

RTCA Paper No. 186-07/SC209-014
Minutes of Meeting #07 of RTCA SC-209
Held As A Joint Session with Eurocae WG-49
For The Maintenance of the ATCRBS & Mode-S MOPS
<http://adsb.tc.faa.gov/SC209.htm>

The Joint Plenary Session of RTCA/SC-209 Meeting #7 and EUROCAE WG-49 was called to order by SC-209 Co-Chair, Thomas Pagano at 10:00am on 20 August 2007, at the facilities of Eurocontrol in Brussels, Belgium. Mr. Pagano and Antoine Herve of WG-49 welcomed all attendees and asked that each attendee introduce themselves and their organization. The attendees for all or part of the meeting included the following:

Mark Annee, representing U.S. Navy	Roland Mallwitz, DFS, Germany (WG-49)
Yves Auchineau, Rockwell Collins (WG-49)	Philippe Murat, L-3 / ACCS (WG-49)
Raymond Bayh, BAE Systems	Showkat Osman, Honeywell International
David Bowen, Eurocae Tech Secretary (WG-49)	Eric Potier, Eurocontrol, Brussels (WG-49)
Bob Clarke, Alion Science (by phone)	Tom Pagano, FAA Tech Center – AJP-653
Andy Davis, Trig Avionics (WG-49)	Lt. Chris Rose, U.S. Air Force
John Fisher, Consultant U.S. Air Force	Andrew Rose, Llanbury Consulting (WG-49 Secretary)
Gary Furr, L-3/Titan, FAATC–AJP-653	Robert Saffell, Rockwell Collins
Martin Gray, Trig Avionics (WG-49)	Charles Sloane, FAA AIR-130 (by phone)
Kevin Hallworth, EASA (WG-49)	Trevor Smith, UK NATS (WG-49)
Antoine Herve, DGAC (French CAA) (WG-49 Chair)	William Thedford, Consultant, U.S. Air Force
Victor Hunsicker, DoD AIMS Program Office	John Van Dongen, FAA Tech Center (by phone)
Richard Jennings, FAA, AIR-130	Nolan Van Foeken, Garmin International
Andrew Leone, FAA Tech Center	Paul Washlesky, DoD AIMS Program Office

Eric Potier welcomed all attendees to Eurocontrol and reviewed the facilities and timing of various functions such as coffee breaks and lunch. Eric further discussed the timing of the bus in the afternoon which would return many attendees back to the Grand Place' area.

1. Agenda Item #1

- 1.1 Richard Jennings indicated that he was ~~taking-siting in during this meeting in~~ the place of Robert Duffer, as the Designated Federal Official. Mr. Jennings additionally welcomed all attendees.

2. Agenda Item #2

- 2.1 With the proposed Joint Session Agenda displayed, Tom Pagano indicated that we have a full Agenda and that there are several items, which required people to call into the meeting. After a brief review of the Agenda, Mr. Pagano declared that the Agenda was accepted and we began to progress on the Agenda as offered to the Joint Plenary Session.

3. Agenda Item #3

- 3.1 Mr. Pagano referred to Agenda Item #3 to discuss the Minutes of SC-209 Working Group #1, Meeting #2, which were presented to this Joint Plenary Session as Working Paper SC209-WP07-02. There were no comments regarding the Minutes of Working Group #1 Meeting #2, and the Minutes were accepted by the Joint Plenary Session as presented in Working Paper SC209-WP07-02.

4. Agenda Item #4

- 4.1 Mr. Pagano referred to Andrew Rose for discussion of the sets of Minutes for the last WG-49 meetings which were represented in Working Paper WG49N11-02, and for the Preparation Meeting in WG49N11-02a. Mr. Rose reviewed the two sets of Meeting Minutes, and there were no comments. The Minutes were accepted.

5. Agenda Item #5

- 5.1 The Meeting continued with Antoine Herve giving a brief summary of the Activities of Eurocae Working Group 49. WG-49 expects to have the draft of the ED-73C ready for final review in late January 2008 with expected publication in the April 2008 timeframe.

