



International Civil Aviation Organization

ICAO

Thirteenth Meeting of the FANS Interoperability Team – Asia
(FIT-Asia/13)

Bangkok, Thailand, 06 – 09 June 2023

Agenda Item 3: PBCS Developments and Implementation

REGIONAL PBCS IMPLEMENTATION UPDATE

(Presented by the Secretariat)

SUMMARY

This paper presents an update on the status of PBCS implementation among Asia/Pacific Administrations, as reported using the Regional PBCS Implementation Survey form.

1. INTRODUCTION

1.1 The Revised Survey on Performance-Based Separation Implementation is expected to be completed annually by all Asia/Pacific Administrations, by not later than 28 February each year. The survey report form (**Attachment A**) is available on the ICAO Asia/Pacific Regional Office eDocuments web-page at <https://www.icao.int/APAC/Pages/eDocs.aspx>.

1.2 Completion and submission of the completed survey report form is supported by a number of formal Conclusions agreed by the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), and its technical sub-group to which FIT-Asia reports – the Regional Airspace Safety Monitoring Advisory Group (RASMAG).

2. DISCUSSION

2.1 The following APANPIRG and RASMAG Conclusions relate to the survey on performance-based separations:

2016 – APANPIRG/27

Conclusion APANPIRG/27-7: PBCS Operator Requirements

That, States are urged to take appropriate measures to develop, establish, implement and promulgate, through advisory circular or other relevant State instrument, necessary policies and procedures to enable operators conducting flights in airspace where separations are dependent on Performance-Based Communication and Surveillance (PBCS) to start using Required Communication Performance (RCP) / Required Surveillance Performance (RSP) indicators in the flight plan as soon as possible. This should take into account:

- a) *time for the operator to comply with the States' policies; and*
- b) *the need for the State to distribute data from PBCS monitoring programs, as necessary.*

2017 – RASMAG/22 and APANPIRG/28

Conclusion RASMAG/22-3: Performance-Based Separation Implementation Survey

That,

1. All APAC States are urged to complete a Survey on Performance-Based Separation Implementation and return the completed survey to the ICAO APAC Regional Office by not later than 18 August 2017; and
2. The Performance-Based Separation Implementation Survey form be uploaded to the ICAO Asia/Pacific Regional Office website, for annual reporting by all APAC States by not later than 30 April each year.

Conclusion APANPIRG/28-11: PBCS Operational Authorizations

That, noting the expected implementation of Performance-Based Communications and Surveillance (PBCS) provisions of ICAO Annexes, PANS and Guidance Material by not later than 29 March 2018, Asia/Pacific States are urged to:

1. Expedite the development and implementation of the PBCS authorization process;
2. Share information through the ICAO Asia/Pacific Regional Office on the availability of PBCS regulatory material and on the expected readiness of their aircraft operators; and
3. Monitor communications and surveillance performance against RCP240 and RSP 180 specifications as described in Doc 9869 – PBCS Manual for all individual aircraft using datalink in their area of responsibility, and make the performance data available on request to all States of Registry.

2018 – RASMAG/23

2.2 At FIT-Asia/8 (June 2018), it was reported that only one Asia/Pacific Administration had submitted a completed report form since FIT-Asia/7 (December 2017). Consequently, RASMAG/23 formed the following Conclusion:

Conclusion RASMAG/23-1: PBCS Compliance

That, ICAO reminds all Asia/Pacific Administrations of Conclusions RASMAG/22-3, and APANPIRG 26/7 and 28/11, and requests they urgently complete the annual Survey on Performance-Based Separation Implementation, due by April 30 each year, particularly with respect to Survey items D1 and D2

2.3 The emphasis on survey items D1 and D2 reflected regional concerns relating to the number of airframes that had not yet been authorized by their regulatory authority to include PBCS indicators in their flight plans. Such aircraft are not eligible for performance-based separations, such as those based on Required Navigation Performance (RNP) in circumstances where the application of the separation minimum is dependent on PBCS. Examples include 50NM longitudinal, 30NM longitudinal and 23 NM lateral separation minimums requiring ADS-C and CPDLC.

