INTERNATIONAL CIVIL AVIATION ORGANIZATION

**REPORT OF THE SECOND MEETING OF THE
PERFORMANCE BASED NAVIGATION SUB-GROUP**

(PBN SG/2)

(Sharm El Sheikh, Egypt, 22 – 25 February 2016)

Approved by the Meeting
and published by authority of the Secretary General

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PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1   The Second meeting of the Performance Based Navigation Sub-Group (PBN SG/2) was successfully held at Concorde El Salam Hotel Sharm El Sheikh, Egypt, 22 – 25 February 2016.

2. OPENING

2.1   The meeting was opened by Mr. Mohamed Smaoui, Acting Regional Director, ICAO Middle East Office, who welcomed the participants to Sharm El Sheikh and wished them a successful and fruitful meeting. He expressed his gratitude and appreciation to the National Air Navigation Services Company (NANSC), Egypt, and especially to Mr. Ehab Azmy, NANSC Chairman. Mr. Smaoui extended special thanks to the air navigation team for the preparation and facilitation of this meeting and for the excellent hospitality extended to the ICAO MID Regional staff and all participants. He highlighted that Egypt's support to the ICAO MID Regional Office activities is an evidence of its active role and reflects Egypt's commitment to enhance the overall safety and efficiency of air navigation and increase capacity in the Region.

2.2   Mr. Smaoui highlighted the advantages of PBN implementation and emphasized that the introduction of PBN has met the expectations of the entire aviation community. However, PBN implementation is still facing a lot of challenges such as adequate training, lack of procedures designers and closer coordination between States and the aviation stakeholders. Mr. Smaoui highlighted that PBN in the MID Region had been progressing but with a low pace, and the implementation was still far behind the agreed targets. Therefore, ICAO is supporting the establishment of the MID Flight Procedure Programme (MID FPP) in order to assist States to improve and expedite PBN implementation. In this respect, he encouraged all Stakeholders to support the MID FPP.

2.3   Mr. Smaoui highlighted that for an improved efficiency, all aviation stakeholders, including States, Industry and International Organizations, should have an active role within the framework of MIDANPIRG. The Chairpersons of the subsidiary bodies have an important role for the coordination and management of the activities of their Sub-Groups, and should provide leadership for achieving the agreed objectives and performance targets, in close coordination with the Secretariat and the members of their Sub-Groups.

2.4   In closing, Mr. Smaoui thanked the participants for their presence and wished the meeting every success in its deliberations.

3. ATTENDANCE

3.1   The meeting was attended by a total of forty seven (47) participants from nine (9) States (Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Saudi Arabia, Sudan, and United Arab Emirates) and four (4) International Organizations (AACO, CANSO, IATA and IFALPA). The list of participants is at **Attachment A** to the Report.

4. OFFICERS AND SECRETARIAT

4.1   In the absence of the Chairperson of the PBN Sub-Group, Mr. Ahmed Mohamed Al Eshaq, Director of Air Navigation, Civil Aviation Authority, Qatar; Mr. Ehab Raslan, Assistant Minister

of Civil Aviation, Ministry of Civil Aviation Authority, Egypt and Vice Chairperson of the PBN Sub-Group, chaired the meeting.

4.2   Mr. Elie El Khoury, Regional Officer ATM/SAR was the Secretary of the meeting, supported by Mr. Abbas Niknejad, Regional Officer AIM/ATM.

5. LANGUAGE

5.1   The discussions were conducted in the English language and documentation was issued in English.

6. AGENDA

6.1   The following Agenda was adopted:

Agenda Item 1:   Adoption of the Provisional Agenda

Agenda Item 2:   Follow-up on MIDANPIRG/15 and MSG/4 Conclusions and Decisions relevant to PBN

Agenda Item 3:   Global and Regional Developments related to PBN

Agenda Item 4:   PBN Implementation in the MID Region

Agenda Item 5:   Future Work Programme

Agenda Item 6:   Any other Business

7. CONCLUSIONS AND DECISIONS – DEFINITION

7.1   The MIDANPIRG records its actions in the form of Conclusions and Decisions with the following significance:

a) **Conclusions** deal with matters that, according to the Group's terms of reference, merit directly the attention of States, or on which further action will be initiated by the Secretary in accordance with established procedures; and

b) **Decisions** relate solely to matters dealing with the internal working arrangements of the Group and its Sub-Groups.

8. LIST OF DRAFT CONCLUSIONS AND DRAFT DECISIONS

DRAFT CONCLUSION 2/1:   TRANSITION PLAN FOR THE RNAV TO RNP INSTRUMENT APPROACH CHART DEPICTION

DRAFT CONCLUSION 2/2:   ASSESSMENT OF PBN IMPLEMENTATION

DRAFT CONCLUSION 2/3:   INPUTS TO THE MID REGION PBN IMPLEMENTATION PLAN

 PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1:   ADOPTION OF THE PROVISIONAL AGENDA

1.1   The meeting reviewed and adopted the Provisional Agenda as at Para 6 of the History of the Meeting.

REPORT ON AGENDA ITEM 2:   **FOLLOW-UP ON MIDANPIRG/15 AND MSG/4 CONCLUSIONS AND DECISIONS RELEVANT TO PBN**

2.1   The meeting noted the status of the MIDANPIRG/15 and MSG/4 Conclusions and Decisions relevant to PBN and the follow-up actions taken by concerned parties as at **Appendix 2A**.

REPORT ON AGENDA ITEM 3:   GLOBAL AND REGIONAL DEVELOPMENTS RELATED TO PBN

GLOBAL AND REGIONAL DEVELOPMENTS

3.1   The subject was addressed in PPT/1, PPT/2, PPT/3 and PPT/4 presented by the Secretariat, Egypt and CANSO, respectively. The meeting was apprised of the Global and Regional developments related to PBN. The meeting encouraged States to take into consideration the global and regional developments related to PBN when developing their national PBN plans and benefit from the available ICAO products and Services.

PBN CHARTING

3.2   The meeting was informed of Amendment 6 to the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, DOC 8168) and the new ICAO Circular 336 on the transition from RNAV to RNP approach chart identification.

3.3   The meeting noted that the inconsistencies between the aeronautical charts, PBN operational approvals and avionics displays have created confusion for pilots and air traffic controllers. It was highlighted that any approach using GNSS is in fact an RNP approach due to the requirement for on-board monitoring and alerting. Consequently, as part of PBN procedures naming convention, only the term RNP will be permitted instead of RNAV (GNSS) and/or RNAV (GPS); and RNP (AR) instead of RNAV (RNP), as of **1 December 2022**. Accordingly, the meeting agreed to the following Draft Conclusion:

> *DRAFT CONCLUSION 2/1:   TRANSITION PLAN FOR THE RNAV TO RNP INSTRUMENT APPROACH CHART DEPICTION*
>
> *That, States be urged to provide their transition plan for the RNAV to RNP Instrument Approach Chart Depiction (Chart Title) to the ICAO MID Regional Office before **31 October 2016**, taking into consideration the provisions/timelines set forth in Amendment 6 to PANS-OPS, Volume II, Part III, Section 5, Chapter 1 and the ICAO Circular 336.*

RNAV VISUAL PROCEDURE (VISUAL GUIDED APPROACHES)

3.4   The meeting was apprised of the latest developments related to the Visual Guided Approaches (VGAs). The meeting noted that VGAs are established at specific aerodromes to enhance safety, improve efficiency and for environmental/noise considerations. In this respect, the meeting encouraged States to work closely with the air operators to make available the required regulations/provisions and certification process, and to implement VGAs where needed/applicable, taking into consideration the best practices and the ICAO provisions that will be issued by 2018.

CANSO PBN BEST PRACTICE GUIDANCE FOR ANSPS

3.5   The meeting received an update on CANSO activities in support of the PBN implementation and in particular the development of the CANSO PBN Best Practice Guidance for ANSPs, available on CNASO website (https://www.canso.org/performance-based-navigation-best-practice-guide-ansps).

3.6   The meeting noted with appreciation that CANSO is always willing to partnership any PBN activity in the Middle East Region.

REPORT ON AGENDA ITEM 4:   PBN IMPLEMENTATION IN THE MID REGION

STATES' UPDATE ON PBN IMPLEMENTATION

4.1   The subject was addressed in PPT/5 to PPT/12 presented by Egypt, Iran, Jordan, Lebanon, Saudi Arabia, Sudan, UAE and the Secretariat on behalf of Qatar, respectively. Bahrain and Kuwait presented their status of PBN implementation verbally.

4.2   The meeting noted with appreciation the States' commitment to meet the PBN agreed targets. The meeting was apprised of the latest developments related to PBN implementation carried out at the national level. The meeting noted the lessons learned, challenges impeding States to meet the agreed targets and the mitigation measures taken/proposed by States to improve the implementation of PBN.

4.3   The meeting highlighted the importance of the post monitoring and assessment of PBN implementation. In this respect, the meeting urged States to explore means and ways to assess the benefit accrued from the implementation of PBN procedures and ATS Routes, and to report the environmental benefits to the ICAO MID Regional Office by **15 September 2016**, in order to be included in the Second MID Region Air Navigation Environmental Report, which will be presented to the Second Meeting of the ATM Performance Measurement Task Force (APM TF/2) (Cairo, Egypt, 24 October 2016). Accordingly, the meeting agreed to the following Draft Conclusion:

> *DRAFT CONCLUSION 2/2:   ASSESSMENT OF PBN IMPLEMENTATION*
>
> *That, States be invited to:*
>
> a) *explore means and ways to assess the benefit accrued from the implementation of PBN;and*
>
> b) *report the environmental benefits to the ICAO MID Regional Office by* **15 September 2016** *in order to be included in the Second MID Region Air Navigation Environmental Report*

4.4   The meeting re-iterated MSG Conclusion 4/11 - *States' PBN Implementation Plans*. Accordingly, the meeting urged States to provide the ICAO MID Regional Office with their updated PBN Implementation Plans on an annual basis (by end of December).

STATUS OF PBN IMPLEMENTATION IN THE MID REGION

4.5   The subject was addressed in PPT/13 presented by the Secretariat. The meeting reviewed and updated the status of PBN implementation (B0-APTA, B0-CCO and B0-CDO) in the MID Region, using the PBN Table of the MID eANP VOL III, as at **Appendix 4A**.

4.6   The meeting noted with concern that the level of implementation of LNAV and LNAV/VNAV is far below the targets set out by the MID Region Air Navigation Strategy (MID Doc 002).

4.7   It was also noted that nine (9) States have so far provided their National PBN Implementation Plan, which indicates the gap with the established target. The meeting noted that Iran and Lebanon will soon provide their National PBN Implementation Plan. It was highlighted that ICAO is developing a Template to be used by States for the development of their national PBN plans.

4.8　　　　The meeting update the applicability area of B0-CCO and B0-CDO as at **Appendix 4B**, and initiated discussion on the planning for the ASBU B1-APTA and B1-CDO Modules. The meeting agreed that the B1-APTA and B1-CDO would apply to certain aerodromes/runway ends. In this regard, the meeting urged States to identify the runway ends where GLS CAT II/III precision would be required, and the aerodromes/TMAs where B1-CDO could be implemented, in consultation with the airspace users.

4.9　　　　The meeting reviewed and updated the MID Region PBN Implementation Plan (MID Doc 007), as at **Appendix 4C**. The meeting urged States to provide the ICAO MID Regional Office with their inputs/comments related to the MID Region PBN Implementation Plan, before **30 March 2016**, in order to present a consolidated version of the Plan to the MSG/5 meeting. Accordingly, the meeting agreed to the following Draft conclusion:

> *DRAFT CONCLUSION 2/3:　INPUTS TO THE MID REGION PBN IMPLEMENTATION PLAN*
>
> *That, States be urged to provided the ICAO MID Regional Office with their inputs/comments related to the MID Region Implementation Plan at **Appendix 4C*** before **30 March 2016**, in order to present a consolidated version of the Plan to the MSG/5 meeting

4.10　　　　The meeting reviewed and updated the list of PBN Focal Points in the MID Region as at **Appendix 4D**.

4.11　　　　The following are the main lessons learned, challenges faced by States and the recommendations that would support States to overcome the identified challenges, highlighted during the meeting:

Lessons Learned/Success Stories

- The meeting noted with appreciation the Saudi experience related to the monitoring of GPS signal, and the capability of the system to cover adjacent FIRs. It was highlighted that no interruption of service has been reported for the period from December 2014 to February 2016. The meeting invited Saudi Arabia to present the same to the CNS SG/7 meeting and share experience with other States.

- The meeting thanked UAE for its willingness to share the GCAA regulations and procedures related to the PBN implementation, which are available on the GCAA website.

- RNAV SIDs and STARs would be more efficient with arrival and departure management, based on Egypt experience.

- No efficient PBN plan without the engagement of the Airspace stakeholders.

- Introduction of PBN had reduced ATC workload as reported by most of the States.

- RNAV SIDs and STARs could be aligned, to some extent, with the radar vectoring techniques used by ATCOs.

- PBN approach for RWY 21 at OLBA (LNAV/VNAV) provided a good alternative to ILS, which could not be implemented due to high mountainous area.

- Promotion of PBN requirements is crucial.

- Appropriate operational documentation such as Standard Operating Procedures (SOPs) should be provided to ensure effective use of PBN.

- Importance of proper coordination with stakeholders (Regulator, Aircraft Operators, Aerodrome authorities, ATS units, Flight Procedure Designers, Airspace Planners, military, etc.) for successful PBN implementation.

- Importance of detailed planning by keeping the PBN Roadmap as the basic outline in detailed planning has to be done describing timely outputs and stakeholders.

- Importance of continuous review of PBN implementation goals and rectifying issues for uninterrupted process.

- Quality assurance on all aspects ensures safety.

- Post implementation reviews to monitor project objectives and if there are deviations, mitigation strategies to be planned to reach the goals.

Challenges

4.12   The following challenges have been identified as the main impediments to the advancement of PBN implementation in the Region:

- shortage of PANS-OPS, Airspace Planners and OPS-approval experts;

- insufficient procedure design work in some States to attain or maintain competency;

- lack of airspace and procedure design training: initial, OJT, and/or recurrent;

- lack of capabilities to implement Quality Assurance;

- lack of regulatory expertise to oversee the process leading to procedure publication;

- low Level of Civil/Military Cooperation;

- unstable political and security situation in some States;

- implementation of eTOD Area 2;

- fleet equipage;

- Operational Improvements Assessment;

- catering for non-compliance (mixed equipage environment);

- fully integrated system (IFP, AIM, eTOD);

- airspace changes to accommodate current and projected traffic increase and further improve safety, capacity and efficiency;

- GNSS Signal Vulnerability;

- maintain Target Level of Safety (TLS); and

- stakeholders (ATCOs, Pilots, etc.) training and readiness.

4.13   The meeting noted the concern raised by States related to the difficulties of data gathering process as part of the initial stages of the implementation of PBN. The meeting recalled the provision of Annex 15 and AIM Concept on the importance of quality assured digital aeronautical data/information in the PBN implementation. The meeting further noted the actions taken to foster the eTOD implementation

in the MID Region and agreed that the issue be addressed and followed-up by AIM Sub-Group.

Recommendations

4.14   The meeting encouraged States to:

- ensure the training/recruitment of qualified experts in the fields of FPD, airspace planning, and operations approval;

- work cooperatively;

- request ICAO support for the training and implementation of PBN;

- organize at national level PBN Workshops;

- request MID Civil/Military Support Team visits;

- engage all stakeholders and in particular the Regulator in the planning and design processes;

- share experience and best practices with each other; and

- use IFSET and/or other tools for the assessment of the benefit accrued from the implementation of PBN.

4.15   The meeting agreed that the MID Flight Procedure Programme (MID FPP) is the optimal solution that would support States to overcome most of the identified challenges, and will foster the PBN implementation in the MID Region.

4.16   The meeting requested the ICAO MID Regional Office to organize an airspace planning workshop, which includes sessions on CCO, CDO and procedure design. The meeting noted with appreciation Egypt's offer to host the Workshop in the second half of 2016.

4.17   The meeting emphasized that the successful implementation of PBN requires in some cases the establishment of the Point of Descent in the adjacent FIR. Accordingly, the meeting encouraged States to coordinate with their neighbouring States to agree on necessary measures that facilitate the implementation of CCOs and CDOs, which might necessitate the amendment of the LOAs.

MID FLIGHT PROCEDURE PROGRAMME (MID FPP) ESTABLISHMENT

4.18   The meeting reviewed the MID FPP Project Document (ProDoc) at **Appendix 4E**. The meeting encouraged States to provide their comments to the ICAO MID Regional Office, if any, by **30 March 2016**, in order for the Secretariat to present the consolidated version to the MAEP Board/2 meeting, Cairo, Egypt, 11-13 April 2016.

4.19   The meeting analyzed the responses to the questionnaire that was circulated by the MID Office to determine the States' procedure design and PBN capabilities and seek their willingness to host and support the MID FPP. The analysis of the survey is at **Appendix 4F**.

4.20   The meeting received with appreciation three (3) offers of hosting the MID FPP from Egypt, Iran and Sudan. The meeting agreed that States should provide the ICAO MID Regional Office by **25 March 2016** with the formal offer for presentation to the MAEP Board/2 meeting.

REPORT ON AGENDA ITEM 5:   FUTURE WORK PROGRAMME

5.1   The meeting reviewed the PBN SG Terms of References (TORs) and agreed that they are still valid and current.

5.2   Taking into consideration, the planned ICAO MID Regional events which are of relevance to the activity of the PBN Sub-Group, in particular the MSG/5, ANSIG/2 and MIDANPIRG/16 meetings, it was agreed that the PBN SG/3 meeting be held during the second half of 2017. The venue will be ICAO MID Regional Office in Cairo, unless a State is willing to host the meeting.

REPORT ON AGENDA ITEM 6:   ANY OTHER BUSINESS

6.1   The meeting received with appreciation a presentation on GNSS signal vulnerability, delivered by Egypt. The meeting recognized the need for adequate legislative and regulatory framework to ensure that the four pillars of the GNSS, availability, integrity, accuracy and continuity are maintained. The meeting agreed that the subject should be addressed to the Seventh Meeting of the CNS Sub-Group (CNS SG/7), Cairo, Egypt, 31 May – 02 June 2016.

