



EUROCAE Paper No EUR 272-120/ WG79-77  
RTCA Paper No. 273-20/SC213-127

**Minutes of Meeting**  
**EUROCAE WG-79 #37 meeting/ RTCA SC-213 Joint Plenary #44**  
**Enhanced Vision Systems (EVS) and Synthetic Vision Systems (SVS)**

<b>Date</b>	<i>October 21-22, 2020</i>
<b>Place</b>	<i>Virtual</i>
<b>Venue</b>	<i>Virtual</i>
<b>Host</b>	<i>RTCA</i>
<b>Contact Persons</b> <b>EUROCAE</b> <b>RTCA</b>	<i>Sergiu Marzac</i> <a href="mailto:sergiu.marzac@eurocae.net">sergiu.marzac@eurocae.net</a> <i>Phone: +33 1 49 46 19 73</i> <i>and</i> <i>Rebecca Morrison</i> <a href="mailto:rmorrison@rtca.org">rmorrison@rtca.org</a> <i>+1 202-330-0654</i>

**Attendance:** Please see attached PDF document for complete attendance list.

**Points of Contact:** Sergiu Marzac, [sergiu.marzac@eurocae.net](mailto:sergiu.marzac@eurocae.net)  
Adrian Cioranu, [adrian.cioranu@eurocae.net](mailto:adrian.cioranu@eurocae.net)

**Tim Etherington**  
RTCA SC-213 Co-Chair  
Email: [timothy.j.etherington@nasa.gov](mailto:timothy.j.etherington@nasa.gov)  
Phone: 319-295-5233  
Mobile: 319-431-7154

**Patrick Krohn**  
RTCA SC-213 Co-Chair  
Email: [pkrohn@uasc.com](mailto:pkrohn@uasc.com)  
Phone: 425-602-1375  
Mobile: 425-626-4074

**Thea Feyereisen**  
RTCA SC-213 Scribe  
Email: [thea.feyereisen@honeywell.com](mailto:thea.feyereisen@honeywell.com)

**Carlo Tiana**  
EUROCAE WG-79 Chair  
Email: [carlo.tiana@rockwellcollins.com](mailto:carlo.tiana@rockwellcollins.com)

**Trish Ververs**  
EUROCAE WG79 Scribe  
Email: [trish.ververs@honeywell.com](mailto:trish.ververs@honeywell.com)

## Agenda

### Tuesday, October 21

- 0900 Check-in
- 0905 Welcome, Introductions
- 0910 Review and approve meeting minutes
- 0915 Industry Updates
- 1015 Break (10 min)
- 1025 WG2 Discussion dates
- 1200 Lunch
- 1300 WG2 Discussions
- 1400 Adjourn

### Wednesday, October 22

- 0900 WG1 Discussions
- 1015 Break (10 min)
- 1025 Industry Updates
- 1045 WG1 Discussions
- 1200 Lunch
- 1300 WG4 Discussions
- 1350 Actions, next steps, future meetings, TOR update
- 1400 Adjourn

## Welcome and Introduction

Participants on the call introduced themselves. There were approximately 35 participants on the call.

Rebecca Morrison, RTCA, reviewed the RTCA anti-trust, proprietary and membership policies along with the EUROCAE IPR and participation policy. She also reviewed the Errata, Change and Revision policy. Sergiu Marzac, EUROCAE, reviewed the EUROCAE policies.

Previous meeting minutes from the virtual plenary meetings in April 2020 and July 2020 were reviewed and approved.

## Industry Updates

Glenn Connor, Discover Technologies, presented an update on the EASA Rule Making Task RMT.0379 for HUDS and EFVS certification under the All Weather Operations (AWO). The initial proposal contained language for increased landing distance factor with HUDs and EFVS. A separate group with sponsorship from manufacturers including Airbus, Bombardier, Dassault, Collins, Gulfstream, and Thales was formed under GAMA to address the concern. Definitions of HUD (Head-up Display) HUDLS (Head-up Display Guidance Landing System) with the latter system providing guidance cues were reviewed. Additional refined definitions of landing distance, and flare cue, flare prompt and flare guidance were suggested as well as the performance criteria for evaluating the impact of the systems on the landing distance. NPA was published in June 2018. GAMA's response is scheduled for Q1 2021. The final EASA rule is scheduled to be published Q2 2022.

## WG2

Randy Bailey, NASA LaRC, reviewed the proposed changes to the new DO-XXX to create one document to include all versions of the EVS and EFVS operations, including EVS for SA, EFVS to 100ft, EFVS landing in 1000ft RVR, 600ft RVR, and Lower Than 600ft RVR. Additional definitions have been added for command guidance and situation information. Appendix C has been updated to provide consistency in the format of the SSR and FHA for each of the operations. The three options for EFVS include:

1. EFVS to 100ft TDZE (91.176b)
2. EFVS to touchdown in 1000 RVR\* (91.176a) (\*or 600ft if the runway is equipped with additional lighting)
3. EFVS to touchdown in less than 1000 RVR (91.176a) with aided rollout for taxi.

