

RTCA Paper No. 026-17/SC135-711  
April 26, 2017

**SUMMARY OF THE SIXTY-EIGHTH MEETING**

**RTCA SPECIAL COMMITTEE 135**  
**ENVIRONMENTAL CONDITIONS AND TEST**  
**PROCEDURES FOR AIRBORNE EQUIPMENT**

The Sixty-Eighth meeting of RTCA/SC-135 was held October 25th through 27th at the FAA Rotorcraft Directorate in Fort Worth, TX.

The following were in attendance:

Bradley Green, RTCA SC-135 Chairman  
Gary Smith, SC-135 Secretary

Honeywell International, Inc.  
Honeywell International, Inc.

Doug Ballard\*  
Susan Beard  
Eric Borgstrom  
Nick Conquest  
Elysabeth Cummings  
Steve Davidson  
Bill Donoghue  
Mike Falzone\*  
Jim Hatlestad  
Terry He\*  
David Jennings  
Howard Jordan  
David Kerr  
Joe Marotta  
Evelyn Matheson  
Jerome Mavier  
Kyle McMullen\*

L3 Communications  
Rockwell-Collins  
Element  
NIAR  
Rosen  
UTC  
UTC  
Garmin  
Boeing  
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Textron Aviation  
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Honeywell  
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Airbus  
NIAR



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Terry Milks  
Rebecca Morrison  
Lee Nguyen  
Mario Rinaldi  
Harlan Sharpe  
Tim Steinbach\*  
Alan Thompson  
Randy Tsuchiyama  
Dave Walen  
Ken Webb  
Matt Wills

Rockwell-Collins  
RTCA  
FAA  
UTC  
NIAR  
Rockwell-Collins  
Element  
Teledyne  
FAA  
Rockwell-Collins  
NIAR

\* via Conference Bridge

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In Accordance with the Federal Advisory Committee Act, Mr. Lee Nguyen of the Federal Aviation Administration was the designated Federal Employee for this meeting.  
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**The agenda for the meeting was as follows:**

1. Chairmen’s Opening Remarks, Introductions.
2. Approval of Summary from the Sixty-Seventh Meeting – (RTCA Paper No. 185-16/SC135-708).
3. Review Working Group Summaries.
4. Flammability Update – Enclosure Fire Test
5. Review Terms of Reference
6. New / Unfinished Business
7. Establish date for next SC-135 Meetings.
8. Closing.

(Note that the following report is organized by Agenda Item, although some sections were conducted out of sequence in order to accommodate some members’ schedules.)

**Agenda Item 1**      **Chairman's opening remarks, Introductions, Recognize Federal Representative**

The plenary session of the Sixty-eighth meeting of RTCA/SC-135 was called to order at 9:03 AM on the 27th of October, 2016. Chairman Brad Green opened the meeting by welcoming those in attendance. Lee Nguyen was introduced as the FAA designate representative for SC-135. Mr. Green reviewed the agenda for the meeting, and invited attendees in the room and those attending by conference bridge to introduce themselves.

Lee Nguyen (FAA) read the Public Meeting Announcement declaring that this advisory meeting was open to the public.

**Agenda Item 2**      **Approval of the Summary from the Sixty-Seventh Meeting**

SC-135 Secretary Gary Smith read the previous meeting's minutes, RTCA Paper No. 185-16/SC135-708. It was noted that the Section 22 notes incorrectly identified MIL-STD-461A, which will be corrected. A motion was made and seconded to accept the minutes as amended, and the motion was approved unanimously.

**Agenda Item 3**      **Review Working Group Activities, Review New Change Proposals**

The Working Group discussions were centered on the Change Proposals submitted for Revision H.

**The Change Coordinators described Change Proposals which were reviewed and dispositioned in their respective group meetings. The level of detail in the Plenary session discussions precludes accurate reporting here, so only change proposals creating significant discussion are noted. The actual Change Proposals and any dispositions are found on the SC-135 Workspace and tracked in the Change Proposal Tracking Log, also found on the Workspace.**

**Sections 1, 2 and 3 – David Kerr, Change Coordinator.** Two Change Proposals submitted.

**Sections 7 and 8, Merrill Vaughan, Change Coordinator.** Gary Smith reported in Merrill Vaughan's absence, but due to severely limited connectivity he was unable to receive the actual report. The Section 7 & 8 WG is working on a summary list of test data recommended to be included in test reports.

**Sections 9, 10, 11 and 14 – Harlan Sharpe, Change Coordinator.** Five Change Proposals submitted for Section 9; two were withdrawn and three were deferred. A new CP was submitted for Section 12 to change the drying time to "15 hours minimum" from "16 hours."

**Section 16 – Joe Marotta, Change Coordinator.** One Change Proposal:  
UG-4 – deferred for additional work.

**Sections 15 and 18 – Ken Webb, Change Coordinator.** Evelyn Matheson was asked to create a Change Proposal similar to H-26 (rejected) for the User Guide. CP H-32 was revisited with a new revision (r2) which was deferred.

