



INTERNATIONAL CIVIL AVIATION ORGANIZATION

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

(PBN SG/4)

(Cairo, Egypt, 19 – 21 January 2020)

The views expressed in this Report should be taken as those of the PBN Sub-Group and not of the Organization. This Report will, however, be submitted to the MIDANPIRG and any formal action taken will be published in due course as a Supplement to the Report.

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 Fourth meeting of the Performance Based Navigation Sub-Group (PBN SG/4) was successfully held at the ICAO MID Office, Cairo, Egypt, from 19 to 21 January 2020.

2. OPENING

2.1 The meeting was opened by Mr. Mohamed Smaoui, Deputy Regional Director, ICAO Middle East Office, who welcomed the participants to Cairo and wished them a successful and fruitful meeting. Mr. Smaoui provided the meeting with an overview of the subjects that will be addressed during the meeting and highlighted the main expected outcomes of the meeting.

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 many challenges such as adequate training, lack of procedure 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 supported 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 join the MID FPP, if they have not yet done so.

2.3 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 twenty-four (24) participants from six (6) States (Bahrain, Egypt, Iran, Qatar, Saudi Arabia and Sudan) and two (2) International Organizations (IATA and Jeppesen). The list of participants is at **Attachment A** to the Report.

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Ahmed Mohamed Al Eshaq, Director of Air Navigation, Civil Aviation Authority, Qatar.

4.2 Mr. Elie El Khoury, Technical Officer, Airspace Management and Optimization (AMO) Section at ICAO Headquarters Montreal, Canada, was the Secretary of the meeting, supported by Mr. Mohamed Smaoui, Deputy Regional Director, ICAO Middle East Office.

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 and election of chairpersons
Agenda Item 2:	Follow-up on MIDANPIRG/17 Conclusions and Decisions relevant to PBN
Agenda Item 3:	Global and Regional Developments related to PBN
Agenda Item 4:	PBN Planning and 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 4/1: ACTION PLAN FOR THE IMPLEMENTATION OF RNAV TO RNP CHART NAMING CONVENTION

DRAFT CONCLUSION 4/2: PBN SIDS AND STARS IMPLEMENTATION

PART II: REPORT ON AGENDA ITEMS**REPORT ON AGENDA ITEM 1: ADOPTION OF THE PROVISIONAL AGENDA AND ELECTION OF CHAIRPERSONS**

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

1.2 In accordance with the MIDANPIRG Procedural Handbook, (MID Doc 001) Edition June 2017, Mr. Ahmed Mohamed Al Eshaq, Director Air Navigation, Civil Aviation Authority, Qatar, and Mr. Ehab Raslan, Senior Air Traffic Controller, National Air Navigation Services Company, Egypt, were unanimously re-elected as the Chairperson and Vice Chairperson of the PBN Sub-Group, respectively for three (3) terms.

**REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG/17 CONCLUSIONS AND DECISIONS
RELEVANT TO PBN**

2.1 The meeting noted the status of the MIDANPIRG/17 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 DEVELOPMENTS RELATED TO PBN***

3.1 The subject was addressed in PPT/1 presented by the Secretariat. The meeting was apprised of the global developments as well as the latest amendments to the ICAO Annexes and Documents related to PBN.

RNAV to RNP Instrument Approach Chart Depiction

3.2 The meeting recalled that the Amendment 6 to the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, DOC 8168) introduced a change to the approach charts by introducing the “PBN Requirements Box” and a change in chart identifications for performance-based navigation (PBN) approaches (transition from RNAV to RNP approach chart identification). It was highlighted that, as part of PBN procedures naming convention, only the term RNP will be permitted as the Procedure identification instead of RNAV (GNSS) and/or RNAV (GPS); and RNP (AR) instead of RNAV (RNP), as of 1 December 2022.

3.3 The meeting noted that ICAO Circular 353, *Transition Planning for Change to Instrument Flight Procedure Approach Chart Identification from RNAV to RNP*, was issued in support of Amendment 6 to PANS-OPS, DOC 8168. The main purpose of CIR 353 is to provide:

- guidance on the transition from the RNAV GNSS RWY XX approach naming convention to RNP RWY XX;
- a framework for a global transition plan through the development of regional transition plans by the ICAO regional offices; and
- guidance to the States on how to develop a transition plan considering all stakeholder requirements needs, as well as hazards, risks and mitigations of transition planning and implementation.

3.4 The meeting reiterated the procedure included in the MID Region PBN Implementation Plan (MID Doc 007) as the MID Region Transition Plan from RNAV to RNP Charting Depiction:

- MID States, that have not yet done so, should implement RNAV to RNP Chart naming convention for their current PBN Approach Procedures published in their AIPs, starting from 29 March 2019 up to 8 September 2022.
- New PBN Approach Procedures, planned to be published before 29 March 2019, should be published using the new naming convention, if practicable.
- If a PBN Approach Procedure published in the National AIP is amended and re-published before 29 March 2019 (for any reason), the new naming convention should be used, if practicable.