6.2   The meeting thanked ICAO for introducing a new way of running the meeting, which ensured effective and fruitful interactions between the participants. The meeting invited ICAO to apply the same arrangements to other meetings, as applicable.

APPENDICES

APPENDIX 2A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/15 CONCLUSIONS AND DECISIONS RELEVANT TO PBN

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS

CONCLUSION 15/10: MID REGION AIR NAVIGATION STRATEGY
 	
That,
 	
a) the revised MID Region Air Navigation Strategy:
 	
  i. is endorsed as the framework identifying the regional air navigation priorities, performance indicators and targets; and
 	
  ii. be published as MID Doc 002.
 	
b) MID States be urged to:
 	
  i. develop their National Air Navigation Performance Framework, ensuring the alignment with and support to the MID Region Air Navigation Strategy; and
 	
  ii. provide the ICAO MID Regional Office, on an annual basis (by the end of November), with relevant data necessary for regional air navigation planning, reporting and monitoring.
	Implement the Conclusion	MIDANPIRG/15
		
		ICAO
		
		ICAO
		
		States
		
		States
			MID AN Strategy
			
			MID Doc 002
			
			State Letter
			
			National Performance Framework
			
			Feedback
				
				Nov. 2015
				
				Nov. 2015
					Actioned
					
					SL AN 1/7–15/191 dated 25 June 2015
					
					MID Doc 002 published

CONCLUSION 15/11: ENDORSEMENT OF THE MID eANP That, a) the new MID ANP VOL I, II and III available at: http://www.icao.int/MID/MIDANPIRG/Pages/Final%20Report/MID-eANP.aspx are endorsed; and b) the ICAO MID Regional Office process the necessary Proposals for Amendment, in accordance with the procedure for amendment approved by the Council, for formal approval by the end of 2015.	Issue Proposals for Amendment	ICAO	Proposals for Amendment	Dec. 2015	Actioned MID eANP, Vol I, II and III, approved and published on the ICAO MID Website
CONCLUSION 15/13: MID FLIGHT PROCEDURE PROGRAMME (FPP) WORKSHOP That, as part of the ICAO support for the establishment of the MID FPP, a Workshop be organized back-to-back with the MAEP SC/2 meeting to be held in October 2015 in order to develop a framework for the establishment of the MID FPP.	Implement the Conclusion	ICAO	Conduct of MID FPP Workshop	Oct. 2015	To be closed Workshop held (18-19 Oct. 2015)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DECISION 15/14: **DISSOLUTION OF THE MPST** That, the MID PBN Support Team (MPST) is dissolved.	Implement the Conclusion	MIDANPIRG/15	Dissolve the MPST	Jun.2015	Completed
CONCLUSION 15/19: **REGIONAL PERFORMANCE DASHBOARDS** That, ICAO expedite the expansion of the regional performance dashboards to include the MID Region-specific indicators, metrics and targets, for which the necessary data is available**.**	Implement the Conclusion	ICAO	Dashboards with Regional indicators, metrics and targets	Dec. 2015	Ongoing
CONCLUSION 15/22: MID REGION HIGH LEVEL AIRSPACE CONCEPT That, the MID Region High Level Airspace Concept (Edition June 2015) is endorsed as MID Doc 004.	Implement the Conclusion	MIDANPIRG/15	MID Region High Level Airspace Concept	Jun. 2015	Completed MID Doc 004 published
CONCLUSION 15/28: **GNSS RADIO FREQUENCY INTERFERENCE** That, States be invited to use the guidance at **Appendix 5.2.2E** for the development/amendment of their regulatory provisions related to the use of GNSS and associated threats.	Implement the Conclusion	ICAO	State Letter	Dec 2015	Actioned SL issued Ref.: AN 7/30.21 – 15/345 dated 22 Dec.2015
CONCLUSION 15/35: AIR NAVIGATION DEFICIENCIES That, States be urged to: a) use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies, including the submission of a specific Corrective Action Plan (CAP) for each deficiency; and b) submit a Formal Letter to the ICAO MID Regional Office containing the evidence(s) that mitigation measures have	Implement the Conclusion	ICAO States	State Letter CAP and necessary updates/ evidences	 When necessary	Ongoing SL issued Ref.: Ref.: AN 2/2 - 15/351 dated 29 December 2015

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
been implemented for the elimination of deficiency(ies) when requesting the elimination of deficiency(ies) from the MANDD.					

FOLLOW-UP ACTION PLAN ON MSG/4 CONCLUSIONS AND DECISIONS RELEVANT TO PBN

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 4/10: MID REGION PBN IMPLEMENTATION PLAN That, the endorsed MID Region PBN Implementation Plan (Version 1, November 2014) be posted on the ICAO MID website.	Implement the Conclusion	MSG/4	MID Region PBN Implementation Plan	Nov. 2014	Completed Published as MID Doc 007 on the ICAO MID website
MSG CONCLUSION 4/11: STATES' PBN IMPLEMENTATION PLANS That, States be urged to: a) develop/update their PBN implementation Plan taking into consideration the MID Region PBN Implementation Plan, the MID Air Navigation Strategy and the Users requirements; and b) provide the ICAO MID Regional Office with their updated PBN Implementation Plan on an annual basis (by end of December).	Implement the Conclusion	ICAO States	State Letter Provide their update PBN Plans on annual basis	Dec. 2014 on annual basis	Actioned SL issued Ref.: AN 6/28-14/334 dated 18 December 2014

APPENDIX 4A

MID REGION TMAs PROCEDURES Implementation Status as of January 2016

Int'l Aerodrome (Ref. MID ANP)	RWY	Precision xLS	Precision CAT	VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	Remarks
BAHRAIN																	1
OBBI	12L	ILS	I	VORDME		Y		Y					Y	Y			
	30R	ILS	I	VORDME		Y		Y					Y				
Total	**2**	**2**		**2**	**Y**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	
%		**100**		**100**	**Mar. 2015**	**100**	**0**	**100**	**0**	**0**	**0**	**0**	**100**	**100**	**0**	**0**	
EGYPT																	7
HEBA	14																
	32	ILS	I			Y		Y	Y	Y							
HESN	17			VORDME		Y		Y	Y	Y			Y	Y			
	35	ILS	I	VORDME		Y		Y	Y				Y				
HECA	05L	ILS	I	VORDME		Y		Y									
	05C	ILS	II	VORDME		Y		Y									
	05R	ILS	I														
	23L	ILS	I	VORDME													
	23C	ILS	II	VORDME		Y		Y									
	23R	ILS	I	VORDME		Y		Y									
HEGN	16			VORDME		Y		Y	Y	Y			Y	Y			
	34	ILS	I	VORDME		Y		Y	Y				Y				
HELX	2	ILS	I	VORDME		Y		Y	Y	Y			Y	Y			
	20	ILS	I	VORDME		Y		Y	Y				Y				
HEMA	15			VORDME		Y		Y	Y	Y			Y	Y			
	33			VORDME		Y		Y	Y				Y				
HESH	04L	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	04R			VORDME		Y	Y	Y	Y				Y				
	22L			VORDME		Y		Y	Y				Y				
	22R			VORDME		Y		Y	Y				Y				
Total	**20**	**12**		**17**	**Y**	**17**	**2**	**17**	**13**	**6**	**0**	**0**	**12**	**5**	**0**	**0**	
%		**60**		**85**	**Jan. 2015**	**85**	**10**	**85**	**65**	**86**	**0**	**0**	**60**	**71**	**0**	**0**	

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches		VOR or NDB	APTA				CCO				CDO				Remarks
		Precision			PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	
		xLS	CAT														
I.R. IRAN																	9
OIKB	03L																
	03R			VORDME / NDB													
	21L	ILS	I	VORDME / NDB													
	21R																
OIFM	08L			VORDME / NDB													
	08R			VORDME / NDB													
	26L			VORDME / NDB													
	26R	ILS	I	VORDME / NDB													
OIMM	13L			VORDME													
	13R			VORDME													
	31L			VORDME / NDB													
	31R	ILS	I	VORDME / NDB													
OISS	11L																
	11R																
	29L	ILS	I	VORDME / NDB													
	29R			VORDME / NDB													
OITT	12L																
	12R																
	30L	ILS	I	VORDME													
	30R	ILS	I	VORDME													

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			PBN RWY	CCO				CDO				Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV		RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	Remarks
		xLS	CAT														
OIIE	11L	ILS	I	VORDME / NDB									Y	Y			
	11R			VORDME / NDB									Y				
	29L			VORDME									Y				
	29R	ILS	II	VORDME / NDB		Y	Y	Y					Y				
OIII	11L			VORDME													
	11R			VORDME													
	29L	ILS	I	VORDME													
	29R																
OIZH	17																
	35	ILS	I	VORDME													
OIYY	13			VORDME													
	31			VORDME													
Total	**32**	**10**		**24**	**N**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**4**	**1**	**0**	**0**	
%		**31**		**75**		**3**	**3**	**3**	**0**	**0**	**0**	**0**	**13**	**11**	**0**	**0**	
IRAQ																	6
ORBI	15L	ILS	I	VORDME													
	15R					Y		Y									
	33L					Y		Y									
	33R	ILS	I	VORDME													
ORMM	14			VORDME													
	32	ILS	I	VORDME													
ORER	18	ILS	II			Y		Y					Y	Y			
	36	ILS	I			Y		Y					Y				
ORSU	13	ILS	I	VOR													
	31	ILS	I	VOR													
ORNI	10																
	28	ILS		VOR													
ORBM																	NO DATA
Total	**12**	**8**		**7**	**N**	**4**	**0**	**4**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	
%		**67**		**58**		**33**	**0**	**33**	**0**	**0**	**0**	**33**	**17**	**0**	**0**	**0**	

Int'l Aerodrome (Ref. MID ANP)	RWY	Precision xLS	Precision CAT	VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	Remarks
JORDAN																	3
OJAM	6					Y	Y	Y	Y	Y			Y	Y			
	24	ILS	I	VORDME		Y	Y	Y	Y				Y				
OJAI	08L	ILS	I	NDB DME		Y	Y	Y	Y	Y			Y	Y			
	08R			NDB		Y	Y	Y	Y				Y				
	26L	ILS	II	VOR / NDB		Y	Y	Y	Y				Y				
	26R	ILS	I	VORDME		Y	Y	Y	Y				Y				
OJAQ	1	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	19	ILS	I			Y	N/A	Y	Y				Y				LNAV/VNAV not feasible
Total	**8**	**6**		**6**	**Y**	**8**	**8**	**8**	**8**	**3**	**0**	**0**	**8**	**3**	**0**	**0**	
%		**75**		**75**	**July 2009**	**100**	**100**	**100**	**100**	**100**	**0**	**0**	**100**	**100**	**0**	**0**	**Plan needs update**
KUWAIT																	1
OKBK	15L	ILS	II			Y	Y	Y	Y	Y			Y	Y			
	15R	ILS	II	VORDME		Y	Y	Y	Y				Y				
	33L	ILS	II	VORDME		Y	Y	Y	Y				Y				
	33R	ILS	II			Y	Y	Y	Y				Y				
Total	**4**	**4**		**2**	**Y**	**4**	**4**	**4**	**4**	**1**	**0**	**0**	**4**	**1**	**0**	**0**	
%		**100**		**50**	**Mar. 2015**	**100**	**100**	**100**	**100**	**100**	**0**	**0**	**100**	**100**	**0**	**0**	**Plan needs update**
LEBANON																	1
OLBA	3	ILS	I	VORDME		Y		Y		Y			Y	Y			
	16	ILS	I	VORDME		Y		Y					Y				
	17	ILS	I	VORDME / NDB		Y		Y					Y				
	21					Y		Y					Y				
	34	N/A		N/A													Not used for landing
	35	N/A		N/A													Not used for landing
Total	**4**	**5**		**5**	**N**	**4**	**0**	**4**	**0**	**1**	**0**	**0**	**4**	**1**	**0**	**0**	
%		**125**		**125**		**100**	**0**	**100**	**0**	**100**	**0**	**0**	**100**	**100**	**0**	**0**	

Int'l Aerodrome (Ref. MID ANP)	RWY	Precision		VOR or NDB	APTA				CCO				CDO				Remarks
		xLS	CAT		PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	
LIBYA																	3
HLLB	15R			VORDME													VOR not flight checked
	15L			VORDME													VOR not flight checked
	33R			VORDME													VOR not flight checked
	33L	ILS	I	VORDME													ILS not flight checked
HLLS	13	ILS	I	VORDME													ILS not flight checked
	31			VORDME													VOR not flight checked
HLLT	9			VORDME													VOR not flight checked
	27	ILS	I	VORDME													ILS not flight checked
Total	8	3		8	N	0	0	0	0	0	0	0	0	0	0	0	
%		38		100		0	0	0	0	0	0	0	0	0	0	0	
OMAN																	2
OOMS	08L	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	26R	ILS	I	VORDME		Y	Y	Y	Y				Y				
OOSA	7	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	25	ILS	I	VORDME		Y	Y	Y	Y				Y				
Total	4	4		4	Y	4	4	4	4	2	0	0	4	2	0	0	
%		100		100	Feb. 2015	100	100	100	100	100	0	0	100	100	0	0	
QATAR																	2
OTBD	15	ILS	I	VORDME		Y	N/A	Y	Y	Y	Y	Y	Y	Y	Y	Y	LNAV/VNAV not feasible
	33	ILS	II/III	VORDME/NDB		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
OTHH	16L	ILS	I/II/III	VORDME		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	CCO/CDO tactically achieved
	16R	ILS	I/II/III	VORDME		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
	34L	ILS	I/II/III	VORDME		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
	34R	ILS	I/II/III	VORDME		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
Total	6	6		6	Y	6	6	6	6	2	6	2	6	2	6	2	
%		100		100	Jan. 2016	100	100	100	100	100	100	100	100	100	100	100	

Int'l Aerodrome (Ref. MID ANP)	RWY	Precision		VOR or NDB	APTA			PBN RWY	CCO				CDO				Remarks
		xLS	CAT		PBN PLAN Update date	LNAV	LNAV / VNAV		RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	
SAUDI ARABIA																	4
OEDF	16L	ILS	II	VORDME													
	16R	ILS	II	VORDME													
	34L	ILS	II	VORDME													
	34R	ILS	II	VORDME													
OEJN	16L	ILS	I	VORDME		Y		Y	Y	Y			Y	Y			
	16C	ILS	II										Y				
	16R	ILS	II			Y		Y					Y				
	34L	ILS	II			Y		Y					Y				
	34C	ILS	II	VORDME									Y				
	34R	ILS	I	VORDME		Y		Y					Y				
OEMA	17	ILS	I	VORDME		Y		Y	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													
	15R	ILS	I														
	33L	ILS	I														
	33R	ILS	I	VORDME													
Total	18	17		13	Y	8	0	8	5	2	0	0	10	2	0	0	
%		94		72	May 2012	44	0	44	28	50	0	0	56	50	0	0	Plan needs update

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA				CCO				CDO				Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	
		xLS	CAT														
SUDAN																	4
HSNN	4					Y	Y	Y									
	22					Y	Y	Y									
HSOB	1					Y	Y	Y									
	19					Y	Y	Y									
HSSS	18	ILS	I	VORDME		Y	Y	Y									
	36	ILS	I	VORDME		Y	Y	Y									
HSPN	17			VORDME / NDB		Y	Y	Y									
	35	ILS	I	VORDME / NDB		Y	Y	Y									
Total	**6**	**3**		**4**	**Y**	**6**	**6**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
%		**50**		**67**	**Dec. 2015**	**100**	**100**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
SYRIA																	3
OSAP	9			VORDME													
	27	ILS	II	VORDME / NDB													
OSLK	17	ILS	I	VORDME / NDB													
	35																
OSDI	05L			VOR													
	05R	ILS	II	VORDME / NDB													
	23L			VORDME / NDB DME													
	23R	ILS	II	VORDME		Y	Y	Y									
Total	**8**	**4**		**7**	**Draft**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
%		**50**		**88**	**Dec. 2009**	**13**	**13**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA				CCO				CDO				Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	
		xLS	CAT														
UNITED ARAB EMIRATES																	8
OMAA	13L	ILS	II					Y	Y	Y			Y	Y			RNP AR
	13R	ILS	I	VOR				Y	Y				Y				RNP AR
	31L	ILS	II/III	VOR				Y	Y				Y				RNP AR
	31R	ILS	II					Y	Y				Y				RNP AR
OMAD	13			VORDME		Y		Y					Y	Y			RNP AR
	31	ILS	I	VORDME		Y		Y					Y				RNP AR
OMAL	1	ILS	I	VOR													
	19			VOR													
OMDB	12L	ILS	I/II/III	VOR		Y	Y	Y	Y	Y			Y	Y			
	12R	ILS	I/II/III	VOR		Y	Y	Y	Y				Y				
	30L	ILS	I/II/III			Y	Y	Y	Y				Y				
	30R	ILS	I/II/III	VOR		Y	Y	Y	Y				Y				
OMDW	12	ILS	II/III			Y	Y	Y	Y	Y			Y	Y			
	30	ILS	II/III			Y	Y	Y	Y				Y				
OMFJ	11								Y	Y							
	29	ILS	I	VOR		Y	Y	Y	Y								
OMRK	16			VOR													
	34	ILS	I	VOR													
OMSJ	12	ILS	I			Y	Y	Y	Y	Y			Y	Y			
	30	ILS	II			Y	Y	Y	Y				Y				
Total	**20**	**16**		**12**	**Y**	**11**	**9**	**15**	**14**	**5**	**0**	**0**	**14**	**5**	**0**	**0**	
%		**80**		**60**	**Dec. 2015**	**55**	**45**	**75**	**70**	**63**	**0**	**0**	**70**	**63**	**0**	**0**	

Int'l Aerodrome (Ref. MID ANP)	RWY	Precision xLS	Precision CAT	VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO	PER AERO	Remarks
YEMEN																	5
OYAA	8	ILS	I	VORDME													
	26			VORDME													
OYHD	3			VOR										Y			
	21			VOR / NDB		Y		Y					Y				
OYRN	6																
	24			VORDME													
OYSN	18	ILS	I	VORDME/NDB		Y	Y	Y	Y	Y			Y	Y			
	36			VOR		Y	Y	Y	Y				Y				
OYTZ																	NO DATA
Total	8	2		7	Draft Plan	3	2	3	2	1	0	0	3	2	0	0	59
%		25		88	Jan. 2010	38	25	38	25	20	0	0	38	40	0	0	

Results				Plans			PBN	SID		CCO		STAR		CDO			
Total	160	102		124	9	79	43	83	56	23	6	2	73	26	6	2	**9 PBN APV + 102 ILS (111/162)**
Percentage (%)		64		78	60	49	27	52	35	39	4	3	16	44	4	3	**69% RWY Ends with Vertical guidance**
59	Aerodrmes																

APPENDIX 4B

B0-CCO and B0-CDO revised applicability area

B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)			
Elements	*Applicability*	*Performance Indicators/Supporting Metrics*	*Targets*
PBN STARs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMAD, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with PBN STAR implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with PBN STAR implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs 100% by Dec. 2018 for all the International Aerodromes/TMAs
International aerodromes/TMAs with CDO	OBBI, HESH, HEMA, HEGN, OIIE, OIKB, OIFM, OJAI, OJAQ, OKBK, OLBA, OOMS, OTHH, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMDB, OMDW, OMSJ,	Indicator: % of International Aerodromes/TMA with CDO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs

B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)			
Elements	*Applicability*	*Performance Indicators/Supporting Metrics*	*Targets*
PBN SIDs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMAD, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with PBN SID implemented as required. Supporting Metric: Number of International Aerodromes/ TMAs with PBN SID implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs 100% by Dec. 2018 for all the International Aerodromes/TMAs
International aerodromes/TMAs with CCO	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OIKB, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with CCO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CCO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs

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APPENDIX 4C

MID Doc 007

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

MID REGION PERFORMANCE BASED NAVIGATION IMPLEMENTATION PLAN

EDITION ~~JUNE~~APRIL, 201~~5~~6

4C-3

AMENDMENTS

The MID Region PBN Implementation Plan should be reviewed and updated by the PBN and/or the ATM Sub-Groups and presented to MIDANPIRG for endorsement.

