

Summary of the One Hundred and Sixth Meeting

Special Committee 159 (SC-159)

Navigation Equipment Using the Global Navigation Satellite System (GNSS)

The one hundred and sixth meeting of SC-159 was held April 30, 2020, virtually, from 10:00 a.m. to noon, Eastern Daylight Time. The attendees were the following:

NAME	COMPANY
Christopher Hegarty (Co-Chairman)	The MITRE Corporation
George Ligler (Co-Chairman)	GTL Associates
Karan Hofmann (Program Director)	RTCA
Barbara Clark (GAR)	Federal Aviation Administration (FAA)

NAME	COMPANY
Ken Alexander	Federal Aviation Administration (FAA)
Doug Arbuckle	Federal Aviation Administration (FAA)
John Ashley	The MITRE Corporation
Laurent Azoulai	Airbus
John Barry	FAA
Kevin Bean	The MITRE Corporation
Mats Brenner	Honeywell
Joseph Dennis	Federal Aviation Administration
Matt Harris	The Boeing Company
Sai Kalyanaraman	Collins Aerospace
John Studenny	CMC Electronics
Hans Trautenberg	EASA
Joel Wichgers	Collins Aerospace

The agenda for the meeting follows:

1. Introductory Remarks: RTCA, GAR and Co-Chairs
2. Discussion of Terms of Reference Approval by PMC
3. Resolution of DO-229F Final Review and Comment (FRAC) Comments Received
4. Approval of DO-229F to Forward to Program Management Committee for publication consideration

5. Action Item Review
6. Assignment/Review of Future Work
7. Other Business
8. Date and Place of Next Meeting
9. Adjourn

 Barbara Clark, Federal Aviation Administration (FAA), was the Government Authorized Representative for this meeting.

Agenda Item 1. Introductory Remarks: RTCA, GAR and Co-Chairs

- SC-159 Co-Chairman Chris Hegarty welcomed everyone to the Plenary meeting. This special Plenary meeting had been convened for the primary purpose of considering Final Review and Comment (FRAC) results on the draft DO-229F, Minimum Operational Performance Standards for Global Positioning System/Satellite-Based Augmentation System Airborne Equipment, and approving, if possible, the resulting document for submission to the RTCA Program Management Committee (PMC) for final approval.
- Karan Hofmann, SC-159 Program Director at RTCA, noted that RTCA is NOT a federal advisory committee but that meetings are conducted in strict accordance with U.S. anti-trust laws. She discussed RTCA’s proprietary references policy and committee participation membership policy. Ms. Hofmann noted that this Plenary meeting is open to the public, that notice of the meeting was published online but not in the Federal Register as had been done previously, and that members of the public may present written or oral statements with the permission of the committee chairmen and program director. Karan also discussed meeting “tips” for virtual meetings using Webex.
- The summary for the 105th meeting of SC-159, RTCA Paper No. 117-20/SC159-1086, dated 29 April 2020, was presented to the meeting. Meeting attendees were asked to review the summary and provide any comments to RTCA.

Agenda Item 2. Discussion of Terms of Reference Approval by PMC

- SC-159 Terms of Reference Revision 16, as approved by the RTCA PMC on March 26, 2020, was presented to the meeting. Chris Hegarty briefly summarized the changes in Revision 16 as well as the discussion at the PMC that resulted in the approval of Revision 16.

**Agenda Item 3. Resolution of DO-229F Final Review and Comment (FRAC)
 Comments Received**

- Kevin Bean, MITRE, provided a presentation on DO-229F FRAC activities. The RTCA PMC, in the SC-159 Terms of Reference update of March 26, 2020, had approved the development and completion of a new product, “Update to DO-229E to introduce requirements tags for use in the new GNSS L1/L5 MOPS,” with a FRAC completion “date due” of April 30, 2020. Kevin provided an overview of the changes in the proposed draft DO-229F, indicating that DO-229F is an equivalent technical baseline to DO-229E and was produced solely to introduce performance requirement tags: no modification to any existing Technical Standard Orders (TSOs) would be required as a result of completing DO-229F. Appendices G and J were the only appendices that received tag numbers. Two notes (in Sections 2.1.1.6 and 2.1.2.3) had been updated to reflect additional guidance from recent operational experience.
- Kevin reported that FRAC had begun on March 30, 2020, and that a total of 155 comments had been received, from seven sources, at the end of the FRAC period on April 29, 2020. The meeting proceeded to address the dispositions of the 155 comments.
- Kevin indicated that the FRAC had resulted in 3 comments deemed to be “high,” 5 comments deemed to be “medium,” 34 comments classified as “low,” and 113 editorial comments.
- Discussion ensued on the three comments classified as “high.” The comments were on resiliency of navigation (Section 1.3), clarity in requirements tagging, and MOPS terminology (LPV/LNAV). After detailed conversation, all three of these comments were dispositioned as agreed by the Plenary.
- The meeting then discussed the 5 comments classified as “medium” and reached consensus on how to disposition each of these comments.
- It was agreed that, after discussion of and agreement with regard to the dispositioning of one particular comment classified as “low,” that for the remaining “low” and “editorial” comments, the MOPS update editors would propose dispositions to the commenting members after the meeting and close each comment.
- The meeting then discussed the potential of updating DO-229F to reflect new versions of IS-GPS-200. After the viewpoints of members of the Committee were heard, it was agreed that no further changes would be made in DO-229F with regard to this point, because of the specific purpose for which DO-229F was drafted.

**Agenda Item 4. Approval of DO-229F to Forward to Program Management
Committee for Publication Consideration**

- Co-Chairman Chris Hegarty proposed approval of DO-229F for submission to the PMC, presuming incorporation of the comment dispositions that had been discussed by the meeting as well as the completion of dispositions agreed with appropriate commenters for the remaining comments classified as “low” and “editorial.” **The meeting approved this motion without dissent.**
- The timeline for submission of DO-229F to the PMC was then discussed; the completed document needed to be available for PMC members by May 11, 2020. Co-Chairman

Hegarty thanked the contributors to DO-229F, the commenters in the FRAC, and the MOPS editors group for their efforts.

Agenda Item 5. Action Item Review

Agenda Item 6. Assignment/Review of Future Work

- As these items had been addressed during the March 2020 SC-159 Plenary and Working Group meetings, there was no further discussion.

Agenda Item 7. Other Business

- Hans Trautenberg reminded attendees that a virtual joint SC-159 Working Group 2/EUROCAE Working Group 62 meeting would take place in two weeks.
- Chris Hegarty provided the meeting with information regarding the consideration by RTCA Special Committee 228 of forming a navigation subgroup. If such a subgroup was put into the SC-228 Terms of Reference, the members of SC-159 would likely need to discuss potential interactions with that subgroup

Agenda Item 8. Date and Place of Next Meeting

- The next full SC-159 meeting (the 107th meeting) will take place the week of October 19th – 23rd, 2020. The subsequent meeting (108th) was scheduled for the week of March 22nd – 26th, 2021.

Chris Hegarty thanked all participants and adjourned the meeting.

CERTIFIED as a true and accurate summary of the meeting.

-S-
Christopher Hegarty
Co-chairman

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George Ligler
Co-chairman