3.5 The meeting urged States that have not yet done so to provide their Action Plan for the implementation of RNAV to RNP Chart naming convention including the status of implementation to the ICAO MID Office by **15 March 2020**, highlighting the total number of approach procedures and those that were published in accordance with the new naming convention.

3.6 Based on the above the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 4/1: ACTION PLAN FOR THE IMPLEMENTATION OF RNAV TO RNP CHART NAMING CONVENTION

That, States, that have not yet done so, be urged to provide the ICAO MID Office with their Action Plan for the implementation of RNAV to RNP Chart naming convention, including the status of implementation to the ICAO MID Office by 15 March 2020.

MID Flight Procedure Programme (MID FPP)

3.7 The subject was addressed in PPT/2 presented by the Secretariat. The meeting was updated on the establishment of the MID FPP. The meeting recalled that the MID FPP would be a viable solution to support States at national level in meeting their obligations related to PANS-OPS and in particular the implementation of Performance Based Navigation PBN (regulatory and service provision) through an effective resource sharing approach under an ICAO Framework. The services that will be provided by the MID FPP are listed in the Project Document. These services would support States to overcome the challenges related to the high cost of establishing and running of PANS-OPS unit as well as ensuring that the competency and qualification of the required PANS-OPS specialists is always maintained.

3.8 The meeting noted with appreciation that:

- the MID FPP has been established as an ICAO TCB Project;
- the hosting venue was changed from Beirut, Lebanon to Abu Dhabi, UAE based on DGCA-MID/5 meeting decision;
- the MID FPP Project Document (ProDoc) was signed currently by 6 States (Jordan, Kuwait, Lebanon, Syria, UAE and Yemen);
- ICAO MID Office secured the required funds to cover at least the first year expenses;
- the First meeting of the MID FPP Steering Committee (MID FPP SC/1) will be held in Abu Dhabi, UAE from 7 to 9 June 2020; and
- the MID FPP SC/1 meeting is expected amongst others, to agree on the working arrangements and funding mechanism of the Programme as well as the Work Plan for the first year.

3.9 Based on the above, the meeting encouraged States to join the MID FPP, if they have not yet done so, and participate in the MID FPP SC/1 meeting.

REPORT ON AGENDA ITEM 4: PBN PLANNING AND IMPLEMENTATION IN THE MID REGION***STATUS OF PBN IMPLEMENTATION IN THE MID REGION***

4.1 The subject was addressed in PPT/3 presented by the Secretariat. The meeting reviewed and updated the status of PBN implementation (Terminal and Approach) in the MID Region, using the PBN Table of the MID eANP Vol III, as at **Appendix 4A**.

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

4.3 It was highlighted that only nine (9) States had provided their National PBN Implementation Plan. 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) in accordance with MSG Conclusion 4/11. The meeting recalled that MSG/6 meeting, through MSG Conclusion 6/21, agreed that the States' National PBN Implementation Plan to be published on the MID Office website with the aim to facilitate consultation and planning of airspace users.

STATES' UPDATE ON PBN IMPLEMENTATION

4.4 The subject was addressed in PPT/4, PPT/5, PPT/7, PPT/8, PPT/9 and PPT/11. presented by Bahrain, Egypt, Iran, Qatar, Saudi Arabia, and Sudan, respectively. The meeting was apprised of the latest activities related to PBN implementation carried out by States. Iran presented in PPT/6 their implemented PBN Safety Assessment Procedure.

4.5 The meeting noted with appreciation the States' commitment to meet the PBN agreed targets. The meeting noted the challenges impeding States to meet the agreed targets as well as the lessons learned and mitigation measures taken/proposed by States to improve the implementation of PBN.

4.6 The meeting highlighted the importance of the assessment of PBN post implementation. In this respect, the meeting reiterated MIDANPIRG/16 Conclusion 16/5 - *Assessment of PBN Implementation* and urged States to report, on annual basis (by 1 November), the environmental benefits accrued from PBN implementation to the ICAO MID Office in order to be included in the MID Region Air Navigation Report.

Lessons Learned/Success Stories

4.7 The followings are the main lessons learned highlighted during the meeting:

- Engagement of all airspace stakeholders for efficient PBN implementation.
- Introduction of PBN had reduced ATC and Pilots workload.
- RNAV SIDs and STARs could be aligned, to some extent, with the radar vectoring techniques used by ATCOs.
- PBN approaches as back-up for ILS approaches.
- Promotion of PBN requirements is crucial.
- Provide proper operational documentation such as Standard Operating Procedures (SOPs) 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 solutions.
 - 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/implemented to reach the goals.
 - PBN training and awareness for all stakeholders.
 - Harmonize the PBN implementation for nearby airports.
 - Use automation tools, digital data, eTOD to minimize human interventions/errors
 - Establish regulatory framework/national advisory material/IFP register.

