

SEVENTY-THIRD MEETING

of RTCA SC-186

held jointly with EUROCAE WG-51

AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B)

DATE: November 8, 2019
TIME: 9:00 a.m. – 1:00 p.m. (EDT)
PLACE: RTCA HQ
Washington, DC

The attendees included:

SC-186 Co-Chairmen

Rocky Stone United Airlines, Inc.

SC-186 Secretary

Michael Garcia Aireon

SC-186 Government Authorized Representative

Matt Haskin FAA

WG-51 Co-Chairmen

Jörg Steinleitner Eurocontrol

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

Name	Organization	Name	Organization
Arbuckle, Doug	Federal Aviation Administration (FAA)	Bowman, Stuart	The MITRE Corporation
Baker, Charles	Federal Aviation Administration (FAA)	Brooks, Kimberly	Federal Aviation Administration (FAA)
Berckefeldt, Richard	Honeywell International, Inc.	Comstock, Greg	StratMach
Bone, Randy	The MITRE Corporation	Darr, Stephen	Dynamic Aerospace, Inc.

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

**** 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 November 8, 2019 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.
 - Rocky noted that this is a joint plenary between RTCA SC-186 and EUROCAE WG-51
3. Review/Approval of the 72nd Meeting Summary
 - The minutes from the August 12th 2019 plenary (#72) were recently posted to the RTCA website
 - The minutes were approved during the Nov. 8th plenary (Note: Since the minutes were published late, comments to the minutes will be accepted post meeting).
4. WG-4 Application Technical Requirements - Status

- Leslie Weitz briefed status for DO-317C noting several updates planned into the document.
- Some of the updates include: CAVS proposal, new test scenarios for CAVS and ATAS, Traffic Category, migrating TCAS to ACAS terminology, Inter-source correlation between ADS-SLR and ADS-B, optional requirements for Altitude, ACAS-X Validation integration with ATAS
- DO-317C Schedule
 - FRAC begins on 12/16/2019
 - Comments due by 2/14/2020
 - FRAC Meeting 3/17/2020
 - Plenary Approval on 3/20/2020
 - Deliver to June PMC

5. Closure of the Final Review and Comment (FRAC) – DO-328B/ED-195B FIM SPR and DO361A/ED-236A FIM MOPS

- Leslie Weitz introduced a summary of the status of the FIM SPR and MOPS FRAC Outcomes
 - SPR: 29 High Comments Received
 - MOPS: 70 High Comments Received
- FIM SPR is complete
 - Leslie made a motion to request Plenary approval of RTCA DO-328B for submission to the March PMC. Motion was seconded.
 - Rocky asked if there were any objections: none were stated
 - Motion was approved to deliver FIM SPR to PMC
- FIM MOPS still needs resolution on several FRAC dispositions
 - Leslie requested approval for the plan laid out in the slides
 - Requesting to schedule a Plenary for Jan 31st to approve DO-361A for submission to 3/26/2020 PMC
 - Appendix G to be Reserved in DO-361A/ED-236A; then Appendix G will be the major modification in DO-361A/ED-236A Change 1. Change 1 to be approved at Sept 10th PMC.
 - Plan approved by plenary
 - It was noted that this plan requires a ToR change, which will be proposed at the 16-Dec-2019 Virtual Plenary and presented to the RTCA PMC at its 19-Dec-2019 meeting. The EUROCAE TAC would also consider such changes at their January 2020 meeting.
 -
- A summarized listing of proposed Plenary meetings was included in this briefing
- Leslie thanked her colleagues for the support in helping get the standards ready for publication

6. WG-3 Extended Squitter MOPS / SC-209 Transponder MOPS - Status
 - Tom Pagano presented the status of WG-3 to the Plenary group
 - Anticipated completion date of June 2020 with final document to RTCA in August 2020 for presentation to the Sept 2020 PMC.
 - Next Meeting (49) is Jan 27, 2020 in Melbourne, FL
 - Meeting 50: June 15 at EASA in Cologne
 - Interim Review and Comment Oct 31 to Dec 15, 2019. Draft distributed with comment matrix
 - FRAC planned for March 20 – May 6, 2020
 - A summary of the planned features to be included in DO-260C was presented in the slides
 - Geometric Altitude is one field that will not be backward-compatible with previous versions of the MOPS. However, it is noted that the benefit of migrating to the new format is deemed to be more significant than the backwards-compatibility challenge.
 - It was noted that not all of the planned plenary dates in the WG-3 slides align with the WG-4 dates. However, after discussion, it was agreed that there was only one discrepancy and it was for a good reason..