2.4 2022 – RASMAG/27

Conclusion RASMAG/27-2: Updated Reporting of PBCS Implementation Status and Performance Monitoring Data

That:

1. *The revised Survey of the Status of Current and Planned Implementation of Performance-Based Separation Minima at Appendix C to the report, and the revised PBCS Action List for ANSPs at Appendix D to the report be uploaded to the ICAO Asia/Pacific Regional Office website to replace the existing; and*
2. *States are urged to submit the following to the Asia/Pacific Regional Office by not later than 28 February each year:*
 - a) *The completed Survey of the Status of Current and Planned Implementation of Performance-Based Separation Minima form; and*
 - b) *PBCS performance data for inclusion in the aggregated regional PBCS performance data report, using the Data Link Performance Report Template – ANSP to FIT provided on the ICAO Asia/Pacific Regional Office website.*

Note 1: Non-FIT-Asia States may submit their PBCS performance data through the relevant FIT.

Note 2: This Conclusion supersedes Conclusions RASMAG/22-3, 23-1, 23-2 and 23-3

2.5 Prior to FIT-Asia/12, one or more completed report forms had been provided by 19 APAC Administrations:

Australia, Bhutan, China, Hong Kong China, Fiji, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, New Zealand, Pakistan, Philippines, Sri Lanka, Republic of Korea, Singapore, Thailand, Viet Nam and USA.

2.6 The following 14 APAC Administrations submitted completed report forms for the 2023 update and report to FIT-Asia/13:

China, Fiji, French Polynesia, Indonesia, Japan, Malaysia, Mongolia, Nepal, New Zealand, Philippines, Singapore, Sri Lanka and Thailand.

2.7 **Attachment B** summarizes the PBCS implementation data provided so far to the ICAO Regional Office.

2.8 The following notes summarize the updates provided since FIT-Asia/12:

China: added completion of tasks C-3, D-1, D-2, reported providing data link problem reports to CRA, implemented RCP400 (SATVOICE) RCP400 (HF) and RSP400 (SATVOICE) and RSP400 (HF), added 30 NM lateral separation.

Fiji: added completion of tasks A-1, A-4, C-2, C-3, D-1, D-2, E-1, reported providing data link problem reports to CRA, implemented RCP240 and RSP180 specifications, added 50NM lateral separation, 50NM longitudinal separation, 30NM longitudinal separation, and 30NM lateral separation.

French Polynesia: added completion of tasks A-1, A-2, A-3, A-4, B-3, B-4, C-1, C-4, D-1, D-2, E-1, reported providing data link problem reports to CRA, implemented RCP240 RCP400 (HF) and RSP180 and RSP400 (HF), added 50NM lateral separation, 50NM longitudinal separation, 30NM longitudinal separation, and 30NM lateral separation.

Indonesia: Implemented RSP180 specification.

Japan: added completion of tasks A-1, A-2, A-3, C-2, C-4, D-1, D-2, E-1.

Malaysia: added completion of tasks A-1, A-2, A-3, B-1, B-2, B-3, B-4, C-3, C-4, reported providing data link problem reports to CRA, implemented RCP240 and RSP180, added 50NM lateral separation.

Mongolia: added 30NM longitudinal separation.

Nepal: no change from previous report.

New Zealand: added completion of tasks A-1, D-2, added 23NM lateral separation and other planned or implemented separations - 20NM longitudinal and 12NM lateral (*Reference: Doc 4444 - 5.4.2.9.2 Table 5-2*).

Philippines: added completion of tasks A-3, A-4, implemented RCP400 (SATVOICE) RCP400 (HF) and RSP400, added 50NM lateral separation, 30NM longitudinal separation, and 30NM lateral separation.

Singapore: no change from previous report.

Sri Lanka: reported providing data link problem reports to CRA, implemented RCP240 and RSP180, added 50NM longitudinal separation, 30NM longitudinal separation.

Thailand: added completion of tasks A-3

2.9 According to the survey result, some confusion/misunderstandings by some Administrations were observed. Therefore, there would be a need to amend the survey form to clarify it. Further discussion will be held under WP/6 of FIT-Asia/13.

