International Civil Aviation Organization

Performance Based Navigation/Global Navigation Satellite System Task Force (PBN/GNSS TF)

Fifth Meeting
(Cairo, Egypt, 15 - 17 April 2013)

Agenda Item 5: State PBN Implementation and MID PBN Support Team Plans

UPDATE THE STATE PBN IMPLEMENTATION PLAN AND MPST

(Presented by the Secretariat)

SUMMARY

This paper presents an update to State PBN Implementation Plans and requests information on the progress made in the MID States for PBN Implementations, also provide information on MID PBN Support team

Action by the meeting is at paragraph 3.

REFERENCE

- AN-Conf/12 Report
- MIDANPIRG/13 Report
- PBN Symposium

1. INTRODUCTION

1.1 The MIDANPIRG/13 Meeting was held in Abu Dhabi, UAE, from 22 to 26 April 2012. The meeting adopted 71 Conclusions and Decisions of which seventeen (17) Conclusions are considered relevant to the work of the PBN/GNSS TF.

1.2 PBN Symposium and Workshops were held in Montréal from 15 to 19 October 2012. The Twelfth Air Navigation Conference (AN-Conf/12) held in Montreal from 19 to 30 November 2012, gained consensus, commitments and formulated recommendations to achieve a harmonized Global Air Navigation System for International Civil Aviation, in order to optimize the opportunities in technology and maturing work programmes toward common global objectives. The AN-Conf/12 considered Aviation System Block Upgrades (ASBUs) and the Communications, Navigation, Surveillance (CNS), Aeronautical Information Management (AIM) and avionics roadmaps for inclusion in the Global Air Navigation Plan

2. DISCUSSION

2.1 The meeting may wish to recall the 36th ICAO General Assembly Resolution A36-23 urged the Planning and Implementation Regional Groups (PIRGs) and States, inter alia, to complete a States PBN implementation plan by 2009 to achieve specific implementation goals starting with 2010. Accordingly, the MID Regional PBN Implementation Strategy and Plan were developed in October 2008 and adopted by MIDANPIRG/11 in February 2009 in order to allow sufficient time for the MID States to complete the development of their States PBN Implementation Plans by December 2009.

2.2 The meeting may further recall that A36-23 Resolution was superseded by Resolution A37-11. The modification of General Assembly Resolution A36-23 with A37-11 basically means that aerodromes that do not have any operations of aircraft equipped with APV are exempted to introduce APV procedures. On one side this could be interpreted as a relaxation of the resolution, on the other hand, it is bolstering of Safety, the reason being that it was reported that many States had the excuse of not having APV equipped aircraft to particular aerodromes, not doing anything on improvement of the approach procedures. This means that even when there are GNSS equipped aircraft, they left old (less safe) approach procedures. General Assembly Resolutions A37-11 requires that there has to be at least a GNSS procedure with LNAV only for those runways that are not served with APV aircraft.

2.3 In light of completion of ICAO Continuous Decent Operations (CDO) Manual Doc 9931, which standardized the development and implementations of CD operations, the meeting noted that MIDANPIRG/12 agreed to Conclusion 12/61: Implementation of Continuous Descent Operations, MIDANPIRG/13 Meeting reviewed the MID Regional PBN Implementation Strategy and plan to include the new requirement as per ICAO General Assembly Resolution A37-11, and accommodate the developments globally and in MID States. Accordingly, MIDANPIRG/13 agreed to the Conclusion 13/47: MID Regional PBN Implementation Strategy and Plan

2.4 MIDANPIRG/13 Meeting was of the view that prompt action by the Region and States is required to accelerate PBN planning, development and implementation to a pace of at least achieving closer to the ICAO Resolution implementation targets. Accordingly, MIDANPIRG/13 agreed that a comprehensive Regional Support Strategy is required and should include the following objectives:

- promotion of PBN to decision makers within States to create the political will to invest and devote the necessary resources for PBN implementation;

- establishing a regional working-level team or forum to identify implementation needs and to direct and/or organize the appropriate resources that will deliver PBN solutions to States;

- formulation of cooperative arrangements to assist States in PBN implementation; and

- development of additional support mechanisms that create skills and capabilities within States to implement and to sustain PBN operations.

2.5 Based on the above, MIDANPIRG/13 agreed to establish MID PBN Support Team (MPST). The meeting agreed on three areas of work for the MPST: 1) promote PBN and convince Stakeholders to support PBN; 2) Gap Analysis and States PBN Implementation Plan update/improvement; and 3) Implementation of PBN.

