



INTERNATIONAL CIVIL AVIATION ORGANIZATION

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

PBN SG/6 Virtual Meeting

(10 – 11 November 2021)

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 Sixth meeting of the Performance Based Navigation Sub-Group (PBN SG/6) was successfully held virtually from 10 to 11 November 2021 from 08:00 to 10:00 UTC, using MS Teams facility.

2. OPENING

2.1 The meeting was chaired by Mr. Ahmed Mohamed Al Eshaq, Director of Air Navigation, Civil Aviation Authority, Qatar, who welcomed the participants and wished them a successful and fruitful meeting.

2.2 Mr. Mohamed Smaoui, Acting Regional Director, ICAO Middle East Office, welcomed all participants to the PBN SG/6 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.

2.3 Mr. Mohamed Smaoui underlined that the introduction of PBN has met the expectations of the entire aviation community, but, PBN implementation is still facing many challenges such as adequate training, lack of procedure designers and closer coordination between States and the aviation stakeholders. He pointed out that the PBN in the MID Region had been progressing but with a low pace, and the implementation in some States is still far behind the agreed targets.

2.4 Mr. Mohamed Smaoui 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 PBN implementation through an effective resource sharing approach under an ICAO Framework. The services that will be provided by the MID FPP would support States to overcome the challenges related to the high cost of establishing, training and running of PANS-OPS Unit as well as ensuring that the competency and qualification of the required PANS-OPS specialists is always maintained. Mr. Mohamed Smaoui encouraged all States to join the MID FPP, if they have not yet done so.

2.5 Finally, Mr. Smaoui thanked all participants for their attendance wishing them successful and productive meeting.

3. ATTENDANCE

3.1 The meeting was attended by a total of sixty-eight (68) participants from fifteen (15) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan, Syria, UAE and Yemen) and two (2) International Organizations/Industry (IFATCA 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. Radhouan Aissaoui, Regional Officer, Information Management was the Secretary of the meeting, assisted by Mr. Ahmad Amireh, Regional Officer, Air Traffic Management and Search and

Rescue (ATM/SAR) and Mr. Ahmad Kaveh, Regional Officer, Air Traffic Management (ATM). Mr. Mohamed Smaoui, Acting Regional Director, supported the meeting.

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/18 Conclusions and Decisions relevant to PBN |
| Agenda Item 3: | Global and Regional Developments |
| Agenda Item 4: | PBN Planning and Implementation in the MID Region |
| Agenda Item 5: | States' PBN Implementation Progress |
| Agenda Item 6: | Review of MID Region PBN Implementation Plan |
| Agenda Item 7: | Working Arrangements and Future Work Programme |
| Agenda Item 8: | 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 6/1: WORKSHOP/WEBINAR ON CCO/CDO IMPLEMENTATION

DRAFT DECISION 6/2: ESTABLISHMENT OF THE CCO/CDO AD HOC WORKING GROUP (CCO/CDO AD-HOC WG)

DRAFT DECISION 6/3: ESTABLISHMENT OF THE MID REGION PBN IMPLEMENTATION PLAN AD HOC WORKING GROUP (PBN IP AD-HOC WG)

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

- 1.1 The subject was addressed in PPT/1 presented by the Secretariat
- 1.2 In accordance with the MIDANPIRG Procedural Handbook (MID Doc 001), Part III, para. 6.1, Mr. Ehab Raslan Mohamed, General Manager of Research and Development, NANSO, Egypt, was unanimously elected as Chairperson of the PBN Sub-Group, and Mr. Yasir Mohammed Ahmed, Chief of Instrument Flight Procedures Design Section, Civil Aviation Authority, Sudan, was unanimously elected as the Vice-Chairperson of the PBN Sub-Group.
- 1.3 The meeting thanked Mr. Ahmed Mohammed Al-Eshaq, Director Air Navigation, Civil Aviation Authority, Qatar, for his leadership and contribution to the work of the PBN SG as the Chairman of PBN for the previous meetings.
- 1.4 The meeting reviewed and adopted the Provisional Agenda as at Para 6 of the History of the Meeting.
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**REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG/18 CONCLUSIONS AND DECISIONS
RELEVANT TO PBN**

2.1 The meeting noted the status of the MIDANPIRG/18 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/3 presented by the Secretariat.

Update related to PFA and Amendments of the ICAO SARPs related to PBN

3.2 The meeting noted the recent approved and proposed amendments to ICAO provisions related to PBN (SARPs and PANS):

- Proposed amendment to PANS-ATM relating to approach phraseology arising from the fifth meeting of the Air Traffic Management Operations Panel (ATMOPSP/5);
- Proposed amendments to Annex 6, Part I and PANS-OPS, Volumes I and III, related to the use of RNAV on conventional routes and procedures and flight data analysis programmes (FDAP) arising from the seventh meeting of the Flight Operations Panel (FTOPSP/7)
- Approval of Amendment 1 to the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume III — Aircraft Operating Procedures
- Approval of Amendment 9 to the Procedures for Air Navigation Services — Aircraft Operations, Volume I — Flight Procedures and Amendment 9 to Volume II — Construction of Visual and Instrument Flight Procedures (PANS-OPS, Doc 8168)
- Proposals for the amendment of Annex 10, Volume I to support the introduction of dual-frequency, multiconstellation (DFMC) global navigation satellite system (GNSS)

MID Flight Procedure Programme (MID FPP) updates

3.3 The meeting was apprised of the latest developments related to the establishment of the MID FPP.

3.4 The meeting re-iterated that the MID Flight Procedure Programme (MID FPP) is the optimal solution that would support States to develop sustainable capability in the instrument flight procedures (IFP) design, PBN airspace concepts and PBN OPS approval, including regulatory oversight. The MD FPP would also support States to overcome most of the identified challenges, which will foster the PBN implementation, and 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. Accordingly, the meeting urged States to join the MID FPP through the signature of the MID FPP ProDoc, if they have not yet done so.

3.5 The meeting was informed that the ICAO MID Office managed to secure the required funds to support the launching of the Programme and cover the expenses at least of the first year and that, in coordination with the ICAO Technical Cooperation Bureau (TCB), the MID FPP Manager has been recruited and is expected to report on duty in Abu Dhabi, UAE (hosting State of the MID FPP Office), beginning of January 2022.

3.6 The meeting noted that the MID FPP SC/1 meeting will be held virtually from 26 to 27 January 2022, at which, it is expected to elect a Chairperson for the MID FPP SC, review and agree on the Work Plan for the year 2022, and on the necessary mechanism and way forward to ensure the sustainability of the Programme. The meeting encouraged all member States to actively participate in the First Meeting of the MID Region Flight Procedure Programme Steering Committee (MID FPP SC/1).

REPORT ON AGENDA ITEM 4: PBN PLANNING AND IMPLEMENTATION IN THE MID REGION***MID Air Navigation Report-2021***

4.1 The subject was addressed in WP/4 presented by the Secretariat. The meeting recalled that the MIDANPIRG/18 meeting endorsed the Revised MID Region Air Navigation Strategy (ICAO MID Doc 002) and its alignment with the 6th edition of the GANP, which is available at:
<https://www.icao.int/MID/MIDANPIRG/Documents/eDocuments/MID%20Doc%20002%20-%20MID%20Air%20Navigation%20Strategy%20-%20Feb%202021.pdf>

4.2 The meeting recalled that the MIDANPIRG/18 meeting, through Conclusion 18/10, urged States to provide the ICAO MID Office, with necessary data by 1st of December 2021 for the development of the MID Region Air Navigation Report - 2021.

4.3 Moreover, the meeting reminded States to provide ICAO MID office with the level of implementation of the elements related to the APTA thread priority 1 elements, by 1st of December 2021, as per the APTA THREAD – Monitoring Table contained in **Appendix 4A**.

MID eANP Volume III

4.4 The meeting reviewed and updated the MID eANP Volume III (APTA Tables), as at **Appendix 4B**.

Performance-based Aerodrome Operating Minima (PB-AOM)

4.5 The subject was addressed in PPT/4 presented by the Secretariat. The meeting noted that The PBAOM concept includes the use of equipment in addition to that which is required for the operation, permitting the granting of operational credit to achieve, for example, lower operational minima.