2.10 The meeting is invited to note that the provisions of ICAO Annexes 6 and 11, and Doc 4444 PANS-ATM, require that PBCS services and regulations are implemented, summarized as follows:

- By Air Navigation Service Providers applying the following commonly used performance-based separation minima¹, where supported by ADS-C/CPDLC:
 - 23 NM lateral separation (RNP 4 or RNP 2);
 - 50 NM longitudinal separation (RNAV 10/RNP 10 or RNP 4); and
 - 30 NM longitudinal separation (RNP 4 or RNP 2)
- By Regulatory Authorities:
 - For safety oversight of ANSP PBCS operations; and
 - To approve, and monitor the performance of, PBCS operations by aircraft and aircraft operators of the State of Registry.

¹ ICAO Doc 4444 Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) sections 5.4.1.2.1.6 and 5.4.2.9.2 detail the communications and surveillance performance requirements for all performance-based separation minima that are supported by ADS-C/CPDLC.

2.11 The meeting should also recall that the implementation of performance-based separations in airspace over the high seas requires supporting procedures in ICAO Doc 7030 – *Regional Supplementary Procedures*, particularly including:

- 50NM lateral separation – RNAV 10 (RNP 10);
- 50NM longitudinal separation – RNAV 10 (RNP 10) RCP240, RSP180;
- 30NM longitudinal separation – RNP 4 or RNP 2, RCP240, RSP180;
- 23 NM lateral separation – RNP 4 or RNP 2, RCP240, RSP180.

2.12 FIT-Asia/13 WP/16 provides further details on clarification of requirements for Doc 7030 support for separation minimums applied in the airspace over the high seas.

2.13 States of registry of aircraft operators that are approved or are seeking approval to file RCP/RSP indicators in flight plans are requested to review their reported progress in Group D and Group E tasks.

Note: Group D tasks relate to regulatory approval for aircraft operators to file RCP/RSP indicators in flight plans, and Group E relates not only to regulatory requirements for post-implementation monitoring, analysis and reporting by ANSPs, but also regulatory monitoring of performance by approved aircraft operators.

2.14 The meeting is also invited to note that ICAO Asia/Pacific Regional Office will continue to monitor regional implementation, and raise APANPIRG Air Navigation Deficiencies or take other action as necessary in cases where States do not comply with relevant ICAO provisions.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) ensure that PBCS implementation status reports are provided to the ICAO APAC Regional Office in accordance with RASMAG and APANPIRG Conclusions;
- c) ensure the consistency of reporting between elements of PBCS and other elements of the reporting form, and between annual reports; and
- d) discuss any relevant matters as appropriate.

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

Instructions:

- 1. Complete the Survey at least once annually and return by email to the ICAO APAC Regional Office (apac@icao.int) by NOT LATER THAN 28 FEBRUARY EACH YEAR.**

 - 2. Administrations that provide ATC Separation Services in Category R airspace¹:**
 - Complete all sections of the form.

 - 3. Administrations that do not provide separation services in Category R airspace:**
 - Complete Section 1 Group A (question A3), Group D and E
Refer ICAO Doc 9869 – PBCS Manual Appendix A refers.
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¹ The Asia/Pacific Seamless Air Navigation Services Plan defines Category R Airspace: ¹ Category R: remote en-route airspace with Air Traffic Services (ATS) HF or CPDLC communications and outside the coverage of ground-based surveillance mote.