Stakeholders shall submit their proposal for amendment to the Plan to the ICAO MID Regional Office at least three months prior the PBN or the ATM Sub-Groups meetings in order to ensure adequate time for appropriate coordination. The table below provides a means to record all amendments.

An up to date electronic version of the Plan will be available on the ICAO MID Regional Office website.

Amendment Number	Effective Date	Initiated by	Impacted pages	Remarks
1	**April 2016**	**PBN SG/2**		

4C-4

EXECUTIVE SUMMARY

The MID Region Performance Based Navigation (PBN) Implementation Plan has been developed to harmonize PBN implementation in the MID Region and to addresses the strategic objectives of PBN based on clearly established operational requirements, avoiding equipage of multiple on-board or ground based equipment, avoidance of multiple airworthiness and operational approvals and explains in detail contents relating to potential navigation applications.

The Plan was prepared in accordance with ICAO provisions related to PBN, the Global Air Navigation Plan, Aviation System Block Upgrades (ASBU) methodology, MID Region Air Navigation Plan and the MID Region Air Navigation Strategy. In addition to the Assembly Resolutions and the twelfth Air Navigation Conference (AN-Conf/12) Recommendations related to PBN.

The plan envisages pre- and post-implementation safety assessments and continued availability of conventional air navigation procedures during transition. The plan discusses issues related to implementation which include traffic forecasts, aircraft fleet readiness, adequacy of ground-based CNS infrastructure etc. Implementation targets for various categories of airspace for the short term (2013 – 2017) and for the medium term (2018 – 2022) have been projected in tabular forms to facilitate easy reference. For the long term (2023 and beyond) it has been envisaged that GNSS and its augmentation system would become the primary navigation infrastructure

This Document consolidates, updates and supersedes all previous MID Region PBN and GNSS Strategies/Plans.

The parts related to PBN implementation for En-route will be reviewed and updated by the ATM Sub-Group and those related to terminal and approach will be reviewed and updated by the PBN Sub-Group.

Explanation of Terms

The drafting and explanation of this document is based on the understanding of some particular terms and expressions that are described below:

MID Region PBN Implementation Plan - A document offering appropriate guidance for air navigation service providers, airspace operators and users, regulating agencies, and international organizations, on the evolution of navigation, as one of the key systems supporting air traffic management, and which describes the RNAV and RNP navigation applications that should be implemented in the short, medium and long term in the MID Region.

Performance Based Navigation - Performance based navigation specifies RNAV and RNP system performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in an airspace.

Performance requirements - Performance requirements are defined in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept. Performance requirements are identified in navigation specifications which also identify which navigation sensors and equipment may be used to meet the performance requirement.

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REFERENCE DOCUMENTS

The below ICAO Documents provide Guidance related to the PBN implementation:

- PANS-ATM (Doc 4444)
- PANS-Ops (Doc 8168)
- PBN Manual (Doc 9613)
- GNSS Manual (Doc 9849)
- RNP AR Procedure Design Manual (Doc 9905)
- CDO Manual (Doc 9931)
- Manual on Use of PBN in Airspace Design (Doc 9992)
- CCO Manual (Doc 9993)
- Procedure QA Manual (Doc 9906)
- PBN Ops Approval Manual (Doc 9997)

TABLE OF CONTENTS

ACRONYMS

The acronyms used in this document along with their expansions are given in the following List:

AACO	Arab Air Carrier Association
ABAS	Aircraft-Based Augmentation System
ACAC	Arab Civil Aviation Commission
AIS	Aeronautical Information System
APAC	Asia and Pacific Regions
APCH	Approach
APV	Approach Procedures with Vertical Guidance
AOC	Air operator certificate
ATC	Air Traffic Control
ASBU	Aviation System Block Upgrades
Baro VNAV	Barometric Vertical Navigation
CCO	Continuous Climb Operations
CDO	Continuous Decent Operations
CNS/ATM	Communication Navigation Surveillance/Air Traffic Management
CPDLC	Controller Pilot Data Link Communications
DME	Distance Measuring Equipment
~~FASID~~	~~Facilities and Services Implementation Document~~
FIR	Flight Information Region
FMS	Flight Management System
GBAS	Ground-Based Augmentation System
GNSS	Global Navigation Satellite System
GLS	GBAS Landing System
IATA	International Air Transport Association
IFALPA	International Federation of Air Line Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
IFF	Identification Friend or Foe
INS	Inertial Navigation System
IRU	Inertial Reference Unit
MEL	Minimum equipment list
MID eANP	MID Region Air Navigation Plan
MIDANPIRG	Middle East Air Navigation Planning and Implementation Regional Group
MID-RMA	Middle East Regional Monitoring Agency
MLAT	Multilateration
PANS	Procedures for Air Navigation Services
PBN	Performance Based Navigation
PIRG	Planning and Implementation Regional Group
RCP	Required Communication Performance
RNAV	Area Navigation
RNP	Required Navigation Performance
SARP	Standards and Recommended Practices
SBAS	Satellite-Based Augmentation System
SID	Standard Instrument Departure
SOP	Standard operating procedure
STAR	Standard Instrument Arrival
TAWS	Terrain awareness warning system
TMA	Terminal Control Area
VOR	VHF Omni-directional Radio-range
WGS	World Geodetic System

CHAPTER 1

PERFORMANCE BASED NAVIGATION

1. INTRODUCTION

1.1   The Performance Based Navigation (PBN) concept specifies aircraft RNAV system performance requirements in terms of accuracy, integrity, availability, continuity and functionality needed for the proposed operations in the context of a particular airspace concept, when supported by the appropriate navigation infrastructure. In this context, the PBN concept represents a shift from sensor-based to performance based navigation.

1.2   The main tool for optimizing the airspace structure is the implementation of PBN, which will foster the necessary conditions for the utilization of RNAV and RNP capabilities by a significant portion of airspace users in the MID Region.

1.3   The MID Regional PBN Implementation Plan will serve as guidance for regional projects for the implementation of air navigation infrastructure, ,such as SBAS, GBAS, GLS etc., as well as for the development of national implementation plans.

1.4   The PBN Manual (Doc 9613) provides guidance on PBN navigation specifications and encompasses two types of approvals: airworthiness, exclusively relating to the approval of aircraft, and operational, dealing with the operational aspects of the operator. PBN approval will be granted to operators that comply with these two types of approval.

1.5   After the implementation of PBN as part of the airspace concept, the total system needs to be monitored to ensure that safety of the system is maintained. A system safety assessment shall be conducted during and after implementation and evidence collected to ensure that the safety of the system is assured.

2. BENEFITS OF PERFORMANCE BASED NAVIGATION

a) *Access and Equity*: Increased aerodrome accessibility.

b) *Capacity*: In contrast with ILS, the GNSS based approaches do not require the definition and management of sensitive and critical areas resulting in potentially increased runway capacity.

c) *Efficiency*: Cost savings related to the benefits of lower approach minima: fewer diversions, overflights, cancellations and delays. Cost savings related to higher airport capacity in certain circumstances (e.g. closely spaced parallels) by taking advantage of the flexibility to offset approaches and define displaced thresholds.

d) *Environment*: Environmental benefits through reduced fuel burn.

e) *Safety*: Stabilized approach paths.

f) *Cost Benefit Analysis*: Aircraft operators and air navigation service providers (ANSPs) can quantify the benefits of lower minima by using historical aerodrome weather observations and modeling airport accessibility with existing and new minima. Each aircraft operator can then assess benefits against the cost of any required avionics upgrade. Until there are GBAS (CAT II/III) Standards, GLS cannot be considered as a candidate to globally replace ILS. The GLS business case needs to consider the cost of retaining ILS or MLS to allow continued operations during an interference event

3. GOALS AND OBJECTIVES OF PBN IMPLEMENTATION

3.1.   The MID Region PBN Implementation Plan has the following strategic objectives:

   a)   ensure that implementation of the navigation element of the MID CNS/ATM system is based on clearly established operational requirements;

   b)   avoid unnecessarily imposing the mandate for multiple equipment on board or multiple systems on ground;

   c)   avoid the need for multiple airworthiness and operational approvals for intra and inter-regional operations; and

   d)   avoid an eclipsing of ATM operational requirements by commercial interests, generating unnecessary costs to States, ~~international~~ organizations, and airspace users.

3.2.   Furthermore, the Plan will provide a high-level strategy for the evolution of the navigation applications to be implemented in the MID Region in the short term (2013-~~2017~~2018), medium term (~~2018~~2019-~~2022~~2025).

3.3.   The plan is intended to assist the main stakeholders of the aviation community to plan the future transition and their investment strategies. For example, Operators can use this Regional Plan to plan future equipage and additional navigation capability investment; Air Navigation Service Providers can plan a gradual transition for the evolving ground infrastructure, Regulating Agencies will be able to anticipate and plan for the criteria that will be needed in the future.

4. PLANNING PRINCIPLES

4.1.   The implementation of PBN in the MID Region shall be based on the following principles:

   a)   implementation of PBN specification and granting PBN operational approvals should be in compliance with ICAO provisions;

   b)   States conduct pre- and post–implementation safety assessments to ensure the application and maintenance of the established target level of safety;

   c)   continued application of conventional air navigation procedures during the transition period, to guarantee the operation by users that are not PBN capable;

   d)   Users/operational requirements should be taken into consideration while planning for PBN implementation;

   e)   States should provide the ICAO MID Regional Office with their updated PBN implementation Plan on annual basis (before December);

   f)   the implementation of Advanced-RNP should start by January 2015;

   g)   implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), including LNAV only minima, for all runway ends at international Aerodromes, either as the primary approach or as a back-up for precision approaches by 2017 with intermediate milestones as follows: 50 percent by 2015 and 70 per cent by 2016;

h)   implementation of straight-in LNAV only procedures, as an exception to g) above, 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.; and

States should assess the benefit accrued from the implementation of PBN procedures and ATS Routes, and to report the environmental benefits to the ICAO MID Regional Office.

5.   PBN OPERATIONAL REQUIREMENTS AND IMPLEMENTATION STRATEGY

5.1.   Introduction of PBN should be consistent with the Global Air Navigation Plan. Moreover, PBN Implementation shall be in full compliance with ICAO SARPs and PANS.

5.2.   Continuous Climb and Descent Operations (CCO and CDO) are two of several tools available to aircraft operators and ANSPs that, through collaboration between stakeholders, will make it possible to increase efficiency, flight predictability and airspace capacity, while reducing fuel burn, emissions and controller-pilot communications, thereby enhancing safety.

En-route

5.3.   Considering the traffic characteristic and CNS/ATM capability of the Region, the En-route operations can be classified as oceanic, remote continental, continental, and local/domestic. In principle, each classification of the En-route operations should adopt, but not be limited to single PBN navigation specification. This implementation strategy will be applied by the States and international organizations themselves, as coordinated at regional level to ensure harmonization.

5.4.   In areas where operational benefits can be achieved and appropriate CNS/ATM capability exists or can be provided for a more accurate navigation specification, States are encouraged to introduce more accurate navigation specification on the basis of coordination with stakeholders and affected neighbouring States.

Terminal

5.5.   Terminal operations have their own characteristics, taking into account the applicable separation minima between aircraft and between aircraft and obstacles. It also involves the diversity of aircraft, including low-performance aircraft flying in the lower airspace and conducting arrival and departure procedures on the same path or close to the paths of high-performance aircraft.

5.6.   In this context, the States should develop their own national plans for the implementation of PBN in Terminal Control Areas (TMAs), based on the MID Region PBN Implementation Plan, seeking the harmonization of the application of PBN and avoiding the need for multiple operational approvals for intra- and inter-regional operations, and the applicable aircraft separation criteria.

Approach

5.7.   ATC workload should be taken into account while developing PBN Approach Procedures. One possible way to accomplish this would be by co-locating the Initial Approach Waypoint (IAW) for PBN with the Initial Approach Fix (IAF) of the conventional approaches. States should phase-out conventional non-precision approach procedures at a certain point when deemed operationally suitable and taking in consideration GNSS integrity requirements.

5.8.   Therefore, MID States are encouraged to include implementation of CCO and CDO, where appropriate, as part of their PBN implementation plans, in compliance with the provisions of

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ICAO Documents 9931 and 9993, and in accordance with the MID Region Air Navigation Strategy.

5.9.   Sates are encouraged to plan for the implementation of RNP AR procedures, which can provide significant operational and safety advantages over other area navigation (RNAV) procedures by incorporating additional navigational accuracy, integrity and functional capabilities to permit operations using reduced obstacle clearance tolerances that enable approach and departure procedures to be implemented in circumstances where other types of approach and departure procedures are not operationally possible or satisfactory. Procedures implemented in accordance with RNP AR Procedure Design Manual (Doc 9905) allow the exploitation of high-quality, managed lateral and vertical navigation (VNAV) capabilities that provide improvements in operational safety and reduced Controlled Flight Into Terrain (CFIT) risks.

CHAPTER 2

CNS INFRASTRUCTURE

1. NAVIGATION INFRASTRUCTURE

Global Navigation Satellite System (GNSS)

1.1.　　　　Global Navigation Satellite System (GNSS) is a satellite-based navigation system utilizing satellite signals, such as Global Positioning System (GPS), and GLONASS for providing accurate and reliable position, navigation, and time services to airspace users. In 1996, the International Civil Aviation Organization (ICAO) endorsed the development and use of GNSS as a primary source of future navigation for civil aviation. ICAO noted the increased flight safety, route flexibility and operational efficiencies that could be realized from the move to space-based navigation.

1.2.　　　　GNSS supports both RNAV and RNP operations. Through the use of appropriate GNSS augmentations,. GNSS navigation provides sufficient accuracy, integrity, availability and continuity to support en-route, terminal area, and approach operations. Approval of RNP operations with appropriate certified avionics provides on-board performance monitoring and alerting capability enhancing the integrity of aircraft navigation.

1.3.　　　　GNSS augmentations include Aircraft-Based Augmentation System (ABAS), Satellite-Based Augmentation System (SBAS) and Ground-Based Augmentation System (GBAS).

1.4.　　　　For GNSS implementation States need to provide effective spectrum management and protection of GNSS frequencies by enforcing strong regulatory framework governing the use of GNSS repeaters, and jammers. States need to assess the likelihood and effects of GNSS vulnerabilities in their airspace and apply, as necessary, recognized and available mitigation methods.

1.5.　　　　During transition to GNSS, sufficient ground infrastructure for current navigation systems must remain available. Before existing ground infrastructure is considered for removal, users should be consulted and given reasonable transition time to allow them to equip accordingly.

1.6.　　　　GNSS implementation should take advantage of the improved robustness and availability made possible by the existence of multiple global navigation satellite system constellations and associated augmentation systems.

1.7.　　　　Operators consider equipage with GNSS receivers able to process more than one constellation in order to gain the benefits associated with the support of more demanding operations. States allow for realization of the full advantages of on-board mitigation techniques.

2. OTHER NAVIGATION INFRASTRUCTURE SUPPORTING PBN

2.1.　　　　Other navigation infrastructure that supports PBN applications includes INS, VOR/DME, DME/DME, and DME/DME/IRU. These navigation infrastructures may satisfy the requirements of RNAV navigation specifications, but not those of RNP.

2.2.　　　　INS may be used to support PBN en-route operations with RNAV-10 and RNAV 5 navigation specifications.

2.3.　　　　VOR/DME may be used to support PBN en-route operations based on RNAV 5 navigation specification.

2.4.　　　　DME/DME and DME/DME/IRU may support PBN en-route and terminal area operations based on RNAV 5, and RNAV 1 navigation specifications. Validation of DME/DME coverage area and appropriate DME/DME geometry should be conducted to identify possible

DME/DME gaps, including identification of critical DMEs, and to ensure proper DME/DME service coverage.

2.5. ~~*Note.*~~ *The conventional Navaid infrastructure should be maintained <u>for mitigation and</u> to support non-equipped aircraft during a transition period* ~~*until at least 2017*~~.

