



International Civil Aviation Organization

THE FIFTH MEETING OF THE ASIA/PACIFIC GBAS/SBAS IMPLEMENTATION TASK FORCE (APAC GBAS/SBAS ITF/5)

(Tokyo, Japan, 21- 23 June 2023)

Agenda Item 2: Progress on the work of Expert Groups constituted to:

- Review and revise the GBAS and SBAS safety assessment guidance document related to anomalous ionospheric conditions, and to
- Draft a Guidance Document on Implementation Process for GBAS/SBAS

Progress of Drafting Guidance Document on Implementation Process for GBAS/SBAS

(Presented by Leads/Co-Lead of Expert Group)

SUMMARY

This paper presents updates on the progress of Expert Group in developing the guidance document for the implementation of GBAS/SBAS. It also proposes extending the Asia Pacific (APAC) GBAS/SBAS Implementation Task Force (ITF) by another three years to allow more time to develop, review and refine the guidance documents.

1. INTRODUCTION

1.1 As per APAC GBAS/SBAS ITF/3 meeting Decision GBAS/SBAS ITF/3-2 regarding the task to draft a guidance reference document for implementation of GBAS/SBAS in the Asia/Pacific Region, an Expert Group with subject matter experts nominated from States/Administrations as members had been established to prepare the draft of this guidance document. Subsequent discussions under Expert Group have been conducted regarding the draft of guidance reference for implementation of GBAS/SBAS in the Asia/Pacific Region. The outcomes and progress in drafting the guidance document are summarized in this WP for members' consideration and comments.

2. DISCUSSION

Structure and Content List of the Guidance Document

2.1 Referring to the discussion in APAC GBAS/SBAS ITF/4 meeting, the structure and content list of the guidance document, as well as phases and elements involved in GBAS/SBAS implementation, given in **Appendix A** were presented and concluded in the meeting.

2.2 The objective of the guidance document is to provide individual reference materials for States on implementation process for GBAS and SBAS respectively. Taking into consideration the current readiness and completeness of draft materials for prepared guidance on GBAS and SBAS implementation, it is more justified in splitting the guidance document into two separate volumes (i.e. one book for GBAS implementation and the other one for SBAS implementation, with the structure and content list given in **Appendices B and C** respectively).

Progress and Status of Draft Guidance Documents

2.3 After multiple rounds of web-meeting and discussion among Expert Group members, the draft guidance document for GBAS Implementation has been prepared and given in **Attachment A** for members’ reference and comments. The majority of the draft guidance document is considered completed in principle and ready for States’ review. However, further fine tuning on some particular details is required and it is anticipated to be wholly completed and ready for promulgation in 2024 after consolidating another round of comments from States on this revision of draft guidance document for GBAS.

2.4 With Expert Group members’ effort and States’ inputs, the draft guidance document for SBAS Implementation has been prepared and given in **Attachment B** for members’ reference and comments. Further review and consolidation of States’ inputs to enhance this revision of draft guidance document for SBAS Implementation is considered necessary. Under the assessment of Leads/Co-Leads of Expert Group, it is anticipated the draft guidance document to be ready for final review in 2024/2025, subject to the progress in further enriching this revision of the draft guidance document for SBAS Implementation with another round of consolidation for inputs/comments to be collected from States.

Extension of the Asia/Pacific GBAS/SBAS Implementation Task Force

2.5 Since the Asia/Pacific GBAS/SBAS Implementation Task Force was initially planned for a period of 3 years with the last meeting in 2023, taking into account the current status of the draft guidance documents for GBAS and SBAS Implementation and the need for spending more time to finish these two guidance documents, the Expert Group considers the need and necessity to extend the period of Asia/Pacific GBAS/SBAS Implementation Task Force for another three (3) years. The timeline for preparing guidance reference document regarding implementation of GBAS/SBAS in the Asia/Pacific Region as discussed and concluded in the APAC GBAS/SBAS ITF/4 has been extracted and given in Appendix D for reference. The high-level timeline in completing remaining works for preparing the guidance documents anticipated in the coming three years is proposed in Appendix E for members’ consideration.

