Minutes of 27th Meeting
RTCA Special Committee 227
19th Meeting
EUROCAE WG-85
18-20 May 2021
Virtual

Agenda
Tuesday
1. Welcome and Administrative Remarks
2. Introduction
3. Review and approve minutes from November 2020 meeting
4. Agenda Overview
    a. Opening Plenary – Day 1
    b. Working Group 1 – Day 2 and 3
    c. Closing Plenary – Day 3
5. Review WG-1 Approved Change Proposals
    a. [M1-08] Containment

    b. [M1-11] Lateral Turn Performance*

    c. [M1-12a] Direct-To Function/User Defined Course to a Fix

    d. [M1-20] Reaction to Manual Flight Plan Updates by Flight Crew

    e. [M1-03] Multi-Sensor and Inertial Navigation

    f. [M1-14] TOAC/FIM

6. Review Status of WG-1
7. Review Status of WG-3
8. New Change Proposal Assignments

Wednesday
1. WG-1 Change Proposal Development

Thursday
1. WG-1 continued
2. Closing Plenary
    a. Other Business
        i. Approve SC-227 TOR Working Changes for WG-3
    b. Review Action Items
3. Adjourn

Chairman:	Mike Cramer, MITRE
GAR:	Barry Miller, FAA
Secretary:	Dave Nakamura, MITRE
Program Director:	Rebecca Morrison
EUROCAE Liaison:	Alex Engel
WG85:	Okuary Osechas

Attendees

Name	Company/Organization
Aaron Jacobson	Boeing
Adam See	Delta
Alex Capodicasa	CMC
Alex Engel	EUROCAE
Andrew McKenzie	Nav Canada
Andrew Riedel	Boeing
Barry Miller	FAA
Bill DeGroh	APA
Bob Gaul	Garmin
Brad Miller	FAA
Brandon Weaver	DLR
Charlie Elliot	Eurocontrol
Christine Clausnitzer	FAA
Colin Ogden	Collins
Daniel Nelson	UK NATS
Darrell Pennington	ALPA
David Jordan	UASC
David DeSmedt	Eurocontrol
Dinesh Kushwaha	Collins
Doug Phifer	FAA
Erik Ringnes	Honeywell
Fernando Diaz	ENAIRE
Florian Buchmann	Austro Control
Frank Wigold	Lufthansa Systems
Gang Feng	Boeing
Gary McMullin	Southwest Airlines
Gary Petty	FAA
Gary Berz	Eurocontrol
Grant Clow	PSA Airlines
Greg Comstock	StratMach
Guy Deker	Thales
Steve Horvath	Garmin
Jason Hewes	Garmin
Jeff Kerr	FAA
Jeff Meyers	FAA
Jennifer Ledford	FAA
Joel Dickinson	FAA
John Barry	FAA
Kendal Hershberger	Garmin
Kirk Kolek	Collins Aerospace
Kurt Stiefel	FAA
Lesley Weitz	MITRE
Michelle Yeh	FAA
Mike Cramer	MITRE

Mike Hornby	NATS
Mike Jackson	Honeywell
Monica Vafiades	USAF
Dave Nakamura	MITRE
Nico De Gelder	NLR
Nick Tallman	FAA
Okuary Osechas	German Aerospace Center
Patrick Cazaux	Thales
Rebecca Morrison	RTCA
Rick Niles	MITRE
Ron Baker	United Airlines
Ricardo De Sousa	NATS
Russ Ramaker	GE
Shivathsan Narayanan	DLR
Silviu Ceparu	Bombardier
Stephen Moody	Boeing
Tim Geels	Collins
Tim Padden	USAF
Tom Yochum	Boeing
Valeriu Vitan	EUROCONTROL
Yee Xiong	UASC
Wes Googe	American Airlines

Tuesday, May 18

Mike reviewed the agenda.

Welcome and Administrative Remarks
Mike Cramer opened the plenary session at 9:00 AM, Tuesday, May 18th. Mike welcomed the participants.
Rebecca and Alex reviewed both the RTCA and EUROCAE Anti-Trust, Proprietary, Privacy, and
Committee Membership Participation policies. As usual, due to the fact this was a virtual meeting, the
typical individual introductions were not made. It was noted the workspace can be used by members to
indicate meeting attendance. Rebecca showed how this can be done. Mike reviewed the agenda for the next
three days. Since there are a six change proposals on the agenda so far, depending on progress, the plenary
may be extended to take up part of tomorrow morning, with a shortened WG1 session.

