VOLUME 4 AIRCRAFT EQUIPMENT AND OPERATIONAL AUTHORIZATIONS

CHAPTER 1 AIR NAVIGATION, COMMUNICATIONS, AND SURVEILLANCE

Section 5 Safety Assurance System: Special Navigation Areas of Operation

Source Basis:

- Section 91.703, Operations of Civil Aircraft of U.S. Registry Outside of the United States.
- Section 91.1014, Issuing or Denying Management Specifications.
- Section 91.1015, Management Specifications.
- Section 119.7, Operations Specifications.
- Section 119.51, Amending Operations Specifications.
- Administrative.

4-96 GENERAL. Special Areas of Operation (SAO) are geographic areas having unique characteristics that require the use of special equipment, procedures, and/or techniques to safely conduct flight operations. This section provides direction and guidance for the evaluation and approval or denial of an operator/program manager/Letter of Deviation Authority (LODA) holder’s request to conduct operations in these SAOs. SAOs include the following:

- Areas requiring high levels of performance due to a reduction in separation standards;
- Areas where navigation by magnetic reference is unreliable and/or inappropriate;
- Areas where metric altitudes/flight levels (FL) are used (altitudes in meters);
- Areas where communication difficulties are frequently encountered;
- Areas where air traffic control (ATC) difficulties are frequently encountered;
- Areas where operations by U.S. operators have political or international sensitivity;
- Areas where aircraft with unique performance characteristics require special criteria; and
- Certain geographic areas where the Administrator has authorized use of a single long-range navigation system (LRNS).

NOTE: For questions regarding SAOs and for coordinating SAO requests, contact specialists in the Flight Operations Group (AFS-410) of the Flight Technologies and Procedures Division (AFS-400) (refer to https://avssp.faa.gov/avs/afs400/Contacts/SitePages/AFS-410 Section D Contacts.aspx).

NOTE: This section is related to Safety Assurance System (SAS) Elements 3.2.2 (OP) Use of Approved Areas, Routes, and Airports; 3.2.3 (OP) Special Navigation Areas of Operation; and 3.3.5 (OP) Extended Operations (ETOPS).

4-97 AREAS REQUIRING HIGH LEVELS OF PERFORMANCE. In some SAOs, the ATC system supports a reduction in separation standards based on improved navigation and communication performance. Significant increases in air traffic over certain busy routes, such as U.S. National Airspace, European Domestic Airspace, and the North Atlantic (NAT), can be accommodated more efficiently if the ATC separation minimums are reduced to permit more aircraft to operate in the same airspace at the same time. However, this reduction in separation
minimums can only be safely accomplished through significant improvements in ATC capabilities and the performance of all aircraft operating within that segment of airspace. The options currently available to permit reductions in ATC separation minimums include the use of the following:

- Air Traffic Services (ATS) surveillance (ATC radar or Automatic Dependent Surveillance-Broadcast (ADS-B));
- Automatic Dependent Surveillance-Contract (ADS-C) (e.g., compliant with Required Surveillance Performance (RSP) 180 for data link reporting of the aircraft’s present position to the ATC system);
- Improved communication (e.g., compliant with Required Communication Performance (RCP) 240); and
- Improved navigation (e.g., compliant with Required Navigation Performance (RNP) 4).

4-98 NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA).

A. General. Operators need a specific approval to fly in NAT HLA. The operator must obtain this approval for each airplane and navigation/system combination used for operations in this airspace. NAT HLA approvals are issued via operations specification (OpSpec)/management specification (MSpec)/Letter of Authorization (LOA) B039. See Volume 3, Chapter 18, Section 4 for guidance.

B. Navigational Performance. RNP 10 or better capability is required to fly in NAT HLA. Such approvals are issued via OpSpec/MSpec/LOA B036 or B054. Guidance for those authorizations is found in Volume 3, Chapter 18, Section 4.

C. Initial NAT HLA Approvals. Each operator must demonstrate (validate) that it can meet NAT HLA standards before receiving approval. See Volume 4, Chapter 1, Sections 2 and 4 for guidance on validations.

