Helicopter Operators Seek LPV Approaches

In the U.S., the FAA continues rapid development of RNAV GPS approach procedures using the Wide Area Augmentation System (WAAS). Meanwhile, operators – from airliners to corporate operators – are making the switch to WAAS-enabled Flight Management Systems (FMS) and realizing the benefits. Just one reason WAAS has become so popular: the sheer number of WAAS procedures available, over 10,500 to date.

As part of the WAAS procedure development, the FAA started publishing Localizer Performance (LP) procedures in January 2011. These WAAS procedures are published at locations where terrain or obstructions do not allow publication of Localizer Performance with Vertical Guidance (LPV) approaches, but utilize angular lateral guidance to provide a lateral-only procedure to ILS-like minima. Originally touted as designed for helicopters, all 182 published to date are for fixed wing operators. Helicopter operators seeking LPV-like performance are left with little choice but to commission the development of private procedures. Hickok & Associates is one company active in the design of private procedures, and has developed 32 FAA-approved helicopter WAAS LPV instrument flight procedures (some for Universal Avionics FMS operators). The company recently announced that it has another 33 helicopter WAAS LPV procedures in various stages of development.

Work toward publication of public-use WAAS LPV helicopter procedures continues with several testing programs underway. The FAA is currently using Universal Avionics’ UNS-1Fw FMS in its S-76A to conduct test flights of LPV procedures in the Long Island, New York area. Universal Avionics’ FMSs have long been installed in helicopter platforms, including Sikorsky, AgustaWestland, Eurocopter and Bell.

Product News and Highlights

A Flat Panel Display for Helicopters: The EFI-890H

With software based on Universal Avionics’ popular fixed-wing flat panel display system and hardware proven and approved to withstand high-vibration environments, the EFI-890H is suited for the unique requirements of helicopter operators. This addition to Universal’s line of flat panel display products, which includes the popular EFI-890R, is designed specifically for helicopter platforms.

Shipment of the EFI-890H will begin in February 2012. The unit will be approved for Sikorsky S-76A, S-76C, S-61L, S-61N, UH-60L; Bell 212, 412, 412EP, 412CF; Eurocopter EC-155, Dauphin N1, N3 and AS-332 helicopters.

The EFI-890H includes a Collective Cue feature and X-Video Night Vision Imaging System (NVIS) capabilities. When integrated with Universal Avionics’ Multi-Mission Management System, the operator has the ability to fly six distinct search patterns. Its features are unmatched for mission operations such as search and rescue, reconnaissance, surveillance, maritime patrol, border patrol, photogrammetry and flight inspection.

Universal Avionics’ EFI-890H offers flexibility for installation as a stand-alone EFI-890H Primary Flight Display, Navigation Display, or Multi-Function Display integrated cockpit system.

Universal Demonstrates Proficiency in Quality Standard

Universal Avionics has successfully passed the audit for the latest revision to the AS9100 standard, Revision C. The company is registered in the International Aerospace Quality Group (IAQG) Online Aerospace Supplier Information System (OASIS).

The AS9100 standard is an internationally accepted Quality Management System model where an organization a) demonstrates its ability to consistently provide products that meet customer and applicable statutory and regulatory requirements, and b) aims to enhance customer satisfaction through the effective application of the system.

Implementation of AS9100 allows Universal’s internal processes to be evaluated regularly and measured by an independent auditor to ensure the company is maintaining the safety, reliability and quality of its products.
ERAM Explained: How Enroute Controllers Manage Traffic in NextGen

En Route Automation Modernization (ERAM) is a program of the Federal Aviation Administration (FAA) designed to allow faster processing of route requests and in flight route changes. ERAM replaces the old En Route Host or “HOST” computer and backup system that is used at 20 FAA high altitude Air Route Traffic Control Centers in the continental U.S., considered to be the backbone of the Nation’s Airspace System (NAS). The “HOST” processes flight radar data, provides communications, and generates display data to Air Traffic Controllers.

ERAM is the core of the Next Generation Air Transportation System (NextGen), advancing the transition from a ground-based system of Air Traffic Control (ATC) to a satellite-based system of Air Traffic Management (ATM). Programs like System Wide Information Management, Data Communications, and Automatic Dependent Surveillance-Broadcast (ADS-B) depend on successful ERAM deployment.

Benefits

As ERAM evolves, it will provide benefits for users and the flying public, pilots, and controllers.

Users and the Flying Public – ERAM will increase air traffic flow and improve automated navigation and conflict detection services. Enroute controllers will be able to track 1,900 aircraft at a time, instead of the current 1,100. This is vital to meeting future demand and preventing gridlock and delays.

Pilots – ERAM will increase flexible routing around congestion, weather, and other restrictions. Real-time ATM and information sharing on flight restrictions improves airlines’ ability to plan flights with minimal changes. In addition, reduced vectoring and increased radar coverage will lead to smoother, faster, and more cost efficient flights. The extended coverage is possible because ERAM is designed to process data from 64 radars instead of the current 24.

Controllers – ERAM will benefit controllers by providing a user-friendly interface with customizable displays. Additionally, trajectory modeling is more accurate, which allows maximum airspace use, better conflict detections, and improved decision making.