6. Agenda Item #6

- 6.1 The Meeting continued with Agenda Item #6 and Tom Pagano discussed some of the activities of RTCA SC-209. As with WG-49, the expectation of SC-209 is that the DO-181D draft will be ready for Final Review and Comment after the SC-209 meeting which was planned for December 2007 at RTCA. This would then require another SC-209 meeting somewhere in the February timeframe with expected publication around April 2008.

7. Agenda Item #7

- 7.1 The Meeting continued with the Agenda by going on to Item #7 with Antoine Herve presenting Working Paper WG49N11-11 to propose the harmonization of the structure of ED-73C with the structure of DO-181D. It was agreed by both WG-49 and SC-209 that the proposal for restructuring the Appendices would be implemented as suggested.
- 7.2 The Meeting continued with Antoine Herve and Andrew Rose presenting Working Paper WG49N11-12 for the revision of ED-73C, Chapter 3. This proposed organization was an effort to bring ED-73C into closer organization with Chapter 2.2 of DO-181D. There was discussion concerning remaining issues and these were agreed to and reflected in an updated version of the Working Paper as WG49N11-12a.

8. Agenda Item #8

- 8.1 The Joint Plenary Session continued with the Agenda by going on to item #8 for the discussion of the results of efforts to update the specification of the TCAS Version

Numbering. Gary Furr gave a brief overview of the history of the TCAS Version Numbering update. Working Paper C-209-WP07-15 was presented as a combination of comments from the ICAO ASP TSG from Roland Mallwitz and some additional comments on the draft of 735B from Robert Saffell. Roland Mallwitz had suggested to ARINC the results of the ICAO ASP TSG regarding their proposal for new TCAS Version Numbering. Robert Saffell had previously indicated that the old Version Numbering should be retained and that a new definition should be added to 735B in Attachment K and L which he proposed. It was pointed out that ARINC had just reissued a new draft of 735B, and Roland Mallwitz agreed to review this draft to ensure that the proposed changes had been incorporated. This task was performed during the meeting and Roland indicated that all changes were accounted for. Bob Saffell accepted Action Item 7-11 to specify requirements and test procedures appropriate for the new information that was added to 735B for hardware and software version numbering.

9. Agenda Item #9

- 9.1 The Joint Plenary Session continued with the Agenda by going on to item #9a with the presentation of Working Paper SC209-WP07-03 by Showkat Osman of Honeywell for a proposed requirement for the S1 P1 detection. Showkat presented the Working Paper, which proposes a new requirement in both DO-181 and ED-73. There was concern indicated that even if the requirements that were presented in the Working Paper were implemented, that it would be possible to still have a problem. Tom Pagano asked if there was another manufacturer that wanted to run the test that is proposed in the Working Paper. Philippe Murat of ACSS indicated that he wanted to ask that the tests be run. Nolan Van Foeken of Garmin also indicated that they would want to run tests, and Andy Davis of Trig Avionics also indicated a desire to run a test. An email was also forwarded to Marty Lockner of Narco asking that they run the same tests. It was reported later in the meeting that Doug Guetter of ACSS had reported back that the ACSS transponders could meet the requirements. Just after the meeting, Marty Lockner reported the testing of Narco transponders and agreed that they could meet the requirements in the Working Paper proposed by Honeywell and Rockwell Collins. WG-49 agreed to check with European manufacturers that were not present during the meeting to see if they comply with this requirement.
- 9.2 The Joint Plenary Session continued with the Agenda by going on to item #9b with the presentation of Working Paper SC209-WP07-04 by Gary Furr for the differences in the paragraph of Numerical Representation of Data in various documents. After brief discussion, it was agreed that the way the text was represented in ICAO Doc 9871 is more correct than the way the text appeared in RTCA/DO-260A. This will result in another proposed change to DO-260A. This proposed change will be maintained by Gary Furr along with other known changes to DO-260A. Further, after discussion, it was agreed that a paragraph similar to the “Representation of Data” will be placed into the front of the revised Appendix B, and Eric Potier also suggested that a general requirement to be placed into the main body of ED-73C and DO-181D.

