

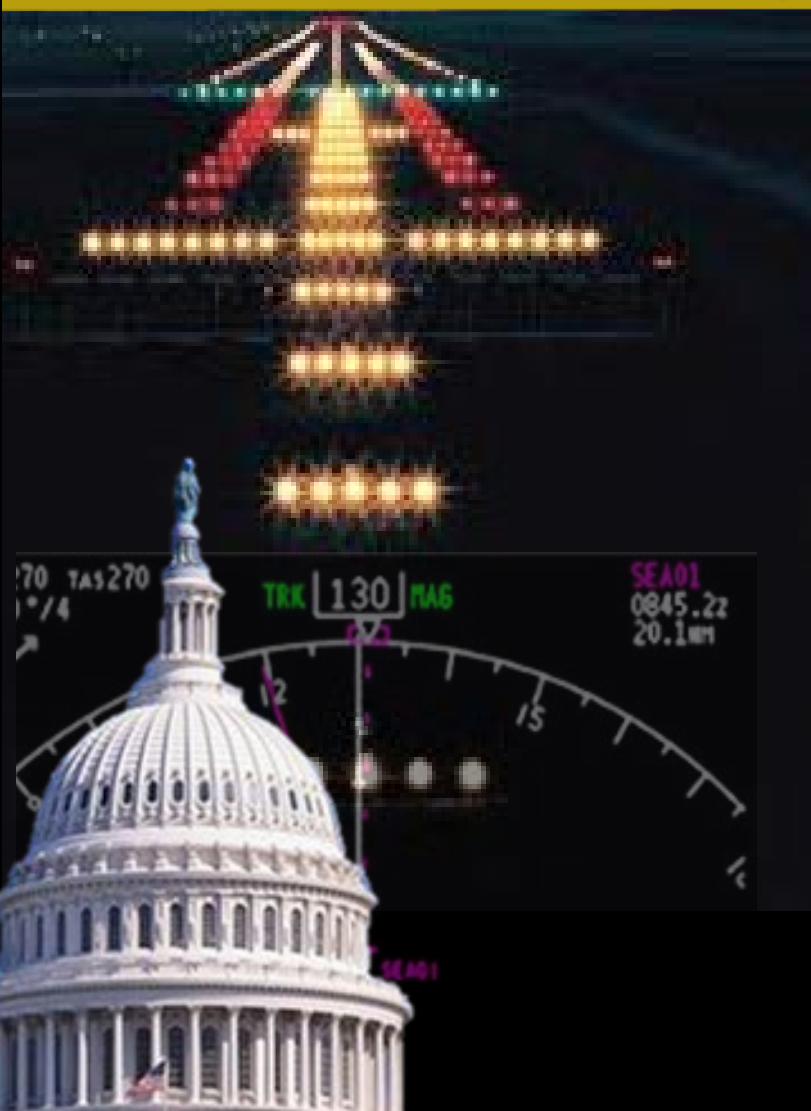
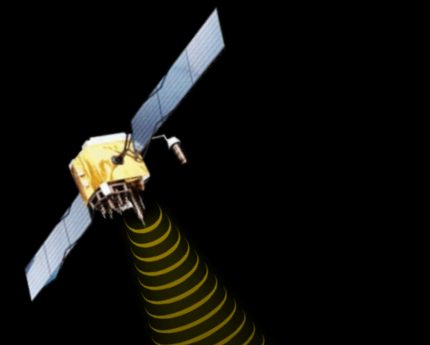


National Airspace System Resource Guide

Flight Technologies and Procedures Division
Flight Operations Group (AFS-410)

The links within this resource guide are provided as a service to help you easily find pertinent information. The validity of the links is re-checked quarterly. Documents and other information may change between updates. Information provided by non-FAA sites should be considered strictly "for information only." You should confirm the accuracy of all such non-FAA information against official FAA documentation.

Email Comments to: 9-AWA-AVS-AFS-400-Flight-Technologies-Procedures@faa.gov



- ▶ Terminal Operations
- ▶ En Route Operations
- ▶ CNS
- ▶ Emerging Technologies
- ▶ International / Position, NAV, Timing
- ▶ Useful Information



New!

- ▶ [SAFO 24002, Jamming and Spoofing](#)

3rd Quarter 2025
Updated Quarterly

[Contacts](#)
[Acronyms](#)



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Emphasis Items

Streamlined Part 91 Process

(Click window below)

The Streamlined Part 91 Operational Approval is an innovative process for obtaining or amending up to ten commonly requested Part 91 Letters of Authorization (LOAs) when purchasing a new aircraft directly from the aircraft manufacturer. Aircraft manufacturers, training providers, manual vendors, and FAA policy experts collaborate to streamline the operational approval process for the operator and inspector.

Dynamic Regulatory System (DRS)

The Dynamic Regulatory System (DRS) is a comprehensive Knowledge Center of Regulatory and Guidance material from the Office of Aviation Safety and other services and offices. DRS is cloud based and can be accessed by any device that has Internet capability. Some document types within DRS are restricted to only FAA employees and contractors.

- [Dynamic Regulatory System \(DRS\)](#)
- [Dynamic Regulatory System Training](#)

Cold Weather Operations

- [Cold Temperature Operation, AIM Altimeter Setting Procedures](#)
- [Updates to the Cold Temperature Airports Program, InFO 22002](#)

Climb/Descend Via

- [Climb Via Clearance Video](#)
- [FAA Information for Operators \(InFO 14003\)](#)



**Federal Aviation
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Subject Matter Expert Cross Reference p.1

(P) Primary
(S) Secondary

Subject Lookup <i>Below are AFS areas of responsibility</i>	Subject Matter Expert (SME) <i>Click on a name below to view full contact information</i>
Advance Air Mobility (AAM)	(P) Adam Hendrickson , (S) Hermon Maddox , Mike Melssen , Earle Fischer , Lindsey Floyd
Advanced Required Navigation Performance (A-RNP)	(P) Jeffrey Kerr , (S) Joel Dickinson ,
Airborne Collision Avoidance System (ACAS-X)	(P) Michael Vaupell , (S)
Aircraft Performance	(P) Ian Spaude , (S) Chris Jones
Airport Airspace Analysis (AAA)	(See DIVISION OF WORK - SERVICE CENTER AREA)
Airport and Approach Lighting	(P) Matthew Harmon , (S) Mike Melssen
All Weather Operations; Irregular Terrain Airport approvals	(P) Lindsey Floyd
Area Navigation (RNAV)	(P) Merrill "Jazz" Armstrong , (S) Joel Dickinson , Jeff Kerr , Hermon Maddox ,
Automatic Dependent Surveillance – Broadcast (ADS-B)	James "Jim" Kenney , Timothy Harris
Aviation Weather	(P) Paul Albuquerque , (S) John Steventon ,
Category (CAT I) (SA CAT I) Instrument Landing System (ILS)	(See AFS-420 Contact Map and SME list)
Category CAT II/III Instrument Landing System (ILS)	(P) Matthew Harmon , (See DIVISION OF WORK - SERVICE CENTER AREA)
Closely Spaced Parallel Operations (CSPO)	(P) John Blair , (S) Joe Lintzenich
Cold Weather Operations	(P) Jeff Kerr
Continuous Descent Final Approach (CDFA)	(P) Jeff Kerr
Coordinating Organization for Navigation (CON)	(P) Merrill "Jazz" Armstrong , (S) Christina Clausnitzer , Jeff Kerr , Doug Phiher , Kristi Peterson
Data Communication (Data Comm)	(P) Mark Patterson , (S) Scott Bender , Palen Elder , Greg Spann
Detect and Avoid (DAA)	(P) Paul Albuquerque , (S) Bart Angle
Dual Frequency Multi Constellation (DFMC)	(P) Kristi Peterson (S) Jeff Kerr
Electronic Flight Bag (EFB)	(P) Kurt Stiefel , (S)
Enhanced Flight Vision Systems (CVS and EFVS)	(P) Christopher "Scott" McLellan , Sean Flack
Global Positioning System (GPS)	(P) Christina Clausnitzer (S) Cathy Graham
Global Navigation Satellite System (GNSS)	(P) Christina Clausnitzer , (S) Joel Dickinson , Jeff Kerr , Cathy Graham , Doug Phiher , Greg Spann , Earle Fischer
Ground-based Augmentation Systems (GBAS)	(P) Mike Melssen , Joel Dickinson , (S) Earle "Byron" Fisher , Greg Spann , Earle Fischer , Kristi Peterson
Instrument Flight Procedures (IFP)	(P) Joel Dickinson , Jeff Kerr , John Blair , Herman Maddox , Chris Jones , Joe Lintzenich
International Civil Aviation Organization (ICAO)	(P) Joel Dickinson , (S) Paul Albuquerque , Jeff Kerr , Bart Angle , Carole Perry , Doug Phiher , Joe Lintzenich , Mike Melssen
GPS/GNSS Interference and Reporting	(P) Cathy Graham , (S) Doug Phiher , Greg Spann , Kristi Peterson
Land and Hold Short Operations (LAHSO)	(P) John Blair , (S) Joe Lintzenich , Chris Jones



