



*International Civil Aviation Organization*

**THE SEVENTH MEETING OF PERFORMANCE BASED NAVIGATION  
IMPLEMENTATION COORDINATION GROUP (PBNICG/7)**

*(Video conference, 21 – 23 October 2020)*

- Agenda Item 3: Implementation status of the Regional Transition Plan for RNP APCH Chart Identification from RNAV to RNP
- Agenda Item 4: States' PBN Implementation Progress  
**INFORMATION PAPER (IP)**

**PBN IMPLEMENTATION IN INDIA AN UPDATE**

(Presented by India)

**SUMMARY**

This paper provides information on the progress of PBN implementation in India and Implementation status of the Identification from RNAV to RNP for RNP APCH Chart

**1. INTRODUCTION**

- 1.1 India is continuing its efforts for a harmonized PBN implementation, with a view to improving overall operational efficiency, capacity, accessibility and safety standards.

**2. DISCUSSION**

2.1 **PBN Implementation Plan**

Airports Authority of India (AAI) has already developed PBN Road Map, which was assessed by ICAO-APAC as Robust plan, to implement PBN procedures in the approach, terminal and En-route phase of the flight. As per the plan, RNAV-1/RNP-1 SIDs and STARs have been developed and implemented in the twelve busiest terminal areas and remaining ten are under development. RNAV-10 routes are already in place and RNAV-5, RNAV-2 and RNP-2 routes are implemented between city pairs, which will result in fuel saving and reduced emission. In line with ICAO APAC Seamless ANS Plan, all new PBN routes within continental airspace planned as RNP 2. In the approach scenario, 52 RNP APCH procedure published at many Airports.

2.2 **India PBN Implementation Status**

Following table, represent En-route PBN implementation status.

Navigation Specification	Completed (# of routes)	In progress (# of routes)
RNAV 10	8	-
RNAV 5	7	-
RNAV 2	2	-
RNP 4	-	-
RNP 2	7	4

2.3 PBN implementation status on terminal airspace (SID/STAR).

Implementation Targets (# of Intl airport)	Completed (# of Intl airport)	In Progress (# of Intl airport)
22	12	10

2.4 **PBN implementation status on RNP APCH (LNAV, LANV/VNAV)**

India has implemented RNP APCH procedures for 52 Runway ends so far. Out of these 23 RNP APCH are for international airports and 29 RNP APCH for domestic airports.

2.5 **Implementation status of the Regional Transition Plan for RNP APCH Chart Identification from RNAV to RNP**

As per the regional transition plan for RNP APCH, chart identification from RNAV to RNP, India has completed and changed all the chart identification and all new charts are having Chart title RNP APCH.

2.6 **PBN implementation challenges and solutions**

In last one year after the last PBNICG/6 meeting India has published 48 RNP APCH procedures. Until PBNICG/6, 4 RNP procedures published. This was possible by taking proactive action by AAI management and the regulator DGCA along with all stakeholders. Following actions taken to implement the RNP APCH procedures:-

- a) High power committee formed by the DGCA with representatives from all the stakeholders to evaluate each procedure before recommending for publication.
- b) All procedures after successful ground validation submitted to the committee for review and recommendation.
- c) After receiving recommendation from the committee, the procedures cleared for publication. Only those procedures, which are not recommended by the committee, were sent for simulator/flight trial.
- d) Post implementation review is important and taken into consideration by inviting comments from all concerned airlines who are flying these procedures at those airports.
- e) Indian regulator DGCA has issued advisory to all domestic airlines to use RNP APCH procedures for landing if aerodrome-operating minima permits.

2.7 **RNP-AR Procedure**

RNP-AR procedure developed for Rwy 32 at Mumbai Airport for better utilization of the runway. Presently, Rwy 32 has VOR procedure with an OCA of 650 ft and minima of 2700 m. ILS is not feasible on this runway due to site constraints. With the design of RNP-AR procedure it has been possible to reduce DA to 400 Ft (RNP 0.3) and minima to 1500 m. ATCOs training in respect of RNP AR procedure from Air Traffic Control perspective completed. Simulator validation of the procedure successfully carried out. The procedure document submitted to DGCA for approval for the conduct of flight trial. The procedure approved by DGCA for Flight Trials. Possibility of Flight trials explored.

2.8 **GBAS Landing System (GLS)**

India has been working on the implementation of GLS operation at Chennai and is planning for a GLS approaches at all four instrument Rwys. GLS equipment installation work is complete. Procedure development work is complete. Validation and publication job is likely to be completed by March 2021.

2.9 **RAIM prediction information**

GPS Visibility Tool developed. Every day at 0001, UTC NOTAM issued listing the duration when RAIM Holes are likely to occur in next 24Hr at every airport. The tool hosted on AAI website for providing users with online RAIM prediction capability.

2.10 **Implementation of LPV (GAGAN)**

India is facing challenges in implementation of LPV (GAGAN) procedures even after designing 65 approaches. The challenge is because of the non-availability of simulators, which can fly LPV approach procedures and non-availability of aircrafts and trained pilots to fly these procedures.

3. **ACTION REQUIRED BY THE MEETING**

The meeting is invited to:

- a) Note the progress of PBN implementation in India; and
- b) Discuss any relevant matters as appropriate.

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