INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THIRTEENTH MEETING OF PERFORMANCE BASED NAVIGATION IMPLEMENTATION COORDINATION GROUP (PBNICG/13)

BANGKOK, THAILAND, 14 - 16 OCTOBER 2026

The views expressed in this Report should be taken as those of the Meeting and not the Organization

Approved by the Meeting
Published by the ICAO Asia and Pacific Office, Bangkok

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INTRODUCTION

Meeting

1.1 The Thirteenth Meeting of Performance Based Navigation Implementation Coordination Group (PBNICG/13) was held from 14 to 16 October 2026 at the Kotaite Wing of the ICAO Asia and Pacific (APAC) Office in Bangkok, Thailand.

Attendance

2.1 The Meeting was attended by 56 registered participants from 18 States, one Special Administrative Regions of China and one international organization, including Australia, China, Hong Kong China, Fiji, India, Indonesia, Japan, Lao People's Democratic Republic (PDR), Malaysia, Maldives, Mongolia, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Thailand, the United States, Viet Nam, ICCAIA and ICAO.

2.2 A list of participants is provided at **Appendix A to the Report**.

Officers and Secretariat

3.1 Mr. Ravinder Singh Jamwal, Director of Operations- AS & ANSS/ FSD DGCA India as Chairperson.

3.2 Mr. Raphael GUILLET, Chief of ICAO APAC RSO and Mr. Irwandi Krisnata, Regional Officer PBN, ICAO APAC RSO, were the Secretaries for the Meeting. They were assisted by Ms. Yang Siqi, Associate Administrative Officer, ICAO APAC RSO.

Language and Documentation

4.1 The PBN Implementation Coordination Group met as a plenary throughout the Meeting. The working language of the meeting was English for all documentation and this Report. A total of 09 Working Papers (WPs), 10 Information Papers (IPs), one Flimsy and five presentations were considered by the Meeting.

4.2 The List of Working and Information Papers are appended at **Appendix B to the Report** (IP/01).

4.3 **DISCLAIMER:** The presentation of material in this report does not imply the expression of any opinion whatsoever on the part of ICAO, APANPIRG or CNS Sub-Group of APANPIRG or PBNICG/13 concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

Opening of the Meeting

5.1 Mr. Ravinder Singh Jamwal welcomed participants to the Meeting.

Draft Conclusions, Draft Decisions and Decisions of PBNICG – Definition

6.1 The PBNICG recorded its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

a) **Draft Conclusions** of the PBNICG relate to matters that are not just of a purely technical or operational nature, which need to be considered by APANPIRG;

b) **Conclusions of** the PBNICG relate to matters of a purely technical or operational nature, which APANPIRG had delegated authority to PBNICG to act upon;

c) **Draft Decisions** relate solely to matters dealing with the internal working arrangements of the PBNICG, which need to be considered by APANPIRG; and

d) **Decisions** of the PBNICG that relate solely to matters dealing with the internal working arrangements of the PBN/ICG, which APANPIRG had delegated authority to CNS/SG to act upon.

List of Draft Conclusions and Decisions

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REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Provisional Agenda

Provision Agenda (WP/01)

1.1 The provisional agenda (WP/01) was adopted by the Meeting. The Meeting noted IP/01 (Provisional List of Papers).

Agenda Item 2: Global and Regional PBN Updates

Global & Regional PBN Updates (WP/02 / SP/01)

2.1 The Secretariat presented an update on global and regional Performance-based Navigation (PBN) implementation activities, including progress against ICAO Assembly Resolution A37-11 and relevant provisions of the Asia/Pacific Seamless ANS Plan. The presentation highlighted current implementation trends within the Asia/Pacific Region and provided comparisons with global implementation performance to support regional planning and monitoring activities.

2.2 The meeting noted that PBN implementation in the APAC Region continued to show gradual improvement between 2025 and 2026. Regional statistics indicated increases in LNAV procedures from 70.4 % to 70.8 %, LNAV/VNAV procedures from 60.1 % to 60.8 %, and LPV procedures from 1.6 % to 2.2 %, while RNP AR implementation remained unchanged at 11.5 %. The meeting further noted positive growth in terminal procedures, with SID implementation increasing from 78.7 % to 79.0 % and STAR implementation increasing from 74.5 % to 76.0 %.

2.3 The meeting also noted relevant PBN-related elements contained in the APAC Seamless ANS Plan Version 4.0 and the forthcoming Asia/Pacific Air Navigation Plan Volume III. Particular attention was given to Priority 1 elements, including PBN approach procedures, RNAV 1/RNP 1 SID and STAR implementation, ABAS, and Navigation Minimum Operating Networks (Nav MON).

2.4 The meeting further reviewed Universal Safety Oversight Audit Programme (USOAP) Protocol Questions relevant to PBN implementation in the Air Navigation Services area. These covered areas such as PBN implementation mechanisms, flight procedure design and validation, inspector qualifications and training, surveillance programmes, quality assurance, publication requirements, procedure review processes, and oversight of instrument flight procedure service providers. The meeting emphasized the importance of maintaining effective regulatory frameworks, adequate resources, and continuous oversight to support safe and sustainable PBN implementation.

2.5 The Secretariat highlighted the PBN-related USOAP Protocol Questions (PQs), including those on periodic review of instrument flight procedures, training of procedure designers and inspectors, quality control of instrument flight procedures, and safety assessment before and after implementation. It was recalled that in other ICAO regions, audits had found procedures that had not been properly approved, resulting in Significant Safety Concerns (SSCs), and that two workshops had been conducted in the Asia/Pacific Region to raise awareness of these PQs.

2.6 The Chairperson shared his experience of USOAP audits and emphasised that: a) published instrument flight procedures should be reviewed within the maximum interval of five years; b) each inspector and procedure designer should have an individual annual training plan, with training records maintained; and c) data exchange between procedure design organisations and data originators, including within the same organisation, should be formalised through letters of agreement to ensure data accuracy and authentication.

