



RTCA Paper No: 014-24/SC227-079
EUROCAE Paper No: 028-24 WG85-55

Minutes of 37th RTCA Special Committee 227 Meeting
Joint with EUROCAE WG-85 4D Navigation Performance, 34th Meeting
13-17 November, 2023

Hybrid: Virtual and in-person

Monday: EUROCONTROL Rue de la Fusée 96, Brussels 1130 (Haren), Belgium

Tuesday-Friday: EASA Av. de Cortenbergh 100, 1040 Bruxelles, Belgium

AGENDA

Monday, November 13, 2023, 9 AM (Local Time)

1. Welcome and Administrative Remarks, review of RTCA/EUROCAE Policies
2. Introductions
3. Review and Approve August 2023 Meeting Minutes
4. Review the comments received in Open Consultation/Final Review and Comment and disposition for DO-283C/ED-323 and DO-236E/DO-75F

Tuesday, November 14, 2023, 9 AM to 4 PM (Local Time)

1. Continue Comment Resolution activities.
2. 1pm-4pm Local Time – WG-3 of SC-227 Presentations (Change Proposals)

Wednesday, November 15, 2023, 9 AM to 4 PM (Local Time)

1. Continue Comment Resolution activities.



Thursday, November 16, 2023, 9 AM to 4 PM (Local Time)

1. Continue Comment Resolution activities.

Friday, November 17, 2023, 9 AM to 12 PM (Local Time)

1. Review Plenary Dates and locations for 2024.
 2. Review Action Items
 3. WG-2
 - a. Meeting Report
 - b. Review comment resolutions
 - c. Consider a motion to close OC/FRAC or and send DO-283C/ED-323 to the RTCA PMC and EUROCAE Council for Publication
 4. WG-1
 - a. Meeting Report
 - b. Review comment resolutions
 5. Consider a motion to close OC/FRAC or and send DO-236E/DO-75F to the RTCA PMC and EUROCAE Council for Publication
- a. New Business
 - b. Adjourn

ATTENDEES

Chairpersons:

- EUROCAE WG-85 Okuary Osechas, Zurich University of Applied Sciences (ZHAW)
- RTCA SC-227 Ellen McGaughy, Collins Aerospace

EUROCAE WG-85 TPM: Mark Watson

RTCA Program Director: Rebecca Morrison

RTCA GAR: Barry Miller, FAA

Acting Secretary: None

Others attending (Name, Company)

Alexander Engel, EUROCAE

Andrew Riedel, Boeing/Jeppesen

Atsushi Kezuka, ENRI, Japan

Barry Miller, FAA

Benoit Legault, CMC Electronics

Bill Tuccio, Garmin

Bob Gaul, Garmin



Brandon Weaver, DLR
Brian Gilbert, Boeing
Collin Ogden, Collins Aerospace
Craig Boxrucker, ALPA
Daniel Nelson, UK NATS
David De Smedt, EuroControl
Doug Phifer, FAA Flight Standards
Ellen McGaughy, Collins Aerospace
Erik Ringnes, Honeywell
Fernando Díaz, ENAIRE
Ferraro Davide, Leonardo Company
Gang Feng, Boeing
GARBI Dimitri, EASA
Gary Petty, FAA Flight Procedures -
Gerhard Berz, EuroControl
Guilherme Verhalen, Embraer
Guy Dekker, Thales Group
Jan Langen, Lufthansa Systems
Jeff Kerr, FAA Flight Standards
Jeff Meyers, FAA Aircraft Cert
Joel Dickinson, FAA Flight Standards
John Barry, FAA Aircraft Cert
Kendal Hershberger, Garmin
Kurt Stiefel, FAA AFS-410
Mark Watson, EUROCAE
Michael Straw, Lufthansa Systems - Lido
Mitch Narins mitchell.narins@gwu.edu
Monica Vafiades, US Air Force USAF
Nat Beeten, US Air Force
Okuary Osechas, ZHAW
Phillip Pankratz, Textron Aviation
Rebecca Morrison, RTCA