Challenges

4.8 The meeting recognized that the following challenges, represent 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 and ensure effective implementation of required procedures for the approval of IFPs and granting of OPS Approvals;
- low level of civil/military cooperation;
- unstable political and security situation in some States;
- data gathering and validation;
- 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.

Recommendations

- 4.9 The meeting encouraged States to implement the following Recommendations:
- ensure the training/recruitment of qualified experts in the fields of IFPD, airspace planning, and operations approval;
 - work cooperatively;
 - request ICAO support for the training and implementation of PBN;
 - organize at National level PBN Workshops;
 - engage all stakeholders and in particular the Regulator in the planning and design processes;
 - share experience and support each other;
 - use IFSET and/or other tools for the assessment of the benefit accrued for the implementation of PBN;
 - review the published IFPs at least each 5 years in accordance with ICAO provisions;
 - urge States to implement PBN SIDs and STARs for all RWY ends at International Airports to support flight predictability as a key enabler for an effective ATFM implementation; and
 - join the MID FPP, if not yet done so.

- 4.10 Based on the above the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 4/2: PBN SIDS AND STARs IMPLEMENTATION

That, PBN SIDs and STARs be implemented at all runway ends of international aerodromes listed in the MID Air Navigation Plan as per the agreed targets in the MID Region Air Navigation Strategy (APTA Thread).

PREPARATION FOR IMPLEMENTATION OF GANP/ASBU 2019 RELATED TO PBN

4.11 The subject was addressed in PPT/3 presented by the Secretariat. The meeting was provided with an overview of GANP 2019 and the new ASBU framework endorsed by 40th Session of ICAO Assembly (Montreal, Canada 24 September to 4 October 2019).

4.12 Based on the discussion, the meeting agreed to a revised APTA Table as at **Appendix 4B** to be presented to ACAO/ICAO ASBU Symposium that will be held at the ICAO MID Regional Office from 16 to 19 March 2020.

4.13 The meeting recognized the challenges associated with the collection of required data for the monitoring of the Key Performance Indicators (KPIs) included in the 6th Edition of the GANP. In this respect, the meeting recommended that, as a start, the following KPIs (KPI01, KPI07 and KPI14) described in **Appendix 4C** would be used for the overall performance monitoring of the air navigation system in the MID Region. This would be further reviewed/discussed by the ASBU Symposium before presentation to MSG/7 for final decision.

4.14 Based on the above, the meeting encouraged States to actively participate in the ACAO/ICAO ASBU Symposium.

MID REGION PBN IMPLEMENTATION PLAN

4.15 The subject was addressed in WP/3, presented by the Secretariat. The meeting reviewed the MID Region PBN Implementation Plan (MID Doc 007), and agreed that it is still valid.

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

RNP AR DEPARTURE

4.17 The subject was addressed in PPT/10 presented by Egypt. The meeting was provided with an overview related to RNP AR Departure highlighting the development of design criteria, requirements, operational approvals and standard operational procedures, etc., as well as the expected benefits.

REPORT ON AGENDA ITEM 5: FUTURE WORK PROGRAMME

5.1 The meeting reviewed and updated the PBN SG Terms of References (TORs) as at **Appendix 5A**.

5.2 The meeting agreed that the PBN SG/5 meeting be held during the first Quarter of 2022. The venue will be the 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 Nothing has been discussed under this Agenda Item.

