



WORKING PAPER

Data Communications Infrastructure Working Group (DCIWG)

**Project Team – Terrestrial (PT-T)
Future VHF Sub-Group Meeting 7
19 Feb 2024**

Agenda Item 1 of FVSG: FVSG/7 Meeting Report



Future VHF Sub-Group (FVSG) 7 Meeting Report

(Submitted by John Chong, Rapporteur)

SUMMARY

This is the meeting report for the 7th meeting of the Future VHF Sub-Group (FVSG) held in Montreal from 19 to 20 Feb 2024.

| Agenda Item | Title | Discussion Points | FVSG/7 Meeting Summary of Discussions |
|-------------|-------------------------------|---|---|
| 1 | FVSG Working Programme | | |
| 1.1 | Work Programme | Work Programme 2024 to be approved by FVSG | The meeting discussed WP01. Appendix A shows the FVSG Work Programme agreed by the 7 th FVSG meeting. |
| 1.2 | Meeting Arrangements | Suggested 3 times yearly: 1. 2 times to hold back-to-back with FSMP WG meetings 2. 3 rd one to hold back-to-back with DCIWG meetings | The meeting decided on the following, to facilitate preparation for submission of Annex 10 Vol 3 PfAs to DCIWG in Jun 2024: 1. Virtual meetings to be held on 14 March and 26 March; 2. Physical meeting to be held from 9 to 12 April in Bangkok or Singapore. |
| 1.3 | Job-Card of FVSG | To update job-card following approval of space-to-earth VHF spectrum by WRC-23 | The meeting drafted proposed amendments to the FVSG job card. This version will be further developed in the April 2024 FVSG meeting, before onward submission to PT-T and DCIWG in June 2024. |

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| | | |  <p>FVSG Job Card Text R2.docx</p> |
| 1.4 | GANP Change Request to include space-based VHF | Raza to update status of GANP change request. | The meeting was updated that space-based VHF was submitted to include into the GANP at GANP/SG. The formal approval will be at the next ICAO Assembly in 2026. |
| 2 | Review of VHF SARPs and Guidance Materials | | |
| 2.1 | Annex 10 Volume 3 | To complete Annex 10 Volume 3 SARPs PfAs by DCIWG meeting in 2024. | <p>The meeting discussed WP02, further refined and agreed on proposed amendments to Annex 10 Volume 3 SARPs.</p>  <p>FVSG WP Annex 10 Vol 3 SAPRS Update</p> <p>Specifically, the following action items are recorded:</p> <p><i>[AI1] Raza to check within ICAO Secretariat on how to differentiate the L-Band AMS(R)S services (provided by Inmarsat and Iridium) and the space-based VHF AMS(R)S, with specific reference to Annex 10 Volume 3 Part 1 Chapter 4 title.</i></p> <p><i>[AI2] John and Matthew to present proposed changes to Annex 10 Volume 3 Part 1 Chapter 4, to the PT-Sat meeting in March 2024. Raza to confirm a 1-hour virtual slot for discussion.</i></p> |
| 2.2 | Doc 9925 (Manual on the Aeronautical Mobile Satellite (Route) Service) | To start review. | The meeting agreed that the approach to develop PfAs to Doc 9925 will be discussed after the June 2024 DCIWG meeting. |
| 2.3 | Doc 9776 (Manual On VHF Digital Link (VDL) Mode 2) | To start review. | The meeting agreed that the approach to develop PfAs to Doc 9776 will be discussed after the June 2024 DCIWG meeting, including forming an editing group between FVSG and WG-M. |
| 2.4 | SARPs Validation Plans and Reports | Industry/ANSPs to present trial progresses and results in support of SARPs validation. | <p>The meeting was briefed on the ANC approval process for SARPs PfAs, including the need to develop (i) validation report and (ii) implementation task list for submission together with the SARPs PfAs.</p> <p>The meeting agreed the following task allocation to speed up the work to develop validation report:</p> |

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| | | | <p><i>[AI3] Final Validation Report merging and editing (<u>John, Andrew</u>)</i></p> <ol style="list-style-type: none"> 1. <i>Introduction (<u>Henry, Seyed</u>)</i> <ol style="list-style-type: none"> a. <i>Background</i> b. <i>WRC-23 studies to prove interoperability and Technical feasibility</i> <ol style="list-style-type: none"> i. <i>Link budgets</i> ii. <i>Doppler shifts</i> iii. <i>Scintillation effects</i> iv. <i>Antenna patterns</i> 2. <i>Technical Concept of the System Operations (<u>Manuel, Matthew</u>)</i> <ol style="list-style-type: none"> a. <i>No change in avionics and ground VHF equipment</i> b. <i>Voice</i> c. <i>Datalink</i> 3. <i>Specific Validation Plans and Tests</i> <ol style="list-style-type: none"> a. <i>Startical (<u>Jose</u>)</i> b. <i>Skykraft (<u>Craig</u>)</i> 4. <i>Compliance to Annex 10 Vol 3 SARPS (<u>Jose, Manuel, Craig, Matthew</u>)</i> <ol style="list-style-type: none"> a. <i>Matrix matching</i> 5. <i>Implementation Task list (<u>John, Manuel, Matthew</u>)</i> |
| 2.5 | ETSI Standard ETSI EN 300 676RTCA / Eurocae Standards | To discuss when is a good point to start review, if required. | <p>The meeting noted the benefits of engaging Eurocae/RTCA to consider evaluating the need to develop standards for space-based VHF. To follow up,</p> <p><i>[AI4] Jose to initiate contact with Eurocae, and start discussions on the process to develop Eurocae/RTCA standards for space-based VHF.</i></p> |
| 3 | Space-based VHF Technology Developments | | |
| 3.1 | Startical Developments | To share development progress | The meeting noted WP03 on Startical development plan presented by Jose. |
| 3.2 | Skykraft Developments | To share development progress | The meeting noted IP03 on Skykraft plans to implement space-based VHF. |
| 3.3 | Others | Placeholder to accommodate other industry involvement in satellite VHF | NIL. |

