International Civil Aviation Organization

Thirteenth Meeting of The Performance Based Navigation Implementation Coordination Group (PBNICG/13)

(Bangkok, Thailand, 14-16 October 2026)

Agenda Item 3: 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 provides an update on the progress of Indonesia's PBN implementation since PBNICG/12, including the status of PBN flight procedures at international and domestic airports as of September 2026, procedures currently in progress, and the implementation plan for 2027. It also reports the progress of the Point Merge System (PMS) for Jakarta airspace and Indonesia's plan to develop RNP AR procedures at airports with challenging terrain. The paper also notes that the airport figures reported are dynamic and differ from those in the Indonesia Air Navigation Plan, which Indonesia intends to update.

1. INTRODUCTION

1.1 Indonesia presented its PBN implementation progress at the twelfth meeting of the PBN Implementation Coordination Group (PBNICG/12, Beijing, 16–18 December 2025, WP/05). This information paper updates the meeting on the current implementation status, the work in progress, and the implementation plan for 2027.

1.2 Indonesia continues to implement PBN flight procedures with a view to enhancing the safety and smooth operation of aircraft throughout the country.

1.3 The numbers of international and domestic airports reported in this paper differ from those reported at PBNICG/12. It should be noted that these numbers are dynamic, reflecting the ongoing development of airports in Indonesia, and consequently differ from those stated in the Indonesia Air Navigation Plan. Indonesia therefore intends to update the Air Navigation Plan in accordance with the development of airport data in the country.

2. DISCUSSION

PBN Implementation status

2.1 The status of airports that have implemented PBN flight procedures as of September 2026 is summarised in Table 1 and we will also attach the details.

Table 1. PBN implementation status in Indonesia

Airport category	Procedure	Implemented / Total
International	PBN IAP	38 of 38 (100.0%)
International	PBN SID/STAR	33 of 38 (86.8%)
Domestic	PBN IAP	103 of 129 (79.8%)
Domestic	PBN SID/STAR	26 of 129 (20.2%)

2.2 The number of PBN approach procedures by type (LNAV, LNAV/VNAV and RNP AR) is shown in Table 2 and we will also attach the details.

Table 2. PBN approach procedures by type

Airport category	LNAV	LNAV/VNAV	RNP AR
International	77	68	4
Domestic	85	67	2

2.3 Since PBNICG/12, 8 new PBN procedures have been published, including PBN SID/STAR for WIJJ, WADD, WADY, WIGG, WIKK and RNP APCH for WAGS, WAFM, WATA.

Progress of ongoing implementation

2.4 The status of the 2026 implementation plan reported at PBNICG/12 is shown in Table 3.

Table 3. Status of the 2026 implementation plan

Category	Airport	Status
International SID/STAR	Sentani – Jayapura	Design process
Domestic SID/STAR	Fatmawati Soekarno – Bengkulu	Published
Domestic SID/STAR	Sultan Thaha – Jambi	Published
Domestic SID/STAR	Depati Amir – Pangkal Pinang	Published
Domestic SID/STAR	Sultan Muhammad Salahuddin – Bima	Design process
Domestic SID/STAR	Kalimarau – Tanjung Redeb	Design process
Domestic SID/STAR	Djalaluddin – Gorontalo	Planned
Domestic SID/STAR	Aji Pangeran Tumenggung Pranoto – Samarinda	Planned
Domestic RNP APCH	H. Asan – Sampit	Published
Domestic RNP APCH	Andi Jema – Masamba	Published
Domestic RNP APCH	Blangkejeren – Gayo Luwes	Published
Domestic RNP APCH	Aek Godang – Padang Sidempuan	Validation process
Domestic RNP APCH	Alas Lauser – Kutacane	Design process
Domestic RNP APCH	H. Aroeppala – Selayar	Design process
Domestic RNP APCH	Kepi – Mappi	Design process
Domestic RNP APCH	Pagerungan – Pulau Pagerungan Besar	Design process
Domestic RNP APCH	Depati Parbo – Kerinci	Design process
RNP AR	Sentani – Jayapura	Planned

RNP AR development plan

2.5 A number of airports in Indonesia are located in challenging terrain, which limits many approach operations at these airports to one side of the runway only. In order to provide additional approach options, Indonesia plans to develop RNP AR procedures at airports with challenging terrain.

2.6 Indonesia has sent several of its personnel to RNP AR training courses and workshops, with the aim of enabling Indonesia to design RNP AR procedures independently in the future.

2.7 The airports currently planned for RNP AR procedures are:

a. Sentani Airport – Jayapura;

b. Mutiara SIS Al-Jufri Airport – Palu;

c. Komodo Airport – Labuan Bajo;

d. Sultan Iskandar Muda Airport – Aceh; and

e. Sultan Muhammad Salahuddin – Bima.

