INTERNATIONAL CIVIL AVIATION ORGANIZATION

Report of the Twenty Two Meeting of the Middle East Air Navigation Planning and Implementation Regional Group and Twelfth Meeting of the Regional Aviation Safety Group-Middle East

MIDANPIRG/22 & RASG-MID/12

(Doha, Qatar, 4 – 8 May 2025)

The views expressed in this Report should be taken as those of the Regional Planning and Implementation Group and not of the Organization. This Report will, however, be submitted to the ICAO Council 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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TABLE OF CONTENTS

Page

PART I - HISTORY OF THE MEETING

1. Place and Duration 1
2. Opening 1
3. Attendance 1
4. Officers and Secretariat 1-2
5. Language 2
6. Agenda 2-3
7. Conclusions and Decisions – Definition 3
8. List of Conclusions and Decisions 3-6

PART II - REPORT ON AGENDA ITEMS

Report on Agenda Item 1 1-1
Report on Agenda Item 2 ..... 2-1/2-11
Report on Agenda Item 3 ..... 3-1/3-2
Report on Agenda Item 4 ..... 4-1/4-27
Report on Agenda Item 5 ..... 5-1/5-40
Report on Agenda Item 6 6-1
Report on Agenda Item 7 7-1

APPENDICES

Appendices 2A & 2B
Appendix 3A
Appendices 4A – 4P
Appendices 5A – 5Z

ATTACHMENT

List of Participants ..... Attachment A

PART I - HISTORY OF THE MEETING

1. Place and Duration

1.1 The Twenty-Two Meeting of the Middle East Air Navigation Planning and Implementation Regional Group and the Twelfth Meeting of the Regional Aviation Safety Group-Middle East (MIDANPIRG/22 & RASG-MID/12) were successfully held in Doha, State of Qatar, from 4 to 8 May 2025.

2. OPENING

2.1 His Excellency Mohammed Faleh Alhajri, Acting President of the Qatar Civil Aviation Authority, delivered the opening address and warmly welcomed all participants to Doha for the MIDANPIRG/22 and RASG-MID/12 Meeting. He underscored Qatar's strong belief in the importance of reinforcing collective efforts to overcome current and future challenges, which is essential to securing a prosperous future for the region's aviation system. In this context, he expressed his hope for productive discussions that would enhance cooperation among States and result in meaningful recommendations and outcomes to support progress, growth, and prosperity in the MID Region.

2.2 On behalf of ICAO, Eng. Mohamed Abubaker Farea, Regional Director of the ICAO Middle East Office, expressed his sincere gratitude to the State of Qatar—and in particular to H.E. Mohammed Alhajri—for graciously hosting this important meeting in Doha. Eng. Farea extended his gratitude to the Qatar Civil Aviation Authority (QCAA) for the warm welcome, exceptional hospitality, excellent organization, and high-quality facilities provided for the event. He noted that hosting such meetings reflects Qatar's continued support for the aviation industry and for ICAO's work program both globally and regionally.

2.3 Eng. Farea announced that air traffic movements in the MID Region had reached a new peak. To accommodate this growth, the MID Office has made every effort to support safe and efficient flight operations, working in close coordination with all relevant stakeholders. He noted that the outcomes of these collaborative efforts, as well as the strategic objectives ahead, would be addressed during the meeting.

2.4 In conclusion, Eng. Farea strongly encouraged all States and stakeholders to maintain their high level of commitment and continue prioritizing aviation safety in the Middle East. He emphasized that through continued collaboration, we can ensure that air travel remains safe, reliable, sustainable and accessible to all.

3. Attendance

3.1 The meeting was attended by a total of Two Hundred and Eleven (211) participants from fourteen (14) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Libya, Oman, Qatar, Saudi Arabia, Sudan, UAE, Yemen and USA) and nine (9) International Organizations/Industries (ADL, AIRBUS, BOEING, CANSO, IATA, IFALPA, IFATCA, IFATSEA and MIDRMA). The list of participants is at **Attachment A**.

OFFICERS AND SECRETARIAT

3.2 Mr. Ahmed Al Jallaf, Chairperson of MIDANPIRG, and Mr. Sulaiman Almuhaimedi, Chairperson of RASG-MID, chaired the meetings.

3.3 Mr. Mohamed Abubaker Farea, Regional Director, acted as the Secretary of the meetings,

supported by the following Regional/Technical Officers:

From the ICAO MID Office, Cairo:

Mr. Mashhor Alblowi	Regional Officer, Flight Safety
Mr. Mohamed Chakib	Regional Officer, Safety Implementation
Mr. Mohamed Iheb Hamdi	Regional Officer, Aerodromes and Ground Aids
Mr. Radhouan Aissaoui	Regional Officer, Information Management
Mr. Ahmad Amireh	Regional Officer, Air Traffic Management and Search and Rescue
Mr. Ahmad Kaveh	Regional Officer, Air Traffic Management

The meeting was also supported by the following team from ICAO EUR/NAT Regional Office and Headquarters:

Mrs. Nino Gelovani	Regional Officer, Meteorology, EUR/NAT Office
Mr. Martin Maurino	Technical Officer, Global Aviation Safety Plan, ICAO HQ
Mr. Elie Elkhoury	Technical Officer, Airspace Management and Optimization, ICAO HQ

4. LANGUAGE

4.1 The discussions were conducted in English. Documentation was issued in English.

5. AGENDA

5.1 The following Agenda was adopted:

Agenda Item 1: Adoption of the Provisional Agenda ***(Plenary)***

Agenda Item 2: Global and Regional Developments ***(Plenary)***

- 2.1 Review of the ANC report on MIDANPIRG/21 and RASG-MID/11 Meetings
- 2.2 ICAO Global and Regional Aviation Safety and Air Navigation developments
- 2.3 Update from States and International Organizations

Agenda Item 3: Coordination between MIDANPIRG and RASG-MID ***(Plenary)***

- 3.1 Follow-up on the PIRG/RASG MID Conclusions and Decisions
- 3.2 Safety Subjects of interest to MIDANPIRG
- 3.3 Air Navigation Subjects of interest to RASG-MID
- 3.4 MID Region Aerodromes Priorities and Challenges

Agenda Item 4: RASG-MID Work Programme ***(RASG-MID/12)***

- 4.1 Follow-up on the RASG-MID/11 Conclusions and Decisions
- 4.2 Outcomes of the RASG-MID Groups (ASRG, SEIG, ASPIG and AIIG)
- 4.3 NASP & MID-RASP Workshop
- 4.4 Election of Chairpersons

Agenda Item 5: MIDANPIRG Work Programme ***(MIDANPIRG/22)***

5.1 Follow-up on MIDANPIRG/21 Conclusions and Decisions
5.2 MID Region Air Navigation priorities and targets
5.3 ANS (AIM, PBN, AGA-AOP, ATM-SAR, CNS and MET)
5.4 Air Navigation Deficiencies
5.5 States' bilateral coordination meetings
5.6 Election of Chairpersons

Agenda Item 6: RASG-MID/ MIDANPIRG Working Arrangements ***(Plenary)***

6.1 Dates and Venue of MIDANPIRG/23 & RASG-MID/13

Agenda Item 7: Any other business ***(Plenary)***

6. CONCLUSIONS AND DECISIONS – DEFINITION

6.1 The MIDANPIRG and RASG-MID record their 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.

7. LIST OF CONCLUSIONS AND DECISIONS

PIRG/RASG CONCLUSION 1:	*MENA ARCM*
PIRG/RASG CONCLUSION 2:	*CONSOLIDATED REGIONAL APPROACH TO GNSS RFI MANAGEMENT*
PIRG/RASG DECISION 3:	*AMENDED RASG-MID SAFETY ADVISORY 14*
PIRG/RASG CONCLUSION 4:	*CAPACITY BUILDING ON GNSS RFI*
PIRG/RASG CONCLUSION 5:	*SUSTAINABILITY AND FUTURE OF THE MID FPP*
RASG-MID CONCLUSION 12/1:	*MENA RSOO*
RASG-MID CONCLUSION 12/2:	*GUIDANCE FOR IMPLEMENTING GOAL 6 OF THE 2026–2028 GASP*
RASG-MID CONCLUSION 12/3:	*13TH ASR*
RASG-MID CONCLUSION 12/4:	*SHARING OF SAFETY DATA ANALYSIS*
RASG-MID CONCLUSION 12/5:	*IMPLEMENTATION PROGRESS ON THE SAFETY ENHANCEMENT INITIATIVES (SEIS)*

RASG-MID CONCLUSION 12/6:	*AAM AND NEW ENTRANTS*
RASG-MID CONCLUSION 12/7:	*DEVELOPMENT OF NATIONAL AVIATION SAFETY PLAN (NASP) IN MID STATES*
RASG-MID CONCLUSION 12/8:	*DEVELOPMENT OF SSP IN MID STATES*
RASG-MID CONCLUSION 12/9:	*ESTABLISHMENT OF ELECTRONIC PILOT LICENSE (EPL) FOR THE MID REGION*
RASG-MID CONCLUSION 12/10:	*SARPS, AND GUIDANCE RELATED TO FATIGUE RISK MANAGEMENT (FRM) FOR MAINTENANCE LICENSED PERSONNEL*
RASG-MID CONCLUSION 12/11:	*MONITORING OF AERODROMES CERTIFICATION IMPLEMENTATION IN THE MID REGION*
RASG-MID CONCLUSION 12/12:	*MONITORING THE IMPLEMENTATION OF LOCAL RUNWAY SAFETY TEAMS IN THE MID REGION*
RASG-MID CONCLUSION 12/13:	*FACILITATION OF ICAO RUNWAY SAFETY GO-TEAM PERFORMANCE MISSIONS*
RASG-MID CONCLUSION 12/14:	*MONITORING OF GLOBAL REPORTING FORMAT (GRF) IMPLEMENTATION IN THE MID REGION*
RASG-MID CONCLUSION 12/15:	*MONITORING OF ACR-PCR METHODOLOGY IMPLEMENTATION IN THE MID REGION*
RASG-MID CONCLUSION 12/16:	*STRENGTHENING WILDLIFE STRIKE REPORTING IN THE MID REGION*
RASG-MID DECIS1ION 12/17:	*ESTABLISHMENT OF THE MID WILDLIFE HAZARD MANAGEMENT ACTION GROUP (MID WHM AG)*
RASG-MID CONCLUSION 12/18:	*ESTABLISHMENT OF THE MID AERODROME SAFETY DATA SHARING FRAMEWORK*
RASG-MID CONCLUSION 12/19:	*ADHERENCE TO ICAO ANNEX 13- ACCIDENT INVESTIGATION FINAL REPORTS*
MIDANPIRG CONCLUSION 22/1:	*MID AIR NAVIGATION REPORT-2024*
MIDANPIRG CONCLUSION 22/2:	*MID AIR NAVIGATION PLAN VOLUME III (EDITION 2025)*
MIDANPIRG CONCLUSION 22/3:	*MID AIR NAVIGATION STRATEGY (EDITION MARCH 2024 REVISION FEBRUARY 2025)*
MIDANPIRG CONCLUSION 22/4:	*MID REGION AIR NAVIGATION REPORT (2025)*

MIDANPIRG CONCLUSION 22/5:	*ARTIFICIAL INTELLIGENCE IN ANS*
MIDANPIRG Conclusion 22/6:	*DEVELOPMENT Regional ATM Monitoring Dashboard*
MIDANPIRG Conclusion 22/7:	*MID RVSM SMR 2024*
MIDANPIRG Conclusion 22/8:	*Reporting of LHDS*
MIDANPIRG Conclusion 22/9:	*MID RVSM SMR 2025*
MIDANPIRG Decision 22/10:	*Project 30/10 Roadmap*
MIDANPIRG CONCLUSION 22/11:	*IMPLEMENTATION OF REDUCED LONGITUDINAL SEPARATION IN THE MID REGION*
MIDANPIRG DECISION 22/12:	*AIRSPACE MANAGEMENT WORKING GROUP (ASM WG) TERMS OF REFERENCE*
MIDANPIRG CONCLUSION 22/13:	*FREE ROUTE IMPLEMENTATION GUIDANCE MATERIAL*
MIDANPIRG CONCLUSION 22/14:	*NATIONAL ATM CONTINGENCY PLAN/ ARRANGEMENT*
MIDANPIRG CONCLUSION 22/15:	*STRENGTHENING CAPACITY BUILDING FOR AOP- BBB IMPLEMENTATION IN THE MID REGION*
MIDANPIRG CONCLUSION 22/16:	*MONITORING THE IMPLEMENTATION OF ADVANCED SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEMS (A-SMGCS) IN THE MID REGION*
MIDANPIRG CONCLUSION 22/17:	*MONITORING A-CDM IMPLEMENTATION PROGRESS IN THE MID REGION*
MIDANPIRG CONCLUSION 22/18:	*FACILITATION OF ICAO AOP GO-TEAM MISSIONS FOR A-CDM AND A-SMGCS*
MIDANPIRG DECISION 22/19:	*MID AMC STG AMENDED TERMS OF REFERENCE*
MIDANPIRG DECISION 22/20:	*MID NAV-MON ACTION GROUP*
MIDANPIRG DECISION 22/21:	*AIMDP TASK FORCE TORS*
MIDANPIRG CONCLUSION 22/22:	*PUBLICATION OF THE PCR IN STATES AIPS*
MIDANPIRG CONCLUSION 22/23:	*PUBLICATION OF GNSS-RELATED INFORMATION IN STATES' AIPS*
MIDANPIRG CONCLUSION 22/24:	*AIM-ING FOR EXCELLENCE WORKSHOP: ADVANCING AERONAUTICAL INFORMATION SERVICES*
MIDANPIRG CONCLUSION 22/25:	*PBN SID/STAR CHARTS HARMONIZED AIP PUBLICATION*

MIDANPIRG CONCLUSION 22/26:	*GUIDANCE MATERIAL ON RNP APPROACH (RNP APCH)*
MIDANPIRG CONCLUSION 22/27:	*IFP PROVISIONS AND SAFETY OVERSIGHT WORKSHOP*
MIDANPIRG CONCLUSION 22/28:	*WAFS DATA*
MIDANPIRG CONCLUSION 22/29:	*IWXXM IMPLEMENTATION DEFICIENCIES*
MIDANPIRG CONCLUSION 22/30:	*WORKSHOP ON ENHANCING MET CAPABILITIES*
MIDANPIRG CONCLUSION 22/31:	*REVISED MET SG TORS*
MIDANPIRG CONCLUSION 22/32:	*SURVEY ON STATES' COMPLIANCE WITH EXISTING AND FORTHCOMING GLOBAL AND REGIONAL MET REQUIREMENTS*
MIDANPIRG CONCLUSION 22/33:	*AIR NAVIGATION DEFICIENCIES*
MIDANPIRG DECISION 22/34:	*REVISED TERMS OF REFERENCE FOR MIDANPIRG SUBSIDIARY BODY*

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ADOPTION OF THE PROVISIONAL AGENDA

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

REPORT ON AGENDA ITEM 2: GLOBAL AND REGIONAL DEVELOPMENTS

2.1 ***Review of the ANC Report on MIDANPIRG/21 and RASG-MID/11 Meetings***

2.1.1 The subject was addressed in WP/02 presented by the Secretariat. The meeting noted that the Air Navigation Commission (ANC) reviewed the MIDANPIRG/21 and RASG-MID/11 Report during the sixth meeting of its 226th Session on 11 June 2024, based on the outcome of the ANC Working Group of the Whole for Strategic Review and Planning (WG/SRP) meeting as presented in AN-WP/9769.

2.1.2 The meeting noted with appreciation that the ANC commended the MID Region for the level of coordination between MIDANPIRG and RASG-MID as well as the progress made in the Region.

2.1.3 The meeting was informed that the commission discussed the conclusions concerning GNSS interference and spoofing, addressing the increased number of GNSS interference reports in the MID region. It was emphasised that implementing necessary actions to mitigate the associated safety risk became critical. The ANC noted that the ATM SUB-Group is preparing a report with necessary actions and that the NOTAM template on GNSS was being revised to provide information on GNSS disturbances.

2.1.4 Regarding Artificial Intelligence (AI) and Digitalization for civil aviation, which had been considered as emerging risks from the RASG-MID perspective, the Commission noted that their importance for air navigation service providers and coordination with regulators would achieve a structured solution on how to address the matter at national and regional levels. The ANC noted that the ANC's prioritization exercise, along with the Standardization Roadmap, would assist in identifying which new technologies would be incorporated in the Standard-setting process.

2.1.5 With respect to the achievements in sustainability, it was clarified that some initiatives and projects were agreed upon to be implemented in the MID Region that would support environmental sustainability, such as airspace optimization and the implementation of flexible use of airspace and free route airspace. Another aspect of sustainability was the actions perceived to secure resources for the regional projects.

2.1.6 The Commission noted the regional projects implemented under the auspices of the ICAO Middle East Regional Office and appreciated an update on the progress to be provided during the 2025 report review.

2.1.7 The following challenges the MID Region is facing were noted by the Commission and considered during the discussions on the global challenges reported to the ICAO Council:

- Many unrest situations and conflict zones necessitated multiple Contingency Coordination Teams (CCTs);
- SSP and NASP development and implementation;
- Limited sharing of safety information and safety data analysis by States;
- Insufficient human & financial resources and training of personnel to meet the State's obligations;
- Political/Security situation/stability in some States;
- Inadequate separation of regulatory/oversight functions and service providers in some States;

- Independent aircraft accident investigation authorities;
- The number of Iranian registered aircraft not supported to meet the Minimum Monitoring Requirement (MMR) continues to increase; and
- Insufficient funding to support the MID FPP Programme and activities

Consolidated Report to Council on PIRGs and RASG 2023-2024

2.1.8 The meeting noted that the Commission agreed to the consolidated report to the Council on PIRGs and RASGs for 2023-2024 during the eighth meeting of its 227th Session on 31 October 2024 based on the review of the WG/SRP several meetings. The consolidated report to the Council for this year covered the period from 1 April 2023 to 31 May 2024.

2.1.9 Enhancements were introduced to the report to present the necessary information to the Council more concisely, streamlined, and simplified. This is supported through dedicated webpages on the ANC and Council portals, where all documentation related to the reporting period will be centralized for easy reference.

2.1.10 In discussing the reported challenges by PIRGs and RASGs for 2023-2024, the Commission agreed to the following four new global challenges, including associated actions that would support addressing them:

- lack of harmonized regional framework and global guidance material for the management of Contingency Coordination Teams (CCTs) in case of airspace disruption;
- low Level of development and implementation of National Aviation Safety Plans (NASPs);
- slow progress in establishing independent aircraft accident investigation authorities and completion of accident investigation reports; and
- low level development of National Air Navigation Plans (NANPs).

2.1.11 The Commission noted the challenges associated with insufficient human and financial resources and personnel training to meet the State's obligations due to their significant impact on the implementation of the ICAO global and regional requirements, aiming to advance the aviation sector. The Commission agreed not to list these challenges as part of the list of air navigation global challenges, as they are not new and are being addressed through other mechanisms. However, the report draws the attention of the Council to the lack of human resources and the training in jeopardy.

2.1.12 Concerning the lack of a global framework for space operations supporting adequate coordination related to space activities to mitigate safety risks to airspace users resulting from space launch and re-entry operations, the Commission agreed not to include it in the list of global challenges at this stage, considering the outcome of the AN-Conf/14, and allow some time to progress the work before assessing the situation and receiving further feedback from the regions.

2.1.13 The Commission agreed to continue working with the Secretariat on enhancing the PIRGs and RASGs consolidated report to the Council, including the option of developing a dashboard to monitor the challenges reported and actions undertaken to resolve them, which would require further coordination with PIRGs and RASGs.

2.1.14 The meeting considered the actions taken by the Air Navigation Commission on the Report of the MIDANPIRG/21 and RASG-MID/11 under the relevant agenda item.

2.1.15 The meeting reviewed the global challenges and updated the status for the MID Region as in **Appendix 2A**.

2.2 *ICAO GLOBAL AND REGIONAL AVIATION SAFETY AND AIR NAVIGATION DEVELOPMENTS*

2.2.1 The subject was addressed in PPT/3 presented by the Secretariat.

14th Air Navigation Conference (An-Conf/14)

2.2.2 The meeting was informed of the main outcome of the 14th Air Navigation Conference (AN-Conf/14) held in Montreal, Canada, from 26 August to 6 September 2024, in particular, the actions in the Recommendations addressed specifically to PIRGs and RASGs. The meeting considered the outcome of AN-Conf/14 under the relevant agenda item and took necessary actions.

42nd ICAO General Assembly

2.2.3 The meeting was provided with an overview of the upcoming 42nd ICAO General Assembly (A42) scheduled to be held in Montreal, Canada, from 23 September to 3 October 2025. The meeting noted that the ICAO Innovation Fair 2025 *"Global Horizons: Inclusive Innovations for Aviation"* will be held before the A42 on 21 and 22 September 2025. All details are available on the A42 website https://www.icao.int/meetings/a42. The Chairperson encouraged States to attend and contribute to the work of the A42 in a collaborative manner, when viable, to best represent the MID Region, building on the MID States' active participation in the AN-Conf/14.

Update on upcoming ICAO provisions

2.2.4 The meeting was provided with an overview of the ICAO provisions that became applicable in 2024 and those in the pipeline for 2025 to 2028. The meeting requested that the MIDANPIRG and RASG-MID subsidiary bodies and states take necessary measures to implement the applicable and upcoming ICAO provisions.

GASP 2023-2025, NASP, Safety Management, USOAP CMA

2.2.5 The meeting was informed on the work underway to finalise the 2026-2028 edition of the Global Aviation Safety Plan (GASP, Doc 10004), including the revision of goal and targets, global operational safety risks, and the global organizational challenges.

2.2.6 The meeting noted that the proposals for the revision of the GASP will be presented for endorsement at the 42nd Session of the ICAO Assembly (A42), to be held in Montréal, Canada, 23 September to 3 October 2025.

2.2.7 The meeting was informed on the status of national aviation safety plan (NASP) development at the global and regional levels.

2.2.8 The meeting noted the improvement in the level of NASP development in the MID region, with twice as many States having provided their NASP for posting on the ICAO public website, since the last MIDANPIRG/21 and RASG-MID/11 meeting in 2024. Particular attention was drawn to the need for States to publish a revised NASP taking into consideration the 2026-2028 edition of the GASP and the latest edition of the Middle East Regional Aviation Safety Plan (MID-RASP 2026-2028 Edition).

2.2.9 The meeting was informed on the latest update on Safety Management activities, including latest amendment of Annex 19 (Safety Management) and the revision of guidance material to support its implementation.

2.2.10 In the same vein, the meeting was apprised of the latest updates related to the integration of the State Safety Programme Implementation Assessment (SSPIA) within ICAO's Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA).

2.2.11 The meeting noted that the 2024 edition of the Protocol Questions (PQs) became applicable for all USOAP CMA activities after 1 July 2025, except for the State Safety Programme (SSP) related PQs. However, the meeting encouraged States to proactively address SSP-related PQs, including both the SSP PQs and SMS PQs. It was highlighted that SSP PQs and SMS PQs are available on the USOAP CMA Online Framework (OLF).

MENA RSOO

Establishment of MENA RSOO- Kingdom of Saudi Arabia (KSA)

2.2.12 The subject was addressed in WP/7 presented by the Kingdom of Saudi Arabia (KSA).

2.2.13 The meeting expressed its appreciation to KSA for providing an overview of the establishment of the Middle East & North Africa Regional Safety Oversight Organization (MENA RSOO), as a coordinated initiative by the Arab Civil Aviation Organization (ACAO) and ICAO MID Office, which is currently spearheaded by Saudi Arabia.

2.2.14 The meeting noted that the primary objective of the MENA RSOO is to assist its Member States to develop and implement their State Safety Programme (SSP), and to strengthen their safety oversight capabilities.

2.2.15 The meeting acknowledged the substantial progress achieved in establishing the MENA RSOO, culminating in its formal launch in December 2023 in Riyadh, Saudi Arabia, marked by an official signing ceremony by eight (8) Member States.

2.2.16 The meeting recognized the MENA RSOO as a vital regional mechanism to enhance Member States' safety oversight capabilities, , and support the implementation of State Safety Programs and sustainability initiatives. Accordingly, the meeting agreed to the following RASG-MID conclusion:

RASG-MID CONCLUSION 12/1: MENA RSOO

That States be encouraged, if not yet done, to sign the MOA and join the MENA RSOO and actively contribute to the success and sustainability of the MENA RSOO.

MENA ARCM

2.2.17 The subject was addressed in PPT/5 by the Secretariat. The meeting noted with appreciation the updated progress on MENA ARCM activities and encouraged States to sign the MENA ARCM MoU if not yet done and urged all States to support MENA ARCM activities.

PIRG/RASG CONCLUSION 1: MENA ARCM

That States be encouraged to sign the MENA AIG Regional Cooperation Mechanism (MENA ARCM) MoU, if not yet done.

2.2.18 The meeting also noted that the State of Qatar Aircraft Accident Investigation Directorate signed the MENA ARCM MoU and joined the MENA ARCM to support its activities.

Outcomes of the Fifth MID Region Safety Summit

2.2.19 The subject was addressed in PPT/6 presented by the Secretariat. The meeting was apprised of the outcomes of the Fifth MID Region Safety Summit, held in Kuwait (26-28 November 2024).

2.2.20 The meeting supported the recommendations put forward by the Summit and invited all stakeholders to take necessary actions to implement those recommendations, as needed. All information related to the Summit, including presentations and Summary Outcomes, is available at: https://www.icao.int/MID/Pages/2024/MIDSS2024.aspx.

GNSS Radio Frequency Interference (RFI) Management in the MID Region

2.2.21 The subject was addressed in PPT/9, PPT/22 and WP/10 respectively presented by the Secretariat, IATA and Egypt.

2.2.22 The meeting was apprised of the increasing threats posed by GNSS Radio Frequency Interference (RFI), including jamming and spoofing, and their significant impact on the safety and continuity of air navigation services. The meeting recalled the serious concerns raised during the ICAO ANC/14, and emphasized the obligations of States under the ITU Constitution and Radio Regulations to notify aviation stakeholders about intentional interference.

