



*International Civil Aviation Organization*

**THE TENTH MEETING OF THE PERFORMANCE-BASED  
NAVIGATION IMPLEMENTATION COORDINATION GROUP  
(PBNICG/10)**

Bangkok, 19 - 21 April 2023

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Agenda Item 6: PBN Training for ATC

**PBN TRAINING FOR ATC IN INDONESIA**

(Presented by Indonesia)

**SUMMARY**

This paper presents an update on the progress of Indonesia's PBN Training for ATC

**1. INTRODUCTION**

- 1.1 The optimal use of appropriate PBN specification is a key enabler to progress seamless ATM in the Asia/Pacific region. The introduction of PBN in Indonesia from 2016 until 2023 can involve considerable investment in terms of training, education, and awareness, material for both flight crew and controllers.
- 1.2 Indonesia has presented the PBN training for ATC and its status at the PBNICG/9 meeting in 2022. Since then, Indonesia has updated and made some innovations to the plan to accommodate the development of several types of training in Indonesia.
- 1.3 Indonesia is focusing on increasing the safety and smooth operation of aircraft throughout the country by PBN training flight procedures in some En route, TMAs, and airports for ATC.

**2. DISCUSSION**

**PBN Training for ATC**

- 2.1 The objective of the course is to facilitate the application of PBN procedures through the improvement of understanding of the PBN concept and the PBN procedures by air traffic controllers. This will also improve the efficiency and capacity of airspace and the safety of operations, which will accelerate the implementation. Indonesia has conducted 17 PBN training ATC personnel in the year 2021 and 2 PBN training in the year 2022 (up until 15 March 2022). In terms of procedure development for ATC training materials consist of separations, routes and procedures, coordination, communications, contingencies, and emergencies.

- 2.2 The training has been performed by the simulator and conducted online and offline consistent with the location of the ATC Unit. Since reported in PBNICG/9 in 2022, Indonesia has increased the implementation of PBN by 10% for international airports and 20% for domestic airports. The PBN training program in Indonesia is basic training, recurrent and advanced. The topics are en route PBN (RNAV 2), terminal (RNP 1), and approach (RNP APCH).
- 2.3 Training local ATCs would improve confidence in the management of PBN traffic and provide a better perception of benefits in terms of workload and complexity reduction. PBN Training content is as follows:
- Familiarization: principles, Concept of operations, AIP changes, Area of operations, SIM – exercise 1
  - Contingencies: Mixed-mode traffic, lateral separation, aircraft deviations, and future change, SIM – exercise 2
  - Competency assessments: exam, practical assessment, the review process
- 2.4 The objective of the course is to facilitate the application of PBN procedures through the improvement of understanding of the PBN concept and the PBN procedures by air traffic controllers. This will also improve the efficiency and capacity of airspace and the safety of operations, which will accelerate PBN implementation in Indonesia.

