



**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 and Industry

**PERFORMANCE BASED COMMUNICATION AND SURVEILLANCE
IMPLEMENTATION PLAN FOR SOUTH AFRICA**

(Presented by South Africa.)

SUMMARY	
<p>The PBCS concept provides a framework for managing communication and surveillance performance in accordance with globally accepted required communication performance (RCP) and required surveillance performance (RSP) specifications.</p> <p>The RCP/RSP specifications included was intended initially for Automatic Dependent Surveillance — Contract (ADS-C), Controller-Pilot Data Link Communications (CPDLC) and Satellite Voice (SATVOICE) communications supporting Air Traffic Management (ATM) operations in airspace where procedural separations are being applied.</p> <p>Action by the Meeting: The Meeting is invited to:</p> <ul style="list-style-type: none"> a) Note the progress made by South Africa in preparation for PBCS implementation. b) Assist with lessons learned (implementation) and post implementation monitoring requirements to guide the successful implementation of PBCS in the AFI Region c) Urge Member States to adopt the Minimum Standards for RCP /RSP Specifications as adopted at the SAT/FIT 24. d) RCP /RSP Specifications to be included in the AFI Regional Air Navigation Plan, should it be adopted. 	
<i>Strategic Objectives</i>	Safety, Air Navigation Capacity and Efficiency

1 INTRODUCTION

1.1 Performance-based communication (PBC) and performance-based surveillance (PBS) constitute performance-based communication and surveillance (PBCS) and are similar, and complementary, to performance-based navigation (PBN). PBC and PBS involve the establishment of required communication performance (RCP) and required surveillance performance (RSP) specifications in order to enhance safety and efficiency within designated airspace, and imposing them on aeronautical communication and surveillance systems respectively. RCP and RSP specifications are composed of certain performance-related parameters. An RCP specification is identified by a designator (e.g. RCP 240) which shows the maximum transaction time in seconds. Similarly, the RSP designator (e.g. RSP 180) indicates maximum data delivery time in seconds. Moreover, there are other performance parameters attached to each RCP and RSP designator which include continuity, availability and integrity.

1.2 The Air Traffic Navigation Services (ATNS) South Africa has decided to commit to migrate from RNAV 10 in our oceanic airspace to RNP4 within the South African designated oceanic airspace enabled through the implementation of PBCS. This can only be achieved by following the PBCS Implementation Plan – Checklist (ICAO Doc 9869). Stemming from the above, there are tasks allocated (A – E) to various aviation stakeholders to ensure full PBCS implementation is synchronized for a future date of implementation.

1.3 The Implementation Plan - (A task allocated to the Air Navigation Service Provider (ANSP) - has yet not yet been presented to all affected stakeholders within South Africa for reasons outlined below.

2. DISCUSSION

2.1. SOUTH AFRICAN PROJECT STATUS

2.1.1 A PBCS Implementation Plan has been drafted, however, one of the important aspect of implementation is to at least test the current system in terms of functionality required for PBCS technical requirements.

2.1.2 To assess the current system, data needs to be extracted from the ATM system (Aircraft Communications Addressing and Reporting System (ACARS) messaging up/down) and then analyzed by an analysis tool to assess if the RCP (Required Communication Performance) and RSP (Required Surveillance Performance) meets the technical specification required for PBCS.

2.1.3 Currently ATNS South Africa has challenges accessing the required RCP and RSP information from the ATM system. This has been escalated to the ATM system supplier who has confirmed that they are currently addressing the challenge. (Timeframe unknown).

2.1.4 Further to this, once the data is downloaded as per ICAO Doc 9869, an analysis tool will need to be acquired to analyse said data as per above requirement the entire system performance data. Training will be required by staff to download extract required data from the ATM system and effective use of the analysis tool. This will enable end-to-end system integrity through post-implementation monitoring, identifying, reporting and tracking of problems, and corrective action.

2.2 PERFORMANCE MONITORING

2.2.1 The goal of monitoring data link communication performance is to:

- Maintain safe and efficient operations;
- Determine continued compliance and interoperability;
- Investigate problems; and
- Share lessons learned.

2.2.2 Once the required data is downloaded from the ATM system, it is important that it is populated in the correct format to be able to get imported into the analysis tool. It is foreseen that ARMA will indeed be the AFI RMA (Regional Monitoring Agency) which will monitor PBCS performance for the AFI region. ANSP's/regulators providing ARMA with extracted data must ensure that it arrives in the correct format for analysis by the analysis tool as ARMA does not have the resource to correct data formats prior to analysis.

2.2.3 Obtaining a baseline of approximately 1 month of flights currently filing PBCS and flying in FAJO and then analyzing performance of said flights and obtaining a result falling inside

PBCS tolerance is required before the implementation plan will be set in motion to ensure that the ATM system is functioning properly.

2.3 PBCS Challenges

2.3.1 Discussions with a local international airline has indicated that they were not filing their flight plans correctly as per flight plan 2012 (and revisions) to allow for ATC to ascertain if an aircraft is PBCS capable and certified. This has been corrected. Training will need to be provided to all ATC working FAJO airspace in terms of flight plan 2012 with specific focus on FANS 1/A and PBCS flight plan indicators.

