



*International Civil Aviation Organization*  
 CAR/SAM Regional Planning and Implementation Group (GREPECAS)  
**Fifteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/15)**  
 Rio de Janeiro, Brazil, 13 to 17 October 2008

**Agenda Item 2: Global and inter-regional activities**

**2.1 Inter-regional and intra-regional CNS/ATM activities and coordination**

**SBAS IMPLEMENTATION**

(Presented by Brazil)

**SUMMARY**

This working paper reaffirms the decision of Brazil not to implement an SBAS, in view of the unfavourable cost-benefit ratio of such implementation.

**References:**

- Report of the ATM/CNS/6 meeting

**1. Introduction**

1.1 The GREPECAS/14 meeting, based on the reports of projects RLA/00/009 and RLA/03/902, considered that GNSS implementation, including SBAS and GBAS, had to be based on operational requirements and technical and cost-benefit analyses supporting the decisions for its implementation. The decision-making process must be carried out with a common perspective, where political aspects acquire vital importance, given the commitments of provider States/Territories/International Organisations, especially from the point of view of the legal responsibilities associated to the implementation of certain SBAS elements in a given State. GNSS implementation must take into account the global concept. To that end, it will be necessary to include a study of the operations and contingency plans in the event of a total degradation of service performance.

1.2 Based on the preliminary results of project RLA/03/902, the GREPECAS/14 meeting noted that the SBAS solutions proposed for the CAR/SAM Regions had to orient to the attainment of, at least, APV I capabilities. Accordingly, it formulated Decision 14/55.

## **2. National ATM Operational Concept**

2.1 Taking into account ATM operational requirements, the Brazilian Administration has developed the national ATM operational concept, which is the document that guides the implementation of the Global ATM Operational Concept, supported by CNS/ATM systems, in the short-, medium- and long term in Brazil.

2.2 The navigation section of said document states that navigation support for the ATM system will be based on the implementation of the performance-based navigation (PBN) concept, in keeping with ICAO guidance contained in Resolution 31/1 of the 36<sup>th</sup> Assembly.

2.3 PBN implementation will use the GNSS/ABAS as the main means of navigation, offering the necessary support for en-route, TMA, non-precision approach, and APV/Baro-VNAV operations. It is important to note that the navigation chapter in the national ATM operational concept is fully aligned with the PBN roadmap.

2.4 The National ATM Operational Concept does not foresee the implementation of the SBAS system to support operations in the Brazilian airspace. In the long term, beyond 2016, the Brazilian Administration may assess SBAS implementation, based on the use of the second frequency for civilian purposes. This decision was made because:

- a) the use of basic GPS with RAIM also provides very good availability for LNAV procedures in the CAR/SAM Regions, fully supporting the PBN concept;
- b) the cost of the SBAS spatial segment would be high, due to the uncertain situation of the ionosphere in the geomagnetic equator;
- c) the operational minima obtained through NPA and APV/Baro-VNAV procedures will meet the operational requirements of most aerodromes; and
- d) precision approaches would be carried out with a GBAS CAT-1 system, and, in the long run, using the second civilian frequency.

2.5 This paper has already been presented at the sixth meeting of the GREPECAS ATM/CNS Subgroup. However, given the significance of the Brazilian decision for the planning of SBAS implementation in the CAR/SAM Regions, the Brazilian Administration has decided to submit it to GREPECAS, so that it may be duly reflected in the report of the meeting, and taken into account in regional GNSS augmentation projects.

## **3. Action by the GREPECAS**

3.1 The Meeting is invited to take note of the information contained in this working paper, and to examine the impact of the Brazilian decision on CAR/SAM regional SBAS implementation initiatives, particularly in South America.