Canadian Public and Private Sectors Work Together for LPVs

Just over three years ago, the FAA’s Wide Area Augmentation System (WAAS) was expanded into Canada and Mexico with the addition of nine new international wide-area reference stations. As reported in our Volume 2, Issue 4 (October 1, 2009) newsletter, development of RNAV (GPS) procedures with LPV minima in Canadian airspace is ongoing, albeit at a slower rate than in the U.S. As of July 29, 2010, the FAA has published 2,208 LPV procedures in the continental U.S. while there are 85 published RNAV (GPS) LPV procedures in Canada.

NAV CANADA’s ongoing National ILS Replacement Program has become one of several driving factors in determining which airports are in-line to have an LPV published. The program aims to evaluate the life-cycle of nearly 50 failure-prone 30 year-old ILS systems through 2014, and has begun replacement of selected ILS systems this year. In addition, the program replaces selected Back-Course (BC) approaches with RNAV (GPS) LPV procedures.

While NAV CANADA continues its survey of locations for WAAS procedure development, private-sector firms have seized the opportunity for custom-designed WAAS approaches. Authorization for procedure design was opened up to non-government agencies in 1996. One such example is Alberta-based engineering firm, JetPro. The company specializes in instrument procedure design and has designed non-WAAS GPS and WAAS approaches at over 60 Canadian airports and 120 runways, according to its website. The availability of WAAS LPV and LNAV/VNAV procedures is expected to grow as both the public and private sectors continue development in Canadian airspace.

New Product News

Cool New Software and Mobile Phone App

New FlightReview™ Software Replays Flight Over Google Earth™

Take another look at the approach you shot into Aspen, CO or review an approach to an airport in which you’re unfamiliar with. With Universal Avionics new FlightReview™ FMS flight data reduction and playback software, you have the ability to access and review past flights and approaches in an intuitive, easy-to-use interface.

FlightReview™ combines FMS action sequences (all button presses) with a 3D rendering of the flight plan over Google Earth for a virtual view from the pilot’s seat of any previously recorded flight, making it a valuable tool for demonstrations, training, quality assurance and entertainment.


Download Navdata Remotely with Android™ App

Break free from the PC: use your mobile phone from anywhere in the world to update your Universal Avionics navigation database (navdata).

Introducing UniNet Mobile, a mobile phone application (app) for the Android platform. Browse navdata account information, current and past orders/invoices and database subscriptions.

Download navdata remotely to your Android phone, then connect to the Solid State Data Transfer Unit (SSDTU) via the USB port. Navdata is then loaded into the FMS from the SSDTU.

This free app will be available from the Android Market on October 19. See it live at the 2010 NBAA Convention in Atlanta, Georgia.

Android is a trademark of Google Inc. Use of this trademark is subject to Google Permissions.
FMS Compliance in the B-RNAV and P-RNAV Environment

Operator’s seeking various levels of Area Navigation (RNAV) approval for their aircraft often ask about the compliance rating or level of the Universal Avionics FMS. Several requirements in the RNAV regulatory guidance rely on total system integration and operational considerations (for which the FMS is only a small part) and fall outside of Universal’s scope as an avionics manufacturer to comment upon. Aircraft compliance should be determined by the system integrator together with the appropriate airworthiness authority.

FAA AC 90-96A provides operational approval and airworthiness guidance material regarding Area Navigation requirements for operators of U.S. registered civil aircraft operating in a Basic RNAV (B-RNAV) or Precision RNAV (P-RNAV) environment in European airspace. Universal’s legacy FMS families comply to FAA TSO C115b / C-129a and is installed to meet AC 20-138 or AC 20-130A.

B-RNAV Compliance

Basic RNAV was implemented in 1998 and defines a minimum required navigation performance for aircraft operating in European Civil Aviation Conference (ECAC)-controlled airspace. From an equipment consideration standpoint, Universal’s FMS products with software version SCN 405.X/505.X and later 40X/50X, 60X/70X, 80X/90X and 100X/110X are compliant with most of the objectives contained in the B-RNAV regulatory documents. Refer to the Universal Avionics Service Letter No. 2753: Basic RNAV (BRNAV)/ RNP-5 operation in European Airspace for FMS-specific compliance details.

P-RNAV Compliance

Precision RNAV defines the minimum performance and functional requirements appropriate for Terminal Airspace RNAV operations, and includes navigation data integrity requirements and flight crew procedures. From an equipment consideration standpoint, Universal’s FMS products with software version SCN 405.X/505.X and later 40X/50X, 60X/70X, 80X/90X and 100X/110X are also compliant with most of the objectives contained in the P-RNAV regulatory documents.