Federal Aviation
Administration

Subject Matter Expert Cross Reference p.2

(P) Primary
(S) Secondary

Subject Lookup <i>Below are AFS areas of responsibility</i>	Subject Matter Expert (SME) <i>Click on a name below to view full contact information</i>
Long-range Navigation	(P) Howard Atkins , (S) Kevin Kelley , Armando Lopez , Michael Costa , Ron Patton , Douglas DiFrancesco , John Marshall , Richard Salomon , Mark Wisniewski
Low Visibility Operations (LVO)	(P) Matthew Harmon , (2) "Scott" McLellan , Mike Melssen , Joe Lintzenich , Lindsey Floyd
Modification of Standards (MoS) See Division of Work - Service Center Area	(P) John Blair ,
Navigation, and Timing (PNT)	(P) Christina Clausnitzer , (S) Cathy Graham
New Entrants	(P) Paul Albuquerque , (S) Mike Melssen , Byron Fisher
Obstruction Evaluation (OE)	(See DIVISION OF WORK - SERVICE CENTER AREA), Chris Jones
Oceanic and Remote Continental Airspace Operations	(P) Howard Atkins , (S) Kevin Kelley , Armando Lopez , Michael Costa Michael Mosher , Ron Patton , Douglas DiFrancesco , John Marshall , Greg Spann , Mark Wisniewski , Scott Stokes
Operations Approval Portal System (OAPS)	(P)
PBN Alaska (AK)	(P) Joel Dickinson , (S) Jeffrey Kerr
Performance Based Navigation (PBN)/Required Performance Navigation (RNP)	(P) Joel Dickinson , (S) John Blair , Jeffrey Kerr , Hermon Maddox , Paul Albuquerque , Joe Lintzenich , Greg Spann , Richard Salomon , Mark Wisniewski
Polar and AMU	(P) Atkins, Howard
Reduced Vertical Separation Minimum (RVSM)	(P)
RNAV Visual Flight Procedure (RVFP) and Special Procedures	(P) Joel Dickinson , (See DIVISION OF WORK - SERVICE CENTER AREA)
RNP Authorization Required (AR) Approach	(P) Jeff Kerr , (S) Joel Dickinson , James Cain , Greg Spann
Rotorcraft/Vertical Lift	(P) Herman Maddox ,
SA CAT I and CAT II/III Authorization policy	(P) Mike Melssen , (S) Christopher "Scott" McLellan
Satellite-based Augmentation Systems (SBAS)	(P) Joel Dickinson , Doug Phifer
Simultaneous Approach Operations	(P) John Blair , Joe Lintzenich
Surface Movement Guidance and Control System (SMGCS)	(See DIVISION OF WORK - SERVICE CENTER AREA)
Terminal Visual Flight Rules	(P) Mike Melssen , Chris Jones
Traffic Alert and Collision Avoidance System (TCAS I/II)	(P) Michael Vaupell
Unmanned Aircraft Systems (UAS)	(P) John Swigart , (S) Paul Albuquerque , Adam Hendrickson , Lindsey Floyd
Vision Systems (EFVS and CVS)	(P) "Scott" McLellan , (S) Sean Flack
Wake Turbulence	(P) Michael Vaupell



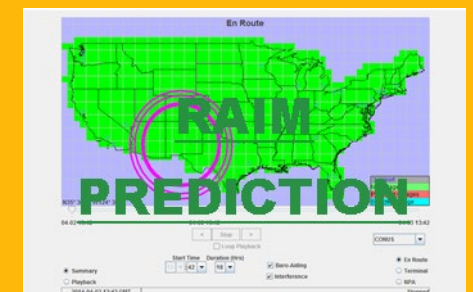
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Page Links

- ▶ [Airport Obstacle Analysis](#)
- ▶ [Instrument Approach Procedures](#)
- ▶ [CAT I, II, III ILS](#)
- ▶ [Airport Operations](#)
- ▶ [Landing Navigation and Systems](#)
- ▶ [Performance Based Navigation](#)
- ▶ [Satellite Based Navigation](#)
- ▶ [Rotorcraft Operations](#)



Terminal Operations



Federal Aviation
Administration

OBSTACLE

ANALYSIS



Airport Obstacle Analysis

- [AC 120-91\(\), Airport Obstacle Analysis](#)
- [InFO 18014, Departure Procedure & Missed Approach Climb Gradient Requirements](#)
- [InFO 23009, Operator Use of Airport Runway Obstacle Analysis Products](#)
- [Overview of AC 120-91\(\), Airport Obstacle Analysis \(PDF\)](#)

Airport Performance Planning

- [Planning for Takeoff Obstacle Clearance](#)
- [Declared Distances](#)
- [Wet Runway Takeoff Performance](#)
- [Landing Distance Assessment](#)



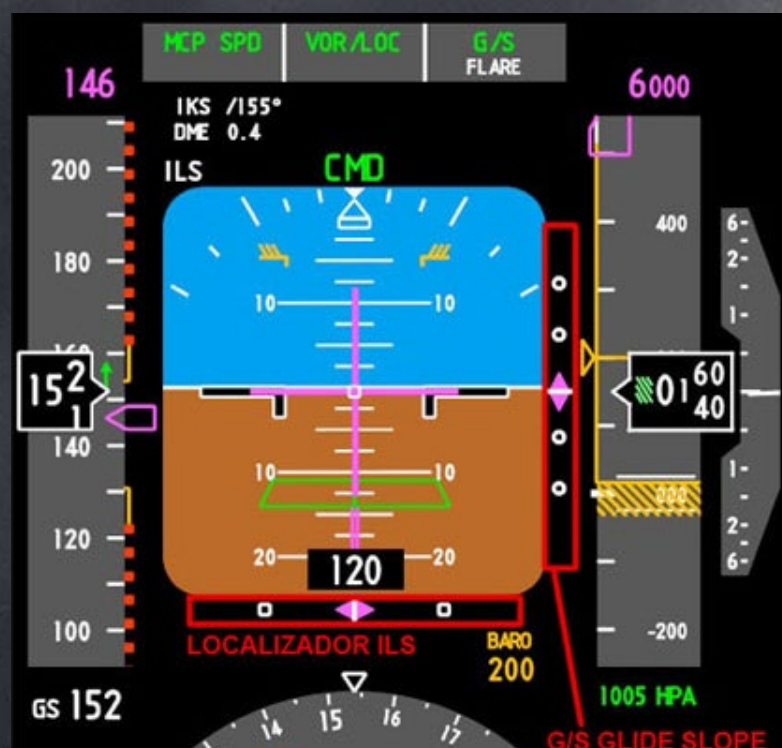
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Instrument Approach Procedures

- [Instrument Procedures Handbook \(IPH\)](#)
- [GPS/WAAS Approaches](#) *(Latest status of these U.S. WAAS approach procedures)*
- [ILS Procedures & Components List](#) *(Bottom of Page)*
- [FAA Aerospace Forecast](#)
- [PBN NAS Navigation Strategy](#) *(PDF)*
- [Digital - Terminal Procedures Publication \(d-TPP\)/Airport Diagrams](#)
- [Precision Runway Monitor \(PRM\) Training](#)
- [GPS RAIM Prediction](#)
- [RNP AR Application Guide](#) *(PDF)*
- [Special Restrictions for Foreign Terminal Instrument Procedures](#) *(FTIP) (PDF)*



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Instrument Landing System

Category I, II, III

Special Authorization Checklists

CAT I, CAT II, CAT III

[Flight Operations Group: Policies & Guidance](#)

- [AC 120-118, Approval/Authorization of All Weather Operations for Takeoff, Landing, and Rollout](#)
- [Order 8400.13\(\)](#), Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and All Category II and III Operation



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Airport Operations



Lighting Systems

- [Lighting Systems - Approach Lighting System with Sequence Flashing Lights \(ALSF-2\)](#)
- [Lighting Systems - Medium Approach Light System with Runway Alignment Indicator Lights \(MALSR\)](#)
- [Lighting Systems - Runway End Identifier Lights \(REIL\)](#)
- [Lighting Systems - Precision Approach Path Indicators \(PAPI\)](#)
- [Lighting Systems - Runway Visual Range \(RVR\)](#)
- [Lighting Systems - Semi Flush Lights \(SFL\)](#)
- [Lighting Systems - Light Emitting Diodes \(LED\)](#)

Runway Markings

- [Airport Sign and Marking Quick Reference Guide](#)
- [AIM, Chapter 2, Section 3. Airport Marking Aids and Signs](#)

General Airport Operation

- [FAA Airport Compliance Manual — Order 5190.6\(\)](#)
- [Airport Compliance](#)
- [Airport Safety](#)
- [Series 150 Advisory Circulars \(ACs\) for Airport Projects](#)
- [Airport Planning & Capacity](#)
- [Tools and Resources for Airport Projects](#)
- [Airport Acronyms and Abbreviations](#)
- [FAA Airport Diagrams](#)

Runway Incursions

- [FAA Runway Incursions](#)
- [FAA Change Order 7050.1B](#)
- [Mitigating Runway Incursion and Excursion](#)
- [Aviation Safety Information Analysis and Sharing \(ASIAS\) system](#)
- [Runway Incursion at Chicago O'Hare \(FAA Safety Video\)](#)
- [FAA Video Runway Incursions and Human Factors \(Video\)](#)

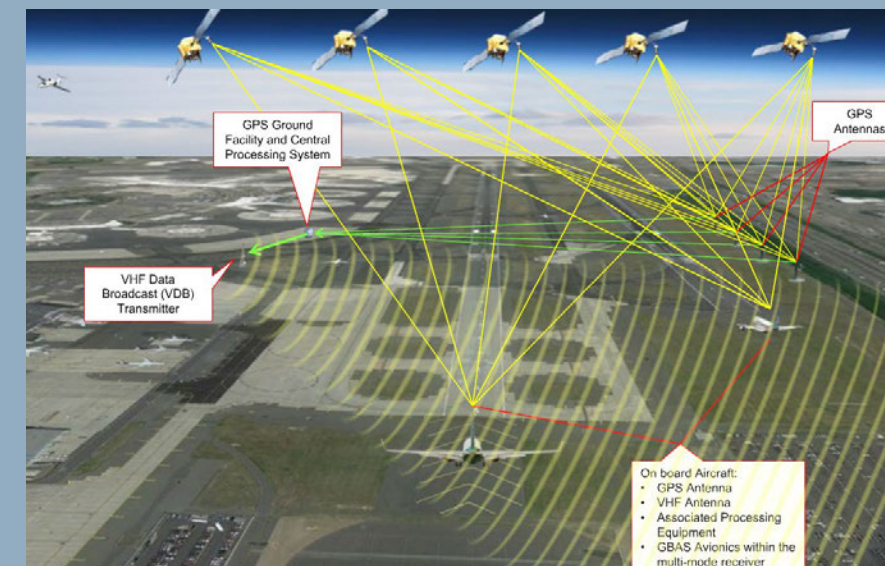
LAHSO Operations

- [LAHSO Order](#)
- [LAHSO - Land and Hold Short Operations](#)
- [SKYbrary: Land and Hold Short Operations](#)
- [AOPA: Land and Hold Short Operations](#)



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Landing Navigation and Systems



- **Flight Operations Group: Performance Based Navigation (PBN)**
- **Satellite Navigation - GBAS - How It Works**
- **Satellite Navigation - Wide Area Augmentation System (WAAS)**
- **Satellite Navigation — Ground Based Augmentation System (GBAS)**
- **Satellite Navigation - NAS Implementation**
- **AIP: ENR 1.17 Performance Based Navigation (PBN) and Area Navigation (RNAV)**
- **FAA: RNP AR Application Guide**
- **AC 90-101(), Approval Guidance for Required Navigation Performance (RNP) Procedures with Authorization Required (AR)**
- **AC 90-105(), Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace**
- **WAAS Quick Facts - Federal Aviation Administration** (WAAS Overview, WAAS: Quick Facts, RNAV (GPS) Approaches, SBAS Worldwide: Quick Facts)
- **SKYbrary: Localizer Performance with Vertical Guidance (LPV)**



