
2.13.4 Accelerate–Stop Distance Available: 6018 ft
2.13.5 Landing Distance Available: 6018 ft
2.14.1 Service Designation: CD/P
2.14.3 Channel: 273.45
2.14.5 Hours of Operation: 24

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 06L
2.14.2 Approach Lighting System: ALSF2
2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 346.325
2.14.5 Hours of Operation: 24

2.14.1 Designation: 06R
2.14.2 Approach Lighting System: MALSR
2.14.1 Service Designation: DEP/P
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24

2.14.1 Designation: 10
2.14.2 Approach Lighting System:
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.7
2.14.5 Hours of Operation:

2.14.1 Designation: 24R
2.14.2 Approach Lighting System: ALSF2
2.14.1 Service Designation: D–ATIS (ARR)
2.14.3 Channel: 127.85
2.14.5 Hours of Operation: 24

2.14.1 Designation: 24L
2.14.2 Approach Lighting System: MALSR
2.14.1 Service Designation: D–ATIS (DEP)
2.14.3 Channel: 132.375
2.14.5 Hours of Operation: 24

2.14.1 Designation: 10
2.14.2 Approach Lighting System:
2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P
2.14.3 Channel: 124
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 273.45
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GTLKE DP
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: KKIDS DP
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 124.5
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: PFLYD DP
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: ZAAPA DP
2.14.3 Channel: 128.25
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: Localizer for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41–25–10.1943N / 81–50–32.8939W
2.19.6 Site Elevation: 778.7 ft

2.19.1 ILS Type: Glide Slope for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41–25–11.9443N / 81–50–35.682W
2.19.6 Site Elevation: 783.4 ft

2.19.1 ILS Type: Inner Marker for runway 06L. Magnetic variation: 8W
2.19.2 ILS Identification: LIZ
2.19.5 Coordinates: 41–23–53.9363N / 81–52–33.3994W
2.19.6 Site Elevation: 761.5 ft

2.19.1 ILS Type: Localizer for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41–25–11.9443N / 81–50–35.682W
2.19.6 Site Elevation: 783.4 ft

2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41–24–53.0116N / 81–51–8.214W
2.19.6 Site Elevation: 768.4 ft

2.19.1 ILS Type: Inner Marker for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41–25–3.7844N / 81–50–47.3046W
2.19.6 Site Elevation: 777.9 ft

2.19.1 ILS Type: Localizer for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41–23–53.0789N / 81–52–34.7494W
2.19.6 Site Elevation: 760.6 ft

2.19.1 ILS Type: Glide Slope for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.5 Coordinates: 41–24–13.6551N / 81–51–45.2101W
2.19.6 Site Elevation: 766 ft

2.19.1 ILS Type: Inner Marker for runway 24R. Magnetic variation: 8W
2.19.2 ILS Identification: PVY
2.19.6 Site Elevation: 785.5 ft
2.19.1 ILS Type: DME for runway 24L. Magnetic variation: 8W
2.19.2 ILS Identification: HPI
2.19.3 Coordinates: 41–23–44.3404N / 81–52–18.0729W
2.19.4 Site Elevation: 778.9 ft
2.19.1 ILS Type: DME for runway 28. Magnetic variation: 8W
2.19.2 ILS Identification: PXP
2.19.6 Site Elevation: 766.3 ft

2.19.1 ILS Type: Glide Slope for runway 24L. Magnetic variation: 8W
2.19.2 ILS Identification: HPI
2.19.5 Coordinates: 41–24–51.9504N / 81–50–45.3186W
2.19.6 Site Elevation: 782.2 ft
2.19.1 ILS Type: Glide Slope for runway 28. Magnetic variation: 8W
2.19.2 ILS Identification: PXP
2.19.6 Site Elevation: 786.3 ft

2.19.1 ILS Type: Localizer for runway 24L. Magnetic variation: 8W
2.19.2 ILS Identification: HPI
2.19.5 Coordinates: 41–23–45.4329N / 81–52–21.5252W
2.19.6 Site Elevation: 771.7 ft
2.19.1 ILS Type: Localizer for runway 28. Magnetic variation: 8W
2.19.2 ILS Identification: PXP
2.19.5 Coordinates: 41–25–1.5177N / 81–51–21.2475W
2.19.6 Site Elevation: 756.3 ft

General Remarks:

NASA GLENN RESEARCH CENTER; NASA RAMP PPR CALL 216–433–2031; 0800–1730 MON–FRI. CONTACT NASA OPNS ON FREQ 122.925 WITHIN 50 NM.

RAMP AREA CONCOURSE D BTN GATES D1, D28 CLSD EXC ACFT WINGSPAN LESS THAN 86 FT.

PAD 3 BAYS 1–5 CLOSED TO ACFT WITH WINGSPAN OVER 134 FT.

PAD 2 AND TAXI LANE Y1 RSTRD TO GROUP II ACFT LESS THAN 79 FT WINGSPAN.

DEER, COYOTES, & BIRDS INCLG WATERFOWL ON & INVOF ARPT.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

PAD 3 BAY 6 CLOSED TO ACFT WITH WINGSPAN OVER 94 FT.

TWYS CLSD OCT–APR TO SUPPORT DEICING OPS: TWY M; TWY M1 BTN TWY L & TWY J1; TWY M2 BTN TWY L & TWY J1; TWY J2 BTN TWY J3 & TWY K.

ALL APCHS ARE OVR NOISE SENSITIVE AREAS. ARPT LATE NGT NOISE ABATEMENT PROCEDURES ARE IN EFFECT 2300–0600. ADDITIONAL NOISE ABATEMENT PROCEDURES ARE IN EFFECT CALL AMGR NORMAL BUSINESS HRS AT 216–265–6090.
Columbus, OH
Port Columbus Intl
ICAO Identifier KCMH

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 39°59′49.008 N / 82°53′31.773 W
2.2.2 From City: 6 miles E of COLUMBUS, OH
2.2.3 Elevation: 815 ft
2.2.5 Magnetic Variation: 7°W (2015)
2.2.6 Airport Contact: JOE NARDONE
COLUMBUS REGIONAL AIRPORT AUTHORITY
COLUMBUS, OH 43219
(614) 239-4000
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IC 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: 74 F/C/X/T
2.12.5 Coordinates: 40°0′11.5307 N / 82°54′27.4941 W
2.12.6 Threshold Elevation: 814.7 ft
2.12.6 Touchdown Zone Elevation: 814.8 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: 74 F/C/X/T
2.12.5 Coordinates: 40°0′5.7308 N / 82°52′44.9692 W
2.12.6 Threshold Elevation: 812.3 ft
2.12.6 Touchdown Zone Elevation: 813.1 ft
2.12.1 Designation: 10R
2.12.2 True Bearing: 94°
2.12.3 Dimensions: 10114 ft x 150 ft
2.12.4 PCN: 77 F/C/W/T
2.12.5 Coordinates: 39°59′47.1453 N / 82°54′33.0422 W
2.12.6 Threshold Elevation: 804.9 ft
2.12.6 Touchdown Zone Elevation: 809.2 ft
2.12.1 Designation: 28L
2.12.2 True Bearing: 274°
2.12.3 Dimensions: 10114 ft x 150 ft
2.12.4 PCN: 77 F/C/W/T
2.12.5 Coordinates: 39°59′29.8102 N / 82°52′23.4543 W
2.12.6 Threshold Elevation: 815 ft
2.12.6 Touchdown Zone Elevation: 815 ft

AD 2.13 Declared Distances
2.13.1 Designation: 10L
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft
2.13.1 Designation: 28R
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft
2.13.1 Designation: 10R
2.13.2 Take-off Run Available: 10113 ft
2.13.3 Take-off Distance Available: 10113 ft
2.13.4 Accelerate–Stop Distance Available: 10113 ft
2.13.5 Landing Distance Available: 10113 ft
2.13.1 Designation: 28L
2.13.2 Take-off Run Available: 10113 ft
2.13.3 Take-off Distance Available: 10113 ft
2.13.4 Accelerate–Stop Distance Available: 10113 ft
2.13.5 Landing Distance Available: 10113 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR
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2.14.5 Hours of Operation: 24

2.14.1 Service Designation: NCLUS DP (DEPARTURES OVER RDBUV & POM CT)
2.14.3 Channel: 371.975
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS (DEICE PAD CONTROL)
2.14.3 Channel: 122.775
2.14.5 Hours of Operation:

2.14.1 Service Designation: SCRLT STAR
2.14.3 Channel: 134
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 7W
2.19.2 ILS Identification: ONB
2.19.5 Coordinates: 40°–0°–12.2661N / 82°–54°–40.558W
2.19.6 Site Elevation: 811.7 ft

2.19.1 ILS Type: DM E for runway 10R. Magnetic variation: 7W
2.19.2 ILS Identification: AQI
2.19.5 Coordinates: 39°–59°–33.7337N / 82°–54°–45.9278W
2.19.6 Site Elevation: 814.8 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 7W
2.19.2 ILS Identification: AQI
2.19.6 Site Elevation: 814.1 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°–33.7337N / 82°–54°–45.9278W
2.19.6 Site Elevation: 814.8 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°–37.8812N / 82°–54°–46.0853W
2.19.6 Site Elevation: 806 ft

**General Remarks:**

TWY D–5 PAVEMENT (NORTH OF TWY D) IS RSTRD TO ACFT WITH WINGSPAN LESS THAN 79 FT.

TAXILANE CONCOURSE A BTN TWY D3 AND TWY D4 CLSD TO ACFT WINGSPAN MORE THAN 130 FT.
ALL SURFACES AROUND TERMINAL; NORTH OF TWY ‘D’ & SOUTH OF TWY ‘E’ ARE NON−MOVEMENT AREAS.


BIRDS INV OF ARPT.

TWYS R2, R3, R4, R5 AND R6 RSTRD TO WINGSPAN LESS THAN 118 FT.

TWY F1 RSTRD TO AIRCRAFT WITH WINGSPAN LESS THAN 120 FT.

HOLD PAD FOR RWY 28L RSTRD TO ACFT WITH WINGSPAN LESS THAN 118 FT.

NOISE BARRIER LOCATED AT SE SIDE OF AIRFIELD RESTRICTED TO ACFT WITH WINGSPAN LESS THAN 79 FT.

BE ALERT: RY 10L/28R RESTRICTIONS ON STAGE I & II TURBOJET ACFT 2200–0800 & ON STAGE III TURBOJET ACFT 2200–0700. PRACTICE APCHS FOR HIGH NOISE LEVEL TYPE ACFT INCLUDING NON−STAGE III MIL JET ACFT SHALL NOT BE APPROVED UNLESS RY 10R/28L IS IN USE & THE APCH TERMINATES IN A FULL STOP TAXI−BACK OPN.

MODEL ACFT TFC WITHIN A 1 NM RDS OF A POINT 8 NM ON A 010 DEG BRG FM THE ARPT; SFC – 5000 FT AGL; SR−SS DLY.

TAXILANE CONCOURSE C BTN TWY J AND TWY K CLSD TO ACFT WINGSPAN MORE THAN 135 FT.

FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL.

TWY R1 RSTRD TO ACFT WITH WINGSPAN LESS THAN 79 FT.
Portland, OR
Portland Intl
ICAO Identifier KPDX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 45°35′19.3519 N / 122°35′48.7299 W
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: STEPHEN NAGY
7200 NE AIRPORT WAY
PORTLAND, OR 97218
(503) 415-6195
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 82 F/D/X/T
2.12.5 Coordinates: 45°34′56.73 N / 122°37′0.5188 W
2.12.6 Threshold Elevation: 22.2 ft
2.12.6 Touchdown Zone Elevation: 22.9 ft

2.12.1 Designation: 21
2.12.2 True Bearing: 225
2.12.3 Dimensions: 6000 ft x 150 ft
2.12.4 PCN: 82 F/D/X/T
2.12.5 Coordinates: 45°35′38.605 N / 122°36′0.8463 W
2.12.6 Threshold Elevation: 26.4 ft
2.12.6 Touchdown Zone Elevation: 26.4 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 119
2.12.3 Dimensions: 9825 ft x 150 ft
2.12.4 PCN: 133 F/D/W/T

2.12.5 Coordinates: 45°35′47.454 N / 122°36′0.0581 W
2.12.6 Threshold Elevation: 29.5 ft
2.12.6 Touchdown Zone Elevation: 30.2 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′42.5347 N / 122°36′17.3022 W
2.12.6 Threshold Elevation: 22.7 ft
2.12.6 Touchdown Zone Elevation: 22.7 ft

2.12.1 Designation: 28L
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°34′49.8531 N / 122°35′2.0463 W
2.12.6 Threshold Elevation: 22.7 ft
2.12.6 Touchdown Zone Elevation: 22.7 ft

2.12.1 Designation: 28R
2.12.2 True Bearing: 299
2.12.3 Dimensions: 9825 ft x 150 ft
2.12.4 PCN: 133 F/D/W/T

2.12.5 Coordinates: 45°35′0.3785 N / 122°33′59.2636 W
2.12.6 Threshold Elevation: 30.8 ft
2.12.6 Touchdown Zone Elevation: 30.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take–off Run Available: 6000 ft
2.13.3 Take–off Distance Available: 6000 ft
2.13.4 Accelerate–Stop Distance Available: 6000 ft
2.13.5 Landing Distance Available: 6000 ft

2.13.1 Designation: 21
2.13.2 Take–off Run Available: 6000 ft
2.13.3 Take–off Distance Available: 6000 ft
2.13.4 Accelerate–Stop Distance Available: 6000 ft
2.13.5 Landing Distance Available: 6000 ft

2.13.1 Designation: 28L
2.13.2 Take–off Run Available: 9825 ft
2.13.3 Take–off Distance Available: 9825 ft
2.13.4 Accelerate–Stop Distance Available: 9825 ft
2.13.5 Landing Distance Available: 8535 ft
2.13.1 Designation: 28R
2.13.2 Take-off Run Available: 9825 ft
2.13.3 Take-off Distance Available: 9825 ft
2.13.4 Accelerate–Stop Distance Available: 9825 ft
2.13.5 Landing Distance Available: 9290 ft

2.13.1 Designation: 10R
2.13.2 Take-off Run Available: 11000 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 11000 ft
2.13.5 Landing Distance Available: 11000 ft

2.13.1 Designation: 28L
2.13.2 Take-off Run Available: 11000 ft
2.13.3 Take-off Distance Available: 11000 ft
2.13.4 Accelerate–Stop Distance Available: 11000 ft
2.13.5 Landing Distance Available: 11000 ft

2.14.1 Designation: 03
2.14.2 Approach Lighting System: P4L

2.14.1 Designation: 21
2.14.2 Approach Lighting System: P4R

2.14.1 Designation: 10L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR

2.18 Air Traffic Services Communication Facilities

2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 21. Magnetic variation: 16E
2.19.2 ILS Identification: GPO
2.19.3 Coordinates: 45–34–47.97N / 122–37–7.94W
2.19.6 Site Elevation: 31 ft

2.19.1 ILS Type: Localizer for runway 21. Magnetic variation: 16E
2.19.2 ILS Identification: GPO
2.19.5 Coordinates: 45–34–49.75N / 122–37–10.47W
2.19.6 Site Elevation: 11.4 ft

2.19.1 ILS Type: DME for runway 10L. Magnetic variation: 16E
2.19.2 ILS Identification: VDG
2.19.5 Coordinates: 45–35–52.3N / 122–36–12.47W
2.19.6 Site Elevation: 25.6 ft

2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 16E
2.19.2 ILS Identification: VDG
2.19.5 Coordinates: 45–35–39.7602N / 122–35–30.1707W
2.19.6 Site Elevation: 30.8 ft

2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 16E
2.19.2 ILS Identification: VDG
2.19.5 Coordinates: 45–34–49.53N / 122–33–46.85W
2.19.6 Site Elevation: 28.9 ft

2.19.1 ILS Type: DME for runway 28R. Magnetic variation: 16E
2.19.2 ILS Identification: IAP
2.19.5 Coordinates: 45–34–47.95N / 122–36–13.551W
2.19.6 Site Elevation: 25.5 ft

2.19.1 ILS Type: Glide Slope for runway 28R. Magnetic variation: 16E
2.19.2 ILS Identification: IAP
2.19.5 Coordinates: 45–35–52.3N / 122–36–12.47W
2.19.6 Site Elevation: 25.6 ft

2.19.1 ILS Type: Localizer for runway 28R. Magnetic variation: 16E
2.19.2 ILS Identification: IAP
2.19.5 Coordinates: 45–34–49.95N / 122–33–46.85W
2.19.6 Site Elevation: 28.9 ft

2.19.1 ILS Type: DME for runway 10R. Magnetic variation: 16E
2.19.2 ILS Identification: PDX
2.19.5 Coordinates: 45°34′46.7386″ N / 122°34′45.2294″ W
Site Elevation: 36 ft
2.19.6 Site Elevation: 19.5 ft

2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 16°E
Identification: JMJ
Coordinates: 45°34′46.7386″ N / 122°34′45.2294″ W
Site Elevation: 36 ft

2.19.2 ILS Identification: PDG
Coordinates: 45°35′33.9026″ N / 122°37′7.2471″ W
Site Elevation: 19.9 ft

2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 16°E
Identification: JMJ
Coordinates: 45°35′43.5268″ N / 122°34′45.8188″ W
Site Elevation: 19.5 ft

General Remarks:
FUEL – A (AIR BP – ATLANTIC AVIATION SVCS. C503–331–4220) J8(MIL) (NC–100LL, A)

BEARING STRENGTH: RWY 03–21 ST 175,RY 10L–28R ST175,RY 10R–28L ST175.

ACFT WITH WINGSPAN GREATER THAN 118 FEET ARE PROHIBITED FROM TURNING EASTBOUND ON TWY C FROM SOUTHWESTBOUND ON TWY F UNLESS UNDER TOW.

NOISE ABATEMENT PROCEDURES IN EFFECT; CALL NOISE OFFICE AT 503–460–4100. RY 28L ARRIVALS ARE NOISE SENSITIVE, EXPECT APCH TO 28R WITH TRANSITION TO 28L.

TWY T BTN EXITS B5 & B6 CLSD TO ACFT WITH WINGSPAN GTR THAN 118 FT.


MISC: FLT NOTIFICATION SVC, ADCUS, AVBL.

AREA OF TWY T BTN M & E3 NOT VSB FM TWR.

MIGRATORY & WINTERING FLOCKS OF LRG WATERFOWL ON & INVOF APRT. HEAVY SEAGULL ACTIVITY SEP THRU APR; EXPECT HIGH NMBR OF BIRDS YEAR AROUND; CK LCL ADVISORIES.

ANG: SEE FLIP AP/1 FOR SUPPLEMENTARY APRT INFO. HAZARDOUS BIRD COND EXIST. PHASE 1 MAY–OCT, PHASE II NOV–APR. CURRENT BIRD WATCH CONDITIONS ARE NOT REPORTED ON ATIS.

ACFT AUTHORIZED TO UTILIZE THE NORTHWEST RAMP WILL BE TOWED TO/FROM THIS RAMP.

TWY TBTN TWY E3 & TWY B5 CLSD TO ACFT WITH WINGSPAN GTR THAN 198 FT.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED)
ENABLED ON ALL AIRPORT SURFACES.

TWY K BTN TWY V & TWY A4 CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

180 DEGREE TURNS BY ACFT WEIGHING IN EXCESS OF 12500 LBS PROHIBITED ON RY 10L/28R, RY 03/21 AND ALL TWYS.

ANG : PPR/OF FL BUS ONLY. BASE OPS OPR 1500–2300Z++ MON–FRI EXC HOL.; DSN 638–4390, C503–335–4390. CTC BASE OPS 15 MIN PRIOR TO LDG AND AFTER DEP ON 281.2. TRAN QUARTERS NOT AVBL. CAUTION: OBST LIGHTING IS NOT NVD COMPATIBLE. NVD NOT AUTHORIZED WHILE AIRBORNE IN VCNTY OF AFLD.

TWY K BTN TWY A5 & TWY V CLSD TO ACFT WINGSPAN MORE THAN 168 FT.

JASU – 4(A/M 32A –86) (M C–11) 1(M A–1A).

FLUID – LHOXRB.

(E94) WSFO/WSO/FW/RFC.

TWY V CLSD TO ACFT WITH WINGSPAN GREATER THAN 168 FT. ACFT WITH WINGSPAN GREATER THAN 118 FT PROHIBITED FM TURNING WB ONTO TWY A FM TWY V UNLESS UNDER TOW.

TWY M BTN TWY E & TWY T CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

TWY C BTN TWY C6 AND TWY C8 CLSD TO ACFT WITH WINGSPAN GTR THAN 180 FEET.

TWY A3 BTN TWY A & THE GA RAMP CLSD TO ACFT WITH WINGSPAN GTR THAN 135 FEET UNLESS UNDER TOW.

UNCONTROLLED TFC AT PEARSON FIELD VANCOUVER WA 3 NM W OF RY 10L THLD ON EXTDD CNTRLN.

ARPT CLSD TO NON–POWERED ACFT EXCP IN EMERG.

AT THE WEST END ARM/DEARM AREA ON TWY C NO ACFT OF ANY TYPE MAY TAXI PAST THE ARM/DEARM AREA WHILE IT IS BEING USED.

TWY C3 CLSD TO ACFT WITH WINGSPAN EQUAL TO OR GTR THAN 79 FT.

TWY T BTN TWY E2 & TWY E3 CLSD TO ACFT WINGSPAN MORE THAN 118 FT.

TWY W CLSD TO ACFT WITH WINGSPAN GTR THAN 118 FT UNLESS UNDER TOW.

TWY E3 CLSD TO ACFT WITH WINGSPAN GTR THAN 198 FEET.

PDX HAS FAC CONSTRAINTS THAT LMT ITS ABILITY TO ACCOMMODATE DIVD FLTS & MNTN THE ARPT SAFE OPN DUR IREG OPS. ACFT OPRS SHUD CTC THE ARPT DUTY MGR AT (503) 460–4236 TO COORD DIVD FLTS EXC IN THE CASE OF A DECLARED IN–FLT EMERG.

NSTD YELLOW PRK SPOT DESIGNATORS AND EQPT TOOL BOX LCTN PAINTED ON RAMP. PLEASE CTC BASE OPS OR REQ FOLLOW ME IF NOT FAMILIAR WITH PANGB PRK PROCEDURES.

MILITARY: ANG: OREGON ANG E RAMP SUN SHADE OBST LGTS O/S.
Philadelphia, PA
Philadelphia Intl
ICAO Identifier KPHL

AD 2.2 Aerodrome geographical and administrative data
2.2.2 From City: 5 miles SW of PHILADELPHIA, PA
2.2.3 Elevation: 35.9 ft
2.2.5 Magnetic Variation: 12W (2020)
2.2.6 Airport Contact: ROCHELLE CAMERON
DIV OF AVIATION TERMINAL E
PHILADELPHIA, PA 19153
(215–937–6914)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index II E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 75
2.12.3 Dimensions: 5001 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39–52–42.0147N / 75–13–48.05W
2.12.6 Threshold Elevation: 9.3 ft
2.12.6 Touchdown Zone Elevation: 20.3 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 256
2.12.3 Dimensions: 5001 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.5 Coordinates: 39–52–54.3825N / 75–12–45.9478W
2.12.6 Threshold Elevation: 35.9 ft
2.12.6 Touchdown Zone Elevation: 35.9 ft

2.12.1 Designation: 27R
2.12.2 True Bearing: 255

2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 60 F/A/X/T
2.12.6 Threshold Elevation: 10.4 ft
2.12.6 Touchdown Zone Elevation: 10.5 ft

2.12.1 Designation: 09L
2.12.2 True Bearing: 256
2.12.3 Dimensions: 5001 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.6 Threshold Elevation: 13.2 ft
2.12.6 Touchdown Zone Elevation: 13.3 ft

2.12.1 Designation: 09R
2.12.2 True Bearing: 255
2.12.3 Dimensions: 9500 ft x 150 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39–51–38.9141N / 75–16–30.7061W
2.12.6 Threshold Elevation: 20.3 ft
2.12.6 Touchdown Zone Elevation: 20.6 ft

2.12.1 Designation: 27L
2.12.2 True Bearing: 255
2.12.3 Dimensions: 12000 ft x 200 ft
2.12.4 PCN: 60 F/A/X/T
2.12.5 Coordinates: 39–52–8.65N / 75–14–1.72W
2.12.6 Threshold Elevation: 10.6 ft
2.12.6 Touchdown Zone Elevation: 10.2 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 159
2.12.3 Dimensions: 6500 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.6 Threshold Elevation: 8.2 ft
2.12.6 Touchdown Zone Elevation: 10.5 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 339
2.12.3 Dimensions: 6500 ft x 150 ft
2.12.4 PCN: 27 F/A/X/T
2.12.6 Threshold Elevation: 12.9 ft
2.12.6 Touchdown Zone Elevation: 12.9 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take-off Run Available: 5001 ft
2.13.3 Take-off Distance Available: 5001 ft
2.13.4 Accelerate–Stop Distance Available: 5001 ft
2.13.5 Landing Distance Available: 5001 ft

2.13.1 Designation: 26
2.13.2 Take-off Run Available: 5001 ft
2.13.3 Take-off Distance Available: 5001 ft
2.13.4 Accelerate–Stop Distance Available: 5001 ft
2.13.5 Landing Distance Available: 5001 ft

2.13.1 Designation: 27R
2.13.2 Take-off Run Available: 9500 ft
2.13.3 Take-off Distance Available: 9500 ft
2.13.4 Accelerate–Stop Distance Available: 9500 ft
2.13.5 Landing Distance Available: 8864 ft

2.13.1 Designation: 09L
2.13.2 Take-off Run Available: 9500 ft
2.13.3 Take-off Distance Available: 9500 ft
2.13.4 Accelerate–Stop Distance Available: 9500 ft
2.13.5 Landing Distance Available: 9500 ft

2.13.1 Designation: 09R
2.13.2 Take-off Run Available: 12000 ft
2.13.3 Take-off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 27L
2.13.2 Take-off Run Available: 12000 ft
2.13.3 Take-off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 11825 ft
2.13.5 Landing Distance Available: 9912 ft

2.13.1 Designation: 17
2.13.2 Take-off Run Available: 6500 ft
2.13.3 Take-off Distance Available: 6500 ft
2.13.4 Accelerate–Stop Distance Available: 6500 ft
2.13.5 Landing Distance Available: 6500 ft

2.13.1 Designation: 35
2.13.2 Take-off Run Available: 6500 ft
2.13.3 Take-off Distance Available: 6500 ft
2.13.4 Accelerate–Stop Distance Available: 6500 ft
2.13.5 Landing Distance Available: 6500 ft

2.14.1 Approach Lighting System:
2.14.2 Visual Approach Slope Indicator System:

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08

2.14.1 Service Designation: APCH/P (090–269, 5000 FT & BLW)
2.14.3 Channel: 127.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270–089, ABV 5000 FT)
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090–269, 6000–8000 FT)
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270–360, 5000 FT & BLW)
2.14.3 Channel: 263.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270–089, ABV 5000 FT)
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090–269, 5000 FT & BLW)
2.14.3 Channel: 291.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (001–089, 5000 FT & BLW)
2.14.3 Channel: 291.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090–269, 6000–8000 FT)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (090–269, 5000 FT & BLW)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BUNTS STAR
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BUNTS STAR
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 118.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CEDAR LAKE STAR
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CEDAR LAKE STAR
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SW 6000 FT & BLW)
2.14.3 Channel: 118.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE RWY 09 ACTIVE 10000 FT & BLW)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SE RWY 27 ACTIVE 8500–10000 FT)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SOUTH/SOUTHWEST RWY 27 8500–10000 FT)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NE 6500 FT & BLW)
2.14.3 Channel: 123.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SOUTH/SOUTHWEST RWY 27 8500–10000 FT)
2.14.3 Channel: 119.75
2.14.5 Hours of Operation: 24
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<th>Service Designation</th>
<th>Channel</th>
<th>Hours of Operation</th>
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<td>124.35</td>
<td>24</td>
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<tr>
<td>CLASS B (W RWY 27 ACTIVE 10000 FT &amp; BLW)</td>
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<td>CLASS B (NW 8000–10000 FT)</td>
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<td>CLASS B (NE 7000–10000 FT)</td>
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<td>CLASS B (5500 FT &amp; BLW)</td>
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<td>CLASS B (SE–SW 5000 FT &amp; BLW)</td>
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<td>CLASS B (6000–8000 FT)</td>
<td>133.875</td>
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<td>CLASS B (SOUTHEAST RWY 27 5500–7500)</td>
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<td>CLASS B (5500 FT &amp; BLW)</td>
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<td>CLASS B (SE RWY 09 ACTIVE 10000 FT &amp; BLW)</td>
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<td>CLASS B (SOUTH/SOUTHWEST RWY 27 8500–10000 FT)</td>
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2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (6000–8000 FT)
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: CLASS B (NE 7000–10000 FT)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: FINAL APCH
2.14.3 Channel: 125.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (WEST RWY 09 ACTIVE 8500–10000 FT)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (NW 8000–10000 FT)
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (SW 6000 FT & BLW)
2.14.3 Channel: 323.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: JIIMS STAR
2.14.3 Channel: 133.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 08/26, 09L/27R, 17/35)
2.14.3 Channel: 118.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P (RWY 09R/27L)
2.14.3 Channel: 135.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PAATS STAR
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PAATS STAR
2.14.3 Channel: 317.55
2.14.5 Hours of Operation: 24
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PHL ONE DP
2.14.3 Channel: 124.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PHL ONE DP
2.14.3 Channel: 319.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 27L)
2.14.3 Channel: 120.425
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: PRM (RWY 26)
2.14.3 Channel: 123.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: RADAR
2.14.3 Channel: 126.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SPUDS STAR
2.14.3 Channel: 128.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: SPUDS STAR
2.14.3 Channel: 272.575
2.14.5 Hours of Operation: 24

2.19.1 ILS Type: DME for runway 09L. Magnetic variation: 12W
2.19.2 ILS Identification: VII
2.19.5 Coordinates: 39–52–35.4715N / 75–13–11.5053W
2.19.6 Site Elevation: 19.4 ft

2.19.1 ILS Type: Glide Slope for runway 09L. Magnetic variation: 12W
2.19.2 ILS Identification: VII
2.19.5 Coordinates: 39–52–6.03N / 75–15–6.06W
2.19.6 Site Elevation: 8.9 ft

2.19.1 ILS Type: Localizer for runway 09L. Magnetic variation: 12W
2.19.2 ILS Identification: VII
2.19.5 Coordinates: 39–52–33.52N / 75–13–8.777W
2.19.6 Site Elevation: 7.2 ft

2.19.1 ILS Type: DME for runway 27R. Magnetic variation: 12W
2.19.2 ILS Identification: PDP
2.19.5 Coordinates: 39–52–35.4715N / 75–13–11.5053W
2.19.6 Site Elevation: 19.4 ft

2.19.1 ILS Type: Glide Slope for runway 27R. Magnetic variation: 12W
2.19.2 ILS Identification: PDP
2.19.5 Coordinates: 39–52–35.8144N / 75–13–35.8144W
2.19.6 Site Elevation: 7.5 ft

2.19.1 ILS Type: Localizer for runway 27R. Magnetic variation: 12W
2.19.2 ILS Identification: PDP
2.19.5 Coordinates: 39–52–4.7498N / 75–15–32.9263W
2.19.6 Site Elevation: 8.8 ft

2.19.1 ILS Type: DME for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL
2.19.5 Coordinates: 39–52–7.3027N / 75–13–47.0541W
2.19.6 Site Elevation: 23.5 ft

2.19.1 ILS Type: Glide Slope for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL

Federal Aviation Administration
Twenty-Sixth Edition
2.19.6 Site Elevation: 13.3 ft

2.19.1 ILS Type: Inner Marker for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL
2.19.5 Coordinates: 39°51′36.7356″N / 75°16′41.589″W
2.19.6 Site Elevation: 7.2 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 12W
2.19.2 ILS Identification: GLC
2.19.5 Coordinates: 39°51′36.2572″N / 75°16′43.9517″W
2.19.6 Site Elevation: 6.8 ft

2.19.1 ILS Type: Localizer for runway 09R. Magnetic variation: 12W
2.19.2 ILS Identification: PHL
2.19.5 Coordinates: 39°51′36.2572″N / 75°16′43.9517″W
2.19.6 Site Elevation: 7.2 ft

2.19.1 ILS Type: Localizer for runway 27L. Magnetic variation: 12W
2.19.2 ILS Identification: GLC
2.19.5 Coordinates: 39°51′36.2572″N / 75°16′43.9517″W
2.19.6 Site Elevation: 6.8 ft

General Remarks:
ARPT IS LCTD IN A NOISE SENSITIVE AREA. AIRPORT NOISE ABATEMENT TAKEOFF PROCEDURES ARE TO BE USED.