3. SURVEILLANCE INFRASTRUCTURE

3.1. For RNAV operations, States should ensure that sufficient surveillance coverage is provided to assure the safety of the operations. Because of the on-board performance monitoring and alerting requirements for RNP operations, surveillance coverage may not be required. Details on the surveillance requirements for PBN implementation can be found in the ICAO PBN Manual (Doc 9613) and ICAO PANS-ATM (Doc 4444), ~~and information on the current surveillance infrastructure in the MID can be found in ICAO FASID table~~ the MID eANP.

3.2. Multilateration (MLAT) employs a number of ground stations, which are placed in strategic locations around an airport, its local terminal area or a wider area that covers the larger surrounding airspace. Multilateration requires no additional avionics equipment, as it uses replies from Mode A, C and S transponders, as well as military IFF and ADS-B transponders. ~~MLAT is under consideration by several MID States (Bahrain, Egypt, Oman and UAE).~~

4. COMMUNICATION INFRASTRUCTURE

4.1. Implementation of RNAV and RNP routes includes communication requirements. Details on the communication requirements for PBN implementation can be found in ICAO PANS-ATM (Doc 4444), ICAO RCP Manual (Doc 9869), and ICAO Annex 10. Information on the current communication infrastructure in the MID can also be found in MID eANP. ~~MID FASID tables~~.

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CHAPTER 3

IMPLEMENTATION OF PBN

1. ATM OPERATIONAL REQUIREMENTS

1.1.   The Global ATM Operational Concept: (Doc 9854) makes it necessary to adopt an airspace concept able to provide an operational scenario that includes route networks, minimum separation standards, assessment of obstacle clearance, and a CNS infrastructure that satisfies specific strategic objectives, including safety, access, capacity, efficiency, and environment.

1.2.   During the planning phase of any implementation of PBN, States should gather inputs from all aviation stakeholders to obtain operational needs and requirements. These needs and requirements should then be used to derive airspace concepts and to select appropriate PBN navigation specification

1.3.   In this regard, the following should be taken into consideration:

    a)   Traffic and cost benefit analyses
    b)   Necessary updates on automation
    c)   Operational simulations in different scenarios
    d)   ATC personnel training
    e)   Flight plan processing
    f)   Flight procedure design training to include PBN concepts and ARINC-424 coding standard
    g)   Enhanced electronic data and processes to ensure appropriate level of AIS data accuracy, integrity and timeliness
    h)   WGS-84 implementation in accordance with ICAO Annex 15 provisions
    i)   Uniform classification of adjacent and regional airspaces, where practicable
    j)   RNAV/RNP applications for SIDs and STARs
    k)   Coordinated RNAV/RNP routes implementation
    l)   RNP approach with vertical guidance
    m)   Establish PBN approval database

1.4.   Table 2-1 shows the navigation specifications published in Parts B and C of PBN Manual (Doc 9613), Volume II. It demonstrates, for example, that navigation specifications extend over various phases of flight. It also contains the Navaids/Sensor associated with each PBN specification.

1.5.   The implementation of PBN additional functionalities/path terminator should be considered while planning/designing new procedures such as:

•   the Radius to Fix (RF) for approach;

•   Fixed Radius Transition (FRT) for En-route; and

•   Time of Arrival Control (TOAC).

Table 3-1. Application of navigation specification by flight phase

Navigation Specification	FLIGHT PHASE								NAVAIDS/SENSORS				
	En-route oceanic/ remote	En-route continental	Arrival	Approach				DEP	GNSS	IRU	DME/ DME	DME/ DME/ IRU	VOR/ DME
				Initial	Intermediate	Final	Missed[1]						
RNAV 10	10	N/A						N/A	O	O	N/A		
RNAV 5[2]	N/A	5	5	N/A					O	O	O	N/A	O
RNAV 2		2	2					2	O		O	O	
RNAV 1		1	1	1	1	N/A	1	1	O		O	O	
RNP 4	4	N/A		N/A				N/A	M				
RNP 2	2	2	N/A						M		SR	SR	
RNP 1[3]	N/A		1	1	1	N/A	1	1	M		SR	SR	
Advanced RNP (A-RNP)[4]	2	2 or 1	1	1	1	0.3	1	1	M	N/A	SR	SR	N/A
RNP APCH[6]	N/A			1	1	0.3[7]	1	N/A	M		N/A		
RNP AR APCH				1-0.1	1-0.1	0.3-0.1	1-0.1		M				
RNP APCH APV				1	1	0.3	1		M				
RNP 0.3[8]	N/A		0.3	0.3	0.3	0.3	0.3	0.3	M				

O: Optional; M: Mandatory; SR: Subject ANSP Requirements

1. *Only applies once 50 m (40 m, Cat H) obstacle clearance has been achieved after the start of climb.*
2. *RNAV 5 is an en-route navigation specification which may be used for the initial part of a STAR outside 30 NM and above MSA.*
3. *The RNP 1 specification is limited to use on STARs, SIDs, the initial and intermediate segments of IAPs and the missed approach after the initial climb phase. Beyond 30 NM from the ARP, the accuracy value for alerting becomes 2 NM.*
4. *A-RNP also permits a range of scalable RNP lateral navigation accuracies*
5. *PBN manual contains two sections related to the RNP APCH specification: Section A is enabled by GNSS and Baro-VNAV, Section B is enabled by SBAS.*
6. *RNP 0.3 is applicable to RNP APCH Section A. Different angular performance requirements are applicable to RNP APCH Section B only.*
7. *The RNP 0.3 specification is primarily intended for helicopter operations.*

2. **IMPLEMENTATION PHASES**:

En-route

Short Term:

2.1.   The current application of RNAV 10 will continue for Oceanic and Remote continental routes.

2.2.   For Continental RNAV 5 specifications should be completed by December 2017. Before the PBN concept, the MID Region adopted the Regional implementation of RNP 5. ~~Furtehr~~Further to application of the PBN concept~~, it is now required that~~ RNP 5 routes have be~~en~~ changed into RNAV 5 routes. Based on operational requirements, States may choose to implement RNAV 1 routes to enhance efficiency of airspace usages and support closer route spacing, noting that appropriate communication and surveillance coverage is provided. Details of these requirements are provided in the PBN manual (Doc 9613) and PANS-ATM (Doc 4444).

Medium Term:

2.3.   RNP 4 and/or RNP 2 routes would be considered for implementation for the En-route oceanic/remote operations.

2.4.   RNP 2 or RNAV 1 would be considered for implementation for En-route continental/local domestic operations.

Terminal

Short Term:

2.5.   In a non-surveillance environment and/or in an environment without adequate ground navigation infrastructure, the SID/STAR application of Basic RNP 1 is expected in selected TMAs with exclusive application of GNSS.

2.6.   CCO and CDO should be implemented at the defined TMAs, in accordance with the State PBN implementation Plans, the MID Region Air navigation Strategy and the MID eANP.

Medium Term:

2.7.   RNAV 1, A-RNP 1 will be implemented in all TMAs, expected target will be 70 % by the end of this term.

Approach

Short Term:

2.8.   Implementation of PBN approaches with vertical guidance (APV) for runway ends at the international aerodromes listed in the MID eANP should be completed by December 2017, including LNAV only minima.

2.9.   The application of RNP AR APCH procedures would be limited to selected airports, where obvious operational benefits can be obtained due to the existence of significant obstacles.

Medium Term:

2.10.   The extended application of RNP AR APCH should continue for airports where there are operational benefits.

2.11.   To progress further with the universal implementation of PBN approaches. GLS procedures should be implemented for the defined runway ends to enhance the reliability and predictability of approaches to runways increasing safety, accessibility, and efficiency.

2.12.   Table 3-2 summarizes the implementation targets of each PBN navigation specification in the MID Region:

Table 3-2. SUMMARY TABLE AND IMPLEMENTATION TARGETS

Airspace	Short term 20142013-20172018		Medium term 20182019-20222025	
	Navigation Specification Preferred	**Targets**	**Navigation Specification Acceptable**	**Targets**
En-route – Oceanic	RNAV 10	100 % by 2016	RNP 4* RNP 2* Defined airspace (A-RNP)	TBD
En-route - Remote continental	RNAV 5 RNAV 10	W/A 100% by 2016	RNP 4* RNP 2* Defined airspace (A-RNP)	TBD
En-route – Continental	RNAV 5 RNAV 1	100 % by 2017 W/A[1]	RNP 2* ~~or 1*~~ Defined airspace (A-RNP)	TBD
En-route - Local / Domestic	RNAV 5 RNAV 1	100 % by 2017 W/A	RNP 2 ~~or 1~~ Defined airspace (A-RNP)	TBD
TMA – Arrival	RNAV 1 ~~in~~ (surveillance environment) ~~and with adequate navigation infrastructure.~~ ~~Basic~~ RNP 1 ~~in~~ (non-surveillance environment)	50% by ~~December 2015~~2016 100% by ~~2017~~2018	RNP 1 and RNP 2 beyond 30 NM from ARP (A-RNP)	TBD
TMA – Departure	RNAV 1 (surveillance environment) RNP 1 (non-surveillance environment)	50% by ~~2015~~2016 100% by ~~2017~~2018	RNP 1 and RNP 2 beyond 30 NM from ARP (A-RNP)	TBD
Approach	LNAV: for all RWY Ends at International Aerodromes LNAV/VNAV: for all RWY Ends at International Aerodromes	80 % by 2014. 100% by ~~2015~~2016 70% by ~~2015~~ 2016 100% by ~~2017~~ 2018	GLS (GBAS) For the defined RWY Ends	TBD
CCO and CDO	W/A	100% by ~~2017~~ 2018	W/A	TBD

> – *W/A: where applicable/defined Airspace, in accordance with State PBN implementation Plans, the MID Region Air navigation Strategy and the MID ANP.*
> – ** would be considered for implementation at the identified Airspace/TMAs*
> – *When no month is specified (e.g. by 2017) means by the end of the year (December 2017).*

Long Term (~~2023~~ 2025 and Beyond)

2.13.   In this phase, GNSS augmentation is expected to be a primary navigation infrastructure for PBN implementation. States should work co-operatively on a multinational basis to implement GNSS in order to facilitate seamless and inter-operable systems and undertake coordinated Research and Development (R&D) programs on GNSS implementation and operation.

2.14.   Moreover, during this phase, States are encouraged to consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance.

2.15.   The required PBN navigation specifications and their associated targets to be implemented for the Long term will be defined in due course.

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CHAPTER 4

SAFETY ASSESSMENT AND MONITORING

1.   NEED FOR SAFETY ASSESSMENT

1.1.   To ensure that the introduction of PBN en-route applications within the MID Region is undertaken in a safe manner and in accordance with relevant ICAO provisions, implementation shall only take place following conduct of a safety assessment that has demonstrated that an acceptable level of safety will be met. This assessment may also need to demonstrate levels of risk associated with specific PBN en-route implementation. Additionally, ongoing periodic safety reviews shall be undertaken where required in order to establish that operations continue to meet the target levels of safety

2.   ROLES AND RESPONSIBILITIES

2.1.   To demonstrate that the system is safe, it will be necessary that the implementing agency – a State or group of States - ensures that a safety assessment and, where required, ongoing monitoring of the PBN ~~E~~en-route implementation are undertaken.

2.2.   In undertaking a safety assessment to enable en-route implementation of PBN, a State or the implementing agency shall:

        a)   establish and maintain a database of PBN approvals;

        b)   monitor aircraft horizontal-plane navigation performance and the occurrence of large navigation errors and report results;

        c)   conduct safety and readiness assessments;

        d)   monitor operator compliance with State approval requirements after PBN implementation; and

        e)   initiate necessary remedial actions if PBN requirements are not met.

CHAPTER 5
OPERATIONAL APPROVAL

1. **OPERATIONAL APPROVAL REQUIREMENTS**

1.2.   Operational approval is usually the responsibility of the regulatory authority of the State of the Operator for commercial air transport operations and the State of Registry for general Aviation (GA) operations. For certain operations, GA operators may not be required to follow the same authorization model as commercial operators.

1.3.   The operational approval assessment must take account of the following:

   a)   ~~a~~Aircraft eligibility and airworthiness compliance;

   b)   ~~O~~operating procedures for the navigation systems used;

   c)   c~~C~~ontrol of operating procedures (documented in the OM);

   d)   ~~F~~flight crew initial training and competency requirements and continuing competency requirements;

   e)   ~~D~~dispatch training requirements; and

   f)   control of navigation database procedures. Where a navigation database is required, operators need to have documented procedures for the management of such databases. These procedures will define the sourcing of navigation data from approved suppliers, data validation procedures for navigation databases and the installation of updates to databases into aircraft so that the databases remain current with the AIRAC cycle. (For RNP AR applications, the control of the terrain database used by TAWS must also be addressed.)

Aircraft eligibility

1.4.   An aircraft is eligible for a particular PBN application provided there is clear statement in:

   a)   the Type Certificate (TC); or
   b)   the Supplement Type Certificate (STC); or
   c)   the associated documentation — Aircraft Flight manual (AFM) or equivalent document; or
   d)   a compliance statement from the manufacturer that has been approved by the State of Design and accepted by the State of Registry or the State of the Operator, if different.

1.5.   The operator must have a configuration list detailing the pertinent hardware and software components and equipment used for the PBN operation.

1.6.   The TC is the approved standard for the production of a specified type/series of aircraft. The aircraft specification for that type/series, as part of the TC, will generally include a navigation standard. The aircraft documentation for that type/series will define the system use, operational limitations, equipment fitted and the maintenance practices and procedures. No changes (modifications) are permitted to an aircraft unless the CAA of the State of Registry either approves such changes through a modification approval process, STC or accepts technical data defining a design change that has been approved by another State.

1.7.   For recently manufactured aircraft, where the PBN capability is approved under the TC, there may be a statement in the AFM limitations section identifying the operations for which the aircraft is approved. There is also usually a statement that the stated approval does not itself constitute

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an approval for an operator to conduct those operations. Alternate methods of achieving the airworthiness approval of the aircraft for PBN operations is for the aircraft to be modified in accordance with approved data. (e.g. STC, minor modification, etc.)

1.8.   One means of modifying an aircraft is the approved Service Bulletin (SB) issued by the aircraft manufacturer. The SB is a document approved by the State of Design to enable changes to the specified aircraft type and the modification then becomes part of the type design of the aircraft. Its applicability will normally be restricted by the airframe serial number. The SB describes the intention of the change and the work to be done to the aircraft. Any deviations from the SB require a design change approval; any deviations not approved will invalidate the SB approval. The State of Registry accepts the application of an SB and changes to the maintenance programme, while the State of the Operator accepts changes to the maintenance programme and approves changes to the MEL, training programmes and Operations specifications. An Original Equipment Manufacturer (OEM) SB may be obtained for current production or out of production aircraft.

1.9.   In respect of PBN, in many cases for legacy aircraft, while the aircraft is capable of meeting all the airworthiness requirements, there may be no clear statement in the applicable TC or STC or associated documents (AFM or equivalent document). In such cases, the aircraft manufacturer may elect to issue an SB with appropriate AFM update or instead may publish a compliance statement in the form of a letter, for simple changes, or a detailed aircraft type specific document for more complex changes. The State of Registry may determine that an AFM change is not required if it accepts the OEM documentation. **Table 5-1** lists the possible scenarios facing an operator who wishes to obtain approval for a PBN application, together with the appropriate courses of action.

Table 5-1

Scenario	Aircraft certification status	Actions by operator/owner
1	Aircraft designed and type certificated for PBN application. Documented in AFM, TC or the STC	No action required, aircraft eligible for PBN application
2	Aircraft equipped for PBN application but not certified. No statement in AFM. SB available from the aircraft manufacturer	Obtain SB (and associated amendment pages to the AFM) from the aircraft manufacturer
3	Aircraft equipped for PBN application. No statement in AFM. SB not available. Statement of compliance available from the aircraft manufacturer	Establish whether the statement of compliance is acceptable to the regulatory authority of the State of Registry of the aircraft
4	Aircraft equipped for PBN application. No statement in AFM. SB not available. Statement of compliance from the aircraft manufacturer not available	Develop detailed submission to State of Registry showing how the existing aircraft equipment meets the PBN application requirements
5	Aircraft not equipped for PBN application	Modify aircraft in accordance with the aircraft manufacturer's SB or develop a major modification in conjunction with an approved design organization in order to obtain an approval from the State of Registry (STC).

Operating procedures

1.10.   The Standard operating procedure (SOP) must be developed to cover both normal and non-normal (contingency) procedures for the systems used in the PBN operation. The SOP must address:

        a)   preflight planning requirements including the MEL and, where appropriate, RNP/RAIM prediction;
        b)   actions to be taken prior to commencing the PBN operation;
        c)   actions to be taken during the PBN operation; and
        d)   actions to be taken in the event of a contingency, including the reporting of significant incidents

GA pilots must ensure that they have suitable procedures/checklists covering all these areas

Control of operating procedures

1.11.   The SOP must be adequately documented in the OM and checklists

Flight crew and dispatch training

1.12.   A flight crew and dispatch training programme for the PBN operation must cover all the tasks associated with the operation and provide sufficient background to ensure a comprehensive understanding of all aspects of the operation. The operator must have adequate records of course completion for flight crew, flight dispatchers and maintenance personnel.

Control of navigation database procedures

1.13.   If a navigation database is required, the procedures for maintaining currency, checking for errors and reporting errors to the navigation database supplier must be documented in the maintenance manual by commercial operators

2.   DOCUMENTATION OF OPERATIONAL APPROVAL

2.1.   Operational approval may be documented as an endorsement of the Air operator certificate (AOC) through an:
        a)   ~~an~~ Operations specification, associated with the AOC; or
        b)   ~~an~~ amendment to the OM; or
        c)   ~~an~~ LOA.

2.2.   During the validity of the operational approval, the CAA should consider any anomaly reports received from the operator or other interested party. Repeated navigation error occurrences attributed to a specific piece of navigation equipment may result in restrictions on use or cancelation of the approval for use of that equipment. Information that indicates the potential for repeated errors may require modification of an operator's training programme. Information that attributes multiple errors to a particular pilot or crew may necessitate remedial training and checking or a review of the operational approval.

2.3.   The State may determine that a GA aircraft may operate on a PBN route/procedure provided that the operator has ensured that the aircraft has suitably approved equipment (is eligible), the navigation database is valid, the pilot is suitably qualified and current with respect to the equipment, and adequate procedures (checklists) are in place.