**Federal Aviation
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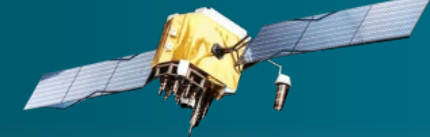
Performance Based Navigation



Operation	Flight Phase	Approval Mechanism	Advisory Circular	Other Documents <i>(Suggest downloading Resource Guides)</i>
RNAV 1	Terminal: Departures and Arrivals	OpSpec/MSpec/LOA C063	AC 90-100()	Climb Via Clearance Video
RNAV 2	En Route, (Q and T Routes)	OpSpec/MSpec/LOA B034,	AC 90-100()	B033 to replace B034
RNP 0.3 Rotorcraft	En Route, Terminal, Approach	HSpec 123	AC 90-105()	
RNP 1	Terminal: departures and arrivals	OpSpec/MSpec/LOA C063	AC 90-105()	
RNP 2 (Domestic)	En Route	OpSpec/MSpec/LOA B035	AC 90-105()	B033 to replace B035
RNP 2 (Oceanic)	En Route: Oceanic/Remote	OpSpec/MSpec/LOA B036	AC 90-105()	NAT Resource Guide PAC Resource Guide WAT Resource Guide
RNP 4 (Oceanic)	En Route: Oceanic/Remote	OpSpec/MSpec/LOA B036	AC 90-105()	NAT Resource Guide PAC Resource Guide WAT Resource Guide
RNP 10 (Oceanic)	En Route: Oceanic/Remote	OpSpec/MSpec/LOA B036	AC 90-105()	NAT Resource Guide PAC Resource Guide WAT Resource Guide
RNP Approaches	Approach	OpSpec/MSpec/LOA C052	AC 90-105()	
RNP AR Approaches	Approach	OpSpec/MSpec/LOA C384	AC 90-101()	
Advanced RNP	En Route, Terminal, Approach	OpSpec/MSpec/LOA C052 , C063 , B035 , and H123	AC 90-105()	NAT Resource Guide PAC Resource Guide WAT Resource Guide B033 to replace B035



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Satellite Based Navigation

Operation	Flight Phase	Approval Mechanism	Advisory Circular	Other Documents
GLS Ground Based Augmentation	Approach	OpSpec/MSpec/LOA C052	AC 120-29()	FAA GBAS
RNAV Visual Flight Procedure	Terminal	TBD	AC 90-100()	Order 8260.60
RNAV Systems on Conventional Route	En Route	OpSpec/MSpec/LOA B034	AC 90-108()	

- [Navigation Programs and Satellite Navigation \(FAA\)](#)
- [SatNav News - Summer2024](#)
- [Video: "The WAAS Experience"](#)
- [Satellite Navigation - Global Positioning System \(GPS\)](#)
- [Satellite Navigation — Ground Based Augmentation System \(GBAS\)](#)
- [Satellite Navigation - Wide Area Augmentation System \(WAAS\)](#)
- [GNSS Library - SatNav News](#)
- [GNSS Library](#)
- [GNSS Library - Briefings](#)
- [GNSS Library - Fact Sheets](#)



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Rotorcraft

Operations

Onshore Rotorcraft Operations

- [Rotorcraft \(FAA\)](#)
- [Regulations, Policies, and Guidance](#)
- [Helicopter Flying Handbook](#)
- [Night Vision \(NVIS and NVG\)](#)
- [AC 27-1\(\)](#)
Certification of Normal Category Rotorcraft
- [AC 29-2\(\)](#)
Certification of Transport Category Rotorcraft



Offshore Rotorcraft Operations

- [Advisory Circular AC 90-80\(\), \(Offshore Ops\)](#)
- [The Ins and Outs of ADS-B \(FAA\)](#)
- [National Weather Service Houston, TX](#)
- [National Weather Service Anchorage, AK](#)



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- ▶ [GNSS and Navigation Systems](#)
- ▶ [Wake Turbulence and Separation](#)
- ▶ [RVSM](#)
- ▶ [Contingencies](#)
- ▶ [GPS/GNSS Interference](#)
- ▶ [Volcanic and Solar](#)
- ▶ [Aviation Weather](#)



En Route Operations



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Administration



GNSS and other Navigation Systems

- [Flight Operations Group: Oceanic and Remote Airspace \(Special Areas of Operation\)](#)
- [AC 90-105\(\), Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace](#)
- [AC 91-70\(\), Oceanic and Remote Continental Airspace Operations](#)
- [AC 20-138\(\), Airworthiness Approval of Positioning and Navigation Systems](#)
- [Satellite Navigation - GPS - How It Works](#)
- [Satellite Navigation - GBAS - How It Works](#)
- [Satellite Navigation - WAAS - How It Works](#)

- [AIM, Chapter 1, Section 2, Performance Based Navigation PBN and Area Navigation \(RNAV\)](#)
- [SKYbrary: Inertial Reference System \(IRS\)](#)
- [AOPA Equipment and Performance Requirement Notes on Instrument Approach Procedures](#)
- [AIP, ENR 7](#)
- [FAA PBN NAS Navigation Strategy \(PDF\)](#)
- [FAA: Critical DMEs](#)
- [Critical DME List](#)
- [FAA: Navigation Programs — VOR MON](#)
- [AIM: Chapter 1, Section 1 Navigation Aids](#)





Wake Turbulence and Separation Standards



- [AIM: Chapter 7, Section 4. Wake Turbulence](#)
- [AC 90-23\(\), Aircraft Wake Turbulence](#)
- [JO 7110.126B, Consolidated Wake Turbulence \(CWT\)](#)
- [FAA: Wake Turbulence Training Aid \(PDF\)](#)
- [AOPA: FAA Emphasizes Wake Turbulence Avoidance](#)
- [SKYbrary: Wake Vortex Turbulence](#)
- [DOT Volpe Center: Wake Turbulence Infographic \(pdf\)](#)
- [Wake Turbulence - FAA video Private/Instrument/Commercial Pilot training 1976](#)
- [FAA Film: Caution-Wake Turbulence F-1077 Boeing 707](#)
- [FAA Video - Wake Turbulence Avoidance](#)
- [Order JO 7110.308E - Simultaneous Dependent Approaches to Closely Spaced Parallel Runways \(faa.gov\)](#)



Reduced Vertical Separation Minimum

RVSM Links

- [FAA RVSM Page](#)
- [NAARMO RVSM Approvals and Monitoring Status Results](#)
- [Monitoring](#)
- [AC 91-85](#)
- [14 CFR Part 91, Appendix G](#)
- [RVSM Approvals and AGHME Monitoring Status Results](#)
- [SKYbrary](#)
- [RVSM Documents](#)
- [NAARMO FAQ](#)
- [RVSM Documentation \(ADS-B\)](#)

410



400



390



380



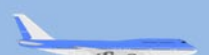
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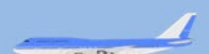
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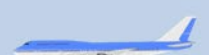
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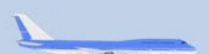
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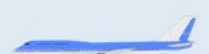
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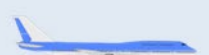
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AGHME SITE



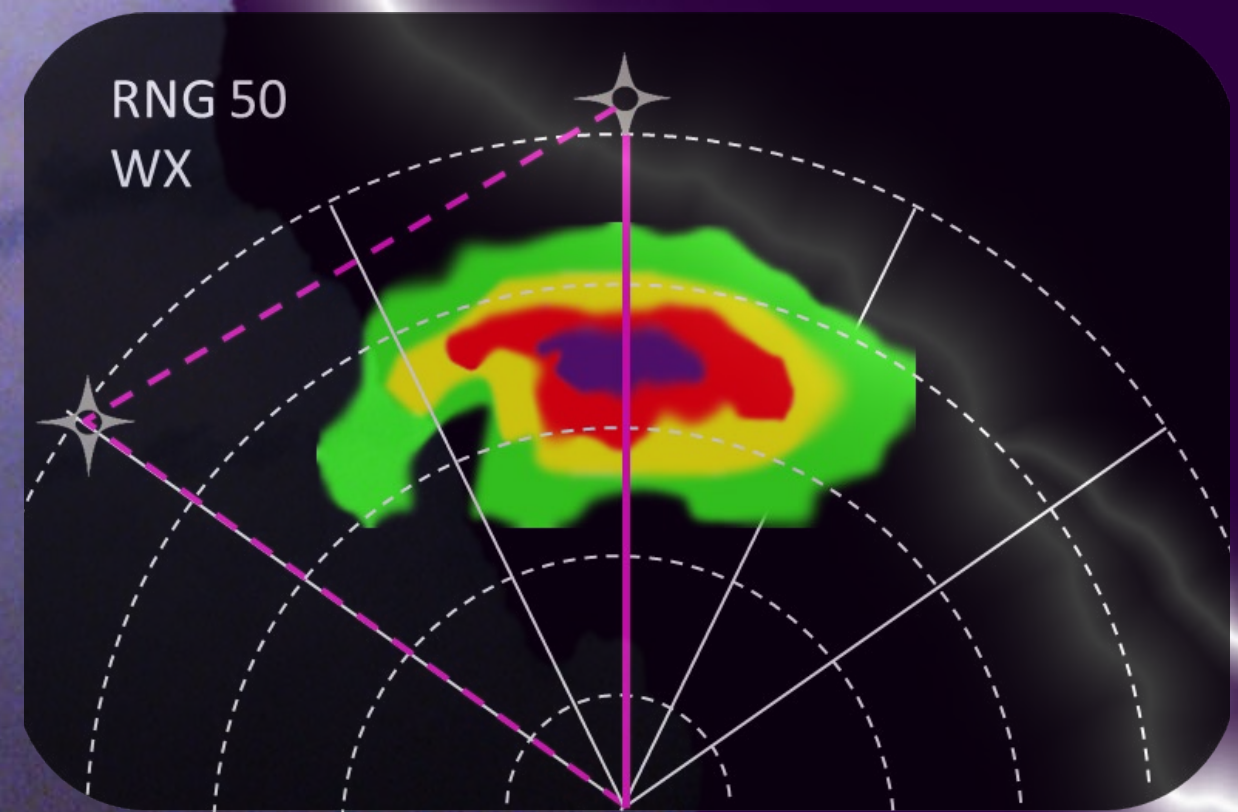
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Contingency References