ONLY NOSE—IN PRKG PERMITTED ON NORTH REMOTE APNS. PPR FM ARPT OPS FOR ALL ACFT PRKG ON REMOTE APNS; CTC 215−937−6914/6800.

RY 09R ROLLOUT RVR USED FOR RY 09L MIDPOINT RVR.

RY S 27L, 27R & 35 SHIP CHNL (DELAWARE RIVER) MAX HEIGHT OF SHIPS 189 FT. RY 26 SHIP CHNL (SCHUYLKILL) MAX HEIGHT OF SHIPS 149 FT.

ASDE−X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS−B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

ALL ACFT TRAVELING ON TWY J MUST USE MINIMUM POWER WHEN TURNING SOUTH DUE TO JETBLAST CONCERNS.

UNLGTD STACK 288 FT MSL (271 FT AGL) 2.3 NM SW OF ARPT.

TCAS EQUIPPED ACFT−TCAS ALERT MAY BE CAUSED BY TRANSPONDER EQUIPPED SHIPS LCTD PHL NAVAL BASE 3 NM E.

TWY J BTN TWYS K3 AND Q RESTRICTED TO ACFT WITH WINGSPANS 171 FT AND LESS.

ALL ENGINE RUNUPS REQUIRE PPR FM DUTY OPNS OFFICER AT 937−6914/6800; RUNUPS 20 MIN MAXIMUM.
POSSIBLE UNMARKED SHIP OBSTRUCTION TRANSITING EAST OR WESTBOUND ALONG THE DELAWARE RIVER REACHING HEIGHTS OF 189’ – BE ALERT WHEN APPROACHING PHL RUNWAY 35 AND WHENEVER CIRCLING OR VISUALLY APPROACHING ALL OTHER RUNWAYS.

BIRDS ON & INVOF ARPT.
Pittsburgh, PA  
Pittsburgh Intl  
ICAO Identifier KPIT

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 40°29′29.1″N / 80°13′57.7″W
2.2.2 From City: 12 miles NW of PITTSBURGH, PA
2.2.3 Elevation: 1202.9 ft
2.2.5 Magnetic Variation: 9W (2020)
2.2.6 Airport Contact: CHRISTINA A. CASSOTIS  
PO BOX 12370, SUITE 4000  
PITTSBURGH, PA 15231  
(412) 472-3509
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index I D certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 28C
2.12.2 True Bearing: 272
2.12.3 Dimensions: 10775 ft x 150 ft
2.12.4 PCN: 68 R/B/X/T
2.12.5 Coordinates: 40°29′20.0419″N / 80°12′33.1754″W
2.12.6 Threshold Elevation: 1136.6 ft
2.12.6 Touchdown Zone Elevation: 1133.5 ft

2.12.1 Designation: 10C
2.12.2 True Bearing: 92
2.12.3 Dimensions: 10775 ft x 150 ft
2.12.4 PCN: 68 R/B/X/T
2.12.5 Coordinates: 40°29′23.6989″N / 80°12′33.1754″W
2.12.6 Threshold Elevation: 1140.2 ft
2.12.6 Touchdown Zone Elevation: 1141.4 ft

2.12.1 Designation: 10L
2.12.2 True Bearing: 92
2.12.3 Dimensions: 10502 ft x 150 ft
2.12.4 PCN: 65 R/B/X/T
2.12.5 Coordinates: 40°29′23.6989″N / 80°12′33.1754″W
2.12.6 Threshold Elevation: 1121.9 ft
2.12.6 Touchdown Zone Elevation: 1125 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°29′4.8667″N / 80°14′0.4048″W
2.12.6 Threshold Elevation: 1174.1 ft
2.12.6 Touchdown Zone Elevation: 1174.1 ft

2.12.1 Designation: 10R
2.12.2 True Bearing: 92
2.12.3 Dimensions: 11500 ft x 200 ft
2.12.4 PCN: 80 R/B/X/T
2.12.5 Coordinates: 40°29′29.8328″N / 80°12′38.1249″W
2.12.6 Threshold Elevation: 1121.9 ft
2.12.6 Touchdown Zone Elevation: 1125 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′45.6544″N / 80°13′29.5187″W
2.12.6 Threshold Elevation: 1147.6 ft
2.12.6 Touchdown Zone Elevation: 1147.6 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 316
2.12.3 Dimensions: 8101 ft x 150 ft
2.12.4 PCN: 71 R/B/X/T
2.12.5 Coordinates: 40°29′24.7699″N / 80°12′17.2183″W
2.12.6 Threshold Elevation: 1113.4 ft
2.12.6 Touchdown Zone Elevation: 1113.4 ft

2.12.1 Designation: H1
2.12.2 True Bearing:  
2.12.3 Dimensions: 53 ft x 53 ft
2.12.4 PCN: ///
2.12.5 Coordinates: --- / ---
2.12.6 Threshold Elevation: ft
2.12.6 Touchdown Zone Elevation: ft

**AD 2.13 Declared Distances**
2.13.1 Designation: 28C
2.13.2 Take-off Run Available: 10775 ft
2.13.3 Take-off Distance Available: 10775 ft
2.13.4 Accelerate–Stop Distance Available: 10310 ft
2.13.5 Landing Distance Available: 9708 ft

2.13.1 Designation: 10C
2.13.2 Take-off Run Available: 10775 ft
2.13.3 Take-off Distance Available: 10775 ft
2.13.4 Accelerate–Stop Distance Available: 10173 ft
2.13.5 Landing Distance Available: 9708 ft

2.13.1 Designation: 10L
2.13.2 Take-off Run Available: 10502 ft
2.13.3 Take-off Distance Available: 10502 ft
2.13.4 Accelerate–Stop Distance Available: 10502 ft
2.13.5 Landing Distance Available: 10502 ft

2.13.1 Designation: 28R
2.13.2 Take-off Run Available: 10502 ft
2.13.3 Take-off Distance Available: 10502 ft
2.13.4 Accelerate–Stop Distance Available: 10502 ft
2.13.5 Landing Distance Available: 10502 ft

2.13.1 Designation: 28L
2.13.2 Take-off Run Available: 11500 ft
2.13.3 Take-off Distance Available: 11500 ft
2.13.4 Accelerate–Stop Distance Available: 11500 ft
2.13.5 Landing Distance Available: 11500 ft

2.13.1 Designation: 10R
2.13.2 Take-off Run Available: 11500 ft
2.13.3 Take-off Distance Available: 11500 ft
2.13.4 Accelerate–Stop Distance Available: 11492 ft
2.13.5 Landing Distance Available: 11492 ft

2.13.1 Designation: 14
2.13.2 Take-off Run Available: 8101 ft
2.13.3 Take-off Distance Available: 8101 ft
2.13.4 Accelerate–Stop Distance Available: 7366 ft
2.13.5 Landing Distance Available: 7366 ft

2.13.1 Designation: 32
2.13.2 Take-off Run Available: 8101 ft
2.13.3 Take-off Distance Available: 8101 ft
2.13.4 Accelerate–Stop Distance Available: 7801 ft

2.13.1 Designation: H1
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

**AD 2.14 Approach and Runway Lighting**
2.14.1 Designation: 28C
2.14.2 Approach Lighting System:

2.14.1 Designation: 10C
2.14.2 Approach Lighting System:

2.14.1 Designation: 10L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 28R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 28L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 10R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 14
2.14.2 Approach Lighting System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: H1
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

**AD 2.18 Air Traffic Services Communication Facilities**
2.18.1 Service Designation: ANG OPS
2.18.3 Channel: 311
2.14.5 Hours of Operation:

2.14.1 Service Designation: APCH/P (271–360)
2.14.3 Channel: 121.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (001–090)
2.14.3 Channel: 124.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (181–270)
2.14.3 Channel: 133.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (270–089)
2.14.3 Channel: 336.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P
2.14.3 Channel: 336.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (091–180)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 126.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 353.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (271–360)
2.14.3 Channel: 121.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (001–090)
2.14.3 Channel: 123.95
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (091–180)
2.14.3 Channel: 124.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS B (181–270)
2.14.1 Service Designation: GND/P (SOUTH)
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P (NORTH)
2.14.3 Channel: 127.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 128.3
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 291.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: OPS
2.14.3 Channel: 36.35
2.14.5 Hours of Operation:

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 10L. Magnetic variation: 9W
2.19.2 ILS Identification: LXB
2.19.6 Site Elevation: 1195 ft
2.19.1 ILS Type: Inner Marker for runway 10L. Magnetic variation: 9W
2.19.2 ILS Identification: LXB
2.19.6 Site Elevation: 1120.3 ft
2.19.1 ILS Type: Localizer for runway 10L. Magnetic variation: 9W
2.19.2 ILS Identification: LXB
2.19.5 Coordinates: 40–30–8.2188N / 80–12–34.1165W
2.19.6 Site Elevation: 1116.6 ft
2.19.1 ILS Type: Glide Slope for runway 10R. Magnetic variation: 9W
2.19.2 ILS Identification: GUT
2.19.5 Coordinates: 40–29–15.3464N / 80–14–53.775W
2.19.6 Site Elevation: 1214.2 ft
2.19.1 ILS Type: Localizer for runway 10R. Magnetic variation: 9W
2.19.2 ILS Identification: GUT
2.19.6 Site Elevation: 1141.2 ft
2.19.1 ILS Type: Glide Slope for runway 28L. Magnetic variation: 9W
2.19.2 ILS Identification: PFS
2.19.5 Coordinates: 40–29–8.2188N / 80–12–34.1165W
2.19.6 Site Elevation: 1116.6 ft
2.19.1 ILS Type: Localizer for runway 28L. Magnetic variation: 9W
2.19.2 ILS Identification: PFS
2.19.6 Site Elevation: 1141.2 ft
2.19.1 ILS Type: DME for runway 32. Magnetic variation: 9W
2.19.2 ILS Identification: TQW
2.19.6 Site Elevation: 1134 ft
2.19.1 ILS Type: Glide Slope for runway 32. Magnetic variation: 9W
2.19.2 ILS Identification: TQW
2.19.5 Coordinates: 40–28–52.663N / 80–12–29.1403W
2.19.6 Site Elevation: 1112.2 ft
2.19.1 ILS Type: Localizer for runway 32. Magnetic variation: 9W
2.19.2 ILS Identification: TQW
2.19.5 Coordinates: 40–28–52.663N / 80–12–29.1403W
2.19.6 Site Elevation: 1112.2 ft

Twenty-Sixth Edition
Federal Aviation Administration
variation: 9W
2.19.2 ILS Identification: TQW
2.19.5 Coordinates: 40°29’50.4118”N / 35°46.29W
2.19.6 Site Elevation: 1139.1 ft

General Remarks:
TWY AA NO TURN–OFF ONTO TWY A FOR ACFT WINGSPAN 171 FT OR GREATER EXC PPR (412) 472–5630.

[MILITARY]: CAUTION: BASH PHASE II OPS IN EFFECT 1 JUL – 31 AUG ANNUALLY. UNLESS MSN REQUIREMENTS DIRECT OTHERWISE, FLIGHTS SHOULD NOT BE SKED WITHIN +/-1HR OF SS/SR. TRAN AICREW SHOULD REQ BIRD WATCH COND FR AFRC (PITT OPS) ON 252.1 OR ANG OPS (STEEL CTL) ON 311.0. AIRCREW WILL BE INFORMED BY STEEL CONTROL OR PITT OPS (AS APPLICABLE) IF CURRENT BWC IS OTHER THAN LOW REGARDLESS OF BASH PHASE.

SERVICE–OIL:  O–156.

TERML TAXILANES E OF CONCOURSES A & B RESTRD TO GROUP 3 ACFT & SMALLER.

ACFT USING TWY ‘N’ PROHIBITED TO STOP ON OVERPASS AREA DUE TO POSSIBLE EMERGENCY EVACUATION HAZARD.

ALL JETS DEPARTING RY 28R MUST BE ALIGNED W/ RWY PRIOR TO APPLYING TKOF POWER.

DEER & BIRDS ON & INVOF ARPT.

ANG: OPR 1130–2030Z++MON–FRI EXCP HOL. (CLSD EV OTH MON.)

ANG ACFT MUST CTC TANKER 303.0/FTR OPNS 293.7 BEFORE CROSSING RWY 28L TO OBTAIN CLNC TO ENTER.

ASSC IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

SERVICE–TRAN ALERT: NO PRIORITY BASIS.

FUEL: A++ PROVIDED BY ANG AND AFRC.(MIL).

PPR/OFFL BUS MIN 48 HR CTC AFLD MGMT DSN 277 8163, C412 474 8163. LTD TRAN SVC. AFLD MGT NML DUTY HRS 1300 0100++MON, WED, FRI, 1300–0500++TUE, THU, EXC HOL. UNIT TRAINING ASSEMBLY 1300 2100Z++SAT SUN. TRAN ACFT MUST HAVE APPVL OF 9110G/CC FOR PPR DUR OF DUTY HR. NO SVC AVBL FOR SPACE AVBL PAX DUR DUTY HR. CALL PITT COMD POST (IRON CITY) BY RDO PRIOR TO ENTRY TO AFRC RAMP. AFLD MGMT DOES NOT ISSUE OR STOR COMSEC. COMSEC STOR CTC COMD POST DSN 277 8146.

LDG FEE.

TRML APN UNCONTROLLED. PUSHBACK PILOT DESCRETION. DO NOT EXIT TRML APN AT TWY C1, C4, V3, V4, D1, W. CTC GC WHEN HLDG AT TWY C2, C3, V1, V2, V5, V6, D2, D3.

PUSHBACK CLNC REQUIRED FR GATES A100 AND A101 AT CARGO A. CTC GC. PUSHBACK FM THESE GATES ENTERS TWY N.

SERVICE–JASU: (ANG) (A/M 32A–86) (AM 32–95); (AFRC – 2(A/M 32–86 (AM 32–95).

SERVICE–FLUID: LPOX LHNIT.

ATCT IS AUTHORIZED TO HAVE ACFT LINE–UP & WAIT ON RYS 28L AT TWY ‘P’ DURG HRS OF DARKNESS.
THE SPECIFIC RY SHALL BE USED ONLY FOR DEPARTURES & THE INTXN MUST BE VSB FM ATCT.

TWY G INTXN AT RY 10L/28R RIGHT TURN NA.
Mayaguez, PR
Eugenio Maria De Hostos
ICAO Identifier TJMZ

AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 18°15′20.5″N / 67°8′54.5″W
2.2.2 From City: 3 miles N of MAYAGUEZ, PR
2.2.3 Elevation: 27.7 ft
2.2.5 Magnetic Variation: 10W (1985)
2.2.6 Airport Contact: EDGAR SIERRA
   BOX 710
   MAYAGUEZ, PR 709
   (787 – 832 – 3390)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, MON – FRI Days, 0730 – 1600 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types:
2.4.5 Hangar Space: NO
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: None

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 27
2.12.2 True Bearing: 256
2.12.3 Dimensions: 4998 ft x 100 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 18°15′26.2517″N / 67°8′29.2981″W
2.12.6 Threshold Elevation: 23.2 ft
2.12.6 Touchdown Zone Elevation: 27.7 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 76
2.12.3 Dimensions: 4998 ft x 100 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 18°15′14.6817″N / 67°9′19.728W
2.12.6 Threshold Elevation: 15.3 ft

General Remarks:
1200’ TWR / 1207’ MSL / 9 NM N NW.

AD 2.13 Declared Distances

2.13.1 Designation: 27
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

2.13.1 Designation: 09
2.13.2 Take-off Run Available: ft
2.13.3 Take-off Distance Available: ft
2.13.4 Accelerate–Stop Distance Available: ft
2.13.5 Landing Distance Available: ft

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 27
2.14.2 Approach Lighting System:

2.14.1 Designation: 09
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 Navigation Aid Type: NDB. Magnetic variation: 10W
2.19.2 Navigation Aid Identification: MAZ
2.19.5 Coordinates: 18°15′13.529N / 67°9′8.947W
2.19.6 Site Elevation:

2.19.1 Navigation Aid Type: VOR/DM E. Magnetic variation: 10W
2.19.2 Navigation Aid Identification: MAZ
2.19.5 Coordinates: 18°15′23.2293N / 67°9′3.7215W
2.19.6 Site Elevation: 18 ft
FOR CD IF FREQ ARE OTS CTC SAN JUAN CERAP AT 787–253–8664/8667

BIRDS ON AND INVOF ARPT.
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′21.837″N / 66°0′7.68″W
2.2.2 From City: 3 miles SE of SAN JUAN, PR
2.2.3 Elevation: 9.6 ft
2.2.4 Magnetic Variation: 11W (1985)
2.2.5 Airport Contact: M R J O R G E H E R N A N D E Z
P. O. BOX 38085
SAN JUAN, PR 937
((787) 289–7240)
2.2.6 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100,115,A+,A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
ID certified on 5/1/2005

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08
2.12.2 True Bearing: 67
2.12.3 Dimensions: 10400 ft x 193 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18°26′17.9673″N / 66°0′57.3115″W
2.12.6 Threshold Elevation: 8.2 ft
2.12.6 Touchdown Zone Elevation: 9.3 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8016 ft x 150 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18°26′0.6107″N / 65°59′26.159W
2.12.6 Threshold Elevation: 9.5 ft
2.12.6 Touchdown Zone Elevation: 9.6 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: 86 R/C/W/T
2.12.5 Coordinates: 18°26′0.8092″N / 66°0′49.4179″W
2.12.6 Threshold Elevation: 9.3 ft
2.12.6 Touchdown Zone Elevation: 9.3 ft

2.12.1 Designation: 28
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8016 ft x 150 ft
2.12.4 PCN: 86 R/C/W/T
2.12.5 Coordinates: 18°26′0.6107″N / 65°59′26.159W
2.12.6 Threshold Elevation: 9.5 ft
2.12.6 Touchdown Zone Elevation: 9.6 ft

AD 2.13 Declared Distances
2.13.1 Designation: 08
2.13.2 Take-off Run Available: 10400 ft
2.13.3 Take-off Distance Available: 10400 ft
2.13.4 Accelerate–Stop Distance Available: 9784 ft
2.13.5 Landing Distance Available: 9384 ft

2.13.1 Designation: 26
2.13.2 Take-off Run Available: 10400 ft
2.13.3 Take-off Distance Available: 10400 ft
2.13.4 Accelerate–Stop Distance Available: 10308 ft
2.13.5 Landing Distance Available: 9908 ft

2.13.1 Designation: 10
2.13.2 Take-off Run Available: 8016 ft
2.13.3 Take-off Distance Available: 8016 ft
2.13.4 Accelerate–Stop Distance Available: 8016 ft
2.13.5 Landing Distance Available: 8016 ft

2.13.1 Designation: 28
2.13.2 Take-off Run Available: 8016 ft
2.13.3 Take-off Distance Available: 8016 ft
2.13.4 Accelerate–Stop Distance Available: 8016 ft
2.13.5 Landing Distance Available: 8016 ft
AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 08
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 10
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 28
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities

2.14.1 Service Designation: APCH/P DEP/P (WEST & SW)
2.14.3 Channel: 119.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (NORTH & EAST)
2.14.3 Channel: 120.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (WEST & SW)
2.14.3 Channel: 269.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (NORTH & EAST)
2.14.3 Channel: 290.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (WEST & SW)
2.14.3 Channel: 290.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (NORTH & EAST)
2.14.3 Channel: 290.2
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D−ATIS
2.14.3 Channel: 125.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

- **2.19.1 ILS Type**: Glide Slope for runway 08. Magnetic variation: 11W
- **2.19.2 ILS Identification**: SJU
- **2.19.5 Coordinates**: 18°26′27.0397″N / 66°0′45.5699″W
- **2.19.6 Site Elevation**: 4.2 ft

- **2.19.1 ILS Type**: Localizer for runway 08. Magnetic variation: 11W
- **2.19.2 ILS Identification**: SJU
- **2.19.5 Coordinates**: 18°25′28.5972″N / 65°59′14.1228″W
- **2.19.6 Site Elevation**: 5.6 ft

- **2.19.1 ILS Type**: Outer Marker for runway 08. Magnetic variation: 11W
- **2.19.2 ILS Identification**: SJU
- **2.19.5 Coordinates**: 18°24′31.8227″N / 66°5′21.8301″W
- **2.19.6 Site Elevation**: 66.5 ft

- **2.19.1 ILS Type**: DME for runway 10. Magnetic variation: 11W
- **2.19.2 ILS Identification**: CLA
- **2.19.5 Coordinates**: 18°26′2.5352″N / 65°0′39.041″W
- **2.19.6 Site Elevation**: 18.2 ft

- **2.19.1 ILS Type**: Glide Slope for runway 10. Magnetic variation: 11W
- **2.19.2 ILS Identification**: CLA
- **2.19.5 Coordinates**: 18°25′57.5628″N / 66°0′39.041″W
- **2.19.6 Site Elevation**: 4.5 ft

- **2.19.1 ILS Type**: Localizer for runway 10. Magnetic variation: 11W
- **2.19.2 ILS Identification**: CLA
- **2.19.5 Coordinates**: 18°26′0.5899″N / 65°59′15.5192″W
- **2.19.6 Site Elevation**: 9 ft

- **2.19.1 Navigation Aid Type**: VORTAC. Magnetic variation: 11W
- **2.19.2 Navigation Aid Identification**: SJU
- **2.19.5 Coordinates**: 18°26′46.6101″N / 65°59′22.2272″W
- **2.19.6 Site Elevation**: 5.7 ft

**General Remarks:**

**MILITARY: ANG: CAUTION** – **MUNIZ ANG APN HGR OBST LGTS PARTIALLY OTS.**

**TWY J BTN J1 AND J5 (NOT INCLUDING J5) CLSD TO ACFT WITH GREATER THAN 118 FT WINGSPAN.**

**ACFT 180 TURNS ON TWYS REQUIRES OPS COORDINATIONS.**

**FBO/GROUND HANDLER MUST SUBMIT 72 HRS PPR FOR ALL MIL ACFT TO: CCO@AEROSTARAIRPORTS.COM OR BY PHONE TO: 787-253-0979**

**MILITARY: ANG: RSTD – RDGD WINGTIP CLNC FOR WIDE BODY ACFT SW SIDE OF MUNIZ ANGB APN DUE TO TEMPO MOBILE OBST.**

**MILITARY: ANG: INBD ACFT ORIGINATING FR OCONUS WITH A PPR FOR MUNIZ ANGB APN MUST CLEAR CUSTOMS AND BORDER PROTECTION AT CIV SIDE. PRIOR COORD MUST BE MADE WITH ANG AMOPS, FONE 740-9629 AT LEAST ONE BUS DAY PRIOR TO ARRIVAL.**

**ALL PVT AND CORPORATE AIRCRAFT MUST CONTACT ARPT OPS, BEFORE ARRIVAL, FOR FBOS & GROUND HANDLING INFO AT 787-253-0979.**

**MILITARY: ANG: CAUTION – UNLGTD ROLLING GATE AT ENTRANCE OF MUNIZ ANGB APN; GATE MUST BE FULLY EXTDD PRIOR TO ACFT TRSN INTO ANG APN.**

**ENGINE RUNUPS PROHIBITED ON GATES AREA.**
APRON 12 AVBL FOR GA ACFT ONLY.

BASE OPS 1130–2000Z MON–FRI, CLSD WKEND AND HOL.

TWY N IS UNDER CONSTRUCTION. PLEASE, CONTACT ARPT OPS AT 787–253–0979 FOR FURTHER DETAILS AND RESTRICTIONS.

