FMS Compliance in the P–RNAV Environment

Precision–Area Navigation (P–RNAV) defines the minimum performance and functional requirements appropriate for Terminal Airspace RNAV operations, and includes navigation data integrity requirements and flight crew procedures. European states are progressively introducing P–RNAV procedures across the Terminal Areas of the European Civil Aviation Conference (ECAC). While there is no European-wide mandate, P–RNAV is outlined by a national Aviation Information Circular (AIC).

Operators not approved for P–RNAV operations and operating conventional procedures are unable to take advantage of the benefits of their RNAV equipment which include shorter, more direct routes. Additionally, in Terminal Airspace where RNAV procedures have been introduced, the application of conventional procedures and radar vectoring by Air Traffic Service Providers to accommodate non-P–RNAV approved flights may negatively affect airport capacity and increase delays. Therefore, many European airports are placing restrictions on aircraft that aren’t fully compliant with the P–RNAV standards. Amsterdam Schiphol Airport was the first airport in Europe to only allow such aircraft. Other airports that have since followed include London Heathrow, Gatwick, Zürich, Vienna International, Stockholm-Arlanda, Brussels, Malpensa, Nice Côte d’Azur, Faro and many more.

Universal’s Flight Management Systems (FMS) with Software Control Number (SCN) 802.X/902.X and later ensure complete compliance with the objectives contained in the P–RNAV regulatory documents. With SCNs prior to 802.X/902.X, multiple deviations exist and operators will have to put into place an alternate means of compliance for specific P–RNAV regulations, as outlined in JAA guidance document TGL10 Rev. 1.

Product News and Highlights

FlightAssure™ Extended Warranty Program

Universal Avionics has announced its new FlightAssure Extended Warranty Program. Key benefits of the program include:

- Fixed price with annual contract
- Full coverage on exchange and repair services
- Available loaner units included
- Component repairs including No Fault Found (NFF) removals
- Fully transferable contract
- Free outbound second day air freight
- Removal and Refit coverage (R&R)
- 24/7 AOG emergency service
- Fully transferable contract
- Free outbound second day air freight
- Removal and Refit coverage (R&R)
- 24/7 AOG emergency service

The FlightAssure Extended Warranty Program removes the uncertainty and guesswork from your avionics’ maintenance, downtime and overall cost. The program was designed to help you with your budget by extending your avionics protection, allowing you to feel more secure than ever.

For more information or enrollment, contact:

Warranty Department
Tel: (520) 573-7627 • (800) 595-5906
Fax: (520) 295-2384
Email: warranty@uasc.com
www.uasc.com/warranty

Cessna 525 CJ1 and CJ2: Coupled Approach Capability with Pro Line 21*

Until recently, a limitation in the Rockwell Collins Pro Line 21® EFIS system had not allowed Universal Avionics’ FMS to vertically couple to the autopilot in Cessna 525 CJ1 and CJ2 aircraft. In January of 2011, Cessna, Rockwell Collins and Universal Avionics came together in an effort to provide a solution for CJ owners. The agreement paved the way for Rockwell Collins to make necessary modifications to the Pro Line 21 EFIS and Flight Guidance System interface to allow vertically coupled approach capability with Universal Avionics’ FMS.

Universal Avionics is happy to announce that a new interface between the FMS and Pro Line 21 which provides vertical coupling on approach is now approved for installation. The installation of the amended TC certification was performed via a Cessna Service Center Mod EO based on typed certified data.

Service Bulletins are currently in work to allow Cessna Service Centers to perform installations. Operators should contact their Service Center for more information regarding installation of this mod.
Falcon 900B Flight Deck Modernization Program

The Dassault Falcon 900 is a French-built corporate jet aircraft made by Dassault Aviation. From 1991 through 1998, the Falcon 900B, a large transcontinental range corporate trijet, was the standard production model.

First certified in 1992, the Falcon 900B differs from the earlier Falcon 900 with more powerful engines, increased range, the ability to operate from unprepared strips and Category II visibility approach clearance. As a result of the Falcon 900B’s success, Falcon 900’s can be retrofitted to the 900B’s capabilities. Currently, the Falcon 900B has an active fleet of 178 aircraft.

Trijets, aircraft powered by three jet engines, are known to have a greater margin of safety. The Falcon 900B features three AlliedSignal TFE-731-5BR turbofan engines, each with 4,750 pounds of thrust. The aircraft has the ability to travel 3,450-4,080 Nautical Miles (NM) at mach 0.84-0.87. It has a high speed cruise at 513 knots and a service ceiling of 51,000 feet.

In addition, the Falcon 900B features a large cabin that’s fit for intercontinental range accommodations. Typically, its comfortable cabin will seat eight to twelve passengers in an executive arrangement.

With high standards in engineering, structural quality and technological advancements, the Falcon 900B is known as a long-life aircraft. Upgrading the flight deck of the Falcon 900B greatly improves the utility of the aircraft, safety of flight and value to make it a cost-efficient alternative to buying a new aircraft.

