



International Civil Aviation Organization

**Performance Based Navigation Sub-Group
(PBN SG)**

First Meeting
(Cairo, Egypt, 1 - 3 April 2014)

Agenda Item 4: PBN Implementation in the MID Region

STATUS OF PBN IMPLEMENTATION IN THE MID REGION

(Presented by the Secretariat)

SUMMARY

The aim of this paper is to review and update the status of PBN implementation in the MID Region.

Action by the meeting is at paragraph 3.

REFERENCES

- MIDANPIRG/14 Report

1. INTRODUCTION

1.1 In accordance with its Terms of Reference (ToR), the PBN Sub Group is required to monitor the status of implementation of PBN in the MID Region.

2. DISCUSSION

2.1 The meeting may wish to note that MIDANPIRG/14 reviewed and updated the MID Region PBN Implementation Strategy and Plan taking into consideration the global and regional developments.

2.1.1 MIDANPIRG/14 noted with appreciation that Bahrain, Egypt, Jordan, Kuwait, Qatar and UAE provided their progress reports related to PBN implementation. Accordingly, the meeting urged States to submit their PBN progress reports to the ICAO MID Regional Office, whenever major progress is achieved, in addition to their updated National PBN Implementation Plans.

2.1.2 The meeting may wish to note that MIDANPIRG/14 reviewed and updated the status of PBN implementation and PBN focal points in the MID Region. The following progress achieved in the implementation of PBN (Terminal and Approach) in the MID Region was noted:

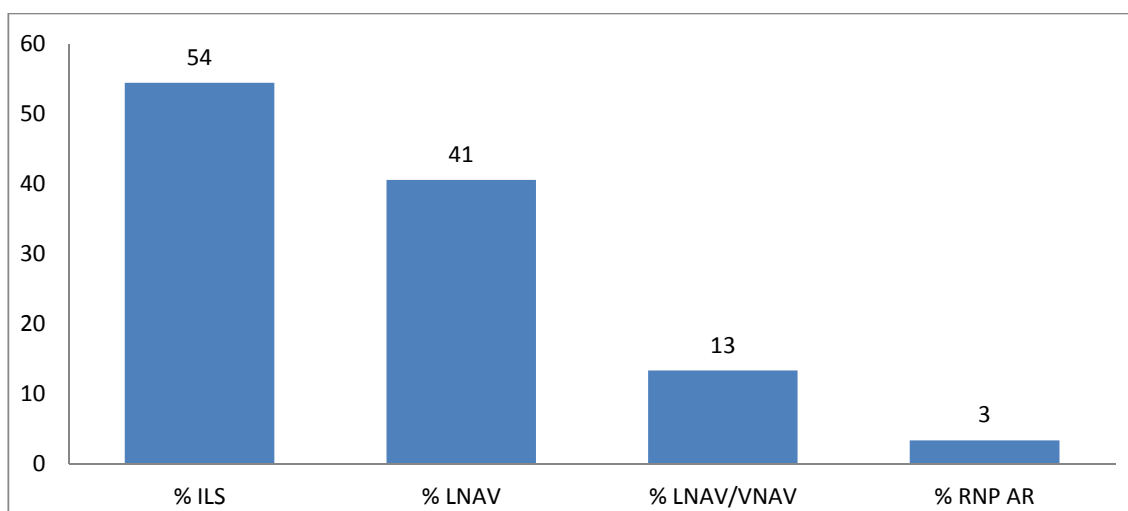
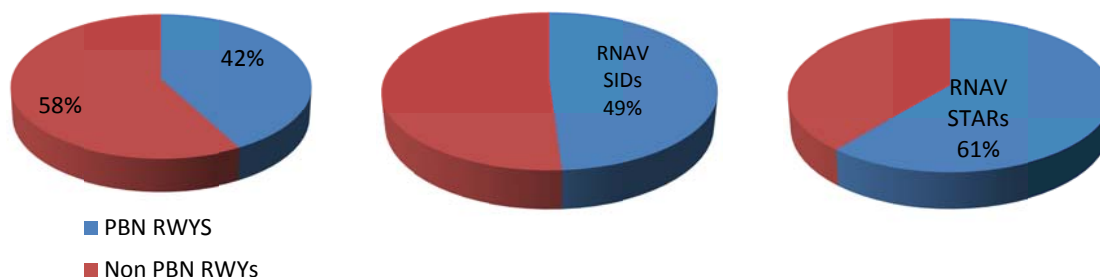
- Jordan and Kuwait had completed the implementation of RNAV SIDs, RNAV STARs and Approach procedures with vertical guidance (LNAV/VNAV) for all its instruments Runway ends.
- Bahrain completed the implementation of RNAV SIDs, RNAV STARs and RNAV GNSS Approach (LNAV) for all its instruments Runway ends;

