The North Atlantic NAT

NAT Resource Guide

for United States Operators

1st Quarter 2016
Updated Quarterly
Operates best downloaded or with Google Chrome

This resource document consolidates U.S. and International guidance for U.S. operators. Please direct questions regarding NAT operations to your Regional NextGen (AXX-220) Special Areas of Operation (SAO) Specialist. Contact us via email with your questions and comments pertaining to this PDF document.

Flight Service Program Changes

- EMPHASIS ITEMS
- AIRSPACE
- REFERENCES
- CNS
- ACRONYMS
- CONTACT US

Contacts
Send Comments
Acronyms

CNS Presentation

Click to View Items

- Emphasis Items
- Oceanic Errors
- SLOP
- Contingency References
- Volcanic Ash and Solar Storms
- Weather Deviation
- Flight Planning
- Current and Planned Implementations

Emphasis Items

Emphasis Items

- Guidance for U.S. Operators: Special Emphasis Items for Operation in North Atlantic Reduced Lateral Separation Minimum (RLatSM) Trail
- Trial Implementation of Reduced Lateral Separation minimum in the ICAO North Atlantic Region
- Operational Policy/Procedures for 30 Nautical Mile (NM) Lateral, 30 NM Longitudinal and 50 NM Longitudinal Separation in the Anchorage, Oakland and New York Oceanic Control Areas (CTAs)
  (Select current edition of Notices to Airmen and then go to Part 3, Section 2, International Oceanic Airspace Notices)
- North Atlantic Regional Data Link Mandate, Phase 2
- LINK 2000 Update
- Failure to comply with ATC clearances in Oceanic Airspace
  (Select current edition of Notices to Airmen and then go to Part 3, Section 2, International Oceanic Airspace Notices)
- International NOTAMS
  (Select current edition of Notices to Airmen and then go to Part 3, Section 2, International Oceanic Airspace Notices)
- ICAO Annex 2 Amendment 43
  "Change in Time Estimate" (now "in excess of 2 minutes")
- SAFO 13004
  Errors Associated with Oceanic Clearances
- NAT Doc 007 North Atlantic Operations and Airspace Manual:
  Chapter 5: Oceanic ATC Clearances
  Chapter 8: MNPS Flight Operation and Navigation Procedures
  Chapter 14: Checklist for Pilots Operating in NAT MNPS Airspace
  Chapter 15: Guarding Against Complacency

Gross Navigation Errors (GNE), Large Height Deviations (LHD) and Erosion of Longitudinal Spacing

1. NAT OPS Bulletin 2014-002

Oceanic Errors Safety Bulletin (OESB) - Issued 04 February 2014

2. NAT OPS Bulletin 2014-001

Sample Oceanic Checklists - Issued 04 February 2014

3. NAT Systems Planning Group

Oceanic Errors

Gross Navigation Errors (GNE)

Large Height Deviations (LHD)

Erosion of Longitudinal Spacing

- NAT OPS Bulletin 2014-001,
  Sample Oceanic Checklists, Issued 04 February 2014
- NAT OPS Bulletin 2014-002,
  Oceanic Errors Safety Bulletin (OESB) - Issued 04 February 2014
- NAT Systems Planning Group
- NAT GNE article by IFALPA
- FAA Order 7110.82, Reporting Oceanic Errors
- Report of RVSM Large Height Deviation Form (LHD) (Word Document)
- Summary of Discussions and Conclusions of the Forty-Eighth Meeting of the North Atlantic Systems Planning Group, Paris, 12 to 15 June 2012,

The North Atlantic Systems Planning Group (NAT SPG), in its June 2012 conclusion 48/21, reclassified a GNE as a "lateral deviation from a cleared track by 10 Nautical Miles (NM) or more."
The FAA is examining this ICAO NAT Region definition for possible adoption.

Strategic Lateral Offset Procedure (SLOP)

Note:
ICAO Document 4444 has been amended to allow additional SLOP offsets at 0.1 NM increments, as outlined in the excerpt below. However, at this time, 0.1 NM increments have not been adopted in any oceanic airspace. Only three options (Centerline, 1 NM right and 2 NM right) remain available; any expansion of SLOP to allow 0.1NM increments will be published in the applicable State AIP and/or the Regional Supplementary Procedures, ICAO Document 7030.

- United States Aeronautical Information Publication (AIP), See ENR 7.1, Strategic Lateral Offset Procedure (SLOP) While within Oceanic Airspace
- ICAO Document 4444, Air Traffic Management
- Amendment 6 to PANS-ATM, Doc 4444, (13 November 2014)

  Excerpt:

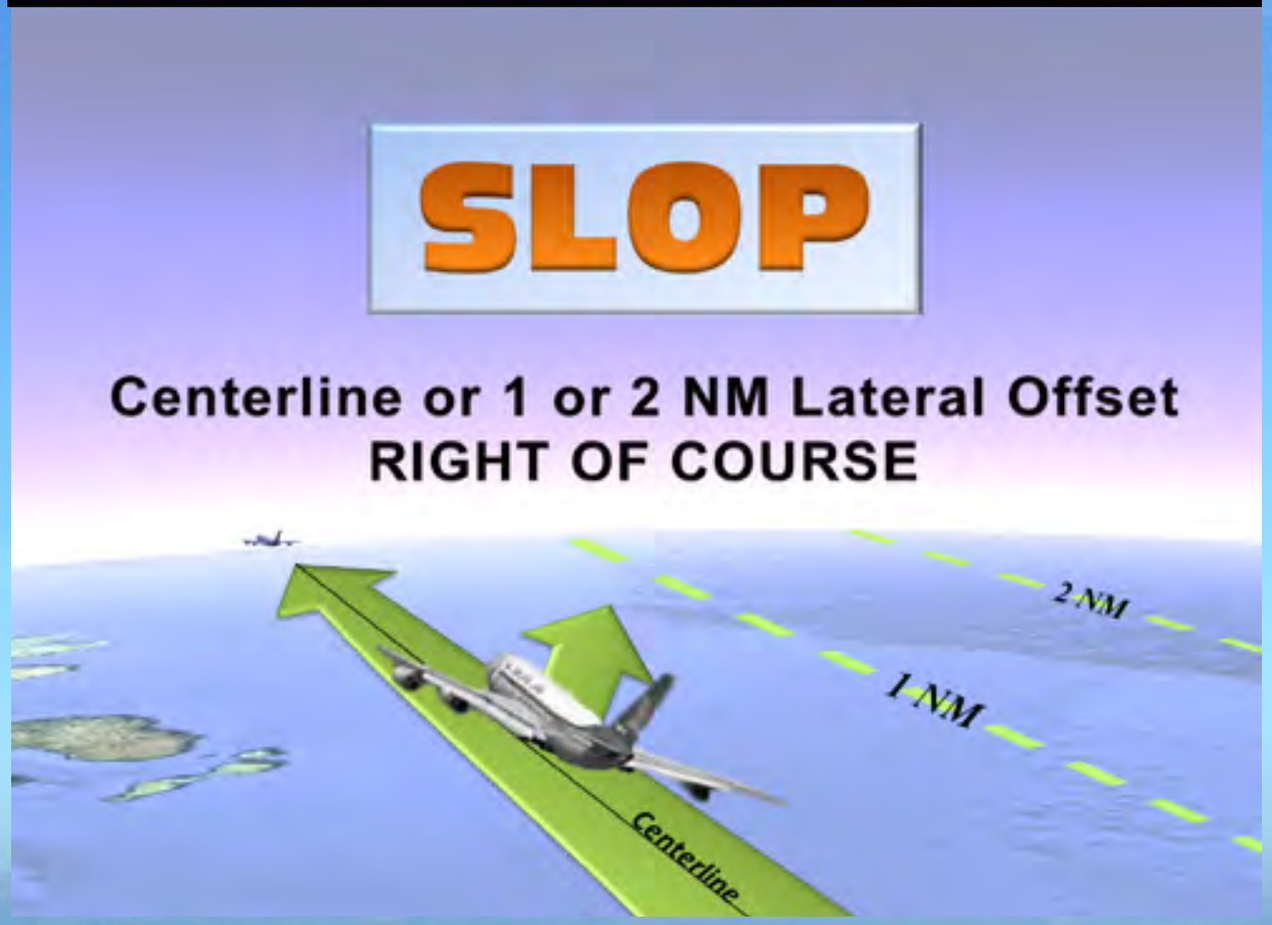
  Strategic lateral offsets shall be authorized only in en-route airspace as follows:

  a) where the lateral separation minima or spacing between route centre lines is 55.5 km (30 NM) or more, offsets to the right of the centre line relative to the direction of flight in tenths of a nautical mile up to a maximum of 3.7 km (2 NM); and

  b) where the lateral separation minima or spacing between route centre lines is 11.1 km (6 NM) or more and less than 55.5 km (30 NM), offsets to the right of the centre line relative to the direction of flight in tenths of a nautical mile up to a maximum of 0.9 km (0.5 NM).
- NAT Doc 007, North Atlantic Operations and Airspace Manual
- Advisory Circular (AC) 91-70 (current edition)

  Oceanic and International Operations, Chapter 3, paragraph 3-9.
- .Shanwick Oceanic - Strategic Lateral Offset Procedure (Video)

SLOP (Strategic Lateral Offset Procedure)

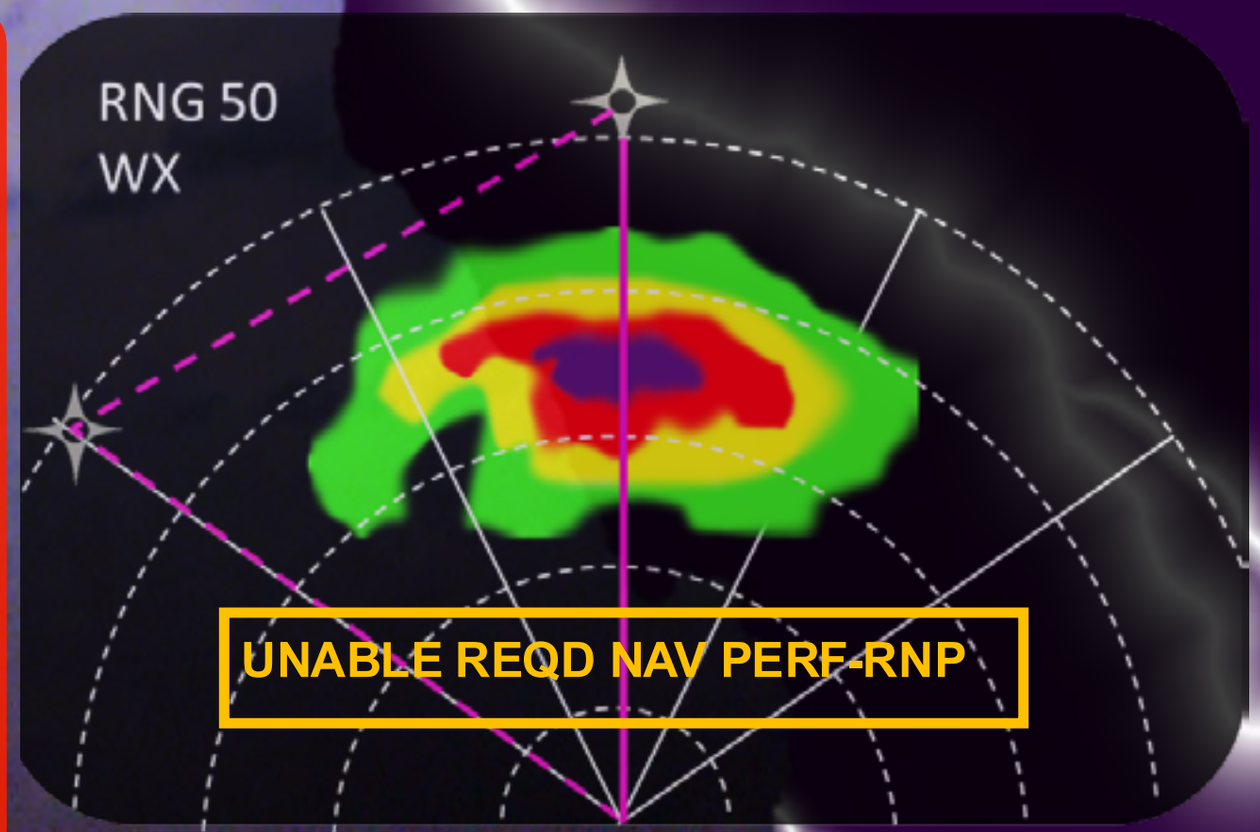


Contingency References

- United States Aeronautical Information Publication (AIP), See ENR 7.3, Special Procedures for In-Flight Contingencies in Oceanic Airspace

- NAT DOC 007 North Atlantic Operations and Airspace Manual
  - *Chapter 6: Communication and Position Reporting Procedures*
  - *Chapter 12: Procedures in the Event of Navigation System Degradation or Failure*
  - *Chapter 13: Special Procedures for In-flight Contingencies*
  - *Chapter 15: Guarding Against Complacency*
  - *Chapter 16: The Prevention of Deviations from Track as a Result of Waypoint Insertion Errors*

- ICAO DOC 4444 PANS-ATM (Link to Purchase)
  - *Chapter 15: Procedures Related To Emergencies, Communication Failure And Contingencies*
- ICAO Annex 2 (Link to Purchase)
  - *Chapter 3: General Rules*