2.7 The Secretariat further highlighted that national regulations should be kept consistent with the latest edition of PANS-OPS (Doc 8168), as the related PQ verified that the criteria used for procedure design were in line with those promulgated by the State.

2.8 The Philippines shared its experience of a USOAP audit concluded in September 2026, in which the auditors emphasised the incorporation of Doc 8168 into national regulations and the need for national regulations to specify how the periodic review of procedures is conducted and its maximum interval. The Philippines also noted that the priority PQs could lead to potential SSCs if not addressed. The Meeting appreciated the information shared, and the Secretariat invited States that had recently undergone audits to share key lessons at future meetings. The Chairperson encouraged States to use the Meeting to seek guidance from other States on addressing the PQs.

2.9 In response to an enquiry from a State on whether the safety assessment before and after implementation referred to in PQ 7.109 was mandatory, the Chairperson and the Secretariat clarified that the introduction of a PBN procedure constituted a change to the ATM system and required a safety assessment, supported by stakeholder consultation and the service provider's Safety Management System (SMS).

2.10 Thailand sought clarification on why only RNP routes, and not RNAV routes, were referred to under element B1/FRTO of the Asia/Pacific Seamless ANS Plan. The Secretariat agreed to look into the matter and revert to the Meeting. India also raised the ICAO Electronic Bulletin on the reassessment of SBAS-based LPV procedures. **ACTION ITEM 13-1**

2.11 The Secretariat encouraged States to review the PBN-related PQs carefully, and noted the Secretariat's intention to continue the discussion at the next meeting drawing on the experience of States that had recently been audited. **ACTION ITEM 13-2**

Outcomes of GBAS SBAS ITF8 (May 2026) and ADB Workshop on SBAS Implementation in ASEAN (October 2026) (SP/02)

2.12 The Secretariat presented the outcomes of the Eighth Meeting of the GBAS/SBAS Implementation Task Force (GBAS/SBAS ITF/8), held in Melbourne, Australia, from 12 to 14 May 2026. Key discussions covered the status of GBAS and SBAS implementation in the APAC Region, updates to regional SBAS guidance material, GNSS radio frequency interference (RFI), certification and safety assessment considerations, and future standardization activities to support implementation

2.13 The meeting noted that most tasks assigned to the Task Force had been completed and that participating States supported the establishment of a coordination mechanism to continue regional collaboration on GBAS and SBAS implementation.

2.14 The Secretariat also informed the Meeting of the feasibility study launched by the Asian Development Bank (ADB) on an SBAS for ASEAN States, expected to be concluded by mid-2027, and of the related ADB workshop at which the Secretariat had presented on SBAS standards, certification and operation.

2.15 In response to an enquiry from Indonesia on Dual-Frequency Multi-Constellation (DFMC) SBAS, the Secretariat noted that avionics equipment would be a key implementation challenge and agreed to arrange a presentation on DFMC at the next meeting. Australia sought clarification on whether the ATC status monitoring of GBAS (GLS) was required in the aerodrome control tower only or also in the approach control unit; the Secretariat advised that the ICAO position was that monitoring should be provided in the tower. **ACTION ITEM 13-3**

Related Meetings Outcomes (WP/03)

2.16 The Secretariat presented outcomes from APANPIRG/36 and its contributory bodies that have implications for regional PBN implementation. Key developments included amendments to the Asia/Pacific Seamless ANS Plan Version 4.0, continued work on 5LNC management, and regional efforts to enhance navigation system planning and implementation. The meeting also noted ongoing initiatives to address code shortages and improve harmonization across the APAC Region.

2.17 The meeting noted the adoption of updated SBAS implementation guidance, approval of regional GNSS RFI coordination and reporting procedures, and discussions on future governance arrangements for GBAS/SBAS activities. CNS SG/30 recommended incorporating GBAS/SBAS-related work into the PBNICG Terms of Reference,

2.18 The meeting noted that under ATMSG, AAITF continued work on the operational use of 5ANNC as a solution to waypoint naming constraints. These outcomes support enhanced regional coordination and the continued advancement of PBN-related objectives in the APAC Region.

2.19 The Meeting noted the disestablishment of the GBAS/SBAS Implementation Task Force (GBAS/SBAS ITF), as agreed by the CNS Sub-Group in July 2026.

2.20 The Meeting was of the view that participants in the PBNICG were primarily PBN users, mainly air traffic controllers (ATCOs) and flight procedure designers, without specific expertise in GBAS and SBAS matters, whereas participants in the last meeting of the GBAS/SBAS ITF were mainly GBAS and SBAS developers with an engineering background.

2.21 Consequently, the Meeting agreed that further consideration was required before any amendment to the PBNICG Terms of Reference (TOR) to include GBAS and SBAS matters was undertaken, and that other options should also be explored in coordination with the Chair of the former GBAS/SBAS ITF. The review should consider arrangements to preserve the specialized technical expertise and coordination functions previously provided by the GBAS/SBAS ITF. The Meeting agreed to revisit the matter at PBNICG/14 in 2027, prior to the next meeting of the CNS Sub-Group. **ACTION ITEM 13-7**

Agenda Item 3: States' PBN Implementation Progress and challenges/lesson learnt

PBN Implementation Status in Pakistan (IP/02)

3.1 Pakistan has made significant progress in the implementation of Performance-Based Navigation (PBN) in accordance with ICAO requirements and regional objectives. The National PBN Implementation Plan was developed and subsequently reviewed to reflect implementation progress and evolving operational requirements. RNP APCH, RNP 1 SIDs and STARs have been progressively implemented at applicable airports to enhance connectivity, accessibility and operational efficiency.