APPENDICES

FOLLOW-UP ACTION PLAN ON MIDANPIRG/17 CONCLUSIONS & DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/6	<p>RVSM MINIMUM MONITORING REQUIREMENTS AND CONDITIONS</p> <p>That, the MIDRMA Member States be urged to:</p> <p>a) take necessary measures to ensure their aircraft operators fully comply with ICAO Annex 6 provisions related to long-term height monitoring requirements, based on the MMR Tables;</p> <p>b) comply with the MID RVSM MMR Conditions published in the MIDRMA website; and</p> <p>c) withdraw the RVSM Approvals of aircraft not complying with the State MMR before 1 July 2019.</p>	States to comply with Annex 6 provisions related to long-term height monitoring requirements	State Letter	ICAO	Jul. 2019	<p>Actioned</p> <p>SL AN 6/5.10.15A-19/199 dated 1 July 2019</p>
C. 17/7	<p>MIDRMA BULLETIN OF NON-RVSM APPROVED AIRCRAFT</p> <p>That,</p> <p>a) the MIDRMA post on the MIDRMA website and share with the MIDRMA Board Members and focal points the Bulletin of non-RVSM approved aircraft on monthly basis; and</p> <p>b) States be encouraged to:</p> <p>i. develop a mechanism to identify the non-RVSM approved aircraft operating in the RVSM Airspace without compliance with Annex 6 provisions;</p> <p>ii. submit their RVSM traffic data including aircraft registrations to be used for the RVSM risk analysis; and</p> <p>iii. coordinate with the MIDRMA in case they are able to provide their RVSM traffic data on a monthly basis.</p>	To identify the non-RVSM approved aircraft operating in the RVSM Airspace without compliance with Annex 6 provisions and that the MIDRMA to share the Bulletin of non-RVSM approved aircraft on monthly basis	State Letter	ICAO	Jul 2019	<p>Actioned</p> <p>SL AN 6/5.10.15A-19/199 dated 1 July 2019</p>
C. 17/8	<p>MID RVSM SAFETY MONITORING REPORT (SMR) 2017</p> <p>That, the MID RVSM Safety Monitoring Report (SMR) 2017 is endorsed.</p>	MID SMR 2017	Endorsement of MID SMR 2017	MIDANPIRG	Apr. 2019	<p>Completed</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/9	<p>THIRD EDITION OF THE MID REGION AIR NAVIGATION REPORT (2018)</p> <p>That, the Third Edition of the MID Region Air Navigation Report (2018) is endorsed and be posted by the ICAO MID Office on the website.</p>	Third Edition of the MID Region Air Navigation Report	Endorsement of MID SMR 2017	MIDANPIRG	Apr. 2019	Completed
C. 17/10	<p>MID REGION AIR NAVIGATION REPORT (2019)</p> <p>That,</p> <p>a) States be urged to provide the ICAO MID Office, with relevant data necessary for the development of the Fourth Edition of the MID Region Air Navigation Report (2019), by 1 December 2019; and</p> <p>b) the MID Region Air Navigation Report (2019) be presented to the MSG/7 for endorsement.</p>	Monitoring and Reporting of ASBU implementation in the MID Region	State Letter Data for AN Report 2017 Air Navigation Report (2019)	ICAO States MSG/7	Dec. 2019 Apr. 2019	Ongoing
C. 17/11	<p>JOINT ACAO/ICAO ASBU SYMPOSIUM</p> <p>That, a Joint ACAO/ICAO ASBU Symposium be organized beginning of 2020.</p>	Raise awareness about the 6 th Edition of the GANP and align the MID AN Strategy	Draft Revised MID AN Strategy	ICAO/ACAO	Mar. 2020	Ongoing 16-19 March 2020
C. 17/12	<p>PUBLICATION OF FIR BOUNDARY POINTS</p> <p>That, States be urged to:</p> <p>a) take into consideration the Guidelines at Appendix 6.2B for the description of their FIR boundaries;</p> <p>b) review the Table ATM I-1 MID Region Flight Information Regions (FIRs)/Upper Information Regions (UIRs) at Appendix 6.2C and coordinate with neighboring States, as appropriate, the definition of common boundaries; and</p> <p>c) provide the ICAO MID Regional Office with their updates and comments before 15 August 2019.</p>	To populate the MID ANP Table ATM I-1	State Letter Feedback from States	ICAO States	Jul 2019 Aug 2019	Actioned SL AN 6/10-19/206 dated 2 July 2019

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/13	<p>AMENDMENT TO THE MID eANP VOLUME III</p> <p>That, the amendment to the MID eANP Volume III at Appendix 6.2D is approved.</p>	To amend/update the MID eANP Vol III	Draft Revised MID AN Strategy	ICAO/ACAO	Mar. 2020	Completed
C. 17/22	<p>MULTI-NODAL ATFM SOLUTION FOR THE MID REGION</p> <p>That,</p> <p>a) the Multi-Nodal Concept be implemented in the MID Region, as a first phase, which would be evolved to a centralized ATFM system in the future; and</p> <p>b) the ATFM Task Force develop the ATFM Concept of Operations for MID Region, accordingly, including the minimum flight data that should be exchanged by ATFM Units.</p>	ATFM Multi-Nodal Concept	ATFM Multi-Nodal Concept	MIDANPIRG	Apr. 2019	Completed
C. 17/23	<p>ACTION PLAN FOR THE IMPLEMENTATION OF ATFM IN THE MID REGION</p> <p>That,</p> <p>a) the Action Plan for the implementation of ATFM in the MID Region at Appendix 6.2J is endorsed; and</p> <p>b) States and Stakeholders to support the work of the ATFM Task Force and implement the actions relevant to them</p>	The Action Plan for the implementation of ATFM	the Action Plan for the implementation of ATFM	MIDANPIRG	Apr. 2019	Completed
C. 17/25	<p>AMENDMENT OF THE MID REGION HIGH LEVEL AIRSPACE CONCEPT (MID DOC 004)</p> <p>That, the ATM SG/5 review and prepare a revised version of the MID Region High level Airspace Concept (MID Doc 004) taking into consideration the latest developments, in particular the outcome of MSG/6 and MIDANPIRG/16 and 17 meetings, for presentation to MIDANPIRG/18.</p>	Revised version of the MID Region High level Airspace Concept	Draft Revised version of the MID Region High level Airspace Concept	ATM SG/5	Dec 2019	Ongoing A revised draft version was developed by the ATM SG/5 meeting that needs further improvements in coordination between ATM SG Secretariat and the States ATM Focal Point for presentation to ATM SG/6 or MIDANPIRG/18.