- 9.3 The Joint Plenary Session continued with the Agenda by going on to item #9c with the presentation of Working Paper SC209-WP07-16 by Andy Leone to better explain the Application Entity definition in Appendix B of the version of DO-181D presented to the meeting. It was agreed to accept the suggested Note to be added to the appropriate place in either the new Appendix B and/or Appendix C. Andy Leone and Antoine Herve worked during the meeting to agree to a outline structure of the revised Appendix C.
- 9.4 The Joint Plenary Session continued with the Agenda item #9c with the presentation of Working Paper SC209-WP07-17 by Gary Furr to let the Session know that the Register format for Register 52₁₆ had been changed to agree with changes that were discussed and agreed to by the ICAO ASP TSG in the July meeting in Paris.
- 9.5 The Joint Plenary Session continued with the Agenda by going on to item #9d with the presentation of Working Paper WG49N11-05 by Eric Potier for the presentation of proposed changes to ED-73C, 5.4.2.2 for RF Peak Power Output. Eric is proposing revising the existing test procedures to expand the test of the long and short Mode S Power Output, as well as the Extended Long Mode S. After discussion, it was agreed that after a small revision to one of the Steps in the proposed Working Paper, saved as WG49N11-05a, that the modification would be accepted as a change to both ED-73C and DO-181D for both sections §2.3.2.2.2 and §2.4.2.2.2. Gary Furr made the revisions in DO-181D during the meeting.
- 9.6 The Joint Plenary Session continued with the Agenda by going on to item #9e with the presentation of Working Paper WG49N11-06 by Antoine Herve to make a change to ED-73 in section §5.4.2.5.2 for Reply Rate Capability. After considerable discussion, it was agreed to make a change to the basic requirements in DO-181D, §2.2.3.4 to match ED-73C, and to add text to ED-73, in §3.4.2 to be equal to §2.2.3.4.2.c for enhanced data link protocol. The meeting then turned to a discussion of the test procedures that relate to the specific requirements. The manufacturers were asked to review DO-181D, §2.4.2.12.4 to see if the test procedure is equal to the requested change in Working Paper WG49N11-06. It was pointed out that the text in §5.4.2.5.2.b, Step 2 requiring a 15 minute test duration was not acceptable to the manufacturers for environmental testing. The meeting then turned to the overall issue of Reply Rate as it has been discussed during the last few meetings, as well as in ICAO meetings. The issue of the reply rate was not resolved, but an action was accepted by Roland Mallwitz and Eric Potier that was later assigned the Action Item 7-17 to run their models and make a recommendation to both WG-49 and SC-209 for resolving the reply rate issue.

