



ICAO

International Civil Aviation Organization

**Tenth Meeting of the FANS Interoperability Team – Asia
(FIT-Asia/10)**

Video Teleconference, 03 – 06 August 2020

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 annual Survey on Performance-Based Separation Implementation is expected to be completed annually by all Asia/Pacific Administrations, by not later than 30 April 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).

1.3 Overall regional engagement in implementation status reporting remains poor.

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 Prior to FIT-Asia/9, one or more completed report forms had been provided by 19 APAC Administrations:

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

2.5 The following six APAC Administrations have submitted completed report forms for the 2020 update and report to FIT-Asia/10:

Australia, China, Philippines, Singapore, Thailand, Viet Nam.

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

2.7 The following notes summarize the updates provided since FIT-Asia/9:

Australia: added completion of tasks B-3, C-3, D-1, D-2, reported providing data link problem reports to CRA, implementing RCP240 RCP400 (HF) RSP180 and RSP400 (HF), added 23NM lateral separation.

China: no change from previous report.

Philippines: deleted task A2, added all Group B, C and E tasks, implemented RCP240 and RSP180 specifications.

Singapore: no change from previous report.

Thailand: added completion of tasks D-1 and D-2

Viet Nam: added completion of tasks B-4, C-1, C-2, D1, D2

2.8 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.

2.9 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.

2.10 The following Administrations are requested to review their reported implementation and provide any updated report:

Hong Kong, China – 50 NM lateral and longitudinal separation implemented, but no Group A, B, C, D or E tasks completed.

Indonesia – 50NM longitudinal separation implemented, but no procedure in Doc 7030.

Note: Indonesia is currently processing a Proposal for Amendment (PFA) to Doc 7030.

Philippines – reported implementation of all of the performance-based separations in the report form, but no supporting Doc 7030 procedures.

2.11 There are also several States that:

- are believed to have implemented performance-based separations requiring PBCS support, but have not reported implementation or the completion of relevant tasks; and/or
- have not reported completion of key group D and E tasks relating to the approval of aircraft operators of their State of Registry for PBCS operations.

2.12 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: Complete the Survey at least once annually and return by email to the ICAO APAC Regional Office (apac@icao.int) by <u>NOT LATER THAN 30 APRIL EACH YEAR.</u>				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		
	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		

Instructions: Complete the Survey at least once annually and return by email to the ICAO APAC Regional Office (apac@icao.int) by NOT LATER THAN 30 APRIL EACH YEAR.				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	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				

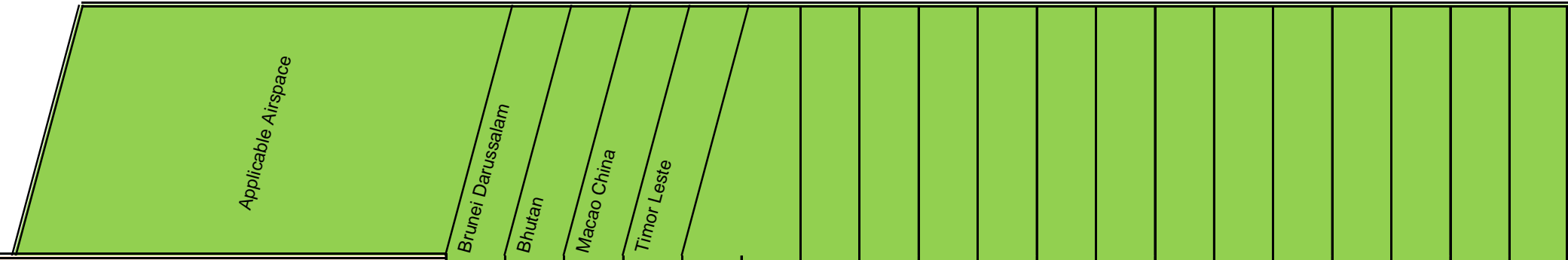
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FIT-Asia PBCS Planning Chart (Administrations with FIR/s)

