

SIXTY SECOND MEETING
SC-186
AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B)

DATE: January 23, 2015
PLACE: Crown Plaza
2605 N A1A
Melbourne, Florida

RTCA HQ
1150 18th Street, NW, Suite 910
Washington, D.C. 20036

The attendees included:

Co-Chairman SC-186

Rocky Stone
Jessie Turner

United Airlines, Inc.
Boeing

SC-186 Designated Federal Official

Don Walker

Federal Aviation Administration

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

	Name	Company/Agency	Name	Company/Agency
1	Arbuckle, Doug	Federal Aviation Administration	Jester-ten Veen, Nienke	The MITRE Corporation
2	Barmore, Bryan	NASA	Jones, Ken	NASA
3	Bitel, Brenda	Regulus Group	Kenney, Larry	Raytheon
4	Bone, Randy	The MITRE Corporation	Kirk, Jamie	Systems Enginuity, Inc.
5	Bowman, Stuart	The MITRE Corporation	Labardini, Eric	Federal Aviation Administration
6	Brown, John	The Boeing Company	Lester, Ted	The MITRE Corporation
7	Comstock, Gregory	Aurora Sciences LLC	Levitt, Ian	Federal Aviation Administration
8	Dacre-Wright, Benoît	Thales Group	Martensson, Johan	EUROCONTROL
9	Dang, Duc	The Boeing Company	Moertl, Peter	The MITRE Corporation
10	de Gelder, Nico	National Aerospace Laboratory NLR	Moses, Harold	RTCA, Inc.
11	Duke, Jim	SAIC	Pagano, Thomas	Regulus Group
12	Eftekari, Robert	The MITRE Corporation	Penhallegon, William	The MITRE Corporation
13	Eich, Tom	L-3 Communications	Pennington, Darrell	Air Line Pilots Association
14	Elliott, Dave	The MITRE Corporation	Plummer, Steve	Federal Aviation Administration
15	Ferrara, John	John Ferrara Consulting	Reed, Mark	Air Line Pilots Association
16	Flores-Kriegsfeld, Julie	Federal Aviation Administration	Searight, Stuart	Federal Aviation Administration
17	Furr, Gary	Regulus Group	Shafaat, Taji	The Boeing Company
18	Garcia, Michael	Aireon, LLC	Shimizu, Tetsu	Japan International Transport Institute, USA
19	Gray, David	Federal Aviation Administration	Steinleitner, Jorg	EUROCONTROL
20	Hadi, Hamid	Aurora Sciences LLC	Stone, Rocky	United Continental Holdings
21	Haissig, Christine	Honeywell International, Inc.	Stoops, Wes	Regulus Group
22	Hamelink, Jane	THANE, Inc.	Suarez, Brandon	General Atomics Aeronautical Systems, Inc.
23	Hiale, Mathieu	Airbus	Turner, Jessie	The Boeing Company
24	Hicok, Dan	Regulus Group	Vallauri, Eric	Egis Avia
25	Hilb, Bob	Consultant	Von Hoene, Paul	Federal Aviation Administration
26	Jacobson, Randy	Rockwell Collins, Inc.	Walker, Don	Federal Aviation Administration
27	Javed, Usmaan	Federal Aviation Administration	Weitz, Lesley	The MITRE Corporation