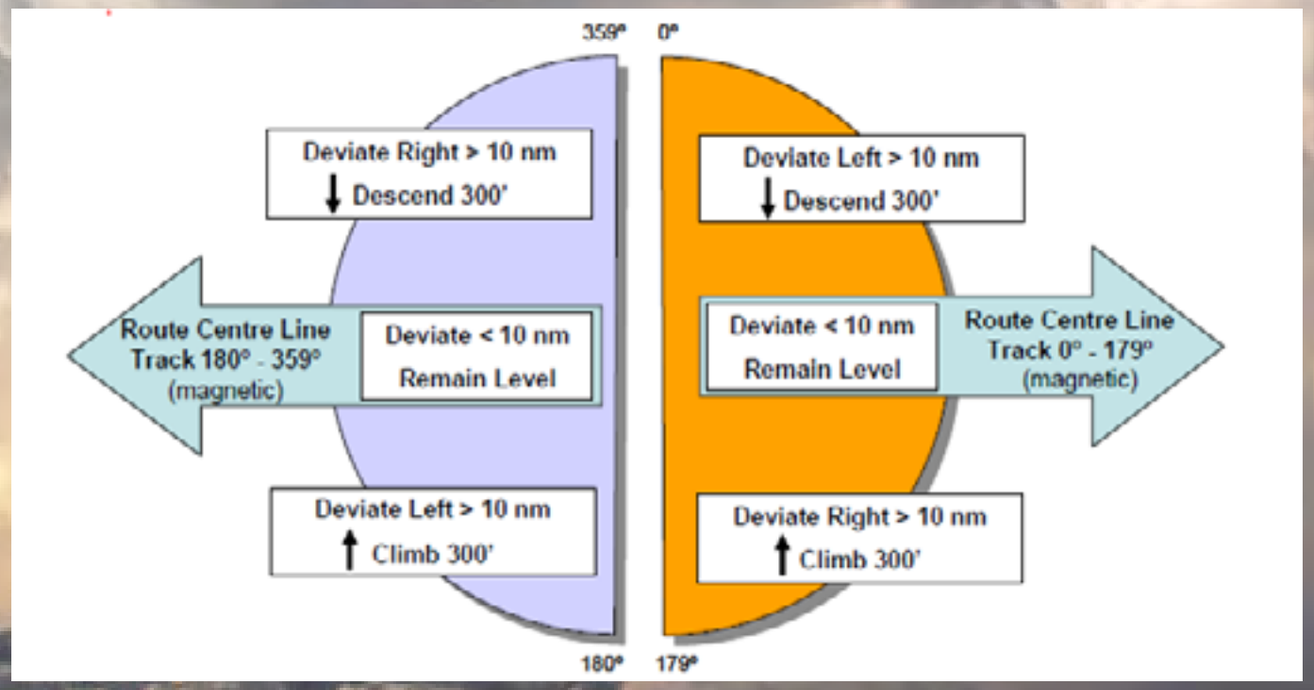


Volcanic Ash and Solar Storms

- Meteorological Office UK
- World VAAC Map
- Skybrary
- Solar Wind Prediction
- Ash Cloud Forecast
- UK CAA guidance for VA
- ICAO: Doc 9974 ANB/487
- Space Weather

Weather Avoidance

- Pilot/Controller Weather Deviation Procedure For Oceanic Operations
- Skybrary, ATC Operations in Weather Avoidance Scenarios
- Skybrary, Weather Radar: Storm Avoidance
- AC 00-24C
- Thunderstorms-Don't Flirt..Skirt 'Em
- *Video:* Thunderstorm Avoidance Using Aviation Weather dot Gov Part 1
- *Video:* Thunderstorm Avoidance Using Aviation Weather dot Gov Part 2



High Level SIGWX Charts

FAA Flight Planning Information

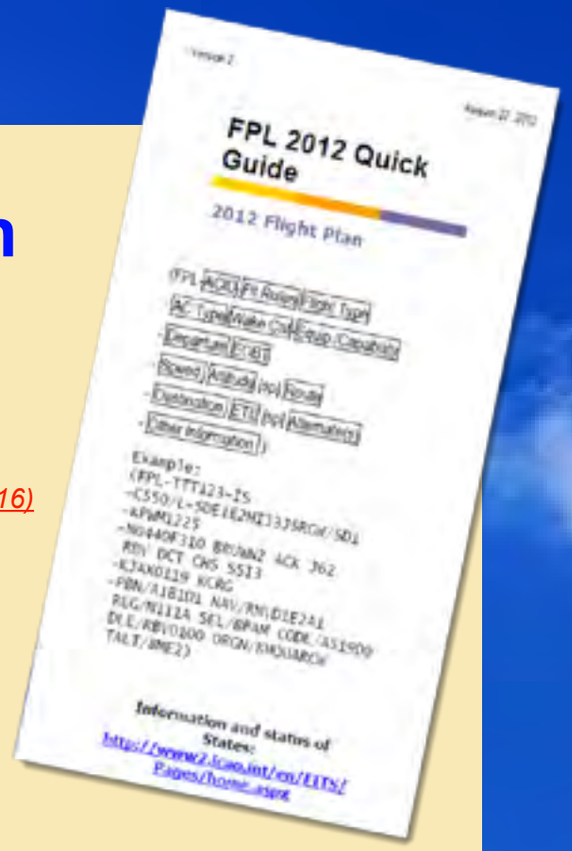
FAA Flight Service Program Changes

FAA InFo 12018: 2012 ICAO Flight Plan Implementation

FAA Website

FAA Form 7233-1 *(Domestic flight plan form phaseout planned for 1 October 2016)*

FAA Form 7233-4 (International)


FPL 2012 Quick Guide

2012 Flight Plan

Information and status of States:

Recent Changes to ICAO Flight Plan

See FAA Flight Planning Information

InFO 15015 Filing REG/ and CODE/ in Item 18 of the Flight Plan

There are four sections of the ICAO flight plan that have changed:

- Item 7 (Aircraft Identification),
- Item 10 (Equipment),
- Item 15 (Route), and
- Item 18 (Other Information).

Numerous errors are occurring in items 10 and 18. Please review the guidance in Amendment 1.

Item 7: Aircraft identification digit limit

Contains no more than 7 alphanumeric characters without hyphens or symbols.

Item 10: Removal and addition of several codes

Operators and pilots need to be aware that when entering equipment and capabilities, they must have:

- Operational equipment on board the aircraft
- Equipment and capabilities commensurate with flight crew qualifications
- Where applicable, authorization from the appropriate authority

Item 18: Other information

There are several abbreviated indicators added to this section. *Aeronautical Information Manual (AIM), Section 1, Paragraph 5-1-9*

Current and Planned Implementations

Reference initiatives listed in Part 3 of International Notices to Airmen

(Please select the most current edition listed)

NORTH ATLANTIC FANS 1/A DATA LINK MANDATE

International Notices to Airmen

(Select current edition and then go to Part 3, Section 2, International Oceanic Airspace Notices)

Phase I- Effective 7 Feb 2013 applicable on 2 core tracks between FL360-390 as noted on the daily NAT Track Message. Operators are required to include CPDLC and ADS-C authorization in fields 10 & 18 of the ***ICAO FP***.

Phase 2- Began on 5 February 2015 with updates (phase 2B and 2C) planned on 7 December 2017 and 30 January 2020, respectively. Data Link systems will be mandated to expand in Phase 2 to specified portions of NAT MNPS airspace.

NEW! **FAQ for Operators not capable of FANS 1/A (or equivalent) CPDLC and ADS-C operation. Includes information on operating outside OTS validity times**

NAT SPG Conclusion 47/3

Encouragement for NAT Region Operators to seek RNP 4 approvals

NAT to PBN Transition Milestones

WATRS PLUS OPERATIONAL POLICY AND PROCEDURES

(Select current edition of Notices to Airmen and then go to Part 3, Section 2, International Oceanic Airspace Notices)

This update includes:

a) Information on the new ICAO FP 2012 implementation effective 15 Nov 2012 using applicable Communication/Navigation/Surveillance codes
b) Reduced lateral separation on oceanic routes
c) RNP 4 and RNP 10

Trial Implementation of Reduced Lateral Separation minimum in the ICAO North Atlantic Region

IFALPA Safety Bulletin: NOTAM A0017/13

Oceanic Clearances for eastbound aircraft entering Minimum Navigation Performance Specification (MNPS) Airspace.

Click to View Items

- The North Atlantic
- Organized Track System
- Blue Spruce
- RVSM

Airspace

The North Atlantic

NAT DOC 007

North Atlantic Operations and Airspace Manual

The North Atlantic is the busiest oceanic airspace in the world!

More than 450,000 flights per year

NORTH ATLANTIC
MINIMUM NAVIGATION PERFORMANCE SPECIFICATIONS AIRSPACE:

- **The vertical dimension of MNPS Airspace:**
  Between **FL285 and FL420** (i.e. in terms of normally used cruising levels, from FL290 to FL410 inclusive).

- **The lateral dimensions include the following Control Areas (CTAs):**
  REYKJAVIK, SHANWICK, GANDER and SANTA MARIA OCEANIC plus the portion of NEW YORK OCEANIC which is North of 27°N but excluding the area which is west of 60°W & south of 38°30'N.
  Specific dimensions are referenced in:
  - ICAO Regional Supplementary Procedures (Doc.7030) - NAT/RAC
  - RVSM in MNPS Airspace: Please reference chapter 9 in NAT DOC 007

See ICAO Annex 6 (Purchase)

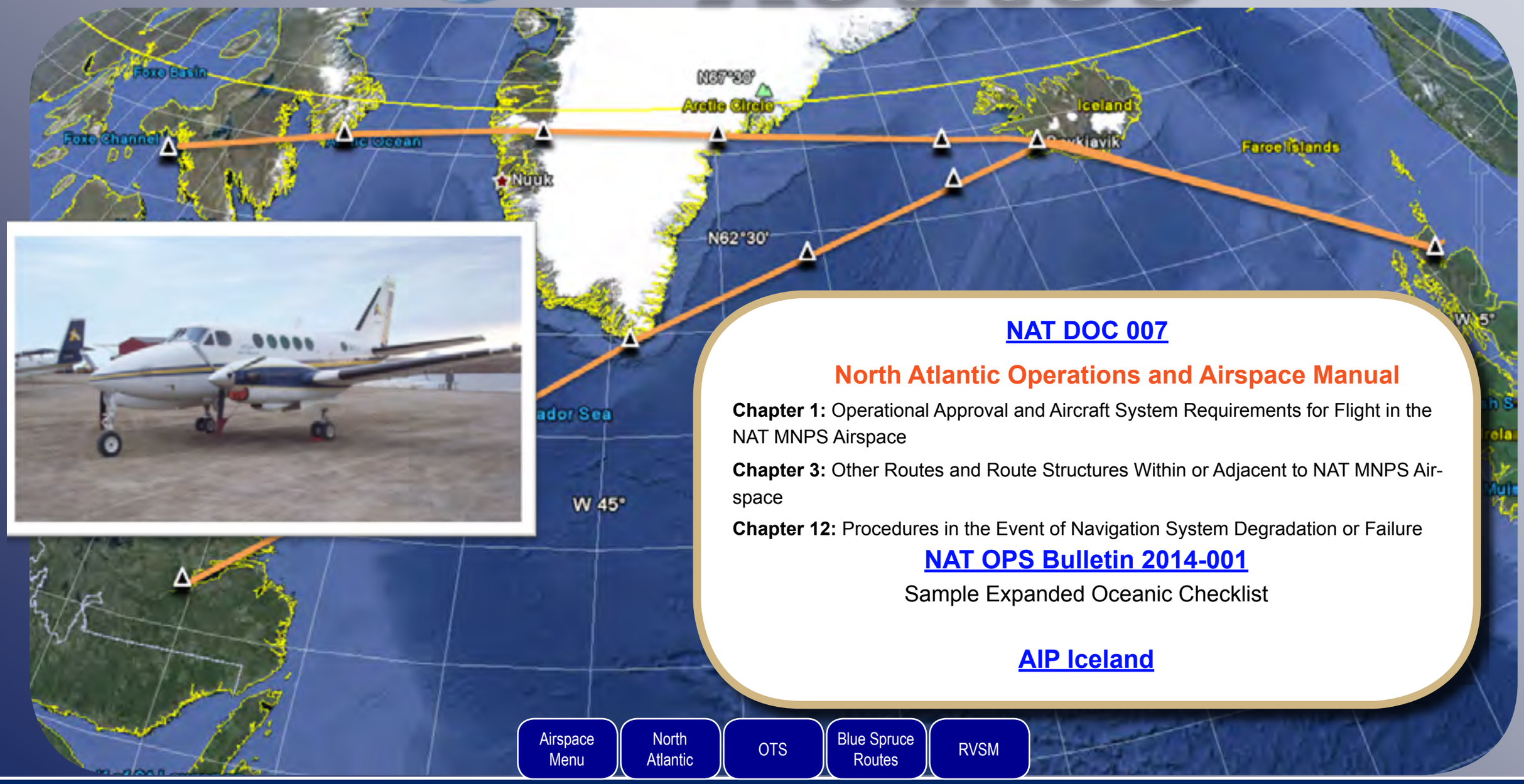
Federal Aviation Administration

Organized Track System

LINKS

- NAT Tracks - OTS
- NAT DOC 007: North Atlantic Operations and Airspace Manual (See Chapter 2)

Blue Spruce Routes



NAT DOC 007

North Atlantic Operations and Airspace Manual

Chapter 1: Operational Approval and Aircraft System Requirements for Flight in the NAT MNPS Airspace

Chapter 3: Other Routes and Route Structures Within or Adjacent to NAT MNPS Airspace

Chapter 12: Procedures in the Event of Navigation System Degradation or Failure

NAT OPS Bulletin 2014-001

Sample Expanded Oceanic Checklist

AIP Iceland

Reduced Vertical Separation Minimum

- FAA RVSM Page
- AC 91-85
- 14 CFR Part 91, Appendix G
- RVSM Approvals and AGHME Monitoring Status Results
- SKYbrary
- Europe (Video) EurocontrolTV
- ICAO RVSM Documents
- NAARMO FAQ

Required Monitoring:

- Every 2 years or
- 1000 flight hours

} Whichever is longer

Atlantic City

AGHME SITE

Upper Township

Airspace Menu | North Atlantic | OTS | Blue Spruce Routes | RVSM

Federal Aviation Administration

References

Click to View Items

United States

- 14 CFR 91.703 /Inspector Guidance
- OpSpec Cross Reference (1)
- OpSpec Cross Reference (2)
- OpSpec Cross Reference (3)
- OpSpec Cross Reference (4)
- OPSPEC Guidance
- 14 CFR Part 91
- 14 CFR Part 121
- 14 CFR Part 135
- Advisory Circulars
- TSO
- FAA Orders

ICAO

- International Civil Aviation Organization
- International Web Sources

Pilot Resources

- Pilot Resources

14 CFR § 91.703

Operations of Civil Aircraft of U.S. Registry Outside of the United States

a. Each person operating a civil aircraft of U.S. registry outside of the United States shall—(1) When over the high seas, comply with annex 2 (Rules of the Air) to the Convention on International Civil Aviation and with §§91.117(c), 91.127, 91.129, and 91.131;(2) When within a foreign country, comply with the regulations relating to the flight and maneuver of aircraft there in force;(3) Except for §§91.117(a), 91.307(b), 91.309, 91.323, and 91.711, comply with this part so far as it is not inconsistent with applicable regulations of the foreign country where the aircraft is operated or annex 2 of the Convention on International Civil Aviation; and(4) When operating within airspace designated as Minimum Navigation Performance Specifications (MNPS) airspace, comply with §91.705. When operating within airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace, comply with §91.706.(5) For aircraft subject to ICAO Annex 16, carry on board the aircraft documents that summarize the noise operating characteristics and certifications of the aircraft that demonstrate compliance with this part and part 36 of this chapter.

b. Annex 2 to the Convention on International Civil Aviation, Ninth Edition—July 1990, with Amendments through Amendment 32 effective February 19, 1996, to which reference is made in this part, is incorporated into this part and made a part hereof as provided in 5 U.S.C. §552 and pursuant to 1 CFR part 51. Annex 2 (including a complete historic file of changes thereto) is available for public inspection at the Rules Docket, AGC–200, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. In addition, Annex 2 may be purchased from the International Civil Aviation Organization (Attention: Distribution Officer), P.O. Box 400, Succursale, Place de L'Aviation Internationale, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3A 2R2.

