

Appendix C

ACRONYMS AND GLOSSARY

AC — advisory circular	AOPA — Aircraft Owners and Pilots Association	ATCSCC — Air Traffic Control System Command Center
ACARS — aircraft communications addressing and reporting system	AP — autopilot system	ATC-TFM — air traffic control-traffic flow management
ACAS — airborne collision avoidance system	APC — auxiliary performance computer	ATCT — airport traffic control tower
AD — airworthiness directive	APV — approach with vertical guidance	ATD — along-track distance
ADF — automatic direction finder	ARFF — aircraft rescue and fire fighting	ATIS — automatic terminal information service
ADS — automatic dependent surveillance	ARINC — aeronautical radio incorporated	ATM — air traffic management
ADS-B — automatic dependent surveillance-broadcast	A-RNAV — advanced area navigation	ATS — air traffic service
AER — approach end of runway	ARSR — air route surveillance radar	ATT — attitude retention system
AFCS — automatic flight control system	ARTCC — Air Route Traffic Control Center	AVN — Office of Aviation System Standards
A/FD — airport/facility directory	ARTS — Automated Radar Terminal System	AWOS — automated weather observing system
AFM — airplane flight manual or aircraft flight manual	ASDA — accelerate-stop distance available	AWSS — automated weather sensor system
AFSS — Automated Flight Service Station	ASDAR — aircraft to satellite data relay	Baro-VNAV — barometric vertical navigation
AGL — above ground level	ASDE-3 — Airport Surface Detection Equipment-3	BRITE — bright radar indicator tower equipment
AIM — aeronautical information manual	ASDE-X — Airport Surface Detection Equipment-X	B-RNAV — European Basic RNAV
AIP — aeronautical information publication	ASOS — automated surface observing system	CAA — Civil Aeronautics Administration
AIS — airmen's information system	ASR — airport surveillance radar	CAASD — Center for Advanced Aviation Systems Development
ALAR — approach and landing accident reduction	ATC — air traffic control	CARF — central altitude reservation function
AMASS — airport movement area safety system [delete term]	ATCRBS — air traffic control radar beacon system	CAT — category
ANP — actual navigation performance	ATCS — Air Traffic Control Specialist	CDI — course deviation indicator
ANR — advanced navigation route		CDM — collaborative decision making
AOA — airport operating area		CDTI — cockpit display of traffic information
AOCC — airline operations control center		CDU — control display unit

CENRAP — Center Radar ARTS Processing

CFIT — controlled flight into terrain

CFR — Code of Federal Regulations

CGD — combined graphic display

CIP — Capital Investment Plan

CNF — computer navigation fix

CNS — communication, navigation, and surveillance

COP — changeover point

COTS — commercial off the shelf

CPDLC — controller pilot data link communications

CRC — cyclic redundancy check

CRCT — collaborative routing coordination tool

CRM — crewmember resource management

CRT — cathode-ray tube

CTAF — common traffic advisory frequency

CTD — controlled time of departure

CVFP — charted visual flight procedure

DA — density altitude, decision altitude

D-ATIS — digital automatic terminal information service

DACS — digital aeronautical chart supplement

DBRITE — digital bright radar indicator tower equipment

DER — departure end of the runway

DH — decision height

DME — distance measuring equipment

DOD — Department of Defense

DOT — Department of Transportation

DPs — departure procedures

DSR — display system replacement

DRVSM — domestic reduced vertical separation minimums

DUATS — direct user access terminal system

DVA — diverse vector area

EDCT — expect departure clearance time

EFB — electronic flight bag

EFC — expect further clearance

EFIS — electronic flight information system

EGPWS — enhanced ground proximity warning systems

EICAS — Engine indicating and crew alerting system

EMS — emergency medical service

EPE — estimated position error

ER-OPS — extended range operations

ETA — estimated time of arrival

EWINS — enhanced weather information system

FAA — Federal Aviation Administration

FAF — final approach fix

FAP — final approach point

FATO — Final Approach and Takeoff Area

FB — fly-by

FBWP — fly-by waypoint

FD — winds and temperatures aloft forecast

FD — flight director

FDC NOTAM — Flight Data Center Notice to Airmen

FDP — flight data processing

FIR — flight information region

FIS — flight information system

FIS-B — flight information service-broadcast

FISDL — flight information services data link

FL — flight level

FMC — flight management computer

FMS — flight management system

FO — fly-over

FOM — flight operations manual

FOWP — fly-over waypoint

FPM — feet per minute

FSDO — Flight Standards District Office

FSS — Flight Service Station

FTE — flight technical error

GA — general aviation

GAMA — General Aviation Manufacturer's Association

GBT — ground-based transmitter

GCA — ground controlled approach

GCO — ground communication outlet

GDP — ground delay programs

GDPE — ground delay program enhancements

GLS — Global Navigation Satellite System Landing System

GNE — gross navigation error

GNSS — Global Navigation Satellite System

GPS — Global Positioning System

GPWS — ground proximity warning system

G/S — glide slope

GS — groundspeed

GWS — graphical weather service

HAA — height above airport

HAR — High Altitude Redesign

HAT — height above touchdown

HDD — head-down display

HEMS — helicopter emergency medical service

HF — high frequency

HFDL — high frequency data link

HGS — head-up guidance system

HITS — highway in the sky

HOCSR — host/oceanic computer

system replacement

HSI — horizontal situation indicator

HSAC — Helicopter Safety Advisory Council

HUD — head-up display

IAF — initial approach fix

IAP — instrument approach procedure

IAS — indicated air speed

ICA — initial climb area

ICAO — International Civil Aviation Organization

IF — intermediate fix

IFR — instrument flight rules

ILS — instrument landing system

IMC — instrument meteorological conditions

INS — inertial navigation system

IOC — initial operational capability

IPV — instrument procedure with vertical guidance (this term has been renamed APV)