2.2.23 The meeting emphasized the need for States to implement GNSS RFI mitigation measures, and to maintain a sufficient network of conventional navigation aids (VOR, DME, ILS) to ensure operational continuity in the event of GNSS signal degradation.

2.2.24 The meeting highlighted the importance of establishing regional coordination mechanisms and encouraged States to develop a GNSS RFI monitoring and reporting framework through the appropriate MID regional frameworks. The use of ICAO's GNSS Manual (Doc 9849) was encouraged to support contingency planning and awareness.

2.2.25 The meeting endorsed the following Conclusion:

PIRG/RASG CONCLUSION 2: CONSOLIDATED REGIONAL APPROACH TO GNSS RFI MANAGEMENT

That, a consolidated regional approach for the management of GNSS RFI be established with the following actions:

a) States be urged to:
- *i. Support the establishment of regional GNSS RFI monitoring and reporting mechanisms through the appropriate MID regional frameworks;*
- *ii. maintain an adequate network of conventional navigation aids to ensure continuity of air navigation services in case of GNSS signal degradation;*
- *iii. strengthen civil-military coordination and ensure timely sharing of information related to intentional GNSS interference;*
- *iv. define reversion scenarios and associated contingency procedures to maintain safe and efficient operations in the event of GNSS unavailability.*

b) ICAO MID Office be requested to:
- *i. coordinate the development of the regional GNSS RFI management framework and potential reporting mechanism;*
- *ii. support States through regional capacity building and awareness activities on GNSS interference detection and mitigation;*

iii. liaise with ICAO Headquarters to contribute to the deployment of global guidance material specifications, including the GNSS RFI mitigation iPack and available information exchange mechanisms.

2.2.26 In response to reported GPS spoofing incidents in the MID Region, the meeting recalled RASG-MID Safety Advisory 14 (RSA-14) and the need for its revision to incorporate both PBN and ATM operational response measures. The amended RSA-14 was reviewed and endorsed. Accordingly, the meeting endorsed the following Decision:

PIRG/RASG DECISION 3: AMENDED RASG-MID SAFETY ADVISORY 14

That, the amended RASG-MID Safety Advisory 14 (RSA-14) at ***Appendix 2B*** *is endorsed.*

2.2.27 The meeting acknowledged the growing operational and safety risks posed by GNSS interference across the region and underscored the urgent need to strengthen regional technical capabilities in monitoring, detection, and mitigation.

2.2.28 The meeting agreed on the need to organize a regional capacity-building event dedicated to GNSS interference management, involving ANS and cybersecurity experts to share best practices, tools, and procedures in alignment with ICAO guidance.

2.2.29 The meeting noted with appreciation the effort of the State of Qatar in supporting the ICAO MID Region work programme by accepting to host the event. The event will be jointly coordinated by ICAO MID and EUR/NAT. In this regard, the meeting endorsed the following Conclusion:

PIRG/RASG CONCLUSION 4: CAPACITY BUILDING ON GNSS RFI

That, ICAO, in collaboration with ICAO partners, organize a Regional Capacity Building event on GNSS Interference during 2025.

2.2.30 Furthermore, IATA apprised the meeting of the sharp rise in GPS interference events, notably jamming and spoofing, with significant operational impacts observed across the MID Region. In addition, IATA presented statistical evidence covering over 36,000 reported events, highlighting sharp increases in spoofing (375%) and jamming (58%) from January 2023 to September 2024, with Egypt, Iraq, and Türkiye identified among the most affected States.

2.2.31 The meeting noted IATA's analysis linking interference to the degradation or loss of GNSS-dependent services such as RNAV, RNP AR, ADS-B, terrain awareness, and ATM/CNS synchronization. The meeting noted the following IATA recommendations:

- ICAO to expedite the development of standardized guidance, equipage policies, and contingency procedures;
- States to improve the consistency and clarity of NOTAMs, and enhance civil-military coordination;
- The MID Region to establish data-sharing and reporting mechanisms to support tactical awareness and response planning.

2.2.32 The meeting recognized that IATA's recommendations fully align with the endorsed PIRG/RASG Conclusion 4 on GNSS RFI Management, and the PIRG/RASG Conclusion 6 on GNSS Capacity Building, reinforcing the urgency of coordinated regional action and cross-sectoral collaboration.

2.2.33 Additionally, Egypt emphasized the growing safety and operational risks posed by GNSS interference, including jamming and spoofing, particularly within Egyptian airspace and adjacent conflict-affected regions. The meeting noted Egypt's detailed analysis of the impact on navigation, surveillance, and communication systems, particularly PBN, ADS-B, CPDLC, and TAWS and the challenges posed by spoofing techniques that cause total degradation of navigation capabilities. In this context, the meeting further noted the absence of standardized ICAO guidance on the publication of alternative navigation sensors (e.g., DME/DME) in the AIP ENR section, to formally designate them as backup systems for GNSS-dependent ATS routes. To address this gap and enhance contingency planning, the meeting invited the ICAO to coordinate with the relevant ANC panels, specifically the IFPP, IMP, and NSP, to provide guidance for the inclusion of backup sensor information (e.g. DME/DME, VOR/DME, etc.) in States' AIPs.

2.2.34 The meeting noted with appreciation Egypt's proposals to strengthen GNSS resilience in alignment with the actions already endorsed under PIRG/RASG Conclusion 4 on the Consolidated Regional Approach to GNSS RFI Management, and consistent with IATA recommendations.

2.2.35 Moreover, the meeting was informed by the UAE that GNSS vulnerabilities had been addressed within the GCC Air Navigation Committee, where States shared lessons learned and best practices. The meeting agreed that a similar initiative be considered at the MIDANPIRG and RASG-MID levels to foster regional coordination and knowledge exchange.

2.2.36 In this regard, the meeting recognized the need to foster the establishment of a regional GNSS interference reporting and analysis mechanism, promote the use of dual/multi-constellation GNSS receivers, and conduct technical training and awareness across all aviation stakeholders. Furthermore, the meeting encouraged collaborative research and engagement with international partners.

Cybersecurity and Innovation Updates for the MID Region

2.2.37 The subject was addressed in PPT/11 and WP/21 respectively presented by the Secretariat and UAE. The meeting was apprised of the progress achieved and future directions in the areas of Innovation and Air Navigation Services (ANS) Cybersecurity for the MID Region.

2.2.38 The meeting noted the objectives of the ICAO Policy on Innovation, aimed at enhancing ICAO's ability to support Member States in accessing and implementing innovation in aviation. The policy, effective from 17 March 2025, promotes a technology-neutral and globally harmonized approach under the No Country Left Behind (NCLB) initiative.

2.2.39 The meeting highlighted the strategic focus areas of the Policy, which include the facilitation of innovation-sharing, horizon scanning, standardization roadmaps, and the establishment of performance indicators. It was also noted that the ICAO Council will undertake periodic updates of the policy based on evolving developments.

2.2.40 The meeting recognized the important role of ICAO Regional Offices, including the MID Office, in integrating the Innovation Policy into regional planning and fostering a culture of innovation. Regional Offices are expected to designate Innovation Champions, support Member States, and lead regional capacity-building and stakeholder engagement initiatives.

2.2.41 The meeting urged Member States to incorporate innovation into their national aviation policies, develop innovation strategies aligned with ICAO's framework, and strengthen national capacities through training and awareness initiatives. States were also encouraged to implement key performance indicators and regularly report progress to ICAO.

2.2.42 The meeting acknowledged the critical role of Artificial Intelligence (AI) in the

modernization of Air Navigation Services (ANS). Applications of AI include real-time conflict resolution, trajectory prediction, speech recognition for ATC error detection, and optimized runway configuration.

2.2.43 The meeting emphasized the growing cybersecurity risks associated with AI integration into ATM systems. While AI technologies offer substantial benefits, they also introduce new vulnerabilities. The meeting highlighted the importance of ensuring the resilience and security of AI-driven systems, in alignment with ICAO's efforts to develop dedicated guidance on AI and cybersecurity.

2.2.44 The meeting noted with appreciation the effort of the Sultanate of Oman in supporting the ICAO MID work programme by accepting to host the ANS Cybersecurity Table-Top Exercise, combined with an AI Innovation Initiatives Workshop, in the third quarter of 2025. This regional event will serve to enhance cybersecurity awareness, foster practical cooperation, and strengthen States' preparedness to address cybersecurity challenges in aviation.

2.2.45 The meeting acknowledged the MID ANS Innovation Initiative, as presented UAE, and recognized its alignment with ICAO's Innovation Policy, the Global Air Navigation Plan (GANP), and the MID Region Air Navigation Strategy.

2.2.46 The meeting encouraged MID States, Air Navigation Service Providers (ANSPs), and relevant stakeholders to voluntarily engage in innovation activities that support the digital transformation, operational efficiency, and environmental sustainability of air navigation services.

2.2.47 The meeting invited States to share relevant developments, best practices, and lessons learned related to innovation in ANS through existing MIDANPIRG mechanisms.

2.2.48 The meeting requested the ICAO MID Office to monitor regional developments related to ANS innovation and provide updates at the upcoming MIDANPIRG-RASG meeting.

CAPSCA Programme Updates for the MID Region

2.2.49 The subject was addressed in PPT/12 presented by the Secretariat. The meeting was apprised

2.2.50 The meeting was apprised of the recent developments and implementation status of the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) within the MID Region. The meeting highlighted that 85% of ICAO Member States are currently engaged in the CAPSCA Programme, representing the highest participation rate since its inception.

2.2.51 The meeting noted with appreciation the growing momentum and visibility of CAPSCA activities between 2023 and 2025, including the successful organization of interregional and regional events such as the 10th CAPSCA EUR/MID Meeting in Bahrain (February 2023), and the joint EUR/MID CAPSCA meeting in Cologne (April 2024). These initiatives have significantly enhanced the interregional collaboration between ICAO MID and EUR/NAT Offices, and States/public health authorities accredited to both regions.

2.2.52 The meeting emphasized the critical role of CAPSCA in advancing pandemic preparedness in civil aviation, highlighting the transition from reactive emergency responses to resilience-building strategies. The need for risk-based and harmonized approaches, rather than arbitrary travel bans, was stressed as a key lesson from the COVID-19 pandemic.

2.2.53 The meeting noted that CAPSCA continues to promote the development and implementation of National Aviation Public Health Emergency Preparedness Plans and Airport-level Public Health Emergency Plans. States were urged to align with ICAO's updated strategy, which includes strengthening multi-sectoral coordination, particularly between public health authorities and airport operators at points of entry.

2.2.54 The meeting recognized the efforts made by CAPSCA in embracing digital innovation to facilitate public health verification in aviation, including interoperable digital health certificates and platforms for health declarations and vaccine/test documentation.

2.2.55 The meeting acknowledged the outcomes of the Doha Declaration, which reinforced States' commitment to develop national aviation health emergency frameworks and integrate WHO's International Health Regulations (2005) into the aviation system.

2.2.56 The meeting was informed of the plan to develop a new ICAO guidance document entitled PANS-Health (Procedures for Air Navigation Services: Health) aimed at standardizing procedures for managing public health emergencies in aviation operations.

2.2.57 The meeting recognized the continued relevance of CAPSCA in light of recent outbreaks such as Marburg, mpox, and Lassa fever, and reiterated the importance of transitioning from planning to implementation, ensuring that States are not only prepared but also audit-ready.

2.2.58 The meeting noted the upcoming 12th CAPSCA EUR/MID Meeting, to be held from 19 to 20 May 2025 in Cairo, Egypt, and encouraged States to actively participate.

MID Flight Procedure Programme (MID FPP)

2.2.59 The subject was addressed in WP/8 presented by the secretariat. The meeting was apprised of the outcomes of the Seventh Meeting of the Directors General of Civil Aviation-Middle East Region (DGCA-MID/7), held in Riyadh, Saudi Arabia, on 19 and 20 May 2024, related to the MID FPP. Updates were also provided on the outcomes of the 6th and 7th Meetings of the MID FPP Steering Committee (SC/6 and SC/7), conducted virtually on 20 August 2024 and 27 February 2025, respectively.

2.2.60 The meeting acknowledged the effectiveness and benefits of the MID FPP, affirming its viability as a valuable solution to assist States in the domains of PANS-OPS and PBN. However, the meeting noted that that the MID FPP has been facing serious financial challenges, since its inception. These challenges stem from unpaid contributions, including outstanding payments from 2022 training activities, overdue 2023 annual fees. Compounded by limited participation from member States, these financial shortfalls have strained the programme's operational capacity, threatening its long-term sustainability.

2.2.61 The meeting noted that as a follow-up action to the MIDANPIRG/21 Conclusion 21/9, the ICAO MID Office conducted a survey on the MID FPP Sustainability. The survey was dispatched on 27 March 2024 via State Letter (Ref: AN 6/33 – 24/047), seeking States' insights and opinions on the future of the MID FPP. The replies indicated that 7 MID States are supporting the continuation of the MID FPP. Two (2) States have indicated explicitly that they are not in favour of continuing the programme. The meeting further noted that 4 States believe that the continuation of the MID FPP needs the change of its current business model, however only 2 States plan to support the implementation of the new business model.

2.2.62 The meeting further noted that the MID FPP SC/7 meeting explored two options:

(1) Hosting the program by a volunteer State from the MID Region: where the

volunteer State hosts the MID FPP and provide the necessary support for the management of the programme (provision of a MID FPP Manager and necessary facilities and tools, etc.); similar to the APAC experience with China as the Host State providing significant support.

(2) ICAO MID Office to continue managing the program through agreements with ICAO-approved PANS-OPS organizations.

2.2.63 Furthermore, in line with MID FPP SC/7 meeting, in particular Conclusion 7/1, the meeting noted that the ICAO MID Office issued State Letter AN 6/33-25/046 on 4 March 2025 to all Member States. That letter sets out both options to secure the programme sustainability and invited each State to review the proposals and formally confirm a preferred choice. Only six States, Bahrain, Iraq, Jordan, Oman, Qatar, and the United Arab Emirates have responded, with Iraq and the UAE expressing support for hosting the programme as a volunteer MID Region State, while the other four States endorsed the second option.

2.2.64 The meeting was informed that the ICAO MID Office engaged with ICAO Legal Bureau (LEB) and Capacity Development and Implementation Bureau (CDI) to explore whether the programme could continue under agreements with ICAO-approved PANS-OPS organizations. These consultations made clear that ICAO possesses neither the legal authority nor the requisite legal and financial regulatory frameworks to assume direct oversight of the MID FPP as proposed. Moreover, the significant legal and liability risks and the potential conflicts of interest associated with such an arrangement would be at odds with ICAO's mandate as an international standard-setting body. Consequently, managing the programme through agreements with ICAO-approved PANS-OPS organizations was found not a viable option.

2.2.65 Following detailed discussions, the meeting agreed to extend the Programme operations for one additional year under the management of the ICAO MID Regional Office. Throughout this period, the MID Office and the MID FPP Steering Committee would jointly explore alternative business models/options to safeguard the Programme continuity until MIDANPIRG/23 finalizes long-term arrangements. Accordingly, the meeting agreed to the following RASG-MID conclusion:

PIRG/RASG CONCLUSION 5: MID FPP SUSTAINABILITY AND FUTURE PLAN

That:

a) ICAO MID Office and the MID FPP SC explore alternative options for the continuation of the MID FPP with a different business model; and

b) ICAO MID Office continue to manage the Programme until a final decision regarding the future of the Programme is taken by the MIDANPIRG/23.

2.3 *UPDATE FROM STATES AND INTERNATIONAL ORGANIZATION*

QCAA's Vision for Global Excellence: Leveraging Advanced Technologies in ATS

2.3.1 The subject was addressed in PPT/24 presented by Qatar. The meeting noted that to ensure the requirements for the Doha FIR, multiple projects have been implemented, with further projects planned for the future. This has ensured the QCAA is at the cutting edge of ATM innovation, not only in the GCC and MENA regions, but also worldwide.

Egyptian Airspace Modernization

2.3.2 The subject was addressed in PPT/20 presented by Egypt. The meeting noted with

appreciation the enhancements introduced to the ATS route structure within Cairo FIR, in coordination with Airspace users and ICAO MID and expressed gratitude to Egypt for the initiative resulted in fuel and emissions savings.

Iraq achievement

2.3.3 The subject was addressed in PPT/103 presented by Iraq. Iraq showcased the improvements introduced within Baghdad FIR, along with the challenges reported mainly related to GNSS interference and the implemented mitigation measures. The meeting thanked Iraq for all initiatives and noted the progress that shared during the meeting.

Development in Muscat FIR

2.3.4 The subject was addressed in PPT/ presented by Oman, Oman presented the scope of Airspace optimization project at the interface with APAC Region between Muscat and Mumbai FIRs, to address the reported challenges, and to accommodate for the expected traffic growth, focusing on the FUA, FRA ATFM, PBN concept; addressing the safety challenges related on the complexity of the Airspace, and in coordination with all the adjacent States. The meeting appreciated the efforts of Oman and requested the States to support Oman in the implementation of the project.

REPORT ON AGENDA ITEM 3: COORDINATION BETWEEN MIDANPIRG AND RASG-MID

3.1 *Follow-up on the PIRG/RASG MID Conclusions and Decisions*

3.1.1 The subject was addressed in WP/13 presented by the Secretariat. The meeting reviewed the progress made for the implementation of the PIRG-RASG Conclusions and Decisions as at **Appendix 3A**.

3.2 *Safety Subjects of interest to MIDANPIRG*

3.2.1 The subject was addressed in PPT/14 presented by the Secretariat. The meeting was apprised of the MID Region safety priorities.

3.2.2 Based on the analysis of the reactive and proactive safety information for the period 2019-2023, the safety priorities defined for the MID Region are:

Regional Operational Safety Risks

a. Runway Excursion (RE) and Abnormal Runway Contact (ARC) during landing;
b. Loss of Control Inflight - (LOC-I);
c. Mid Air Collision- (MAC)
d. Controlled Flight Into Terrain- (CFIT); and
e. Runway Incursion- (RI).

3.2.3 In addition to this, safety issues have been identified and mapped to their respective potential accident outcomes.

Organizational issues

a. States' Safety Oversight Capabilities;
b. Safety management;
c. Human Factors & Human Performance;
d. Competence of personnel; and
e. Risk interdependencies.
   - Cybersecurity risks
   - GNSS Interference Risks
   - 5G interference with Radio Altimeter
   - aviation health safety (AHS) risks
   - Risks arising from conflict zones, and
   - Security risks with an impact on aviation safety.

Emerging issues

3.2.4 Advanced Air Mobility (AAM) and New Entrants including UAS and eVTOL

3.2.5 The meeting also noted with appreciation the status of the MID region Safety performance.

3.3 *Air Navigation Subjects of interest to RASG-MID*

RVSM OPERATIONS AND MONITORING ACTIVITIES IN THE MID REGION (SMR2024)

3.3.1 The subject was addressed in WP/15 presented by the Secretariat.

3.3.2 The meeting was apprised with summary of the results of the MID Safety Monitoring Reports (SMR) 2024, The subject was further addressed under Agenda Item 5.3 (WP/44).

3.4 ***AGA-OPS Future Challenges for the MID Region***

3.4.1 The subject was addressed in PPT/17 presented by the Secretariat.

Aircraft Classification Rating – Pavement Classification Rating (ACR-PCR) methodology

3.4.2 The meeting was apprised of the major regulatory and technical developments impacting Aerodrome Design and Operations in the MID Region, including the implementation of the Aircraft Classification Rating – Pavement Classification Rating (ACR-PCR) methodology and the revised Obstacle Limitation Surfaces (OLS) framework.

3.4.3 The meeting noted that the ACR-PCR methodology, introduced through Amendment 15 to Annex 14, Volume I, replaces the legacy ACN-PCN system and provides a performance-based approach for managing pavement load capacity and operational planning. The methodology, applicable as of 28 November 2024, requires updated technical evaluations and presents significant challenges related to data availability, aircraft mix, and iterative calculation methods.

3.4.4 The meeting was apprised of ICAO's support activities to facilitate ACR-PCR implementation, including a planned regional webinar in coordination with ACI and the availability of ICAO Global Aviation Training (GAT) courses. States were encouraged to coordinate with the ICAO MID Office to access capacity-building tools.

Obstacles Limitation Surfaces

3.4.5 The meeting noted the upcoming revision of Chapter 4 of Annex 14, Volume I, concerning Obstacle Limitation Surfaces (OLS), including its effective and applicability dates. The revised model introduces Obstacle Free Surfaces (OFS) and Obstacle Evaluation Surfaces (OES), representing a shift toward a risk-based, performance-oriented approach to airspace protection. The amendment is intended to facilitate the safe integration of modern aircraft types, Performance-Based Navigation (PBN) procedures, and evolving urban development near aerodromes.

3.4.6 The meeting acknowledged the need for States to initiate updates to national regulations and safeguarding processes in line with the revised Obstacle Limitation Surfaces (OLS) provisions. The meeting was informed of ICAO tools under development, including the revised Airport Services Manual, Part 6, and a dedicated OLS Software Tool. States were encouraged to request the OLS Implementation iPack and to actively participate in forthcoming global and regional ICAO seminars.

REPORT ON AGENDA ITEM 4: RASG-MID WORK PROGRAMME

4.1 ***Follow-up on the RASG-MID/11 Conclusions and Decisions***

4.1.1 The subject was addressed in WP/25 presented by the Secretariat. The meeting was apprised of the progress achieved in the implementation of the RASG-MID/11 Conclusions and Decisions as at **Appendix 4A.**

4.2 ***Outcomes of the RASG-MID Groups (ASRG, SEIG, ASPIG and AIIG)***

Progress Towards 2026-2028 GASP

4.2.1 The subject was addressed in PPT/26 by the Secretariat. The meeting was informed on the work undertaken by the ICAO GASP Study Group (GASP-SG), which includes representation from MID States, to finalise the 2026-2028 edition of the GASP, to be presented for endorsement at ICAO's 42nd.

4.2.2 The meeting noted the global safety issues listed in the 2026-2028 GASP, including global operational safety risks and organizational challenges, as well as the proposed goals and targets for the next edition.

4.2.3 The meeting was also informed of the actions taken to address feedback on the GASP, received during the Fourteenth Air Navigation Conference (AN-Conf/14), as well as through the Questionnaire on the GASP Update, and the subsequent steps to finalise the Plan ahead of ICAO's 42nd.

4.2.4 Concerning the application of root cause analysis to further elaborate on the global organizational challenges identified in the GASP, the meeting was informed that while the GASP outlines global safety issues and their alignment with the established goals and targets, detailed guidance on addressing these challenges will be provided in the Global Aviation Safety Roadmap (ICAO Doc 10161).

4.2.5 With regards to strengthening State oversight capabilities, in the context of the 2026-2028 edition of the GASP, the meeting was informed that the GASP Study Group focused on the lowest USOAP CMA Effective Implementation (EI) scores for specific Protocol Questions (PQs), Critical Element (CEs) and Audit Area combination, and the feedback received from the Questionnaire on the GASP Update, completed by States and International Organizations prior to the Fourteenth Air Navigation Conference (AN-Conf/14).

4.2.6 With respect to the use of standardized taxonomies for classifying occurrence categories and promoting harmonization between States and their service providers in safety information analysis, the meeting encouraged States to adopt the taxonomy developed by the CAST/ICAO Common Taxonomy Team (CICTT), established in 1999 by the U.S. Commercial Aviation Safety Team (CAST) and the International Civil Aviation Organization (ICAO). The CICTT promotes the use of common terminology and standardized definitions to describe aviation safety events.

4.2.7 The meeting invited ICAO to consider complementing the presentation on the 2026-2028 GASP update with a status update on existing electronic tools such as those available through the ICAO Online Framework (OLF) and the Integrated Safety Trend Analysis and Reporting System (iSTARS) that may support States in developing their National Aviation Safety Plans (NASPs) and State Safety Programmes (SSPs).

4.2.8 With respect to Goal 6 of the 2026–2028 GASP, which focuses on expanding the use of industry evaluation programmes and safety data-sharing initiatives, the meeting recognized the inception of non-ICAO recognised industry evaluation programmes. Accordingly, the meeting agreed to the following Conclusion:

RASG-MID CONCLUSION 12/2: GUIDANCE FOR IMPLEMENTING GOAL 6 OF THE 2026–2028 GASP

That, ICAO is invited to develop guidance to assist states in assessing non-ICAO recognised industry evaluation programmes.

ASRG Outcomes

4.2.9 The subject was addressed in WP/27 and PPT/28 presented by the secretariat. The meeting was apprised of the MID Region safety priorities.

4.2.10 Based on the analysis of the reactive and proactive safety information for the period 2019-2023, the safety priorities identified for the MID Region are:

Regional Operational Safety Risks

a. Runway Excursion (RE) and Abnormal Runway Contact (ARC) during landing;
b. Loss of Control Inflight - (LOC-I);
c. Mid Air Collision- (MAC);
d. Controlled Flight Into Terrain- (CFIT); and
e. Runway Incursion- (RI).

4.2.11 In addition to this, safety issues have been identified and mapped to their respective potential accident outcomes

Regional Organizational issues

States' Safety Oversight Capabilities

4.2.12 USOAP-CMA audits had identified that State's inability to effectively oversee aviation operations remains a global concern. In respect of MID Region, the regional average overall Effective Implementation (EI) (13 out of 15 States have been audited) is approx. 76,8 %, which is above the world average 69.68% % (as of 10 August 2024). Three (3) States are currently below EI 60.

4.2.13 All eight areas and CEs have an EI above 60%. However, the areas of AIG and ANS and CE4, CE7, and CE8 still need more improvement. 6 areas and 5 critical elements are above the target of 70% E.

4.2.14 Moreover, the effective implementation in certification, surveillance, and resolution of Safety concerns need to be improved.

Safety Management

4.2.15 States should build upon fundamental safety oversight systems to fully implement SSPs

according to Annex 19; States shall require that applicable service providers under their authority implement an SMS. The average EI for SSP foundation PQs for States in the MID Region is 78, 85%.

4.2.16 The implementation of SSP is one of the main challenges faced by the State in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top Safety Enhancement Initiatives (SEIs).

