

RTCA Paper No. 165-06/SC209-006
Minutes of Meeting #03 of RTCA SC-209
For The Maintenance of the ATCRBS & Mode-S MOPS
<http://adsb.tc.faa.gov/SC209.htm>

The meeting was called to order by Co-Chair Thomas Pagano of the FAA Technical Center at 9:00am EDT, 8 August 2006, at the facilities of RTCA in Washington DC. Mr. Pagano indicated that Co-Chair Robert Saffell of Rockwell Collins would be arriving to this meeting late after the arrival of his plane. Mr. Pagano then welcomed all attendees and asked that each attendee introduce themselves and their organization. The attendees for all or part of the meeting included:

Mark Annee, U.S. Navy	Andrew Leone, FAA Tech Center
Ray Bayh, BAE Systems	Hal Moses, RTCA
John Berglund, U.S. Navy	Peter Muraca, FAA Tech Center
Woody Bode, Freestate Electronics	Tom Pagano, FAA Tech Center – AJP-1850
Bob Clarke, Alion Science	Robert Saffell, Rockwell Collins
Rob Duffer, FAA, AIR-130	Boris Stallings, NAVAIR (US Navy)
John Fisher, Consultant, U.S. Air Force	Bill Thedford, Consultant, U.S. Air Force
Gary Furr, L-3 / Titan, FAATC–AJP-1850	John Van Dongen, FAA TC – AJP-1850
Doug Guetter, L-3 / ACSS	Don Walker, Honeywell International
Ron Harris, Freestate Electronics	Leo Wapelhorst, L-3 / Titan, FAATC-AJP-1850

1. Robert Duffer also welcomed all attendees and thanked the Committee for the hard work performed during and in between the first two meetings.
2. With the proposed Agenda displayed, Tom Pagano asked if there were any suggested additions or changes to the Agenda for this meeting. There were no suggested changes, so Mr. Pagano declared the Agenda accepted and began to progress on the Agenda as published.
3. Tom Pagano then asked that we review and approve the Minutes of Meeting #2. Working Paper SC209-WP03-02 was offered as RTCA Paper No. 109-08/SC209-004. It was pointed out by several Committee members that there has been discussion between members between Meeting #2 and this meeting indicating that some members who were not in attendance during Meeting #2 did not agree with some of the conclusions that were reached during Meeting #2. Nevertheless, it was agreed by all Committee members that the Minutes of Meeting #2 accurately reflected the discussions and decisions that were made during Meeting #2 by those in attendance, and hence, the Minutes of Meeting #2 were accepted as published.

4. The Committee reviewed the dates and locations of the upcoming Committee meetings. Don Walker of Honeywell in Olathe Kansas offered to host Meeting #4 at his facilities in Olathe. After discussion, the Committee agreed to hold Meeting #4 at Honeywell in Olathe, Kansas. The following dates and locations were approved, even though the actual meeting location of Meeting #6 was to be determined by Bob Saffell and provided later.

Meeting	Dates/Time	Meeting Location
#4	18 – 19 October 2006 9:00am – 5:00pm EDT	Honeywell, 23500 West 105 th Street, Olathe KS
#5	5 – 6 December 2006 9:00am – 5:00pm EST	RTCA, Washington DC
#6	Proposed: 29 Jan – 2 Feb 2007 Ending @ 2:00pm 2/2/07	Currently proposed Joint meeting between SC-209 and Eurocae WG-49 in Melbourne Florida, hosted by Rockwell Collins at a physical location TBD