7. FAA Surveillance Broadcast Services (SBS) Program - Status
 - Doug Arbuckle presented the SBS Program Update to the Plenary group
 - FAA amended 14 CFR 91.225(f) (and 14 CFR 91.215) via an Interim Final Rule published 18 July 2019. Several ADS-B-related Federal Register Notices have been published over the past year
 - All Terminal Service Delivery Points have been completed.
 - Link version 2 equipage continues to increase as 1 January 2020 approaches.
 - Final Investment Decision in May 2019 for funding and scope for FY20-FY25. Existing ADS-B service contract ends in 2025.
 - The plans for FAA's operational use of Space-Based ADS-B were presented for the Near-Term (1-3 years), Mid-Term (3-5 years), and Long-Term (5+ years)
 - FAA's plans for ATC phased automation changes to support ADS-B-In applications stretch from 2020 to 2035
 - IM Evaluation with ADS-B-In Retrofit Spacing (AIRS) - starting equipage in 2020, benefit analysis complete FY22

8. Other Business.
 - 1090 MHz Analysis to SC186 08Nov19
 - Jim Baird briefed this presentation and introduced a 1090 spectrum analysis from the FAA
 - Goal: Determine most effective means of mitigating future impacts of 1090 MHz congestion on affected systems
 - From 2020 thru 2055

- ADS-B, TCAS, SSRs, Multilateration (WAM)
 - Use FAA SBS 2009 analysis as starting point
- Focus of the interference analysis and projections was on the US Northeast corridor
- Various growth models were used to observe sensitivity of results to different scenarios
- The most sensitive system to increases in “load” are airborne receiving systems (TCAS, ADS-B-IN, etc.)
- Aircraft densities in the model are based on measurements from an April 2011 flight test, with various traffic growth scenarios applied. Using SBS TIS-B A reports and other measurements may be conducted in the 2020 timeframe to validate the model.
- The Report’s recommendations are:
 - Require forward-fit equipage of TCAS with Extended Hybrid Surveillance
 - Implement WAM on a regional basis where needed
 - Investigate additional alternatives to address ADS-B Air-to-Air impacts
 - Resolve known analysis limitations (technical risks)
 - Identify spectrum capacity criteria for NAS service volumes
 - Coordinate related spectrum analysis activities
- Date, Place and Time of Next Meeting.
 - Virtual Plenary session to open FRAC/OC for DO-317C/ED-194B on December 16, 2019. 9am EDT.
 - The next face-to-face plenary session for SC-186 is March 20, 2020, location in TBD, with a planned closing of DO-317C/ED-194B FRAC/OC.
 - Virtual Plenary session to open FRAC/OC for DO-361A/ED-236A Change 1 on May 1, 2020
 - Virtual Plenary session to close FRAC/OC and approve DO-361A/ED-236A Change 1 on June 30, 2020

9. New Business

- Randy asked after DO-361A/ED-236A Change 1, will WG-4 go on a hiatus afterwards?
 - The group indicated that the answer is probably, but it depends on whether surface alerting products return to the Working Group.
 - A TOR change would have to happen to enable any additional work beyond the DO-361A/ED-236A Change 1

10. Review Action Items/Work Programs.

- Jessie to draft a formal ISRA between SC-186 and SC-159 to develop requirements related to vertical velocity and accuracy parameters.
- Remaining Action Items from previous plenary:

- ~~Al Secen and Rocky Stone reached 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). The group has indicated interest in restarting. Target due date for the updated MOPS set to August 2021 in the updated TOR (it is unlikely that WG5 would begin until after WG3 has submitted DO-260C to PMC). WG initiation action still remains open. Co-chairs will be needed to re-form the group.~~
- ~~Martin Puskar to remove/revise slide with Export/Proprietary markings prior to posting the SURF IA slides to the RTCA workspace~~

11. Adjourn Plenary.

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