



Performance-based Communication and Surveillance (PBCS) Approvals and Monitoring

New York Oceanic Work Group

Jamaica, New York

13 October 2016

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FAA



Federal Aviation
Administration

Why PBCS?

Operators have choices for their "data link"

Technology

- FANS 1/A
- ATN B1
- B2
- POA (VDL M0/A)
- AOA (VDL M2)
- HFDL
- SATCOM
 - + Classic Aero on I3/I4
 - + Data 2/Data 3
 - + SwiftBroadband (SBB)
 - + Short Burst Data (SBD)
 - + Certus

+

Implementation

- AOC
- Cabin Services
- Configurable Avionics
- Procedures
- CSP/SSP
 - + SITA
 - + ARINC
 - + Inmarsat
 - + Iridium
 - + MTSAT



Different capabilities and performance

... and ATM operations, such as applying performance-based separation minima, rely on a specific data link capability

PBCS approval will be required to be eligible to participate in the following horizontal separation minima in accordance with ICAO PANS-ATM (Doc 4444):

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

PANS-ATM Change from 30 to 23 NM Lateral

- PANS-ATM included a provision for applying a procedural lateral separation with a minimum of 30 NM, which has been implemented in the Pacific Region and elsewhere
- Amendment 7 to PANS-ATM (15th Edition - 2016) changed the minimum of this provision from **30 NM** to **23 NM**, and the provision now includes:
 - ✦ RCP240 and RSP180
 - ✦ Requirement for 5 NM ADS lateral deviation event contract (from Regional SUPPs)
 - ✦ RNP2 or (the original) RNP4
- Now, there is no longer a specific provision in PANS-ATM for applying a 30 NM procedural lateral separation minimum
- To clarify for PBCS implementation
 - ✦ Date when the actual separation minimum (e.g. 30 NM) would change to 23 NM may occur after but not before **29 March 2018**

Summary of ICAO PBCS Provision

Applicable November 2016

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

PBCS Project – Regional Implementation

NAT

- NAT SPG/52 Conclusions (**June 2016**)
 - ✦ Conclusion **52/19 – PBCS Operator Requirements in the NAT Region**
 - That, in view of the ICAO amendments on performance-based communications and surveillance (PBCS) and reduced separations with applicability date in November 2016 and ongoing NAT implementations, the ICAO Regional Director, Europe and North Atlantic, urge States of the Operator (or Registry) to take appropriate measures to develop, establish and implement necessary policies and procedures to ensure that their operators conducting flights in the NAT Region can be compliant with PBCS requirements, by **29 March 2018**.
 - ✦ Conclusion **52/20 – RCP/RSP Flight Plan Designators**
 - That, the NAT States/ANSPs that plan to apply 42.6 km (23 NM) lateral separation minimum and/or 55.5 km (30 NM), 93 km (50 NM) and/or 5-minute longitudinal separation minima implement the capability to process and apply ICAO PBCS flight plan designators to determine aircraft eligibility for performance-based horizontal separation by **29 March 2018**.

PBCS Project – Regional Implementation

ASIA-PAC

Conclusion **APANPIRG/27-x: 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.

PBCS Project – Regional Implementation

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Conclusion **APANPIRG/27-x: State Implementation of ICAO Provisions for PBCS**

That, States which apply or plan to apply 30 NM and/or 50 NM longitudinal separation minima and/or 23 NM lateral separation minimum are urged to:

- a) implement the ATM system capability to process and use ICAO PBCS flight plan indicators to determine aircraft eligibility for performance-based separation by not later than **29 March 2018**; and
- b) apply common implementation dates using RCP/RSP indicators to establish performance-based separation in adjacent airspace, supported by joint submission of Proposals for Amendment (PfA) to ICAO Doc 7030 – Regional Supplementary Procedures.

PBCS Project – Regional Implementation

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Conclusion **APANPIRG/27-x: Asia/Pacific Region PBCS Transition Strategy**

That, the Asia/Pacific Region PBCS Transition Strategy at APANPIRG/27/WP/7 Attachment A [Also provided as Attachment A to IPACG PM IP/18-02] be endorsed, and posted on the Asia/Pacific Regional Office website.