Safety Assessment of Foreign Aircraft (SAFA)

EASA SAFA Ramp Inspections

FAA Inspector Guidance:

FAA Order 8900.1

Paragraph 4-108 (RNP in Class II Airspace) Paragraph 4-108 provides guidance for RNP 10 qualification with two or more Long-Range Navigation Systems (LRNS).

Paragraph 3-816 OpSpec/MSpec B036 (Class II Navigation Using Multiple Long-Range Navigation Systems. Located in 8900.1, Vol 3, Chapter 18, Section 4 (Part B OpSpecs – En Route Authorizations and Limitations) This paragraph provides guidance for RNP 10 qualification for aircraft equipped with two or more LRNS's.

Operation Specification Cross Reference (Page 1 of 4)

Special Operations	Part 121 (Ops Spec)	Part 135 (Ops Spec)	Part 125 (Ops Spec)	Part 91 (LOA)	Part 91K (MSPEC)	Other Approvals & Approval References	FPL Field 10a	FPL Field 10b	FPL Field 18
RVSM	B046/ D092	B046/D092	B046/ D092	B046/ D098	B046/D092	AC 91-85	W	-	-
CPDLC	A056	A056	A056	A056	A056	AC 120-70C	J1-J7	-	-
GPS	N/A	N/A	N/A	N/A	N/A	Order 8900.1, Volume 4, Chapter 1 section 2, 4-31 or Aeronautical Information Manual (AIM) Chapter 1 – Air Navigation (see 1-1-18).	G	-	-
GPS with WAAS	N/A	N/A	N/A	N/A	N/A	Order 8900.1, Volume 4, Chapter 1 section 2, 4-32 or Aeronautical Information Manual (AIM) Chapter 1 – Air Navigation (see 1-1-19).	G, Z	-	NAV/SBAS
ADS-B Out (Domestic)	N/A	N/A	N/A	N/A	N/A	AC 20-165 and TSO-C166 AC 90-114	-	B1 or B2	SUR/260b
ADS-B Out UAT (Domestic)	N/A	N/A	N/A	N/A	N/A	AC 20-165 and TSO-154 AC 90-114	-	U1 or U2	SUR/282B
ADS-B Out (Interna-tional)	A153 See Notice N8900.269	A153 See Notice N8900.269	A153 See Notice N8900.269	A153 See Notice N8900.269	A153 See Notice N8900.269	A153 authorizes flight operations using ADS-B in international airspace where FAA authorization is required. Refer to State AIPs for airspace and/ or routes where A153 is required. Also see INFO 13009 at Airline Operator INFOs	-	B1 or B2, U1 or U2	Note 2

Operation Specification Cross Reference (Page 2 of 4)

Special Operations	Part 121 (Ops Spec)	Part 135 (Ops Spec)	Part 125 (Ops Spec)	Part 91 (LOA)	Part 91K (MSPEC)	Other Approvals & Approval References	FPL Field 10a	FPL Field 10b	FPL Field 18
ADS-C	A056	A056	A056	A056	A056	AC 120-70C	-	D1,G1	-
NAT MNPS Unrestricted	B036 + B039	B036 + B039	B036 + B039	B036 + B039	B036 + B039		X	-	-
RNP 10, Multiple LRNS	B036	B036	B036	B036	B036	B036 provides the basic requirements for RNP10 and RNP4 using dual Long Range Navigation Systems installed and operational. Additional Ops Specs or LOA may be required depending on the airspace or special area of operation to be flown: Central East Pacific (CEP): B037 North Pacific (NOPAC): B038 Areas of magnetic unreliability: B040 North Polar: B055 Other Areas: Check B050 for applicability	R	-	PBN/A1
RNP 10, Single LRNS	B054	B054	B054	B054	B054	B054 provides the requirements for RNP 10 using a single Long Range Navigation System in the limited areas defined.	R	-	PBN/A1
RNP 4	B036	B036	B036	B036	B036	B036 provides the basic requirements for RNP10 and RNP4 using dual Long Range Navigation Systems installed and operational. Additional Ops Specs or LOA may be required depending on the airspace or special area of operation to be flown: Central East Pacific (CEP): B037 North Pacific (NOPAC): B038 Areas of magnetic unreliability: B040 North Polar: B055	R	-	PBN/L1

Operation Specification Cross Reference (Page 3 of 4)

Special Operations	Part 121 (Ops Spec)	Part 135 (Ops Spec)	Part 125 (Ops Spec)	Part 91 (LOA)	Part 91K (MSPEC)	Other Approvals & Approval References	FPL Field 10a	FPL Field 10b	FPL Field 18
RNAV	B034	B034	B034	Note 1 B034	B034	B034 authorizes RNAV operation in the domestic U.S. For operations outside the U.S. – including the Gulf of Mexico Q-routes – the relevant area must be authorized in B050 with B034 indicated. When RNAV operations are authorized per B034, the flight qualifies for PBN/B1-B6 as appropriate.	R	-	PBN/B1-B6
B-RNAV	B034	B034	B034	N/A	B034	AC 90-96A	R	-	PBN/B1-B6
RNAV 5	B034	B034	B034	Note 1 B034	B034	Part 91: When operating in a foreign state please consult the AIP for further information regarding operational requirements. (LOA may be required; See AIP)	R	-	PBN/B1-B6
P-RNAV	B034	B034	B034	B034	B034	AC 90-96A	R	-	PBN/D1-D4
RNAV 2	B035	B035	B035	Note 1 B035	B035	US Domestic Operations: AC 90-100	R Note 3,4	-	PBN/D1,D2 or D4 Note 3,4
RNAV 1	C063	C063	C063	Note 1 C063	C063	AC 90-100 AC 90-105	R Note 3,4	-	PBN/D1,D2 or D4 Note 3,4
RNP 1	C063	C063	C063	Note 1 C063	C063	AC 90-105	G,R Note 4	-	PBN/O1 or O2
RNP AR Approach	C384	C384	C384	C384	C384	AC 90-101	G,R	-	PBN/T1 or T2
RNAV (GPS) Approach (LNAV, LNAV/VNAV)	C052	C052	C052	Note 1	C052	AC 90-105	G,R	-	PBN/S1 Note 5

Operation Specification Cross Reference (Page 4 of 4)

Special Operations	Part 121 (Ops Spec)	Part 135 (Ops Spec)	Part 125 (Ops Spec)	Part 91 (LOA)	Part 91K (MSPEC)	Other Approvals & Approval References	FPL Field 10a	FPL Field 10b	FPL Field 18
RNAV (GPS) Approach (LNAV, LNAV/ VNAV using Baro-VNAV)	C052	C052	C052	Note 1	C052	AC 90-105	G,R	-	PBN/S2 Note 6
LPV approach (APV with SBAS)	C052 B030 for Alaska only	C052 B030 for Alaska only	C052	C052 Note 1	C052	AC 90-107	B,G, Z	-	Note 7 NAV/SBAS

Notes

Note 1: Some Part 91 operations outside of the Domestic US NAS require an LOA, for others it is optional. Consult the Foreign State AIP for further information regarding operational requirements.

Note 2: Aircraft with A353 should file the SUR/ codes shown if certified for domestic U.S. operations per the indicated requirements. The SUR/ information is not required for international operations.

Note 3: In addition to PBN/ information, NAV/ information may optionally be filed in order to indicate RNAV capability by phase of flight (departure, en route, arrival). This allows a filer to request RNAV procedures for only specific phases of flight. The AIM Section 5-1-9 contains instructions for filing RNAV capability in NAV/. Remember that when including NAV/, enter 'Z' in Field 10a.

Note 4: When filing a PBN/ code for RNAV or RNP, Field 10 must contain consistent capability information as follows:

If PBN/ indicates GNSS (e.g. C2)…	Field 10a must contain 'G'
If PBN/ indicates DME/DME (e.g. B3)…	Field 10a must contain 'D'
If PBN/ indicates VOR/DME (e.g. B4)…	Field 10a must contain 'D' and ('O' or 'S')
If PBN/ indicates DME/DME/IRU (e.g. D4)…	Field 10a must contain 'D' and 'I'

Note 5: Insert S1 in PBN/ for those aircraft that have an RNAV system approved for RNAV (GPS) or GPS approaches IAW AC 90-105, Appendix 1.

Note 6: Insert S2 in PBN/ for those aircraft that have an RNAV system approved for RNAV (GPS) or GPS approaches IAW AC 90-105, Appendix 1, and a barometric vertical navigation (baro-vnav) capability for vertical guidance approved in accordance with AC 90-105, Appendix 4.

Note 7: Insert "B" In Item 10a for aircraft with WAAS-GPS approach RNAV systems approved IAW AC 90-107. Operators may also include PBN codes S1 or S2 (only one) based on RNAV system approval. Please consult Airplane Flight Manual (AFM) or supplement to verify capability.

United States Operation Specifications

Flight Standard Information System (FSIMS)

Operations Specifications	
A056	Data Link Communications (CPDLC ADS-C)
A061	Use of Electronic Flight Bag
A153	ADS-B Ops Outside the U.S.-Designated Airspace
B029	Drift-down or Fuel Dumping
B030	IFR Navigation Using GPS/WAAS RNAV Systems
B034	RNAV Class I
B036	Multiple Long Range Navigation Systems (M-LRNS)
B039	NAT MNPS
B040	Areas of Magnetic Unreliability
B041	Twin Engine NAT Ops
B043	Special Fuel Reserves
B044	Planned Re-dispatch/Re-release
B045	Extended Overwater Operation Using a Single Long Range Com
B046	RVSM
B050	China/Russia/WATRS/Gulf of Mexico
B054	Single Long Range Navigation Systems (S-LRNS)
B055	North Polar Operations
B342	ETOPS (Two Engines), Parts 121 and 135
B344	ETOPS (More than Two Engines), Parts 121 and 135
C055	Alternate Airport IFR Weather Minimums (ETOPS)
C070	Airports Authorized for Scheduled Operations (ETOPS) Part 121

United States
14 CFR Part 91

14 CFR Part 91 (All)

14 CFR Part 91 *Inclusive but not limited to:*	
91.3	Responsibility and Authority of the PIC
91.117	Aircraft Speed
91.123	Compliance with ATC Clearances and Instructions
91.127	Operating on or in the vicinity of an airport in Class E airspace
91.129	Operations in Class D airspace
91.131	Operations in Class B airspace
91.181	Course to be Flown
91. 211	Supplemental Oxygen
91.511	Communication and navigation equipment for overwater operations
91.703	Operations of civil aircraft of U.S. registry outside of the United States
91.705	Operations within airspace designated as Minimum Navigation Performance Specification Airspace
91.706	Operations within airspace designed as Reduced Vertical Separation Minimum Airspace (See appendix G)
91.1019	Conducting tests and inspections
91.1041	Aircraft proving and validation tests
Appendix C	Operations in the North Atlantic (NAT) Minimum Navigation Performance Specifications
Appendix G	Operations in Reduced Vertical Separation Minimum (RVSM) Airspace

United States
14 CFR Parts 117 & 121

14 CFR Part 117 (All)
14 CFR Part 121 (All)

14 CFR Part 117 *Inclusive but not limited to:*	
Tables A-C	Maximum Flight Time Limits

14 CFR Part 121 *Inclusive but not limited to:*	
121.11	Rules applicable to operations in a foreign country
121.93	Route requirements: General
121.99	Communications facilities – domestic and flag operations
121.113	Area and route requirements: General
121.122	Communications facilities-supplemental operations
121.333	Supplemental oxygen for emergency descent and for first aid; turbine engine powered airplanes with pres. cabins
121.351	Communication and navigation equipment for extended over-water operations and for certain other operations
121.574	Oxygen for medical use by passengers

United States
14 CFR Part 135

14 CFR Part 135 (All)

14 CFR Part 135 *Inclusive but not limited to:*	
135.43	Crewmember certificates: International operations
135.73	Inspections and tests
135.89	Pilot requirements: Use of oxygen
135.98	Operations in the North Polar Area
135.145	Aircraft proving and validation tests
135.157	Oxygen equipment requirements
135.165	Communication and navigation equipment: Extended over-water or IFR operations
135.364	Maximum flying time outside the United States

United States Advisory Circulars (AC)

Advisory Circulars (All)

Advisory Circulars (AC) *Inclusive but not limited to:*	
AC 20-138D	Airworthiness Approval of Positioning and Navigation Systems
AC 20-140B	Guidelines for Design Approval of Aircraft Data Link Systems Supporting Air Traffic Services (ATS)
AC 20-150A	Airworthiness Approval of Satellite Voice Equipment Supporting Air Traffic Service (ATS) Communication
AC 20-165A	Airworthiness Approval of Automatic Dependent Surveillance—Broadcast (ADS -B Out System)
AC 90-96A	Approval of U.S. Operators and Aircraft to Operate Under IFR in European Airspace for B-RNAV/RNAV5 and P-RNAV
AC 90-105	Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System
AC 90-114A	Automatic Dependent Surveillance—Broadcast (ADS-B) Operations
AC 91-70A	Oceanic and International Operations
AC 91-85	Approval of Aircraft and Operators for flight in Reduced Vertical Separation Minimum Airspace
AC 120-42B	Extended Operations (ETOPS and Polar Operations)
AC 120-70C	Operational Authorization Process for Use of Data Link Communication System
AC 135-42	Extended Operations (ETOPS and Polar Operations)

United States
Technical Standard Orders (TSO)

Technical Standard Orders (All)

Technical Standard Orders (TSO) *Inclusive but not limited to:*	
TSO-C115c	Flight management systems (FMS) using multi-sensor inputs
TSO-C129a (Canceled)	Airborne Supplemental Navigation Equipment Using The Global Positioning System (GPS)
TSO-C145d	Airborne Navigation Sensors Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS)
TSO-C146d	Stand-Alone Airborne Navigation Equipment Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS)
TSO-C154c	Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Equipment
TSO-C157a	Aircraft Flight information Services-Broadcast (FIS-B) Data Link Systems and Equipment
TSO-C159a	Next Generation Satellite Systems (NGSS) Equipment
TSO-C166b	Extended Squitter Automatic Dependent Surveillance - Broadcast (ADS-B) and traffic information
TSO-C195a	Avionics Supporting Automatic Dependent Surveillance - Broadcast (ADS-B) Aircraft Surveillance Applications (ASA)
TSO-C196b	Airborne Supplemental Navigation Sensors for Global Positioning System Equipment Using Aircraft-Based Augmentation

United States FAA Orders

FAA Orders and Notices (All)

FAA Orders *Inclusive but not limited to:*	
7110.82D	Reporting Oceanic Errors
8400.12C	Required Navigation Performance 10 (RNP 10) Operational Authorization*
8400.33	Procedures for Obtaining Authorization for RNP-4 Oceanic and Remote Area Operations*
8900.1	Flight Standards Information Management System (FSIMS)
	** AC 90-105A, projected to be published in Q1/2016, will supersede FAA Orders 8400.12 and 8400.33*