IRU — Inertial Reference Unit

KIAS — knots indicated airspeed

LAAS — Local Area Augmentation System

LAHSO — land and hold short operations

LDA — localizer type directional aid, landing distance available

LF — low frequency

LNAV — lateral navigation

LOA — letter of agreement/letter of authorization

LOC — localizer

LOM — locator outer marker

LPV — See glossary

LTP — landing threshold point

MAA — maximum authorized altitude

MAHWP — missed approach holding waypoint

MAMS — military airspace management system

MAP — missed approach point

MAP — manifold absolute pressure

MASPS — minimum aviation system performance specification

MAWP — missed approach waypoint

MCA — minimum crossing altitude

McTMA — multi-center traffic management advisor

MDA — minimum descent altitude

MDH — minimum descent height

MEA — minimum en route altitude

MEL — minimum equipment list

METAR — aviation routine weather report

MFD — multifunction display

MIA — minimum IFR altitude

MIT — miles-in-trail [delete term]

MLS — microwave landing system

MNPS — minimum navigation performance specifications

MOA — military operations area

MOCA — minimum obstruction clearance altitude

MOPS — minimum operational performance standards

MORA — minimum off route altitude

MRA — minimum reception altitude

MSA — minimum safe altitude

MSAW — minimum safe altitude warning

MSL — mean sea level

MTA — minimum turning altitude

MVA — minimum vectoring altitude

NA — not authorized

NACO — National Aeronautical Charting Office

NAR — National Airspace Redesign

NAS — National Airspace System

NASA — National Aeronautics and Space Administration

NASSI — National Airspace System status information

NAT — North Atlantic

NATCA — National Air Traffic Controllers Association

NAT/OPS — North Atlantic Operation

NAVAID — navigational aid

NBCAP — National Beacon Code Allocation Plan

ND — navigation displays

NDB — nondirectional beacon

NFDC — National Flight Data Center

NFPO — National Flight Procedures Office

NGA — National Geospatial-Intelligence Agency

NIMA — National Imagery and Mapping Agency

NM — nautical mile

NOAA — National Oceanic and Atmospheric Administration

NOPAC — North Pacific

NOTAM — Notice to Airmen

NOTAM D — Distant NOTAM

NOTAM L — Local NOTAM

NOZ — normal operating zone

NPA — nonprecision approach

NPRM — Notice of Proposed Rulemaking

NRP — national route program

NRR — non-restrictive routing

NRS — National Reference System

NSE — navigation system error

NTAP — Notice to Airmen Publication

NTSB — National Transportation Safety Board

NTZ — no transgression zone

NWS — National Weather Service

OCS — obstacle clearance surface

ODP — obstacle departure procedure

OEP — Operational Evolution Plan

OpsSpecs — operations specifications

OROCA — off-route obstruction clearance altitude

PA — precision approach

PAR — precision approach radar

PARC — performance-based operations aviation rulemaking committee

PCG — positive course guidance

PDC — pre-departure clearance

PDR — preferential departure route

PF — pilot flying

PFD — primary flight display

pFAST — passive final approach spacing tool

PIC — pilot in command

PinS — Point-in-Space

PIREP — pilot weather report

PM — pilot monitoring

POH — pilot's operating handbook

POI — principle operations inspector

PRM — precision runway monitor

P-RNAV — European Precision RNAV

PT — procedure turn

PTP — point-to-point

QFE — transition height

QNE — transition level

QNH — transition altitude

RA — resolution advisory, radio altitude

RAIM — receiver autonomous integrity monitoring

RCO — remote communications outlet

RDOF — radio failure

RJ — regional jet

RNAV — area navigation

RNP — required navigation performance

ROC — required obstacle clearance

RSP — runway safety program

RVR — runway visual range

RVSM — reduced vertical separation minimums

RVV — runway visibility value

RWY — runway

SAAAR — Special Aircraft and Aircrew Authorization Required

SAAR — special aircraft and aircrew requirements

SAMS — special use airspace management system

SAS — stability augmentation system

SATNAV — satellite navigation

SDF — simplified directional facility

SER — start end of runway

SIAP — standard instrument approach procedure

SID — standard instrument departure

SIGMET — significant meteorological information

SM — statute mile

SMA — surface movement advisor

SMGCS — surface movement guidance and control system

SMS — surface management system

SOIA — simultaneous offset instrument approaches

SOP — standard operating procedure

SPECI — non-routine (special) aviation weather report

SSV — standard service volume

STAR — standard terminal arrival

STARS — standard terminal automation replacement system

STC — supplemental type certificate

STMP — special traffic management program

SUA — special use airspace

SUA/ISE — special use airspace/inflight service enhancement

SVFR — special visual flight rules

SWAP — severe weather avoidance plan

TA — traffic advisory

TAA — terminal arrival area

TACAN — tactical air navigation

TAF — terminal aerodrome forecast

TAS — true air speed

TAWS — terrain awareness and warning systems

TCAS — traffic alert and collision avoidance system

TCH — threshold crossing height

TDLS — terminal data link system

TDZ — touchdown zone

TDZE — touchdown zone elevation

TEC — tower en route control

TERPS — U.S. Standard for Terminal Instrument Procedures

TFM — traffic flow management

TIS — traffic information service

TIS-B — traffic information service-broadcast

TLOF — Touchdown and Lift-Off Area

TM — traffic management

TMA — traffic management advisor

TMU — traffic management unit

TOC — top of climb

TOD — top of descent

TODA — takeoff distance available

TOGA — take-off/go around

TORA — takeoff runway available

TPP — terminal procedures publication

TRACAB — see glossary.

