International Civil Aviation Organization

THE ELEVENTH MEETING OF PERFORMANCE BASED NAVIGATION IMPLEMENTATION COORDINATION GROUP (PBNICG/12)

Beijing, 16 – 18 December 2025

Agenda Item 4: States' PBN Implementation Progress and the challenges faced by the States and lessons learnt

PBN IMPLEMENTATION PROGRESS IN INDONESIA

(Presented by Indonesia)

SUMMARY

This paper presents the update on the progress of Indonesia's PBN implementation and the updated PBN implementation plan, challenges and lesson learnt.

1. INTRODUCTION

1.1 Indonesia has presented the state PBN implementation progress and status at PBNICG/11 meeting on 2024. Since then, Indonesia has updated and make some adjustments to the plan to accommodate the development of airports.

1.2 Indonesia is focusing in increasing the safety and smooth operation of aircraft throughout the country by implementing PBN flight procedure in some of the airports.

2. DISCUSSION

PBN Implementation status

2.1 Since reported in PBNICG/11 on 2024, the summary of airports that already implement fully/partly PBN flight procedures are as follows:

a. International Airport with PBN IAP: 32 from total 32 airports (2 airports with RNP AR);
b. International Airport with PBN SID/STAR: 29 from total 32 airports;
c. Domestic Airport with PBN IAP: 105 from total 129 airports (1 airports with RNP AR ;
d. Domestic Airport with PBN SID/STAR: 26 from total 129 airports.

2.2 The table of PBN implementation airports are attached on this paper.

Airport Category	Procedure	Implemented (Count & %)	Not Implemented (Count & %)	Total number of Instrument RWY ends	Total Airports
International	PBN IAP	**32 (100.0%)**	0 (0.0%)	44 fm	32
International	PBN SID/STAR	**29 (90.6%)**	2 (7.4%)	43/40 fm	32
Domestic	PBN IAP	**105 (81.4%)**	29 (20.7%)	188 fm	129
Domestic	PBN SID/STAR	**26 (20.1%)**	109 (77.9%)	44/48 fm	129

Figure 1. PBN implementation progress in Indonesia

2.3 The detail Implementation of PBN approach procedures LNAV only, LNAV/VNAV, RNP-AR. (*table)

	Lnav	Lnav/vnav	RNP AR
International	3	59	2
Domestik	41	140	1

2.4 Indonesia provided assistance to Timor Leste regarding the design of Instrument Flight Procedures (IFP) at Rota Do Sandalo Airport – Oe-Cusse. This bilateral cooperation supports the enhancement of aviation safety and efficiency in the region by implementing advanced PBN navigation.

2.5 Indonesia is currently collaboration with Australia under the ITSAP group exchange for the design and restructuring of Terminal Manoeuvring Area (TMA) airspace Denpasar-Bali Airport. This cooperative effort aims to optimize airspace capacity and flow management, ensuring the implementation of efficient PBN SID/STAR procedures within one of Indonesia busiest terminal environments.

2.6 DGCA France has extended a training offer to COSCAP-SEA member. As part of this cooperation, Indonesia has been allocated 8 training which will be conducted at ENAC (Ecole Nationale de l'Aviation Civile) in Toulouse, including :

a. Advanced NAV evolution
b. ATM overview
c. Sustainable development of air transport
d. Helicopter IFR criteria
e. Aerodrome manual
f. Aerodrome SMS
g. Comprehensive Instrument Procedure Design Course (RNP AR Approach)
h. Safety management in aviation – safety at stare level

2.7 AirNav Indonesia and Boeing Company have signed a MoU for cooperation aimed at enhacing aviation safety and efficiency in Indonesia. The primary partnership program under this agreement is the Jakarta Airspace Study (Metroplex). This study is dedicated to reviewing and conceptual design flight procedures within the Jakarta airspace area, which encompasses multiple airports, including Soekarno-Hatta International Airport, Halim Perdanakusuma Airport, and Pondok Cabe Airport. The core objective of this initiative is to improve flight operation to ensure they are safe, effective, and efficient.

2.8 AirNav Indonesia collaborated with Aus Company on the design of Instrument Flight Procedure RNP-AR for Sultan Babullah Airport - Ternate. This procedure was published in 2025.

