

**Summary of the 18th Meeting
Special Committee 227
Standards of Navigation Performance**

The 18th Plenary Meeting of RTCA Special Committee 227 (SC-227) was held September 20 -22, 2016. This meeting was held at RTCA. Attendees, at the meeting and via webex, included:

- | | |
|--|----------------------------------|
| Dave Nakamura (Chairman SC-227) | Advanced PBN Solutions / SAIC |
| Barry Miller (Designated Federal Official) | Federal Aviation Administration |
| Sam Miller (WG3 Co-Chair) | The MITRE Corporation |
| Richard Jinkins (WG3 Co-Chair) | Rockwell Collins, Inc. |
| Al Secen | RTCA |
| Mike Cramer | The MITRE Corporation |
| Shiva Anand | The MITRE Corporation |
| Patrick Cazaux | Thales Avionics |
| Mesfin Ali | Fedex Express |
| Bob Gaul (on phone) | Garmin |
| Steve Horvath | Garmin |
| David Jordan (on phone) | Universal Avionics Systems Corp. |
| Geoffrey Chisholm | Federal Aviation Administration |
| Jeff Meyers (on phone) | Federal Aviation Administration |
| Brad Miller | Federal Aviation Administration |
| Michelle Yeh | Federal Aviation Administration |
| Ruth Hirt | Federal Aviation Administration |
| Anup Raje | Honeywell International, Inc. |
| Hasan Haq | The Boeing Company |
| Michael Gordon Smith | Esterline CMC Electronics |
| Jenipher Scott | U.S. Air Force |
| Peter Vayda | U.S. Air Force |

In accordance with the Federal Aviation Advisory Committee Act, Barry Miller, Federal Aviation Administration, was the Designated Federal Official for this meeting.

RTCA SC-227, Standards of Navigation

- The 18th Plenary meeting of SC-227 was convened at 9:00 a.m. EST by Chair Dave Nakamura (Advanced PBN Solutions / SAIC) and the meeting was opened officially by the FAA DFO Barry Miller.
- Each person in attendance was invited to introduce themselves.
- Dave reviewed the agenda (copied below). He pointed out that this week the committee would stay in plenary session in order to finalize change proposals for incorporation into the draft document, for the next meeting. In the discussion of meeting duration, he pointed out that the current 2 and ½ day work schedule would be insufficient to ensure completion of change proposals and completion of a document in time for the planned FRAC next year. The group acknowledged this and accepted expanding the work schedule with the future meeting starting on Monday and continuing through to Friday (4 and ½ days).

Summary Agenda:

Plenary, Tuesday

1. Welcome and Administrative Remarks
2. Introductions
3. Review of Minutes from Meeting 17
4. Agenda Overview
 - Schedule
 1. Three meetings (7 ½ days) left to wrap up and approve draft for FRAC
 2. Increase number of meeting days for plenary/draft sessions
 - New Business
 - SC227 Terms of Reference Updates
5. Review and Discussions of MOPS Issues and Change Proposals

Closing Plenary, Thursday, 9:00 – Noon

6. Progress Report/Summary
7. Other Business
8. Next Meeting
9. Adjourn

Intellectual Property Policy

Al Secen substituting for Rebecca reviewed the RTCA policy and process for development of standards and how any related or relevant intellectual property must be addressed.



Membership Policy

Al reviewed the new membership policy. He stated that companies participating in RTCA committees must be members of RTCA starting January 1, 2016. Consultants to the FAA are considered to be members if they have an FAA email address, and similarly for consultants for other companies.

Plenary Discussion

The plenary discussion of Working Group 3 items was as follows:

1. Based upon a telecon discussion some weeks ago that did not arrive at a consensus, Sam Miller asked the group for agreement on the purpose of the EMD and to develop requirements based upon that philosophy. The current text in Section 1.1 states “The requirements contained in this MOPS apply to an electronic map display where it is intended that the equipment will be an integral part of the RNP or RNAV system.” Since this committee was asked to update DO-257A to reflect the RNP MASPS and MOPS, the intent of the EMD is now directed to be part of an RNP or RNAV system.

Discussion focused on current systems compared to an RNAV RNP system and the hard requirements being proposed. Barry Miller was sensitive to adding “shalls” that could affect existing systems. Mike Cramer reminded us that this should be a forward looking document while still making allowances for current systems. A comment was made considering a Class system (RNP and conventional) and the possibility of addressing Installation requirements instead of classes. Garmin believes that the respective RNP functions can be displayed elsewhere in the flight deck as opposed to solely on the EMD. Brad Miller asked that we continue on the RNP course of thought and consider those requirements that are questionable on a case by case basis.

The committee will work further on Section 3.0 Installation and explore this option of addressing requirements in the flight deck as opposed to only on the EMD.