- 9.7 The Joint Plenary Session continued with the Agenda by going on to item #9f with the presentation of Working Paper WG49N11-07 by Antoine Herve to discuss Side Lobe Suppression. There is a difference in DO-181D, §2.2.5.1 where the value is one (1) percent versus the value in ED-73C, §3.8.2, which is ten (10) percent. An action was given to the manufacturers to see if leaving this value at one percent (and changing ED-73C to 1%) would cause any problems. A new Step 8 was added to §2.4.2.4 to match the request in the Working Paper. Other changes were deemed to be not significant. Kevin Hallworth accepted Action Item 7-1 to contact European manufacturers to ask them to determine if the 1% side lobe suppression requirement would be a problem.
- 9.8 The Joint Plenary Session continued with the Agenda by going on to item #9g with the presentation of Working Paper WG49N11-08 by Andrew Rose to show that Bev Nichols had entered some editorial notes in the draft of ED-73C that needed to be removed. These editorial changes were accepted. A discussion was then held regarding mutual suppression. A difference was found in the requirements for a response to mutual suppression in ED-73C, §3.15.1 and DO-181D, §2.2.11, where there was an addition of a subparagraph “b” in DO-181D but not added into ED-73C. SC-209 agreed to remove the initial requirement that had been placed in §2.2.11.a and go back to the same language as was in DO-181C and ED-73B. Kevin Hallworth accepted Action Item 7-2 to separately contact the European manufacturers to determine whether they provide mutual suppression according to the newly accepted requirement in DO-181D, §2.2.11.b.
- 9.9 The Joint Plenary Session continued with the Agenda by going on to item #9h with the presentation of Working Paper SC209-WP07-19 by Raymond Bayh for more suggested changes and clarifications to the draft of DO-181D. The Change 1, which was a proposal to change §2.2.13.3.1 was not agreed to by the Meeting. Change 2 to §2.2.19.1 was accepted and implemented during the meeting. Change 3 to §2.2.19.1.12.7 was accepted and implemented during the meeting. Change 4 to §2.2.19.1.13 was modified and implemented during the meeting. Bob Saffell accepted Action Item 7-3 to review the test procedure sections in §2.5.4.19 that related to §2.2.19.1.13, which had changes.
- 9.10 The Joint Plenary Session continued with the Agenda by going on to item #9i with the presentation of Working Paper SC209-WP07-20 by Raymond Bayh for suggestions on how to populate the section of DO-181D entitled “Event-Driven Squitter.” Raymond withdrew this Working Paper and the section in DO-181D that references the TCAS RA Broadcast (§2.2.23.2) will be deleted, and the sections below will be renumbered. As an addition, it was agreed that the section §2.2.23.3 entitled “Non-Transponder Devices” would also be deleted from DO-181D, and the sections below will be renumbered.

9.11 The Joint Plenary Session continued with the Agenda by going on to item #9j with the presentation of Working Paper WG49N11-09 by Eric Potier and SC209-WP07-06 with comments on Eric's paper inserted by Bob Saffell. With respect to the change indicated as "S-4," the Session discussed the issue of "Validation of declared on-the-ground status" and Roland Mallwitz agreed to accept Action Item 7-4 to bring up this issue with the ICAO ASP Working Group during their meeting in October in Montreal. With respect to the change indicated as "S-9," SC-209 agreed to double check whether or not the proposed test procedures were already covered. It was suggested by Roland that perhaps several notes could be added to explain intent. After reviewing each of the items in this Working Paper, numerous Action Items were accepted for further review by both SC-209 and WG-49 members for results to be presented during the next WG-49 meeting in September. A revision to this Working Paper was maintained during the meeting by Andrew Rose as WG49N11-09a.

10. Agenda Item #10

10.1 The Joint Plenary Session continued with the Agenda by going on to item #10 by phoning John Van Dongen for a discussion of potential changes to the Comm-B Protocol test procedures that were originally discussed in SC-209 Working Group #1 Working Papers ModeS-WP01-05 and ModeS-WP07-06. Both of these Working Papers were posted on the web site which contains Working Papers from this meeting. As for the changes that were proposed in WP01-05, it was agreed that the changes that have been proposed to the test procedure would be accepted, and implemented in both DO-181D and ED-73C, however, the manufacturers would have to further review the detailed procedures prior to the publication of the documents. As relates to the Working Paper WP01-06, all of the suggested changes were accepted, and will be implemented into the drafts of both DO-181D and ED-73C. There was a problem identified in the lead in paragraph to Figure 2-19. An action was given to Eric to propose replacement text.

11. Agenda Item #11

11.1 The Joint Plenary Session continued with the Agenda by going on to item #11 for a discussion on the harmonization of the ELS and EHS requirements and test procedures. It is the intention of WG-49 not to take the requirements and test procedures that were generated by Bob Saffell and that went into DO-181D, but to take the generic test procedures generated by Mikael Ponnau and Bob Saffell, and some of the detailed requirements from Eric Potier and combine them. There was considerable discussion on this point and Tom Pagano pointed out that he believed that the WG-49 approach would not lead to a harmonized set of documents. After further discussion it was agreed that WG-49 would most likely add the detailed ELS/EHS requirements and test procedures as a separate Appendix to ED-73C, rather than a numbered section. WG-49 would also add another Appendix separately with the Generic Test Procedures that were developed by Bob Saffell and Mikael Ponnau. SC-209 agreed to then add these Generic Test Procedures as a separate Appendix to serve as an example of BDS Register testing for interim use for testing newly added registers.