D. Maintaining NAT HLA Authorization. In addition to initially meeting NAT HLA criteria, each operator must continuously maintain the required level of navigational performance. Each gross navigation error (GNE) (errors of 10 nautical miles (NM) or more) has a significant impact on flight safety in this airspace and must be fully investigated in a timely manner, before perishable information becomes unavailable, and before flightcrew recollection of the event fades. The cause of each error must be identified, and effective action must be taken to prevent reoccurrence of similar errors. The North Atlantic Central Monitoring Agency provides the notification of the GNE to not only the operator that made the GNE, but also to specialists in AFS-400 (refer to https://avsssp.faa.gov/avs/afs400/Contacts/SitePages/AFS-410 Section D Contacts.aspx). These specialists, in turn, review the GNE and contact the responsible Flight Standards Service office. When an inspector learns of a GNE by one of his or her operators, the inspector must immediately contact the operator and advise that the GNE will be investigated. The inspector must ensure that the operator takes timely corrective action. After this notification, inspectors must determine the effectiveness of the operator’s actions as follows:
1) If it is determined that an operator’s actions will prevent the occurrence of similar errors, the operator should be permitted to continue NAT HLA operations with close surveillance of the operator’s navigational performance. If similar errors occur in subsequent operations, stronger action must be taken.

2) If an operator fails to take action to improve navigation performance, action must be initiated to suspend NAT HLA authorization (OpSpec B039 is rescinded).

3) If it is determined that an operator’s actions to improve navigational performance are inadequate or otherwise unsatisfactory, the operator must be notified that the corrective action is unacceptable. When an operator does not implement a satisfactory solution in a reasonable timeframe (normally, 30 days; see Volume 3, Chapter 18, Section 8), the action must be initiated to suspend NAT HLA authorization, and it could include enforcement action.

NOTE: It is Federal Aviation Administration (FAA) policy that a specialist from AFS-410 (refer to https://avssp.faa.gov/avs/afs400/Contacts/SitePages/AFS-410SectionDContacts.aspx) participate in the investigation of GNEs. These specialists, at their option, may also participate in the evaluation of the actions proposed by the operator to preclude the occurrence of similar errors. AFS-400 must be notified as soon as possible when an inspector and/or a specialist determine that actions should be taken to suspend NAT HLA authorization.

4-99 CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION (MNPS) AIRSPACE. Certain high-altitude airspace in northern Canada has been designated as MNPS airspace (see the Canadian Aeronautical Information Publication (AIP)).

A. General Criteria. In general, any aircraft/navigation system combination approved for unrestricted operation in NAT HLA for a particular operator also meets Canadian MNPS criteria. A particular operator can (under most circumstances) be authorized to conduct Canadian MNPS operations with those aircraft and navigation system combinations authorized for that operator in NAT HLA. However, due to the unique nature of operations in high latitudes and in areas of magnetic unreliability (AMU), approval for Canadian MNPS operation is not automatic. Each proposed operation must be evaluated on its own merits. OpSpec B059 is available for issuance to Title 14 of the Code of Federal Regulations (14 CFR) part 135 certificate holders only. OpSpec B039 authorization may be conducted and approved concurrently. See Volume 3, Chapter 18, Section 4 for guidance.

B. Canadian MNPS Approvals. For 14 CFR parts 91 subpart K (part 91K), 121, and 125 certificate holders, Canadian MNPS airspace approvals are granted by adding that area of en route operations to OpSpec B050. For part 135 certificate holders, the Canadian MNPS airspace approvals are granted by issuance of OpSpec B059 and by adding that area of en route operations to OpSpec B050. For part 135, OpSpec B039 may or may not be issued, as applicable.
4-100 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Aeronautical Information Service (AIS) of NAT ATS Provider States.
- International Civil Aviation Organization (ICAO) Doc 7030, Regional Supplementary Procedures.