2.8 The development of these procedures remains subject to procedure design, flight validation and operator readiness.

Point Merge System (PMS) in Jakarta airspace

2.9 Indonesia is developing the Point Merge System (PMS) for Jakarta terminal airspace, covering Soekarno–Hatta International Airport (WIII) and its interfaces with Halim Perdanakusuma Airport (WIHH). The PMS concept seeks to improve arrival sequencing, reduce reliance on tactical vectoring and support more consistent descent profiles. The design goals of the PMS arrivals, compatible with the RNAV 1 specification, are to increase the safety margin, reduce ATCO workload, optimise the descent profile and reduce emissions. These are design objectives, not yet verified operational outcomes.

2.10 Earlier planning envisaged implementation in 2024. At PBNICG/12, Indonesia reported that the PMS had reached the final concept stage and that the next phase depended on operational readiness, including the safety risk assessment of the applicable air traffic control (ATC) system. Subsequent technical work, the Jakarta Metroplex study and the transition to a new air traffic management system have required the implementation timetable to be revised.

2.11 The AirNav Indonesia–Boeing collaboration progressed from 2023 through 2025. Boeing submitted the Jakarta Conceptual Airspace Design and Baseline TAAM Modelling Alternative Airspace Analysis final report in December 2025. The study considered traffic flows at WIII and WIHH, including comparisons between current operations and alternative airspace concepts using fast-time simulation.

2.12 For east-flow scenarios, the Boeing fast-time modelling indicated peak arrival rates of 35 movements/hour for the baseline, 37 for segregated mode and 39 for mixed mode. For west flow, the peak rates were 38 movements/hour for segregated mode and 40 for mixed mode. These are modelled scenario results, not validated operational capacities or realised benefits.

2.13 Following the stakeholder reviews in 2026, the project remains at the conceptual design and pre-validation stage. The revised target is implementation in the fourth quarter of 2027 (Q4 2027). This is a forward-looking planning target rather than an approved operational

commencement date, and it is subject to design finalisation, operational simulation, safety assessment, procedure validation, personnel and system readiness, and the applicable AIRAC publication schedule.

2.14 The main outstanding issues are:

a. Operational integration: testing of normal and peak traffic, runway changes, adverse weather, holding demand and contingency/non-PMS operations; definition of ACC–APP responsibilities for separation and spacing; assessment of sectorisation and controller workload; and determination of whether different procedures are needed during low-traffic/night operations; and

b. Assurance and readiness: completion of simulator trials and relevant flight/procedure validation, safety risk assessment, ATC training and stakeholder coordination, and alignment of deployment with the new ATM system, operational staffing and the applicable AIRAC cycle. These are requirements and planned actions and are not yet completed.

PBN implementation plan for 2027

2.15 The implementation plan for 2027 is summarised in Table 4.

Table 4. PBN implementation plan for 2027

Item	Airport / scope	Target
RNP AR	Sentani (Jayapura), Mutiara SIS Al-Jufri (Palu), Komodo (Labuan Bajo), Sultan Iskandar Muda (Aceh), Sultan Muhammad Salahuddin (Bima)	2027-2030
PBN IAP	Alas Lauser (Kutacane), H. Aroeppala (Selayar), Kepi (Mappi), Pagerungan (Pulau Pagerungan Besar), Depati Parbo (Kerinci), Rahadi Oesman (Ketapang)	2027
PBN SID/STAR	Sentani (Jayapura), Mathilda Batlayeri (Saumlaki), Sultan Muhammad Salahuddin (Bima), Djalaluddin (Gorontalo), Kalimarau (Tanjung Redeb), Aji Pangeran Tumenggung Pranoto (Samarinda), Rahadi Oesman (Ketapang)	2027
Point Merge System (PMS)	Soekarno Hatta (Jakarta)	Q4 2027

Challenges and lessons learnt

2.16 Indonesia has encountered the following challenges in the course of PBN implementation:

a. the design of procedures for airports located in challenging terrain, where approaches are often available from one side only;

b. maintaining the consistency of airport data, as the number of airports is dynamic and differs from that stated in the Indonesia Air Navigation Plan; and

c. reliance on GNSS, acknowledging the increasing global threat of GNSS radio frequency interference (RFI), including intentional jamming and spoofing.

2.17 The lessons learnt are as follows:

a. effective PBN training for ATC personnel, flight procedure designers and pilots is essential, and building in-house RNP AR design capability reduces reliance on external support;

b. collaboration among the regulator, the air navigation service provider (ANSP) and operators are essential to ensure that implemented procedures comply with ICAO standards; and

c. for complex terminal airspace changes such as PMS, early engagement of procedure designers, controllers, safety specialists and other airspace users is needed, concept selection should follow operational simulation and risk assessment, and training, ATM-system transition and publication readiness should be reflected in a realistic, phased schedule.