2.6 The meeting may wish to note that UAE had requested a PBN Go-Team visit which was conducted during 16-20 January 2011. Accordingly, MIDNAPIRG/13 agreed that UAE be the champion of MPST, and IATA to support. Furthermore, MIDANPIRG/13 encouraged MID States that are advanced in PBN implementation to participate in the work of MPST.

2.7 MIDANPIRG/13 Meeting reviewed the MPST Terms of Reference (TOR) and agreed to the following Decision:

DECISION 13/48: ESTABLISHMENT OF MID PBN SUPPORT TEAM (MPST)

That, MPST be established with TOR as at ***Appendix 4.5U*** *to the Report on Agenda Item 4.5.(* ***Appendix*** **A** to this working paper)

2.8 MIDANPIRG/13 Meeting noted the PBN Go-Team recommended that each ICAO Region develop the PBN Go-Team capabilities within the Region in order to assist MID States in the Implementation of PBN. Accordingly, MIDANPIRG/13 Meeting agreed to the following Conclusion:

CONCLUSION 13/49: MID PBN SUPPORT TEAM (MPST)

That,

a) ICAO MID Regional Office provide the leadership for MPST;
b) UAE be the champion for the MPST;
c) IATA fully commit and support the MPST; and
d) MID States assign members to MPST and allocate necessary resources.

2.9 The meeting may wish to note that Egypt, Jordan and Oman expressed interest for MPST visit. Accordingly, MID office coordinated with UAE and IATA and the following procedure was agreed for the MPST Visit:

a) State to send official request to ICAO MID Regional Office;
b) State to nominate Focal Point;
c) ICAO MID Regional Office reply with the questionnaire;
d) States to reply to Questionnaire in week;
e) conference call arranged between all concerned (State, ICAO, IATA and Champion) to define scope of work;
f) coordinate and agree on dates for the visit; and
g) Champion, IATA and ICAO to conduct the visit.

2.10 The meeting may wish to note that MIDANPIRG/13 Meeting reviewed and updated the status of the MID Region State PBN Implementation Plan and PBN implementation focal points as at **Appendices B** and **C** to this working paper.

2.11 The meeting may wish to note that MIDANPIRG/12 had agreed on Conclusion 12/58 *PBN IMPLEMENTATION PROGRESS REPORT,* urging MID States to keep the ICAO MID Regional Office updated using the spreadsheet and the progress report. In this regard, the meeting received the progress reports from the following States (Bahrain, Egypt, Jordan, Qatar, Saudi Arabia and UAE). Accordingly, the MIDANPIRG/13 Meeting agreed that progress reports to be sent in June and December in order to monitor the progress of implementation of PBN in the Region the meeting agreed to the following Conclusion:

CONCLUSION 13/50: PBN IMPLEMENTATION PROGRESS REPORT

That, for future reporting on the status of PBN implementation, States be urged to:

a) use the excel sheet as at ***Appendix 4.5X*** *.(* ***Appendix*** **D** to this working paper) *to the report on Agenda Item 4.5, and PBN Implementation Progress Report Template as at* ***Appendix 4.5Y*** *.(* ***Appendix*** **E** to this working paper) *to the Report on Agenda Item 4.5; and*

b) submit progress reports to ICAO MID Regional Office every six months and whenever major progress is achieved.

2.12 Based on the above the ICAO MID Regional Office sent a follow-up State Letter AN 6/28-12/211 dated 11 July 2012, requesting States to provide progress reports and the following States: Bahrain, Jordan, Qatar and UAE provided the reports as at **Appendix F** to this working paper.

2.13 The meeting may recall that ICAO General Assembly Resolution A37-19 requested ICAO to develop the necessary tools to assess the benefits associated with operational improvements, for example PBN, CDO/CCO, RVSM, FUA, etc. in order to achieve a global annual average fuel efficiency improvement of 2 percent until 2020. ICAO developed the ICAO Fuel Savings Estimation Tool – (IFSET) that allows States to estimate fuel savings from operational improvements consistent with CAEP-approved Green House Gases (GHG) models and consistent with Global Air Navigation Plan, and MIDANPIRG/13 agreed to establish an Air Traffic Management Measurement Task Force (ATMM TF) dedicated to the measurement process.

2.14 The meeting may wish to note that PBN has taken a major step forward following ICAO's recently-completed PBN Symposium. The four-day Symposium and Workshops (16 October -19 October) brought together over 400 participants from 67 countries and 13 International Organizations. Representation included aircraft manufacturers, Air Navigation Service Providers (ANSPs), airlines, regulators, ATC system manufacturers, avionics designers, air traffic controllers, pilots, the military, aeronautical information companies and instrument procedure designers.