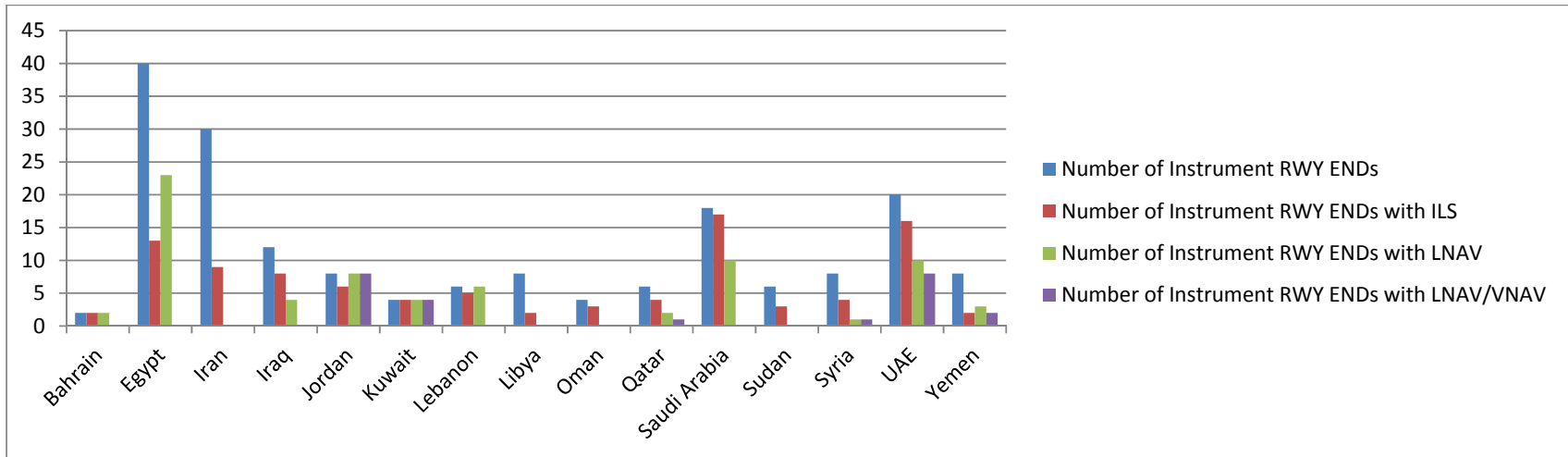
- Lebanon completed the implementation of RNAV STARs and RNAV GNSS Approach (LNAV) for all its instruments Runway ends;
- PBN implementation had significantly improved in Saudi Arabia by an increase of 30%, and
- PBN implementation in UAE had reached 70%. It is to be emphasized that only UAE had implemented RNP-AR approaches in the MID Region, four (4) at Abu Dhabi and two (2) at Al Bateen International Airports.

2.1.3 The meeting may wish to note that MIDANPIRG/14 recalled that the 37th Assembly through Resolution A37-11 resolved that States complete a PBN implementation plan as a matter of urgency to achieve the 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% by 2010, 70% by 2014. In this regard, it was noted with concern that the implementation of Approach Procedures with Vertical guidance in the MID Region is far below expectation (nine (9) States have not yet started implementation).