Contingency Reference Links

- [SKYbrary: Emergency Decent: Guidance for Flight Crews](#)
- [Airborne Weather Radar Limitations](#)
- [FAA Turbulence](#)
- [SKYbrary: Drift Down Procedure](#)
- [AOPA: Emergency Procedures](#)



Federal Aviation
Administration

GPS/GNSS Interference



Documents

- [SAFO \(24002\)](#) (Sometime it is necessary to click the refresh button in DRS)
- [AIM](#)(Click Button to Expand References).....▶
- [AIP](#)(Click Button to Expand References).....▶
- [EASA - Information on Conflict Zones](#)
- [EASA SIB](#)
- [NAT Ops Bulletin 2025-001](#)
- [ICAO Strategic Guidance 14ANC Working Paper 063](#)
- [OPS Group Report](#)

Videos

- [Airbus - Navigation, Equipment, Jamming and Spoofing](#)
- [Boeing - 737 GPS Interference](#)
- [GPS Jamming \(& spoofing\) explained](#) (Flightrader 24 Video)

Tools/Trackers

- [GPSJAM.org](#)
- [Live GPS Spoofing and Jamming Tracker Map](#) (SKAI Data Services/GPSwise)
- [Flightradar24: GPS jamming map](#)
- [FAA: Prohibitions, Restrictions, and Notices](#)
- [EASA - Conflict Zone Information Bulletins \(CZIBs\)](#)
- [Eurocontrol GNSS Threat Assessment Tool](#)

Websites/Articles

- [FAA: Public Notices](#) (Government GPS Interference Testing, Training and Evaluation)
- [Airbus Safety First 2024. GNSS Interference](#)
- [Flightradar24: GPS Website](#)
- [IATA SIRM Insights](#) (Lists Indications and Useful Links)
- [SKYBRARY: GNSS Jamming and Spoofing](#)
- [SKYBRARY: Interference to GNSS Signals](#)



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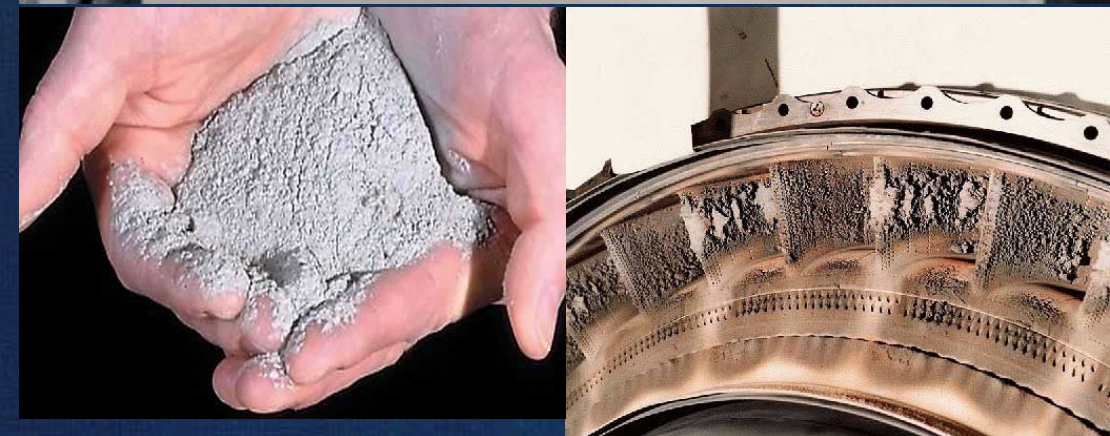
Volcanic Ash and Solar Storms

Volcanic Links

- [World VAAC Map](#)
- [SKYbrary](#)
- [Washington DC Volcanic Ash Advisory Center](#)
 1. [Current Volcanic Ash Advisories](#)
 2. [Volcanic Ash Advisory Archive](#)
 3. [Volcanic Ash Forecast Transport and Dispersion](#)
- [Anchorage Volcanic Ash Advisory Center](#)
- [ATM Volcanic Ash Contingency Plan Template](#)
- [Volcanic Ash Reporting Form in the AIM](#)

Space and Solar Links

- [Current Space Weather Conditions, Alerts, Watches, and Warnings](#)
- [Space Weather](#)
- [Solar Wind Prediction](#)



Federal Aviation
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Aviation Weather

Aviation Weather Links

- [AIM: Thunderstorm Flying \(See 7-1-29\)](#)
- [Aviation Weather Handbook designated FAA-H-8083-28](#)
- [Surface Weather Observation Stations ASOS/AWOS](#)
- [Aviation Weather Center \(NOAA\)](#)
- [RVR Status Monitor](#)
- [Flight Delay Information](#)
- [FAA WeatherCams \(Google Chrome\)](#)
- [NAV Canada Weather Cameras](#)
- [NAV Canada Aviation Weather](#)
- [Weather Glossary](#)
- [Table of Commonly Used Acronyms and Abbreviations](#)
- [Geoengineering Monitor Map](#)



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Page Links

- ▶ Data Link Communications
- ▶ Performance-based CNS
- ▶ ADS-B

Communication Navigation, and Surveillance



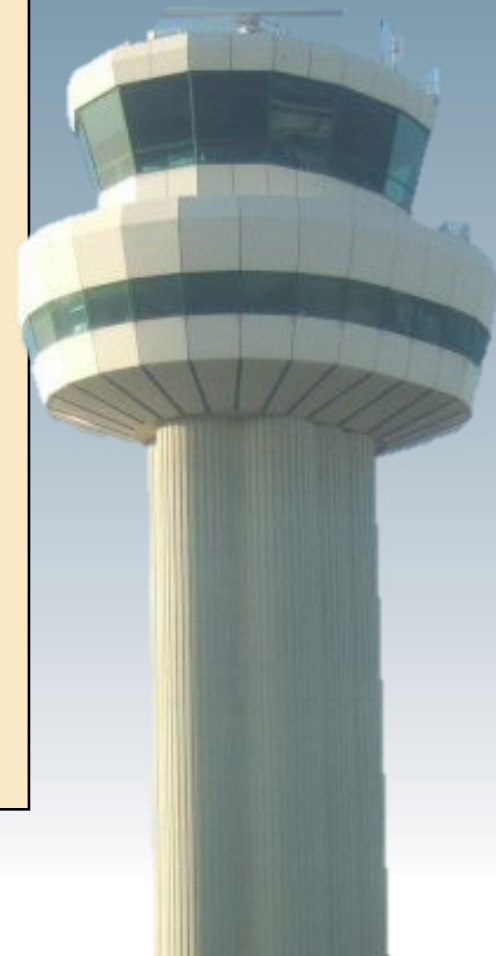
Federal Aviation
Administration

Data Link Communications



- [Notice 8900.678 and InFO 23008](#)
- [Flight Operations Group: Data Communications \(DataComm\)](#)
- [Data Communication Program](#)
- [SKYbrary: Data Link Search](#)
- [ENR 7.5 Operational Policy Performance Based Navigation \(PBN\) and Performance-Based Communication and Surveillance \(PBCS\)](#)
- [NAS Data Communication Guide](#)
- [CPDLC End2End Description](#)
- [Data Comm Operational Problem Reporting \(OPR\) Ticket](#) *(Google Chrome)*
- [AC 90-117\(\), Data Link Communications](#)
- [A056 Data Link Communication Application Guide](#) *In table under "Additional Information"*
- [GOLD ICAO doc 10037](#)
- [NAT OPS Bulletin 2019 003 Rev 05 Data Link Performance Improvement Options](#)

- [En-Route CPLDC Participation List](#)
- [U.S. Domestic En Route CPDLC Participation Form](#)
- [U.S. Domestic En Route CPDLC Participation Form Multiple Aircrafts](#)
- [En Route Quick Reference Guide](#)



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Performance-Based CNS

Communication

- AC 90-117(), Data Link Communications
- Flight Operations Group, Data Communications
- Controller Pilot Data Link Communications (CPDLC) Navigation
- FANS Central Reporting Agency

Navigation

- AC 90-105(), Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace
- Flight Operations Group: Performance Based Navigation (PBN) Guidance & Approval

Surveillance

- See ADS-B Page

Communication
Navigation
Surveillance



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ADS-B

FAA Videos

- [ADS-B for General Aviation](#)
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See 14 CFR Part 91,

- [§91.225](#) and
- [§91.227](#)



- [Advisory Circular AC 20-172, \(ADS-B In\)](#)
- [Advisory Circular AC 20-165, \(ADS-B out\)](#)
- [Equip ADS-B](#)
- [Automatic Dependent Surveillance-Broadcast \(ADS-B\)](#)
- [Automatic Dependent Surveillance - Broadcast \(ADS-B\)](#) (different FAA website from above site with same name)
- [Equip ADS-B FAQ](#)
- [Public ADS-B Performance Report Request](#)
- [Equip ADS-B](#)
- [AOPA: What is ADS-B?](#)
- [SKYbrary: Automatic Dependent Surveillance Broadcast \(ADS-B\)](#)



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Emerging Technologies



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Electronic Flight Bag

- [AC 120-76\(\), Authorization for Use of Electronic Flight Bags](#)
- [FAA: Activities, Courses, Seminars, Webinars](#)
- [SKYbrary: Electronic Flight Bag \(EFB\)](#)
- [Electronic Flight Bags | Volpe \(DOT\)](#)
- [AOPA: EFB](#)
- [AC 91-78\(\), Use of Electronic Flight Bags](#)