2.6 A draft decision is proposed for members’ discussion and support for seeking consideration and further endorsement by CNS SG:

Draft Decision GBAS-SBAS ITF 5/03 - Extension of the Asia/Pacific GBAS/SBAS Implementation Task Force	
What: To extend the period of Asia/Pacific GBAS/SBAS Implementation Task Force for another 3 years (i.e. up to 2026)	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To complete tasks, such as guidance reference for GBAS/SBAS Implementation, under the TORs of Asia/Pacific GBAS/SBAS Implementation Task Force	Follow-up: <input checked="" type="checkbox"/> Required from States
When: June 2023	Status: Draft to be adopted by CNS SG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

- a) Review the materials presented in the WP;
- b) Urge States/Administrations to share relevant materials and comments with Expert Group for the draft guidance reference documents for GBAS and SBAS Implementation; and
- c) Discuss the proposed draft decision for the extension of Asia/Pacific GBAS/SBAS Implementation Task Force.

Appendix A – Structure and Content List of Guidance Reference Document for Implementation of GBAS/SBAS in the Asia/Pacific Region

1. *Objectives and Scope of the Guidance Document*
2. *Executive Summary*
3. *Roles and Responsibilities of Stakeholders*
4. *Performance Indicators*
5. *Implementation Process for GBAS*
 - a. *Overview*
 - b. *Framework, Phases and Elements of GBAS Implementation Process*
 - i. *Operational Need Analysis*
 - ii. *Cost-benefit Assessment*
 - iii. *Technical Feasibility Assessment*
 - *Siting Study*
 - *GPS Data Collection and Analysis*
 - *Ionospheric Impact Study*
 - *Site Constraint Study*
 - *VDB Coverage Assessment*
 - iv. *Concept of Operations (CONOPS) Development*
 - v. *VDB Frequency Application and Assignment*
 - vi. *GBAS Solution Selection*
 - vii. *Site Deployment*
 - viii. *Airport Height Restriction Plan Amendment*
 - ix. *GLS Flight Procedure Development*
 - x. *Flight Check*
 - xi. *Safety Assessment*
 - xii. *System Certification*
 - xiii. *Development of Regulations Related to GBAS for Aviation*
 - xiv. *Training*
 - xv. *Operation Certification*
 - xvi. *Post-implementation Review*
6. *Implementation Process for SBAS*
 - a. *Overview*
 - b. *Framework, Phases and Elements of SBAS Implementation Process*
 - i. *Operational Need Analysis*
 - ii. *Cost-benefit Assessment*
 - *Full SBAS implementation (Implementation Type A)*
 - *Participating in existing SBAS (Implementation Type B)*
 - *Utilizing existing SBAS service (Implementation Type C)*
 - iii. *Technical Feasibility Assessment*
 - *Full SBAS implementation (Type A)*
 - *Satellite (transponder) deployment*
 - *SBAS PRN coordination*
 - *SBAS ID coordination*
 - *Coverage and service volume*
 - *Service level*
 - *Ground monitoring station siting*
 - *Uplink station siting*

- *Ionospheric impact study*
 - *Participating in existing SBAS (Type B)*
 - *Ground monitoring station siting*
 - *Coordination with the SBAS provider*
 - *Review of existing SBAS services*
 - *Coverage and service volume*
 - *Service level*
 - *Ionospheric impact study*
 - *Utilizing existing SBAS service (Type C)*
 - *Coverage and service volume*
 - *Service level*
 - *Available services*
 - *Coordination with the SBAS provider*
 - iv. *Concept of Operations (CONOPS) Development*
 - v. *SBAS Solution Selection*
 - vi. *System Deployment (For Implementation Type A and B)*
 - vii. *SBAS Flight Procedure Development*
 - viii. *Flight Check*
 - ix. *Safety Assessment*
 - x. *System Certification*
 - xi. *Development of Regulations Related to SBAS for Aviation*
 - xii. *Training*
 - xiii. *Operation Certification*
 - xiv. *Post-implementation Review*
7. *Post-implementation Activities*
- c. *Operation and Maintenance Activities*
 - d. *Performance Indicators*
8. *Appendix*
- Appendix 1 - Terminologies and Definition*
 - Appendix 2 – Reference*
 - Appendix 3 – Experience shared by States/Administrations*