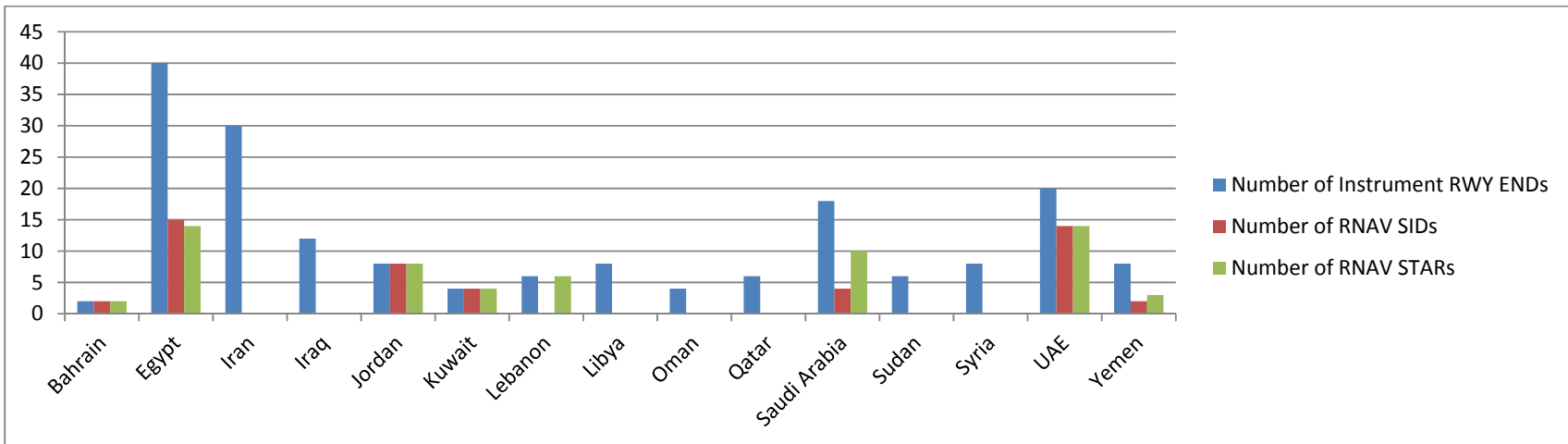
2.2 Based on the above, the meeting may wish to note that Iran, Iraq, Lebanon, Libya and Sudan have not yet submitted their national PBN implementation plan.

2.3 The meeting may wish to note that the status of PBN implementation in the terminal area, as of February 2014 is at **Appendix A** to this working paper. The below **Graphs** reflect the Regional status of implementation related to PBN Approach Procedures, RNAV SIDs and RNAV STARs:

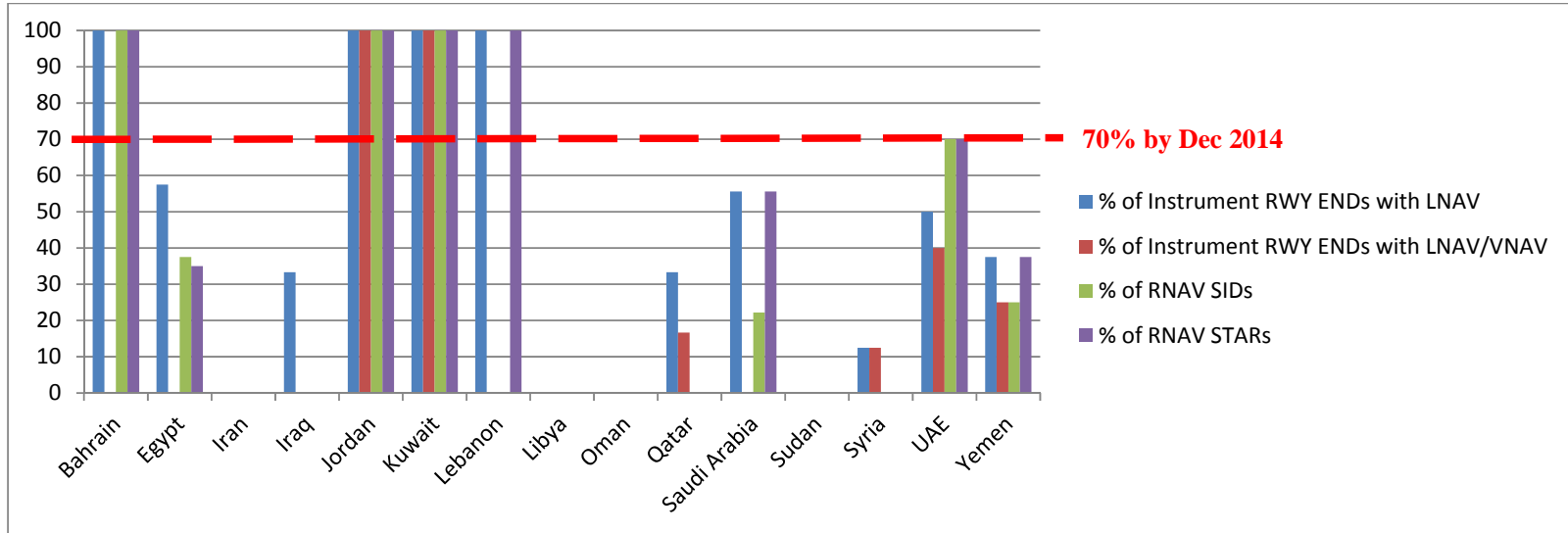




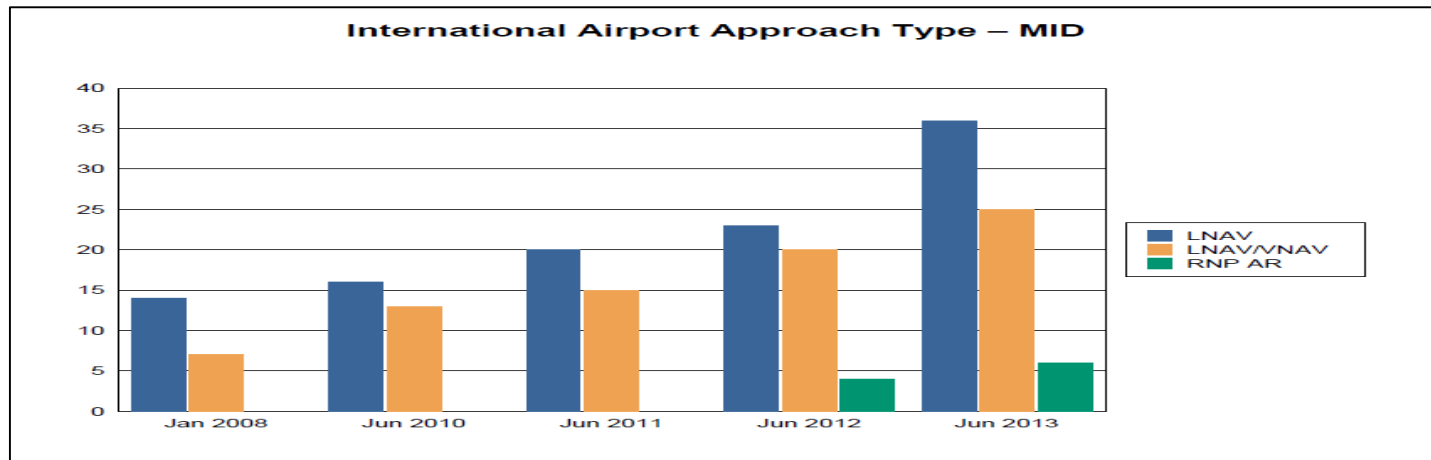
PBN RWYs Status by State



RNAV SIDs and STARs Status by State



Percentage of PBN Approaches, RNAV SIDs and RNAV STARs by States



Annual PBN Progress in the MID Region

2.4 It is to be highlighted that only 58 instrument RWY ends are provided with vertical guidance out of 180 RWY ends (32%). Taking into consideration that APVs enhance safety by providing stable approaches, States are urged to take necessary measures to foster the implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), for all instrument RWY ends, either as the primary approach or as a back-up for precision, in accordance with the agreed performance target.