5. The Committee then began review of Working Paper SC209-WP03-11 as the status report for the overall effort of creating a draft of an Appendix B to DO-181D for the Mode S Specific Services. Peter Muraca discussed the steps that had been taken since Meeting #2 to update the draft which was presented to Meeting #3 as Working Paper SC209-WP03-03. Peter and Andy Leone indicated that future steps included:
- a. updating the draft further with any comments that comes from the review of the consolidated comments that were presented to this meeting in Working Paper SC209-WP03-04,
 - b. preparing the next version for sending to Eurocae WG-49 for their review prior to their meeting in October,
 - c. making decisions on the content required for Elementary and Enhanced Surveillance, and
 - d. adding test procedures as necessary.
6. The Committee then began review of the consolidated comments that had been submitted, prior to the meeting, on the draft of Appendix B for the Mode S Specific Services which were captured in Working Paper SC209-WP03-04. As each comment was individually reviewed and discussed, an entry was made in the Working Paper and **Action Item 3-1** was accepted by Bob Saffell, Don Walker and John Berglund to prepare one or more Working Papers to suggest proposed changes in concert with the agreed upon issues that were discussed. The revised Working Paper containing all of the SC-209 agreements was posted on the SC-209 web site after the meeting as SC-209-WP03-04R1. Comment numbers in WP03-04R1 for which Action Item 3-1 is expected to produce further proposals include comments #7, #9, and #12 through #18.
7. Gary Furr briefed the content of Working Paper SC209-WP03-10, which contains a comparison matrix for changes that have been suggested to be made to the ATCRBS Transponder MOPS, RTCA/DO-144 to revise it to become an official RTCA MOPS document, as well as updating it as the Committee believes necessary. Gary indicated that Tom Pagano had initially asked that personnel from Garmin take the lead in suggesting the revisions to DO-144, but that they respectfully declined to take the lead. Subsequently, a meeting was held at the FAA Technical Center with those in attendance including: Gary Furr, Tom Pagano, John Van Dongen, Leo Wapelhorst and Andy Leone to discuss what were

believed to be the necessary changes or additions that will need to be made while revising DO-144. From that meeting, Leo Wapelhorst agreed to the task of comparing the sections of DO-181C with DO-144, and with the standard RTCA MOPS sections, and suggesting how DO-144 could be restructured into the standard RTCA MOPS outline, and suggesting which sections should be added in order to have a more complete ATRCBS MOPS. Leo has completed this task on hardcopy-only, and Gary Furr indicated that he will execute those suggestions prior to Meeting #4 and offer the draft of DO-144A version 0.2 for review. Rob Duffer accepted **Action Item 3-2** to call several manufacturers and encourage them to participate with the suggested modification of DO-144.

8. Gary Furr then began to review the changes that have gone into the current draft version 0.4 of DO-181D and the comparison matrix that shows the changes to the outline as were agreed to by the Committee during Meeting #2. Working Papers SC209-WP03-06 and SC209-WP03-09 were offered for review. After Gary completed a high level review of the changes that had been made in V0.4, Tom Pagano led a discussion related to how we would complete the currently empty sections on Elementary and Enhanced Surveillance. SC-209 expected to obtain information from Eurocae WG-49 with respect to their sections of ED-73C related to the same topics.

During the discussion on Elementary and Enhanced Surveillance, Don Walker of Honeywell pointed out that his company had asked a question of the ICAO SCRSP Working Group B, Technical Subgroup (TSG) over two years ago, the answer to which is documented in the Minutes to their meeting of 2 – 6 February 2004 in Fort Lauderdale Florida in paragraph #31. The questions asked: “Is a full ADLP required to meet SARPs requirements for a Level 2 transponder and the European Mode S requirement?” The answer indicated: “A full ADLP is not required. The only requirement is for GFM message formatting needed to support ELS and EHS surveillance requirements.” Don Walker, Honeywell International, stated that the answer from ICAO clearly indicated that an ADLP is not required to meet the Level 2 European Mandate. Tom Pagano and Bob Saffell disagreed with the definition of Level 2 and wanted to get further guidance from ICAO ASP Working Group.