3. STATE REGULATORY MATERIAL

3.1.   Individual States must develop national regulatory material which addresses the PBN applications relevant to their airspace or relevant to operations conducted in another State by the State's operators or by aircraft registered in that State. The regulations may be categorized by operation, flight phase, area of operation and/or navigation specification. Approvals for commercial operations should require specific authorization.

4. APPROVAL PROCESS

General

4.2.   Since each operation may differ significantly in complexity and scope, the project manager and the operational approval team need considerable latitude in taking decisions and making recommendations during the approval process. The ultimate recommendation by the project manager and decision by the DGCA regarding operational approval should be based on the determination of whether or not the applicant:

        a)   meets the requirements established by the State in its air navigation regulations;
        b)   is adequately equipped; and
        c)   is capable of conducting the proposed operation in a safe and efficient manner.

4.3.   The complexity of the approval process is based on the inspector's assessment of the applicant's proposed operation. For simple approvals, some steps can be condensed or eliminated. Some applicants may lack a basic understanding of what is required for approval. Other applicants may propose a complex operation, but may be well prepared and knowledgeable. Because of the variety in proposed operations and differences in an applicant's knowledge, the process must be thorough enough and flexible enough to apply to all possibilities.

Phases of the approval process

Step 1 — Pre-application phase

4.4.   The operator initiates the approval process by reviewing the requirements; establishing that the aircraft, the operating procedures, the maintenance procedures and the training meet the requirements; and developing a written proposal to the regulator. A number of regulators have published "job aids" to assist the operator in gathering the necessary evidence to support the approval application. At this stage a pre-application meeting with the regulator can also be very beneficial. If the proposed application is complex, the operator may need to obtain advice and assistance from OEMs or other design organizations, training establishments, data providers, etc.

Step 2 — Formal application phase

4.5.   The operator submits a formal, written application for approval to the CAA, which appoints a project manager either for the specific approval or generally for PBN approvals.

Step 3 — Document evaluation phase

4.6.   The CAA project manager evaluates the formal, written application for approval to determine whether all the requirements are being met. If the proposed application is complex, the project manager may need to obtain advice and assistance from other organizations such as regional agencies or experts in other States.

Step 4 — Demonstration and inspection phase

4.7.   During a formal inspection by the project manager (assisted as necessary by a CAA team), the operator demonstrates how the requirements are being met.

Step 5 — Approval phase

4.8.   Following a successful formal inspection by the CAA, approval is given ~~via~~through an:

a)   ~~an~~ Operations specification, associated with the AOC; or
b)   ~~an~~ amendment to the OM; or
c)   ~~an~~ LOA.

Some PBN applications may not require formal approval for GA operations — this will be determined by the State of Registry.

Note.— The approval procedure described above consists of a simplified process of the certification guidance contained in Part III of the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335).*

5.   FOREIGN OPERATIONS

5.1.   A State undertakes, in accordance with Article 12 to the Convention, to ensure that every aircraft flying over or ~~manoeuvring~~maneuvering within its territory shall comply with the rules and regulations relating to the flight and ~~manoeuvre~~man oeuvre of aircraft there in force. Article 33 to the Convention provides that certificates of airworthiness and certificates of competency and ~~licences~~licenses issued, or rendered valid, by the State in which an aircraft is registered, shall be recognized by other States, provided that the requirements under which such certificates or ~~licences~~licenses were issued or rendered valid are equal to or above the minimum standards which may be established by ICAO. This requirement for recognition is now extended by Annex 6, Part I and Part III, Section II, such that Contracting States shall recognize as valid an AOC issued by another Contracting State, provided that the requirements under which the certificate was issued are at least equal to the applicable Standards specified in Annex 6, Part I and Part III.

5.2.   States should establish procedures to facilitate the application by foreign operators for approval to operate into their territory. States should be careful in their requirements for applications, to request only details relevant to the evaluation of the safety of the operations under consideration and their future surveillance. When evaluating an application by an operator from another State to operate within its territory a State will examine both the safety oversight capabilities and record of the State of the Operator and, if different, the State of Registry, as well as the operational procedures and practices of the operator. This is necessary in order for the State, in the terms of Article 33 to the Convention, to have confidence in the validity of the certificates and ~~licences~~licenses associated with the operator, its personnel and aircraft, in the operational capabilities of the operator and in the level of certification and oversight applied to the activities of the operator by the State of the Operator.

5.3.   The operator will need to make applications to each State into or over which it is intended to operate. The operator will also need to keep its own CAA, as the authority of the State of the Operator, informed of all applications to operate in other States. Applications should be made direct to the CAAs of the States into which it is intended to operate. In some cases it will be possible to download information and instructions for making an application and the necessary forms from a website maintained by the CAA in question.

5.4.   States should promote the implementation and operational approval of Advanced RNP (A-RNP) navigation specifications, which serves all the flight phases as follows:

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- En-Route Oceanic, Remote: RNP 2;
- En-Route Continental: RNP 2 or RNP 1;
- Arrival and Departures: RNP 1;
- Initial, intermediate and missed approach phases: RNP 1; and
- Final Approach Phase: RNP 0.3.

5.5.   Because functional and performance requirements are defined for each navigation specification, an aircraft approved for an RNP specification is not automatically approved for all RNAV specifications. Similarly, an aircraft approved for an RNP or RNAV specification having a stringent accuracy requirement (e.g. RNP 0.3 specification) is not automatically approved for a navigation specification having a less stringent accuracy requirement (e.g. RNP 4).

APPENDIX 4D

PBN IMPLEMENTATION FOCAL POINT

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Bahrain	Addaullah Al-Qadhi	Chief AIM & Airspace Planning	Bahrain MOTT, Civil Aviation Affairs P.O. Box 586	aalqadhi@mtt.gov.bh	+973 17 329966	+973 17 321180	
Egypt	Tayseer Mohamed Abdel Karim	General Director of ATS Inspectorate	Ministry of Civil Aviation Egyptian Civil Aviation Authority Cairo International Airport Road Cairo - EGYPT	tetokareem4@gmail.com	+202 2268 0627	+202 2265 7814	+20100 522 8675
	Ehab Raslan Abdel Galil	Assistant Minister of Civil Aviation	Ministry of Civil Aviation Cairo International Airport Road Cairo - EGYPT	ehab.raslan@civilaviation.gov.eg ehab.rasslan@gmail.com	+202 2268 5422	+202 2268 5422 Ext 1178	
Iran	Habib Davoudi Dana	Deputy of ATS GD	ATM Department Mehrabad International Airport Tehran 13445	h.davoudi@yahoo.com	+982144649269	+982 166025013	
	Mohammad Khodakarami	D.G. of Aeronautical Affairs (in CAO)	Mehrabad International Airport P.O. Box 13445 – 1798	mokhodakarami@gmail.com m-khodakarami@cao.ir	+98214464 9269	+982 16603 6241	
Iraq	Ali Mohsin Hashim	Director ATS	Bghdad Intl Airport	atc_iraqcaa@yahoo.com			+9647815762525
Jordan	Nayef Marshoud	Director ATM department	P.O. Box 7547	datm@carc.gov.jo	+962 6 4891266	+962 6 4897729	+962 797498992
Kuwait	Salah Kh A. A. Al Babtain	Head of Safety & License	Directorate General of Civil Aviation Kuwait International Airport P.O. Box 17 Safat 13001	Q8dgca_danoff@hotmail.com sk.albabtain@dgca.gov.kw	+965 24346221	+965 24710268	
Lebanon	Tarek Mrad	Chief of International Organisation Department	Directorate General of Civil Aviation Beirut Rafic Hariri Int'l Airport	intorganisations@beirutairport.gov.lb tsmrad99@gmail.com	+961 1629023	+961 1150/3009	
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@dgcam.gov.om	+96824518990 +24519 939	+968 24519501	+968 99359415

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STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
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
	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 Planner	General Authority of Civil Aviation P.O. Box 21444 Jeddah 21444	ahalhakami@gaca.gov.sa	+966 126 717717 Ext. 1594	+966 126 717717 Ext 1593	+966 598 402598
Sudan	Yasir Mohammed Ahmed Ali Abdalla	Chief Instrument Procedures Design Unit	Sudan Civil Aviation Authority	yasiratc@hotmail.com		+249 1234 99212	(249) 123499212
	Nagi Mohamed Abdalla	ATC Instructor & PBN Group member	Sudan Civil Aviation Authority	elshwia1992@yahoo.com elshwia1992@gmail.com		+249 123499347	
Syria	Hassan Hamoud	Air Traffic Management Director	Syrian Civil Aviation Authority Damascus, Syria	ans@scaa.sy	+9631154010181	+9631154010180	
UAE	Muayyed Al Teneiji	Airspace Coordination General Civil Aviation Authority	Sheikh Zayed Air Navigation Centre P.O. Box 66 Abu Dhabi – UAE	mtenaiji@szc.gcaa.ae	+971 2 599 6836	+971 2 599 6890	
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 4E

Draft V.6
20 January 2016

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MID FLIGHT PROCEDURE PROGRAMME
(MID FPP)

**To Enhance Sustainable Instrument Flight Procedure Capability
in Participating States**

Prepared by the

International Civil Aviation Organization (ICAO)

for the

**MID Region ATM Enhancement Programme (MAEP),
and the
Civil Aviation Administrations of Participating States**

ANNEX 1

to the
Management Service Agreement between the
[*State/Organization*]
and the
International Civil Aviation Organization (ICAO)

The 37th session of the ICAO Assembly in 2010 in its Resolution A37-11 reaffirmed the global commitment for PBN implementation and called upon the States to complete a PBN implementation plan as a matter of urgency and for ICAO to develop a coordinated action plan to assist States in the implementation of PBN and to ensure development and/or maintenance of globally harmonized SARPs, Procedures for Air Navigation Services (PANS) and guidance material including a global harmonized safety assessment methodology to keep pace with operational demands.

The Second Meeting of the Directors General of Civil Aviation-Middle East Region (DGCA-MID/2) (Jeddah, Saudi Arabia, 20 to 22 May 2013), through Conclusion 2/5 agreed that a study related to the establishment of a MID Region Flight Procedure Programme (FPP) be carried out within the framework of the PBN Sub-Group, taking into consideration similar programmes in other ICAO Regions.

The Fifteenth Meeting of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG/15) (Bahrain, from 8 to 11 June 2015) emphasized that the establishment of the MID FPP would foster the PBN implementation in the Region.

The MID FPP was endorsed as one of the MID Region ATM Enhancement Programme (MAEP) projects by the MAEP Board/1 meeting (Cairo, Egypt, 23-25 June 2014), and supported by the MSG/4, MAEP Steering Committee/2, DGCA-MID/3, and MIDANPIRG/15 meetings.

The MAEP was established by the DGCA-MID/2 meeting, which, through DGCA Conclusion 2/4, agreed that a MAEP Board composed of high level representatives from concerned States and Organizations, be established to be responsible for overall supervision, direction, and management of the Programme.

The DGCA-MID/3 meeting (Doha, Qatar, 27-29 April 2015) endorsed the MAEP memorandum of Agreement (MOA), which was signed by Egypt, Jordan, Kuwait, Sudan and UAE.

The Organizational Structure is as follows:
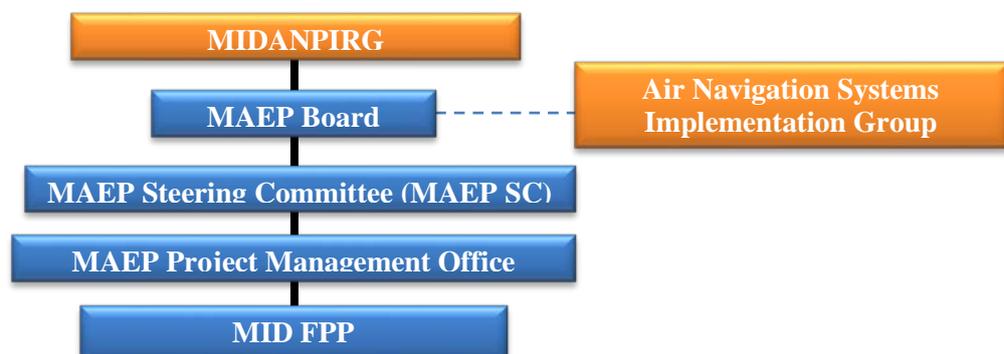
a) MAEP Board: composed of members from States.

b) MAEP Steering Committee (MAEP SC): act as an advisory body to the MAEP Board, guide its work and ensure that MAEP objectives are accomplished in a timely, effective and efficient manner. The MEAP SC is composed of MAEP Board members and representative from AACO, ACAC, ACI, AIRBUS, BOEING, CANSO, EUROCONTROL/SESAR JU, FAA-USA, IATA, IFALPA and co-chaired by States and Organizations.

c) MAEP Project Management Office (PMO): co-located in the ICAO MID Regional Office; and responsible of monitoring the implementation of the different MAEP projects.

In order to increase safety of Instrument Flight Rule (IFR) trajectories and to provide support to improve the safety and efficiency of IFR procedures in the MID Region, thereby realizing the significant safety, access, efficiency, and reduced environmental impact, MID States have agreed to establish a Flight Procedure Programme in the MID Region (MID FPP) with the goal of developing the State's capabilities in the instrument flight procedure design, PBN airspace design and PBN OPS approval, including regulatory oversight.

The MID FPP establishment was supported by the signature of the Letter of Intent for the MID FPP by, [reference] …on [date].

[*State/Organization*] has agreed to host the MID FPP for an initial period of three years with a renewable three year option.

This agreement covers the period [1 July 2016 – 30 June 2019] considered as Phase I.

Description of Programme

This document defines the scope of ICAO assistance to [State/Organization] as the host Administration and other participating MID Civil Aviation Administrations in establishing a functioning Flight Procedure Programme (FPP) in close collaboration with the ICAO MID Regional Office.

In Phase I, the MID FPP is envisioned to be a centre of excellence in the field of flight procedure design. The MID FPP would employ best practices in training, automation and quality assurance with subject matter experts to address the PBN flight procedure implementation needs and enhance the capabilities of the States. The programme is being established by an initial group of MID Civil Aviation Administrations (the Active States) who are funding the programme: other MID Civil Aviation Administrations may also join, by signing on to the Project Document and making a financial contribution. The duration of the Phase I of the programme will be three years, after that time, the programme would be re-evaluated.

Management Services to be provided:

Through this Annex, ICAO will provide the following services to the host Administration and to any other MID Civil Aviation Administration having joined the MID FPP:

*   MID FPP oversight;

- Assignment of Programme personnel to assist in achieving the planned immediate objectives through the production of relevant outputs, by carrying out activities generally described in the Project Document.

- Technical support of the Programme expert, including technical briefing and debriefing; Technical Review of Programme outputs and review, finalization and distribution of Programme reports; and.

- Programme progress monitoring.

Budget Estimate: An estimate of costs is provided as **Appendix D** to the Annex 2 (Project Document)

Brief Description: The Programme objective is to assist States to develop sustainable capability in the instrument flight procedure (IFP) design, PBN airspace design and PBN OPS approval, including regulatory oversight, so as to meet their commitments under Assembly Resolutions A37-11 for Performance Based Navigation (PBN) implementation and the regional requirements, and comply with ICAO provisions related to flight procedure design and PBN.

Signed on behalf of:	Signature	Name/Title	Date
International Civil Aviation Organization		Secretary General	
State/Organization			

INTERNATIONAL CIVIL AVIATION ORGANIZATION

PROJECT DOCUMENT

Programme Title:	**MID Flight Procedure Programme (MID FPP) to Enhance Sustainable Instrument Flight Procedure Capability in the Participating States**
Programme No.:	
Duration:	3 years: [1 July 2016- 30 June 2019]
Sector and Sub-Sector:	Air Navigation Capacity and Efficiency – Performance Based Navigation
Country Implementing Agency:	Civil Aviation Administration of the Participating State implementing as (check one):

☐	**Active State** (A MID Participating State that commits to funding the Programme by means of an annual financial contribution in line with an approved budget)
☐	**User State** (A MID Participating State that is not an Active State, but one that intends to use the MID FPP services)

Executing Agency:	International Civil Aviation Organization (ICAO)
Location:	TBD
Estimated Start Date:	1 July 2016

Estimated Programme Cost: US$　　　　(2016/2017) – US$　　　　(Remaining years)

Brief Description: The Programme objective is to assist States to develop sustainable capability in the instrument flight procedure (IFP) design, PBN airspace design and PBN OPS approval, including regulatory oversight, so as to meet their commitments under Assembly Resolutions A37-11 for Performance Based Navigation (PBN) implementation and the regional requirements, and comply with ICAO provisions related to flight procedure design and PBN.

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Signed on behalf of:	Signature	Name/Title	Date
International Civil Aviation Organization		Secretary General	
State/Organization			

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1. BACKGROUND

1.1 ICAO developed harmonized navigation specifications for all existing area navigation applications, and published these navigation specifications in the Performance Based Navigation (PBN) Manual (Doc. 9613).

1.2 The 37th session of the ICAO Assembly in 2010 in its Resolution A37-11 reaffirmed the global commitment for PBN implementation and called upon the States to complete a PBN implementation plan as a matter of urgency and ICAO to develop a coordinated action plan to assist States in the implementation of PBN and to ensure development and/or maintenance of globally harmonized SARPs, Procedures for Air Navigation Services (PANS) and guidance material including a global harmonized safety assessment methodology to keep pace with operational demands.

1.3 In 2009, ICAO published the Quality Assurance Manual (Doc. 9906). This document addresses two levels of processes. A high-level process, called the Instrument Flight Procedure (IFP) process, covers all elements from initiation to publication of the procedure and the relevant maintenance, safety, validation and flight inspection activities. The process does not end with publication. Feedback from users must be considered in the improvement process. A second specific process, for the design of the IFP — the Flight Procedure Design (FPD) process — is part of the IFP process.

1.4 The MID Air Navigation Strategy (ICAO MID Doc 002), endorsed by MIDANPIRG, includes the Aviation System Block Upgrades (ASBU) B0-APTA, B0-CCO and B0-CDO Modules, which are considered as priority 1 for implementation in the MID Region. In this respect, the MID FPP would support its Participating States with the implementation of the mentioned Modules.

