



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**Twenty-Fifth Meeting of the AFI Planning and Implementation Regional Group (APIRG/25)
(7 and 11 November 2022)**

Agenda Item 3: AFI Airspace Monitoring

COORDINATION OF THE ROLE OF THE RMA AND OPERATIONAL PROCEDURE FOR PBCS NON-COMPLIANCE REPORTING

(Presented by ARMA)

SUMMARY	
<p>This working paper provides guidance for the implementation of procedures to support Performance Based Communication and Surveillance (PBCS) and non-compliance reporting in AFI Region in accordance with the AFI PBCS Plan, the roles and responsibilities of each organization participating in the program, and coordination of information upon receiving non-compliance performance reports.</p>	
<p>Action by the Meeting is as paragraph 3</p>	
<i>Strategic Objectives</i>	A, B, D and E

1 INTRODUCTION

1.1 The PBCS monitoring program is meant to support hazard identification as well as safety risk assessment and management as required by the ICAO Standards and Recommended Practices and Procedures (SARPs) on safety risk assessment and management. ICAO Doc 9869 PBCS Manual contains guidance material intended to facilitate implementation. States that have aircraft approved for PBCS or that have implemented separation standards that require PBCS are expected to develop policies and procedures based on the cited ICAO guidance.

1.2. Version 2 of the ICAO Doc 9869, PBCS Manual contains guidance material that is intended to provide information to supplement the SARPs for Air Navigation Services regarding the provision of PBCS. The specific purpose of guidance material in general is to facilitate implementation. It is to be amended periodically to maintain reflection of current practices and procedures that positively contribute to implementation and continued application.

2. DISCUSSION

2.2. One of the responsibilities and standardized practices listed in the PBCS Manual is that “ANSPs should consider combining the PBCS monitoring programmes with other monitoring programmes, particularly those established on the basis of a bilateral, multilateral or regional air navigation agreement, such as for monitoring RVSM, performance-based horizontal separation minima, and safety of ATM operations.” (ICAO Doc 9869, Second Edition (advance unedited), Performance-Based Communication and Surveillance (PBCS) Manual), 2016).

2.3. Regional Monitoring Agencies (RMAs) have considerable experience in communication with States regarding non-compliant operations. The RMAs accepted the proposal that the proficiencies in these areas be extended to communicating with States regarding underperforming aircraft. The RMAs would not, however, be involved in monitoring performance of PBCS operations.

2.4. The establishment of AFI PBCS monitoring was confirmed at APIRG 22, Conclusion 22/12 *a, d-f*, (quoted below) resulted in the agreement that RMAs support the regional PBCS monitoring programme.

APIRG/22 Conclusion 22/12: Establishment of the AFI Performance-Based Communication and Surveillance (PBCS) Monitoring

That:

- a) The AFI PBCS monitoring should be established as part of the AFI RMA monitoring mechanism;*
- d) The Secretariat to provide assistance and support as necessary to facilitate early establishment of the AFI PBCS monitoring mechanism; and*

- e) The proposed terms of reference of the ARMA relating to PBCS monitoring at **Appendix** to this report be reviewed and updated as necessary.*
- f) PBCS monitoring should be established as part of the South Atlantic Regional Monitoring Agency (SATMA) monitoring mechanism*

2.5. The RMAs are to support the regional PBCS monitoring by:

- (a) receiving reports of non-compliance with RSP 180 and RCP 240 from Air Navigation Service Providers (ANSPs) associated with RMAs' current airspace responsibility and transmitting these reports to the respective State or the appropriate RMA;
- (b) receiving and maintaining RCP and RSP approvals issued by States of Operator/Registry and incorporating into expanded RVSM/PBCS approvals database;
- (c) Verifying compliance with State PBCS requirements (applicable to RMAs with designated areas of responsibility that include airspace where PBCS is implemented); and
- (d) Sharing RCP and RSP approvals between RMAs in line with current sharing practices of RVSM approvals to facilitate the ability of States/ANSPs to verify that aircraft operators filing PBCS capabilities in the flight plan are authorized to do so.

2.6. A PBCS non-compliant monthly reporting format was developed, endorsed and implemented in 2019 at the Regional Monitoring Agency Co-ordination Group (RMACG).

2.7. States of the operator/registry must be notified of aircraft/fleets observed with non-compliant data link performance and additionally take corrective action.

2.8 Guidance on Transmission of PBCS Non-Compliance Performance Reports

2.8.1 PBCS monitoring requires continuous performance monitoring of data link operations within airspace utilizing separation standards listed in **Table 1** for compliance against the relevant RCP/RSP specifications. Figure 2 below depicts the method that has been implemented of submitting and receiving PBCS non-compliance data. Further details of this process are provided in this section that defines and outlines the expectations, roles, and responsibilities.

