



DIRECTORS GENERAL OF CIVIL AVIATION-MIDDLE EAST REGION

First Meeting (DGCA-MID/1) (Abu Dhabi, UAE, 22-24 March 2011)

Agenda Item 4: Air Navigation Issues

PERFORMANCE BASED NAVIGATION

(Presented by IATA)

SUMMARY

Performance Based Navigation (PBN) represents an evolution from the former ground-based navigation concept. PBN is based on the definition of performance requirements necessary to operate in a determined airspace. These requirements are specified in terms of system accuracy, integrity, availability, continuity, and functionality and could be met by a mix of navigation sensors and equipment.

REFERENCES

- PBN Manual, Doc 9613

1. INTRODUCTION

1.1 At the 36th General Assembly of the International Civil Aviation Organization (ICAO) in 2007, States agreed to resolution A36-23, which urges all States to implement PBN. The resolution calls for PBN approaches for all airports by 2016 - with 30% by 2010 and 70% by 2014.

1.2 Resolution A37-11 supersedes A36-11, which urges all States to complete a national PBN implementation plan as soon as possible to achieve PBN for en route and terminal areas.

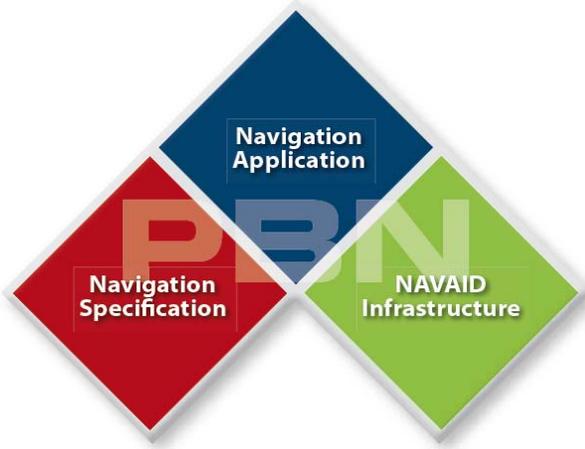
1.3 The Industry PBN Declaration complements resolution A36-23 with a much broader affirmation by the whole aviation community that fully supports the transition to PBN.

1.4 PBN improves safety by providing a precise lateral and vertical flight path in areas of difficult terrain. It provides consistent, stabilised approaches to all runway ends, which is a significant benefit for smaller airports that lack the capability for precision approaches. With PBN, aircraft arrive aligned to the runway centreline on a defined vertical glide path and at the same speed every time.

1.5 PBN is environmentally friendly. PBN routes are more direct and reduce the track miles flown, which means lower emissions. IATA estimates that shorter PBN routes could cut global CO2 emissions by about 13 million tonnes per year. PBN can reduce noise pollution with precise paths routed to avoid noise-sensitive areas. Combined with optimised profile descents PBN allows lower, quieter engine thrust levels.

2. DISCUSSION

2.1 ICAO's PBN concept identifies a component known as the **Navigation Application** which is enabled by two sub components; **NAVAID Infrastructure** and the **Navigation Specification**.



2.2 The PBN concept encompasses two kinds of navigation specifications: Required Navigation Performance (RNP) and Area Navigation (RNAV). The key difference between RNAV and RNP is that RNP systems require having on-board monitoring and alert capability. To date, the PBN Manual contains eight navigation specifications: four of these are RNAV specifications and four of these are RNP specifications.

2.3 Several PBN Challenges need to be met in order to progressively implement PBN and get the desired benefits:

2.3.1 PBN needs a bigger global spotlight; there is a need for high-level promotion and leadership of PBN at the States' level.

2.3.2 High level buy-in is required by all stakeholders including the military.

2.3.3 Pilots and ATC training and awareness.

2.3.4 Airspace Concept development and procedure design.

2.3.5 Operational approval process.

2.4 In order to address these challenges, and assist in the global implementation of PBN, IATA is working with ICAO and other stakeholders on the following initiatives.

2.4.1 ICAO/IATA Global PBN Task Force:

- a. Implementation Support Team: to support the development of ICAO provisions to allow PBN implementation.
- b. Go-Team: one Go-Team visit has already been done for the United Arab Emirates (UAE) in January 2011.

The objective of the Go-Team, in close cooperation with all aviation stakeholders, is to assess the areas identified by States in their PBN implementation plans and to provide a list of recommendations to further support PBN implementation activities.

2.4.2 IATA is actively participating in the PBNSG developing and updating the PBN Manual. Operational approval procedure concepts have been incorporated into Doc 9613, and further study is being made to provide operational approval guidance in a separate manual dedicated for PBN Operational Approval.

2.4.3 IATA is contributing to different ICAO groups developing PBN provisions, like the Instrument Flight Procedures Panel (IFPP), Separation and Airspace Safety Panel (SASP).

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the content of this paper.

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