**Ground Reference Fluctuation (GRF) Working Group - Ken Webb.** Ken reported on the work of the Working Group. Their recommendation is to not pursue including GRF testing in DO-160H, as it is more of an installation issue, rather than test. The MIL-STD-461 task group also looked at GRF testing. The SC-135 Committee was polled about keeping the proposal (to add a GRF test section) alive. The Committee unanimously accepted the Working Group recommendation to keep the Working Group open to consider adding a GRF section to subsequent revisions to DO-160 or to pursue a White Paper. Ken’s report on the GRF committee work will be posted on the Workspace.

**Sections 19 and 20 – Jim Hatlestad, Change Coordinator.** Numerous Change Proposals were presented. After much discussion, 3 were accepted, 5 were deferred, and several others were reserved for future discussion due to lack of time. Jim said that Section 19 working group meetings would be scheduled.

**Section 21 – Matt Wills, Change Coordinator.**

- Nick Plaman of Rockwell Collins submitted a Change Proposals with several new figures. The work was well received and several minor changes will need to be addressed.
- Dave Walen (FAA) submitted a Change Proposal to report test actual frequency and amplitude of the highest emissions measured in each frequency decade.

Matt Wills announced he is stepping out of the Section 21 Change Coordinator role. He will be succeeded by Nick Conquest, also of NIAR. Brad Green led the Committee in thanking Matt for his years of service and many contributions to Section 21.

**Section 22 – Erik Borgstrom, Change Coordinator.** Erik reported that since the last SC-135 meeting, the Section 22 Working Group met in May and September. He stated that a major re-write of 22.5.2 is coming, with round-robin testing by NIAR, DLS and Rockwell Collins for validation. Erik also noted that there will be changes regarding calibration for cable injection tests. Erik’s report on the Section 22 work will be posted to the Workspace.

**Agenda Item 4**

**Flammability Update – Enclosure Fire Test**

Alan Thompson provided an update and status on the development of a new fire test method for testing aircraft electronic boxes whole, instead of broken down into individual components. Alan has been

working with the FAA Fire Test Working Group for the past few years with the goal of adding this new method to Revision H of RTCA DO-160 as an alternative option to the present cat C methods. The presentation focused on a comparison of testing performed on electronic enclosures at Element Minneapolis using a programmable line burner and at Airbus using a foam block soaked with flammable fluid. Based on the results, the decision was made to move forward with the programmable line burner as it was less invasive and more repeatable. Alan's presentation will be posted to the Workspace.

Alan also reported that the FAA has purchased a line burner to conduct tests at their Tech Center, and that a draft procedure was completed but round robin tests were still needed to confirm the procedure and guidance are appropriate. He concluded that they were on track to complete the draft procedure by Spring of 2018.

#### **Agenda Item 5**                      **Review Terms of Reference**

Brad discussed the existing schedule for releasing the next revisions of DO-160 and DO-357, and questioned whether the Committee would be able to maintain that schedule. He asked the Committee if we should leave the schedule as-is, push out the delivery of just DO-357, or push out the delivery of both DO-160 and DO-357. Before the Committee provided an answer, Rebecca Morrison (RTCA) stated that another committee had delayed their completion schedule by 2 years without objection from RTCA leadership. Brad recommended separating the dates for releasing both documents, although the matter of changing the schedule was left unanswered.

#### **Agenda Item 6**                      **New/Unfinished Business**

Brad Green addressed the subject of aligning the revision letters of DO-160 and the DO-357 User Guide for the next revision, which was raised at the last SC-135 meeting and previously. Brad reported that he had raised the question again with EUROCAE, and they disagree that there is a problem with the two documents at different revision levels. Without EUROCAE agreement, DO-160 and DO-357 will maintain revision letters independent of each other.

Brad gave a presentation on Integrated Modular Avionics (IMA) and reviewed the questions posed for what constitutes acceptable DO-160 testing for them. Considerations include the environment being tested, and testing at the module or cabinet level. Brad asked for a motion to charter a working group to create guidelines for testing IMA. A motion was offered, seconded and approved. The IMA presentation will be posted on the Workspace.

Gary Smith suggested that the Committee reach out to their respective organizations for any inputs for the DO-160 and DO-357 revisions, to prompt timely submittal. He also reminded all Change Coordinators of the need for updating graphics in their Sections.



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**Agenda Item 7**

**Establish Date for Next SC-135 Meeting**

The next SC-135 meeting is planned for April 25-27 at the RTCA headquarters in Washington, D.C.

**Agenda Item 8**

**Closing and Adjourn**

Brad Green asked for a motion to adjourn the meeting. A motion was offered, seconded, and unanimously approved. The meeting was adjourned at 1:02 PM on Thursday, October 27th, 2016.

Certified as a true and accurate summary of the meeting.

-S-  
Bradley Green  
Chairman

-S-  
Gary Smith  
Secretary