

**Minutes of Meeting #16 of RTCA SC-186 Working Group 3**  
**Development of Revision A of the ADS-B 1090 MHz MOPS**  
<http://adsb.tc.faa.gov/ADS-B/186-subf.htm>

The meeting was called to order by Co-Chair Dr Vincent Orlando at 9am 10 December 2002, at the RTCA Headquarters in Washington DC. Dr. Orlando welcomed all attendees and asked that each attendee introduce themselves and their organization. The attendees included:

Jerry Anderson, FAA – AIR-130	Bill Harman, MIT Lincoln Lab	Bob Saffell, Rockwell Collins
Larry Bachman – Johns Hopkins – APL	Ron Jones, FAA ASD-140	Mark Schneider, Sensis Corp
Bob Burns, Titan Corp. FAA TC – ACB-410	James Maynard, UPS Aviation Tech.	Stuart Searight, FAA TC – ACB-420
Mike Castle – Johns Hopkins – APL	Vince Orlando, MIT Lincoln Lab	Ronald Staab, Trios Associates
Gary Furr, Titan Corp, FAA TC – ACB-410	Tom Pagano, FAA TC – ACB-410	Rick Stead, ARINC
Bob Granville, Retired FAA	Stacey Rowlan – L3 Communications	

1. Following the introductions, the following known regrets to attendance were announced:
  - Bob Semar, United Airlines
2. Following Agenda Item #2, the Working Group reviewed the Minutes of Meeting #15 held at the RTCA Headquarters in Washington DC. The Minutes of Meeting #15 were accepted as published.
3. Following Agenda Item #3, the Working Group reviewed the location, date and time of the next meeting, which is shown below. It was noted that the SC-186 Leadership has specifically requested that the Plenary Days be Thursday, 30 January 2003 and Friday, 31 January 2003. This means that WG-3 will meet on Monday through Wednesday to discuss any comments to the Plenary draft of DO-260A. Additionally, it was agreed to hold a teleconference on Thursday, 9 January 2003 starting at 1pm EST and planned to end by 3pm EST in order to discuss any comments that might have been received to that time and to discuss any possible comments that should be submitted by WG-3 against the Plenary Review copy of DO-260A for review during Plenary.

Dates/Time	Meeting Place
Monday, 27 Jan '03 at 9am through 4pm, Friday, 31 January 2003	<b><u>Confirmed at RTCA - PLENARY DATES ARE CONFIRMED</u></b> WG-3 meeting on Monday, Tuesday and Wednesday to resolve any comments, and the SC-186 Plenary to approve DO-260A meeting on Thursday and Friday

4. The first order of business was to review Agenda Item 4a, the set of simulation results for the A3 Receiver Performance in LA2020 environment presented in WP-16-07 by Larry Bachman and Mike Castle. The Working Group discussed the results of the curves and it was the conclusion of the Working Group that the results of the simulations would be represented best as histograms rather than a line connecting data points. It was agreed that future performance results would be displayed as histograms and that these figures would be placed into Appendix P.
5. Because of discussion on the Target State and Status performance results prior to Meeting 15, Ron Jones had prepared Working Paper WP-16-10 as a proposed change in the Broadcast Rates for the Target State and Status Messages. Following Working Group discussion, it was **agreed** that there was no need for a change in the broadcast rates for the Target State and Status Messages, and Working Paper WP-16-10 was withdrawn from further Working Group consideration.