1.5 The Directors General of Civil Aviation-Middle East Region through the Doha, Declaration, April 2015, agreed to take necessary measures to implement PBN approach procedures with vertical guidance, for all runways ends at international aerodromes, either as the primary approach or as a back-up for the precision approaches by 2017.

2. INSTITUTIONAL FRAMEWORK

2.1 **Participating States**: The Programme will be executed on the basis of the Project Document signed by the Host [State/Organization] and ICAO and to which any State wishing to participate may sign on. Upon signature onto the attachment of the Project Document, such State becomes a Participating State. Participating States are grouped in two categories:

- **Active States:** All MID Participating States that commit to funding the programme by means of an annual financial contribution in line with an approved budget become an Active State. The Host State/Organization is considered an Active State, based on the in-kind contribution provided to the programme.

- **User States:** All MID States that are not Active State are User States.

2.2 Any MID State that would like to join the MID FPP should first join the MAEP Board through the signature of the MAEP Memorandum of Agreement (MOA) and the MAEP Project Document.

2.3 Participating States who are not Active States or User States are Observer States.

2.4   **Host Administration**

During Phase I of the Programme, [State/Organization] is the Host Administration.

2.5   **MID FPP Governing Body**

2.5.1   The Programme will be governed by the MAEP Board supported by the MAEP Steering Committee and monitored by the MAEP PMO. The Terms of Reference of the MAEP Steering Committee are at **Appendix E**.

2.5.2   The MID FPP Coordinator should present to MAEP PMO Manger, on quarterly basis, progress reports related to the Programme developments, recommending necessary measures to improve the effectiveness and efficiency of the Programme. The MAEP PMO Manager and/or the MID FPP Coordinator should present progress reports on annual basis to the MAEP Steering Committee, for review and proposal of recommendations to MAEP Board.

2.5.3   Roles and Responsibilities

In the context of the MID FPP, the roles and responsibilities of the MAEP Board/Steering Committee should include:

> *Technical*
>
> MAEP SC and/or MAEP Board:
>
> -   review of the performance of the Programme
>
> -   ensure the collaboration and consistency with other MAEP projects
>
> *Managerial/financial*
>
> MAEP Board:
>
> review and approval of the:
>
> -   Strategic objectives of the MID FPP
>
> -   annual Work Programme of the MID FPP;
>
> -   annual Budget;
>
> -   annual financial contribution level for Active States, including considering request for waiver of financial contribution in lieu of in-kind contribution;
>
> -   fee schedule for services and trainings in accordance with ICAO Policy; and
>
> -   Project Document as deemed necessary.

2.5.4   ICAO will facilitate the assistance detailed in this Project Document by providing overall programme oversight, the inputs set out in 8.4 below, financial account management and budgetary control of the programme, financial reports in accordance with its rules and procedures, and implementation monitoring of the Programme in cooperation with the MID FPP Coordinator and the MAEP PMO Manager. It will provide technical support to its experts in the performance of their duties and undertake monitoring missions.

2.5.5   The Participating States will provide the respective inputs, as set out in 8.1 to 8.3 below.

3.   ISSUES AND OPERATING CONCEPT

3.1   **Issues**

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3.1.1   Instrument flight procedures developed to take advantage of the benefits of PBN are totally reliant on the data in a database on the aircraft. For this reason, quality assurance in the flight procedure design process, while always important, takes on added importance for PBN-based procedures. A great safety concern in this respect is that many States lack the expertise to establish a sustainable internal procedure design capability, meeting the requirements of PANS-OPS and their responsibility under Annex 15 for the quality of their aeronautical information and data, including instrument flight procedures.

3.1.2   Following are some of the main procedure design-related issues and problems faced by States:

a) Insufficient number of procedure designers;

b) Insufficient procedure design work in some States to attain or maintain proficiency;

c) Lack of airspace and procedure design training: initial, OJT, and/or recurrent;

d) Lack of knowledge to integrate procedure design efficiently into airspace design;

e) Lack of depth in procedure design organization to perform quality assurance (QA);

f) Insufficient expertise in procedure design organization to provide adequate QA of procedures;

g) Lack of procedure design and obstacle data storage automation in the States;

h) Lack of operational approval expertise to obtain proper operational approval and to oversee operators for PBN operations;

i) Lack of regulatory expertise to oversee the process leading to procedure publication; and

j) Lack of service provision for ATC/ATM training for PBN implementation.

3.2   **Operating Concept**

3.2.1   The MID FPP would serve as a means to assist Participating States to address the issues listed in 3.1.2. The MID FPP will foster the implementation of instrument flight procedures, developed with the appropriate quality systems, especially focusing on PBN and vertically guided instrument approach procedures by:

a) assisting States with sufficient density of procedures to establish a sustainable internal procedure design capability capable of meeting the requirements of PANS-OPS and their responsibility for the quality of their procedures;

b) providing the appropriate level of technical expertise necessary to enable States that do not have the density of procedures necessary to sustain an internal procedure design capability; and

c) providing a vehicle to improve quality in the States' procedure design process through access to procedure design automation solutions and associated data storage.

3.2.2   At Participating States' request the MID FPP would:

a) assist State's procedure and airspace designers in developing their procedures with priority for PBN procedures;

b) assist State with the development of a Quality Assurance (QA) system for IFP, including flight procedure regulatory approval;

c) provide refresher, recurrent and PBN initial training courses and OJT to procedure designers, remotely, on-site* or at the MID FPP location;

d) provide training course and OJT for QA including flight procedure regulatory approval;

e) provide training course and OJT for operators approval for PBN operations;

f) assist State for PBN Plan implementation through operational assessment, business case, and activity planning for PBN Implementation;

g) assist States in the design of SIDs, STARs, CCO and CDO;

h) assist State in developing PBN-related regulations;

i) develop procedures implementation for States that have no procedure design capability;

j) assist State with data origination;

k) assist State with ground and flight validation;

l) assist State in operators approval for PBN operations;

m) provide training course for air traffic controllers about PBN flight procedures operations;

n) provide State with any other associated assistance, as required;

o) provide training courses for new procedures designers in accordance with ICAO Doc 9906; and

p) assist States with the estimation of environmental benefit accrued from the implementation of instrument flight procedures/PBN procedures.

Note: in order to assist the Participating States in expediting the implementation, both training and services can be extended to relevant stakeholders such as air operators and air navigation service providers in accordance with ICAO Policy.

3.2.3 As part of the services provided in 3.2.2 above, the Programme would:

a) provide States access to procedure design software applications at the MID FPP location; and

b) provide States access to available databases for training purposes.

3.2.4 Cost to Active States for the services provided in 3.2.2 a, b, c, d, e and f and 3.2.3 above would be included in the basic FPP annual participation contribution. Other services would be charged to the Active State as per a fee in accordance with ICAO Policy.

3.2.5 For User States, training courses with exception to OJT provided in 3.2.2 c, d and e and 3.2.3 above may be free of charge. Other services would be charged to the User States in accordance with ICAO Policy fee.

3.2.6 For missions/training courses on-site, the travel and accommodation expenses and the daily subsistence allowance for the MID FPP personnel, ICAO Team and course' instructors should be covered by the host States in accordance with ICAO policies.

3.2.7 Cost levels as per 3.2.4 and 3.2.5 may be adjusted depending on level of contribution to the Programme as decided by the MAEP Board.

3.3   **Relevant documents**

  a) Procedures for Air Navigation Services – Aircraft Operations (Doc 8168)

  b) Performance Based Navigation Manual (Doc 9613)

  c) World Geodetic System Manual (Doc 9674)

  d) Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information **(**Doc 9881)

  e) Required Navigation Performance – Authorization Required Procedure Design Manual (Doc 9905)

  f) Quality Assurance Manual for Flight Procedure Design (Doc 9906)

  g) Continuous Descent Operations Manual (Doc 9931)

  h) Manual on Use of PBN in Airspace Design **(**Doc 9992)

  i) Continuous Climb operations Manual (Doc 9993)

  j) PBN Operational Approval Manual (Doc 9997)

  k) Doc 4444

  l) ICAO Annexes 4, 11, 14 and 15

  m) ICAO Assembly Resolutions A37-11 and A38-7

  n) Manual of All-Weather Operations (Doc 9365)

  o) Aeronautical Charting Manual (Doc 8697)

4.   PROGRAMME IMPLEMENTATION STRATEGY

4.1   In order to support the goals of Assembly Resolution A37-11, GANP and the MID regional requirements, Phase I of the Programme will commence on [1 July 2016] and is expected to last at least until [30 June 2019].

4.2   The following resources are planned to achieve the programme objectives for Phase I:

  a) The MID FPP is hosted by [State/organization] in [city], [Country]. The office requirements are specified in the **Appendix A**;

  b) The MID FPP Coordinator is appointed by ICAO for a period of 3 years. The Job description is presented in the **Appendix B1**;

  c) Experts in PANS-OPS, Training, OPS Approval, Data Specialist, will be nominated by States, Organizations, and Industry to create a pool of experts who will support the provisions of the MID FPP services. Their Job descriptions are presented in the **Appendices B2**, **B3**, B**4** and **B5**, respectively; and

  d) Participating States or Donors will nominate appropriately qualified candidates that meet the job description requirements. The nominations will be evaluated by the Regional Director of the MID Office in coordination with the MID FPP Coordinator.

4.3   The MID FPP will build its capacity to provide assistance, training, quality assurance, procedure and airspace design, and operational approval to the Participating States. Other specific fields may be identified during the programme implementation. Additional staff might be needed, as deemed necessary, to meet the demand.

4.4   The work plan for year [2016/2017] is presented in the **Appendix C**.

4.5   Implementation strategy detailed in 4.1 through 4.4 herein may be revised by a decision of the MAEP Board and ICAO.

5.   EXPECTED OUTCOME OF THE PROGRAMME

5.1   States in the region will have significantly improved competency in procedure and airspace design, and regulatory approval (PBN operational approval, IFP design approval), as evidenced by implementation and training accomplished.

5.2   Operational improvements as follows:

   i.   Increase/improve States' PBN implementation Plans;

   ii.   Increase in the number of PBN procedures implemented and published in States AIP;

   iii.   Increase in the number of TMAs with approved PBN operations;

   iv.   Increase in the number of approved local carriers for PBN operations;

   v.   Demonstrated evidence for improved safety and efficiency of flight operations.

5.3   A review by the governing body should be conducted at least one (1) year prior to the end of Phase I to determine whether the programme should be continued into the next Phase, and if so, the strategic direction that the programme should take.

6.   PROGRAMME REVIEW, MONITORING AND REPORTING

6.1   The Programme will be monitored by ICAO HQ and ICAO MID Regional Office. Upon signature of the Project Document by at least five (5) Active States, a Steering Committee meeting may be convened at the earliest possible and ICAO TCB will initiate the recruitment process of the MID FPP staff upon receipt of the required funds.

6.2   The MID FPP Coordinator will provide quarterly reports on the implementation of the Programme to ICAO MID Regional Office, and Technical Cooperation Bureau, MAEP PMO Manager, and to the members of the Steering Committee via the ICAO MID Regional Director.

6.3   The MAEP PMO Manager and/or the MID FPP Coordinator will provide on annual basis progress report on the MID FPP to the MAEP Steering Committee.

6.4   At least two months prior to the end of his assignment, the MID FPP Coordinator will submit a draft Final Report to the ICAO MID Regional Director.

7.   PHASE 1([1 July 2016-30 June 2019) STRATEGY FORWARD

         The objectives assigned to the MID FPP are described in 3.2.2 of the present document. The following immediate objectives related mainly to the setup of the MID FPP capabilities are targeted for the first 6 months of the duration of the programme (2016).

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7.1   **Immediate Objective 1**

Establish capability for PBN Workshop Implementation Plan, <mark>using external expertise</mark>.

Output 1.1
Establish workshop programme for PBN Implementation Plan
    Activity 1.1.1
    <mark>Define external expertise origin and source of funding</mark>
    Activity 1.1.2
    Determine contents and schedule for the workshop

7.2   **Immediate Objective 2**
Establish capability for operational approval of air operators by Civil Aviation Authorities (CAA) course, <mark>using external expertise</mark>.

Output 2.1
Establish workshop programme for operational approval of air operators by CAA
    Activity 2.1.1
    Define external expertise origin and source of funding
    Activity 2.1.2
    Determine contents and schedule for the course

7.3   **Immediate Objective 3**
Establish operating capability of the MID FPP in the areas of procedure design including initial PANS-OPS, PBN and OJT (On-The-Job) training capability.

Output 3.1
Establish automation system for the input, storage and output of aeronautical data required for the instrument flight procedure process, based on global standards that will interface with flight procedure design automation tools and avionics database packing tools.
    Activity 3.1.1
    Install automated software and middleware supporting on the software on technical computers of the internal network.

Output 3.2
Establish initial procedure design and OJT (On-The-Job) training capability
    Activity 3.2.1
    Train procedure designers as instructors.
    Activity 3.2.2
    Determine contents for procedure design training sessions and OJT sessions.

7.4   **Immediate Objective 4**
Establish Flight Procedure validation process and regulatory approval process support capability.

Output 4.1
Establishment of Flight Procedure validation process support capability.
    Activity 4.1.1
    Identify a list and pricing of Flight procedure validation suppliers to cover MID Region to establish initial Flight procedure validation capability, planned to be executed in 2017.

Activity 4.1.2
Train MID FPP staff in Flight Procedure design ground validation process.
Activity 4.1.3
Establish a support framework to assist States in validating flight procedures.

Output 4.2
Establishment of Flight Procedure regulatory approval process support capability.
Activity 4.2.1
Train MID FPP staff in Flight Procedure regulatory validation process based on Doc 9906 (Quality Assurance Manual), examples from competent States (at least three) and consultation from ICAO ANB.
Activity 4.2.2
Continue updating the training as new ICAO documentation becomes available.
Activity 4.2.3
Establish a support framework to assist States in approving flight procedures.

7.5   **Immediate Objective 5**
Execute 2016/2017 MID FPP annual work programme, see **Appendix C**.

Output 5.1
Successful execution of 2016/2017 MID FPP annual work programme.
Activity 5.1.1
Provide to Member States the schedule list of training and support activities.
Activity 5.1.2
Provide trainings and support activities according to annual work programme.

7.6   **Immediate Objective 6**
Attain the full capability for MID FPP for Phase I.

Output 6.1
Establish a pool of specialists in PANS-OPS, OPS Approval and Flight procedures Instructors who will mainly work remotely with the MID FPP Coordinator on-call basis;
Activity 6.1.1
Establish selection process and identify a pool of suitable candidates, preferably through approaching MID States and Donors, according to job description in **Appendix B.**

7.7   **Immediate Objective 7**
Obtain approved work plan, budget and agreement on annual States contribution for 201x.

Output 7.1
Obtain approved work plan, budget and agreement on States contribution for 201x.
Activity 7.1.1
Prepare and propose work plan, budget and annual States contribution level for 2016/2017 to the governing body.
Activity 7.1.2
Report the outcome of 7.1.1 to the governing body.

8. **INPUTS**

8.1.1 By [date], [State/organization] as the Host Administration will provide the following:

a) suitable office space and furniture including maintenance and repairs if necessary as defined in **Appendix A**;

b) computer equipment and Information Technology equipment (telephone, Internet) as defined in **Appendix A**;

c) procedure design and charting equipment as defined in the **Appendix A**;

d) suitably equipped classroom(s) for MID FPP training courses held in xxxx. The classroom could be located in the MID FPP premises or in any other building proposed by Host;

e) use of vehicle for purposes of official movements between Programme office and supporting facilities as needed.

f) operating and maintenance expenses as related to the office facility in a) including, electricity, water, internet connection, local and international phone connections, cleaning, office security

8.1.2 The host State will facilitate the issuances of visas, accreditations or residence permits for the ICAO experts and recognized dependants ensuring the expeditious relocation of them at the duty station and for the whole duration of their ICAO contracts and subsequent renewals.

8.1.3 By date, [XXXX] as the Host Administration will provide seconded personnel in accordance to 4.2.

8.2 **Active States**

Active States will provide the following:

a) annual contributions covering the cost of the programme, as indicated in the annual budget of the Programme;

b) participation in the governing body meetings as Member States with the right to vote.

8.3 **Participating States**

Participating States will provide the following:

a) in-kind contribution to support the MID FPP with the following non-exhausted list:

- furniture including maintenance and repairs if necessary as defined in **Appendix A**;

- Computer equipment and Information Technology equipment as defined in **Appendix A**;

- Procedure design and charting equipment as defined in the **Appendix A**;

- Suitably equipped classroom(s) for MID FPP training courses held in their States.

- Operating and maintenance expenses as related to the office facility in a) including, electricity, water, internet connection, local and international phone connections, cleaning,

b) support the MID FPP by providing expertise or resources, to the extent practicable taking into account the needs of the MID FPP;

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c) authorize release to the MID FPP of aeronautical data from third parties, including AIP and electronic terrain and obstacle data, as well as appropriate topographic mapping data and charts pertaining to their State for the purposes of the Programme, in particular for the design of instrument flight procedures and for quality assurance assistance;

d) bear the expenses of duty travel (Air Tickets, Transportation, Accommodation and Daily Subsistence Allowances) of MID FPP staff as required supporting the MID FPP activities in their States.

e) release of the assigned experts from his daily duties in order to perform remotely the assigned tasks by the MID FPP Coordinator, and to participate in the MID FPP activities as required;

f) complete all remaining necessary steps to publish instrument flight procedures developed wholly or partly within the MID FPP framework as public procedures in their State Aeronautical Information Publication.

8.4 ICAO

ICAO will provide the following:

a) International Personnel

  - Programme Coordinator for the MID FPP

b) Mission travel of ICAO HQ/RO personnel for monitoring purposes; and

c) Administrative and other services for the handling of the Programme;

d) Financial account management and budgetary control of the programme; and

e) Technical support to the Programme experts in the performance of their duties and undertake monitoring missions.

