



Agenda Item 3: PBCS Developments and Implementation

PBCS MONITORING AND FPL CHECK IN FUKUOKA FIR

(Presented by Japan)

SUMMARY

This paper presents non-compliance aircraft for the Required Communication Performance (RCP) 240 and Required Surveillance Performance (RSP) 180, which were observed in the Fukuoka Flight Information Region (FIR), and a result of flight plan check for the Performance Based Communications and Surveillance (PBCS) aircraft the Pacific Ocean flights in Fukuoka FIR during the period from January to December 2022.

1. INTRODUCTION

1.1 The Central Reporting Agency Japan (CRA Japan), which is established in the Civil Aviation Bureau (JCAB) and has the responsibility of the CRA function in the Pacific Ocean Airspace of Fukuoka Flight Information Region (FIR), has started to introduce the Performance Based Communications and Surveillance (PBCS) framework since April 2015.

1.2 The Japan Airspace Safety Monitoring Agency (JASMA) provides the Regional Monitoring Agency (RMA) and the En-route Monitoring Agency (EMA) responsibilities for Fukuoka FIR.

1.3 JASMA has included information on Japanese aircraft operators' authorizations of the Required Communication Performance (RCP) 240 and the Required Surveillance Performance (RSP) 180 in the global RMA's approval database uploaded to the Knowledge Services Network (KSN) website every month since September 2019.

1.4 The Network Performance Assessment Center (NPAC) in JCAB monitors performance data for the Automatic Dependent Surveillance - Contract (ADS-C) and the Controller Pilot Data Link Communications (CPDLC) in Fukuoka FIR. The data is provided to CRA Japan and shared with JASMA on the monthly basis.

1.5 **Figure 1** shows the framework for operational and performance assessment of PBCS in Japan as of May 2023.

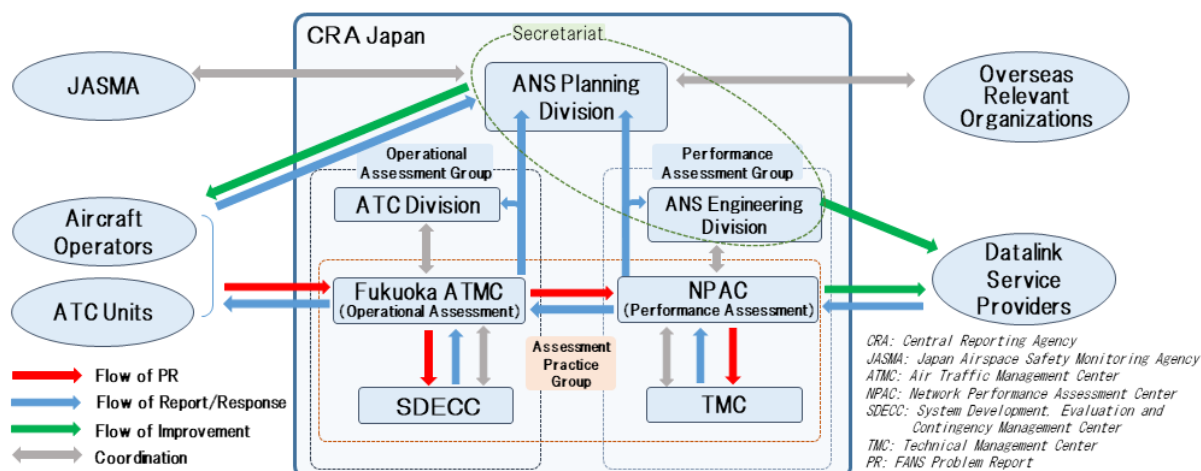


Figure 1: PBCS operational/performance assessment framework in Japan

2. DISCUSSION

2.1 Table 1 and Table 2 present lists of RSP180 non-compliance aircraft identified and monitored particularly by NPAC for the period from July to December 2022, which were reported to CRA Japan and JASMA. It was also confirmed that the reported non-compliance aircraft had RSP180 approval on the latest approval database on the KSN website.

