Revision to AC 90-101 Renames RNP SAAAR

With a revision currently in work for Advisory Circular 90-101, the FAA will change the designation for RNP Special Aircraft and Aircrew Authorization Required (SAAAR) procedures to the more succinct RNP "Approval Required" or simply RNP AR. The move aligns U.S.-based procedures with the term used more commonly in the international community for these type of RNP procedures.

Entitled *"Approval Guidance for RNP Procedures with SAAAR,"* AC 90-101 provides airworthiness and operational approval guidance for operators seeking authorization for Required Navigation Performance (RNP) SAAAR (now AR) instrument approach procedures. The original AC was released December 5, 2005.

Approval Required (AR) procedures are charted as "RNAV (RNP) RWY XX" on the approach plate, and contain "(Special)" at the top to indicate that special authorization is required to use the procedure. According to industry sources close to Universal Avionics, data suppliers are expected to update the approach plates to reflect the new terminology concurrent with the revision of AC 90-101.

No major changes are expected to the guidance regarding compliance requirements for RNP AR approval, which is currently a highly complex process. A industry task force working to streamline RNP AR approvals reported at the NBAA Annual Convention in Orlando, Florida that the average submittal for RNP SAAAR approval was 300 pages. To date, the majority of RNP AR approvals granted by the FAA have been to Part 91 and Part 121 operators.

To obtain a copy of RNP 90-101, click "Regulations & Policies / Advisory Circulars" at www.faa.gov.

New Products for the New Year

CVFDR Approvals Granted by FAA

In November, the FAA issued Technical Standard Order (TSO) approvals for Universal Avionics' new Cockpit Voice and Flight Data Recorder (CVFDR) product line, making units available for immediate delivery. A Supplemental Type Certificate (STC) for the Cockpit Voice Recorder CVR-120R on Universal's Hawker Beechcraft King Air series aircraft is expected to be approved by January 2010.

The lightweight and compact CVFDR is offered in five model options to meet a variety of business, transport and rotorcraft applications.

CVFDR Model	Features
CVR-120A	120-minute CVR
CVR-120R	120-minute CVR plus RIPS
FDR-25	25-hour FDR
CVFDR-145	120-minute CVR plus 25-hour FDR
CVFDR-145R	120-minute CVR with RIPS and 25-hour FDR

For more information, contact your sales manager or call Universal at: 1-800-321-5253 / (520) 295-2300.

TAWS to Display Obstacles
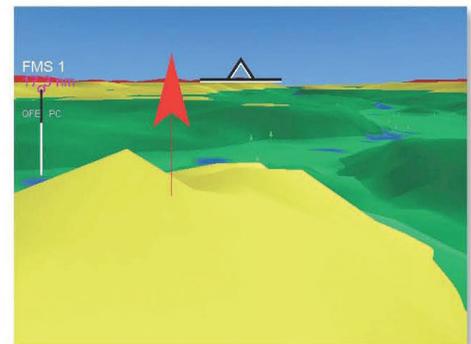
3D View - *A close distance obstacle that is above the aircraft altitude.*

An upcoming software release for the Class A and B Terrain Awareness and Warning System (TAWS) will feature the addition of man-made obstacle depiction and alerting functionality. Display of obstacle data is an optional configuration in the new software (SCN 12.0). A separate obstacle database, which will be priced and offered upon FAA TSO approval (expected in February), is required. In-service TAWS units will be upgraded on request. Contact the Product Support Department for more information.

CPDLC: Saying Good Day to "g'day"

Projections of future air traffic volume warn that airspace congestion will be a challenge to the air traffic management infrastructure in years to come. Likewise, radio channels used by air traffic controllers to route aircraft will likely become overburdened. The FAA projects a 35% increase in aircraft handled by air route traffic control centers (ARTCCs) from 2005 to 2015 alone.