International Civil Aviation Organization (ICAO) Documents

Online Store
EUR and NAT Documents
NAT Documents
NAT OPS Bulletins
Planning Documents Supporting Separation Reductions and other Initiatives

NAT Documents *Inclusive but not limited to:*	
NAT DOC 001	NAT SPG (Systems Planning Group) Handbook
NAT DOC 003	High Freq. Management Guidance Material for the N. Atlantic Region
NAT DOC 004	Common Aeradio Com. Interface Control Doc. for the N. Atlantic Region
NAT DOC 005	Future ATM Concept of Operations for the North Atlantic Region
NAT DOC 006, Pt 1	Air Traffic Mgmt Operational Contingency Plan Pts I & II - N. Atlantic Reg.
NAT DOC 006, Pt 2	Volcanic Ash Contingency Plan - NAT Region
NAT DOC 007	North Atlantic Operations and Airspace Manual
NAT DOC 008	Application of Separation Minima - North Atlantic Region - (NAT ASM)
NAT DOC 009	Service Development Road Map
GOLD 2nd Edition	Global Operational Data Link Document
ICAO DOC 9613	Performance-based Navigation (PBN) Operational Approval Manual

NAT Operations Bulletins *Inclusive but not limited to:*	
NAT RVSM	Minimum Monitoring Requirements
Bulletin 2013-001	Information & Guidance for Data Link Oceanic Clearance Delivery in Santa Maria FIR
Bulletin 2014-002	Oceanic Errors Safety Bulletin (OESB) - Issued 04 February 2014
Bulletin 2014-001	Sample Oceanic Checklists - Issued 04 February 2014

INTERNATIONAL WEB SOURCES

NACC Current FIR Status

FIR World Viewer

ICAO 2015 FIR World

- Trackwise – Targeting Risk Within The Shanwick OCA – Complete Video
- European Region RVSM
- Transport Canada Aeronautical Information Manual (TC AIM)
- Nav Canada
- Danish Transport Authority – Trafikstyrelsen
- European Aviation Safety Agency (EASA)
- AIP Iceland
- ISAVIA
- Ireland Aeronautical Information Publication (AIP)
- Santa Maria Oceanic
- Portuguese Aeronautical Information Services
- Norwegian Aeronautical Information Publication (AIP)
- UK Aeronautical Information Publication (AIP)

Pilot Resources

Charts and Guides

- digital — Terminal Procedures Publication (d-TPP)/Airport Diagrams
- digital —Airport/Facility Directory
- North Atlantic Charts
- VFR Raster Charts
- IFR En Route Aeronautical Charts and Planning
- Instrument Flight Procedures Information Gateway
- VFR Class B Enhancement Graphics
- Aeronautical Chart User Guide
- Airport Diagrams
- ADS-B, SAPT, RAIM User Guide

Flight Planning

- NOTAMS
- Aeronautical Information Publication (AIP)
- Aeronautical Information Manual (AIM)
- Notices to Airman Publication (NTAP)
- Predictive RAIM
- Temporary Flight restrictions
- Aviation Weather Center
- FAA Flight Planning Information
- Direct User Access Terminal (DUAT)
- Direct User Access Terminal Service (DUATS)
- FAA ICAO Quick Guide
- Critical DME List
- FAA Form 7233-1 *(Domestic flight plan form phaseout planned for 1 October 2016)*
- FAA Form 7233-4
- Flight Medical Examiner

FAA Offices

- Flight Standards District Offices (FSDO)
- Certificate Management Offices (CMO)
- Aircraft Certification Offices (ACO)
- Aircraft Evaluation Group
- International Field Offices
- Flight Standards Service
- Rotorcraft Directorate
- Performance Based Flight Systems Branch
- Performance Based Navigation (PBN)
- Satellite Based Navigation (SatNav)
- Data Communications (DataComm)
- Oceanic and Remote Airspace
- Reduced Vertical Separation Minimum

FAA TV

Useful Links

- Advisory Circulars
- Orders and Notices
- Technical Standard Orders
- FAA Forms
- Flight Delay Information
- Airworthiness Directives (ADS)
  - Current
  - Historical

Manuals, Guides, and Testing

- Handbooks and Manuals
- Aircraft
- Aviation
- Examiner and Inspector
- Airman Testing

CNS

(Communication, Navigation, Surveillance)

Click to View Items

- Long Range Communication
- Data Link Authorization
- Data Link Map
- RCP 240
- RCP 400
- RNP 4 Separation
- RNP 4 Accuracy
- RNP 10 Separation
- RNP 10 Accuracy

Long Range Communications

GOLD (Global Operational Data Link Document) 2nd Edition,
Published by ICAO

14 CFR

91.511 Communication and Navigation for Overwater Operations

121.351 Communication and Navigation Equipment for Extended Over-Water Operations and for Certain Other Operations.

135.165 Communication and Navigation for Overwater Operations

Advisory Circulars

AC 20-150A Airworthiness Approval of Satellite Voice Equipment Supporting Air Traffic Services (ATS) Communication

AC 91-70 Oceanic and International Operations

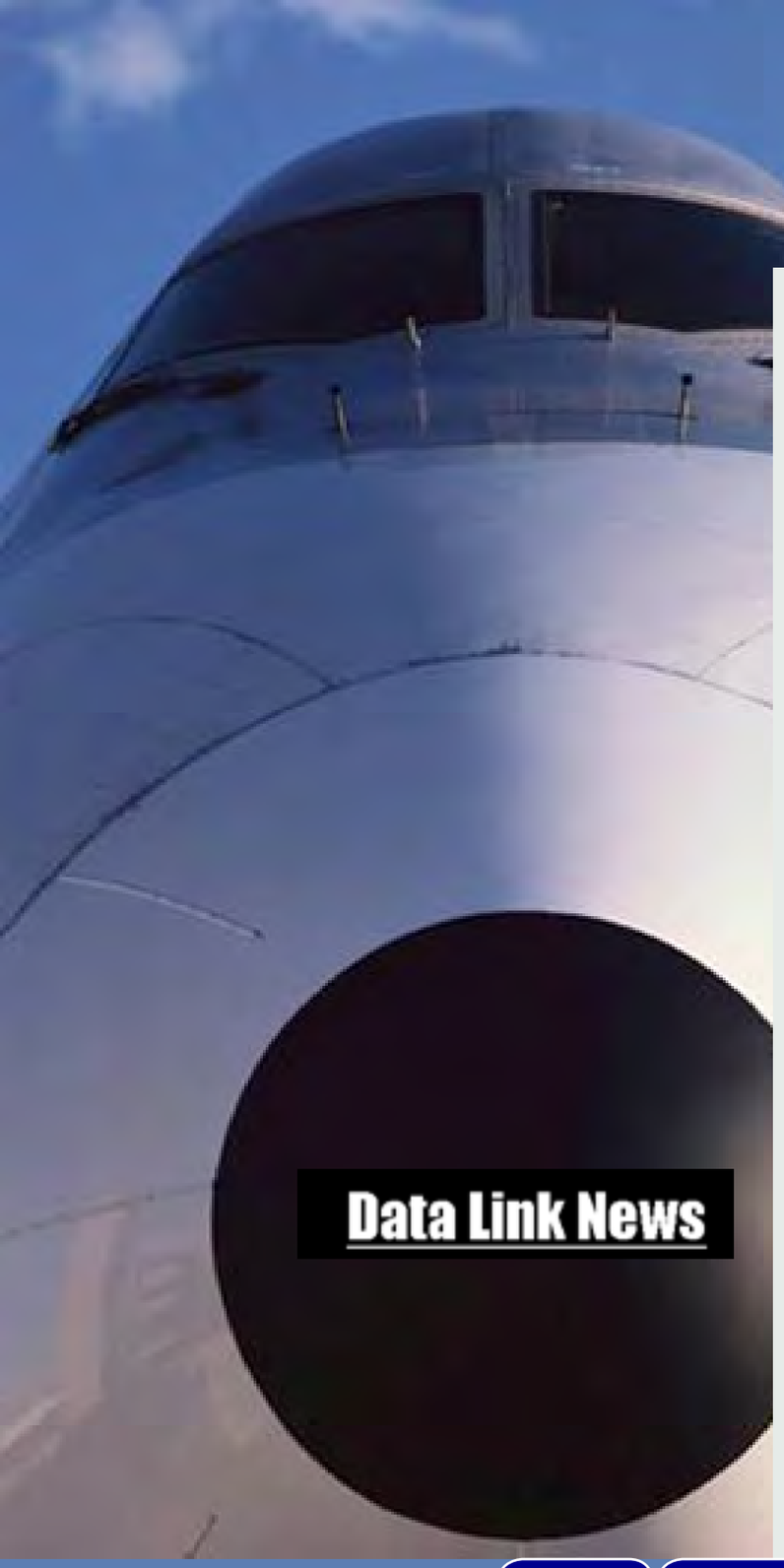
AC 120-70C Operational Authorization Process for Use of Data Link Communication System