1. Has your State completed any of the following preparations for PBCS implementation?					
PBCS Implementation Task List	Task Group	Task ID	TASK descriptor	Y/N	If NO, Planned Date
	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		
	Group D	D-1	Aircraft operator readiness		
		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		

				Y/N	If NO, Planned Date
2. Does your State submit data link problem reports to a recognized Central Reporting Agency (CRA)					
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, RNP 4, RNP 2	50 NM Lateral Separation <i>Communication other than direct controller-pilot voice</i>		
		RNAV/RNP 10, RNP 4	50 NM Longitudinal Separation <i>RCP/240 and RSP/180</i>		
		RNP 4 or RNP 2	30 NM Longitudinal Separation		
			30 NM Lateral Separation <i>In cases where the ANSP has considered there is insufficient operational benefit to justify the investment in the change from 30 NM to 23 NM.</i>		
			23 NM Lateral Separation		
			<i>Other planned or implemented separations dependent on RCP240/RSP180. Please also provide the DOC 4444 PANS- ATM reference.</i>		

FIT-Asia PBCS Planning Chart (Administrations with FIR/s)

State	Afghanistan	Bangladesh	Cambodia	China	Hong Kong China	India	Indonesia	DPR Korea	Republic of Korea	Lao PDR	Malaysia	Myanmar	Maldives	Mongolia	Nepal	Pakistan	Philippines	Sri Lanka	Singapore	Thailand	Viet Nam
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PBCS Implementation Task List	Task Group	Task ID	TASK descriptor	Afghanistan	Bangladesh	Cambodia	China	Hong Kong China	India	Indonesia	DPR Korea	Republic of Korea	Lao PDR	Malaysia	Myanmar	Maldives	Mongolia	Nepal	Pakistan	Philippines	Sri Lanka	Singapore	Thailand	Viet Nam		
	Group A	A-1	AIP (Prescription of an RCP/RSP specification)					X			X				X						X		X			
A-2		ANSP (PBCS policies, objectives supporting safety oversight)					X			X				X								X				
A-3		Operator and aircraft System- PBCS policies, objectives supporting safety oversight					X			X				X							X		X	X		
A-4		Regional Supplementary Procedures (Doc. 7030) for PBCS operations , if applicable					X			X				X							X		X			
Group B	B-1	PBCS Implementaion Plan					X			X				X						X		X				
	B-2	Target dates for PBCS and relevant ATM operations					X			X				X						X		X				
	B-3	RCP/RSP specifications					X			X				X						X		X		X		
	B-4	PBCS awareness					X			X				X						X		X		X		
Group C	C-1	Operational concepts and procedures for PBCS operations					X			X										X		X		X		
	C-2	ATC automation changes to use flight plan RCP/RSP indicators					X			X		X								X		X		X		
	C-3	ATC automation changes for PBCS monitoring					X			X				X						X		X		X		
	C-4	Confirm initial ANSP compliance with RCP/RSP specifications					X			X				X						X		X		X		
Group D	D-1	Aircraft operator readiness					X			X										X		X	X	X		
	D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP					X			X										X		X	X	X		
Group E	E-1	PBCS monitoring - post implementation					X			X										X		X				
Does your State submit data link problem reports to a recognized Central Reporting Agency (CRA)							X			X			X	X							X	X		X		
Cmmunication Specifications & Interoperatability Standards	Normal	RCP240	FANS1/A CPDLC				X			X				X						X	X	X		X		
		RCP400	SATVOICE				X							X						X						
	Alternate	RCP400	HF				X			X				X						X						
Surveillance Specifications & Interoperatability Standards	Normal	RSP180	FANS1/A ADS-C				X			X				X						X	X	X		X		
		RSP400	SATVOICE				X							X						X						
	Alternate	RSP400	HF				X			X				X						X						
ADS-B																										
Navigation Specifications & Applicable ATM Operations	RNAV/RNP	RNAV/RNP 10, RNP 4, RNP 2	50 NM Lateral Separation <i>Communication other than direct controller-pilot voice</i>					X		X			X	X			X	X	X	X	X			X		
		RNAV/RNP 10, RNP 4	50 NM Longitudinal Separation RCP/240 and RSP/180					X		X							X	X	X	X	X	X			X	
		RNP 4 or RNP 2	30 NM Longitudinal Separation					X		X							X			X	X	X				X
			30 NM Lateral Separation <i>In cases where the ANSP has considered there is insufficient operational benefit to justify the investment in the change from 30 NM to 23 NM.</i>									X									X					X
		Other planned or implemented separations	23 NM Lateral Separation								X										X					X

Responded to Survey 2023