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/43	<p>FAST TRACK/APPROVAL BY PASSING PROCEDURE</p> <p>That, States be invited to provide the ICAO MID Office, not later than 15 August 2019, with their views and proposals related to Fast Track/Approval by Passing Procedure, for presentation to the MSG/7 meeting, for appropriate action.</p>	<p>To facilitated and expected the approval process of some actions</p>	<p>State Letter Procedure for Fast Track</p>	<p>ICAO MSG/7</p>	<p>Sep 2019 Apr 2020</p>	<p>Actioned</p> <p>SL ME 3 – 19/273 dated 11 September 2019</p>
D. 17/45	<p>CHAIRMANSHIP OF MIDANPIRG AND SUBSIDIARY BODIES</p> <p>That, the MIDANPIRG Procedural Handbook be amended to reflect the following:</p> <p>“In case of absence of the Chairperson for two consecutive meetings, unless otherwise determined by special circumstances, the election of Chairperson should be included in the agenda of the second meeting for the election of a new Chairperson, unless otherwise decided by the meeting.”</p>	<p>Amendment of MIDANPIRG Procedural Handbook</p>	<p>Endorsement of MIDANPIRG Procedural Handbook Edition April 2019</p>	<p>MIDANPIRG/17</p>	<p>Apr 2019</p>	<p>Completed</p>
D. 17/46	<p>NEW EDITION OF THE MIDANPIRG PROCEDURAL HANDBOOK</p> <p>That, the Secretariat consolidate a new Edition of the MIDANPIRG Procedural Handbook, for review by the MSG/7 meeting before the formal endorsement by the MIDANPIRG/18 meeting.</p>	<p>Amendment of MIDANPIRG Procedural Handbook</p>	<p>New Edition of the MIDANPIRG Procedural Handbook</p>	<p>Secretariat</p>	<p>Apr 2020</p>	<p>Ongoing</p>

MID REGION TMA Procedures Implementation (ASBU B0-APTA, B0-CCO and B0-CDO)
(Status as of 21 January 2020)

Int'l AD (Ref. MID ANP)	RWY End	Conventional Approaches		APTA			CCO					CDO				Remarks	
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID		CCO		RNAV STAR		CDO		
		xLS	CAT						RWY	RWY	AD	RWY	AD	RWY	AD		RWY
BAHRAIN																	1
OBBI	12L	ILS	II	VORDME		Y	Y	Y			Y	Y	Y	Y	Y	Y	
	12R			VORDME		Y	Y	Y									
	30L			VORDME		Y	Y	Y									
	30R	ILS	II	VORDME		Y	Y	Y			Y		Y		Y		
Total	4	2		4	Y	4	4	4	0	0	2	1	2	1	2	1	
%		50		100		100	100	100	0	0	50	100	50	100	50	100	
EGYPT																	7
HEBA	14									Y							
	32	ILS	I			Y		Y	Y								
HESN	17			VORDME		Y	Y	Y	Y	Y			Y	Y			
	35	ILS	I	VORDME		Y	Y	Y	Y				Y				
HECA	05L	ILS	I	VORDME		Y		Y									
	05C	ILS	II	VORDME		Y		Y									
	05R	ILS	II			Y		Y									
	23L	ILS	II	VORDME		Y		Y									
	23C	ILS	II	VORDME		Y		Y									
	23R	ILS	I	VORDME		Y		Y									
HEGN	16L			VORDME		Y	Y	Y	Y	Y			Y	Y			
	16R			VORDME		Y	Y	Y	Y				Y				
	34L			VORDME		Y	Y	Y	Y				Y				
	34R	ILS	I	VORDME		Y	Y	Y	Y				Y				
HELX	2	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	20	ILS	I	VORDME		Y	Y	Y	Y				Y				
HEMA	15			VORDME		Y		Y	Y	Y			Y	Y			
	33			VORDME		Y		Y	Y				Y				