TRACON — terminal radar approach control

TSE — total navigation system error

TSO — technical standard order

UAT — universal access transceiver

UHF — ultra high frequency

URET — user request evaluation tool

US — United States

USAF — United States Air Force

VCOA — visual climb over airport

VDP — visual descent point

VFR — visual flight rules

VGSI — visual glide slope indicator

VHF — very high frequency

VLJ — very light jet

VMC — visual meteorological conditions

V_{MINI} — minimum speed-IFR.

VNAV — vertical navigation

V_{NEI} — never exceed speed-IFR.

VOR — very high frequency omnidirectional range

VORTAC — very high frequency omnidirectional range/tactical air navigation

VPA — vertical path angle

V_{REF} — reference landing speed

V_{SO} — stalling speed or the minimum steady flight speed in the landing configuration

WAAS — Wide Area Augmentation System

WAC — World Aeronautical Chart

WP — waypoint

Glossary

Abeam Fix – A fix, NAVAID, point, or object positioned approximately 90 degrees to the right or left of the aircraft track along a route of flight. Abeam indicates a general position rather than a precise point.

Accelerate-Stop Distance Available (ASDA) – The runway plus stopway length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.

Aircraft Approach Category – A grouping of aircraft based on reference landing speed (VREF), if specified, or if VREF is not specified, 1.3 VSO (the stalling speed or minimum steady flight speed in the landing configuration) at the maximum certificated landing weight.

Airport Diagram – A full-page depiction of the airport that includes the same features of the airport sketch plus additional details such as taxiway identifiers, airport latitude and longitude, and building identification. Airport diagrams are located in the U.S. Terminal Procedures booklet following the instrument approach charts for a particular airport.

Airport/Facility Directory (A/FD) – Regional booklets published by the National Aeronautical Charting Office (NACO) that provide textual information about all airports, both VFR and IFR. The A/FD includes runway length and width, runway surface, load bearing capacity, runway slope, airport services, and hazards such as birds and reduced visibility.

Airport Sketch – Depicts the runways and their length, width, and slope, the touchdown zone elevation, the lighting system installed on the end of the runway, and taxiways. Airport sketches are located on the lower left or right portion of the instrument approach chart.

Air Route Traffic Control Center (ARTCC) – A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight

Air Traffic Service (ATS) – Air traffic service is an ICAO generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service, or aerodrome control service).

Approach End of Runway (AER) – The first portion of the runway available for landing. If the runway threshold is displaced, use the displaced threshold latitude/longitude as the AER.

Approach Fix – From a database coding standpoint, an approach fix is considered to be an identifiable point in

space from the intermediate fix (IF) inbound. A fix located between the initial approach fix (IAF) and the IF is considered to be associated with the approach transition or feeder route.

Approach Gate – An imaginary point used by ATC to vector aircraft to the final approach course. The approach gate is established along the final approach course 1 NM from the final approach fix (FAF) on the side away from the airport and is located no closer than 5 NM from the landing threshold.

Area Navigation (RNAV) – A method of navigation that permits aircraft operations on any desired course within the coverage of station referenced navigation signals or within the limits of self contained system capability.

Automated Surface Observing System (ASOS)/Automated Weather Sensor System (AWSS) – The ASOS/AWSS is the primary surface weather observing system of the U.S.

Automated Surface Observing System (ASOS) – A weather observing system that provides minute-by-minute weather observations such as temperature, dew point, wind, altimeter setting, visibility, sky condition, and precipitation. Some ASOS stations include a precipitation discriminator which can differentiate between liquid and frozen precipitation.

Automated Weather Observing System (AWOS) – A suite of sensors which measure, collect, and disseminate weather data. AWOS stations provide a minute-by-minute update of weather parameters such as wind speed and direction, temperature and dew point, visibility, cloud heights and types, precipitation, and barometric pressure. A variety of AWOS system types are available (from AWOS 1 to AWOS 3), each of which includes a different sensor array.

Automated Weather Sensor System (AWSS) – The AWSS is part of the Aviation Surface Weather Observation Network suite of programs and provides pilots and other users with weather information through the Automated Surface Observing System. The AWSS sensor suite automatically collects, measures, processes, and broadcasts surface weather data.

Automated Weather System – Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS), Automated Weather Sensor System (AWSS) and Automated Weather Observation System (AWOS).

Automatic Dependent Surveillance-Broadcast (ADS-B) – A surveillance system that continuously broadcasts GPS position information, aircraft identification,

altitude, velocity vector, and direction to all other aircraft and air traffic control facilities within a specific area. Automatic dependent surveillance-broadcast (ADS-B) information will be displayed in the cockpit via a cockpit display of traffic information (CDTI) unit, providing the pilot with greater situational awareness. ADS-B transmissions will also provide controllers with a more complete picture of traffic and will update that information more frequently than other surveillance equipment.

Automatic Terminal Information Service (ATIS) – A recorded broadcast available at most airports with an operating control tower that includes crucial information about runways and instrument approaches in use, specific outages, and current weather conditions, including visibility.

Center Radar ARTS Presentation/Processing (CENRAP) – CENRAP was developed to provide an alternative to a non-radar environment at terminal facilities should an ASR fail or malfunction. CENRAP sends aircraft radar beacon target information to the ASR terminal facility equipped with ARTS.

Changeover Point (COP) – A COP indicates the point where a frequency change is necessary between navigation aids when other than the midpoint on an airway, to receive course guidance from the facility ahead of the aircraft instead of the one behind. These COPs divide an airway or route segment and ensure continuous reception of navigational signals at the prescribed minimum en route IFR altitude.

Charted Visual Flight Procedure (CVFP) – A CVFP may be established at some towered airports for environmental or noise considerations, as well as when necessary for the safety and efficiency of air traffic operations. Designed primarily for turbojet aircraft, CVFPs depict prominent landmarks, courses, and recommended altitudes to specific runways.

