



THE GOLD STANDARD FOR AVIATION SINCE 1935

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RTCA Paper No. 163-18/SC135-719
April 26, 2018

SUMMARY OF THE SEVENTY-SECOND MEETING

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

The Seventy-second meeting of RTCA/SC-135 was held April 26th, 2018 at RTCA Headquarters in Washington, DC

The following were in attendance:

Bradley Green, SC-135 Chairman
Jacob VanDyke, SC-135 Secretary
Rebecca Morrison, Program Director

Honeywell International, Inc.
Honeywell International, Inc.
RTCA, Inc.

Doug Ballard
Susan Beard
Erik Borgstrom
Nick Conquest
Bill Donoghue
Mike Falzone
Marsirlene Gohn
Brad Green
Jim Hatlestad
Howard Jordan
David Kerr
Ivan Malizia
Evelyn Matheson
Jerome Mavier
Kyle McMullen

L-3 Communications
Rockwell Collins, Inc.
Element Materials Technology
NIAR
United Technologies Corporation
Garmin Ltd.
Teledyne Control
Honeywell International
The Boeing Company
Textron Aviation Beechcraft
Garmin Ltd.
Embraer
The Boeing Company
Airbus
NIAR



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Joe Marotta
Jerome Mavier
Kyle McMullen
Terry Milks
Lee Nguyen
Miguel Perez*
Marc Poncon
Mario Rinaldi

Harlan Sharpe
Tim Steinbach*
Eric Stewart
Aziz Tazi
Chuck Thompson*
Randy Tsuchiyama
Jacob VanDyke
Merrill Vaughan*
David Walen *

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FAA
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Airbus
United Technologies Corporation
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Rockwell Collins, Inc.
Rockwell Collins, Inc.
Transport Canada
Elite Test
Teledyne
Honeywell International
The Boeing Company
FAA

* via Conference Bridge

In Accordance with the Federal Advisory Committee Act, Mr. Lee Nguyen of the Federal Aviation Administration was the Designated Federal Official for this meeting.

The agenda for the meeting was as follows:

1. Chairmen’s Opening Remarks, Introductions.
2. Approval of Summary from the Seventy-First Meeting – (RTCA Paper No. 310-17/SC135-717)
3. Review Working Group Summaries.
4. Review Ground Based Task Group Summary



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5. Review schedule
6. New / Unfinished Business

7. Establish date for next SC-135 Meetings.
8. Closing.

(Note: The following report is organized by Agenda Item, although some sections were conducted out of sequence to accommodate some members' schedules.)

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

The plenary session of the Seventy-second meeting of RTCA/SC-135 was called to order at 9:01 AM on the 26th of April, 2018. Chairman Brad Green opened the meeting by welcoming those in attendance. Lee Nguyen was introduced as the FAA designated Federal Official for SC-135. Rebecca Morrison reviewed the RTCA Proprietary Information and membership policies, and made some general announcements. 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 Seventy-First Meeting**

SC-135 Secretary Jacob VanDyke read the minutes from the 71st meeting, RTCA Paper No. 310-17/SC135-717. An error was noted in Agenda Item 4 and was corrected. A motion was made and seconded to accept the minutes as corrected, and the motion was approved unanimously.

Agenda Item 4 **Review Working Group Summaries**

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.

A change proposal for replacing “should” with “shall” in paragraph 3.7 was approved as written. Several topics were discussed with regards to adding general guidance in section 3. An action was taken to submit a change proposal to clarify direct vs. indirect power definition. A change proposal to replace “tested” with “qualified”, globally in the EQF was rejected.

Sections 4, 5 and 6 – Jacob VanDyke, Change Coordinator.

Topics were discussed regarding the Short-Time Operating test along with potential category definition required for human worn equipment. One change proposal was deferred to the Users Guide regarding power up following the Ground Survival test. All figures and tables for sections 4 and 5 were updated and accepted through change proposals to reflect common formats.

Sections 7 and 8, Merrill Vaughan, Change Coordinator.

On change proposal was discuss for section 7, addressing guidance for category selection. Discussion around Limit Load and Ultimate Load testing resulted in agreement to create a change proposal to be discussed at the next meeting, potentially adding categories to section 7. The list of minimum requirements for test reports was discussed and updated.

Sections 9, 10, 11 and 14 – Harlan Sharpe, Change Coordinator.

A working group discussion was held to address challenges with accurately measuring pH levels of fallout collection. An action was taken to gather information from various labs to determine if additional action is needed.

Four change proposals were dispositioned. Text was added to the Salt Fog test to specify times are a minimum, and a reference error was correct to perform only one drying period following Cat T testing.