Non-Compliance Aircraft (by Aircraft Type)													
Aircraft Operator	Aircraft Type	Jul-22		Aug-22		Sep-22		Oct-22		Nov-22		Dec-22	
		ASP	Count	ASP	Count	ASP	Count	ASP	Count	ASP	Count	ASP	Count
GIA	B77W	89.47%	19	-	0	100.00%	45	-	0	-	0	96.30%	81
VJT	GL7T	96.50%	314	94.76%	210	95.59%	340	96.28%	242	98.02%	202	93.49%	261
CPJ	GL7T	95.76%	118	91.67%	24	-	0	92.59%	27	-	0	100.00%	63
CPA	B744	88.46%	26	83.71%	356	84.41%	526	93.66%	489	95.59%	340	98.26%	288
OAE	B772	93.56%	202	100.00%	162	100.00%	58	99.44%	360	98.64%	811	98.85%	348
CSS	B744					94.26%	244	94.81%	308	95.91%	318	95.61%	319
PAL	A321					94.50%	1,381	94.99%	718	92.24%	863	93.87%	751
SIA	B78X							94.26%	1,619	93.77%	1,574	94.20%	2,190
CAL	A21N									94.70%	151	97.56%	123
QQE	A21N									94.79%	211	95.23%	482
ANA	GLF6											93.79%	773
CXA	B78X											94.28%	297
KAL	A333											90.15%	1,492

Legend:
 - Yellow: ASP is below 95% and Count is 100 or above
 - Red: ASP is below 90% and Count is 100 or above
 - Grey: Count is below 100

Table 1: Non-compliance aircraft by aircraft type observed from July to December 2022

Non-Compliance Aircraft (by Aircraft Registration)																
Aircraft Operator	Aircraft Type	Registration	RSP180 Approval	RSP180 on FPL	Jul-22		Aug-22		Sep-22		Oct-22		Nov-22		Dec-22	
					ASP	Count	ASP	Count	ASP	Count	ASP	Count	ASP	Count	ASP	Count
FDX	MD11	N599FE	Yes	Yes	97.37%	114	99.21%	126	97.85%	93	94.42%	269	98.40%	125	94.40%	125
CPA	B744	B-LIC	Yes	No	88.46%	26	-	0	76.00%	75	63.64%	44	80.77%	26	94.12%	68
CPA	B744	B-LID	Yes	No			76.86%	242	71.82%	220	94.44%	54	82.35%	51	-	0
KAL	A333	HL8027	Yes	Yes					88.60%	134	-	0	99.40%	166	73.41%	534
PAL	A321	RPC9906	Yes	No					87.40%	127	94.92%	59	77.94%	68	96.49%	57
PAL	A321	RPC9928	Yes	No					87.29%	118	-	0	100.00%	59	93.48%	46
CPA	B748	B-LJD	Yes	No									89.78%	411	95.08%	630
DAL	A339	N418DX	Yes	Yes									89.80%	147	93.27%	104

Legend:
 - Yellow: ASP is below 95% and Count is 100 or above
 - Red: ASP is below 90% and Count is 100 or above
 - Grey: Count is below 100

Table 2: Non-compliance aircraft by aircraft registration observed from July to December 2022

2.2 It is confirmed through the Federal Aviation Administration (FAA) that the B747 fleet of the Cathay Pacific (CPA) has been suffering from messaging performance issues to the PBCS RSP180/RCP240 standards. CPA has been working with the airframe and system manufacturers to analyze the issues and introduce system improvements. Additionally, CPA does not file P2 and RSP180 on their flight plans for the flights operated by B747 having performance issues.

2.3 **Figure 2** represents the number of all aircraft flying in the Pacific Ocean airspace of Fukuoka FIR, the percentage of aircraft with “P2” and “RSP180” in their flight plans, and the percentage of the aircraft which were confirmed PBCS approval in the approval databases for the period from January to December 2022.