TWY S BTN TWY S2 AND TWY S5 CLSD LGTD AND BARRICADED.
AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 35°2′32.681″N / 89°58′36.045″W
2.2.2 From City: 3 miles S of MEMPHIS, TN
2.2.3 Elevation: 340.9 ft
2.2.5 Magnetic Variation: 1W (2020)
2.2.6 Airport Contact: SCOTT A BROCKMAN
2491 WINCHESTER RD.
MEMPHIS, TN 38116
(901) 922-8000
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A, A+, A++
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
I C certified on 5/21/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 09
2.12.2 True Bearing: 92
2.12.3 Dimensions: 8946 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 35°3′31.046″N / 89°59′8.6536″W
2.12.6 Threshold Elevation: 253.2 ft
2.12.6 Touchdown Zone Elevation: 258.7 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 272
2.12.3 Dimensions: 8946 ft x 150 ft
2.12.4 PCN: 92 R/B/W/T
2.12.5 Coordinates: 35°3′28.0128″N / 89°57′21.0816″W
2.12.6 Threshold Elevation: 292 ft
2.12.6 Touchdown Zone Elevation: 292 ft

2.12.1 Designation: 18C
2.12.2 True Bearing: 179
2.12.3 Dimensions: 11120 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35°3′16.5411″N / 89°58′34.2156″W
2.12.6 Threshold Elevation: 270.6 ft
2.12.6 Touchdown Zone Elevation: 290.1 ft

2.12.1 Designation: 36C
2.12.2 True Bearing: 359
2.12.3 Dimensions: 11120 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35°3′1–26.5803″N / 89°58′31.8977″W
2.12.6 Threshold Elevation: 340.9 ft
2.12.6 Touchdown Zone Elevation: 340.9 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35°3′26.7376″N / 89°58′22.6229″W
2.12.6 Threshold Elevation: 334.3 ft
2.12.6 Touchdown Zone Elevation: 334.7 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35°2′55.7402″N / 89°59′22.6229″W
2.12.6 Threshold Elevation: 277.6 ft
2.12.6 Touchdown Zone Elevation: 300.9 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 179
2.12.3 Dimensions: 9320 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35°2′58.1489″N / 89°59′14.7913″W
2.12.6 Threshold Elevation: 288.4 ft
2.12.6 Touchdown Zone Elevation: 294.7 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 359
2.12.3 Dimensions: 9320 ft x 150 ft
2.12.4 PCN: 82 R/C/W/T
2.12.5 Coordinates: 35°3′25.9852″N / 89°59′12.8121″W
2.12.6 Threshold Elevation: 320.8 ft
2.12.6 Touchdown Zone Elevation: 320.8 ft

AD 2.13 Declared Distances
2.13.1 Designation: 09
2.13.2 Take–off Run Available: 8946 ft
2.13.3 Take–off Distance Available: 8946 ft
2.13.4 Accelerate–Stop Distance Available: 8946 ft
2.13.5 Landing Distance Available: 8946 ft
2.13.1 Designation: 27
2.13.2 Take-off Run Available: 8946 ft
2.13.3 Take-off Distance Available: 8946 ft
2.13.4 Accelerate–Stop Distance Available: 8946 ft
2.13.5 Landing Distance Available: 8946 ft

2.13.1 Designation: 18C
2.13.2 Take-off Run Available: 11120 ft
2.13.3 Take-off Distance Available: 11120 ft
2.13.4 Accelerate–Stop Distance Available: 11120 ft
2.13.5 Landing Distance Available: 11120 ft

2.13.1 Designation: 36C
2.13.2 Take-off Run Available: 11120 ft
2.13.3 Take-off Distance Available: 11120 ft
2.13.4 Accelerate–Stop Distance Available: 10715 ft
2.13.5 Landing Distance Available: 10715 ft

2.13.1 Designation: 36R
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 18L
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 18R
2.13.2 Take-off Run Available: 9320 ft
2.13.3 Take-off Distance Available: 9320 ft
2.13.4 Accelerate–Stop Distance Available: 9320 ft
2.13.5 Landing Distance Available: 9320 ft

2.13.1 Designation: 36L
2.13.2 Take-off Run Available: 9320 ft
2.13.3 Take-off Distance Available: 9320 ft
2.13.4 Accelerate–Stop Distance Available: 9320 ft
2.13.5 Landing Distance Available: 9320 ft

2.14.1 Designation: 27
2.14.2 Approach Lighting System: M ALSR

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 09
2.14.2 Approach Lighting System: M ALSR

2.14.1 Designation: 18C
2.14.2 Approach Lighting System: M ALSR

2.14.1 Designation: 36C
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: M ALSR

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: M ALSR

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: ALSF2

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 1W
2.19.2 ILS Identification: MEM
2.19.5 Coordinates: 35°–3°27.2174N / 89°–58°56.2128W
2.19.6 Site Elevation: 252.5 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 1W
2.19.2 ILS Identification: MEM
2.19.5 Coordinates: 35°–3°27.6511N / 89°–57°7.9461W
2.19.6 Site Elevation: 296.5 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 1W
2.19.2 ILS Identification: JIM
2.19.5 Coordinates: 35°–3°24.4908N / 89°–57°36.2529W
2.19.6 Site Elevation: 277.2 ft

2.19.1 ILS Type: Localizer for runway 27. Magnetic variation: 1W
2.19.2 ILS Identification: JIM
2.19.6 Site Elevation: 252.2 ft

2.19.1 ILS Type: Glide Slope for runway 18C. Magnetic variation: 1W
2.19.2 ILS Identification: SDU
2.19.5 Coordinates: 35–3–7.6024N / 89–58–37.5142W
2.19.6 Site Elevation: 273.1 ft

2.19.1 ILS Type: Localizer for runway 18C. Magnetic variation: 1W
2.19.2 ILS Identification: SDU
2.19.5 Coordinates: 35–1–10.2462N / 89–58–31.5613W
2.19.6 Site Elevation: 345.5 ft

2.19.1 ILS Type: DME for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.5 Coordinates: 35–3–22.0479N / 89–58–37.3452W
2.19.6 Site Elevation: 268.9 ft

2.19.1 ILS Type: Glide Slope for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.5 Coordinates: 35–1–38.095N / 89–58–34.3391W
2.19.6 Site Elevation: 261.2 ft

2.19.1 ILS Type: Localizer for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.5 Coordinates: 35–3–16.8761N / 89–58–19.3033W
2.19.6 Site Elevation: 328.2 ft

2.19.1 ILS Type: Glide Slope for runway 36C. Magnetic variation: 1W
2.19.2 ILS Identification: TSE
2.19.6 Site Elevation: 344.5 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 1W
2.19.2 ILS Identification: MYO
2.19.5 Coordinates: 35–3–5.9229N / 89–58–19.6804W
2.19.6 Site Elevation: 285.7 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 1W
2.19.2 ILS Identification: MYO
2.19.5 Coordinates: 35–1–38.0016N / 89–58–16.1795W
2.19.6 Site Elevation: 278.7 ft

2.19.1 ILS Type: Glide Slope for runway 36R. Magnetic variation: 1W
2.19.2 ILS Identification: MYO
2.19.5 Coordinates: 35–3–6.1649N / 89–58–22.8431W
2.19.6 Site Elevation: 285.7 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 1W
2.19.2 ILS Identification: OOI
2.19.5 Coordinates: 35–2–48.6497N / 89–59–18.4713W
2.19.6 Site Elevation: 287.1 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 1W
2.19.2 ILS Identification: OOI
2.19.5 Coordinates: 35–1–17.2969N / 89–59–12.6028W
2.19.6 Site Elevation: 321.4 ft

2.19.1 ILS Type: DME for runway 36L. Magnetic variation: 1W
2.19.2 ILS Identification: OHN
2.19.5 Coordinates: 35–1–16.8761N / 89–58–19.3033W
2.19.6 Site Elevation: 328.2 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 1W
2.19.2 ILS Identification: OHN
2.19.5 Coordinates: 35–3–6.901N / 89–59–10.0928W
2.19.6 Site Elevation: 285.7 ft

2.19.1 ILS Type: Glide Slope for runway 36L. Magnetic variation: 1W
2.19.2 ILS Identification: OHN
2.19.6 Site Elevation: 344.5 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 1E
2.19.2 Navigation Aid Identification: MEM
2.19.5 Coordinates: 35°0′54.3808″N / 89°58′59.5258″W
2.19.6 Site Elevation: 363.4 ft

**General Remarks:**

TWY P1, TWY P2, TWY N NORTH OF TWY V, TWY C NORTH OF TWY V & TWY S NORTH OF TWY V DESIGNATED NON-MOVEMENT AREA.

ANG: PPR 24 HR PN RQR; OFFL BUS ONLY.

COMMUNICATIONS—ANG COMD POST: RADIO CALL GRACELAND OPS.

HEL OPS TO/FROM TRML BLDG NA.


CONDUCT GND OPS WITH TRANSPONDERS ON.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

BASH PHASE II APR–MAY & AUG–OCT; CURRENT BIRD WATCH COND NOT ON ATIS.

MILITARY: MIL RAMP OPS AT REDUCED ARFF, DOWNGRADED TO YELLOW.

BIRDS INVOF ARPT.

APRON J & N RUNUP PAD CLSD.

TWY V BTN TWY S & Y RSTR TO ACFT WITH TAIL HEIGHT 65 FT 10 IN OR LESS.

TWY P1 BTN TWY T & TRML RAMP & TWY P2 BTN TWY T & TRML RAMP CLSD.

ACFT WITH WINGSPAN MORE THAN 118 FT RSTR FM TAXI ON TWY J NORTH OF C3.

HOLD SHORT INSTRUCTION READ BACK RQR.

NOISE ABATEMENT PROCEDURES IN EFFECT. SUCCESSIVE AND/OR SIMULTANEOUS DEP APVD ON RWY 36L–18R & RWY 36C–18C OR RWY 36L–18R & WRY 36R–18L WITH COURSE DIVERGENCE NO LATER THAN 2.27 NM FROM RWY END.

LARGE & HEAVY EASTBOUND ACFT ON TWY V FOR RWY 27 HOLD SHORT AT MINIMUM THRUST AREA SIGN.

ANG RAMP OFFICIAL BUSINESS ONLY; PPR – V966–8131. TRANSIENT ACFT RQR FOLLOW ME ASSIST ENTERING ANG RAMP.

TWY J BTN TWY P & R RSTR TO 15 MPH FOR ACFT WITH WINGSPAN MORE THAN 171 FT.

TWY V BTN SPOT 7W & RWY 27 RSTR TO ACFT WITH WINGSPAN OF 171 FT 6 IN OR LESS.
ACFT WITH WINGSPAN MORE THAN 171 FT 6 IN RSTR FM TAXI ON TWY N BTN TWY M7 & T.

ANG—ATIS INFO REPORTS BIRD ACT H24 IN AREA

PPR RQR FOR TAXI CLNC ON TWY N NORTH OF TWY V, TWY S NORTH TWY V & AND TWY C NORTH OF TWY V – FEDEX RAMP ATCT 131.5.

CTC RAMP CONTROL 121.8 FOR ENTRY ON ANG RAMP. ANG FREQS 138.95 353.45. AFT HR CTC COMMAND POST – DSN 726–7148; C901–291–7311/7312 OR SECURITY FORCES – DSN 726–7101; C901–291–7101/7133.

PPR FOR TAXI CLNC FM N & S CARGO RAMP PRKG – 121.9.
AD 2.2 Aerodrome geographical and administrative data

2.2.1 Reference Point: 36°7′28.11″N / 86°40′41.45″W

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: ROBERT RAMSEY
140 BNA PARK DR. SUITE 520
NASHVILLE, TN 37214
(615) 275-1612

2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services

2.6.1 Aerodrome Category for Firefighting: ARFF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation: 02C
2.12.2 True Bearing: 18
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 56 R/B/W/T
2.12.5 Coordinates: 36°6′11.9899″N / 86°41′16.6591″W
2.12.6 Threshold Elevation: 569.1 ft
2.12.6 Touchdown Zone Elevation: 586.7 ft

2.12.1 Designation: 20C
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 56 R/B/W/T
2.12.5 Coordinates: 36°6′11.9899″N / 86°41′16.6591″W
2.12.6 Threshold Elevation: 569.1 ft
2.12.6 Touchdown Zone Elevation: 586.7 ft

2.12.1 Designation: 02L
2.12.2 True Bearing: 18
2.12.3 Dimensions: 7704 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 36°7′3.6342″N / 86°41′11.3105″W
2.12.6 Threshold Elevation: 598.7 ft
2.12.6 Touchdown Zone Elevation: 599 ft

2.12.1 Designation: 20R
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 59 R/B/W/T
2.12.5 Coordinates: 36°6′11.9899″N / 86°41′16.6591″W
2.12.6 Threshold Elevation: 569.1 ft
2.12.6 Touchdown Zone Elevation: 586.7 ft

2.12.1 Designation: 02R
2.12.2 True Bearing: 18
2.12.3 Dimensions: 7704 ft x 150 ft
2.12.4 PCN: 70 R/B/W/T
2.12.5 Coordinates: 36°7′3.6342″N / 86°41′11.3105″W
2.12.6 Threshold Elevation: 598.7 ft
2.12.6 Touchdown Zone Elevation: 599 ft

2.12.1 Designation: 20L
2.12.2 True Bearing: 198
2.12.3 Dimensions: 8001 ft x 150 ft
2.12.4 PCN: 59 R/B/W/T
2.12.5 Coordinates: 36°6′11.9899″N / 86°41′16.6591″W
2.12.6 Threshold Elevation: 569.1 ft
2.12.6 Touchdown Zone Elevation: 586.7 ft

2.12.1 Designation: 13
2.12.2 True Bearing: 133
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.4 PCN: 70 R/C/W/T
2.12.5 Coordinates: 36°7′28.11″N / 86°40′41.45″W
2.12.6 Threshold Elevation: 535.9 ft
2.12.6 Touchdown Zone Elevation: 550.7 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 313
2.12.3 Dimensions: 11030 ft x 150 ft
2.12.4 PCN: 70 R/C/W/T
2.12.5 Coordinates: 36°7′28.11″N / 86°40′41.45″W
2.12.6 Threshold Elevation: 535.9 ft
2.12.6 Touchdown Zone Elevation: 550.7 ft

AD 2.13 Declared Distances

2.13.1 Designation: 02C
2.13.2 Take-off Run Available: 8001 ft
2.13.3 Take-off Distance Available: 8001 ft
2.13.4 Accelerate–Stop Distance Available: 7601 ft
2.13.5 Landing Distance Available: 7601 ft
2.13.1 Designation: 20C
2.13.2 Take-off Run Available: 8001 ft
2.13.3 Take-off Distance Available: 8001 ft
2.13.4 Accelerate–Stop Distance Available: 8001 ft
2.13.5 Landing Distance Available: 8001 ft

2.13.1 Designation: 02L
2.13.2 Take-off Run Available: 7702 ft
2.13.3 Take-off Distance Available: 7702 ft
2.13.4 Accelerate–Stop Distance Available: 7702 ft
2.13.5 Landing Distance Available: 7702 ft

2.13.1 Designation: 20R
2.13.2 Take-off Run Available: 7702 ft
2.13.3 Take-off Distance Available: 7702 ft
2.13.4 Accelerate–Stop Distance Available: 7702 ft
2.13.5 Landing Distance Available: 7702 ft

2.13.1 Designation: 02R
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft

2.13.1 Designation: 20L
2.13.2 Take-off Run Available: 8000 ft
2.13.3 Take-off Distance Available: 8000 ft
2.13.4 Accelerate–Stop Distance Available: 8000 ft
2.13.5 Landing Distance Available: 8000 ft

2.13.1 Designation: 13
2.13.2 Take-off Run Available: 10288 ft
2.13.3 Take-off Distance Available: 11029 ft
2.13.4 Accelerate–Stop Distance Available: 10288 ft
2.13.5 Landing Distance Available: 9487 ft

2.13.1 Designation: 31
2.13.2 Take-off Run Available: 10228 ft
2.13.3 Take-off Distance Available: 11209 ft
2.13.4 Accelerate–Stop Distance Available: 10228 ft
2.13.5 Landing Distance Available: 9487 ft

2.14.1 Designation: 02L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 20R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 02R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 20L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 13
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 31
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: ALCP
2.14.3 Channel: 314.4
2.14.5 Hours of Operation:
2.14.1 Service Designation: APCH/P (WEST)
2.14.3 Channel: 372
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: APCH/P IC (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CD PRE TAXI CLNC
2.14.3 Channel: 126.05
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (EAST)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 02C
2.14.2 Approach Lighting System: MALSR
2.14.1 Designation: 20C
2.14.2 Approach Lighting System:

2.14.1 Service Designation: CLASS C (WEST)
2.14.3 Channel: 119.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST)
2.14.3 Channel: 372
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 135.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (WEST)
2.14.3 Channel: 119.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (WEST)
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 135.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 118.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (WEST)
2.14.3 Channel: 119.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (EAST)
2.14.3 Channel: 360.7
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.6
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 02C. Magnetic variation: 3W
2.19.2 ILS Identification: EZN
2.19.5 Coordinates: 36°−32.9571N / 86°−41–42.3692W
2.19.6 Site Elevation: 554 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°−26.4864N / 86°−40–42.7621W
2.19.6 Site Elevation: 589.7 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°−25.7779N / 86°−40–39.0927W
2.19.6 Site Elevation: 545.4 ft

2.19.1 ILS Type: Glide Slope for runway 20R. Magnetic variation: 3W
2.19.2 ILS Identification: VIY
2.19.5 Coordinates: 36°−8.58196N / 86°−40–42.7621W
2.19.6 Site Elevation: 554.9 ft
variation: 3W
2.19.2 ILS Identification: VIY
2.19.5 Coordinates: 36–6–49.6756N / 86–41–16.7814W
2.19.6 Site Elevation: 598.1 ft

2.19.1 ILS Type: DME for runway 02R. Magnetic variation: 3W
2.19.2 ILS Identification: UQU
2.19.5 Coordinates: 36–6–30.9674N / 86–40–12.8854W
2.19.6 Site Elevation: 622.2 ft

2.19.1 ILS Type: Glide Slope for runway 02R. Magnetic variation: 3W
2.19.2 ILS Identification: VIY
2.19.5 Coordinates: 36–6–37.6961N / 86–40–6.7484W
2.19.6 Site Elevation: 566 ft

2.19.1 General Remarks:
BIRD ACTIVITY ON & INVOF ARPT.

READ BACK OF ALL RWY HLDG INSTRUCTIONS RQR.

NO FLIGHT OVER MAIN TERMINAL BLDG PERMITTED.


NO UNAUTHORIZED 180 DEG TURNS FOR ACFT OVR 12500 LBS ON ASPH SFCS.

DO NOT CONFUSE TWY S FOR RWY 20C.

ALL TURBOJET RWYS HAVE NOISE ABATEMENT PROC. MIL FIGHTER/ATTACK/TRAINER TURBOJETS USE RWY 13/31 FOR ARR & DEP.

ANG: CALL SIGN MUSIC CITY OPS.

C CONCOURSE TAXILANES ARE INNER TAXILANE FOR OUBD TFC & OUTER TAXILANE FOR INBD TFC.
PILOTS COMPLY WITH ALL HOLD SHORT INSTRUCTIONS PARTICULARLY AT TWY K & RWY 20 C APCH; TWY L AT RWY 13 APCH; AND TWY H AT RWY 31 APCH.

LGTD JET BLAST FENCE 568 FT MSL 1167 FT NW RWY 13 THR; 598 MSL 1100 FT SE OF RWY 31 THR.

FLT NOTIFICATION SVC (ADCUS) AVBL.

TERMINAL RAMP UNCONTROLLED. MONITOR 122.95 FOR RAMP ADVISORIES.
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°53’50.039”N / 97°2’15.701”W

2.2.2 From City:
12 miles NW of DALLAS–FORT WORTH, TX

2.2.3 Elevation:
606.4 ft

2.2.5 Magnetic Variation:
4E (2015)

2.2.6 Airport Contact:
SEAN DONOHUE
PO BOX 619428
DALLAS–FT WORTH, TX 75261
(972–973–3112)

2.2.7 Traffic:
IFR/VFR

AD 2.3 Attendance Schedule

2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities

2.4.1 Cargo Handling Facilities:
YES

2.4.2 Fuel Types:
100LL,A

2.4.5 Hangar Space:
None

2.4.6 Repair Facilities:
None

2.6.1 Aerodrome Category for Firefighting:
ARFF Index I
E certified on 7/1/1973

AD 2.12 Runway Physical Characteristics

2.12.1 Designation:
31R

2.12.2 True Bearing:
315

2.12.3 Dimensions:
9000 ft x 200 ft

2.12.4 PCN:
95 R/B/W/T

2.12.5 Coordinates:
32°53’41.932”N / 97°0’3.0376”W

2.12.6 Touchdown Zone Elevation:
508.4 ft

2.12.6 Touchdown Zone Elevation:
523.4 ft

2.12.1 Designation:
13R

2.12.2 True Bearing:
139

2.12.3 Dimensions:
9300 ft x 150 ft

2.12.4 PCN:
76 R/B/W/T

2.12.5 Coordinates:
32°54’34.4723”N / 97°4’59.276”W

2.12.6 Threshold Elevation:
519 ft

2.12.6 Touchdown Zone Elevation:
591 ft

2.12.1 Designation:
13L

2.12.2 True Bearing:
135

2.12.3 Dimensions:
9000 ft x 200 ft

2.12.4 PCN:
95 R/B/W/T

2.12.5 Coordinates:
32°54’45.197”N / 97°1’17.3221”W

2.12.6 Threshold Elevation:
553.1 ft

2.12.6 Touchdown Zone Elevation:
550 ft

2.12.1 Designation:
17C

2.12.2 True Bearing:
180

2.12.3 Dimensions:
13400 ft x 150 ft

2.12.4 PCN:
93 R/B/W/T

2.12.5 Coordinates:
32°54’56.5441”N / 97°1’33.5097”W

2.12.6 Threshold Elevation:
577.2 ft

2.12.6 Touchdown Zone Elevation:
581.4 ft

2.12.1 Designation:
31L

2.12.2 True Bearing:
319

2.12.3 Dimensions:
9300 ft x 150 ft

2.12.4 PCN:
76 R/B/W/T

2.12.5 Coordinates:
32°53’24.9716”N / 97°3’47.7953”W

2.12.6 Threshold Elevation:
591 ft

2.12.6 Touchdown Zone Elevation:
591 ft

2.12.1 Designation:
17L

2.12.2 True Bearing:
180

2.12.3 Dimensions:
13400 ft x 150 ft

2.12.4 PCN:
93 R/B/W/T

2.12.5 Coordinates:
32°54’56.5441”N / 97°1’33.5097”W

2.12.6 Threshold Elevation:
577.2 ft

2.12.6 Touchdown Zone Elevation:
581.4 ft

2.12.1 Designation:
35C

2.12.2 True Bearing:
0

2.12.3 Dimensions:
13400 ft x 150 ft

2.12.4 PCN:
93 R/B/W/T

2.12.5 Coordinates:
32°52’43.9636”N / 97°1’34.218”W

2.12.6 Threshold Elevation:
563.1 ft

2.12.6 Touchdown Zone Elevation:
563.2 ft

2.12.1 Designation:
35R

2.12.2 True Bearing:
0

2.12.3 Dimensions:
8500 ft x 150 ft

2.12.4 PCN:
91 R/B/W/T

2.12.5 Coordinates:
32°52’29.8535”N / 97°0’35.6686”W

2.12.6 Threshold Elevation:
575.6 ft

2.12.6 Touchdown Zone Elevation:
575.6 ft

2.12.1 Designation:
17L

2.12.2 True Bearing:
180

2.12.3 Dimensions:
13400 ft x 150 ft

2.12.4 PCN:
93 R/B/W/T

2.12.5 Coordinates:
32°52’49.8535”N / 97°0’35.6686”W

2.12.6 Threshold Elevation:
575.6 ft

2.12.6 Touchdown Zone Elevation:
575.6 ft
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 91 R/B/W/T
2.12.5 Coordinates: 32°53′53.9534N / 97°0′35.203W
2.12.6 Threshold Elevation: 524.3 ft
2.12.6 Touchdown Zone Elevation: 545.2 ft

2.12.1 Designation: 35L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.4 PCN: 81 R/B/W/T
2.12.5 Coordinates: 32°52′44.0203N / 97°0′48.2888W
2.12.6 Threshold Elevation: 563.4 ft
2.12.6 Touchdown Zone Elevation: 564 ft

2.12.1 Designation: 17R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 200 ft
2.12.4 PCN: 81 R/B/W/T
2.12.5 Coordinates: 32°54′56.5996N / 97°1′47.5806W
2.12.6 Threshold Elevation: 566.6 ft
2.12.6 Touchdown Zone Elevation: 566.7 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.4 PCN: 83 R/B/W/T
2.12.5 Coordinates: 32°54′56.8785N / 97°3′2.6511W
2.12.6 Threshold Elevation: 601.5 ft
2.12.6 Touchdown Zone Elevation: 601.6 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13401 ft x 200 ft
2.12.4 PCN: 83 R/B/W/T
2.12.5 Coordinates: 32°52′44.2972N / 97°3′3.3332W
2.12.6 Threshold Elevation: 575.3 ft
2.12.6 Touchdown Zone Elevation: 580.7 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.4 PCN: 90 R/C/W/T
2.12.5 Coordinates: 32°52′44.3493N / 97°3′17.4003W
2.12.6 Threshold Elevation: 582.2 ft
2.12.6 Touchdown Zone Elevation: 587.6 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 13400 ft x 150 ft
2.12.4 PCN: 90 R/C/W/T
2.12.5 Coordinates: 32°54′56.9275N / 97°3′16.7239W
2.12.6 Threshold Elevation: 604.4 ft
2.12.6 Touchdown Zone Elevation: 606.4 ft

AD 2.13 Declared Distances

2.13.1 Designation: 31R
2.13.2 Take-off Run Available: 8373 ft
2.13.3 Take-off Distance Available: 8373 ft
2.13.4 Accelerate–Stop Distance Available: 8373 ft
2.13.5 Landing Distance Available: 8373 ft

2.13.1 Designation: 13L
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 8373 ft

2.13.1 Designation: 13R
2.13.2 Take-off Run Available: 9300 ft
2.13.3 Take-off Distance Available: 9300 ft
2.13.4 Accelerate–Stop Distance Available: 9300 ft
2.13.5 Landing Distance Available: 9300 ft

2.13.1 Designation: 31L
2.13.2 Take-off Run Available: 9300 ft
2.13.3 Take-off Distance Available: 9300 ft
2.13.4 Accelerate–Stop Distance Available: 9300 ft
2.13.5 Landing Distance Available: 9300 ft

2.13.1 Designation: 17C
2.13.2 Take-off Run Available: 13400 ft
2.13.3 Take-off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft
2.13.5 Landing Distance Available: 13400 ft

2.13.1 Designation: 35C
2.13.2 Take-off Run Available: 13400 ft
2.13.3 Take-off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft
2.13.5 Landing Distance Available: 13400 ft
2.13.3 Take–off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft
2.13.5 Landing Distance Available: 13400 ft

2.13.1 Designation: 35R
2.13.2 Take–off Run Available: 8500 ft
2.13.3 Take–off Distance Available: 8500 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

2.13.1 Designation: 17L
2.13.2 Take–off Run Available: 8500 ft
2.13.3 Take–off Distance Available: 8500 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

2.13.1 Designation: 35L
2.13.2 Take–off Run Available: 13400 ft
2.13.3 Take–off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft
2.13.5 Landing Distance Available: 13400 ft

2.13.1 Designation: 17R
2.13.2 Take–off Run Available: 13400 ft
2.13.3 Take–off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft
2.13.5 Landing Distance Available: 13400 ft

2.13.1 Designation: 18L
2.13.2 Take–off Run Available: 13401 ft
2.13.3 Take–off Distance Available: 13401 ft
2.13.4 Accelerate–Stop Distance Available: 13401 ft
2.13.5 Landing Distance Available: 13401 ft

2.13.1 Designation: 36R
2.13.2 Take–off Run Available: 13401 ft
2.13.3 Take–off Distance Available: 13401 ft
2.13.4 Accelerate–Stop Distance Available: 13401 ft
2.13.5 Landing Distance Available: 13401 ft

2.13.1 Designation: 36L
2.13.2 Take–off Run Available: 13400 ft
2.13.3 Take–off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft

2.13.1 Designation: 18R
2.13.2 Take–off Run Available: 13400 ft
2.13.3 Take–off Distance Available: 13400 ft
2.13.4 Accelerate–Stop Distance Available: 13400 ft
2.13.5 Landing Distance Available: 13400 ft

2.13.1 Designation: 17C
2.13.2 Take–off Run Available: 13401 ft
2.13.3 Take–off Distance Available: 13401 ft
2.13.4 Accelerate–Stop Distance Available: 13401 ft
2.13.5 Landing Distance Available: 13401 ft

2.13.1 Designation: 35C
2.13.2 Take–off Run Available: 13401 ft
2.13.3 Take–off Distance Available: 13401 ft
2.13.4 Accelerate–Stop Distance Available: 13401 ft
2.13.5 Landing Distance Available: 13401 ft

AD 2.14 Approach and Runway Lighting

2.14.1 Designation: 31R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 13L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 13R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 17C
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35C
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 31L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 17L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 17R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 18L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 36R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 36L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: ALSF2

2.19.1 ILS Type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: LWN
2.19.5 Coordinates: 32–53–16.0647N / 97–3–42.7672W
2.19.6 Site Elevation: 588.7 ft

2.19.1 ILS Type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: LWN
2.19.5 Coordinates: 32–54–24.1329N / 97–4–54.0746W
2.19.6 Site Elevation: 587.6 ft

2.19.1 ILS Type: Localizer for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: LWN
2.19.6 Site Elevation: 575 ft

2.19.1 ILS Type: DME for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32–52–45.6425N / 97–1–28.781W
2.19.6 Site Elevation: 555.8 ft

2.19.1 ILS Type: Glide Slope for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32–52–34.123N / 97–1–39.6491W
2.19.6 Site Elevation: 573.6 ft

2.19.1 ILS Type: Inner Marker for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32–55–4.09N / 97–1–33.46W
2.19.6 Site Elevation: 573 ft

2.19.1 ILS Type: Localizer for runway 17C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.5 Coordinates: 32–52–33.1505N / 97–1–34.2781W
2.19.6 Site Elevation: 562.7 ft

2.19.1 ILS Type: DME for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: FLQ
2.19.6 Site Elevation: 551.5 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′34.123″N / 97°1′39.6491″W
2.19.6 Site Elevation: 573.6 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′35.3015″N / 97°1′34.258″W
2.19.6 Site Elevation: 557.2 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′43.4402″N / 97°0′30.9032″W
2.19.6 Site Elevation: 559.2 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′43.4402″N / 97°0′30.9032″W
2.19.6 Site Elevation: 559.2 ft

2.19.1 ILS Type: Glide Slope for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32°52′18.7175″N / 97°0′40.2982″W
2.19.6 Site Elevation: 591.2 ft

2.19.1 ILS Type: Glide Slope for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32°52′33.6523″N / 97°1′53.6029″W
2.19.6 Site Elevation: 556.9 ft

2.19.1 ILS Type: Glide Slope for runway 35C. Magnetic variation: 4E
2.19.2 ILS Identification: AJQ
2.19.5 Coordinates: 32°52′33.207″N / 97°1′48.3488″W
2.19.6 Site Elevation: 558.2 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′33.6523N / 97°1′53.6029W
2.19.6 Site Elevation: 556.9 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′54.9854N / 97°1′43.5413W
2.19.6 Site Elevation: 559.0 ft

2.19.1 ILS Type: Localizer for runway 35L. Magnetic variation: 4E
2.19.2 ILS Identification: UWX
2.19.5 Coordinates: 32°55′7.3142N / 97°1′47.5225W
2.19.6 Site Elevation: 567.6 ft

2.19.1 ILS Type: DME for runway 18L. Magnetic variation: 4E
2.19.2 ILS Identification: CIX
2.19.5 Coordinates: 32°55′8.6708N / 97°3′7.2741W
2.19.6 Site Elevation: 594.7 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′34.0875N / 97°3′12.5854W
2.19.6 Site Elevation: 582.3 ft

2.19.1 ILS Type: Inner Marker for runway 18R. Magnetic variation: 4E
2.19.2 ILS Identification: CIX
2.19.5 Coordinates: 32°55′4.5483N / 97°3′16.6916W
2.19.6 Site Elevation: 602.6 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 4E
2.19.2 ILS Identification: CIX
2.19.5 Coordinates: 32°52′33.9326N / 97°3′17.4526W
2.19.6 Site Elevation: 580.4 ft

2.19.1 ILS Type: DME for runway 36R. Magnetic variation: 4E
2.19.2 ILS Identification: FJN
2.19.5 Coordinates: 32°55′8.6708N / 97°3′7.2741W
2.19.6 Site Elevation: 594.7 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′34.0875N / 97°3′12.5854W
2.19.6 Site Elevation: 582.3 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°55′8.6708N / 97°3′7.2741W
2.19.6 Site Elevation: 594.7 ft

2.19.1 ILS Type: Localizer for runway 36L. Magnetic variation: 4E
2.19.2 ILS Identification: BXN
2.19.5 Coordinates: 32°52′54.4087″N / 97°3′22.0405″W variation: 4E
2.19.6 Site Elevation: 579.9 ft
2.19.2 ILS Identification: BXN
2.19.5 Coordinates: 32°55′6.9002″N / 97°3′16.6717″W
2.19.6 Site Elevation: 601.9 ft

General Remarks:
TKOF DSTC FOR RY 35L FM TWY EQ IS 13084 FT & FM TWY EP IS 12811 FT.