Cockpit display of traffic information (CDTI) – The display and user interface for information about air traffic within approximately 80 miles. It will typically combine and show traffic data from TCAS, TIS-B, and ADS-B. Depending on features, the display may also show terrain, weather, and navigation information.

Collision Hazard – A condition, event, or circumstance that could induce an occurrence of a collision or surface accident or incident.

Columns - See Database Columns

Contact Approach – An approach where an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least one mile flight visibility, and a reasonable expectation of contin-

uing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least one statute mile.

Controlled Flight Into Terrain (CFIT) – A situation where a mechanically normally functioning airplane is inadvertently flown into the ground, water, or an obstacle. There are two basic causes of CFIT accidents; both involve flight crew situational awareness. One definition of situational awareness is an accurate perception by pilots of the factors and conditions currently affecting the safe operation of the aircraft and the crew. The causes of CFIT are the flight crews' lack of vertical position awareness or their lack of horizontal position awareness in relation to terrain and obstacles.

Database Columns – The spaces for data entry on each record. One column can accommodate one character.

Database Field – The collection of characters needed to define one item of information.

Database Identifier – A specific geographic point in space identified on an aeronautical chart and in a navigation database, officially designated by the controlling state authority or derived by Jeppesen. It has no ATC function and should not be used in filing flight plans nor used when communicating with ATC.

Database Record – A single line of computer data made up of the fields necessary to define fully a single useful piece of data.

Decision Altitude (DA) – A specified altitude in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established. The term “Decision Altitude (DA)” is referenced to mean sea level and the term “Decision Height (DH)” is referenced to the threshold elevation. Even though DH is charted as an altitude above MSL, the U.S. has adopted the term “DA” as a step toward harmonization of the United States and international terminology. At some point, DA will be published for all future instrument approach procedures with vertical guidance.

Decision Height (DH) – See Decision Altitude

Departure End of Runway (DER) – The end of runway available for the ground run of an aircraft departure. The end of the runway that is opposite the landing threshold, sometimes referred to as the stop end of the runway.

Descend Via – A descend via clearance instructs you to follow the altitudes published on a STAR. You are not authorized to leave your last assigned altitude unless specifically cleared to do so. If ATC amends the altitude or route to one that is different from the published procedure, the rest of the charted descent procedure is canceled. ATC will assign you any further route, altitude, or airspeed clearances, as necessary.

Digital ATIS (D-ATIS) – An alternative method of receiving ATIS reports by aircraft equipped with datalink services capable of receiving information in the cockpit over their Aircraft Communications Addressing and Reporting System (ACARS) unit.

Diverse Vector Area (DVA) – An airport may establish a diverse vector area if it is necessary to vector aircraft below the minimum vectoring altitude to assist in the efficient flow of departing traffic. DVA design requirements are outlined in TERPS and allow for the vectoring of aircraft immediately off the departure end of the runway below the MVA.

Dynamic Magnetic Variation – A field which is simply a computer model calculated value instead of a measured value contained in the record for a waypoint.

Electronic Flight Bag (EFB) – An electronic display system intended primarily for cockpit or cabin use. EFB devices can display a variety of aviation data or perform basic calculations (e.g., performance data, fuel calculations, etc.). In the past, some of these functions were traditionally accomplished using paper references or were based on data provided to the flight crew by an airline's "flight dispatch" function. The scope of the EFB system functionality may also include various other hosted databases and applications. Physical EFB displays may use various technologies, formats, and forms of communication. These devices are sometimes referred to as auxiliary performance computers (APC) or laptop auxiliary performance computers (LAPC).

Ellipsoid of Revolution – The surface that results when an ellipse is rotated about one of its axes.

En Route Obstacle Clearance Areas – Obstacle clearance areas for en route planning are identified as primary, secondary, and turning areas, and they are designed to provide obstacle clearance route protection width for airways and routes.

Expanded Service Volume – When ATC or a procedures specialist requires the use of a NAVAID beyond the limitations specified for standard service volume, an expanded service volume (ESV) may be established. See standard service volume.

Feeder Route – A feeder route is a route depicted on IAP charts to designate courses for aircraft to proceed from the en route structure to the IAF. Feeder routes,

also referred to as approach transitions, technically are not considered approach segments but are an integral part of many IAPs.

Field - See Database Field

Final Approach and Takeoff Area (FATO) – The FATO is a defined heliport area over which the final approach to a hover or a departure is made. The touch-down and lift-off area (TLOF) where the helicopter is permitted to land is normally centered in the FATO. A safety area is provided around the FATO.

Fix – A geographical position determined by visual reference to the surface, by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device. Note: Fix is a generic name for a geographical position and is referred to as a fix, waypoint, intersection, reporting point, etc.

Flight Information Region (FIR) – A FIR is an airspace of defined dimensions within which Flight Information Service and Alerting Service are provided. Flight Information Service (FIS) is a service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Alerting Service is a service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

Flight Level (FL) – A flight level is a level of constant atmospheric pressure related to a reference datum of 29.92 in.Hg. Each flight level is stated in three digits that represents hundreds of feet. For example, FL 250 represents an altimeter indication of 25,000 feet.

Floating Waypoints – Floating waypoints represent airspace fixes at a point in space not directly associated with a conventional airway. In many cases they may be established for such purposes as ATC metering fixes, holding points, RNAV-direct routing, gateway waypoints, STAR origination points leaving the en route structure, and SID terminating points joining the en route structure.

Fly-By (FB) Waypoint – A waypoint that requires the use of turn anticipation to avoid overshooting the next flight segment.

Fly-Over (FO) Waypoint – A waypoint that precludes any turn until the waypoint is overflown, and is followed by either an intercept maneuver of the next flight segment or direct flight to the next waypoint.

Four Corner Post Configuration – An arrangement of air traffic pathways in a terminal area that brings incoming flights over fixes at four corners of the traffic area, while outbound flights depart between the fixes, thus minimizing conflicts between arriving and departing traffic.

