



ICAO

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(FIT-Asia/12)

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

(Presented by the Secretariat)

SUMMARY

This paper presents follow-up discussion of matters raised during discussion of **FIT-Asia/12 WP/8**.

1. INTRODUCTION

1.1 **FIT-Asia/12 WP/8** introduced discussion of the Asia/Pacific Region's form for the submission of the status of current and planned implementation of performance-based horizontal separation, and proposed revision to the regional PBCS implementation chart that is used to report to FIT-Asia on the implementation progress reported by States.

2. DISCUSSION

Status Report Form

2.1 The Survey of the Status of Current and Planned Implementation of Performance-Based Separation Minima, available on the [ICAO Asia/Pacific eDocuments web-page](#) (ATM Section, Data Link Sub-Section) is divided into four sections.

2.2 **Section 1** of the status reporting form is derived from the items of PBCS planning identified in ICAO Doc 9869 *PBCS Manual*. No change is proposed to this section. The meeting should note that questions in Groups A to E are relevant to States that provide performance-based separations dependent upon PBCS within their airspace. States that do not provide such separation services are, however, required to implement **Group A (A3)** and Groups D and E, which are necessary for the approval and regulatory oversight of operators that file PBCS indicators in flight plans.

2.3 **Sections 2 and 3** of the status reporting form relate primarily to States that provide PBCS-dependent performance-based separations, and relate to provision of reports to a recognized Central Reporting Agency (CRA), and performance monitoring and reporting to a recognized FIT against RCP240, RCP400, RSP180 and RSP400 specifications.

2.4 **Section 4** of the status reporting form includes separation minimums that were considered at the time of development of the form (2018) to be the fundamental performance-based separations for implementation in the airspace defined in the Asia/Pacific Seamless ANS Plan as Category R (remote)¹. Most of these separation minimums had had been implemented for many years in several APAC FIRs prior to the applicability of PBCS.

2.5 Current lateral and longitudinal ‘performance-based’ separation minimums and their performance requirements are listed in the extracts from ICAO Doc 4444 – PANS-ATM, in **Tables 1 and 2**.

Table 5-2. Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes

<i>Minimum Spacing Between Tracks</i>		<i>Performance Requirements</i>			<i>Additional Requirements</i>
<i>Airspace where SLOP is not authorized, or is only authorized up to 0.5 NM</i>	<i>Airspace where SLOP up to 2 NM is authorized</i>	<i>Navigation</i>	<i>Communication</i>	<i>Surveillance</i>	
93 km (50 NM)	93 km (50 NM)	RNAV 10 (RNP 10) RNP 4 RNP 2	Types of communication other than direct controller-pilot VHF voice		
37 km (20 NM)	42.6 km (23 NM)	RNP 4 RNP 2	RCP 240	RSP 180	Conformance monitoring shall be ensured by establishing an ADS-C event contract specifying a lateral deviation change event with a maximum of 5 NM threshold and a waypoint change event
37 km (20 NM)	42.6 km (23 NM)	RNP 2 or GNSS equipage	Types of communication other than direct controller-pilot VHF voice		While one aircraft climbs/descends through the level of another aircraft remaining in level flight
27.8 km (15 NM)	33.4 km (18 NM)	RNP 2 or GNSS equipage	Direct controller-pilot VHF voice communications		
16.7 km (9 NM)	22.3 km (12 NM)	RNP 4 RNP 2	RCP 240	RSP 180	While one aircraft climbs/descends through the level of another aircraft remaining in level flight
13 km (7 NM)	19 km (10 NM)	RNP 2 or GNSS equipage	Direct controller-pilot VHF voice communications		While one aircraft climbs/descends through the level of another aircraft remaining in level flight

Table 1: Performance-based Separation Minima – Lateral Separation

¹ Category R: remote en-route airspace with Air Traffic Services (ATS) HF or CPDLC communications and outside the coverage of ground-based surveillance coverage.

<i>Separation minima</i>	<i>RNP</i>	<i>RCP</i>	<i>RSP</i>	<i>Maximum ADS-C periodic reporting interval</i>
93 km (50 NM)	10	240	180	27 minutes
	4	240	180	32 minutes
55.5 km (30 NM)	2 or 4	240	180	12 minutes
37 km (20 NM)	2 or 4	240	180	192 seconds (3.2 minutes)
5 minutes	2 or 4 or 10	240	180	14 minutes

Table 2: Performance-based Separation Minima – Longitudinal Separation

2.6 A proposed amended reporting form, with explanatory notes, is provided for consideration by the meeting in **Attachment 1**. The amendments relate to:

Instructions

1. Change of reporting date to February 28 each year;
2. **Administrations that provide ATC Separation Services in Category R airspace:**
 - Complete all sections of the form; and
 - ~~May cease reporting when all elements of each section are reported as implemented (discuss)~~
3. **Administrations that do not provide separation services in Category R airspace:**
 - Complete Section 1 Group D and E only; and
 - ~~May cease reporting when all elements of Section 1 Group D and E are implemented.~~

Section 4

4. Revised to clarify the navigation performance requirements for each separation minimum surveyed;
5. Simplified to only survey implementation of 50 NM longitudinal/lateral, 30 NM longitudinal, 23 NM lateral separation, and 30 NM lateral separation where ANSPs did not consider the operational benefit justified the expense of ATM automation system changes to support 23 NM lateral separation.

