



ICAO

International Civil Aviation Organization

African Flight Procedure Programme

Eleventh Meeting of the African Flight Procedure Programme Steering Committee Lusaka, Zambia, 21 - 23 May 2025

AGENDA ITEM 5: Future Design of SBAS Flight procedures in Africa

(Presented by [KENYA])

Summary
This information paper presents the expected outcome of Satellite Based Augmentation System (SBAS) navigation implementation in Africa and therefore the need for Africa Flight Procedure Programme (AFPP) to prepare the designers for any future challenges through building capacity and competence in this critical domain including facilitating on-job training.
Action by the meeting in section 4
Reference(s): <ul style="list-style-type: none"> • APIRG/22 Meeting report of the Africa-Indian Ocean Planning and Implementation Regional Group (APIRG/22), Accra, Ghana, 29 July - 02 August 2019 • Final report on CBA for SBAS implementation in Africa • ICAO Doc. 8168 Vol. II • ICAO Doc 9906 Quality Assurance Manual for Flight Procedure Design
Related ICAO Strategic Objective(s). <ul style="list-style-type: none"> • This information paper relates to the Safety, Air Navigation Capacity and Efficiency, and Economic Development Strategic Objectives.

1 Introduction

- 1.1 In year 2017, a Decision was adopted by the Africa Union Member States ~~and~~ in line with the APIRG/22 conclusion 22/39 that tasked the African Union Commission (AUC) to conduct a Continental Cost-Benefit Analysis (CBA) on Satellite Based Augmentation System (SBAS) introduction in the region, taking into consideration existing initiatives in the implementation of EGNOS in Africa. Specific focus was on the aviation sector, evaluating the operational, safety, environmental, and social benefits as well as the costs of SBAS implementation for all aviation stakeholders.
- 1.2 The CBA study completed in May 2022 demonstrated high economic attractiveness of SBAS implementation across the whole aviation sector and beyond as submitted to AU policy organs.
- 1.3 Progress of the implementation of GNSS/SBAS in Africa was presented by the African Civil Aviation Commission (AFCAC) on behalf of 54 African States during the 41st session of ICAO Assembly, Montreal, Canada.

2 Discussions

- 2.1 SBAS is a wide area differential Global Navigation Satellite System signal augmentation system which uses a number of geostationary satellites, able to cover vast areas, to broadcast primary GNSS data which provides ranging, integrity and correction information by a network of SBAS ground stations.
- 2.2 Design of SBAS flight procedures involves use of Satellite-Based Augmentation Systems (SBAS) signal for navigation. This includes designing procedures for Localizer Performance with Vertical Guidance (LPV) and Localizer Performance (LP) approaches, as well as other SBAS-enabled procedures like PinS approaches which allow for aerodrome lower minima's.
- 2.3 Based on the undertaking of the AFPP training activities there is lack of this expertise and competency in developing SBAS flight procedures if the SBAS ground signal and associated infrastructure is made available in the region.
- 2.4 Therefore there is need for AFPP to consider incorporating SBAS training in order to prepare flight procedure designers in advance on this future challenge through building capacity and competency in this critical domain including facilitating the relevant on-job training.

3 SBAS Benefits

- 3.1 SBAS is designed to enable users to rely on GNSS navigation data for all phases of flight, from en route through to LPV-200 approaches equivalent to Category I for airports within an SBAS coverage area.
- 3.2 SBAS provides a capability to conduct vertically guided approaches to non-instrument runways, providing significant improvement to operational safety that was previously un-available at considerably cheaper costs.
- 3.3 SBAS reduce the dependence on aging, ground-based and legacy infrastructure, enabling rationalization of these ground-based technologies. SBAS is a key enabler of Performance Based Navigation (PBN).
- 3.4 The use of SBAS navigation improves operational efficiency, increase of airspace capacity, reduction of noise and CO2 emission.
- 3.5 SBAS implementation may support other aviation applications in the CNS/ATM domain. For instance, SBAS provides the required level of accuracy for ADS-B.

4 Action by the meeting

- 4.1 The Steering Committee meeting is invited to:
 - a. Note the information in this WP;
 - b. Take note on the progress of implementation of SBAS in Africa and the future impact on flight procedures.
 - c. Support any decision that may be proposed to develop competence and expertise in this domain.