FAA InFOs

InFO 15008 Iridium Satellite Voice (SATVOICE) with Safety Services

InFO 15015 Filing REG/ and CODE/ in Item 18 of the Flight Plan

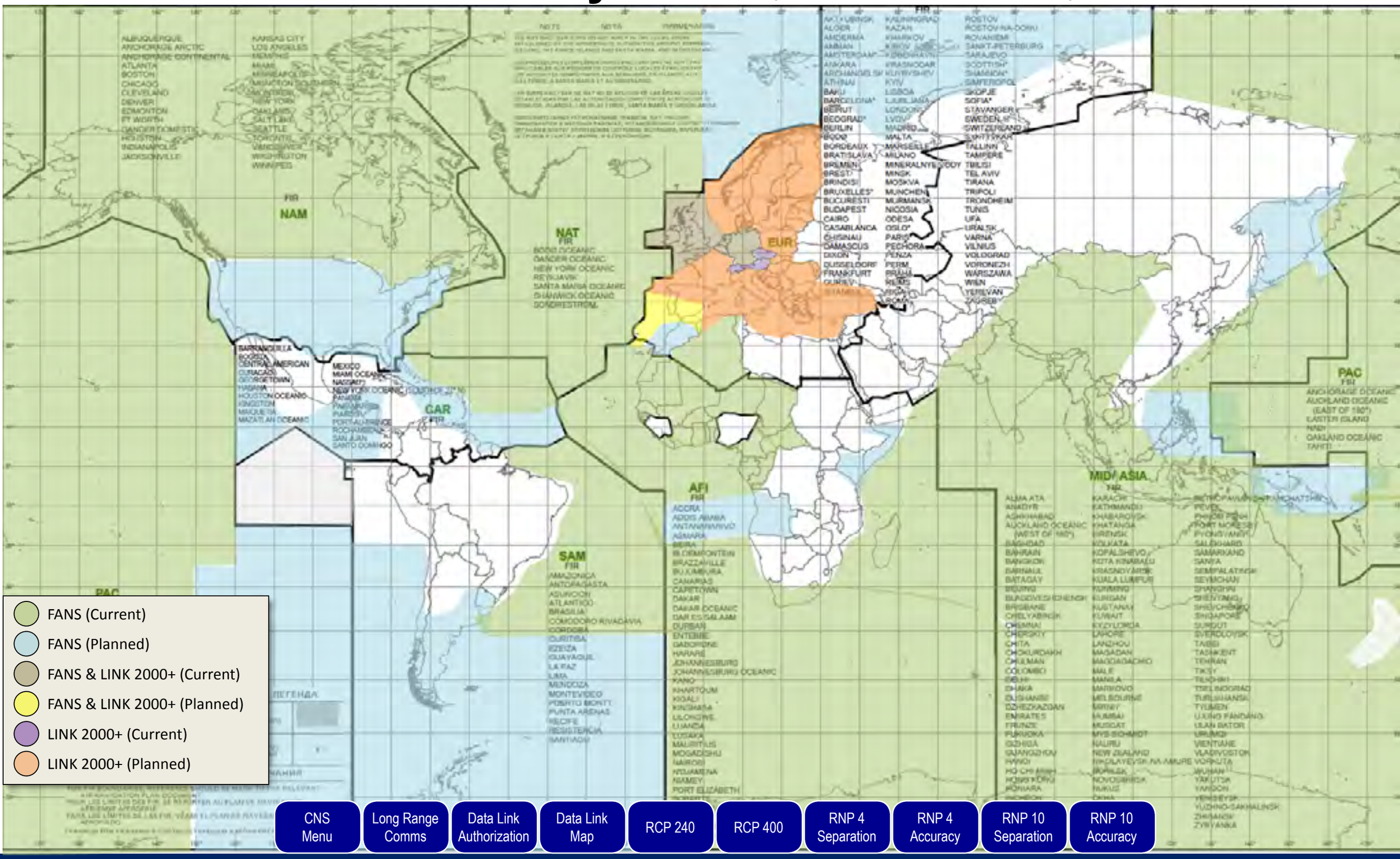
Data Link Authorization



Documents and References

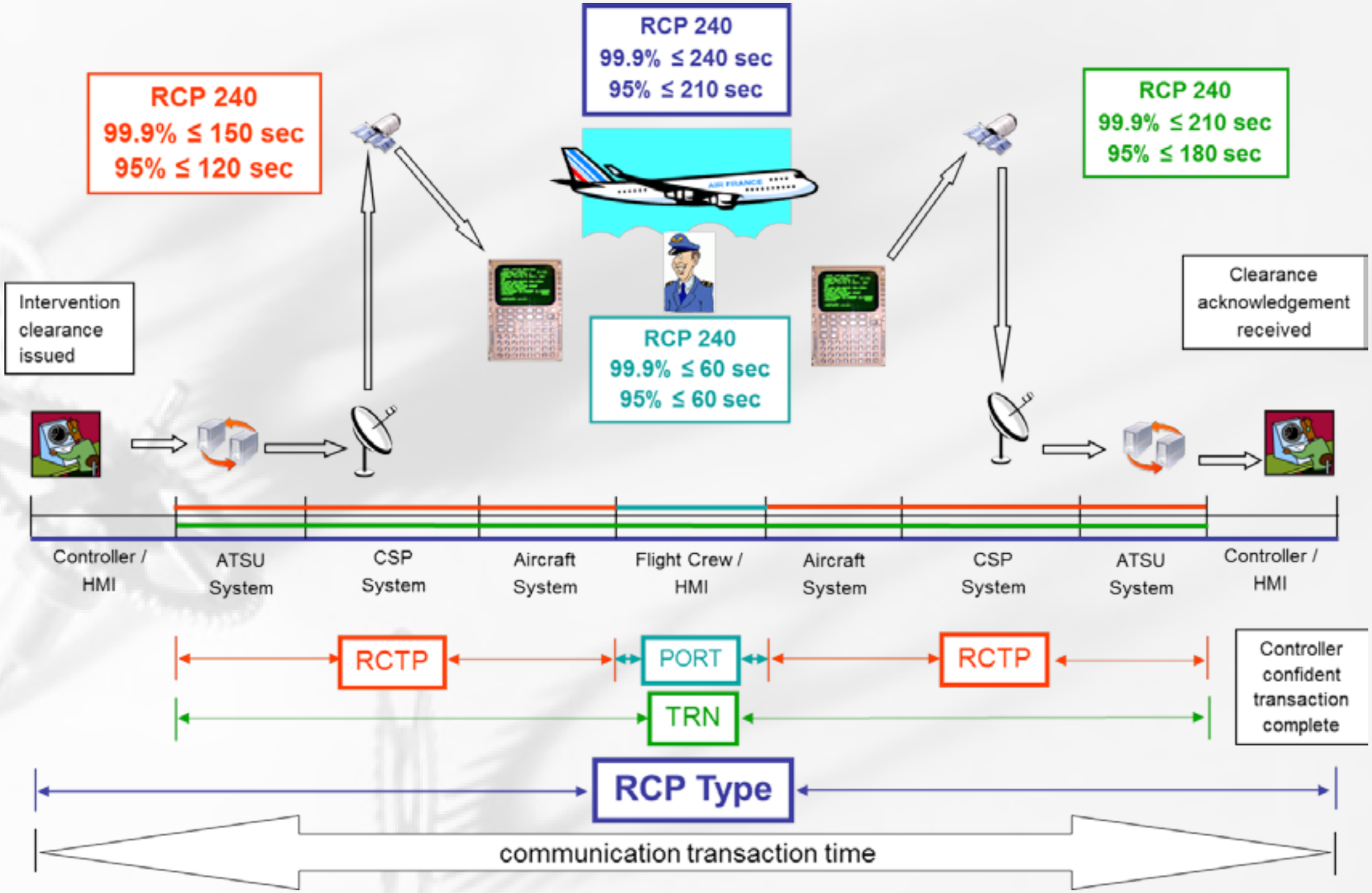
- FAA Advisory Circular 120-70C (PDF) *Operational Authorization Process for Use of Data Link Communication System*
- FAA Advisory Circular 20-140B (PDF) (Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS) (PDF) *This AC provides airworthiness requirements for the type design approval of aircraft with a data link system installed.*
- Job Aid (Draft)
- Asia Pacific Operational Authorization information Package, June 15, 2012
- FAA Advisory Circular AC 91-70A (PDF) *Oceanic and International Operations*
- FAA Site: Oceanic and Offshore
- GOLD (Global Operational Data Link Document) 2nd Edition, *Published by ICAO*
- NAT OPS Bulletin 2013-001, Information & Guidance for Data Link Oceanic Clearance Delivery in Santa Maria FIR
- *SPACG-CRA, NAT-DLMA* Problem Reports Login Page
- ARINC
- NAT Data Link Mandate Phase 2 Notice
- NAT OPS Bulletin 2012-031: NAT Region Data Link Mandate
- New York CPDLC NOTAM *(Reference Part 3, International NOTAMS)*
- LINK 2000+ Library, Link 2000+ Program
- Controller-Pilot Data-Link Communications
- Skybrary Regulation 29/2009
- Standardized Master Minimum Equipment (MMEL) Policy letter
- Skybrary COMMISSION REGULATION (EC) No 29/2009 of 16 January 2009
- FAA Advisory Circular 20-160, Onboard Recording of Controller Pilot Data Link Communication in Crash Survivable Memory
- Annex 6 - Operation Of Aircraft-Intl Commercial Air Transport 9Th Edition - 6.3.3 Data Link Recorders
- Annex 6 Part II General Aviation 3.6.3 and Appendix 3.1 Flight Recorders
- 14 CFR Parts 23, 25 , 27, §29.1457, §91.609
- Rule by the Federal Aviation Administration on 03/02/2015

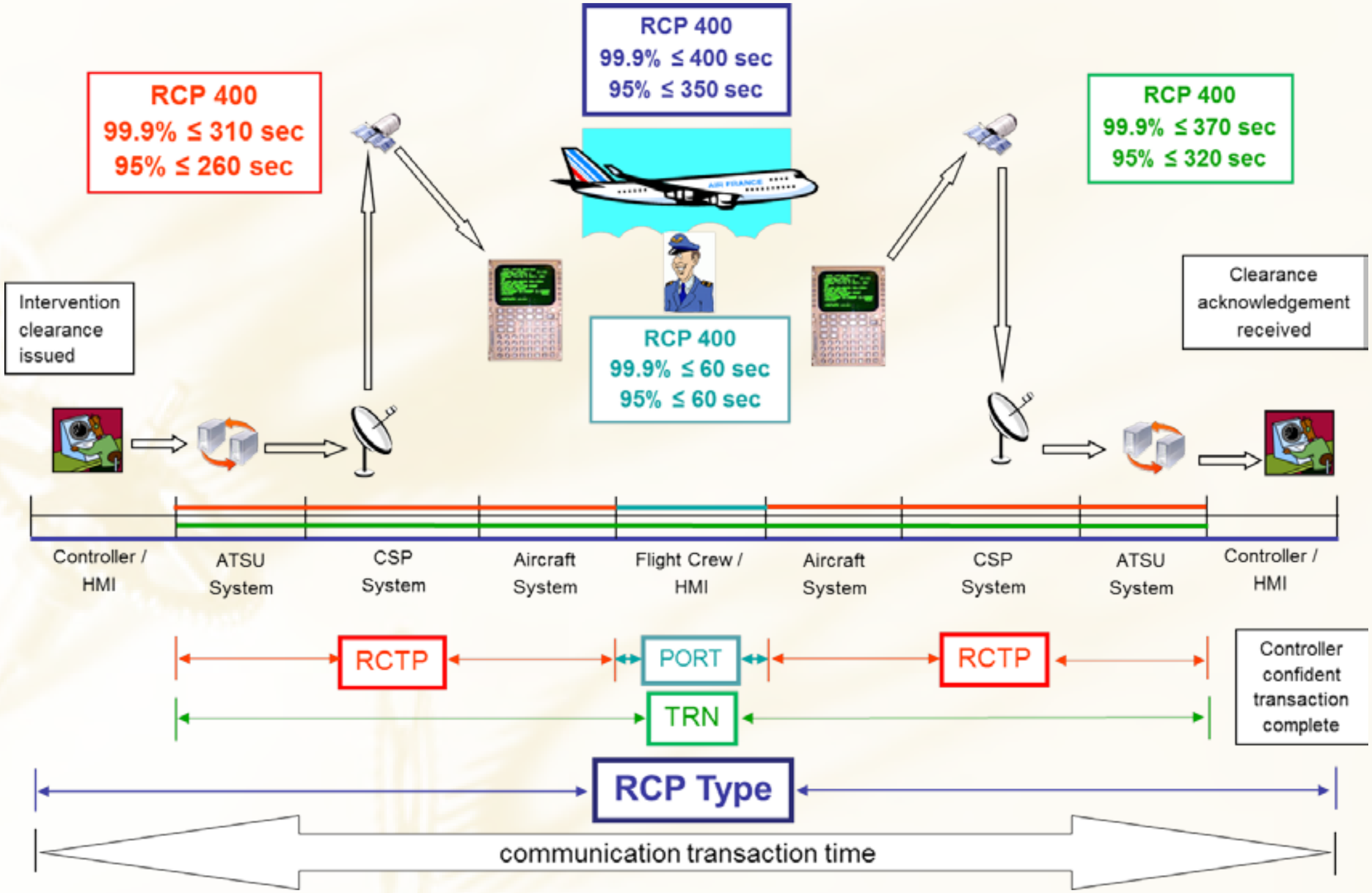
Data Link Systems *(Current and Planned)*



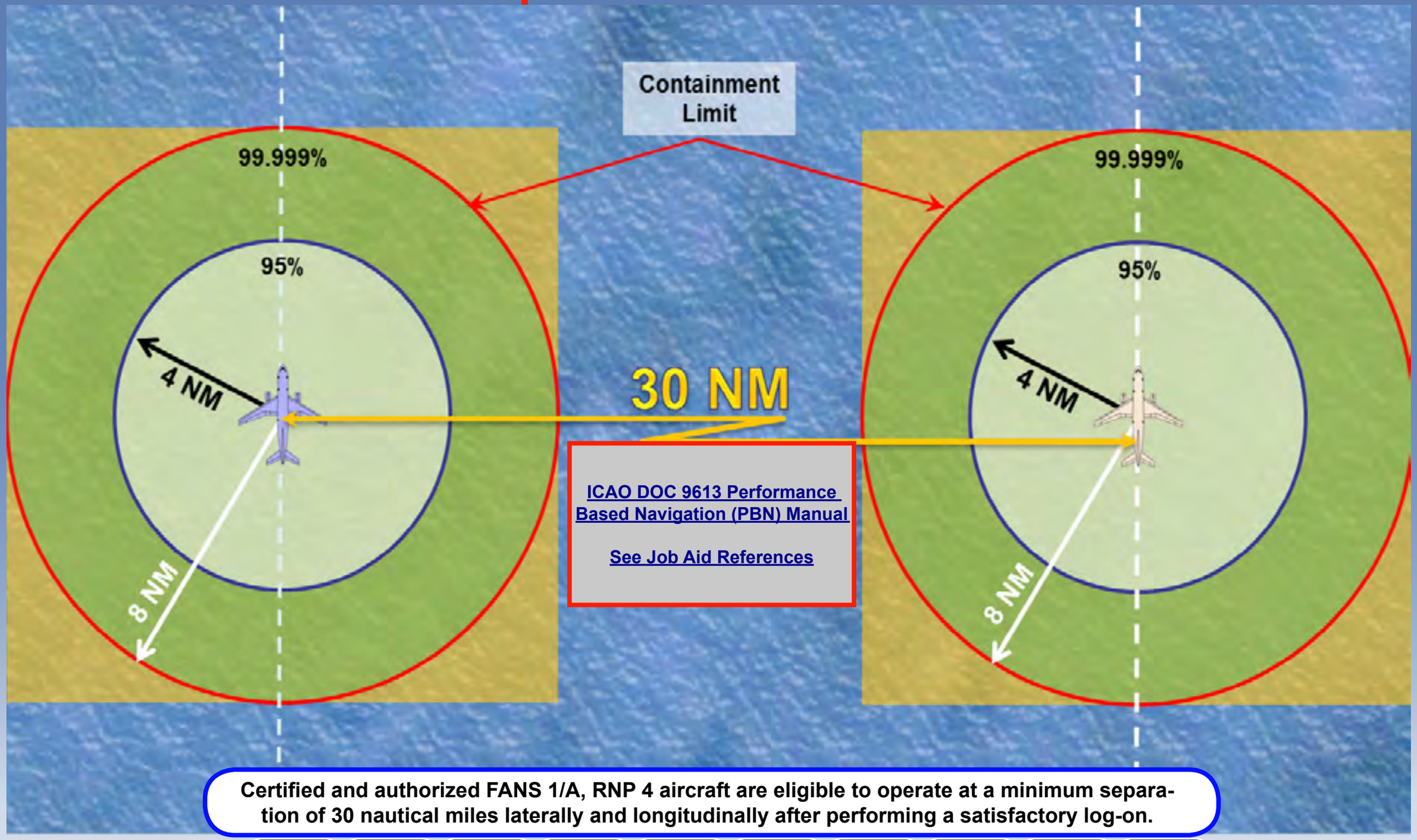
CNS Menu | Long Range Comms | Data Link Authorization | Data Link Map | RCP 240 | RCP 400 | RNP 4 Separation | RNP 4 Accuracy | RNP 10 Separation | RNP 10 Accuracy

Federal Aviation Administration


RCP 240
99.9% ≤ 240 sec
95% ≤ 210 sec
RCP 240
99.9% ≤ 150 sec
95% ≤ 120 sec
RCP 240
99.9% ≤ 210 sec
95% ≤ 180 sec
Intervention clearance issued
RCP 240
99.9% ≤ 60 sec
95% ≤ 60 sec
Clearance acknowledgement received
Controller / HMI
ATSU System
CSP System
Aircraft System
Flight Crew / HMI
Aircraft System
CSP System
ATSU System
Controller / HMI
RCTP
PORT
RCTP
TRN
Controller confident transaction complete
RCP Type
communication transaction time


RCP 400
99.9% ≤ 310 sec
95% ≤ 260 sec
RCP 400
99.9% ≤ 400 sec
95% ≤ 350 sec
RCP 400
99.9% ≤ 370 sec
95% ≤ 320 sec
Intervention clearance issued
RCP 400
99.9% ≤ 60 sec
95% ≤ 60 sec
Clearance acknowledgement received
Controller / HMI
ATSU System
CSP System
Aircraft System
Flight Crew / HMI
Aircraft System
CSP System
ATSU System
Controller / HMI
RCTP
PORT
RCTP
TRN
Controller confident transaction complete
RCP Type
communication transaction time