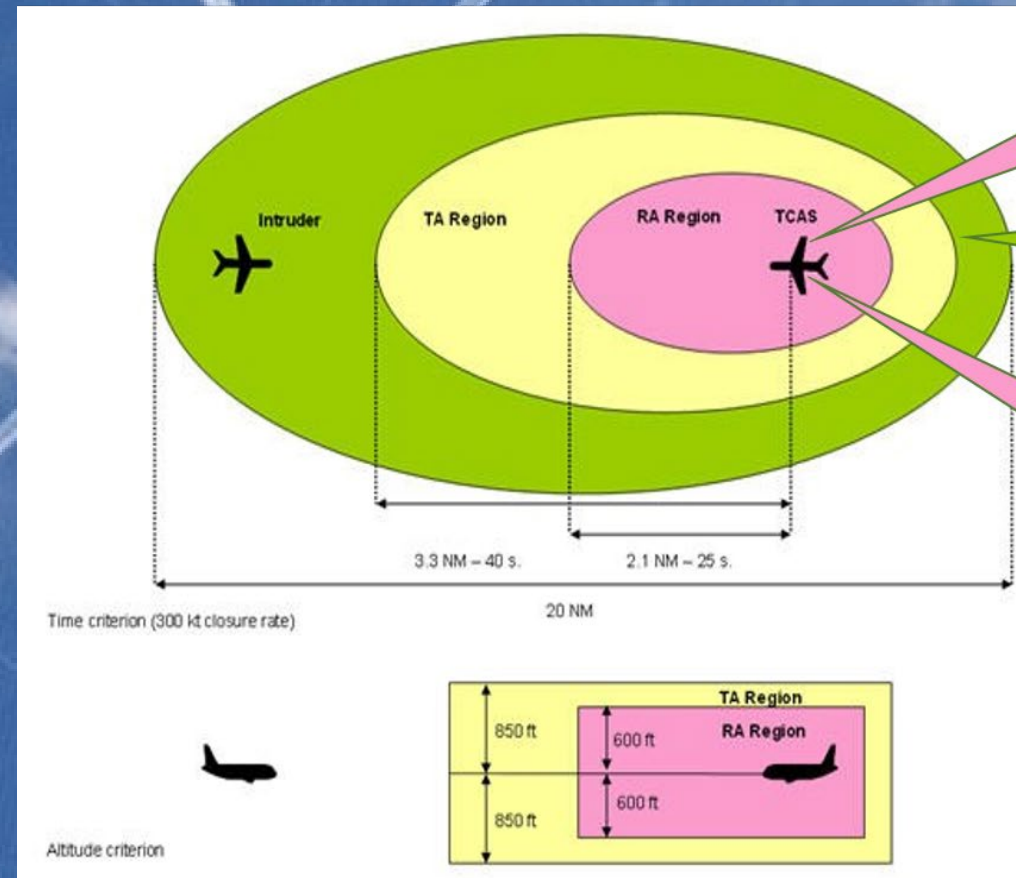
NextGEN



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TCAS / ACAS-X

- [FAA Booklet Introduction to TCAS II v7.1](#)
- [EUROCONTROL SKYbrary: Airborne Collision Avoidance System \(ACAS\)](#)
- [EUROCONTROL SKYbrary: TCAS II version 7.1](#)
- [EUROCONTROL Skybrary: ACAS X](#)
- [Flight Safety Foundation: ACAS X](#)



“Climb”
“Climb”
“NOW”

“Traffic”
“Traffic”

“Descend”
“Descend”
“NOW”



Federal Aviation
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Vision Systems

(EFVS, CVS, and SVS)

Enhanced Flight Vision Systems (EFVS)

- FAA: Enhanced Flight Vision Systems (EFVS)
- AC 20-167(), Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment
- AC 90-106(), Enhanced Flight Vision System Operations
- EFVS Application Guides: Part 91, Part 91K, Part 121, Part 129, Part 135
- FAA: Combined Vision Systems Literature Review
- SKYbrary: Synthetic Vision Systems (SVS)



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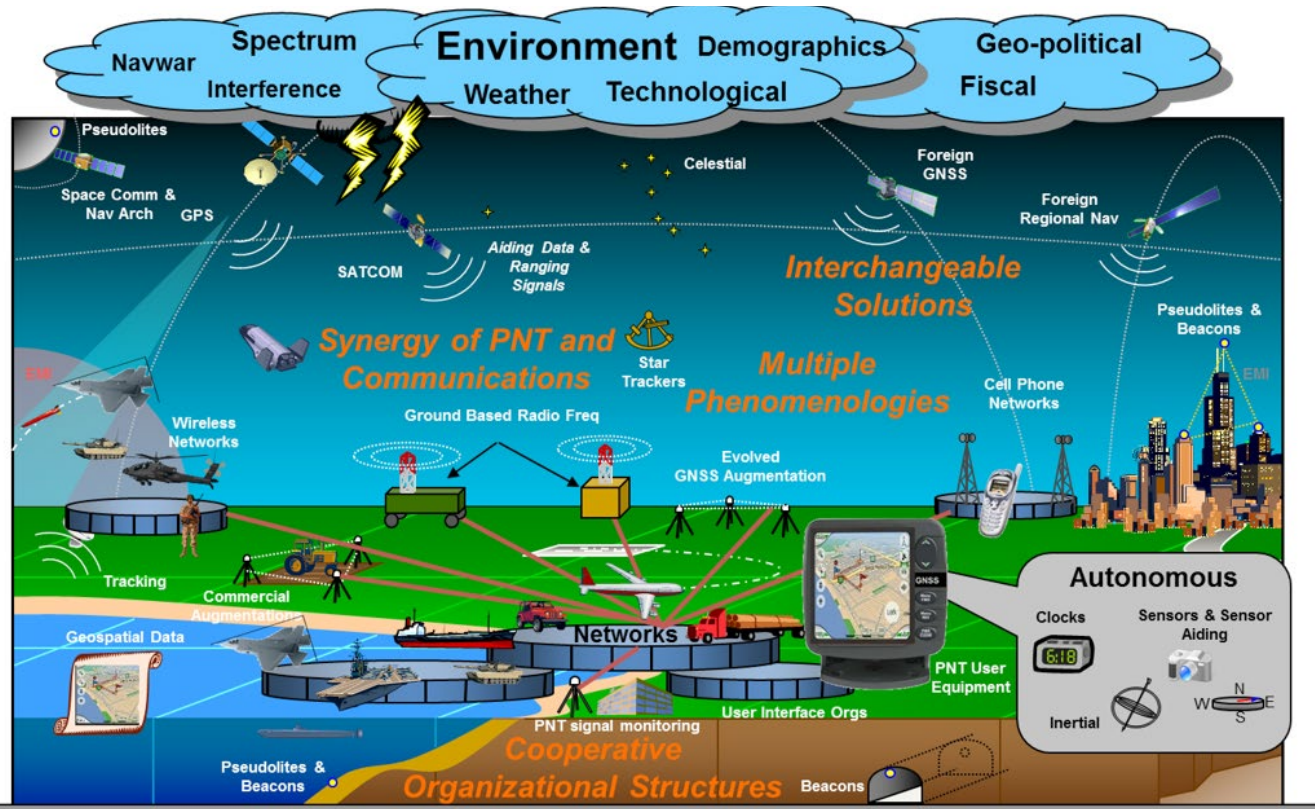
► PNT

Position Navigation Timing



Federal Aviation
Administration

Position, Navigation, Timing (PNT)



- What is Positioning, Navigation and Timing (PNT)?
- GPS.gov
- PNT & Spectrum Management Program Office Fact Sheet
- Positioning, Navigation and Timing (PNT) & Spectrum Management
- What is Spectrum Management?
- Navigation Programs — Satellite Navigation

Positioning, the ability to accurately and precisely determine one's location and orientation two-dimensionally (or three-dimensionally when required) referenced to a standard geodetic system (such as World Geodetic System 1984, or WGS84);

Navigation, the ability to determine current and desired position (relative or absolute) and apply corrections to course, orientation, and speed to attain a desired position anywhere around the world, from sub-surface to surface and from surface to space; and

Timing, the ability to acquire and maintain accurate and precise time from a standard (Coordinated Universal Time, or UTC), anywhere in the world and within user-defined timeliness parameters. Timing also includes time transfer.



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[G-AIRMETS](#)

[SIGMETS](#)

Flight Planning Information

[FAA Website](#)

[FAA Form 7233-4](#)

[ICAO Doc 7030 \(Link to Purchase\)](#)

Useful Links

- [Flight Plan Guide](#)
- [Aeronautical Information Manual \(AIM\) Chapter 5, Section 1, Paragraph 5-1-9](#)
- [Flight Plan Filing \(SKYbrary\)](#)
- [Filing for Data Link Operations \(See AC 90-117\(\)\)](#)
- [Flight Planning for Oceanic and Remote Continental Airspace \(See AC 91-70\)](#)
- [Sunrise, Sunset, Solar Noon, and Solar Position](#)
- [SkyVector Aeronautical Charts](#)



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Advisory Circulars

Advisory Circulars (AC) <i>Inclusive but not limited to:</i>	
<u>AC 00-63()</u>	Use of Cockpit Displays of Digital Weather and Aeronautical Information - Including Change 1
<u>AC 20-138()</u>	Airworthiness Approval of Positioning and Navigation Systems
<u>AC 20-140()</u>	Guidelines for Design Approval of Aircraft Data Link Systems Supporting Air Traffic Services (ATS)
<u>AC 20-150()</u>	Airworthiness Approval of Satellite Voice Equipment Supporting Air Traffic Service (ATS) Communication
<u>AC 20-165()</u>	Airworthiness Approval of Automatic Dependent Surveillance—Broadcast (ADS-B Out System)
<u>AC 90-96()</u>	Approval of U.S. Operators and Aircraft to Operate Under IFR in European Airspace for B-RNAV/RNAV5 and P-RNAV
<u>AC 90-100()</u>	U.S. Terminal and En Route Area Navigation (RNAV) Operations
<u>AC 90-101()</u>	Approval Guidance for RNP Procedures with AR
<u>AC 90-105()</u>	Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace
<u>AC 90-107()</u>	Guidance for localizer performance with Vertical Guidance and Localizer
<u>AC 90-114()</u>	Automatic Dependent Surveillance—Broadcast (ADS-B) Operations
<u>AC 90-117()</u>	Data Link Communications
<u>AC 91-70()</u>	Oceanic and Remote Continental Airspace Operations
<u>AC 91-85()</u>	Approval of Aircraft and Operators for flight in Reduced Vertical Separation Minimum Airspace
<u>AC 120-42()</u>	Extended Operations (ETOPS and Polar Operations)
<u>AC 135-42()</u>	Extended Operations (ETOPS) and Operations in the North Polar Area