6. Next, the Working Group considered the results of performance presented by William Harman in Working Paper WP-16-08. Following Working Group discussion, it was agreed that Bill Harman and Larry Bachman would spend time separate from the body of the WG Meeting and prepare the text and presentation materials for Appendix P based on results presented in WP-16-07 and WP-16-08. The results were presented to the Working Group late Thursday afternoon and copies of the documents were prepared for member review over night. More discussion on Appendix P and the performance results continued Friday morning until all materials were agreed to and Gary Furr was directed to bring the separate files together and create Appendix P for Plenary review.
7. After the preliminary review of WP-16-08 was completed and Harman and Bachman were assigned to complete Appendix P, the Working Group returned to address the remainder of the Agenda, beginning with Agenda Items 7a and 7b presented by Gary Furr as a quick review of the status of the complete DO-260A document and the remaining TBDs in the draft.
8. The Working Group then began review of the consolidated comments presented in Agenda Item 7c and presented in Working Paper WP-16-03 from EUROCAE WG51SG1. The Working Group reviewed each comment in WP-16-03 individually and created Working Paper WP-16-12 as the WG-3 response to each comment. Where there were changes to be made in the Draft of DO-260A, these were edited during the meeting as each comment was reviewed and agreed to.
9. The Working Group then began review of Working Paper WP-16-09 as presented by Rocky Stone for a proposed Appendix Q to detail the Runway Threshold Speed, which had been lost when the Aircraft Coordination Message was deleted from DO-260A by WG-3 many meetings ago. After WP-16-09 was reviewed, the Working Group *agreed* that the proposed text was ready for Plenary review and Gary Furr was directed to post it to the web site as Appendix Q.
10. Next, the Working Group reviewed Agenda Item 7g, as comments received from Gene Wong on his review of Appendix D, version 3, as modified by Vince Orlando and Mark Schneider during Meeting #15. Gene added several paragraphs dealing with ASDE-X and once these changes were reviewed by the Working Group, with some minor editorial changes, Appendix D, draft version 4 was approved for Plenary review and Gary Furr was directed to post it to the web site.
11. As the EUROCAE WG51SG1 comments were being reviewed in Working Paper 1090-WP-16-03, Vince Orlando noticed that Table 2-11 in §2.2.3.2.3.1 of our draft MOPS does not follow the original proposal shown in working paper, 1090-WP-5-10A, where Jim Maynard proposed the NIC supplement field as a way of providing compatibility between DO-260-compliant equipment and DO-260A-compliant equipment. WG-3 asked Jim Maynard to review the current Draft-6 of DO-260A specifically to identify the parts of the main document (sections 1 to 4) and Appendices A and N that might need to be changed to correct this apparent error. Jim Maynard did in fact propose several revisions to DO-260A and Appendix A in Working Paper WP-16-11, which was produced during the Meeting. The primary changes were in §2.2.3.2.3.1 and §2.2.3.2.7.2.6, and in Tables 2-11 and A-2. WP-16-11 was accepted by the Working Group as proposed changes, and Gary Furr was directed to implement them into the next draft of DO-260A.
12. The Working Group then began review of WP-16-05, which is a proposed change to the Test for Sliding Window Technique in §2.4.4.4.3 as presented by William Harman. Bill explained that following inclusion of the original test procedure accepted at Meeting 15, he held discussions with his technical matter experts and that they felt that the test procedure should be revised. Following Working Group discussion, Bill again decided that there should be further revisions. Upon being presented with the revisions proposed by Bill in WP-16-05R1, the Working Group accepted the revisions and directed Gary Furr to implement them into the next Draft of DO-260A.

