Components of ADS–B Technology

According to the Federal Aviation Administration (FAA), there are currently over 500 operational Surveillance and Broadcast Services (SBS) radio stations in the National Airspace System (NAS). At this time, these stations are broadcasting two components of Automatic Dependent Surveillance–Broadcast (ADS–B) technology along the East Coast and South/Southwest (U.S.): Traffic Information Services (TIS–B) and Flight Information Services (FIS–B).

TIS–B sends traffic information derived from air traffic surveillance radars to ADS-B-equipped aircraft from ADS-B Ground-Based Transceivers (GBT). Even when nearby aircraft aren’t equipped with ADS–B, those aircraft that are, are provided with a more complete traffic picture. This offers increased situational awareness in the cockpit of all traffic known to the Air Traffic Control (ATC) system. However, TIS–B data doesn’t always provide as much information as what is received directly from an aircraft’s ADS–B Out broadcast (because of required data processing).

FIS–B provides weather text, weather graphics, Notice to Airmen (NOTAM), Automatic Terminal Information Service (ATIS) and similar information. This benefits operators by improving safety through heightened situational awareness.

By the end of 2013, over 700 SBS radio stations are expected to be built, providing full ADS–B coverage for more than 95 percent of U.S. airspace.

Mandated compliance to ADS–B technology is growing. Airworthiness agencies worldwide have issued rules and requirements pertaining to ADS–B equipage. More information can be found in Universal Avionics’ ADS–B White Paper, Doc No. WHTP-2013-14-05, available at: www.uasc.com/ads-b.

Product News and Highlights

Universal Avionics and MD Helicopters Unveil New Flight Deck for NextGen Explorer®

Universal Avionics has partnered with MD Helicopters, Inc. in a two-year program to build and design a NextGen flight deck for the MD Explorer helicopter. Located only miles from each other in Arizona, Universal Avionics and MD Helicopters’ partnership offers new technology to take the MD Explorer into the 21st Century.

The NextGen multipurpose twin-engine helicopter features a single-pilot IFR-capable flight deck with display graphics that are video and mission display capable. The Primary Flight Display (PFD) provides all primary flight parameters, primary engine/rotor data and safety critical annunciators. The Multi-Function Display/Engine Indicating and Crew-Alerting System (MFD/EICAS) replaces the current IIDS and radar displays with synoptic displays. Synthetic vision, enhanced moving maps, system displays, electronic charts, checklists and innovative user interfaces are part of the baseline.

One highlight of the NextGen flight deck is a point-and-click display using a cyclic-mounted cursor slew switch that enables the pilot to operate the system while maintaining visual contact with key display parameters. This unique feature is designed to keep “hands-on, heads-up” for increased visual awareness.

Single- and dual-pilot cockpit configurations will be supported for forward-fit and retrofit installation.

“We look forward to providing MD with the latest in avionics technology that affords enhancements to safety, reductions in operational costs and addresses current and future requirements,” said Dan Reida, Universal’s Vice President of Sales, Marketing and Support. “This program reinforces Universal’s commitment to the Rotorcraft market.”

For additional information, visit: www.uasc.com/MD or contact your Universal Avionics Regional Sales Manager.
STARs with Altitudes for Smooth, Continuous Descents

Programming the new generation of Standard Terminal Arrival Routes (STARs) with clearances to altitudes that allow for a smooth, continuous descent is one of the key capabilities of Universal Avionics’ Flight Management System (FMS).

Below, Universal Avionics’ training experts outline guidance when faced with such a STAR:

It is best illustrated with an example: the PUFFR2 STAR at KAPA requires the pilot to fly the arrival both laterally and vertically, and with speed restrictions. Universal Avionics’ FMS with Software Control Number (SCN) 80X, 1000 and subsequent uses the ENROUTE VNAV function to automatically calculate crossing altitudes, therefore, greatly simplifying flying these types of procedures.

In reviewing the Flightplan (FPL) page after loading the PUFFR2 ARRIVAL into the flightplan, one sees both the waypoints and their associated crossing altitudes in the ALT/FL field.

Where possible, the FMS uses the TGT FPA entered on the VNAV MENU such as when there is a crossing window rather than a mandatory crossing altitude. The TGT FPA is defaulted to 3°, but can be set between 0° and 9°.

An “X” prior to the altitude indicates that it is an FMS calculated crossing altitude, while an “@” symbol adjacent to an ALT/FL indicates a mandatory crossing altitude.