4.6 The concept of PB-AOM was explained and the meeting was informed that the Standard Aerodrome operating minima are predicated upon aircraft equipped with the minimum required equipment (the basic aircraft) for that approach. These aerodrome operating minima relate directly to the established types and categories of operations and the associated infrastructure requirements (e.g. runway lights, approach lights). Advanced Aircraft can take advantage of existing infrastructure to obtain special authorizations for enhanced approach operations to lower minimums than basic aircraft can use.

4.7 It was clarified that Advanced Aircraft are those aircraft with equipment in addition to that required for a Basic Aircraft for a given approach or landing operation. Examples of additional equipment could include EVS, HUD and/or autoland. The additional equipment allows the aircraft to operate to lower RVR values and/or to lower DH than would be achievable with a basic equipped aircraft. PB AOM are derived by taking account of the combined capabilities of an Advanced Aircraft, and available ground facilities.

4.8 Furthermore, the meeting was informed that aerodrome operating minima are expressed in terms of minimum visibility/RVR and MDA/H or DA/H and when aerodrome operating minima are established, the combined capability of the aeroplanes equipment and on-ground infrastructure should be taken into account. Better equipped aeroplanes may be able to operate into lower natural visibility conditions, lower DA/H and/or operate with less ground infrastructure. Operational credit means that the aerodrome operating minima may be reduced in case of suitably equipped aeroplanes. Another way to grant

operational credit is to allow visibility requirements to be fulfilled, wholly or partly, by means of the on-board systems. HUD, automatic landing or vision systems, which were not available at the time when the criteria for aerodrome operating minima were originally established.

4.9 It was clarified that the granting of operational credits does not affect the classification (i.e. Type or Category) of an instrument approach procedure since they are designed to support instrument approach operations conducted using aeroplanes with the minimum equipment prescribed.

4.10 With regard the implementation of the PB-AOM and the granting of the operational credit for advanced aircraft in MID region, it was noted that various States in MID region have regulated the concept in several regulations, including but not limited to :

- UAE CAR OPS 1 1.785 AND Appendix 1 to CAR-OPS HUD, VS or Equivalent Head Up Display (HUD), Vision System (VS) or Equivalent.
- QATAR QCAR Air Operations Annex IV: Part-CAT : CAT.OP.MPA.110 Aerodrome operating minima
- Oman CAR-OPS 1.430 Aerodrome Operating Minima – General
- Saudi Arabia GACAR PART 91 – GENERAL OPERATING AND FLIGHT RULES 91.403 LVO: Use of Enhanced Vision Systems or Head-Up Display.
- Bahrain ANTR OPS 1.785 Head Up Display (HUD) or Equivalent Displays and Appendix 1
- Jordan JCAR-OPS.1 OPS 1.430 Aerodrome operating minima – General
- Egypt Part 91 General operating and flight rules 91.146 Aerodrome operating minima

Continuous Descent Operations/ Continuous Climb Operations (CDO/CCO)

4.11 The subject was addressed in PPT/5 presented by the Secretariat. The meeting recalled that the Implementation of CCO/CDO at high-density airports is one of the priority elements for MID States as per the MID region Air Navigation Strategy. In order to help states in CCO/CDO implementation, a session was dedicated to CCO/CDO implementation.

- 4.12 In this session, the meeting was provided with a presentation covering the following:
- CDO and CCO in the GANP;
 - what CDO and CCO are;
 - benefits of CCO/CDO;
 - the factors that affect CCO/CDO;
 - the impact of airspace/procedures design on CCO/CDO;
 - the advantages and disadvantages of open and closed STARs;
 - Basic and enhanced CCO design example;
 - How to Integrate CCO and CDO Designs;
 - Publications and charting CCO and CDO.

4.13 Moreover, fully noting the significant challenges that States are facing in the implementation of the CCO/CDO , the meeting proposed to conduct workshop, in collaboration with champion States and International Organizations, to provide an overview of Continuous Climb and Descent Operations (CCO/CDO) requirements as per ICAO Documents and to gain insight into lessons learned and/or best practices on CCO/CDO implementation and its operation and to promote the sharing of good practices: (phraseology, publication/charting, assessment of ENV benefits, etc.

4.14 Based on the above, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 6/1: CONDUCT OF A WORKSHOP ON CCO/CDO IMPLEMENTATION IN 2022

That,

- a) *a Workshop on CCO/CDO implementation be organized in 2022, in collaboration with MID FPP, to provide necessary knowledge about the ICAO provisions on the subject and share experience and best practices on CCO/CDO implementation by States/Airspace users;*
- b) *States and International Organizations are strongly encouraged to participate actively in this Workshop.*

4.15 The meeting noted that a review undertaken by the secretariat revealed that current MID States AIPs does not contain details on CCO/CDO availability at airports.

4.16 Therefore, the Meeting noted the need for an harmonised AIP content related to CCO/CDO to ensure that identified good practices are shared and that Flight Crews / Flight Planners know where CCO- / CDO-related text may be found in an AIP. A harmonised structure that promotes the sharing of good AIP practices, phraseology, definitions, how CDO is measured etc. The development of harmonised material on CCO / CDO; structure and content to be located in a section of States' Aeronautical Information Publications (AIP). This material will take existing worldwide AIP good practices into account.

4.17 Based on the above, the meeting agreed to the following Draft Decision:

DRAFT DECISION 6/2: ESTABLISHMENT OF CCO/CDO AD HOC WORKING GROUP

That, a CCO/CDO Ad Hoc Working Group:

- a) *be established to develop guidance related to the publication of CCO/CDO information (text and Charts) in the AIP, in coordination with the relevant MIDANPIRG and RASG MID subsidiary bodies.*
- b) *be composed of:*
 - *Chairpersons of the PBN SG*, AIM SG and ATM SG*
 - *Secretariat*
 - *Mrs. Sheila Brizo, (QCAA Qatar)*
 - *Mr. Muhammad Al juhani (GACA Saudi Arabia)*
 - *Lindi-Lee Kirkman (IATA)*
- c) *present their outcome during the PBN SG/7 meeting.*

** the rapporteur of the group is the Chairman of the PBN SG.*

4.18 In addition, the meeting urged States to expedite implementation of CCO/CDO, as applicable, to achieve targets of the MID Air Navigation Strategy and to use IFSET and/or other tools for the assessment of the benefit accrued from the implementation of CCO/CDO.

MID States CDO/CCO implementation, experiences and challenges

4.19 Apart from the session dedicated to CCO/CDO implementation, the meeting noted with appreciation the presentations provided by Bahrain, Qatar, Saudi Arabia and UAE about the implementation methodology, challenges, and their mitigation and benefits derived from CDO and CCO.

4.20 In addition, the meeting greatly valued Capt. Ahmed Mashal, Fuel Efficiency Manager Egyptair, contribution and support of the ongoing effort towards the promotion of CCO/CDO implementation.

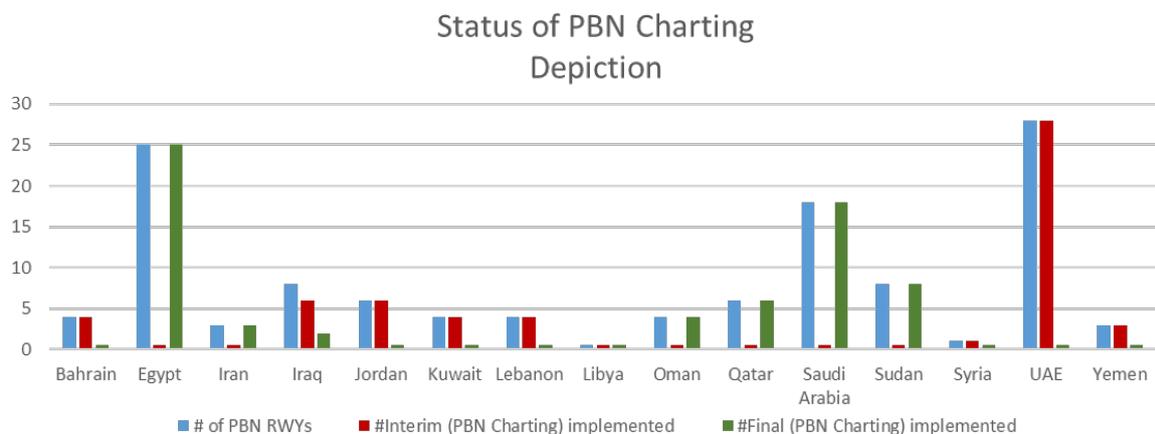
REPORT ON AGENDA ITEM 5: STATES' PBN IMPLEMENTATION PROGRESS

Implementation status of the Regional Transition Plan for RNP APCH Chart Identification from RNAV to RNP

5.1 The subject was addressed in PPT/7 presented by the Secretariat. The Secretariat presented the Implementation status of the regional transition plan for RNP APCH chart identification from RNAV to RNP, MID Transition Plan for RNP APCH Chart Identification. The Secretariat reminded the States about target date for RNP transition as follows:

- Until 30 November 2022, approach charts depicting procedures that meet the RNP APCH navigation specification criteria must include either the term RNP or RNAV (GNSS) in the identification (e.g. RNP RWY 23 or RNAV (GNSS) RWY 23). However, from 1 December 2022, only the term RNP will be permitted.
- Until 30 November 2022, approach charts depicting procedures that meet the RNP AR APCH navigation specification criteria must include either the term RNP (AR) or RNAV (RNP) in the identification (e.g. RNAV (RNP) RWY 23). However, from 1 December 2022, only the term RNP (AR) will be permitted.