Also, ERAM significantly increases the number of flights that can be tracked. Two functionally-identical channels with dual redundancy eliminate a single point of failure. With ERAM, controllers will experience reduced workloads and stress, increased collaboration, and seamless data sharing between centers.

Current Status

Lockheed Martin, under contract by the FAA, has installed ERAM at 20 Air Route Traffic Control Centers, the William J. Hughes Technical Center, and the FAA Academy. Full operational capability is being released in stages on a site-by-site basis.

Operational trials at two key sites, Salt Lake City and Seattle, have been underway since Fall 2009. The complexity of the upgrade has extended the operational trials at the two test sites, as software issues are still being resolved. Implementation of ERAM at the other 18 sites have been temporarily halted until the issues are resolved and fiscal budgets are approved by Congress.

It is not expected that Universal Avionics FMS operators will be affected by the updates to ERAM in the short term. However, as ADS-B mandates in the U.S. mature, it is expected that the “best equipped, best served” philosophy will be enabled by the new ERAM system.
Notes from Product Support

Procedure Additions to the Navigation Database

In navigation database Cycle 1111 (effective October 20, 2011), Universal Avionics added Localizer circle-to-land and Back Course circle-to-land procedures to the navigation databases for FMS Software Control Numbers (SCN) 802/902, 803/903, and 1000/1100. Highlights about these procedures are included below.

What are Localizer circle-to-land approaches?

There are 23 Localizer circle-to-land approaches worldwide. Most are located in Canada, Europe, and the United States. A popular example of a Localizer circle-to-land approach is the LOC DME–E at Aspen-Pitkin Co/Sardy (KASE), Aspen, Colorado. All Localizer circle-to-land procedures are now contained in the navigation database.

What are Back Course circle-to-land approaches?

Back Course circle-to-land procedures are less common than Localizer; there are four such approaches in the world and all are located in the U.S. One example is the LOC DME (BACK CRS)–A at Santa Maria Public / Capt Hancock (KSMX), Santa Maria, California. All Back Course circle-to-land procedures are now in the navigation database.

Is there anything I need to know about flying these procedures?

In SCNs 802.0/902.0 through 802.3/902.3, the FMS may push an FMS-FLOC DIFF WARN message when flying these procedures. This FMS-FLOC DIFF WARN message indicates that the FMS may have a slight position error that causes the aircraft to fly parallel to the localizer inbound course without localizer capture. The warning is due in part to FMS logic which “assumes” the localizer will be aligned with the approach inbound course.

In SCNs 802.4/902.4, 803.0/903.0 and 1000.0/1100.0, a change was made to use the actual localizer coordinates, thus correcting this issue.

Please contact Nav Data Services and PC Engineering at (520) 295-2300 / (800) 321-5253 or navdata@uasc.com with further questions or concerns.

Software and Hardware Updates

FMS Trainer

FMS Trainer (FMST) software version 2.2 released in December 2011. The PC-based program added support for Windows 7 and includes updated graphics.

FMS

SCN 1000.6/1100.6 rescheduled for approval in January 2012. Minor software change allows the testing of LOS discretes via the CDU among other improvements.

EFI-890R

A minor part number change incorporates a modification to address Night Vision Imaging Systems (NVIS) capability for the X-Video EFI-890R configuration. Expected in February 2012.

Service Bulletins are published for all software releases and hardware modifications. Visit www.uasc.com to view the Service Bulletin for the software and hardware updates listed here, in addition to associated Service Letters and archived Bulletins.
What’s Your “LPV Save” Number?

Share Your Story with Us

When the flight couldn’t have been completed without LPV capability, it’s sometimes referred to as an “LPV Save.” Maybe the airport didn’t have ILS, or it was out of service. In bad weather conditions, WAAS approaches may be the only way to get to the scheduled airport.

The team at Universal Avionics loves to hear stories about LPV Saves. And we bet that other operators would enjoy them as much as we do. Send your story to universalflyer@uasc.com to be featured in this special section sharing LPV Saves.

To ensure your privacy, please tell us whether we may use your name or other identifying information. Include your address so we can send a special thank you for sharing your story.

Horizon Air LPV Saves: 18 (and counting)

The weather in the Spokane, Washington area on Thursday, October 6, 2011 was overcast with poor visibility and low ceilings at Spokane International Airport (GEG) and nearby Pullman-Moscow Regional Airport (PUW). Runway construction at GEG had also caused the Instrument Landing System (ILS) on the main runway (3/21) to be out of service. The outlook was not good for the Horizon Air flights scheduled for landings at those two airports.

“Once the aircraft routers and dispatchers became aware of the conditions,” said Steve Bush, Horizon Air’s Flight Operations Manager, “...they actively routed the WAAS aircraft to keep them in those markets while other aircraft were diverted or cancelled.”

Fourteen flights – inbound and outbound – were confirmed as LPV Saves. Two more flights were probable saves. “Our company leadership got a firsthand glimpse at what could be possible when we equip the full fleet with WAAS avionics,” added Steve Bush.

—As told by Steve Bush from regional airline Horizon Air. Reproduced in part, with permission from FAA SatNav News Fall 2011.