4.2.17 In addition, the development of National Aviation Safety plan (NASP) is one of the MID region safety priorities and nine (9) States had developed and published their NASPs in ICAO website.

4.2.18 In line with the Safety Strategic Objective of the International Civil Aviation Organization (ICAO), the 2023-2025 edition of the Global Aviation Safety Plan (GASP, Doc 10004) presents the global strategy for the continuous improvement of aviation safety. It also provides a framework in which regional and national aviation safety plans (RASPs and NASPs) are developed and implemented.

4.2.19 NASP should be developed in alignment with the GASP and the MID-RASP. However, priority should be given to national safety issues. Moreover, the NASP should be also aligned and coordinated with the MID-RASP (as appropriate

Human Factors and Human Personnel

4.2.20 As new technologies continue to emerge and system complexity increases, it is crucial to ensure the development of appropriate competencies and the adaptation of training methods to effectively address evolving challenges.

Competence of Personnel

4.2.21 The availability of well-trained and competent aviation personnel is essential to ensuring the safety and resilience of the aviation industry. Several States in the MID Region have established mature and comprehensive regulatory frameworks to support proper training, licensing, the adequacy of training devices, and effective oversight. Nevertheless, several factors are challenging this otherwise mature framework. The introduction of new technologies and increasing automation are reshaping the safety requirements for aviation personnel, while emerging training devices are transforming traditional methods. Additionally, new aircraft types and advancements in virtual reality and artificial intelligence are revolutionizing pilot training as a whole.

Manage Risk Interdependencies

4.2.22 The COVID-19 crisis demonstrated that safety, security, public health, and other risks can no longer be managed in isolation. The aviation community has recognized that developing separate tools and guidance for each domain affected by cross-cutting risks may hinder not only the timely implementation of mitigation measures but also the establishment of an enabling framework to support integrated and collaborative risk management.

Cybersecurity Risks

4.2.23 The global civil aviation ecosystem is rapidly advancing toward increased digitalization. As a result, any exchange of information within the digital workflows of the aviation community must be resilient to information security threats, which could have serious implications for flight safety, airspace

availability, and overall operational continuity. Recognizing the complexity of the aviation system and the growing need to manage cybersecurity risks, the MID Region needs to adopt a comprehensive and standardized approach to addressing information security across all aviation domains. Furthermore, it is essential that the aviation industry and civil aviation authorities actively share knowledge and lessons learned to enhance system resilience and protect against threats posed by individuals or organizations with malicious intent.

Security Risks with an impact on Aviation Safety

4.2.24 The implementation of aviation security measures can have a direct impact on safety aspects of aerodrome or aircraft operations. Airport security, aircraft security or in-flight security are the areas where the interdependencies are highly visible and where any security requirements should also consider potential impacts on aviation safety. States should consider where interdependencies between civil aviation safety and security exist.

4.2.25 Therefore, an integrated approach to the management of safety and security risks across the spectrum of aviation activities would bring benefits such as a complete overview of risks, a better sharing of security information and the closure of gaps in the security system while focusing on increasing the overall level of safety. Consequently, this would allow ensuring synergies where security measures can have an impact on safety and vice versa; thereby avoiding incompatible actions and strengthening the overall safety and security of civil aviation.

Risks arising from conflict zones

4.2.26 Some fatal accidents on conflicted areas raised the question why the aircraft was flying over an area where there was an ongoing armed conflict. This is why it's important for states, aircraft operators, and other airspace users such as air navigation service providers (ANSPs), to work together to share the most up-to-date conflict zone risk-based information possible to assure the safety of civil flights.

Aviation Health Safety (AHS) Risks

4.2.27 The COVID-19 pandemic highlighted the critical importance of harmonizing health policies affecting aviation, particularly in the Commercial Air Transport (CAT) domain. The primary objective is to minimize the impact of health-related safety threats on CAT operations. To achieve this, health safety threats should be integrated into the broader management of risk interdependencies within the aviation system.

4.2.28 COVID-19 is unlikely to be the last pandemic the world will face. It is therefore essential to continue supporting the competitiveness of the aviation industry in the MID Region by ensuring the highest standards of aircraft cabin safety to reduce the risk of disease transmission across borders. This will help restore public confidence in air travel and enhance the region's ability to respond effectively to future public health crises of a similar nature.

GNSS Interference and spoofing Risks

4.2.29 Satellite navigation signals are used both for aircraft navigation and for aggressive aircraft/ drone in the region. Satellite navigation signals are weak and can easily be compromised by a range of growing threats, including intentional or unintentional signal interference, jamming, spoofing, and/or the manipulation of position and timing information. The effects of such threats vary greatly. Satellite signal

jamming can have a serious effect on the accuracy of navigation systems and, in some cases, results in unusual system behaviour.

4.2.30 IATA presented statistical evidence covering over 36,000 reported events, highlighting sharp increases in spoofing (375%) and jamming (58%) from January 2023 to September 2024, with Egypt, Iraq, and Türkiye identified among the most affected States. Summary of Analysis – IDX Events - January 2023 to September 2024:

Reported GPS Signal Interference events

- Number/Rate: 36,253 reported events / 0.77 events per 1,000 flights
- Trend: 107% increase (no of events) and 175% increase (rate)
- Highest Regions: EUR, MENA
- Highest FIRs: LTAA/Ankara, ORBB/Baghdad, HECC/Cairo

Reported GPS jamming events:

- Number/Rate: 25,756 reports / 0.54 events per 1,000 flights
- Trend: 58% increase (no of events) and 111% increase (rate)
- Highest Regions: EUR, MENA
- Highest FIR: LTAA/Ankara, ORBB/Baghdad

Reported GPS spoofing events

- Number/Rate: 10,497 reports / 0.21 events per 1,000 flights
- Trend: 375% increase (no of events) and 500% increase (rate)
- Highest Regions: MENA, EUR
- Highest FIR: HECC/Cairo, LTAA/Ankara, ORBB/Baghdad

Reported EGPWS events

- Number/Rate: 8,896 reports / 0.19 events per 1,000 flights
- Trend: 384% increase (no of events) and 500% increase (rate)
- Highest Regions: MENA, EUR
- Highest FIR: HECC/Cairo, LTAA/Ankara, OJAC/Amman

4.2.31 To bring attention to the critical issue of GNSS interference and spoofing, and to foster discussions on the management of GNSS vulnerabilities and potential mitigation measures against GNSS RFI, ICAO convened the ICAO EUR/MID Radio Navigation Symposium from 6 to 8 February 2024 in, Turkey and several recommendations have been adopted by the meeting.

Interference with Radio Altimeter

4.2.32 There is a major risk that 5G telecommunications systems in the 3.7–3.98 GHz band will cause harmful interference to radar altimeters on all types of civil aircraft- including commercial transport airplanes; business, regional, and general aviation airplanes; and both transport and general aviation helicopters. If there is no proper mitigation, this risk has the potential for broad impacts to aviation operations in the United States as well as in other regions where the 5G network is being implemented next to the 4.2-4.4 GHz frequency band.

Regional Emerging issues

4.2.33 Emerging safety issues refer to potential risks that may impact aviation safety in the future. These can stem from new technologies, evolving public policies, innovative concepts, business models, or ideas that may currently seem peripheral but have the potential to mature into critical mainstream issues or major industry trends.

4.2.34 Advanced Air Mobility (AAM) and new entrants, including Unmanned Aircraft Systems (UAS) and electric Vertical Take-Off and Landing (eVTOL) aircraft, represent significant emerging areas that require proactive safety consideration and regulatory adaptation.

4.2.35 The meeting reviewed and endorsed the 13th MID-ASR and agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 12/3: 13TH ASR

That, the Thirteen MID Annual Safety Report is endorsed and be posted on the ICAO MID Website.

4.2.36 The MID Annual safety reports (ASRs) are available at the following link: icao.int/MID/MIDANPIRG/Documents/MID22_and_RASGMID12/RASG-MID12-WP_27-_App_-MID ASR 13th Edition_Ver%282019-2023%29.pdf

4.2.37 The meeting noted the main challenge facing the ASRG for the development of the ASRs, in particular:

- Limited sharing of safety information and safety data analysis by the States.

4.2.38 In connection with the above, the meeting reiterated the importance of sharing of safety data analysis and safety information for improved ASRs development and urged States to provide the ICAO MID Office by end of June 2025 the safety data analysis and their associated safety recommendations for the period (2020 –2024). Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 12/4: SHARING OF SAFETY DATA ANALYSIS

*In respect of the next MID ASR edition, States are encouraged to provide necessary safety information and safety data analysis to the ICAO MID Office, by June 2025 related to each occurrence category in **Appendix 4B** for the past 5 years (2020– 2024) and using the templates in **Appendices 4C and 4D**. The Draft of the 14th edition of the MID ASR will be presented to the ASRG/7 meeting for review.*

Occurrence reporting system and investigation incidents- Iraq

4.2.39 The subject was addressed in IP/6 presented by Iraq GCANS.

4.2.40 The meeting expressed its appreciation to Iraq GCANS for sharing their experience with occurrence reporting in air traffic control (ATC) and highlighting its important role in enhancing aviation safety.

Egyptian Mandatory Occurrence Reporting on-line portal- Egypt

4.2.41 The subject was addressed in IP/7 presented by Egypt.

4.2.42 The meeting expressed its appreciation to Egypt for sharing their experience on the Mandatory Occurrence Reporting online portal. The initiative aims to share operational insights and promote Safety Management awareness across ICAO Member States.

SEIG Outcomes

Outcome on the 14th Air Navigation Conference.

4.2.43 Covered under Agenda item 2.2 "Global and regional safety and Air Navigation development".

Update on the implementation Progress of the Safety Enhancement Initiatives (SEIs)

4.2.44 The subject was addressed in WP/29 presented by the secretariat. The Middle East Regional Aviation Safety Plan (MID-RASP) 2023-2025 Edition at **Appendix 4E** presents the strategic direction for the management of aviation safety in the MID Region, to strengthen Member States Safety Oversight System, and risk-based approach to managing safety and support effective implementation of States' Safety Programmes (SSP) and Safety Management System (SMS) including the development of NASPs. The.

4.2.45 The MID-RASP 2023-2025 Edition identifies MID Region Safety Performance Measurement and Monitoring (SPMM) with specific safety targets in line with GASP and the RASG-MID would continuously monitor the implementation of the Safety Enhancement Initiatives (SEIs) and measure safety performance of regional civil aviation, to ensure the intended targets are achieved using the MID Region SPMM.

4.2.46 2.4 The tenth meeting of the Regional Aviation Safety Group – Middle East (RASG-MID/10) was held in Muscat, Oman, 14-17 May 2023; reviewed and endorsed the MID-RASP 2023-2025 Edition including 24 Safety Enhancement Initiatives (SEIs) and 63 safety actions through RASG-MID Conclusion 10/7.

4.2.47 The meeting was apprised with appreciation on the updated progress on SEIs and their respective safety actions and noted that 43 Safety actions (68%) out of 63 have been implemented and completed**.** Accordingly, the meeting endorsed the updated implementation progress of SEIs and safety actions and agree to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 12/5: IMPLEMENTATION PROGRESS ON THE SAFETY ENHANCEMENT INITIATIVES (SEIS)

That,

*a) the implementation progress of the Safety Enhancement Initiatives (SEIs) and safety actions included in the MID-RASP 2023-2025 Edition at **Appendix 4F** is endorsed; and*

b) States, international organizations and industry are urged to support the MID-RASP 2023-2025 Edition activities including SEIs and safety actions.

Proposal of Safety Enhancement Initiative for implementing Artificial Intelligence

4.2.48 The meeting noted that AI is revolutionizing global aviation safety through predictive analytics and proactive risk mitigation. Many nations are prioritizing AI research investments and implementing pilot programs to modernize safety frameworks.

4.2.49 The meeting was informed that while global advancements in AI-driven aviation safety are accelerating, the MID Region remains in the nascent stages of adoption. Given the technology's complexity and resource-intensive nature, the region must prioritize establishing foundational infrastructure, robust regulatory frameworks, and institutional readiness before scaling AI integration.

4.2.50 The meeting noted that the current MID Region AI initiatives remain exploratory, with no unified strategy for aviation integration. Designating AI as a Safety Enhancement Initiative (SEI) under the MID-RASP would address this gap, providing a structured pathway for collaborative implementation.

4.2.51 The meeting also noted key challenges identified include limited technical expertise; inadequate data governance systems; regulatory fragmentation; and emergent risks associated with algorithmic bias and system interoperability.

4.2.52 The meeting was of the opinion that the SEI under MID-RASP should adopt a phased approach, starting with capacity-building and infrastructure development, and gradual deployment of AI tools in safety oversight and risk management processes.

The necessity of establishing a working committee for AAM in the MID region

4.2.53 The meeting recognized Advanced Air Mobility (AAM) as a transformative shift in transportation, with the potential to redefine urban connectivity and airspace efficiency. As the MID Region prioritizes multimodal transportation systems and sustainable urban development, AAM presents a strategic opportunity to align with these objectives.

4.2.54 The meeting noted that the AAM sector remains in its nascent stage globally, characterized by limited operational maturity, evolving safety standards, and fragmented regulatory frameworks. Rapid technological advancements further underscore the need for adaptive governance models.

4.2.55 The meeting also noted that given the early developmental state of both AAM and AI technologies, the meeting concluded that establishing a regional working group or task force would be premature at this juncture. Instead, the following phased approach was recommended.

- National Prioritization: States should develop tailored AAM strategies, focusing on risk assessments, stakeholder collaboration, and regulatory alignment.
- Monitoring Global Developments: Track advancements in AAM technologies, harmonized regulatory frameworks, and international best practices.
- Future Collaboration: Reassess regional coordination mechanisms once foundational national frameworks and global standards stabilize.

4.2.56 Accordingly, the meeting endorsed the AAM and new entrants and agree to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 12/6: AAM AND NEW ENTRANTS

That,

a) AAM and AI covered under the ICAO Focus area AAM and new entrants be included as a Safety Enhancement Initiative (SEI) within the MID Region Aviation Safety Plan (MID-RASP) 2026-2028 Edition to ensure structured regional coordination and alignment with global aviation innovation priorities;

b) Encourage States and industry stakeholders to prioritize and conduct capacity-building initiatives, to foster expertise and knowledge-sharing in AAM and AI technologies, regulatory frameworks, and risk management strategies; and

c) *Encourage States and stakeholders to actively engage in the proposed SEI by sharing operational insights, best practices, and lessons learned.*

MID States Progress on NASPs Development

4.2.57 The meeting noted with appreciation the updated progress undertaken by the ICAO GASP Study Group (GASP-SG), to revise the GASP for the 2026-2028 edition including the process used to identify global safety issues, including common operational safety risks and organizational challenges.

4.2.58 The meeting was informed that so far, nine (9) States developed their NASPs and shared approved copies with ICAO MID Office. Eight (8) have published their NASPs on ICAO website (Egypt, Iran, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, and UAE).

4.2.59 In line with the Safety Strategic Objective of the International Civil Aviation Organization (ICAO), the 2023-2025 edition of the Global Aviation Safety Plan (GASP, Doc 10004) presents the global strategy for the continuous improvement of aviation safety. It also provides a framework in which regional and national aviation safety plans (RASPs and NASPs) are developed and implemented

4.2.60 States NASP should be developed in alignment with the GASP and the MID-RASP. However, priority should be given to national safety issues. Moreover, the NASP should be also aligned and coordinated with the MID-RASP (as appropriate).

4.2.61 The meeting also recalled that the GASP 2023-2025 Target 3.2 calls for all States to publish a NASP by 2024.

4.2.62 The meeting was informed that States of Egypt and Saudi Arabia shared their experiences and challenges related to the development of NASP.

4.2.63 The meeting was also informed about the NASP workshop delivered by ICAO MID Office including the GASP and MID-RASP, the Global Aviation Safety Roadmap and the Use of Roadmap to develop NASP, and the process for developing NASP

4.2.64 The meeting noted the challenges faced by States in developing their NASPs; which came

in line with the identified organizational issues at the global level.

- Capacity building and training;
- Senior management commitment
- Limited resources including financial
- Limited qualified personnel;
- Safety data and safety information collection and analysis;
- Emerging of new technologies;
- Limited collaboration, coordination, and communication amongst stakeholders;
- Limited guidance to develop a robust safety risk management framework and processes; and
- Geopolitical situation in the region.

4.2.65 The meeting acknowledged the persistent challenges faced by States in developing and implementing National Aviation Safety Plans (NASP). To address these gaps, the meeting was apprised about the MID Regional Office's proposal to conduct targeted assistance missions, providing tailored technical support to States for NASP development, alignment with global plan, and operational execution. Accordingly, the meeting agreed to the following RASG-MID Conclusion.

RASG-MID CONCLUSION 12/7: DEVELOPMENT OF NATIONAL AVIATION SAFETY PLAN (NASP) IN MID STATES

That, States be:

a) urged to prioritize the development and implementation of the NASP in line with the GASP and MID-RASP, if not yet done so;

b) encouraged to share the latest versions of their NASPs with ICAO HQ and ICAO Regional MID office for publication on the GASP public portal;

c) Encouraged to leverage existing ICAO guidance materials, tools, and best practices to accelerate NASP development and implementation;

d) Invited to seek technical assistance from the ICAO MID Regional Office for NASP development, including tailored on-site assistance missions and/or State-specific NASP workshops to address unique operational challenges; and

e) Encouraged to actively share lessons learned, challenges, and successes in NASP development during SEIG meetings and/or the Regional NASP Workshops, fostering peer-to-peer knowledge exchange and regional collaboration.

Proposals for the amendment of Annex 19

4.2.66 Covered under Agenda item 2.2 "Global and regional safety and Air Navigation development.

State Safety Programme (SSP)

4.2.67 The meeting was informed that States should build upon fundamental safety oversight systems to implement effective SSPs. As per Annex 19, States shall require that applicable service providers under their authority implement an SMS. The SMS enables service providers to capture and transmit safety information, which contributes to safety risk management. An SSP requires the implementation of a risk-

based approach to measure and monitor the safety performance of the State's civil aviation system and the progress towards achieving the State's safety objectives. In this context, the role of the State evolves to include the establishment and achievement of safety performance targets, as well as effective oversight of its service providers' SMS.

4.2.68 The meeting recalled that the GASP 2023-2025 Edition Goal 3 Target 3.1 calls for all States to implement the foundation of an SSP by 2023.

4.2.69 The meeting thanked Saudi Arabia and UAE for sharing their experiences and best practices related to the development of SSP.

4.2.70 The meeting was informed that the ICAO MID office conducted the SSP workshop, which covered the Safety Management Fundamentals; System Description including interfaces; SSP Gap Analysis & Implementation Plan; SSP Coordination Group; States Safety policy and objectives; Training; SRM Framework; Safety Intelligence; Safety performance management change at the State level, and safety promotion.

4.2.71 The meeting was also informed about the importance of States establishing and implementing a mechanism such as a Safety Data Analysis Unit to ensure the collection, processing and enable analysis of safety data and safety information at the State level.

4.2.72 The meeting noted the challenges faced by States in developing their SSP:

- Legislation amendments;
- Capacity building and training;
- Limited qualified personnel;
- Limited guidance to establish and develop a Safety data and safety information collection and analysis;
- Limited collaboration, coordination, and communication amongst SSP stakeholders;
- Limited guidance to develop a robust safety risk management framework and processes; and
- Transition from a prescriptive approach to a more risk-based and performance-based approach; and
- Geopolitical situation in the region

4.2.73 The meeting acknowledged the challenges States face in developing State Safety Programmes (SSP) and preparing for upcoming SSP assessments. To address these gaps, the meeting noted with appreciation the MID Regional Office's proposal to conduct targeted assistance missions, offering tailored technical support to States for SSP implementation, alignment with ICAO requirements, and readiness for evaluations. Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 12/8: DEVELOPMENT OF SSP IN MID STATES

That, States be:

a) urged to prioritize the timely establishment, implementation, and maintenance of State Safety Programmes (SSPs) and to strengthen Safety Management System

(SMS) adoption across all aviation service providers, ensuring alignment with ICAO Annex 19 standards;

b) encouraged to request assistance from the ICAO MID Regional Office related to the development and implementation of their SSPs including the conduct of:

i. Targeted SSP technical assistance missions to prepare States for upcoming ICAO SSP assessments
ii. Tailored SSP implementation Workshops
iii. State Safety Risk Management framework workshops to enhance risk-based decision-making capabilities.

c) Invited to share lessons learned, challenges, and successes in SSP development during SEIG meetings, fostering peer-to-peer knowledge exchange and regional collaboration; and

d) encouraged to share their latest version of SSP manuals with ICAO MID Office.

NCMCs Meeting

4.2.74 The National Continuous Monitoring Coordinators (NCMCs) meeting was held during SEIG/6 meeting. The NCMCs meeting was a great opportunity to share experiences, challenges and best practices, which were appreciated by all participants.

4.2.75 The meeting noted with appreciation that Egypt, Iran, Iraq, Jordan, Kuwait, Libya, Oman, Qatar, Saudi Arabia, UAE, and Yemen shared their experiences during the meeting.

4.2.76 The meeting noted the following common challenges/difficulties:

1) lack of sufficient human resources (qualified technical personnel) to meet the State's obligations and carry out oversight functions and mandate;

2) Insufficient financial resources in some States;

3) Inability to attract, recruit and retain sufficiently qualified/experienced technical personnel;

4) Providing sufficient training;

5) Inadequate separation of regulatory/oversight functions and service providers/operators in some States;

6) Independent AIG Authority; and

7) Political/Security situation/stability in some States.

4.2.77 The meeting noted with appreciation the sharing of experience in the preparation, conduct and follow-up of ICAO USOAP-CMA activities and identified the following as best practices and actions:

1) update all CAPs to fully address the PQ findings and report the progress made on the CAPs implementation through OLF, which is a vital factor for the planning and conduct of the USOAP-CMA validation activities including ICVM to enhance the EI;

2) address the PPQs first (Breakdown of PQs and PPQs);

3) continuously update the self-assessment to conduct internal audits, prepare for ICAO USOAP CMA activities; and monitor the civil aviation safety oversight system;

4) high level commitment and engagement (regular briefings and meetings);

5) assignment of focal point(s) for each audit area;
6) training of personnel (USOAP-CMA CBT, Workshop, participation in ICVMs and Audits), including the conduct of a USOAP-CMA Workshop (cost-recovery basis) at National level;

7) take advantage of other States experiences; and

8) regular update of the required information such as the State Aviation Activities Questionnaire (SAAQ) and Compliance Checklist/Electronic Filing of Differences (CC/EFOD).

4.2.78 Accordingly, the meeting urged States to take necessary actions to overwhelm the challenges related to USOAP CMA, and take advantage of the experience in the preparation, conduct and follow-up of ICAO USOAP-CMA activities as best practices.

NCMC's Roles and Responsibilities

4.2.79 The subject was addressed in the WP/82 presented by Oman. The meeting appreciated Oman's initiative to enhance the roles and responsibilities of the NCMC. Accordingly, the meeting agreed to address this initiative during the next NCMCs Meeting, considering the established guidelines in Appendix F of ICAO Doc. 9735.

State-Level Flight Data Monitoring (FDM): A New Era of Proactive Safety in Iran- Iran

4.2.80 The subject was addressed in the WP/61 presented by the Islamic Republic of Iran.

4.2.81 The meeting expressed its appreciation to the Islamic Republic of Iran for sharing its experience with the Flight Data Monitoring (FDM) Programme.

4.2.82 The meeting clearly noted that Flight Data Analysis (FDA) / Flight Data Monitoring (FDM) programmes should be established and maintained by air operators as an integral part of their Safety Management System (SMS), in accordance with the requirements of ICAO Annex 6. Operators may, as appropriate, share relevant safety information with the regulator to support safety oversight and enhancement.

4.2.83 The meeting recognized the FDM/FDA programme as a key enabler of proactive, data-driven safety oversight. It encouraged the promotion of regional collaboration and capacity-building initiatives to support the effective implementation and sustainability of FDM/FDA programmes.

Reducing the risk of unstable approaches in the MID region- Iran

4.2.84 The subject was addressed in the WP/62 presented by Islamic Republic of Iran.

4.2.85 The meeting was apprised of and expressed appreciation to the Islamic Republic of Iran for sharing its experience in reducing the risk of unstable approaches with focus on practical data-driven solutions that can be rapidly implemented to mitigate unstable approach risks.

4.2.86 IFALPA brought to the attention of the meeting a joint publication by IATA, CANSO, IFATCA, and IFALPA, which outlines policies, procedures, and best practices for mitigating the risks associated with unstable approaches as at the following link:
HTTPS://WWW.IATA.ORG/CONTENTASSETS/7A5CD514DE9C4C63BA0A7AC21547477A/IATA-GUIDANCE-UNSTABLE-APPROACHES.PDF

4.2.87 The meeting noted that unstable approaches continue to pose a significant safety risk, particularly during the final approach and landing phases and encouraged states, organizations, and industry stakeholders to conduct and support the capacity-building activities to strengthen unstable approach risk mitigation efforts.

AI-Enhanced Flight Data Monitoring (FDM) for Proactive Risk Management - Iran

4.2.88 The subject was addressed in WP/63 presented by the Islamic Republic of Iran.

4.2.89 The meeting expressed its appreciation to Iran for sharing its experience with AI-enhanced Flight Data Monitoring (FDM) for proactive risk management.

4.2.90 The meeting noted the growing importance of integrating Artificial Intelligence (AI) into Flight Data Monitoring (FDM) as a key enabler for proactive and predictive safety management.

4.2.91 The meeting also noted the challenges related to data privacy, system integration, and AI transparency, which require a structured and collaborative approach to address.

4.2.92 The meeting agreed that, prior to initiating an AI-enhanced Flight Data Monitoring (FDM) programme, comprehensive discussions should be held during upcoming SEIG meetings to deliberate on the concept and agree on the way forward.

Event Triggered Ad-Hoc Audit Framework - UAE

4.2.93 The subject was addressed in WP/65 presented by UAE.

4.2.94 The meeting expressed its appreciation to the UAE for sharing their valuable experience on the implementation of ad-hoc audits.