2.15 The theme of the PBN Symposium was "Expediting Implementation Together", which indicated the collaborative team approach required for successful PBN implementation. Throughout the workshops and sessions, more than 50 speakers and moderators covered a multitude of topics that focused on why PBN is the global aviation communities highest air navigation priority. ICAO also produced a special PBN implementation kit or *iKit*, with essential explanatory information, practical documentation and guidance material on implementing PBN, also in order to assist States with expediting implementation PBN procedures. ICAO has endorsed instrument procedure design organizations that meet certain conditions and criteria.

2.16 The meeting may wish to note that the ICAO Endorsement of an Instrument Procedure Design Organization is simply a statement of support. It does not constitute an authorization, an approval or a certification of an Organization nor the procedures it designs. The State is solely responsible for approving and authorizing an Instrument Approach Design Organization as well as the instrument flight procedures it designs for use within the State.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) encourage States to use MPST;

b) agree on the procedure for the conduct of MPST in para 2.9;

c) provide update to **Appendices B and C** to this working paper;

d) encourage States to provide progress reports as in para 2.9 and agree to present the conclusion to MIDANPIRG/13; and

e) urge MID States to complete and update their State PBN implementation plans.

APPENDIX A

TERMS OF REFERENCE FOR MID PBN SUPPORT TEAM (MPST)

1. TERMS OF REFERENCE:

a) promote PBN and convince Stakeholders to support PBN;

b) gap Analysis and PBN Implementation Plan update/improvement; and

c) implementation of PBN. This would result in the engagement at a working level to coordinate and provide assistance to States.

2. WORK PROGRAMME:

a) promotion of PBN by increasing awareness and education to motivate States to invest and implement;

b) make use of the PBN Go Team Visit to the UAE, and adapt this to provide the support at a greater frequency;

c) collection of required data and practices to maintain data integrity;

d) conducting safety assessments;

e) completion and improvement of PBN implementation plans;

f) guidance to establish the regulatory framework, approvals process and other mechanisms necessary for implementation and sustainment of PBN capabilities;

g) provide guidance and assistance to operators in obtaining operational approval for utilising RNP and other PBN procedures;

h) assist in operational approval;

i) providing guidance to States in PBN en-route implementation, airspace route design and harmonization across FIRs; and

j) undertake other functions relevant to implementation of PBN as assigned by the PBN/GNSS TF and report to PBN/GNSS TF

3. COMPOSITION OF THE TASK FORCE

Experts from MID Region States, UAE as champion, IATA support and representative from Industry, International/Regional Organizations may be invited when required.

APPENDIX B

STATUS OF MID STATES PBN IMPLEMETATION PLAN

State	**Plan Submission**	**Plan Status**	**Percentage of Implementation Short term (2012)**		**Remark**
			En route %	TMA %	
Bahrain	Submitted		10	40	
Egypt	Submitted	Draft	100	80	need user input
Iran	Not submitted				Only PBN approach and Terminal implementation status received
Iraq	Not submitted				
Jordan	Submitted		100		Restriction on levels
Kuwait	Submitted				
Lebanon	Not submitted				Only PBN approach and Terminal implementation status received
Oman	submitted		100	7	
Qatar	Submitted		10	40	
Saudi Arabia	submitted				
Syria	Submitted	Draft			
UAE	submitted		100	60	
Yemen	Submitted	Draft			