9. The discussion of Elementary and Enhanced Surveillance led to further discussion of coordination issues with Eurocae WG-49 in our combined efforts to update DO-181C and ED-73B. Bob Saffell reported that from the last WG-49 meeting, a Eurocontrol representative had indicated that they will request that a 30 day period of flight testing take place for any transponder change and that the testing should test any registers that the transponders are servicing.
10. The topic of transponder registers spawned a discussion of a topic that was brought up during the recent WG-49 meeting with respect to how to handle an Address Announced (AA) field of ALL ZEROs or ALL ONEs. Bill Thedford offered the Committee a document which was to be identified as Working Paper SC209-WP03-13, which was an annotated copy of Working Paper WG49N7-11a from Mikael Ponnau on this same topic showing changes proposed to ED-73C for the cases where AA is ALL ZEROs or ALL ONEs. After discussion, the Committee agreed to try to incorporate the same text as will be agreed upon by WG-49 for this case. Don Walker indicated that Honeywell has some issues with the

solution proposed by Mikael, but that Honeywell would prepare a separate Working Paper for submission at the next WG-49 meeting for their consideration.

11. Bill Thedford continued with a presentation of what was to become Working Paper SC209-WP03-14 which identifies the status of the database effort that he is continuing to compare the requirements differences between DO-181D, ED-73C and the SARPs documents, in an overall effort to have all documents come closer together. Bill indicated that he has taken the latest draft revision V0.4 of DO-181D from Gary Furr and used it to compare to the latest drafts of ED-73C. The work is not nearing completion, but it is progressing.
12. Bill Thedford also focused the Committee's attention on a Working Paper from the last WG-49 meeting which was identified as WG49N7-06a from Mikael Ponnau which proposed a set of generic test procedures for Enhanced Surveillance to go into ED-73C. Bill also indicated that he had charged MIT with writing a document which is entitled "*Compliance Verification for Mode S Transponder Elementary Surveillance (ELS), Enhanced Surveillance (EHS), and Automatic Dependent Surveillance via Broadcast (ADS-B) Applications.*" This document itemizes the required steps for compliance verification to be performed on Mode S avionics supporting the "elementary surveillance" (ELS) and "enhanced surveillance" (EHS) data link applications. Bill indicated that he would make this document available to SC-209 members for review. This document will become a Working Paper for Meeting #4.
13. Bob Saffell then began a presentation of Working Paper SC209-WP03-12, which is an analysis of the P1-P3-P4 Accept/Reject requirements in response to Action Item 2-7. Bob indicated that the intent of this Working Paper was to address the remaining issues regarding conflicts between the SARPs and RTCA/DO-181D regarding the detection of the P4 pulse in Mode-S All-Call Interrogations. This topic had been discussed at the most recent ICAO WG-B TSG meeting in Toulouse France, and the conclusion coming out of that meeting was that the SARPs and ED-73C agree, and that DO-181C/D differs but that the difference is not operationally significant. The issue discussed in SC-209 was that it appears that WG-49 does not wish to change their ED-73C or SARPs language, so the question was what to do in DO-181D? SC-209 agreed that the language in DO-181C/D is appropriate and more in line with the way that transponders are implemented. Tom Pagano suggested that SC-209 implement a test procedure that both WG-49 and SC-209 can agree to and that the regulatory authorities can accept for certification. **Action Item 3-3** was accepted by Rob Duffer to discuss this matter with Kevin Halworth of EASA, and to bring back the results of that discussion to the next SC-209 meeting.
14. Working Paper SC-209-WP03-05 was put together by Gary Furr as a collective set of comments that had been submitted by manufacturers since Meeting #02 regarding the answer to the question that was posed in a "Letter to Manufacturers" regarding a proposed change to a test procedure in §2.4.2.7 involving DME/JTIDS interference. Rockwell Collins had responded that they did not wish to allow the changing of any test increments to 1 dB steps. ACSS had responded that the change in the test would only add a small amount of time to their testing, and Honeywell responded that it would add about 10 days to their testing. Bob Saffell accepted **Action Item 3-4** to review the proposed changes to §2.4.2.7 again, and to consult his transponder and DME experts in Rockwell Collins to see what they think about the proposed change.