3.2 Pakistan is also exploring the feasibility of RNP AR operations at selected northern airports due to challenging terrain and airspace constraints. En-route ATS routes have been progressively converted to PBN specifications, including RNP 10 and RNAV 5, while future RNP 2 implementation remains under consideration. Continued stakeholder coordination, safety assessment, contingency arrangements for GNSS interference, and appropriate training remain essential for sustained PBN implementation.

3.3 In response to an enquiry from the Secretariat, Pakistan advised that no PBN equipage mandate had been issued and that conventional procedures and the Minimum Operational Network (MON) continued to be maintained.

PBN Implementation Progress in Japan (IP/03)

3.4 Japan presented an update on the progress of its PBN implementation activities and the development of the next phase of the Collaborative Actions for Renovation of Air Traffic Systems (CARATS) programme targeting 2040. The presentation highlighted ongoing efforts to modernize air traffic management and support the implementation of ICAO air navigation objectives

3.5 The meeting noted information on the implementation status of PBN applications, including RNP APCH, RNP AR, RNP to ILS, SBAS APV I and en-route operations. The presentation discussed future implementation plans, challenges related to aircraft equipage and stakeholder readiness, and lessons learned from close coordination with airlines and phased implementation.

3.6 The Secretariat invited Japan to explore whether a Japanese airline could share its operational experience and benefits from the use of SBAS (MSAS) at the next meeting, and proposed to share with Japan the presentation made by IndiGo airline on its use of LPV procedures based on GAGAN at the GBAS SBAS workshop in Oct 2025 in India. **ACTION ITEM 13-4**

3.7 In response to enquiries from the Chairperson, Japan advised that RNP AR and RNP-to-ILS procedures were implemented based on airline requests and decided in coordination meetings between airlines and the ANSP. In response to an enquiry from Indonesia, the Secretariat noted that progression from APV-I to CAT I typically required several years of data collection and system tuning. India advised that GAGAN was currently approved for APV-I operations only.

Update on PBN Implementation in Australia (IP04)

3.8 Australia provided an update on navigation augmentation, GNSS RFI issues and surveillance-based safety monitoring initiatives. The paper outlined implementation progress associated with the Southern Positioning Augmentation Network (SouthPAN) Satellite Based Augmentation System, provided a brief update on Ground Based Augmentation System operations, discussed recent operational experience associated with GNSS RFI events affecting aircraft arriving in Australia.

3.9 The Meeting noted that a Downlinked Barometric Pressure Setting Monitoring (DBPSM) function will be included in the system requirements of Australia's future civil-military ATM system to put in operations from 2030. This decision has been taken after discussion with other ANSPs using this new system and following the discussion at the last PBNICG/12 in December 2025 about the May 2022 QNH mis-setting serious incident at Paris-Charles de Gaulle. The Secretariat urged States to assess, with their safety teams, the potential risk of QNH mis-setting during APV Baro-VNAV operations and to share any mitigation measures at the next meeting. **ACTION ITEM 13-5**

3.10 India expressed the view that the existing ATC practice of issuing the QNH with the approach clearance and on final approach provided adequate mitigation. Australia noted that DBPSM, by using meteorologically derived QNH, could detect errors by both pilots and controllers. The Meeting noted that the risk should be considered in the safety assessment of APV Baro-VNAV procedures. Indonesia commended Australia on the implementation of PBN across its entire airspace network following its GNSS mandate in 2016.

PBN Implementation Progress in Indonesia (IP/05)

3.11 Indonesia presented continued progress in PBN implementation since PBNICG/12, with PBN instrument approach procedures implemented at all international airports and most domestic airports. Eight new PBN procedures were published during the reporting period, and additional SID/STAR and RNP APCH procedures remain under development.

3.12 The meeting noted Indonesia's ongoing efforts to develop RNP AR procedures at airports with challenging terrain and the planned implementation of the Point Merge System (PMS) in Jakarta airspace. These initiatives aim to enhance operational efficiency, safety, and access.

3.13 In response to an enquiry from Australia, Indonesia advised that reports of GNSS RFI were being received from pilots and that a detection application was under development. The United States shared an event in which GNSS interference had resulted in an aircraft deviating by more than 100 NM on entry into the Oakland Oceanic FIR, with no reports filed in the upstream FIRs, and highlighted the importance of timely reporting of GNSS RFI events. In response to enquiries from the Philippines, Indonesia advised that its RNP AR procedures and their flight validation were currently undertaken by third-party service providers.

Implementation of Established on RNP AR (EoR) Operations at Hong Kong International Airport (IP/06)

3.14 Hong Kong, China presented the implementation of Established on RNP AR (EoR) operations at Hong Kong International Airport to enable independent parallel approaches within its constrained terminal airspace. The Meeting noted that a new RNP AR approach to Runway 07R incorporating four RF legs had been designed, that a No Transgression Zone (NTZ) of 1,300 metres had been established given the runway spacing of 3,185 metres, that flight validation and a multidisciplinary safety risk assessment had been completed in early 2026, and that the procedures had been published in AIP Amendment 12/26 with an effective date of 26 November 2026. An operational trial would initially be limited to local operators.

3.15 In response to enquiries from Malaysia, Indonesia, Japan, the Philippines and ICCAIA, Hong Kong, China informed that: a) RNP AR-capable aircraft would be identified through the flight plan and a list of authorised operators provided to approach controllers; b) the AIP amendment had been published two AIRAC cycles in advance of the effective date; c) a survey of operators indicated that around 20 per cent were RNP AR-capable; d) the trial would initially be conducted during the midday arrival peak; e) RNP AR was considered more beneficial than RNP VPT at this stage; and f) TCAS could not be simulated in the flight simulation but based on a qualitative assessment done by consultants, TCAS RA is very unlikely due to the runway spacing.