ARPT UNDER CONSTRUCTION; PAEW IN MOVEMENT AREAS.

PPR ACFT WITH WINGSPAN 215 FT OR GREATER (GROUP VI) CALL ARPT OPNS 972–973–3112 FOR FOLLOW-ME SERVICES WHILE TAXIING TO & FROM RAMP & RYS.

TWY A6 CLSD TO ACFT WITH WINGSPAN 171 FT AND GREATER.

TKOF DSTC FOR RY 18R FM TWY WG IS 13,082 FT.

RY VISUAL SCREEN 20 FT AGL 1180 FT S AER 35C.

ACFT AT EAST AIR FREIGHT MUST CONTACT DFW TWR AT 127.5 PRIOR TO TAXI OUT.

APRON ENTRANCE/EXIT POINTS 22, 24, 105, AND 107 CLSD TO ACFT WITH WINGSPAN GREATER THAN 125 FT.

TKOF DSTC FOR RY 17L FM TWY Q2 IS 8196 FT.

PPR GA OPERATIONS 0000–0500; CALL ARPT OPNS 972–973–3112.

APRON ENTRANCE/EXIT POINT 124 CLSD TO ACFT WITH WINGSPAN GREATER THAN 213 FT.

RY STATUS LGTS IN OPN.

TKOF DSTC FOR RY 35R FM TWY Q9 IS 8196 FT.

ACFT USING TERMINAL D GATES OR APRON ENTRANCE/EXIT POINTS 122 THRU 150 MUST OBTAIN APPROVAL FROM DFW RAMP TOWER 129.825 PRIOR TO ENTERING RAMP AND PRIOR TO PUSHBACK.

TERMINAL B APRON TAXILANE BTN APRON ENTRANCE/EXIT POINT TAXILANES 107 & 117 CLSD TO ACFT WITH WINGSPAN 94 FT AND GREATER.

TKOF DSTC FOR RY 17C FM TWY EG IS 13,082 FT.

APRON ENTRANCE/EXIT POINTS 110, 111, 112, 113, 114, 115, AND 116 CLSD TO ACFT WITH WINGSPAN GREATER THAN 94 FT.

TKOF DSTC FOR RY 18L FM TWY WG IS 13,082; FM TWY WH IS 12,815.

UNLESS OTHERWISE SPECIFIED, ALL APRON ENTRANCE/EXIT POINTS CLSD TO ACFT WITH WINGSPAN GREATER THAN 214 FT EXCEPT PPR.

PPR FROM ARPT OPNS FOR GEN AVN ACFT TO PROC TO AIRLINE TRML GATE EXCP GEN AVN FAC.

PPR FM THE PRIMARY TENANT AIRLINES TO OPERATE WITHIN THE CENTRAL TERMINAL AREA. PROPER MINIMUM OBJECT FREE AREA DISTANCES MAY NOT BE MAINTAINED FOR RAMP/APRON TAXILANES. TWY EDGE REFLECTORS ALONG ALL TWYS.
APRON ENTRANCE/EXIT POINTS 1 AND 2 CLSD TO ACFT WITH WINGSPAN GREATER THAN 89’ EXCEPT PPR.

APRON ENTRANCE/EXIT POINTS 3 AND 4 CLSD TO ACFT WITH WINGSPAN GREATER THAN 118 FT EXCEPT PPR.

TKOF DSTC FOR RY 36R FM TWY WP IS 12,815 FT; FM TWY WQ IS 13,082 FT.

TKOF DSTC FOR RY 17R FM TWY EG IS 13082 FT & FM TWY EH IS 12816 FT.

LAND & HOLD SHORT SIGNS ON RY 17C AT TWY ‘B’ 10,460 FT S OF RY 17C THLD; RY 18R AT TWY ‘B’ 10,100 FT S OF RY 18R THLD; RY 35C AT TWY ‘EJ’ 9050 FT N OF RY 35C THLD; RY 36L AT TWY ‘Z’ 10,650 FT N OF RY 36L THLD; LGTD & MKD WITH IN–PAVEMENT PULSATING WHITE LGTS.

ACFT USING TWY HA NORTH OF TWY B MUST OBTAIN APPROVAL FROM RAMP 129.825 PRIOR TO ENTERING RAMP.

APRON ENTRANCE/EXIT POINTS 9, 32, 33, 34, 35, 36, 37, 38, & 53 CLSD TO ACFT WITH WINGSPAN GREATER THAN 135 FT.

APRON ENTRANCE/EXIT POINTS 5, 7, 42, 44, 48, 49, 51, 52, 117, 118 AND 122 CLSD TO ACFT WITH WINGSPAN GREATER THAN 118 FT.

APRON ENTRANCE/EXIT POINTS 31 AND 39 CLSD TO ACFT WITH WINGSPAN GREATER THAN 167 FT.

TWYS MAY REQUIRE JUDGMENTAL OVERSTEERING FOR LARGE ACFT.

STD SAWED GROOVING 160 FT WIDE FULL LENGTH RYS 13L/31R; 18L/36R & 17R/35L. STD GROOVING 130 FT WIDE FULL LENGTH RYS 17L/35R; 18R/36L; 13R/31L & 17C/35C.

BIRDS ON & INVOF ARPT.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

RY VISUAL SCREEN 22 FT AGL 1179 FT S AER 35L.

ACFT USING TERMINAL E GATES E2–E17 MUST OBTAIN APPROVAL FROM RAMP 131.0 PRIOR TO ENTERING RAMP AND PRIOR TO PUSHBACK. ACFT USING TERMINAL E GATES E–18–E38 MUST OBTAIN APPROVAL FROM RAMP 128.825 PRIOR TO ENTERING RAMP AND PRIOR TO PUSHBACK.

A 380 OPNS ONLY AUZD ON RWYS 18R/36L AND 18L/36R. B747–8 OPNS ONLY AUZD ON RWYS 18R/36L, 18L/36R AND 17R/35L. CTC ARPT OPNS FOR ADDNL INFO.
AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 31°48′26.4N / 106°22′34.9W
2.2.2 From City: 4 miles NE of EL PASO, TX
2.2.3 Elevation: 3961.6 ft
2.2.5 Magnetic Variation: 8E (2015)
2.2.6 Airport Contact: SAM RODRIGUEZ
6701 CONVAIR RD
EL PASO, TX 79925
(915)212-0333
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A1+,B+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
I C certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 04
2.12.2 True Bearing: 50
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.4 PCN: 64 F/B/X/T
2.12.5 Coordinates: 31°48′−5.5605N / 106°23′−59.4625W
2.12.6 Threshold Elevation: 3916.9 ft
2.12.6 Touchdown Zone Elevation: 3923.2 ft
2.12.1 Designation: 22
2.12.2 True Bearing: 230
2.12.3 Dimensions: 12020 ft x 150 ft
2.12.4 PCN: 64 F/B/X/T
2.12.5 Coordinates: 31°49′−22.0112N / 106°22′−12.7821W
2.12.6 Threshold Elevation: 3949.5 ft
2.12.6 Touchdown Zone Elevation: 3949.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 04
2.13.2 Take−off Run Available: 12020 ft
2.13.3 Take−off Distance Available: 12020 ft
2.13.4 Accelerate−Stop Distance Available: 12020 ft
2.13.5 Landing Distance Available: 12020 ft

2.13.1 Designation: 22
2.13.2 Take-off Run Available: 12020 ft
2.13.3 Take-off Distance Available: 12020 ft
2.13.4 Accelerate–Stop Distance Available: 12020 ft
2.13.5 Landing Distance Available: 12020 ft

2.13.1 Designation: 08L
2.13.2 Take-off Run Available: 5499 ft
2.13.3 Take-off Distance Available: 5499 ft
2.13.4 Accelerate–Stop Distance Available: 5499 ft
2.13.5 Landing Distance Available: 5499 ft

2.13.1 Designation: 26R
2.13.2 Take-off Run Available: 5499 ft
2.13.3 Take-off Distance Available: 5499 ft
2.13.4 Accelerate–Stop Distance Available: 5499 ft
2.13.5 Landing Distance Available: 5499 ft

2.13.1 Designation: 08R
2.13.2 Take-off Run Available: 9025 ft
2.13.3 Take-off Distance Available: 9025 ft
2.13.4 Accelerate–Stop Distance Available: 9025 ft
2.13.5 Landing Distance Available: 9025 ft

2.13.1 Designation: 26L
2.13.2 Take-off Run Available: 9025 ft
2.13.3 Take-off Distance Available: 9025 ft
2.13.4 Accelerate–Stop Distance Available: 9025 ft
2.13.5 Landing Distance Available: 9025 ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 04
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 22
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 08L
2.14.2 Approach Lighting System:

2.14.1 Designation: 26R
2.14.2 Approach Lighting System:

2.14.1 Designation: 08R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 26L
2.14.2 Approach Lighting System:

**AD 2.18 Air Traffic Services Communication Facilities**

2.18.1 Service Designation: APCH/P (SOUTH–V 16)
2.18.3 Channel: 119.15
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P (SOUTH–V 16)
2.18.3 Channel: 353.5
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P IC (NORTH–V 16)
2.18.3 Channel: 124.25
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: APCH/P IC (NORTH–V 16)
2.18.3 Channel: 298.85
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD PRE TAXI CLNC
2.18.3 Channel: 125
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CD/P
2.18.3 Channel: 379.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: CLASS C
2.18.3 Channel: 119.15
2.18.5 Hours of Operation: 24
2.14.1 Service Designation: CLASS C (SOUTH–V16)
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH–V16)
2.14.3 Channel: 124.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (SOUTH–V16)
2.14.3 Channel: 298.85
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (NORTH–V16)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 120
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 254.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 119.15
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P
2.14.3 Channel: 263
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: L CL/P
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: L CL/P
2.14.3 Channel: 239.275
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 04. Magnetic variation: 8E
2.19.2 ILS Identification: ETF
2.19.5 Coordinates: 31°47′58.7232N / 106°24′13.5201W
2.19.6 Site Elevation: 3926 ft

2.19.1 ILS Type: Localizer for runway 04. Magnetic variation: 8E
2.19.2 ILS Identification: ETF
2.19.5 Coordinates: 31°49′28.4448N / 106°22′3.7979W
2.19.6 Site Elevation: 3950.4 ft

2.19.1 ILS Type: DME for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31°47′58.7232N / 106°24′13.5201W
2.19.6 Site Elevation: 3926 ft

2.19.1 ILS Type: Glide Slope for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31°49′17.2839N / 106°22′26.5917W
2.19.6 Site Elevation: 3940.3 ft

2.19.1 ILS Type: Localizer for runway 22. Magnetic
variation: 8E
2.19.2 ILS Identification: ELP
2.19.6 Site Elevation: 3910.9 ft
2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 12E
2.19.2 Navigation Aid Identification: ELP
2.19.6 Site Elevation: 4023 ft
2.19.1 ILS Type: Outer Marker for runway 22. Magnetic variation: 8E
2.19.2 ILS Identification: ELP
2.19.5 Coordinates: 31–51–37.0342N /

**General Remarks:**

ENGINE POWER IS RSTRD TO IDLE POWER ON ONE ENGINE AT A TIME FOR MAX 5 MIN ON ANY TERMINAL OR PARKING APRONS, CROSS-BLEED STARTS OR OTHER PRE DEP ACTIVITY ON MOVEMENT AREAS ONLY, MAINT OR OTR RQRMT NEEDING LONGER OR HIGHER POWER CTC TWR FOR DIRECTIONS TO DESIGNATED RUNUP AREAS.

CTN: BIGGS AAF 2NM NW RWY 22 CAN BE MISTAKEN FOR ELP RWY 22.

COMPASS ROSE CLSD PERMLY.

TWY J NE OF TWY K1; TWY K NE OF TWY K1 BTN TWY J & NORTH CARGO RAMP; TWYS U & V SOUTH OF TWY L; & TWY K2 NOT VISIBLE FM ATCT.

NOISE ABATEMENT PROCEDURES IN EFFECT, CTC ATCT FOR DETAILS.

HOLDING POSITION MARKINGS FOR RUNWAY 8R APPROACH AND RUNWAY 4/22 ARE IN CLOSE PROXIMITY TO THE TERMINAL APRON; REVIEW AIRPORT DIAGRAM PRIOR TO PUSHBACK FROM THE GATE.

MILITARY USERS SHOULD REVIEW NOISE ABATEMENT PROCEDURES LISTED FOR BIGGS AAF.

NORTH BOUND TFC PROHIBITED ON TWY F SOUTH OF APCH END RWY 08R.

24 HR PPR CLASS A EXPLOSIVES CTC 915–212–0333.
Houston, TX
George Bush Intercontinental/Houston
ICAO Identifier KIAH

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 29°59′3.967N / 95°20′29.193W
2.2.2 From City: 15 miles N of HOUSTON, TX
2.2.3 Elevation: 95.8 ft
2.2.5 Magnetic Variation: 3E (2015)
2.2.6 Airport Contact: STEVEN RUNGE
PO BOX 60106
HOUSTON, TX 77205
(281) 230-3100
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.3 Hangar Space: YES
2.4.5 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IE certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 08L
2.12.2 True Bearing: 90
2.12.3 Dimensions: 9000 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 30°0′25.7816N / 95°21′31.6473W
2.12.6 Threshold Elevation: 90.6 ft
2.12.6 Touchdown Zone Elevation: 94 ft

2.12.1 Designation: 26L
2.12.2 True Bearing: 270
2.12.3 Dimensions: 9402 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29°59′36.3817N / 95°19′30.9539W
2.12.6 Threshold Elevation: 92.3 ft
2.12.6 Touchdown Zone Elevation: 94.6 ft

2.12.1 Designation: 09
2.12.2 True Bearing: 90
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 67 R/A/W/T
2.12.5 Coordinates: 29°58′39.3363N / 95°20′2.7891W
2.12.6 Threshold Elevation: 89.9 ft
2.12.6 Touchdown Zone Elevation: 90.1 ft

2.12.1 Designation: 27
2.12.2 True Bearing: 270
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 67 R/A/W/T
2.12.5 Coordinates: 29°58′39.4071N / 95°18′9.0948W
2.12.6 Threshold Elevation: 84.3 ft
2.12.6 Touchdown Zone Elevation: 86.2 ft

2.12.1 Designation: 33R
2.12.2 True Bearing: 332
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29°57′31.5505N / 95°20′24.189W
2.12.6 Threshold Elevation: 84.9 ft
2.12.6 Touchdown Zone Elevation: 88 ft

2.12.1 Designation: 15L
2.12.2 True Bearing: 152
2.12.3 Dimensions: 12001 ft x 150 ft
2.12.4 PCN: 72 R/A/W/T
2.12.5 Coordinates: 29°59′16.4026N / 95°21′28.3335W
2.12.6 Threshold Elevation: 94.6 ft
2.12.6 Touchdown Zone Elevation: 95.2 ft

2.12.1 Designation: 33L
2.12.2 True Bearing: 332
2.12.3 Dimensions: 10000 ft x 150 ft
2.12.4 PCN: 94 R/B/W/T
2.12.5 Coordinates: 29°57′48.7474N /
AD 2.13 Declared Distances
2.13.1 Designation: 08L
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

2.13.1 Designation: 26R
2.13.2 Take-off Run Available: 9000 ft
2.13.3 Take-off Distance Available: 9000 ft
2.13.4 Accelerate–Stop Distance Available: 9000 ft
2.13.5 Landing Distance Available: 9000 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 08L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 26R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 09
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 27
2.14.2 Approach Lighting System: ALSF2
2.14.1 Designation: 33R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 15L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 33L
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 15R
2.14.2 Approach Lighting System: MALSR

**AD 2.18 Air Traffic Services Communication Facilities**

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30°–0°–21.9187N / 95–20–2.26W
2.19.6 Site Elevation: 89.7 ft

2.19.1 ILS Type: Glide Slope for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30°–0°–29.7528N / 95–21–18.6875W
2.19.6 Site Elevation: 86 ft

2.19.1 ILS Type: Inner Marker for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30°–0°–25.764N / 95–21–40.8592W
2.19.6 Site Elevation: 90.8 ft

2.19.1 ILS Type: Localizer for runway 08L. Magnetic variation: 3E
2.19.2 ILS Identification: BZU
2.19.5 Coordinates: 30°–0°–25.7696N / 95–21–43.9647W
2.19.6 Site Elevation: 94.4 ft

2.19.1 ILS Type: DME for runway 08R. Magnetic variation: 3E
2.19.2 ILS Identification: IAH
2.19.6 Site Elevation: 92.5 ft

2.19.1 ILS Type: Glide Slope for runway 08R. Magnetic variation: 3E
2.19.2 ILS Identification: IAH
2.19.5 Coordinates: 29°–59–40.3184N / 95–21–6.0476W
2.19.6 Site Elevation: 88.8 ft

2.19.1 ILS Type: Localizer for runway 08R. Magnetic variation: 3E
2.19.2 ILS Identification: IAH
2.19.6 Site Elevation: 89.6 ft

2.19.1 ILS Type: DME for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: JYV
2.19.6 Site Elevation: 92.5 ft

2.19.1 ILS Type: Glide Slope for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: JYV
2.19.5 Coordinates: 29°–59–39.5388N / 95–19–42.8056W
2.19.6 Site Elevation: 86.8 ft
2.19.1 ILS Type: Inner Marker for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: J Y V
2.19.6 Site Elevation: 89.2 ft

2.19.1 ILS Type: Localizer for runway 26L. Magnetic variation: 3E
2.19.2 ILS Identification: J Y V
2.19.6 Site Elevation: 92.2 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: U Y O
2.19.6 Site Elevation: 87.3 ft

2.19.1 ILS Type: Glide Slope for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: U Y O
2.19.5 Coordinates: 29–58–35.3875N / 95–19–50.679W
2.19.6 Site Elevation: 85.3 ft

2.19.1 ILS Type: Localizer for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: U Y O
2.19.6 Site Elevation: 81 ft

2.19.1 ILS Type: DME for runway 09. Magnetic variation: 3E
2.19.2 ILS Identification: U Y O
2.19.6 Site Elevation: 87.3 ft

2.19.1 ILS Type: Glide Slope for runway 33R. Magnetic variation: 3E
2.19.2 ILS Identification: C D G
2.19.5 Coordinates: 29–57–38.8144N / 95–20–33.4594W
2.19.6 Site Elevation: 80.4 ft

2.19.1 ILS Type: Localizer for runway 33R. Magnetic variation: 3E
2.19.2 ILS Identification: C D G
2.19.6 Site Elevation: 91.9 ft

2.19.1 ILS Type: Glide Slope for runway 15R. Magnetic variation: 3E
2.19.2 ILS Identification: L K M
2.19.6 Site Elevation: 89.9 ft

2.19.1 ILS Type: Localizer for runway 15R. Magnetic variation: 3E
2.19.2 ILS Identification: L K M
2.19.5 Coordinates: 29–57–24.9013N / 95–20–44.5885W
2.19.6 Site Elevation: 82.7 ft

2.19.1 ILS Type: Glide Slope for runway 27. Magnetic variation: 3E
2.19.2 ILS Identification: G H I
2.19.5 Coordinates: 29–59–35.4434N / 95–18–20.8578W
2.19.6 Site Elevation: 80 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 5E
2.19.2 Navigation Aid Identification: I A H
2.19.5 Coordinates: 29–57–24.9013N / 95–20–44.5885W
2.19.6 Site Elevation: 80.6 ft

**General Remarks:**
The FLWG MOV AREAS ARE NOT VSB FM THE ATCT: PORTIONS OF T Wy'S 'W A' & 'W B' FM T Wy 'W H' TO THE AER 33R; T Wy'S 'W A' & 'W B' FM T Wy 'W D' NORTH FOR 400 FT; T Wy 'W D' FM T Wy 'W A' TO T Wy 'N R'; T Wy 'N R'; T Wy 'W L' FM RWY 15L TO T Wy 'W B' & T Wy 'W M'.

Federal Aviation Administration Twenty-Sixth Edition
TXLN 'RA', 'RB', 'RC', 'R2', AND TWY 'SC' NORTH OF TWY 'SB' ARE DSGND NON-MOVEMENT AREAS OPERD BY UAL RAMP CTL.

DUAL TWY OPNS TWY NK BTN TWY NB & NORTH RAMP; WEST CNTRLN RSTRD TO ACFT MAX WING SPANS 125 FT & EAST CNTRLN MAX WING SPANS 214 FT.

NORTH RAMP TAXI LANE BTN TWYS NF & NR RSTRD TO ACFT WITH WING SPAN 125 FT & BLO.

RWY STATUS LGTS ARE IN OPN.

TWY WW BTN TWY NR AND TWY WB CLSD TO ACFT WINGSPAN MORE THAN 214 FT.

TWY 'SF' BTN TWY 'NB' AND TXL 'RA' IS DSGND NON-MOV AREA.

9 FT AGL UNMKD SECURITY FENCE ADJ TO FBO & CORPORATE BASE OPR RAMPS AND NONMOV AREA TXLS.

TWY SF BTN RWY 09/27 UP TO AND INCLUDING THE EAST BRIDGE CLSD TO ACFT WITH WINGSPAN 215 FT & OVER.

HEL HOVER/TAXI RSTRD TO HARD SFC MOV AREAS ONLY.

TWY 'NR' CLSD TO ACFT WITH WING SPANS GREATER THAN 125 FT BTN TWY 'WD' & TWY 'WB'.

TWY WC WEST OF RWY 15R/33L RSTRD TO ACFT WITH 118 FT WING SPAN AND BLW.

TWY NR BTN TWY NC AND TWY WW CLSD TO ACFT WINGSPAN MORE THAN 214 FT.

TWY NR BTN WW AND TWY WB DSGND NON-MOVEMENT AREA.

TWY NA LGT ALL BTN TWY WP AND TWY NP NOT STD

PILOTS & CREWS SHOULD BE AWARE OF DEP TURNS ON CRS IN EXCESS OF 180 DEGS. PILOT READ BACK OF DRCTN OF TURN IS HIGHLY ENCOURAGED.

TWYS WA & WB MAGNETIC ANOMALIES MAY AFFECT COMPASS HDG.

RWY 15L/33R MAGNETIC ANOMALIES MAY AFFECT COMPASS HDG FOR TKOF.

GBAS APCH SVC VOL 20NM FR THR, ALL GLS APCHS.

NORTH RAMP NORTH & SOUTH TAXI LANES CLSD TO ACFT WITH WING SPANS GREATER THAN 125 FT.

RWY 09/27 CLSD TO ACFT WITH WINGSPAN 215 FT & ABOVE.

TXLN RC CLSD TO ACFT WITH WINGSPAN GREATER THAN 135 FT.

BIRDS ON & INVOF ARPT.

ASDE-X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS-B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

NOISE SENSITIVE AREA N, E AND W OF ARPT.

TWY WW RUN UP PAD FOR RWY 15L CLSD TO ACFT WITH WINGSPAN 135 FT & OVER.
WILDLIFE HAZ BATS INVOF IAH.

TWY NK BTN TWY NB AND TERMINAL D RAMP SIMULTANEOUS ACFT OPS PROHIBITED WHEN MIDDLE TAXILANE IN USE.
Laredo, TX  
Laredo Intl  
ICAO Identifier KLRD

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 27°32'39.1"N / 99°27'41.7"W
2.2.2 From City: 3 miles NE of LAREDO, TX
2.2.3 Elevation: 508 ft
2.2.5 Magnetic Variation: 5E (2020)
2.2.6 Airport Contact: JEFF MILLER  
5210 BOB BULLOCK LOOP  
LAREDO, TX 78041  
(956-795-2000)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: None

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I
B certified on 7/1/1975

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 32
2.12.2 True Bearing: 327
2.12.3 Dimensions: 5927 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 27°32'8.635N / 99°27'24.668W
2.12.6 Threshold Elevation: 467.4 ft
2.12.6 Touchdown Zone Elevation: 493.6 ft

2.12.1 Designation: 18L
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 27°33'22.9267N / 99°27'33.5988W
2.12.6 Threshold Elevation: 499.2 ft
2.12.6 Touchdown Zone Elevation: 499.2 ft

2.12.1 Designation: 36R
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8236 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 27°32'1.4547N / 99°27'30.449W
2.12.6 Threshold Elevation: 474.2 ft
2.12.6 Touchdown Zone Elevation: 486.7 ft

2.12.1 Designation: 36L
2.12.2 True Bearing: 3
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 27°33'56.8817N / 99°27'49.0449W
2.12.6 Threshold Elevation: 497 ft
2.12.6 Touchdown Zone Elevation: 497 ft

2.12.1 Designation: 18R
2.12.2 True Bearing: 183
2.12.3 Dimensions: 8743 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 27°33'23.3681N / 99°27'44.7128W
2.12.6 Threshold Elevation: 503.7 ft
2.12.6 Touchdown Zone Elevation: 503.7 ft

AD 2.13 Declared Distances
2.13.1 Designation: 32
2.13.2 Take-off Run Available: 5927 ft
2.13.3 Take-off Distance Available: 5927 ft
2.13.4 Accelerate–Stop Distance Available: 5927 ft
2.13.5 Landing Distance Available: 5927 ft

2.13.1 Designation: 14
2.13.2 Take-off Run Available: 5927 ft
2.13.3 Take-off Distance Available: 5927 ft
2.13.4 Accelerate–Stop Distance Available: 5927 ft
2.13.5 Landing Distance Available: 5927 ft

2.13.1 Designation: 18L
2.13.2 Take–off Run Available: 8236 ft
2.13.3 Take–off Distance Available: 8236 ft
2.13.4 Accelerate–Stop Distance Available: 8236 ft
2.13.5 Landing Distance Available: 8236 ft

2.13.1 Designation: 36R
2.13.2 Take–off Run Available: 8743 ft
2.13.3 Take–off Distance Available: 8743 ft
2.13.4 Accelerate–Stop Distance Available: 8743 ft
2.13.5 Landing Distance Available: 8743 ft

2.13.1 Designation: 36L
2.13.2 Take–off Run Available: 8743 ft
2.13.3 Take–off Distance Available: 8743 ft
2.13.4 Accelerate–Stop Distance Available: 8743 ft
2.13.5 Landing Distance Available: 8623 ft

2.13.1 Designation: 18R
2.13.2 Take–off Run Available: 8743 ft
2.13.3 Take–off Distance Available: 8743 ft
2.13.4 Accelerate–Stop Distance Available: 8743 ft
2.13.5 Landing Distance Available: 8743 ft

2.14.1 Designation: 36R
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: 36L
2.14.2 Approach Lighting System:

2.14.1 Designation: 18R
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 18R. Magnetic variation: 5E
2.19.2 ILS Identification: LRD
2.19.5 Coordinates: 27°30′−31′50.8814N / 99°27′−46.6673W
2.19.6 Site Elevation: 477 ft

2.19.1 ILS Type: Glide Slope for runway 18R. Magnetic variation: 5E
2.19.2 ILS Identification: LRD
2.19.5 Coordinates: 27°33′−12′49.9933N / 99°27′−40.6967W
2.19.6 Site Elevation: 497 ft

2.19.1 ILS Type: Localizer for runway 18R. Magnetic variation: 5E
2.19.2 ILS Identification: LRD
2.19.5 Coordinates: 27°31′−51.7421N / 99°27′−49.3028W
2.19.6 Site Elevation: 477 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 9E
2.19.2 Navigation Aid Identification: LRD
2.19.5 Coordinates: 27°28′−43.4544N / 99°25′−3.6441W
2.19.6 Site Elevation: 583 ft

General Remarks:
RWY 14/32 RSTRD TO A CFT LESS THAN 60000 LBS DTW.

BIRDS ON AND INV OF ARPT.
FEDERAL INSPECTION STATION FEE.

FOR CD IF UNA TO CTC ON FSS FREQ, CTC HOUSTON ARTCC AT 281–230–5622.

TWY C CLSD BTN RWY 18L/36R & RWY 18R INDEFLY.

FEDERAL INSPECTION STATION IS LCTD ON THE WEST GENERAL AVIATION/CARGO APRON.

