

**Minutes of 30<sup>th</sup> Meeting**  
**RTCA Special Committee 227**  
**24<sup>th</sup> Meeting**  
**EUROCAE WG-85**  
**14-18 February 2022**  
**Virtual**

Agenda

**Monday, February 14, 2022, 10 AM to 3 PM**

1. Welcome and Administrative Remarks, review of RTCA/EUROCAE Policies
2. Introductions
3. Review and Approve November 2021 Meeting Minutes
4. Review status of WG-1
5. Review status of WG-2
6. Review status of WG-3
7. Review of WG-1 Proposed Disposition of OC/FAC MASPS Comments

**Tuesday, February 15, 2022, 10 AM to 3 PM**

1. Review of WG-1 Proposed Disposition of OC/FAC MASPS Comments

**Wednesday, February 16, 2022, 10 AM to 3 PM**

1. Disposition of OC/FAC MASPS Comments, or continue Review of WG-1 Proposed Disposition of OC/FAC MASPS Comments

**Thursday, February 17, 2022, 10 AM to 3 PM**

1. Disposition of OC/FAC MASPS Comments, or continue Review of WG-1 Proposed Disposition of OC/FAC MASPS Comments

**Friday, February 18, 2022, 10 AM to 3 PM**

1. If required, continue Disposition of OC/FAC MASPS Comments
2. Consider a motion to send the MASPS to the PMC and Council for publication
3. Review tentative plenary dates in 2022
4. Review Action Items
5. New Business
6. Adjourn

Chairpersons: Mike Cramer, MITRE  
 Ellen McGaughy, Collins Aerospace  
 GAR: Barry Miller, FAA  
 Secretary: Dave Nakamura, MITRE  
 Program Director: Rebecca Morrison  
 EUROCAE TPM: Alex Engel  
 WG-85: Okuary Osechas, DLR

Attendees

Name	Company/Organization
Aaron Jacobson	Boeing
Alex Engel	EUROCAE
Andrew McKenzie	Nav Canada
Andrew Riedel	Boeing
Barry Miller	FAA
Bennie Hutto	NATCA
Bill de Groh	APA
Bill Fernandez	FAA
Bob Gaul	Garmin
Brad Miller	FAA
Brandon Lint	FAA
Brandon Weaver	DLR
Dale Courtney	FAA
Daniel Nelson	UK NATS
Darrell Pennington	ALPA
David DeSmedt	EUROCONTROL
Dimitri Garbi	EASA
Ellen McGaughy	Collins Aerospace
Erik Ringnes	Honeywell
Fernando Diaz	ENAIRE
Frank Wigold	Lufthansa Systems
Gang Feng	Boeing
Gerhard Berz	EUROCONTROL
Guy Deker	Thales
Jeff Kerr	FAA
Jeff Meyers	FAA
Joel Dickinson	FAA
John Barry	FAA
John Studenny	CMC Electronics
Kendal Hershberger	Garmin
Kirk Kolek	Collins Aerospace
Kurt Stiefel	FAA
Lesley Weitz	MITRE
Mike Cramer	MITRE
Michelle Yeh	FAA
Mike Webb	FAA
Monica Vafiades	USAF
Dave Nakamura	MITRE
Nathan Beeten	USAF
Nick Tallman	FAA
Okuary Osechas	DLR
Rebecca Morrison	RTCA

Ruth Hirt  
Shivathsan Narayanan  
Stephen Moody  
Steve Horvath  
Sylvain Raynaud  
Tim Geels  
Tim Padden  
Tom Yochum  
Valeriu Vitan  
Wes Googe  
Yee Xiong

FAA  
DLR  
Boeing  
Garmin  
Airbus  
Collins Aerospace  
USAF  
Boeing  
EUROCONTROL  
American Airlines  
UASC

## **Monday, February 14th**

Mike reviewed the agenda.