Appendix B – Structure and Content List of Guidance Reference Document for Implementation of GBAS in the Asia/Pacific Region

1. *Objectives and Scope of the Guidance Document*
2. *Executive Summary*
3. *Roles and Responsibilities of Stakeholders*
4. *Performance Indicators*
5. *Implementation Process for GBAS*
 - c. *Overview*
 - d. *Framework, Phases and Elements of GBAS Implementation Process*
6. *Post-implementation Activities*
 - a. *Operation and Maintenance Activities*
 - b. *Performance Indicators*
7. *Appendix*
 - Appendix 1 - Terminologies and Definition*
 - Appendix 2 – Reference*
 - Appendix 3 – Experience shared by States/Administrations*

Appendix C – Structure and Content List of Guidance Reference Document for Implementation of SBAS in the Asia/Pacific Region

1. *Objectives and Scope of the Guidance Document*
2. *Executive Summary*
3. *Roles and Responsibilities of Stakeholders*
4. *Performance Indicators*
5. *Implementation Process for SBAS*
 - e. *Overview*
 - f. *Framework, Phases and Elements of SBAS Implementation Process*
6. *Post-implementation Activities*
 - a. *Operation and Maintenance Activities*
 - b. *Performance Indicators*
7. *Appendix*

Appendix 1 - Terminologies and Definition

Appendix 2 – Reference

Appendix 3 – Experience shared by States/Administrations

Appendix D – Timeline for Preparing Guidance Reference Document for Implementation of GBAS/SBAS in the Asia/Pacific Region Discussed and Concluded in APAC GBAS/SBAS ITF/4

Period	Activities	Outcomes
May – October 2022	States sharing with Expert Group their internal guidelines/practice/experience in the implementation of GBAS/SBAS <i>(Action: States/Administrations)</i>	States’ relevant contribution for their internal guidelines/practice/experience in the implementation of GBAS/SBAS
May – June 2022	Sub-team working meetings and writing up draft of guidance document <i>(Action: Expert Group Members and Leads/Co-Lead)</i>	Sections of draft write-up
End June 2022	Expert Group Leads/Co-lead Meeting with Chair <i>(Action: Leads/Co-Lead and Chair)</i>	Milestone dates for completing draft write-up of individual section and progress reporting on draft write-up
July – September 2022	Sub-team working meetings and writing up draft of guidance document <i>(Action: Expert Group Members and Leads/Co-Lead)</i>	Sections of draft write-up
End September 2022	Expert Group Leads/Co-lead Meeting with Chair <i>(Action: Leads/Co-Lead and Chair)</i>	Progress reporting on draft write-up
October – December 2022	Sub-team working meetings and writing up draft of guidance document <i>(Action: Expert Group Members and Leads/Co-Lead)</i>	Sections of draft write-up
End December 2022	Expert Group Leads/Co-lead Meeting with Chair <i>(Action: Leads/Co-Lead and Chair)</i>	Progress reporting on draft write-up
January – March 2023	Sub-team working meetings and writing up draft of guidance document <i>(Action: Expert Group Members and Leads/Co-Lead)</i>	1 st draft write-up for all sections
End March 2023	Expert Group Leads/Co-lead Meeting with Chair <i>(Action: Leads/Co-Lead and Chair)</i>	Progress reporting on draft write-up and review on the 1 st draft write-up for all sections
APAC GBAS/SBAS ITF/5	Presenting the 1 st draft of guidance reference document for implementation of GBAS/SBAS in the Asia/Pacific Region <i>(Action: Expert Group)</i>	Comments consolidated from APAC GBAS/SBAS ITF for fine tuning the draft guidance document

Period	Activities	Outcomes
Beyond APAC GBAS/SBAS ITF/5 and up to APAC GBAS/SBAS ITF/6	Fine tuning the draft guidance document to address comments collected in APAC GBAS/SBAS ITF/5 <i>(Action: Expert Group Members, Leads/Co-Lead and Chair)</i>	Final draft of guidance reference document for implementation of GBAS/SBAS in the Asia/Pacific Region
APAC GBAS/SBAS ITF/6	Presenting the final draft of guidance reference document for implementation of GBAS/SBAS in the Asia/Pacific Region in APAC GBAS/SBAS ITF/6 for endorsement <i>(Action: Expert Group)</i>	Finalised the 1 st issue of guidance reference document for implementation of GBAS/SBAS in the Asia/Pacific Region