PBN Implementation in India an Update (IP/07)

3.16 India provided a comprehensive update on the progress of Performance-Based Navigation (PBN) implementation across its airspace. The paper outlined current deployment statistics for terminal, approach, and en-route, highlighting the integration of RNAV transitions to ILS final approach tracks to reduce ATC workload. India discussed recent operational adjustments, noting the temporary revision of LPV procedure minima in response to ICAO Electronic Bulletin 2026/13.

3.17 Furthermore, India highlighted recent advancements in rotorcraft operations with the implementation of Helicopter Point-in-Space (PinS) and CAT H approaches, and introduced the ongoing Point Merge System (PMS) trial operations at Bengaluru aimed at enhancing high-density air traffic capacity

3.18 The Chairperson informed the Meeting that the DGCA India had issued an operations circular, available on the DGCA website, providing guidance to the ANSP on the review of LPV procedures following the Electronic Bulletin 2026/13, and encouraged States to share the measures they had taken. In response to an enquiry from Pakistan, India advised that its RNAV 1 and RNP 1 procedures were GNSS-based, with RNP 1 applied where ATS surveillance was not available. In response to enquiries from Indonesia, India and the Chairperson shared their experience of the PMS implementation, including extensive stakeholder consultation, a study visit to Malaysia, and a trial phase initially limited to a two-hour low-traffic period. **ACTION ITEM 13-5**

3.19 Noting that no specific ICAO training on PMS was available, the Secretariat suggested that interested States consider forming an informal online group to exchange experience on PMS implementation, with the support of the Secretariat.

Agenda Item 4: National PBN Regulatory Framework

PBN Approach Procedures to Non-Instrument Runways: Design Concept and Safety Assessments (WP/04)

4.1 India presented procedural design concepts and safety assessments arising from the ICAO Annex 14 definition of a non-instrument runway, which permits instrument approaches to a point from which the approach continues in visual meteorological conditions (VMC).

4.2 The meeting also noted India's implementation methodology, which establishes a 1000 ft Above Threshold Elevation visual transition point based on VFR visibility requirements. India detailed the rigorous safety assessments, obstacle surveys, and operational mitigations utilized to expand regional connectivity at airports such as Jagdalpur, Kangra, and Agatti etc. To ensure flight crew awareness, India advocated for the adoption of a standardized charting caution for such procedures across the region.

4.3 The Secretariat noted that the concept differed from RNP VPT. The Philippines shared that it annotated such procedures as usable in VMC only. Pakistan, while agreeing on the absence of harmonised criteria in Doc 8168, expressed concern on the consistency between the Annex 14 definition of a non-instrument runway and the Annex 6 provisions on instrument approach operations and aerodrome operating minima, and on the status of a VMC caution where minima below VMC had been approved, and requested the view of ICAO. The Secretariat agreed to seek the view of the Instrument Flight Procedures Panel (IFPP) on the matter and to inform the Meeting accordingly. **ACTION ITEM 13-1**

Agenda Item 5: Review PBN Implementation and Operational Guidance Document

Update on the Guidance Material for GNSS RFI and Associated Data Link Disruption Coordination and Reporting Procedures Version 1.0 (WP/05)

5.1 The Secretariat presented an update on the work of the Procedures for GNSS and Data Link Disruption Ad Hoc Group established by ATM/SG/12 and introduced Version 1.0 of the draft Asia/Pacific Regional Guidance Material for GNSS RFI and Associated Data Link Disruption Coordination and Reporting Procedures. The presentation outlined the activities undertaken by the Ad Hoc Group, including the collection and analysis of GNSS RFI event data, review of existing reporting practices, and development of a harmonized regional reporting and coordination framework.

5.2 The meeting noted information on the development of the regional guidance material, which includes procedures for detection, validation, reporting, coordination, mitigation and post-event review of GNSS RFI and associated data link disruption events. The presentation highlighted the planned submission of the guidance material to APANPIRG and encouraged States, Administrations and stakeholders to apply the guidance, as appropriate, to support harmonized regional reporting, coordination and information sharing arrangements

5.3 The meeting noted that the guidance material had been developed under ATM/SG and considered by the CNS SG, and had been brought to the attention of PBNICG because GNSS RFI

affected PBN operations as well as communication and surveillance. The Meeting noted that industry was developing aircraft-based solutions, such as improved antennas and multi-constellation detection, which were complementary to the work of States on reporting, informing air traffic controllers and locating interference sources. The Secretariat offered to share, on request, material from a recent industry online workshop on GNSS RFI.

Advanced RNP Navigation Specification Inconsistency in ICAO Documents PANS-OPS (Doc 8168) And PBN Manual (DOC 9613) (WP/06)

5.4 Pakistan presented information on identified inconsistencies between the updated Advanced RNP (A-RNP) navigation specification contained in the Performance-based Navigation (PBN) Manual (ICAO Doc 9613, 5th Edition) and the provisions currently reflected in Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS, ICAO Doc 8168) Volumes I and II. It was highlighted that, although the Advanced RNP framework had been revised to align with updated standards, including the removal of final approach applicability and scalable RNP requirements, the corresponding design criteria and operational references in PANS-OPS had not yet been updated accordingly. The inconsistencies could potentially lead to misinterpretation or inappropriate application of the navigation specification, with associated safety and efficiency implications.