Where there is no altitude entered or an “X” altitude exists, the pilot may manually enter a crossing altitude.

Using the default Target Flight Path Angle (TGT FPA) available on the VNAV menu page and database altitude restrictions, an optimum vertical flight path is computed by the FMS minimizing attitude and power adjustments. While the pilot must comply with speed restrictions, the FMS will fly the arrival both laterally and vertically.

If that crossing altitude is lower than the subsequent altitude, the FMS will lower the subsequent altitude unless it is a mandatory crossing altitude.

Additional Information

Related information may also be found in Universal Avionics’ Operator and Training Manuals, available for download from UniNet at: www.uasc.com/UniNet.
From the Flight Deck

Discussing White Papers 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 white papers that Universal Avionics has been developing.

Here’s what he had to say:

The Universal Flyer: What do the white papers that Universal Avionics have been developing address?

Paul: Primarily, the white papers that Product Managers and the Flight Test Department have been working on are related to complex rulemaking subjects that the FAA, European Aviation Safety Agency (EASA) and other regulatory agencies have been creating during the last few years. The first concerns the impending Automatic Dependent Surveillance–Broadcast (ADS–B) Out mandate, and the second is related to Required Navigation Performance (RNP).

The Universal Flyer: Why were these particular topics chosen?

Paul: Although neither is necessarily a new topic, and many airlines have already addressed both, many corporate operations have not. Therefore, Universal can assist in answering their questions with these white papers.

The Universal Flyer: What was the purpose for creating these white papers?

Paul: Complex topics like these require serious thought by operators. There are equipment, installation and training issues to be considered. Some operators may even contemplate new aircraft to meet these mandates. However, Universal believes that a very cost effective solution can be achieved with existing aircraft at a fraction of the cost of a new aircraft. Universal Avionics takes pride in our customer support and the quality of the products we produce. We hope that the white papers will provide enough information for our customers to address upcoming changes and requirements in the national and worldwide airspaces.

The Universal Flyer: Who contributed to these white papers?

Paul: Subject matter experts, such as our Product Managers, Engineering and Flight Test Pilots all contributed to the technical content of these papers.

The Universal Flyer: Did you learn anything new or particularly interesting during the development of these white papers?

Paul: It’s difficult to develop a technical paper even if it’s a familiar subject and not come across details that you’ve forgotten or had missed reading previously. In particular, the variations of the implementations of RNP around the world still need to be harmonized in detail as we discovered.

The Universal Flyer: What’s the advantage of these white papers over others that have already been released to the industry?

Paul: The key to success when creating a white paper is to understand the audience that will be reading it. Universal’s leadership not only understands the business of aviation, but also the products the company develops because they operate them. With that said, this has allowed us to write the content that our operators need in a way that is useful and appealing to them.

The Universal Flyer: How can someone obtain a copy of these white papers?

Paul: Universal Avionics’ white papers are public documents designed for our customer base to make informed equipment choices and installation decisions. As such, released whitepapers are available on our website, www.uasc.com, from which they can be downloaded. If additional questions arise, we are here to support answering those as well.

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

Did You Know?

Universal’s FMS Contains a Dual Memory Bank

Universal Avionics’ FMS contains a dual memory bank capable of holding the next cycle database before it becomes effective. When the current database expires, the next cycle database will automatically become active. When the FMS is powered up, one of the functions of the self-test is to determine which database is active by comparing the effective dates and expiration dates.

Since the FMS is capable of storing two cycles, the next cycle can be loaded into the FMS as soon as it is made available 14 days prior to the cycle start date. This allows the database to be loaded at a more convenient time than the day before or the day of the cycle change over.
July Social Media Contest

Win a Universal Avionics Gift Bag

During the month of July, those who “Like” Universal Avionics’ Facebook Page will be entered for a chance to win a Universal Avionics gift bag filled with multiple prizes including a shirt, hat, stationery and more!

Keep an eye out for one lucky winner to be announced on Facebook, Thursday, August 1st.

Liking Universal’s Facebook Page not only enters you into the contest, but also provides instant access to Universal’s news and updates, photos, videos and more.

In addition to Facebook, you can find Universal Avionics on a host of other social media platforms, including:

- Twitter – Follow @UnivAvionics
- LinkedIn – Follow Universal Avionics Corporation Company Page
- Instagram – Follow Universal Avionics
- Google+ – Add Universal Avionics Corporation to your circle
- Pinterest – Follow Universal Avionics Corporation
- Tumblr – Follow Universal Avionics Corporation

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