Gateway Fix – A navigational aid or fix where an aircraft transitions between the domestic route structure and the oceanic route airspace.

Geodetic Datum – The reference plane from which geodetic calculations are made. Or, according to ICAO Annex 15, the numerical or geometrical quantity or set of such quantities (mathematical model) that serves as a reference for computing other quantities in a specific geographic region such as the latitude and longitude of a point.

Glidepath Angle (GPA) – The angular displacement of the vertical guidance path from a horizontal plane that passes through the reference datum point (RDP). This angle is published on approach charts (e.g., 3.00°, 3.20°, etc.). GPA is sometimes referred to as vertical path angle (VPA).

Global Navigation Satellite System (GNSS) – An umbrella term adopted by the International Civil Aviation Organization (ICAO) to encompass any independent satellite navigation system used by a pilot to perform onboard position determinations from the satellite data.

Gross Navigation Error (GNE) – In the North Atlantic area of operations, a gross navigation error is a lateral separation of more than 25 NM from the centerline of an aircraft's cleared route, which generates an Oceanic Navigation Error Report. This report is also generated by a vertical separation if you are more than 300 feet off your assigned flight level.

Ground Communication Outlet (GCO) – An unstaffed, remotely controlled ground/ground communications facility. Pilots at uncontrolled airports may contact ATC and AFSS via Very High Frequency (VHF) radio to a telephone connection. This lets pilots obtain an instrument clearance or close a VFR/IFR flight plan.

Head-Up Display (HUD) – See Head-Up Guidance System (HGS)

Head-Up Guidance System (HGS) – A system which projects critical flight data on a display positioned between the pilot and the windscreen. In addition to showing primary flight information, the HUD computes an extremely accurate instrument approach and landing guidance solution, and displays the result as a guidance cue for head-up viewing by the pilot.

Height Above Touchdown (HAT) – The height of the DA above touchdown zone elevation (TDZE).

Highway in the Sky (HITS) – A graphically intuitive pilot interface system that provides an aircraft operator with all of the attitude and guidance inputs required to safely fly an aircraft in close conformance to air traffic procedures.

Initial Climb Area (ICA) – An area beginning at the departure end of runway (DER) to provide unrestricted climb to at least 400 feet above DER elevation.

Instrument Approach Waypoint – Fixes used in defining RNAV IAPs, including the feeder waypoint (FWP), the initial approach waypoint (IAWP), the intermediate waypoint (IWP), the final approach waypoint (FAWP), the RWY WP, and the APT WP, when required.

Instrument Landing System (ILS) – A precision instrument approach system that normally consists of the following electronic components and visual aids; localizer, glide slope, outer marker, middle marker, and approach lights.

Instrument Procedure with Vertical Guidance (IPV) – Satellite or Flight Management System (FMS) lateral navigation (LNAV) with computed positive vertical guidance based on barometric or satellite elevation. This term has been renamed APV.

International Civil Aviation Organization (ICAO) – ICAO is a specialized agency of the United Nations whose objective is to develop standard principles and techniques of international air navigation and to promote development of civil aviation.

Intersection – Typically, the point at which two VOR radial position lines cross on a route, usually intersecting at a good angle for positive indication of position, resulting in a VOR/VOR fix.

Landing Distance Available (LDA) – ICAO defines LDA as the length of runway, which is declared available and suitable for the ground run of an aeroplane landing.

Lateral Navigation (LNAV) – Azimuth navigation, without positive vertical guidance. This type of navigation is associated with nonprecision approach procedures or en route.

Local Area Augmentation System (LAAS) – LAAS further increases the accuracy of GPS and improves signal integrity warnings.

Localizer Performance with Vertical Guidance (LPV) – LPV is one of the four lines of approach minimums found on an RNAV (GPS) approach chart. Lateral guidance accuracy is equivalent to a localizer. The HAT is published as a DA since it uses an electronic glide path that is not dependent on any ground equipment or barometric aiding and may be as low as 200 feet and $\frac{1}{2}$ SM visibility depending on the airport terrain and infrastructure. WAAS avionics approved for LPV is required. Baro-VNAV is not authorized to fly the LPV line of minimums on a RNAV (GPS) procedure since it uses an internally generated descent path that is subject to cold temperature effects and incorrect altimeter settings.

Loss of Separation – An occurrence or operation that results in less than prescribed separation between aircraft, or between an aircraft and a vehicle, pedestrian, or object.

LPV – See Localizer Performance with Vertical Guidance

Magnetic Variation – The difference in degrees between the measured values of true north and magnetic north at that location.

Maximum Authorized Altitude (MAA) – An MAA is a published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, RNAV low or high route, or other direct route for which an MEA is designated at which adequate reception of navigation signals is assured.

Metering Fix – A fix along an established route over which aircraft will be metered prior to entering terminal airspace. Normally, this fix should be established at a distance from the airport which will facilitate a profile descent 10,000 feet above airport elevation (AAE) or above.

Mid-RVR – The RVR readout values obtained from sensors located midfield of the runway.

Mileage Break – A point on a route where the leg segment mileage ends, and a new leg segment mileage begins, often at a route turning point.

Military Airspace Management System (MAMS) – A Department of Defense system to collect and disseminate information on the current status of special use airspace. This information is provided to the Special Use Airspace Management System (SAMS). The electronic interface also provides SUA schedules and historical activation and utilization data.

Minimum Crossing Altitude (MCA) – An MCA is the lowest altitude at certain fixes at which the aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude. MCAs are established in all cases where obstacles intervene to prevent pilots from maintaining obstacle clearance during a normal climb to a higher MEA after passing a point beyond which the higher MEA applies.

Minimum Descent Altitude (MDA) – The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

Minimum En Route Altitude (MEA) – The MEA is the lowest published altitude between radio fixes that assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or seg-

ment, RNAV low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.