5.2 The detailed status of the Transition Plan for RNP APCH Chart Identification from RNAV to RNP in MID region is provided in the chart below.



5.3 The meeting reviewed and updated the status of RNAV to RNP Charting Depiction as at Appendix 5A.

5.4 In addition, the meeting urged States that have not yet done so to provide the ICAO MID Office with their action plan for the implementation of RNAV to RNP Chart naming convention, and keep the MID Office apprised of the status of implementation.

Implementation Status of the resolution A37-11 and APTA Thread B0 & B1 in MID region

5.5 The subject was addressed in PPT/8 presented by the Secretariat.

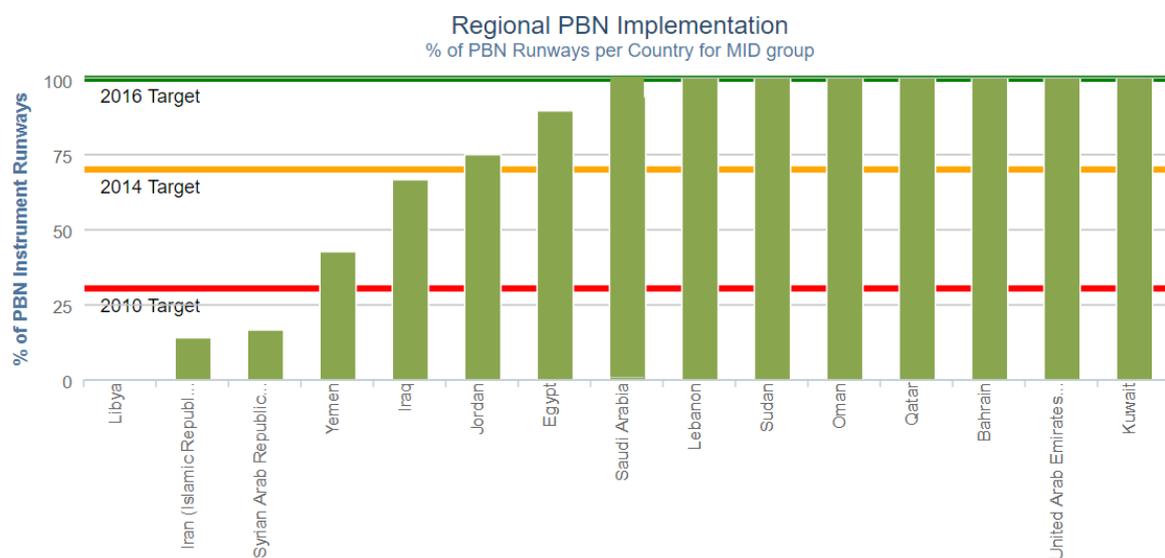
ICAO Assembly Resolution A37-11 Implementation Status

5.6 The secretariat presented global PBN implementation status as available in ICAO iSTARS.

5.7 The meeting recalled the key requirement of ICAO Assembly Resolution A37-11, which resolved that States to complete a PBN implementation plan as a matter of urgency to achieve:

- a) implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), including LNAV-only minima, for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as follows: 30 per cent by 2010, 70 per cent by 2014; and
- b) implementation of straight-in LNAV-only procedures, as an exception to a) 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;

5.8 The Percentage of States in MID region meeting the resolution Targets is provided in the chart below.



5.9 The meeting urged States behind global achievement to expedite implementation of PBN to achieve the global targets of the Assembly Resolution A37-11.

5.10 The meeting discussed the discrepancy in the list of international airports in iSTARS and MID Air Navigation Plan (ANP) and asked the secretariat to coordinate with ICAO to use the ANP as State reference for number of international airport.

Implementation status of the APTA THREAD BLOCK 0 in MID region

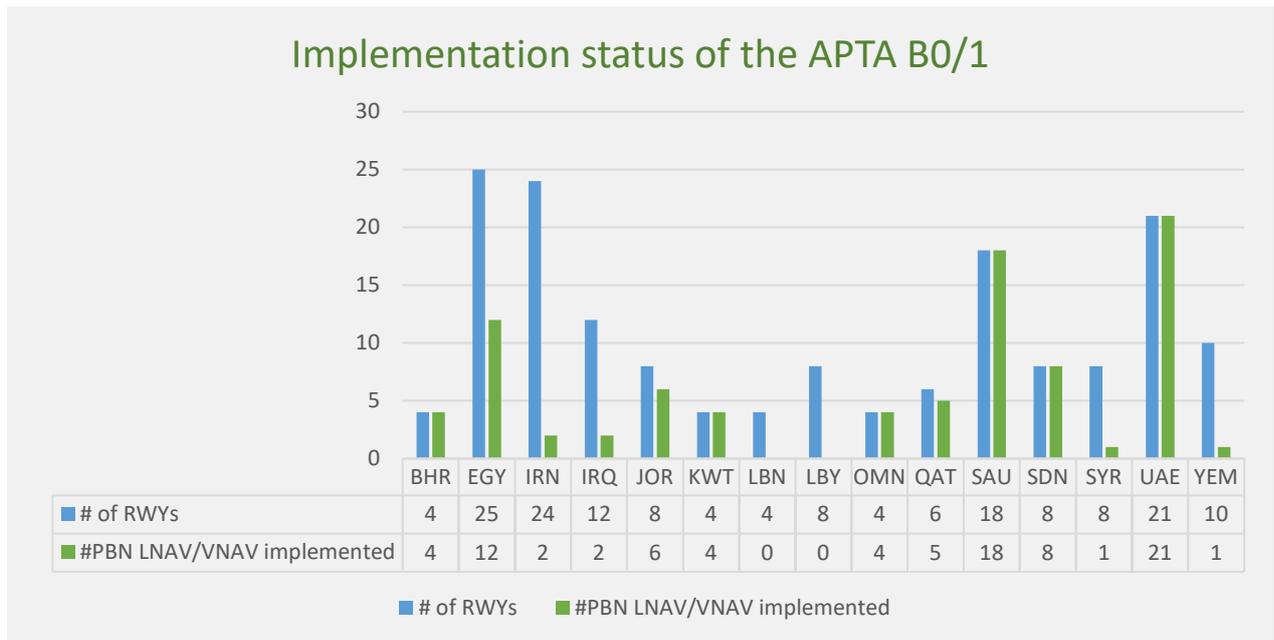
5.11 The meeting recalled the priority 1 Elements of APTA Thread along with the associated elements, applicability, performance Indicators, supporting Metrics, and performance Targets as per the revised MID Air Navigation Strategy (MID Doc002) as follows:

APTA: priority 1 Elements, applicability, performance Indicators, supporting Metrics, and Targets			
Elements	Applicability	Performance Indicators/Supporting Metrics	Targets

APTA B0/1 PBN Approaches (with basic capabilities)	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)	100% by Dec. 2017
APTA 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).	70% by Dec 2022
APTA B0/4 CDO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI, OLBA, OOMS, OTHH, OTBD, OEJN, OEMA, OEDF, OERK, HSSK, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	Indicator: % of International Aerodromes/TMA with CDO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% Dec 2021
APTA B0/5 CCO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI, OLBA, OOMS, OTHH, OTBD, OEJN, OEMA, OEDF, OERK, HSSK, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	Indicator: % of International Aerodromes/TMA with CDO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% Dec 2021
APTA B0/7 Performance based aerodrome operating minima – Advanced aircraft	All States	Indicator: % of States authorizing PB-OM for Air operators operating Advanced aircraft. Supporting Metric: Number of States authorizing PB-OM for Air Operators operating Advanced aircraft.	50% Dec 2021