To supplement traditional voice over VHF and HF radio frequencies, Controller/Pilot Data Link Communications (CPDLC) have been introduced in several high-density traffic regions. These systems employ datalink technology over VDL Mode 2 to allow the exchange of information between air traffic controllers and flight crews via digital text messages. These predefined, routine messages can consist of requests, clearances, responses, route modifications, advisories and reports. Application of CPDLC in oceanic regions has been opertional for several years using satellite datalink technology.

The type and amount of information allowed within a CPDLC system varies from region to region. Eurocontrol's Link 2000+ program, located at the Maastricht Upper Area Control Centre in the Netherlands, uses six message sets. The FAA's CPDLC Build 1 testing at the Miami, Florida ATRCC consisted of four basic message sets. The program began in 2002 but was canceled in 2004 due to lack of funding.

What the Experts Say

Industry groups tout that CPDLC air-ground communications will take less time and convey more information than by using voice alone. Automation of frequent repetitive tasks will result in efficiencies that reduce controller workload, increase airspace capacity and reduce delays, with the potential for significant fuel savings. Datalink communications will also result in greater message accuracy, improving the safety and efficiency of air traffic management.

What the Studies Reveal

Analyses from the mid-1990s predict an air traffic controller workload reduction from 6% to 29%, depending on how many aircraft within range are equipped with CPDLC. Simulations reveal increases in sector capacity to have a linear relationship with air traffic controller workload reduction. For every 1% in workload reduction, airspace capacity in that sector increases by half of that amount. That is, if controller workload is reduced by 10%, airspace capacity increases by 5%.

More recent studies and simulations reveal that real-world usage of datalink transmissions is slower than voice. In one study by the FAA, controllers sending datalink messages took an average of two seconds longer than issuing voice transmissions (4.39 seconds vs 2.40 seconds). How can something that takes longer reduce workload, increase capacity and be more efficient? Further analysis of the data finds that CPDLC messages when used *in conjunction* with traditional systems is quite valuable in improving air traffic control communicaitons efficiency.

What Efficiencies Exist

The longer transmission time for datalink messages was found to be a result of intentional pauses by the controller between messages. The data suggest that these pauses allow for strategic processes and planning activities, as controllers select or construct messages best suited for the current operational task.

Further, these actions were conducted in parallel with voice transmissions to non-datalink-equipped aircraft. The ability to "multi-task" messages alleviates the communications bottleneck that results from successive voice transmissions.

The presence of predefined message sets improved message accuracy by eliminating the need for read-back and hear-back – both notoriously known to cause operational errors. Non-standard communications often found in voice transmissions ("Good day") are also absent, making CPDLC messages more precise and shorter.

Summary

CPDLC is used to exchange routine, non-time-critical messages at a strategic level between air crews and controllers. While the radio transmission using datalink technology itself occurs within milliseconds, real-world usage proves longer times for completion of message transaction. The efficiency of CPDLC lie in providing air traffic controllers the ability to strategize and send non-time-critical messages in parallel with voice communications, thereby replacing serial transmissions. While there may never be an end to the traditional "g'day" closing, we might hear it less often in years to come.

Feedback

Your feedback is appreciated. Email your comments to: universalflyer@uasc.com.

Update

Receive The Universal Flyer by mail or email. Email universalflyer@uasc.com or call the Marketing department at (800) 321-5253 or (520) 295-2300 to update your profile.

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Value of the Customer Voice
How Feedback is Incorporated into Universal Avionics' Product Development Process

"Designed by pilots, for pilots" – This statement truly describes Universal Avionics' product design and development philosophy.

The operational features of Universal's Flight Management Systems, Flat Panel Displays, Synthetic Vision, and other avionics equipment are developed with the guidance of the company's President and CEO, Joachim "Ted" Naimer, pilot-in-command of a Challenger CL-601. Further, Universal Avionics relies upon feedback from customers and dealer installation centers to ensure adaptability across diverse platforms.

