



WORKING PAPER

**SPECIAL AFRICA-INDIAN OCEAN (AFI)
REGIONAL AIR NAVIGATION (RAN) MEETING**

Durban, South Africa, 24 to 29 November 2008

Agenda Item 6: Development of a set of comprehensive work programmes in the air navigation field, aimed at improving efficiency of the air navigation system (Efficiency Committee)

NEED FOR A COMPREHENSIVE REGIONAL AIR NAVIGATION PLANNING SYSTEM

(Presented by the International Air Transport Association (IATA))

SUMMARY

This paper calls for a comprehensive performance-based regional air navigation planning system in the AFI Region for guidance of States and all aviation stakeholders, in order to ensure consistency and effectiveness in planning and implementation activities. Such a comprehensive system should take due account of user requirements.

Action by the meeting is in paragraph 2.

1. INTRODUCTION

1.1 The ICAO Air Navigation Plan (ANP) for the Africa-Indian Ocean (AFI) Region (Doc 7474) contains requirements for air navigation systems to be implemented by States and the aviation industry to ensure safe and efficient air transport operations in the region. The existing ANP is a result of a systems-based approach, which has now been overtaken by performance-based approach. This also applies to the structure of the AFI Planning and Implementation Regional Group (APIRG) and its auxiliary bodies.

AFI ANP limitations

1.2 Although the current AFI ANP provides for requirements in all air navigation fields, these requirements need to be completed or updated in some areas, such as aeronautical surveillance and the global navigation satellite system (GNSS).

Aeronautical surveillance

1.2.1 Existing requirements which were established by APIRG/13 (2001), are limited to en-route operations. There are no surveillance requirements for terminal control areas and aerodromes, and there are no requirements for automatic dependent surveillance – broadcast (ADS-B).

GNSS

1.2.2 The current AFI GNSS implementation strategy was last updated by APIRG/14 (2003) and no longer reflects user requirements for approach with vertical guidance (APV) operations. IATA clearly indicated its opposition at APIRG/15 (2005) to the implementation of a satellite-based augmentation system (SBAS) in the AFI region, since the industry does not see a solid business case to justify its cost. Therefore it is of concern to us that the AFI GNSS strategy continues to refer to the European Geostationary Navigation Overlay Service (EGNOS/SBAS) as shown in the Table below.

Table: Synopsis of the AFI GNSS Strategy

AFI GNSS Strategy				
Time scale	Phase I		Phase II	Phase III
	2000 – 2005		2006 – 2011	2012 – 2017
Certification	Basic GNSS	Basic GNSS	from en-route to LPV (APV-1)	from en-route to CAT I
Oceanic/En-route		GPS	GPS with EGNOS	Long-term GNSS
Continental/En-route		GPS	GPS with EGNOS	Long-term GNSS
Terminal	GPS		GPS with EGNOS	Long-term GNSS
Approach and landing	(GPS/Baro) NPA		LPV (APV-1) SBAS	SBAS CAT I CAT I GBAS CAT II/III GBAS

1.2.3 Any guidance or planning in the above areas, should be supported by an appropriate business case. States and air navigation service providers (ANSPs) are taking a number of initiatives (Secondary Surveillance Radar (SSR), Automatic Dependent Surveillance — Contract (ADS-C), ADS-B/Universal Access Transceiver (ADS-B/UAT), ADS-B Extended Squitter (ADS-B ES), SBAS, etc.), which are not coordinated and lack a proper business case justification.

1.2.4 Moreover, while there is a need to ensure consistency between operational requirements (e.g. ATM applications) and the corresponding supporting infrastructure, further coordination is required among APIRG system-based auxiliary bodies.

Implementation of Global Plan Initiatives (GPIs)