Regional Status Reporting to FIT-Asia, RASMAG and APANPIRG.

2.7 As mentioned in discussion of FIT-Asia/12 WP/8, the status report form used report regional implementation status to FIT-Asia, RASMAG and APANPIRG was provided to FIT-Asia in the early stages of understanding of PBCS, and included a number of non-PBCS-related operational initiatives that were being considered by some States and their ATM planning groups. The revised Regional Status Report form provided in **Attachment 2** to this Flimsy now only includes implementation status tracking of the items listed in the revised survey form. Proposed deletions are shown for consideration by the meeting.

Reporting Dates

2.8 The current reporting dates are as follows:

- PBCS Monitoring Data – ANSP to FIT – 31 March each year
(Conclusions RASMAG 23-2 and 23-3)
- Survey form: - 30 April each year
(Conclusions RASMAG/22-3 and 23-1)

2.9 As mentioned in **FIT-Asia/12 WP/8** (referring to the survey form) the meeting is invited to agree to a revised, common reporting date for both the PBCS monitoring data and the survey form. The proposed date of 28 February each year would provide the benefit of alignment with revised dates for other implementation status reports (subject to the agreement of the ATM Sub-Group of APANPIRG)

Draft Conclusion for Consideration by RASMAG

2.10 The meeting is invited to consider the following Draft Conclusion, for presentation to RASMAG/27. While the Draft Conclusion only refers to the survey form, the meeting may consider whether it should be revised to include any revised reporting date for PBCS monitoring data (ANSP to FIT) as mentioned above.

Draft Conclusion FIT-Asia/12/X – X: Revised Survey of the Status of Current and Planned Implementation of Performance-Based Separation Minima

That,

1. the revised survey form at **Attachment 1** be uploaded to the Asia/Pacific Regional Office to replace the existing form; and
2. States use the form to report the status of implementation of performance-based separation minima by not later than [date subject to discussion], in accordance with the instructions in the form.

This Draft Conclusion supersedes Conclusions RASMAG/22-3 and 23-1

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; a
- b) Agree to the revised regional status report form, for reporting implementation status to FIT-Asia, RASMAG and APANPIRG;
- c) Discuss and agree to revised reporting dates for the survey form and PBCS monitoring data; 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 30 APRIL EACH YEAR.**
2. **Administrations that provide ATC Separation Services in Category R airspace:**
 - 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

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>This was included to take account of States that considered there was little or no cost benefit in implementing the ATM system changes to support 23 NM lateral separation. Propose retain</i>		
		RNP2	23 NM Lateral Separation 30NM Climb-Descend Through <i>This separation minimum was superseded by new minimums in PANS- ATM, which are not proposed for inclusion in the survey.</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			
PBCS Implementation Task List	Task Group	Task ID	TASK descriptor																								
	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		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			
		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		X	
		C-2	ATC automation changes to use flight plan RCP/RSP indicators					X			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		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	X		X		
	Does your State submit data link problem reports to a recognized Central Reporting Agency (CRA)							X			X			X								X	X		X		
	Cmmunication Specifications & Interoperability Standards	Normal	RCP240	FANS1/A CPDLC				X			X											X	X		X		
			RCP400	SATVOICE										X													
	Surveillance Specifications & Interoperability Standards	Alternate	RCP400	HF							X			X													
RSP180			FANS1/A ADS-C				X			X											X	X		X			
	Alternate	RSP400	SATVOICE							X			X														
		RSP400	HF							X			X														
ADS-B																							X				
Navigation Specifications & Applicable ATM Operations	RNAV/RNP	RNAV/RNP 10; RNP 4, RNP 2	50 NM Lateral Separation					X		X			X				X		X		X	X		X			
		RNAV/RNP 10; RNP 4	50 NM Longitudinal Separation					X		X							X		X	X		X		X			
		RNP 4 or RNP 2	30 NM Longitudinal Separation								X													X	X		
			30 NM Lateral Separation (pre-existing std)								X													X	X		
			23 NM Lateral Separation (new std)								X														X		
		RNP2	30NM Climb-Descend Through								X																
			20NM Lateral Climb-Descend Through	NOT-YET-SURVEYED																							
			07-15 NM VHF Lateral Separation	NOT-YET-SURVEYED																							
			8NM VHF Climb-Descend Through	NOT-YET-SURVEYED																							
		10 MINUTE Longitudinal Separation without MNT.																									
RVSM																											
ADS-C CDP																											
ADS-B-ITP																											
Tactical Lateral Offsets for Climb or Descent																											
Tailored Arrival																											
CDO																											
UPR																											
DARP			Accept																								
			Initiate																								