APPENDIX C

PBN IMPLEMENTATION FOCAL POINT

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Bahrain	Fareed Abdullah Al Alawi	Head, air Traffic Operations	Civil Aviation Affairs P.O. Box 586	falalawi@caa.gov.bh	+973 17321992	+973 17321158	+97339651596
Bahrain	Saleem Mohamed Hassan	Chief Air Traffic Management	Civil Aviation Affairs P.O. Box 586	saleemmh@caa.gov.bh	+973 17329966	+973 17321117	+97339608860
Egypt	Badr Mohamed Shouman	General Director HCAA	Ministry of Civil Aviation Egyptian Civil Aviation Authority Cairo International Airport Road Cairo - EGYPT	badrshoman@yahoo.com	+202 2268 0627	+202 2265 7849	+20100 601 3603
Iran	Habib Davoudi Dana	Chief of Procedure Design Office	ATM Department Mehrabad International Airport Tehran 13445	h.davoudi@yahoo.com	+982144649269	+982 166025013	
Iran	Mohammad Khodakarami	D.G. of Aeronautical Affairs (in CAO)	Mehrabad International Airport P.O. Box 13445 – 1798	mkhd4444@yahoo.com	+98214464 9269	+982 16603 6241	
Iraq							
Jordan	Nayef Marshoud	Director ATM department	P.O. Box 7547	datm@carc.gov.jo	+962 6 4891266	+962 6 4897729	+962 797498992
Kuwait	Adel Mohammed Al Yagout	Superintendent of Air Navigation Department	Directorate General of Civil Aviation Kuwait International Airport P.O. Box 17 Safat 13001	Q8dgca_danoff@hotmail.com	+965 4346221	+965 4346220	+965 9571755
Lebanon	Walid Alhassanieh	Chief ACC	Air Navigation Department Beirut Rafic Hariri Int'l Airport	hassaniehw @beirutairport.gov.lb	+9611629023 +9611629106	+961 1629026	+961 3509902
Oman	Sabri Said Saud Al-Busaidy	DMS Manager	Directorate General of Meteorology & Air Navigation (DGMAN) Muscat International Airport P.O. Box 1 CPO Seeb	sabri@dgcam.gov.om	+96824518990 +24519 939	+968 24519501	+968 99359415
Qatar	Ahmed Al-Eshaq	Director Air Navigation	Civil Aviation Authority P.O. Box 3000 Doha – QATAR	ahmed@caa.gov.qa	(974) 465 6554	(974) 462 2300	(974) 555 0440

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Qatar	Faisal Alqahtan	Head of AIS	Civil Aviation Authority P.O. Box 73 Doha – QATAR	Faisal.alqahtan@caa.gov.qa	(974)44656554	(974)44656221	(974) 5553 7060
Saudi Arabia	Ali H. Hakami	Navigational Aids Systems Planner	General Authority of Civil Aviation P.O. Box 21444 Jeddah 21444	yaro123@yahoo.com	+966 2 671 7717 Ext 1594	+966 2 671 7717 Ext 1593	+966 59 840 2598
Syria	Al Layth Al Hammoud	Chief of Air Navigation					
UAE	Talal Al Hammadi	Head - Airspace Coordination General Civil Aviation Authority	Sheikh Zayed Air Navigation Centre P.O. Box 66 Abu Dhabi – UAE	thammadi@szc.gcaa.ae	+97125996883	97125996890	+971508180873
Yemen	Ahmed Mohamed Al Kobati	Director Air Navigation Operations	Air Navigation Sector CAMA Airport Road P.O. Box 3473 Sana'a – REPUBLIC OF YEMEN	cama570@yahoo.com	+9671344047	+9671345402	+967 777241375

APPENDIX D

<STATE> PBN APPROACH and TERMINAL IMPLEMENTATION STATUS

UPDATED: 29/02/2008

NO	ICAO REGION	ICAO DESIG	AIRPORT NAME[5]	COUNTRY	INTL (Y/N)[1]	RUNWAY	INST RWY Y/N	RESTRICTIONS	APPROACH LNAV/VNAV[2]	APPR EFF DATE[6]	RNAV/RNP SID[3]	SID EFF DATE[6]	RNAV/RNP STAR[4]	STAR EFF DATE[6]	COMMENTS
1	MID	OOMS	MUSCAT	OMAN	Y	08	Y		LNAV	May-07	RNAV-1	Dec-10	RNAV-1	Dec-10	
2	MID	OOMS	MUSCAT	OMAN	Y	26	Y		LNAV/VNAV	May-07	RNAV-1	Dec-10	RNAV	May-07	

ABOVE IS ONLY AN EXAMPLE. IT IS NOT MEANT TO SHOW THE ACTUAL IMPLEMENTATION AT THAT AIRPORT

Notes:

1. If the aerodrome is used for international operations, including as an alternate, enter 'Y', if not, enter 'N'
2. If LNAV only, enter LNAV. If LNAV/VNAV only enter LNAV/VNAV. If both enter BOTH. If RNP AR, enter RNP AR.If there is an RNP AR to the same runway that also has an LNAV and/or LNAV/VNAV the enter the RNP AR on a separate line for that runway.
3. If RNAV or RNP SID exists for this runway, note navigation specification, RNAV 1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV.
4. If RNAV or RNP STAR exists for this aerodrome note navigation specification, RNAV-1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV.
5. Should list all instrument aerodromes and runway ends in the State, as well as non-instrument runway ends that are used by aircraft in excess of 5700 kg MTOW. Leave blank blocks L-N as appropriate, if PBN or RNAV approaches, SIDs or STARs are not implemented or planned to be implemented yet as part of the State PBN Implementation Plan
6. Enter actual effective date or proposed future effective date as month-year