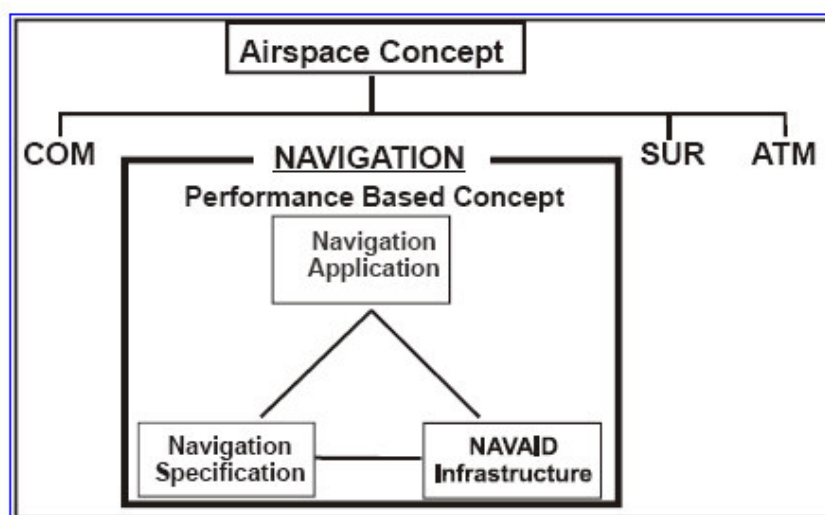
1.2.5 The fifth meeting of the ALLPIRG/Advisory Group (ALLPIRG/5, March 2006) adopted Conclusion 5/2 on the implementation of Global Plan initiatives. ALLPIRG Conclusion 5/2 is reproduced in the Appendix. For effective planning and implementation of GPIs, there is a need to review the data presented in the tables contained in the ANP so as to facilitate integration of the GPIs into the planning process and to maximize their usefulness as part of the ANP searchable database. The Statement of Basic Operational Requirements and Planning Criteria (BORPC) contained in the ANP also needs to be cross-referenced and benchmarked to GPI's.

Implementation of performance-based navigation (PBN)

1.2.6 The current ICAO PBN Manual (Doc 9613) recognizes that under the traditional approach, each new technology is associated with a range of system-specific requirements for obstacle clearance, aircraft separation, operational aspects (e.g. arrival and approach procedures), and flight crew and air traffic controller operational training. This old approach imposes unnecessary efforts and expenses on States, airlines and ANSPs.

1.2.7 PBN eliminates the need for redundant investment in developing system criteria and in operational modifications and training. Rather than building an operation around a particular system, under PBN the operation is defined according to operational goals, and the available systems are then evaluated to determine whether they provide adequate support.

1.2.8 PBN implementation includes, among other issues, considerations on selected navigation specifications, related navigational infrastructure, communications, surveillance, obstacle clearance and route spacing, user requirements, etc. Therefore, PBN is conducive to a more coherent air navigation planning system.



Performance-Based Navigation Concept

1.2.9 Considering the benefits associated with PBN, IATA has developed guidance material for obtaining airworthiness and operational approvals for PBN navigation specifications for use by States and aircraft operators, and has embarked on pilot projects in various regions worldwide (such as the Cape Town PBN Project) with a view to the swift implementation of PBN.

1.2.10 As the AFI stakeholders work together on PBN implementation; a critical component will be complete implementation of WGS-84. As this is also a safety requirement, it will be important to identify where WGS-84 is lacking and to work together for complete WGS-84 implementation.

Recommendation 6/x — Need for a revision of the AFI air navigation plan

That the AFI Air Navigation Plan be revised to provide comprehensive reference guidance to States, air navigation service providers and users on the planning and implementation of a performance-based air navigation system covering all phases of flight.

Recommendation 6/x – Reorganization of APIRG

That APIRG be organized to be aligned with ICAO GPI's in its planning and implementation activities.

2. **ACTION BY THE MEETING**

2.1 The meeting is invited to:

- a) note the contents of this paper, including the IATA initiatives for pilot projects with a view to the swift implementation of PBN operations; and
- b) adopt the recommendations at paragraph 1.2.10 above.

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APPENDIX

ALLPIRG/5

Conclusion 5/2– Implementation of Global Plan Initiatives (GPIs)

That, recognizing that the evolution continues from a systems-based to a performance-based approach to planning and implementation of the air navigation infrastructure, the regional planning groups:

- a) Note that the Global Plan is a significant component in the development of regional and national plans and that, together with the global ATM operational concept, provide an effective architecture for achieving a harmonized and seamless Global ATM system;
- b) Identify GPIs that most closely align with the well-established implementation plans of their respective regions;
- c) Select GPIs that would be most effective in achieving the objectives of the region while ensuring continuation of the work already accomplished;
- d) Implement GPIs that take into account the Initiatives across regions, to align work programmes and to develop national and regional plans that facilitate achieving a Global ATM system;
- e) Utilize the planning tools as the common planning and implementation mechanism, thereby ensuring proper coordination and global integration; and
- f) Review, at each PIRG meeting as a part of its regular agenda, the progress achieved and challenges identified in the implementation of GPIs using a common template.

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