



Agenda Item 4: Report on GESEA activities and deliverables and Subgroups

PROGRESS MADE BY SG2 PANS-OPS

(Presented by the Coordinator of GESEA)

SUMMARY

This Working Paper presents the main progress achieved by the GESEA Subgroup 2 (SG2 PANS-OPS) since the SAM/IG/33 Meeting, as well as the outcomes of the Fifth SG2 PANS-OPS Meeting, held from 1 to 3 July 2026.

It also provides an update on the status of actions related to quality management in instrument flight procedure design, the updating of PANS-OPS procedures, the mitigation of GNSS interference through the Minimum Operational Network (MON) concept, and other regional initiatives aimed at supporting the States.

References:

- Report of the SAM/IG/33 Meeting
- Report of the GESEA/9 Meeting
- Report of the Fifth GESEA/SG2 PANS-OPS Meeting

1. Background

1.1 As a result of the conclusions and actions adopted by the Thirty-Third Meeting of the SAM Implementation Group (SAM/IG/33), the GESEA Subgroup 2 (SG2 PANS-OPS) was tasked with developing regional studies, tools, and guidance material aimed at strengthening quality management, sustainability, and the harmonization of instrument flight procedure (IFP) design in the SAM Region, in accordance with ICAO provisions and guidance.

1.2 During the Ninth GESEA Plenary Meeting (GESEA/9), the progress achieved by SG2 in the development of these activities was presented. The meeting also provided further guidance to strengthen the ongoing work, with particular emphasis on the development of a PANS-OPS Quality Assurance monitoring dashboard, taking as a reference the tool presented by Colombia, as well as promoting new studies related to quality management, the periodic updating of flight procedures, and the mitigation of GNSS interference through the Minimum Operational Network (MON) concept.

1.3 Subsequently, during the Fifth SG2 PANS-OPS Meeting (GESEA/SG2/5), held from 1 to 3 July 2026, the progress of the assigned actions was reviewed, the deliverables developed by the Subgroup were evaluated, and new activities were agreed upon for their consolidation and presentation at SAM/IG/34.

2. Analysis

2.1 Regional Guidance on Quality Management in Instrument Flight Procedure Design

2.1.1 One of the main deliverables currently being developed by SG2 is the Regional Guidance on Quality Management in Instrument Flight Procedure Design, prepared by the SG2 Quality Working Group and based on the guidance contained in ICAO Doc 9906.

2.2.2 The objective of the Regional Guidance is to assist States of the SAM Region on establishing, implementing, maintaining, and continually improving quality management processes applicable to instrument flight procedure (IFP) design. In doing so, it aims to enhance operational safety, promote regional harmonization, and ensure effective management of the instrument flight procedure life cycle.

2.2.3 The main topics addressed include the organization and responsibilities of IFPDS, personnel competency and training, the management of aeronautical, terrain, and obstacle data, the use of design tools and software, design, verification, and validation processes, document management and traceability, change management, monitoring and continual improvement, as well as the rationalization of instrument flight procedures.

2.2.4 In addition, the Regional Guidance will include an appendix containing best practices for the management and design of instrument flight procedures. This appendix will compile good practices, lessons learned, and solutions implemented by the States of the SAM Region with the objective of supporting the harmonization of PANS-OPS processes and serving as reference material for IFPDS.

2.2.5 During the Fifth SG2 PANS-OPS Meeting, the initial version of the Regional Guidance was presented and reviewed by the participants, who provided several technical comments and recommendations to strengthen its content. Based on these contributions, the Quality Working Group incorporated the corresponding revisions and subsequently circulated the updated version to the States of the SAM Region for a more detailed review and the submission of additional comments.

2.2.6 The comments received from the States will be evaluated by the Quality Working Group and incorporated into the final version of the document. Completion of the Regional Guidance is scheduled for November 2026, following the conclusion of the review and consensus-building process with the States of the SAM Region.

2.2 Second Regional Survey on PANS-OPS Resources

2.2.1 In accordance with GESEA/9 Action, SG2 PANS-OPS developed a Second Regional Survey addressed to the Instrument Flight Procedure Design Service Providers (IFPDSPs) of the States in the SAM Region.

2.2.2 The objective of the survey is to assess the States' capability to keep their instrument flight procedures up to date, in accordance with the ICAO recommendation Doc 9906 (Quality Assurance Manual for Instrument Flight Procedure Design) to conduct a periodic review at intervals not exceeding five years. It also seeks to identify the needs, constraints, and challenges faced by the service providers responsible for instrument flight procedure design, taking into account aspects related to human resources, training, design tools, quality assurance, availability of aeronautical data, procedure validation, and resource planning.