Operation Specifications

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<u>3</u>	A010	Aviation Weather Information
	A056	Data Link Communications (CPDLC ADS-C)
	A061	Use of Electronic Flight Bag
<u>4</u>	B029	Drift-down or Fuel Dumping
	B030	IFR Navigation Using GPS/WAAS RNAV Systems
	B033	TBD
	B034	IFR Class I Terminal and En Route Navigation using Area Navigation Systems (<i>B033 to replace B034 and B035</i>)
	B035	Class I Navigation in U.S. Class A Airspace using Area or Long-Range Navigation Systems (<i>B033 to replace B034 and B035</i>)
	B041	North Atlantic Operations With Two-Engine Airplanes Under Part 121
	B046	RVSM
	B050	Authorized Areas of En Route Operations, Limitations, and Provisions
	C048	EFVS Operations
<u>5</u>	C052	Straight-In Non-Precision, APV, and Category I Precision Approach and Landing Minima-All Airports
	C060	Category (CAT) II or CAT II and CAT III (CAT II/III) operations
	C061	Flight Control Guidance Systems For Automatic Landing Operations Other Than Categories II And III

Section	Para	Title
<u>5</u>	C062	Manually Flown Flight Control Guidance System Certified For Landing Operations Other Than Categories II And III
	C063	Area Navigation (RNAV) and Required Navigation Performance (RNP) Terminal Operations
	C072	Engine Out Departure Procedures With Approved 10 Minute Takeoff Thrust Time Limits
	C073	VNAV IAP using MDA as a DA
	C075	Category I IFR Landing Minimums—Circle-To-Land Approach Maneuver
	C076	CAT I IFR Landing Minimums—Contact Approaches
	C077	Terminal Visual Flight Rules, Limitations, And Provisions
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	C079	Ifr Lower-Than-Standard Takeoff Minima Airplane Operations—All Airports
	C081	Special Instrument And Rnav Visual Flight Procedures
	C384	Required Navigation Performance Procedures with Authorization Required
<u>7</u>	H123	Rotorcraft RNP 0.3 En Route and Terminal Operations





Regulations (See DRS)

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<u>91.3</u>	Responsibility and Authority of the PIC
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<u>91.123</u>	Compliance with ATC Clearances and Instructions
<u>91.127</u>	Operating on or in the vicinity of an airport in Class E airspace
<u>91.129</u>	Operations in Class D airspace
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<u>91.181</u>	Course to be Flown
<u>91.211</u>	Supplemental Oxygen
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<u>91.225</u>	ADS-B Out equipment and use
<u>91.227</u>	ADS-B Out equipment performance requirements
<u>91.511</u>	Communication and navigation equipment for overwater operations
<u>91.703</u>	Operations of civil aircraft of U.S. registry outside of the United States
<u>91.1019</u>	Conducting tests and inspections
<u>91.1041</u>	Aircraft proving and validation tests

14 CFR Part 91 *Inclusive but not limited to:*

<u>Appendix G</u>	RVSM Airspace
-----------------------------------	---------------

14 CFR Part 121 *Inclusive but not limited to:*

<u>121.11</u>	Rules applicable to operations in a foreign country
<u>121.93</u>	Route requirements: General
<u>121.99</u>	Communications facilities – domestic and flag operations
<u>121.113</u>	Area and route requirements: General
<u>121.122</u>	Communications facilities-supplemental operations
<u>121.161</u>	Airplane limitations: Type of Route
<u>121.333</u>	Supplemental oxygen for emergency descent and for first aid; turbine engine powered airplanes with pres. cabins
<u>121.351</u>	Communication and navigation equipment for extended over-water operations and for certain other operations
<u>121.574</u>	Oxygen for medical use by passengers

14 CFR Part 125 *Inclusive but not limited to:*

<u>125.11</u>	Certificate eligibility and prohibited operations
<u>125.23</u>	Rules applicable to operations subject to this part
<u>125.43</u>	Use of operations specifications

14 CFR Part 135 *Inclusive but not limited to:*

<u>135.3</u>	Rules applicable to operations subject to this part
<u>135.43</u>	Crewmember certificates: International operations
<u>135.73</u>	Inspections and tests
<u>135.89</u>	Pilot requirements: Use of oxygen
<u>135.145</u>	Aircraft proving and validation tests
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<u>135.165</u>	Communication and navigation equipment: Extended over-water or IFR operations
<u>135.364</u>	Maximum flying time outside the United States



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Technical Standard Orders (TSO) and FAA Orders

Technical Standard Orders (TSO) <i>Inclusive but not limited to:</i>	
<u>TSO-C115</u>	Flight Management Systems (FMS) using multi-sensor inputs
<u>TSO-C145</u>	Airborne Navigation Sensors Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS)
<u>TSO-C146</u>	Stand-Alone Airborne Navigation Equipment Using the Global Positioning System (GPS) Space Based Augmentation System (SBAS)
<u>TSO-C154</u>	Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Equipment
<u>TSO-C157</u>	Aircraft Flight information Services-Broadcast (FIS-B) Data Link Systems and Equipment
<u>TSO-C159</u>	Next Generation Satellite Systems (NGSS) Equipment
<u>TSO-C160</u>	Very High Frequency (VHF) Digital Link (VDL) Mode 2 Communication Equipment
<u>TSO-C166</u>	Extended Squitter Automatic Dependent Surveillance - Broadcast (ADS-B) and traffic information
<u>TSO-C195</u>	Avionics Supporting Automatic Dependent Surveillance - Broadcast (ADS-B) Aircraft Surveillance Applications (ASA)
<u>TSO-C196</u>	Airborne Supplemental Navigation Sensors for Global Positioning System Equipment Using Aircraft-Based Augmentation

FAA Orders <i>Inclusive but not limited to:</i>	
<u>8260.58</u>	United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design - Including Change 1 and 2



Flight Standards Handbooks



[See FAA Handbooks and Manuals](#)

- [Aeronautical Information Manual](#)
- [Airplane Flying Handbook \(FAA-H-8083-3B\)](#)
- [Aviation Instructor's Handbook](#)
- [Helicopter Flying Handbook](#)
- [Instrument Flying Handbook \(PDF\)](#)
- [Instrument Procedures Handbook](#)
- [Aeromedical Safety Brochures](#)
- [Pilot's Handbook of Aeronautical Knowledge \(FAA-H-8083-25B\)](#)
- [Plane Sense – General Aviation Information \(PDF\)](#)
- [Risk Management Brochures](#)
- [Risk Management Handbook \(Change 1\) \(PDF\)](#)
- [Remote Pilot — Small Unmanned Aircraft Systems Study Guide \(FAA-G-8082-22\) \(PDF\)](#)
- [Weight-Shift Control Aircraft Flying Handbook \(PDF, 64.3 MB\)](#)
- [Weight-Shift Control Aircraft Flying Handbook Addendum \(PDF\)](#)
- [Weight & Balance Handbook \(FAA-H-8083-1B\)](#)

Inspectors Handbooks 8300.10, 8400.10, and 8700.1, have been incorporated into FAA Order 8900.1,

- [Dynamic Regulatory System \(DRS\)](#)



**Federal Aviation
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Flight Standards: Certification and Application

- [Dynamic Regulatory System \(DRS\)](#)
- [Examiner and Inspector Handbooks and Manuals](#)
- [Online Resources: Resources for Mechanics](#)
- [Oceanic and Remote Continental Application Guide](#) (B036, B037, B038 and B039)
- [Web Based Operations Safety System \(WebOPSS\)](#)
- [WebOPSS User Guide](#)

Flight Standards Satellite and Performance Based Navigation

- [Satellite Navigation - GPS/WAAS Approaches](#)
- [Performance Based Navigation \(PBN\) Implementation and Usage](#)
- [Flight Technologies and Procedures Division: Flight Operations Group](#)
 1. [Performance Based Navigation \(PBN\) Guidance & Approval](#)
 2. [Satellite Based Navigation \(SatNav\)](#)
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FLIGHT STANDARDS



FAA Inspector Guidance

FAA Order 8900.1

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Air Operator and Air Agency Certification and Application Process for 14 CFR 91K, 121, and 135

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1	Link	Link	Link
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- [Conduct Certification of a 14 CFR Part 125 Operator](#)
- [Evaluate an Application for Deviation Authority Under Part 125](#)
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Special Use Airspace

- Temporary Flight restrictions
- Special Use Airspace (SUA) Map and List
- Order JO 7400.10C - Special Use Airspace
- AIM, Chapter 3, Section 4, Special Use Airspace
- FAA Restricted or Special Use Airspace
- 14 CFR, PART 73, Special Use Airspace

Special Areas of Operations for UAS Line of Sight (LOS)

- ** B4UFLY Mobile App
- ** Stadiums and Sporting Events
- ** Flying Near Airports
- ** Security Sensitive Airspace Restrictions
- ** FAA UAS Data on a Map
- ** Washington DC Prohibited & Restricted Airspace
- ** Drones and Wildfires (pdf)

**WARNING AVOID
PROHIBITED AREA**

**P-40
-4009**

**R-4009 OVERLIES P-40
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**Federal Aviation
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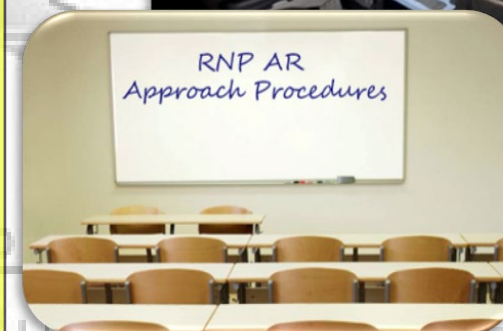
Aviation Training Links

Aviation Training Links

- [FAA Training & Testing](#)
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- [FAA Industry Training Standards \(FITS\)](#)
- [FAA Safety Team \(FAASTeam\)](#)
- [FAA Activities, Courses, Seminars & Webinars](#)
- [FAA Catalog of Training](#)
- [FAA FITS Training & Curriculum](#)
- [FAA Training Resources and Guides](#)
- [FAA Airman Testing](#)
- [FAA Aviation Handbooks and Manuals](#)
- [FAA Precision Runway Monitor \(PRM\) Training](#)
- [FAA Air Carrier Training](#) *Training Requirements*
- [Airman Education Programs](#)
- [NASA Aircraft Icing Training](#) *(works with Google Chrome)*

- [U.S. Government Bookstore: Aviation Guidelines](#)
- [FAA General Aviation Pilot's Guide to Preflight Weather Planning, Weather Self-Briefings, and Weather Decision Making](#)
- [Phoenix East Aviation: Difference Between Part 141 and Part 61](#)
- [14 CFR Part 61, Certification: Pilots, Flight Instructors, and Ground Instructors](#)
- [14 CFR Part 141, Pilot Schools](#)
- [14 CFR Part 142, Training Centers](#)
- [AOPA: New Pilot's Guide to ATC Communication](#)
- [AIM: Radio Communication Phraseology and Techniques](#)
- [AC 61-91, Wings Proficiency Program](#)