9. RISKS, MITIGATION MEASURES AND PREREQUISITES

9.1 Risks and Risk Levels

Risks	Risk Level
a) Delays in nominating of experts from participating States and Organizations	Low
b) Delays in MID FPP expert training as PD Instructor	Low
c) Delays in sourcing of implementation workshop facilitator	Low
d) Delays in transfer of funds to ICAO	Medium to High
e) Delays in secondment of experts from States/Donors	Medium to High
f) Delays in identification of suitably qualified candidates for positions	Medium to High
g) Delays in sourcing OPS Approval Instructor	High

9.2 Risk Mitigation Measures

It may be considered that low level in risk level is acceptable and doesn't need any mitigation measure.

Considering the medium to high level for delays in:

a) Transfer fund to ICAO, pressing against Active States late to transfer fund to ICAO could be related to delay for activity requested from MID FPP by the State in order to accelerate the transfer fund by CAA. This action could mitigate the risk to an acceptable low level;

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b) Secondment from States/Donors, the MID FPP activity could be difficult to be organized when the secondment is late. The MID FPP activity supposed to be provided by the missing seconded expert would be replaced by another activity that MID is in capacity to provide. This action could mitigate the risk to an acceptable low level;

c) Identification of suitably qualified candidates for Procedure Design, Data, and IT positions. Help could be provided by MID FPP to States for identification of candidates as a mitigation measure to risk level. This mitigation could reduce risk to medium level which is not acceptable. The MID FPP activity supposed to be provided by the missing seconded expert would be replaced by another activity that MID FPP is in capacity to provide. This action could mitigate the risk to an acceptable low level;

Considering the high level for delays in:

a) Sourcing of OPS approval Instructor, the organization of the associated workshop should be postponed until the secondment is effective. A mitigation measure could consist of finding an external expertise for workshop facilitator. This facilitator could be obtained from Donors supporting previous workshop on the same subject. This action could mitigate the risk to an acceptable low level.

In any case, mitigation measure could consist of creation of external incomes by the MID FPP providing charged activity. This action could mitigate the risk level to an acceptable low level but could not concern all risks.

9.3   **Pre-requisites**

a) Project Document would be signed by a minimum of five (5) States as Active States before the start of the Programme to ensure funding for the Annual Budget and permits the MID FPP to provide activity and training;

b) Facilities and equipment available for MID FPP activities, as detailed in 8.1.

10.   PROGRAMME WORK PLAN

The Programme work plan for 2016/2017, is provided in **Appendix C**.

11.   PROGRAMME BUDGET

11.1   The activities/events shall normally be convened at the MID FPP premises. If a State/Organization offers to host an activity, it shall coordinate with the MID FPP Coordinator as early as possible, but in any case at least six (06) months in advance and, shall be responsible for providing a venue, services and all costs of travel, accommodation and subsistence allowance for Instructors/Experts performing the activity.

11.2   The Programme budget corresponding to Phase I (2016/2017), is provided in **Appendix D**.

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Appendix A

INTERNATIONAL CIVIL AVIATION ORGANIZATION

TECHNICAL CO-OPERATION PROGRAMME

MID FPP OFFICE REQUIREMENTS

This Appendix presents the minimum MID FPP office requirements.

MID FPP staff	
	• Programme Coordinator (1) Full Time Recruited by ICAO TCB • 5 to 10 Procedure Designers and Airspace Planners, 2- to 4 OPS Approval experts and 2 to 4 PD Instructors assigned by States and Donors, who will work on-call-basis. • PANS-OPS Specialist, Data Specialist (1), Administrative Assistant (1) and/or IT Specialist (1) should be seconded when needed.

Office space	
1 office	• Programme Coordinator
1 office	• PANS-OPS Expert
1 room	• Lab for procedure design
1 room	• Classroom/ Meeting room

Furniture equipment	
Coordinator	• Desk and chair • Storage/File cabinet • Book case • Conference table (6 persons) and chairs • Monitor/Webcam for conferences
Offices	• Standard furniture for all offices • Desk, chair, storage/file cabinet, book case – per person
Classroom OJT room	• Adequate space for 20 students • 4 drawing tables • White boards • Student tables • Projector
Meeting room	• Adequate equipment for 20 persons

IT equipment	

	• Secure Wi-Fi Internet connexion
	• Desk-top Phone with international services
	• 1 Mobile phone (Coordinator)
	   – Laptop computer with docking station
	   – monitor 19"
	• Data Specialist when seconded
	   – Office computer equipment (monitor 19")
	• External storage disks
	• 1 desktop multi-functional colour copier/scanner/printer

Procedure Design equipment	
Offices	• Maps Storage cabinet • Maps A3 printer • A0 scanner

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	• A0 printer Semi-professional • GPS • 1 server and 2 workstations (PCs)
Classroom	• Computer Data Projector • Supplies for training sessions : set squares, protractors, compasses, rulers and pocket calculators
software	• 2 Procedure Design Software Licenses • 2 GOOGLE EARTH licenses • 2 ACROBAT READER licenses • 2 COREL DRAW licenses • 2 virtual machines (such as VMWARE) licenses for the remotely use of the Procedure Design Software

APPENDIX B - JOB DESCRIPTION

International Civil Aviation Organization
Technical Cooperation Bureau – Job Description

POSITION INFORMATION

Generic Title:	Programme Coordinator	Position Number (ID):	
Specific Title:	MID FPP Coordinator	Job Card:	
Project Number:		Post Number/Job Code:	
Duty Station:	TBD	CCOG code:	
Duration:	3 years	Starting Date:	

ORGANISATIONAL SETTING

Under the direction of the Director/Technical Cooperation Bureau, the Field Operations Section is responsible for the strategic planning, development, execution and evaluation of Projects in TCB. The Section assists with the identification of priority development requirements across civil aviation and with technical cooperation to recipient States. It carries out resource mobilization with multilateral and bilateral development partners and industry and develops regional and country specific technical cooperation programmes and projects. The Section executes these programmes and projects in accordance with the policies and contractual modalities of TCB.

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MAJOR DUTIES AND RESPONSIBILITIES

Under the direction of the ICAO Middle East Regional and in cooperation with MAEP PMO Manager, the national counterparts and other programme personnel:

- Work with ICAO, MAEP PMO Manager and the participating States on creation of the MID FPP Office and commencement of operations, including establishment of office capability and processes.
- Be responsible for all aspects of the operation and management of the Flight Procedure Programme to include programme coordination functions, personnel resourcing and training, office software and automation implementation, work plans, travel, and budget.
- Coordinate, develop and provide specific support activities as follows:
    a. Training and support for local airspace and procedure designers;
    b. The design and implementation of Instrument flight procedures for those States without procedure design capability;
    c. Training about regulatory processes to approve procedures (including PBN procedures)
    d. Training about validation and quality assurance process;
    e. PBN training for ATC and ATM staff; and
    f. Training and support on operational approval for aircraft operators.
- Perform frequent coordination at all levels with ICAO MID Regional Office, other FPP offices, sub-regional groups, International Organizations and States on issues related to FPP operations.

- Foster positive relationships and cooperation among assigned staff, international experts, seconded officers and CAA officers.
- Identify, and develop programme resources.
- Report on a regular basis to the MAEP PMO Manager and , the ICAO Middle East Regional Director, on the progress of the FPP to include:
    a. Programme Status (Interim or Full Operational Capability, status of resources, budget, etc.);
    b. Accomplishments (since last report);
    c. Objectives for the next reporting period; and
    d. Other (new requirements, concerns, issues, etc.)
- Conduct Quality Assurance of procedures designed by the MID FPP PANS-OPS Specialists.
- Responsible for the implementation of MID FPP work plan approved by the MAEP Board.
- Develop and amend business plans (deliverables, timeline, budget and concerned entities) for MID FPP and recommends them to the Steering Committee.
- Develop Key Performance Indicators (KPIs) for tracking the implementation of the Programme and to assess and measure the effectiveness of the Programme.
- Submit progress reports to the MAEP PMO Manger, as appropriate and when required.
- Identify and report Programme risk to the MAEP PMO and maintain a risk database.
- Foster positive relationships and cooperation among assigned staff, international experts, seconded officers and CAA officers.
- Assign projects to the MID FPP personnel.
- Review and approve the procedure designed by the MID FPP Specialists.
- Supervise/monitor the performance of the MID FPP Specialists.
- Perform other related duties as required.

QUALIFICATIONS AND EXPERIENCE

Educational background

University degree in business administration or public administration or equivalent management and business experience

Professional experience and knowledge

- At least 10 years operational experience (pilot or Air Traffic Controller) with a good understanding of instrument flight procedure design process. A working knowledge of the Ops Approval and Airspace Design processes is highly desirable
- Knowledge in aeronautical data quality and trajectories' publication;
- At least 5 years aviation management experience;
- Knowledge of the ICAO GANP and ASBUs, as well as the Performance Based Navigation (PBN) concept, objectives and supporting ICAO provisions and guidance;
- Ability to work and coordinate with civil aviation officials at all levels, as well as industry, regional and sub-regional groups, to accomplish the goals of the Programme;
- Ability to successfully lead major projects under a team structure; Experience in team management with the ability to foster and maintain harmonious, positive working relationships in an multi-national environment;
- Satisfactory completion of formal PANS-OPS course(s) to cover the conventional and PBN procedure design criteria;
- Significant Experience in the development of IFPs for conventional and PBN procedures;
- Experience in the implementation of Flight Procedure Design Quality Assurance (Doc 9906) requirements;
- Advanced Experience using Flight Procedure Design automation systems for flight procedure design is preferable, Experience as an Instrument Flight Procedure Design Instructor for ICAO PANS-OPS (Doc 8168) courses is also preferable

Language Skills

Essential
- Fluent reading, writing and speaking abilities in English are essential.

Desirable
- A working knowledge of Arabic is an asset

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Competencies

- **Judgment/Decision-Making**: Demonstrated ability to take ownership of all responsibilities and commitments, to exercise a mature opinion, to recognize key issues and analyse relevant information, to formulate viable recommendations and make decisions.
- **Vision**: Identifies strategic issues, opportunities and risks.
- **Leadership**: Drives for change and improvement, does not accept the status quo, establishes and maintains relationships with a broad range of people to understand needs and gain support.
- **Managing Performance**: Monitor progress against milestones and deadlines.
- **Building Trust**: Operates with transparency, treats sensitive or confidential information appropriately.
- **Teamwork**: Ability to work with colleagues to achieve the project objectives and maintain harmonious working relations in a multinational environment.
- **Client Orientation**: Ability to establish and maintain partnerships with outside partners, to work and argue effectively in a system based on consensus and to successfully manage and resolve conflicts.
- **Communication**: Ability to write clearly and concisely and present oral reports.

REMUNERATION

TBD

APPENDIX B - JOB DESCRIPTION

International Civil Aviation Organization
Technical Cooperation Bureau – Job Description

POSITION INFORMATION			
Generic Title:	Procedure Designer	Position Number (ID):	
Specific Title:	Procedure Designer	Job Card:	
Project Number:		Post Number/Job Code:	
Duty Station:	Remotely	CCOG code:	
Duration:	3 years	Starting Date:	

ORGANISATIONAL SETTING

Under the direction of the Director/Technical Cooperation Bureau, the Field Operations Section is responsible for the strategic planning, development, execution and evaluation of Projects in TCB. The Section assists with the identification of priority development requirements across civil aviation and with technical cooperation to recipient States. It carries out resource mobilization with multilateral and bilateral development partners and industry and develops regional and country specific technical cooperation programmes and projects. The Section executes these programmes and projects in accordance with the policies and contractual modalities of TCB.

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MAJOR DUTIES AND RESPONSIBILITIES

Under the direction of the ICAO Middle East Regional and in cooperation with MAEP PMO Manager and the MID FPP Coordinator, the national counterparts and other programme personnel;

- Design instrument procedures as tasked by the FPP Coordinator according to ICAO specifications;
- Review, verify, maintain and make sure that the flight procedure is ready for the final approval.
- Guarantee a quality assurance in the flight procedure design
- Provide training of the flight procedure designer staff and elaborate all necessary documentation and guidance materials
- Introduce and implement PNB according to ICAO specifications and taking into consideration national and regional plans
- Maintain a well-structured database for obstacles assessment
- Provide on-the-job training
- Perform other related duties as assigned

QUALIFICATIONS AND EXPERIENCE

Educational background

University degree or equivalent qualifications and experience in the air navigation.

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Professional experience and knowledge

- Minimum ten years' experience at increasing levels of responsibility and leading to supervisory level in Air Navigation Services (ANS) and flight procedure design in large government, in an international organization or in aviation industry.
- Experience in aviation operations as a pilot, navigator or air traffic controller.
- Satisfactory completion of an approved PANS OPS flight procedures design courses and an advanced courses on PANS OPS flight procedures design (PBN, RNAV, SBAS, GBAS, etc.) at a specialized international school.
- Knowledge in the aeronautical information conceptual and exchange model (AICM/AIXM), automation, digital terrain model (DTM), geographic information systems and cartography.
- Experience in the use of flight procedure designer software during the flight procedure design process.
- Experience in providing flight procedures design training.
- Knowledge in quality systems and flight procedure design software.
- Experience in participating in the work of International Organization for Standardization (ISO) and quality assurance.
- Thorough knowledge of ICAO Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS).
- Ability to write clearly and concisely detailed technical and specialized reports and to make verbal presentations.
- Ability to develop clear goals that are consistent with agreed strategies. Identify priorities and adjust as required.

Language Skills

Essential

- Good command of oral and written English is essential.

Desirable

- A working knowledge of Arabic is an asset.

Competencies

- **Judgment/Decision-Making**: Demonstrated ability to take ownership of all responsibilities and commitments, to exercise a mature opinion, to recognize key issues and analyse relevant information, to formulate viable recommendations and make decisions.
- **Vision**: Identifies strategic issues, opportunities and risks.
- **Leadership**: Drives for change and improvement, does not accept the status quo, establishes and maintains relationships with a broad range of people to understand needs and gain support.
- **Managing Performance**: Monitor progress against milestones and deadlines.
- **Building Trust**: Operates with transparency, treats sensitive or confidential information appropriately.
- **Teamwork**: Ability to work with colleagues to achieve the project objectives and maintain harmonious working relations in a multinational environment.
- **Client Orientation**: Ability to establish and maintain partnerships with outside partners, to work and argue effectively in a system based on consensus and to successfully manage and resolve conflicts.
- **Communication**: Ability to write clearly and concisely and present oral reports.

REMUNERATION

Provided by the State/Donors nominating the experts

APPENDIX B - JOB DESCRIPTION

**International Civil Aviation Organization
Technical Cooperation Bureau – Job Description**

POSITION INFORMATION			
Generic Title:	Instructor	Position Number (ID):	
Specific Title:	Instructor	Job Card:	
Project Number:		Post Number/Job Code:	
Duty Station:	Remotely	CCOG code:	
Duration:	3 years	Starting Date:	

ORGANISATIONAL SETTING

Under the direction of the Director/Technical Cooperation Bureau, the Field Operations Section is responsible for the strategic planning, development, execution and evaluation of Projects in TCB. The Section assists with the identification of priority development requirements across civil aviation and with technical cooperation to recipient States. It carries out resource mobilization with multilateral and bilateral development partners and industry and develops regional and country specific technical cooperation programmes and projects. The Section executes these programmes and projects in accordance with the policies and contractual modalities of TCB.

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MAJOR DUTIES AND RESPONSIBILITIES

Under the direction of the MID FPP Coordinator the national counterparts and other programme personnel:
- Conduct airspace planning, procedure design and OPS Approval courses as tasked by the MID FPP Coordinator;
- Perform other related duties as assigned by the MID FPP Coordinator

QUALIFICATIONS AND EXPERIENCE

Educational background

University degree or equivalent qualifications and experience in the air navigation.

Professional experience and knowledge

- Significant aviation experience as an Air Traffic Controller or a pilot or demonstrated equivalencies;
- Significant experience as Instrument Flight Procedure Design specialist with extensive knowledge of ICAO PANS-OPS (Doc 8168) and ICAO PBN (Doc 9613) requirements;
- Significant experience as an Airspace Design specialist with knowledge of ICAO use of PBN In Airspace Design (Doc 9992);

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- Training and Experience as an Instrument Flight Procedure Design Instructor for ICAO PANS-OPS (Doc 8168) courses with thorough understanding of teaching techniques and assessment methods;
- Thorough understanding of Flight Procedure Design Quality Assurance (Doc 9906) requirements and its implementation

Language Skills

Essential
- Good command of oral and written English is essential.

Desirable
- A working knowledge of Arabic is an asset.

Competencies

- **Judgment/Decision-Making**: Demonstrated ability to take ownership of all responsibilities and commitments, to exercise a mature opinion, to recognize key issues and analyse relevant information, to formulate viable recommendations and make decisions.
- **Vision**: Identifies strategic issues, opportunities and risks.
- **Leadership**: Drives for change and improvement, does not accept the status quo, establishes and maintains relationships with a broad range of people to understand needs and gain support.
- **Managing Performance**: Monitor progress against milestones and deadlines.
- **Building Trust**: Operates with transparency, treats sensitive or confidential information appropriately.
- **Teamwork**: Ability to work with colleagues to achieve the project objectives and maintain harmonious working relations in a multinational environment.
- **Client Orientation**: Ability to establish and maintain partnerships with outside partners, to work and argue effectively in a system based on consensus and to successfully manage and resolve conflicts.
- **Communication**: Ability to write clearly and concisely and present oral reports.

REMUNERATION

Provided by the State/Donors nominating the experts

APPENDIX B - JOB DESCRIPTIONS

International Civil Aviation Organization
Technical Cooperation Bureau – Job Description

POSITION INFORMATION			
Generic Title:	OPS approval Expert	Position Number (ID):	
Specific Title:	OPS approval Expert	Job Card:	
Project Number:		Post Number/Job Code:	
Duty Station:	Remotely	CCOG code:	
Duration:	3 years	Starting Date:	

ORGANISATIONAL SETTING

Under the direction of the Director/Technical Cooperation Bureau, the Field Operations Section is responsible for the strategic planning, development, execution and evaluation of Projects in TCB. The Section assists with the identification of priority development requirements across civil aviation and with technical cooperation to recipient States. It carries out resource mobilization with multilateral and bilateral development partners and industry and develops regional and country specific technical cooperation programmes and projects. The Section executes these programmes and projects in accordance with the policies and contractual modalities of TCB.