<STATE> PBN APPROACH AND TERMINAL IMPLEMENTATION STATUS

NO	ICAO REGION	ICAO DESIG	AIRPORT NAME[5]	COUNTRY	INTL (Y/N)[1]	RUNWAY	INST RWY Y/N	RESTRICTIONS IF ANY	APPROACH LNAV/VNAV[2]	APPR EFF DATE[6]	RNAV/RNP SID[3]	SID EFF DATE[6]	RNAV/RNP STAR[4]	STAR EFF DATE[6]	COMMENTS
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															

1. If the aerodrome is used for international operations, including as an alternate, enter 'Y', if not, enter 'N' **2.** If LNAV only, enter LNAV. If LNAV/VNAV only enter LNAV/VNAV. If both enter BOTH. If RNP AR, enter RNP AR. If there is an RNP AR to the same runway that also has an LNAV and/or LNAV/VNAV the enter the RNP AR on a separate line for that runway. **3.** If RNAV or RNP SID exists for this runway, note navigation specification, RNAV 1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV. **4.** If RNAV or RNP STAR exists for this aerodrome note navigation specification, RNAV-1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV. **5.** Should list all instrument aerodromes and runway ends in the State, as well as non-instrument runway ends that may be used by aircraft in excess of 5700 kg MTOW. Leave blank blocks L-N as appropriate, if PBN or RNAV approaches, SIDs or STARs are not implemented or planned to be implemented yet as part of the State PBN Implementation Plan. **6.** Enter actual effective date or proposed future effective date as month-year

APPENDIX E

PBN IMPLEMENTATION PROGRESS REPORT

Date: (DD/MM/YY)

State: (Name of State)

Designation of PBN Focal Point
Reference: MID State Letter Ref AN 6/28 – 149 dated 21 April 2008 and follow up letter Ref AN6/28 – 293 dated 10 August " in order to facilitate necessary follow-up and coordination, to provide a PBN Implementation Focal Point by 21 August 2008 "

Status: (Nominated/ To be Nominated)
Focal Point: (Name, Designation, Mailing Address, Email, Phone, Fax)

State PBN Implementation Plan
Reference: ICAO Assembly Resolution 37/11: Performance-based navigation global goals

Recognizing that not all States have developed a PBN implementation plan by the target date of 2009; *The Assembly: Urges* all States to implement RNAV and RNP air traffic services (ATS) routes and approach procedures in accordance with the ICAO PBN concept laid down in the Performance-based Navigation (PBN) Manual (Doc 9613);

Status: (Adopted / To be adopted) by (name of a national body) and (Reviewed / To be reviewed) by ICAO *PBN/GNSS* TF

Approach Operations
Reference: ICAO Assembly Resolution A37/11

"*States complete a PBN implementation plan to achieve:* implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), including LNAV only minima, for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as follows: 30 per cent by 2010, 70 per cent by 2014 and implementation of straight-in LNAV only procedures, as an exception, for instrument runways at aerodromes where there is no local altimeter setting available and where there are no aircraft suitably equipped for APV operations with a maximum certificated take-off mass of 5 700 kg or more.

Implementation Targets (# of RWY Ends)			**Completed** (# of RWY Ends)		**On Progress** (# of RWY Ends)	
Y2012	Y2014	Y2016	LNAV	LNAV/VNAV	LNAV	LNAV/VNAV
10			8			

Note(s): (States may include information on recent publications of new PBN approach procedures.)

Arrival and Departure Operations
Reference: ICAO Assembly Resolution A37/11

Implementation Targets (# of Int'l Airports)			**Completed** (# of Int'l Airports)		**On Progress** (# of Int'l Airports)	
Y2012	Y2014	Y2016	Arrival	Departure	Arrival	Departure

Note(s): (States may include information on recent publications with new PBN arrival/departure procedures.)