2.3.2 Training will have to be given to all FAJO ATC's to ensure familiarity with reduced separation between aircraft and various contingency measures to implement should system failures occur, or recovery from failure needs to occur.

2.3.3 Obtaining the required PBCS extracted data in the correct format for analysis from various AFI member states will pose a challenge. It is foreseen that the PBCS data extraction which is a current ATNS challenge will be a generic problem across the AFI member states.

2.3.4 Many States are currently considering ADS-B space based as a surveillance solution. They need to bear in mind that PBCS is an ADS-B enabler. Even with a RSP15 - corresponding to a position report updated interval of 15 s that may be achievable a multi-source ADS-B system with a space-based component – an RCP240 – implying a controller intervention time of 4 minutes – would at very best allow for 15 nautical mile (NM) lateral separation.

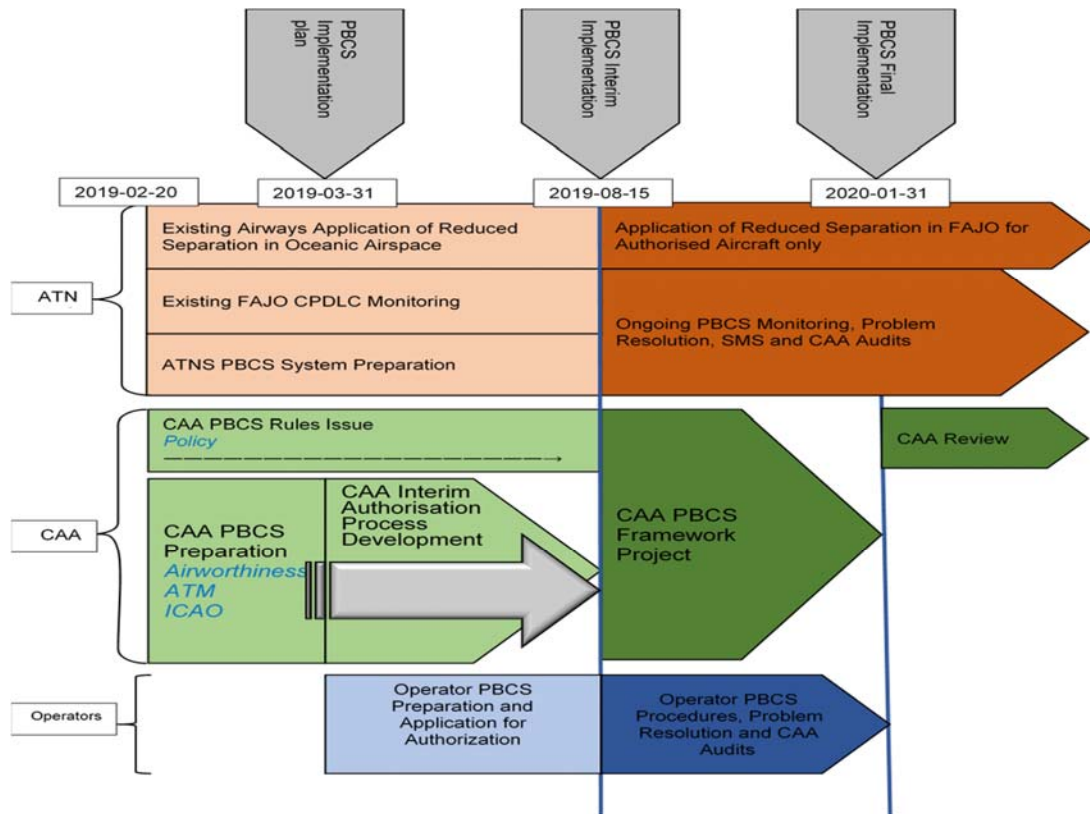
2.3.5 South Africa intends joining the PBCS charter once PBCS is fully implemented. Monitoring of PBCS performance is vital and needs to be stressed across the AFI region to ensure the RMA is provided with timeous data in the required format to avoid Exclusion from the PBCS charter.

2.3.6 Communication service providers across the AFI region need to be verified by ANSP's/Regulators to be part of the PBCS charter in meeting the required RSP/RCP technical requirements.

2.4 PBCS IMPLEMENTATION PLAN – CHECKLIST (ICAO DOC 9869)

2.4.1 A checklist that should be used as a guide for planning the implementation of PBCS operations. The checklist is systematized as follows:

- Group A tasks – State/region preparation;
- Group B tasks – ANSP general project development and management;
- Group C tasks – ANSP implementation activities – ATS service provision;
- Group D tasks – Aircraft operator, aircraft type/system (airworthiness) eligibility;
- Group E tasks – All stakeholders – post-implementation monitoring.



Note – The dates mentioned in the table above are subject to change as data extraction from the ATM system is currently a challenge.

3 ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the progress made by South Africa in preparation for PBCS implementation.
- b) Assist with lessons learned (implementation) and post implementation monitoring requirements to guide the successful implementation of PBCS in the AFI Region.
- c) Urge Member States to adopt the Minimum Standards for RCP /RSP Specifications as adopted at the SAT/FIT 24.
- d) RCP /RSP Specifications to be included in the AFI Regional Air Navigation Plan, should it be adopted.

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