The ability and willingness to incorporate feedback into its design and development process and release timely product updates makes Universal Avionics stand out from its competitors.

The Inputs
Most feedback is received by the Product Support Department. Product improvement suggestions and issues relating to the installation, configuration or operation of the equipment are documented in a change and process management software program. Feedback considered for a hardware or software change is classified as either a Problem Report (PR) or Product Improvement (PI).

Prioritization
To determine when the PRs and PIs will be incorporated into the research and development schedule, they are prioritized by a team of representatives from Product Support, Engineering, Certification and Marketing/Sales Departments. A number of factors are considered when prioritizing changes, for example, airworthiness and safety issues, delivery date obligation and customer requests.

Schedule Planning
The multi-departmental team then determines the projected release schedule. Typically, software changes to instrument products are released on a quarterly basis. Changes to FMS software vary from a few months to over a year, depending on the complexity of the change and its priority level.

Obtaining Approvals
Universal Avionics' Certification Department meets with the FAA early to discuss the change and ensure all compliance standards will be met during the design development process. On-site DERs (Designated Engineering Representatives certified through the FAA) allow Universal Avionics to obtain certification approval efficiently, and oftentimes quicker than its competitors.

Repair Station Wants to Know What Happened?

The inclusion of information with an incoming unit facilitates Universal Avionics' troubleshooting process and improves turnaround time. Information helpful for troubleshooting a product repair include:

- Timing of the failure.
- Did it occur in the air or on the ground?
- Was the unit hot or cold?
- Describe any on-site troubleshooting to narrow the cause of the problem.

In the event of a problem, call, fax or email the Repair Station with the conditions of the anomaly to help us better understand your experience and work toward an expeditious resolution.

Universal Avionics Repair Station
Phone: (520) 547-3313 / (800) 862-6977
AOG Hotline: (520) 295-2399
Fax: (520) 547-3323
Email: repairs@uasc.com

Follow-up
Upon certification approval of the software or hardware change, Universal performs a follow-up with the customer or dealer to provide a status of the request.

Feedback is essential to this closed-loop product design and development process, whether it comes from the CEO or a new pilot training with the UNS-1C. Universal welcomes your input. Contact Product Support to let us know how we can improve your experience with Universal Avionics.

Software and Hardware Updates

FMS
SCN 803.2/903.2 expected 2nd quarter. This minor change will address potential memory corruption, correction for a software defect and addition of a DME blind channel tune label.

SCN 1000.4/1100.4 expected 2nd quarter. Minor change adds FMS and TAWS feature enhancements, support for future FANS requirements and ASCB-A capability.

RCU
SCN 1016.0.6 expected in January. This minor change adds support for a different size LCD display and LED backlighting.

EFI-890R
SCN 1017.1.6 expected 2nd quarter. This minor software change adds an AMETEK EIU interface.

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.

Customer Highlight Series

Safety Enhancement for Commercial Operator Air Inuit Ltd

Air Inuit Ltd operates domestic passenger, charter and cargo services in northern Canada with a fleet of modern, turbine-powered aircraft. Wholly-owned by the people of Nunavik, Canada, the ops environment is extremely challenging – unimproved or rough strips, and heavily affected by seasonal and meteorological influences. As an essential life-line for the communities serviced, safety is top priority.

Avionics upgrades by Mid-Canada Mod Center (MC2) and Universal Avionics have been underway for some time. First completed was a B737-200C Passenger/Cargo combi. Universal's dual UNS-1Lw WAAS/SBAS-FMS, SSDTU, TAWS and MFD-640 were incorporated as part of a complete cockpit redevelopment – the second such project by MC2 under an STC they developed. The same mods, minus the MFD, are currently being added to the airline's fleet of eight Dash 8 100 and 300 aircraft.

MC2 Mods to Air Inuit B737-200C featuring Universal Avionics WAAS/SBAS-FMS, TAWS and MFD-640.
Photo credit – MC2.