4.2.95 The meeting noted the UAE GCAA’s proactive implementation of ad-hoc audits as a vital component of its safety oversight program. These audits, triggered by safety occurrences, operational trends, and infrastructure changes, provide targeted assessments beyond the scope of routine audits.

4.2.96 The meeting also recognized the value of unannounced audits in enhancing compliance with ICAO USOAP provisions and reinforcing a risk-based oversight approach.

4.2.97 The meeting encouraged states to consider adopting similar ad-hoc audit mechanisms, particularly following safety events, and to draw on the UAE's experience in developing and executing such focused safety assessments.

The Challenges of Individual State-Based License Verification Systems- UAE

4.2.98 The subject was addressed in WP/66 presented by UAE.

4.2.99 The meeting noted the challenges posed by the lack of a standardized approach to aircrew license verification, which has led to operational inefficiencies, administrative burdens, and barriers to international mobility.

4.2.100 The meeting was further informed that the implementation of separate license verification systems by individual States has led to several challenges. These include inconsistencies in requirements, increased administrative burdens, and obstacles to international mobility.

4.2.101 The meeting noted that, as part of global aviation modernization efforts, ICAO is currently developing the Electronic Pilot License (ePL)- a secure digital alternative to traditional paper-based licenses. The ePL is designed to enhance operational efficiency, reduce the risk of fraud, and facilitate streamlined cross-border license validation. Furthermore, its implementation presents an opportunity to align pilot licensing systems with digital academic credential frameworks, thereby supporting the broader objective of recognizing aviation licenses as equivalent to academic qualifications.

4.2.102 The meeting acknowledged the potential of the ICAO Electronic Pilot License (ePL) as a unified digital solution to streamline license verification processes globally. Additionally, the meeting expressed strong support for the UAE's initiative to present a Working Paper at the ICAO Assembly, advocating for the global harmonization of licensing systems and the recognition of aviation licenses as equivalent to academic qualifications. Accordingly, the meeting agreed to the following conclusion.

RASG-MID CONCLUSION 12/9: ESTABLISHMENT OF ELECTRONIC PILOT LICENSE (EPL) FOR THE MID REGION

That,

a) The survey on the Electronic Pilot Licence (ePL) will be developed by the UAE GCAA, in coordination with the ICAO MID Regional Office;

b) The MID Office will circulate the survey to all MID States and encourage them to provide their inputs; and

c) The results of the survey analysis will be shared with the UAE to support the development of the Working Paper to be presented at the 42nd ICAO Assembly.

Establishment of a Unified Examination Database for the MID Region- UAE.

4.2.103 The subject was addressed in WP/67 presented by United Arab Emirates (UAE).

4.2.104 The meeting expressed its appreciation to the UAE for proposing the establishment of a Unified Examination Database to standardize assessments for pilots, air traffic controllers, and maintenance engineers in line with ICAO Annex 1 across the MID Region.

4.2.105 The meeting recognized the significance of establishing a Unified Examination Database for the MID Region as a key step toward standardizing evaluation methods, promoting regulatory harmonization, and enhancing the mobility and competence of licensed aviation personnel. Accordingly, the meeting agreed that, prior to initiating the regional implementation of the Unified Examination Database, the UAE will present a Working Paper (WP) for comprehensive discussions during an upcoming SEIG meeting, in order to deliberate and agree on the way forward.

Fatigue in Aviation Maintenance Environment - UAE

4.2.106 The subject was addressed in WP/68 presented by United Arab Emirates (UAE).

4.2.107 The meeting noted UAE's concern that ICAO's SARPs, and guidance related to Fatigue Risk Management (FRM) specific to maintenance licensed personnel does not exist. Fatigue among maintenance personnel has been cited as a contributing factor to some accidents and serious incidents. Research indicates fatigue among aviation maintenance personnel is a threat to safety.

4.2.108 The meeting noted with appreciation efforts made by ICAO, IATA and IFALPA in developing and publishing the Fatigue Management Guide for Airline Operators, Second Edition 2015, which provides operators with a complete document on prescriptive and performance-based fatigue management approaches. The document is available at: https://www.icao.int/safety/fatiguemanagement/FRMS%20Tools/FMG%20for%20Airline%20Operators%202nd%20Ed%20(Final)%20EN.pdf.

4.2.109 The meeting strongly supported the UAE's initiative to present a Working Paper at the ICAO's 42nd Assembly, advocating for a global harmonization of FRM SARPs and documented guidance for maintenance licensed personnel. Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 12/10: SARPS, AND GUIDANCE RELATED TO FATIGUE RISK MANAGEMENT (FRM) FOR MAINTENANCE LICENSED PERSONNEL

That,

a) a detailed survey to assess the measures taken to mitigate fatigue in the maintenance environment to be developed by UAE and Saudi Arabia, in coordination with the ICAO MID Regional Office, IATA, and IFALPA;
b) the ICAO MID Office to circulate the survey to all MID States and collect feedback and proposals;
c) the results of the survey to analyzed by UAE and Saudi Arabia, in coordination with the ICAO MID Regional Office, IATA, and IFALPA;
d) UAE in coordination with Saudi Arabia, IATA, and IFALPA to develop a Working Paper to be presented at the 42nd ICAO Assembly, inviting ICAO to develop SARPs and guidance for maintenance licensed personnel, and
e) UAE and Saudi Arabia, in coordination with the ICAO MID Regional Office, IATA, and IFALPA to develop a Regional Safety Advisory on the subject to be presented to the SEIG/7 Meeting for further discussion and agreement on the way forward.

State Safety Risk Management- Kingdom of Saudi Arabia (KSA)

4.2.110 The subject was addressed in IP/3 presented by the Kingdom of Saudi Arabia (KSA).

4.2.111 The meeting expressed its appreciation to KSA for sharing its experience in the effective implementation of risk management within the State Safety Program (SSP), including the engagement and collaboration with SSP stakeholders to enhance aviation safety.

4.2.112 The meeting also noted that Saudi Arabia has implemented a structured, multi-level State Safety Risk Management (SSRM) process under its State Safety Program (SSP), ensuring systematic identification, assessment, and mitigation of aviation risks. Through robust data collection, stakeholder collaboration, and integration with the National Aviation Safety Plan (NASP), Saudi Arabia enhances proactive safety management and aligns with ICAO standards to address emerging safety challenges.

AOC Certification: GCAA's Digital Leap Toward Regulatory Excellence - UAE

4.2.113 The subject was addressed in IP/4 presented by the United Arab Emirates (UAE).

4.2.114 The meeting expressed its appreciation to UAE for sharing its experiences in the GCAA's transformation of the Air Operator Certificate (AOC) issuance process through a distinctive, end-to-end automation framework.

4.2.115 The meeting noted that UAE GCAA has advanced regulatory modernization by automating the AOC issuance process in line with the national Zero Bureaucracy vision. Leveraging AI for system integration this transformation enhances efficiency, transparency, and coordination while maintaining regulatory oversight, solidifying the UAE's position as a leader in aviation innovation.

Safety Performance Management within the Egyptian State Safety Programme (SSP)- Egypt

4.2.116 The subject was addressed in IP/8 presented by Egypt.

4.2.117 The meeting expressed its appreciation to Egypt for sharing its experiences in the safety performance management (SPM).

4.2.118 The meeting was informed that the Egyptian CAA Safety performance management is modeled on a Plan-Do-Check-Act (PDCA) cycle, Three-Tier Performance Measurement Model, and Integration of Risk-Based Oversight (RBO).

Advancing Safety Through Global Safety Information Exchange – USA (FAA)

4.2.119 The subject was addressed in IP/10 presented by UAS (FAA).

4.2.120 The meeting expressed its appreciation to UAS (FAA) in promoting the sharing of safety-related data, information, and intelligence between States to better identify existing and emerging risks in the aviation system, allowing for a more holistic analysis and aligned safety outcomes.

4.2.121 The meeting noted that the collection, analysis, and sharing of safety data is fundamental to proactive and predictive aviation safety management. Collaborative data-sharing initiatives such as the Commercial Aviation Safety Team (CAST), ASIAS, and the Global Safety Information Management

Exchange (GSIME) have demonstrated how shared safety intelligence can identify hidden hazards, inform effective mitigation strategies, and enhance the global aviation safety net.

4.2.122 The meeting also noted that by establishing a safety information exchange, States can directly support safety decision-making, proactive risk management, and effectively comply with their obligations under the Convention on International Civil Aviation and improve the overall level of aviation safety worldwide.

Initiative For Enhancing the National Continuous Monitoring Coordinator (NCMC) Role in the MID Region - Sultanate of Oman

4.2.123 The subject was addressed in WP/82 presented by Sultanate of Oman.

4.2.124 The meeting expressed its appreciation to the Sultanate of Oman for sharing its experience and initiatives to enhance the role of the National Continuous Monitoring Coordinator (NCMC) within the ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) in the MID Region).

4.2.125 The meeting noted the critical role of NCMCs in ensuring States' continuous readiness for the USOAP-CMA, and the current gaps in ICAO guidance that impact their effectiveness

4.2.126 The meeting acknowledged that the evolving landscape of aviation oversight necessitates a more structured and proactive approach to managing Protocol Question (PQ) updates, and emphasized the need to strengthen the authority, tools, and processes available to NCMCs.

From Organizational Insight to State Oversight: A Scalable Safety Risk Profile Approach- Kingdom of Saudi Arabia (KSA)

4.2.127 The subject was addressed in WP/86 presented by the Kingdom of Saudi Arabia (KSA).

4.2.128 The meeting expressed its appreciation to KSA for sharing its experience in a scalable approach for developing Safety Risk Profiles (SRPs) at the organizational level and integrating them into a State's safety oversight system.

4.2.129 The meeting noted that the SRPs enable States to systematically capture the safety risk and performance information of aviation service providers, moving from reactive, uniform oversight to a more targeted and data-driven approach aligned with the ICAO Global Aviation Safety Plan (GASP). By aggregating organizational SRPs, States can build a comprehensive national safety risk picture, allowing for targeted resource allocation and improved safety management.

4.2.130 The meeting encouraged States to develop and integrate SRPs within their national oversight frameworks and State Safety Programmes (SSPs), in line with ICAO's Global Aviation Safety Plan (GASP). It also urged States to promote the exchange of best practices to facilitate the wider implementation of SRPs throughout the MID Region.

Experience on implementing SMS for ANS - Egypt

4.2.131 The subject was addressed in PPT/105 presented by Egypt.

4.2.132 he meeting expressed its appreciation to Egypt for sharing its experience in implementing a Safety Management System (SMS) within Air Navigation Services (ANS).

Aerodromes Safety, planning and Implementation Group Outcomes

4.2.133 The subject was address in WP/31, presented by the secretariat.

Introduction and Participation

4.2.134 The subject was addressed in WP/31 presented by the Secretariat. The meeting was apprised of the outcomes of the Seventh Aerodrome Safety Planning and Implementation Group Meeting (ASPIG/7), hosted by Saudi Arabia in Riyadh from 6 to 10 April 2025, with participation from 11 States and 6 international/regional organizations.

Proposed Amendments to Annex 14 and Obstacle Limitation Surfaces

4.2.135 The meeting noted ICAO's proposed amendments to Annex 14, Volume I, introducing Obstacle Free Surfaces (OFS) and Obstacle Evaluation Surfaces (OES), applicable as of 21 November 2030.

MID RASP SEIs and Aerodrome Safety Dashboard Updates

4.2.136 The meeting reviewed the progress related to AGA-related Safety Enhancement Initiatives (SEIs) under the MID RASP 2023–2025, including updates to the Aerodrome Safety Dashboard. States were encouraged to update their list of international airports as published in their AIPs for incorporation in the MID ANP.

Aerodrome Certification Implementation Monitoring

4.2.137 The meeting emphasized the importance of monitoring aerodrome certification activities and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/11: MONITORING OF AERODROMES CERTIFICATION IMPLEMENTATION IN THE MID REGION

That, to facilitate effective monitoring and support the advancement of aerodrome certification activities within the MID Region, States are urged to submit updated progress on their Aerodrome Certification Implementation Plans to the ICAO MID Office ***by the third quarter (Q3) of the current year****, utilizing the revised reporting template provided in* ***Appendix 4G****.*

Local Runway Safety Teams (LRSTs)

4.2.138 The meeting reviewed LRST implementation progress and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/12: MONITORING THE IMPLEMENTATION OF LOCAL RUNWAY SAFETY TEAMS IN THE MID REGION

*That, to effectively track and support the establishment of Local Runway Safety Teams (LRSTs) in the MID Region, States are urged to submit, **by the third quarter (Q3) of the current year**, updates on the progress of their LRST Implementation Plans to the ICAO MID Office, utilizing the updated reporting template provided in **Appendix 4H.***

ICAO Runway Safety Go-Team Missions

4.2.139 The meeting highlighted the role of Go-Team missions in enhancing LRST effectiveness and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/13: FACILITATION OF ICAO RUNWAY SAFETY GO-TEAM PERFORMANCE MISSIONS

*That, in order to assess the effectiveness and operational performance of Local Runway Safety Teams (LRSTs) at selected aerodromes across the MID Region, concerned States be urged to confirm, **by the third quarter (Q3) of the current year**, their acceptance of the ICAO Runway Safety Go-Team missions. This confirmation should follow the formal notification from the ICAO MID Office regarding the aerodromes selected for review. States be further encouraged to facilitate the coordination and logistical arrangements necessary to enable these missions, in close collaboration with the designated aerodrome operators.*

Global Reporting Format (GRF) Implementation

4.2.140 The meeting reviewed GRF implementation progress and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/14: MONITORING OF GLOBAL REPORTING FORMAT (GRF) IMPLEMENTATION IN THE MID REGION

*That, in order to ensure effective monitoring and support the timely implementation of the Global Reporting Format (GRF) methodology at aerodromes in the MID Region, States are urged to submit, **by the third quarter (Q3) of the current year**, updates on the progress of their GRF Deployment Plans to the ICAO MID Office, utilizing the standardized reporting template provided in **Appendix 4I** and with reference to the action milestones illustrated in **Appendix 4J**.*

ACR-PCR Methodology Deployment

4.2.141 The meeting discussed the implementation of the Aircraft Classification Rating / Pavement Classification Rating (ACR-PCR) methodology and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/15: MONITORING OF ACR-PCR METHODOLOGY IMPLEMENTATION IN THE MID REGION

That, in line with the Action Milestones sample for ACR-PCR Implementation as at

***Appendix 4K**, and with a view to ensuring effective monitoring of the deployment of the ACR-PCR methodology in the MID Region, States are urged to submit, **by the third quarter (Q3) of the current year**, progress updates on the implementation of their Aerodrome ACR-PCR Deployment Plans to the ICAO MID Office, using the standardized template provided in **Appendix 4L**.*

Wildlife Hazard Management

4.2.142 The meeting noted challenges posed by wildlife strikes and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/16: STRENGTHENING WILDLIFE STRIKE REPORTING IN THE MID REGION

*That, recognizing the critical importance of systematic wildlife strike reporting for enhancing aviation safety in the MID Region, States be urged to ensure that, through their designated IBIS Focal Points, all **wildlife strike reports for the current year** are consolidated and submitted to ICAO in accordance with the guidance provided in **Appendix 4M**, **no later than the end of the first quarter (Q1) of the subsequent year**.*

4.2.143 In addition, the meeting recognized the strategic positioning of the Middle East as a critical migratory corridor for Central Asian bird populations, and acknowledged the increasing challenges this presents to aviation safety, as highlighted by the World Birdstrike Association (WBA). It was noted that the frequency and unpredictability of wildlife hazards are rising, driven by climate-induced shifts in migratory routes and habitat behaviours.

4.2.144 The meeting recalled that several key migratory bottleneck zones across the region currently lack adequate protective measures and formal wildlife monitoring mechanisms, thereby heightening operational risk to air navigation. In this context, the meeting underscored the need for focused surveillance efforts, proactive habitat management, and tailored capacity-building initiatives.

4.2.145 It was further noted that ICAO data continues to significantly underrepresent the actual scale of wildlife strike hazards in the region due to inconsistent reporting practices. The meeting emphasized that airports with formal Wildlife Hazard Management (WHM) programmes report considerably higher detection rates, reaffirming the importance of establishing systematic reporting protocols and strengthening WHM capabilities at the regional level.

4.2.146 In response to these challenges, the meeting acknowledged the merit of establishing a dedicated MID Wildlife Hazard Management Working Group (MID WHM WG), modeled on successful practices from other ICAO regions such as APAC. The proposed group would serve as a regional coordination platform to advance data-driven wildlife risk management, promote regulatory and operational harmonization, and support the development of regionally relevant certification and training frameworks.

4.2.147 The meeting supported the proposal submitted by the World Bird Strike Association (WBA) yet agreed to establish the MID Action Group (MID WHM AG) which can be upgraded to a Working Group at later stage. The Terms of Reference (ToR) are planned to be developed during the WHM AG first meeting and subsequently presented to RASG-MID/13 for endorsement:

RASG-MID DECISION 12/17: ESTABLISHMENT OF THE MID WILDLIFE HAZARD MANAGEMENT ACTION GROUP (MID WHM AG)

That, recognizing the growing threat posed by wildlife hazards to aviation operations in the MID Region, and the need for a coordinated and proactive regional approach, the MID Wildlife Hazard Management Action Group (MID AG WG) be established. The Action Group shall develop and agree on its Terms of Reference during its inaugural meeting and submit them to the RASG-MID/13 meeting for endorsement.

Aerodrome Safety Data Sharing Framework

4.2.148 The meeting emphasized the importance of structured data sharing and endorsed the following Conclusion:

RASG-MID CONCLUSION 12/18: ESTABLISHMENT OF THE MID AERODROME SAFETY DATA SHARING FRAMEWORK

That, in order to support a proactive and collaborative approach to aerodrome safety in the MID Region, States are urged to:

a) coordinate with aerodrome operators to collect anonymized data on significant and challenging non-compliances, particularly those addressed through effective corrective action plans;
*b) promote the use of the standardized reporting template, endorsed in **Appendix 4N**, by Aerodromes Safety Committees and Local Runway Safety Teams; and*
*c) submit the compiled datasets to the ICAO MID Office **by the third quarter (Q3) of the current year** to support the establishment of the MID Aerodrome Safety Data Sharing Framework.*

Vertiport Design and Authorization – Saudi Arabia Experience

4.2.149 The subject was addressed in WP/101 presented by Saudi Arabia. The meeting was apprised of the Kingdom's efforts to develop a national framework for vertiport design and authorization in support of Advanced Air Mobility (AAM) operations.

4.2.150 The meeting noted the structured five-phase vertiport authorization process adopted by GACA, and the outcomes of recent trials conducted during the Hajj season and at NEOM, which identified key safety concerns including battery charging risks and firefighting needs.

4.2.151 The meeting acknowledged the development of a national AAM roadmap and encouraged States to consider GACA's material as a reference when developing regulatory frameworks for vertiport infrastructure and operations.

Water Aerodromes – Saudi Arabia Experience

4.2.152 The subject was addressed in WP/100 presented by Saudi Arabia. The meeting was apprised of the Kingdom's initiative to establish a national framework for the certification, authorization, and operation of water aerodromes, aligned with ICAO guidance and in support of Vision 2030 tourism and connectivity goals.

4.2.153 The meeting noted that the General Authority of Civil Aviation (GACA) issued GACAR Part 137, which sets out regulatory requirements for water aerodromes. Under this framework, five water aerodromes have been authorized, and two Islands, have been fully certified to support seaplane operations in the Red Sea region.

4.2.154 The meeting acknowledged Saudi Arabia's active engagement with ICAO's Water Aerodromes Working Group (WGWA) and its contributions toward the development of global Standards and Recommended Practices (SARPs) specific to water aerodromes, recognizing that current ICAO provisions do not yet distinguish between land and water aerodrome surfaces.

4.2.155 The meeting noted the operational and regulatory challenges encountered during the initial implementation of the certification framework, particularly in the areas of Safety Management Systems (SMS), wildlife hazard management, and rescue and firefighting services. States were encouraged to exchange experiences and collaborate on addressing these challenges while ICAO continues to develop global guidance material.

Certification of Aerodrome Training Providers – Oman Experience

4.2.156 The subject was addressed in PPT/79 presented by Oman. The meeting was apprised of Oman's national framework for certifying aerodrome training providers, particularly those offering Rescue and Firefighting Services (RFFS) training.

4.2.157 The meeting noted that the Civil Aviation Authority (CAA) of Oman applies structured certification and oversight procedures, including requirements on instructor qualifications, facilities, trainee assessment, and audit mechanisms.

4.2.158 The meeting encouraged States to consider Oman's framework as a reference for establishing or enhancing national systems for the certification and monitoring of aerodrome training organizations.

AIIG Outcomes

MENA ARCM/5 MEETING

4.2.159 The subject was address in WP/32, presented by the secretariat.

4.2.160 The MENA ARCM/5 meeting was informed that an on the Online share folder demonstration to manage MENA ARCM database and activities has been conducted in February 2024 and was also provided with a presentation on the registration process and ways to use the Share folder.

4.2.161 The meeting noted that MENA ARCM Members States to register and use the online Share Folder as part of the Technical Assistance process and procedure. The share folder registration link to be accessed through: https://mena-arcm.acao.org.ma

4.2.162 The meeting acknowledged the final decision, made through a voting process on the last day of the conference, regarding the selection of the MENA ARCM logo at ***Appendix 4O***.

4.2.163 The meeting was informed about the GASP 2026-2028 progress update including the process to identify the global safety issues and the proposed GASP Goals 2026-2028.

4.2.164 The meeting was also informed on the latest update on ICAO Annex 13 amendments including Investigations involving unmanned aircraft, Release of investigative information, Global Aeronautical Distress Safety System (GADSS) data and information, Consultation period of Final Reports, Publication of Final Reports as well as AIGP/7 & 8 proposed recommendations.

Assistance to Aircraft Accident victims and their families (AAAVF)" Conference

4.2.165 The meeting noted that Oman Transport Safety Bureau (OTSB), in cooperation with the ICAO MID Office have successfully organized "Assistance to Aircraft Accident victims and their families (AAAVF)" Conference in Muscat, during 7 to 9 May 2024. The main purpose of the conference was to explore how best to assist the aircraft accident victims and their families.

4.2.166 The meeting was informed that the event included speeches, presentations, and discussions. In addition, two- days Conference provided an overview on shared experiences from regulators, accident investigation authorities, and industry perspective as well as best practices in the communication of sensitive information on aircraft accidents, information management.

4.2.167 The meeting noted with appreciation the outcomes of the conference.

MENA ARCM/6 MEETING

UPDATED PROGRESS ON MENA ARCM AREAS OF COOPERATION & TECHNICAL ASSISTANCE

4.2.168 The meeting was informed of the work progress achieved on the MENA ARCM database management, Technical Assistance, and share folder.

4.2.169 The meeting noted that MENA ARCM Member States were urged to submit their data to the MENA ARCM Coordinator if they had not already done so.

MENA ARCM Member States discussion & presentations

4.2.170 The meeting was informed about the MEN ARCM Member states discussion and presentations:

- urged MENA ARCM Members States to register and use the online Share Folder as part of the Technical Assistance process and procedure. The share folder registration link to be accessed through: https://mena-arcm.acao.org.ma/.
- agreed that the MENA ARCM Coordinator in coordination with ACAO to support States in the registration process, accessing and using the share folder.
- agreed to initiate the establishment of safety recommendations database to enhance aviation safety through systematic data collection, analysis, and dissemination of safety recommendations derived from accident investigations and with the objective to share lessons learned across the MENA ARCM member States to prevent recurrence of similar occurrences.
- noted that a workshop on the establishment of safety recommendations database is tentatively planned to be conducted during the upcoming MENA ARCM in Saudi Arabia with focus on framework development and data management protocol.
- noted that MENA ARCM Coordinator in coordination with ACAO to explore initially using the share folder as a platform for safety recommendations.

- agreed to reinforce the capacity building activities in aircraft accident investigation field using technical assistance form and coordination with MENA ARCM Coordinator.
- agreed to ensure the translation to Arabic language during the upcoming MENA ARCM meetings, as needed.
- thanked Morocco BEA for sharing the learned lessons/experience and common findings from ICAO USOAP audits mainly inadequate Organizational Structure, insufficient detailed MoU, insufficient Trained Personnel, delayed Accident Reporting, inadequate Accident Investigation Manuals or Procedures, limited Access to Technical Resources and Data, insufficient follow-up on Safety Recommendations, and inadequate Prevention Measures.
- thanked UAE AIG in sharing UAE AAIS Projects including Aviation Pathology Protocol in aircraft accident investigations, master's Program in Aviation Safety and Aircraft Accident Investigation, and UAE AIMS.

AMENDMENT 19 TO ANNEX 13 UPDATE

4.2.171 The meeting was informed about the Amendment 19 to Annex 13 & AIG PQs 2024 update.

MENA ARCM MoU signature ceremony

4.2.172 The meeting was informed that the state of Qatar AIG signed the MENA ARCM MoU at ***Appendix 4P*** and joined the MENA ARCM to support its activities (so far 16 States).

Fourth RAIO CP Annual Meeting

4.2.173 The meeting noted that the Fourth RAIO CP Annual Meeting has been held on 19 Nov 2024 back-to-back with MENA ARCM/6 meeting.

Symposium: "Aviation Safety and Aircraft Accident and Incident Investigation"

4.2.174 The meeting noted that the General Civil Aviation Authority (GCAA) of the United Arab Emirates (UAE), in cooperation with the International Civil Aviation Organization (ICAO) has successfully organized "Aviation Safety and Aircraft Accident Investigation" Symposium in Abu Dhabi, during 20 to 21 November 2024. The symposium convened accident investigation authorities, regulators, international organizations, and industry experts to discuss critical aspects of aviation safety and investigation practices. This event brought together global aviation safety professionals to discuss challenges, share experiences, and foster collaboration on safety and accident investigation practices.