2.5 The meeting may wish to note that the following ICAO documents and guidance materials supporting the PBN implementation are available on the ICAO NET:

- PANS Ops (DOC 8168)
- PBN Manual (Doc 9613) 4th Edition
- RNP AR Procedure Design Manual (Doc 9905)
- PBN Ops Approval Manual (Doc 9997)
- Manual on Use of PBN in Airspace Design (Doc 9992)
- CDO Manual (Doc 9931)
- CCO Manual (Doc 9993)
- GNSS Manual (Doc 9849)
- Procedure QA Manual (Doc 9906)

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review and update the status of PBN implementation in the MID Region at **Appendix A**;
- b) urge States to take necessary measures to improve their PBN implementation in order to meet the agreed performance targets;
- c) urge States to provide their PBN implementation plans or their updated plans to ICAO MID Regional Office as soon as possible; and
- d) review and update the list of PBN Focal Points in the MID Region at **Appendix B**.

Feb-14

MID REGION TMAs PROCEDURES Implementation Status

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV / VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
BAHRAIN													
OBBI	12L	ILS	I	VORDME	Y					Y		Y	
	30R	ILS	I	VORDME	Y					Y		Y	
Total	2	2		2	2	0	0	0	0	2	0	2	
%		100		100	100	0	0	0	0	100	0	100	
EGYPT													
HEAX	4			VORDME	Y								
	18												
	22			VORDME	Y								
	36			VORDME									
HEBA	14												
	32	ILS	I		Y					Y			
HESN	17			VORDME	Y					Y		Y	
	35	ILS	I	VORDME	Y					Y		Y	
HEAT	13				Y					Y		Y	
	31	ILS	I	VORDME	Y					Y		Y	
HECA	05L	ILS	I	VORDME	Y								
	05C	ILS	II	VORDME	Y								
	05R	ILS	I										
	23L	ILS	I	VORDME									
	23C	ILS	II	VORDME	Y								
	23R	ILS	I	VORDME	Y								
HEAR	16												
	34			VORDME									
HEGN	16			VORDME	Y					Y		Y	
	34	ILS	I	VORDME	Y					Y		Y	
HELX	2			VORDME	Y					Y		Y	
	20	ILS	I	VORDME	Y					Y		Y	

Appendix A

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV / VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
HEMA	15			VORDME									
	33			VORDME									
HEPS	10			VORDME									
	28												
HEOW	1			NDB									
	19												
HESH	04L	ILS	I	VORDME	Y					Y		Y	
	04R			VORDME	Y					Y		Y	
	22L			VORDME	Y					Y		Y	
	22R			VORDME	Y					Y		Y	
HESC	17			NDB									
	35			NDB									
HETB	4	ILS	I	VORDME	Y					Y		Y	
	22			VORDME	Y					Y		Y	
HEAL	13			VORDME	Y								
	31			VORDME	Y								
HESG	15			VORDME									
	33			VORDME									
Total	40	13		32	23	0	0	0	0	15	0	14	
%		33		80	58	0	0	0	0	38	0	35	
I.R. IRAN													
OIKB	03L												
	03R			VORDME / NDB					Y		Y		
	21L	ILS	I	VORDME / NDB					Y		Y		
	21R												
OIFM	08L			VORDME / NDB					Y		Y		
	08R			VORDME / NDB					Y		Y		
	26L			VORDME / NDB					Y		Y		
	26R	ILS	I	VORDME / NDB					Y		Y		