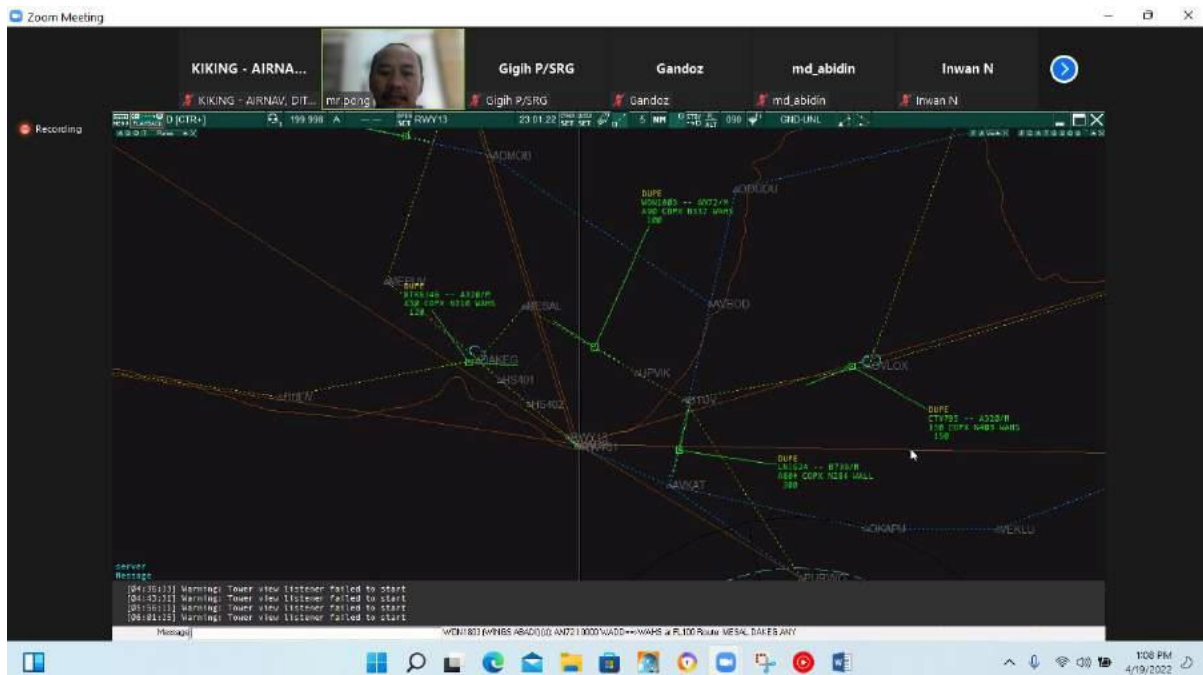


Figure 1. One of PBN Training for ATC in Indonesia

### 3. ACTION REQUIRED BY THE MEETING

- 3.1 The meeting is invited to:
- a) Update the status of training PBN for ATC in Indonesia
  - b) Note the information contained in this paper; and
  - c) Discuss any relevant matters as appropriate.

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Attachment**LOCATION OF TRAINING PBN FLIGHT PROCEDURES FOR ATC**

Table 1. List of International Airport (with instrument runway) with PBN IAP (30/32 airports)

<b>No.</b>	<b>Airport Name</b>	<b>Location</b>	<b>Navpsec</b>
1	Pattimura	Ambon	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 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 AR
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

Table 2. List of International Airport (With Instrument Runway) With PBN SID/STAR 18/32)

<b>No.</b>	<b>Airport Name</b>	<b>Location</b>	<b>Navspec</b>
1	Pattimura	Ambon	RNP AR
2	Husein Sastranegara	Bandung	RNP AR
3	Sam Ratulangi	Manado	RNP AR
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

Table. 3 List of Domestic Airport with PBN IAP (78/110)

No.	Airport Name	Location	Navspec
1	Sultan Syarif Haroen	Pelalawan	RNP APCH
2	Bersujud	Batulicin	RNP APCH
3	Fatmawati Soekarno	Bengkulu	RNP APCH
4	Djalaluddin	Gorontalo	RNP APCH
5	Sultan Thaha	Jambi	RNP APCH
6	Wamena	Jaya Wijaya	RNP APCH
7	Utarom	Kaimana	RNP APCH
8	Kuabang	Kao	RNP APCH
9	Halu Oleo	Kendari	RNP APCH
10	Rahadi Oesman	Ketapang	RNP APCH
11	Gusti Sjamsir Alam	Kotabaru	RNP APCH
12	Komodo	Labuan Bajo	RNP APCH
13	Rendani	Manokwari	RNP APCH
14	Tjilik Riwut	Palangkaraya	RNP APCH
15	Muara Sis Al Jufri	Palu	RNP APCH
16	Mathilda Batlayeri	Saumlaki	RNP APCH
17	Tebelian	Sintang	RNP APCH
18	Domestik Eduard Osok	Sorong	RNP APCH
19	Waikabukak	Tambolaka	RNP APCH
20	Sultan Baabullah	Ternate	RNP APCH
21	Mozes Kilangin	Timika	RNP APCH
22	Syukur Aminuddin Amir	Luwuk	RNP APCH
23	Abdul Rachman Saleh	Malang	RNP APCH
24	Depati Amir	Pangkal Pinang	RNP APCH
25	Kalimarau	Tanjung Redeb	RNP APCH