4.2.175 The meeting was informed about the importance of international cooperation in addressing global issues and improving aviation safety standards. The event included speeches, presentations, and panel discussions on topics such as:

a) Annual Safety Reports: participants provided with information regarding the latest Annual Safety Reports with an emphasis on accident and incident data.
b) Cooperation and Harmonization of Safety Recommendations: discussed strategies and recommendations for coordinating and harmonizing safety recommendations and data for accident and incident investigations.

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c) Industry perspective on working with RAIOs/ICMs: explored the importance of coordination of safety data, how collaboration between industry and RAIOs/ICMs works, what advantages it yields and how both parties could leverage on each other's expertise.
d) AIG Panel and Working Group 23 work progress: provided an overview of USOAP AIG findings and provided guidance and information to RAIOs/ICMs for complying with ICAO SARPs.

e) Supporting Member States: Benefits and Challenges of RAIOs/ICMs: shared their experiences to support their Member States, challenges, benefits and way forward for regional cooperation.
f) Completed accident and incident investigation: discussed how accident and incident investigations were successfully completed and shared the lessons learned during the process.

Accident Investigation Reports- IATA

4.2.176 The subject was address in PPT/78 presented by IATA. The meeting expressed its appreciation to IATA for providing an overview of accidents and the updated status of final accident investigation reports for the period 2020–2024.

4.2.177 The meeting was informed that Final Reports have been published for 57% of the accidents that occurred during the period 2018–2023.

4.2.178 The meeting noted that IATA will share the safety recommendations with MID Office to be included in the MID ASR.

4.2.179 In light of the concerns raised regarding the low number of finalized accident investigation reports, the meeting encouraged States and organizations to actively participate in the upcoming MENA ARCM meetings for further discussion on this issue. Accordingly, the meeting agreed to the following conclusion:

RASG-MID CONCLUSION 12/19: ADHERENCE TO ICAO ANNEX 13- ACCIDENT INVESTIGATION FINAL REPORTS

That, the State conducting an aircraft accident investigation must submit a Preliminary report to ICAO within thirty days of the date of the accident and release the final report within twelve months in accordance with ICAO Annex 13 requirement.

Continued Operational Safety Through Effective Accident and Incident Investigation - FAA

4.2.180 The subject was address in IP/9 presented by USA (FAA). The meeting expressed its appreciation to FAA for sharing their experience in Continued Operational Safety Through Effective Accident and Incident Investigation.

4.2.181 The meeting noted that the FAA's Office of Accident Investigation and Prevention is delegated authority within the FAA's Aviation Safety (AVS) organization to be the primary liaison to the U.S. National Transportation Safety Board (NTSB) and maintains a team of accident investigators for this function.

4.2.182 The meeting also noted that the accident investigation is a cornerstone of an effective Safety Management System (SMS), essential for identifying root causes, preventing recurrence, and advancing aviation safety. The FAA's Office of Accident Investigation and Prevention plays a critical role in supporting the U.S. State Safety Program (SSP) by working closely with the NTSB and leveraging advanced data analytics to implement proactive safety measures.

4.2.183 The meeting was informed that the FAA maintains a dedicated team of trained accident investigators who collaborate with the NTSB and utilize emerging technologies to enhance the accuracy and timeliness of safety insights.

4.3 *NASP & MID-RASP Workshop*

Sharing of best practices on NASP: KSA, Qatar, and UAE

4.3.1 The subject was addressed in PPT/81, PPT/84, and PPT/85. The meeting expressed its appreciation to KSA, Qatar, and UAE for sharing their valuable experiences and insights on the development and implementation of their National Aviation Safety Plans (NASPs).

4.3.2 The subject was addressed in PPT/33 presented by the secretariat. The meeting commended ICAO Headquarters and the ICAO MID Office for organizing the workshop on NASP and MID-RASP, which provided valuable support to States in the development and implementation of their National Aviation Safety Plans (NASPs).

4.4 *Election of Chairpersons*

4.4.1 The subject was addressed in WP/34 presented by the Secretariat. The meeting was apprised of the status of the Chairpersons and Vice Chairpersons of the RASG-MID.

4.4.2 The meeting noted that Mr. Mubarak Al Gheilani, First Vice-Chairperson, and Ms. Sharron Caunt, Second Vice-Chairperson, had indicated their inability to continue serving in their respective roles within the RASG-MID.

4.4.3 Accordingly, the meeting elected Ms. Rawya Nasser Al Adawi, Acting Director General of Civil Aviation Regulation at the Civil Aviation Authority of Oman, as the First Vice-Chairperson of the RASG-MID. Mr. Jehad Faqir, Head of Regional Safety for Africa and the Middle East at IATA, was elected as the Second Vice-Chairperson.

4.4.4 In light of the above, the meeting expressed its appreciation to Mr. Mubarak Al Gheilani and Ms. Sharron Caunt for their outstanding contributions and dedicated support to the RASG-MID.

4.4.5 Regarding the position of Chairperson, the meeting noted that Capt. Suliman S. Almuhaimedi, Executive Vice President (EVP) of Aviation Safety and Environmental Sustainability Sector at the General Authority of Civil Aviation, Saudi Arabia, had completed his term as Chairperson of the RASG-MID. However, in accordance with the RASG-MID Procedural Handbook and to ensure continuity in the Group's work programme, the meeting re-elected Capt. Almuhaimedi to serve as Chairperson for an additional three cycles (meetings), starting with the RASG-MID/13 meeting in 2026.

REPORT ON AGENDA ITEM 5: MIDANPIRG WORK PROGRAMME

5.1 *Follow-up on the MIDANPIRG/21 Conclusions and Decisions*

5.1.1 The subject was addressed in WP/35 presented by the Secretariat. The meeting reviewed the progress made in the implementation of MIDANPIRG/21 Conclusions and Decisions. The actions taken by States and the Secretariat were reviewed. The updated list is provided at **Appendix 5A**.

5.2 *MID Region Air Navigation priorities and targets*

Global Air Navigation Developments

5.2.1 The subject was addressed in WP/36, presented by the Secretariat. The meeting was apprised of the latest developments concerning Contingency Management, ATFM, Flow and Flow-Information for a Collaborative Environment (FF-ICE) and the updates to the Global ATM Operational Concept, which were considered under the relevant agenda items.

MID ANP, Volume I: FIR Boundaries PfA

5.2.2 The subject was addressed in WP/37 presented by the Secretariat. The meeting reiterated MIDANPIRG Conclusion 20/13 and noted the coordination was carried out with Iraq, Libya, Sudan and Syria as well as ICAO HQ (ANB) by to include the lateral limits coordinates and vertical dimensions of their respective FIRs/UIRs and SRRs in Tables ATM I-1 and SAR I-1, however due to number of inconsistencies, only Libya and Sudan have been identified as ready to submit their PfAs independently, while coordinating with the adjacent FIRs and MID Office to comply with the standard PfA procedures.

5.2.3 The meeting noted that despite MIDANPIRG conclusions and ICAO MID Office follow up since 2017, so far, the progress of development of PfAs to incorporate MID FIRs/SRRs in MID ANP Volume I was not progressing as planned. The Secretariat provided updated status as follows:

States	States AIP	ANP Volume I FIR	ANP Volume I SRR	Remark
Bahrain	ENR 2.1	Not published	Not published	Bahrain & Saudi Arabia PfA FIRSRR-MID Basic ANP 13.03-ATM-SAR is on-hold since 2013
Egypt	ENR 2.1	Not published	Not published	
Iran	ENR 2.1	Not published	Not published	
Iraq	Not published	Not published	Not published	
Jordan	ENR 2.1	Not published	Not published	
Kuwait	ENR 2.1	Not published	Not published	
Lebanon	ENR 2.1	Not published	Not published	
Libya	ENR 2.1	On-going	On-going	PfA MID-I-2401 Approved by President of the ICAO Council. 14 November 2024
Oman	ENR 2.1	Not published	Not published	
Qatar	ENR 2.1	Published	Published	C-DEC 225/10 11 March 2022

Saudi Arabia	ENR 2.1	Not published	Not published	Bahrain & Saudi Arabia PfA FIRSRR-MID Basic ANP 13.03-ATM-SAR is on-hold since 2013
Sudan	ENR 2.1	Not published	Not published	Sudan and South Sudan Task Force (SSS TF) is working on the subject. Draft PfA AFI/MID ANP 18/02 – ATM/SAR was agreed and States are coordinating with adjacent FIRs
Syria	ENR 2.1	Not published	Not published	
UAE	ENR 2.1	Not published	Not published	
Yemen	ENR 2.1	Not published	Not published	

MID ANP, Volume II: Optimization of MID Region ATS route designator and related PfA

5.2.4 The subject was addressed in WP/43 presented by the Secretariat in the following outlines:

ATS Route Designator changes in accordance with approved PfAs.

5.2.5 The meeting recalled the MIDANPIRG Conclusions 19/13 and 20/27 which are respectively related to PfAs MID.II.2201-ATM and MID.II.2302-ATM to eliminate all identified issues and challenges related to the ATS route network in the MID Region. Accordingly, first and second meeting of the ASM Working Group (WG) took further steps to ensure that the aeronautical publications of the relevant States align with the approved PfAs. accordingly, the meeting was informed that Iran, Libya, Oman, Qatar, Sudan, Syria and UAE have updated their respective AIPs. The status of implementation was as follows:

State	Change route designator PfA MID.II.2201-ATM & MID.II.2302-ATM
Bahrain	T557 to L557, Y604 to L704, Y856 to M556, T308 to M708, Z622 to M722, T872 to N572, T602 to N702, T319 to P319, T430 to P550, T444 to P700, T934 to P713.
Egypt	-
Iran	W4 to A414, W136 to M434, W148 to B418, W141 to B541, W147 to B547, J5 to M555, Z151 to L700/N717, Q13 to L713, Z627 to L717, Z680 to L720, T301 to M701, Z670 to M710, T215 to M715, T218 to M718, Q19 to M719, Z675 to N567, Z350 to N570, T665 to N700, T602 to N702, Z151 to N717, T202 to P302, T319 to P319, T430 to P550, Z855 to P558, T975 to P715 and Q18 to P718.
Iraq	-
Jordan	-
Kuwait	-
Lebanon	-
Libya	V300 to A420, W861 to B727, G659 to J615, G660 to J622, G661 to J725, G662 to J730, G663 to J850, G665 to J855, G739 to J977, G855 to J980, W9 to M709, Z178 to N708, V100 to N711, W857 to N982, Z350 to P310, M600 to P320, Z270 to P560, W863 to P563, Z333 to P573, W852 to P702, T295 to P706, T299 to P709, T297 to M707 & Y751 to M855.
Oman	L695, M303, M681, M877, N430, P304, P316, P513, R402 to non-regional T507 to L559, T980 to L700, Q620 to M700, Z515 to M717, T970 to N570, Q978 to

	N718
Qatar	Y604 to L704, T665 to N700, T430 to P550, T444 to P700
Saudi Arabia	G674, G799, M309 & R23 to non-regional H732 to M553, H741 to M320, J735 to P703, J749 to N709, J852 to M702, J874 to N704, T136 to L716, Y415 to M705, Y511 to M711, Z515 to M717, Q332 to N323, V13 to N703, Y517 to N707, T513 to N713, V975 to P705, Q510 to P710, T100 to P711, Q212 to P712, Q21 to P721, Q143 to P723, Q615 to P753, Q624 to P752, T295 to P706 & T142 to N722.
Sudan	B572 to L567, M320 to M323, Y613 to M713, Q733 to M723, V790 to N720, T238 to P318, P562 to P572, Z980 to P720.
Syria	A21 to R655, B538 to Q538, J222 to N310, Q52 to N565
UAE	L552 to Y552, T507 to L559, L562 to Q572, L565 to Q565, L568 to Q568, M302 to Q312, M322 to Q322, M552 to Z522, M558 to Y558, M560 to T560, M569 to Q569, N313 to Q323, N566 to Q576, T665 to N700, Q415 to N715, P308 to Q308, P311 to Q311, P317 to Q317, P321 to Q321, P553 to Q563.
Yemen	L566 to Y101, P552 to Y103, R799 to Y105, Z515 to M717 and establish LADLI-PUTSO

Removal of ATS Route prefix "U"

5.2.6 The meeting recalled the MSG Conclusions 6/9 regarding the removal of the prefix "U" from ATS route designators. In doing so, the Secretariat assessed the progress of the implementation of the above Conclusion and noted that Bahrain, Egypt, Iran, Jordan, Kuwait, Libya, Oman, Qatar, Sudan, Syria, UAE and Yemen have executed this requirement. The status of implementation was as follows:

State	Status of removal "U" - PfA MID.II.2201-ATM & MID.II.2302-ATM
Bahrain	A453, B415, B416, B419, B457, G663, L305, L308, L319, L438, L443, L602, L604, L768, M430, M444, M677, M872, N300, N318, N563, N571, N685, N687, N697, N929, P425, P430, P559, P693, P699, P899, P975 & R659
Egypt	A1, A16, A411, A727, B12, B411, L315, L321, L550, L551, L604, L607, L612, L613, L617, L677, M305, M309, M312, M686, M690, M872, M999, N307, N316, N697, P557, P563, P751, R2 & R650.
Iran	A416, A418, A422, A453, A647, A788, B121, B411, B416, B417, B441, B451, G202, G452, G663, G665, G666, G667, G669, G670, G775, G781, G792, L124, L125, L223, L319, L333, L430, M316, M318, M434, M561, M573, N319, N440, P146, P567, P574, R205, R401, R462, R654, R659, R660, R661, R784 & R794.
Iraq	A424, B411, G202, G665, G667, G669, G795, L200, L417, L602, M203, M434, M688, M860, M861, P975 and R652.
Jordan	A412, B411, B544, G662, L200, L513, L768, M319, M449, M690, N318, R652 & R785.
Kuwait	A453, A788, B416, B417, G667, G669, G782, G795, L602, M320, M677, N302, P891, P975 & R784.
Lebanon	G2, L620, N310, N438, P300, R219, R655
Libya	A411, M312, M999, R2
Oman	A454, A775, A777, B400, B424, B535, B549, G216, G652, L301, L306, L308, L310, L425, L430, L444, L555, L556, L602, L631, L695, L764, L883, M300, M303, M428,

	M440, M551, M628, M572, M677, M681, M762, N300, N315, N318, N324, N430, N563, N569, N571, N629, N685, N767, N881, P304, P307, P316, P513, P570, P574, P634, P899, R401, R402 & R462
Qatar	B415, L305, L564, M430, M444, N300, P430 & R659
Sudan	A727, B407, B413, B526, B535, G660, M863, P560, P561, P751
Syria	A412, B544, G202, L513, L572, L601, L602, L768, M861, N310, P975, R655, R785
UAE	B415, G462, G666, G783, L223, L305, L308, L310, L313, L440, L519, M318, M428, M550, M557, M572, M628, M677, M762, N300, N318, N563, N685, P307, P559, P574, P634, P699, P899, R401, R784.
Yemen	A408, B400, B403, B404, B413, B424, B526, B535, B544, B549, G652, G667, L314, L425, L564, L677, L301, M318, M321, M551, M559, M574, M634, M651, M999, N303, N315, N764, P312, P323, P570, P751, P752, P753, R401, R674, R777.

Optimization of ATS route designator

5.2.7 The meeting recalled MIDANPIRG Conclusion 21/5 related to the above subject. In this respect, the meeting noted that the Secretariat, in collaboration with MID States, was actively engaged in developing the required draft PfA. In doing so, relevant data was gathered, and an analysis was performed to develop the necessary proposal for review by ASM WG/3 meeting prior to the submission of a PfA.

Development of PfA related to Cairo FIR ATS Route Optimization Phase I

5.2.8 The meeting noted with appreciation that the PfA, originated by Egypt and coordinated States and International Organizations concerned, aims to optimize traffic flow, providing considerable operational benefits to aircraft operators within the Region. Specifically, the new route options would reduce flight distances, resulting in reduced CO_2 emissions; as well as offering increased flexibility for flight planning in response to meteorological phenomena, operational restrictions, or other factors that affect traffic flows.

Oman Airspace Optimization Project at the interface between the Middle east and Asia pacific region

5.2.9 This subject was addressed in PPT/106 presented by Oman. The meeting noted with appreciation the progress made to enhance the airspace over the high seas at the interface with the APAC Region, and encouraged States and Organizations to support Oman in the planning and implementation phases.

Oman and Yemen Air Navigation Service improvement and traffic flow optimization over high seas

5.2.10 This subject was addressed in WP/74 presented by Oman and Yemen. The meeting recalled that Oman had started in June 2023, Oman Airspace Strategic Project (OASP), for Muscat airspace optimization, and part of its efforts to enhance airspace structure via improved route network to accommodate regional and international flows considering the introduction of the FUA and FRA concept, hence, improving traffic flows to reach CO_2 emission reductions and ultimately LTAG objectives. In this respect, Oman and Yemen notified the meeting on the highlevel meeting between the Ministers of Transport of the two States held in Muscat in December 2024, as part of the ongoing efforts aimed at improving the air traffic management and ensure seamless air traffic flow.

5.2.11 Based on the above, both States have recognized the shared challenges they encounter and have mutually agreed to form a collaborative technical team. This team will focus on addressing the

intricacies of airspace optimization and air traffic flow, with a particular emphasis on studying the following:

a) Improved traffic flow through existing route network to solve existing hotspots over waypoint RIGAM crossing traffic flow from Somalia into Oman and develop a concept for future airspace route structure, hence improve the air navigation services;

b) Improved & reduced separation procedures between both States;

c) Explore interfacing ATM systems to enhance informational exchange;

d) Work in progress to resolve the RVSM safety issues regarding the high LHD reports on Waypoint IMKAD and develop plan for OLDI connection implementation to overcome the growing number of LHDs category E caused mainly human errors; and

e) Assess and explore the actual CNS capabilities through the enhancement of the surveillance, communication and navigation aids infrastructure to meet the requirement of regional demands for the maximum benefit of the air navigation system in the common area.

MID Air Navigation Report – 2024

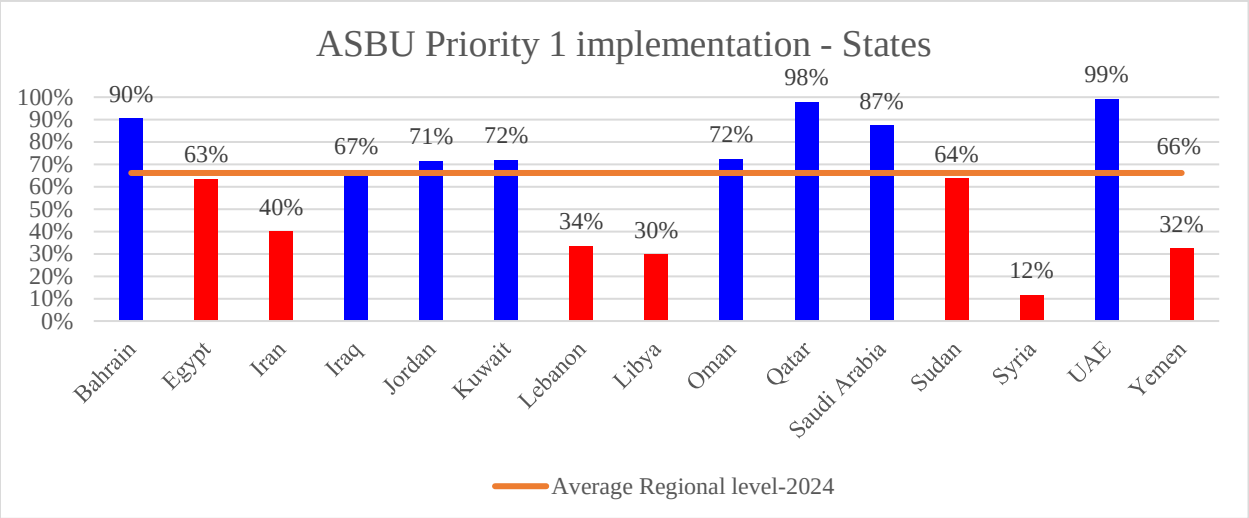
5.2.12 The subject was addressed in WP/38 and IP/29 presented by the Secretariat. The meeting noted that eleven (11) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, UAE and Yemen) have replied to State Letter AN 1/7 – 24/185 dated 15 December 2024. Consequently, the ICAO MID prepared a consolidated draft report as detailed in **Appendix 5B**, which was reviewed and approved by the RANP/NANP TF/2.

Status of MID Priority 1 ASBU Threads/Elements implementation

a) overall regional ASBU level of implementation increased to 66.14% compared to 60.14% in 2023;

b) UAE, Qatar, Bahrain, and Saudi Arabia have the highest level of implementation with 99.17%, 97.59%, 90.33% and 87.22%, respectively; and

c) FICE, NOPS, DAIM, NAVS, & have the lowest level of implementation with 45.31%, 45.83%, 47.19% and 48.33%, respectively.



MID State's major achievement(s)/success story(ies)

5.2.13 The meeting appreciated Egypt, Iran, Iraq, Oman, Qatar, Saudi Arabia and UAE for sharing their major achievements and success stories for inclusion in the MID Air Navigation Report-2024. Furthermore, it was noted that the additional PPTs, WPs and IPs as listed below to be included into the Air Navigation Report-2024.

- IP/12 presented by Oman related to South Runway in Muscat;
- IP/14 presented by UAE related to implementation of New NOTAM Series "C";
- IP/15 presented by Iran related to development and installation of 3D Tower Simulators;
- IP/16 presented by Iran related to development of Advanced Surveillance System (ASUR);
- IP/17 presented by Iran related to Electronic Flight Strip System (EFSS);
- IP/18 presented by UAE related to enhancing UAE AIM Services Provision;
- IP/19 presented by Saudi Arabia related to production of Aeronautical Chart – ICAO 1:500 000;
- WP/19 presented by Saudi Arabia related to implementation of Simultaneous Operations on Parallel Instrument Runways at Jeddah and Riyadh international airports;
- PPT/20 presented by Egypt related to Egyptian Airspace Improvement;
- IP/22 presented by Saudi Arabia related to Saudi Arabia Air Navigation Plan;
- IP/24 presented by Iran related to Iran ATSEP experts ability to address challenges related to ATM Automation & Surveillance system;
- PPT/91 presented by Qatar related to Cross Border Free Route Airspace implementation; and
- PPT/99 presented by UAE related to Cross Border Free Route Airspace implementation in Emirates FIR.

5.2.14 Based on the above, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/1: MID AIR NAVIGATION REPORT-2024

That, the MID Air Navigation Report-2024 be endorsed and published under the ICAO MID Office website.

MID Air Navigation Plan Volume III

5.2.15 The subject was addressed in WP/39 presented by the Secretariat. The meeting noted that the RANP/NANP TF/2 reviewed the inputs from States as well as the MIDANPIRG Sub-Groups and agreed on Draft of MID Air Navigation Plan Volume III as at **Appendix 5C**. The following changes have been incorporated in the revised version of Volume III:

- TABLE ASBU-MID-DAIM 3-1: Automated Data-Centric Environment;
- TABLE ASBU-MID- DAIM-3-2: Aeronautical Data Quality;
- TABLE ASBU-MID - DAIM-3-3: Provision of Digital Datasets;
- KPI 04 (Filed flight plan en-route extension) is added to the list of MID Region KPIs;
- the list of Performance Objectives and associated Operational Improvements (projects) proposed by States for inclusion in the MID ANP Volume III was updated; and
- a column titled "Remarks/Progress" was added to the MID Region Air Navigation Systems Performance Based Framework/Template (Table) in order to allow the tracking/monitoring of the progress achieved.

5.2.16 Based on the above, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/2: MID AIR NAVIGATION PLAN VOLUME III (EDITION 2025)

That, MID Air Navigation Plan Volume III (Edition 2025) be endorsed and published under the ICAO MID Office website.

MID Air Navigation Strategy (ICAO MID Doc 002)

5.2.17 The subject was addressed in WP/40 presented by the Secretariat in the following outlines:

MID Air Navigation Strategy new amendment

5.2.18 The meeting noted that for continuity purposes and consistent reporting, and highlighted the importance of the amendment of the MID Air Navigation Strategy (ICAO MID Doc 002) follow the amendment cycle of the GANP (minor changes every 3 years and major changes every 6 years). Since the 8th Edition of the GANP, which will be endorsed by the 42nd General Assembly of ICAO, would include major changes, the RANP/NANP TF/2 meeting agreed that the revised version of the MID Region Air Navigation Strategy at **Appendix 5D**, include minor changes, considering the inputs of the different MIDANPIRG Sub-Groups.

5.2.19 Based on the above, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/3: MID AIR NAVIGATION STRATEGY (EDITION MARCH 2024 REVISION FEBRUARY 2025)

That, the MID Air Navigation Strategy (ICAO MID DOC 002, Edition March 2024, Revision February 2025) be endorsed and published under the ICAO MID Office website.

Overall status of MID ASBU Priority 1 implementation

5.2.20 The meeting noted that as per the ASBU timeline detailed in the ICAO GANP portal, Block 1 has concluded, and Block 2 commenced at the beginning of 2025. Consequently, utilizing data supplied by MID States and additional analysis performed by ICAO MID, the following key points were emphasized.

a) ASBU Block 0 (2013-2018)
   - 28 elements out of 52 are priority 1; the regional averages of implementation of 20 of them (representing 72%) is below regional targets;
   - the average level of implementation of priority 1 ASBU block 0 elements is 68.94%;
   - Qatar, Bahrain, UAE, Oman, Saudi Arabia & Jordan have the highest level of implementation; and
   - NAVS B0/4, RSEQ B0/1, ASUR B0/2, FICE B0/1 & NOPS B0/1 have the lowest level of implementation with 20.00%, 35.71%, 37.50%, 40.63% and 41.67%, respectively.

b) ASBU Block 1 (2019-2024)
   - 6 elements out of 58 are priority 1; the regional average of implementation for all of them are below regional targets;
   - the average level of implementation of priority 1 ASBU block 1 elements is 63.60%;
   - Bahrain, Qatar, Saudi Arabia & UAE have the highest level of implementation with 100%; and
   - DAIM B1/4 and DAIM BI/3 have the lowest level of implementation with 33.47% & 42.11% respectively.

