



ICAO

**Twenty-Second Meeting of the AFI Planning and Implementation Regional Group
(APIRG/22)**

(Accra, Ghana, 29 July – 2 August 2019)

Agenda Item 4.- Other Air Navigation Issues

4.4. Initiatives by States & Industry and other air navigation issues

Need for an African position on the change of the concept of use of GNSS signals by aircraft

(Presented by ASECNA)

SUMMARY	
<p>Nowadays, in each airspace, aircraft receivers select and use the GNSS signals on the basis only of performance criteria, regardless the status of approval of the signals by the designated authority for the concerned airspace. Therefore, a GNSS signal can be used by aircraft in airspace for which it has not been approved.</p> <p>This concept of use of GNSS signals by aircraft creates major institutional and regulatory issues and liability vacuum regarding service provision, and needs to be changed. States shall have the ability to commission GNSS services in respect to their mandates and obligations, and thereby to control the use of GNSS elements in their airspace.</p> <p>The emergence of the next GNSS generation (DFMC), in the process of standardisation, provides the opportunity to change by the 2025-2030 horizon the concept of operations to ensure that the future aircraft receivers shall only use the signals that have been accepted by States for navigation purposes.</p> <p>If the opportunity is missed, then the situation will continue for the next 30 years, with an exponentially increase of the created regulatory, liability and institutional issues.</p> <p>Action by the Meeting: refer to paragraph 5</p>	
<i>Strategic Objectives</i>	A – Safety, B – Air Navigation Capacity and Efficiency, D – Economic Development

1. INTRODUCTION

1.1 Provision of GNSS services, and especially of SBAS services, is global in essence and extends beyond the borders of sovereignty of States and of the areas of responsibility of air navigation services providers. This implies new issues of political, institutional, regulatory and legal dimensions to be addressed.

2. ISSUE AT STAKE

2.1 Nowadays, in each airspace, aircraft receivers select and use the GNSS signals (also called GNSS elements in the ICAO terminology) on the basis only of performance criteria, regardless the status of approval of the signals by the designated authority and the status of promulgation in the AIP for the concerned airspace. Therefore, a GNSS signal can be used by aircraft in airspace for which it has not been approved.

2.2 This concept of use of GNSS signals by aircraft is a legacy of the ICAO standards and EUROCAE/RTCA MOPS (for aircraft receivers) for the current generation of GNSS. It creates major institutional and regulatory issues and liability vacuum regarding service provision.

2.3 These issues concern all the GNSS signals, and more particularly SBAS signals. The cases of geographical overlap of SBAS services areas, with areas covering airspace not under the jurisdiction of the SBAS providers, will significantly increase in the future for many reasons. On one hand, the SBAS systems are flourishing over the world leading to the expansion of SBAS services provision globally. Today, nine (09) operational and under-development of SBAS systems are recognised by ICAO. On the other hand, with the emergence of the next generation of GNSS, so-called Dual Frequency Multi-Constellation (DFMC), for which standardisation is on-going, the SBAS service areas will be significantly extended mechanically, without any additional infrastructure.

2.4 Today, the European EGNOS, US WAAS and Indian GAGAN signals are received in some portions of the airspace (Central Atlantic Ocean, Northern Africa above 20°N, Indian Ocean and Eastern Africa) under jurisdiction of some African States, with the possibility to be used by aircraft for horizontal navigation whereas they have not been approved for the purpose. Tomorrow, such signals, together with new signals from other SBAS, will be received in the main part of the African airspace.

3. THE NEED FOR CHANGE

3.1 The fact that a SBAS service was accepted by ICAO and comply with SARPs is not enough to solve the regulatory, liability and institutional, and thereby sovereignty, issues created by this situation. The implementation, between concerned States, of mutual recognition arrangements for certification and approval is a long stand process and is not always possible or successful.

3.2 This current situation cannot be allowed to continue, and States shall have the ability to commission GNSS services in respect to their mandates and obligations, and thereby to control the use of GNSS elements in their airspace.

3.3 The emergence of the next GNSS generation (so-called DFMC, Dual Frequency Multi Constellation), in the process of standardisation, provides the opportunity to change by the 2025-2030 horizon the concept of operations to ensure that aircraft receivers only use the GNSS signals which are approved and promulgated as such in the AIP for the airspace in which the aircraft are flying.

3.4 This next GNSS generation is the subject of important on-going works within international bodies, such as ICAO, EUROCAE and RTCA.

3.5 There is a need to ensure that DFMC GNSS is standardised in a way that the States control the use the DFMC signals in their airspace, and thereby that their use by aircraft for all phases of flight are limited to the approved signals (in opposition to the current situation where aircraft receivers are free to determine the appropriate set of GNSS elements to use).

4. PROPOSED AFRICAN POSITION

4.1 The process of development of the ICAO SARPs for DFMC within the ICAO Navigation Systems Panel (NSP) is expected to be completed internally by end 2020.

4.2 The change of the concept of use by aircraft of GNSS signals have been discussed in length over the last years, and solutions have been explored to ensure that the future aircraft receivers only use the DFMC SBAS elements accepted by States. However, to proceed further on the matter, the NSP is expecting to know what are the States supporting this change.

4.3 If States does not affirm their position, the change will not be considered in this window of development of SARPs, and then the current situation will continue for the next 30 years, with an exponentially increase of the created regulatory, liability and institutional issues.

4.4 Therefore, to ensure that the change is integrated in the provisions developed by the NSP, there is a need to affirm a common African position on the matter during the upcoming 40th Assembly.

4.5 To this end, a working paper was developed by experts during the Stakeholder's Preparation Meeting held under the aegis of AFCAC from 15 to 19 July 2019.

5. ACTION BY THE MEETING

5.1 The meeting is invited to:

- consider the need for a change of the concept of use by aircraft of the GNSS signals, as the current concept creates major regulatory, liability and institutional issues
- endorse the African position set out in the attached working paper proposed for submission and presentation by AFCAC during the 40th ICAO Assembly, to request ICAO, when developing provisions, to consider the next generation of SBAS DFMC aircraft receivers shall only use the SBAS elements that have been accepted by States for navigation purposes.

Attachment

African position Working Paper, as developed by experts during the Stakeholder's Preparation Meeting held under the aegis of AFCAC from 15 to 19 July 2019.