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	
	PBCS Implementation Task List	Group A	A-1	AIP (Prescription of an RCP/RSP specification)				X			X										X		X		
A-2			ANSP (PBCS policies, objectives supporting safety oversight)				X														X		X		
A-3			Operator and aircraft System- PBCS policies, objectives supporting safety oversight				X														X		X		
A-4			Regional Supplementary Procedures (Doc. 7030) for PBCS operations , if applicable				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		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
		C-4	Confirm initial ANSP compliance with RCP/RSP specifications				X				X										X		X		X
Group D		D-1	Aircraft operator readiness																		X		X	X	X
		D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP																		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	
Cmmunication Specifications & Interoperability Standards	Normal	RCP240	FANS1/A CPDLC				X			X										X		X		X	
		RCP400	SATVOICE										X												
	Alternate	RCP400	HF								X		X												
		RSP180	FANS1/A ADS-C				X				X										X		X		X
Surveillance Specifications & Interoperability Standards	Normal	RSP400	SATVOICE																						
		RSP400	HF								X		X												
	Alternate	ADS-B																					X		
		RNP 4	RNAV/RNP 10	50 NM Lateral Separation					X		X			X					X	X	X	X	X		X
			50 NM Longitudinal Separation					X		X							X	X	X	X	X	X		X	
Navigation Specifications & Applicable ATM Operations	RNP 4	30 NM Longitudinal Separation																						X	
		30 NM Lateral Separation (pre-existing std)																						X	
		23 NM Lateral Separation (new std)																							X
	RNP2	30NM Climb-Descend Through																							
		20NM Lateral Climb-Descend Through																							
		07 - 15 NM VHF Lateral Separation																							
		8NM VHF Climb-Descend Through																							
10 MINUTE Longitudinal Separation without MNT.																									
RVSM																									
Other ATM Operations	ADS-C CDP																								
	ADS-B ITP																								
	Tactical Lateral Offsets for Climb or Descent																								
	Tailored Arrival																								
	CDO																								
	UPR																								
	DARP	Accept																							
Initiate																									

FIT-Asia Seamless PBCS Planning Chart (Administrations without FIR/s)



Task Group	Task ID	TASK descriptor	Applicable Airspace																	
			Brunei Darussalam	Bhutan	Macao China	Timor Leste														
PBCS Implementation Task List	Group A	A-1	AIP (Prescription of an RCP/RSP specification)																	
		A-2	ANSP (PBCS policies, objectives supporting safety oversight)																	
		A-3	Operatpr and aircraft System- PBCS policies, objectives supporting safety oversight																	
		A-4	Regional Supplementary Procedures (Doc. 7030) for PBCS operations , if applicable																	
	Group B	B-1	PBCS Implementaion 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	ATC automation changes to use flight plan RCP/RSP indicators																	
		C-3	ATC automation changes for PBCS monitoring																	
		C-4	Confirm initial ANSP compliance with RCP/RSP specifications																	
	Group D	D-1	Aircraft operator readiness																	
	Group E	E-1	PBCS monitoring - post implementation																	
	Cmmunication Specifications & Interoperability Standards	Normal	RCP240	FANS1/A CPDLC																
RCP400			SATVOICE																	
Alternate		RCP400	HF																	
		RCP400	HF																	
Surveillance Specifications & Interoperability Standards	Normal	RSP180	FANS1/A ADS-C																	
		RSP400	SATVOICE																	
	Alternate	RSP400	HF																	
		RSP400	HF																	
Navigation Specifications & Applicable ATM Operations	RNAV/RNP 10	50 NM Lateral Separation																		
		50 NM Longitudinal Separation																		
	RNP 4	30 NM Longitudinal Separation																		
		30 NM Lateral Separation (pre-existing std)																		
		23 NM Lateral Separation (new std)																		
	RNP2	30NM Climb-Descend Through																		
		20NM Lateral Climb-Descend Through																		
		07 - 15 NM VHF Lateral Separation																		
	8NM VHF Climb-Descend Through																			
	10 MINUTE Longitudinal Separation without MNT.																			
RVSM																				
Other ATM Operations	ADS-C CDP																			
	ADS-B ITP																			
	Tactical Lateral Offsets for Climb or Descent																			
	Tailored Arrival																			
	CDO																			
	UPR																			
	DARP	Accept																		
		Initiate																		