5.5 The Secretariat informed the Meeting that the review of the PBN Manual and PANS-OPS was included in the work programme of the Instrument Flight Procedures Panel (IFPP), and undertook to seek the view of the IFPP on the timing of the updated provisions, together with the question on non-instrument runways raised under WP/04, and to inform participants by email. Pakistan was of the view that the use of instrument approach operations on non-instrument runways reflected an inconsistency between Annex 14 and Annex 6 and might more appropriately be referred to the FLTOPSP. India, as a member of the IFPP, informed the Meeting that the next IFPP meeting would commence on 19 October 2026, that work on the update of the PBN Manual and on non-instrument runways was ongoing in coordination with other panels, including the Aerodromes Panel, and suggested that PBNICG could bring such discrepancies to the attention of ICAO. **ACTION ITEM 13-1**

RNP AR DP Design Criteria – A Big Challenge for RNP AR Operations (WP/07)

5.6 Pakistan presented the evolutionary development of RNP AR navigation specification starting from only approach to full operations including approach and departures. It highlights the importance of a standard harmonized criteria for RNP AR Departures in implementation of RNP AR operations in rich terrain and other challenging environments where the implementation of departure procedures using other navigation specifications are not practicable. Describing the challenges being faced by the States and aviation industry due to non-availability of ICAO RNP AR departure design criteria, it urges that ICAO may be pursued to accord priority and include it priority task of relevant ANC panel.

5.7 The meeting noted that RNP AR-related tasks were included in the work programme of the IFPP, and undertook to seek clarification from the IFPP on the development of RNP AR departure design criteria and to share the outcome with the Meeting. **ACTION ITEM 13-1**

Agenda Item 6: States' Minimum Operation Network (MON)

Minimum Operational Network (SP/03)

6.1 The Secretariat presented information on the Minimum Navigation Operational Network (NAV MON) concept in the context of increasing GNSS Radio Frequency Interference (RFI) events and the associated ICAO roadmap for enhancing navigation resilience. The presentation outlined

ICAO's short-term, medium-term and long-term actions aimed at ensuring the continuity, resilience and efficiency of air navigation services during GNSS degradation or disruption events.

6.2 The meeting noted developments in global and regional planning, including the introduction of Navigation Minimal Operating Networks (NAVS B0/4) in the Global Air Navigation Plan (GANP), its designation as a Priority 1 element in the Asia/Pacific Seamless ANS Plan, and relevant provisions contained in ICAO Assembly Resolution A42-8 regarding resilient terrestrial CNS capabilities. The evolution of the Resilient Navigation Operational Network (NAV RON) concept from NAV MON and the ongoing work of the ICAO Navigation Systems Panel were also discussed.

Minimum Operational Network (MON) Implementation in Australia (IP/08)

6.3 Australia presented information on the implementation of its Minimum Operational Network (locally referred to as the Backup Navigation Network) through the Navigation Rationalisation Project. The paper outlined the strategic rationale for reducing the terrestrial navigation network following implementation of GNSS-based PBN operations, the safety assessment and fault-tree analysis activities undertaken to support the change, the composition and role of the retained Backup Navigation Network, and lessons learned from stakeholder engagement, operational transition and contingency planning. The paper highlighted the importance of maintaining an appropriate terrestrial backup capability while transitioning to a PBN navigation environment.

6.4 In response to enquiries from the Secretariat, India, the Chairperson and Viet Nam, Australia informed the Meeting that: a) the process had started with the CASA mandate for GNSS as the primary means of navigation, followed by safety planning and the selection of navigation aids for retention, which was the most time-consuming part; b) no specific tool had been used for the selection, which was based on fault-tree analysis and extensive consultation, taking into account the economic as well as the contingency use of each aid; c) the number of navigation aids had been reduced from 407 to 214, with 37 of 85 VORs decommissioned, mostly en-route and holding VORs rather than aerodrome VORs, and no ILS removed; d) the project, initiated by the Department of Infrastructure on cost grounds, had been fully supported by the regulator, while the main challenges had arisen with training and private operators and some defence users; e) fixed routes serving the major population centres continued to follow the former navigation aid structure, with replacement waypoints at the same positions, and Australia had not yet experienced wide-scale GNSS RFI; and f) Australia also faced difficulties in obtaining NDB spare parts, which, together with maintenance costs, was a driver for further NDB rationalization being considered at a preliminary stage.

6.5 The Chairperson commended Australia for a transparent case study on balancing PBN modernization with terrestrial resilience and encouraged States to refer to the paper.

Minimum Operational Network (MON) in Pakistan (IP/09)

6.6 Pakistan presented its approach to implementing a Minimum Operational Network (MON) to enhance navigation resilience during GNSS disruption events. While achieving extensive PBN implementation, Pakistan has maintained conventional navigation infrastructure to support continued IFR operations and ensure operational continuity during GNSS outages or interference

6.7 It also highlighted the retention of VOR/DME, ILS and NDB facilities, together with GNSS-independent surveillance systems, as part of a resilient backup capability. Pakistan noted that its current navigation and surveillance infrastructure provides an appropriate level of resilience to support safe ATS and contingency operations, consistent with the intent of ICAO Council Decision C-DEC 234/11.

6.8 In response to enquiries from the Secretariat, India and the Chairperson, Pakistan informed the Meeting that: a) the decision to retain the existing conventional infrastructure had been taken jointly

by the regulator and the ANSP at the start of PBN implementation, with the aim of being "satellite resilient rather than satellite dependent"; b) as no change to the infrastructure was involved, no documented safety assessment or cost-benefit analysis had been conducted, although a safety assessment would be undertaken if changes were made under the ongoing ATM modernization project; c) national regulations did not yet contain specific provisions on the MON, and the regulator and the ANSP were discussing DME/DME coverage at airports most affected by GNSS RFI; d) GNSS-derived data could be suppressed in ATM processing during RFI events so that surveillance relied on Mode S radar; and e) a GNSS circular providing guidance to aircrew and ATC units had been issued and would be reviewed in line with the regional guidance material.

Backup Navigation Facility (BNF) implementation in Indonesia (IP/10)

6.9 Indonesia presented implementation of a Backup Navigation Facility (BNF) and Minimum Operational Network (MON) to enhance navigation resilience during GNSS disruptions. Indonesia reported that its strategy integrates DME/DME, VOR/DME and ILS infrastructure to support safe reversion from PBN operations when GNSS services are degraded or unavailable.