New elements for MID ASBU Priority 1

5.2.21 The meeting was informed that the next proposal for amendment of MID Air Navigation Strategy will be aligned with the 8th Edition of the GANP and include additional Priority 1 ASBU elements from Block 0, Block 1 and Block 2.

5.2.22 The meeting noted that the ASBU elements identified as Priority 1 at the regional level in the MID Air Navigation Strategy are for monitoring and reporting. However, States could identify additional ASBU elements from Block 0, 1 and 2 as priority for implementation at National level, considering operational needs and based on implementation of Performance Based Approach (PBA). In this respect the meeting thanked Bahrain, Qatar, Saudi Arabia an UAE for their efforts in implementing additional ASBU elements from Block 0, 1 and 2, which have not been identified as priority 1 at the regional level.

5.2.23 Based on the above, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/4: MID REGION AIR NAVIGATION REPORT (2025)

That,

*a) States urged to provide the ICAO MID Office with the following data for the development of the MID Region Air Navigation Report-2025 by **31 December 2025**:*

i. the status of implementation of Priority 1 ASBU elements;

ii. major achievements and success stories

iii. information about any additional ASBU elements from Block 0, 1 and 2 that have been identified as a priority for implementation at National level; and

iv. progress achieved for the implementation of the Performance Based Approach and development of National Air Navigation Plan (NANP).

b) the MID Air Navigation Report (2025) be presented to the MIDANPIRG/23 for endorsement.

5.2.24 The meeting noted that Artificial Intelligence (AI) in ANS sector remains in its nascent stage globally, characterized by limited maturity in operational environment, evolving safety standards, and fragmented regulatory frameworks. Rapid technological advancements further underscore the need for adaptive governance models.

5.2.25 The meeting also noted that given the early developmental state of AI technologies, the meeting concluded that establishing a regional working group or task force would be premature at this juncture.

MIDANPIRG CONCLUSION 22/5: ARTIFICIAL INTELLIGENCE IN ANS

That, States and industry stakeholders be encouraged to prioritize and conduct capacity-building initiatives, to foster expertise and knowledge-sharing in AI technologies, regulatory frameworks, and risk management strategies.

Implementation of automated label handover between ATCUs using OLDI/AIDC messages

5.2.26 The subject was addressed in WP/73 presented by UAE. The meeting noted that OLDI/AIDC provides a framework for electronic coordination and data exchange between ATC units. Key messages within (OLDI/AIDC) allow for seamless label handover, ensuring more efficient flight progression across FIR boundaries. Accordingly, the meeting encouraged the MID States and ANSPs to collaborate with UAE on the implementing of automated label handover procedures.

Development of National Air Navigation Plan by MID States

5.2.27 The subject was addressed in WP/42 and IP/22 presented respectively by the Secretariat and Saudi Arabia.

5.2.28 The meeting appreciated Kuwait, Qatar and Saudi Arabia for development of their respective National Air Navigation Plan. In addition, the meeting noted that the NANPs for Iran, Jordan, Oman and UAE were under development.

Regional ATM monitoring Dashboard

5.2.29 The subject was addressed in PPT/41 presented by Saudi Arabia. The meeting noted with appreciation the offer received from Saudi Arabia to develop a dashboard to support the activities of the

ATM SG and the monitoring of implementation levels, using the available expertise within GACA and SANS. Accordingly, the RANP/NANP TF/2 meeting reviewed the proposal.

5.2.30 The primary advantages and anticipated outcomes associated with the proposed dashboard were outlined as follows:

- effectively visualize complex data;
- improve status awareness;
- empower Data-Driven Decisions;
- data integrity through intelligent automation;
- customizable data exploration and analysis;
- flexible data visualization experience;
- streamline operations efficiency; and
- historical data access.

5.2.31 The key features of the proposed dashboard were as follows:

- data collection and analysis:
- visualizations;
- customized options;
- reporting capabilities; and
- sharing.

5.2.32 The meeting agreed that on the development of ATM dashboard to support MID States to monitor the status of ATM related subjects, as start; and to present the outcomes to the MIDANPIRG/23 meeting.

5.2.33 Based on the above, the meeting invited Saudi Arabia to coordinate with the Secretariat for the necessary arrangements required for the development of the ATM dashboard, taking into account the ICAO iSTARS capabilities.

5.2.34 Accordingly, the meeting agreed in the following Conclusion:

MIDANPIRG Conclusion 22/6: DEVELOPMENT of Regional ATM Monitoring Dashboard

That,

a) the Air Traffic Management Monitoring Dashboard be developed by ATM SG to monitor ATM related items, based on the offer received from Saudi Arabia; and

b) the progress of the Dashboard be presented to MIDANPIRG/23 meeting for further deliberation, including the potential expansion of the proposed dashboard to monitor status of other ANS items.

Enhancing MID Region Air Traffic Flow with the RAD Portal

5.2.35 The subject was addressed in WP/96 presented by Oman and Saudi Arabia, jointly. The primary objective of the RAD platform developed by Saudi Arabia was to create a portal that can be accessed and manage the RAD. This will enable a centralized, user-friendly interface offering comprehensive route availability, and real-time updates on airspace changes. The Key objectives include:

- improved air traffic flow and capacity management;
- enhanced flexibility and efficiency of the flight planning;
- seamless cross-border route coordination with adjacent FIRs; and
- strengthening regional airspace efficiency and digital innovation.

5.2.36 The main features of the RAD platform envisaged for the website are summarized as follows:

- centralized/multi nodal web access;
- interactive planning;
- advanced search and filtering tools;
- secure role-based access;
- mobile desktop accessibility; and
- API access data export.

5.2.37 The platform will be designed to ensure at least the following functions:

- high availability (99.9% uptime) and scalability to support growing user demand and accommodate State needs for access. The system will have an adequate level of redundancy to achieve the target level of availability;
- real-time system performance with quick load times;
- robust audit logs, backups, and disaster recovery plans; and
- customizable user interface with user-defined alerts, saved routes, and preferences.

5.2.38 The meeting appreciated the efforts of Oman and Saudi Arabia for this initiative and requested to make the required follow up through ASM WG and ATM SG for further operational and technical requirements.

5.3 *ANS (AIM, PBN, AGA-AOP, ATM-SAR, CNS and MET)*

RVSM Operations and Monitoring Activities in the MID Region (SMR 2024)

5.3.1 The subject was addressed in WP/44 and WP/23 presented by the MIDRMA and Iran, respectively. The meeting recalled MIDANPIRG Conclusion 21/14 related to the data collection required for the development of the MID RVSM MID RVSM Safety Monitoring Report (SMR) 2024.

5.3.2 The meeting noted the delivery of the required data by MID States, and noted that no data received for Khartoum FIRs, thus was excluded from SMR2024.

5.3.3 The meeting noted that, based on currently available information (except for Khartoum FIR), there was no evidence available to MIDRMA that the continued operations of RVSM adversely affect the overall vertical risk of collision during the reporting cycle of the SMR2024.

5.3.4 The meeting reviewed the SMR2024, and agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/7: MID RVSM SMR 2024

*That, the MID RVSM Safety Monitoring Report (SMR) 2024 at **Appendix 5E**, be endorsed.*

5.3.5 Accordingly, the meeting agreed to the following conclusion:

MIDANPIRG CONCLUSION 22/8: REPORTING OF LHDS

That, in order to assess compliance with Safety Objective 2, the MIDRMA Member States be urged to:

a) take necessary measures to ensure that LHDs (Categories A, B, C, D, E, H, J and K) are reported in timely manner to the MIDRMA using the LHD Online LHD Reporting Tool available on the MIDRMA website (https://midrma.com/lhd/home/login);
b) *provide, on timely bases, their reported LHDs (related to the above LHD Categories) to the MIDRMA for the development of the MID RVSM Safety Monitoring Reports and to ensure that RVSM implementation continue to be safe in the MID Region;*
c) *coordinate with MIDRMA, as required;*
d) *MIDRMA conduct periodic meetings (vis web conference), at least once every 3 months, with the ATC Focal Points; and*
e) *MIDRMA presents the ATM-technical matters to the ATM SG for appropriate actions.*

5.3.6 Additionally, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/9: MID RVSM SMR 2025

That,

a) the FPL/traffic data for the period 01 – 31 May 2025 to be used for the development of the MID RVSM Safety Monitoring Report (SMR 2025); before 1 July 2025.
b) only the appropriate Flight Data form available on the MIDRMA website (www.midrma.com) should be used for the provision of FPL/traffic data to the MIDRMA; and
c) the final version of the MID RVSM SMR 2025 be ready for presentation and endorsement by the MIDANPIRG/23 Meeting.

5.3.7 The meeting was informed about the current status of the safety protocol opened between Muscat and Mumbai FIRs. Despite the efforts and measures taken since the initiation of the RVSM safety protocol at the eastern boundaries of Muscat FIR, there was no visible improvement in the reduction of LHD reports between Muscat and Mumbai ATC units. Moreover, the number of reported LHDs had steadily increased, which poses a serious and escalating risk to the RVSM airspace at the common boundary between Muscat and Mumbai FIRs.

5.3.8 The meeting noted with concern, that this increasing trend of LHDs was extremely concerning and highlighted the urgent need for immediate attention and action from both Muscat and Mumbai ACCs. The measures implemented so far, while well-intentioned, had not been sufficient to mitigate the risks posed by these LHD occurrences. The ATC units were urged to focus on strengthening coordination, enhancing real-time reporting mechanisms, and ensuring that corrective actions were not only implemented but also monitored for effectiveness. Given the seriousness of the situation, it was imperative that both ATC units take decisive steps to address the root causes of these LHD incidents to prevent further risk to airspace safety.

5.3.9 The meeting was informed about the current status of the safety protocol opened between

Sana'a FIR and its adjacent FIRs near the Horn of Africa. A comparative analysis of LHD reports between 2023 and 2024 highlights a significant increase in reported deviations especially related to Addis Ababa, Jeddah, Muscat, and Mumbai FIRs, indicating a deterioration in RVSM airspace safety. In 2023, a total of 181 LHD reports were recorded, whereas in 2024, this number surged to 380, more than doubling the previous year.

5.3.10 The meeting encouraged concerned States in coordination with the Regional Offices, to continue coordination and report progress to the upcoming MIDANPIRG meeting; and agreed to keep both Safety Protocols open.

5.3.11 The meeting was informed that the OFAC License for monitoring Iranian aircraft renewed on 23 July 2024, was valid until 22 July 2026. The MIDRMA completed height monitoring for 70 Iran-registered aircraft in two missions to Tehran. The MIDRMA appreciated the efforts of FARSCO and Iran CAA. 40 additional aircraft were planned for the check, which will lead to Iran CAA become fully compliant with RVSM height monitoring.

5.3.12 In WP/23, Iran expressed its gratitude for the efforts and follow-up conducted by ICAO, MIDRMA, and the Chairperson of MIDANPIRG in attaining the OFAC license renewal. Iran CAA requested additional follow-up on the matter to pursue a permanent solution that would enhance the safe operation of international civil aviation.

5.3.13 In WP/64, Iran highlighted the challenges related to TCAS Resolution Advisories (RAs) and proposed comprehensive approach for enhancing Air Traffic Control (ATC) procedures. This include the implementing standardized altitude capture techniques and providing specialized training for Air Traffic Control Officers (ATCOs) on the nature of TCAS RAs can prevent conflicting instructions during RA events.

Cross-Regional Airspace Optimization to enhance safety

5.3.14 The subject was addressed in WP/72, presented by UAE.

5.3.15 The meeting highlighted the need for a comprehensive cross-regional airspace optimization strategy over the high seas to enhance safety, capacity, and efficiency. Considering growing air traffic demand, inconsistencies in separation standards, and operational constraints at Flight Information Region (FIR) boundaries, which resulted in an urgent need to harmonize airspace structures, enhance coordination, and implement modern Air Traffic Management (ATM) solutions.

5.3.16 The meeting noted the complexity of operations particularly on the interfaces of the MID Region, which might be cascaded to other FIRs within the Region.

5.3.17 The meeting noted the need for cross regional coordination mechanism to be established, in order to support the States at the interface in coordination with the respective ICAO Regional Offices.

5.3.18 The meeting tasked the Secretariat to explore a cross regional coordination mechanism to be developed and presented to the ATM SG.

Reduction of longitudinal separation (Project 30/10)

5.3.19 Regarding WP/48, presented by the Secretariat, the meeting noted that the Secretariat conducted an analysis to assess the status of longitudinal separation implemented within the MID Region, based on the data provided by MID States. The meeting commended the Secretariat for the efforts in addressing the longstanding MIDANPIRG Conclusion 13/5 and presenting the status of implementation based on a performance approach.

5.3.20 In WP/72, presented by UAE, the meeting noted that harmonization of airspace structures and procedures was essential to enhance operational efficiency, separation standards and route structures should be aligned and harmonized to facilitate seamless traffic flow. The expansion of FRA would provide greater flexibility for airspace users while ensuring capacity optimization and safety improvements.

5.3.21 In WP/76, presented by Oman, the meeting was informed that Oman and India implemented trials of surveillance-based 20 NM longitudinal separation in oceanic airspace, particularly at the Muscat–Mumbai FIR interface at position RASKI, successfully. The latest coordination meeting confirmed that both sides are, in principle, ready for the full implementation of the 20 NM surveillance-based longitudinal separation minima, subject to final regulatory approvals. Oman had already secured the necessary regulatory approval for full-fledged implementation. Further extension of this separation to other parallel cross-border oceanic routes within the Muscat and Mumbai FIRs was envisaged in subsequent stages.

5.3.22 In WP/95, presented by Saudi Arabia, referred to the 14th Air Navigation Conference (AN-Conf/14), Recommendation 3.1/1 regarding implementation of uniform longitudinal separations of 30 NM or less in oceanic and remote airspace, and 10 NM or less elsewhere. This initiative known as "**Project 30/10**". Saudi Arabia underlined the need for harmonization of separation minima between adjacent FIRs and regions, especially in areas with high traffic flow or critical transit flight, could be achieved through a regional road map based on Recommendation 3.1/1 and the following Criteria:

a) analysis of the current situation of all separations applied within MID FIRs and between adjacent FIRs;
b) identify FIRs where longitudinal separations of 30 NM or less, and 10 NM or less can be applied;
c) conduct of Safety Risk Assessments for the introduction of the longitudinal separations of 30 NM or less, and 10 NM or less, as applicable. The SRAs should cover all safety requirements and mitigations;
d) identify technical and operational enablers for the introduction of the new separation minima between adjacent MID States;
e) identify changes to ATS network to support the introduction of the longitudinal separations of 30 NM or less, and 10 NM or less;
f) develop transition procedures and enhanced coordination between adjacent ANSPs. This transition should include traffic transfer and handover procedures, amendments to the ATS agreements; and
g) training for air traffic controllers and operational Staff on the applicable separation minima.

5.3.23 Based on all the above, the meeting agreed on the following Decision:

MIDANPIRG DECISION 22/10: PROJECT 30/10 ROADMAP

That, the ATM SG develop roadmap for the implementation of Project 30/10 in the MID Region, including the inter-regional aspects.

5.3.24 The meeting also noted that MIDANPIRG Conclusion 13/5 was exclusively concerned with the reduction of longitudinal separation in radar environments. So, the meeting agreed the following Conclusion to supersede Conclusion 13/5 to include both procedural and surveillance airspace.

MIDANPIRG CONCLUSION 22/11: IMPLEMENTATION OF REDUCED LONGITUDINAL SEPARATION IN THE MID REGION

That,

a) States, that have not yet done so:

i. be urged to implement reduction of longitudinal separation where appropriate:

- reduce longitudinal separation down to 10 NM; where ATS surveillance service provided; and

- reduce longitudinal separation down to 30 NM, where no ATS surveillance service provided.

ii. be invited to agree with their adjacent FIRs/States on the date of implementation and updating of the LoAs.

b) the ATM SG monitors the progress of implementation and undertakes necessary measures to promote its advancement.

Outcome of the ATFM TF/9 meeting

5.3.25 The subject was addressed in WP/55 presented by the Secretariat in the following outlines:

Progress implementation of ATFM in the MID region based on ICAO MID Doc 014 phase 1A

5.3.26 The meeting noted that ICAO MID with the support of the ATFM TF Chairperson, developed and circulated the ATFM implementation survey Phase IA through ICAO MID State Letter (Ref: ME 3/2.1.1 – 23/193 dated 12 September 2023). In this respect, ICAO MID received feedback from 10 States presented at **Appendix 5F**. Consequently, the meeting recognized that the overall implementation of the requirements outlined in ICAO MID Doc 014 for Phase 1A in the MID region was **65%**.

5.3.27 The meeting also noted that ATFM TF/9 meeting tasked the Secretariat, in collaboration with the ATFM Chairperson, to carry out a new survey to assess the implementation of ICAO MID Doc 014 Phase I (including the requirements of Phase IA and IB) in June 2025.

Progress of implementation of MID ASBU Priority 1 elements related to ATFM

5.3.28 The meeting noted that based on ICAO MID Doc 014 and ICAO MID Doc 002, the following ASBU elements related to implementation of ATFM Phase 1A are monitored at the regional level.

a) AMET B0/1: Meteorological observations products
b) AMET B0/2: Meteorological forecast and warning products
c) FICE B0/1: AIDC/OLDI
d) FRTO B0/2: FUA
e) NOPS B0/1: Initial integration of collaborative airspace with ATFM
f) RSEQ B0/1: Airspace Management
g) SURF B0/2: comprehensive situational awareness of surface operations
h) ACDM B0/1: Airports CDM information sharing
i) ACDM B0/2: integration with ATM network function

5.3.29 The meeting recalled the outcomes of Air Navigation Report-2024 related ASBU elements at **Appendix 5G** and noted that the overall implementation of ASBU elements priority 1 related to ATFM implementation at regional level per applicability area was **45.47%**.

Development of MID States ATFM implementation plan

5.3.30 The meeting noted that ATFM TF/9 meeting tasked the Secretariat in collaboration with the ATFM Chairperson to carry out a new survey in June 2025 to assess the following items; the results of this survey will be presented to the ATFM/10 and ATM SG/11 meetings for further review and actions:

a) the implementation of ICAO MID Doc 014 Phase I including the requirements of Phase IA and IB; and
b) progress of the MID States to develop their respective national ATFM plan in line with ICAO MID Doc 014.

Implementation of ATFM measures to manage MID region ATM contingency

5.3.31 The meeting noted that MID States, through direct bilateral/multilateral agreements/procedure with relevant adjacent FIRs or through CCT meetings, have been implementing required ATFM measures to ensure safe and efficient management of traffic operation. In this context, and in accordance with ICAO MID Doc 014, the following ATFM measures have been implemented based on traffic demand, operational needs and safety/security assessment to manage traffic flow under both normal and contingency situations.

a) *Mile in Trail*; to manage traffic flow between Cairo and Jeddah FIRs;
b) *Minutes in Trail*; to manage traffic flow over Khartoum FIR;
c) *level-capping*; for departure and arrival traffic between Jeddah and Port Sudan airports as well as arrival and departure traffic to Juba airport; and
d) *re-routing;* to avoid conflict zone by utilizing the route options within Addis Ababa, Asmara, Jeddah, and Cairo FIRs.

5.3.32 The meeting received updates from Oman and Qatar, in WP/75 and PPT/90, respectively, related to ATFM implementation within Muscat and Doha FIRs.

5.3.33 The meeting commended the efforts of Oman and Qatar, and invited the other States to consider the information shared.

Outcomes of Airspace Management Action Group (ASM WG)

5.3.34 The subject was addressed in WP/47, presented by the Secretariat.

5.3.35 The meeting recalled the discussion during the last MIDANPIRG meeting, related to the establishment of Airspace Management Working Group (ASM WG), as a centralized entity to address airspace management challenges and further enhance the coordination on regional level, through Decision 21/10.

5.3.36 The meeting noted that the first ASM WG meeting was successfully conducted in Doha Qatar during the period 30 September to 2 October 2024, hosted by Qatar Civil Aviation Authority (QCAA); back-to-back with the Free Route Airspace (FRA) Workshop. The ASM WG unanimously elected Mr. Saqr Obaid Al Marashda, Senior Manager Airspace Management, ANS/ATM, SZC, UAE, and Mr. Wael Ezzat, ACC Manager, Egypt, as the Chairperson and the Vice Chairperson, respectively.

5.3.37 The meeting reviewed the ASM WG Terms of Reference drafted by the ASM WG/1 meeting; considering the main tasks assigned to the ASM WG including: addressing the challenges in Airspace Management and provide a forum for the ATM specialists in the Region to work together to improve safety and efficiency, increase airspace capacity to meet future demand requirements; and reduce the environmental impact of increasing air traffic by offering improved ATM operations.

5.3.38 Accordingly, the meeting agreed on the following Decision:

MIDANPIRG DECISION 22/12: AIRSPACE MANAGEMENT WORKING GROUP (ASM WG) TERMS OF REFERENCE

*That, the Terms of Reference of the Airspace Management Working Group, at **Appendix 5H**, is endorsed.*

5.3.39 Additionally, the meeting reviewed the outcomes of the FRA Workshop; emanating from the ASM WG/1 meeting, and commended Qatar, Saudi Arabia and UAE for sharing their experience related to the implementation of FRA, which was a result of a successful implementation of CMC/FUA, and encouraged States to consider the outcomes of the Workshop to support further implementation of FRA in the MID Region.

5.3.40 Accordingly, the meeting agreed on the following conclusion:

MIDANPIRG CONCLUSION 22/13: FREE ROUTE IMPLEMENTATION GUIDANCE MATERIAL

*That, the Guidance material for Free Route implementation at **Appendix 5I**, is endorsed.*

5.3.41 The meeting noted that the ASM WG projects and the enhancements initiatives within the MID Region and agreed that the following topics would be considered as “Focus Areas” for the development of ASM Action Plan:

1. Implementation of PBN in Enroute
2. Implementation of reduction of longitudinal separation
3. ATS route structure network (including ATS route designators and 5LNCs)

4. ASM improvement (CMC and FUA, FRA, RAD, TOS, FLAS & LoA)
5. RPAS/UTM
6. FF-ICE implementation
7. Other ASM related enhancements

5.3.42 The meeting reviewed the ASM WG Action Plan, as a framework for the ASM WG Activities. The Action Plan includes many airspace optimization and enhancements projects led by MID States; to enable the ASM to provide support on regional and cross-regional levels, track and monitor the activities, and, where required, provide a venue for the experts from States to exchange experience and knowledge.

5.3.43 The ASM WG/2 meeting was successfully conducted (virtually, 27 January 2025), mainly to follow up on the Action Plan and to include the additional Action Items emanating from the ATM SG meeting. The updated version of the ASM WG Action Plan is at **Appendix 5J**.

MID Region ATM Contingency Planning

5.3.44 The subject was addressed in PPT/54, presented by the Secretariat.

5.3.45 The meeting recalled the requirement of Contingency planning in Annex 11, and the continent of the MID ATM Contingency Plan (Doc 003).

5.3.46 The meeting recalled the discussion during MIDANPIRG/21, in particular conclusion 21/17, related to the Contingency Planning. The meeting noted with appreciation that the ICAO APAC/MID ATM Contingency Planning Workshop (25 - 27 June 2024) and APAC ATM Contingency Tabletop Exercise (28 June 2024) in Bangkok, Thailand.

5.3.47 The meeting noted the outcomes of the Workshop, including the need for more collaboration and harmonization across the ICAO Regions, considering that the impact of any contingency event on international traffic flows is, in most cases, inter-regional.

5.3.48 The Workshop proposed that a new Framework “ATM/ATS Contingency Arrangement and Procedures” should include identification of level of response, Categories and Play Books.

5.3.49 The meeting was apprised with the development on the ICAO HQ related to the Global Priorities - Priority Focus Areas ICAO Crisis Response Mechanism/ Framework which was reflected in ICAO Business Plan 2023-2025.

5.3.50 The meeting received update on the status of CCTs activated within the MID Region, Khartoum FIR and MID Region Political tension.

5.3.51 The meeting expressed appreciation to the efforts of the States, ANSP and international Organizations; and the support provided by the Secretariat in the MID Office to support the activities of the CCTs, in timely manner.

5.3.52 Based on the above, the meeting agreed on the following Conclusion, emanating from the ATM SG/10 meeting:

MIDANPIRG CONCLUSION 22/14: NATIONAL ATM CONTINGENCY PLAN/ ARRANGEMENT

That,

a) *ICAO MID Office assist MID States, where required, in the development of their National ATM Contingency Plans in a harmonized manner by organizing tailored workshops for each State upon request;*

b) *States be encouraged to coordinate with IATA and Airspace Users on the planning and implementation of contingency measures within the National ATM Contingency Plans; and*

c) *IATA to provide the available operational data and users' requirements to enable proper planning.*

5.3.53 In WP/69, Iran emphasized the necessity of establishment of conditional route identified earlier from contingency events and aligned with ASBU element FRTO B0/3. In this respect, Iran proposed to encourage MID States to publish alternative route options as conditional route in their respective AIPs to facilitate a safe and efficient response to potential contingency situations.

Outcome of the ASPIG Meeting (AGA-AOP)

5.3.54 The subject was addressed in WP/45 presented by the Secretariat. The meeting was apprised of the outcomes of the Seventh Meeting of the Aerodrome Safety Planning and Implementation Group (ASPIG/7), held in Riyadh, Saudi Arabia, from 6 to 10 April 2025 and hosted by the General Authority of Civil Aviation (GACA). The meeting brought together participants from 11 MID States and 6 international organizations and focused on regional priorities related to Aerodrome Design, Operations, Safety, and Efficiency.