### **Welcome and Administrative Remarks**

Mike Cramer opened the plenary Webex session at 10:00 AM, Monday, February 14th. Mike welcomed the participants and thanked those submitting comments. Alex and Rebecca reviewed both the RTCA and EUROCAE Anti-Trust, Proprietary Information, and Committee Membership Participation policies. This was a virtual meeting only, the typical individual introductions were not made. Members were reminded to note workspace meeting attendance on Aeropus.

### **Review and Approve minutes**

Dave walked through the minutes for the November meeting. They were accepted.

### **Review Status of WG-1**

Dave stated that the WG-1 comment resolution discussions ended up covering just the 6 non-concurs. The six were grouped into four areas. One was for lateral turn performance. The second was on RNP holding area dimensions. The third was on VOR criteria contained in Appendix C. The fourth was on the IM related changes to TOAC requirements. All the non-concurs were resolved and consensus was reached on what will be the proposed resolution at this plenary.

### **Review Status of WG-2**

The group is waiting for WG-1 to complete its work and will start soon, possibly early March.

### **Review Status of WG-3**

WG-3 has reviewed brainstorming issues/topics. The list will continue to evolve. The WG will use a software tool, NVIVO qualitative data analysis tool, to help organize and develop papers. This is licensed for analysis and research that will be used separately from Aeropus. An NVIVO extract report can be stored for the record in Aeropus.

## **Review of WG-1 Proposed Disposition of OC/FAC MASPS Comments**

### **Review of the Non-Concur resolutions:**

#### **Non-Concurs 54610 and 54616**

These non-concurs took issue with lateral turn performance, specifically the proposed 23 degree bank limit above FL195. Based on the discussions on operational applications, data and need, there was plenary acceptance of bank limit up to 23 degrees for mid and low altitude transitions, 16 degrees for high altitude transitions except for SIDS, STARS and Approaches where the bank limit is 23 degrees. Airbus acceptance has been communicated to both EUROCAE and RTCA. The comment is closed.

#### **Non-Concur 54615**

This non-concur took issue with the 23 degree bank angle for RNP holding. Based on the discussion and resolution of 54610 and 54616, this comment was withdrawn. Airbus acceptance of this resolution has been communicated to both RTCA and EUROCAE. The comment is closed.

#### **Non-Concur 54592**

The non-concur with regard to VOR characteristics and performance was resolved to the commenters satisfaction by the plenary proposal to remove the VOR and VOR/DME material from the appendix. This was the easiest option since VOR is not among the accepted navigation sources

for RNP performance and operations. It was part of the original guidance that reflected the committees view that the technical performance of VOR and VOR/DME would be sufficient for RNP. However, States and service providers have determined that there were many reasons why VOR services and performance were not needed or desired for RNP, such that inclusion in the MASPS only adds confusion about VOR as an RNP navigation source. The commenter acceptance of the resolution has been communicated with EUROCAE and RTCA. There was plenary agreement, noting DFS acceptance. The comment is closed.

#### **Non-Concurs 54625 and 54618**

The TOAC non-concurs were #'s 54624, 54618. 54618 took issue with the new requirement for 10% speed adjustment range. 54624 took issue with the speed adjustment effect on initial speed profile and the potential reduction for ETA min max, impacting TOAC's ability to perform its function. The plenary discussion concluded that while there has been extensive analysis, data and simulation with IM capable aircraft, there is insufficient information and data regarding the integrated operations with TOAC capable aircraft (where the RNP system is revised as required in the FRAC MASPS. Lacking evidence e.g. simulation, data, trials, etc to support and validate the proposed changes, the group agreed it was best to remove the proposed requirements for now and restore the Change 1 requirements.

The speed adjustment range change was also subject to strong reservations on system/aircraft implementation and subsequent acceptability because of CFR restrictions and possible enforcement actions on operators. At the heart of some of these issues and concerns was the apparent lack of an overarching concept as well as any associated changes in operating rules, guidance and procedures.

