

SEVENTIETH MEETING

SC-186

AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B)

DATE: November 2, 2018
TIME: 9:00 a.m. – 11:30 a.m. (EDT)
PLACE: RTCA HQ
1150 18th NW, Suite 910
Washington, DC 20036

The attendees included:

SC-186 Co-Chairmen

Rocky Stone United Airlines, Inc.
Jessie Turner Boeing

SC-186 Secretary

Michael Garcia Aireon

SC-186 Government Authorized Representative

Gregg Neseimeier FAA

Members (Present in the room and on the Teleconference/WebEx)

Name	Organization	Name	Organization
Arbuckle, Doug	Federal Aviation Administration (FAA)	Darr, Stephen	Dynamic Aerospace, Inc.
Baker, Charles	Federal Aviation Administration (FAA)	Daskalakis, Anastasios	Aurora Innovations
Berckefeldt, Richard	Honeywell International, Inc.	Duke, Jim	Air Line Pilots Association (ALPA)
Bone, Randy	The MITRE Corporation	Field, Jack	The MITRE Corporation
Bowman, Stuart	The MITRE Corporation	Garcia, Michael	Aireon, LLC
Brooks, Kimberly	Federal Aviation Administration (FAA)	Gaul, Bob	Garmin Ltd.
Comstock, Greg	StratMach	Godoy, Jose	ARINC Incorporated

Name	Organization	Name	Organization
Gray, David	Federal Aviation Administration (FAA)	Secen, Al	RTCA, Inc.
Gray, Martin	Trig Avionics Limited	Shafaat, Taji	The Boeing Company
Hahn, Edward	Air Line Pilots Association (ALPA)	Skoog, Todd	Garmin Ltd.
Jacobson, Randy	Rockwell Collins, Inc.	Sparrow, Jeffrey	Aurora Innovations
Jain, Ravi	Federal Aviation Administration (FAA)	Stassen, Hans	The MITRE Corporation
Kenney, Larry	Raytheon	Steiner, Timothy	Federal Aviation Administration (FAA)
Littleford, Daniel	Federal Aviation Administration (FAA)	Steinleitner, Jorg	EUROCONTROL
Lovelace, Dan	Regulus Group	Stone, Rocky	United Airlines, Inc.
Macoomb, Ian	NAV CANADA	Stoops, Wes	Regulus Group
Mark, Eltzafan	Federal Aviation Administration (FAA)	Townsend, Brian	American Airlines, Inc.
Nesemeier, Gregg	Federal Aviation Administration (FAA)	Turner, Jessie	The Boeing Company
Nguyen, Lee	Federal Aviation Administration (FAA)	Von Hoene, Paul	Federal Aviation Administration (FAA)
Orell, Greg	MITRE	Walker, Don	Honeywell
Pagano, Thomas	Regulus Group	Weitz, Lesley	The MITRE Corporation
Perez, Brenda	Regulus Group		

**** Note: All files named in conjunction with Agenda items can be downloaded from the RTCA SC-186 Workspace at <http://workspace.rtca.org/kws> ****

1. Chairman's Introductory Remarks.
 - Rocky convened the Nov 2, 2018 meeting by welcoming all in attendance. Participants were identified based on the WebEx participant list and the RTCA VP and EUROCAE Liaison read several standard policy statements (02_RTCA_EUROCAE Welcome, Meeting KickOff Slides.pdf)
2. Review of Meeting Agenda.
 - Rocky reviewed the agenda and noted that it is posted to the RTCA workspace.
3. Review/Approval of the Sixty-Eighth Meeting Summary
 - The minutes from the Sept 7th 2018 plenary (#69) were posted and Rocky requested that the participants review them at their earliest convenience.
 - The minutes were approved during the November 2nd plenary.
4. WG-4 – Close FRAC Briefing for Appendix U for DO-317B, Change 1
 - Will be discussed as part of WG-4 general status briefing
5. Additional Briefings
 - WG-3 – Extended Squitter Mops/SC-209 ATC XPDR Mops – Status
 - Tom Pagano Briefed the status of WG-3 to the Plenary