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| 4 | Space-based VHF Avionics/Airframers) | Operational Matters | – Coordination with OPDLWG (ATC, Pilots, |
| 4.1 | Avionics | To discuss | The meeting agreed on the importance of engaging OPDLWG early in the SARPs development process. On this note: <i>[AI5] Jose/Manuel to follow up with OPDLWG Chair Shelley, to discuss the approach to start engagement with OPDLWG on space-based VHF.</i> |
| 4.2 | Airlines Engineering/Ops | To discuss | |
| 4.3 | Flight Crew Training | To discuss | |
| 4.4 | Aircraft Operator Operational Approval | To discuss | |
| 5 | Liaison between DCIWG and FSMP – SARPs, Guidance Materials, Coordination with ITU, Radio Regulators and ICAO Regional Offices | | |
| 5.1 | Annex 10 Volume 5 | FVSG to provide inputs as and when necessary. | The meeting noted IP02 presented by Manuel, specifically that FSMP Sat-VHF Correspondence Group (CG) was set up, and this CG and FVSG could have direct working-level correspondences without going through their respective parent Panels. The meeting also noted that the FVSG job card item on Annex 10 Volume 5 will be taken over by FSMP, and submission of the Annex 10 Volume 5 PfAs will be through FSMP endorsement in 2025. |
| 5.2 | Planning Criteria – Doc 9718 | FVSG to provide inputs as and when necessary. | The meeting noted that Doc 9718 PfAs will be discussed at FSMP Sat-VHF CG. |
| 5.3 | Coordination: ANSPs, State Regulators, Radio Regulators | To discuss | The meeting agreed to remove this sub-Agenda item, given that ITU and ICAO correspondences are facilitated through FSMP. |
| 5.4 | Coordination: ICAO Regional Offices | To discuss | The meeting noted that coordination with ICAO Regional Offices will commence after a matured version of the Annex 10 Volume 5 PfAs are developed. |
| 5.5 | Coordination: ICAO Panels, e.g. SASP, ATMOPS, FLTOPSP | To discuss | The meeting agreed that coordination to start after PfAs endorsed by DCIWG in June 2024. |
| 5.6 | Coordination : RTCA/EUROCAE, AEEC | To discuss | See para. 2.5 above. |
| 6 | Other VHF Technologies | | |
| 6.1 | Advanced VDL | Not started | The meeting agreed to remove Agenda Item 6 from the Work Programme. |
| 6.2 | VHF on high altitude platforms | | |

Appendix A – FVSG Work Programme Agreed at FVSG/7 Meeting in Feb 2024

| Agenda Item | Title |
|--------------------|--|
| 1 | FVSG Working Programme |
| 1.1 | Work Programme |
| 1.2 | Meeting Arrangements |
| 1.3 | Job-Card of FVSG |
| 1.4 | GANP Change Request to include space-based VHF |
| 2 | Review of VHF SARPs and Guidance Materials |
| 2.1 | Annex 10 Volume 3 |
| 2.2 | Doc 9925 (Manual on the Aeronautical Mobile Satellite (Route) Service) |
| 2.3 | Doc 9776 (Manual On VHF Digital Link (VDL) Mode 2) |
| 2.4 | SARPs Validation Plans and Reports |
| 2.5 | ETSI Standard ETSI EN 300 676 RTCA / Eurocae Standards |
| 3 | Space-based VHF Technology Developments |
| 3.1 | Startical Developments |
| 3.2 | Skykraft Developments |
| 3.3 | Others |
| 4 | Space-based VHF Operational Matters – Coordination with OPDLWG (ATC, Pilots, Avionics/Airframers) |
| 4.1 | Avionics |
| 4.2 | Airlines Engineering/Ops |
| 4.3 | Flight Crew Training |
| 4.4 | Aircraft Operator Operational Approval |
| 5 | Liaison between DCIWG and FSMP, and Coordination with other Stakeholders |
| 5.1 | Annex 10 Volume 5 |
| 5.2 | Planning Criteria – Doc 9718 |
| 5.3 | Coordination: ICAO Regional Offices |
| 5.4 | Coordination: ICAO Panels, e.g. SASP, ATMOPS, FLTOPSP |
| 5.5 | Coordination : RTCA/EUROCAE, AEEC |