B. Forms. None.

C. Job Aids. None.

4-101 CENTRAL EAST PACIFIC (CEP) ROUTE SYSTEM. The CEP system is the organized route system between Hawaii and the west coast of the United States. Several ATS routes and associated transition waypoints are within the CEP. RNP 10 is required for aircraft operating on the CEP routes. Nonapproved aircraft can expect to fly above or below the exclusionary airspace. Refer to AC 91-70, Oceanic and Remote Continental Airspace Operations, and the AIP, as well as the Pacific Supplement, for further information.

4-102 RNP IN CEP AND NORTH PACIFIC (NOPAC) AIRSPACE: OPSPECS B037 AND B038.

A. Guidance. This paragraph provides guidance for OpSpecs B037 and B038 to reflect the implementation of RNP 10 approval requirements on the CEP and NOPAC route systems. This information is applicable to all part 91 operators and parts 121, 125, and 135 certificate holders that have been, or that wish to be, authorized to operate on these route systems. See Volume 3, Chapter 18, Section 4 for guidance.

B. Policy.

1) All certificated operators conducting operations on the CEP and/or NOPAC route systems must be issued OpSpecs B037 and B038.

2) Part 91 operators conducting flights on the NOPAC and CEP route systems at FLs where RNP 10 approval is required must be issued Letter of Authorization (LOA) B036 approving such operations. Part 91 operators currently holding LOA B036 authorizing RNP 10 operations are not required to be issued a separate LOA for individual areas of operation or route systems where RNP 10 is implemented.

4-103 AMUs. Two large areas of en route operation have unique features which significantly complicate air navigation. These two areas are centered around Earth’s magnetic poles.

A. Concept. Conventional magnetic compasses sense magnetic direction by detecting the horizontal component of Earth’s magnetic field. Since this horizontal component vanishes near the magnetic poles, magnetic compasses are highly unreliable and unusable in an area
approximately 1,000 NM from each magnetic pole. Within these areas, air navigation tasks are further complicated by very rapid changes in magnetic variation over small distances. For example, when flying between the magnetic North Pole and the true North Pole, a heading of true north results in a magnetic heading of south (a magnetic variation of 180 degrees).

**B. Convergence of the Meridians.** Since these two major AMUs also occur near Earth’s geographic poles, the convergence of the meridians also presents additional directional complications. When flying great circle courses at latitudes greater than 67 degrees, convergence of the meridians can create rapid changes in true headings and true courses with small changes in aircraft position. As a result, relatively small errors in determining the aircraft’s actual position can produce very large errors in determining the proper heading to fly and to maintain the assigned flightpath. When even small errors occur, very large navigation errors can develop over extremely short distances. An extreme example of this phenomenon occurs at Earth’s geographic North Pole. Flight in any direction from the exact pole is initially due south (that is, the direction to Russia or the United States is south).

**C. Special Equipment, Techniques, and/or Procedures.** Special navigation equipment, techniques, and/or procedures are critical to operate safely in polar areas, including the two AMUs. Operations based solely on magnetic references within AMUs are unsafe, unacceptable, and must not be approved. Operations within these areas can only be conducted safely if the primary heading reference is derived from sources other than magnetic.

**D. Approvals.** All approvals for operations into AMUs are granted by issuing OpSpec B040, and by adding that area of en route operation to the standard OpSpec B050. A checklist for operations in AMUs is available in the guidance subsystem in association with OpSpec B040.

### 4-104 NORTH POLAR OPERATIONS

The North Polar Area of Operations is defined as the area that lies north of latitude 78°00’00” N (refer to OpSpec A002). The North Polar routes across Russia are shown in the Russian AIP or in commercial charting publications for Eastern Europe and Eurasia. OpSpec B055 authorizes North Polar operations. See Volume 3, Chapter 18, Section 4, OpSpec B055 for more information on this authorization.

### 4-105 AREAS WITH SIGNIFICANT COMMUNICATIONS AND/OR ATC DIFFICULTIES

The levels of sophistication in communication, navigation, and ATC capabilities in certain areas of operation outside North America and Europe vary widely. The following subparagraphs provide evaluation criteria that must be considered when approving operations in these areas.