RNP 4 Separation and Containment

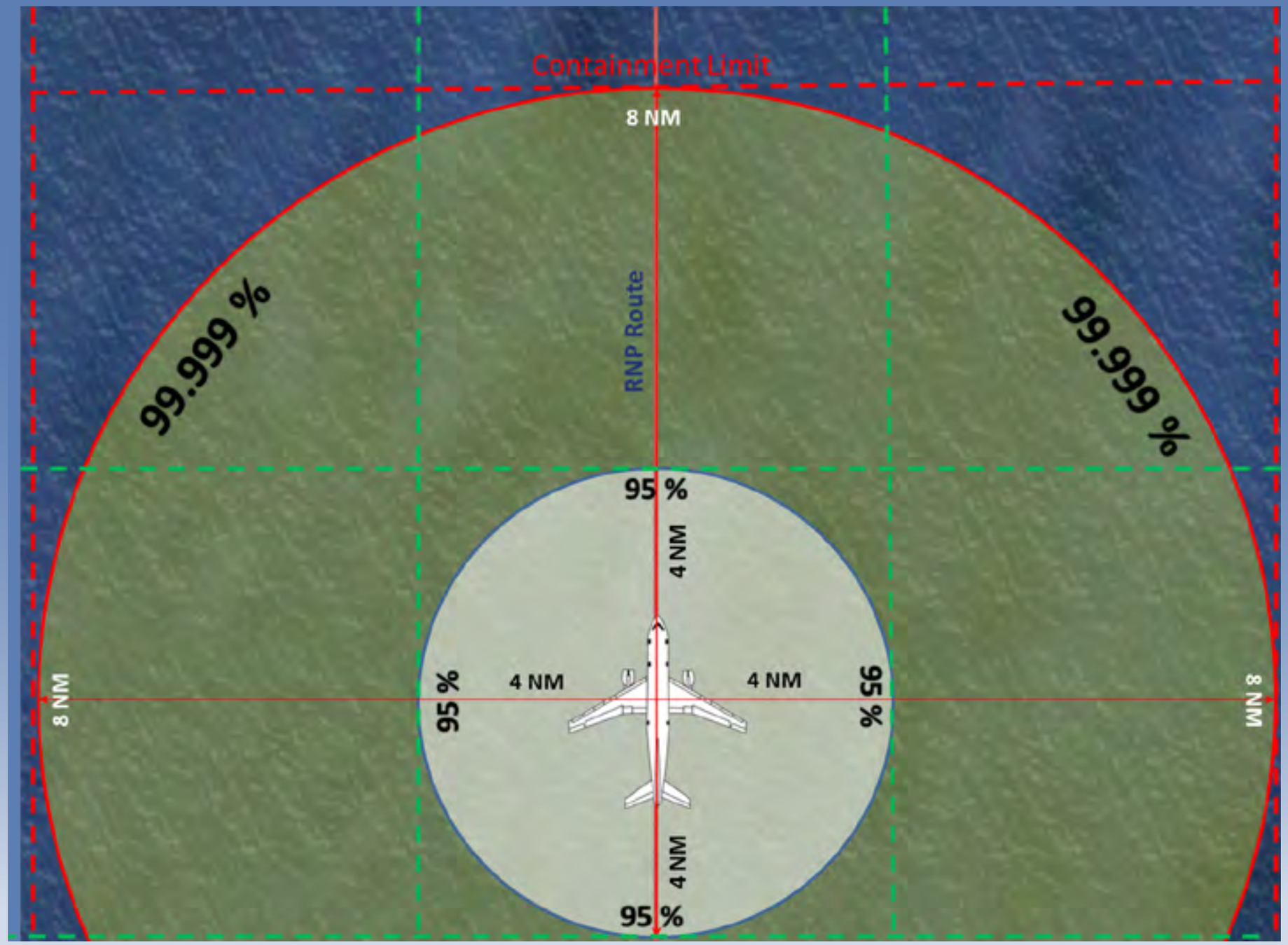


ICAO DOC 9613 Performance Based Navigation (PBN) Manual

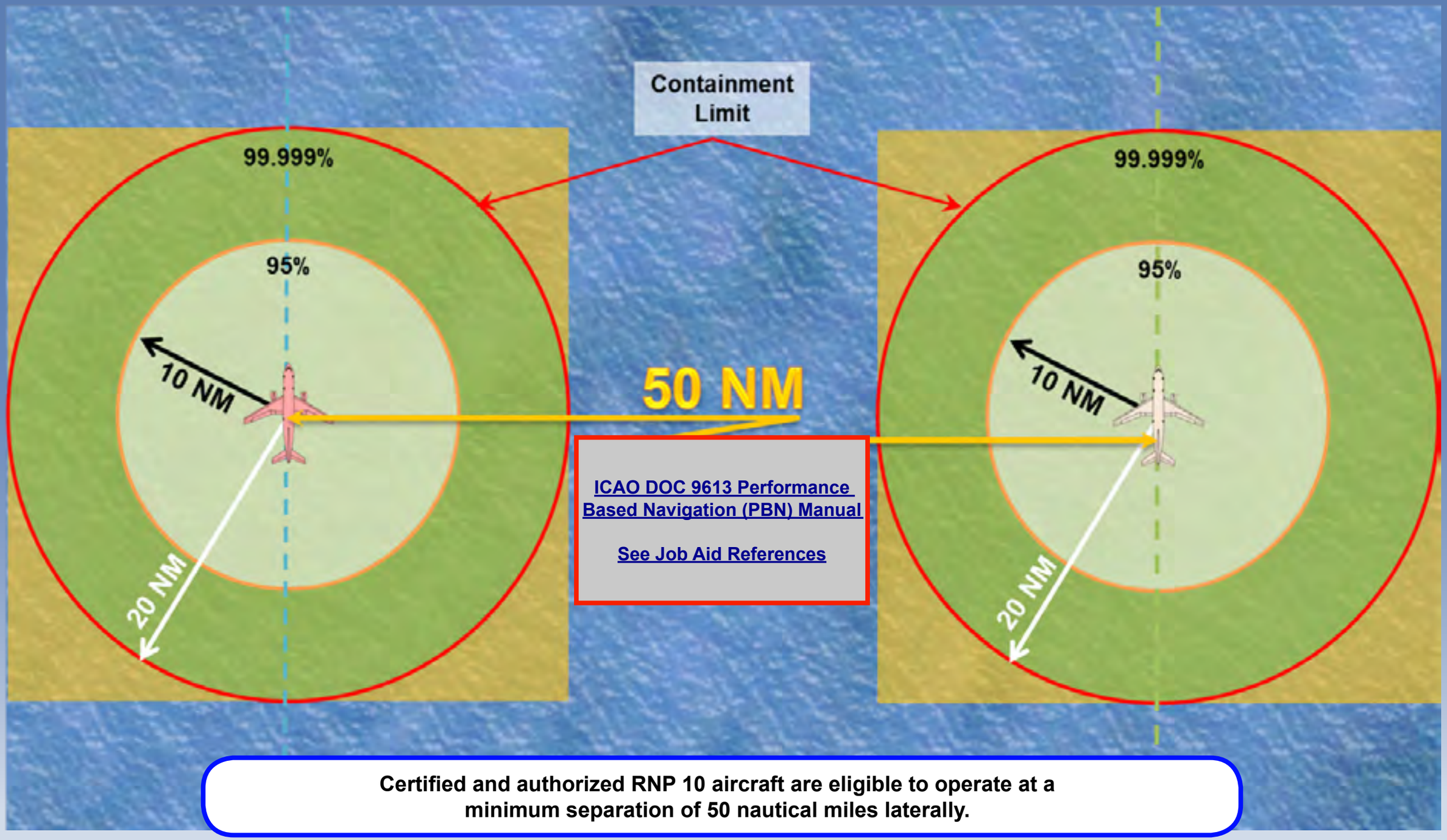
See Job Aid References

Certified and authorized FANS 1/A, RNP 4 aircraft are eligible to operate at a minimum separation of 30 nautical miles laterally and longitudinally after performing a satisfactory log-on.

RNP 4 Accuracy



RNP 10 Separation and Containment

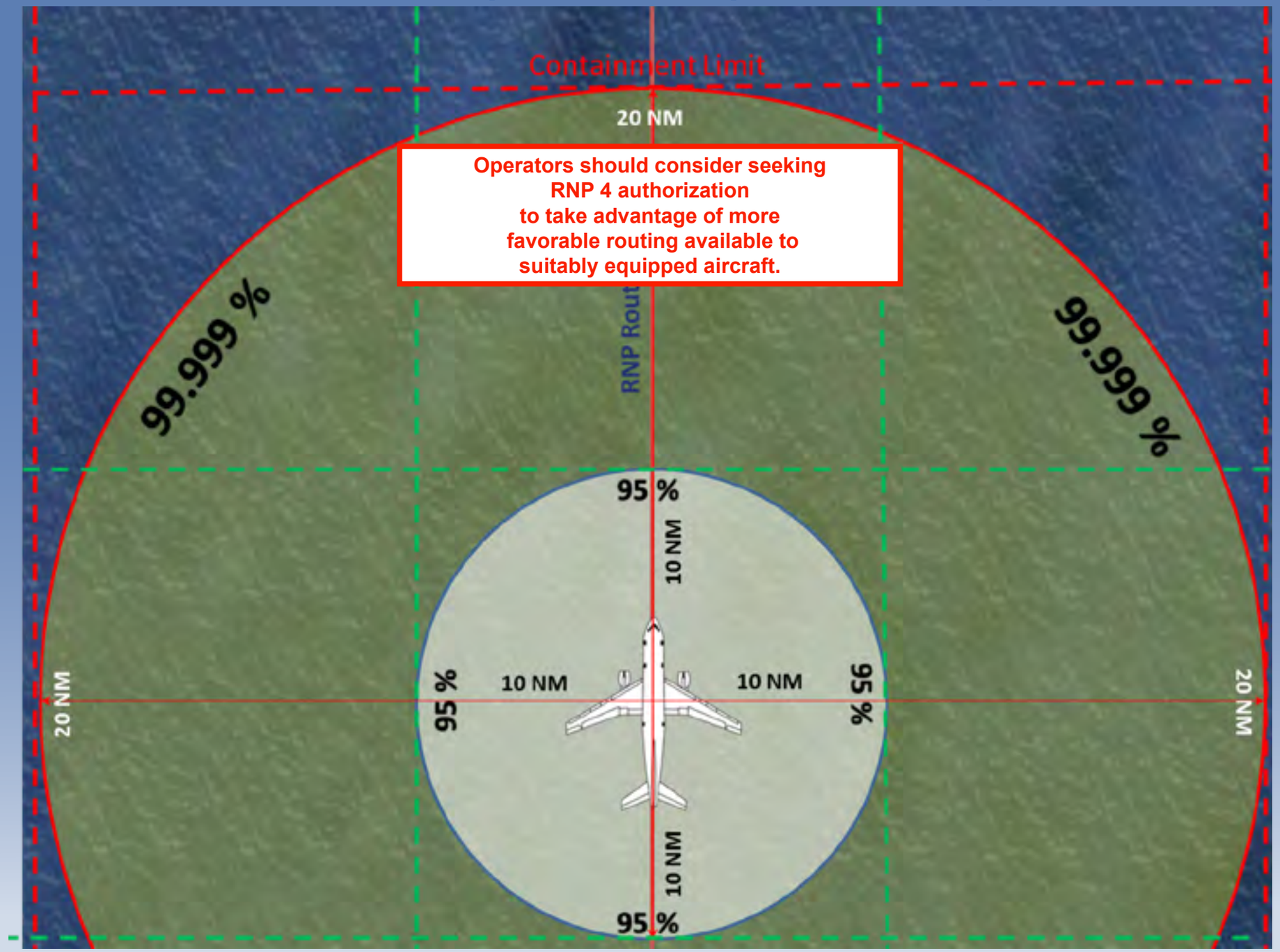


ICAO DOC 9613 Performance Based Navigation (PBN) Manual

See Job Aid References

Certified and authorized RNP 10 aircraft are eligible to operate at a minimum separation of 50 nautical miles laterally.

RNP 10 (RNAV 10) Accuracy



ACRONYMS

Click to View Items

A
B, C
D
E
F
G
H, I
J, K, L
M
N
O, P
Q, R
S
T
U, V
W
X

Acronym	Definition
A	
A/FD	Airport/Facility Directory
AAA	Airport Airspace Analysis
AAD	Assigned Altitude Deviation
AAO	Adverse Assumption Obstacle
AAS	Airport Advisory Service
AAWU	Alaskan Aviation Weather Unit
ABAS	Aircraft Based Augmentation System
AC	Advisory Circular
ACA	Arctic Control Area
ACARS	Aircraft Communication Addressing and Reporting System
ACAS	Airborne Collision Avoidance System
ACC	Area Control Center
ACI	Airport Council International
ACL	ATC Clearance
ACM	ATC Communication Management
ACO	Aircraft Certification Office
ACP	Actual Communication Performance
ACSP	Aeronautical Communication Service Provider
ACTP	Actual Communication technical Performance
ADC	Air Data Computer
ADCUS	Advise Customs
ADDS	Aviation Digital Data Service
ADF	Automatic Direction Finder
ADIRU	Air Data Inertial Reference Unit
ADIZ	Air Defense Identification Zone
ADMS	Atmospheric Dispersion Modelling System
ADS	Automatic Dependent Surveillance
ADS-ADD	ADS Aircraft Derived Data
ADS-B	Automatic Dependent Surveillance-Broadcast
ADS-B In	ADS-B signal received onboard from another aircraft or ground station
ADS-B Out	ADS-B signal sent from aircraft to ground station or other aircraft
ADS-C	Automatic Dependent Surveillance-Contract
ADS-NRA	ADS in Non-Radar Airspace

A B, C D E F G H, I J, K, L M N O, P Q, R S T U, V W X

Acronym	Definition
ADS-RAD	ADS in Radar Airspace Blending of ADS & SSR
AEDT	Aviation Emissions Design Tool
AEEC	Airlines Electronic Engineering Committee
AEM III	Advanced Emission Model
AERO2K	Model Name
AeroNav	Aeronautical Navigation Products
AFB	Air Force Base
AFCS	Automatic Flight Control System
AFIS	Automatic Flight Information Service
AFM	Airplane Flight Manual
AFN ATS	Facilities Notification (FANS logon)
AFS	Flight Standards Services
AFSS	Automated Flight Service Station
AFTN	Aeronautical Fixed Telecommunication Network
AGHME	Aircraft Geometric Height Measurement Element
AGL	Above Ground Level
AHRS	Attitude Heading Reference System
AIC	Aeronautical Information Circular
AIFSS	Aviation International Flight Service Station
AIM	Aeronautical Information Manual
AIP	Aeronautical Information Publication
AIR	Aircraft Certification Services
AIRE	Atlantic Interoperability Initiative to Reduce Emissions
AIREP	Aircraft Reports
AIRMET	Airmen's Meteorological Information
AIS	Aeronautical Information Service
AISR	All centers, some military facilities, some international ATC units
AKD	Altitude Keeping Device
ALAQS	Airport Local Air Quality Studies
ALD	Available Landing Distance
ALS	Approach Light Systems
ALTRV	Altitude Reservation
AMOC	Alternative Means of Compliance
AMSL	Above Mean Sea Level

Acronym	Definition
AMSS	Aeronautical Mobile Satellite Service
AMU	Area of Magnetic Unreliability
AMVER	Automated Merchant Vessel Report
ANC	Air Navigation Commission
ANCON	Aircraft Noise Control Model
ANOTEC	Spanish Company
ANP	Actual Navigation Performance
ANP	Air Navigation Plan
ANP	Aircraft Noise and Performance
ANSP	Air Navigation Service Provider
AOC	Aeronautical Operational Control
AOCC	Airline Operations Control Center
AOV	Air Traffic Safety Oversight Service
AP	Autopilot System
APM	Aircraft Performance Model
APMT	Aviation Environmental Portfolio Management Tool
APNT	Alternate Position Navigation and Time
APP	Airport Planning and Programming
APQI	Aircraft Position Quality Indicator
APU	Auxiliary Power Unit
APV	Approach with Vertical Guidance
AQP	Advance Qualification Program
AR	Authorization Required
ARENA	Areas Noted for Attention
ARFF IC	Aircraft Rescue and Fire Fighting Incident Commander
ARINC	Aeronautical Radio Incorporated
ARO	Airport Reservations Office
ARP	Airports
ARSA	Airport Radar Service Area
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
ARTS	Automated Radar Terminal System
ASDE-X	Airport Surface Detection Equipment - Model X
ASE	Altimetry System Error

