



ICAO BANGKOK

UNITING AVIATION

# Operational Data Link Seminar

## Outcomes

Shane Sumner

*Regional Officer, ATM/AIM*

*ICAO Asia and Pacific Regional Office*

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# Objectives

- Assess the impact of the amendments to ICAO Annexes and Procedures for Air Navigation Services (PANS) concerning PBCS that are applicable by November 2016
- Determine a transition strategy for the Asia – Pacific Regions to accommodate possible noncompliance with the PBCS provision by November 2016;
- Review appropriate regional provisions including Asia and Pacific Regional Supplementary Procedures (Asia-PAC SUPPs, Doc 7030) and relevant guidance material, to determine necessary changes to prescribe reduced separation minima and associated PBN/PBCS requirements in the Asia and Pacific Regions



# Conditions for achieving objectives

- PBCS is essential to ensure safe and efficient ATM operations
- ICAO Regions should cooperate to develop their implementation plans to transition to PBCS – based on PBCS implementation plan checklist contained in the *PBCS Manual* (Doc 9869), Appendix A, and coordinate with ICAO Headquarters
- Cooperation from operators, communication service providers, aircraft manufacturers, other industry and regulators will be essential to the success of PBCS implementation



# The ICAO PBCS Provision References

Adopted/Approved March 2016 → Applicable November 2016

ICAO Doc	Description	Amdt
Annex 6	Operation of Aircraft	
Part I	Commercial Air Transport — Aeroplanes	40
Part II	General Aviation — Aeroplanes	34
Part III	Operations — Helicopters	20
Annex 11	Air Traffic Services	50
Annex 15	Aeronautical Information Services	39
Doc 4444	PANS—ATM	7
Doc 8400	PANS—ABC	



# Review the ICAO PBCS Provision

PBCS is a shared responsibility, but accountability is clear

In accordance with the ICAO PBCS Provision, State	In accordance with State policies	
	ANSP	Operator
<ul style="list-style-type: none"><li>❑ Establishes PBCS policies for ANSP, operator, airworthiness, etc.</li><li>❑ Prescribes RCP / RSP specifications in the applicable airspace for the relevant operations</li><li>❑ Publishes PBCS requirements in aeronautical information publication (AIP)</li></ul>	<ul style="list-style-type: none"><li>❑ Provides RCP / RSP-compliant services</li><li>❑ Recognizes RCP / RSP capabilities in air traffic control (ATC) automation</li><li>❑ Establishes PBCS monitoring program</li></ul>	<ul style="list-style-type: none"><li>❑ Prepares to file RCP / RSP capabilities in flight plan</li><li>❑ Participates in ANSP PBCS monitoring programs</li></ul>



# Review the ICAO PBCS Provisions

- The PBCS ICAO provision prescribes RCP240 / RSP180 to communication and surveillance capability required to apply the following performance-based horizontal separation minima
  - 30 NM, 50 NM and 5 minute longitudinal
  - 23 NM lateral (formerly 30 NM lateral)
- Supporting Manuals
  - GOLD Manual (Doc 10037)
  - PBCS Manual (Doc 9869)
  - Manual on Monitoring the Application of Performance-based Horizontal Separation Minima (Doc [PBHSM])
    - Formerly and often still referred to as en route monitoring agency (EMA)



# Items to Complete by Nov. 2016

- States need to establish their policies for their operators to be eligible to file RCP / RSP capability in the flight plan
- Operators need to prepare to be eligible and update their systems to insert the RCP / RSP designators in the flight plan
- ANSPs may need to provide PBCS monitoring data to relevant parties to make a compliance finding for operational approval
- ANSPs need to modify their systems to use RCP / RSP designators when applying performance-based separation minima
- States need to coordinate on Regional SUPPs (Doc 7030) and prescribe relevant RCP / RSP specifications in AIP



# Challenges, Issues, etc (1/2)

- a) Policy making
  - 1) When/Where/How will PBCS be implemented ?
- b) Certification process for sub-system on board
  - 1) What kind of data is required in order to certify compliance of sub-system? (CRA can provide ACP/ASP data to manufactures)
- c) Operational approval process for RCP/RSP specification
  - 1) How long do we need to complete approval process by aircraft operators and regulator?
  - 2) When will guidance material be issued to stakeholders? (AC-90-PBCS by FAA)
  - 3) What training program is required for Operators/ATC?
  - 4) What prescription should be included in “agreement” among Operators and CSP/SSPs?
- d) Application of specific ATM operations including separation standards applied
  - 1) How to realize “seamless” ATM operation among FIRs? (If one applies with P-code, other does not...)
  - 2) What items should be prescribed in AIP ?