**A. Navigational Aids (NAVAID).** The ground-based facilities that are implemented to support air navigation in some of these areas are based on antiquated technology and frequently experience reliability problems. The National Airspace System (NAS) and the navigational performance requirements in many countries are based almost exclusively on non-directional radio beacons (NDB). Also, many of the NAVAIDs do not operate continuously. For example, NAVAIDs are shut down from dusk to dawn in certain countries.
B. Communication. The primary means of voice en route communication with ATC in most oceanic and remote areas of operation is almost exclusively high frequency (HF) radio. Atmospheric noise created by extensive thunderstorm activity in tropical areas and aurora activity in polar areas significantly increases the difficulty of using HF as a prime means of communication with ATC.

C. ATC. The level of ATS varies from radar-based services (equivalent to domestic U.S. operations) to a total absence of any ATC. Flight information regions (FIR) have been established in most areas of the world. Specific ICAO Member States have been assigned the responsibility of providing ATS in these FIRs. There are wide variations in the ATC services available. En route ATC radar is not available in all countries and ATS may rely heavily on position reports and airborne navigation performance capabilities for the separation of aircraft. Various levels of ATS provided in these areas are as follows:

NOTE: It is critical that flightcrews understand that subtle terminology differences and language barriers may exist in foreign countries where they operate. For example, crews must ensure they understand whether the altimeter setting issued by ATC is in hectopascals (millibars) or inches of mercury.

1) Within controlled airspace, ATC provides ATC service to prevent collisions between aircraft and to expedite and maintain an orderly flow of air traffic. This also includes air traffic advisory services and those alerting services related to weather and Search and Rescue (SAR).

2) Within advisory airspace, air traffic advisory service is available to provide separation, to the extent possible, between aircraft operating on instrument flight rules (IFR) flight plans. It is important to understand that this is an advisory service (similar to a Flight Service Station (FSS)), not a control service (prevention of collision). In advisory airspace, flightcrews are provided information concerning the location of other aircraft. Prevention of collision is the responsibility of the pilot in command (PIC). Terrain clearance is also the responsibility of the PIC. The ATSS available also include those alerting services related to SAR. In certain areas, special reporting procedures called “broadcasts in the blind” have been established to assist pilots in avoiding other aircraft. At designated intervals, each pilot broadcasts the aircraft’s position, route, and FL over a specified very high frequency (VHF). Awareness of the proximity of other aircraft is obtained by maintaining a continuous listening watch on the specified frequency. This procedure is an expected practice in large portions of Northwestern Africa (including the Dakar FIR) and South America (including most Brazilian airspace). In many of these areas, the broadcast-in-the-blind procedure is used to augment the separation of IFR aircraft.

3) FIRs have not been established for a few areas in the world. These are commonly called uncontrolled information regions, or “no man’s land.” The largest of these areas is in the South Atlantic Ocean, annotated as “No FIR.” Flight Information Services (FIS) also do not exist in the high-altitude structure in other large areas (above the top of controlled airspace). Within no man’s land, aircraft separation (prevention of collision) is entirely the responsibility of the PIC. Advice and information for the safe and efficient conduct of flights is not provided by an ATS unit. An ATS unit does not provide alerting services related to SAR.
D. Metric FLs. Airspace systems in some countries are based on the use of metric flight altitudes/FLs. Operations within these areas require special procedures for conversion charts between metric FLs and FLs based on feet. For example, an FL of 10,000 meters represents FL 328, or a flight altitude of 1,000 meters represents an altitude of 3,280 feet.

4-106 EVALUATION CRITERIA FOR AREAS WITH COMMUNICATIONS AND ATC DIFFICULTIES. Principal Operations Inspectors (POI) must evaluate, on a case-by-case basis, all proposals to conduct operations in the sovereign airspace of countries that are not equivalent or similar to the U.S. NAS.

A. General Criteria. The operator must show (considering factors unique to the proposed area of operation) that safe operations can be conducted within the area of operation, and that the facilities and services necessary to conduct the operation are available and serviceable during the period when their use is required. The operator must also show that the proposed operation is in full compliance with the requirements in Part B OpSpecs that are applicable to that operation.

B. Operations in Advisory Airspace. The operator must show that its training programs and operating procedures permit safe operations in advisory airspace and ensure compliance with the expected operating practices. The operator must also show that the operation is in compliance with OpSpec A014.