**** 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 welcomed everyone and introduced and welcomed Jessie Turner from Boeing as the new SC186 co-chair. Jessie is replacing Vinny Capezzuto who recently left the FAA to pursue opportunities in private industry. Rocky thanked Vinny for his leadership and contributions to the committee and ADS-B development and implementation. Jessie thanked Rocky, and quickly stated he was very much looking forward to working with the committee.
 - Don Walker was introduced as the Designated Federal Official, and Don then read the DFO Public Meeting Announcement.
2. Review of Meeting Agenda.
 - The agenda was reviewed. Rocky added an overview briefing from Aireon on their plans for space-based ADS-B communications to the agenda under new business.
3. Review/Approval of the 61st Meeting Summary, RTCA Paper No. RTCA Paper No. 169-14/SC186-335
 - The minutes from the 61st meeting, held in July, 2014 were approved without comment.
4. Surveillance Broadcast Services (SBS) Program Status (SC186-P62-WP06-ADS-B_SBS_Status_SC186_20150123.pdf)
 - Doug Arbuckle presented the status brief for the SBS Program Office. Doug noted that a new, permanent Program Manager will be named very soon and should be providing this briefing at the next meeting of the committee. The SBS briefing looked at the status and progress of flight services enabled by ADS-B, GIM-S IOC, and equipage information for various operators, and the next steps planned by SBS for ADS-B use by both controllers and on the flight-deck.
5. European Activities (SC186-P62-WP17-European Activities Update.pdf)
 - Jörg Steinleitner, Eurocontrol, provided a brief overview of current European activities outside the joint work on the FIM MOPS. Jorg reported that currently, due to current lack of resources and interest in Europe, it is anticipated that work on Advanced IM will not be a joint activity with EUROCAE WG-51. This could change if the SJU recognizes A-IM as part of SESAR 2020. Doug Arbuckle expressed his hopes that there will be European engagement in A-IM development and stated that this has been and is being expressed by FAA personnel to the SJU in multiple teleconferences being held to prepare for the FAA/SESAR Coordinating Committee meeting in February.
 - Europe is looking at early Implementation of a modified SURF IA which will not include a moving map.
 - Jörg also mentioned WG51 plans to work on a general performance-based surveillance SPR to define surveillance requirements for 8 reference ATC environments.
6. Updated SC-186 Terms of Reference (SC186-P62-WP04-TOR_Rev_16-PMC_Approved-2014-1216.pdf)
 - Rocky presented the revised Terms of Reference for SC-186. These TORs recognize Jessie as the new Co-Chair; reflect changes to schedules for the current set of FIM deliverables; and add to the committee's work plan for Advanced FIM SPRs and FIM v2.0 MOPS deliverables, and updates to the link MOPS in order to define new on-condition messages needed to support wind/wake/MET data and potentially messages supporting A-IM.

7. WG-4 – Application Technical Requirements

- Flight Deck-based Interval Management (FIM) MOPS Status & Schedule (*SC186-P62-WP11-RTCA_SC186_WG4_Status_Jan2015.pdf*)
 - Ian levitt, FAA ANG-C, briefed on the status of the FIM MOPS and SPR development. On the recent comment & review cycle they received 990 comments of which 630 were either “High” or “Medium”. During their meetings this week, the WG felt it adequately adjudicated all of the comments received. The current schedule is for the Test Requirements to be completed, the document to be updated per the recent comment and review process, and have the document out for Final Review and Comment (FRAC) by the end of March. There will be a WG4 meeting to address and review all comments the week of June 8th, with a joint SC186/WG51 Plenary to approve the documents on June 12, 2015. This meeting will be in Europe at a location still to be determined.
- Cockpit Assisted Pilot Procedures (CAPP) (*SC186-P62-WP12-CAPP sim report status-Report.pdf*)
 - Randy Bone, MITRE, presented a preliminary overview of recent MITRE HITL work on CDTI Assisted Pilot Procedure (CAPP). Randy covered the scenarios, participants, and methodologies used. Randy touched on preliminary results from the questionnaires. Overall, CAPP procedures were found to be acceptable, and workload (while slightly increased for the pilots) was also found to be acceptable. The final report is planned to be completed by the end of March.
- Pairwise trajectory Management (PTM) (*SC186-P62-WP11-RTCA_SC186_WG4_Status_Jan2015.pdf*)
 - Ken Jones, NASA LaRC, gave a presentation of the work to further develop the PTM concept, operational scenarios, and definitions. An updated version of the OSED is expected in February. (Whether the final delivery will be an official OSED, or something similar, but less formal is still being discussed.) Key areas being worked on include the removal of lateral resolutions, and the refining of the definition of a PTM Separation Standard.
- Advanced Interval Management (A-IM) Development (*SC186-P62-WP14-A-IM Summary for Plenary (2015-01-23) - v0.4.pdf*)
 - Bill Penhallagon presented an overview of the work on developing Advanced Interval Management (A-IM). Don prefaced the brief by mentioning that an early focus of this work was to develop a capture document to provide required information to SC-214 so that they can develop CPDLC messages that will support the envisioned operations for both A-IM Approach and Arrivals and PTM. Bill then presented a breakdown of the operations currently included in A-IM, the overall schedule for completing current documents being worked on, and planned next steps to progress the capture document to support the CPDLC work and to material needed for a future complete A-IM OSD.