Ricardo De Sousa, UK NATS
Silviu Ceparu, Bombardier
Stephen Moody, Boeing/Jeppesen
Steve Horvath, Garmin
Sylvain Raynaud, Airbus
Tim Geels Collins, Collins Aerospace
Tim Padden, US Air Force
Toyohachi Yokota Jransa
Trent Bigler, FAA
Trent Prange, FAA
Valeriu Vitanl, EuroControl
Vijay Pisini, Collins Aerospace
Wes Gooze, American Airlines

MINUTES

Monday, November 13, 2023

- Preamble: At 9am the meeting opened with introductions, and overviews of policies and planned work for the week. Participation was in person and virtual via WebEx.
- Minutes: The SC-227 Plenary #36 Minutes from the August 2023 meeting in Washington DC were reviewed and accepted.
- Proposal for SC-227 TOR change that the DDC MOPS be a new DO-XXX with a new title update was accepted. However, see the minute for Friday that the title was subsequently modified without participation from WG#3, so approval was rescinded, and this will be revisited at the next Plenary after WG#3's review.
- FIM and TOAC report: The status remains the same, that has been progress, but it does not impact SC-227 documents.
- WG#2 draft DO-283C (public): In Plenary, SC-227 started resolving items submitted in the Formal Review and Comment (FRAC) that were deemed High and Medium. A total



of 465 comments to the MOPS were received. A couple non-concurs were downgraded before the meeting, resulting in the following categorizations at the start of Plenary:

- High: 18 comments
- Medium: 70 comments
- Low: 112 comments
- Editorial: 264 comments

Tuesday, November 14, 2023

- Beginning at 9am, SC-227 Plenary continued dispositioning FRAC of draft DO-283C. RNP MOPS FRAC resolutions with significant impact included:
 - MOPS FRAC IDs 67997, 67998, 67999, 68000, 68001 and 68020 (Design Assurance): EASA CS-ACNS Issue 4 intends that RNP APCH requires DAL B software for any approach minimum, including the LNAV minimum. EASA submitted a proposal to address the associated FRAC items, [AerOpus EASA - DA and Safety proposals for DO-283C - ED-323](#), which was reviewed and accepted. The discussion included
 - The NavDB does not support hazardous for LNAV approaches. (On Thursday it was discussed that it's not obvious how the NavDB can meet the corresponding DPAL 1.)
 - Even if the software is DAL B, the installation may not meet 10-7 for the hardware as required by EASA.
 - The FAA intends to require 10-7 for Advanced RNP (within the scope of MOPS); however, the FAA intends to address this at the system level by limiting implementation to where ATC can monitor the operation.
 - Scalability for Advanced RNP: Although datalink supports up-linking the leg RNP, datalink is not currently a MOPS requirement. Hence for this MOPS version, the scalability definition does not include automatically setting the RNP value via datalink.



- TOGA-to-LNAV inconsistency: EASA requires it for RNP AR, but the PBN manual only requires it for RNP AR with RF leg. There was discussion about whether 2.2.2.3.1 Transition to Missed Approach should be changed to required (instead of optional) for Class B in Table 2-13. However, since this was not related to a FRAC comment, it cannot be considered for change as part of this FRAC.
- WG#3 submitted three Change Proposals for approval:
 - WG3 C10099 Applicable DO-257A content was accepted.
 - WG3 C10035 Database, section 2.2.5 was accepted.
 - WG3 C10102 DO-257 Title Name Change Proposal was accepted but required TOR change, for which RTCA PMC approval is also needed:
 - Title Name was accepted as submitted on Monday. (However, see in the minutes for Friday that the approval was rescinded to further change the title text, and this CP will be re-submitted for approval at the next Plenary.)
 - To request RTCA PMC for a new DO- number was accepted.