C. Operations in Uncontrolled Information Regions (No Man’s Land). Since ATC, air traffic advisory, flight information, and alerting services are not available from ATS units when operating within these areas, the operator must show that acceptable, alternative means are available to ensure the following:

1) The appropriate organization can be given a timely notification when SAR aid is needed (at least as prompt as notifications provided by FAA procedures and facilities).

2) Changes in significant weather information can be provided to the flightcrew rapidly.

3) Changes in the serviceability of the required NAVAIDs are available to the flightcrew and the operator’s operational control system.

4) Reliable information concerning other IFR aircraft operating within this area is available in flight (e.g., Traffic Alert and Collision Avoidance System (TCAS), ADS-B). This includes broadcast-in-the-blind procedures and other expected practices.

5) The required navigation facilities necessary to safely conduct the operation are available and serviceable.

D. Role of Specialists in AFS-410. The uniqueness of operations in advisory airspace and in no man’s land usually requires assistance from persons with special navigational knowledge, skills, and expertise. Inspectors are expected to request the assistance of these specialists (refer to https://avssp.faa.gov/avs/afs400/Contacts/SitePages/AFS-410 Section D Contacts.aspx) when evaluating proposals to conduct operations outside controlled airspace.
4-107 OPERATIONS IN RESTRICTED INTERNATIONAL AREAS. Operations by U.S. operators within the sovereign airspace of certain countries have restrictions levied by various agencies of the U.S. Government. The following are examples:

- Commercial trade restrictions,
- No-fly zones,
- Special Federal Aviation Regulation (SFAR) flight prohibitions,
- Restriction of certain transactions related to aircraft services,
- Suspension of cargo air operations, and
- Suspension of passenger-carrying operations to the United States because the airport authorities do not maintain and carry out effective security measures.

NOTE: These restrictions frequently specify certain airports, selected routes, and special procedures that must be used.

A. Information on Restricted Areas. The current list of restrictions and information about the processes and agencies to contact with regard to those restrictions is located on the FAA’s Prohibitions, Restrictions and Notices (PRN) website at https://www.faa.gov/air_traffic/publications/us_restrictions/.

B. FAA Review of Restrictions. The operator should review the current list of restrictions with the POI to confirm which restrictions apply in order for the operator to obtain the applicable license and/or exemption for flight operations in that restricted area.

C. Operator Actions Required. It is important that the operator is advised to take simultaneous actions with all the agencies necessary for the licenses and/or exemptions for the restricted country or countries in which, or over which, they are requesting to operate. The POI should inform the operator that the FAA does not have control over the process by which other agencies grant licenses. Further, the POI should recommend that operators make the requests as far in advance as possible of the intended date of flight. Under no circumstances should the operator conduct an overflight of a restricted airspace unless the issuing authority has given approval.

1) The operator is responsible for obtaining the appropriate licenses and/or exemptions from the U.S. Government agency or agencies (e.g., Department of State or Department of Commerce) that impose the restrictions for that country or area.

2) Except for cases where an SFAR or a Notice to Airmen (NOTAM) prohibits flight operations, the POI may issue an amendment to OpSpec B050 authorizing operations to or over countries or areas on the PRN list. The operator must apply for amendment of OpSpecs, and show that it meets the “safety in air commerce” and the “public interest” requirements of 14 CFR part 119, § 119.51(a)(2). As appropriate, the POI would then issue OpSpec B450 to authorize operations in countries on the PRN list.

3) If there is an SFAR or NOTAM that imposes a flight prohibition, and/or other Federal agencies have imposed restrictions for flights into or over a restricted country or area, before flight operations can be authorized, the operator must provide its POI with all applicable
written Federal agency authorizations and an FAA grant of exemption or a letter of approval to operate in or over the restricted international area.

a) Grant of Exemption. The Executive Director, Flight Standards Service (AFX-1) has the authority to grant exemptions to allow an operator to operate within an area otherwise prohibited by an SFAR or NOTAM. If such an exemption to an SFAR is granted, the exemption number must be listed in OpSpec A005 and both the effective and expiration dates must be noted in the exemption remarks. The method for an operator to petition for such an exemption is described in 14 CFR part 11.

b) Letter of Approval. If another U.S. Federal Government entity seeks to contract for an operator’s flight services within an area that is restricted by an SFAR or NOTAM, the Associate Administrator for Aviation Safety (AVS-1) must first issue a letter of approval to that government entity to do so. The process for requesting a letter of approval is described in each SFAR’s preamble.