# Challenges, Issues, etc (2/2)

## e) Monitoring process

- 1) How to establish or develop mechanism of “Sharing Information”, “Corrective actions” within States and among FIRs/regions ?
- 2) How to check each post implementation analysis by ICAO?

## f) Data sharing including results of the safety monitoring process (based on PBHSM)

- 1) Who has responsibility for the monitoring ? (RMA, EMA or...?)
- 2) How to establish “database” for confirmation of PBC/PBS approval status?
- 3) How to gather/exchange the information of approval status of aircraft beyond States?

## g) Framework for required corrective actions

- 1) Who has responsibility to execute the actions? (Who is “States” in documents?)
- 2) How to get contact list of all stakeholders?



# Status – Establish Operator Requirements

- Example – Canada, U.K. and U.S. are developing advisory circulars for operators to be eligible to file RCP240 / RSP180 in the flight plan
  - Targeting September 2016 for completion
  - Other States could benefit from this work
- Some differences in approach to determine eligibility
  - Design approval and condition of operator's operations and maintenance programs
  - But may also require PBCS monitoring data
- Specific approach is a matter for the States (Operator or Registry)
  - Standardization of States' PBCS policies is promoted through guidance material contained in the PBCS Manual (Doc 9869)



# APAC PBCS Transition Strategy - Intro

- Asia–Pacific transition strategy will address use of RCP / RSP flight plan designators for performance-based separations
  - To complement use of RNP flight plan designators
- Most significant issue – States and the operators are not likely to be ready to file RCP / RSP flight plan designators in relevant FIRs by November 2016
  - Also, some Asia-Pacific ANSPs may not be ready to use RCP / RSP flight plan designators by November 2016



# PBCS Operator Requirements

Proposed APANPIRG Conclusion 27/[n1] (September 2016)

That, States are urged to take appropriate measures to develop, establish and implement necessary policies and procedures to enable operators conducting flights in Flight Information Regions (FIRs) where separations are dependent on performance-based communication and surveillance (PBCS) to start using required communication performance (RCP) / required surveillance performance (RSP) flight plan designators as soon as possible. This should take into account:

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



## 30 NM Lat and 30/50 NM Long Transition

- Procedures for applying distance-based separation minima have been amended (Doc 4444, Chapter 5)
  - 50 NM and 30 NM longitudinal separation minima, and
  - 23 NM lateral separation minimum (formerly 30 NM)
- These separation minima are subject to the ICAO PBCS provision



# 30 NM Lat and 30/50 NM Long Transition

- Options considered
  - Stop applying the separation minima until PBCS is fully implemented
    - use of RCP / RSP flight plan designators beginning November 2016 would, in effect, stop applying the separation minima if many operators are not RCP / RSP eligible
  - Consider them to be “trial” status
  - Continue with the operational implementation under certain conditions.



# 30 NM Lat and 30/50 NM Long Transition

- We believe that these separation minima are currently being applied to a relatively small proportion of eligible aircraft pairs
  - These flights should already be subjected to PBCS monitoring
- The application of these separation minima should continue on the following conditions
  - PBCS monitoring is in place
  - PBCS is fully implemented (use of RCP / RSP flight plan designators) as soon as practically possible



# RCP / RSP Flight Plan Designators

Proposed APANPIRG Conclusion 27/[n2] (September 2016)

- Adjacent FIRs that are applying a particular separation minimum need to agree among themselves on a common date when to begin to use the RCP / RSP flight plan designators to avoid mid-ocean issues. This common date should be decided to be no later than [AIRAC date] November 2017

For example:

- That, the relevant ANSPs that plan to apply 30 NM and 50 NM longitudinal separation minima, and/or generally a 23 NM lateral separation minimum (currently 30 NM) implement the capability to process ICAO PBCS flight plan designators by [AIRAC date] (this date would signify the date that existing distance-based separations would be implemented under the newly amended ICAO provision and be no later than November 2017)



# Asia-Pacific Transition Strategy – Seamless PBCS Planning Chart

		Task Group	Task ID	TASK descriptor	Applicable Airspace	Anchorage Oceanic FIR	Auckland FIR	Brisbane (Hohiara & Nauru) UTAs	Fukuoka FIR	Manila FIR	Nadi FIR	Oakland Oceanic FIR	Port Moresby FIR	Santiago FIR	Tahiti FIR	Ujung Pandang FIR	Anchorage Domestic FIR	Anchorage Arctic FIR	Guam CERP	Honolulu Control Facility	Los Angeles ARTCC	Mazatlan FIR	Oakland Domestic ARTCC	Seattle ARTCC	Vancouver ACC		
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																								
		A-4	Regional Supplementary Procedures (Doc. 7030) for PBCS operations . if																								
	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																									
Communication Specifications & Interoperability Standards	Normal	RCP240	FANS1/A CPDLC		X	X	X	X			X	X		X	X	X									X		
	Alternate	RCP400	SATVOICE																								
Surveillance Specifications & Interoperability Standards	Normal	RSP180	FANS1/A ADS-C		X	X	X	X			X	X		X	X	X											
	Alternate	RSP400	SATVOICE																								
Navigation Specifications & Applicable ATM Operations			HF																								
			ADS-B		X	X	X				O					O	X	X		X		X		X	X		
	RNAV/RNP 10	50 NM Lateral Separation		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		50 NM Longitudinal Separation		X	X	X	X					X	X	X	X	X		X		X	X	X	X	X	X	X	
	RNP 4	30 NM Lateral Separation		X	X	X	X					X	X							X	X	X	X	X	X	X	
		30 NM Longitudinal Separation		X	X	X	X					X	X					X		X	X	X	X	X	X	X	
	RNP2	30NM Climb-Descend Through																									
		15 - 20 NM VHF Lateral Separation																									
			8NM VHF Climb-Descend Through																								
			10 MINUTE Longitudinal Separation without MNT.		X	X	X	X			X	X		X				X		X	X	X	X	X	X	X	
		RVSM		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Other ATM Operations			ADS-C CDP		P				P			P															
			ADS-B ITP		P				P			X															
			Tactical Lateral Offsets for Climb or Descent				X	X				X															
			Tailored Arrival									X															
			CDO		O			X																			
			UPR		X	X	X	X			X	X	X	X	X											X	
	DARP	Accept		X	X	X	X				X	X	X	X	X					X	X	X		X	X		
		Initiate										X	X			X											

Note: Current status of each FIR is as of March 2016. Legend : X: Implemented, O : Under operational trial, P : Under planning.



## State Readiness (will be re-worked by ICAO RO)

1	Have you implemented or are you planning to implement performance-based horizontal separation minima in your airspace? If planning to implement, state when you will implement.
2	Review the processes and procedures your State has in place to conduct approvals. Determine what needs to be done to begin issuing PBCS approvals for RCP240 and RSP180?
3	Investigate whether your ANSP is modifying its flight processing systems to automatically read the P codes ...reducing controller workload and error.
4	When will the systems be ready to process RCP / RSP flight plan indicators?
5	What PBCS monitoring (data analysis and problem reporting) is in place?
6	How can monitoring results can be shared with the region?



# Next Steps

- Complete the following items
  - Proposal for amendment (PfA) to the Regional SUPPS (Doc 7030)
  - Common language for State documents, such as aeronautical information publications (AIPs) and Aeronautical Information Circulars (AICs)



# Next Steps

- Regional Office will coordinate transition strategy, proposed conclusions and proposals for regional SUPPs and other materials

APAC Group	Dates
FIT-ASIA	5-6 May 2016
RASMAG	14-17 June 2016
ATM sub-group	4-8 July 2016
CNS sub-group	11-15 July 2016
IPACG [through Japan]	12-16 September (Via correspondence)
ISPACG [ through New Zealand]	Via correspondence
APANPIRG	7-10 September 2016



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