APPENDIX x

PBN IMPLEMENTATION PROGRESS REPORT

State: UNITED ARAB EMIRATE) Date: 30 June 2012

Designation of PBN Focal Point

Reference:
MID State Letter Ref AN 6/28 – 149 dated 21 April 2008 and follow up letter Ref AN6/28 – 293 dated 10 August " in order to facilitate necessary follow-up and coordination, to provide a PBN Implementation Focal Point by 21 August 2008 "

Status: Nominated
Focal Point: Talal Al Hammadi, Head of Airspace Planning, PO Box 666, Abu Dhabi, thammadi@szc.gcaa.ae, +971 2 xxxx)

State PBN Implementation Plan

Reference:
MIDANPIRG Conclusion 11/74 – PBN State implementation Plan
"That, in order to give effect to Assembly Resolution A36-23: Performance based navigation global goals, MID States are urged to complete development of their individual State Implementation plans based on the regional PBN implementation plan by 30 September 2009 so that it may be reviewed by the ATM/SAR/AIS SG as part of the Regional agreement process.

Status: Approved by GCAA, Adopted by NASAC and reviewed by ICAO GNSS TF
Note(s):
The UAE PBN Implementation plan was submitted to ICAO in March 2011 and will be reviewed on an annual basis.

Approach Operations

Reference:
ICAO Assembly Resolution A36-23
"States and planning and implementation regional groups (PIRGs) complete a PBN implementation plan by 2009 to achieve: implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS) for all instrument runway ends, either as the primary approach or as back up for precision approaches by 2016 with intermediate milestones as follows: 30 percent by 2010, 70 percent by 2014."
Status:

Implementation Targets (# of RWY Ends)			Completed (# of RWY Ends)				In Progress (# of RWY Ends)			
Y2010	Y2014	Y2016	LNAV		LNAV/VNAV		LNAV		LNAV/VNAV	
OMAA 13L					OMAA 13L	Y				
OMAA 13R					OMAA 13R	Y				
OMAA 31L					OMAA 31L	Y				
OMAA 31R					OMAA 31R	Y				
OMAD 31			OMAD 31	Y					OMAD 31	Y
OMAD 13			OMAD 13	Y					OMAD 13	Y
	OMAL 01L									
	OMAL 19R									
OMDB 12L			OMDB 12L	Y	OMDB 12L	Y				
OMDB 12R			OMDB 12R	Y	OMDB 12R	Y				
OMDB 30L			OMDB 30L	Y	OMDB 30L	Y				
OMDB 30R			OMDB 30R	Y	OMDB 30R	Y				
OMDW 12					OMDW 12	Y				
OMDW 30					OMDW 30	Y				
	OMFJ 11									
	OMFJ 29									
	OMRK 16								OMRK 16	Y
	OMRK 34								OMRK 34	Y
OMSJ 12			OMSJ 12	Y	OMSJ 12	Y				
OMSJ 30			OMSJ 30	Y	OMSJ 30	Y				

Note(s):
OMAD is busy with projects to implement RNP-AR procedures – scheduled for implementation in Q4 2012.
OMRK is busy with a project to implement RNPAPCH-VNAV – scheduled for implementation Q4 2012.

Arrival and Departure Operations

Reference: 1) ICAO Assembly Resolution A36-23

"States and planning and implementation regional groups (PIRGs) complete a PBN implementation plan by 2009 to achieve: implementation of RNAV and RNP operations (where required) for en route and terminal areas according to established timelines and intermediate milestones."

2) MID PBN Regional Implementation Plan and Strategy

"Short-term Implementation Targets: □ RNP APCH (with Baro-VNAV) in 30% of instrument runways by 2010 and 50% by 2012 and priority should be given to airports with most significant operational benefits RNAV-1 SIDs/STARs for 30% of international airports by 2010 and 50% by 2012 and priority should be given to airports with RNP Approach RNP-5 and B-RNAV which is implemented in MID Region to be redefined as per ICAO PBN terminology by 2009 (MIDANPIRG/11), full implementation of PBN by 2012 for continental en-route.."

- *"Medium-term Implementation Targets: RNP APCH with Baro-VNAV or APV in 100% of instrument runways by 2016. RNAV-1 or RNP-1 SID/STAR for 100% of international airports by 2016 and RNAV-1 or Basic RNP-1 SID/STAR at busy domestic airports where there are operational benefits*