Universal Avionics recently partnered with Duncan Aviation to install and certify a technologically advanced cockpit for the Dassault Falcon 900B. This cockpit upgrade replaces 25 older instruments and significantly improves reliability and situational awareness. The avionics suite includes:

- **Display Suite**: Five high-resolution LED backlit LCD EFI-890R Flat Panel Displays, including Engine Indication (EI) that replaces analog gauges.
- **Situational Awareness**: Two Vision-1® Synthetic Vision Systems, two Application Server Units (ASU) for electronic charts, checklists and EDocs.
- **Flight Management**: Dual UNS-1Ew WAAS/SBAS-FMSs with 5-inch Flat Panel Control Display Units (FPCDU) and optional third FMS.
- **Radio Tuning and Communications**: Optional Radio Control Unit (RCU) and optional FANS-capable airborne datalink system, UniLink® UL-801 Communications Management Unit (CMU).

With more capabilities than most new aircraft, this exciting upgrade offers operators:

- Maximized safety
- Increased capability
- Improved cockpit efficiency
- Improved reliability
- Maximized Return on Investment (ROI)

Additionally, the upgrade program will ensure that your Falcon 900B is approved to fly in all airspace, and gain compliance with emerging mandates.

The first installation is currently underway with the aircraft scheduled to be delivered in June. For additional program information, please contact a Universal Avionics Regional Sales Manager or Duncan Aviation.
From the Flight Deck

Discussing Flight Testing with Universal Avionics’ Manager of Airworthiness and Flight Operations

For this issue of The Universal Flyer, we asked Paul Damschen, Universal’s Manager of Airworthiness and Flight Operations, to discuss recent flight test operations for Universal’s AHS-525 Attitude Heading Reference System (AHRS). Here’s what he had to say:

The Universal Flyer: What was the purpose of the most recent flight test for AHRS?

Paul: There are several performance-related tests necessary to qualify the AHRS for certification. In this case, we were doing aircraft cold soak testing, which is not technically required for certification. However, from a Universal position, we feel it’s necessary to qualify our products in their operating environment. Therefore, we left the flight test aircraft out in the coldest weather we could find, then proceeded to de-ice it and start it at the existing external temperatures to determine if the equipment or installation was affected by the adverse weather conditions.

The Universal Flyer: Universal’s flight test operations are based out of Tucson, Arizona. Where were you able to find these low temperatures?

Paul: We based this test flight out of Flagstaff, Arizona for maximum cold weather effect. Located in northern Arizona, Flagstaff is a small mountain town that’s 6,910 feet in elevation. Though less than 150 miles from Phoenix, Flagstaff’s mean annual temperature is 28.0°F (15.6 °C) cooler because of its high elevation.

The Universal Flyer: Did you run into any obstacles during this flight test?

Paul: Absolutely. We had snow, ice, as well as low temperatures, which happened to be some of the lowest temperatures in the western U.S. at the time.

The Universal Flyer: How did these obstacles affect the flight testing?

Paul: As is typical in winter weather, if you don’t like the weather, just wait ten minutes and it will change. That’s what we had as a situation going into Flagstaff. The primary runway there is 21, which has both an RNAV and ILS approach. The other runway end, 03, only has an RNAV approach which supports LPV approach minimums.

When we initially received our ATIS weather, it indicated several thousand feet of ceiling clearance, so we fully expected to have VFR conditions on arrival. However, we planned on flying the RNAV 03 as backup. By the time we arrived at the Initial Approach Fix, the weather was beginning to degrade with a snow shower moving in from the west. By the time we reached TOHQU, the Final Approach Fix, the tower began calling and warning us of rapidly degrading visibility and an indefinite ceiling.

We continued to approach and by the time we reached decision altitude, the visibility degraded to about 1.5 miles. Sufficient to get into KFLG, but if we didn’t have LPV capability, the only options would have been to fly to an alternate airport or attempt the ILS to the non-favored runway end. Neither of those options are desirable, so we were quite happy to have LPV capability that day.

Look for more pilot tips, tricks and talk from Paul in future issues of The Universal Flyer.

FMS Compliance in the P–RNAV Environment (continued)

These may include manual sensor de-selection when required, manually checking approved procedures each month for changes in the database, and manually selecting terminal mode in software versions prior to SCN 603/703 for P–RNAV operations.

Refer to Universal Avionics’ Service Letter No. 2792c: JAA PRNAV UASC Compliance Evaluation Summary for FMS compliance details.


For more information regarding Universal Avionics’ line of WAAS/SBAS-FMSs, visit: www.uasc.com/products or contact a Universal Avionics Regional Sales Manager.
New Asia Pacific Office Announced

Universal Avionics has announced that the company is opening a new satellite sales and support office in Singapore. The Asia Pacific Office will further support Universal’s significant customer base in areas including Thailand, Japan and Australia, where numerous flight deck retrofit projects are in work. Additionally, the Asia Pacific Office will be a dedicated sales and support base with local representatives that can provide faster on-site assistance for customers and partners in the region. This office will support numerous flight deck retrofit and OEM projects in work.

“We continue to see increased growth in the region and feel it’s key to continue to provide our customers with the kind of support they’ve come to expect from Universal Avionics, both before and after the sale,” said Dan Reida, Universal Avionics’ Vice President of Sales, Marketing and Support. “We feel this addition will be well-received,” he added.

For more information regarding Universal Avionics’ worldwide sales, authorized dealers and customer support network, visit www.uasc.com.

Universal Avionics’ Asia Pacific Office is a Representative Office registered in Singapore.

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