Acronym	Definition
ASOS	Automated Surface Observing System
ASR	Aviation Safety Report
ASR	Airport Surveillance Radar
ASR	Antenna Structure Registration
ASRS	Aviation Safety Reporting System
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATCC	Air Traffic Control Center
ATCRBS	Air Traffic Control Radar Beacon System
ATCSCC	Air Traffic Control System Command Center
ATCT	Airport Traffic Control Tower
ATD	Along-Track Distance
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATM	Air Traffic Management
ATMG	Air Traffic Management Group
ATN	Aeronautical Telecommunication Network
ATN	Aeronautical Telecommunications Network
ATO	Air Traffic Organization
ATOP	Oceanic centers
ATS	Air Traffic Service
ATSA-AIRB	Enhanced Traffic Situational Awareness when Airborne
ATSA-ITP	Enhanced Traffic Situational Awareness In-Trail-Procedures
ATSA-S&M	Enhanced Sequencing & Merging operations
ATSA-SURF	Enhanced Traffic Situational Awareness on the airport Surface
ATSA-VSA	Enhanced Visual Separation on Approach
ATSP	Air Traffic Services Provider
ATSU	Air Traffic Service Unit
ATT	Attitude Retention System
AVS	Office of Aviation Safety
AWC	Aviation Weather Center
AWO	All Weather Operations
AWORM	All Weather Operations Program Manager
AWOS	Automated Weather Observing System

Acronym	Definition
AWPR	Automatic Waypoint Reporting
AWSS	Automated Weather Sensor System
AWTT	Aviation Weather Technology Transfer
AWW	Severe Weather Forecast Alert
B	
BAASS	Bigelow Aerospace Advanced Space Studies
BADA	Base of Aircraft Data
baro VNAV	Barometric Vertical Navigation
BBS	Bulletin Board System
BC	Back Course
BECMG	Becoming group
BITE	Built-In Test Equipment
BMVBS	German Ministry of Transport
BORPC	Basic Operational Requirements and Planning Criteria
BOTA	Brest Oceanic Transition Area
BRG	Bearing
B-RNAV	Basic Area Navigation
C	
C/A	Coarse Acquisition
CAA	Civil Aviation Authority
CAASD	Center for Advanced Aviation Systems Development
CAATS	Canadian Automated Air Traffic System
CAD	Centralized ADS-C system
CAEP	ICAO Committee on Aviation Environmental Protection
CANSO	Civil Air Navigation Services Organization
CAR	Caribbean Region
CAR-SAM	Caribbean–South America (ICAO term)
CARTS	Common Automated Radar Terminal System
CAT	Clear Air Turbulence
CATEX	Categorical Exclusion
CB	Cumulonimbus Clouds
CC	Connection
CD	Controller Display
CDA	Current Data Authority

Acronym	Definition
CDI	Course Deviation Indicator
CDL	Configuration Deviation List
CDR	Coded Departure Route
CDTI	Cockpit Display of Traffic Information
CDU	Control Display Unit
CENPAC	Central Pacific
CEP	Central East Pacific
CEPAC	Central East Pacific Route System
CERAP	Combined Center/RAPCON
CFA	Controlled Firing Area
CFIT	Controlled Flight into Terrain
CFL	Cleared Flight Level
CFM	Company Flight Manual
CFP	Computer Flight Plan
CFR	Code of Federal Regulations
CFRS	Centralized FMC Waypoint System
CHDO	Certificate-Holding District Office
CIS	Commonwealth of Independent States
CM	Context management
CMA	Central Monitoring Agency
CMO	Certificate Management Office
CNS	Communications, Navigation, and Surveillance
CNS/ATM	Communications, Navigation and Surveillance/Air Traffic Management
CO	Carbon Oxide
CO2	Carbon Dioxide
COA	Certificate of Waiver or Authorization
COSPAS	Space System for the Search of Vessels in Distress
CPC	Connect Request (Euro Control)
CPDLC	Controller-Pilot Data Link Communications
CR	Connect Request
CRC	Cycle Redundancy Check
CRM	Collision Risk Model
CSP	Communication Service Providers
CTA	Control Area

Acronym	Definition
CTAF	Common Traffic Advisory Frequency
CTR	Control Zone
CU	Cumulus Clouds
CVFP	Charted Visual Flight Procedure
CVRS	Computerized Voice Reservation System
CWA	Center Weather Advisory
CWSU	Center Weather Service Unit
D	
DA	Decision Altitude
DA	Data Authority
DARP	Dynamic Airborne Reroute Procedure
D-ATIS	Data link (or Digital) Automatic Terminal Information Service
DCDU	Datalink Control & Display Unit
DCL	Departure Clearance
DCP	Data Collection Package
DCPC	Direct Controller Pilot Communications
DDTC	Data link Delivery of Taxi Clearance
DER	Departure End of Runway
DEWIZ	Distant Early Warning Identification Zone
DF	Direction Finder
DfT	Department for Transport
DH	Decision Height
DL	Data Link (CPDLC, ATN, ACARS, AFIS)
DLIC	Data Link Initiation Capability
DLS	Data Link Services
DM	Downlink Message
DME	Distance Measuring Equipment
DME/N	Standard DME
DME/P	Precision DME
DOD	Department of Defense
DOF	Digital Obstacle File
DOI	Department of Interior
D-ORIS	Data link Operational “En-Route” Information Service
DP	Instrument Departure Procedure

Acronym	Definition
DPU	Data Processor Unit
DR	Dead Reckoning
DRT	Diversion Recovery Tool
DRVSM	Domestic Reduced Vertical Separation Minimum
DSC	Downstream Clearance
D-SIG	Data link Surface Information & Guidance
D-TAXI	Data link Taxi Instruction
DTC DUATS	Direct file over the internet
DTED	Digital Terrain Elevation Data
DUATS	Direct User Access Terminal System
DVA	Diverse Vector Area
DVFR	Defense Visual Flight Rules
DVRSN	Diversion
E	
EA	Environmental Assessment
EASA	European Aviation Safety Agency
ECAC	European Civil Aviation Conference
ECI	Environmental Condition Indicator
EDCT	Expect Departure Clearance Time
EDMS	Emissions and Dispersion Modelling System
EDR	Excessive Descent Rate
EDTO	Extended Diversion Time Operations
EFAS	En Route Flight Advisory Service
EFIS	Electronic Flight Instrument System
EFV	Enhanced Flight Visibility
EFVS	Enhanced Flight Vision System
EGPWS	Enhanced Ground Proximity Warning System
EICAS	Engine Indicating and Crew Alerting System
EIS	Environmental Impact Statement
ELT	Emergency Locator Transmitter
EMAS	Engineered Materials Arresting System
EPE	Estimate of Position Error
EPI	Environmental Key Performance Indicator
EPU	Estimate Position of Uncertainty

Acronym	Definition
ERAM	En Route centers
ESV	Expanded Service Volume
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETE	Estimated Time En Route
ETOPS	Extended Operations
ETP	Equal Time Point
EUR	Europe
EUR/NAT	Europe and North Atlantic
EUROCAE	European Organization for Civil Aviation Equipment
EUROCONTROL	European Organization for the Safety Air Navigation
EVS	Enhance Vision System
EWINS	Enhanced Weather Information System
EWR	Newark International Airport
F	
FA	Area Forecast
FAA	Federal Aviation Administration
FAB	Functional Airspace Blocks
FAF	Final Approach Fix
FANS	Future Air Navigation System
FAROS	Final Approach Runway Occupancy Signal
FAS	Final Approach Segment
FASID	Facilities and Services Implementation Document
FAST	Future Aviation Scenario Tool
FAWP	Final Approach Waypoint
FB	Fly-by
FBO	Fixed Base Operator
FCC	Federal Communications Commission
FD	Flight Director
FDC	Flight Data Center
FDE	Fault Detection and Exclusion
FDP2000	Anchorage Domestic center
FDPS	Flight Data Processing System
FESG	ICAO Forecasting and Economic Support Group

Acronym	Definition
FIC	Flight Information Center
FIP	Flight Inspection and Procedures
FIR	Flight Information Region
FIS	Flight Information Service
FIS-B	Flight Information Services Broadcast
FISDL	Flight Information Services Data Link
FL	Flight Level
FLAS	Flight Level Allocation Scheme
FLIP	Flight Information Publication
FLIPCY	Flight Plan Consistency
FLIPINT	Flight Path Intent
FLTA	Forward Looking Terrain Avoidance
FMC	Flight Management Computer
FMC WPR	Flight Management Computer Waypoint Position Reporting
FMCS	Flight Management Computer System
FMS	Flight Management System
FMSP	Flight Management System Procedure
FO	Fly-over
FOCA	Federal Office of Civil Aviation
FOM	Figure of Merit
FOM	Forecasting and Operations Module
FOM	Flight Operations Manual
FOV	Field of View
FPA	Flight Path Angle
FPFO	Flight Procedures Field Office
FPNM	Feet Per Nautical Mile
FPO	Flight Procedures Office
FPV	Flight Path Vector
Frequent	Occurring more often than 1 in 1000 events or 1000 flight hours.
FRMS	Fatigue Risk Management System
FROP	Final Roll-out point
FRT	Fixed Radius Transition
FSDO	Flight Standards District Office
FSIMS	Flight Standards Information Management System

Acronym	Definition
FSS	Flight Service Station
FSTD	Flight System Training Device
FTE	Flight Technical Error
FTR	Flexible Track Route
FTS	Flexible Track System
FUA	Flexible Use of Airspace
G	
GBAS	Ground Based Augmentation System
GCO	Ground Communication Outlet
GEO	Geostationary Satellite
GFAAF	Global Framework for Aviation Alternative Fuels
GHG	Green House Gas (emissions)
GIS	Geographical Information System
GLCC	Global LORAN-C Charts
GLONASS	Global Orbiting Navigation Satellite System (Russian)
GLS	"Global Navigation Satellite System [GNSS] Landing System "
GMS	Global Positioning System Monitoring System
GMT	Greenwich Mean Time
GMU	GPS (Height) Monitoring Unit
GNE	Gross Navigation Error
GNSS	Global Navigation Satellite System
GNSSP	Global Navigation Satellite System Panel
Go-around	A transition from an approach to a stabilized climb.
GOLD	Global Operational Data Link Document
GP	General Purpose
GPS	Global Positioning System
GPU	Ground Power Unit
GPWS	Ground Proximity Warning System
GRAS	Ground-based regional augmentation system
GRECO	Graphical Trajectory Co-ordination
GRI	Group Repetition Interval
GSD	Geographical Situation Display
GSE	Ground Support Equipment

Acronym	Definition
GUS	Ground Uplink Station
H	
HAR	High Altitude Redesign
HAT	Height Above Touchdown
HDG	Heading
HDTA	High Density Traffic Airports
HEDA	Helicopter En Route Descent Area
HEMS	Helicopter Emergency Medical Services
HF	High Frequency
HFDL	High Frequency Data Link
HIL	Horizontal Integrity Limit is equal to the Horizontal Alert Limit
HIRL	High Intensity Runway Lights
HIWAS	Hazardous Inflight Weather Advisory Service
HMI	Human Machine Interface
HMU	Height Monitoring Unit
hPa	Hectopascals
HR	Human Range
HRR	Helicopter Rapid Refueling Procedures
HSI	Horizontal Situation Indicator
HUD	Head-Up Display
Hz	Hertz
I	
I&I	Implementation and Impact
IAF	Initial Approach Fix
IAP	Instrument Approach Procedure
IAS	Indicated Air Speed
IATA	International Air Transport Association
IAWP	Initial Approach Waypoint
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IF	Intermediate Fix
IFP	Instrument Flight Procedures
IFR	Instrument Flight Rules
IFSET	ICAO Fuel Savings Estimation Tool

Acronym	Definition
IGA	International General Aviation
ILS	Instrument Landing System
ILS/PRM	Instrument Landing System/Precision Runway Monitor
IM	Inner Marker
IMC	Instrument Meteorological Conditions
IN	International Notice to Airmen
INM	Integrated Noise Model
INS	Inertial Navigation System
IOC	Initial Operational Capability
IPDS	Instrument Procedure Design System
IR	IFR Military Training Route
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISA	International Standard Atmosphere
ITCZ	Intertropical Convergence Zone
ITP	In-Trail Procedures
ITWS	Integrated Terminal Weather System
J	
JAA	Joint Aviation Authority
JFK	John F. Kennedy International Airport
K	
KHz	Kilohertz
km	Kilometer
KPA	Key Performance Areas
KPI	Key Performance Indicator
L	
LAA	Local Airport Advisory (within 10 miles of an airport with FSS)
LAA	Lowest Authorized Altitude
LAAS	Local Area Augmentation System
LAHSO	Land and Hold Short Operations
LAQ	Local Air Quality
LAT	Latitude
LAWRS	Limited Aviation Weather Reporting Station
LDA	Landing Distance Available

Acronym	Definition
LDA	Localizer Type Directional Aid
LDA/PRM	Localizer Type Directional Aid/Precision Runway Monitor
LDE	Lateral Deviation Event (LDE)
LDOC	Long Distance Operational Control
LGA	LaGuardia Airport
LIRL	Low Intensity Runway Lights
LLWAS	Low Level Wind Shear Alert System
LLWAS NE	Low Level Wind Shear Alert System Network Expansion
LLWAS-RS	Low Level Wind Shear Alert System Relocation/Sustainment
LNAV	Lateral Navigation
LOA	Letter of Authorization
LOC	Localizer
LODA	Letter of Design Approval
LOE	Line Oriented Evaluation
LOFT	Line Oriented Flight Training
LONG	Longitude
LOP	Line-of-position
LP	Localizer Performance
LPV	Localizer Performance with Vertical Guidance
LRCS	Long-Range Communication System
LRDE	Level Range Deviation Event
LRNP	Long-Range Navigation Program
LRNS	Long-Range Navigation System
LTP	Landing Threshold Point
LUAW	Line Up and Wait
LZ	Landing Zone
M	
MACS	Military Aviation Communication System
MAGENTA	Model for Assessing Global Exposure to the Noise of Transport Aircraft
MAHWP	Missed Approach Holding Waypoint
MAP	Missed Approach Point
MARSA	Military Assumes Responsibility for Separation of Aircraft
MAS	Message Assurance
MASPS	Minimum Aircraft System Performance Specification