6.10 The meeting was informed of ongoing initiatives to strengthen resilience, including DME/DME network optimization, VOR/DME retention studies, preservation of ILS capability, and the development of a GNSS RFI monitoring application to enable proactive detection, mapping and alerting of interference events. The meeting also noted that Indonesia is an active member of the ICAO APAC GNSS RFI and Data Link Disruption Ad Hoc Group and continues to contribute to the development of regional guidance and coordination mechanisms.

6.11 The meeting further noted lessons learned from the GNSS interference event in the Jakarta FIR on 8 April 2026, which affected 44 flights and required temporary reversion to conventional navigation procedures. Indonesia emphasized that BNF and MON are essential contingency capabilities for maintaining safe operations during GNSS disruptions and reaffirmed its commitment to regional collaboration on GNSS resilience, interference reporting, and contingency planning.

6.12 The Secretariat enquired whether foreign operators, in addition to national operators, could be required to report GNSS RFI encountered in Indonesian airspace, noting that some airlines reported only to their State of Registry, and invited States to share their practices. Indonesia advised that the DGCA letter to national operators had been its first action following the incident and that it was coordinating with the national cyber agency, the military and airport operators. The Meeting noted that the regional guidance material encouraged States to publish GNSS RFI reporting requirements in the AIP and that aircraft operators should report events to the ATS unit of the airspace concerned. India shared that Indian operators reported GNSS interference to the relevant ATS unit, their company, the Airports Authority of India and the DGCA, wherever the event occurred, and that a safety assessment of GNSS interference was conducted every three months.

6.13 India and the Chairperson raised the possibility of rationalizing instrument flight procedures in conjunction with the rationalization of navigation aids, noting the workload for procedure designers and regulators of the periodic review of numerous procedures, some of which were rarely used. The Secretariat advised that there was no ICAO initiative on this matter and that it was for national decision. Pakistan supported the idea. **ACTION ITEM 13-1**

6.14 The Meeting agreed to include the MON on the agenda of PBNICG/14 and invited States to share their experience on MON implementation. **ACTION ITEM 13-3**

Agenda Item 7: RNP Visual Manoeuvring with Prescribed Track (VPT)

RNP Visual Manoeuvring with Prescribed Track (VPT) (SP/04)

7.1 The meeting noted the presentation on Required Navigation Performance Visual Manoeuvring Procedures (RNP VPT), which introduced the ICAO concept, development history, and associated guidance material. The presentation explained that RNP VPT is an IFR procedure combining an RNP instrument path with a prescribed visual path defined by waypoints to promote stabilized approaches and visual manoeuvring. It also highlighted the operational drivers for its development, including operations at terrain-constrained aerodromes, predictable approach paths, improved accessibility, and support for stabilized approaches.

7.2 The meeting further noted the potential safety, efficiency, and access benefits of RNP VPT, as well as the operational approval requirements and implementation considerations for States, ANSPs, and operators. The presentation encouraged States to consider suitable candidate aerodromes, strengthen procedure design and approval capabilities, and share implementation experiences within the region. Participants were also invited to consider the potential role of RNP VPT.

7.3 India sought clarification on whether an RNP AR approach procedure had to be published before an RNP VPT procedure could be developed, and whether operators approved for RNP AR could fly an RNP VPT procedure designed to RNP AR criteria without a specific approval. China enquired why RNP AR, rather than other RNP specifications, was the navigation specification baseline for RNP VPT, and whether ICAO intended to incorporate RNP VPT provisions into PANS-OPS (Doc 8168). The Secretariat advised that, in accordance with ICAO Circular 359, the design criteria, operational approval and training for RNP VPT were based on RNP AR, the main difference being that the visual segment commenced earlier in the approach.

Agenda Item 8: Any Other Business

PBN Focal Point (WP/08)

8.1 The PBN Focal Point list was circulated to all registered PBNICG participants for review and update. Any update may be provided to the secretariat through the email.

8.2 The Secretariat noted that updates had been received from Australia, Pakistan and Republic of Korea and requested other States to review their focal point information internally and provide any update to the Secretariat by email within two weeks. **ACTION ITEM 13-6**

Term of Reference (ToR) and Task List (WP/09)

8.3 Secretariat presented the latest Term of Reference (ToR) and Task List for review and update. Revision of ToR will be conducted at the upcoming PBNICG Meeting.

8.4 The Meeting noted that the PBNICG Terms of Reference (ToR) had not been reviewed for several years and that the CNS SG had requested the Group to consider the inclusion of GBAS/SBAS matters. The Secretariat would review the ToR in consultation with the Chairperson and the Chair of the former GBAS/SBAS ITF, possibly through an online meeting in early 2027, and present proposed amendments to PBNICG/14. **ACTION ITEM 13-7**

8.5 The Meeting noted the introduction of an internal PBNICG Action List (Appendix B to WP/09) to track lower-level actions between meetings. The Secretariat would circulate the PBNICG/13 Action List by email.

APAC FPP Extending into Phase VI (SP/05)

8.6 The meeting noted the extension of the APAC FPP into Phase VI for the period from 1 January 2027 to 31 December 2029 and encouraged non-participating Asia-Pacific States to join the Programme. It also noted the planned training courses, workshops and technical activities, including a Procedure Design Seminar to be held in Hong Kong, China, in November 2027.