D. Approval of Operations in Restricted Areas. If an operator requests authorization to conduct operations into or over restricted international areas for which an FAA flight prohibition is not in effect and shows that it meets the requirements of § 119.51(a), the POI should authorize the operation by adding the area of en route operation to OpSpec B050 and, as applicable, amending OpSpec B450 as well. Even though the information is not required by 14 CFR to be recorded, but an authorization to operate into or over a restricted international area is required, the POI may request the date of issuance and its expiration date for insertion in the numbered notes section of OpSpec B050.

4-108 RNP IN CLASS II AIRSPACE. The implementation of RNP is integral to the achievement of Next Generation Air Transportation System (NextGen) Integration and Implementation, and part of a worldwide ICAO effort for the implementation of performance-based communication, navigation, surveillance, and air traffic management (CNS/ATM) concepts.

A. General. Aircraft/operators that operate on routes where RNP navigation specifications (NavSpecs) are applied must be approved by the State of the Operator or State of Registry, as appropriate, as capable of navigating to prescribed RNP standards (e.g., RNP 10 for the entire route on which RNP 10 is required). Different airplane separation standards require different RNP NavSpecs (e.g., 50-NM lateral separation requires RNP 10, while 30-NM lateral separation requires RNP 4, as well as enhanced communication and surveillance capabilities). The implementation of more stringent RNP and other communication, navigation, and surveillance (CNS) capabilities is part of an ICAO-coordinated effort to introduce separation standards that enable more efficient air traffic management (ATM) while maintaining Acceptable Levels of Safety (ALoS). Benefits to users are increased availability of fuel- and time-efficient altitudes, routes and enhanced airspace capacity, and controller flexibility.

B. Applicability of Guidance to Multiple LRNSs and Single LRNS Equipage. The guidance provided below applies both to airplanes equipped with two or more LRNSs and to aircraft equipped with just a single LRNS. Operators and airplanes must be evaluated in accordance with AC 90-105.
C. Single LRNS Eligibility for RNP 10 in a Limited Number of Designated Areas. OpSpec/MSpec/LOA B054/MB054 may be issued to authorize an operator to conduct Class II navigation using single LRNS with an RNP 10 authorization in a limited number of designated areas of operation. The Gulf of Mexico is one of the areas where this authority is permitted. A 50-NM lateral separation between airplanes authorized RNP 10 or RNP 4 is in place in the Gulf of Mexico oceanic control areas (OCA).

D. Operational Approval in Oceanic Airspace Where RNP 10, 4, or 2 is Required. Operators are approved for RNP 10, 4 or 2 by the issuance of standard OpSpec/MSpec/LOA paragraphs:

- OpSpec/MSpec A002.
- OpSpec/MSpec/LOA B036, if applicable.
- OpSpec/MSpec B054/MB054, if applicable.
- For operators requiring short-term operations, LOA D098.

NOTE: See Volume 3, Chapter 18, Sections 3, 4, and 6 for guidance on these authorizations.

4-109 USE OF A SINGLE LRNS IN CERTAIN GEOGRAPHIC AREAS. Part 121, § 121.351, part 125, § 125.203, and part 135, § 135.165 allow use of a single LRNS, authorized by the Administrator and approved in operations specifications, for “operations and routes in certain geographic areas.” The vehicle for this authorization is OpSpec B054 (LOA B054 is also available, but only to authorize RNP 10 for part 91 operators). It should also be noted in OpSpec B050 in association with the applicable areas of operation. See Volume 3, Chapter 18, Section 4 for guidance.

RESERVED. Paragraphs 4-110 through 4-125.