

**Minutes of Meeting #06 of RTCA SC-209 Working Group #1
For The Development & Maintenance of the Mode-S MOPS**

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

Meeting #6 of Working Group #1 of RTCA/SC-209 was called to order by Co-Chair Tom Pagano at 9:00am EDT, 14 April 2008, at Engility Corporation in Washington DC. 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 the following:

Raymond Bayh, BAE Systems	Showkat Osman, Honeywell
Bob Clarke, Alione Sciences (by phone)	Tom Pagano, FAA Tech Center – AJP-653
Rob Duffer, FAA (by phone)	Robert Saffell, Rockwell Collins
Gary Furr, Engility Corp., FAATC–AJP-653	Bill Thedford, Consultant, USAF
Martin Gray, Trig Avionics	Nolan Van Foeken, Garmin International
Garrett Harris, MIT Lincoln Lab	Don Walker, Honeywell (by phone)
Richard Jennings, FAA AIR-130	Eurocae WG-49 representatives (by phone)

1. Agenda Item #1

- 1.1 Robert Duffer, the Designated Federal Official, was not able to personally be with us during this meeting. Mr. Richard Jennings acted as the Designated Federal Official for this meeting and he also welcomed all attendees to the meeting and thanked them for their participation.
- 1.2 Gary Furr welcomed the attendees on behalf of Engility Corporation and briefed on the logistics of the facility and the surrounding area.

2. Agenda Item #2

- 2.1 With the proposed meeting Agenda displayed as Working Paper ModeS-WP06-01, Mr. Pagano asked if there were any suggested additions or changes to the Agenda for this meeting. The Group discussed the order in which the Working Papers should be reviewed so that we can have a scheduled teleconference between SC-209 and WG-49. There was an addition with a Issue Paper that has been submitted by Don Walker of Honeywell in which Don wanted to discuss potential issues with the ZERO (0) Type Code Extended Squitter. The Group agreed to call Mr. Walker and schedule a time for him to present the Issue Paper. Mr. Pagano declared that the Agenda was accepted with these changes, and began to progress on the Agenda as revised and offered to the Working Group. A revised Agenda will be posted on the web page for this meeting as ModeS-WP06-01R1.

3. Agenda Item #3

3.1 Mr. Pagano referred to Agenda Item #3 to discuss the Minutes of SC-209 Working Group #1, Meeting #5, which was held at The Crowne Plaza Hotel in Melbourne Florida, and presented to this meeting as Working Paper ModeS-WP06-02. The Minutes of SC-209 Working Group #1, Meeting #5 were accepted by the Working Group as presented in Working Paper ModeS-WP06-02.

4. Mr. Pagano referred to Agenda Item #4 to begin to discuss the Working Papers that will affect the MOPS document.

4.1 The Working Group continued with the Agenda by going on to Agenda Item #4f with a presentation of Working Paper ModeS-WP06-12 by Bob Saffell for the proposed changes to DO-181D because of changes that have occurred because of the publication of RTCA/DO-185B for TCAS. As the Group reviewed the Working Paper, several discussions centered on the use of references to TSO C119x in DO-181D. It was determined that TSO-C119a specifically referenced RTCA/DO-185, TSO-C119b (published in 1998) specifically referenced RTCA/DO-185A, and a new revision, TSO-C119c is in the process of publication and references RTCA/DO-185B. Some changes were made to the Working Paper and saved as version WP06-12R1 for later discussion with WG-49 as to the proposed changes. Also, the draft of DO-181D was opened and a new paragraph and table were entered at the beginning of paragraph §2.2.22 in which a description of the versions of TCAS and TSOs and RTCA MOPS were equated. The changes proposed in WP06-12R1 were implemented into the draft of DO-181D after the meeting.

4.2 The Working Group continued on with the review of Agenda Item #4c with a presentation of Working Paper ModeS-WP06-09 by Bob Saffell. This Working Paper represents proposed changes to DO-181D with regard to modifications to test procedures for the Extended Squitter sections in response to Action Item WG1-5-2. Some additions were made and the Working Paper was saved as WP06-09R1. During the teleconference with WG-49, they had several suggestions which were accepted by SC-209 and the Working Paper was modified to produce WP06-09R2. The changes proposed in WP06-09R2 were implemented into the draft of DO-181D after the meeting.