Work Plan 35

	Date	Activities	Location*	Participants	Strategic Objectives	Organizer
1	16-20 Nov 2026	Procedure Design Refresher Course (including Charting-Coding for Procedure Designers)	Bangkok, Thailand	FPP and APAC	Expand Value Creation	FPP
2	19-20-Jan 2027	Charting & Coding Workshop	Online	FPP and APAC	Expand Value Creation	FPP
3	15 Mar-9 Apr 2027	Pans-Ops Procedure Design Initial Course	Beijing, China	FPP and APAC	Expand Value Creation	FPP
4	24 May-11 Jun 2027	PBN Procedure Design Course	Beijing, China	FPP and APAC	Expand Value Creation	FPP
5	6-10 Sep 2027	Procedure Design Refresher Course	Bangkok, Thailand	FPP and APAC	Expand Value Creation	FPP
6	2-4 Nov 2027	19th Steering Committee Meeting	Hongkong, China	FPP and ICAO	Expand Value Creation	FPP/Host State
7	5-6 Nov 2027	Procedure Design Seminar	Hongkong, China	FPP and APAC	Technical Exchange Platform	FPP

8.7 States and Administrations were invited to support Phase VI through financial or in-kind contributions, nominate potential speakers and technical experts, propose relevant resources, and continue responding to FPP surveys to enable the Programme to refine its activities.

8.8 The Secretariat highlighted the value of the post-training effectiveness survey in assessing whether the knowledge gained through FPP training was applied in practice, and encouraged participants to contribute to and attend the Procedure Design Seminar to be held in Hong Kong, China, in November 2027, the agenda of which would be shared with participants.

Free Route Airspace Workshop

8.9 The Secretariat informed the Meeting of the ICAO/IATA Free Route Airspace (FRA) Workshop to be held in Beijing, China, on 17 and 18 November 2026, covering the FRA concept, progressive implementation steps, the flexible use of airspace and civil-military cooperation, and the experience of States, EUROCONTROL and airlines. Interested participants were encouraged to register through the ICAO APAC meetings webpage.

Agenda Item 9: Date and venue for the next meeting

PBNICG/14

9.1 PBNICG/14 would be tentatively held in May 2027 location yet to be defined. States willing to host may contact the Secretary at ikrisnata@icao.int.

Closing of the Meeting

The Chairperson thanked the participants for their contributions and expressed appreciation to the ICAO Asia/Pacific Regional Sub-Office for their support. The Secretary appreciated the participation of the States' delegates and the fruitful sharing of information and experience.

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International Civil Aviation Organization

The Thirteenth Meeting of PBN Implementation Coordination Group (PBNICG/13)

(Bangkok, Thailand, 14 – 16 October 2026)

List of Participants

No	Name	Title/Organization	Email
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	Fiji (1)		
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List of Participants

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List of Participants

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The Thirteenth Meeting of PBN Implementation Coordination Group (PBNICG/13)

(Bangkok, Thailand, 14 – 16 October 2026)

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International Civil Aviation Organization

The Thirteenth Meeting of PBN Implementation Coordination Group (PBNICG/13)

(Bangkok, Thailand, 14 – 16 October 2026)

List of Participants

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* Online attendance

International Civil Aviation Organization

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

(Bangkok, Thailand, 14-16 October 2026)

PROVISIONAL LIST OF PAPER

(Presented by the Secretariat)

WORKING PAPERS

No.	Agenda Item	Subject	Presented by
01	1	Provisional Agenda	Secretariat
02	2	Global & Regional PBN Updates	Secretariat
03	2	Related Meetings Outcomes	Secretariat
04	4	PBN Approach Procedures to non-instrument Runways: Design Concept and Safety Assessments	India
05	5	Update on the Guidance Material for GNSS RFI and Associated Data Link Disruption Coordination and Reporting Procedures Version 1.0	Secretariat
06	5	Advanced RNP Navigation Specification Inconsistency in ICAO Documents PANS-OPS (Doc 8168) And PBN Manual (DOC 9613)	Pakistan
07	5	RNP AR DP Design Criteria – A Big Challenge for RNP AR Operations	Pakistan
08	8	PBN Focal Point	Secretariat
09	8	PBN Term of Reference (ToR) and Task List	Secretariat

INFORMATION PAPERS

No.	Agenda Item	Subject	Presented by
01	1	Provisional List of Paper	Secretariat
02	3	PBN Implementation Status in Pakistan	Pakistan
03	3	PBN Implementation Progress in Japan	Japan
04	3	Update on PBN Implementation in Australia	Australia
05	3	PBN Implementation Progress in Indonesia	Indonesia
06	3	Implementation of Established on RNP AR (EoR) Operations at Hong Kong International Airport	Hongkong, China
07	3	PBN Implementation in India an Update	India
08	6	Minimum Operational Network (MON) Implementation in Australia	Australia
09	6	Minimum Operational Network (MON) in Pakistan	Pakistan
10	6	Backup Navigation Facility (BNF) implementation in Indonesia	Indonesia

FILMSIES

No.	Agenda Item	Subject	Presented by
01	2	iSTARS Guidance for State's PBN Implementation Monitoring	Secretariat

PRESENTATIONS

No.	Agenda Item	Subject	Presented by
01	2	Global & Regional PBN Updates	Secretariat
02	2	Outcomes of GBAS SBAS ITF8 (May 2026) and ADB Workshop on SBAS Implementation in ASEAN (October 2026)	Secretariat
03	6	Minimum Operational Network	Secretariat
04	7	RNP Visual Manoeuvring with Prescribed Track (VPT)	Secretariat
05	8	APAC FPP Extending Into Phase VI	APAC FPP

— END —

Terms of Reference APAC PBN Implementation Coordination Group (PBNICG)

Serve as the primary APAC Regional Body to support PBN implementation, harmonization and prioritization with a goal to enhance safety and efficiency of aircraft trajectories and operations. The forum also takes into account activities related to the implementation of relevant ASBU elements, with initial focus on B0-CDO, B0-FRTO, B0-CCO, and B0-APTA. The following are the main activities envisaged:

a) Monitor PBN implementation of APAC States/Administrations and make recommendations as necessary in areas where ICAO and international organizations can provide assistance.

b) Through ICAO, provide guidance to States to update their PBN implementation plans. Identify challenges within State PBN Implementation Plans and PBN implementation activities and advise States in addressing these challenges in a harmonized manner.

c) Taking a multi-disciplinary approach, promote more efficient flight operations and trajectories and, as necessary, address related topics including Air Traffic Services (ATS) route network.

d) Analyze and report operational benefits of PBN implementation and provide regular PBN implementation updated information to ICAO for inclusion in the air navigation reports and regional performance dashboard.

e) Identify issues/action items which are related to the regional implementation of PBN and related ASBU elements, and where appropriate, communicate with related regional groups.

f) Review regional priorities/targets and relevant regional plans as related to PBN implementation.

