International Civil Aviation Organization

The First Meeting of ICAO Asia/Pacific Performance based Navigation Implementation Coordination Group (PBNICG/1)

Beijing, China, 10-12 March 2015

Agenda Item 5: Implementations of PBN in Terminal Area
Agenda Item 6: Implementations of PBN in Domestic En-route Airspace
Agenda Item 8: Issues and challenges regarding PBN implementations

PBN IN A PAGE

(Presented by Secretariat)

SUMMARY

This flimsy presents a draft 'PBN-in-a-page" and requests PBNICG to form a small to review its content.

1. DISCUSSION

1.1 PBN can be considered a complicated subject which includes several ICAO documents. To support PBN implementers and ease the complication of implementing PBN, the ICAO APAC Regional Sub-Office (ICAO APAC RSO) has developed a concise document, "PBN-in-a-page" to summarize consideration related to PBN. The "PBN-in-a-page" summarizes relevant PBN-related information from various ICAO documents, including Doc 9613, PANS-OPS, and PANS-ATM and tabularizes them into one page. The information in the "PBN-in-a-page" includes PBN Navigation Specification, PBN Navigation Infrastructure, PBN Navigation Application, applicable route spaces and associated conditions.

1.2 Once reviewed, "PBN-in-a-page" can be useful as a quick reference material during PBNICG meetings and during PBN airspace and route design sessions.

2. ACTION BY THE MEETING

3.1 The meeting is invite to form a small group to review the format and the content of 'PBN-in-a-page."

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PBN NavSpecs and Route Spacing (PBN Manual Doc 9613 Volume II, Attachment B)

Nav Specs	Flight Phase								Supporting Nav. Infrastructure	Route Spacing (NM)	Conditions
	En-route Oceanic/Remote	En-route Continental	Arrival	Approach				Departure			
				Initial	Intermediate	Final	Missed				
RNAV 10	10								Not require ground-based Naviad Dual LRNS (INS, IRS FMS, GNSS)	50	NAV - RNAV 10 (RNP 10) Approval, lateral deviation less than 7NM (same direction)/6NM (opposite direction) COM - Voice com through 3rd party, DCPC in some areas SUR - Procedureal pilot position reports Other -system safety must be monitored, TLS $5X10^{-9}$ accident per flight hour
RNAV 5		5	5						VOR/DME DME/DME INS or IRS GNSS	16.5 - straight unidirectional racks (same direction route-ECAC) 18 - straight bidirectional tracks (opposite direction route- ECAC) 10 - ATC intervention capability (ECAC) 30 - No ATS Surveillance in high traffic density (ECAC)	NAV - RNAV 5/RNP 5 OPS Approval (BRNAV) COM - Direct VHF controller /pilot voice communications SUR - procedureal pilot position report (RNP 5) - Radar surveillance (RNAV 5)
RNAV 2		2	2					2	GNSS DME/DME DME/DME/IRU	8 to 9 - straight tracks in high traffic density (en-route) (FAA)	NAV - RNAV 2 OPS Approval (PRNAV, US RNAV AC 90-100) COM - Direct VHF controller /pilot voice communications SUR - Radar surveillance
RNAV 1		1	1	1	1		1	1	GNSS DME/DME DME/DMe/IRU	8 - straight tracks in high density (terminal, Eurocontrol) 7 for SIDs/STARs (PANS-ATM)	NAV - RNAV 1 OPS Approval (PRNAV, US RNAV AC 90-100) COM - Direct VHF controller /pilot voice communications SUR - Radar surveillance
RNP 4	4								Not require ground-based Naviad GNSS	30 (part of the Pacific airspace) 50 or 30* (PANS-ATM) *23NM proposed by SASP (applicable date : 10 November 2016)	NAV - RNP 4 OPS Approval COM - DCPC or CPDLC SUR - ADS with a lateral deviation contract having 5NM Other - sytem verification assuring lateral deviation less than 15NM
RNP 2	2	2							GNSS	50, 30 or 15 (PANS-ATM) 7 for climb/descend through other aircraft with VHF DCPC 20 for climb/descend through other aircraft with other type of com.	NAV - RNP 2 OPS Approval (Oceanic/Remote/continental) COM - depend on operational considerations (route spacing, traffic density, complexity, contingency procedures) SUR - not required except reduced route spacing
RNP 1			1	1	1		1	1	GNSS	5 for SIDs/STARs (PANS-ATM)	NAV - RNP 1 OPS Approval COM - DCPC (RNP 1 SIDs/STARs) SUR - not required except reduced route spacing
A RNP	2	2 or 1	1	1	1	0.3	1	1	GNSS Multi-DME may be provided	7 - straight and turning tracks (<90˚) in high traffic density (en-route, Terminal, Eurocontrol) 6 to 7 NM with an RNP 0.5 (terminal, Eurocontrol)	NAV - A-RNP OPS Approval (Navigation accuracy at least ±1NM, 95% of the flght time) COM - Direct VHF controller /pilot voice communications SUR - Radar surveillance (may not be required to certain navigation application)
RNP APCH				1	1	0.3	1		GNSS (Missed App - RNAV or Conv.)	5 for SIDs/STARs (PANS-ATM)	NAV - RNP APCH OPS Approval COM - not required SUR - not required
RNP AR APCH				1 - 0.1	1 - 0.1	0.3 - 0.1	1 - 0.1		GNSS (DME/DME may be authorized	5 for SIDs/STARs (PANS-ATM)	NAV - RNP AR APCH OPS Approval COM - not required SUR - not required
RNP 0.3		0.3	0.3	0.3	0.3		0.3	0.3	GNSS		NAV - RNP 0.3 OPS Approval COM - not required SUR - not required