Status of implementation of the APTA B0/1

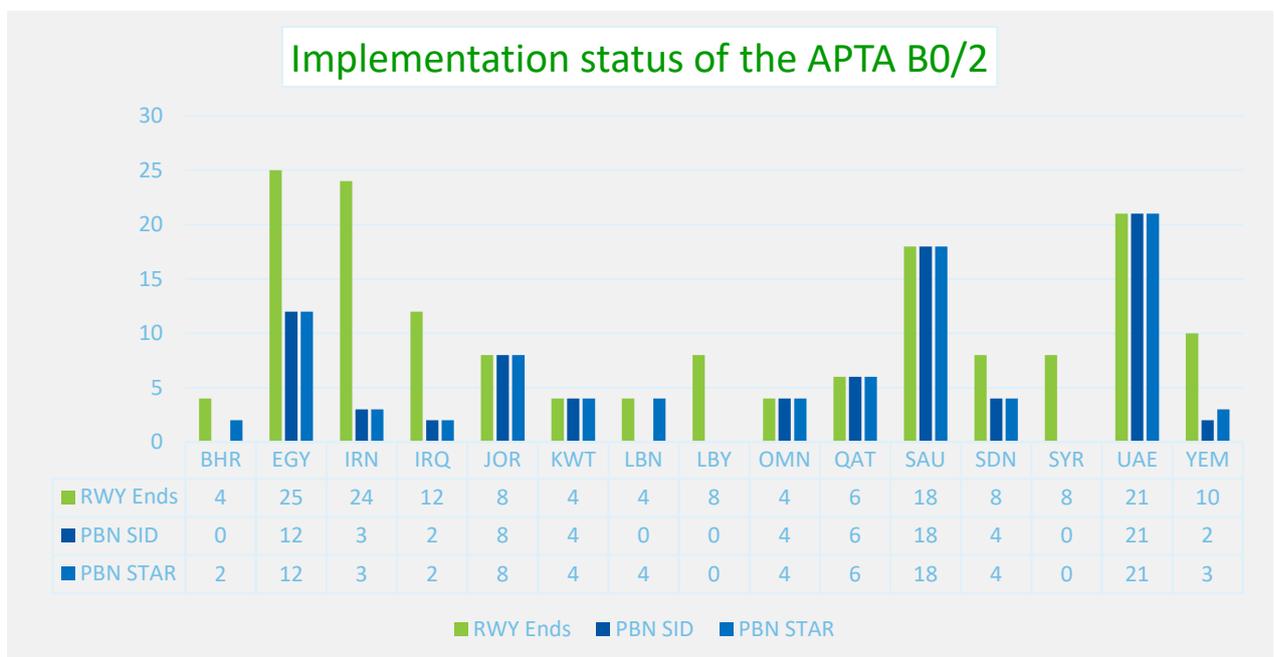
5.12 The meeting reviewed and updated the status of implementation of the APTA B0/1 related to PBN Approaches (with basic capabilities) as shown in the chart below.



5.13 The meeting noted that the status of implementation of the APTA B0/1 related to PBN Approaches (with basic capabilities) reached 54% far behind the regional target of 100% by Dec. 2017.

Status of implementation of the APTA B0/2

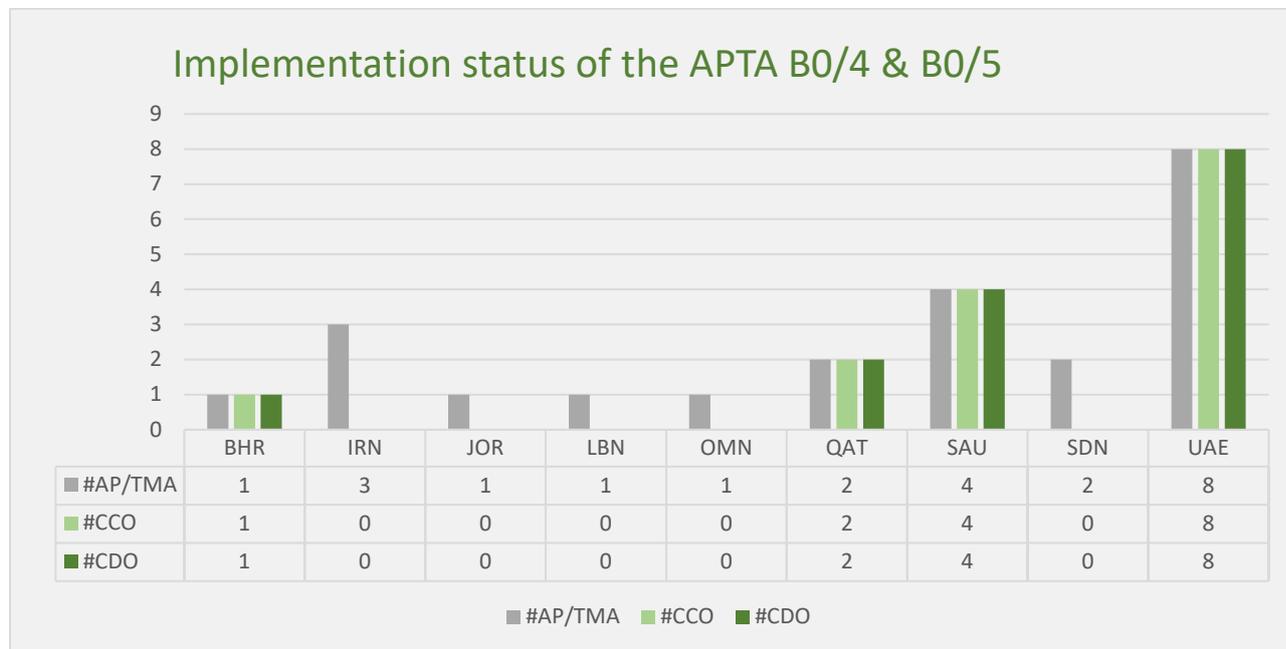
5.14 The meeting reviewed and updated the status of implementation of the APTA B0/2 related to PBN SID and STAR procedures (with basic capabilities) as shown in the chart below.



5.15 The meeting noted that the status of implementation of the APTA B0/2 related to PBN SID and STAR procedures (with basic capabilities) which reached 78% above the regional target of 70% by Dec. 2022.

Status of implementation of the APTA B0/4 and B0/5

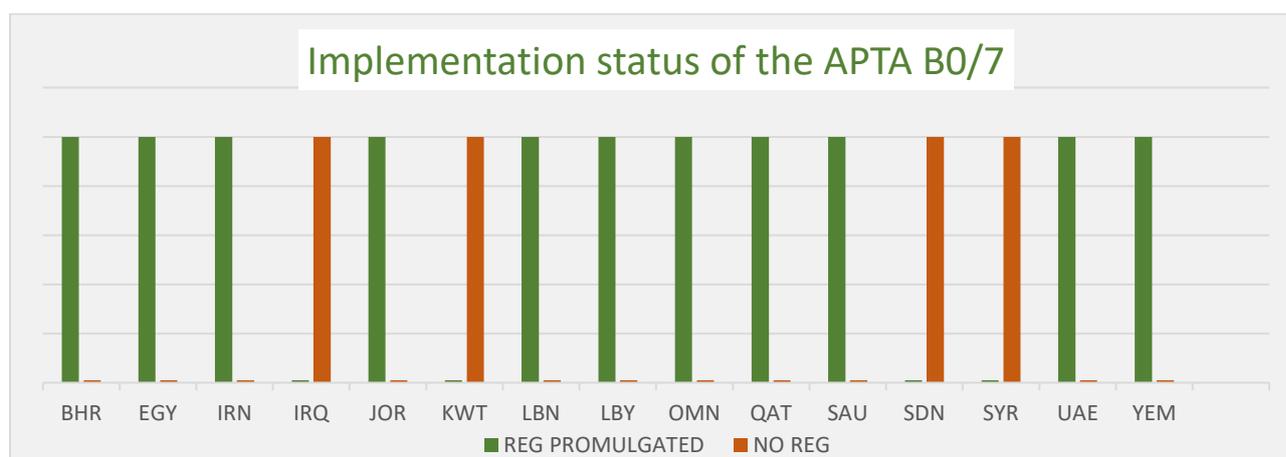
5.16 The meeting reviewed and updated the status of implementation of the APTA B0/4 and B0/5 related to CDO and CCO (with basic capabilities) as shown in the chart below.