2.9 The Indonesia National PBN Stakeholders forum is actively monitoring the implementation of PBN in Indonesia and evaluating the PBN implementation plan. The member of Indonesia National PBN Stakeholders forum consist of DGCA, Airnav Indonesia and Airlines.

PBN Implementation progress and plan 2025/2026

2.10 The Indonesia PBN implementation progress until 2025 are as follows:

	Airport / Route	Status	Target Year
International Airport IAP	Hasanuddin - Makassar (RWY 13)	Publish on AIP	2025
	Supadio - Pontianak	Publish on AIP	2025
International Airport SID/STAR	Sentani - Jayapura	Design process 2025	2025
	Frans Kaisiepo - Biak	Publish on AIP	2025
	Raja Sisingamangaraja XII – Siborongborong	Publish on AIP	2025
	Juwata - Tarakan	Publish on AIP	2025
Domestic Airport RNP AR	Sultan Babullah - Ternate	Publish on AIP	2025
	Singkawang - Singkawang	Publish on AIP	2025
Domestic Airport SID/STAR	Nusantara – Penajam Paser Utara	Publish on AIP	2025
	Mopah - Merauke	Publish on AIP	2025
	Domine Eduard Osok - Sorong	Publish on AIP	2025
	Dou Aturure - Nabire	Publish on AIP	2025
	Weda Bay – Lelief Sawai	Publish on AIP	2025
Domestic Airport RNP APCH	Nusantara – Penajam Paser Utara	Publish on AIP	2025
	Mali - Alor	Publish on AIP	2025
	Atung Bungsu – Pagar Alama	Publish on AIP	2025

Point Merge System (PMS) Jakarta Airspace	IMIP - Morowali	Publish on AIP	2025
	Dou Aturure - Nabire	Publish on AIP	2025
	Weda Bay – Lelief Sawai	Publish on AIP	2025
	Soekarno Hatta	Ready for publication	2025

2.11 The Indonesia PBN implementation plan until 2026 are as follows:

	Airport / Route	Status	Target Year
International Airport IAP	-	-	-
International Airport SID/STAR	Sentani - Jayapura	Design process 2025	2026
Domestic Airport SID/STAR			
	Fatmawati Soekarno - Bengkulu	Validation process 2025	2026
	Sultan Thaha - Jambi	Validation process 2025	2026
	Depati Amir - Pangkal Pinang	Validation process 2025	2026
	Sultan Muhammad Salahudiin - Bima	2026	
	Djalaludding - Gorontalo	2026	
	Binaka - Gunung Sitoli		
	Kalimarau - Tanjung Redeb	2026	
	Pranoto - Samarinda	2026	
Domestic Airport RNP APCH			
	H. Asan - Sampit	Validation process 2025	2026
	Tjilik Riwut - Palangkaraya	Design process 2025	2026
	Andi Jema - Masamba	Design process 2025	2026
	Aek Godang - Padang Sidempuan	Design process 2025	2026
	Blangkejeren - Gayo Luwes	Publication process 2025	2026
	Alas Lauser – Kutacane	Design process 2025	2026
	H. Aroeppala - Selayar	Design process 2025	2026
	Kepi - Mappi	2026	
	Pagerungan – Pulau Pagerungan Besar	2026	
RNP-AR	Depati Parbo - Kerinci	Design process 2025	2026
	Sentani - Jayapura	2026	

2.12 The planned follow-up action concerning the implementation of the Point Merge System (PMS) has currently reached the final concept. Focus now on ensuring operational readiness prior to transition. Next phase involves awaiting readiness related to the Safety Risk Assessment of the applicable Air Traffic Control (ATC) system.

Challenges and Lesson Learnt

1.1 Throughout the PBN Implementation, Indonesia has faced some challenges as follow:

a. The strategy to increase the effectiveness of utilization of a PBN route by considering the population of PBN capable aircraft in an airspace;
b. The handling of mixed between conventional and PBN routes on an airspace;
c. The crossing between the regional routes;
d. The strategy to design a PBN route that is shorter and more effective than a conventional route;
e. Reliance on GNSS, acknowledging the increasing global threat of GNSS Radio Frequency Interference (RFI), including intentional jamming (signal blocking) and spoofing (signal deception).

1.2 The lesson learnt in facing those challenges to ensure the effectiveness of PBN Implementation as follow:

a. To conduct an effective PBN Training for ATC Personnel, FPD, Pilot
b. Collaboration among the Regulator, the Air Navigation Service Provider (ANSP), and Operators is essential to ensure that implemented procedures comply with ICAO standards.