Acronym	Definition
MAWP	Missed Approach Waypoint
MBM	Market Based Measures
MCA	Ministry of Civil Aviation
MCDU	Multi-function Cockpit Display Unit
MDA	Minimum Descent Altitude
MEA	Minimum En Route Altitude
MEARTS	Micro En Route Automated Radar Tracking System
MEL	Minimum Equipment List
MET	Meteorology Information
MET	Meteorological
METAR	Aviation Routine Weather Report
MHz	Megahertz
MIA	Minimum IFR Altitude
MIRL	Medium Intensity Runway Lights
MLS	Microwave Landing System
MM	Middle Marker
MMEL	Master Minimum Equipment List
MMS	Mineral Management Service
MNPS	Minimum Navigation Performance Specification
MNPS OPS	Minimum Navigation Performance Specifications Operations
MOA	Memorandum of Agreement
MOA	Military Operations Area
MOCA	Minimum Obstruction Clearance Altitude
MOPS	Minimum Operational Performance Standards
MORA	Minimum Off-Route Altitude
MPI	Management Performance Indicator
MRA	Minimum Reception Altitude
MRB	Magnetic Reference Bearing
MRN	Message Reference Number
MSA	Minimum Sector Altitude
MSA	Minimum Safe Altitude
MSAW	Minimum Safe Altitude Warning
MSL	Mean Sea Level
MSpec	Management Specification

Acronym	Definition
MTBF	Mean Time Between Failures
MTI	Moving Target Indicator
MTOS	Mountain Obscuration
MTR	Military Training Route
MTT	Minimum Time Track
MTTR	Mean Time To Repair
MVA	Minimum Vectoring Altitude
MWA	Mountain Wave Activity
MWO	Meteorological Watch Office
N	
NAA	National Airworthiness Authority
NAARMO	North American Approval Registry and Monitoring Organization
NACO	National Aeronautical Charting Office
NAM	North American Region
NAPT	National Airspace and Procedures Team
NAR	North American Route
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NASR	National Airspace System Resource
NAT	North Atlantic Region
NAT OTS	North Atlantic Organized Track System
NAT SPG	North Atlantic Systems Planning Group
NATS	National Air Traffic Services Limited
NAV	Navigation
Nav Specs	Navigation Specifications
NAVAID	Navigational Aid
NAVCEN	Coast Guard Navigation Center
NCA	Northern Control Area
NCR	Negative Climb Rate
NCWF	National Convective Weather Forecast
ND	Navigation Display
NDA	Next Data Authority
NDB	Nondirectional Radio Beacon
NDB	Navigation Data Base

Acronym	Definition
NEPA	National Environmental Policy Act
NERS	North Atlantic European Route Scheme
NEXRAD	Next Generation Weather Radar
NextGen	Next Generation
NFDC	National Flight Data Center
NFPG	National Flight Procedures Group
NFPO	National Flight Procedures Office
NGA	National Geospatial-Intelligence Agency
NIRS	Noise Integrated Routing System
NM	Nautical Miles
NMAC	Near Midair Collision
NOAA	National Oceanic and Atmospheric Administration
NOF	NOTAM offices
NOPAC	North Pacific
NOPAC	North Pacific Route System
NoPT	No Procedure Turn Required
NOTA	Northern Oceanic Transition Area
NOTAM	Notice to Airmen
NOx	Nitrogen Oxides
NOx-CSM	Nitrogen Oxides Cost Spreadsheet Model
NPA	Nonprecision Approach
NPOLE	North Pole
NRA	Non-Radar Airspace
NRS	Navigation Reference System
NRS	National Reference System
NSA	National Security Area
NSE	Navigation Sensor Error
NSE	Navigation System Error
NSW	No Significant Weather
NTAP	Notices to Airmen Publication
NTSB	National Transportation Safety Board
NTZ	No Transgression Zone
NWS	National Weather Service
O	

Acronym	Definition
OAC	Oceanic Area Control Center
OADR	Oceanic Altitude Deviation Reports
OASIS	Flight Services in Alaska
OAT	Outside Air Temperature
OBS	Omni-bearing Selector
OCA	Oceanic Control Area
OCA	Obstacle Clearance Altitude
OCA	Oceanic Control Area
OCD	Oceanic Clearance Delivery
OCEAN21	Oceanic Flight surveillance and flight data processing
OCH	Obstacle Clearance Height
OCL	Oceanic Clearance
OCS	Obstacle Clearance Surface
ODP	Obstacle Departure Procedure
OE	Obstruction Evaluation
OEM	Original Equipment Manufacturers
OESB	Oceanic Errors Safety Bulletin
OFDPS	Hawaii/Guam control facility
OIS	Operational Information System
OIS	Obstacle Identification Surface
OM	Outer Marker
OPI	Operational Performance Indicator
OPR	Office of Primary Responsibility
OpSpecs	Operation Specification
ORT	Operational Requirements Table
OSAP	Offshore Standard Approach Procedure
OTS	Organized Track System
P	
P/CG	Pilot/Controller Glossary
PA	Precision Approach
PAC	Pacific Region
PACOTS	Pacific Oceanic Track System
PAI	Principal Avionics Inspector
PAM	Path Arrival Management

Acronym	Definition
PANS	Procedures for Air Navigation Services
PANS-ABC	ICAO abbreviations and codes
PANS-ATM	Procedures for Air Navigation Services-Air Traffic Management
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PAR	Preferred Arrival Route
PARC	Performance-Based Operations Aviation Rulemaking Committee
PARC	Performance-Based Operations Aviation Rulemaking
PBN	Performance Based Navigation
PC	Proficiency Check
PDA	Premature Descent Alert
PDC	Pre-departure Clearance
PDE	Path Definition Error
PEC	Position Error Correction
PEE	Position Estimate Error
PEGAS	Russian Federation Air Quality Model
PFD	Personal Flotation Device
PinS	Point-in-Space
PIREP	Pilot Weather Report
PMI	Principal Maintenance Inspector
PNF	Pilot-Not-Flying
POB	Persons on Board
POC	Point of Contact
POFZ	Precision Obstacle Free Zone
POH	Pilot's Operating Handbook
POI	Principal Operations Inspector
PORT	Pilot Operational Response Time
POS	Position
PPO	Prior Permission Only
PPS	Precise Positioning Service
PQI	Position Quality Indicator
PRB	Procedure Review Board
PRM	Precision Runway Monitor
PRM	Preferred Route Message

Acronym	Definition
P-RNAV	Precision RNAV
PSE	Path Steering Error
PSR	Primary Surveillance Radar
PT	Procedure Turn
PT	Proficiency Training
PTRS	Program Tracking and Reporting Subsystem
PVT	Position, Velocity & Time
Q	
Q Routes	High-altitude RNAV routes
QA	Quality Assurance
QICP	Qualified Internet Communications Provider
R	
R/T	Radio Telephony
RA	Resolution Advisory
RAA	Remote Advisory Airport
RAIM	Receiver Autonomous Integrity Monitoring
RAIS	Remote Airport Information Service
RAPT	Regional Airspace and Procedures Team
RBDT	Ribbon Display Terminals
RCAG	Remote Center Air/Ground
RCC	Rescue Coordination Center
RCLS	Runway Centerline Lighting System
RCO	Remote Communications Outlet
RCP	Required Communication Performance
RCP A	Required Communication Performance Availability
RCP C	Required Communication Performance Continuity
RCP ET	Required Communication Performance Expiration Time
RCP I	Required Communication Performance Integrity
RD	Rotor Diameter
REF	Reference
REIL	Runway End Identifier Lights
REL	Runway Entrance Lights
RF	Radius-to-Fix
RFM	Rotorcraft Flight Manual

Acronym	Definition
RGS	Radio Ground Station
RIL	Runway Intersection Lights
RLIM	Runway Light Intensity Monitor
RNAV	Area Navigation
RNAV RNP	RNP Authorization Required
RNL	Reference Noise Levels
RNP	Required Navigation Performance
ROC	Required Obstacle Clearance
RPAT	RNP Parallel Approach Runway Transitions
RSP	Required Surveillance Performance
RSTP	Required Surveillance Technical Performance
RTA	Required Time of Arrival
RTC	Required Terrain Clearance
RVFP	Area Navigation Visual Flight Procedure
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
RWS	Runway Segment
RWSL	Runway Status Light
RWY	Runway
S	
S&M	Sequencing and Merging
SAGE	System for Assessing Aviation's Global Emissions
SAM	System Area Monitor
SAM	South America Region
SAO	Special Areas of Operations
SAR	Search and Rescue
SARP	Standards and Recommended Practices (ICAO)
SARPS	Standards and Recommended Practices
SARSAT	Search and Rescue Satellite-Aided Tracking
SAS	Stability Augmentation System
SAT	Static Air Temperature
SATCOM	Satellite Communication
SATCOM Voice	Satellite Voice Communication
SBAS	Satellite-based Augmentation System

Acronym	Definition
SC	Stratocumulus Clouds
SCA	Southern Control Area
SDF	Simplified Directional Facility
SDL	Satcom Data Link
SELCAL	Selective Calling
SESAR	Single European Sky ATM Research
SET	Select Event Training
SFL	Sequenced Flashing Lights
SFR	Special Flight Rules
SIA	Standard Instrument Approach
SIAP	Standard Instrument Approach Procedure
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Information
SLA	Standard Landing Aid
SLOP	Strategic Lateral Offset Procedure
S-LRCS	Single Long Range Communication System
S-LRNS	Single Long-Range Navigation System
SM	Statute Mile
SMGCS	Surface Movement Guidance Control System
SMO	System Management Office
SMS	Safety Management System
SNR	Signal-to-noise Ratio
SOIA	Simultaneous Offset Instrument Approaches
SONDEO	Study on Noise Exposure Around European Airports
SOP	Standard Operating Procedure
SOTA	Shannon Oceanic Transition Area
SPC	Storm Prediction Center
SPF	Special Procedure Form
SPI	Special Pulse Identification
SPOT	Special Purpose Operational Training
SPS	Standard Positioning Service
SRM	Safety Risk Management
SRMD	Safety Risk Management Document
SRMDM	Safety Risk Management Decision Memorandum

Acronym	Definition
SSB	Single Sideband
SSEC	Static Source Error Correction
SSR	Secondary Surveillance Radar
STAPES	System for Airport Noise Exposure Studies
STAR	Standard Terminal Arrival
STARS	Standard Terminal Automation Replacement System
STC	Supplemental Type Certificate
STMP	Special Traffic Management Program
SUPPS	Supplementary Procedures
SVA	Enhanced Successive Visual Approaches
SVS	Synthetic Vision System
SWIM	System Wide Information Management
SWSL	Supplemental Weather Service Locations
T	
T ROUTES	Tango routes
TA	Traffic Advisory
TAA	Terminal Arrival Area
TAC	Terminal Area Chart
TACAN	Tactical Air Navigation
TAF	Terminal Area Forecast
TARGETS	Terminal Area Route Generation Evaluation and Traffic Simulation
TAS	True Airspeed
TAWS	Terrain Awareness Warning System
TC	Type Certificate
TCAS	Traffic Alert and Collision Avoidance System
TCH	Threshold Crossing Height
TD	Time Difference
TDLS	Tower Data Link System
TDM	Track Definition Message
TDWR	Terminal Doppler Weather Radar
TDZ	Touch Down Zone
TDZ	Touchdown Zone
TDZE	Touchdown Zone Elevation
TDZL	Touchdown Zone Lights

Acronym	Definition
TEC	Tower En Route Control
TERPS	Terminal Instrument Procedures
TF-5	Task Force-5
TGL	Temporary Guidance Leaflet
THL	Takeoff Hold Lights
TIBS	Telephone Information Briefing Service
TIS	Traffic Information Service
TIS-B	Terminal Information Service - Broadcast
TKE	Track Keeping Error
TLS	Target Level of Safety
TLS	Transponder Landing System
TMA	Terminal Maneuvering Area
TMI	Track Message Identification
TOD	Top of Descent
TPP	Terminal Procedures Publications
TQM	Total Quality Management
TRACON	Terminal Radar Approach Control Facility
TRN	Monitored Operational Performance
TRSA	Terminal Radar Service Area
TSA	Transportation Security Administration
TSE	Total System Error
TSO	Technical Standard Order
TSOA	Technical Standard Order Authorization
TVE	Total Vertical Error
TWDL	Two-Way Data Link
TWEB	Transcribed Weather Broadcast
TWIB	Terminal Weather Information Broadcast
TWIP	Terminal Weather Information for Pilots
U	
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
UAV	Unmanned Aerial Vehicle
UDDF	Universal Data Delivery Format

Acronym	Definition
UFO	Unidentified Flying Object
UHF	Ultrahigh Frequency
UM	Uplink Message
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UPR	User Preferred Route
USB	Upper Sideband
USIFPP	United States Instrument Flight Procedures Panel
USNOF	United States NOTAM Office
UTA	Upper Control Area
UTC	Universal Time Coordinated
UWS	Urgent Weather SIGMET
V	
VAR	Volcanic Activity Reporting
VASI	Visual Approach Slope Indicator
VCOA	Visual Climb Over the Airport
VDA	Vertical Descent Angle
VDL	VHF Data Link
VDP	Visual Descent Point
VFR	Visual Flight Rules
VGSI	Visual Glide Slope Indicator
VHF	Very High Frequency
VIP	Video Integrator Processor
VLF	Very Low Frequency
VMC	Visual Meteorological Conditions
VMINI	Instrument flight minimum speed
VNAV	Vertical Navigation
VNE	Never exceed speed
VNEI	Instrument flight never exceed speed
VOLMET	Meteorological Information For Aircraft In Flight
VOR	Very High Frequency Omni-directional Range
VOR/DME	VHF Omnidirectional Range/Distance Measuring Equipment
VORTAC	VHF Omni-directional Range/Tactical Air Navigation
VOT	VOR Test Facility

Acronym	Definition
VR	VFR Military Training Route
VRE	Vertical Rate of Change Event
VREF	Reference landing approach speed
VSM	Vertical Separation Minimum
VSO	Stalling speed or the minimum steady flight speed in the landing configuration at maximum weight
VTF	Vector to Final
VV	Vertical Visibility
VVI	Vertical Velocity Indicator
VX	Speed for best angle of climb
VY	Speed for best rate of climb
VYI	Instrument climb speed, utilized instead of VY for compliance with the climb requirements for instrument flight
W	
WA	AIRMET
WAAS	Wide Area Augmentation System
WAC	World Aeronautical Chart
WAH	When Able Higher
WATRS	West Atlantic Route System
WATRS Plus	WATRS airspace + Miami Atlantic High Offshore Airspace + San Juan Oceanic FIR
WCE	Waypoint Change Event
WFO	Weather Forecast Office
WG	Working Group
WGS-84	World Geodetic System of 1984
WGS-84 Ellipsoid	A mathematical model of the earth's shape based on WGS-84 survey information
WMO	World Meteorological Organization
WMS	Wide-Area Master Station
WMSC	Weather Message Switching Center
WMSCR	Weather Message Switching Center Replacement
WP	Waypoint
WPR	Waypoint Position Report
WRS	Wide-Area Ground Reference Station
WS	SIGMET
WSO	Weather Service Office
WSP	Weather System Processor
WST	Convective Significant Meteorological Information

Acronym	Definition
WW	Severe Weather Watch Bulletin
X	
XTK	Cross-Track Error

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- SAO Specialists
- FAA HQ Aviation Safety Inspectors
- Contractor Contacts
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