- The Working Group anticipates completing DO-260C (version 3) of the 1090ES MOPS by December of 2019
- ADS-B Development includes:
 - Support A-IM application
 - Support High Altitude / High Velocity Vehicles
 - Addition of Phase Modulation
 - Removal of UTC Coupling bit
 - DF19 support removed for ADS-B
 - GNSS position extrapolation timeout extended
 - Flight ID processing changes
 - Geometric Vertical Accuracy allows for ≤ 10 meters
 - Geometric Altitude (HAE) reporting improved
 - Weather Surveillance – Aircraft based Observations
 - Removal of several Airborne Position message type codes
 - HPL limit for high position integrities
 - Support for ACAS-X
 - Support for UAS Detect and Avoid (DAA)
 - Addition of Interrogation / Reply Monitor (IRM) capability
 - Additional guidance for Selected Heading/Altitude
 - Improved algorithm for Air-Ground determination
 - Unmanned Aircraft Systems (UAS) Lost Link
 - Support of Autonomous Distress Tracking with a new alert
 - Surface Link Mitigation Service Status for ADS-B IN
 - Removal of unused message fields in version 2
 - CPR Modifications
 - Message Tx Modifications
- New material is no longer being considered to be added to DO-260C starting at the Jan 2019 meeting. Additional changes will be based on refining content relative to previously accepted topics.
- Rocky asked about whether squitter rates will likely be increased to accommodate the additional messages envisioned for DO-260C. Tom mentioned that spectrum analysis is still on-going in coordination with ICAO to determine the options available, including 1090 occupancy improvements for Mode S (DO-181)
- WG-4 – Advanced Interval Management (A-IM) – Status
 - Don Walker Briefed the status of WG-4 to the Plenary
 - Completed Review and comment cycle on Draft FIM SPR DO-328B
 - Overhauled FIM functionality concerning infeasibility check, IM speed compliance, and negative spacing intervals
 - Continued coordination with CSC on Weather requirements and Traffic Prioritization for IM as well as support for transponder interrogation
 - Updated European Safety Targets for FIM

- Don and Tom discussed whether the “Clearance Register” will be included in the transponder MOPS update (Working Paper to be provided by WG-4 to CSC)
- Held ASA MOPS DO-317B Change 1 FRAC – Appendix U (TSAA Test Vectors)
- WG-4 resumed operations as a joint committee with EUROCAE
- DO-317B Change 1 FRAC
 - Concern that velocity error model is overly conservative
 - Agreed to publish updated test vectors
 - Committee has an open action to develop a new velocity error model or validate the appropriateness of the current model
 - Don Walker formally requested approval from the Plenary for DO-317B, Change 1. Rocky seconded the motion and there were no objections, therefore the motion was approved
- Don reviewed the high level FIM MOPS schedule
- FIM SPR Appendix B-6 (Simulation Results) will be reviewed
- Updates coming for DO-317C
 - Update CATS for dependent parallel runway operations
 - Corrections to CAVS test procedures and test vectors
 - Revisit velocity error model
 - Update Appendix H: Surface Link Mitigation Service Status
- Next WG-4 meeting is in March (12-14) in Phoenix, hosted by AAL
- FAA Surveillance & Broadcast Services (SBS) Program – Status
 - Doug Arbuckle Briefed the status of SBS to the Plenary
 - Avionics upgrades in Alaska have completed 307 of 314 units (1090 and UAT)
 - As of October, 64,766 aircraft are equipped with ADS-B, 58,267 are good installs, and 6461 are considered non-performing aircraft.
 - A heatmap was shown by airspace class with ADS-B V2 compliant aircraft
 - The No Services Aircraft List (NSAL) was introduced which excludes non-compliant ADS-B installations from delivering ADS-B data to automation
 - Rolling ICAO Code project can issue temporary ICAO codes. No safety risks were identified. The use of these codes will be limited to US airspace, but expansion for flights into Canada is being explored.
 - FAA will be discontinuing ADS-B/TIS-B/ADS-R services to LV1 aircraft after Jan 1, 2020. Notice FAA-2018-0914 will be published in the Federal Register on Nov 5, 2018.
 - ASSC is preparing for IOC at MCI and PIT (in progress) airport in Dec 2018
 - ADS-B In retrofit Spacing is an operational evaluation with AAL for ADS-B IN
 - ASEPS is shifting its strategy to Pivots, identifying short-term opportunities to leverage work done to date to contribute to a long-term solution
 - FAA recognizes SBA benefits and its future potential, but there are some additional steps needed before it could be used operationally
 - Five Pivots were introduced from the new strategy.