Int'l AD (Ref. MID ANP)	RWY End	Conventional Approaches		APTA			PBN Update date	CCO				CDO				Remarks	
		Precision		VOR or NDB	LNAV	LNAV / VNAV		PBN RWY	RNAV SID		CCO		RNAV STAR		CDO		
		xLS	CAT						RWY	AD	RWY	AD	RWY	AD	RWY		AD
SAUDI ARABIA																	4
OEDF	16L	ILS	I														
	16R	ILS	I	VORDME													
	34L	ILS	I	VORDME													
	34R	ILS	I	VORDME													
OEJN	16L	ILS	I			Y	Y	Y	Y	Y		Y	Y	Y			
	16C	ILS	I			Y	Y	Y	Y		Y		Y				
	16R	ILS	I	VORDME		Y	Y	Y	Y		Y		Y				
	34L	ILS	I	VORDME			N/F		Y				Y				LNAV/VNAV not feasible
	34C	ILS	I	VORDME		Y	Y	Y	Y				Y				
	34R	ILS	I			Y	Y	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		Y	Y	Y	Y	Y			Y	Y			
	15R	ILS	I	VORDME		Y	Y	Y	Y				Y				
	33L	ILS	I			Y	Y	Y	Y				Y				
	33R	ILS	I	VORDME		Y	Y	Y	Y				Y				
Total	18	17		13	Y	13	10	13	14	3	2	1	14	3	0	0	
%		94		72		72	56	72	78	75	11	25	78	75	0	0	

Int'l AD (Ref. MID ANP)	RWY End	Conventional Approaches		APTA			CCO				CDO				Remarks		
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN	RNAV SID		CCO		RNAV STAR			CDO	
		xLS	CAT						RWY	RWY	AD	RWY	AD	RWY		AD	RWY
UNITED ARAB EMIRATES																	8
OMAA	13L	ILS	II			AR	AR	Y	Y	Y	Y	Y	Y	Y	Y	Y	RNP AR
	13R	ILS	I	VOR		AR	AR	Y	Y		Y		Y		Y		RNP AR
	31L	ILS	II/III	VOR		AR	AR	Y	Y		Y		Y		Y		RNP AR
	31R	ILS	II			AR	AR	Y	Y		Y		Y		Y		RNP AR
OMAD	13			VORDME		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	
	31	ILS	I	VORDME		Y		Y	Y		Y		Y		Y		
OMAL	1	ILS	I	VOR		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	19			VOR		Y	Y	Y	Y		Y		Y		Y		
OMDB	12L	ILS	I/II/II I			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	12R	ILS	I/II/II I			Y	Y	Y	Y		Y		Y		Y		
	30L	ILS	I/II/II I			Y	Y	Y	Y		Y		Y		Y		
	30R	ILS	I/II/II I			Y	Y	Y	Y		Y		Y		Y		
OMDW	12	ILS	II/III			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	30	ILS	II/III			Y	Y	Y	Y		Y		Y		Y		
OMFJ	11					N/A	N/A	N/A	Y	Y	Y	Y		Y		Y	Not used for landing
	29	ILS	I	VOR		Y	Y	Y	Y		Y		Y		Y		
OMRK	16			VOR		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	34	ILS	I	VOR		Y	Y	Y	Y		Y		Y		Y		
OMSJ	12	ILS	I			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	RNP AR
	30	ILS	II			Y	Y	Y	Y		Y		Y		Y		RNP AR
Total	20	16		9	Y	20	18	20	20	8	20	8	19	8	19	8	
%		80		45		100	90	100	100	100	100	100	95	100	95	100	

Int'l AD (Ref. MID ANP)	RWY End	Conventional Approaches		APTA			CCO				CDO				Remarks		
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID		CCO		RNAV STAR			CDO	
		xLS	CAT						RWY	AD	RWY	AD	RWY	AD		RWY	AD
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	1																
	19																
Total	10	2		7		3	2	3	2	1	0	0	3	2	0	0	58
%		20		70		30	20	30	20	20	0	0	30	40	0	0	
Results					Plans	LNAV	LNAV/V NAV	PBN RWYs		SID		CCO		STAR		CDO	
Total	168	103		126	10	106	72	106	81	30	36	13	93	35	31	12	14 PBN APV + 103 ILS (127/166)
Percentage (%)		61		75	67	63	43	63	48	52	21	22	21	60	18	21	77% RWY Ends with Vertical guidance
58	Aerodromes																
Note. 6 RNP AR Approach were implemented in OMAA and OMSJ, UAE.																	