2.2.3 The information collected will provide a regional assessment of the current status of the IFPDSPs in the SAM Region, identify opportunities for technical cooperation, and support the definition of future actions aimed at strengthening PANS-OPS capabilities within the States.

2.2.4 The main survey results will be presented during SAM/IG/34 in order to provide a regional overview of the States' capability to keep their instrument flight procedures up to date, as well as the principal needs identified to strengthen instrument flight procedure design services in the SAM Region.

2.3 **PANS-OPS Quality Assurance Monitoring Dashboard**

2.3.1 Colombia presented a dashboard (Appendix A) developed to monitor all instrument flight procedures published by the State. The tool enables continuous monitoring and management of these procedures, identifying those approaching their periodic review due date or exceeding the ICAO-recommended review interval, thereby supporting the planning of updates and the allocation of resources required for their maintenance.

2.3.2 Building on this initiative, Brazil presented a conceptual dashboard model incorporating indicators related to the Minimum Operational Network (MON). The proposed model includes the monitoring of conventional procedures and ground-based navigation aids that may serve as operational backups in the event of GNSS interference, providing information to support contingency planning and enhance operational resilience.

2.3.3 SG2 emphasized that such tool represents the best practice for PANS-OPS Quality Assurance, as it facilitates decision-making and the management of the instrument flight procedure life cycle. In this regard, the Regional Guidance on Quality Management in Instrument Flight Procedure Design will include guidance on performance indicators, functional capabilities, and best practices for the implementation of monitoring and management tools to support the States in the continuous maintenance and periodic review of their instrument flight procedures.

2.4 **Mitigation of GNSS Interference and Application of the Minimum Operational Network (MON) Concept**

2.4.1 In accordance with GESEA/9, SG2 PANS-OPS initiated activities related to the mitigation of GNSS interference and the application of the Minimum Operational Network (MON) concept in the SAM Region.

2.4.2 During the Fifth SG2 PANS-OPS Meeting, Brazil presented a study on the increasing number of jamming and spoofing events reported in different regions of the world and their impact on GNSS-based air navigation operations. Recent occurrences in the SAM Region were also presented, including those at Brasília International Airport (SBBR) and Jorge Chávez International Airport (SPJC), Lima, where GNSS interference affected flight operations and highlighted the need for contingency measures to ensure the continuity of air navigation services.

2.4.3 As part of this initiative, Brazil presented the Minimum Operational Network (MON) Implementation Plan, developed on the basis of PCA 100-5, a regulatory document issued by the Department of Airspace Control (DECEA), which establishes the guidelines for the planning and implementation of a Minimum Operational Network (MON) in Brazil to ensure the continuity of operations in the event of GNSS interference.

2.4.4 During the discussions, the participants agreed on the importance of States assessing their operational dependence on GNSS and developing appropriate contingency plans. In this context, SG2 will continue its studies on the application of the MON concept in coordination with the Interop Working Group (GT Interop) and the ICAO SAM Regional Office to support the development of a SAM Regional Plan for GNSS Interference Mitigation.

2.5 **Other Recommendations Arising from the Fifth SG2 PANS-OPS Meeting**

2.5.1 In addition to the actions described above, the Fifth SG2 PANS-OPS Meeting formulated several recommendations aimed at strengthening the technical capabilities of the States in the SAM Region. The main recommendations included:

- promoting the organization of a regional RNP AR Instrument Flight Procedure Design Course, proposed to be held in Brazil from 18 to 29 October 2027;

- promoting the organization of a regional Airspace Planning Course, proposed to be held in Lima;
- promoting the organization of a regional ARINC 424 Course for Instrument Flight Procedure Designers, with the objective of strengthening regional expertise in procedure coding, while supporting the implementation of digital aeronautical information and modern flight procedure design practices
- continuing the development of specialized technical topics, including TERPS criteria, Digital Terrain Models (DTMs), Geographic Information Systems (GIS), procedure validation, and statistical wind data, with a view to their progressive incorporation into the Regional Guidance on Quality Management in Instrument Flight Procedure Design;
- continuing to promote regional training and technical cooperation initiatives aimed at strengthening the knowledge, skills, and technical capabilities of PANS-OPS specialists in the SAM Region.

3. **Suggested Action**

3.1 The meeting is invited to:

- a) note the information contained in this Working Paper;
- b) acknowledge the progress achieved by SG2 PANS-OPS;
- c) support the continuation of the SG2 PANS-OPS work programme;
- d) provide comments and guidance, as appropriate.

END

Appendix A

