INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
NINETEENTH MEETING (APIRG/19)
(Dakar, Senegal, 28 to 31 October 2013)

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

PERFORMANCE BASED NAVIGATION (PBN) IMPLEMENTATION IN SOUTH AFRICA

(Presented by South Africa)

SUMMARY
South Africa like most of the AFI Region States, have embarked on a process that would ensure the implementation of PBN. The South African National PBN Roadmap, which is aligned to the GNSS AFI Strategy, has been finalized and is used as a guiding principle for the PBN implementation. The implementation of PBN in South Africa requires a radical realignment of the way that navigation systems are perceived. This will require fundamental changes to the way that certification, regulation, oversight and operation of navigation systems is performed. However, for the successful implementation of PBN within South Africa, this requires Collaborative Decision Making amongst all the stakeholders. This paper provides updates to the PBN implementation process within South Africa
REFRENCE(S):ICAO Doc 9613 - Performance-based Navigation Manual

Strategic Objective(s):	This working paper relates to the Strategic Objectives C and E

1. INTRODUCTION

1.1 The South African PBN Roadmap has been endorsed by the relevant stakeholders in 2010. The PBN Roadmap depicts the agreed timeframes, navigational criteria and specifications in which to implement RNAV and RNP operations. The South Africa PBN Roadmap was developed based on the AFI GNSS strategy and PBN Roadmap.

1.2 The South African PBN Roadmap contains various targets that were set to ensure that PBN is fully implemented by the year 2022.

Summary Table mid Term (2013-2016)

Airspace	**Nav. Specifications**	**Nav. Specifications where Operationally Required**
En Route Oceanic	RNAV 10	RNP 4
En Route Remote Continental	RNAV 10	RNP 4
En Route Continental	RNAV 2, RNAV 5	RNAV 1
TMA Arrival/Departure	Expand RNAV 1, or RNP 1 application Mandate RNAV 1, or RNP 1 in high density TMAs	
Approach	Expand RNP APCH with (Baro-VNAV or Augmented GNSS) with LNAV-only procedures (See note below). Implement RNP AR APCH where there are operational benefits	
Note: Where altimeter setting does not exist or aircraft of maximum certificated take-off mass of 5700kg or more, using an aerodrome that is suitably equipped for APV.		

2. DISCUSSION

2.1 A DME/DME network infrastructure in the terminal areas of identified Airports to provide redundancy for GNSS and in support of PBN is being installed. The South African PBN Implementation Team (SAPIT), under the guidance of the PBN Steering Committee will determine the priorities for the implementation of the DME/DME networks.

2.2 South Africa issued an AIRAC AIP SUPPLEMENT S011/13, in which all the Navigational specifications (NAVSPECS) and Operational requirements for Approvals are published. This publication provides a basis to ensure that the SAPIT will be able to determine through Collaborative Decision Making (CDM), which procedures are suitable for which airport depending on operational requirements.

2.3 Amendment to the Civil Aviation Legislation with respect to the NAVSPECS is at an advanced stage.

2.4 As a follow up to the Implementation seminar/workshops undertaken in the past, ICAO in partnership with IATA and CANSO conducted a PBN Airspace Planning Concept Workshop from 19 to 30 August 2013. The workshop, included participative case studies of

real and functional airspaces, and was facilitated by experts from ICAO and IATA through the Global PBN Task Force Go Team structure.

2.5 The focus of the workshop was the Johannesburg and Lagos Terminal Areas. These activities will provide the best practices from the PBN Manual (Doc 9613), continuous Descent Operations (CDO) manual (Doc 9931), Continuous Climb Operations (CCO) Manual.

2.6 Several Airlines have collaborated to ensure that RNP APCH (APV-Baro-VNAV) for Waterkloof (FAWK), Overberg and Langebaanweg are in the process of being designed. This will assist airlines with access to additional diversionary airfields in the event of inclement weather. The project will commence in October 2013 and will contribute to achieving the midterm PBN Roadmap Targets.

2.7 After the opening of the new King Shaka International Airport (FALE), in 2010, it was discovered that the published Standard Instrument Departures (SIDS) and Standard Instrument Arrivals (STARS) could not be used, as more than half of the operators were not certified for such procedures. In mitigating this, trials were conducted at FALE in 2012 using COMAIRs Boeing 737/300 and 737/400 aircraft. The purpose of these trials was to prove that these aircraft were able to maintain the required level of accuracy in order to comply with RNAV 2 NAVSPEC. The trial report was submitted to the South African Civil Aviation Authority (SACAA) and after successful simulator trials, the SACAA certified COMAIR to conduct RNAV 2 operations at FALE and the suspended GNSS procedures were converted to RNAV 2 and implemented.

2.8 The implementation of RNP-AR SIDs, STARs and approaches at Cape Town International (FACT) is a major milestone in the history of South African civil Aviation. South African Airways commissioned the design of the special Performance Based Navigation (PBN) procedures for use at Cape Town International airport in April 2013. These procedures are of the Required Navigation Performance – Authorization Required (RNP-AR) type and are the first of their type implemented in South Africa. The procedures allow for optimum aircraft and air traffic management performance, reducing fuel burn & noise and providing cost savings for certified airlines.

2.9 The implementation of the Baro/VNAV Approach at Lanseria International Airport (FALA) is another major achievement. FALA has implemented the first BARO VNAV RNP APCH in South Africa. In preparation for the opening of the new Runway at FALA, an Advanced RNP APCH is being designed to allow access into the other runway end which has airspace and geographical limitations.

2.10 South Africa is optimistic that it will reach all the PBN targets by 2022.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Note the information contained in this paper.

b) South Africa is inviting any AFI State willing to share PBN lessons learned to contact its PBN office:

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