GANP BBBs in AGA Area

5.3.55 The meeting noted the follow-up on the implementation status of regional initiatives to enhance aerodrome capacity and efficiency and acknowledged the need to reinforce technical personnel competencies. In this regard, the meeting endorsed the following Conclusion:

MIDANPIRG CONCLUSION 22/15: STRENGTHENING CAPACITY BUILDING FOR AOP- BBB IMPLEMENTATION IN THE MID REGION

*That, in order to support the effective implementation of the Basic Building Block (BBB) Framework for Airport Operations, States are urged to provide the ICAO MID Office, **by the third quarter (Q3) of the current year**, with information on their capacity building needs for AGA inspectors and airport operator technical personnel, using the standardized template provided in **Appendix 5K**.*

GANP AOP Threads: Surface Operations (SURF)

5.3.56 The meeting was apprised of the planning and implementation status of Advanced Surface Movement Guidance and Control Systems (A-SMGCS) in the MID Region. It was noted that structured monitoring is essential to support the progressive deployment of A-SMGCS aligned with the ASBU SURF thread. The following Conclusion was endorsed:

MIDANPIRG CONCLUSION 22/16: ***MONITORING THE IMPLEMENTATION OF ADVANCED SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEMS (A-SMGCS) IN THE MID REGION***

*That, in support of the progressive implementation of A-SMGCS services aligned with the ASBU Surface (SURF) thread, States are urged to provide the ICAO MID Office, **by the third quarter (Q3) of the current year**, with updated information on the status of A-SMGCS deployment plans at aerodromes listed in the RANP Applicability Area, using the reporting template provided in **Appendix 5L**. The information should be validated by the concerned airport operators and should consider the implementation dependencies outlined in **Appendix 5M**.*

GANP AOP Threads: Airport Collaborative Decision-Making (A-CDM)

5.3.57 The meeting reviewed the progress of Airport Collaborative Decision-Making (A-CDM) implementation across the MID Region and emphasized the need to align reporting with ICAO milestones and tools. The following Conclusion was endorsed:

MIDANPIRG CONCLUSION 22/17: ***MONITORING A-CDM IMPLEMENTATION PROGRESS IN THE MID REGION***

*That, with reference to the A-CDM Planning and Implementation Milestones presented in **Appendix 5N**, States are urged to submit, **by the third quarter (Q3) of the current year**, the status of their A-CDM Deployment Plans to the ICAO MID Office, as confirmed by aerodromes listed in the Regional Air Navigation Plan (RANP) applicability area, using the standard reporting template provided in **Appendix 5O**.*

5.3.58 In light of the need for a more agile implementation support mechanism, the meeting agreed that deploying a flexible ICAO AOP Go-Team would be more efficient than establishing a permanent task force. The Go-Team would provide tailored assistance to selected aerodromes for A-CDM and A-SMGCS. The following Conclusion was endorsed:

MIDANPIRG CONCLUSION 22/18: ***FACILITATION OF ICAO AOP GO-TEAM MISSIONS FOR A-CDM AND A-SMGCS***

*That, in order to support the establishment and assess the operational performance of Airport Operational Threads including A-CDM and A-SMGCS systems, at selected aerodromes defined at the MID ANP applicability Area, concerned States be urged to confirm, **by the third quarter (Q3) of the current year**, their acceptance of ICAO AOP Go-Team missions. This confirmation should follow the formal notification from the ICAO MID Office regarding the aerodromes selected for support. States are further encouraged to facilitate the coordination and logistical arrangements required to enable these missions, in close collaboration with the designated aerodrome operators.*

Use of Alphanumeric Callsigns to Reduce Callsign Confusion

5.3.59 The subject was addressed in WP/70 and WP/97 presented by UAE and IATA, respectively. The meeting was apprised of the persistent safety risks associated with callsign similarity and

confusion, including miscommunication between ATC and flight crews, increased controller workload, and the potential for serious incidents such as runway incursions and mid-air conflicts.

5.3.60 The meeting recognized that resolving callsign confusion requires a coordinated, multi-stakeholder approach and agreed to include the subject in the agenda of the upcoming ASPIG/8 Meeting and encouraged States to integrate callsign deconfliction measures into their State Safety Programmes and National Aviation Safety Plans.

Outcomes of the CNS/13 Meeting

5.3.61 The subject was addressed in WP/49 presented by the Secretariat. The meeting was apprised of the outcomes of the Thirteenth Meeting of the Communication, Navigation and Surveillance Sub-Group (CNS SG/13), held in Jeddah, Saudi Arabia, from 20 to 23 October 2024.

Frequency and Spectrum Management

5.3.62 The meeting reviewed regional VHF COM frequency allotment challenges, highlighting issues of spectrum congestion and limited reuse efficiency. States were urged to update national frequency data and apply best practices for frequency reuse and cross-border coordination.

5.3.63 In addition, the meeting noted the proposal by Iraq to enhance the ICAO Frequency Finder Tool using polygon-shaped sector volumes to improve planning accuracy. States were encouraged to submit sector coordinates to support this enhancement.

5.3.64 Moreover, the meeting noted the establishment of a Frequency Spectrum Management Office (FSMO) by Saudi Arabia as a best practice and encouraged other States to adopt similar structures and promote participation in frequency-related capacity-building activities.

5.3.65 The meeting recalled that the ICAO MID Office, in coordination with the ICAO EUR/NAT Office, is organizing a WRC-27 Preparatory Workshop in Q4/2025, planned to be held in Paris, to support the alignment of national strategies and ensure effective regional input into the global decision-making process. The meeting recognized the importance of early regional preparations for WRC-27 and called for active participation by civil aviation frequency management experts. States were urged to incorporate aviation spectrum requirements into their national submissions.

Communication Infrastructure and SWIM Transition

5.3.66 The meeting noted renewed opportunities for MID States to join the APAC Common aeRonautical Virtual Private Network (CRV) due to reduced costs and enhanced features. States were urged to conduct readiness assessments and consider participation, in line with GANP and ASBU objectives.

5.3.67 The meeting emphasized the importance of a coordinated transition to System-Wide Information Management (SWIM), highlighting the need for infrastructure readiness and dual-system support during the transition.

5.3.68 In this regard, the meeting agreed on Saudi Arabia proposal to assign the MID AMC Steering Group (STG) the role of overseeing SWIM transition management at the regional level. As such, the MIDAMC STG Terms of References are amended to incorporate SWIM-related activities.

MIDANPIRG DECISION 22/19: MID AMC STG AMENDED TERMS OF REFERENCE

*That, the amended MID AMC Steering Group Terms of Reference at **Appendix 5P**, incorporating SWIM infrastructure related activities is endorsed.*

Implementation of Flight and Flow Information for a Collaborative Environment (FF-ICE) in the MID Region

5.3.69 The meeting recalled AN-Conf/14 Recommendation for the implementation of FF-ICE and cessation of FPL2012 by 2034, as an essential advancement in air traffic management.

5.3.70 The meeting recalled the discussion during MIDANPIRG/21 meeting related to FF-ICE implementation requirements, particularly related to Conclusion 21/20, concerning the need to conduct FF-ICE Workshop in 2025, with the support of the ATFM TF and relevant Subgroups to address FF-ICE planning and implementation in the MID Region.

5.3.71 The meeting noted that the ICAO APAC/MID ATFM and FF-ICE Seminar 2025 was successfully conducted in Dubai, UAE, during the period 23 – 26 February 2025, hosted by General Civil Aviation Authority of the United Arab Emirates (GCAA/UAE). 154 participants from APAC and MID States and international organizations attended the seminar.

5.3.72 The Seminar provided comprehensive background information on the ATFM and FF-ICE, including the requirements and the prerequisites, services and planning phases. In addition, the Seminar provided a forum for sharing experiences, lessons learned and perspectives from the States/ANSPs and Airspace Users with a highlight on cross-border solutions. Additionally, the Seminar was apprised of the ongoing work related to amendments of the ICAO provisions and guidance material related to ATFM and FF-ICE and the cessation of FPL 2012. Accordingly, a regional roadmap for the transition to FF-ICE was deemed necessary. The meeting reviewed the Seminar outcomes in **Appendix 5Q.**

5.3.73 The Seminar recommended that the MID Airspace Management Working Group (ASM WG) to draft the MID FF-ICE regional transition plan, for further review by the ATM SG and endorsement by MIDANPIRG, while the ATFM TF would continue focusing on supporting the ATFM implementation within the Region in line with the ongoing work concerning the amendments of the ICAO provisions and guidance material related to ATFM and the cessation of FPL 2012.

5.3.74 The meeting noted that the majority of the MID States have indicated their intention to transition to FF-ICE and cease FPL2012 before the ICAO-planned date in 2034.

5.3.75 Qatar presented through WP/87 a proposed regional regulatory framework related to FF-ICE, at **Appendix 5R**, to support States in the Region in developing harmonized national requirements for the implementation of FF-ICE, in alignment with applicable ICAO provisions, the GANP, FF-ICE ASBU Thread, and the guidance of the ICAO Doc 9965 and FF-ICE ASBU Thread.

5.3.76 The meeting noted that the operational aspects of FF-ICE are currently being addressed by the ASM WG under the ATM Sub-Group. Given the complexities related to system implementation, the meeting agreed that a dedicated multidisciplinary FF-ICE Implementation Task Force, composed of members from AIM, ATM, and CNS SGs, might be established.

5.3.77 Based on all the above, the meeting tasked the AIM SG, ATM SG, and CNS SGs to include FF-ICE as part of their work programme. The meeting agreed that a joint FF-ICE meeting/workshop would be organized on the occasion of the ATM SG/11 and CNS SG/14 meetings, planned to be conducted in parallel, with inputs from the AIM SG. The joint FF-ICE meeting should recommend to the MIDANPIRG/23 meeting the best way forward for planning and implementing FF-ICE in the MID Region, taking into consideration the work plans presented in the meeting and the experiences of APAC and EUR. The meeting tasked AIM SG with prioritizing SWIM implementation as an enabler for FF-ICE implementation and other services.

Navigation Resilience and GNSS RFI Management

5.3.78 The meeting recalled that the NAV-MON concept aims to optimize and rationalize the regional ground-based navigation infrastructure, supporting the progressive decommissioning of non-essential facilities while preserving the availability of critical navigation services. In view of escalating GNSS vulnerabilities, such as jamming and spoofing, the meeting underscored the strategic importance of maintaining conventional ground-based navigation aids (e.g. VOR, DME, ILS) to safeguard operational resilience and airspace capacity during GNSS outages.

5.3.79 The meeting called that the CNS SG/13 meeting reviewed the consolidated NAV-MON template, jointly developed by the CNS, PBN, and ATM Sub-Groups. Upon analysis of its content, the meeting agreed on the urgent need to establish a dedicated regional Navigation Minimum Operational Network (NAV-MON) mechanism to ensure the continuity of Air Navigation Services (ANS) under both normal and contingency conditions, particularly the growing risks associated with GNSS interference.

5.3.80 This topic was also addressed in WP/94 presented by the Saudi Arabia. The meeting noted that the proposed NAV-MON framework is aligned with the GANP ASBU element NAVS-B0/4 and ICAO Doc 9849 guidance and provides the foundation for sustaining PBN operations with resilient, GNSS-independent navigation capabilities. The meeting acknowledged the importance of DME/DME coverage and alternative position sources in mitigating GNSS vulnerabilities.

5.3.81 In this regard, the meeting reaffirmed the importance of supporting the MID NAV-MON Action Group and encouraged States to contribute subject matter expertise and national data. Furthermore, the meeting noted that ICAO Assembly 42, under Technical Commission Agenda Item 24, may offer a platform for States to advocate harmonization of Regional NAV-MON across ICAO Regions.

5.3.82 In this regard, the meeting endorsed the following Decision:

MIDANPIRG DECISION 22/20: MID NAV-MON ACTION GROUP

That,

a) NAV-MON Action Group be established to develop a proposal for a Regional Navigational Minimum Operational Network supporting the ANS operations;

b) the terms of reference of the NAV-MON Action Group be developed during the first meeting of the Action Group; and

c) States support the NAV-MON Action Group through the assignment of CNS and ANS Subject matter experts and sharing states' experience and provision of required data for developing the MID NAV-MON Network.

Surveillance Matters

Use of Mode S Conspicuity Code for Transit Flights

5.3.83 The meeting acknowledged the operational benefits of utilizing the Mode S conspicuity code (A1000) to address limitations related to Secondary Surveillance Radar (SSR) code availability. It was noted that the effectiveness of this solution relies on regional coordination and the technical readiness of States. In this regard, States were encouraged to initiate bilateral discussions and update relevant agreements to support the joint implementation and trial use of Mode S aircraft identification and flight plan coupling.

Integration of ADS-B as a Complementary Surveillance Layer

5.3.84 The meeting noted Saudi Arabia's ADS-B implementation plan, targeting completion by Q2/2025, which aims to enhance surveillance capabilities in remote areas and complement existing radar and Mode S infrastructure. The meeting recognized the key benefits of ADS-B, including extended coverage, improved data accuracy, cost efficiency, and increased operational safety.

5.3.85 In addition, the meeting acknowledged the vulnerabilities associated with ADS-B, particularly its reliance on GNSS. The meeting emphasized the need for mitigation measures, including robust contingency procedures, interoperability with existing systems, and appropriate cybersecurity safeguards.

Strengthening Air Traffic Safety with Surveillance Sharing

5.3.86 The subject was addressed in WP/92 presented by UAE. The meeting was apprised of the increasing importance of regional surveillance data sharing as a key enabler of air traffic safety, operational efficiency, and cross-border coordination. Building upon CNS SG/13 outcomes, the meeting emphasized the need to strengthen surveillance integration across the MID Region in line with ICAO's Global Air Navigation Plan (GANP) and the MID ANP.

5.3.87 The meeting noted that while several MID States have made progress in deploying advanced surveillance technologies, such as radar, ADS-B, and multilateration (MLAT), data exchange remains limited and fragmented. The lack of coordinated sharing was identified as a constraint to improving regional situational awareness, especially in cross-border and remote airspace.

5.3.88 The meeting was informed of the UAE's achievements in implementing comprehensive radar and ADS-B data integration, both nationally and with neighboring States. Key initiatives include the establishment of unified tracker systems, cross-border surveillance agreements, and robust cybersecurity measures to ensure the integrity and reliability of shared data.

5.3.89 The meeting acknowledged the operational benefits of surveillance sharing, including enhanced conflict detection, reduced separation minima, increased airspace capacity, and improved ATM service delivery. However, it was also recognized that legal and cybersecurity concerns, along with the absence of standardized agreements, remain barriers to broader implementation.

5.3.90 The meeting encouraged States to build on the UAE's experience by initiating bilateral and multilateral cooperation frameworks for surveillance data sharing, prioritizing high-density and key air traffic corridors. The meeting reaffirmed the importance of regional coordination and adherence to ICAO guidance to address technical, legal, and cybersecurity challenges.

Outcome of the AIMDP TF/1 meeting

5.3.91 The subject was addressed in WP/51 presented by the Secretariat. The meeting noted the outcomes of the First meeting of the Aeronautical Information Management Digitalization & Planning Task Force (AIMDP TF/1) which was graciously hosted by IATA AME and CARC Jordan in Amman, Jordan from 20 to 21 January 2025. The meeting was attended by a total of forty-one (41) participants from seven (7) States (Egypt, Iraq, Jordan, Libya, Oman, Saudi Arabia and UAE) and three (3) Organizations/Industries (ADL, IATA, NGL).

5.3.92 The meeting recalled that the Aeronautical Information Management Digitalization & Planning Task Force (AIMDP TF) was established by the MIDANPIRG/21 meeting, through Decision 21/29, to ensure alignment of the DAIM thread/elements with GANP latest Edition, develop appropriate monitoring tables for inclusion in ICAO eANP Vol. III. This task force is also entrusted to ensure a synchronized and harmonized deployment of digital AIS datasets in the MID Region, to address the challenges facing the AIM digitalization and to work together to foster harmonization and digitalization of the entire aeronautical data chain to meet future demand requirements.

AIMDP TF Terms of Reference

5.3.93 It was highlighted that, in drafting its Terms of Reference, the AIMDP TF/1 meeting took into account MIDANPIRG/21 Decision 21/29 and agreed upon the following key deliverables:

- **Develop a Strategic Framework:** Establish a unified vision, concept, and strategy for modernizing Aeronautical Information Services (AIS) to foster harmonization and digitalization in the AIS/AIM service domain across the MID Region.
- **Align Regional Implementation Plans:** Formulate a Regional Plan for Digital Dataset Provision, ensuring compliance with ICAO Annex 15, PANS-AIM (Doc 10066), and the AIS Manual (Doc 8126). This includes Standardized data formats and coding specifications, Phased implementation timelines to guarantee regional consistency, and Mechanisms for monitoring and reporting progress.
- **Address Digitalization Challenges:** Identify key barriers hindering the digitalization of Aeronautical Information Management (AIM) and develop targeted solutions to overcome them. This includes implementing capacity-building initiatives such as regional workshops and the development of relevant guidance material.

5.3.94 Based on the above, the meeting reviewed and endorsed the AIMDP TF Terms of Reference (ToRs), and agreed to the following Decision:

MIDANPIRG DECISION 22/21: AIMDP TASK FORCE TORS

*That, the AIMDP Task Force Terms of Reference (ToR) at **Appendix 5S** endorsed.*

5.3.95 The meeting recalled MIDANPIRG/21 Decision 21/29, which urged States to support the AIMDP Task Force by appointing a Focal Point to actively contribute to its work, and to share their experiences, challenges, and best practices related to Aeronautical Information Management (AIM) digitalization.

5.3.96 The meeting noted that only seven MID States, Bahrain, Jordan, Libya, Qatar, Saudi Arabia, Sudan, and the UAE have appointed Focal Points. Accordingly, the meeting urged the remaining

States to nominate their Focal Points without delay, in order to ensure regional alignment and effectively address common challenges through unified collaboration.

Strategic Planning and Key Implementation Priorities

5.3.97 It was acknowledged that the digital transformation from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM) represents a significant shift in how aeronautical data is managed and utilized. However, while the global aviation industry is rapidly advancing towards digital data sets as part of this transformation, the MID Region continues to face considerable challenges in aligning with this progress, including:

I. **Institutional Issues**: Absence of a national policy for digital datasets, resulting in unclear assignment of responsibilities and accountability among stakeholders.

II. **Financial Issues**: Digital data processing incurs higher costs than traditional paper-based methods. Compounding this challenge, cost-recovery mechanisms for digital datasets remain undefined.

III. **Technical Issues**: Lack of established procedures or guidance for managing and updating digital datasets. Additionally, insufficient technical expertise to support digital dataset development and maintenance further exacerbates challenges.

5.3.98 The meeting noted that in order to address these challenges and facilitate the harmonized deployment of digital Aeronautical Information Services (AIS) datasets across the MID Region, the AIMDP TF/1 meeting established a structured framework of strategic priorities and dedicated workstreams. These workstreams delineate specific activities, assign accountable champions, define deliverables, and set phased timelines to ensure coordinated implementation.

5.3.99 To harmonize digital AIS deployment in the MID Region, the AIMDP TF/1 meeting established a structured framework with five prioritized workstreams, led by assigned champions and tied to phased deliverables:

Vision & Strategy for AIS Harmonization
Leads: Egypt, ICAO MID
Deliverable: Updated MID Doc 008 (Guidance for AIM Planning) by Q4 2025.

Readiness Assessment Framework
Leads: Oman, ICAO MID
Deliverables: Gap-analysis methodology framework and State-level Gap Analysis Report by Q2 2025.

Regional Implementation Plan
Leads: UAE, Saudi Arabia
Deliverable: MID Digital Datasets Plan (scope, delivery methods, timelines) by Q4 2025.

Capacity-Building Roadmap
Leads: Saudi Arabia
Deliverable: Implementation Support Plan (workshops, Go-Teams, resource allocation) by Q4 2025.

Progress Monitoring Mechanism
Leads: Jordan, IATA
Deliverable: Reporting framework to evaluate digitalization effectiveness by Q4 2025.

Outcome of the AIM SG/11 meeting

5.3.100 The subject was addressed in WP/50 presented by the Secretariat. The meeting noted the outcomes of the Eleventh Meeting of the Aeronautical Information Management Sub-Group (AIM SG/11), held in Amman, Jordan, from 22 to 23 January 2025, which convened back-to-back with the first meeting of the AIM Digitalization & Planning Task Force (AIMDP TF/1).

NOTAM Template on GNSS interference

5.3.101 The meeting recalled that MIDANPIRG/20, through Conclusion 20/18, had endorsed a NOTAM template for GNSS interference, and that, in response to a rise in GPS spoofing incidents, MIDANPIRG/21 via Conclusion 21/30, requested ICAO and IATA, in coordination with the AIM SG, to develop a revised template. It also recalled that the 14th Air Navigation Conference (26 August–6 September 2024) acknowledged the absence of a standardized NOTAM Q-code for GNSS interference events and subsequently requested ICAO to develop additional NOTAM codes to enhance consistency and operational efficiency. In addition. The meeting noted that on 26 March 2025 the ICAO Council in its Decision 234/11(e) recognized the work done by NSP and the ongoing progress to create new NOTAM Codes "the Council recognized the work of the Air Navigation Commission and its expert groups to address this issue, including the development of new guidance material and the creation of new NOTAM codes for GNSS RFI. The meeting noted that PBN SG/9 reviewed and endorsed the proposed GNSS RFI NOTAM template**,** pending the issuance of the new codes, and tasked the Secretariat with coordinating its finalization with the AIM Sub-Group, with implementation to follow once the codes become available.

ACR/PCR publication Status in MID

5.3.102 The meeting recalled that in 2020, ICAO adopted with Amendment 15 to Annex 14, Volume I Aerodromes — Aerodrome Design and Operations, a new method for expressing and calculating the bearing strength of a pavement, called the Aircraft Classification Rating (ACR) - Pavement Classification Rating (PCR). The meeting noted that a transition period of 4 years had been set by ICAO and the new method has become applicable on 28 Nov 2024, replacing the current Aircraft Classification Number (ACN) - Pavement Classification Number (PCN) method.

5.3.103 The meeting noted that ICAO MID has developed and disseminated through SL File Ref.: ME 3/2.5 – 24/172 dated 7 November 2024, a Survey on the implementation/publication of the new Aircraft Classification Rating (ACR) - Pavement Classification Rating (PCR) method. This survey aimed to gather valuable feedback from Member States on the status of publication of the new ACR-PCR method. The following key findings were highlighted:

- Most States (9 out of 10) have endorsed the new ACR-PCR. Only one State has not endorsed it.
- Several States (7 out of 10) have confirmed that airport operators are determining and providing the PCR. Three States have not yet reached this stage.
- Only one State (Qatar) has completed the publication of the PCR and three States (Egypt, Saudi Arabia and UAE) have started publication process.

- Estimated Time for Publication:
  - Five States estimate a timeline of 1-2 years for publication.
  - One State estimates a longer timeline of more than 2 years for publication.

5.3.104 It was pointed out that that, in order to achieve effective implementation, it is essential for Civil Aviation Authorities (CAAs) and Aeronautical Information Service Providers (AISPs) to take immediate action to address the identified gaps and accelerate progress.

5.3.105 To promote and foster the publication of the ACR/PCR methodology in a timely and uniform manner across the MID Region, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/22: PUBLICATION OF THE PCR IN STATES AIPS

That, States be urged to:

a) ensure effective coordination between the Aeronautical Information Service Providers (AISP) and Airport Operators (AOs) regarding the publication of the ACR-PCR method;
b) establish a well-coordinated National ACR-PCR Publication Plan, providing necessary support to all relevant stakeholders throughout the process; and
c) Submit a detailed action plan for the Publication of the new ACR-PCR method to the ICAO MID Office; and regularly update the MID Office on the progress achieved.

and AISPs be urged to:

a) ensure that all relevant AIS personnel are formally updated about the content of the relevant provisions concerning the PCR values to be published in the AIP (AD 2.8, AD 3.8 and AD 2.12), and on the aerodrome charts, and update the applicable AISP operating procedures and the formal arrangements with AP, as necessary;
b) ensure that any software tools used for data handling and aeronautical product publication purposes are able to accommodate the new pavement strength method;
c) receive the PCR values by the aerodrome operators, and prepare the relevant information for publication;
d) report any delay concerning PCR data to be originated by aerodrome operators to the CAA; and
e) ensure that PCR information is published for all aerodromes with priority given to International Aerodromes.

GNSS Elements in MID States AIPs

5.3.106 The meeting recalled ICAO's standards for publishing GNSS information in State AIP, particularly in sections AD 2.19 (Radio Navigation and Landing Aids) and ENR 4.3 (GNSS). The meeting also referenced ICAO Doc 9849 (GNSS Manual), which outlines requirements for AIPs to include:

- a clear statement of terms and conditions, procedures and such things as training requirements;
- background information about GNSS technology and its operational applications;
- current information that can assist AOs in planning for the acquisition of avionic;
- information updates; and

- WGS-84 coordinate system

5.3.107 The meeting noted that a Secretariat review of MID States' Aeronautical Information Publications (AIPs) revealed only Saudi Arabia had published GNSS information. The meeting called on States to promptly update their AIPs, specifically sections AD 2.19 (Radio Navigation and Landing Aids) and ENR 4.3 (GNSS) to align with ICAO Standards and Recommended Practices (SARPs) and guidelines. Consequently, the meeting endorsed the following Conclusion:

MIDANPIRG CONCLUSION 22/23: PUBLICATION OF GNSS-RELATED INFORMATION IN STATES' AIPS

That,

a) States that have not yet done so are urged to promptly publish GNSS information in the relevant sections of their AIPs, including AD 2.19 (Radio Navigation and Landing Aids) and ENR 4.3 (Global Navigation Satellite System - GNSS), ensuring compliance with ICAO Standards and Recommended Practices (SARPs) and associated guidelines; and

b) ICAO MID monitor the publication status of GNSS-related information in States' AIPs and regularly report progress to the relevant subsidiary bodies of MIDANPIRG.

Advancing Aeronautical Information Services Through Capacity Building

5.3.108 The meeting recalled that the total number of air navigation deficiencies recorded in MANDD was 98 deficiencies. The AIM field accounts for the largest share, representing 46% of the total deficiencies, underscoring its critical importance in addressing systemic challenges.

5.3.109 To resolve these long-standing challenges, the meeting agreed to collaborate with IATA and Boeing/Jeppesen to organize a targeted workshop. This initiative aims to bolster awareness, share best practices, and equip States with actionable strategies to resolve longstanding deficiencies. Consequently, the meeting endorsed the following Conclusion:

MIDANPIRG CONCLUSION 22/24: AIM-ING FOR EXCELLENCE WORKSHOP: ADVANCING AERONAUTICAL INFORMATION SERVICES

That ICAO MID Office, in collaboration with IATA, Boeing/Jeppesen, and Member States, organize a workshop in 2025 to strengthen States' understanding and capabilities in Aeronautical Information Services, address existing deficiencies, enhance the effectiveness of AIM, and promote regional cooperation through best practices and knowledge sharing.