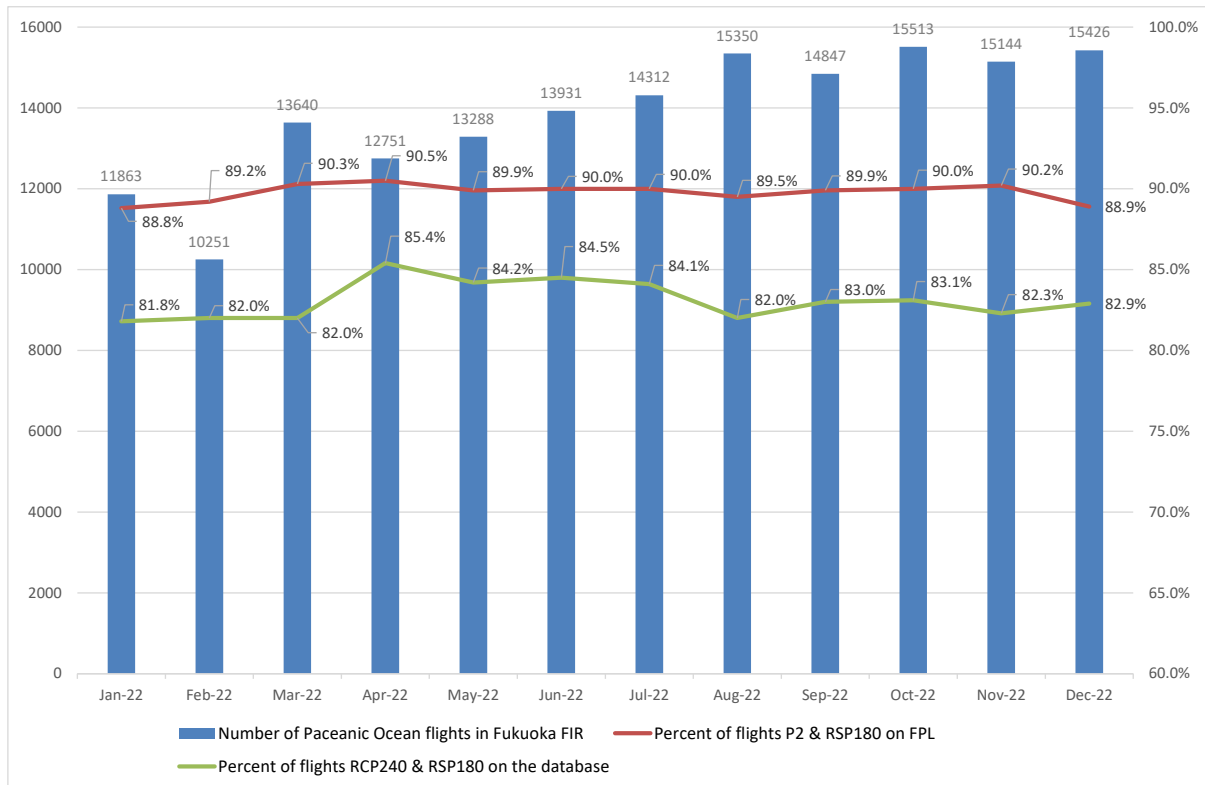


Figure 2: Percentage of PBCS-filed aircraft and PBCS-approved aircraft in 2022

2.4 Approximately 90% of aircraft filing P2 and RSP180 on their flight plans were flying in the Pacific Ocean airspace of Fukuoka FIR in 2022. However, according to the JASMA’s monitoring of flight plans filing the PBCS designators, the percentage of flights confirmed PBCS approval that flying in the airspace of Fukuoka FIR was approximately 82% to 85%. It means that 30 to 50 flights, which filed P2 and RSP180 on their flight plans, but the aircraft’s PBCS approval information was not on the RMAs’ database, existed a day in the airspace.

2.5 To enhance airspace capacity in the Pacific Ocean airspace, FAA and JCAB have been considering and discussing the implementation of the 23 NM lateral separation minima in the Pacific Ocean airspace of Anchorage Oceanic, Oakland Oceanic and Fukuoka FIRs.

2.6 One of the purposes of the consideration and discussion is to redesign the North Pacific (NOPAC) route, which currently has five RNAV10 (RNP10) routes separated at least 50 NM from each other. The NOPAC route would eventually consist of two RNAV10 (RNP10) routes and two RNP4 routes, and the ATS routes would be separated at least 23 NM from each other.

2.7 The project is named “NOPAC Redesign,” FAA and JCAB have already started the redesign project with a phased approach. **Figure 3** shows the current status, Phase 1b, and non-PBCS/RNP4 aircraft is not be allowed to fly altitude stratum between FL340 and FL400 on R220 basically after current phase.

2.8 Additionally, two RNAV10 (RNP10) routes, G344 and R591, has already removed and shortened in Phase 1b so that aircraft operators can fly more flexible routes as a User Preferred Route (UPR).

