



*International Civil Aviation Organization*

**Meeting of the Performance Based Navigation/Global Navigation System Satellite System Task Force  
(PBN/GNSS TF/4)**

**Forth Meeting**  
*(Egypt, Cairo, 2-4 October 2011)*

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**Agenda Item 5: Review State PBN Implementation Plans, Issues and Go Team**

**STATUS OF RNAV APPROACHES IMPLEMENTATION**

*(Presented by IATA)*

**SUMMARY**

This paper presents status of implemented RNAV Approaches within the MID Region.

**1. Introduction**

- 1.1 Airlines have historically relied on ground-based navigation aids (Nav aids), such as VORs and NDBs. With this type of navigation, aircraft fly from one position relative to a ground-based Nav aids to the next. The flexibility of routes an aircraft can fly using ground-based navigation is limited according to the Nav aids location and area of coverage.
- 1.2 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 lacks 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 times.
- 1.3 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 CO<sub>2</sub> 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 A MID Regional Performance Based Navigation (PBN) Implementation Strategy and Plan has been produced in line with Resolution A 36/23 adopted by ICAO Assembly in its 36<sup>th</sup>. The regional implementation roadmap under this Strategy covers three phases;

2.1.1 Short Term (2008-2012): under which application of RNAV-5 or RNAV-1 for continental en-route is mandated by the end of 2012

2.1.2 Medium Term (2013-2016): under which RNAV-1 or basic RNP-1 is expected to be implemented in all TMA's by the end of the term.

2.1.3 Long term (2016 and beyond): during which GNSS is expected to be the primary navigation infrastructure for PBN implementation.

2.2 The status of implementation of RNAV approaches which can be used by operators are as follows;

<b>Country</b>	<b>Location</b>	<b>ICAO</b>	<b>RNAV approach</b>	<b>RNAV SID/STAR</b>	<b>Comments</b>
Bahrain	Bahrain	OBBI	yes	no	RNAV (GPS)
Egypt	Cairo	HECA	no	yes	RNAV (VOR DME)
Iran	Tehran	OIIE	no	no	nil
Iraq	Basra	ORMM	no	no	nil
Jordan	Amman	OJAI	no	no	nil
Kuwait	Kuwait	OKBK	yes	yes	RNAV (GNSS)
Lebanon	Beirut	OLBA	yes	yes	RNAV (GNSS)
Oman	Muscat	OOMS	no	no	nil
Qatar	Doha	OTBD	yes	no	RNAV (RNP), RNAV (GNSS)
Saudi Arabia	Dammam	OEDF	no	no	nil
	Jeddah	OEJF	yes	yes	RNAV (GNSS)
	Medina	OEMA	no	no	nil
	Riyadh	OERK	no	no	nil
Sudan	Khartoum	HSSS	yes	no	RNAV (GNSS)
Syria	Damascus	OSDI	yes	no	RNAV (GNSS)
UAE	Abu Dhabi	OMAA	no	yes	--
	Al Ain	OMAL	no	no	nil
	Al Maktoum	OMDW	no	yes	--
	Dubai	OMDB	yes	yes	RNAV (GNSS)
	Fujairah	OMFJ	no	yes	RNAV SIDs (no STAR)
	Ras Al Khaimah	OMRK	no	no	nil
	Sharjah	OMSJ	yes	yes	RNAV (GNSS)
Yemen	Sanaa	OYSN	yes	yes	RNAV (GNSS)

- 2.3 Several challenges need to be met in order to progressively implement PBN and get the desired benefits;
- The need for high-level promotion and leadership of PBN at the States' level.
  - High level buy-in by all stakeholders.
  - Pilots and ATC training and awareness.
  - Airspace Concept development and procedure design.
  - Operational approval process.
- 2.3 The creation of PBN Regional Support Cell (RSC) as proposed under IATA WP 11 will assist in the regional implementation of PBN.
- 2.4 ICAO is in the process to publish an ICAO Manual on PBN Operation Approval. Updates will be incorporated into the current version of the PBN Manual relating to ops approval but the core part will remain in the new Manual.
- 2.5 The Go Team was established under the PBN Global Task Force to develop the organizational/administrative mechanisms and financial means to provide direct assistance to ANSPs, CAAs and airlines, and develop options for their modus operandi, e.g. develop "Go Teams" and coordination with the ICAO Flight Procedure Programme Office. A PBN Go Team Visit was concluded for the UAE in January 2011.

### **3. ACTION BY THE MEETING**

- 3.1 The meeting is invited to:
- a) Note and discuss the content of this paper.

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