



International Civil Aviation Organization

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

Bangkok, 19 – 21 Apr 2023

- 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 and the challenges faced by the states and lessons learnt.

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

As per PBN Road Map of INDIA, which was assessed by ICAO-APAC, to implement PBN procedures in the approach, terminal and En-route phase of the flight, RNAV-1/RNP-1 SIDs and STARs have been developed and implemented in the twelve busiest terminal areas. 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, 83 RNP APCH procedure published as on 28.03.2023.

2.2 India PBN Implementation Status as on 01.01.2023

Following table, represent **En-route PBN implementation status.**

Navigation Specification	Completed (# of routes)	In progress (# of routes)
RNAV 10	53	-
RNAV 5	16	-
RNAV 2	3	-
RNP 4	-	-
RNP 2	25	-

Note: India applies 20NM longitudinal separation on RNP 2 routes and also on selective high-density Routes between RNP 2 approved aircraft.

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

Implementation Targets (# of Intl airport)	Completed (# of Intl airport)	In Progress (# of Intl airport)
23	12	1

Implementation percentage: **52.2%**

2.4 PBN implementation status on RNP APCH (LNAV, LNAV/VNAV) as on 28.03.2023

India has implemented RNP APCH procedures (LNAV, LNAV/VNAV) for 81 Runway ends so far. Out of these 42 RNP APCH are for international airports and 39 RNP APCH for domestic airports.

Total no. of Runway ends (International airports)	68		
RNP APCH procedure (LNAV, LNAV/VNAV)	Planned	Published	In process
	68	42	10
Implementation percentage		61.8%	

Total no. of Runway ends (Domestic airports)	119		
RNP APCH procedure (LNAV, LNAV/VNAV)	Planned	Published	In process
	119	39	17
Implementation percentage		32.8%	

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. 100% task completed.

2.6 RNP-AR Procedure

RNP-AR procedure was developed for Rwy 32 at Mumbai Airport for better utilization of the runway. However, procedure could not be promulgated yet for want of Flight trial.

2.7 RAIM prediction information

GPS Visibility Tool developed. Every day at 0001UTC 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.

2.8 **Implementation of LPV (GAGAN)**

AAI has promulgated 2 LPV (GAGAN) procedures so far. 8(eight) procedures are at different stage of development and 19 procedures are planned for future development.

2.9 **Challenges faced by the States:**

- a) Standard instrument approach charts by ICAO other than those published as specimen charts in the charting manual will help to mitigate ambiguity in representation of different type of charts. Depiction inconsistencies, Nonstandard/custom notes, nonstandard layout may be some of the IFP induced chart issues which clutters it. As Every country is publishing their charts in different format can be standardized to some extent.
- b) More ICAO approved regional training centers in south Asia will help to expedite training of procedure designers.
- c) ICAO should conduct recurrent training/refresher training of procedure designers more frequently.

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.