During further consideration of Working Paper SC209-WP03-05, SC-209 agreed that John Van Dongen should revise his proposed changes to §2.3.2.2.3 and submit a new proposal at Meeting #4.

After further Committee discussion of Working Paper SC209-WP03-05, regarding the comments from Honeywell on Step 2 of paragraphs §2.3.2.6 and §2.4.2.6, the Committee agreed that these paragraphs would be changed as per Working Paper WP02-05R2 and that all old changes would be rejected and a statement on using 3 dB MTL would be inserted.

After further Committee discussion of Working Paper SC209-WP03-05, regarding the comments from Honeywell on Step 4 of paragraph §2.3.2.6, the original proposed changes in the Working Paper were accepted.

After further Committee discussion of Working Paper SC209-WP03-05, regarding the comments from Honeywell on Step 7 of paragraph §2.4.2.6, the original proposed changes in the Working Paper were rejected and the text of the test procedure was set back to the original text of Step 7 as reflected in WP02-05R2.

As part of the discussion on test procedure changes, **Action Item 3-5** was agreed to for the Manufacturers to review Working Papers SC209-WP03-07 and WP03-08 in detail, and get back to John Van Dongen and Leo Wapelhorst prior to the next meeting so that any proposed changes to test procedures could be finalized during Meeting #4.

Don Walker of Honeywell brought up a concern that there needs to be a requirement and test procedure for S1. Don agreed to generate a Working Paper for Meeting #4 as a proposal for this change.

15. The summary of Action Items that remained open, or were newly assigned and accepted during Meeting #3 are as follows:

Action Number	Open Action Item Descriptions	Assigned to	Status
1-3	Coordinate with Stuart Searight to make sure that all of the TCAS issues are accounted for.	Tom Pagano Gary Furr	Ongoing
2-2	Resolve the differences in the "Reply Rate" requirements in the following sections: (1) DO-181C, §2.2.3.4.1, (2) ED-73B, §3.4.1, (3) SARPs Annex 10, Vol-IV, §3.1.1.7.9	Doug Guetter Bob Saffell	
2-6	Further the restructuring of section §2.2 of DO-181 for Meeting #3 No input for Meeting #3. Held over for Meeting #4.	Bayh, Saffell, Annee, Guetter	
3-1	Create a Working Paper which will be submitted to the ICAO ASP TSG which identifies those proposed changes that have been discussed in the revised set of comments.	Don Walker Bob Saffell John Berglund Doug Guetter	
3-2	Call manufacturers to try to get more participation in the effort to revise DO-144	Rob Duffer	
3-3	Approach Kevin Halworth at EASA with the points of discussion regarding the differences in DO-181D and ED-73C and the SARPs on the P4 issue	Rob Duffer	
3-4	Review the proposed changes to the test procedures in §2.4.2.7 with his transponder and DME experts to see what they think about the proposed changes.	Bob Saffell	
3-5	Review in detail Working Papers WP03-07 and WP03-08 and get back to John Van Dongen and Leo Wapelhorst so that changes to test procedures can be coordinated prior to Meeting #4.	All Manufacturers	

16. The **Working Papers** for all SC-209 Meetings, as well as the Meeting Agendas, Meeting Minutes, Meeting Schedules and proposed modifications to the ATCRBS and Mode-S MOPS will be posted on the web site maintained by Gary Furr at the FAA William J Hughes Technical Center, located at:

<http://adsb.tc.faa.gov/SC209.htm>

As reported in the Meeting Summary of Eurocae WG-49, Meeting #6, members of SC-209 may access the WG-49 workspace through the Eurocae web site located at:

<http://www.eurocae.org/> Login: WG49 and password: MODE-S

Also, the workspace of Eurocae WG-51 can be accessed by SC-209 members through the same Eurocae web site with: Login: WG51 and password: ADSB