CP H135 was reviewed regarding adding a test category (Cat F) that involves a 4-hour salt fog exposure period, followed by a functional check, and then a continuation of testing that follows the current Cat T test procedure. SC-135 committee accepted as modified.

The Fluids list in Section 11 was discussed, and a change proposal was deferred pending a section re-write.

Section 13 – Brad Green on behalf of Alan Thompson, Change Coordinator.

Seven change proposals were presented, but not discussed. Proposals will be addressed at the next EUROCAE meeting.

Section 16 – Joe Marotta, Change Coordinator.

A change proposal to extend the definition of emergency electrical systems to include ground conditions was accepted as modified.

Section 17 – Nick Conquest on behalf of John Covell, Change Coordinator.

CP UG-13 was dispositioned. This change proposals intent is to make LISNs optional for Section 17 testing. This proposal was deferred with a task to verify that presence of LISNs does not affect Voltage Spike test method.

Section 18 – Nick Conquest on behalf of Ken Webb, Change Coordinator.

CP H-136 was dispositioned as “other”. Accepted in concept, change coordinator and author will work together to create the official drawing change of Figure 18-1.

CP H-138 was dispositioned as Deferred. The intent was to correct test levels for category R(WF) to follow test levels for category R(CF) and R(NF). Additional action was taken to determine intent of test levels for K(WF) and if those levels are correct as-is or should be updated (and/or add information to UG to explain test levels).

Sections 19 and 20 – Jim Hatlestad, Change Coordinator.

Five change proposals were dispositioned for section 19. Most notable was a change to address electric fields into display faces, and a request to add Users Guide content for this section.

Six change proposals were dispositioned for section 20. Accepted proposals resulted in three updates for reverberation chamber testing: removal of the quarter wave limitation for working volume, clarification of cable placement, and cable routing.

Section 21 – Nick Conquest, Change Coordinator.

Ten change proposals were dispositioned, with only one accepted proposal. The accepted change proposal corrects the intercept value in Figure 21-3, Category P. Although this was already addressed in the errata, the proposal was accepted.

Of the nine remaining proposals, one was deferred. Eight were rejected with either a recommendation to move the content to the User Guide, or a request for more information from the submitter.

A discussion was also held regarding FFT Time Domain Emissions Measurement, with an expected proposal to be discussed at the next SC-135 meeting.

Section 22 – Eric Stewart, Change Coordinator.

The SAE AE-2 task group reviewed RR 7.0 test data to include WF3, WF4, WF5A, Loop measurements, and reevaluating resistor value for WF2, WF3, and WF4. Data to be available for review at SAE meeting in May.

The task group reviewed the latest draft of Section 22. Change proposal to accept new draft document. User's Guide review and development expected to begin January 2019.

Section 23 – Steve Cook, Change Coordinator.

Digital camera standards are under review by EUROCAE.

Section 25 – Eric Borgstrom, Change Coordinator.

Discussed and accepted CP H-131 to removed inferred requirement for LISN(s) in the ESD setup.

Additional data was presented regarding the LISN impedance curve. This drove limited discussion due to time constraints, but will be discussed in detail at the next meeting.

Agenda Item 5 Review Ground Based Equipment Task Group Summary

Comment was raised to look to IEC standards for guidance. Request was raised to help to workshare with WG-14. Potential issue as WG-14 is not currently involved in any effort supporting UAS. Face to face and online meetings are scheduled through this year. Deadline established for July 10th 2019 to have all drafts complete.

Agenda Item 6 Review Schedule

Chairman Green addressed the schedule during the discussion of the ground based equipment document. Based on the Revised Terms of Reference (TOR), SC-135 has committed to presenting the first complete draft of DO160H and the Revision to DO-357 by Q4 of 2020, to support final release by December, 2021. A joint meeting with WG-14. Currently planned for Q2, 2021 in Europe to support DO-160H FRAC.



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Agenda Item 7

New/Unfinished Business

- **Alignment of Change Proposal Dispositions between EUROCAE WG-14 and RTCA SC135.** Extensive effort was applied to change proposal tracking. It was determined the best path forward would be for the SC-135 Program Director to manage the administrative process going forward. Once the change logs and workspace are up to date, the role of managing this process will transition.

Agenda Item 8

Establish Date for Next SC-135 Meeting

The next SC-135 meeting will be held at the Honeywell International Headquarters in Morris Plains, NJ. Dates of the meeting will be from Tuesday, October 23rd through Thursday, October 25th, 2018.

Agenda Item 9

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 2:42 PM on Thursday, April 26th, 2018.

-S-
Bradley Green
Chairman

-S-
Jacob VanDyke
Secretary

Certified as a true and accurate summary of the meeting.