Appendix A

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV/ VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
ORER	18	ILS	II		Y				Y		Y		
	36	ILS	I		Y				Y		Y		
ORSU	13	ILS	I	VOR					Y		Y		
	31	ILS	I	VOR					Y		Y		
ORNI	10												
	28	ILS		VOR									
ORBМ													NO DATA
Total	12	8		7	4	0	0	0	8	0	4	0	
%		67		58	33	0	0	0	67	0	33	0	
JORDAN													
OJAM	6				Y	Y			Y	Y	Y	Y	
	24	ILS	I	VORDME / NDB	Y	Y			Y	Y	Y	Y	
OJAI	08L	ILS	I	NDB DME	Y	Y			Y	Y	Y	Y	
	08R			NDB DME	Y	Y			Y	Y	Y	Y	
	26L	ILS	II	VOR / NDB	Y	Y			Y	Y	Y	Y	
	26R	ILS	I	VORDME / NDB	Y	Y			Y	Y	Y	Y	
OJAQ	1	ILS	I	VORDME	Y	Y			Y	Y		Y	
	19	N/A	N/A		Y	N/A			Y	Y	N/A	Y	LNAV/VNAV not feasible
Total	8	6		6	8	8	0	0	8	8	7	8	
%		75		75	100	100	0	0	100	100	88	100	
KUWAIT													
OKBK	15L	ILS	II		Y	Y				Y		Y	
	15R	ILS	II	VORDME	Y	Y				Y		Y	
	33L	ILS	II	VORDME	Y	Y				Y		Y	
	33R	ILS	II		Y	Y				Y		Y	
Total	4	4		2	4	4	0	0	0	4	0	4	
%		100		50	100	100	0	0	0	100	0	100	

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV / VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
LEBANON													
OLBA	3	ILS	I	VORDME	Y				Y		Y	Y	
	16	ILS	I	VORDME	Y						Y	Y	
	17	ILS	I	VORDME / NDB	Y				Y		Y	Y	
	21				Y				Y		Y	Y	
	34	N/A		N/A	N/A				Y		N/A	N/A	Not used for landing
	35	N/A		N/A	N/A				Y		N/A	N/A	Not used for landing
Total	6	5		5	6	0	0	0	5	0	6	6	
%		83		83	100	0	0	0	83	0	100	100	
LIBYA													
HLLB	15R			VORDME					Y		Y		
	15L			VORDME					Y		Y		
	33R			VORDME					Y		Y		
	33L			VORDME					Y		Y		
HLLS	13	ILS	I	VORDME					Y		Y		ILS not flight checked
	31			VORDME					Y		Y		
HLLT	9			VORDME					Y		Y		
	27	ILS	I	VORDME					Y		Y		ILS not flight checked
Total	8	2		8	0	0	0	0	8	0	8	0	
%		25		100	0	0	0	0	100	0	100	0	
OMAN													
OOMS	08R	ILS	I	VORDME					Y				
	26L	ILS	I	VORDME					Y				
OOSA	7			VORDME					Y				
	25	ILS	I	VORDME					Y				
Total	4	3		4	0	0	0	0	4	0	0	0	
%		75		100	0	0	0	0	100	0	0	0	

Appendix A

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV / VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
QATAR													
OTBD	15	ILS	I	VORDME	Y								
	33	ILS	II/III	VORDME	Y	Y							
OTHH	16L	ILS	I	VORDME									
	16R												
	34L												
	34R	ILS	I	VORDME									
Total	6	4		4	2	1	0	0	0	0	0	0	
%		67		67	33	17	0	0	0	0	0	0	
SAUDI ARABIA													
OEDF	16L	ILS	II	VORDME					Y				
	16R	ILS	II	VORDME									
	34L	ILS	II	VORDME									
	34R	ILS	II	VORDME					Y				
OEJN	16L	ILS	I	VORDME	Y				Y			Y	
	16C	ILS	II		Y				Y			Y	
	16R	ILS	II		Y				Y			Y	
	34L	ILS	II		Y				Y			Y	
	34C	ILS	II	VORDME	Y				Y			Y	
	34R	ILS	I	VORDME	Y				Y			Y	
OEMA	17	ILS	I	VORDME	Y				Y	Y		Y	
	18			VORDME	Y				Y	Y		Y	
	35	ILS	I	VORDME	Y				Y	Y		Y	
	36	ILS	I	VORDME	Y				Y	Y		Y	
OERK	15L	ILS	I	VORDME					Y				
	15R	ILS	I						Y				
	33L	ILS	I						Y				
	33R	ILS	I	VORDME					Y				
Total	18	17		13	10	0	0	0	16	4	0	10	
%		94		72	56	0	0	0	89	22	0	56	

