WAAS

Wide Area Augmentation System

the navigation system that dramatically increases the accuracy, integrity and availability of GPS



Using WAAS, aircraft can access over 4,100 runway ends in poor weather conditions with minimums as low as 200 feet. WAAS can even get you into places where an Instrument Landing System (ILS) may not be available. In addition to its unprecedented benefits related to airport access, WAAS also offers a number of other benefits. There are now twice as many WAAS procedures (LPVs and LPs) as there are ILS glide slopes in the U.S. National Airspace System.

WAAS LPVs Outnumber Category I ILS Approaches Within the U.S.
As of November 30, 2023, there are 4,145 LPVs serving 2,012 airports, 1,247 are non-ILS airports. The FAA is adding more new WAAS procedures each year

Benefits of WAAS compared with GPS for Flight Planning, Terminal and Enroute Operations

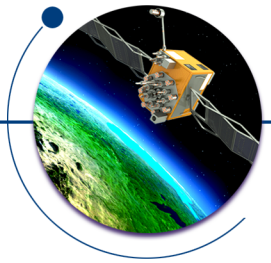
- Allows use of LNAV/VNAV minima without temperature restrictions
- Provides vertically-guided approach procedures capability at airports that do not have ground-based navigational aides *(Some infrastructure upgrades may be required to get the best possible minimums. More information is available in "Maximizing Airport Operations Using the Wide Area Augmentation System" available at http://gps.faa.gov. in library)*
- Is not affected by snow reflections that can impact ILS operations
- Allows RNAV (GPS) approaches to be used for alternate airport flight planning
- Increases number of alternate airport options which improves flight planning flexibiity
- Satisfies equipment requirements for 'T' and 'Q' routes (meets SFAR 97 in Alaska)
- Eliminates RAIM check requirement per AC 90-100A
- Provides three additional ranging sources (from WAAS GEOs)
- Enables extension of terminal mode operations for both departure and arrival to beyond 30 nautical miles from the airport reference point
- Increased accuracy and availability
- Eliminates ILS critical areas
- Enables ADS-B

GPS/WAAS Technical Standard Orders
TSO-C145c - "Airborne Navigation Sensors Using the GPS Augmented by the Satellite-Based Augmentation System"

TSO-C146c - "Stand-Alone Airborne Navigation Equipment Using the GPS System Augmented by the Satellite-Based Augmentation System"

WAAS LPVs Provide Similar Level of Service to Category I ILS

- Vertical guidance
- Glidepath more stable than that of ILS
- Minimums as low as 200 feet, which is lower than all Required Navigation Performance (RNP) Authorization Required (AR) approaches and all conventional (e.g. VOR, NDB) non-precision approaches



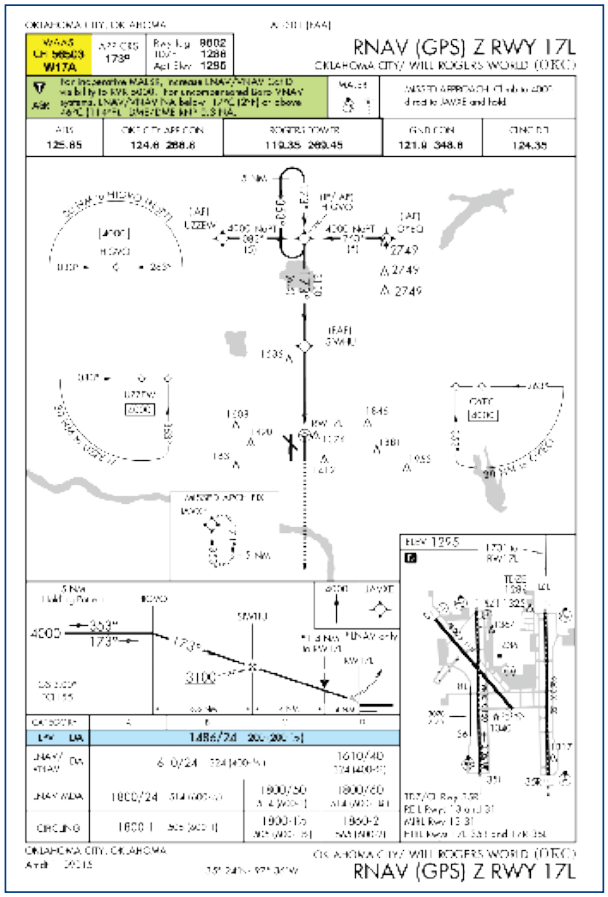
LPV Approaches Enabled by a WAAS Receiver

The Localizer Performance with Vertical guidance (LPV) procedure takes advantage of the accuracy of WAAS to provide an instrument approach procedure equivalent to a Category I ILS approach. While an LPV approach looks and flies like an ILS approach, it provides the pilot with more stable vertical guidance. An LPV approach can provide minimums as low as 200 feet at qualifying airports.

WAAS LP Approaches

The Localizer Performance (LP) procedures can often provide lower minima than lateral navigation (LNAV) procedures due to the narrower Obstacle Clearance Surface (OCS). The smaller LP OCS footprint provides greater potential for avoiding more obstructions in the final approach segment that would otherwise require the minima to be higher. LPs will be published at locations where the terrain or obstructions do not allow publication of LPV procedures. As of November 30, 2023, there are 736 LPs serving 538 airports, 437 are non-ILS airports.

NOTE *- WAAS receivers certified prior to TSO C-145b and TSO C-146b, even if they have LPV capability, do not contain LP capability unless the receiver has been upgraded. Receivers capable of flying LP procedures must contain a statement in the Flight Manual Supplement or Approved Supplemental Flight Manual stating that the receiver has LP capability, as well as the capability for the other WAAS and GPS approach procedure types.*



Important RNAV Approach Information

WAAS
CH **56503**
W17A

WAAS Channel Number: **CH 56503**
WAAS Approach ID: **W17A**
W: **WAAS**
17: **Runway 17L**
A: **1st WAAS Approach to RWY 17L**

ASR For inoperative MALSR, increase LNAV/VNAV Cat D visibility to RVR 5000. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 46°C (114°F). DME/DME RNP-0.3 NA.

Temperature Restriction does not apply to WAAS equipment

LPV	DA	1486/24	200 (200-½)

LPV Minimum Line (*flown with WAAS receiver only*)

How to Request an LPV or LP Approach at Your Airport

Click on the header above or go to http://gps.faa.gov and type "request an LPV" in the search box.

Where to Find Listing of Airports with LPV and LP Approaches

Click on the header above or go to http://gps.faa.gov and click on "GPS/WAAS Approaches" in the Quick Links box.