26	Silampari	Lubuk Linggau	RNP APCH
27	Haji Hasan Aroeboesman	Ende	RNP APCH
28	Oesman Sadik	South Halmahera	RNP APCH
29	Iskandar	Pangkalan Bun	RNP APCH
30	Tampa Padang	Mamuju	RNP APCH
31	Pitu	Morotai	RNP APCH
32	Cut Nyak Dien	Nagan Raya	RNP APCH
33	Jenderal Sudirman	Purbalingga	RNP APCH
34	David Constanctine Sudele	Rote Ndao	RNP APCH
35	Aji Pangeran Tumenggung Pranoto	Samarinda	RNP APCH
36	Naha	Tahuna	RNP APCH
37	Toraja	Tanah Toraja	RNP APCH
38	Sultan Bantilan	Toli Toli	RNP APCH
39	Matahora	Wakatobi	RNP APCH
40	Jenderal Besar Soedirman	Purbanlingga	RNP APCH
41	Tunggul Wulung	Cilacap	RNP APCH
42	Soa	Bajawa	RNP APCH
43	Ngloram	Blora	RNP APCH
44	Gewayantana	Larantuka	RNP APCH
45	Haji Muhammad Sidik	Muara Teweh	RNP APCH
46	Rembele	Takengon	RNP APCH
47	Fransiskus Xaverius Seda	Maumere	RNP APCH
48	Maimun Saleh	Sabang	RNP APCH
49	Trunojoyo	Sumenep	RNP APCH
50	Lasikin	Sinabang	RNP APCH
51	Pangsuma	Putusibau	RNP APCH
52	Sangia Nibandera	Kolaka	RNP APCH
53	Noto Hadinegoro	Jember	RNP APCH
54	Nunukan	Nunukan	RNP APCH
55	Tanjung Harapan	Tanjung Selor	RNP APCH
56	Raja Haji Abudllah	Tanjung Balai Karimun	RNP APCH
57	Binaka	Gunung Sitoli	RNP APCH
58	Malikussaleh	Aceh Utara	RNP APCH
59	Sugimanuru	Muna	RNP APCH
60	Betoambari	Bau Bau	RNP APCH
61	Muko-Muko	Muko-Muko	RNP APCH
62	Bua	Lagaligo Luwu	RNP APCH
63	Warukin	Tabalong	RNP APCH
64	Tanjung Api	Ampana	RNP APCH
65	Gamar Malamo	Halmahera	RNP APCH
66	Sultan Muhammad Kaharuddin	Sumbawa Besar	RNP APCH
67	Muara Bungo	Muara Bungo	RNP APCH

68	Sibisa	Parapat	RNP APCH
69	Nusawiru	Pangandaran	RNP APCH
70	Numfor	Biak	RNP APCH
71	Kol Robert Atty Bessing	Malinau	RNP APCH
72	Melonguane	Sangihe	RNP APCH
73	Miangas	Miangas	RNP APCH
74	Dr. Ferdinand Lumbantobing		RNP APCH
75	Ewer		RNP APCH
76	Tanah Merah		RNP APCH
77	Namniwel		RNP APCH
78	Mopah		RNP APCH

Table 4. List of Domestic Airport (with instrument runway) with PBN SID/STAR (14/32)