Minimum IFR Altitude (MIA) – Minimum altitudes for IFR operations are prescribed in Part 91. These MIAs are published on NACO charts and prescribed in Part 95 for airways and routes, and in Part 97 for standard instrument approach procedures.

Minimum Navigation Performance Specifications (MNPS) – A set of standards which require aircraft to have a minimum navigation performance capability in order to operate in MNPS designated airspace. In addition, aircraft must be certified by their State of Registry for MNPS operation. Under certain conditions, non-MNPS aircraft can operate in MNPS airspace, however, standard oceanic separation minima is provided between the non-MNPS aircraft and other traffic.

Minimum Obstruction Clearance Altitude (MOCA) – The MOCA is the lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments that meets obstacle clearance requirements for the entire route segment. This altitude also assures acceptable navigational signal coverage only within 22 NM of a VOR.

Minimum Reception Altitude (MRA) – An MRA is determined by FAA flight inspection traversing an entire route of flight to establish the minimum altitude the navigation signal can be received for the route and for off-course NAVAID facilities that determine a fix. When the MRA at the fix is higher than the MEA, an MRA is established for the fix, and is the lowest altitude at which an intersection can be determined.

Minimum Safe Altitudes (MSA) – MSAs are published for emergency use on IAP charts. For conventional navigation systems, the MSA is normally based on the primary omnidirectional facility on which the IAP is predicated. For RNAV approaches, the MSA is based on the runway waypoint (RWY WP) for straight-in approaches, or the airport waypoint (APT WP) for circling approaches. For GPS approaches, the MSA center will be the Missed Approach Waypoint (MAWP).

Minimum Vectoring Altitude (MVA) – Minimum vectoring altitude charts are developed for areas where there are numerous minimum vectoring altitudes due to variable terrain features or man-made obstacles. MVAs are established for use by ATC when radar ATC is exercised.

Missed Approach Holding Waypoint (MAHWP) – An approach waypoint sequenced during the holding portion of the missed approach procedure that is usually a fly-over waypoint, rather than a fly-by waypoint.

Missed Approach Waypoint (MAWP) – An approach waypoint sequenced during the missed approach procedure that is usually a fly-over waypoint, rather than a fly-by waypoint.

National Airspace System (NAS) – Consists of a complex collection of facilities, systems, equipment, procedures, and airports operated by thousands of people to provide a safe and efficient flying environment.

Navigational Gap – A navigational course guidance gap, referred to as an MEA gap, describes a distance along an airway or route segment where a gap in navigational signal coverage exists. The navigational gap may not exceed a specific distance that varies directly with altitude.

Nondirectional Radio Beacon (NDB) – An L/MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine bearing to or from the radio beacon and “home” on or track to or from the station. When the radio beacon is installed in conjunction with the ILS marker, it is normally called a compass locator.

Non-RNAV DP – A DP whose ground track is based on ground-based NAVAIDS and/or dead reckoning navigation.

Obstacle Clearance Surface (OCS) – An inclined or level surface associated with a defined area for obstruction evaluation.

Obstacle Departure Procedure (ODP) – A procedure that provides obstacle clearance. ODPs do not include ATC related climb requirements. In fact, the primary emphasis of ODP design is to use the least onerous route of flight to the en route structure while attempting to accommodate typical departure routes.

Obstacle Identification Surface (OIS) – The design of a departure procedure is based on TERPS, a living document that is updated frequently. Departure design criteria assumes an initial climb of 200 feet per NM after crossing the departure end of the runway (DER) at a height of at least 35 feet above the ground. Assuming a 200 feet per NM climb, the departure is structured to provide at least 48 feet per NM of clearance above objects that do not penetrate the obstacle slope. The slope, known as the obstacle identification slope (OIS), is based on a 40 to 1 ratio, which is the equivalent of a 152-foot per NM slope.

Off-Airway Routes – The FAA prescribes altitudes governing the operation of aircraft under IFR for off-airway routes in a similar manner to those on federal airways, jet routes, area navigation low or high altitude routes, and other direct routes for which an MEA is designated.

Off-Route Obstruction Clearance Altitude (OROCA) – An off-route altitude that provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

Operations Specifications (OpsSpecs) – A published document providing the conditions under which an air carrier and operator for compensation or hire must operate in order to retain approval from the FAA.

Pilot Briefing Information – The current format for charted IAPs issued by NACO. The information is presented in a logical order facilitating pilot briefing of the procedures. Charts include formatted information required for quick pilot or flight crew reference located at the top of the chart.

Point-in-Space (PinS) Approach – An approach normally developed to heliports that do not meet the IFR heliport design standards but meet the standards for a VFR heliport. A helicopter PinS approach can be developed using conventional NAVAIDS or RNAV systems. These procedures have either a VFR or visual segment between the MAP and the landing area. The procedure will specify a course and distance from the MAP to the heliport(s) and include a note to proceed VFR or visually from the MAP to the heliport, or conduct the missed approach.

Positive Course Guidance (PCG) – A continuous display of navigational data that enables an aircraft to be flown along a specific course line, e.g., radar vector, RNAV, ground-based NAVAID.

Precision Runway Monitor (PRM) – Provides air traffic controllers with high precision secondary surveillance data for aircraft on final approach to parallel runways that have extended centerlines separated by less than 4,300 feet. High resolution color monitoring displays (FMA) are required to present surveillance track data to controllers along with detailed maps depicting approaches and a no transgression zone.

Preferential Departure Route (PDR) – A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an instrument Departure Procedure (DP) or a Preferred IFR Route.

Preferred IFR Routes – A system of preferred IFR routes guides you in planning your route of flight to minimize route changes during the operational phase of flight, and to aid in the efficient orderly management of air traffic using federal airways.