5.17 The meeting noted that the status of implementation of the APTA B0/4 and B0/5 which reached 65% each element, far behind the regional target of 100% by Dec. 2021.

Status of implementation of the APTA B0/7

5.18 The meeting reviewed and updated the status of implementation of the APTA B0/7 related to Performance based aerodrome operating minima – Advanced aircraft as shown in the chart below.



5.19 The meeting noted that the status of implementation of the APTA B0/7 related to Performance based aerodrome operating minima – Advanced aircraft which reached 74% far above the regional target of 50% by Dec. 2021.

Challenges confronting the accelerating PBN implementation in MID Region

5.20 The subject was addressed in PPT/10 presented by Mr. Ehab Raslan Mohamed the co-chairman of the PBN SG.

5.21 The meeting noted and recognized that the following challenges, represent the main impediments to the advancement of PBN implementation in the Region:

- Economic sanctions on some States in MID;
- Lack of investment to implement PBN projects or purchasing systems/tools;
- PBN Resources: Limited/scarce funding for Regulator/ANSP;
- Lack of training and qualified human resources;
- Lack of Air Traffic Control/ Air Traffic Management (ATC/ATM) training for PBN implementation,
- Lack of airspace and procedure design training,
- Lack of operational approval expertise to obtain proper operational approval and to oversee operators for PBN operations,
- Lack of regulatory expertise to oversee the process leading to procedure publication.
- Insufficient number of procedure designers;
- Attention and higher level of involvement in managerial levels in monitoring and planning the PBN implementation;
- The States' priorities have been changing (COVID-19 pandemic worsens the economic situation).

5.22 The meeting encouraged States to implement the following recommendations to expedite implementation of PBN to achieve targets of the MID Air Navigation Strategy.

- 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;
- join the MID FPP, if not yet done so.

REPORT ON AGENDA ITEM 6: MID REGION PBN IMPLEMENTATION PLAN

6.1 The subject was addressed in WP/3 presented by the Secretariat.

6.2 The meeting reviewed the current version of the MID Region PBN Implementation Plan and identified the necessary changes/updates.

6.3 The meeting recognized that the MID Region PBN Implementation Plan should be constantly updated and refined throughout the implementation process in order to keep pace with changes in MID Region Air Navigation Strategy (MID Doc 002) and to ensure alignment with the GANP 6th edition.

6.4 The meeting recalled ICAO Assembly resolution 37-11 which requires States to develop a PBN implementation plan. To prepare and submit its plan, it is necessary that MID Region Performance Based Navigation (PBN) Implementation Plan provides guidance to States and ANSPs on how to develop a PBN implementation and suggests what such a plan could contain.

6.5 Furthermore, the Meeting agreed that the implementation phases of the MID Region PBN Implementation Plan should be broadly split into short, medium-to- long-term dates for introduction as follows:

- Short-term (up to Dec 2024)
- Medium-to Long-Term (2025-2030+)

6.6 Based on the above, the meeting agreed to the following Draft Decision:

DRAFT DECISION 6/3: ESTABLISHMENT OF THE MID REGION PBN IMPLEMENTATION PLAN AD HOC WORKING GROUP (PBN IP AD-HOC WG)

That,

a) an Ad Hoc Working Group be established to review the MID Region PBN Implementation Plan and develop a revised version for submission to the MIDANPIRG/20 meeting for endorsement, to keep pace with the developments, including the GANP 6th Edition and the MID Region Air Navigation Strategy (MID Doc 002, Edition April 2021); and

b) be composed of:

- *Chairpersons of the PBN SG* and ATM SG*
- *Secretariat*
- *Mr. Saqr Al Marashda (GCAA UAE)*
- *Mr. Hamed Al Zubaidi(GCAA UAE)*
- *Mr. Ahmed Al Shehhi (GCAA UAE)*
- *Mr. Muhammad Al juhani (GACA Saudi Arabia)*

** the rapporteur of the group is the Chairman of the PBN SG.*

REPORT ON AGENDA ITEM 7: WORKING ARRANGEMENTS AND FUTURE WORK PROGRAMME

7.1 The meeting reviewed and updated the PBN SG Terms of References (TORs) as at **Appendix 7A**.

7.2 The meeting agreed that the PBN SG/7 meeting be held, virtually, during the fourth quarter of 2021, unless a State is willing to host the meeting.

REPORT ON AGENDA ITEM 8: ANY OTHER BUSINESS

8.1 Nothing has been discussed under this agenda item.

APPENDICES

APPENDIX 2A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/18 CONCLUSIONS & DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 18/10	<p>THE MID REGION AIR NAVIGATION REPORT – 2021</p> <p>That, States be urged to provide the ICAO MID Office, with relevant data necessary for the development of the MID Region Air Navigation Report – 2021, by 30 December 2021.</p>	<p>Monitoring and Reporting of ASBU implementation in the MID Region</p>	<p>State Letter</p> <p>Data for AN Report 2021</p> <p>Air Navigation Report (2021)</p>	<p>ICAO</p> <p>States</p>	<p>Dec. 2021</p>	<p>Ongoing</p>
C. 18/22	<p>ACTION PLAN FOR THE IMPLEMENTATION OF RNAV TO RNP CHART NAMING CONVENTION</p> <p>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/plans of implementation by September 2021.</p>	<p>Monitoring and Reporting of RNAV to RNP Chart naming convention implementation and status in the MID Region</p>	<p>State Letter</p> <p>Dashboard of RNAV to RNP Chart naming convention status in the MID Region</p>	<p>ICAO (File Ref : AN 6/29 – 21/072 dated 19 May 2021)</p> <p>States</p>	<p>Sep. 2021</p>	<p>Ongoing</p> <p>Updates provided in Agenda Item 5.1 PPT7</p>
C. 18/23	<p>PBN SIDS AND STARS IMPLEMENTATION</p> <p>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).</p>	<p>Monitoring and Reporting of APTA THREAD /B0/2 Element PBN SID and STAR procedures (with basic capabilities) implementation and</p>	<p>State Letter</p> <p>APTA THREAD /B0/2 Element PBN SID and STAR procedures</p>	<p>ICAO (File Ref : AN 6/28 – 21/076 dated 19 May 2021)</p> <p>States</p>	<p>Sep. 2021</p>	<p>Ongoing</p> <p>Updates provided in Agenda Item 5.2 PPT8</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
		status in the MID Region	(with basic capabilities) status in the MID Region			
D.18/57	TERMS OF REFERENCE OF THE PBN SG That, the Terms of Reference of the PBN SG be updated as at Appendix 5.4G.	updated ToRs of the PBN SG	ToRs of the PBN SG	MIDANPIRG/18	Feb. 2021	Completed Endorsed by the MIDANPIRG/18 meeting.

MID REGION AIR NAVIGATION STRATEGY

APTA THREAD – Monitoring Table

Element	Title	Applicability	Performance Indicators/Supporting Metrics	Targets	Timelines
APTA B0/1	PBN Approaches (with basic capabilities)	All RWYs ENDS at International Aerodromes	Indicator: % of Runway 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)	100%	Dec 2017
APTA 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 Runway ends at international aerodromes provided with PBN SID and STAR (basic capabilities).	70%	Dec 2022
APTA B0/4	CDO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI, OLBA, OOMS, OTHH, OTBD, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	Indicator*: % of International Aerodromes with CDO implemented as required. Supporting Metric: Number of International Aerodromes with CDO implemented as required. *As per the applicability area	100%	Dec 2021
APTA B0/5	CCO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI, OLBA, OOMS, OTHH, OTBD, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	Indicator*: % of International Aerodromes with CCO implemented as required. Supporting Metric: Number of International Aerodromes with CCO implemented as required. *As per the applicability area	100%	Dec 2021
APTA B0/7	Performance based aerodrome operating minima – Advanced aircraft	All States	Indicator: % of States authorizing Performance-based Aerodrome Operating Minima for Air operators operating Advanced aircraft. Supporting Metric: Number of States authorizing Performance-based Aerodrome Operating Minima for Air operators operating Advanced aircraft.	50%	Dec 2021