2. ACTION REQUIRED BY THE MEETING

2.1 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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Attachment

LIST OF AIRPORTS WITH PBN FLIGHT PROCEDURES

Table 1. List of International Airport (with instrument runway) with PBN IAP (32/32 airports)

No.	Airport Name	Location	Navpsec
1	Pattimura	Ambon	RNP APCH RNP AR
2	I Gusti Ngurah Rai	Bali	RNP APCH
3	Sultan Aji Muhammad Sulaiman Sepinggan	Balikpapan	RNP APCH
4	Sultan Iskandar Muda	Aceh	RNP APCH
5	Husein Sastranegara	Bandung	RNP APCH RNP AR
6	Halim Perdanakusuma	Jakarta	RNP APCH
7	Soekarno Hatta International	Jakarta	RNP APCH
8	Sentani	Jayapura	RNP APCH
9	El Tari	Kupang	RNP APCH
10	Zainuddin Abdul Madjid International	Praya	RNP APCH
11	Sam Ratulangi	Manado	RNP APCH
12	Minangkabau International	Padang	RNP APCH
13	Sultan Mahmud Badaruddin II	Palembang	RNP APCH
14	Sultan Syarif Kasim II	Pekanbaru	RNP APCH
15	Jenderal Ahmad Yani	Semarang	RNP APCH
16	Juanda	Surabaya	RNP APCH
17	Raja Sisingamangaraja XII	Siborongborong	RNP APCH
18	Kualanamu International	Deli Serdang	RNP APCH
19	Kertajati International	Majalengka	RNP APCH
20	Supadio	Pontianak	RNP APCH
21	Sultan Hasanuddin	Makasar	RNP APCH
22	Yogyakarta International	Kulonprogo	RNP APCH
23	Banyuwangi	Banyuwangi	RNP APCH
24	Frans Kaisiepo	Biak	RNP APCH
25	Juwata	Tarakan	RNP APCH
26	Radin Inten II	Lampung	RNP APCH
27	Syamsudin Noor	Banjarmasin	RNP APCH
28	H.AS. Hanandjoeddin	Tanjung Pandan	RNP APCH
29	Adi Soemarmo	Solo	RNP APCH
30	Adi Sucipto	Yogyakarta	RNP APCH
31	Hang Nadim	Batam	RNP APCH
32	Raja Haji Fisabilillah	Tanjungpinang	RNP APCH

Table 2. List of International Airport (With Instrument Runway) With PBN SID/STAR (29/32)

No.	Airport Name	Location	Navspec
1	Pattimura	Ambon	RNP AR
2	Husein Sastranegara	Bandung	RNP AR
3	Sam Ratulangi	Manado	RNP 1
4	I Gusti Ngurah Rai	Bali	RNAV 1
5	Sultan Aji Muhammad Sulaiman Sepinggan	Balikpapan	RNAV 1
6	Soekarno Hatta International	Jakarta	RNAV 1
7	Sultan Hasanuddin	Makasar	RNAV 1
8	Juanda	Surabaya	RNAV 1
9	Sultan Mahmud Badaruddin II	Palembang	RNAV 1
10	Kualanamu International	Deli Serdang	RNAV 1
11	Yogyakarta International	Kulonprogo	RNAV 1
12	Kertajati International	Majalengka	RNP 1
13	Radin Inten II	Lampung	RNP 1
14	Sultan Iskandar Muda	Aceh	RNP 1
15	H.AS. Hanandjoeddin	Tanjung Pandan	RNAV 1
16	Halim Perdanakusuma	Jakarta	RNAV 1
17	Jenderal Ahmad Yani	Semarang	RNP 1
18	Syamsudin Noor	Banjarmasin	RNP 1
19	Hang Nadim	Batam	RNAV 1
20	Raja Haji Fisabilillah	Tanjungpinang	RNAV 1
21	El Tari	Kupang	RNP 1
22	Banyuwangi	Banyuwangi	RNP 1
23	Zaenuddin Abdul Madjid International	Praya	RNP 1
24	Minangkabau International	Padang	RNAV 1
25	Sultan Syarif Kasim II	Pekanbaru	RNAV 1
26	Sentani	Jayapura	RNAV 1
27	Frans Kaisiepo	Biak	RNAV 1