8. Coordination with SC-214/WG-78 for ADS-B Application Data Link Requirements –Status. (*SC186-P62-WP13-IM CPDLC TT report.pdf*)

- Randy Bone presented a recap of coordination activities occurring between SC-214/WG-78 and SC-186/WG-51 under the ISRA between SC-186 and SC-214. The IM CPDLC Tiger Team has had a preliminary telecon but has not actively started its task of developing Advanced Interval Management (A-IM) data comm requirements. That activity will begin

in April of 2015. The current SC-214/WG-78 schedule has the CPDLC SPR/Interop approved by the end of 2015 and published in March of 2016.

9. FAA information briefings

- Equip 2020: (*SC186-P62-WP07-Equip_2020_briefing_final.pdf*)
 - Doug Arbuckle presented an overview of the Equip2020 activities. Equip 2020 is a forum in which FAA and industry work together to address identified issues and concerns about the ADS-B Out rule and related topics such certification and installation issues. This effort was kicked off with the ADS-B Call to Action meeting in October 2014. Meetings of this group occur approximately monthly. Doug urged folks to check within the companies as to who might be their representatives in these discussions.
- Planned TIS-B Service Changes: (*SC186-P62-WP08-TIS-B_briefing_final.pdf* & *SC186-P62-WP09-TIS-B_service_change_summary.pdf*)
 - Doug next presented a briefing on unanticipated effects of the current TIS-B client/target services, and the FAA plans to change TIS-B target and client services to better provide a full traffic picture to properly ADS-B In equipped aircraft. WP09 describes the issue background and planned actions in more detail.
- Recent Regulatory/Guidance/Policy updates: (*SC186-P62-WP16-Recent Regulatory Guidance Policy updates.pdf*)
 - Don Walker gave an overview on recent AVS activities, including TSO-C199 which addresses Traffic Awareness Beacon Systems (TABS), and updates to various TCAS/TAS TSOs, and those addressing ADS-B Out and In devices.
- Summary of Avionics Monitoring results (*SC186-P62-WP10-Avionics_Monitoring_01-16-15_RTCA*)
 - Doug presented slides presenting statistics on ADS-B avionics being rule-compliant as seen by the ADS-B Compliance Monitor. Doug stated there is now a monthly meeting between SBS and AVS to review findings, discuss progress, and assign actions. Doug showed statistical breakdowns of compliance with respect to broadcasted NAC, NIC, and SIL values and listed the installation issues being observed.

10. Date, Place and Time of Next Meeting.

- As proposed by WG4, the next plenary will be June 12, 2015. This joint plenary session with WG51 will be primarily for the approval of the FIM SPR and MOPS. It will be collocated at RTCA in Washington, DC and in Europe and a place to be determined where WG4 will be meeting that week to resolve all FRAC comments.

11. New Business.

- Aireon Overview (*SC186-P62-WP15-Aireon RTCA Presentation - v4.pdf*)
 - Mike Garcia presented an overview of Aireon's plans and schedules for spaced-based ADS-B services.
- Overview of 1090 MHz Phase Modulation Research (*SC186-P62-WP05-1090MHz_Phase_Modulation_Technique.pdf*)
 - Tom Pagano presented a briefing on work being done at the FAA Technical Center to explore the viability and potential benefits of 1090MHz Phase Modulation.
 - During some conversation after Tom's briefing, Don stated that he did indeed see Phase Modulation as a technically sound approach to increasing capacity on 1090MHz, however, he also observed that to implement this, it would likely mean equipment upgrades (not just software) for the majority of transponders and this is likely to be met with strong resistance by the airlines, especially since they are

already upgrading their equipment for rule-compliant ADS-B Out by 2020. Don also observed that the 1090/1030MHz congestion mitigation efforts currently being done under the leadership of Jim Baird are preliminarily indicating that the current and future congestion problems might not be as dire as feared a few years ago.

12. Other Business.

- Status brief on Wake Vortex Tiger Team
 - Rocky reported that the final white paper on Wake Vortices and the transmission of low-latency wind and vortex information is in the process of being completed and will be presented to the PMC at their March meeting.

13. Review Action Items/Work Programs.

- Stuart reported no specific action items were assigned during the meeting.

14. Adjourn Plenary.

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

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Gary Furr
Secretary, SC-186

CERTIFIED as a true and
accurate summary of the meeting.

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Rocky Stone
Co-Chair, SC-186

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Jessie Turner
Co-Chair, SC-186