APTA : Improve arrival and departure operations

TABLE -APTA 3-1

EXPLANATION OF THE TABLE

Column	
1	Name of the State / International Aerodromes' Location Indicator
2	Runway Designator
3, 4, 5	Conventional Approaches (ILS / VOR or NDB)
6, 7, 8, 9	Elements of APTA B0/1 PBN Approaches with basic capabilities (Status of PBN Plan and implementation of LNAV, LNAV/VNAV), where: Y – Yes, implemented N – No, not implemented
10	PBN Runway: where any type of PBN approach is implemented
12, 15	Elements of APTA B0/2 PBN SID and STAR procedures (with basic capabilities) Y – Yes, implemented N – No, not implemented
11, 13	Elements of APTA B0/5 CCO basic (Status of implementation of CCO) per runway end and per aerodrome, where: Y – Yes, implemented N – No, not implemented

14, 16 Elements of APTA B0/4 CDO basic (Status of implementation of CDO) per runway end and per aerodrome, where:

Y – Yes, implemented

N – No, not implemented

17 Elements of APTA B0/7 Performance based aerodrome operating minima – Advanced aircraft (Compliance with the requirements for PB AOM) per State, where:

FC – Fully compliant

NC – Not compliant

18 Remarks

Int'l AD (Ref. MID ANP) (1)	RWY (2)	Conventional Approaches (3)		APTA (6)				CCO (11)				CDO (14)				PB AOM (17)	Remarks (18)		
		Precision (4)		VOR or NDB (5)	PBN PLAN (7)	LNAV (8)	LNAV / VNAV (9)	PBN RWY (10)	RNAV SID (12)		CCO (13)		RNAV STAR (15)		CDO (16)				
		xLS	CAT						Update date	RWY	AD	RWY	AD	RWY	AD			RWY	AD
BAHRAIN																			
OBBI	12L	ILS	II	VORDME		Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y		
	12R			VORDME		Y	Y	Y	N	N	N	N	N	N	N	N			
	30L			VORDME		Y	Y	Y	N	N	N	N	N	N	N	N			
	30R	ILS	II	VORDME		Y	Y	Y	N	N	Y	N	Y	N	Y	N			

Total	4	2		4	Y	4	4	4	0	0	2	1	2	1	2	1	-	
%		50		100	Y	100	100	100	0	0	50	100	50	100	50	100	100	
EGYPT																		
HEBA	14					Y	N	Y	N	Y	N	N	N	N	N	N		
	32	ILS	I			Y	N	Y	Y	N	N	N	N	N	N	N		
HESN	17			VORDME		Y	Y	Y	Y	Y	N	N	Y	Y	N	N		
	35	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N		
HECA	05L	ILS	I	VORDME		Y	N	Y	N	N	N	N	N	N	N	N		
	05C	ILS	II	VORDME		Y	N	Y	N	N	N	N	N	N	N	N		
	05R	ILS	II			Y	N	Y	N	N	N	N	N	N	N	N		
	23L	ILS	II	VORDME		Y	N	Y	N	N	N	N	N	N	N	N		
	23C	ILS	II	VORDME		Y	N	Y	N	N	N	N	N	N	N	N	Y	
	23R	ILS	I	VORDME		Y	N	Y	N	N	N	N	N	N	N	N		
HEGN	16L			VORDME		Y	Y	Y	N	Y	N	N	N	Y	N	N		
	16R			VORDME		Y	Y	Y	N	N	N	N	N	N	N	N		
	34L			VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N		
	34R	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N		
HELX	2	ILS	I	VORDME		Y	Y	Y	Y	Y	N	N	Y	Y	N	N		
	20	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N		
HEMA	15			VORDME		Y	N	Y	Y	Y	N	N	Y	Y	N	N		

ORER	18	ILS	II			Y	N	Y	N	N	N	N	N	N	N	N		
	36	ILS	I			Y	N	Y	N	N	N	N	N	N	N	N		
ORSU	13	ILS	I	VOR		Y	N	Y	N	N	N	N	N	N	N	N		
	31	ILS	I	VOR		Y	N	Y	N	N	N	N	N	N	N	N		
ORNI	10	ILS	I	VOR		Y	Y	Y	Y	Y	N	N	Y	Y	N	N		
	28	ILS	I	VOR		Y	Y	Y	Y	N	N	N	Y	N	N	N		
ORBMM	15					N	N	N	N	N	N	N	N	N	N	N		
	33					N	N	N	N	N	N	N	N	N	N	N		
Total	14	9		8	N	8	2	8	2	1	0	0	2	1	0	0	-	
%		64		57		57	14	57	14	17	0	0	14	16.67	0	0	0	
JORDAN																		
OJAI	08L	ILS	I	NDB		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	08R			NDB		Y	Y	Y	Y	N	N	N	Y	N	N	N		
	26L	ILS	II	VOR		Y	Y	Y	Y	N	N	N	Y	N	N	N		
	26R	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N		Y
OJAQ	1	ILS	I			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	19	ILS	I			Y	N/A	Y	Y	N	N	N	Y	N	N	N		LNAV/VNAV not feasible
Total	6	5		4	Y	6	6	6	6	2	2	2	6	2	2	2	-	
%		83		67		100	100	100	100	100	33	100	100	100	33	100	100	

	15L			VORDME		N	N	N	N	N	N	N	N	N	N	N		
	33R			VORDME		N	N	N	N	N	N	N	N	N	N	N		
	33L	ILS	I	VORDME		N	N	N	N	N	N	N	N	N	N	N		
HLLS	13	ILS	I	VORDME		N	N	N	N	N	N	N	N	N	N	N		
	31			VORDME		N	N	N	N	N	N	N	N	N	N	N		
HLLT	9			VORDME		N	N	N	N	N	N	N	N	N	N	N		
	27	ILS	I	VORDME		N	N	N	N	N	N	N	N	N	N	N		
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	100	
OMAN																		
OOMS	08L	ILS	I	VORDME		Y	Y	Y	Y	Y	N	N	Y	Y	N	N		
	26R	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	
OOSA	7	ILS	I	VORDME		Y	Y	Y	Y	Y	N	N	Y	Y	N	N		
	25	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	N	N		
Total	4	4		4	Y	4	4	4	4	2	0	0	4	2	0	0	-	
%		100		100		100	100	100	100	100	0	0	100	100	0	0	100	
QATAR																		
OTBD	15	ILS	I	VORDME		Y	N/A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	LNAV/VNAV not feasible

	33	ILS	II/III	VORDME/NDB		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		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	N	Y	N	Y	N	Y	N		CCO/CDO tactically achieved
	34L	ILS	I/II/III	VORDME		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		CCO/CDO tactically achieved
	34R	ILS	I/II/III	VORDME		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		CCO/CDO tactically achieved
Total	6	6		6	Y	6	6	6	6	2	6	2	6	2	6	2	-	
%		100		100		100	100	100	100	100	100	100	100	100	100	100	100	
SAUDI ARABIA																		
OEDF	16L	ILS	I	-		Y	Y	Y	N	N	Y	N	Y	N	Y	N		
	16R	ILS	I	VORDME		Y	Y	Y	N	N	Y	N	Y	N	Y	N		
	34L	ILS	I	VORDME		Y	Y	Y	N	N	Y	N	Y	N	Y	N	Y	
	34R	ILS	I	VORDME		Y	Y	Y	N	N	Y	N	Y	N	Y	N		
OEJN	16L	ILS	I			Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y		

	16C	ILS	I			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	16R	ILS	I	VORDME		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	34L	ILS	I	VORDME		N	N/F	N	Y	N	Y	N	Y	N	Y	N		LNAV/VNAV not feasible
	34C	ILS	I	VORDME		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	34R	ILS	I			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
OEMA	17	ILS	I	VORDME		Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y		
	18			VORDME		Y	Y	Y	Y	N	N	N	Y	N	Y	N		
	35	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	Y	N		
	36	ILS	I	VORDME		Y	Y	Y	Y	N	N	N	Y	N	Y	N		
OERK	15L	ILS	I	VORDME		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	15R	ILS	I	VORDME		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	33L	ILS	I			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	33R	ILS	I	VORDME		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
Total	18	17		13	Y	16	18	18	14	3	13	2	18	3	18	3	-	
%		94		72		89	100	100	78	75	72	50	100	75	100	75	100	Plan needs update
SUDAN																		
HSNN	4					Y	N	Y	Y	Y	N	N	Y	Y	N	N		
	22					Y	N	Y	Y	N	N	N	Y	N	N	N	N	N