LNDG FEE ASSESSED FOR ANY "FOR HIRE" ACFT.
San Antonio, TX  
San Antonio Intl  
ICAO Identifier KSAT

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 29°32′–2.25N / 98°28′–8.605W  
2.2.2 From City: 7 miles N of SAN ANTONIO, TX  
2.2.3 Elevation: 809.1 ft  
2.2.5 Magnetic Variation: 4E (2020)  
2.2.6 Airport Contact: JESUS H. SAENZ, JR.  
9800 AIRPORT BLVD  
SAN ANTONIO, TX 78216  
(210)–207–3444  
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, All Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES  
2.4.2 Fuel Types: 100LL, A  
2.4.5 Hangar Space: YES  
2.4.6 Repair Facilities: MAJOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: ARFF Index  
IC certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 04  
2.12.2 True Bearing: 41  
2.12.3 Dimensions: 8505 ft x 150 ft  
2.12.4 PCN: 91 R/B/W/T  
2.12.5 Coordinates: 29°31′–23.6409N / 98°28′–11.6562W  
2.12.6 Threshold Elevation: 786 ft  
2.12.6 Touchdown Zone Elevation: 786 ft

2.12.1 Designation: 22  
2.12.2 True Bearing: 221  
2.12.3 Dimensions: 8505 ft x 150 ft  
2.12.4 PCN: 91 R/B/W/T  
2.12.5 Coordinates: 29°32′–27.3928N / 98°27′–8.7715W  
2.12.6 Threshold Elevation: 754.5 ft  
2.12.6 Touchdown Zone Elevation: 770 ft

2.12.1 Designation: 31R  
2.12.2 True Bearing: 312  
2.12.3 Dimensions: 5519 ft x 100 ft  
2.12.4 PCN: 61 F/C/W/T  
2.12.5 Coordinates: 29°31′–48.7812N / 98°27′–53.0202W  
2.12.6 Threshold Elevation: 779.2 ft  
2.12.6 Touchdown Zone Elevation: 788.1 ft

2.12.1 Designation: 13L  
2.12.2 True Bearing: 132  
2.12.3 Dimensions: 5519 ft x 100 ft  
2.12.4 PCN: 61 F/C/W/T  
2.12.5 Coordinates: 29°32′–35.0764N / 98°28′–39.714W  
2.12.6 Threshold Elevation: 797.3 ft  
2.12.6 Touchdown Zone Elevation: 797.3 ft

2.12.1 Designation: 31L  
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°31′–38.0038N / 98°27′–55.9932W  
2.12.6 Threshold Elevation: 778.5 ft  
2.12.6 Touchdown Zone Elevation: 790 ft

2.12.1 Designation: 13R  
2.12.2 True Bearing: 132  
2.12.3 Dimensions: 8502 ft x 150 ft  
2.12.4 PCN: 86 R/B/W/T  
2.12.5 Coordinates: 29°32′–33.8853N / 98°29′–7.9481W  
2.12.6 Threshold Elevation: 809.1 ft  
2.12.6 Touchdown Zone Elevation: 809.1 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 04  
2.13.2 Take–off Run Available: 8505 ft  
2.13.3 Take–off Distance Available: 8505 ft  
2.13.4 Accelerate–Stop Distance Available: 8505 ft  
2.13.5 Landing Distance Available: 8505 ft

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Twenty–Sixth Edition
2.13.1 Designation: 22
2.13.2 Take-off Run Available: 8505 ft
2.13.3 Take-off Distance Available: 8505 ft
2.13.4 Accelerate–Stop Distance Available: 8505 ft
2.13.5 Landing Distance Available: 8505 ft

2.13.1 Designation: 31R
2.13.2 Take-off Run Available: 5519 ft
2.13.3 Take-off Distance Available: 5519 ft
2.13.4 Accelerate–Stop Distance Available: 5519 ft
2.13.5 Landing Distance Available: 5519 ft

2.13.1 Designation: 13L
2.13.2 Take-off Run Available: 5519 ft
2.13.3 Take-off Distance Available: 5519 ft
2.13.4 Accelerate–Stop Distance Available: 5519 ft
2.13.5 Landing Distance Available: 5519 ft

2.13.1 Designation: 31L
2.13.2 Take-off Run Available: 8502 ft
2.13.3 Take-off Distance Available: 8502 ft
2.13.4 Accelerate–Stop Distance Available: 8502 ft
2.13.5 Landing Distance Available: 8502 ft

2.13.1 Designation: 13R
2.13.2 Take-off Run Available: 8502 ft
2.13.3 Take-off Distance Available: 8502 ft
2.13.4 Accelerate–Stop Distance Available: 8502 ft
2.13.5 Landing Distance Available: 8502 ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 04
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 22
2.14.2 Approach Lighting System:

2.14.1 Designation: 31R
2.14.2 Approach Lighting System:

2.14.1 Designation: 31L
2.14.2 Approach Lighting System: MALS

**AD 2.18 Air Traffic Services Communication Facilities**

2.18.1 Service Designation: ALAMO DP (RWY 04, 22, 31)
2.18.3 Channel: 125.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ALAMO DP (RWY 13)
2.18.3 Channel: 127.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ALAMO DP (RWY 13)
2.18.3 Channel: 269.1
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ALISS DP (RWY 04, 22, 31)
2.18.3 Channel: 307
2.18.5 Hours of Operation: 24

2.18.1 Service Designation: ALISS DP (RWY 04, 22, 31)
2.18.3 Channel: 290.225
2.18.5 Hours of Operation: 24
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P
2.14.3 Channel: 121.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P (115−154/35−56 SAT)
2.14.3 Channel: 257.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (141−270)
2.14.3 Channel: 118.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (360−090)
2.14.3 Channel: 124.45
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (091−140)
2.14.3 Channel: 128.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (091−140)
2.14.3 Channel: 318.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (360−090)
2.14.3 Channel: 335.625
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (141−270)
2.14.3 Channel: 353.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (271−359)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (271−359)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 LRD TRANSITION)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 CRP TRANSITION)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04, 13, 31)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 CRP TRANSITION)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: BOWIE DP (RWY 04 LRD TRANSITION)
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<th>Frequency</th>
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2.14.3 Channel: 119.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LCL/P
2.14.3 Channel: 257.8
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LEJON DP (RWY 04, 22, 31)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LEJON DP (RWY 13)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LEJON DP (RWY 12)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: LEJON DP (RWY 13)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: MILET DP (RWY 04)
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: MILET DP (RWY 13, 22, 31)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: MILET DP (RWY 13, 22, 31)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: MILET DP (RWY 04)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: STONEWALL STAR
2.14.3 Channel: 125.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: STONEWALL STAR
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: THREE RIVERS DP (RWY 13, 22, 31)
2.14.3 Channel: 125.7
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: THREE RIVERS DP (RWY 13, 22, 31)
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: THREE RIVERS DP (RWY 04)
2.14.3 Channel: 127.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: THREE RIVERS DP (RWY 04)
2.14.3 Channel: 269.1
2.14.5 Hours of Operation: 24
2.14.1 Service Designation: THREE RIVERS DP (RWY 13, 22, 31)
2.14.3 Channel: 290.225
2.14.5 Hours of Operation: 24

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: SAT
2.19.6 Site Elevation: 807.6 ft

2.19.1 ILS Type: Glide Slope for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: SAT
2.19.5 Coordinates: 29–32–32.9486N / 98–26–58.6881W
2.19.6 Site Elevation: 746.3 ft

2.19.1 ILS Type: Glide Slope for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: SAT
2.19.5 Coordinates: 29–32–32.9486N / 98–26–58.6881W
2.19.6 Site Elevation: 746.3 ft

2.19.1 ILS Type: Inner Marker for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29–32–35.0937N / 98–27–1.1714W
2.19.6 Site Elevation: 748.9 ft

2.19.1 ILS Type: Outer Marker for runway 04. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.6 Site Elevation: 807.6 ft

2.19.1 ILS Type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.6 Site Elevation: 771 ft

2.19.1 ILS Type: DME for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.6 Site Elevation: 771 ft

2.19.1 ILS Type: Glide Slope for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: ANT
2.19.5 Coordinates: 29–31–47.9039N / 98–28–1.9173W
2.19.6 Site Elevation: 777.5 ft

2.19.1 ILS Type: Localizer for runway 13R. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.6 Site Elevation: 790.7 ft

2.19.1 ILS Type: DME for runway 31L. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.6 Site Elevation: 790.7 ft

2.19.1 ILS Type: Glide Slope for runway 31L. Magnetic variation: 4E
2.19.2 ILS Identification: IZR
2.19.5 Coordinates: 29–31–47.9039N / 98–28–1.9173W
2.19.6 Site Elevation: 777.5 ft

2.19.1 Navigation AId Type: VORTAC. Magnetic variation: 8E
2.19.2 Navigation AId Identification: SAT
2.19.6 Site Elevation: 1158.8 ft

**General Remarks:**

TWY L CLSD NORTHBOUND.
FREQUENT RUBBER ACCUMULATION NW 2500 RY 13R/31L.

GLIDER/SOARING OPNS APRXLY 17 MILES NW OF ARPT DURING VFR.

ARPT RSTD TO ACFT WITH WINGSPAN GTR THAN 171 FT, PPR WITH 24HR OPS 210–207–3433. RQRD FOR AUTH.

ALL INTL GENERAL AVIATION CLEAR U.S. CSTM S AT NORTH FIXED BASE OPERATOR RAMP EAST SIDE, CALL U.S. CSTM S 210–821–6965 UPON ARR.

TWY S BTN APCH END RWY 13L AND RWY 13R/31L CLSD TO ACFT WITH WINGSPAN MORE THAN 100 FT.

TWY R BTN APCH END RWY 13L AND RWY 13R/31L CLSD TO ACFT WITH WINGSPAN MORE THAN 100 FT.

NOISE SENSITIVE AREAS EXIST ON ALL SIDES OF ARPT, AT PILOT S DISCRETION CLIMB AS QUICKLY AND QUIETLY AS SAFELY POSSIBLE ON DEPARTURE AND USE CONSIDERATION WHEN FLYING OVER POPULATED AREAS BY MINIMIZING FLT AND HIGH PWR SETTINGS. MILITARY AIRCRAFT: DEPARTING AND ARRIVING AIRCRAFT WILL USE MINIMUM POWER SETTINGS CONSISTENT WITH AIRCRAFT FLIGHT MANUALS, AFTERBURNER TAKEOFF IS PROHIBITED UNLESS REQUIRED FOR SAFETY OF FLIGHT. ENGINE–UPS ARE PERMITTED BTN 0600–2300.

ACFT TAXIING ON RY 04 NE BOUND LOOK FOR HOLD SHORT TO RY 31L.

INNER RAMP TAXI LANE NORTH OF TRML A AND B IS CLSD TO ACFT WITH WINGSPAN GTR THAN 135 FT.

TWY D NON–MOVEMENT AREA FM TWY N TO 500 FT W OF TWY N.

PPR WITH ARPT OPNS FOR ACFT POWERING BACK FM TERMINAL GATES.

COMPASS DEVIATION MAY OCCUR AT THE NW PORTION OF TWY R DUE TO REBAR RE–ENFORCED CONC BRIDGE LCTD UNDER THE TWY.

WORK IN PROGRESS SCHEDULED MAINTENANCE ON & ALONG TWYS AND RAMPS AREAS AT VARIOUS TIMES.

GROUND RUN–UP ENCLOSURE AVBL 24 HRS.

A BARRICADED PAVEMENT ELEVATION CHANGE EXISTS ALONG THE EASTERN SIDE OF THE WEST RAMP.

NUMEROUS FLOCKS OF BIRDS INVOF ARPT.

FOREIGN MIL ACFT WITH WINGSPAN LESS THAN 100 FT MUST REP TO GA RAMP FED INSPECTION STATION FOR CUST PROCESSING, CTC AP MANAGEMENT AT 210–207–3433.

RY 13L/31R NOT AVBL FOR PART 121 ACR OPNS.

TERMINAL GATES A1, A5, A6, A7 & A8 USE ONLY WITH PPR CALL OPNS 210–207–3433.

ALL ACFT AFTER LDG ON RWY 13R/31L EXITING SOUTHWEST BOUND ON TWY DELTA TO MAKE 90 DEG TURN ON TWY GOLF TO AVOID UNUSBL SFC.
C130 AND C17 TYPE ACFT MUST PARK ON WEST RAMP TO CLR CUST.

ACFT TAXIING ON TWY N SW BOUND LOOK FOR HOLD SHORT TO RY 31R.

TWY Z CLSD TO ACFT WITH WINGSPAN GREATER THAN 118 FT.

AERODROME ALL SFC WIP CONST FOR CURRENT INFO CTC OPS. 210−207−3433.

APRON EAST CARGO RAMP INT OF RWY 04/22 AND TWY DELTA ACFT ARE REQ TO APPLY THE MNM THRUST WHEN XNG THE RWY TO AVOID DMG DUE TO JET BLAST.


SAT TWY R BTN APCH END RWY 13L AND TWY D CLSD TO ACFT MORE THAN 99600 LB.

TWYS L & B CLSD TO ACFT WITH WINGSPANS GREATER THAN 118 FT EXITING RY 31L.

ACFT AT TERMINAL A & B ADVISE GND CTL PRIOR TO PUSH.
AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 40°47′18.216N / 111°58′39.984W
2.2.2 From City: 3 miles W of SALT LAKE CITY, UT
2.2.3 Elevation: 4230.9 ft
2.2.5 Magnetic Variation: 11E (2020)
2.2.6 Airport Contact: BILL WYATT
  P.O. BOX 145550
  SALT LAKE CITY, UT 84114
  (801) 575-2408
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100LL, A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
  I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 14
2.12.2 True Bearing: 153
2.12.3 Dimensions: 4893 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°47′8.5848N / 111°58′16.4661W
2.12.6 Threshold Elevation: 4224.7 ft
2.12.6 Touchdown Zone Elevation: 4224.7 ft

2.12.1 Designation: 32
2.12.2 True Bearing: 333
2.12.3 Dimensions: 4893 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°46′−8.5848N / 111°57′−16.4661W
2.12.6 Threshold Elevation: 4224.7 ft
2.12.6 Touchdown Zone Elevation: 4224.7 ft

2.12.1 Designation: 34R
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12002 ft x 150 ft

2.12.1 Designation: 16L
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12002 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°48′−26.8298N / 111°58′−36.9557W
2.12.6 Threshold Elevation: 4229.1 ft
2.12.6 Touchdown Zone Elevation: 4230.9 ft

2.12.1 Designation: 16R
2.12.2 True Bearing: 175
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°48′−28.0035N / 111°59′−57.4282W
2.12.6 Threshold Elevation: 4225.8 ft
2.12.6 Touchdown Zone Elevation: 4225.8 ft

2.12.1 Designation: 34L
2.12.2 True Bearing: 355
2.12.3 Dimensions: 12000 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°46′−29.9171N / 111°59′−43.6913W
2.12.6 Threshold Elevation: 4228.8 ft
2.12.6 Touchdown Zone Elevation: 4228.8 ft

2.12.1 Designation: 35
2.12.2 True Bearing: 360
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°46′−21.3022N / 111°57′−43.4496W
2.12.6 Threshold Elevation: 4228.8 ft
2.12.6 Touchdown Zone Elevation: 4228.8 ft

2.12.1 Designation: 17
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°46′−25.5192N / 111°57′−47.5915W
2.12.6 Threshold Elevation: 4226.8 ft
2.12.6 Touchdown Zone Elevation: 4226.8 ft

2.12.1 Designation: 18
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9596 ft x 150 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°46′−25.5192N / 111°57′−47.5915W
2.12.6 Threshold Elevation: 4226.8 ft
2.12.6 Touchdown Zone Elevation: 4226.8 ft
2.12.1 Designation: HB
2.12.2 True Bearing:
2.12.3 Dimensions: 60 ft x 60 ft
2.12.4 PCN: ///
2.12.5 Coordinates: 40°46′27.0827″N / 111°57′24.0562″W
2.12.6 Threshold Elevation: 4220.4 ft
2.12.6 Touchdown Zone Elevation: ft

2.12.1 Designation: HF
2.12.2 True Bearing:
2.12.3 Dimensions: 60 ft x 60 ft
2.12.4 PCN: ///
2.12.5 Coordinates: --- / ---
2.12.6 Threshold Elevation: ft

AD 2.13 Declared Distances
2.13.1 Designation: 14
2.13.2 Take-off Run Available: 4892 ft
2.13.3 Take-off Distance Available: 4892 ft
2.13.4 Accelerate–Stop Distance Available: 4892 ft
2.13.5 Landing Distance Available: 4892 ft

2.13.1 Designation: 32
2.13.2 Take-off Run Available: 4892 ft
2.13.3 Take-off Distance Available: 4892 ft
2.13.4 Accelerate–Stop Distance Available: 4892 ft
2.13.5 Landing Distance Available: 4892 ft

2.13.1 Designation: 34R
2.13.2 Take-off Run Available: 12002 ft
2.13.3 Take-off Distance Available: 12002 ft
2.13.4 Accelerate–Stop Distance Available: 12002 ft
2.13.5 Landing Distance Available: 12002 ft

2.13.1 Designation: 16L
2.13.2 Take-off Run Available: 12002 ft
2.13.3 Take-off Distance Available: 12002 ft
2.13.4 Accelerate–Stop Distance Available: 12002 ft
2.13.5 Landing Distance Available: 12002 ft

2.13.1 Designation: 16R
2.13.2 Take-off Run Available: 12000 ft
2.13.3 Take-off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 34L
2.13.2 Take-off Run Available: 12000 ft
2.13.3 Take-off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.3 Take-off Distance Available: 12000 ft
2.13.4 Accelerate–Stop Distance Available: 12000 ft
2.13.5 Landing Distance Available: 12000 ft

2.13.1 Designation: 35
2.13.2 Take-off Run Available: 9597 ft
2.13.3 Take-off Distance Available: 9597 ft
2.13.4 Accelerate–Stop Distance Available: 9597 ft
2.13.5 Landing Distance Available: 9597 ft

2.13.1 Designation: 17
2.13.2 Take-off Run Available: 9597 ft
2.13.3 Take-off Distance Available: 9597 ft
2.13.4 Accelerate–Stop Distance Available: 9597 ft
2.13.5 Landing Distance Available: 9597 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 14
2.14.2 Approach Lighting System:

2.14.1 Designation: 32
2.14.2 Approach Lighting System:

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 17
2.14.2 Approach Lighting System: ALSF2
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 35
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 17
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: HB
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

2.14.1 Designation: HF
2.14.2 Approach Lighting System:
2.14.4 Visual Approach Slope Indicator System:

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids

2.19.1 ILS Type: DME for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.5 Coordinates: 40–46–18.724N / 111–58–18.1254W
2.19.6 Site Elevation: 4239.9 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.5 Coordinates: 40–46–19.627N / 111–58–19.2908W
2.19.6 Site Elevation: 4220 ft

2.19.1 ILS Type: Inner Marker for runway 16L. Magnetic variation: 11E
2.19.2 ILS Identification: MOY
2.19.6 Site Elevation: 4225.1 ft

2.19.1 ILS Type: DME for runway 34R. Magnetic variation: 11E
2.19.2 ILS Identification: SLC
2.19.5 Coordinates: 40–46–18.724N / 111–58–18.1254W
2.19.6 Site Elevation: 4239.9 ft

2.19.1 ILS Type: Glide Slope for runway 34R. Magnetic variation: 11E
2.19.2 ILS Identification: SLC
2.19.5 Coordinates: 40–46–39.3436N / 111–58–19.2908W
2.19.6 Site Elevation: 4220 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 11E
2.19.2 ILS Identification: UAT
2.19.5 Coordinates: 40–48–17.3028N / 112–0–1.6005W
2.19.6 Site Elevation: 4218.7 ft

2.19.1 ILS Type: DME for runway 34L. Magnetic variation: 11E
2.19.2 ILS Identification: UUH
2.19.5 Coordinates: 40–46–18.5061N / 111–58–22.0717W
2.19.6 Site Elevation: 4226.5 ft

Twenty-Sixth Edition

Federal Aviation Administration
General Remarks:
SEE CURRENT NOTAMS FOR DATES AND ADDITIONAL INFO.

Military: ANG Ramp: NSTD Pavement Mark on Ramp.

SVFR is NOT RCMD AT THE ARPT, IF REQD, EXPT DLAS.

TWY Y RSTD TO WINGSPANS LESS THAN 171 FT BTWN TWY H3 AND H4.


ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

Spots 22 and 23 to be Renamed 1WEST on 15 Sep 2020.

Surface Movement Guidance Control System & Low Visibility Taxi Procedures.

Helipads B and F Located on General Aviation Aprons.

Use Caution for Extensive Paragliding Ops Inv of Point of the Mountain.
SEE FLIP AP/1 SUPPLEMENTARY ARPT INFO.

MILITARY: COMMUNICATIONS: ANG COMD POST – CALL UTAH CONTROL.

USE MINIMUM THRUST IN CONSTRUCTION AREAS.

CONTACT GROUND ON 123.775 BEFORE TAXIING OUT OF NORTH CARGO.

DUE TO TFC VOL, LCL DEPARTURE AND ARR OPNS ARE DISCOURAGED AND DLAS CAN BE EXPED BTN 1500–1730Z ++ AND 0130–0300Z ++.

MILITARY: SVC: FUEL A ++.

FLOCK OF BIRDS ON AND IN VICINITY OF ARPT.

SPOTS 20 AND 21 TO BE RENAMED 2WEST ON 15 SEP 2020.

Charlotte Amalie, VI  
Cyril E King  
ICAO Identifier TIST

**AD 2.2 Aerodrome geographical and administrative data**

2.2.1 Reference Point: 18°20′14.3N / 64°58′24W
2.2.2 From City: 2 miles W of CHARLOTTE AMALIE, VI
2.2.3 Elevation: 23.6 ft
2.2.5 Magnetic Variation: 13W (2000)
2.2.6 Airport Contact: JEROME SHERIDAN  
C Y R I L E. K I N G A I R P O R T  
S T T H O M A S, V I 8 0 2  
((340) 714–6667)
2.2.7 Traffic: IFR/VFR

**AD 2.3 Attendance Schedule**

2.3.1 All Months, All Days, 0700–2300 Hours

**AD 2.4 Handling Services and Facilities**

2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100L, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MINOR

**AD 2.6 Rescue and Firefighting Services**

2.6.1 Aerodrome Category for Firefighting: ARFF Index  
IC certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

2.12.1 Designation: 28  
2.12.2 True Bearing: 267  
2.12.3 Dimensions: 7000 ft x 150 ft  
2.12.4 PCN: 88 F/A/W/T  
2.12.5 Coordinates: 18°20′15.8124N / 64°57′47.7382W  
2.12.6 Threshold Elevation: 11.7 ft  
2.12.6 Touchdown Zone Elevation: 16.5 ft

2.12.1 Designation: 10  
2.12.2 True Bearing: 87  
2.12.3 Dimensions: 7000 ft x 150 ft  
2.12.4 PCN: 88 F/A/W/T  
2.12.5 Coordinates: 18°20′12.7247N / 64°59′0.3371W

2.12.6 Threshold Elevation: 23.5 ft  
2.12.6 Touchdown Zone Elevation: 23.6 ft

**AD 2.13 Declared Distances**

2.13.1 Designation: 28  
2.13.2 Take–off Run Available: 7000 ft  
2.13.3 Take–off Distance Available: 7000 ft  
2.13.4 Accelerate–Stop Distance Available: 6170 ft  
2.13.5 Landing Distance Available: 3870 ft

2.13.1 Designation: 10  
2.13.2 Take–off Run Available: 7000 ft  
2.13.3 Take–off Distance Available: 7000 ft  
2.13.4 Accelerate–Stop Distance Available: 6892 ft  
2.13.5 Landing Distance Available: 6892 ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 28  
2.14.2 Approach Lighting System:  
2.14.4 Visual Approach Slope Indicator System:  
2.14.1 Designation: 10  
2.14.2 Approach Lighting System:  

**AD 2.18 Air Traffic Services Communication Facilities**

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 10. Magnetic variation: 13W  
2.19.2 ILS Identification: TMN  
2.19.5 Coordinates: 18°20′18.78N / 64°57′39.88W  
2.19.6 Site Elevation: 22.6 ft

2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 13W  
2.19.2 ILS Identification: TMN  
2.19.5 Coordinates: 18°20′10.62N / 64°58′48.29W  
2.19.6 Site Elevation: 15.1 ft
2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: TMN
2.19.5 Coordinates: 18–20–16.26N / 64–57–37.22W
2.19.6 Site Elevation: 17 ft

2.19.1 Navigation Aid Type: VOR/DME. Magnetic variation: 10W
2.19.2 Navigation Aid Identification: STT
2.19.6 Site Elevation: 679.2 ft

**General Remarks:**

LGTS ON HILL 4 NM SE OF ARPT MAY BE MISTAKEN FOR RY 10/28 WHEN MAKING A VISUAL APCH FROM THE SOUTH.

ACFT THAT BACK TAXI FOR DEP ON RY 28 SHALL MAKE THEIR 180 DEG TURN CCLKWS.

NOISE SENSITIVE AREA: AVOID OVERFLIGHTS OF WATER ISLAND LOCATED 2 MI SE OF ARPT.

ARFF UNAVBL 2300–0630.

RY 10 DEPS MAINTAIN RY HDG UNTIL REACHING DEP END OF RY BFR TURNING ON COURSE OR ASSIGNED HDG UNLESS OTRW AUZD BY ATCT.

WHEN TWR CLSD CTC SAN JUAN CERAP AT 787–253–8664/8665

PILOTS CTC GND CTL PRIOR TO PUSHBACK.

PILOTS MAY ENCTR FALSE ILLUSORY INDICATIONS DURG NGT VISUAL APCHS TO RY 10 WHEN USING VISUAL CUES FOR VERTICAL GUIDANCE; RCMD USE OF THE ILS GS & FQT CROSS REF WITH THE ACFT ALTM TO MAINT THE PROPER APCH PROFILE.

OBSTRUCTION SAILBOAT MAST 100FT WEST OF APPROACH END OF RWY 10 50FT AGL
Christiansted, VI  
Henry E Rohlsen  
ICAO Identifier TISX

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 17°42′5.416″ N / 64°48′6.9945″ W
2.2.2 From City: 6 miles SW of CHRISTIANSTED, VI
2.2.3 Elevation: 74.1 ft
2.2.5 Magnetic Variation: 13W (2000)
2.2.6 Airport Contact: JEROME SHERIDAN  
P.O. BOX 1134  
ST CROIX, VI 00821  
(340) 714–6662
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, 0500–2300 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL, A1+
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 28
2.12.2 True Bearing: 264
2.12.3 Dimensions: 10004 ft x 150 ft
2.12.4 PCN: 62 F/C/W/T
2.12.5 Coordinates: 17°42′10.62″ N / 64°47′15.544″ W
2.12.6 Threshold Elevation: 22.5 ft
2.12.6 Touchdown Zone Elevation: 40 ft

2.12.1 Designation: 10
2.12.2 True Bearing: 84
2.12.3 Dimensions: 10004 ft x 150 ft
2.12.4 PCN: 62 F/C/W/T
2.12.5 Coordinates: 17°42′0.212″ N / 64°48′58.445″ W
2.12.6 Threshold Elevation: 73.7 ft
2.12.6 Touchdown Zone Elevation: 74.1 ft

General Remarks:
APCH TO RY 28 SMTM'S OBSCD BY SMOKE FM LANDFILL LCTD E OF ARPT.
TAXI INTO POSITION AND HOLD PROCEDURES NO LONGER IN EFFECT.

AD 2.13 Declared Distances
2.13.1 Designation: 28
2.13.2 Take–off Run Available: 10004 ft
2.13.3 Take–off Distance Available: 10004 ft
2.13.4 Accelerate–Stop Distance Available: 10004 ft
2.13.5 Landing Distance Available: 8998 ft

2.13.1 Designation: 10
2.13.2 Take–off Run Available: 10004 ft
2.13.3 Take–off Distance Available: 10004 ft
2.13.4 Accelerate–Stop Distance Available: 9003 ft
2.13.5 Landing Distance Available: 9003 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 28
2.14.2 Approach Lighting System:

2.14.1 Designation: 10
2.14.2 Approach Lighting System: MALSR

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: Glide Slope for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: STX
2.19.5 Coordinates: 17°41′58.77″ N / 64°48′45.5″ W
2.19.6 Site Elevation: 63.5 ft

2.19.1 ILS Type: Localizer for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: STX
2.19.5 Coordinates: 17°42′11.36″ N / 64°47′8.28″ W
2.19.6 Site Elevation: 26.4 ft

2.19.1 ILS Type: Outer Marker for runway 10. Magnetic variation: 13W
2.19.2 ILS Identification: STX
2.19.5 Coordinates: 17°41′30.92″ N / 64°53′4.74″ W
2.19.6 Site Elevation: 40 ft
BIRDS & WILDLIFE ON & INVOF ARPT.

AP SFC COND UNMON DLY 2300 – 0600 AST.

WHEN TWR CLSD CTC SAN JUAN CERAP AT 787–253–8664/8665
Everett, WA
Snohomish County (Paine Fld)
ICAO Identifier KPAE

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47°54′26.345N / 122°16′55.538W
2.2.2 From City: 6 miles SW of EVERETT, WA
2.2.3 Elevation: 606.9 ft
2.2.5 Magnetic Variation: 16°E (2020)
2.2.6 Airport Contact: ARIF GHOUSE
3220 100TH ST SW
EVERETT, WA 98204
(425) 388-5100
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 NOV—APR Months, All Days, 0700—2100 Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: NO
2.4.2 Fuel Types: 100LL,A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index
IB certified on 11/1/1974

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 16L
2.12.2 True Bearing: 180
2.12.3 Dimensions: 3004 ft x 75 ft
2.12.4 PCN: 4 F/B/Y /T
2.12.5 Coordinates: 47°54′23.129N / 122°16′18.0936W
2.12.6 Threshold Elevation: 602.9 ft
2.12.6 Touchdown Zone Elevation: 606.9 ft
2.12.1 Designation: 34R
2.12.2 True Bearing: 359
2.12.3 Dimensions: 3004 ft x 75 ft
2.12.4 PCN: 4 F/B/Y /T
2.12.5 Coordinates: 47°53′47.904N / 122°17′7.0916W
2.12.6 Threshold Elevation: 577.6 ft
2.12.6 Touchdown Zone Elevation: 583.4 ft

AD 2.13 Declared Distances
2.13.1 Designation: 16L
2.13.2 Take-off Run Available: 3004 ft
2.13.3 Take-off Distance Available: 3004 ft
2.13.4 Accelerate–Stop Distance Available: 3004 ft
2.13.5 Landing Distance Available: 3004 ft
2.13.1 Designation: 34R
2.13.2 Take-off Run Available: 3004 ft
2.13.3 Take-off Distance Available: 3004 ft
2.13.4 Accelerate–Stop Distance Available: 3004 ft
2.13.5 Landing Distance Available: 3004 ft

2.13.1 Designation: 16R
2.13.2 Take-off Run Available: 9010 ft
2.13.3 Take-off Distance Available: 9010 ft
2.13.4 Accelerate–Stop Distance Available: 9010 ft
2.13.5 Landing Distance Available: 9010 ft

2.13.1 Designation: 34L
2.13.2 Take-off Run Available: 9010 ft
2.13.3 Take-off Distance Available: 9010 ft
2.13.4 Accelerate–Stop Distance Available: 9010 ft
2.13.5 Landing Distance Available: 9010 ft

**AD 2.14 Approach and Runway Lighting**

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: P4L

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALSF

**AD 2.18 Air Traffic Services Communication Facilities**

**General Remarks:**

RWY 16L/34R LTD TO HEL 8000 LBS OR LESS.