## WG1/3

Thea Feyereisen, Honeywell, reviewed the Synthetic and Combined Vision MASPS draft document. WG1/3 will coordinate with WG2 to maintain consistency with the structure of the DO-XXX documents from this committee. Operational Concept section for SVGS and CVS with EFVS was reviewed. Discussions included the value of the CVS providing context to the EFVS scene and the integration with SV provides the visual momentum to draw attention to the critical elements of the display that are important for the operation. The need to also include Safety aspects in the Operations section was discussed. The working group is starting to add standards for Vision Systems for non-PFD displays, e.g., MFD or EFB. Secondary Display Vision System requirements were discussed along with applicability of current requirements for PFDs.

## FAA Updates

Trent Prange, FAA, reported on the status of the AC 20-185A (SVGS AC) and AC 20-167B (EFVS AC). The EFVS AC is still under legal review and is not expected for another year. Legal released the SVS AC in July however the release is dependent on a decision whether the release is covered by the Department of Transportation policy. The visual advantage work is not currently covered in the AC but the FAA plans to incorporate the information in future updates or in other ways such as an Issue Paper.

Scott McLellan, FAA, suggested the use of the operational concept exemption process as a tool to evaluate the technology prior to the rule being complete to support the operation given the lengthy rule-making process. The technology must be shown to be in the public interest and provide an equivalent level of safety. This approach would likely require an operator to apply for the exemption and work with the FAA and is easier than tackling the rule making upfront.

## WG4

Cliff Johnson, FAA Technical Center, reviewed the vision system research being conducted at the Tech Center to focus on visual advantage provided by SVS/EFVS/CVS and other technologies. He reviewed the guided discussions with helicopter operators to define potential operational credit that may be sought and the helicopter safety technology survey conducted by International Helicopter Safety Foundation (IHSF).

Tim Rolfe, HeliOffshore, led community members in a discussion that provided operational experience context and current safety issues. The two leading accident types in the offshore environment are CFIT and Loss-Of-Control. They haven't considered the use of Vision Systems (CVS, SVS or EVS) in the offshore environment as of yet. He expressed concerns around the integrity of the synthetic system given the dynamic nature and remote operation of the oil and gas operations. He would support enhanced or combined systems due to the challenge and exposure to degraded visual environments. He expressed concern that they don't often have multiple alternates, must meet approach minima. Any camera fixed to the fuselage may be a limiting factor. They support head mounted technologies for their operations. Tim welcomed the opportunity to define the operational requirements, which is novel for the helicopter community instead of just taking the requirements from fixed wing operations.

JJ Gerber, Cougar Helicopters, leads HeliOffshore operational effectiveness working group. He is located on the east coast of Canada and has experience with the harsh degraded visual environments where operations are regularly impacted. HeliOffshore technology areas have included HTAWS, flight path management and eye tracking.

Sam Ratterree, PHI, flies H145 with synthetic vision. Currently SVS is not frequently used offshore because of factors like obstacles, winds and moving platform locations offshore. The main limiting factor for operations has been the radar for determining minimums. Radar resolution must be within one mile to consider a change to minimums. They would be interested in bringing minimums down to ½ mile. In his experience on the H145, the synthetic alone will not work by itself without imagery enhancement. It was mentioned that depending upon properties, some SVS may support situation awareness, energy management, Loss-Of-Control and CFIT even in the offshore environment.

Jeff Goyer, Hess, mentioned his primary area of interest was enhancing the safety for the offshore community rather than operational credit. He has experienced frustration with regulators in gaining operational approval with his company's EFVS equipped G650 although it is certified for operational credit on the aircraft. His Vision Systems focus is to get a better view of the environment rather than operational credit. He believes operational credit is more important in the On Shore environment.

## Terms of Reference

The committee discussed the need to update the TOR to reflect current progress in the work product. They will be updated as follows.

- 1) MASPS for CVS for Helicopter Operations (Carlo Tiana, WG4 Chair)  
FRAC: Sept 2022      Publication: Q4 2022
- 2) MASPS for SVS/SVGS/CVS (Thea Feyereisen, WG1/3 Chair)  
FRAC: May 2021      Publication: Q3 2021
- 3) MASPS for EVS/CVS/EFVS (Randy Bailey, WG2 Chair)  
FRAC: May 2021      Publication: Q3 2021

## Actions Items

1. Sergiu Marzac to present new dates to TAC for all three work products.
2. Patrick Krohn and Tim Etherington to present new dates to PMC for all three work products.
3. Rebecca Morrison to send out a survey for date preferences for a 2-day virtual WG in February 2021 and a 2-day Plenary for May 2021

## Next Meeting

The next plenary is planned for May 2021. There is uncertainty if the meeting will be virtual or in-person due to COVID.

Working group virtual meetings will begin again every other week starting October 29.