FAA PBCS Policy Update

- ❑ December 2016 – AC 90-[datacomm]
 - ✦ Superseding AC 120-70C
 - ✦ Standards and guidance for CPDLC, ADS-C, and PBCS
 - ✦ New A056 OpSpec/MSpec/LOA templates
 - ✦ Additional guidance / procedures and training material

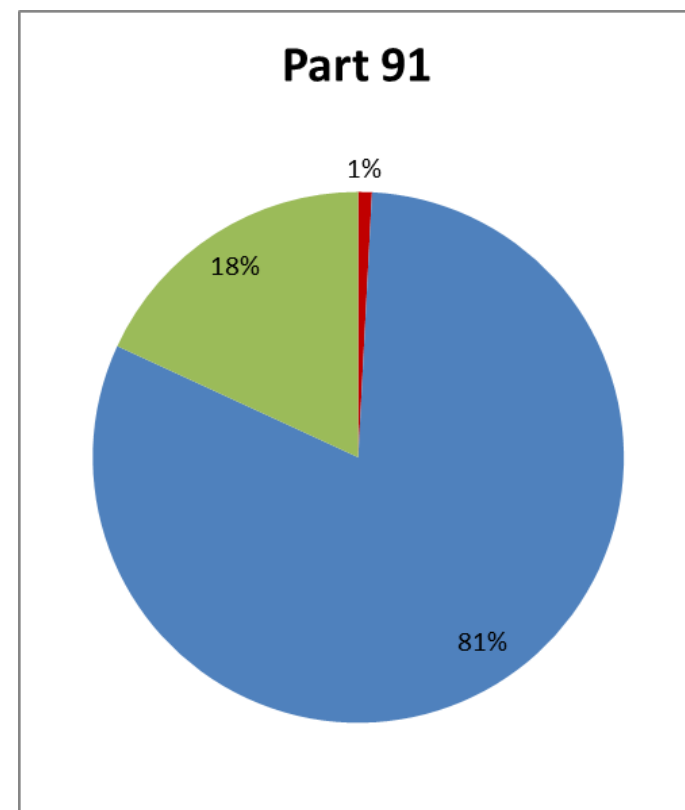
FAA PBCS Approvals and Monitoring

- FAA Separation Standards Analysis Branch will assess performance against **RSP180/ RCP240** for FAA data link approvals
- **INITIAL APPROVAL** for US operators will be determined by FAA Flight Standards Branch based on performance assessment
 - Considerable historical data available - ANG-E61 has been performing PBCS monitoring for Oakland, Anchorage and New York oceanic FIRs since **2009**
 - If no monitoring data available no RSP/RCP approval issued
 - Preliminary results indicate that majority of existing data link approvals for which monitoring data is available would qualify for RSP180 and RCP240
- **CONTINUED MONITORING** → All data link operations will be monitored at regular intervals and results posted to FAA website

Initial Approval Assessment

GENERAL AVIATION (Part 91)

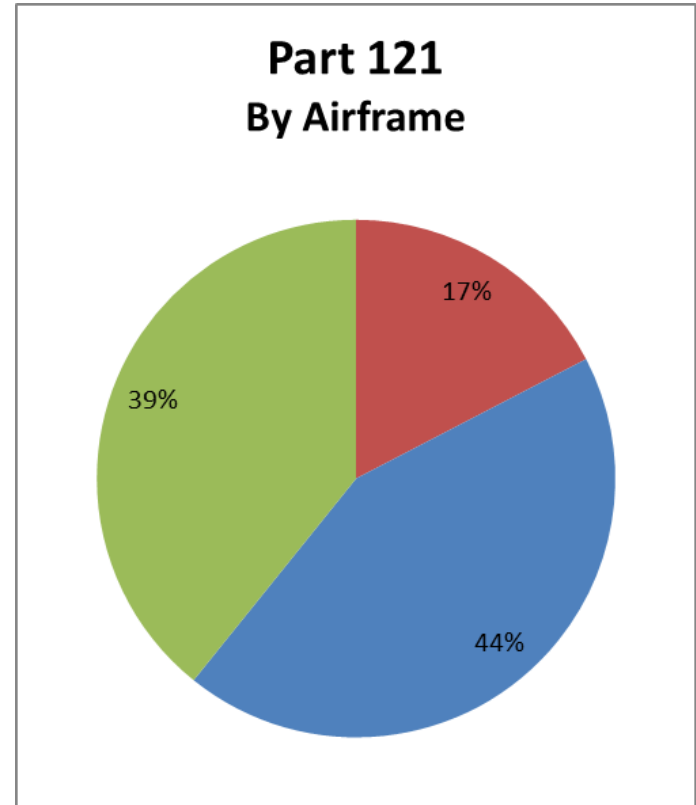
- **1,093** distinct approvals (individual airframes)
 - ✦ **20** specific ICAO aircraft types
- **198** qualify for RSP180/RCP240
- **895** no RSP/RCP approval
 - ✦ **9** do **not** meet RSP180 and/or RCP240 95% requirements
 - ✦ 886 have no performance data or fewer than 100 ADS-C downlink reports during the 18-month review period (Jan 2015 – Jun 2016)