AVOID INT DEPS FM RWY 16L/34R

IT IS REQ THAT PILOTS ADHERE TO THE FLW NOISE ABATEMENT PROC UNLESS OTRW INSTRD BY ATCT, ITNRNT ARR AND LOW APCH OF SML ACFT OVER 250 HORSEPOWER AUZ ON RWYS 16L AND 34R.

NOISE SENSITIVE ARPT; FOR NOISE ABATEMENT PROC & TFC PROC CALL ARPT OPS 425–388–5125.

TSNT HEL EXP LNDG/TKOF ON TWY B.

RWY 16R/34 TGL PROHIBITED MON–FRI FM 0700–0900.

ITNRNT DEP OF SML ACFT OVER 250 HORSEPOWER ON RWY 34R.

TRNG FLTS DISCOURAGED AFT 2200.

FOR NOISE ABATEMENT FROM 0500–1500Z++ IF ACFT PERFORMANCE/WIND ALLOWS, USE RY 16R FOR ARRIVALS AND RY 34L FOR DEPARTURES.

TWY C BTN TRML RAMP AND CNTRL RAMP RSTRD TO WINGSPAN OF 68 FT OR LESS. TWY D, F, G AND L RSTRD TO WINGSPAN LESS THAN 49 FT. TWY A4, A5, K7 & B RSTRD TO WINGSPAN LESS THAN 118 FT. TAXILANE H RSTRD TO WINGSPAN LESS THAN 49 FT.

LRG ACFT FLY W PAT OVR WTR; SML ACFT FLY E PAT OVR ARPT.
AVOID LOW_LVL OVRFLT OF BOEING RAMP; NE CORNER OF ARPT DUE TO JET BLAST.

FLOCKS OF LRG & SML BIRDS INVOLVING ARPT.

BE ALERT TO CNVG TFC ON BASE TO FINAL LEGS RWY 16R/34L 2100–0700.

FOR CD WHEN ATCT IS CLSD CTC SEATTLE APCH AT 206–214–4722.

PAE HAS FAC CONSTRAINTS THAT LIMIT ITS ABILITY TO ACCOMMODATE DIVD FLTS AND MNTN THE ARPTS SAFE OPN DUR IREG OPS. ACFT OPR SHOULD CTC THE ON-DUTY ARPT OPS PSNL (425–388–5125) TO COORD DIVD FLTS EXC IN THE CASE OF A DECLARED IN-FLT EMERG.

PPR REQD FOR ACES ON BOEING RAMP. CTC BOEING FLT DISPATCH 206–544–5900 FOR APVL. PRIOR TO TAXI ONTO BOEING RAMP CTC BOEING RADIO TWR 123.475 OR CALL 425–342–5900.

TWY K1 CLSD TO ACFT UNDER 30000 LBS.

TKOF CLNC RWY 16R FULL LEN; ENT RWY VIA TWY A1 UNLESS TWY AA SPECIFIED.

USE CTN FOR 80 FT AGL LGT POLES SW EDGE OF BRAVO RAMP.

RWY 16L/34R CLSD BTN 0500–1500Z.

TWY A–2 RSTRD TO 30000 LBS.

EMERG FREQ 121.5 NOT MNT AT TWR. SEATTLE APP CON–TRACON MNT 121.5 FOR EVERETT (PAE).

AREAS NOT VSB FM ATCT INCL E EDGE OF S 1200 FT OF TWY A, TAXILANE E FM SE CORNER OF W HNGRS TO TWY A, TAXILANE H FROM NW EDGE OF W HNGRS TO TAXILANE E.

TAXILANE E RSTRD TO WINGSPAN LESS THAN 171 FT. ACFT WINGSPAN OF 171 FT OR GREATER ON TAXILANE E, TUG OPS ONLY. EAST 500 FT OF TAXILANE E RSTRD TO WINGSPAN LESS THAN 49 FT.

AIRFIELD CONDS NOT MNTD BTN 0000–0630.
Seattle, WA
Seattle–Tacoma Intl
ICAO Identifier KSEA

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47°26′59.6″N / 122°18′42.4″W
2.2.2 From City: 10 miles S of SEATTLE, WA
2.2.3 Elevation: 432.3 ft
2.2.5 Magnetic Variation: 16E (2020)
2.2.6 Airport Contact: LANCE LYTTLE
   BOX 68727
   SEATTLE, WA 98168
   ((206) 787–5229)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: A, A1
2.4.5 Hangar Space: NONE
2.4.6 Repair Facilities: NONE

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: ARFF Index I E certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 16C
2.12.2 True Bearing: 180
2.12.3 Dimensions: 9426 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 47°27′49.6628″N / 122°18′27.9008″W
2.12.6 Threshold Elevation: 432.3 ft
2.12.6 Touchdown Zone Elevation: 432.3 ft
2.12.1 Designation: 34C
2.12.2 True Bearing: 0
2.12.3 Dimensions: 9426 ft x 150 ft
2.12.4 PCN: 96 R/B/W/T
2.12.5 Coordinates: 47°25′52.2202″N / 122°18′28.9377″W
2.12.6 Threshold Elevation: 346.7 ft
2.12.6 Touchdown Zone Elevation: 371.5 ft
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′49.6628″N / 122°18′27.9008″W
2.12.6 Threshold Elevation: 432.3 ft
2.12.6 Touchdown Zone Elevation: 432.3 ft
2.12.1 Designation: 34R
2.12.2 True Bearing: 0
2.12.3 Dimensions: 11901 ft x 150 ft
2.12.4 PCN: 110 R/B/W/T
2.12.5 Coordinates: 47°27′49.6628″N / 122°18′27.9008″W
2.12.6 Threshold Elevation: 432.3 ft
2.12.6 Touchdown Zone Elevation: 432.3 ft
2.12.1 Designation: 16R
2.12.2 True Bearing: 180
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 89 R/B/W/T
2.12.5 Coordinates: 47°26′25.9217″N / 122°19′5.009″W
2.12.6 Threshold Elevation: 379.3 ft
2.12.6 Touchdown Zone Elevation: 379.3 ft
2.12.1 Designation: 34L
2.12.2 True Bearing: 0
2.12.3 Dimensions: 8500 ft x 150 ft
2.12.4 PCN: 89 R/B/W/T
2.12.5 Coordinates: 47°26′25.9217″N / 122°19′5.009″W
2.12.6 Threshold Elevation: 379.3 ft
2.12.6 Touchdown Zone Elevation: 379.3 ft

AD 2.13 Declared Distances
2.13.1 Designation: 16C
2.13.2 Take–off Run Available: 9426 ft
2.13.3 Take–off Distance Available: 9426 ft
2.13.4 Accelerate–Stop Distance Available: 9426 ft
2.13.5 Landing Distance Available: 9426 ft
2.13.1 Designation: 34C
2.13.2 Take–off Run Available: 9426 ft
2.13.3 Take–off Distance Available: 9426 ft
2.13.4 Accelerate–Stop Distance Available: 9426 ft
2.13.5 Landing Distance Available: 9426 ft
2.13.1 Designation: 16L
2.13.2 Take–off Run Available: 11901 ft
2.13.3 Take–off Distance Available: 11901 ft
2.13.4 Accelerate–Stop Distance Available: 11901 ft
2.13.5 Landing Distance Available: 11901 ft
2.13.1 Designation: 34R
2.13.2 Take-off Run Available: 11901 ft
2.13.3 Take-off Distance Available: 11901 ft
2.13.4 Accelerate–Stop Distance Available: 11901 ft
2.13.5 Landing Distance Available: 11901 ft

2.13.1 Designation: 16R
2.13.2 Take-off Run Available: 8500 ft
2.13.3 Take-off Distance Available: 8500 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

2.13.1 Designation: 34L
2.13.2 Take-off Run Available: 8500 ft
2.13.3 Take-off Distance Available: 8500 ft
2.13.4 Accelerate–Stop Distance Available: 8500 ft
2.13.5 Landing Distance Available: 8500 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 16C
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 34C
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 16L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 34R
2.14.2 Approach Lighting System: MALS

2.14.1 Designation: 16R
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 34L
2.14.2 Approach Lighting System: MALS

AD 2.18 Air Traffic Services Communication Facilities

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: SZI
2.19.5 Coordinates: 47°26′6.28″N / 122°18′39.51″W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: Glide Slope for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: SZI
2.19.5 Coordinates: 47°27′38.687″N / 122°18′45.462″W
2.19.6 Site Elevation: 417.6 ft

2.19.1 ILS Type: Localizer for runway 16C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47°26′6.703″N / 122°18′40.4438″W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: DME for runway 34C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47°26′6.28″N / 122°18′39.51″W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: Glide Slope for runway 34C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47°26′6.28″N / 122°18′39.51″W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: Localizer for runway 34C. Magnetic variation: 16E
2.19.2 ILS Identification: TUC
2.19.5 Coordinates: 47°26′6.28″N / 122°18′39.51″W
2.19.6 Site Elevation: 359 ft

2.19.1 ILS Type: DME for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47°26′3.5974″N / 122°18′22.6779″W
2.19.6 Site Elevation: 369.4 ft

2.19.1 ILS Type: Glide Slope for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47°27′38.9362″N / 122°18′33.8193″W
2.19.6 Site Elevation: 425.2 ft

2.19.1 ILS Type: Localizer for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47°27′38.9362″N / 122°18′33.8193″W
2.19.6 Site Elevation: 425.2 ft
2.19.1 ILS Type: Localizer for runway 16L. Magnetic variation: 16E
2.19.2 ILS Identification: SNQ
2.19.5 Coordinates: 47−25−42.224N / 122−18−29.0263W
2.19.6 Site Elevation: 335.5 ft

2.19.1 ILS Type: DME for runway 34R. Magnetic variation: 16E
2.19.2 ILS Identification: SEA
2.19.5 Coordinates: 47−26−3.5974N / 122−18−22.6779W
2.19.6 Site Elevation: 343.7 ft

2.19.1 ILS Type: Glide Slope for runway 34R. Magnetic variation: 16E
2.19.2 ILS Identification: SEA
2.19.5 Coordinates: 47−26−3.3996N / 122−18−23.0248W
2.19.6 Site Elevation: 355.1 ft

2.19.1 ILS Type: Localizer for runway 34R. Magnetic variation: 16E
2.19.2 ILS Identification: SEA
2.19.5 Coordinates: 47−26−3.996N / 122−18−23.0248W
2.19.6 Site Elevation: 355.1 ft

2.19.1 ILS Type: DME for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−26−15.6195N / 122−18−59.9408W
2.19.6 Site Elevation: 344.8 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−26−15.9249N / 122−18−59.9836W
2.19.6 Site Elevation: 358.5 ft

2.19.1 ILS Type: Localizer for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−26−15.9249N / 122−18−59.9836W
2.19.6 Site Elevation: 358.5 ft

2.19.1 ILS Type: Glide Slope for runway 16R. Magnetic variation: 16E
2.19.2 ILS Identification: CJL
2.19.5 Coordinates: 47−26−15.9249N / 122−18−59.9836W
2.19.6 Site Elevation: 358.5 ft

General Remarks:
(E94) WSO/WSFO.

RWY 16L/34R RSTD TO ACFT WITH WINGSPAN 260 FT OR LESS.

TAXILANE W RSTD TO ACFT WITH WINGSPAN 135 FT OR LESS N OF TWY N AND 167 FT OR LESS SOUTH OF TWY N. SEATTLE RAMP TWR PRVDS ADZY CTL ONLY.

AIR CARGO 5 RAMP DUAL ENG TAX ONLY

TWYS J & H E OF TWY T RSTD TO ACFT WITH WINGSPAN 167 FT OR LESS.

BTN THE HRS OF 2200−0700 THE USE OF EXTDD REVERSE THRUST IS DISCOURAGED BYD WHAT IS
NECESSARY FOR OPERATIONAL OR SAFETY REASONS. NOISE ABATEMENT PROCEDURES IN EFFECT BTN
2200–0600. FOR FURTHER INFO CONTACT SEA NOISE ABATEMENT OFFICE AT 206–787–7496.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF
EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

TWY H E OF RWY 16L/34R RSTD TO ACFT WITH WINGSPAN 118 FT OR LESS WHEN EXITING RWY 16L/34R.

HELICOPTERS LANDING & DEPARTING AVOID OVERFLYING FUEL FARM LCTD AT THE SE CORNER OF
THE ARPT.

DO NOT MISTAKE TWY T FOR LNDG SFC.

ACES TO AIR CARGO 4 PRKG AND CARGO AREAS RSTD TO ACFT WITH WINGSPAN 170 FT OR LESS.

(E110) CONTINUOUS POWER ARPT.

TWY B SOUTH OF AIR CARGO 7 RAMP RSTD TO ACFT WITH WINGSPAN 260 FT OR LESS.

TWY FOR CORPORATE HNGR RAMP RSTD TO ACFT WITH WINGSPAN 62 FT OR LESS FOR TAXI OPS. GA
CUST PKNG IS VERY LTD.

RY STATUS LGTS ARE IN OPN.

TWY A SOUTH OF TWY G RSTD TO ACFT WITH WINGSPAN 225 FT OR LESS.

100LL FUEL NOT AVBL.

TWY B S OF TWY Q RSTD TO ACFT WITH WINGSPAN 260 FT OR LESS.

BIRD FLOCKS WITHIN ARPT VCNTY – CHECK LCL ADZYS.

TAXILANE ON N SIDE OF N STLT RSTD TO ACFT WITH WINGSPAN 118 FT OR LESS. TRI–TAXILANES AT N
STLT: CNTR (GREEN) TAXILANE RSTD TO ACFT WITH WINGSPAN 135 FT OR LESS. WHEN AN ACFT IS ON
THE CNTR (GREEN) OR OTR (ORANGE/BLUE) TAXILANES, NO OTR ACFT CAN SIMUL USE THE ADJ
TAXILANE(S). ORANGE & BLUE TAXILANES ARE RSTD TO ACFT WITH WINGSPAN 118 FT OR LESS. TWO
ACFT CAN SIMUL USE THE OUTER TAXILANES.

GA LANDING FEES PAYABLE BY MAJOR CREDIT CARDS ONLY.

ACFT WITH WINGSPANS OF 171 FT OR MORE PARKED AT PAX GATES OR CARGO 7 MUST PROVIDE 30 MIN
PPR PRIOR TO PUSHBACK TO SEATTLE RAMP TWR WHEN VSBY LESS THAN 2400 RVR

FLIGHT NOTIFICATION SERVICE (ADCUS) AVBL.

PPR FOR ALL GA PRKG AND SVC. CTC 206–433–5481. OPR HRS 0530L – 2300L, WITH A CALL OUT AVBL UPON
REQ.
Spokane, WA
Spokane Intl
ICAO Identifier KGEG

AD 2.2 Aerodrome geographical and administrative data
2.2.1 Reference Point: 47°37′8.5N / 117°32′6.8W
2.2.2 From City: 5 miles SW of SPOKANE, WA
2.2.3 Elevation: 2385 ft
2.2.5 Magnetic Variation: 14°E (2020)
2.2.6 Airport Contact: LAWRENCE J KRAUTER
9000 W AIRPORT DR.
SPOKANE, WA 99224
((509) 455–6418)
2.2.7 Traffic: IFR/VFR

AD 2.3 Attendance Schedule
2.3.1 All Months, All Days, All Hours

AD 2.4 Handling Services and Facilities
2.4.1 Cargo Handling Facilities: YES
2.4.2 Fuel Types: 100, 100LL, A
2.4.5 Hangar Space: YES
2.4.6 Repair Facilities: MAJOR

AD 2.6 Rescue and Firefighting Services
2.6.1 Aerodrome Category for Firefighting: A RFF Index
IC certified on 5/1/1973

AD 2.12 Runway Physical Characteristics
2.12.1 Designation: 03
2.12.2 True Bearing: 45
2.12.3 Dimensions: 11002 ft x 150 ft
2.12.4 PCN: 88R/B/W/T
2.12.5 Coordinates: 47°36′36.3499N / 117°33′0.2876W
2.12.6 Threshold Elevation: 2385 ft
2.12.6 Touchdown Zone Elevation: 2385 ft

2.12.1 Designation: 26
2.12.2 True Bearing: 270
2.12.3 Dimensions: 8199 ft x 150 ft
2.12.4 PCN: 40R/B/X/T
2.12.5 Coordinates: 47°37′0.3642N / 117°31′12.1045W
2.12.6 Threshold Elevation: 2371.5 ft
2.12.6 Touchdown Zone Elevation: 2371.5 ft

AD 2.13 Declared Distances
2.13.1 Designation: 03
2.13.2 Take-off Run Available: 11002 ft
2.13.3 Take-off Distance Available: 11002 ft
2.13.4 Accelerate–Stop Distance Available: 11002 ft
2.13.5 Landing Distance Available: 11002 ft

2.13.1 Designation: 26
2.13.2 Take-off Run Available: 11002 ft
2.13.3 Take-off Distance Available: 11002 ft
2.13.4 Accelerate–Stop Distance Available: 11002 ft
2.13.5 Landing Distance Available: 11002 ft

AD 2.14 Approach and Runway Lighting
2.14.1 Designation: 03
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 26
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 08
2.14.2 Approach Lighting System:
2.14.1 Designation: 26
2.14.2 Approach Lighting System:

2.14.1 Service Designation: APCH/P DEP/P IC (205−025)
2.14.3 Channel: 123.75
2.14.5 Hours of Operation: 24

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P DEP/P IC (026−204)
2.14.3 Channel: 133.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (026−204)
2.14.3 Channel: 263
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (205−025)
2.14.3 Channel: 282.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/S DEP/S
2.14.3 Channel: 372.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 124.325
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: ATIS
2.14.3 Channel: 254.375
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 127.55
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (205−025)
2.14.3 Channel: 123.75
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (026−204)
2.14.3 Channel: 133.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (026−204)
2.14.3 Channel: 263
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (205−025)
2.14.3 Channel: 282.25
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.9
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 348.6
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 118.3
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 278.3
2.14.5 Hours of Operation: 24

AD 2.19 Radio Navigation and Landing Aids
2.19.1 ILS Type: DME for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47°36′32.05N / 117°32′15.1W
2.19.6 Site Elevation: 2380.2 ft

2.19.1 ILS Type: Glide Slope for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47°36′47.5569N / 117°32′51.8755W
2.19.6 Site Elevation: 2372 ft

2.19.1 ILS Type: Localizer for runway 03. Magnetic variation: 14E
2.19.2 ILS Identification: OLJ
2.19.5 Coordinates: 47°37'–59.6757N / 117°30'–54.7682W
2.19.6 Site Elevation: 2315.7 ft

2.19.1 ILS Type: DME for runway 21. Magnetic variation: 14E
2.19.2 ILS Identification: GEG
2.19.5 Coordinates: 47°36'–32.05N / 117°33'–15.1W
2.19.6 Site Elevation: 2380.2 ft

2.19.1 ILS Type: Glide Slope for runway 21. Magnetic variation: 14E
2.19.2 ILS Identification: GEG
2.19.5 Coordinates: 47°37'–48.959N / 117°31'–19.4519W
2.19.6 Site Elevation: 2324.3 ft

2.19.1 Navigation Aid Type: VORTAC. Magnetic variation: 21E
2.19.2 Navigation Aid Identification: GEG
2.19.5 Coordinates: 47°33'–53.805N / 117°37'–36.789W
2.19.6 Site Elevation: 2756.3 ft

General Remarks:
PORTIONS OF TWY K NOT VISIBLE FM ATCT.

TWY K UNLGTD ON RAMP SIDE ALONG MAINTENANCE RAMP AND IS UNAVBL BELOW 1200 RVR UNLESS UNDER ESCORT BY "FOLLOW ME".

BE ALERT TO TURBULENCE OVER SMOKE STACKS 1 MILE EAST OF ARPT.

WATERFOWL & BIRDS ON & INOF ARPT.
Milwaukee, Wisconsin
General Mitchell International
ICAO Identifier KMKE

ASDE-X in use. Operate transponders
with altitude reporting mode and ADS-B
(if equipped) enabled on all airport surfaces.

CAUTION: Be alert to
runway crossing clearances.
Readback of all runway
holding instructions is required.
Milwaukee, WI
General Mitchell Intl
ICAO Identifier KMKE

**AD 2.2 Aerodrome geographical and administrative data**

- **Reference Point:** 42°56′48.955N / 87°53′49.432W
- **From City:** 5 miles S of MILWAUKEE, WI
- **Elevation:** 728.4 ft
- **Magnetic Variation:** 4W (2020)
- **Airport Contact:** BRIAN DRANZIK
  5300 S HOWELL AVE
  MILWAUKEE, WI 53207
  (414) 747-5300
- **Traffic:** IFR/VFR

**AD 2.3 Attendance Schedule**

- **All Months, All Days, All Hours**

**AD 2.4 Handling Services and Facilities**

- **Cargo Handling Facilities:** YES
- **Fuel Types:** 100LL, A
- **Hangar Space:** YES
- **Repair Facilities:** MAJOR

**AD 2.6 Rescue and Firefighting Services**

- **Aerodrome Category for Firefighting:** A RFF Index
  I C certified on 5/1/1973

**AD 2.12 Runway Physical Characteristics**

- **Designation:** 19R
  **True Bearing:** 187
  **Dimensions:** 9990 ft x 200 ft
  **PCN:** 64 R/A/W/T
  **Coordinates:** 42°56′27.699N / 87°53′34.7753W
  **Threshold Elevation:** 677.7 ft
  **Touchdown Zone Elevation:** 677.7 ft

- **Designation:** 01L
  **True Bearing:** 7
  **Dimensions:** 9990 ft x 200 ft
  **PCN:** 64 R/A/W/T
  **Coordinates:** 42°56′21.766N / 87°53′32.5016W
  **Threshold Elevation:** 671.9 ft
  **Touchdown Zone Elevation:** 671.9 ft

- **Designation:** 07L
  **True Bearing:** 72
  **Dimensions:** 4797 ft x 100 ft
  **PCN:** 20 F/A/X/T
  **Coordinates:** 42°56′9.8896N / 87°54′19.1101W
  **Threshold Elevation:** 671.5 ft
  **Touchdown Zone Elevation:** 672 ft

- **Designation:** 25L
  **True Bearing:** 252
  **Dimensions:** 8300 ft x 150 ft
  **PCN:** 58 R/A/W/T
  **Coordinates:** 42°56′46.4731N / 87°54′13.893W
  **Threshold Elevation:** 683.1 ft
  **Touchdown Zone Elevation:** 674.6 ft

- **Designation:** 13
  **True Bearing:** 132
  **Dimensions:** 5537 ft x 150 ft
  **PCN:** 48 R/B/W/T
  **Coordinates:** 42°56′29.2767N / 87°54′12.2946W
  **Threshold Elevation:** 671.4 ft
  **Touchdown Zone Elevation:** 674.6 ft

- **Designation:** 07R
  **True Bearing:** 72
  **Dimensions:** 8300 ft x 150 ft
  **PCN:** 58 R/A/W/T
  **Coordinates:** 42°56′20.6652N / 87°55′3.9117W
  **Threshold Elevation:** 728.4 ft
  **Touchdown Zone Elevation:** 728.4 ft

- **Designation:** 13
  **True Bearing:** 132
  **Dimensions:** 5537 ft x 150 ft
  **PCN:** 48 R/B/W/T
  **Coordinates:** 42°56′29.2767N / 87°54′12.2946W
  **Threshold Elevation:** 671.4 ft
  **Touchdown Zone Elevation:** 674.6 ft
2.12.6 Touchdown Zone Elevation: 670.5 ft

2.12.1 Designation: 31
2.12.2 True Bearing: 312
2.12.3 Dimensions: 5537 ft x 150 ft
2.12.4 PCN: 48 R/B/W/T
2.12.5 Coordinates: 42°56′52.5074 N / 87°53′17.1839 W
2.12.6 Threshold Elevation: 668.6 ft
2.12.6 Touchdown Zone Elevation: 670.1 ft

2.12.6 Touchdown Zone Elevation: 670.5 ft

2.13.1 Designation: 19R
2.13.2 Takeoff Run Available: 9990 ft
2.13.3 Takeoff Distance Available: 9990 ft
2.13.4 Accelerate–Stop Distance Available: 9990 ft
2.13.5 Landing Distance Available: 9205 ft

2.13.1 Designation: 01L
2.13.2 Takeoff Run Available: 9990 ft
2.13.3 Takeoff Distance Available: 9990 ft
2.13.4 Accelerate–Stop Distance Available: 9380 ft
2.13.5 Landing Distance Available: 9080 ft

2.13.1 Designation: 01R
2.13.2 Takeoff Run Available: 4182 ft
2.13.3 Takeoff Distance Available: 4182 ft
2.13.4 Accelerate–Stop Distance Available: 4182 ft
2.13.5 Landing Distance Available: 4182 ft

2.13.1 Designation: 19L
2.13.2 Takeoff Run Available: 4182 ft
2.13.3 Takeoff Distance Available: 4182 ft
2.13.4 Accelerate–Stop Distance Available: 4182 ft
2.13.5 Landing Distance Available: 4182 ft

2.13.1 Designation: 07L
2.13.2 Takeoff Run Available: 4797 ft
2.13.3 Takeoff Distance Available: 4797 ft
2.13.4 Accelerate–Stop Distance Available: 4797 ft
2.13.5 Landing Distance Available: 4797 ft

2.13.1 Designation: 25R
2.13.2 Takeoff Run Available: 4797 ft
2.13.3 Takeoff Distance Available: 4797 ft
2.13.4 Accelerate–Stop Distance Available: 4797 ft
2.13.5 Landing Distance Available: 4797 ft

2.13.1 Designation: 25L
2.13.2 Takeoff Run Available: 4797 ft
2.13.3 Takeoff Distance Available: 4797 ft
2.13.4 Accelerate–Stop Distance Available: 4797 ft
2.13.5 Landing Distance Available: 4797 ft

2.13.1 Designation: 07R
2.13.2 Takeoff Run Available: 8300 ft
2.13.3 Takeoff Distance Available: 8300 ft
2.13.4 Accelerate–Stop Distance Available: 8012 ft
2.13.5 Landing Distance Available: 8012 ft

2.13.1 Designation: 31
2.13.2 Takeoff Run Available: 5537 ft
2.13.3 Takeoff Distance Available: 5537 ft
2.13.4 Accelerate–Stop Distance Available: 5537 ft
2.13.5 Landing Distance Available: 5152 ft

2.13.1 Designation: 07R
2.13.2 Takeoff Run Available: 5537 ft
2.13.3 Takeoff Distance Available: 5537 ft
2.13.4 Accelerate–Stop Distance Available: 5537 ft
2.13.5 Landing Distance Available: 5152 ft

2.14.1 Designation: 19R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 01L
2.14.2 Approach Lighting System: ALSF2

2.14.1 Designation: 01R
2.14.2 Approach Lighting System: 
2.14.4 Visual Approach Slope Indicator System: 

2.14.1 Designation: 19L
2.14.2 Approach Lighting System: 
2.14.4 Visual Approach Slope Indicator System: 

2.14.1 Designation: 07L
2.14.2 Approach Lighting System: 

2.14.1 Designation: 25R
2.14.2 Approach Lighting System: 

2.14.1 Designation: 25L
2.14.2 Approach Lighting System: 
2.14.1 Designation: 07R
2.14.2 Approach Lighting System: MALSR

2.14.1 Designation: 13
2.14.2 Approach Lighting System:

2.14.1 Designation: 31
2.14.2 Approach Lighting System:

AD 2.18 Air Traffic Services Communication Facilities
2.14.1 Service Designation: APCH/P (B SE)
2.14.3 Channel: 118
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P (B SE)
2.14.3 Channel: 317.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P DEP/P IC (A NW)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: APCH/P IC (A NW)
2.14.3 Channel: 126.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CD/P
2.14.3 Channel: 120.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (B SE)
2.14.3 Channel: 118
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (A NW)
2.14.3 Channel: 126.5
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (A NW)
2.14.3 Channel: 307
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: CLASS C (B SE)
2.14.3 Channel: 317.725
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: COMD POST (128 ARW ANG UPSET CTL)
2.14.3 Channel: 321
2.14.5 Hours of Operation:

2.14.1 Service Designation: COMD POST (28 ARW ANG UPSET CON)
2.14.3 Channel: 6761
2.14.5 Hours of Operation:

2.14.1 Service Designation: D–ATIS
2.14.3 Channel: 126.4
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (A NW)
2.14.3 Channel: 125.35
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: DEP/P (B SE)
2.14.3 Channel: 135.875
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: EMERG
2.14.3 Channel: 121.5
2.14.5 Hours of Operation:

2.14.1 Service Designation: EMERG
2.14.3 Channel: 243
2.14.5 Hours of Operation:

2.14.1 Service Designation: GND/P
2.14.3 Channel: 121.8
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: GND/P
2.14.3 Channel: 263.125
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 124.575
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: LCL/P
2.14.3 Channel: 269.05
2.14.5 Hours of Operation: 24

2.14.1 Service Designation: OPS
2.14.3 Channel: 139.5
2.14.5 Hours of Operation:
2.14.1 Service Designation: OPS
2.14.3 Channel: 311
2.14.5 Hours of Operation:

**AD 2.19 Radio Navigation and Landing Aids**

2.19.1 ILS Type: DME for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42°57′50.9407N / 87°53′27.4465W
2.19.6 Site Elevation: 725 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42°56′4.4522N / 87°53′23.6562W
2.19.6 Site Elevation: 743.1 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°55′44.6539N / 87°53′52.3948W
2.19.6 Site Elevation: 706 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′44.6539N / 87°53′52.3948W
2.19.6 Site Elevation: 691.4 ft

2.19.1 ILS Type: Glide Slope for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42°56′4.4522N / 87°53′43.0463W
2.19.6 Site Elevation: 725 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42°55′44.6539N / 87°53′52.3948W
2.19.6 Site Elevation: 706 ft

2.19.1 ILS Type: Localizer for runway 01L. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42°56′49.9549N / 87°53′30.968W
2.19.6 Site Elevation: 713 ft

2.19.1 ILS Type: DME for runway 19R. Magnetic variation: 4W
2.19.2 ILS Identification: MKE
2.19.5 Coordinates: 42°56′4.4522N / 87°53′23.6562W
2.19.6 Site Elevation: 743.1 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 4W
2.19.2 ILS Identification: GMF
2.19.5 Coordinates: 42°56′18.5074N / 87°54′47.1205W
2.19.6 Site Elevation: 709.2 ft

2.19.1 ILS Type: Glide Slope for runway 19R. Magnetic variation: 4W
2.19.2 ILS Identification: GMF
2.19.5 Coordinates: 42°56′18.5074N / 87°54′47.1205W
2.19.6 Site Elevation: 666.4 ft

2.19.1 ILS Type: Localizer for runway 07R. Magnetic variation: 4W
2.19.2 ILS Identification: GMF
2.19.5 Coordinates: 42°56′18.5074N / 87°54′47.1205W
2.19.6 Site Elevation: 669.1 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 4W
2.19.2 ILS Identification: PXY
2.19.5 Coordinates: 42°56′18.5074N / 87°55′22.7833W
2.19.6 Site Elevation: 728 ft

2.19.1 ILS Type: Localizer for runway 25L. Magnetic variation: 4W
2.19.2 ILS Identification: PXY
2.19.5 Coordinates: 42°56′18.5074N / 87°55′22.7833W
2.19.6 Site Elevation: 728 ft

**General Remarks:**

TWY B BTN TWY V AND TWY P CLSD TO AFCT WITH WINGSPAN GREATER THAN 170 FT.