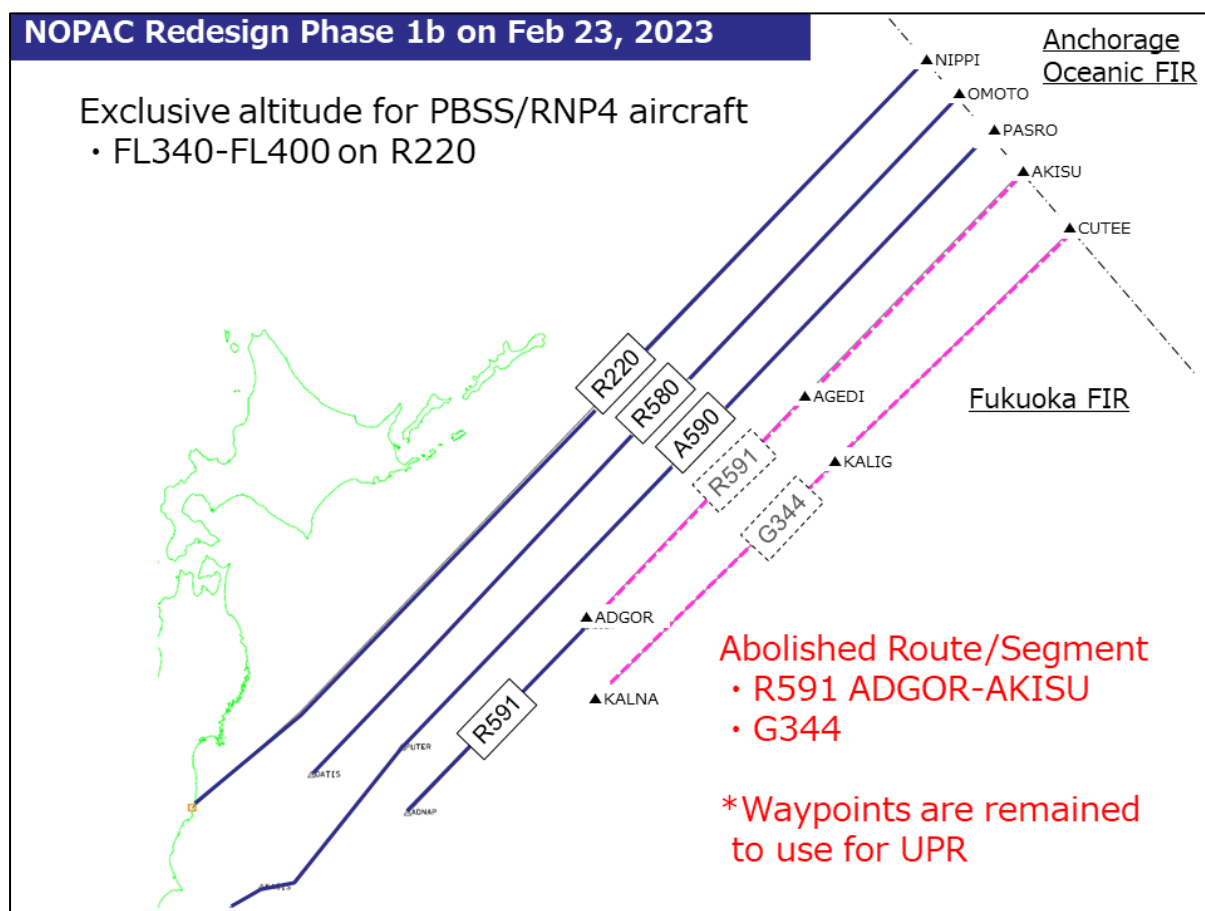


Figure 3: NOPAC route operation and structure in Phase 1b

2.9 FAA and JCAB plan to implement the 23 NM lateral separation minima between PBCS/RNP4 aircraft before moving forward to the next Phase of the NOPAC Redesign project. In Fukuoka FIR, the 23 NM lateral separation minima will be implemented on 15 June 2023.

2.10 Since lateral separation minima for PBCS/RNP4 aircraft will be reduced from 30 NM to 23 NM in Fukuoka FIR, the aircraft which does not have PBCS authorization/approval or meet the requirement of PBCS performance should be identified to ensure airspace safety.

2.11 To achieve implementation of the reduced separation minima based on PBCS, the integrated procedure of PBCS monitoring, identifying non-compliance aircraft and improvement of the aircraft confirmed poor performance is vital. Therefore, JCAB continues and strengthens PBCS framework including PBCS monitoring and assessment scheme, and will provide feedback JCAB’s experience and knowledge to FIT-Asia.

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:
- a) note the information contained in this paper; and
 - b) discuss any relevant matters as appropriate.

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