



International Civil Aviation Organization
Eastern and Southern African Office

**Air Traffic Management Coordination Meeting for Southern AFI
Flight Information Regions (ATM/CM-SAF)
(Johannesburg, South Africa, 3-5 February 2015)**

**Agenda Item 4: PBN, ASBU's and the AFI optimized route trajectory and
airspace (AORTA) initiative.**

Performance Based Navigation (PBN) Implementation

(Presented by South Africa)

SUMMARY

This paper provides updates to the PBN implementation process within South Africa. The implementation of PBN in South Africa will require 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 without buy-in and commitment from stakeholders and the implementation of PBN via a national level the program will not succeed. This paper outlines the Navigational Specifications to support the implementation of PBN in South Africa.

Action by the meeting is at **paragraph 4.**

REFERENCES

This Working Paper is related to Strategic Objectives: **A, C, F**

1. INTRODUCTION

- 1.1 ATNS is committed to comply with the ICAO PBN initiatives in South Africa. 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.

2. DISCUSSION

- 2.1 In an effort to reduce air operation costs and contributing towards having a greener environment, States are urged to implement Performance Based Navigation (PBN). South Africa has a PBN Roadmap which has been approved by ICAO. The PBN Steering Committee was established to monitor and provide guidance to the South African PBN Implementation Team (SAPIT) who in turn is responsible for all PBN initiatives to enable South Africa to achieve the targets as stipulated in the PBN Roadmap.
- 2.2 ATNS, as one of the contributors and an important player in the PBN project, is directly responsible for the implementation of Project targets affecting only the regulated business. ATNS is also providing an Air Traffic Service at non-ACSA airports on a contractual basis and therefore have little influence on the implementation of PBN procedures at those airports. ATNS can only recommend these initiatives by means of explaining the benefits of PBN to the airport management, but cannot enforce them.
- 2.3 During the 2013/14 financial year ATNS has recorded 50% implementation of RNAV 1 / 2 SID/STAR at international airports which satisfies the 50% targets as stipulated in the RSA PBN Roadmap. ATNS also achieved 55.5% implementation of RNP APCH procedures for all ACSA instrument runways. This exceeds the national target of 50%.
- 2.4 ATNS has, upon request from the Lanseria Airport Management, under contractual obligation, designed an Advanced-RNP Instrument Flight Procedure, for which the criteria for the design of this procedure, was published only by means of a state-letter from the International Civil Aviation Organization (ICAO), distributed for comment by states. This NAVSPEC was published in the ICAO DOCUMENT 8168 Volume II, titled "Construction of Visual and Instrument Flight Procedures" in November 2014.
- 2.5 COMAIR agreed to fly "Live" trials in VMC and simulator trials to assist with data collection to compile a Safety Case in order to get the Advanced-RNP (A-RNP) approved and certified by SACAA. The data from the live trials was recorded by LUCIAD and will be used to indicate the accuracy achieved by the A-RNP procedure. ATNS is optimistic that the A-RNP procedure for RWY 25 will be published before the end of 2014.
- 2.6 The Transformation of George Airspace (TOGA) project is well under way and new procedures for the rehabilitated RWY are under development. The concept of CCO/CDO will be applied to the design of the new SID's and STARS. The Transformation of Port Elizabeth Airspace (TOPEA) project has kicked off and will follow the same principals applied in TOGA.
- 2.7 The Gauteng Area PBN Plan (GAPP) has kicked off. 4 missed approach procedures are being designed for RWY 03L/R and RWY 21L/R. The missed approach procedures will enable OPS to review the LVO procedures and reduce the current separation required during LVO. Conventional procedures will be converted to

RNAV 2 specification. Full review of GAPP will begin in March 2015.

- 2.8 The SAAF Baro-VNAV project has begun and the 3 SAAF bases have been surveyed. Feedback on the priorities for the work was received from the diversionary committee and the order of design and implementation will be:
- Air Force Base Langebaanweg
 - Air Force Base Overberg
 - Air Force Base Waterkloof
- 2.9 The South African PBN Implementation Team (SAPIT) has determined after careful consideration the following NAVSPECS for use in all airspace that ATNS serves:
- RNAV 10 – En-route Oceanic
 - RNAV 5 – En-route Continental
 - RNAV1/RNAV 2 - Terminal (RNAV 2 initially and eventually migrate to RNAV 1)
 - RNP-APCH with Baro-VNAV, RNP APCH, RNP AR APCH.
 - A-RNP pending the Lanseria project outcome.
 - After benchmarking against other ANSP's, ATNS believes that the above NAVSPEC are optimal for South African and Foreign sovereign airspace
- 2.10 South African Airways (SAA) has agreed to publish the RNP AR Approaches that they had designed for Cape Town in the SA AIP. ATNS has agreed to carry the maintenance if required of these RNP AR procedures until the Runway re-alignment has been completed and new procedures are designed.
- 2.11 ICAO requirements for the status monitoring of navigation services and the provision of relevant information to ATS services are provided in Annex 10, Volume I and Annex 11. When a GNSS based radio navigation service for approach, landing or take-off is determined to be essential by the State; this Standard implicitly requires that a local status GNSS monitoring tool should be available to provide timely warnings to ATC services. Alternatively, in particular in the context of RNP APCH applications used as complementary means to the services already provided by networks of conventional NAVAIDs, several States have decided to provide advisory predictive GNSS service availability NOTAMs to users and ATC services, based on the status information that is provided by the core satellites or augmentation system operator. Additional real-time information to ATC may be provided by pilots reports based on status information provided by the avionics. In such cases, there is in principle no need for local status monitoring tools.

3. CONCLUSION

3.1 The Benefits of PBN will show economic savings for the ATM community:

- In the form of equipment maintenance for the airport operator
- Equipment installation and maintenance for the ANSP
- Less track miles, reduced flying time and less fuel emissions resulting in cost savings for the Aircraft Operators

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

4.1.1 Note the information contained in the DP

4.1.2 Discuss the requirement for GNSS monitoring

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