Operationally, users of FMS software versions prior to SCN 802/902 will have to put into place an alternate means of compliance for a few specific P-RNAV regulations, as outlined in JAA guidance document TGL #10. These may include manual sensor de-selection when required, manually checking approved procedures each month for changes in the database, manually selecting terminal mode in software versions prior to SCN 603/703 for P-RNAV operations, etc. Refer to the Universal Avionics Service Letter No. 2792: JAA P-RNAV UASC Compliance Evaluation Summary for FMS compliance details.

Implementation Continues

The implementation schedule for P-RNAV procedures in European airspace continues. The ECAC publishes a planning schedule and regular updates via its website. Refer to the interactive map at: www.ecacnav.com/RNAV_Applications/RNAV_Interactive_Map for details.
Notes from Product Support
The Next Change to FMS Navdata Services; FMS List Feature Tips; and Standby Mode Notice

What’s Behind Navigation Database Changes

The navigation database for Universal Avionics FMSs contains information about navaids, airports, enroute waypoints, runways, airways and SID, STAR and approach procedures. Each month, the navdata is updated and made available to customers via internet download or mail service.

When the navigation database (navdata) is loaded into the FMS, several internal checks are performed to ensure the integrity of the database. One of the integrity checks is to verify the size of each database entity and another is to verify the total size of the database.

Encoded in the FMS is a maximum number for each database entity (approaches, terminal waypoints, etc) it is able to accept. Every generation of FMS has a different limit, which is dependant upon the availability of the technology at the time the FMS was designed and manufactured, e.g., think about the hard drive space available with your current computer compared to one made 10 years ago.

Continual growth in navigation data, primarily due to the publication of RNAV (GPS) procedures, has caused the database to become very large. In some FMS models, the database exceeds the maximum allowable size for data loads.

To address this situation, Universal Avionics realigns database coverage or adjusts content in order to maintain a database for the FMS. Universal Avionics is committed to providing navdata for all FMS models. Altering the FMS code would result in the issuance of new software and FMS part numbers (affecting certification status), that would be cost prohibitive for both Universal and its customers.

The next adjustment to the navigation database becomes effective October 21, 2010, and will affect several subscriptions for FMSs operating software versions prior to SCN 801/901. A notice of change Navdata Information Letter has been included in the database package and located on the navdata file download page on the UASC website. Operators who think they may be affected by the change should consult the applicable Navdata Information Letter to determine if the change affects their flight operations and to learn what options are available.

FMS Tip: Unique LIST Function Quick and Efficient

The powerful capabilities of the LIST key are used frequently when creating flight plans. Did you know that LIST can be used outside flight plan creation? Further, did you know that the LIST key changes the method of list generation depending upon its use?

For example, LIST can be used in conjunction with the DTO key to assist in defining a point to proceed directly to. Pressing DTO / LIST produces a generated list of points separate from the list of flight plan waypoints.

Also, using LIST while generating a flight plan produces a list from cursor position in the flight plan, not actual aircraft position. Using LIST in concert with DTO generates the list from actual aircraft position.

Attention Standby Mode Users

The Standby Mode feature of the FMS allows the crew to shut down and restart the system for up to 8 hours and still retain the pilot data, flight plan and fuel data. The function is a configurable option for FMSs operating SCN 602/702 and later.

Operators employing the standby mode function should consult Service Bulletin Number 3XXX.XX.( )-34-3402, Standby Mode and Navigation Anomaly, to learn about a recent finding with the functionality of this feature.

Software and Hardware Updates

**MCDU**
SCN 11.0 expected 4th quarter 2010. Minor change updates hardware and software design to address critical part obsolescence issues.

**FMS**
SCN 1000.5/1100.5 expected end of 1st quarter 2011. Minor change includes several enhancements to approach performance.

**AHS-525**
SCN 1022.0.0 expected 1st quarter 2011. Major TSO/STC submittal in support of new AHRS.

**EFI-890R/MFD-640**
TSO data package in support of elevating the existing vibration qualification testing for helicopter platforms has been extended into the 4th quarter 2010.

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.
Universal Avionics Featured in ProPilot Magazine

If you haven’t done so already, pickup a copy of the September issue of ProPilot Magazine. The issue features Universal Avionics on its cover and a detailed article about the company, including in-depth interviews with several company representatives, including President and CEO Joachim (Ted) L. Naimer.

This cover picture, taken at the Bombardier service center facilities adjacent to UASC headquarters in Tucson, AZ, includes the company’s King Air 350 and F90 (our Challenger CL-601-3A was not included in this photo).

Refer to the Flight Department Profile segment (beginning on page 56) to learn more about our company’s history and aviation department activities.