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MAJOR DUTIES AND RESPONSIBILITIES

Under the direction of the MID FPP Coordinator the national counterparts and other programme personnel:
- Assist States with the flight procedure regulatory approval as tasked by the MID FPP Coordinator
- Review, verify, maintain and make sure that the flight procedure is ready for the final approval.
- Provide on-the-job training to OPS Approval experts
- Perform other related duties as assigned

QUALIFICATIONS AND EXPERIENCE

Educational background

University degree or equivalent qualifications and experience in the air navigation.

Professional experience and knowledge

- Satisfactory completion of formal PANS-OPS course(s) to cover the conventional and PBN procedure design criteria;
- Experience in the development of IFPs for conventional and PBN procedures;
- Understanding of Flight Procedure Design Quality Assurance (Doc 9906) requirements and its implementation;

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- Experience using Flight Procedure Design automation systems for flight procedure design is preferable, Experience as an Instrument Flight Procedure Design Instructor for ICAO PANS-OPS (Doc 8168) courses is also preferable.
- Experience of working with CAAs (Regulatory authorities), preferably in the MID Region

Language Skills

Essential
- Good command of oral and written English is essential.

Desirable
- A working knowledge of Arabic is an asset.

Competencies

- **Judgment/Decision-Making**: Demonstrated ability to take ownership of all responsibilities and commitments, to exercise a mature opinion, to recognize key issues and analyse relevant information, to formulate viable recommendations and make decisions.
- **Vision**: Identifies strategic issues, opportunities and risks.
- **Leadership**: Drives for change and improvement, does not accept the status quo, establishes and maintains relationships with a broad range of people to understand needs and gain support.
- **Managing Performance**: Monitor progress against milestones and deadlines.
- **Building Trust**: Operates with transparency, treats sensitive or confidential information appropriately.
- **Teamwork**: Ability to work with colleagues to achieve the project objectives and maintain harmonious working relations in a multinational environment.
- **Client Orientation**: Ability to establish and maintain partnerships with outside partners, to work and argue effectively in a system based on consensus and to successfully manage and resolve conflicts.
- **Communication**: Ability to write clearly and concisely and present oral reports.

REMUNERATION

Provided by the State/Donors nominating the experts

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APPENDIX B - JOB DESCRIPTIONS

International Civil Aviation Organization
Technical Cooperation Bureau – Job Description

POSITION INFORMATION

Generic Title:	Data Specialist	Position Number (ID):	
Specific Title:	Data Specialist	Job Card:	
Project Number:		Post Number/Job Code:	
Duty Station:	TBD	CCOG code:	
Duration:	3 years	Starting Date:	

ORGANISATIONAL SETTING

Under the direction of the Director/Technical Cooperation Bureau, the Field Operations Section is responsible for the strategic planning, development, execution and evaluation of Projects in TCB. The Section assists with the identification of priority development requirements across civil aviation and with technical cooperation to recipient States. It carries out resource mobilization with multilateral and bilateral development partners and industry and develops regional and country specific technical cooperation programmes and projects. The Section executes these programmes and projects in accordance with the policies and contractual modalities of TCB.

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IMPACT OF OUTCOME OF THE POSITION

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MAJOR DUTIES AND RESPONSIBILITIES

Under the direction of the MID FPP Coordinator the national counterparts and other programme personnel:
- Establish and update MID FPP data base of aeronautical data to support procedure design
- Acquire and store obstacle data to support procedure design
- Perform other related duties as assigned

QUALIFICATIONS AND EXPERIENCE

Educational background

University degree or equivalent qualifications and experience in the air navigation.

Professional experience and knowledge

- Significant experience in aeronautical data management;
- Knowledge of ICAO PANS-OPS (Doc 8168) and ICAO PBN (Doc 9613) data requirements;
- Thorough understanding of Flight Procedure Design Quality Assurance (Doc 9906) requirements and its implementation;
- Training and experience using Flight Procedure Design automation systems for flight procedure design,
- Experience of working with CAAs, preferably in the MID Region.

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Language Skills

Essential

- Good command of oral and written English is essential.

Desirable

- A working knowledge of Arabic is an asset.

Competencies

- **Judgment/Decision-Making**: Demonstrated ability to take ownership of all responsibilities and commitments, to exercise a mature opinion, to recognize key issues and analyse relevant information, to formulate viable recommendations and make decisions.
- **Vision**: Identifies strategic issues, opportunities and risks.
- **Leadership**: Drives for change and improvement, does not accept the status quo, establishes and maintains relationships with a broad range of people to understand needs and gain support.
- **Managing Performance**: Monitor progress against milestones and deadlines.
- **Building Trust**: Operates with transparency, treats sensitive or confidential information appropriately.
- **Teamwork**: Ability to work with colleagues to achieve the project objectives and maintain harmonious working relations in a multinational environment.
- **Client Orientation**: Ability to establish and maintain partnerships with outside partners, to work and argue effectively in a system based on consensus and to successfully manage and resolve conflicts.
- **Communication**: Ability to write clearly and concisely and present oral reports.

REMUNERATION

Provided by the State/Donors nominating the experts

Appendix C

INTERNATIONAL CIVIL AVIATION ORGANIZATION

TECHNICAL COOPERATION PROGRAMME

WORK PLAN 2016/2017[DS1]

MID FPP Objectives for Year 2016/2017

Year 2016 will be an important year for the MID Flight Procedures Programme (MID FPP). The purpose of the Programme is to provide opportunity to use the training activities and services proposed by the Programme for MID Member States.

In order to propose a variety of training activities and services to meet the needs of Member States needs according to the ICAO Resolution A37-11, ASBU B0-APTA and the Global and regional requirements, the 2016/2017 MID FPP Training Programme is composed of workshops, training courses and support activities. The training activities centered on PBN Plan implementation, regulatory approval procedures and PBN OPS approval for operators have to be considered as essential to improve or start PBN implementation in States.

On the other hand, specific projects and implementation support activities will support Participating States to consolidate or implement the flight procedures through ground validation and approval process.

These activities will allow the Participating States to expedite or to make the first steps for implementing PBN flight procedures in the Region.

The MID FPP Objectives for 2016/2017 are as follows;
- Commence Phase 1 MID FPP operations on [01 July 2016];
- Conduct 4 Training activities; and
- Conduct 2 Project-orientated implementation support activities
- Design a minimum of [X] PBN instrument procedures/year

MID FPP Training Activities for 2016/2017
1) PBN Implementation Workshop– 3-4 days – [date] 2016
Description: This PBN Implementation Workshop is intended to assist States/Administrations in enhancing their PBN Implementation Plans and move forward with actual PBN implementations. The Workshop will also provide updated information regarding global PBN activities and how PBN can be an enabler for enhancing ATM operations. During the workshops, the participants with assistances from African FPP facilitators will develop a list of short-term action items aiming to enhance their existing PBN Implementation Plans and advance their on-going PBN implementations and deployments. The list of action items along with relevant recommendations will then be submitted to appropriate CAAs f for their actions.

Participants of these workshops should be representatives from all aviation stakeholders with an interest in PBN implementation.
- Facilitator – TBD
- Coordination/Sponsorship –TBD
- Material – ANB, APAC FPP, AFPP, MID FPP
- Facility – TBD
- Funding – TBD (from SIP 15000 USD)

2) PBN Ops Approval Course - 1 week - [date] 2016

Description: The course is based on ICAO Doc 9997 and conducts to support States in developing their operational approval capability for approving PBN operations and air operators in obtaining PBN OPS approvals. The purpose of the course is to provide experienced flight inspectors, flight operations regulators and air operators' personnel with a comprehensive understanding of the requirements for PBN operational approval.

At the end of the course, each student will be individually assessed for successfully acquiring the required competencies, and the outcome of the assessment will then be reported to each student and his/her agency.

The course is open to qualified and experienced flight inspectors, regulators and air operator personnel involved in PBN flight operations.

- Instructor – TBD
- Coordination/Sponsorship – TBD
- Material – ANB, TBD
- Facility – TBD
- Funding - TBD

3) PANS-OPS Initial Procedure Design Course– 4 Weeks – [dates] 2016

Description: The course is based on ICAO PANS-OPS and aims to support States in developing their conventional flight procedures and basic procedure design capability by providing fundamental knowledge regarding procedure design. The instruction consists of lecturing, exercises, progress tests and examinations.

At the end of the course, each student will be individually assessed for successfully acquiring the required competencies, and the outcome of the assessment will then be reported to each student and his/her agency.

- Instructor – TBD
- Material – TBD
- Facility – TBD
- Funding – TBD

4) PBN Procedure Design – English – 3 Weeks – [dates] 2016

Description: The course aimed to support States/Administrations in developing their PBN procedure design capacity and to support ICAO's global PBN implementation goals as indicated in the ICAO 2010 and 2013 Assembly Resolutions. The course is follow-on of the ICAO PANS-OPS Initial Procedure Design Course.

At the end of the course, each student will be individually assessed for successfully acquiring the required competencies, and the outcome of the assessment will then be reported to each student and his/her agency.

The course is open to qualified procedure designers who have successfully completed PANS-OPS Initial Course either at the African FPP or other institutions.

- Instructor – TBD
- Material – TBD
- Facility – TBD
- Funding - TBD

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MID FPP Project-oriented Implementation Support for 2016
1) OJT on ground validating and approving procedures with specific projects, [States, dates]

Description: The OJT sessions are targeted to assist regulators in validating and approving specific PBN procedures. The purpose of the session is to provide hands-on assistance for regulators in reviewing specific procedure design and validation packages which have been submitted prior to actual approvals and publications into the State AIPs. It is expected that once the validation and approval process is completed, the said procedures will be promptly published and implemented.

- Instructor - Qualified procedure designer from MID FPP
- Funding by States participating on the OJTs or Donors if available
- Facility - TBD
- Conditions – This OJT session is available for
  - Active States with annual contributions to the MID FPP; or
  - States who requests for this support under a service fee

2) Design of 10 new instrument procedures (minimum), [States, dates]
Plan, consult with concerned stakeholder and design at least 10 Instrument procedures and present them to the requesting States for validation and publication.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

TECHNICAL CO-OPERATION PROGRAMME

BUDGET 2016/2017

Project Budget				In US$
Programme Title	**MID FPP**		**PHASE I**	
Year July 2016/ June 2017		Minimum expenses (if sponsored)	Minimum expenses	Revenue
Salaries				
MID FPP Coordinator				
EXPERTISE				
Consultant Hiring	PBN Implementation Plan			
	Ops Approval			
	PANS-OPS initial			
	PBN Design			
ORGANIZATION				
	Implementation PBN Plan			
	Ops Approval			
	PBN Design			
MISSION TRAVEL				
(travel expenses +DSA)				
OFFCIE EQUIPMENT				
	Software*			
	Software annual maintenance*			
	water, electricity, telephone, internet, fax			
	documentation			
	office supplies			
MISCELLANEOUS				
CONTRIBUTION				
	Active participation States			
	SAFE			
	Donors			
ACTIVITY INCOMES				
	Expertise: 2 activities, 5 days each			
	Procedure design			
	Travel expenses, DSA in charge of State			
OVERALL TOTAL				

*Could be provided through in-kind contributions

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

TECHNICAL CO-OPERATION PROGRAMME

BUDGET 2017/2018

Project Budget				In US$
Programme Title	**MID FPP**	**PHASE I**		
Year July 2017/ June 2018		Minimum expenses (if sponsored)	Minimum expenses	Revenue
Salaries				
MID FPP Coordinator				
EXPERTISE				
Consultant Hiring	PBN Implementation Plan			
	Ops Approval			
	PNAS-OPS initial			
	PBN Design			
ORGANIZATION				
	Implementation PBN Plan			
	Ops Approval			
	PBN Design			
MISSION TRAVEL				
(travel expenses+ DSA)				
OFFCIE EQUIPMENT				
	Software annual maintenance*			
	water, electricity, telephone, internet, fax			
	documentation			
	office supplies			
MISCELLANEOUS				
CONTRIBUTION				**0**
	Active participation States			
	SAFE			
	Donors			
ACTIVITY INCOMES				**0**
	Expertise: activities, 5 days each			
	Procedure design			
	Travel expenses, DSA in charge of State			
OVERALL TOTAL				**0**

*Could be provided through in-kind contributions

INTERNATIONAL CIVIL AVIATION ORGANIZATION

TECHNICAL CO-OPERATION PROGRAMME

BUDGET 2018/2019

Project Budget				In US$
Programme Title	**MID FPP**	**PHASE I**		
Year July 2018/ June 2019		Minimum expenses (if sponsored)	Minimum expenses	Revenue
Salaries				
MID FPP Coordinator				
EXPERTISE				
Consultant Hiring	PBN Implementation Plan			
	Ops Approval			
	PANS-OPS initial			
	PBN Design			
ORGANIZATION				
	Implementation PBN Plan			
	Ops Approval			
	PBN Design			
MISSION TRAVEL				
(travel expenses+ DSA)				
OFFCIE EQUIPMENT				
	Software annual maintenance*			
	water, electricity, telephone, internet, fax			
	documentation			
	office supplies			
MISCELLANEOUS				
CONTRIBUTION				
	Active participation States (5x20000)			
	SAFE			
	Donors			
ACTIVITY INCOMES				
	Expertise: activities, 5 days each			
	Procedure design			
	Travel expenses, DSA in charge of State			
OVERALL TOTAL				

*Could be provided through in-kind contributions

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Appendix E

MAEP STEERING COMMITTEE (MAEP SC)

TERMS OF REFERENCE

A)   **Purpose of the MAEP SC:**

The MAEP SC is established to act as an advisory body to the MAEP Board, guide its work and ensure that MAEP objectives are accomplished in a timely, effective and efficient manner.

In order to meet its Terms of Reference, the MAEP SC shall:

1. Review regional objectives, plans and users' requirements, and recommend priorities to the MAEP Board.

2. Review plans submitted by the PMO, and recommend priorities, projects/working packages and associated funding arrangements to the MAEP Board.

3. Ensure that the business plans are in line with the MID Air Navigation Strategy.

4. Oversee the activities of the PMO in line with the plans and budgets approved by the MAEP Board.

5. Monitor the financial performance at project level in line with the Board approved budget for each project/working package.

6. Monitor and follow-up the implementation of the MAEP Board Conclusions and Decisions related to the projects/working packages management.

7. Follow up with the PMO the implementation of the agreed projects/working packages and provide regular progress report to the Board.

8. Coordinate technical issues with the appropriate MIDANPIRG subsidiary bodies;

9. Establish Task Forces and implementation bodies, as deemed necessary, provided that:

    i.   the MAEP SC ensure harmonization and avoidance of duplication of efforts;

    ii.   the MAEP SC assumes the role of maintaining accountability for the established task forces and implementation bodies ensuring that they meet their deliverables; and

    iii. all ATM stakeholders, including Industry and International Organizations, have an active participation in the established task forces and implementation bodies.

10. Monitor the progress of work and provide guidance to the established Task Forces and implementation bodies.

B)   **Composition:**

The MAEP SC is composed of:

a) The MAEP SC Co-Chairpersons

b) MAEP Board Chairperson

c) Members/Alternates from the MAEP member States

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d) MAEP Representatives/Alternates from the following Partners:

AACO, ACAC, ACI, AIRBUS, BOEING, CANSO, EUROCONTROL/SESAR JU, FAA-USA, IATA, IFALPA

Other representatives from States and industry may be invited on ad-hoc basis, as required.

Note 1: *The MAEP SC meetings are organised by the PMO. The PMO Manager will act as the Secretary of the MAEP SC meetings.*

Note 2: *ICAO will attend the MAEP SC meetings as Observer and would provide support as appropriate.*

Note 3: *The composition of the MAEP SC might be updated over time to include only Member States and Partners that could participate actively in the MAEP SC and contribute to its work.*

ICAO MID Flight Procedure Programme (FPP) Survey

State	Replied	How many trained procedure designers are there in your State?	How many of the trained procedure designers in your State work for the State regulator?	How many of the trained procedure designers in your State work for the State's procedure design service provider?	How many procedure designers work for the State training organization?	How many of the trained procedure designers in your State have successfully completed advanced training in PBN procedure design?	Would Benefit from Services	Willing to Host	Provided Hosting Offer	Willing to Support	
										Financial to the start-up or annual operating expenses of the FPP	Expertise
Bahrain	Yes	Non	Non	Non	Non	Non	Yes	NO	N/A	Yes	NO
Egypt	Yes	10	1	10	4	8	Yes	Yes	Yes	Yes	Yes
Iran	Yes	7	2	5	4	3	Yes	Yes	Yes	Yes	Yes
Iraq	-	-	-	-	-	-	-	-	-	-	-
Jordan	Yes	3	1	2	0	3	Yes	NO	N/A	NO	Yes
Kuwait	Yes	2	0	2	2	0	Yes	NO	N/A	NO	NO
Lebanon	Yes	2	0	0	0	0	Yes	Yes	N/A	Yes	Yes
Libya	-	-	-	-	-	-	-	-	-	-	-
Oman	-	-	-	-	-	-	-	-	-	-	-
Qatar	Yes	4	0	4	N/A	3	Yes	NO	N/A	NO	Yes
Saudi Arabia	Yes	8	3	5	0	5	NO	NO	N/A	NO	NO
Sudan	Yes	4	2	4	0	4	Yes	Yes	Yes	Yes	Yes
Syria	-	-	-	-	-	-	-	-	-	-	-
UAE	Yes	8	2	7	0	8	Yes	NO	N/A	Yes	NO
Yemen	-	-	-	-	-	-	-	-	-	-	-
Results	**10**	**48**	**11**	**39**	**10**	**34**	**9 Yes 1 NO**	**Yes**	**3 offers**	**6 Yes 4 NO**	**6 Yes 4 NO**

ATTACHMENT

LIST OF PARTICIPANTS

NAME	TITLE
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Mr. Sameh Hassanien Morsy	Airforce EGYPT
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Mr. Salah Kh A. A. Al Babtain	Head of Safety & License Directorate General of Civil Aviation Air Navigation Department, DGCA Safat - State of KUWAIT
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- END -