RY 19R TODA 8,750 FT FROM INT TWY V.
RY 07L/25R NO ACFT 65,000 LBS OR GREATER ALLOWED TO TAXI BTN TWY D & RY 13/31 AND EAST OF RY 19R.

TWY C CLSD BTN APCH END OF RY 7L AND TWY D1 TO ACFT WITH WINGSPAN GTR THAN OR EQUAL TO 118 FT UNLESS PMSN FM ARPT MGR 414–747–5325.

ANG: END OF RUNWAY FACILITIES, AIRCRAFT SHELTERS/REVETMENTS, AND ALERT FACILITIES ARE NOT AVAILABLE. AFLD/ACFT PARKING CONCERNS INCLUDE: LIMITED STATIC GROUNDING POINTS AND NO AIRCRAFT TIE DOWN POINTS.

TWY A CLSD BTN TWY A4 AND TWY A5 TO ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 214' UNLESS PERMISSION FROM ARPT MGR 414–747–5325.

ALL AIRCRAFT PUSHBACKS FROM GATES C20, C21, C22, C23, D39 D41 D43, D45, D48, D51, D53, D54, D55, E65, E66, & E67 REQUIRE CLEARANCE FROM GROUND CONTROL. PUSHBACKS FROM ALL OTHER GATES ARE AT RAMP/PILOT DISCRETION; CONTACT GROUND CONTROL WHEN READY TO TAXI.

TWY S & TWY T BTN TWY R & RY 07R/25L AND RY 07R/25L BTN RY 1R/19L & TWY R CLSD DURG CAT II & III OPNS.

ANG: ANY MDS'S (OTHER THAN KC–135) IS LIMITED TO STANDARD TRANSIENT MARSHALLING AND PARKING. NO TECHNICAL DATA AVAILABLE FOR TRANSIENT MAINTENANCE. FUEL AND AGE EQUIPMENT SUPPORT AVAILABLE FOR SELF-SERVICE. THERE ARE NO ADDITIONAL CONFIGURATION ITEMS SUPPORTED SUCH AS LANTIRN PODS, EDM PODS, ETC.

HOLDING BAY AT RY 01L CLSD EXCP ACFT WITH WINGSPAN LESS THAN 118 FT.


PREFERRED USAGE BY ACFT BTN 2200–0600 IS TKOF RY 19R & LNDG RY 01L.

RY 07L/25R CLSD TO ALL JET ACFT.

DEICE PAD FOR RY 07R NOT AUTH FOR THRU TAXI.

TRNG FLGTS INVOLVING SUCCESSIVE USE OF ANY RY PROHIBITED 2200–0600.

ANG: NSTD MRK ON PRK APRON FOR WINGTIP CLNC; SEE AFLD MGT FOR DETAILED MAP.

ACFT WITH WINGSPAN GREATER THAN 175 FT CANNOT PASS SIMULTANEOUSLY ON TWY 'E' & TWY 'Z'.

HOLDING BAY AT RY 19R WHEN IN USE, TWY Z ADJACENT TO BAY IS LIMITED TO ACFT WITH WINGSPAN UP TO 170 FT.

RY 13/31 CLSD JET ACFT, UNLESS PMSN FROM TWR OR AMGR 414–747–5325.

TWY A CLSD FROM TWY R TO TWY E AND TWY E CLSD FROM TWY T TO TWY M AND TWY T NORTH OF RY 07R–25L CLSD TO ACFT WITH TAIL HEIGHT GREATER THAN 54.5 FT DURING CAT II AND CAT III OPS.

RY 01R–19L AVAILABLE TO AIR CARRIERS FOR TAXI ONLY.

TWY S D1, F2, H, J, F1, P AND F (EAST OF RY 19R) AND TWY K (EAST OF RY 19L) CLSD TO ACFT WTH WINGSPAN GREATER THAN 78 FT.

TWY F (WEST OF TWY Z) CLSD TO ACFT WITH WINGSPAN GREATER THAN OR EQUAL TO 118 FT UNLESS
PERMISSION FROM ARPT DIR AT 414–747–5325.

ANG: NO FLEET SVC/HOT CARGO PARKING AVAILABLE. CTC UPSET CTRL 20 MIN PRIOR TO ARR TO RCV CURRENT BIRD WATCH COND AND PARKING INFO.

ALL APCHS ARE OVER NOISE SENSITIVE AREAS; ALL TURBOJET ACFT SHOULD REFRAIN FROM CONDUCTING MULTI VFR TFC PATTERN APCHS & DEPS WO PRIOR APVL FM AM GR CALL C414–747–5325.

BIRDS ON & INV OF ARPT.

RYS 13/31 & 01R/19L & 07L/25R CLSD EXCP LGT WT SINGLE ENG ACFT 0400–1200Z DLY.

TWY V BTN TWY D AND RY 7L/25R CLSD TO ACFT WITH WINGSPAN GREATER THAN 170 FT WHEN RY 7L/25R IN USE.

ASDE–X IN USE. OPERATE TRANSPONDERS WITH ALTITUDE REPORTING MODE AND ADS–B (IF EQUIPPED) ENABLED ON ALL AIRPORT SURFACES.

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Appendix 1. ATS Routes

MINIMUM ENROUTE IFR ALTITUDES
OVER PARTICULAR ROUTES AND INTERSECTIONS

1. This is an annual consolidation of all data in Subparts C and D of Part 95 – Subchapter F, which were in effect February 25, 2021, Amendment 557 included.

2. It is not an amendment to Part 95; therefore, it will not appear in the Federal Register.

For updates to these routes and access to additional data products, please visit http://faa.gov/air_traffic/flight_info/aeronav/.

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Appendix 2. FAA Form 7233–4 – International Flight Plan

a. The FAA will accept a flight plan in international format for IFR, VFR, SFRA, and DVFR flights. File the flight plan electronically via a Flight Service Station (FSS), FAA contracted flight plan filing service, or other commercial flight plan filing service. Depending on the filing service chosen, the method of entering data may be different but the information required is generally the same.

b. The international flight plan format is mandatory for:

1. Any flight plan filed through a FSS or FAA contracted flight plan filing service; with the exception of Department of Defense flight plans and civilian stereo route flight plans, which can still be filed using the format prescribed in FAA Form 7233–1.

NOTE−
DOD Form DD−175 and FAA Form 7233−1 are considered to follow the same format.

2. Any flight that will depart U.S. domestic airspace. For DOD flight plan purposes, offshore Warning Areas may use FAA Form 7233–1 or military equivalent.

3. Any flight requesting routing that requires Performance Based Navigation.

4. Any flight requesting services that require filing of capabilities only supported in the international flight plan format.

NOTE−
Additional information to assist with filing a flight plan using the international format can be found at http://www.faa.gov/ato?k=fpl.

c. Flight Plan Contents

1. A flight plan will include information shown below:

(a) Flight Specific Information (TBL 2–1)

(b) Aircraft Specific Information (TBL 2–19)

(c) Flight Routing Information (TBL 2–20)

(d) Flight Specific Supplementary Information (Item 19)

2. The tables indicate where the information is located in the international flight plan format, the information required for U.S. domestic flights, and the location of equivalent information in the domestic flight plan format.

3. International flights, including those that temporarily leave domestic U.S. airspace and return, require all applicable information in the international flight plan. Additional information can be found in ICAO Doc. 4444 (Procedures for Air Navigation Services, Air Traffic Management), and ICAO Doc. 7030 (Regional Supplemental Procedures) as well as the Aeronautical Information Publications (AIPs), Aeronautical Information Circulars (AICs), and NOTAMs of applicable other countries.
Appendix 2−2

2 DEC 21

AIP

United States of America

TBL 2-1

Flight Specific Information

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d. Instructions for Flight−Specific Information Items

1. Aircraft Identification (Item 7) Aircraft Identification is always required. Aircraft identification must not exceed seven alphanumeric characters and be either:

   (a) The ICAO designator for the aircraft operating agency, followed by the flight identification (for example, KLM 511, NGA 213, JTR 25). When in radiotelephony the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight identification (for example, KLM 511, NIGERIA 213, JESTER 25);

   (b) The nationality or common mark and registration of the aircraft (for example, EIAKO, 4XB2C2D, N2567GA), when:

      (1) In radiotelephony, the call sign to be used by the aircraft will consist of this identification alone (for example, CGAJS) or preceded by the ICAO telephony designator for the aircraft operating agency (for example, BLIZZARD CGAJS); or

      (2) The aircraft is not equipped with radio.

NOTE−
1. Standards for nationality, common and registration marks to be used are contained in Annex 7, Chapter 2.

2. Provisions for using radiotelephony call signs are contained in Annex 10, Volume II, Chapter 5. ICAO designators and telephony designators for aircraft operating agencies are contained in Doc 8585—Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

NOTE−
Some countries’ aircraft identifications begin with a number, which cannot be processed by U.S. ATC automation. The FAA will add a leading letter temporarily to gain automation acceptance for aircraft identifications that begin with a numeral. For flight−processing systems (e.g., ERAM or STARS) which will not accept a call sign that begins with a number, if the call sign is 6 characters or less, add a Q at the beginning of the call sign. If the call sign is 7 characters, delete the first character and replace it with a Q. Put the original call sign in the remarks section of the flight plan.

EXAMPLE−
9HRA becomes Q9HRA
5744233 becomes Q744233

2. Flight Rules (Item 8a)

   (a) Flight rules are always required.

   (b) Flight rules must indicate IFR (I) or VFR (V).
(c) For composite flight plans, submit separate flight plans for the IFR and VFR portions of the flight. Specify in Item 15 the point or points where change of flight rules is planned. The IFR plan will be routed to ATC, and the VFR plan will be routed to a Flight Service for Search and Rescue services.

**NOTE—**
The pilot is responsible for opening and closing the VFR flight plan. ATC does not have knowledge of a VFR flight plan’s status.

3. Type of Flight (Item 8b)

(a) The type of flight is optional for flights remaining wholly within U.S. domestic airspace.

(b) Indicate the type of flight as follows:
- G – General Aviation
- S – Scheduled Air Service
- N – Non-Scheduled Air Transport Operation
- M – Military
- X – other than any of the defined categories above

4. Equipment and Capabilities (Item 10, Item 18 NAV/, COM/, DAT/, SUR/)

(a) Equipment and capabilities that can be filed in a flight plan include:
- Navigation capabilities in Item 10a, Item 18 PBN/, and Item 18 NAV/
- Voice communication capabilities in Item 10a and Item 18 COM/
- Data communication capabilities in Item 10a and Item 18 DAT/
- Approach capabilities in Item 10a and Item 18 NAV/
- Surveillance capabilities in Item 10b and Item 18 SUR/

(b) Codes allowed in Item 10a are shown in Table 2–2. Codes allowed in Item 10b are shown in TBL 2–3. Codes recognized in Item 18 NAV/, COM/, DAT/, and SUR/ are shown in TBL 2–4. Note that other service providers may define additional allowable (and required) codes for use in Item 18 NAV/, COM/, DAT/, or SUR/. Codes to designate PBN capability are described in TBL 2–5.

**Radio communication, navigation and approach aid equipment and capabilities**

ENTER one letter as follows:
- N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

OR
- S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (see Note 1),

AND/OR

ENTER one or more of the following letters from TBL 2–2 to indicate the serviceable COM/NAV/approach aid equipment and capabilities available.
### TBL 2-2

**Item 10a Navigation, Communication, and Approach Aid Capabilities**

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<td>F</td>
<td>A D F</td>
<td>O V O R</td>
</tr>
<tr>
<td>G</td>
<td>GNSS (See Note 2)</td>
<td>P1 CPDLC RCP 400 (See Note 7)</td>
</tr>
<tr>
<td>H</td>
<td>H F RTF</td>
<td>P2 CPDLC RCP 240 (See Note 7)</td>
</tr>
<tr>
<td>I</td>
<td>Inertial Navigation</td>
<td>P3 SATVOICE RCP 400 (See Note 7)</td>
</tr>
<tr>
<td>J1</td>
<td>CPDLC ATN V D L M o d e 2 (See Note 3)</td>
<td>P4–P9 Reserved for RCP</td>
</tr>
<tr>
<td>J2</td>
<td>CPDLC FANS 1/A HFDL</td>
<td>R PBN Approved (See Note 4)</td>
</tr>
<tr>
<td>J3</td>
<td>CPDLC FANS 1/A V D L M o d e A</td>
<td>T TACAN</td>
</tr>
<tr>
<td>J4</td>
<td>CPDLC FANS 1/A M o d e 2</td>
<td>U UHF RTF</td>
</tr>
<tr>
<td>J5</td>
<td>CPDLC FANS 1/A SATCOM (INMARSAT)</td>
<td>V VHF RTF</td>
</tr>
<tr>
<td>J6</td>
<td>Reserved</td>
<td>W RVSM Approved</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X MNPS Approved /North Atlantic (NAT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High Level Airspace (HLA) approved</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y VHF with 8.33 kHz Channel Spacing Capability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Z Other equipment carried or other capabilities (See Note 5)</td>
</tr>
</tbody>
</table>

Any alphanumeric characters not indicated above are reserved.

**NOTE**—
1. If the letter “S” is used, standard equipment is considered to be VHF RTF, VOR, and ILS, unless another combination is prescribed by the appropriate ATS authority.
2. If the letter “G” is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.

**EXAMPLE**—
NAV/SBAS
3. See RTCA/EUROCAE Interoperability Requirements Standard for ATN Baseline 1 (ATN B1 INTEROP Standard – DO -280B/ED–110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.
4. If the letter “R” is used, the performance–based navigation levels that can be met are specific in Item 18 following the indicator PBN/. Guidance material on the application of performance–based navigation to a specific route segment, route, or area is contained in the Performance–based Navigation (PBN) Manual (Doc 9613)
5. If the letter “Z” is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/, NAV/, and/or DAT, as appropriate.
6. Information on navigation capability is provided to ATC for clearance and routing purposes.


**TBL 2-3**

**Item 10b Surveillance Capabilities**

| ENTER “N” if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable, or |
| ENTER One or more of the following descriptors, to a maximum of 20 characters, to describe the serviceable surveillance equipment and/or capabilities on board. |

| ENTER no more than one transponder code (Modes A, C, or S) |

**SSR Modes A and C:**

- **A** Transponder Mode A (4 digits – 4096 codes)
- **C** Transponder Mode A (4 digits – 4096 codes) and Mode C

**SSR Mode S:**

- **E** Transponder Mode S, including aircraft identification, pressure-altitude, and extended squitter (ADS-B) capability
- **H** Transponder Mode S, including aircraft identification, pressure-altitude, and enhanced surveillance capability
- **I** Transponder Mode S, including aircraft identification, but no pressure-altitude capability
- **L** Transponder Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS-B), and enhanced surveillance capability
- **P** Transponder Mode S, including pressure-altitude, but no aircraft identification capability
- **S** Transponder Mode S, including both pressure-altitude and aircraft identification capability
- **X** Transponder Mode S, with neither aircraft identification nor pressure-altitude capability

**NOTE:**
Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via Mode S transponder.

**ADS-B:**

- **B1** ADS-B with dedicated 1090 MHz ADS-B “out” capability
- **B2** ADS-B with dedicated 1090 MHz ADS-B “out” and “in” capability
- **U1** ADS-B with “out” capability using UAT
- **U2** ADS-B with “out” and “in” capability using UAT
- **V1** ADS-B with “out” capability using VDL Mode 4
- **V2** ADS-B with “out” and “in” capability using VDL Mode 4

**NOTE:**
File no more than one code for each type of capability, e.g., file B1 or B2 and not both

**ADS-C:**

- **D1** ADS-C with FANS 1/A capabilities
- **G1** ADS-C with ATN capabilities

Alphanumeric characters not included above are reserved.

**EXAMPLE:**
ADE3RV/HB2U2V2G1

**NOTE:**
1. The RSP specification(s), if applicable, will be listed in Item 18 following the indicator SUR/, using the characters “RSP” followed by the specifications value. Currently RSP 180 and RSP 400 are in use.
2. List additional surveillance equipment or capabilities in Item 18 following the indicator SUR/.
### TBL 2-4

**Item 18 NAV/, COM/, DAT/, and SUR/ capabilities used by FAA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Purpose</th>
<th>Entry</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAV/ entries used by FAA</td>
<td>Qualify PBN for departure or arrival only</td>
<td>RNVD0E2A1</td>
<td>Indicates that flight is capable of RNAV 1 arrivals and RNAV 2 en route, but cannot fly an RNAV 1 departure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RNVD1E2A0</td>
<td>Indicates that flight is capable of RNAV 1 departures and RNAV 2 en route, but cannot fly an RNAV 1 arrival.</td>
</tr>
<tr>
<td>COM/ entries used by FAA</td>
<td>N/A</td>
<td>N/A</td>
<td>The FAA currently does not use any entries in COM/.</td>
</tr>
<tr>
<td>DAT/ entries used by FAA</td>
<td>Capability and preference for delivery of pre-departure clearance</td>
<td>Priority number followed by:</td>
<td>Entries are combined with a priority number, for example; 1FANS2PDC means a preference for departure clearance delivered via FANS 1/A; with capability to also receive the clearance via ACARS PDC.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FANS</td>
<td>FANS = FANS 1/A DCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FANSP</td>
<td>FANSP = FANS 1/A + DCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PDC</td>
<td>PDC = ACARS PDC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VOICE</td>
<td>VOICE = PDC via voice (no automated delivery)</td>
</tr>
<tr>
<td>SUR/ entries used by FAA</td>
<td>Req. Surveillance Performance</td>
<td>RSP180</td>
<td>Aircraft is authorized for Required Surveillance Performance RSP180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RSP400</td>
<td>Aircraft is authorized for Required Surveillance Performance RSP400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADS–B</td>
<td>Aircraft has 1090 MHz Extended Squitter ADS–B compliant with RTCA DO–260B (complies with FAA requirements)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>282B</td>
<td>Aircraft has 978 MHz UAT ADS–B compliant with RTCA DO–282B (complies with FAA requirements)</td>
</tr>
</tbody>
</table>

**NOTE** – Other entries in NAV/, COM/, DAT/, and SUR/ are permitted for international flights when instructed by other service providers. Direction on use of these capabilities by the FAA is detailed in the following sections.
### Item 18. PBN/ Specifications

(Include as many of the applicable descriptors, up to a maximum of 8 entries (not more than 16 characters).)

<table>
<thead>
<tr>
<th>PBN/</th>
<th>RNAV SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>RNAV 10 (RNP 10)</td>
</tr>
<tr>
<td>B1</td>
<td>RNAV 5 all permitted sensors</td>
</tr>
<tr>
<td>B2</td>
<td>RNAV 5 GNSS</td>
</tr>
<tr>
<td>B3</td>
<td>RNAV 5 DME/DME</td>
</tr>
<tr>
<td>B4</td>
<td>RNAV 5 VOR/DME</td>
</tr>
<tr>
<td>B5</td>
<td>RNAV 5 INS or IRS</td>
</tr>
<tr>
<td>B6</td>
<td>RNAV 5 LORAN C</td>
</tr>
<tr>
<td>C1</td>
<td>RNAV 2 all permitted sensors</td>
</tr>
<tr>
<td>C2</td>
<td>RNAV 2 GNSS</td>
</tr>
<tr>
<td>C3</td>
<td>RNAV 2 DME/DME</td>
</tr>
<tr>
<td>C4</td>
<td>RNAV 2 DME/DME/IRU</td>
</tr>
<tr>
<td>D1</td>
<td>RNAV 1 all permitted sensors</td>
</tr>
<tr>
<td>D2</td>
<td>RNAV 1 GNSS</td>
</tr>
<tr>
<td>D3</td>
<td>RNAV 1 DME/DME</td>
</tr>
<tr>
<td>D4</td>
<td>RNAV 1 DME/DME/IRU</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PBN/</th>
<th>RNP SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>RNP 4</td>
</tr>
<tr>
<td>O1</td>
<td>Basic RNP 1 all permitted sensors</td>
</tr>
<tr>
<td>O2</td>
<td>Basic RNP 1 GNSS</td>
</tr>
<tr>
<td>O3</td>
<td>Basic RNP 1 DME/DME</td>
</tr>
<tr>
<td>O4</td>
<td>Basic RNP 1 DME/DME/IRU</td>
</tr>
<tr>
<td>S1</td>
<td>RNP APCH</td>
</tr>
<tr>
<td>S2</td>
<td>RNP APCH with BARO–VNAV</td>
</tr>
<tr>
<td>T1</td>
<td>RNP AR APCH with RF (special authorization required)</td>
</tr>
<tr>
<td>T2</td>
<td>RNP AR APCH without RF (special authorization required)</td>
</tr>
</tbody>
</table>

**NOTE—**

1. **PBN** Codes B1–B6 indicates RNAV 5 capability. The FAA considers these B codes to be synonymous and qualifying for point–to–point routing but not for assignment to the PBN routes shown in the table.
2. Combinations of alphanumeric characters not included above are reserved.
3. The PBN/ specifications are allowed per ICAO Doc. 4444. The FAA makes use of a subset of these codes as described in the section on filing navigation capability.

(c) The following sections detail what capabilities need to be provided to obtain services from the FAA for:

- IFR flights (general).
- Assignment of Performance–Based Navigation (PBN) routes.
- Automated Departure clearance (via Datacom DCL or PDC).
- Reduced Vertical Separation Minima (if requesting FL 290 or above).
- Reduced Separation in Oceanic airspace.

(d) Capabilities such as voice communications, required communications performance, approach aids, and ADS–C, are not required in a flight plan that remains entirely within domestic airspace.
(e) Flights that leave domestic United States airspace may be required to include additional capabilities, per requirements for the FIRs being overflown. Consult the appropriate State Aeronautical Information Publications for requirements.

(f) Include the capability only if:
- The requisite equipment is installed and operational;
- The crew is trained as required; and
- Any required Operations Specification, Letter of Authorization, or other approvals are in hand.

**NOTE**
Do not include a capability solely based on the installed equipment if an operational approval is required.

5. Filing equipment and capability in an IFR Flight Plan. This section details the minimum requirements to identify capabilities in an IFR flight plan for flights in the domestic United States. Other requirements to file a capability are associated with obtaining specific services as described in subsequent sections. The basic capabilities that must be addressed include Navigation, Transponder, Voice, and ADS–B Out as described below. A designator for “Standard” capability is also allowed to cover a suite of commonly carried voice, navigation, and approach equipment with one code.

(a) **Standard Capability and No Capability (Item 10a)**
- Use “S” if VHF radio, VOR, and ILS equipment for the route to be flown are carried and serviceable. Use of the ‘S’ removes the need to list these three capabilities separately.
- Use “N” if no communications, navigation, or approach aid equipment for the route to be flown are carried or the equipment is unserviceable.
- When there is no transponder, ADS–B, or ADS–C capability then file only the letter ‘N’ in Item 10b.

(b) **Navigation Capabilities (Item 10a, Item 18 NA V/)**
- Indicate radio navigation capability by filing one or more of the codes in TBL 2–6.
- Indicate Area Navigation (RNAV) capability by filing one or more of the codes in TBL 2–7.

**TBL 2–6**
**Radio Navigation Capabilities**

<table>
<thead>
<tr>
<th>Capability</th>
<th>Item 10a</th>
<th>Item 18 NAV/</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOR</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>DME</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>TACAN</td>
<td>T</td>
<td></td>
</tr>
</tbody>
</table>

**TBL 2–7**
**Area Navigation Capabilities**

<table>
<thead>
<tr>
<th>Capability</th>
<th>Item 10a</th>
<th>Item 18 NAV/</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNSS</td>
<td>G</td>
<td>SBAS (if WAAS equipped)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GBAS (if LAAS equipped)</td>
</tr>
<tr>
<td>INS</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>DME / DME</td>
<td>DR</td>
<td></td>
</tr>
<tr>
<td>VOR / DME</td>
<td>DOR</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**
1. SBAS – Space–Based Augmentation System
   GBAS – Ground–Based Augmentation System
2. No PBN/ code needs to be filed to indicate the ability to fly point-to-point routes using GNSS or INS.
3. Filing one of these four area navigation capabilities as shown does not indicate performance based navigation sufficient for flying Q–Routes, T–Routes, or RNAV SIDs or STARs. To qualify for these routes, see the section on Performance Based Navigation Routes.
(c) Transponder Capabilities (Item 10b)

- For domestic flights, it is not necessary to indicate Mode S capability. It is acceptable to simply file one of the following codes in TBL 2–8.

<table>
<thead>
<tr>
<th>Capability</th>
<th>Item 10b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transponder with no Mode C</td>
<td>A</td>
</tr>
<tr>
<td>Transponder with Mode C</td>
<td>C</td>
</tr>
</tbody>
</table>

- International flights must file in accordance with relevant AIPs and regional supplements. Include one of the Mode S codes in TBL 2–9, if appropriate.

**NOTE**
File only one transponder code.

(d) ADS–B Capabilities (Item 10b, Item 18 SUR/ and Item 18 CODE/)

- Indicate ADS–B capability as shown in TBL 2–10. The accompanying entry in Item 18 indicates that the equipment is compliant with 14 CFR §91.227. Some ADS–B equipment used in other countries is based on an earlier standard and does not meet U.S. requirements.
- Do not file an ADS–B code for “in” capability only. There is currently no way to indicate that an aircraft has “in” capability but no “out” capability.
- For aircraft with ADS–B “out” on one frequency and “in” on another, include only the ADS–B “out” code. For example, B1 or U1, (See TBL 2–10).

<table>
<thead>
<tr>
<th>ADS–B Capabilities</th>
<th>Item 10b</th>
<th>Item 18 SUR/</th>
</tr>
</thead>
<tbody>
<tr>
<td>1090 ES Out Capability</td>
<td>B1</td>
<td>260B</td>
</tr>
<tr>
<td>1090 ES Out and In Capability</td>
<td>B2</td>
<td>260B</td>
</tr>
<tr>
<td>UAT Out Capability</td>
<td>U1</td>
<td>282B</td>
</tr>
<tr>
<td>UAT Out and In Capability</td>
<td>U2</td>
<td>282B</td>
</tr>
</tbody>
</table>
(e) Voice Communication Capabilities (Item 10a)

The FAA does not require indication of voice communication capabilities in a flight plan for domestic flights, but it is permissible. For flights outside the domestic United States, all relevant capabilities must be indicated as follows (See TBL 2-11):

**TBL 2-11**
Voice Communication Capabilities

<table>
<thead>
<tr>
<th>Capability</th>
<th>Item 10a</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHF Radio</td>
<td>V</td>
</tr>
<tr>
<td>UHF Radio</td>
<td>U</td>
</tr>
<tr>
<td>HF Radio</td>
<td>H</td>
</tr>
<tr>
<td>VHF Radio (8.33 kHz Spacing)</td>
<td>Y</td>
</tr>
<tr>
<td>ATC SATVOICE (INMARSAT)</td>
<td>M 1</td>
</tr>
<tr>
<td>ATC SATVOICE (Iridium)</td>
<td>M 2</td>
</tr>
</tbody>
</table>

(f) Approach Aid Capabilities (Item 10a).

The FAA does not require filing of approach aid capability in order to request a specific type of approach, however any of the codes indicated in TBL 2-12 in 10a are permissible.

- International flights may be required to indicate approach capability, based on instructions from relevant service providers.