Review and Approve minutes
Dave walked through the minutes for the last meeting. They were approved.

WG85 Status
Ricardo stood in for Okuary. He noted that WG85 has restarted activity. Their plan is also be joint with 227
on 283. FIM is an area they are working to understand better.   Active participants are Eurocontrol,
ENAIRE, NLR, Thales and Austrocontrol. The WG leadership is from NATS, DLR and Skyguide.   The
actual WG membership is larger and they seeking to expand active participation for the long term. The last
meeting was March. Activated UTM participants is anticipated. Their issues of Interest and in-work are:
GPS and Nav Resilience, Systemised Airspace (incl VRNP), Baro vs Geometric Altitude. They recognize
that this work may not be concluded in the current MASPS schedule and could come back to the committee
for a future MASPS and MOPS update. Regarding WG-85 having a joint document in DO-283, this is
subject to the EUROCAE TAC approval of the TORs. The WG is looking more into FIM and coordination
with WG-51. The next WG 85 meeting is June or July. The Full Airspace Systemization CONOPS was
reviewed based on WG85 discussions. There is need for more airspace usage efficiency. Vertical operations
and uncertainty are factors in this. The objective is 4D predictability. There are also issues with operational
credit for geometric path operations. They were asked about an ETSO for the MOPS. The decision on an
ETSO is anticipated with EASA approval at the TAC.

WG1 Status
Dave reviewed the schedule and actions for WG1. For the schedule, what was shown is assuming that the
last seven of the change proposals are completed and accepted this week. The draft MASPS is expected to
be available for internal SC227 review by June 7th. Comments are due back by August 3rd, using the RTCA
comment worksheet. Comments will be given proposed dispositions that will be discussed at the August 17th
– 19th plenary. Following this, a draft MASPS for FRAC will be given to RTCA by August 31st.
Comments will be due November 1st. Comments will be given proposed dispositions that will be discussed
at the November 16th – 18th plenary. A face to face meeting is planned. The final document would be
available for the next PMC meeting in Q1 of 2022, and complete WG1 activity.

WG 3 Status
Andrew reviewed the group structure, objectives (data driven charting), updating for DO-257, scope of DO-
257 modified for electronic charts, timeline with biweekly meetings, with a MOPS and FRAC by June 2023.

Change Proposal Review
The following WG-1 Approved Change Proposals were reviewed.

[M1-08] Containment
This paper proposes clarification of the terms containment integrity and containment continuity with regard to their relationship of terminology used in other standards and guidance material. **Plenary accepted the change proposal for the MASPS update.**

[M1-11] Lateral Turn Performance*
This paper proposes changes to the turn transition area to reduce the size of the area, to aid airspace management. Additionally, changes were made to reduce the incidence of early wide turns that result is a flight safety issue due to the exposure and risk of loss of separation between aircraft. While this change is a forward looking standard, concerns were raised by Thales that some aircraft/systems will be required to change at some point. Should there be something noted in the MASPS about older RNP systems?

It was also pointed out that there is need to coordinate with SC-159 even though their GNSS MOPS is not open for update. A coordination paper from SC-227 is needed.
Plenary accepted the change proposal for the MASPS update, but need a new note to note not all existing aircraft performance will meet requirements. Will develop and include for internal review. The Chair has action to draft a coordination paper for SC-159.

[M1-12a] Direct-To Function/User Defined Course to a Fix
This paper notes the functional issues with the manual performance of direct-to and intercepts with different systems. It proposes changes that provide added guidance where the direct-to and course to fix capabilities are functionally integrated. Additionally, course to a fix is identified as a function. This change is intended to reduce the time/steps needed to use the functions. It was pointed out that the term course could be confusing since procedures and paths are defined by tracks. One comment was that they are somewhat synonymous when used as they are. Another issue is the name of the function since this is really about the function and performance to intercept a defined track to a fix. We will leave to the document review to see if there are more comments about this. **Plenary accepted the change proposal for inclusion in the MASPS update.**