4.3 The Working Group began review of Agenda Item #4b with a presentation of Working Paper ModeS-WP06-03 by Bob Saffell. This Working Paper represents the proposed resolution to Action Item 7-3, which was already included inside the version 1.6 of the draft DO-181D. The review of WP06-03 was proposed only to ensure that all Group members had an opportunity to review the proposed changes. During the review of WP06-03, it was discovered that there were some inconsistencies in text between DO-181D and ED-73C in the section of requirements for Aircraft Identification Reporting. The deficiency was agreed to be in the draft of DO-181D and some changes were entered into the working draft of DO-181D during the discussion to account for the cases where *“a surveillance or Comm-A interrogation (UF=4, 5, 20, 21) contains RR=18 and DI does not equal 3 or 7, or DI equals 3 or 7 and RRS=0.”*

- 4.4 The Working Group began review of Agenda Item #4g with a presentation of Working Paper ModeS-WP06-13 by Don Walker. This Working Paper represents an Issue Paper discussing the Extended Squitter with a ZERO (0) Type Code. Don called into the teleconference bridge and presented the background of the Issue Paper. After some Group discussion, it was agreed that SC-209 would accept the proposed change, but it was pointed out that we would have to have a discussion with WG-49 on this topic during the teleconference bridge on Tuesday. Honeywell also pointed out that they would propose revisions to the test procedures in DO-181D if this issue was completely agreed to by both SC-209 and WG-49. During the teleconference with WG-49, there were concerns expressed about the proposed changes and it was pointed out by Roland Mallwitz that changes would be required in both the 1090ES SARPs and the ICAO Doc 9871. If we are to execute all of these changes, then the Issue Paper would have to be presented to the ICAO ASP Working Group meeting to be held in Bangkok May 19-23, 2008. In order for this to happen, the ICAO ASP Technical Subgroup would have to agree that this was a valid issue, then the Working Group would have to agree to present this issue for discussion during the upcoming ICAO ASP TSG meeting to be held in Paris 30 June through 4 July, 2008. Further, if the TSG meeting approves all proposed changes, then the resulting Change Proposals would have to be presented during the ICAO ASP Panel meeting in December 2008 in Montreal. To this end, Don Walker agreed to produce a revision of ModeS-WP06-13 and send it to Roland Mallwitz for distribution to the ICAO ASP TSG via email to see if an agreement could be reached to present the issue to the Working Group meeting in Bangkok.
- 4.5 The Working Group began review of Agenda Item #4d with a presentation of Working Paper WP06-10 by Gary Furr. This Working Paper represents the responses of five (5) manufacturers that responded to the request to comment on, and/or agree with, the requirement and test procedure on low level Mode S responses. The Working Group agreed that each manufacturer represented in the Working Paper would discuss their reasoning behind their specific requests to change the requirement and test procedure. Additionally, Bob Clarke had been asked to model a set of data that was provided by Andy Leone from flight data gathered in the New York area in 2006. Bob Clarke presented several charts showing the number of low level replies. Each manufacturer then explained his own individual reason for asking for a modified requirement and test procedure. After considerable discussion and review of options, the Working Group agreed to modify the Garmin suggestion as captured in WP06-10R1, and then each manufacturer will gather further data so that the unknown blanks can be filled in during the document FRAC process. During a follow-up teleconference, WG-49 agreed with this approach and will modify ED-73C in the same way.
- 4.6 The Working Group began review of Agenda Item #4e with the presentation of Working Paper ModeS-WP06-11 by Martin Gray of Trig Avionics. This Working Paper represents a response from Trig Avionics for alerting the requirement for handling the S1-P1 Whisper-Shout TCAS issue that has been previously discussed during SC-209 meetings. Martin also presented an additional analysis file, which was designated as WP06-11A and was posted on the web page along with a revised title to the original Working Paper. After discussion on the original Working Paper and the newly offered analysis, it was agreed by the Group that there would be no change in the

proposed requirements originally offered by Honeywell and Rockwell Collins and represented in the current version 1.6 of the draft DO-181D. During a follow-up teleconference, WG-49 agreed with this approach and will modify ED-73C in the same way.

- 4.7 The Working Group began review of Agenda Item #4h with the presentation of Working Paper ModeS-WP06-14 by Bill Thedford, which was offered to the Group as a comparison of the drafts of DO-181D version 1.6 versus the draft of ED-73C version “h.” The Group stepped through the Working Paper and noted several differences in the two MOPS documents which needed to be discussed with WG-49. There was then a teleconference with WG-49, during which these differences were discussed.

5. Agenda Item #5

- 6.1 The list of open Action Items was reviewed separately by Gary Furr after the meeting and it is believed that all previously open action items have been closed.

- 6. The Dates and locations of future SC-209 and WG-49 meetings were discussed under Agenda Item #6. The next meeting will be an RTCA SC-209 Plenary meeting on 18-19 June 2008 with the agenda consisting of the Final Review and Approval of both DO-181D and DO-144A.

Organization	Dates	Place
WG-49	18 – 19 June 2008	Eurocontrol Headquarters, Brussels
SC-209 Plenary #8	18 – 19 June 2008	RTCA Headquarters, Washington DC

- 7. 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