PBNICG will report to CNS/SG. CNS/SG will coordinate with ATM/SG.

Composition

The PBNICG will compose of multi-disciplinary experts with knowledge and/or responsibility for PBN implementation nominated by ICAO member States/Administrations in the Asia and Pacific Regions and International Organizations. Secretariat support for the PBNICG will be provided by the ICAO APAC RSO with assistance from the APAC RO and ANB. Representatives of ICAO programmes such as COSCAPs and FPP will be invited to participate as applicable.

Note: The PBNICG, while undertaking the tasks, should take into account of the work being undertaken by relevant ICAO Panels and other study/working groups.

Performance Based Navigation Implementation Coordination Group (PBNICG)

Action List

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
12/1	Continue PBN implementation at international and domestic airports, PBN remaining a Global Priority.	Ongoing	All States	Ongoing	-
12/2	Define in the AIP/AIC the conditions for the pilot to conduct the RAIM availability prediction.	Ongoing	States	Ongoing	-
12/3	~ Share the QNH mis-setting information with State safety teams; ~ discuss the importance of QNH for APV Baro-VNAV in the national PBN forum; ~ investigate whether QNH inconsistency is a risk and with which probability; and ~ ensure ATCOs are trained on the importance of QNH for APV Baro-VNAV.	Ongoing	States	Ongoing	-
12/4	States willing to host PBNICG to contact the Secretary.	Ongoing	States	Ongoing	-
12/5	Include on the PBNICG/13 agenda: RAIM prediction implementation, QNH mis-setting, GNSS RFI, contingency procedures, navaids Minimum Operational Network, RNP (VPT) and reverse mode in RNP APCH.	PBNICG/13	ICAO Secretariat, States	Closed	The Agenda of RAIM prediction implementation and reverse mode in RNP APCH will be arranged on further PBNICG meeting due to time limitation. Other topics were discussed at PBNICG/13 (Agenda Items 5, 6 and 7); remaining topics

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
					carried forward to Action Item 13-3.
13-1	Look into the following matters, seeking the view and inform participants of the outcome by email: a) why only RNP routes, and not RNAV routes, are referred to under element B1/FRTO of the Asia/Pacific Seamless ANS Plan; b) PBN approach procedures to non-instrument runways (consistency between the Annex 14 definition and the Annex 6 provisions, and the status of a VMC caution specially when the aerodrome operating minima below VMC is authorized); c) the timing of updated provisions resolving the inconsistencies between the Advanced RNP navigation specification in the PBN Manual (Doc 9613, 5th Edition) and PANS-OPS (Doc 8168) Volumes I and II; and d) the development and priority of RNP AR departure procedure design criteria in the work programme of the relevant panel. e) the rationalization of IFPs inline with rationalization of NAVAIDs	PBNICG/14	ICAO Secretariat	Open	Agenda Items 2, 4 and 5 (SP/01, WP/04, WP/06, WP/07)
13-2	Review the PBN-related USOAP Protocol Questions carefully; States that have recently undergone USOAP audits to share key lessons learned at PBNICG/14, where the discussion will continue.	PBNICG/14	States, ICAO Secretariat	Open	Agenda Item 2 (WP/02, SP/01)
13-3	Include on the PBNICG/14 agenda: a) a presentation on Dual-Frequency Multi-Constellation (DFMC) SBAS; b) Minimum Operational Network (MON), with States sharing their experience on MON implementation; c) RAIM prediction implementation;	PBNICG/14 (May 2027)	ICAO Secretariat, States	Open	Agenda Items 2, 6 and 8 (SP/02, SP/03, IP/08 to IP/10); carried forward from Action Item 12/5

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
	d) reverse mode in RNP APCH; and e) revision of the PBNICG Terms of Reference.				
13-4	Japan to explore whether a Japanese airline could share its operational experience and benefits from the use of SBAS (MSAS) at the next meeting; the Secretariat to share with Japan the IndiGo presentation on LPV operations based on GAGAN (GBAS/SBAS workshop, India, October 2025).	PBNICG/14	Japan, ICAO Secretariat	Open	Agenda Item 3 (IP/03)
13-5	Share at the next meeting: a) the outcome of the assessment, with State safety teams, of the potential risk of QNH mis-setting during APV Baro-VNAV operations, to be taken into account in the safety assessment of APV Baro-VNAV procedures, and any mitigation measures; and b) the measures taken to review LPV procedures following ICAO Electronic Bulletin 2026/13 (reference: DGCA India operations circular).	PBNICG/14	States	Open	Agenda Item 3 (IP/04, IP/07); follow-up to Action Item 12/3
13-6	Review PBN Focal Point information internally and provide any update to the Secretariat by email within two weeks.	Oct-26	States	Open	Agenda Item 8 (WP/08); updates already received from Australia, Pakistan and Republic of Korea
13-7	Review the PBNICG Terms of Reference, including the possible inclusion of GBAS/SBAS-related work as requested by the CNS SG and a new group name as necessary, in consultation with the Chairperson and the Chair of the former GBAS/SBAS ITF (possibly through an online meeting in early 2027), and present proposed amendments and the Task List to PBNICG/14.	PBNICG/14	ICAO Secretariat, Chairperson, Chair of the former GBAS/SBAS ITF	Open	Agenda Items 2 and 8 (WP/03, WP/09)