[M1-20] Reaction to Manual Flight Plan Updates by Flight Crew
This paper proposes changes that ensure the RNP system does not delete or remove a flight plan fixes attributes e.g. fly-over, altitude, etc when the flight plan and fix are modified by a flight plan change. **Plenary accepted the change proposal for inclusion in the MASPS update.**

[M1-03] Multi-Sensor and Inertial Navigation
This paper provides additional guidance for multi-sensor configurations and use of inertial navigation in the navigation solution. This builds on the work from SC159 with regard to the variety of inertial navigation systems and the extent to which they may be used. Sensor requirements, assumptions and Appendix C were changed and expanded to provide the new guidance material for the broad range of inertial navigation equipment. More helpful, detailed information is contained in DO-384. The committee was encouraged to look at it. **Plenary accepted the change proposal for inclusion in the MASPS update.**

Wednesday, May 19th, Working Group 1
Plenary Continued
[M1-14] TOAC/FIM Wed AM
This paper proposes changes to achieve operational compatibility with FIM equipped aircraft that are based upon the application concept and standards developed by SC-186. SC-227 has received copies of information and concept descriptions as background to the change proposal. This has been discussed and is posted in the workspace. The material provides a basis for changes to TOAC, leading to operational compatibility between FIM equipped aircraft and aircraft an RNP System with TOAC capability. Specifically, the treatment of procedure AT/Below constraints as AT constraints, response to speed restrictions, a speed adjustment tolerance of 10% vs 10 kts, assumptions to service providers, etc are among the changes included. Concerns were raised regarding ATC and the behavior of non-TOAC aircraft vs

TOAC/FIM aircraft on procedures. Particpants from SC-186 including operators who participate in SC-227 support the intended FIM applications and aircraft performance requirements.

Another concern was with flying AT constraints as a response to AT/BELOW and flyability of procedures where below speed is allowed and necessary. Should the requirement to treat A/B as AT be removed. The group agreed that the requirement should be removed. We need to keep in mind the application where the operation and procedure are with FIM are intended. Does speed adjustment apply for climb. Exclude climb? We will see what comments come from the internal review.
Plenary accepted the change proposal for inclusion in the MASPS update.

[M1-20] Reaction to Manual Flight Plan Updates by Flight Crew
This paper proposes changes that ensure the RNP system does not delete or remove a flight plan fixes attributes e.g. fly-over, altitude, etc when the flight plan and fix are modified by a flight plan change. This is the result of operational experiences discussed at the PARC Nav Working Group. It was suggested that we need to make a system requirement that is linked to the operational consideration. Additionally, the current statement is too general and may create more problems across all procedures. Instead there is a need to add a requirement and stay specific on the fly-over problem on a fix at the end of a procedure and closing a discontinuity. **Mike took the action to draft a new statement for plenary tomorrow**.

[M1-19] On-board Navigation Database
It was pointed out that this paper was discussed and essentially completed at the last working group session. The group agreed that this could be discussed at plenary and avoid the step of resuming WG1 and agreeing to present at plenary. This paper proposes additional guidance with regard to the option of having multi-cycle navigation databases. It was noted that many systems are already doing what is being proposed. However, there are in-service issues with how some systems behave in managing change-over.
Plenary accepted the change proposal for inclusion in the MASPS update.

WG 1 Change Proposal Development

Thursday, May 20th
Plenary Continued

[M1-20] Reaction to Manual Flight Plan Updates by Flight Crew
The update to clarify the specific operational context was reviewed. The clarification covered the expected effect for fixes on departures and arrivals. Equipment requirements were added, as well as an informational example.
Plenary accepted the change proposal for inclusion in the MASPS update.

MASPS Update and Review
The schedule as presented yesterday was reviewed again. It was noted that there was a minor adjustment in the date but there is still ample time for the FRAC review period. The MASPS will be updated to incorporate this accepted change proposals. Everyone is requested to use the RTCA comment worksheet and provide comments by the August 3rd due date. The accepted change proposals will be uploaded to the accepted change proposals folder.

Post Meeting Note: Input has been received from WG-107 with regard to changes for Appendix C, DME. Working Group review will take place in parallel during the internal review period. The goal is to reach agreement on Appendix C changes, prior to the internal review, and propose acceptance at the same time as the internal comment resolution discussion in August.

New Business

There was no new business

Not everyone has logged attendance on the workspace and was reminded to do so.

Webex Meeting Adjourned