Principal Operations Inspector (POI) – Scheduled air carriers and operators for compensation or hire are assigned a principal operations inspector (POI) who works directly with the company and coordinates FAA operating approval.

Record – See Database Record

Reduced Vertical Separation Minimums (RVSM) – RVSM airspace is where air traffic control separates aircraft by a minimum of 1,000 feet vertically between flight level (FL) 290 and FL 410 inclusive. RVSM airspace is special qualification airspace; the operator and the aircraft used by the operator must be approved by the Administrator. Air traffic control notifies operators of RVSM by providing route planing information.

Reference Landing Speed (VREF) – The speed of the airplane, in a specified landing configuration, at the point where it descends through the 50-foot height in the determination of the landing distance.

Remote Communications Outlet (RCO) – An unmanned communications facility remotely controlled by air traffic personnel. RCOs serve FSSs and may be UHF or VHF. RCOs extend the communication range of the air traffic facility. RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging IFR cancellations or departure/landing times.

Reporting Point – A geographical location in relation to which the position of an aircraft is reported. (See Compulsory Reporting Points)

Required Navigation Performance (RNP) – RNP is a statement of the navigation performance necessary for operation within a defined airspace. On-board monitoring and alerting is required.

RNAV DP – A DP developed for RNAV-equipped aircraft whose ground track is based on satellite or DME/DME navigation systems.

Roll-out RVR – The RVR readout values obtained from sensors located nearest the rollout end of the runway.

Runway Heading – The magnetic direction that corresponds with the runway centerline extended, not the painted runway numbers on the runway. Pilots cleared to “fly or maintain runway heading” are expected to fly or maintain the published heading that corresponds with the extended centerline of the departure runway (until otherwise instructed by ATC), and are not to apply drift correction; e.g., RWY 4, actual magnetic heading of the runway centerline 044.22°, fly 044°.

Runway Hotspots – Locations on a particular airport that historically have hazardous intersections. Hot spots alert pilots to the fact that there may be a lack of visibility at certain points or the tower may be unable to see that particular intersection. Whatever the reason, pilots need to be aware that these hazardous intersections exist and they should be increasingly vigilant when approaching and taxiing through these intersections. Pilots are typically notified of these areas by a Letter to Airmen or by accessing the FAA Office of Runway Safety.

Runway Incursion – an occurrence at an airport involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of separation with an aircraft that is taking off, intending to take off, landing, or intending to land.

Runway Safety Program (RSP) – Designed to create and execute a plan of action that reduces the number of runway incursions at the nation’s airports.

Runway Visual Range (RVR) – An estimate of the maximum distance at which the runway, or the specified lights or markers delineating it, can be seen from a position above a specific point on the runway centerline. RVR is normally determined by visibility sensors or transmissometers located alongside and higher than the centerline of the runway. RVR is reported in hundreds of feet.

Runway Visibility Value (RVV) – The visibility determined for a particular runway by a transmissometer. A meter provides a continuous indication of the visibility (reported in miles or fractions of miles) for the runway. RVV is used in lieu of prevailing visibility in determining minimums for a particular runway.

Significant Point – [ICAO Annex 11] A specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes.

Special Instrument Approach Procedure – A procedure approved by the FAA for individual operators, but not published in FAR 97 for public use.

Special Use Airspace Management System (SAMS) – A joint FAA and military program designed to improve civilian access to special use airspace by providing information on whether the airspace is active or scheduled to be active. The information is available to authorized users via an Internet website.

Standard Instrument Departure (SID) – An ATC requested and developed departure route designed to increase capacity of terminal airspace, effectively control the flow of traffic with minimal communication, and reduce environmental impact through noise abatement procedures.

Standard Service Volume – Most air navigation radio aids which provide positive course guidance have a designated standard service volume (SSV). The SSV defines the reception limits of unrestricted NAVAIDS which are usable for random/unpublished route navigation. Standard service volume limitations do not apply to published IFR routes or procedures. See the AIM for the SSV for specific NAVAID types.

Standard Terminal Arrival (STAR) – Provides a common method for departing the en route structure and navigating to your destination. A STAR is a pre-planned instrument flight rule ATC arrival procedure published for pilot use in graphic and textual form to simplify clearance delivery procedures. STARS provide you with a transition from the en route structure to an outer fix or an instrument approach fix or arrival waypoint in the terminal area, and they usually terminate with an instrument or visual approach procedure.

Standardized Taxi Routes – Coded taxi routes that follow typical taxiway traffic patterns to move aircraft between gates and runways. ATC issues clearances using these coded routes to reduce radio communication and eliminate taxi instruction misinterpretation.

STAR Transition – A published segment used to connect one or more en route airways, jet routes, or RNAV routes to the basic STAR procedure. It is one of several routes that bring traffic from different directions into one STAR. NACO publishes STARS for airports with procedures authorized by the FAA, and these STARS are included at the front of each Terminal Procedures Publication regional booklet.

Start End of Runway (SER) – The beginning of the takeoff runway available.

Station Declination – The angular difference between true north and the zero radial of a VOR at the time the VOR was last site checked.

Surface Incident – An event during which authorized or unauthorized/unapproved movement occurs in the movement area or an occurrence in the movement area associated with the operation of an aircraft that affects or could affect the safety of flight.

Surface Movement Guidance Control System (SMGCS) – Facilitates the safe movement of aircraft and vehicles at airports where scheduled air carriers are conducting authorized operations. The SMGCS low visibility taxi plan includes the improvement of taxiway and runway signs, markings, and lighting, as well as the creation of SMGCS low visibility taxi route charts.

Synthetic Vision – A visual display of terrain, obstructions, runways, and other surface features that creates a virtual view of what the pilot would see out the window. This tool could be used to supplement normal vision in low visibility conditions, as well as to increase situational awareness in IMC.

Takeoff Distance Available (TODA) – ICAO defines TODA as the length of the takeoff runway available plus the length of the clearway, if provided.