Implementation Targets (# of Int'l Airports)						Completed (# of Int'l Airports)		Design/Review In Progress (# of Int'l Airports)	
Y2010		Y2014		Y2016		STAR	SID	STAR	SID
OMAA	13L					OMAA 13L	OMAA 13L		
OMAA	13R					OMAA 13R	OMAA 13R		
OMAA	31L					OMAA 31L	OMAA 31L		
OMAA	31R					OMAA 31R	OMAA 31R		
OMAD	31							OMAD 31	
OMAD	13							OMAD 13	
				OMAL	01				
				OMAL	19				
OMDB	12L					OMDB 12L	OMDB 12L		
OMDB	12R					OMDB 12R	OMDB 12R		
OMDB	30L					OMDB 30L	OMDB 30L		
OMDB	30R					OMDB 30R	OMDB 30R		
OMDW	12					OMDW 12	OMDW 12		
OMDW	30					OMDW 30	OMDW 30		
		OMFJ	11				OMFJ 11		
		OMFJ	29				OMFJ 29		
				OMRK	16				
				OMRK	34				
OMSJ	12					OMSJ 12	OMSJ 12		
OMSJ	30					OMSJ 30	OMSJ 30		

Note(s):

OMAD is busy with projects to implement RNAV-1 STAR procedures – scheduled for implementation in Q4 2012.

See the attached spreadsheet for further detail.

Bahrain PBN APPROACH and TERMINAL IMPLEMENTATION STATUS

1	MID	OBBI	Bahrain	Kingdom of Bahrain	Y	30R	Y	Right Hand Circuit Only	RNAV GNSS	Jun-07	RNAV-5	May-11
2	MID	OBBI	Bahrain	Kingdom of Bahrain	Y	12L	Y	Left Hand Circuit Only	RNAV GNSS	Jun-07	RNAV-5	May-11
3	MID	OBBI	Bahrain	Kingdom of Bahrain	Y	30L	Y	Right Hand Circuit Only	No	No plan	No	No
4	MID	OBBI	Bahrain	Kingdom of Bahrain	Y	12R	Y	Left Hand Circuit Only	No	No Plan	No	No
5	MID	OBKH	Sakhir Air Base	Kingdom of Bahrain	N	17	Y	Left Hand Circuit Only	RNAV GNSS	Jul-09	RNAV-5	May-11
6	MID	OBKH	Sakhir Air Base	Kingdom of Bahrain	N	35	Y	Right Hand Circuit Only	RNAV GNSS	Jul-09	RNAV-5	May-11
7	MID	OBBS	Isa Air Base	Kingdom of Bahrain	N	33	Y	Right Hand Circuit Only	No	No Plan	No	No
8	MID	OBBS	Isa Air Base	Kingdom of Bahrain	N	15	Y	Left Hand Circuit Only	No	No Plan	No	No

Notes:

1. If the aerodrome is used for international operations, including as an alternate, enter 'Y', if not, enter 'N'
2. If LNAV only, enter LNAV. If LNAV/VNAV only enter LNAV/VNAV. If both enter BOTH. If RNP AR, enter RNP AR.If there is an RNP AR to the same runway that also has an LNAV and/ line for that runway.
3. If RNAV or RNP SID exists for this runway, note navigation specification, RNAV 1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV.
4. If RNAV or RNP STAR exists for this aerodrome note navigation specification, RNAV-1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV.
5. Should list all instrument aerodromes and runway ends in the State, as well as non-instrument runway ends that are used by aircraft in excess of 5700 kg MTOW. Leave blank blocks L-N as appr are not implemented or planned to be implemented yet as part of the State PBN Implementation Plan
6. Enter actual effective date or proposed future effective date as month-year

- END -

UPDATED: 1/12/2012

RNAV-5	May-11	
RNAV-5	May-11	
No	No	
No	No	
RNAV-5	May-11	
RNAV-5	May-11	
No	No	
No	No	

'or LNAV/VNAV the enter the RNP AR on a separate

opriate, if PBN or RNAV approaches, SIDs or STARs

STATE> PBN APPROACH AND TERMINAL IMPLEMENTATION STATUS

JORDAN

1	MID	OJAI	Queen Alia International	JORDAN	Y	26L	Y	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	May-13	
2	MID	OJAI	Queen Alia International	JORDAN	Y	26R	Y	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
3	MID	OJAI	Queen Alia International	JORDAN	Y	08L	Y	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
4	MID	OJAI	Queen Alia International	JORDAN	Y	08R	N	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
5	MID	OJAM	AMMAN MARKA	JORDAN	Y	24	Y	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
6	MID	OJAM	AMMAN MARKA	JORDAN	Y	06	N	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
7	MID	OJAQ	KING HUSSEIN	JORDAN	Y	01	Y	NIL	BOTH	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
8	MID	OJAQ	KING HUSSEIN	JORDAN	Y	19	Y	NIL	LNAV	May-13	RNAV 1	أيار-١٣	RNAV 1	أيار-١٣	
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PBN IMPLEMENTATION PROGRESS REPORT

State: State of Qatar Date: 15/11/2012

Designation of PBN Focal Point

Reference : MID State Letter Ref AN 6/28 – 149 dated 21 April 2008 and follow up letter Ref AN6/28 – 293 dated 10 August 2008 " in order to facilitate necessary follow-up and coordination, to provide a PBN Implementation Focal Point by 21 August 2008 "

Status : Nominated

Focal Point : Ahmed Al Eshaq
Director Air Navigation
P. O. Box 73
Civil Aviation Authority
State of Qatar.