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV/ VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
SUDAN													
HSKA	2												Charts are Not Published
	20												
HSSS	18	ILS	I	VORDME									
	36	ILS	I	VORDME									
HSPN	17			VORDME / NDB									
	35	ILS	I	VORDME / NDB									
Total	6	3		4	0	0	0	0	0	0	0	0	
%		50		67	0	0	0	0	0	0	0	0	
SYRIA													
OSAP	9			VORDME					Y		Y		
	27	ILS	II	VORDME / NDB					Y		Y		
OSLK	17	ILS	I	VORDME / NDB					Y		Y		
	35												
OSDI	05L			VOR					Y		Y		
	05R	ILS	II	VORDME / NDB					Y		Y		
	23L			VORDME / NDB DME					Y		Y		
	23R	ILS	II	VORDME	Y	Y			Y		Y		
Total	8	4		7	1	1	0	0	7	0	7	0	
%		50		88	13	13	0	0	88	0	88	0	
UNITED ARAB EMIRATES													
OMAA	13L	ILS	II				Y			Y		Y	
	13R	ILS	I	VOR			Y			Y		Y	
	31L	ILS	II/III	VOR			Y			Y		Y	
	31R	ILS	II				Y			Y		Y	
OMAD	13			VORDME	Y		Y		Y			Y	
	31	ILS	I	VORDME	Y		Y		Y			Y	
OMAL	1	ILS	I	VOR									
	19			VOR									
OMDB	12L	ILS	II/III	VOR	Y	Y				Y		Y	
	12R	ILS	I	VOR	Y	Y				Y		Y	

Appendix A

Int'l Aerodrome	RWY	Approach							SID		STAR		Remarks
		Precision		VOR or NDB	LNAV	LNAV / VNAV	RNP AR	LPV	Conventional	RNAV	Conventional	RNAV	
		xLS	CAT										
	30L	ILS	I	-	Y	Y				Y		Y	
	30R	ILS	II/III	VOR	Y	Y				Y		Y	
OMDW	12	ILS	II/III		Y	Y				Y		Y	
	30	ILS	II/III		Y	Y				Y		Y	
OMFJ	11									Y			
	29	ILS	I	VOR						Y			
OMRK	16			VOR									
	34	ILS	I	VOR					Y				
OMSJ	12	ILS	I		Y	Y				Y		Y	
	30	ILS	II		Y	Y				Y		Y	
Total	20	16		13	10	8	6	0	3	14	0	14	
%		80		65	50	40	30	0	15	70	0	70	
YEMEN													
OYAA	8	ILS	I	VORDME					Y		Y		
	26			VORDME					Y		Y		
OYHD	3			VOR									
	21			VOR / NDB	Y							Y	
OYRN	6												
	24			VORDME									
OYSN	18	ILS	I	VORDME	Y	Y			Y	Y	Y	Y	
	36			VOR	Y	Y			Y	Y	Y	Y	
OYTZ													NO DATA
Total	8	2		7	3	2	0	0	4	2	4	3	
%		25		88	38	25	0	0	50	25	50	38	

Results

Total	180	98		136	73	24	6	0	89	49	59	61	4 PBN APV + 54 ILS
%		54		76	41	13	3	0	49	27	33	34	32%

PBN IMPLEMENTATION FOCAL POINT

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
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	Ashraf Elkhashab		Ministry of Civil Aviation Egyptian Civil Aviation Authority Cairo International Airport Road Cairo - EGYPT	khshab@gmail.com			
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	Abdulla Adwani	Superintendent of AIS	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
Libya							
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@dgc.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

APPENDIX B

B-2

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
Sudan							
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

- END -