No.	Airport Name	Location	Remarks
1	Muara Sis Al Jufri	Palu	RNP 1
2	Komodo	Labuan Bajo	RNP 1
3	Tebelian	Sintang	RNP 1
4	Mozes Kilangin	Timika	RNP 1
5	Sultan Baabullah	Ternate	RNP 1
6	Toraja	Tana Toraja	RNP 1
7	Oesman Sadik	South Halmahera	RNP 1
8	Iskandar	Pangkalan Bun	RNP 1
9	Toraja	Tanah Toraja	RNP 1
10	Tampa Padang	Mamuju	RNP 1
11	Jenderal Besar Soedirman	Purbanlingga	RNP 1
12	Haji Muhammad Sidik	Muara Teweh	RNP 1
13	Fransiskus Xaverius Seda	Maumere	RNP 1
14	Rembele	Takengon	RNP 1

Table 5. List of Remote Airports (non-instrument runway) with PBN IAP

No.	Airport Name	Location	Navspec
1	Buli	Halmahera	RNP APCH
2	Bade	Papua	RNP APCH
3	Kimam	Papua	RNP APCH
4	Kokonao	Papua	RNP APCH
5	Sarmi	Papua	RNP APCH
6	Ayawasi	Papua	RNP APCH
7	Teluk Bintuni	Papua	RNP APCH
8	Inanwatan	Papua	RNP APCH
9	Kambuaya	Papua	RNP APCH
10	Merdei	Papua	RNP APCH
11	Teminabuan	Papua	RNP APCH
12	Bawean	East Java	RNP APCH

13	Sinabang	North Sumatra	RNP APCH
14	Sibolga	North Sumatra	RNP APCH
15	Torea	Papua	RNP APCH
16	Sitaro - Siau	North Sulawesi	RNP APCH
17	Kokonao	Mimika	RNP APCH
18	Cakrabhuwana	Cirebon	RNP APCH

### LIST OF PBN ENROUTE TRAINING

ATS Route	Routes	Publication	Navspec
T1	Jakarta – Bali	17 Aug 2017	RNAV 10
T2	Surabaya – Jakarta	27 Aug 2020	RNAV 2
T3	Jakarta – Surabaya – Bali	27 Aug 2020	RNAV 2
T4	Bali – Jakarta	27 Aug 2020	RNAV 2
T5	Jakarta – Makassar	27 Aug 2020	RNAV 2
T6	Makassar – Jakarta	27 Aug 2020	RNAV 2
Z21	Medan – Aek Godang	2 Mar 2017	RNP 2
Z22	Medan – Sibolga	2 Mar 2017	RNP 2
Z23	Medan – Binaka	2 Mar 2017	RNP 2
Z24	Medan – Lasikin	2 Mar 2017	RNP 2
Z25	Medan – Rembele	2 Mar 2017	RNP 2
Z26	Medan – Lhok Sukon	2 Mar 2017	RNP 2
T5 EXT	Aceh – Jakarta – Cirebon	01 Jun 2021	RNAV 2
T6 EXT	Jakarta – Binaka - Aceh	01 Jun 2021	RNAV 2
T7	Aceh – Padang – Bengkulu - JKT	01 Jun 2021	RNAV 2
T8	Jakarta - Aceh	01 Jun 2021	RNAV 2
T10	Jakarta – Medan - Aceh	01 Jun 2021	RNAV 2
T19	Semarang – Surabaya - Kupang	02 Des 2021	RNAV 2
T20	Kupang – Surabaya – Semarang	02 Des 2021	RNAV 2
T15	Surabaya - Papua	8 Sep 2022	RNAV 2
T16	Surabaya - Papua	8 Sep 2022	RNAV 2
T17	Surabaya - Papua	8 Sep 2022	RNAV 2
T18	Surabaya - Papua	8 Sep 2022	RNAV 2
T5 EXT	Makassar – Papua	8 Sep 2022	RNAV 2
T6 EXT	Papua - Makassar	8 Sep 2022	RNAV 2