There was plenary agreement to restore the Change 1 TOAC requirements as well as some other changes based upon other FRAC comments. Airbus found this to be acceptable. Airbus communicated the acceptability of the resolution to both EUROCAE and RTCA. The comment is closed. It was noted that work will continue in the Nextgen Advisory Committee task group where an integrated IM and TOAC concept of operations will be developed. The results could be available for SC227 consideration in 2023.

Of the 232 high, medium and low comments whose resolutions began in the November meeting, there are 75 left to resolve this week. These include a small number of editorials that were recategorized as low, so as to have plenary discussion on what appears to be more than an editorial change.

All comment resolutions, and agreed to changes differing from those contained in comments are in the FRAC comment worksheet. One significant comment has to do with the compliance analysis example in Appendix B. It is dated material especially because it includes VOR which has been excluded for use in RNP operations. The question is whether to update the example for a more consistent system architecture and sensors, which is a significant amount of work. This could be something to consider as part of the MOPS update. For now, it is probably best to remove it and just rely on the guidance provided in Section 4 of the MASPS.

#### **Tuesday, February 15th**

##### **Disposition Draft MASPS Comments**

The review continued on Tuesday, with 24 comments remaining to discuss, plus others linked to dispositioned comments and requiring concurrence of author (54566-69, 54575, 54579, 54619), and some left for follow up (53400, 54542). The discussions could end today or tomorrow, depending on the closing plenary session.

During the comment review, the above comments were all resolved, and dispositioned in the worksheet.

The discussion left off on comment 54598, where the Appendix B example is out of date and also not in line with the latest navigation source choices for RNP now described in the MASPS. Should this be updated or removed. Mike stated that a possible solution is to remove the Appendix and use the detailed guidance in Section 4. Dave pointed out that Section 4 contains guidance for performance compliance, containment compliance and evaluation, failure analysis, etc. The example is only for part of the material and is specifically linked to the failure analysis. The example does not fully address the minimum elements for containment integrity and continuity analysis. This aspect is not made clear in the current example. At this stage, figuring out what to do to make everything line up is a major, time consuming effort. The proposal was to remove the Appendix, remove the appendix references in Section 4, and retain the specific guidance contained in Section 4 seems appropriate. The next question is should we consider what the example appendix could be as part of the MOPS update. Having looked at the MOPS which is quite different, this could increase the amount of effort to accomplish this, as the MOPS does not appear to require the performance, containment, and failure analyses in the MASPS. It is left to WG2 to decide. The group agreed with removing the appendix and adding an explanation in Appendix B, for the MASPS. The proposed explanation will be presented to the plenary tomorrow.

Discussions on the FRAC comments continued after this. All comments were resolved with the exception of the two on DME criteria in Appendix C. The expected proposal for the DME standard deviation equation will be put together by Gary Berz and Barry Miller for discussion on Wednesday.

### **Wednesday, February 16th**

A question was raised regarding the comment resolution worksheet at the end of yesterdays session, where a number of resolutions were missing. It was noted that due to a mix up the resolutions were recorded on the comment worksheet instead of the resolution worksheet. The resolutions for 4 items were placed on the resolution worksheet.

The proposal for explanatory text for removal of the Appendix B example was reviewed. A few minor edits were made. The plenary agreed with the updated flimsy. The material will also be used in the EUROCAE version of the MASPS. However, due to their document style, the explanatory material will be included in the forward of the ED-75E.

Gary Berz and Barry Miller presented a proposal for updating the DME criteria in Appendix C that provides a better example of how multiple DME position estimation could be implemented in an RNP system. It is not a minimum requirement. Additionally, information has been retained with regard to position estimation when only 2 DMEs are used. It was noted that what the group has done will hopefully encourage evolution in RNP system implementations.

Both flimsies as accepted in plenary session, along with the comment worksheet will be posted to Aeropus.

The committee agreed that that the MASPS with updates from the FRAC resolution worksheet should be sent to the PMC and Council for publication.

Next meeting will be May 23<sup>rd</sup> – 26<sup>th</sup>.

The planned meeting sessions for Thursday and Friday were cancelled.

### **Webex Meeting Adjourned**