	23R	ILS	II	VORDME		Y	Y	Y	N	N	N	N	N	N	N	N		
Total	8	4		7		1	1	1	0	0	0	0	0	0	0	0	-	
%		50		88		13	13	13	0	0	0	0	0	0	0	0	0	
UNITED ARAB EMIRATES																		
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	N	Y	N	Y	N	Y	N		RNP AR
	31L	ILS	II/III	VOR		AR	AR	Y	Y	N	Y	N	Y	N	Y	N		RNP AR
	31R	ILS	II			AR	AR	Y	Y	N	Y	N	Y	N	Y	N		RNP AR
OMAD	13			VORDME		Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	31	ILS	I	VORDME		Y	N	Y	Y	N	Y	N	Y	N	Y	N		
OMAL	1	ILS	I	VOR		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	19			VOR		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
OMDB	12L	ILS	I/II/III			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	12R	ILS	I/II/III			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	30L	ILS	I/II/III			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
	30R	ILS	I/II/III			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
OMDW	12	ILS	II/III			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	30	ILS	II/III			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
OMFJ	11					N/A	N/A	N/A	Y	Y	Y	Y	N	Y	N	Y		Not used for landing

Y

	29	ILS	I	VOR		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
OMRK	16			VOR		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	34	ILS	I	VOR		Y	Y	Y	Y	N	Y	N	Y	N	Y	N		
OMSJ	12	ILS	I			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		RNP AR
	30	ILS	II			Y	Y	Y	Y	N	Y	N	Y	N	Y	N		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	100	
YEMEN																		
OYAA	8	ILS	I	VORDME		N	N	N	N	N	N	N	N	N	N	N	Y	
	26			VORDME		N	N	N	N	N	N	N	N	N	N	N		
OYHD	3			VOR		N	N	N	N	N	N	N	Y	N	N			
	21			VOR / NDB		Y	N	Y	N	N	N	Y	N	N	N			
OYRN	6					N	N	N	N	N	N	N	N	N	N	N		
	24			VORDME		N	N	N	N	N	N	N	N	N	N	N		
OYSN	18	ILS	I	VORDME/NDB		Y	Y	Y	Y	Y	N	N	Y	Y	N	N		
	36			VOR		Y	Y	Y	Y	N	N	N	Y	N	N	N		
OYTZ	1					N	N	N	N	N	N	N	N	N	N	N		
	19					N	N	N	N	N	N	N	N	N	N	N		
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	100	

Results					Plans	LNAV	LNAV/VNAV	PBN RWYS		SID		CCO		STAR		CDO	
Total	168	104		126	13	106	83	115	79	30	49	14	94	35	51	17	10 PBN APV + 101 ILS (111/166)
Percentage (%)		63		76	87	64	50	69	48	45	30	24	57	52	31	24	67% RWY Ends with Vertical guidance
58	Aerodromes																
Note. 6 RNP AR Approach were implemented in UAE (OMAA and OMSJ)																	

- END -

Appendix 5A

Status of RNAV to RNP Charting Depiction in MID region

Updated on 01st October 2021

State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name
Bahrain	OBBI	RWY 12R	Y	Y	4	4	0	0%
		RWY 12L	Y	Y				
		RWY 30R	Y	Y				
		RWY 30L	Y	Y				
Egypt	HEBA	RWY 14R	Y	N	25	0	25	100%
		RWY 32L	Y	N				
		RWY 32	Y	N				
	HESN	RWY 17	Y	Y				
		RWY 35	Y	Y				
	HECA	RWY 05L	Y	N				
		RWY 23R	Y	N				
		RWY 05C	Y	N				
RWY 23C		Y	N					

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State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name
		RWY 05R	Y	N				
		RWY 23L	Y	N				
	HEGN	RWY 16L	Y	Y				
		RWY 34R	Y	Y				
		RWY 16R	Y	Y				
		RWY 34L	Y	Y				
		RWY 02	Y	Y				
	HELX	RWY 20	Y	Y				
		RWY 02L	Y	N				
		RWY 20R	Y	N				
		RWY 15	Y	N				
	HEMA	RWY 33	Y	N				
		RWY 04L	Y	Y				
	HESH	RWY 22R	Y	Y				

State	Airport	RWY ends	LNAV	LNAV/VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name
		RWY 04R	Y	Y				
		RWY 22L	Y	Y				
Iran	OIKB	RWY 03R	N	N	3	0	3	100%
		RWY 21L	N	N				
	OIFM	RWY 08L	N	N				
		RWY 26R	N	N				
		RWY 08R	N	N				
		RWY 26L	N	N				
	OIMM	RWY 13L	N	N				
		RWY 31R	N	N				
		RWY 13R	N	N				
		RWY 31L	N	N				
	OISS	RWY 29L	N	N				
		RWY 29R	N	N				

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State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name					
	OITT	RWY 12L	N	N									
		RWY 30R	N	N									
	OIIE	RWY 11L	N	N									
		RWY 29R	Y	Y									
	OIHI	RWY 11R	N	N									
		RWY 29L	N	N									
		RWY 11L	N	N									
		RWY 29R	N	N									
	OIYY	RWY 13	N	N									
		RWY 31	N	N									
	OIZH	RWY 17R	Y	N									
		RWY 35L	Y	Y									
	Iraq	ORNI	RWY 28	Y					Y	8	6	2	25%
			RWY 10	Y					Y				

State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name					
	ORBI	RWY 15R	Y	N									
		RWY 33L	Y	N									
		RWY 15L	N	N									
		RWY 33R	N	N									
	ORMM	RWY 32	N	N									
		RWY 14	N	N									
	ORER	RWY 18	Y	N									
		RWY 36	Y	N									
	ORSU	RWY 31	Y	N									
		RWY 13	Y	N									
	Jordan	OJAM	RWY 06	Y					Y	6	6	0	0%
			RWY 24	Y					Y				
OJAI		RWY 08R	Y	Y									
		RWY 26L	Y	Y									

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State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name	
		RWY 08L	N	N					
		RWY 26R	N	N					
		OJAQ	RWY 01	Y					Y
			RWY 19	Y					Y
Kuwait	OKBK	RWY 15R	Y	Y	4	4	0	0%	
		RWY 33L	Y	Y					
		RWY 15L	Y	Y					
		RWY 33R	Y	Y					
Lebanon	OLBA	RWY 03	Y	N	4	4	0	0%	
		RWY 21	Y	N					
		RWY 16	Y	N					
		RWY 17	Y	N					
Libya	HLLB	RWY 15L	N	N	0		0		

State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name					
		RWY 33R	N	N									
		RWY 15R	N	N									
		RWY 33L	N	N									
		RWY 13	N	N									
	HLLS	RWY 31	N	N									
		RWY 09	N	N									
	HLLT	RWY 27	N	N									
	Oman	OOMS	RWY 08L	Y					Y	4	0	4	100%
			RWY 26R	Y					Y				
OOSA		RWY 07	Y	Y									
		RWY 25	Y	Y									
Qatar	OTBD	RWY 15	Y	N	6	0	6	100%					
		RWY 33	Y	Y									
	OTHH	RWY 16L	Y	Y									

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State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name
		RWY 34R	Y	Y				
		RWY 16R	Y	Y				
		RWY 34L	Y	Y				
Saudi Arabia	OEDF	RWY 16L	Y	Y	18	0	18	100%
		RWY 34R	Y	Y				
		RWY 16R	Y	Y				
		RWY 34L	Y	Y				
	OEJN	RWY 16R	Y	Y				
		RWY 34L	Y	Y				
		RWY 16C	Y	Y				
		RWY 34C	Y	Y				
		RWY 16L	Y	Y				
		RWY 34R	Y	Y				
		RWY 17	Y	Y				
OEMA	RWY 17	Y	Y					

State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name					
		RWY 35	Y	Y									
		RWY 18	Y	Y									
		RWY 36	Y	Y									
	OERK	RWY 15L	Y	Y									
		RWY 33R	Y	Y									
		RWY 15R	Y	Y									
		RWY 33L	Y	Y									
	Sudan	HSOB	RWY 01	Y					Y	8	0	8	100%
			RWY 19	Y					Y				
HSSK		RWY 18	Y	Y									
		RWY 36	Y	Y									
HSNN		RWY 04	Y	Y									
		RWY 22	Y	Y									
HSPN		RWY 17	Y	Y									