2. The following Change Proposals were discussed:
 - a. M16-02 CONTROLS was accepted as written.
 - b. M16-04 TOUCHSCREENS was accepted as written.
 - c. M16-05 COLOR – question raised on requirement of consistent color usage on two displays and Anup Raje will investigate, remainder accepted as written.
 - d. M16-16 LABELS was accepted as written.
 - e. M17-17 DISPLAY was accepted as written.
 - f. M17-19 MAP DEPICTION was accepted as written.
 - g. M17-21 LABELS was accepted as written.
 - h. M16-08 DEFINED PATH – requirement 2 was deleted. Comment that this may also be addressed in Section 3 Installation, and then was accepted as written.
 - i. M17-20 MAP ATTRIBUTES was accepted as written.
 - j. M16-15 DEPICTION OF OWNERSHIP was accepted as written.



THE GOLD STANDARD FOR AVIATION SINCE 1935

- k. M18-26 DISPLAY OF ADDITIONAL INFORMATION – graphical display of the digital FPA was amended to require it be extracted from the navigation database and that Temperature Compensation (if implemented) would not affect the value. Remainder was accepted as written.
- l. M18-27 Appendix H RECOMMENDED SYMBOLOGY was accepted as written (app deleted).
- m. M18-28 Appendix E COLOR was accepted as written.
- n. M18-29 Appendix F RASTER AERONAUTICAL CHARTS was accepted as written (app deleted).
- o. M18-30 Appendix G RASTER-PIXEL was accepted as written (app deleted).
- p. M18-31 Appendix I AERODROME CHARACTERISTICS was accepted as written (app deleted).
- q. M19-35 EQUIPMENT PERFORMANCE REQUIREMENTS AND TEST PROCEDURES – minor word change and then was accepted as written.
- r. M18-32 PURPOSE AND SCOPE – amended to address only 2 dimensional displays (as opposed to 3D) and then was accepted as written.
- s. M19-37 DATABASE – clarified responsibility for DQRs on the manufacturer, moved the notes to Section 2.2.4 and then was accepted as written.
- t. M16-11 DATABASE – notes from M19-37 moved here. Also clarified the requirement to provide method of identify version and operating period for EMDs with an internal database and then was accepted as written.
- u. M16-07 SYMBOLS was accepted as written.
- v. M17-09 DISPLAY OF ADDITIONAL INFORMATION ON THE EMD – two requirements were deleted and moved to Section 3 Installation and then was accepted as written.
- w. M18-24 FLIGHT PLAN – similar to M17-09, several of these requirements could go into Section 3. Further discussion tabled until the next telecon.
- x. M17-18 DISPLAT OPERATING CHARACTERISTICS – further work required. Brad Miller will look at clarifying test related to a “watchdog.” Patrick Cazaux and Sam Miller will work on clarifying text on North-Up orientation. Further discussion tabled until next telecon.
- y. M17-19 MAP DEPICTION – Brad Miller would like to investigate the Total System Accuracy equation a little more. Additional minor edits made and then was accepted as written pending Brad’s conclusion.
- z. M17-23 EQUIPMENT PERFORMANCE REQUIREMENTS (Table 2-1) – table requires additional review and will be the subject of an upcoming telecon.
- aa. M19-34 EQUIPMENT PERFORMANCE – ENVIRONMENTAL – Jeff Meyers will draft a note to clarify second paragraph. Further work may be required.
- bb. M19-36 INSTALLED EQUIPMENT PERFORMANCE – Sam explained that some minor edits were made but this section needs to be a priority for review and what additions for Section 2 are required.

Working Group Discussion

1. Section 2.7 (no CP assigned yet) – Sam will align the test items to the changes made in Section 2 and then a scrub is required to ensure the bench test requirements are still valid. Work in upcoming telecons.
2. Actions:
 - a. Design Assurance (Section 2.1.8) – There is work ongoing in the FAA on the topic of Design Assurance. Brad Miller will follow that work and then bring to this committee for incorporation into this MOPS.
 - b. Latency has been an ongoing topic of discussion. Brad Miller will look at options and bring recommendations to the committee for consideration.

Dave pointed out that the minutes from the last meeting had been posted and asked if there were any comments. There were no comments or changes. The committee accepted the meeting report.

Other Business

There was no new business

Next meeting

The meeting plan for the next year is:

December 5, 2016

March 20, 2017

June 12, 2017

September 18, 2017?

Telecon schedule – The Working Group 3 telecon schedule will be managed by Sam Miller.

The meeting was adjourned

CERTIFIED as a true and accurate summary of the meeting.

Anup Raje, Acting Secretary

Dave Nakamura, Chairman