**TBL 2-12**
Approach Aid Capabilities

<table>
<thead>
<tr>
<th>Capability</th>
<th>Item 10a</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILS</td>
<td>L</td>
</tr>
<tr>
<td>MLS</td>
<td>K</td>
</tr>
<tr>
<td>LPV Approach (APV with SBAS) (WAAS)</td>
<td>B</td>
</tr>
<tr>
<td>GBAS Landing System (LAAS)</td>
<td>A</td>
</tr>
</tbody>
</table>

6. Performance-Based Navigation Routes (Item 10a, Item 18 PBN/, Item 18 NAV/– When planning to fly routes that require PBN capability, file the appropriate capability as shown in TBL 2-13.
### Filing for Performance Based Navigation (PBN) Routes

<table>
<thead>
<tr>
<th>Type of Routing</th>
<th>Capability Required</th>
<th>Item 10a</th>
<th>Item 18 PBN/ See NOTE 4</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNAV SID or STAR (See NOTE 1)</td>
<td>RNAV 1</td>
<td>GR</td>
<td>D2</td>
<td>If GNSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic Q–Route (see separate requirements for Gulf of Mexico Q–Routes)</td>
<td>RNAV 2</td>
<td>GR</td>
<td>C2</td>
<td>If GNSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T–Route</td>
<td>RNAV 2</td>
<td>GR</td>
<td>C2</td>
<td>GNSS is required for T–Routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNAV (GPS) Approach</td>
<td>RNAV Approach, GPS</td>
<td>GR</td>
<td>S1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNAV (GPS) Approach</td>
<td>RNAV Approach, GPS</td>
<td>GR</td>
<td>S2</td>
<td>Domestic arrivals do not need to file PBN approach capabilities to request the approach.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNP AR Approach with RF</td>
<td>RNP (Special Authorization Required) RF Leg Capability</td>
<td>GR</td>
<td>T1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNP AR Approach without RF</td>
<td>RNP (Special Authorization Required)</td>
<td>GR</td>
<td>T2</td>
<td></td>
</tr>
</tbody>
</table>

### NOTE–

1. If the flight is requesting an RNAV SID only (no RNAV STAR) or RNAV STAR only (no RNAV SID) then the flight plan can include the following entries in Item 18 NAV/:
   - Assign RNAV SID, but no RNAV STAR: NAV/RNVD1E2A0 (optionally, the A0 may be omitted)
   - Assign RNAV STAR, but no RNAV SID: NAV/RNVD0E2A1 (optionally, the D0 may be omitted)

2. PBN code D1 includes the capabilities of D2, D3, and D4. PBN code B1 includes the capabilities of B2, B3, and B4. PBN code C1 includes the capabilities of C2, C3, and C4.

3. Operating in Reduced Vertical Separation Minima (RVSM) Airspace (Item 10a). When planning to fly in RVSM airspace (FL 290 up to and including FL 410) then file as indicated below.

   (a) PDC provides pre–departure clearances from the FAA to the operator’s designated flight operations center, which then delivers the clearance to the pilot by various means. Use of PDC does not require any special flight plan entry.

   (b) DCL provides pre–departure clearances from the FAA directly to the cockpit/FMS via Controller Pilot Data Link Communications (CPDLC). Use of DCL requires flight plan entries as follows:
      - Include CPDLC codes in Item 10a only if the flight is capable of en route/oceanic CPDLC, the codes are not required for DCL.
      - Include Z in Item 10a to indicate there is information provided in Item 18 DAT/.
      - Include the clearance delivery methods of which the flight is capable, and order of preference in Item 18 DAT/. (See AIM 5–2–2)
         - V OICE – deliver clearance via Voice
         - P DC – deliver clearance via PDC
         - F ANS – deliver clearance via FANS 1/A
         - F ANSP – deliver clearance via FANS 1/A+

4. Automated Departure Clearance Delivery (DCL or PDC). When planning to use automated pre–departure clearance delivery capability, file as indicated below.

5. RNA V (GPS) Approach RNAV Approach, GPS GR S1

6. RNA V (GPS) Approach RNAV Approach, GPS GR S2

7. RNA V (GPS) Approach RNAV Approach, GPS GR S2

8. RNA V (GPS) Approach RNAV Approach, GPS GR S2

EXAMPLE–

DAT/1FANS2PD C
DAT/1FANS2P D C

8. Operating in Reduced Vertical Separation Minima (RVSM) Airspace (Item 10a). When planning to fly in RVSM airspace (FL 290 up to and including FL 410) then file as indicated below.
(a) If capable and approved for RVSM operations, per AIM 4–6–1, Applicability and RVSM Mandate (Date/Time and Area), file a W in Item 10a. Include the aircraft registration mark in Item 18 REG/, which is used to post–operationally monitor the safety of RVSM operations.

- Do not file a “W” in Item 10a if the aircraft is capable of RVSM operations, but is not approved to operate in RVSM airspace.
- If RVSM capability is lost after the flight plan is filed, request that ATC remove the ‘W’ from Item 10a.

(b) When requesting to operate non–RVSM in RVSM airspace, using one of the exceptions identified in AIM 4–6–10, do not include a “W” in Item 10a. Include STS/NONRVSM in Item 18. STS/NONRVSM is used only as part of a request to operate non–RVSM in RVSM airspace.

9. Eligibility for Reduced Oceanic Separation. Indicate eligibility for the listed reduced separation minima as indicated in the tables below. Full Operational Requirements for these services are found in Part 3, Section 2, “International Oceanic Airspace Notices” of the NOTAM book available at http://www.faa.gov/air_traffic/publications/notices/.

### TBL 2–14
**Filing for Gulf of Mexico CTA**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lateral</td>
<td>50 NM (ADS–C not required)</td>
<td>Voice comm–HF or VHF as required to maintain contact over the entire route to be flown.</td>
<td>RNP10 or RNP4</td>
<td>ADS–C in Item 10b CPDLC in Item 10a PBN in Item 18 (also File ‘R’ in Item 10a) PBN in Item 18 NAV/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A A1 or L1 N/A</td>
</tr>
</tbody>
</table>

**NOTE**–
If not RNAV10/RNP10 capable and planning to operate in the Gulf of Mexico CTA, then put the notation NONRNP10 in Item 18 RMK/, preferably first.

### TBL 2–15
**Filing for 50 NM Lateral Separation in Anchorage Arctic FIR**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lateral</td>
<td>50 NM (ADS–C not required)</td>
<td>None beyond normal requirements for the airspace</td>
<td>RNP10 or RNP4</td>
<td>ADS–C in Item 10b CPDLC in Item 10a PBN in Item 18 (also File ‘R’ in Item 10a) PBN in Item 18 NAV/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A A1 or L1 N/A</td>
</tr>
</tbody>
</table>
### TBL 2-16

**Filing for 30 NM Lateral, 30 NM Longitudinal, and 50 NM Longitudinal Oceanic Separation in Anchorage, Oakland, and New York Oceanic CTAs**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ADS-C in Item 10b</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CPDLC in Item 10a</td>
</tr>
<tr>
<td>Longitudinal</td>
<td>50 NM</td>
<td>Position report at least every 27 minutes (at least every 32 minutes if both aircraft are approved for RNP-4 operations)</td>
<td>CPDLC</td>
<td>RNP10</td>
<td>D1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>J5, and/or J6, and/or J7</td>
</tr>
<tr>
<td>Longitudinal</td>
<td>30 NM</td>
<td>ADS-C position report at least every 10 minutes</td>
<td>CPDLC</td>
<td>RNP4</td>
<td>D1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>J5, and/or J6, and/or J7</td>
</tr>
<tr>
<td>Lateral</td>
<td>30 NM</td>
<td>ADS-C−based lateral deviation event contract with 5NM lateral deviation from planned routing set as threshold for triggering ADS report of lateral deviation event</td>
<td>CPDLC</td>
<td>RNP4</td>
<td>D1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>J5, and/or J6, and/or J7</td>
</tr>
</tbody>
</table>
### TBL 2-17

**Filing for Reduced Oceanic Separation when RSP/RCP Required on March 29, 2018**

<table>
<thead>
<tr>
<th>Dimension of Separation</th>
<th>Separation Minima</th>
<th>RSP Requirement</th>
<th>RCP Requirement</th>
<th>PBN Requirement</th>
<th>Flight Plan Entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral</td>
<td>55.5 km 30 NM</td>
<td>180</td>
<td>240</td>
<td>RNP 2 or RNP4</td>
<td>RSP180 P2 J5, and/or J6, and/or J7 L1</td>
</tr>
<tr>
<td>Performance-based Longitudinal</td>
<td>5 Minutes</td>
<td>180</td>
<td>240</td>
<td>RNAV 10 (RNP10) RNP4, or RNP2</td>
<td>RSP180 P2 J5, and/or J6, and/or J7 A1 or L1 RNP2(See Note)</td>
</tr>
<tr>
<td>Performance-based Longitudinal</td>
<td>55.5 km 30 NM</td>
<td>180</td>
<td>240</td>
<td>RNP4 or RNP2</td>
<td>RSP180 P2 J5, and/or J6, and/or J7 L1 RNP2(See Note)</td>
</tr>
<tr>
<td>Performance-based Longitudinal</td>
<td>93 km 50 NM</td>
<td>180</td>
<td>240</td>
<td>RNAV 10 (RNP10) or RNP4</td>
<td>RSP180 P2 J5, and/or J6, and/or J7 A1 or L1</td>
</tr>
</tbody>
</table>

**NOTE**—Filing of RNP 2 alone is not supported in FAA controlled airspace; PBN/L1 (for RNP 4) must be filed to obtain the indicated separation.

**10. Date of Flight (Item 18 DOF/)**

Flights planned more than 23 hours after the time the flight plan is filed, must include the date of flight in DOF/ expressed in a six–digit format YYMMDD, where YY equals the year (Y), MM equals the month, and DD equals the day.

**NOTE**—FAA ATC systems will not accept flight plans more than 23 hours prior to their proposed departure time. FAA Flight Service and commercial flight planning services generally accept flight plans earlier and forward to ATC at an appropriate time, typically 2 to 4 hours before the flight.

**EXAMPLE**—DOF/171130

**11. Reasons for Special Handling (Item 18 STS/)**

(a) Indicate the applicable Special Handling in Item 18 STS/ as shown in TBL 2–18.

**NOTE**—Priority for a flight is not automatically granted based on filing one of these codes but is based on documented procedures. In some cases, additional information may also be required in remarks; follow all such instructions as well.
### TBL 2-18

**Special Handling**

<table>
<thead>
<tr>
<th>Special Handling</th>
<th>Item 18STS/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight operating in accordance with an altitude reservation</td>
<td>ALTRV</td>
</tr>
<tr>
<td>Flight approved for exemption from ATFM measures by the appropriate ATS authority</td>
<td>ATFMX</td>
</tr>
<tr>
<td>Fire Fighting</td>
<td>FFR</td>
</tr>
<tr>
<td>Flight check for calibration of NAVAIDS</td>
<td>FLTCK</td>
</tr>
<tr>
<td>Flight carrying hazardous material(s)</td>
<td>HAZMAT</td>
</tr>
<tr>
<td>Flight with Head of State status</td>
<td>HEAD</td>
</tr>
<tr>
<td>Medical flight declared by medical authorities</td>
<td>HOSP</td>
</tr>
<tr>
<td>Flight operating on a humanitarian mission</td>
<td>HUM</td>
</tr>
<tr>
<td>Flight for which a military entity assumes responsibility for separation of military aircraft</td>
<td>MARSA</td>
</tr>
<tr>
<td>Life critical medical emergency evacuation</td>
<td>MEDEVAC</td>
</tr>
<tr>
<td>Non-RVSM capable flight intending to operate in RVSM airspace</td>
<td>NONRVSM</td>
</tr>
<tr>
<td>Flight engaged in a search and rescue mission</td>
<td>SAR</td>
</tr>
<tr>
<td>Flight engaged in military, customs, or police services</td>
<td>STATE</td>
</tr>
</tbody>
</table>

(b) Any other requests for special handling must be made in Item 18 RMK/.

(c) Include plain-language remarks when required by ATC or deemed necessary. Do not use special characters, for example; / * – = +.

**EXAMPLE**

RMK/NRP
RMK/DVRSN

12. Remarks

Include when necessary.

13. Operator (Item 18 OPR/)

When the operator is not obvious from the aircraft identification, the operator may be indicated.

**EXAMPLE**

OPR/NETJETS

14. Flight Plan Originator (Item 18 ORGN/)

(a) VFR flight plans originating outside of FAA FSS or FAA contracted flight plan filing services must enter the 8-letter AFTN address of the service where the flight plan was originally filed. Alternately, enter the name of the service where the FPL was originally filed. This information is critical to locating the FPL originator in the event additional information is needed.

(b) For IFR flight plans, the original filers AFTN address may be indicated, which is helpful in cases where a flight plan has been forwarded.

**EXAMPLE**

ORGN/Acme Flight Plans
ORGN/KDENXLDS
e. Instructions for Aircraft Specific Information.

1. Number of Aircraft (Item 9) when there is more than one aircraft in the flight; indicate the number of aircraft up to 99.

2. Type of Aircraft (Item 9)

   (a) Provide the appropriate 2–4-character aircraft type designator listed in FAA Order 7360.1, Aircraft Type Designators at: https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.info/DocumentId/1036757

   (b) When there is no designator for the aircraft type use ‘ZZZZ’, and provide a description in Item 18 TYP/.

3. Wake Turbulence Category (Item 9)

   A Wake Turbulence Category is required for all aircraft types. Provide the appropriate wake turbulence category for the aircraft type as listed in FAA Order 7360.1. The categories include:

   (a) J – SUPER, aircraft types specified as such in FAA Order JO 7360.1, Aircraft Type Designators.

   (b) H – HEAVY, to indicate an aircraft type with a maximum certificated take–off mass of 300,000 lbs. or more, with the exception of aircraft types listed in FAA Order JO 7360.1 in the SUPER (J) category.

   (c) M – MEDIUM, to indicate an aircraft type with a maximum certificated take–off mass of less than 300,000 lbs. but more than 15,500 lbs.

   (d) L – LIGHT, to indicate an aircraft type with a maximum certificated take–off mass of 15,500 lbs. or less.

4. Aircraft Registration (Item 18 REG/)

   The aircraft registration must be provided here if different from the Item 7 entry. The registration mark must not include any spaces or hyphens. Additionally, the actual aircraft registration must also be included if Item 7 would have contained a leading numeric and was modified to be prefixed with the appropriate alphabetic character for U.S. ATC acceptance.

   **EXAMPLE**—
   U.S. aircraft with registration N789AK
   REG/N789AK
   Belgian aircraft with registration OO–FAH
   REG/OOFAH

5. Mode S Address (Item 18 CODE/)

---

### TBL 2-19

**Aircraft Specific Information**

<table>
<thead>
<tr>
<th>Item</th>
<th>International Flight Plan (FAA Form 7233–4)</th>
<th>Domestic U.S. Requirements</th>
<th>Equivalent Item on Domestic Flight Plan (FAA Form 7233–1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Aircraft</td>
<td>Item 9</td>
<td>Included when more than one a/c in flight</td>
<td>Item 3</td>
</tr>
<tr>
<td>Type of Aircraft</td>
<td>Item 9</td>
<td>Required</td>
<td>Item 3</td>
</tr>
<tr>
<td>Wake Turbulence Category</td>
<td>Item 9</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aircraft Registration</td>
<td>Item 18 REG/</td>
<td>Include when planning to operate in RVSM airspace</td>
<td>N/A</td>
</tr>
<tr>
<td>Mode S Address</td>
<td>Item 18 CODE/</td>
<td>Not required within U.S. controlled airspace</td>
<td>N/A</td>
</tr>
<tr>
<td>SELCAL Codes</td>
<td>Item 18 SEL/</td>
<td>Include when SELCAL equipped</td>
<td>N/A</td>
</tr>
<tr>
<td>Performance Category</td>
<td>Item 18 PER/</td>
<td>Not required for domestic flights</td>
<td>N/A</td>
</tr>
</tbody>
</table>
There is no U.S. requirement to file the aircraft Mode S Code in Item 18.

6. SELCAL code (Item 18 SEL/)

(a) Flights with HF radio and Selective Calling capability should include their 4-letter SELCAL code. Per the U.S. AIP, GEN 3.4, Paragraph 9, Selective Calling System (SELCAL) Facilities Available.

(b) The SELCAL is a communication system that permits the selective calling of individual aircraft over radio–telephone channels from the ground station to properly equipped aircraft, to eliminate the need for the flight crew to constantly monitor the frequency in use.

EXAMPLE—SEL/CLEF

7. Performance Category (Item 18 PER/)

Include the appropriate single-letter Aircraft Approach Category as defined in the Pilot/Controller Glossary.

EXAMPLE—PER/A

<table>
<thead>
<tr>
<th>Item</th>
<th>International Flight Plan (FAA Form 7233–4)</th>
<th>Domestic U.S. Requirements</th>
<th>Equivalent Item on Domestic Flight Plan (FAA Form 7233–1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Departure Airport</td>
<td>Item 13</td>
<td>Required</td>
<td>Item 2</td>
</tr>
<tr>
<td>Departure Time</td>
<td>Item 13</td>
<td>Required</td>
<td>Item 1</td>
</tr>
<tr>
<td>Cruise Speed</td>
<td>Item 15</td>
<td>Required</td>
<td>N/A</td>
</tr>
<tr>
<td>Requested Altitude</td>
<td>Item 15</td>
<td>Required</td>
<td>Item 3</td>
</tr>
<tr>
<td>Route</td>
<td>Item 15</td>
<td>Required</td>
<td>N/A</td>
</tr>
<tr>
<td>Delay En Route</td>
<td>Item 15, Item 18 DLE/</td>
<td>Required</td>
<td>N/A</td>
</tr>
<tr>
<td>Destination Airport</td>
<td>Item 16</td>
<td>Required</td>
<td>Item 11</td>
</tr>
<tr>
<td>Total Estimated Elapsed Time</td>
<td>Item 16</td>
<td>Required</td>
<td>Item</td>
</tr>
<tr>
<td>Alternate Airport</td>
<td>Item 16, Item 18 ALTN/ (Destination Alternate), RALT/ (En route Alternate); TALT/ (Take-off Alternate)</td>
<td>If necessary</td>
<td>N/A</td>
</tr>
<tr>
<td>Estimated Elapsed Times</td>
<td>Item 18 EET/</td>
<td>Include when filing flight plan with center other than departure center</td>
<td>N/A</td>
</tr>
</tbody>
</table>

f. Instructions for Flight Routing Items

1. Departure Airport (Item 13, Item 18 DEP/)

(a) Enter the departure airport. The airport should be identified using the four-letter location identifier from FAA Order JO 7350.9, Location Identifiers, or from ICAO Document 7910. FSS and FAA contracted flight plan filing services will allow up to 11 characters in the departure field. This will permit entry of non-ICAO identifiers and other fixes such as an intersection, fix/radial/distance, and latitude/longitude coordinates. Other electronic filing services may require a different format.

NOTE—While user interfaces for flight plan filing are not specified, all flight plan filing services must adhere to the appropriate Interface Control Document upon transmission of the flight plan to the control facility.

(b) When the intended departure airport (Item 13) is outside of domestic U.S. airspace, or if using the paper version of FAA Form 7233–4, or DOD equivalent, if the chosen flight plan filing service does not allow
non–ICAO airport identifiers in Item 13 or Item 16, use the following ICAO procedure. Enter four Z’s (ZZZZ) in Item 13 and include the non–ICAO airport location identifier, fix, or waypoint location in Item 18 DEP/. A text description following the location identifier is permissible in Item 18 DEP/.

**NOTE**—Use of non–ICAO identifiers in Item 13 and Item 16 is only permissible when flight destination is within U.S. airspace. If the destination is outside of the U.S., then both Item 13 and Item 16 must contain either a valid ICAO airport identifier or ZZZZ. Use of non–ICAO departure point is not permitted in Item 13 if destination in Item 16 is outside of U.S.

**EXAMPLE**—
DEP/M 21
DEP/W29 BAY BRIDGE AIRPORT
DEP/EMI 1211017
DEP/3925N07722W

2. Departure Time (Item 13)
Indicate the expected departure time using 4 digits, 2 digits for hours and 2 digits for minutes. Time is to be entered as Coordinated Universal Time (UTC).

3. Requested Cruising Speed (Item 15)
   (a) Include the requested cruising speed as True Airspeed in knots using an N followed by four digits.
   **EXAMPLE**—
   N0450
   (b) Indicate the requested cruising speed in Mach using an M followed by three digits.
   **EXAMPLE**—
   M081

4. Requested Cruising Altitude or Flight Level (Item 15)
   (a) Indicate a Requested Flight Level using the letter F followed by 3 digits.
   **EXAMPLE**—
   F350
   (b) Indicate a Requested Altitude in hundreds of feet using the letter A followed by 3 digits.
   **EXAMPLE**—
   A080

5. Route (Item 15)
Provide the requested route of flight using a combination of published routes, latitude/longitude, and/or fixes in the following formats.
   (a) Consecutive fixes, lat/long points, NAVAIDs, and waypoints should be separated by the characters “DCT”, meaning direct.
   **EXAMPLE**—
   FLACK DCT IRW DCT IRW12503
   4020N07205W DCT MONEY
   (b) A published route should be preceded by a fix that is published on the route, indicating where the route will be joined. The published route should be followed by a fix that is published as part of the route, indicating where the route will be exited.
   **EXAMPLE**—
   DALL3 EIC V18 MEI LGC4
   (c) It is acceptable to specify intended speed and altitude changes along the route by appending an oblique stroke followed by the next speed and altitude. However, note that FAA ATC systems will neither process this information nor display it to ATC personnel. Pilots are expected to maintain the last assigned altitude and request revised altitude clearances from ATC.
EXAMPLE—
DCT APN J177 LEXOR/N0467F 380 J177 TAM/N0464F390 J177

NOTE—
Further guidance on route construction can be found at http://www.faa.gov/ato?k=fpl.

6. Delay En Route (Item 15, Item 18 DLE/)

(a) ICAO defines Item 18 DLE/ to provide information about a delay en route. International flights with a delay outside U.S. domestic airspace should indicate the place and duration of the delay in Item 18 DLE/. The delay is expressed by a fix identifier followed by the duration in hours (H) and minutes (M), HHMM.

EXAMPLE—
DLE/EM10140

(b) U.S. ATC systems will accept but not process information in DLE/. Therefore, for flights in the lower 48 states, it is preferable to include the delay as part of the route (Item 15). Delay in this format is specified by an oblique stroke (/) followed by the letter D, followed by 2 digits for hours (H) of delay, followed by a plus sign (+), followed by 2 digits for minutes (M) of delay: /DHH+MM.

EXAMPLE—
DCT EMI/D01+40 DCT MAPEL/D00+30 V143 DELRO DCT

7. Destination Airport (Item 16, Item 18 DEST/)

(a) Enter the destination airport. The airport should be identified using the four-letter location identifier from FAA Order JO 7350.9, Location Identifiers, or from ICAO Document 7910. FSS and FAA contracted flight plan filing services will allow up to 11 characters in the destination field. This will permit entry of non-ICAO identifier airports, and other fixes such as an intersection, fix/radial/distance, and latitude/longitude coordinates. Other electronic filing services may require a different format.

NOTE—
While user interfaces for flight plan filing are not specified, all flight plan filing services must adhere to the appropriate Interface Control Document upon transmission of the flight plan to the control facility.

(b) When the intended destination (Item 16) is outside of domestic U.S. airspace, or if using the paper version of FAA Form 7233—4, or if the chosen flight plan filing service does not allow non-ICAO airport identifiers in Item 13 or Item 16, use the following ICAO procedure. Enter four Z’s (ZZZZ) in Item 13 and include the non-ICAO airport location identifier, fix, or waypoint location in Item 18 DEP/. A text description following the location identifier is permissible in Item 18 DEP/.

EXAMPLE—
DEST/06A MOTON FIELD
DEST/4AK6
DEST/MONTK
DEST /3925N07722W

8. Total Estimated Elapsed Time (Item 16)
All flight plans must include the total estimated elapsed time from departure to destination in hours (H) and minutes (M), format HHMM.

9. Alternate Airport (Item 16, Item 18 ALTN/)

(a) When necessary, specify an alternate airport in Item 16 using the four-letter location identifier from FAA Order 7350.9 or ICAO Document 7910. When the airport does not have a four-letter location identifier, include ZZZZ in Item 16c and file the non-standard identifier in Item 18 ALTN/.

(b) While the FAA does not require filing of alternate airports in the flight plan provided to ATC, rules for establishing alternate airports must be followed.

(c) Adding an alternate may assist during Search and Rescue by identifying additional areas to search.

(d) Although alternate airport information filed in a flight plan will be accepted by air traffic computer systems, it will not be presented to controllers. If diversion to an alternate airport becomes necessary, pilots are expected to notify ATC and request an amended clearance.
10. Estimated Elapsed Times (EET) at boundaries or reporting points (Item 18 EET/)

EETs are required for international or oceanic flights when crossing a Flight Information Region (FIR) boundary. The EET will include the ICAO four-letter location identifier for the FIR followed by the elapsed time to the FIR boundary (e.g., KZNY0245 indicates 2 hours, 45 minutes from departure until the New York FIR boundary).

EXAMPLE--
EET/MMFR0011 MMTY0039 KZAB0105

11. Remarks (Item 18 RMK/)

Enter only those remarks pertinent to ATC or to the clarification of other flight plan information. Items of a personal nature are not accepted.

NOTE--
1. "DVRSN" should be placed in Item 11 only if the pilot/company is requesting priority handling to their original destination from ATC as a result of a diversion as defined in the Pilot/Controller Glossary.
2. Do not assume that remarks will be automatically transmitted to every controller. Specific ATC or en route requests should be made directly to the appropriate controller.

9. Flight Specific Supplemental Information (Item 19)

1. Item 19 data must be included when completing FAA Form 7233-4. This information will be retained by the facility/organization that transmits the flight plan to Air Traffic Control (ATC), for Search and Rescue purposes, but it will not be transmitted to ATC as part of the flight plan.
2. Do not include Supplemental Information as part of Item 18. The information in Item 19 is retained with the flight plan filing service for retrieval only if necessary.

NOTE--
Supplemental Information within Item 19 will be transmitted as a separate message to the destination FSS for VFR flight plans filed with a FSS or FAA contracted flight plan filing service. This will reduce the time necessary to conduct SAR actions should the flight become overdue, as this information will be readily available to the destination Flight Service Station.

3. Minimum required Item 19 entries for a domestic flight are Endurance, Persons on Board, Pilot Name and Contact Information, and Color of Aircraft. Additional entries may be required by foreign air traffic services, or at pilot discretion.

(a) After E/ Enter fuel endurance time in hours and minutes.
(b) After P/ Enter total number of persons on board using up to 30 alphanumeric characters. Enter TBN (to be notified) if the total number of persons is not known at the time of filing.

EXAMPLE--
P/005
P/TBN
P/ON FILE CAPEAIR OPERATIONS

(c) R/ (Radio) Cross out items not carried
(d) S/ (Survival Equipment) Cross out items not carried.
(e) J/ (Jackets) Cross out items not carried.
(f) D/ (Life Raft/Dinghies) Enter number carried and total capacity. Indicate if covered and color.
(g) A/ (Aircraft Color and Markings) Enter aircraft color(s).

EXAMPLE--
White Yellow Blue

4. NJ/ (Remarks. Not for ATC) select N if no remarks. Enter comments concerning survival equipment and information concerning personal GPS locating service, if utilized. Enter name and contact information for
responsible party to verify VFR arrival/closure, if desired. Ensure party will be available for contact at ETA. (for example; FBO is open at ETA)

5. C/ (Pilot) Enter name and contact information, including telephone number, of pilot-in-command. Ensure contact information will be valid at ETA in case SAR is necessary.
## FAA Form 7233-4, International Flight Plan

**Appendix 2−22**

### International Flight Plan

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority</strong></td>
<td>&lt;= FF</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Filing Time</strong></td>
<td>&lt;=</td>
</tr>
<tr>
<td><strong>Originator</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Specific Identification</strong></td>
<td>= Address and/or Originator</td>
</tr>
<tr>
<td><strong>Message Type</strong></td>
<td>&lt;= (FPL)</td>
</tr>
<tr>
<td><strong>Aircraft Identification</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Flight Rules</strong></td>
<td>&lt;=</td>
</tr>
<tr>
<td><strong>Type of Flight</strong></td>
<td>&lt;=</td>
</tr>
<tr>
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<td><strong>Route</strong></td>
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<td><strong>Destination Aerodrome</strong></td>
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<td><strong>Supplementary Information</strong></td>
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<td><strong>Survival Equipment</strong></td>
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<td><strong>Desert</strong></td>
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<td><strong>VHF</strong></td>
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<td><strong>Aircraft Color and Markings</strong></td>
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<td><strong>Accepted By</strong></td>
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<td><strong>Additional Information</strong></td>
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FAA Form 7233-4 (7/15)
# FAA Form 7233-4, International Flight Plan

**International Flight Plan**

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**3 Message Type** <= (FPL)
- <=

**7 Aircraft Identification**
- N, 7, 8, 9, A, K

**8 Flight Rules**
- 1

**Type of Flight**
- G

**5 Number**
- 1

**Type of Aircraft**
- T, B, M

**Wake Turbulence Cat.**
- L

**10 Equipment**
- SDGR

**7equipments**
- 5

**13 Departure Aerodrome**
- K, B, O, S

**13 Time**
- 1, 7, 0, 0

**15 Cruising Speed**
- 1

**15 Level**
- 2

**15 Route**
- LBSTA, LBSTA DCT ENE J573 YSJ DCT

**16 Destination Aerodrome**
- C, Y, S, J

**16 Total EET**
- 0, 1, 4, 5

**16 Altn Aerodrome**
- Z, Z, Z

**16 2nd Altn Aerodrome**
- 0

**16 Other Information**
- PBN/AIB/H1 EET/CZQM0100 ALTN/CCW3

**Supplementary Information (Not to be Transmitted in FPL Messages)**
- **Endurance**
  - **HR MIN**
    - 0, 6, 0, 0
  - **Persons on Board**
    - 0, 0, 5
- **Emergency Radio**
  - **UHF**
  - **VHF**
  - **ELT**

**Survival Equipment**
- **Polar**
- **Desert**
- **Maritime**
- **Jungle**

**Jackets**
- **Light Fluorescent**
- **UHF**
- **VHF**

**Dinghies**
- **Number Capacity Cover**
- **Color**

**Aircraft Color and Markings**
- **White Red Yellow**

**Remarks**
- **Spot Gen3**

**Pilot-in-Command**
- W. Moriarty 555-555-5555

**Filed By**

**Accepted By**

**Additional Information**

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