Takeoff Runway Available (TORA) – ICAO defines TORA as the length of runway declared available and suitable for the ground run of an aeroplane takeoff.

Tangent Point (TP) – The point on the VOR/DME RNAV route centerline from which a line perpendicular to the route centerline would pass through the reference facility.

Terminal Arrival Area (TAA) – TAAs are the method by which aircraft are transitioned from the RNAV en route structure to the terminal area with minimal ATC interaction. The TAA consists of a designated volume of airspace designed to allow aircraft to enter a protected area, offering guaranteed obstacle clearance where the initial approach course is intercepted based on the location of the aircraft relative to the airport.

Threshold – The beginning of the part of the runway usable for landing.

Top of Climb (TOC) – An identifiable waypoint representing the point at which cruise altitude is first reached. TOC is calculated based on your current aircraft altitude, climb speed, and cruise altitude. There can only be one TOC waypoint at a time.

Top of Descent (TOD) – Generally utilized in flight management systems, top of descent is an identifiable waypoint representing the point at which descent is first initiated from cruise altitude. TOD is generally calculated using the destination elevation (if available) and the descent speed schedule.

Touchdown and Lift-Off Area (TLOF) – The TLOF is a load bearing, usually paved area at a heliport where the helicopter is permitted to land. The TLOF can be located at ground or rooftop level, or on an elevated structure. The TLOF is normally centered in the FATO.

Touchdown RVR – The RVR visibility readout values obtained from sensors serving the runway touchdown zone.

Touchdown Zone Elevation (TDZE) – The highest elevation in the first 3,000 feet of the landing surface.

Tower En Route Control (TEC) – The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite air traffic and reduces air traffic control and pilot communication requirements.

TRACAB – A new type of air traffic facility that consists of a radar approach control facility located in the tower cab of the primary airport, as opposed to a separate room.

Traffic Information Service-Broadcast (TIS-B) – An air traffic surveillance system that combines all available traffic information on a single display.

Traffic Management Advisor (TMA) – A software suite that helps air traffic controllers to sequence arriving air traffic.

Transition Altitude (QNH) – The altitude in the vicinity of an airport at or below which the vertical position of an aircraft is controlled by reference to altitudes (MSL).

Transition Height (QFE) – Transition height is the height in the vicinity of an airport at or below which the vertical position of an aircraft is expressed in height above the airport reference datum.

Transition Layer – Transition layer is the airspace between the transition altitude and the transition level. Aircraft descending through the transition layer will set altimeters to local station pressure, while departing aircraft climbing through the transition layer will be using standard altimeter setting (QNE) of 29.92 inches of Mercury, 1013.2 millibars, or 1013.2 hectopascals.

Transition Level (QNE) – The lowest flight level available for use above the transition altitude.

Turn Anticipation – The capability of RNAV systems to determine the point along a course, prior to a turn WP, where a turn should be initiated to provide a smooth path to intercept the succeeding course, and to enunciate the information to the pilot.

Turn WP [Turning Point] – A WP which identifies a change from one course to another.

User-defined Waypoint – User-defined waypoints typically are created by pilots for use in their own random RNAV direct navigation. They are newly established, unpublished airspace fixes that are designated geographic locations/positions that help provide positive course guidance for navigation and a means of checking progress on a flight. They may or may not be actually plotted by the pilot on enroute charts, but would normally be communicated to ATC in terms of bearing and distance or latitude/longitude. An example of user-defined waypoints typically includes those derived from database-driven area navigation (RNAV) systems whereby latitude/longitude coordinate-based waypoints are generated by various means including keyboard input, and even electronic map mode functions used to establish waypoints with a cursor on the display. Another example is an offset phantom waypoint, which is a point in space formed by a bearing and distance from NAVAIDs such as VORs, VORTACs, and TACANs, using a variety of navigation systems.

User Request Evaluation Tool (URET) – The URET helps provide enhanced, automated flight data management. URET is an automated tool provided at each radar position in selected en route facilities. It uses

flight and radar data to determine present and future trajectories for all active and proposed aircraft flights. A graphic plan display depicts aircraft, traffic, and notification of predicted conflicts. Graphic routes for current plans and trial plans are displayed upon controller request. URET can generate a predicted conflict of two aircraft, or between aircraft and airspace.

Vertical Navigation (VNAV) – Traditionally, the only way to get glidepath information during an approach was to use a ground-based NAVAID, but modern area navigation systems allow flight crews to display an internally generated descent path that allows a constant rate descent to minimums during approaches that would otherwise include multiple level-offs.

Vertical Navigation Planning – Included within certain STARs is information provided to help you reduce the amount of low altitude flying time for high performance aircraft, like jets and turboprops. An expected altitude is given for a key fix along the route. By knowing an intermediate altitude in advance when flying a high performance aircraft, you can plan the power or thrust settings and aircraft configurations that result in the most efficient descent, in terms of time, fuel requirements, and engine wear.

Visual Approach – A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually to the airport of intended landing; it is not an IAP. Also, there is no missed approach segment. When it is operationally beneficial, ATC may authorize pilots to conduct a visual approach to the airport in lieu of the published IAP. A visual approach can be initiated by a pilot or the controller.

Visual Climb Over the Airport (VCOA) – An option to allow an aircraft to climb over the airport with visual reference to obstacles to attain a suitable altitude from which to proceed with an IFR departure.

Waypoints – Area navigation waypoints are specified geographical locations, or fixes, used to define an area navigation route or the flight path of an aircraft employing area navigation. Waypoints may be any of the following types: predefined, published, floating, user-defined, fly-by, or fly-over.

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

Wide Area Augmentation System (WAAS) – A method of navigation based on GPS. Ground correction stations transmit position corrections that enhance system accuracy and add vertical navigation (VNAV) features.