- Full ADS-C capability is projected for readiness with ATOP in 2021 (FID in Feb 2019)
- SBA operational evaluation will start in the Caribbean airspace using ERAM to support 5 NM separation in 2020
- A question was asked regarding GADSS support from SBA and it was clarified that it would not be via the FAA but rather via commercial offerings such as FlightAware's GlobalBeacon product. Rocky noted that the aircraft side of GADSS ADT is still being worked out in the aviation community.
- Honeywell Flight Test Research on SURF IA
 - Martin Puskar Briefed the status of SURF IA to the Plenary
 - SURF IA system helps flight crew to avoid RWY incursions & collisions with other traffic using received ADS-B data
 - Flight tests were conducted in several airports in 2018 to evaluate SURF IA
 - SURF IA HMI is acceptable with minor modifications and color alignments.
 - SURF-A concept is acceptable with limitations.
 - SURF IA core algorithm is acceptable and works as designed by requirements.
 - FAA confirmed the importance of the system that helps to avoid serious Runway Incursions type A&B and runway collision with other traffic.
 - Airbus is interested in SURF-A concept without CDTI to retrofit existing fleet.
 - NACp 8 is being reviewed for eligibility for SURF-IA
 - This study provided a methodology and basic key performance indicators definition for future continuation of PJ.28 Very Large Scale Demo (VLD) project
 - The testing shows overall compliance with DO-323 requirements with minor deviations or proposals for improvement
 - Slide 1 should be removed or revised given that the content was intended to be presented in a public forum
 - Don recommended that SURF-IA standards work await the completion of FIM MOPS. SLR will also need to be analyzed in subsequent SURF-IA trials as part of the LOS challenges.

6. Other Business.

- Terms of Reference (Rev 22 Draft)
 - Leslie presented an updated version of the Terms of Reference to clarify changes and timing related to DO-317B Change 1 (Dec. 2018) to DO-317C (Feb. 2020)
 - Additionally, the ASA MOPS description was updated
 - Rocky made a motion to approve the changes to the terms of reference to submit and it was seconded and approved.
- Date, Place and Time of Next Meeting.
 - The next face-to-face plenary session for SC-186 is July 11, 2019, location TBD (likely in Europe during the afternoon CDT).

7. New Business

- None

8. Review Action Items/Work Programs.

- Martin Puskar to remove/revise slide with Export/Proprietary markings prior to posting the SURF IA slides to the RTCA workspace
- Miles Bellman will create a markup version for Appendix U for DO-317B, Change 1 and post that to the workspace by 9/10/2018.
- Don Walker will schedule a telecom within the next 2 weeks to discuss some additional potential changes related to velocity bias to Appendix U of DO-317B, Change 1
- Action Items from previous plenary (Sept 7, 2018):
 - ~~Doug Arbuckle will check with SASP to determine what can be shared with RTCA on ASEPS~~
 - ~~Don Walker and David Gray to reach out to Buck regarding analyzing TSAA algorithm performance for Helicopters (Does the Fixed-Wing based algorithm work well enough for most Helicopter operations?)~~
 - Al Secen and Rocky Stone will reach out to the UAT community to survey whether they are available and interested to initiate WG5 (it's likely that they will need to wait to start up until after DO-260C has gone through FRAC)
 - ~~Don Walker has an action to update the definition of CAPP and review it at the next Plenary~~
 - ~~Lesley and Doug will review the definition of CAPP and determine how it might fit in with other related IM work~~
 - ~~Doug and Lesley will coordinate with Jorg to determine the exact date/time of the virtual plenary meeting planned for Sept.~~
 - ~~Doug will email to the SC-186 leadership documents relating to WG4/WG1 activities (from circa 2014) for new applications to the RTCA workspace~~

9. Adjourn Plenary.

- Rocky thanked everyone for their participation and adjourned the meeting.