12. Agenda Item #12

- 12.1 The Joint Plenary Session continued with the Agenda by going on to item #12b by phoning Bob Clarke for his presentation of Working Paper SC209-WP07-14 for requesting changes to the transponder MOPS documents for higher squitter rates using lower power as was previously agreed to in ICAO SARPs. The Session discussed several aspects of the Working Paper and a change was made to be identical to the Change Proposal that came out of the ICAO ASP meeting in April 2007 in Working Paper WP ASP02-14R1. The changes proposed in Working Paper SC209-WP07-14R1 will be implemented into both DO-181D and ED-73C.
- 12.2 The Joint Plenary Session continued with the Agenda by going on to item #12a for the presentation of Working Paper SC209-WP07-05 by Gary Furr as a list of Change Proposals that have been submitted to ICAO for inclusion in Annex 10, Amendment 82 that will affect either or both MOPS documents. An Action Item was accepted by Tom Pagano and Bill Thedford to draft a set of proposed changes for requirements and test procedures in DO-181D for presentation during the October SC-209 meeting.

13. Agenda Item #13

- 13.1 The Joint Plenary Session continued with the Agenda by going on to item #13 for a discussion of the environmental testing in both MOPS documents. Working Papers SC209-WP07-21, WG49N11-15 and WG49N11-16. Several items were noted by WG-49 for further discussion during their WG-49 meeting in September. Revisions and actions were maintained on this topic in WG49N11-15a. Bob Saffell and Showkat Osman accepted Action Item 7-13 to review the totality of ED-73C, §5.4 and to propose adding text that would explain how each test procedure should be treated during environmental testing.

14. Agenda Item #14

- 14.1 The Joint Plenary Session continued with the Agenda by going on to item #14 with the presentation of Working Papers SC209-WP07-08 and WG49N11-13 by Kevin Hallworth regarding the NTSB recommendations for the implementations of enhancements or modifications to the transponder controls, as a result of the Brazilian midair collision in September 2006, in MOPS documents in response to a WG-49 Action Item A10/17. In Working Paper WG49N11-13, which suggests changes to ED-73C, Kevin concluded that there should be no change to the MOPS documents for the first two recommendations. However, for the third recommendation, Kevin provided a recommended replacement of ED-73C section 2.4 "Operation of Controls" as provided in the text of Working Paper WG49N11-13. After discussion of the proposed modification of his proposal, Kevin accepted an action to make some changes to the text of his proposal, and work with Rich Jennings to produce a draft for both SC-209 and WG-49 to review in upcoming meetings.

15. Agenda Item #15

15.1 The Joint Plenary Session continued with the Agenda by going on to item #15, which was a presentation by Jorg Steinleitner of Eurocontrol on the Pioneer and Airborne Monitoring Programs of the CASCADE Program Office. Jorg provided a very interesting presentation which was captured in Working Paper WG49N11-19 and posted to the SC-209 Meeting #7 web page.

16. Agenda Item #16

16.1 The Joint Plenary Session continued with the Agenda by going on to item #16 with Bill Thedford giving a verbal update to his efforts to track the differences in the two MOPS documents. Bill expects that it would take him approximately two weeks to run a complete comparison once he receives the next “final” drafts of each of the respective MOPS documents. It was agreed by the Session that running this comparison would not be reasonable until after the next meeting of WG-49 in September and prior to the SC-209 meeting in October.

17. Agenda Item #17

17.1 There was no specific discussion during this Joint Session related to the production of the update to RTCA/DO-144, the ATCRBS MOPS. This topic will be discussed during the October meeting of SC-209 in Washington.