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State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name					
		RWY 35	Y	Y									
Syria	OSAP	RWY 09	N	N	1	1	0	0%					
		RWY 27	N	N									
	OSDI	RWY 05L	N	N									
		RWY 23R	Y	Y									
		RWY 05R	N	N									
		RWY 23L	N	N									
	OSLK	RWY 17	N	N									
		RWY 35	N	N									
	UAE	OMAA	RWY 13 R	Y					Y	28	28	0	0%
			RWY 31 L	Y					Y				
RWY 13 L			Y	Y									
RWY 31 R			Y	Y									
OMAD		RWY 13	Y	Y									
		RWY 31	Y	Y									

State	Airport	RWY ends	LNAV	LNAV/VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name
	OMAL	RWY 01	Y	Y				
		RWY 19	Y	Y				
	OMDW	RWY 12	Y	Y				
		RWY 30	Y	Y				
		RWY 13	Y	Y				
		RWY 31	Y	Y				
	OMDB	RWY 12L	Y	Y				
		RWY 30R	Y	Y				
		RWY 12R	Y	Y				
		RWY 30L	Y	Y				
	OMFJ	RWY 11						
		RWY 29	Y	Y				
	OMRK	RWY 16	Y	Y				
		RWY 34	Y	Y				
	OMSJ	RWY 12	Y	Y				

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State	Airport	RWY ends	LNAV	LNAV/ VNAV	Total number PBN APCHs	Total number Interim PBN Charting implemented	Number of Final PBN Charting implemented	% of PBN APCHs using new name
		RWY 30	Y	Y				
Yemen	OYAA	RWY 08	N	N	3	3	0	0%
		RWY 26	N	N				
	OYHD	RWY 03	N	N				
		RWY 21	Y	N				
	OYRN	RWY 06	N	N				
		RWY 24	N	N				
	OYSN	RWY 18	Y	Y				
		RWY 36	Y	Y				
	OYTZ	RWY 01	N	N				
		RWY 19	N	N				

APPENDIX 7A

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) framework and the MID Region Air Navigation Strategy;
- b) monitor the status of implementation of the MID Region PBN-related ASBU threads/elements 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, 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) provide regular progress reports to MIDANPIRG concerning its work programme; and
- i) 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 framework;
- b) provide necessary inputs to the MID Region 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 implementations, and recommend necessary remedial actions;

- d) review and support the MID Flight Procedure Programme activities, as required, including coordination of capacity building activities related to training and qualification of the procedure design personnel and all other personnel involved in PBN implementation;
- e) monitor the progress of studies, projects, trials and demonstrations by the MID Region States, and other ICAO Regions in PBN and GNSS; and
- f) Coordinate with relevant MIDANPIRG and RASG-MID Subsidiary bodies issues with common interests.

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.

3. WORKING ARRANGEMENTS

3.1 The Chairperson, in close co-operation with the Secretary, shall make all necessary arrangements for the most efficient working of the Subgroup. The Subgroup shall at all times conduct its activities in the most efficient manner possible with a minimum of formality and paper work (paperless meetings). Permanent contact shall be maintained between the Chairperson, Secretary and Members of the Subgroup to advance the work. Best advantage should be taken of modern communications facilities, particularly video-conferencing (Virtual Meetings) and e-mails.

3.2 Face-to-face meetings will be conducted when it is necessary to do so.

ATTACHMENT A

Sixth Meeting of the Performance Based Navigation Sub-Group (PBN SG/6)

(Virtual, 10 – 11 November 2021, 09:00 – 11:00 UTC)

List of Participants

State Org/Industries	Contact	Title
Bahrain	Mr. Abdulla Hasan Al Qadhi	Chief AIM
	Mr. Ali Abdulla Al Mutaie	AIM Supervisor
	Mr. Mohammed Nabeel al Abdulla	AIM Supervisor
	Mr. Abdulla Rashed Al-Jawder	AIM Specialist
Egypt	Mr. Tayseer Mohamed Abdel Kareem	ATS General Manager
	Mr. Amr Ibrahim Abdel Latiff	ANS Inspector
	Ehab Raslan Mohamed	G.M of R&D
	Mr. Ahmed Abdel Gawad	
	Mr. Ahmed Samy Nazer	Safety Officer
	Mr. Mohamed Nabil	ATCO
	Mr. Mohamed Zakria	ATCO
	Mr. Ahmed Mohamed	ATCO
	Capt Ahmed M. Omar Mashal	Egyptair
	Capt Ahmed Hashim	Egyptair
Iran	Mr. Mehdi Pahlavani	ATC Flight Procedure Designer
	Mr. Saber Safaei Tanha	ANS Auditor
	Ms. Sotoudeh Nikmanesh	ATC Expert
Iraq	Mr. Allayath M. Alwan	ATC OPS Manager
	Mr. Zaydoon H.Ali	APP Procedures Manager
	Mr. Thaer Hasan	CNS Engineer
Jordan	Mr. Mohammed Ali Almomani	Chief of Safety & Standard ATM
	Mr. Mohammed Farouq O. Doqa	ANS Inspector
	Mr. Tamer Ahmad H. Al-Nabulsi	ATM Specialist/ATM Division
	Mrs. Narman Issat As'ad	Chief of ATM Training Division
Kuwait	Mr. Ahmed M. Butaiban	Head of ACC and APP Division
	Mr. Meshal S. Alqenaei	First Control Radar Officer
Lebanon	Mr. Tarek Mrad	Head Section Beirut ACC centre
Libya	Mr. Hasan Salem	Chief of AIS
	Mr. Tareg Kashkar	Chief of IFPD
	Mr. Osama Mohammed Elahwel	Head of ATS
Oman	Mr. Nasser Salim Al Mazroui	Act. Director of ATC
	Mr. Sulaiman Nasser Al-Salmi	Act. Chief of Airspace Planning and Management Dept

State Org/Industries	Contact	Title
	Mr. Hamed Mohamed Ali Al-Affani	SATCO
	Mr. Werner Kleynhans	PANS-OPS Inspector
Qatar	Mr. Ahmed Al-Eshaq	Air Navigation Director
	Mrs. Sheila Brizo	PANS-OPS Specialist
	Mrs. Pamela Erice	AIM Supervisor
	Mr. Asiri Christo	AIM Officer
Saudi Arabia	Mr. Muhammad Al-Juhani	Flight Procedure Manager
	Mr. Mazen Alshehri	AIM Manager
	Mr. Mohammed Hassan Khalifa	Flight Procedure Design Inspector
	Mr. Imed ben Saad	AFP and AIM Expert
	Mr. Adnan Salaem Bahebail	Aviation Procedures Design Inspector
	Mr. Anas Ibrahim Fallatah	Instrument Flight Procedures Chief
	Mr. Ali Hamzah Al-Khaibari	Airspace Planning & Design Supervisor
Sudan	Mr. Yasir Mohammed Ahmed	Chief of Instrument Flight Procedures Design Section
Syria	Mr. Tarek Al Jourf	Air Navigation Department
UAE	Mr. Muayyed Al Teneiji	Director Air Traffic Management
	Mr. Saqr Al Marashda	Manager Airspace Management
	Mr. Rovshan Sultanov	
Yemen	Mr. Ahmed Mohamed Alkobati	Advisor at ANS Sector
	Mr. Hussein Al-Abed	Manager ANS Operations
	Mr. Saleh Abdullah S. Al.Khamosi	Chief Aeronautical chart
	Mr. Younis Al-Khader	Director General of Air Navigation
	Mr. Mahmood A. Razak	Consultant – D.G. of Air Navigation
	Mr. Ashab Shehab Saeed Omar	ATM Manager
	Mr. Abdul Kareem Mana Nasher	AIS Manager
	Mr. Abdullah Ahme dAlhudaifi	SMS Expert
	Mr. Abdullah Abdulwareth Aleryani	G.D Air Navigation
Mr. Sabri Abdulelah Al Hakimi	Chief of NOTAM Office	
IFATCA	Mr. Raouf Nashed	IFATCA Rep. Middle East
Boeing/Jeppesen	Mr. Volker Meyer	Manager International Relations
ICAO	Mr. Mohamed Smaoui	A/RD
	Mr. Radhouan Aissaoui	RO/IM
	Mrs. Muna Alnadaf	RO/CNS

State Org/Industries	Contact	Title
	Mr. Ahmad Amireh	RO/ATM/SAR
	Mr. Ahmad Kaveh	RO/ATM
	Mrs. Manal Wissa	Programme Analysis Associate