Wednesday, November 15, 2023

- Beginning at 9am, SC-227 Plenary continued dispositioning FRAC of draft DO-283C. RNP MOPS FRAC IDs with significant impacted included
- MOPS FRAC ID 68021 (RNAV versus RNP holding) accepted as follows
 - In Table 2-13 to change Class B to require RNP Holding
 - In the RNP Holding area exit, change from “shall” fly-by to “should” fly-by the exit fix because of corner case scenarios (submitted by Thales) where it’s not feasible aerodynamically.

Thursday, November 16, 2023



- At 9am, SC-227 Plenary continued dispositioning RAC of draft DO-283C from 9am.
- Other significant discussions included: At this time, Europe currently has no plans to take advantage of Time of Arrival Control (TOAC). The plan is ADS-C, but the intent is to share, not control, the trajectory.

Friday, November 17, 2023

- At 9am Plenary resumed. It was not feasible to finish dispositioning the MOPS FRAC, and the MASP FRAC was not started. It was therefore agreed to have WG#1-2 telecon working groups to continue making progress on consensus. The proposed dispositions will not be approved during the working group telecons but rather held for approval at the next Plenary. The WG#1-2 telecons will be November 30, December 7, December 14 and December 21.
- Relevant to WG#3
 - EUROCAE is going to reconsider whether to be joint with RTCA for DDC.
 - Regarding WG3 C10102 DO-257 Title Name Change Proposal, Monday's approval was rescinded to further change the title name which will be re-submitted to the next Plenary for approval to give WG#3 the opportunity to review. The intent of Friday's title change was to more clearly convey the intent that it is possible to approve EMD and/or EACD together and/or alone, that is, that the EMD and EACD do not have to be approved together. The title agreed on Friday was, "Minimum Operational Performance Standards for Electronic Aeronautical Chart Displays and the Depiction of Navigational Information on Electronic Map Displays."
- New Business
 - EUROCAE asked about the following list of documents whether 1) Do they needed updated 2) Do they still work 3) Are they no longer needed/useful. The



expected outcome is that EUROCAE will keep the documents in their inventory but that no updates are needed.

- WG-7 (Ref: 1/WG7C/1-74) MPS for airborne Doppler radar ground speed and/or drift angle measuring equipment – Yes, it is needed for helicopter.
 - WG-7 (Ref:1/WG7C/2-74) MPS for airborne automatic dead reckoning computer equipment utilising aircraft heading and Doppler obtained velocity vector data - Yes, it is needed for helicopter.
 - WG-13 (Ref: ED-58) MOPS for area navigation equipment using multi-sensor inputs (airborne equipment), Where ED-58 is RTCA DO-187 and MPS/WG7C/1-74 & 2-74 is RTCA DO-158 . Note that this was NOT joint with RTCA, so DO-208() remains independent. Yes, there are still equipment produced and operating under this TSO.
- Request Gary **Berz** shared (and will email for posting) ICAO A41-WP/97 Assembly 41st Session Agenda 31: Aviation Safety and Air Navigation Standardization. Improving Communication Navigation and Surveillance (CNS) Resilience through GNSS Interference mitigation to discuss whether this committee interested to take on this topic. The committee declined to request an update to the TOR for this activity, but the suggested items would have been
 - To add some additional high level principals or guidelines standardization for equipment checks on GNSS (e.g time going backwards, position jumps,...). Although the receiver already has a step detector function, but it is being overcome.
 - To add an Interference indicator.,There are too many alerts (surveillance, ground prox, FMS DR... etc..) that it's too difficult to recognize it's interference.
- Next meetings: Next plenary dates are planned as follows:
 - Jan 29-Feb 2nd, 2024 Washington DC at RTCA (confirmed)



- May 13-17th, 2024,
- August 19-23, 2024 and
- Nov. 18-22 are other dates with location TBD for all of these

Webex/Meeting Adjourned