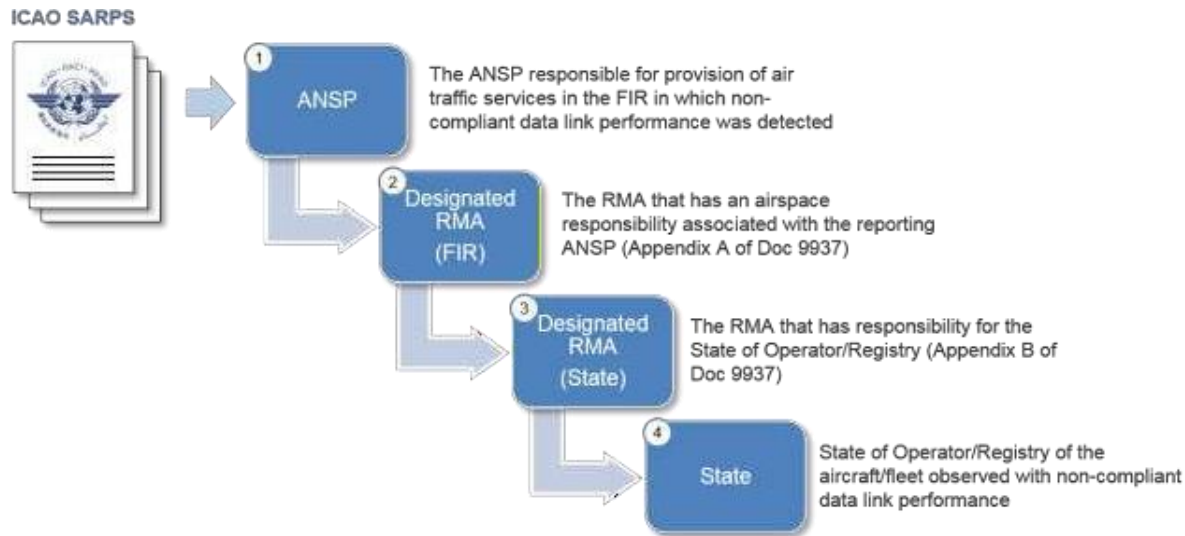


Figure 2. Communication flow for reports of non-compliance with PBCS performance requirements

Dimension of separation	Separation minima	RSP requirement	RCP requirement	Associated navigation requirement
Lateral	42.6 km (23 NM)*	180	240	RNP4
Performance-based Longitudinal	5 minutes	180	240	RNP2 or RNP4 or RNP10
Performance-based Longitudinal	55.5 km (30 NM)	180	240	RNP2 or RNP4
Performance-based Longitudinal	93 km (50 NM)	180	240	RNP4 or RNP10

* Also applicable to existing and future applications of 30NM lateral separation minima

Table 1 Separation standards with PBCS applicability

- a. **Figure 2 Step 1** - Initial monitoring and reporting of non-compliance are performed by the ANSP. The ANSP is responsible for the collection, analysis, and classification of non-complaint performance data within their FIR. The ANSP then transmits the data, in the agreed format (separated by operator) to the designated RMA responsible for that FIR. Additionally, in the absence of a non-compliance reports, ANSPs are expected to communicate monitoring status to their designated RMA. **Figure 3** is an example of a non-compliance report (separated by operator) generated by the ANSP which will then be submitted to the designated RMA.

PBCS ANSP Non-compliance Report Form								
Report Date:	09/08/2022							
Period of observed non-compliance:	May 2022 - July 2022							
Reporting Air Navigation Service Provider (ANSP):	NATS							
Contact email address(es) at Reporting ANSP:	jonathan.plomer@nats.co.uk ; tom.brown@nats.co.uk ; michael.price@nats.co.uk							
Reporting to Regional Monitoring Agency (RMA):	NAT CMA							
ICAO CODE:	ETH							
Airline Operator:	ETHIOPIAN AIRLINES							
State of Operator/Registry:	ETHIOPIA							
PBCS Data								
FIR	4-letter ICAO Aircraft Type	Registration	ADS-C downlink Message Counts	95% RSP 180 Benchmark ASP	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 Benchmark ACP	Notes	Filed for P2/RSP180
				<=90 sec		<=180 sec		
EGGX	B7**	ET***	117	93.16%	10	90.0%	(*2) (*3) (*5)	Yes

Figure 3. A compiled ANSP non-compliance report separated by operator

- b. **Figure 2 Step 2** - The designated RMA for the FIR is responsible for receiving the non-compliance reports. RMAs may be designated several FIRs. The RMAs take the received FIR reports and compile them into separate reports by relevant State of registry/operator. Registry/Operator reports are combined into reports for all States for each designated RMA.
- c. **Figure 2 Step 3** – The designated RMAs for the States receive one combined report containing non-compliance data. The designated RMA must now separate the non-compliance reports for each of their States and pass the non-compliance reports to the respective PBCS regulators.
- d. **Figure 2 Step 4** – The final step in the reporting and transmission of the reports and represents the State, which is responsible for the oversight of all airframes registered in their respective States and ensures that the performance of those airframes meets the required standards.