Draft APTA based on GANP/ASBU 2019

<i>APTA: Improve arrival and departure operations</i>				
Elements	Applicability	Performance Indicators/Supporting Metrics	Targets	Timelines
B0/1: PBN Approaches (with basic capabilities) LNAV/VNAV	All RWYs ENDS at International Aerodromes	Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV) Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV) <i>Link to GANP 2019 KPIs (MID)</i> <i>GANP 2019 MID KPI02, KPI07 and KPI14</i>	100%	Dec. 2017
B0/2: PBN SID and STAR procedures (with basic capabilities)	All RWYs Ends at International Aerodromes	Indicator: % of runway ends at international aerodromes provided with PBN SID and STAR (basic capabilities). Supporting Metric: Number of runways ends at international aerodromes provided with PBN SIDs and STAR (basic capabilities). <i>Link to GANP 2019 KPIs:</i> <i>KPI02, KPI07 and KPI14</i>	70%	Dec. 2022
B0/4: CDO (Basic)	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% (for the identified Aerodromes/TMAs)	Dec. 2018
B0/5: CCO (Basic)	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% (for the identified Aerodromes/TMAs)	Dec. 2018

GANP 2019 MID KPIs

KPI01 Departure punctuality

Definition	Percentage of flights departing from the gate on-time (compared to schedule).	
Objectives/Utility	<p>The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).</p> <p>This is an airspace user and passenger focused KPI: departure punctuality gives an overall indication of the service quality experienced by passengers, and the ability of the airlines to execute their schedule at a given departure location.</p>	
Measurement unit	% of scheduled flights	
Operation measured	IFR departures of scheduled airlines	
Variants	<p>Variant 1A – % of departures within ± 5 minutes of scheduled time of departure</p> <p>Variant 1B – % of departures delayed ≤ 5 minutes versus schedule</p> <p>Variant 2A – % of departures within ± 15 minutes of scheduled time of departure</p> <p>Variant 2B – % of departures delayed ≤ 15 minutes versus schedule</p>	
Parameters	<p>On-time threshold (maximum positive or negative deviation from scheduled departure time) which defines whether a flight is counted as on-time or not.</p> <p>Recommended values: 5 minutes and 15 minutes.</p>	
Data Requirement	<p>For each departing scheduled flight:</p> <p>Scheduled time of departure (STD) or Scheduled off-block time (SOBT)</p> <p>Actual off-block time (AOBT)</p>	
Data from	Schedule database(s), airports, airlines and/or ANSPs	
Formula/Algorithm	<p>Exclude non-scheduled departures</p> <p>2. Categorize each scheduled departure as on-time or not</p> <p>At aggregated level:</p> <p>3. Compute the KPI: number of on-time departures divided by total number of scheduled departures</p>	
Related ASBU Threads	APTA, ASURF, A-CDM	
MIDANPIRG Subsidiary bodies	PBN SG, ASPIG, ATM SG	

KPI14 Departure punctuality

Definition	Percentage of flights arriving at the gate on-time (compared to schedule)	
Objectives/Benefits	<p>The KPI is typically computed for traffic flows, individual airports, or clusters of airports (selection/grouping based on size and/or geography).</p> <p>This is an airspace user and passenger focused KPI: arrival punctuality gives an overall indication of the service quality experienced by passengers, and the ability of the airlines to execute their schedule at a given destination.</p>	
Measurement unit	% of scheduled flights	
Operation measured	IFR arrivals of scheduled airlines	
Variants	<p>Variant 1A – % of arrivals within ± 5 minutes of scheduled time of arrival</p> <p>Variant 1B – % of arrivals delayed ≤ 5 minutes versus schedule</p> <p>Variant 2A – % of arrivals within ± 15 minutes of scheduled time of arrival</p> <p>Variant 2B – % of arrivals delayed ≤ 15 minutes versus schedule</p>	
Parameters	<p>On-time threshold (maximum positive or negative deviation from scheduled arrival time) which defines whether a flight is counted as on-time or not.</p> <p>Recommended values: 5 minutes and 15 minutes.</p>	
Data Requirement	<p>For each arriving scheduled flight:</p> <ol style="list-style-type: none"> Scheduled time of arrival (STA) or Scheduled in-block time (SIBT) Actual in-block time (AIBT) 	
Data Feed	Schedule database(s), airports, airlines and/or ANSPs	
Formula/Algorithm	<p>At the level of individual flights:</p> <ol style="list-style-type: none"> Exclude non-scheduled arrivals Categorize each scheduled arrival as on <p>At aggregated level:</p> <ol style="list-style-type: none"> Compute the KPI: number of on-time arrivals divided by total number of scheduled arrivals 	
Related ASBU Threads	APTA, ASUR, A-CDM	
MIDANPIRG Subsidiary bodies	PBN SG, ASPIG, ATM SG	