3. ACTION REQUIRED 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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Attachment

LIST OF AIRPORTS WITH PBN FLIGHT PROCEDURES

Table 1. List of International Airport with PBN IAP (38/38 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.	Syamsudin Noor	Banjarbaru	RNP APCH
7.	Banyuwangi	Banyuwangi	RNP APCH
8.	Hang Nadim	Batam	RNP APCH
9.	Bersuud	Batu Licin	RNP APCH
10.	H.AS.Hanandjoeddin	Belitung	RNP APCH
11.	Frans Kaisiepo	Biak	RNP APCH
12.	Adi Soemarmo	Boyolali	RNP APCH
13.	Kualanamu	Deli Serdang	RNP APCH
14.	Halim Perdanakusuma	Jakarta	RNP APCH
15.	Soekarno Hatta International	Jakarta	RNP APCH
16.	Sentani	Jayapura	RNP APCH
17.	Dhoho	Kediri	RNP APCH
18.	International Yogyakarta	Kulonprogo	RNP APCH
19.	El Tari	Kupang	RNP APCH
20.	Komodo	Labuan Bajo	RNP APCH
21.	Radin Inten II	Lampung Selatan	RNP APCH
22.	Kertajati	Majalengka	RNP APCH
23.	Sam Ratulangi	Manado	RNP APCH
24.	Sultan Hasanuddin	Maros	RNP APCH
25.	Mopah	Merauke	RNP APCH
26.	Minangkabau	Padang Pariaman	RNP APCH
27.	Sultan Mahmud Badaruddin II	Palembang	RNP APCH
28.	Muatiara Sis Al Jufri	Palu	RNP APCH
29.	Sultan Syarif Kasim II	Pekanbaru	RNP APCH
30.	Sultan Syarif Haroen Setia Negara	Pelalawan	RNP APCH
31.	Supadio	Pontianak	RNP APCH
32.	Zainuddin Abdul Madjid	Praya	RNP APCH
33.	Aji Pangeran Tumenggung Pranoto	Samarinda	RNP APCH
34.	Jenderal Ahmad Yani	Semarang	RNP APCH

35.	Raja Sisingamangaraja XII	Siborongborong	RNP APCH
36.	Juanda	Surabaya	RNP APCH
37.	Raja Haji Fisabilillah	Tanjungpinang	RNP APCH
38.	Juwata	Tarakan	RNP APCH

Table 2. List of International Airport With PBN SID/STAR (34/38)

No.	**Airport Name**	**Location**	**Navspec**
1.	Pattimura	Ambon	RNP AR
2.	I Gusti Ngurah Rai	Bali	RNAV 1
3.	Sultan Aji Muhammad Sulaiman Sepinggan	Balikpapan	RNAV 1
4.	Sultan Iskandar Muda	Aceh	RNP 1
5.	Husein Sastranegara	Bandung	RNP 1
6.	Syamsudin Noor	Banjarbaru	RNP 1
7.	Banyuwangi	Banyuwangi	RNP 1
8.	Hang Nadim	Batam	RNAV 1
9.	H.AS.Hanandjoeddin	Belitung	RNAV 1
10.	Frans Kaisiepo	Biak	RNP 1
11.	Kualanamu	Deli Serdang	RNAV 1
12.	Halim Perdanakusuma	Jakarta	RNAV 1
13.	Soekarno Hatta International	Jakarta	RNAV 1
14.	Dhoho	Kediri	RNP 1
15.	International Yogyakarta	Kulonprogo	RNAV 1
16.	El Tari	Kupang	RNP 1
17.	Komodo	Labuan Bajo	RNP 1
18.	Radin Inten II	Lampung Selatan	RNP 1
19.	Kertajati	Majalengka	RNP 1
20.	Sam Ratulangi	Manado	RNP 1
21.	Sultan Hasanuddin	Maros	RNAV 1
22.	Mopah	Merauke	RNP 1
23.	Minangkabau	Padang Pariaman	RNAV 1
24.	Sultan Mahmud Badaruddin II	Palembang	RNAV 1
25.	Mutiara Sis Al Jufri	Palu	RNP 1
26.	Sultan Syarif Kasim II	Pekanbaru	RNAV 1
27.	Supadio	Pontianak	RNAV 1
28.	Zainuddin Abdul Madjid	Praya	RNP 1
29.	Jenderal Ahmad Yani	Semarang	RNP 1
30.	Raja Sisingamangaraja XII	Siborongborong	RNP 1
31.	Juanda	Surabaya	RNAV 1
32.	Raja Haji Fisabilillah	Tanjungpinang	RNAV 1
33.	Juwata	Tarakan	RNP 1