**Appendix E – Timeline in Completing Remaining Works for Guidance Documents
Implementation of GBAS/SBAS in the Asia/Pacific Region Anticipated in the
Coming Three Years**

Period	Activities	Outcomes
APAC GBAS/SBAS ITF/5	Presenting the 1 st draft of guidance document for implementation of GBAS and the preliminary draft of guidance document for implementation of SBAS in the Asia/Pacific Region <i>(Action: Expert Group)</i>	Comments consolidated from APAC GBAS/SBAS ITF for fine tuning the draft guidance documents
Period between APAC GBAS/SBAS ITF/5 and APAC GBAS/SBAS ITF/6	Fine tuning the draft document of GBAS Implementation to address comments collected in APAC GBAS/SBAS ITF/5 Enhance the preliminary draft guidance of SBAS Implementation with further inputs from States and additional materials supplemented by Expert Group <i>(Action: Expert Group Members, Leads/Co-Lead and Chair)</i>	Final draft of guidance document for implementation of GBAS in the Asia/Pacific Region 1 st draft of guidance document for implementation of SBAS in the Asia/Pacific Region
APAC GBAS/SBAS ITF/6	Presenting the final draft of guidance document for implementation of GBAS in APAC GBAS/SBAS ITF/6 for endorsement Presenting the 1 st draft of guidance document for implementation of SBAS in the Asia/Pacific Region <i>(Action: Expert Group)</i>	Finalised the 1 st issue of guidance document for implementation of GBAS in the Asia/Pacific Region Comments consolidated from APAC GBAS/SBAS ITF for fine tuning the draft guidance document for implementation of SBAS in the Asia/Pacific Region in APAC
Period between APAC GBAS/SBAS ITF/6 and APAC GBAS/SBAS ITF/7	Issue the 1 st version of guidance document for implementation of GBAS in the Asia/Pacific Region <i>(Action: ICAO Regional Sub-office)</i> Fine tuning the draft guidance document of SBAS Implementation to address comments collected in APAC GBAS/SBAS ITF/6 <i>(Action: Expert Group Members, Leads/Co-Lead and Chair)</i>	Final draft of guidance document for implementation of SBAS in the Asia/Pacific Region
APAC GBAS/SBAS ITF/7	Presenting the final draft of guidance document for implementation of SBAS in APAC GBAS/SBAS ITF/7 for endorsement	Finalised the 1 st issue of guidance document for implementation of SBAS in the Asia/Pacific Region

Period	Activities	Outcomes
	<p>Reviewing States' feedback for the 1st version of guidance document for implementation of GBAS in the Asia/Pacific Region issued</p> <p><i>(Action: Expert Group)</i></p>	<p>Amendment(s) required to address States' feedback for the 1st version of guidance document for implementation of GBAS in the Asia/Pacific Region issued</p>
<p>Period between APAC GBAS/SBAS ITF/7 and APAC GBAS/SBAS ITF/8</p>	<p>Issue the 1st version of guidance document for implementation of SBAS in the Asia/Pacific Region</p> <p><i>(Action: ICAO Regional Sub-office)</i></p> <p>Amend the guidance document of GBAS Implementation to address feedback collected in APAC GBAS/SBAS ITF/7 for ICAO Regional Sub-office issuing the 2nd version</p> <p><i>(Action: Expert Group Members, Leads/Co-Lead and Chair for making amendments and ICAO Regional Sub-office for issuing the 2nd version if needed)</i></p>	<p>1st version of guidance document for implementation of SBAS in the Asia/Pacific Region issued</p>
<p>APAC GBAS/SBAS ITF/8</p>	<p>Reviewing States' feedback for the 1st version of guidance document for implementation of SBAS in the Asia/Pacific Region issued</p> <p><i>(Action: Expert Group)</i></p>	<p>Amendment(s) required to address States' feedback for the 1st version of guidance document for implementation of SBAS in the Asia/Pacific Region issued</p>