18. Agenda Item #18

18.1 The Joint Plenary Session continued with the Agenda by going on to item #18 for a presentation of Working Paper SC209-WP07-09 by Gary Furr for the proposed resolution of several open items in DO-181D and ED-73C. Gary explained that several of the issues that had been identified in the original Working Paper had been resolved during this meeting. The only major issues that remain not resolved were the differences in the Figures in the two MOPS documents. This Working Paper performs a review of each specific Figure in both DO-181D and ED-73C and reaches an opinion as to whether they are the same or different. WG-49 agreed to review this Working Paper again during their next meeting in September and make recommendations after that for any changes that would be necessary. Gary agreed to port copies of ED-73, Figure 3-1, and Figures 18A, 19A, 20A, 21A and 22A into the next draft of DO-181D for review. Tom Pagano agreed to work with Gary to determine whether there would be any additional text required in DO-181D to introduce the new Figures. Gary also agreed renumber all of the Figures in DO-181 into a numerical order.

19. The list of open Action Items was reviewed during SC-209 Meeting #7, and the summary of Action Items that remained open, or were newly recorded as being assigned and accepted during Meeting #7 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
5-1	Modify the draft of DO-181D to include references to Appendix B and capture MSP processing in the Transponder.	Tom Pagano Showkat Osman	
7-1	Contact European manufacturers to ask about the side lobe suppression issue of one percent in DO-181C versus ten percent in ED-73C. Can they meet the 1%.	Kevin Hallworth	
7-2	Contact European manufacturers to ask whether they provide mutual suppression according to the newly added request in DO-181D, 2.2.11.b.	Kevin Hallworth	
7-3	Rewrite 2.5.4.19 to be consistent with changes made to the Data Link Capability Reporting in 2.2.19.1.13. Also check 2.6.2.3.	Bob Saffell	
7-4	Discuss the issue of "Validation of declared on-the-ground status" with ICAO ASP during the October meeting in Montreal.	Roland Mallwitz	
7-5	Review the environmental sections for Fixed and Variable Direct Data (2.3.2.11.1 & 2.3.2.11.2) to see if referencing 2.6 is appropriate.	Bob Saffell	
7-6	Review all of ELS and EHS test procedures to see what should be specific to environmental tests.	Bob Saffell	
7-7	Write a test procedure in Procedure #20 for testing 2.2.13.3.1.f.	Tom Pagano	
7-8	Check §2.4.2.12.3 Step 1 where there is an exclusion for UF=0, 11, 16 and 24, to see if the exclusion applies to all of the steps in that test procedure.	Tom Pagano	
7-9	Review all of the TCAS material in DO-181 that may need to be copied into ED-73C and make a recommendation to WG-49 during their September meeting.	Roland Mallwitz	
7-10	Review Working Paper SC209-WP07-05 as the list of Change Proposals for Annex 10 and draft change proposals for DO-181D for presentation during the October meeting of SC-209 and for submission to WG-49 for their consideration and review.	Tom Pagano Bill Thedford	
7-11	Incorporate the requirements and test procedures for TCAS DO-185B and TCAS hardware and software version numbering.	Bob Saffell	
7-12	In order to add a section into DO-181D to specify new labeling requirements, Nolan will propose text to add into section 1 of DO-181D.	Nolan Van Foeken	
7-13	Go through all of ED-73C, §5.4 and propose adding text for specifying how to handle each test procedure for environmental.	Bob Saffell Showkat Osman	
7-14	Propose the structure for Appendix B and C as agreed to in the new formats.	Antoine Herve Andy Leone	
7-15	Look at the Enhanced Comm-B Protocol Test Procedure.	John Van Dongen	
7-16	Review WG49N11-09a for all test procedures.	Eric Potier Showkat Osman	
7-17	Run models to determine the appropriate reply rate number and make proposals to WG-49 and SC-209 to resolve the reply rate issue.	Roland Mallwitz Eric Potier	

20. 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