2.9 Conclusion

2.9.1 In support of continued safe operations within airspaces for which RMAs are currently performing system performance monitoring in the vertical dimension, RMAs play a valuable role in supporting safe operations in the horizontal airspace where PBCS is applied, by providing PBCS approval data and serving as a liaison between ANSPs and relevant States.

2.9.2 RMAs support the regional PBCS monitoring programs by:

- i. Receiving reports of non-compliance with RSP180 and RCP240 from ANSPs associated with current airspace responsibility and transmitting reports to the respective State;
- ii. Receiving and maintaining RCP and RSP approvals issued by States of Operator/Registry associated with current State responsibility and incorporating into expanded RVSM/PBCS approvals database; and
- iii. Sharing RCP and RSP approvals between RMAs in line with current sharing practices of RVSM approvals for the ability of States/ANSPs to verify that aircraft operators filing PBCS capabilities in the flight plan are authorized to do so.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

- a) Note the information contained in this paper;
- b) Note any relevant matters as appropriate regarding pre-implementation process of PBCS in the AFI Region;
- c) Address any concerns or necessitates in the RMA PBCS processes in assisting States with the implementation.
- d) Encourage States to familiarise themselves with the AFI PBCS Plan, provided for guidance, published on the ARMA Website.
- e) Request States to complete a survey on the status of the planned implementation of PBCS in their respective FIRs to determine readiness as per the attachments to this WP. (**Attachment A and B**).

ATTACHMENT A

SURVEY OF THE STATUS OF CURRENT AND PLANNED IMPLEMENTATION OF PERFORMANCE- BASED HORIZONTAL SEPARATION MINIMA

Instructions: States to complete the Survey and return by email to the ICAO Africa Indian Ocean Regional Monitoring Agency(ARMA) to determine readiness for PBCS Implementation				Y/N	If NO, Planned Date
1. Has your State completed any of the following preparations for PBCS implementation?					
PBCS Implementation Task List	Task Group	Task ID	TASK descriptor		
	Group A	A-1	AIP (Prescription of an RCP/RSP specification. Also see B-3 below)		
		A-2	PBCS policies, objectives supporting safety oversight of ANSP PBCS operations		
		A-3	PBCS policies, objectives supporting safety oversight of Aircraft Operator and Aircraft System PBCS operations		
		A-4	Proposal for Amendment to ICAO Doc 7030 - <i>Regional Supplementary Procedures</i> for PBCS operations , if applicable		
	Group B	B-1	PBCS Implementation Plan		
		B-2	Target dates for PBCS and relevant ATM operations		
		B-3	RCP/RSP specifications		
		B-4	PBCS awareness		
	Group C	C-1	Operational concepts and procedures for PBCS operations		
		C-2	ATM automation system changes to use flight plan RCP/RSP indicators		
		C-3	ATM automation changes for PBCS monitoring		
		C-4	Confirm initial ANSP compliance with RCP/RSP specifications		
		D-1	Aircraft operator readiness		

	Group D	D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP		
	Group E	E-1	PBCS monitoring, analysis and reporting - post implementation		

Attachment B

Instructions: States to complete the Survey and return by email to the ICAO Africa Indian Ocean Regional Monitoring Agency(ARMA) to determine readiness for PBCS Implementation				Y/N	If NO, Planned Date
2. Does your State submit data link problem reports to a recognized AFI Regional Monitoring Agency (ARMA)					
3. Does your State monitor and analyze data link performance in accordance with the following specifications and report the analysis to a recognized FANS Interoperability Team (FIT)?					
Communication Specifications & Interoperability Standards	Normal	RCP240	FANS1/A CPDLC		
	Alternate	RCP400	SATVOICE		
		RCP400	HF		
Surveillance Specifications & Interoperability Standards	Normal	RSP180	FANS1/A ADS-C		
	Alternate	RSP400	SATVOICE		
		RSP400	HF		
4. Has your State implemented or planned to implement the following performance-based horizontal separation minima?					
Navigation Specifications & Applicable ATM Operations	RNAV/RNP	RNAV/RNP 10	50 NM Lateral Separation		
			50 NM Longitudinal Separation		
		RNP 4	30 NM Longitudinal Separation		
			30 NM Lateral Separation		
			23 NM Lateral Separation		
RNP2	30NM Climb-Descend Through				