



Paris, June, 2010

Minutes of the 1th meeting of the 'new' EUROCAE WG-49
"Mode S Enhanced Surveillance"

26th May 2010 - EUROCAE, Paris

Attendees

Antoine Herve - DGAC [WG49 Chairman], Eric Potier - EUROCONTROL, Pierre Ruault - EUROCONTROL, Yves Audineau - Rockwell Collins, Roland Mallwitz - Eurocae secretary, Nicolas Soldevilla - Thales communications, Trevor Smith - NATS, Mohammed Chadli - DGAC

Conf call : Gary Furr - FAA, Kevin Hallworth - EASA, Kevin Wilson - Honeywell

1.1 Introduction

Antoine Herve welcomed the attendees to the meeting.

A Herve has been confirmed as the chairman of the WG 49.

For the organization of the activity, it has been proposed to have a common work with RTCA SC209.

The Purpose is to have joint meetings with SC209 rather than separated meetings.

The meetings could be done through conference call or/and face to face meeting

ED 102 A and DO 260B have been developed on this "integrated model"

One main issue is that the 2 MOPS (ED 73C and DO 181D) are not exactly the same.

Nevertheless, Gary has kindly proposed to identify ED 73C modifications, and accepted to become the "common" secretary for SC209 and WG49.

Counterpart : SC209 would also have to consider our improvement suggestion (ameliorations identified by WG49 from field experience)

1.2 Approval of Agenda

Antoine Herve introduced the proposed agenda which was updated and agreed:

[Working paper: \(WG49N01-01\) Agenda WG49-updated.doc](#)

1.3 Reason for reopening the WG49

Eric Potier introduced the reason to reopen the WG49.

ED 73C/ DO181 D are impacted by:

1. Extended Squitter version 2 MOPS (DO 260B / ED 102A) approved at the end of 2009
2. New requirements from ICAO
3. Improvements from field experience

Working paper: (WG49N01-02) candidate- changes ED73C-1.doc

2. Presentation of the potential impact on ED 73C

2.1. Impact of the modifications on extended squitters management in ED 102 A and DO260B

After introducing the different modifications implemented in the ADS-B MOPS, Eric focused on those impacting the ED 73C and DO 181D.

- ⇒ Extended Squitters types (creation of the periodic status squitter)
- ⇒ Update rates
- ⇒ ADS-B Timeout and Termination

Discussion on the way to tackle this issue. Indeed as the 1090 ES MOPS already covered these specifications; rather than updating the Mode S MOPS, ES specifications could be suppressed from the MOPS in order to avoid specifications duplications. See Action A1/2.

2.2. New requirements from ICAO

- ⇒ Ground status (TCS).

TCS could be used to force the aircraft to react as on-the-ground (ES format + no All call replies). However it would impact FS and VS fields and this should be done with precaution.

- ⇒ Long P4 validation

It has been observed that in the vicinity of airports there is a high density of DF11 on II=0 which creates useless RF pollution. Suppression of the Long P4 would impact the military installations so that a preferred solution would be to work on the validation process of the long P4 acquisition (reinforce the acquisition process)

- ⇒ Valid extraction of a register not supported => reply with 0

The clarification should be taken into account in the MOPS.

- ⇒ Subnetwork Version Number

Subnetwork Version: Next ICAO Volume IV (amdt 86) should be issued in 2013 but it is difficult to reference in the MOPS a doc which has not yet been officially issued.

2.3. Ameliorations from Field experience

- ⇒ Editorial correction in ED73C section 3.27.1.2 p80. The text "When Bit 48 is set to ONE and Bit 71 is set to ONE the ACAS unit is operational using the formats for ACAS." Must be removed. It is no more true as bit71 is used for RTCA DO185B or future version. This need to be updated only in ED73C as DO181D is already correct on this subject.

- ⇒ SI Code

Extraction of register referenced by a BDS2 different from zero has been detected

in failure on different types of transponder when an SI code (Di=3) is used. The update of the ED73C is an opportunity to add a test to ensure that it is tested on all transponders.

⇒ swap of the BDS register contents

The swap of register contents has been recently detected in Europe. Different causes have been found including: a transponder type anomaly, an isolated transponder case and a system issue. The system issue is due to the collision of interrogations transmitted by different radars, which results in only one reply received by the two radars. This is correct response for one radar and an incorrect response for the second radar. There is nothing in the response allowing the second radar to detect that the content is not the expected register. The addition of a piece of information allowing the identification of which register is provided may help and need to be investigated.

Another point to be investigated was about the need to check the extraction of EHS parameters during and after a transmitter duty cycle protection.

⇒ Phase modulation interoperability issue. For the next meeting, a presentation on the Mode S transponder study, initiated by EASA, can be made by a 'consultant' involved in writing the report. He will therefore present the study results and conclusions. Proposed date: Tuesday 29 June 2010, after lunch.

⇒ The number of Mode S transmissions are more and more often approaching the minimum capability specified by ICAO and transponders MOPS and it was therefore proposed to investigate the possibility to revisit the minimum capability currently specified.

⇒ Post meeting note: Another issue related to the verification of frequency on aircraft in section 3.3.3 of DO-181D has been raised. It is mentioned +/- 3 MHz although all Mode S transponders shall be 1090 +/- 1 MHz. *(This issue is addressed in the latest revision of Change 1 to DO-181D)*

2.4. Review of initial list of identified modifications prepared by SC209.

Working paper: (WG49N01-03 DO181-Change-1.doc)

2.5. Other issues

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2.6. Identified Action :

Action items

Reference	Description	Status	Actionee
A1/1	Identify the different AMCs and ETSOs : What are the EASA plans regarding new airspace regulation mandates (ADS B, new ES requirements)	Open	EASA
A1/2	Examine if extended squitter could be easily suppressed from the MOPS in order to avoid duplication of specification in different MOPS	Open	All
A1/3	Check the impact of the ground switch on ACAS logic	Open	Yves Audineau
A1/4	For the next meeting, a presentation on the Mode S transponder study, initiated by EASA, can be made by a 'consultant' involved in writing the report. He will therefore present the study results and conclusions. Proposed date: Tuesday 29 June 2010, after lunch.	Open	EASA
A1/5	Update the distribution list. In particular add Trig avionics and Funkwerk Avionics	Open	EUROCAE

5. Date, Place and Time of Future Meetings

The schedule of meetings was noted as in the table below. As agreed the meeting will be WG49-SC209 Joint Meeting

SC-209/WG49	28-30 Jun 2010	Eurocae, Paris
SC-209/WG49	Oct 2010	Eurocontrol, Brussels

2.7. Other Business

- Pierre Ruault presented a WP in order to enhance the monitoring of the aircraft
Working paper: (WG49N01-04)avionics-monitoring.doc
- Another idea mentioned during the discussion is to have the transponders reporting their occupancy (an estimation of) in a register. This would facilitate the analysis of the overload issue, . However it has been objected that it would not be possible to monitor occupancy due to ATCBRS interrogation not triggering replies since it would imply a firmware modification (no SW). Moreover Mode S Total number of interrogations could not be known.