Initial Approval Assessment

COMMERCIAL (Part 121)

- **51** distinct approvals (ICAO operator/aircraft type pairs)
 - ✦ **14** specific ICAO operators
 - ✦ **21** specific ICAO aircraft types
 - ✦ Associated with 2,073 individual airframes
- **36** qualify for RSP180/RCP240
 - ✦ **813** associated airframes
- **15** no RSP/RCP approval
 - ✦ **6** do **not** meet RSP180 95% and/or RCP240 95%
 - **360** associated airframes with types that would likely not require RSP180/RCP240
 - ✦ **9** have no performance data or fewer than 100 ADS-C downlink reports during the review period (Jan – Jun 2016)
 - **550** associated airframes that are mainly using domestic data link



Considerations (1 of 2)

- For the aircraft currently having an FAA data link approval (A056) and having zero or minimal operations in any of the 3 FAA oceanic airspace:
 - ✦ Part 91 aircraft may be given initial approval based on aggregate performance of respective ICAO aircraft type, e.g. GLF6
 - ✦ Operators should indicate operations in non-FAA oceanic airspace to facilitate data collection from relevant ANSP to inform FAA performance assessment
 - ✦ Operators should indicate when planning strictly domestic data link and thus not requiring RSP180/RCP240

Considerations (2 of 2)

- Operations found to be meeting RSP180 and RCP240 requirements in one airspace and not meeting in other(s) will be taken into special consideration
 - ✦ The bottom line is **SAFETY**
 - ✦ ATC must be able to receive ADS-C reports and CPDLC responses in expected timeframes to ensure safe separation of aircraft in all airspace where an aircraft is flying
 - ✦ Aircraft meeting performance requirements should not experience increased risk if separated by aircraft not able to meet them

Sample Website Report

[https://www.faa.gov/air_traffic/separation_standards/PBCS Monitoring](https://www.faa.gov/air_traffic/separation_standards/PBCS_Monitoring)

Time period for PBCS monitoring data: January - June 2016						
Monitoring data obtained from: Oakland, Anchorage, New York Oceanic Airspace						
RSP180/RCP240 required for application of 50NM/30NM/5-minute longitudinal and 23NM lateral						
ICAO Flight Plan Filing Requirements						
	RSP180	RCP240	None			
Field 10a:		P2	No P code filed			
Field 18:	SUR/RSP180		No RSP filed			
CHDO	FAA Designator	ICAO Operator/Type	Operation Type (CFR Part)	# Airframes	RSP Approval	RCP Approval
SW21	AALA	AAL/A332	121	15	180	240
SW21	AALA	AAL/A333	121	9	180	240
SW21	AALA	AAL/B738	121	273	None	None
SW21	AALA	AAL/B752	121	64	180	240
SW21	AALA	AAL/B763	121	45	180	240
SW21	AALA	AAL/B772	121	47	180	240
SW21	AALA	AAL/B77W	121	20	180	240
SW21	AALA	AAL/B788	121	17	180	240
GL23	KCSA	CKS/B744	121	10	180	240
SO27	DALA	DAL/A332	121	11	180	240
SO27	DALA	DAL/A333	121	28	180	240
SO27	DALA	DAL/B739	121	59	None	None
SO27	DALA	DAL/B744	121	12	180	240
SO27	DALA	DAL/B752	121	18	None	None
SO27	DALA	DAL/B763	121	68	180	240
SO27	DALA	DAL/B764	121	21	180	240
SO27	DALA	DAL/B772	121	8	180	240
SO27	DALA	DAL/B77L	121	10	180	240
CE23	FDEA	FDX/B763	121	12	None	None
CE23	FDEA	FDX/B77L	121	27	180	240
CE23	FDEA	FDX/MD11	121	58	180	240