KPI07 En-route ATFM delay

Definition	ATFM delay attributed to flow restrictions in a given en-route airspace volume	
Objectives/Benefits	<p>The KPI can be computed for any volume of en-route airspace which participates in the ATFM process.</p> <p>This KPI is a time aggregation of the ATFM delay generated by flow restrictions which are established to protect a given volume of en-route airspace against demand/capacity imbalances. These flow restrictions (also called ATFM regulations) normally have a delay cause associated with them. This allows the KPI to be disaggregated by cause, which allows better diagnosis of the reasons for demand/capacity imbalances. Typically, the KPI is used to check whether ANSPs provide the capacity needed to cope with demand.</p>	
Measurement unit	Minutes/flight	
Operation measured	The management of (temporary) capacity shortfalls in en-route airspace due to high demand and/or capacity reductions for a variety of reasons, resulting in the allocation of ATFM delay	
Variants	None	
Parameters	None	
Data Requirement	<p>For each IFR flight: - Estimated Take-off Time (ETOT) computed from the last filed flight plan - Calculated Take-off Time (CTOT) - ID of the flow restriction generating the ATFM delay - Airspace volume associated with the flow restriction - Delay code associated with the flow restriction</p>	
Data Feed	ATFM	
Formula/Algorithm	<p>At the level of individual flights:</p> <ol style="list-style-type: none"> 1. Select the flights crossing the volume of en-route airspace 2. Select the subset of flights which are affected by the flow restrictions in this airspace 3. Compute ATFM delay: CTOT minus ETOT <p>At aggregated level:</p> <ol style="list-style-type: none"> 4. Compute the KPI: sum of ATFM delays divided by number of IFR flights crossing the airspace 	
Related ASBU Threads	NOPS	
MIDANPIRG Subsidiary bodies	ATM SG, ASPIG	

APPENDIX 4D

PBN IMPLEMENTATION FOCAL POINT

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APPENDIX 5A

**PERFORMANCE BASED NAVIGATION SUB-GROUP
(PBN SG)**

1. Terms of Reference

1.1 The terms of reference of the PBN Sub-Group are:

- a) ensure that the implementation of PBN in the MID Region is coherent and compatible with developments in adjacent regions, and is in line with the Global Air Navigation Plan (GANP), the Aviation System Block Upgrades (ASBU) methodology and the MID Region Air Navigation Strategy;
- b) monitor the status of implementation of the MID Region PBN-related ASBU Modules included in the MID Region Air Navigation Strategy as well as other required PBN supporting infrastructure, identify the associated difficulties and deficiencies and provide progress reports, as required;
- c) keep under review the MID Region PBN performance objectives/priorities, develop action plans to achieve the agreed performance targets and propose changes to the MID Region PBN plans/priorities, ~~through the ANSIG,~~ as appropriate;
- d) seek to achieve common understanding and support from all stakeholders involved in or affected by the PBN and GNSS developments/activities in the MID Region;
- e) provide a platform for harmonization of developments and deployments of PBN concentrating on PBN for approach and terminal areas;
- f) monitor and review the latest developments in the area of PBN and procedure design, provide expert inputs for PBN-related issues; and propose solutions for meeting ATM operational requirements;
- g) monitor and review the latest GNSS developments and activities;
- h) carry out necessary studies for the establishment of a MID Flight Procedure Programme Office;
- i) provide regular progress reports to ~~the ANSIG and~~ MIDANPIRG concerning its work programme; and
- j) review periodically its Terms of Reference and propose amendments, as necessary.

1.2 In order to meet the Terms of Reference, the PBN Sub-Group shall:

- a) provide necessary assistance and guidance to States to ensure harmonization and interoperability in line with the GANP, the MID ANP and ASBU methodology;

- b) provide necessary inputs to the MID Air Navigation Strategy through the monitoring of the agreed Key Performance Indicators related to PBN;
- c) identify and review those specific deficiencies and problems that constitute major obstacles to the provision of efficient PBN implementation, and recommend necessary remedial actions;
- ~~d) develop and lead the work programme of the MID PBN Support Team (MPST) including the conduct of MPST visits;~~
- ~~e) assist States that may require support in the implementation of PBN, through MPST support teams;~~
- ~~f)d) conduct study related to the establishment of review and support the MID Flight Procedure Programme ~~office~~activities, as required;~~
- ~~g)e) monitor the progress of studies, projects, trials and demonstrations by the MID Region States, and other ICAO Regions in PBN and GNSS;~~
- ~~h)f) coordinate with the CNS SG to study the requirements for GNSS Augmentation Systems in the MID Region, and develop implementation plans; and~~
- ~~i)g) foster the implementation of PBN through proper training and qualification of the procedure design personnel and all other personnel involved in PBN implementation.~~

2. COMPOSITION

2.1 The Sub-Group is composed of:

- a) MIDANPIRG Member States;
 - b) concerned International and Regional Organizations as observers; and
 - c) other representatives from provider States and Industry may be invited on ad hoc basis, as observers, when required.
-

ATTACHMENT A

LIST OF PARTICIPANTS

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