700 AGL
NASSUA APP 121.0



RNP AR
Approach Procedures

Wings Program



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Charts and Guides

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- [Digital - Chart Supplement \(d-CS\)](#)
- [North Atlantic Charts](#)
- [VFR Raster Charts](#)
- [IFR En Route Aeronautical Charts and Planning](#)
- [Instrument Flight Procedures Information Gateway](#)
- [VFR Class B Enhancement Graphics](#)
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- [Aeronautical Information Publication \(AIP\)](#)
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- [Flight Service 1800wxbrief](#)
- [Flight Plan Quick Reference Brochure](#)
- [Critical DME List](#)
- [FAA Form 7233-4](#)
- [Flight Medical Examiner](#)
- [SkyVector](#)
- [AC 91-74\(\), Pilot Guide: Flight in Icing Conditions](#)
- [US Domestic CPLDC Flight and Route PG](#)

FAA Offices

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- [Office of Safety Standards](#)
- [FAA Safety Team \(FAAST Team\)](#)
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Acronyms

[FAA Acronym Site](#)



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Acronym	Definition
A	
A/FD	Chart Supplement
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



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
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	FAA Office Symbol for 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	FAA office symbol for: Aircraft Certification Services
AIRE	Atlantic Interoperability Initiative to Reduce Emissions
AIREP	Aircraft Reports
AIRMET	Airman'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
AMSS	Aeronautical Mobile Satellite Service



Acronym	Definition
AMU	Areas of Magnetic Unreliability
AMVER	Automated Merchant Vessel Report
ANC	Air Navigation Commission
ANCON	Aircraft Noise Control Model
ANP	Actual Navigation Performance
ANP	Air Navigation Plan
ANP	Aircraft Noise and Performance
ANSP	Air Navigation Service Provider
AOC	Aeronautical Operational Control
AOCC	Airline Operation 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
ASDA	Accelerated-Stop Distance
ASDE-X	Airport Surface Detection Equipment - Model X
ASE	Altimetry System Error
ASOS	Automated Surface Observing System



Acronym	Definition
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
ATN	Aeronautical Telecommunication Network
ATO	FAA office symbol for: Air Traffic Organization
ATOP	Oceanic centers (Advance Technologies and Oceanic Procedures)
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	FAA office symbol for: Office of Aviation Safety
AWC	Aviation Weather Center
AWO	All Weather Operations
AWOS	Automated Weather Observing System
AWPR	Automatic Waypoint Reporting
AWSS	Automated Weather Sensor System
AWTT	Aviation Weather Technology Transfer
AWW	Severe Weather Forecast Alert
B	



Acronym	Definition
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	
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
CDFA	Continuous Descent Final Approach
CDI	Course Deviation Indicator
CDL	Configuration Deviation List
CDR	Coded Departure Route
CDTI	Cockpit Display of Traffic Information
CDU	Control Display Unit



Acronym	Definition
CENPAC	Central Pacific
CEP	Central East Pacific
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 Monoxide
CO2	Carbon Dioxide
COA	Certificate of Waiver or Authorization
COSPAS	Space System for the Search of Vessels in Distress (Acronym transliterated from Russian, meaning)
CPC	Connect Request (Euro Control)
CPDLC	Controller-Pilot Data Link Communications
CPDLC-DCL	Controller-Pilot Data Link Communications Departure Clearance
CR	Connect Request
CRC	Cyclic Redundancy Check
CRM	Collision Risk Model
CRM	Cockpit Resource Management
CSP	Communication Service Providers
CSPO	Closely Spaced Parallel Operations
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
CTR	Control Zone
CU	Cumulus Clouds



Acronym	Definition
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
DCNS	Data Communication Network System
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
DPU	Data Processor Unit



Acronym	Definition
DR	Dead Reckoning
DRS	Dynamic Regulatory System
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 Systems
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 of Position Uncertainty



Acronym	Definition
ERAM	Enroute Automated Modernization
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	Enhanced Vision System
EWINS	Enhanced Weather Information System
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	Flight Data Processing 2000 (Anchorage Domestic Center)
FDPS	Flight Data Processing System
FESG	ICAO Forecasting and Economic Support Group
FIC	Flight Information Center



Acronym	Definition
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
FN_AK	FANS 1/A (+) Logon Response
FN_CAD	FANS 1/A (+) Contact Request
FN_COMP	FANS 1/A (+) Contact Complete
FN_CON	FANS 1/A (+) Logon Request
FN_RESP	FANS 1/A (+) Contact Response
FO	Fly-over
FOCA	Federal Office of Civil Aviation (Germany)
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
FRMS	Fatigue Risk Management System
FROP	Final Roll-Out point



Acronym	Definition
FRT	Fixed Radius Transition
FSDO	Flight Standards District Office
FSIMS	Flight Standards Information Management System
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
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
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	
HAA	Height Above Airport or Helicopter Air Ambulance
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
HLA	High Level Airspace
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



Acronym	Definition
IFSET	ICAO Fuel Savings Estimation Tool
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



Acronym	Definition
LDA	Landing Distance Available
LDA	Localizer Type Directional Aid
LDA/PRM	Localizer Type Directional Aid/Precision Runway Monitor
LDE	Lateral Deviation Event (LDE)
LDOC	Long Distance Operational Control
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
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
MTBF	Mean Time Between Failures



Acronym	Definition
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 (predecessor to FAA Aeronautical Information Services)
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 (UK Air Traffic Service Provider)
NAV	Navigation
Nav Specs	Navigation Specifications
NAVAID	Navigational Aid
NAVCEN	Coast Guard Navigation Center
NCA	Northern Control Area (Canada)
NCR	Negative Climb Rate
NCWF	National Convective Weather Forecast
ND	Navigation Display
NDA	Next Data Authority
NDB	Nondirectional Radio Beacon
NDB	Navigation Data Base
NEPA	National Environmental Policy Act



Acronym	Definition
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
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
NTSB	National Transportation Safety Board
NTZ	No Transgression Zone
NWS	National Weather Service
O	
OAC	Oceanic Area Control Center
OADR	Oceanic Altitude Deviation Reports
OASIS	Flight Services in Alaska
OAT	Outside Air Temperature



Acronym	Definition
OBS	Omni-bearing Selector
OCA	Obstacle Clearance Altitude
OCA	Oceanic Control Area
OCD	Oceanic Clearance Delivery
OCEAN 21	FAA oceanic Flight Data Processing System. See also ATOP.
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	Offshore Flight Data Processing System
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 Organized Track System
PAI	Principal Avionics Inspector
PAM	Path Arrival Management
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



Acronym	Definition
PAR	Preferred Arrival Route
PARC	Performance Based Operations Aviation Rulemaking Committee
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
PID	Pilot Initiated Downlink
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
P-RNAV	Precision RNAV
PSE	Path Steering Error
PSR	Primary Surveillance Radar
PT	Procedure Turn
PT	Proficiency Training



Acronym	Definition
PVT	Position, Velocity & Time
Q	
Q Routes	High-altitude RNAV routes
QA	Quality Assurance
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
RGS	Radio Ground Station
RIL	Runway Intersection Lights
RLIM	Runway Light Intensity Monitor
RNAV	Area Navigation
RNP AR	RNP Authorization Required
RNL	Reference Noise Levels
RNP	Required Navigation Performance



Acronym	Definition
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)
SARPSS	Standards and Recommended Practices, also FAA's Safety Assurance System
SARSAT	Search and Rescue Satellite-Aided Tracking
SAS	Stability Augmentation System
SAT	Static Air Temperature
SATCOM	Satellite Communication
SATCOM Voice or SATVOICE	Satellite Voice Communication
SBAS	Satellite-based Augmentation System
SC	Stratocumulus Clouds
SCA	Southern Control Area (Canada)
SDF	Simplified Directional Facility
SDL	Satcom Data Link
SELCAL	Selective Calling (<i>ICAO managed communications method used to notify aircraft that a ground radio station wishes to communicate.</i>)
SESAR	Single European Sky ATM Research
SET	Select Event Training



Acronym	Definition
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 Procedures
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
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



Acronym	Definition
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	
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	Touchdown Zone
TDZE	Touchdown Zone Elevation
TDZL	Touchdown Zone Lights
TEC	Tower En Route Control
TERPS	Terminal Instrument Procedures
TF-5	Task Force-5
TGL	Temporary Guidance Leaflet
THL	Takeoff Hold Lights
TIS	Traffic Information Service
TIS-B	Terminal Information Service - Broadcast
TKE	Track Keeping Error
TLS	Target Level of Safety



Acronym	Definition
TLS	Transponder Landing System
TMA	Terminal Maneuvering Area
TMI	Track Message Identification
TOD	Top of Descent
TODA	Takeoff Distance
TORA	Takeoff Run Available
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
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
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



Acronym	Definition
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
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



Acronym	Definition
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
WAT	West Atlantic Route System
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
WW	Severe Weather Watch Bulletin
X	
XTK	Cross-Track Error



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Swigart, John (FAA)	202-267-1025	john.swigart@faa.gov	International Civil Aviation Organisation (ICAO) Remotely-piloted Aircraft International Focal Systems (RPAS) Panel WG-5 Advisor Mode C Veil Lead New Entrant Think Tank (NETT) Team Lead AFS-400 Unmanned Aircraft Systems (UAS) in Controlled Airspace



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Section B: Terminal

Name	Phone	Email	Area of Expertise
Armstrong, Merrill (FAA) Section B Manager	202-267-3119	merrill.armstrong@faa.gov	Area Navigation (RNAV) Data Communication (Data Comm) Performance Based Navigation (PBN) Required Navigation Performance (RNP)
Bender, Scott W (FAA)	850-512-9926	Scott.W.Bender@faa.gov	Data Communication (Data Comm)
Blair, John (FAA)	202-267-8986	john.blair@faa.gov	Closely Spaced Parallel Operations (CSPO) Land and Hold Short Operations (LAHSO) Modification of Standards (MoS) Runway Selection and Use Simultaneous Approach Operations