Email : ahmed@caa.gov.qa
Phone : +974 4465 6555
Fax : +974 4465 6554

State PBN Implementation Plan

Reference : ICAO Assembly Resolution 37/11: Performance-based navigation global goals

Recognizing that not all States have developed a PBN implementation plan by the target date of 2009; *The Assembly: Urges* all States to implement RNAV and RNP air traffic services (ATS) routes and approach procedures in accordance with the ICAO PBN concept laid down in the Performance-based Navigation (PBN) Manual (Doc 9613);

Status : **Adopted** by **Civil Aviation Authority State of Qatar, Air Navigation Department** and **to be reviewed** by ICAO *PBN/GNSS* TF

Approach Operations

Reference : ICAO Assembly Resolution A37/11

"*States complete a PBN implementation plan to achieve:* implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), including LNAV only minima, for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as follows: 30 per cent by 2010, 70 per cent by 2014 and implementation of straight-in LNAV only procedures, as an exception, for instrument runways at aerodromes where there is no local altimeter setting available and where there are no aircraft suitably equipped for APV operations with a maximum certificated take-off mass of 5 700 kg or more.

Implementation Targets (# of RWY Ends)			Completed (# of RWY Ends)		On Progress (# of RWY Ends)	
Y2012	Y2014	Y2016	LNAV	LNAV/VNAV	LNAV	LNAV/VNAV
2	**6**	**6**	**2**	**1**	**4**	**4**

Note(s): (States may include information on recent publications of new PBN approach procedures.)

Arrival and Departure Operations

Reference: ICAO Assembly Resolution A37/11

Implementation Targets (# of Int'l Airports)			Completed (# of Int'l Airports)		On Progress (# of Int'l Airports)	
Y2012	Y2014	Y2016	Arrival	Departure	Arrival	Departure
1	**2**	**2**	**1**	**0**	**2**	**2**

Note(s): (States may include information on recent publications with new PBN arrival/departure procedures.)

STATE OF QATAR PBN APPROACH and TERMINAL IMPLEMENTATION STATUS

UPDATED: 15/11/2012

NO	ICAO REGION	ICAO DESIG	AIRPORT NAME[5]	COUNTRY	INTL (Y/N)[1]	RUNWAY	INST RWY Y/N	RESTRICTIONS	APPROACH LNAV/VNAV[2]	APPR EFF DATE[6]	RNAV/RNP SID[3]	SID EFF DATE[6]	RNAV/RNP STAR[4]	STAR EFF DATE[6]	COMMENTS
1	MID	OTBD	DOHA INTL.	QATAR	Y	15	Y		LNAV	Jun-07	RNAV-1 SID	TBN	RNAV-1 STAR	Under Construction	7 SIDs, 3 STARs
2	MID	OTBD	DOHA INTL.	QATAR	Y	33	Y		LNAV	Jun-07	RNAV-1 SID	TBN	RNAV-1 STAR	Under Construction	7 SIDs, 3 STARs
									LNAV/VNAV	Jun-07					
3	MID	OTHH	HAMAD INTL.	QATAR	Y	16L	Y		LNAV	TBN	RNAV-1 SID	TBN	RNAV-1 STAR	TBN	7 SIDs, 3 STARs
									LNAV/VNAV	TBN					
4	MID	OTHH	HAMAD INTL.	QATAR	Y	34R	Y		LNAV	TBN	RNAV-1 SID	TBN	RNAV-1 STAR	TBN	7 SIDs, 3 STARs
									LNAV/VNAV	TBN					
5	MID	OTHH	HAMAD INTL.	QATAR	Y	16R	Y		LNAV	TBN	RNAV-1 SID	TBN	RNAV-1 STAR	TBN	7 SIDs, 3 STARs
									LNAV/VNAV	TBN					
6	MID	OTHH	HAMAD INTL.	QATAR	Y	34L	Y		LNAV	TBN	RNAV-1 SID	TBN	RNAV-1 STAR	TBN	7 SIDs, 3 STARs
									LNAV/VNAV	TBN					

Notes:

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