



International Civil Aviation Organization

**THE NINTH MEETING OF PERFORMANCE BASED NAVIGATION
IMPLEMENTATION COORDINATION GROUP (PBNICG/9)**

Video Conference, 22 – 23 Mar 2022

- 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, 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. 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, 70 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	53	-
RNAV 5	16	-
RNAV 2	3	-
RNP 4	-	-
RNP 2	21	4

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	11

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

India has implemented RNP APCH procedures for 70 Runway ends so far. Out of these 38 RNP APCH are for international airports and 32 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. 100% task completed.

2.6 **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.

2.7 **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.

2.8 **Implementation of LPV (GAGAN)**

Jeppesen has validated 21 Rwy ends sim trial and reports were satisfactory. Further Jeppesen in coordination with ROCKWELL COLLINS created NAV-DATA for AAI owned B350 aircraft equipped with GAGAN receiver (GPS 40005). On 05/02/2022, AAI aircraft successfully carried out first LPV flight trial of RWY 07 for Kannur airport. FAS DB of flight trial was found satisfactory. AAI will promulgate it once DGCA approves the same. AAI is also planning to carry out the rest of flight trials for which NAV-DB have been created.

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.