Name	Phone	Email	Area of Expertise
Dickinson, Joel (FAA)	405-954-4809	joel.dickinson@faa.gov	Area Navigation (RNAV) Visual Flight Procedures (RVFP) Global Navigation Satellite System (GNSS) Operations GNSS Operations Satellite-based Augmentation Systems (SBAS) GNSS Operations Ground-based Augmentation Systems (GBAS) Instrument Procedures Handbook Editor International Civil Aviation Organization (ICAO) Performance Based Navigation (PBN) Study Group (PBN SG) Advisor ICAO PBN Combined Task Force (CTF) Advisor ICAO PBN Navigation Systems Panel (NSP) Advisor Performance Based Navigation (PBN) Area Navigation (RNAV) PBN Required Navigation Performance (RNP) PBN RNP Authorization Required (AR) Approach PBN Advanced Required Navigation Performance (A-RNP)
Elder, Palen (FAA)	609-485-9907	palen.elder@faa.gov	Data Communication (Data Comm)
Kerr, Jeffrey (FAA)	202-267-6389	jeffrey.kerr@faa.gov	Required Navigation Performance (RNP) Authorization Required (RNP AR) RNP Approaches RNP Certification
Maddox, Herman H (FAA)	813-230-0434	herman.maddox@faa.gov	Rotorcraft, AAM/UAM, Area Navigation (RNAV), eVTOL, Helicopter Operations Performance Based Navigation (PBN), Procedures Review Board (PRB) United States Helicopter Safety Team (USHST)
Patterson, Mark (FAA)	202-267-8848	mark.patterson@faa.gov	Data Communication (Data Comm)



Name	Phone	Email	Area of Expertise
Spaude, Ian (FAA)	612-253-4562	ian.spaude@faa.gov	Aircraft Performance Airport and Approach Lighting
Cain, James (Contractor)	202-267-8884	james.ctr.cain@faa.gov	Required Navigation Performance (RNP) Approaches RNP Authorization Required (RNP AR) RNP Certification
Jones, Christopher P (Contractor)	202-267-8950	christopher.p-ctr.jones@faa.gov	Advisory Circular (AC) 120-91 Airport Obstacle Analysis Aircraft Performance, AC 120-91 Limitations, and Provisions Transport Aircraft Performance Planning Concepts
Lintzenich, Joseph (Contractor)	202-267-8905	joseph.CTR.lintzenich@faa.gov	International Civil Aviation Organization (ICAO) Support Precision Runway Monitor (PRM) Support
Spann, Gregory (Contractor)	202-267-8847	gregory.ctr.spann@faa.gov	Data Communication (Data Comm) Required Navigation Performance (RNP)/ Area Navigation (RNAV) Operations Required Navigation Performance (RNP) Approaches RNP Authorization Required (RNP AR) Oceanic and Remote Operations Global Navigation Satellite System (GNSS) Operations Ground-based Augmentation Systems (GBAS) GNSS Operations Satellite-based Augmentation Systems (SBAS)



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Section C: New Entrant

Name	Phone	Email	Area of Expertise
Walsh, Tom (FAA) Section C Manager	404-295-2586	thomas.walsh@faa.gov	Airport Obstacle Analysis Airspace and Procedures Detect and Avoid (DAA) Unmanned Aircraft System (UAS) Traffic Management (UTM) UAS Autoland Systems
Albuquerque, Paul (FAA)	202-267-1485	paul.albuquerque@faa.gov	Remote ID Rulemaking Unmanned Aircraft Systems (UAS) Radio Technical Commission for Aeronautics (RTCA) Command and Control Airborne Collision Avoidance System (ACAS-X) Automatic Dependent Surveillance – Broadcast (ADS-B) Aviation Weather Detect and Avoid (DAA) International Civil Aviation Organization (ICAO) Remotely-piloted Aircraft Systems (RPAS) Panel WG-5 Advisor International Civil Aviation Organization (ICAO) Remotely-piloted Aircraft Systems (RPAS) Support International Civil Aviation Organization (ICAO) Flight Operations Panel (FLTOPSP) Mode C Veil Lead National Airspace System (NAS) Change Proposal (NCP) New Entrant Think Tank (NETT) Team Lead AFS-400 New Entrants Performance Based Operations Aviation Rulemaking Committee Performance Based Operations Aviation Rulemaking Committee (PARC) Communications Working Group (PARC-CWG) Remote ID Rulemaking



Name	Phone	Email	Area of Expertise
Angle, Bartholemew (FAA)	202-267-0868	bartholemew.angle@faa.gov	Title 14 of the Code of Federal Regulations (14 CFR) Part 107 Title 14 of the Code of Federal Regulations (14 CFR) Part 135 Title 14 of the Code of Federal Regulations (14 CFR) Part 136 Title 14 of the Code of Federal Regulations (14 CFR) Part 141 Title 14 of the Code of Federal Regulations (14 CFR) Part 142 Title 14 of the Code of Federal Regulations (14 CFR) Part 61 Title 14 of the Code of Federal Regulations (14 CFR) Part 91 Unmanned Aircraft Systems (UAS) Unmanned Aircraft Systems (UAS) Advisory Circulars (ACs) Unmanned Aircraft Systems (UAS) Autoland Systems Unmanned Aircraft Systems (UAS) Communications, Networks and Surveillance (CNS) Technologies Unmanned Aircraft Systems (UAS) in Controlled Airspace Unmanned Aircraft Systems (UAS) Policy Development and Technical Guidance Unmanned Aircraft Systems (UAS) Radio Technical Commission for Aeronautics (RTCA) Command and Control (C2) Link Unmanned Aircraft Systems (UAS) Traffic Management (UTM) Unmanned Aircraft Systems (UAS) Traffic Management (UTM) Command and Control International Civil Aviation Organization (ICAO) 14 Code of Federal Regulations Detect and Avoid
Harmon, Matthew K (FAA)	202-267-9838	matthew.k.harmon@faa.gov	Airport and Approach Lighting National Airspace System (NAS) Change Proposal (NCP) Standard CAT II/III Instrument Landing System (ILS) Approaches Approval
Floyd, Lindsey (FAA)	407-765-9750	lindsey.floyd@faa.gov	Advanced Air Mobility (AAM) Beyond Visual Line of Sight (BVLOS) Technologies



Name	Phone	Email	Area of Expertise
Hendrickson, Adam (FAA)	202-267-7658	adam.hendrickson@faa.gov	Advanced Air Mobility (AAM) Automation Beyond Visual Line of Sight (BVLOS) Technologies Collision Avoidance Detect and Avoid (DAA) New Entrants Research Safety Risk Management (SRM) Systems Engineering Unmanned Aircraft Systems (UAS)
McLellan, Christopher "Scott" (FAA)	202-267-4363	christopher.mclellan@faa.gov	Vision Systems (EFVS and Synthetic Vision, EFVS and Synthetic Vision)
Melssen, Mike (FAA)	405-954-5377	mike.melssen@faa.gov	Ground Based Augmentation System (GBAS), New Entrants, Terminal Visual Flight Rules, Advanced Air Mobility (AAM)
Fisher, Earle (Contractor)	202-267-9335	Earle.B-CTR.Fisher@faa.gov	GNSS Operations - Ground Based Augmentation Systems (GBAS), New Entrants, Advanced Air Mobility (AAM)
Flack, Sean (Contractor)	202-267-8929	sean.ctr.flack@faa.gov	Vision Systems (EFVS and Synthetic Vision, EFVS and Synthetic Vision)



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Section D: En Route

Name	Phone	Email	Area of Expertise
Costa, Michael (FAA) Section D Manager	469-891-1252	michael.l.costa@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Atkins, Howard B (FAA)	317-698-9148	howard.b.atkins@faa.gov	AMU/Polar Operations Long-range Navigation Oceanic and Remote Continental Airspace Operations North Atlantic Safety Oversight Group (NAT SOG)
DiFrancesco, Douglas (FAA)	480-307-0148	douglas.difrancesco@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Kelley, Kevin C (FAA)	202-267-8854	kevin.c.kelley@faa.gov	Long-range Navigation North Atlantic (NAT) Scrutiny Group (International group) North Atlantic Technology and Interoperability Group (NAT TIG) (International group) Oceanic and Remote Continental Airspace Operations Oceanic Event Review Committee (OERC) Operations Specifications Working Group (OSWG) Performance Based Operations Aviation Rulemaking Committee (PARC) Communications Working Group (PARC-CWG)



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Lopez, Armando (FAA)	305-505-0319	armando.lopez@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Marshall, John A (FAA)	314-283-3230	john.a.marshall@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Medina, Gary (FAA)	505-804-8622	gary.medina@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Patton, Ronald Howard (FAA)	314-324-4085	ron.h.patton@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Salomon, Richard (Contractor)	203-214-5141	richard.E-CTR.Salomon@faa.gov	Long-range Navigation Oceanic and Remote Continental Airspace Operations
Stokes, Scott	734-598-0096	scott.r.stokes@faa.com	Long-range Navigation Oceanic and Remote Continental Airspace Operations



Name	Phone	Email	Area of Expertise
Wisniewski, Mark (Contractor)	202-267-8843	mark.ctr.wisniewski@faa.gov	Advisory Circular (AC) 90-105A Approval Guidance for Required Navigation Performance (RNP) Operations and Barometric Vertical Navigation Operations Specification (OpSpec) Working Group (OSWG) Required Navigation Performance (RNP) 10 Special Areas of Operations (SAO) Operations Specification (OpSpec)



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Section E: Emerging Technology

Name	Phone	Email	Area of Expertise
Hint, Brian	202-937-8666	brain.hint@faa.gov	Section Manager
Harris, Timothy (FAA)	847-294-7279	timothy.harris@faa.gov	Automatic Dependent Surveillance – Broadcast (ADS-B) IN/OUT and True North
Kenney, James "Jim"(FAA)	202-267-8218	james.kenney@faa.gov	Automatic Dependent Surveillance – Broadcast (ADS-B) IN/OUT ADS-B Call Sign Mis-Match (CSMM)
Searing, Brent (FAA)	202-267-7061	brent.searing@faa.gov	"Annual Aviation Safety (AVS) Workplan for Next Generation Air Transportation System (NextGen) Annual Performance Plan Business Planning Communications One Division Plan (ODP)"

Name	Phone	Email	Area of Expertise
Steventon, John (FAA)	202-267-4947	John.Steventon@faa.gov	Aviation Weather
Stiefel, Kurt (FAA)	847-294-8315	Kurt.Stiefel@faa.gov	Data Link of Aeronautical Information Electronic Flight Bag (EFB)
Vaupell, Michael O (FAA)	847-200-9698	Michael.O.Vaupell@faa.gov	ACAS-X, TCAS, Wake Turbulence





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