13. The Working Group then addressed Working Paper WP-16-06 presented by William Harman as a proposed insertion of probability values into the tables in the test procedures in §2.4.4.4.2.4, §2.4.4.4.2.5 and §2.4.4.4.2.6, as well as in §2.3.2.4.8.1, §2.3.2.4.8.2 and §2.3.2.4.8.3. Following Working Group discussion, some of the values reported in WP-16-06 were altered. The Working Group agreed during the meeting to values for the test procedure tables in the previously defined sections. The Draft DO-260A file was edited during the meeting to reflect the agreed values.
14. The Working Group continued with review of Working Paper WP-16-04 presented by Bob Saffell as proposed changes to section 2.3, the environmental test procedures. The Working Group agreed with the proposed changes to section 2.3 and directed that WP-16-04 be implemented into the next draft of DO-260A.
15. The Working Group then began the review of version 2 of Appendix F, the MASPS Compliance Matrix, presented by Stuart Searight. The Working Group agreed to the proposed changes made by Stuart in version F2 and additionally agreed to add a section F.3 entitled TIS-B MASPS Compliance. After the addition of section F.3 and acceptance of the changes made by Stuart, version 3 of Appendix F will be posted on the web site for Plenary review. Upon completion of the review of Appendix F, there were two open issues with respect to paragraphs that needed to be added into the Mode Status Report and Target State and Status sections for the “Reserved for Flight Mode Specific Data” field and the “Horizontal Intent: Reserved for Heading/Track Capability” fields. These two paragraphs will be added after the meeting by Gary Furr and adjustments to references in Appendix F will be corrected before version 3 of Appendix F is posted for Plenary review.
16. The Working Group continued with a review of Working paper WP-16-02 with an analysis of 1090 MHz Fruit Models and Reception Probability Models, presented by Ron Staab. Some minor editing was performed during the presentation of WP-16-02 to produce WP-16-02R1, which will be posted to the web site after the meeting.
17. Following the review of WP-16-11 and the proposed changes to Table A-2, the remainder of Appendix A was reviewed by the Working Group. Except for several minor editorial changes, version 6 of Appendix A was approved for Plenary review and Gary Furr was directed to post it to the web site.
18. The Working Group then reviewed a revision to Working Paper WP-16-01 that Ron Jones had been working on during the progress of the meeting, incorporating plots from JHU-APL and MIT LL into sections 4 and 5 of proposed Appendix O. After Working Group discussion, and review of the final plots, changes to Appendix O2 as proposed by Working Paper revision WP-16-01R1, were accepted and Gary Furr was directed to implement the changes and post them to the web site for Plenary Review.
19. The Working Group then reviewed revisions to documents that were prepared by JHU-APL and MIT LL during the meeting as drafts to Appendix P. After Working Group discussion, and review of the final text and plots, Gary Furr was directed to take the files as presented during the meeting and craft Appendix P and post it to the web site for Plenary Review.

20. The following **Action Item** was identified as the only Action Item that remained OPEN at the end of this meeting.

Action Number	Action Description	Assigned to	Status
8-1	Provide the results from testing with the directional 1090 MHz receive antenna. (Flight Tests originally scheduled for 24-25 April 2002 were delayed because the LDPU had a problem and this may be delayed until Spring 2003)	Carl Jezierski	

21. The **Working Papers** shown in the following table are specifically for the Meeting being reported in these Meeting Minutes. Working Papers for all WG-3 Meetings, as well as the Meeting Agendas, Meeting Minutes, Meeting Schedules and modifications to DO-260 for the production of Revision A, will be posted on the ADS-B 1090 MHz web site located at:

<http://adsb.tc.faa.gov/ADS-B/186-subf.htm>

Working Paper	Size	Description	Introduced At:
1090-WP-16-01R1	58KB	Proposed Additional Text for DO-260A, Appendix O, Sections O.5 & O.6: Accommodation of Trajectory Change Reporting, presented by Ron Jones	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-02R1	68KB	1090 MHz Fruit Models and Reception Probability Models, presented by Ron Staab	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-03	117KB	Comments of EUROCAE WG-51, SG-1 on the Draft DO-260A version 5B, presented by EUROCAE WG51SG1	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-04	320KB	Proposed Revisions Section 2.3 of DO-260A, presented by Bob Saffell	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-05R1	39KB	Proposed Revision to the Test Procedure for Sliding Window Decoding in §2.4.4.4.3, presented by William Harman	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-06	300KB	Reception Probability Values from Simulation, presented by William Harman in response to Action Item 14.05 for values in Tables in 2.4.4.4.2	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-07	16KB	A3 Receiver Performance in LA2020, presented by Larry Bachman	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-08	381KB	Air-to-Air Reception in LA2020 and the Low Density Environment, presented by William Harman	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-09	10KB	Proposed Appendix Q for future Runway Threshold Speed On-Condition Message, presented by Rocky Stone	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-10	18KB	Proposed Revision to DO-260A for the Broadcast of Target State and Status Messages, presented by Ron Jones	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-11	26KB	Proposed Changes to Correct NIC Encoding Errors in Tables in DO-260A, presented by James Maynard	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-12	18KB	WG-3 Response to EUROCAE WG51SG1 Comments on DO-260A (WP-16-03), presented by Vince Orlando	Meeting 16, 12/10/02 RTCA, Washington DC
1090-WP-16-13	11KB	Comments on Section 2.2.10, ADS-B Report Assembly Guidance, presented by James Maynard	Meeting 16, 12/10/02 RTCA, Washington DC