



Agenda Item 1A: Current situation and regional priorities

IMPLEMENTATION OF PERFORMANCE-BASED NAVIGATION (PBN) IN ECUADOR, STATUS AND NEED FOR NEW STRATEGIES

(Presented by Ecuador)

SUMMARY	
<p>This working paper deals with the implementation of performance-based navigation (PBN), its status and the need to search for new strategies.</p>	
<p>References:</p> <p>The Assembly (ICAO):</p> <ol style="list-style-type: none"> 1. Urges all States to implement RNAV and RNP air traffic services (ATS) approach routes and procedures in accordance with the ICAO PBN concept set out in the ICAO Performance-Based Navigation Manual (Doc 9613); 2. Resolved that: <ol style="list-style-type: none"> a) States and regional planning and implementation groups (PIRGs) complete a PBN implementation plan by 2009, to achieve: <ol style="list-style-type: none"> 1) implementation of RNAV and RNP operations (where required) for en-route and terminal areas according to established timelines and intermediate milestones; and 2) implementation of vertically-guided approach (VPA) procedures (Baro-VNAV and/or augmented GNSS) for all instrument runway ends, either as a primary approach or as a backup for precision approaches by 2016 with intermediate milestones as follows: 30 percent by 2010, 70 percent by 2014; and b) ICAO develop a coordinated action plan to assist States in the implementation of PBN and ensure the development and/or maintenance of globally harmonised SARPs, Procedures for Air Navigation Services (PANS) and guidance material, including a globally harmonised safety assessment methodology to keep pace with operational requirements, 3. Urges States to include in their PBN implementation plan provisions for the implementation of vertically guided approach (VPA) procedures to all runway ends serving aircraft with a maximum certificated take-off mass of 5 700 kg or more, in accordance with established timelines and milestones. 	
<p>ICAO strategic objectives:</p>	<p><i>Safety</i> <i>Air navigation capacity and efficiency</i></p>

1. Background

1.1 The DGCA and operators set out to modernise air navigation in national airspace as part of its activities. The DGCA published its PBN plan, developing and publishing PBN routes and RNAV and RNP procedures, offering efficiency, capacity, and safety benefits.

1.2 PBN implementation has brought the following improvements:

- Improve arrival, departure and nearby routes;
- Increase sequencing, spacing and merging efficiency when integrated with communication, surveillance and air traffic controller decision support tools;
- Enable reduced divergence between departure operations, resulting in increased departure performance;
- Provide safe access to airspace near obstacles and terrain;
- Improve access to airports during adverse weather conditions, especially for general aviation (GA) operations;
- Reduce pilot-controller voice communication, allowing the air traffic controller more time to plan for, or handle, emergencies and abnormal situations;
- Provide pilots with vertical guidance, resulting in more stable approaches and landings;
- Reduce flight path miles, fuel consumption and emissions due to more direct flight paths and optimised vertical descent profiles;
- Improve predictability to better inform airline operators about schedule and gate management; and
- Reduce reliance and investment in ground-based navigation aids and the conventional procedures that depend on them.

1.3 Results: RNP RNAV operations are conducted only with aircraft equipped with GPS navigation equipment; most general aviation and other major aviation aircraft do not have such equipment.

1.4 As a result, pilots are not trained in this type of navigation and approach.

2. **Discussion**

2.1 Based on the results of PBN implementation plans in each State, consideration should be given to updating them, including: domestic airports, aircraft equipment issues, and crew training.

3. **Suggested action**

3.1 The Meeting is invited to:

- a) update the PBN regional implementation plan, to include domestic airports, define aircraft equipment, as well as pilot training.