Strengthening AIM Data Integrity

5.3.110 The subject was addressed in WP/80 presented by United Arab Emirates. The meeting noted the UAE GCAA's successful enhancement of Aeronautical Information Management (AIM) data integrity by migrating from MD5 to the more secure SHA-512 hashing algorithm, thereby strengthening cryptographic protection and mitigating risks inherent in older methods.

5.3.111 The meeting noted also the SHA-512's superior ability to safeguard data integrity, resist cyber threats, and maintain a robust aeronautical information environment.

5.3.112 It was pointed out that previously, hash values were published only with the AIP updates notification email, limiting new subscribers' ability to verify data integrity. Now, UAE has made hash lists continuously accessible via its website-hosted Aeronautical Information Publication, ensuring that all users, regardless of when they subscribe, can authenticate data at any time. This enhancement not only aligns the AIP with current cryptographic standards but also bolsters user confidence in the reliability and security of published information.

5.3.113 The meeting recalled the provision of ICAO PANS-AIM DOC 10066, particularly Chapter 2, Paragraph 2.2.1, on Data Integrity Monitoring and Assurance. This provision specifies that data integrity must be maintained through the use of cryptographic technologies (e.g. hash functions, message authentication codes, asymmetric and symmetric encryption, and digital certificates).

5.3.114 The meeting further urged Member States to adopt and integrate these practices into their Aeronautical Information Management (AIM) frameworks. Emphasis was placed on the implementation of advanced hashing algorithms, such as SHA-256 or SHA-3, to address evolving cybersecurity threats, as well as ensuring the continuous availability of hash lists to support real-time verification process.

5.3.115 To operationalize these objectives, the meeting tasked the AIM Sub-Group (AIM SG) with developing detailed guidance on Data Integrity Monitoring and Assurance protocols. This guidance is to align with ICAO standards while addressing regional operational needs and cybersecurity challenges. Additionally, AIM SG was directed to monitor the implementation of these practices across Member States.

SWIM and Digital NOTAM Implementation - Advancing Aeronautical Information Management in Qatar

5.3.116 Through PPT/83, the meeting noted that the Qatar Civil Aviation Authority (QCAA) has launched its SWIM service to enhance information sharing in Aeronautical Information and Air Traffic Management (ATM), supporting improved situational awareness among stakeholders. The service was officially introduced through an Aeronautical Information Circular issued on 28 November 2024, with the initial rollout focused on Aeronautical Information Management (AIM) and plans to expand into Meteorological (MET) and ATM domains.

5.3.117 The meeting noted also that implementation is being conducted in two phases:

- Phase One: A six-month trial encouraging user feedback.
- Phase Two: Full operational deployment based on trial insights.

5.3.118 It was highlighted that the SWIM system is designed as an information backbone, compliant with ICAO Doc 10039 and Eurocontrol standards, supporting global data exchange models like AIXM, FIXM, and IWXXM. It includes layered architecture and a Service Registry to facilitate easy discovery and access to services by both providers and consumers. The meeting noted that, parallel to SWIM initiatives, the QCAA has successfully implemented a Digital NOTAM system, which transforms traditional NOTAMs into structured, machine-readable data utilizing the AIXM 5.1 standard. It was highlighted that this digital format enhances accuracy, supports automation, and reduces the risk of human error. Furthermore, the Digital NOTAM Portal was acknowledged for offering both graphical and textual interfaces, alongside user-friendly functionalities such as date- and feature-type filtering, as well as real-time synchronization with the central database.

5.3.119 It was pointed out that the transition faced challenges, including the integration of legacy systems and the need to upskill personnel. However, the meeting emphasized that the QCAA addressed these hurdles through a phased migration strategy and targeted training programs, ensuring a smooth and sustainable shift to digital operations.

5.3.120 Finally, the meeting recognized the QCAA's reaffirmed commitment to advancing ICAO's global vision for modernized aeronautical information management. The importance of regIonal collaboration was stressed, particularly in supporting safer and more efficient air navigation services across the MID Region. ***IMPLEMENTATION OF NEW NOTAM SERIES "C",*** IP/14 was submitted by UAE, highlighting UAE's initiative with the introduction of a dedicated NOTAM series ("C") to streamline NOTAM distribution and identification. The new NOTAM Series "C", aimed at enhancing the categorization of low-level activities specially for low-level activities like UAS operations, fireworks, and laser activities, exploring the mechanisms employed by the UAE to ensure a seamless transition.

Enhancing UAE AIM Services Provision

5.3.121 IP/18 was submitted by UAE, presenting the various initiatives taken by UAE AIM to enhance AIM Services Provision by digitalization and automation. In particular the provision of the Aeronautical Chart — ICAO 1:500 000 in electronic (GeoTIFF) format.

Production of Aeronautical Chart - ICAO 1:500:000

5.3.122 IP/19 was submitted by Saudi Arabia, highlighting the production and maintenance of the ICAO 1:500,000 Aeronautical Chart in compliance with GACAR Part 175 and ICAO Annex 4 standards. The paper underscores the chart's role in aviation safety and efficiency within Saudi airspace, emphasizing its operational use for pre-flight planning, enroute navigation under Visual Flight Rules (VFR), and flight operations at low/intermediate altitudes.

Outcome of the PBN SG/9 meeting

5.3.123 The subject was addressed in WP/52 presented by the Secretariat. The meeting noted the outcomes of the Eighth meeting of the Performance Based Navigation Sub-Group (PBN SG/9) held in Doha, Qatar, from 9 to 11 December 2024.

Performance Based Aerodrome Operating Minima (PB-AOM)

5.3.124 The meeting reaffirmed MIDANPIRG/21 Conclusion 21/6, which called for a webinar on Performance-Based Aerodrome Operating Minima (PB-AOM) to deepen understanding of its technical, operational, and aerodrome design implications. In response, a dedicated session was conducted to address implementation challenges and practical applications. The session highlighted how PB-AOM empowers operators of advanced aircraft to reduce operating minima in low-visibility conditions by utilizing enhanced onboard systems and existing aerodrome infrastructure. Key benefits emphasized included operational flexibility for airlines and airports, cost-effective utilization of aerodrome facilities and streamlined integration of CNS/ATM services.

DOC 9849, GNSS Manual Update Summary

5.3.125 The meeting recalled that MIDANPIRG/20, through Conclusion 20/23, had called for a webinar to review the critical updates in the fifth edition of the PBN Manual (Doc 9613, ED-5).

Accordingly, a dedicated session was convened to examine the revised document's operational, technical, and regulatory amendments, notably its restructured framework for enhanced clarity, expanded guidance on Free Route Airspace to boost efficiency, updated terminology reflecting current technologies, strengthened RNP AR specifications, and the inclusion of advanced satellite-based navigation systems.

PBN Charting: SID/STAR

5.3.126 The meeting recalled that MIDANPIRG/21 had identified discrepancies in PBN SID/STAR charts published in MID State AIPs, ranging from inconsistent chart titles and identification to variable PBN Box layouts contrary to ICAO promulgation principles and through Decision 21/8, had established a PBN SID and STAR Charting Ad Hoc Working Group to develop harmonized guidance and specimen charts to address these challenges and promote consistency across the MID region.

5.3.127 The meeting noted that the PBN SG/9, in collaboration with the ICAO EUR/NAT Office and Eurocontrol, reviewed the Ad-Hoc Working Group's outcomes and endorsed the PBN SID/STAR Charts Harmonized AIP Publication factsheet, jointly developed by ICAO EUR/NAT and Eurocontrol, to prevent duplication and promote interregional harmonization of charting methodologies.

5.3.128 The meeting recalled that the factsheet, designed for chart-origination specialists, that the factsheet, tailored for specialists responsible for chart origination, provides illustrative examples and references to relevant ICAO provisions. This resource is intended to enhance understanding and to promote harmonization but does not seek to replace or override state regulations or ICAO requirements regarding AIP publication and charting. Furthermore, the meeting noted that complementary explanatory guidance was produced by the PBN SID and STAR Charting Ad-Hoc Working Group to assist States in achieving higher levels of standardization.

5.3.129 Based on the above and with a view to streamlining efforts, promoting interregional harmonization, and aligning with ongoing initiatives, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 22/25: PBN SID/STAR CHARTS HARMONIZED AIP PUBLICATION

That, ICAO MID Office:

*a) promotes the PBN SID and STAR Charting factsheet at **Appendix 5T** along with the* complementary explanatory guidance at ***Appendix 5U*** *to enhance harmonization in the publication of these procedures across the MID Region, ensuring their widespread dissemination among member states; and*

b) monitors the implementation status of PBN SID/STAR charts and the harmonized AIP publication and provides progress reports to the relevant subsidiary bodies of MIDANPIRG.

RNP APCH guidance material

5.3.130 The meeting noted that the MID-RASP 2023–2025 framework, aligned with the Global Aviation Safety Plan, establishes six regional safety performance goals monitored via the MID Region Safety Performance Measurement and Monitoring (SPMM) system through 24 Safety Enhancement Initiatives and 61 actionable steps, among them G1-SEI-04A1, which addresses CFIT risk by advocating for the development of RNP Approach design guidance.

5.3.131 The meeting further noted that the ICAO EUR/NAT Office has published comprehensive RNP Approach Guidance Material (EUR Doc 025).

5.3.132 To streamline efforts, eliminate redundancy, and harmonize regional practices, the meeting endorsed the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 22/26: GUIDANCE MATERIAL ON RNP APPROACH (RNP APCH)

That, ICAO MID promotes the guidance material on RNP Approach (RNP APCH) outlined in EUR Doc 025, at ***Appendix 5V****, and ensuring its widespread dissemination among MID States.*

IFP provisions and oversight capability in MID Region

5.3.133 The meeting noted that the PBN SG/9 meeting underscored the critical role of State Safety Oversight, particularly the implementation of the eight critical elements (8 CEs), as a foundational framework for ensuring aviation safety. The meeting emphasized the need for IFPD service providers to establish robust processes for Instrument Flight Procedure (IFP) development, including operational/quality manuals, periodic procedure reviews, continuous maintenance, quality assurance, comprehensive training programs, and integration of Safety Management Systems (SMS).

5.3.134 Noting progress against PBN and PANS-OPS Protocol Questions in the MID Region, and mindful of Significant Safety Concerns exposed by recent ICAO USOAP-CMA audits elsewhere, particularly in regulatory oversight of IFPs, the meeting urged States to establish and implement a robust safety oversight framework for Instrument Flight Procedures (IFP) and Performance-Based Navigation (PBN).

5.3.135 To foster regional collaboration and knowledge exchange, the meeting agreed to convene a dedicated workshop on PBN implementation, IFP development services, and safety oversight practices, aimed at sharing best practices, addressing common challenges, and harmonizing oversight approaches.

5.3.136 On this basis, and with a view to supporting Civil Aviation Authorities in establishing robust IFP Safety oversight frameworks, and foster knowledge-sharing among stakeholders, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 22/27: IFP PROVISIONS AND SAFETY OVERSIGHT WORKSHOP

That,

a) IFP Provision and Safety Oversight Workshop be organized in 2025; and
b) States and stakeholders are encouraged to actively participate in the workshop to exchange experiences, address challenges, and foster collaboration.

MID Region Transition to True North Challenges, Implications, and Way Forward

5.3.137 The subject was addressed in WP/77 presented by Saudi Arabia and United Arab Emirates, members of the ICAO True North Advisory Group (TRUE-AG). The meeting noted during the PBN SG/9

meeting in December 2024, participants' feedback revealed a significant knowledge gap, a lack of expertise, and the need for explicit guidance material from ICAO to support states in this transition.

5.3.138 The meeting noted that if true north reference for aircraft heading is implemented, it would mean the discontinuation of the existing practice of converting aeronautical data from its original format in true reference into magnetic reference. It would simplify charting and aircraft operations, improve operational safety, and could result in considerable cost savings for air operators, air navigation service providers (ANSPs), aerodromes, avionics manufacturers, and flight procedure designers.

5.3.139 It was pointed out that the transition to True North in the MID Region poses multifaceted challenges, requiring a comprehensive review of existing air navigation systems, infrastructure, and operational procedures. Key challenges include limited awareness of True North's operational implications, the absence of national transition roadmaps and strategic planning, and insufficient technical expertise to assess impacts on navigation charts, aerodrome operations, and procedure design. Additionally, uncertainties regarding cost allocation and funding mechanisms, coupled with the need to update regulatory frameworks to align with True North standards, necessitate enhanced coordination among ANSPs, regulators, and airspace users. Addressing these gaps is critical to ensuring a harmonized and effective transition while maintaining aviation safety and efficiency across the MID region.

5.3.140 Noting the challenges associated with the transition to True North, the meeting encouraged States:

- to conduct a National Impact Assessment: Identify affected areas such as PBN procedures, aerodrome markings, charting, and ATM systems.
- Gap Analysis and Cost Evaluation: Assess infrastructure and regulatory gaps and estimate transition costs.
  Capacity Building and Training: Develop expertise through workshops and technical training sessions.
- Stakeholder Coordination: Engage ANSPs, airlines, aerodrome operators, and military authorities in planning efforts.
- Develop a Transition Roadmap: Establish a phased **APPROACH WITH CLEAR MILESTONES AND IMPLEMENTATION TIMELINES.**

5.3.141 Additionally, the meeting noted that the subject is being addressed at a global level; and requested ICAO to formulate a comprehensive transition plan, supported by targeted guidance and awareness-building activities such as seminars, workshops, and webinars. This plan should establish a platform for cross-State knowledge exchange of best practices and facilitate cost analysis studies to aid national financial planning efforts.

Wake Turbulence Encounter Classifications

5.3.142 The subject was addressed in WP/71, presented by UAE.

5.3.143 The meeting recalled the Wake Turbulence Categories in ICAO Doc 4444, and noted the inconsistences in the classification and reporting of the Wake Turbulence Encounters (WTE) across different Airlines and ANSPs. The meeting noted the need for a standardized methodology for classification the encounters as Light, Moderate or Sever based on aircraft response metrics rather than pilot perception, to improve global harmonized WTE reporting.

5.3.144 The meeting requested ICAO to consider the WTE categorization matrix and the reporting form included in the paper, for future development of the guidance material.

Yemen PBN Progress

5.3.145 IP/25 was submitted by Yemen, highlighting the key measures and initiatives taken by CAMA Aden in implementing the new PBN terminal flight procedures at several Airports to allow more efficient accessibility to the Airports and to optimize terminal airspace operations in alignment with ICAO strategic objectives.

Outcomes of MET SG/11

5.3.146 The subject was addressed in WP/53 presented by the Secretariat. The meeting noted the outcomes of the MET Sub-Group (MET SG/11) and the Workshop on Formulating a Space Weather Exercise held at the ICAO MID Regional Office in Cairo, back-to-back from 14 to 16 November 2023.

5.3.147 The meeting noted also that in order to manage the significant increase in volume of data, the data delivery mechanism will be upgraded and be System Wide Information Management (SWIM)-compliant using Application Programmer Interface (API). Users will be able to choose which region to download data for as well as to specify which vertical levels and which forecast time-steps of data are required. In addition, a set of 8 fixed regions will be provided as well as global data. SADIS FTP users will be invited to test the new SADIS API components when they become available (WAFS gridded data in December 2023, operational meteorological OPMET data in February 2024 and SIGWX in July 2024).

5.3.148 Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 22/28: WAFS DATA

That, the SADIS users be encouraged to prepare their systems for visualizing and creating charts from the new WAFS SIGWX data sets in IWXXM format by using the test data sets available at https://www.metoffice.gov.uk/services/transport/aviation/regulated/wafs-sigwx-test-data & for those with WIFS accounts https://aviationweather.gov/wifs/data/IWXXM_TEST/.

5.3.149 The meeting was apprised of the outcomes Workshop on Formulating a Space Weather Exercise, in particular:

- Continue awareness campaign on SWX through webinars/workshops;
- Regulatory authority should assure NOC distributes SWX advisories to ACC/FIC, AMO and NOF and that these advisories are included in flight documentation and briefings (depending on internal communications in how this is done);
- Liaise with other stakeholders (SWXC, ATM, COM, Flight Information Office FIO, regulators, operators and relevant science community) on further developing a SWXEX Directive;
- Consider broader exercise to include other Regions (e.g. EUR and NAT as well as MID); and

– Keep abreast of other regional developments related to space weather exercises and contingency arrangements in line with the GANP.

5.3.150 The meeting acknowledged, while the outcomes seemed very good and the objectives of the workshop were met from the perspective of sharing information on SWX provisions and impacts to aviation, more has to be done to include all relevant stakeholders in order to plan an actual SWX exercise in the future. Therefore, the meeting agreed that another SWX Exercise Workshop be conducted with a broader scope of stakeholders in order to progress the SWX Exercise Directives.

Outcomes of MET SG/12

5.3.151 The subject was addressed in WP/59, presented by the Secretariat. The meeting reviewed the outcomes of the Twelfth Meeting of the Meteorology Sub-Group (MET SG/12), which was held virtually from 12 to 13 November 2024. This meeting provided a vital platform for States and organizations to exchange views, share updates on recent developments, and collaborate on key issues affecting meteorological services in the MID Region. It was attended by 43 participants from 10 MID States, two other States, and two international organizations, demonstrating strong regional and interregional engagement.

5.3.152 The meeting acknowledged several global and regional developments in aeronautical meteorology, particularly those related to the World Area Forecast System (WAFS), IWXXM implementation, and data exchange mechanisms. It recognized the importance of continued coordination among stakeholders to ensure compliance with evolving ICAO provisions and to meet the changing needs of the aviation community.

5.3.153 It was highlighted that WAFS enhancements and SWIM compliance updates were provided regarding the transition to new SIGWX forecasts in IWXXM format and broader WAFS coverage, which includes enhanced vertical resolution and new forecast intervals. The SADIS API was highlighted as SWIM-compliant, and users were encouraged to prepare for the phased retirement of legacy datasets.

5.3.154 The meeting noted that the implementation status of IWXXM v3.0 across MID States. It was also noted that Bahrain, Jordan, Saudi Arabia, Qatar, and the UAE had completed implementation, with other States expected to follow in 2025. States that had not implemented IWXXM were urged to accelerate the implementation of IWXXM v3.0. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 22/29: IWXXM IMPLEMENTATION DEFICIENCIES

That, States that have not implemented IWXXM for OPMET exchange as per ICAO and WMO provisions be included in the list of Air Navigation Deficiencies.

5.3.155 The meeting reviewed the list of Air Navigation Deficiencies and noted that some deficiencies have remained unresolved for over a decade. It emphasized the need for updated Corrective Action Plans (CAPs) and meeting agreed to the following MIDANPIRG Conclusion.

MIDANPIRG CONCLUSION 22/30: WORKSHOP ON ENHANCING MET CAPABILITIES

That, the ICAO MID Office, in collaboration with WMO and Member States, organize a workshop alongside MET SG/13 in 2025 to support States in addressing MET deficiencies.

5.3.156 The MET SG/12 meeting reviewed the Terms of Reference (TORs) for the MET Sub-Group (MET SG) and suggested amendments for further improvement. The proposal to include Space Weather Information in the MET SG's TORs was presented as an essential enhancement to ensure comprehensive coverage of aviation meteorological phenomena requirements.

5.3.157 Based on the above, the meeting agreed on the following Decision:

MIDANPIRG CONCLUSION 22/31: REVISED MET SG TORS

That, the revised Terms of References (TORs) of the MET SG are endorsed as at ***Appendix 5W.***

5.3.158 The MET SG/12 meeting highlighted the need to develop and conduct a comprehensive survey to assess States' compliance with existing and forthcoming global and regional MET requirements. This survey would also help identify states' specific needs to facilitate targeted assistance and planning.

5.3.159 Accordingly, the meeting agreed to the following Conclusion:

MIDANPIRG CONCLUSION 22/32: SURVEY ON STATES' COMPLIANCE WITH EXISTING AND FORTHCOMING GLOBAL AND REGIONAL MET REQUIREMENTS

That, the ICAO MID Regional Office conduct a survey to assess States' compliance with both current and upcoming global and regional MET requirements.

Search and Rescue (SAR) Implementation Status

5.3.160 The subject was addressed in WP/93, presented by Saudi Arabia.

5.3.161 The meeting recalled that the Global Aeronautical Distress and Safety System (GADSS) aims to enhance aircraft tracking, distress alerting, and post-accident search and rescue capabilities, thereby significantly improving identification of aircraft in distress and the SAR operations. A cornerstone of GADSS is Autonomous Distress Tracking (ADT) requirements, which mandate that aircraft automatically transmit location information in distress situations, independent of crew action and relying on onboard systems.

5.3.162 The meeting highlighted the main components of the GADSS, the benefits, and challenges that might be faced during the implementation of ADT.

5.3.163 The meeting invited States to share information on the implementation of ADT and the regulatory framework, operational, and SAR procedures.

5.3.164 The subject was addressed in WP/56, presented by the Secretariat. The meeting recalled the relevant SARPs and guidance material related to SAR included in ICAO Annex 12 and the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR - Doc 9731), the MID Doc 010: MID Search and Rescue Implementation plan and the ASBU GADS B1/2 which was identified as Priority 1 in the MID Region.

5.3.165 The meeting highlighted that the main findings related to SAR implementation within the MID Region, and the status of SAR bi-lateral arrangements reported to the MID Office at **Appendix 5X**.

5.3.166 The meeting recalled the discussion during the MIDANPIRG/20 & RASG-MID/10 (Muscat, Oman, 14 – 17 May 2023) meeting, related to the SAR findings and deficiencies, in particular, the organization of a SAR implementation Workshop in 2024.

5.3.167 The meeting noted with appreciation that the MID SAR Implementation Workshop was successfully conducted at the MID Office in Cairo during the period 6 – 7 May 2024; 30 participants attended the Workshop from the MID States. The Workshop reviewed ICAO Provisions related to SAR and the current implementation status within the MID Region. Additionally, provided brief on Amendment 19 to Annex 12 related to GADSS (applicable by 28 November 2024) and USOAP CMA PQs related to SAR implementation. Also, the workshop provided a detailed description on the GADSS components and implementation plan in particular the Autonomous distress tracking and SIT185 messages format. The Workshop was considered as a venue for SAR experts from the MID Region to share their experience and success stories related to SAR implementation. The meeting encouraged the States to use the information provided by the Workshop to enhance the level of SAR implantation within the Region.

5.3.168 The meeting encouraged States to use the ICAO Doc 010, and the information provided during the workshop to enhance the SAR level of implementation.

5.3.169 The meeting reviewed and updated the list of SAR GADSS Focal Points, at **Appendix 5Y**.

MIDANPIRG Chairman Awards programme

5.3.170 The meeting recalled the MIDANPIRG Chairperson initiative related to the Award programme, to recognize and celebrate excellence of the outstanding contribution and efforts within the MIDANPIRG framework, aiming to recognize, appreciate and motivate active contributions and efforts by MID States and members towards the success of MIDANPIRG activities.

5.3.171 The meeting noted that the ANC valued the launching of the MIDANPIRG Award competition among the subsidiary bodies.

5.3.172 The meeting recalled the nomination and selection process and noted that the “MIDRMA Sustainability action Group” was nominated for the award, accordingly the group members received recognition from the Chairman.

5.4 *Air Navigation Deficiencies*

5.4.1 The subject was addressed in WP/58 presented by the secretariat. The meeting urged States to use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies, including the submission of a specific Corrective Action Plan (CAP) for each deficiency. The meeting reiterated that a deficiency would be eliminated only when a State submit a formal Letter to the ICAO MID Office containing the evidence(s) that mitigation measures have been implemented for the elimination of this deficiency.

5.4.2 The meeting noted with concern that the majority of deficiencies listed in the MANDD have no specific Corrective Action Plan (CAP) and do not have a valid completion date. In this respect, the meeting agreed the following MIDANPIRG Conclusion to supersede the current MIDANPIRG Conclusion 15/35 related to elimination of Air Navigation Deficiencies.

MIDANPIRG CONCLUSION 22/33: AIR NAVIGATION DEFICIENCIES

That,

c) States be urged to:

i. use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies, including the submission of a specific Corrective Action Plan (CAP) and completion date for each deficiency; and

ii. submit a Formal Letter to the ICAO MID Regional Office containing the evidence(s) that mitigation measures have been implemented for the elimination of deficiency(ies) when requesting the elimination of deficiency(ies) from the MANDD.

d) ICAO MID be urged to:

i. review the status of the recorded deficiency in MANDD on a quarterly basis and send reminder to States focal point(s) to ensure MANDD is kept up to date; and

ii. technically support MID States to eliminate recorded deficiencies in MANDD.

5.4.3 The meeting reviewed and updated the list of deficiencies in the AIM, AOP, ATM, CNS, SAR and MET fields as reflected in the MID Air Navigation Deficiency Database (MANDD) at: https://mandd.icao.int. The meeting noted that the total number of air navigation deficiencies recorded in MANDD was 102 deficiencies compared to 98 deficiencies in MIDANPIRG/21.

5.4.4 A quantitative analysis of the MID States' Air Navigation Deficiencies is shown in the Tables and Graphs presented at **Appendix 5Z**.

5.4.5 The meeting reviewed the current status of deficiencies:

- In the AOP field: the total number of AOP deficiencies is nine (9) priority "A". Seven (7) deficiencies related to aerodrome certification; one (1) related to runway physical characteristics; and one (1) related to apron lighting. The lack of implementation of aerodromes' certification represents 78% of these deficiencies.

- In the AIM field: based on documents provided by Iraq and Oman, the meeting agreed to remove the deficiency reported against Iraq related to geoid undulation and deficiency against Oman related to AIXM based database; the total number of AIM deficiencies is forty-three (43); thirty-seven (37) priority "A" and six (6) priority "B". Twenty (20) deficiencies related to eTOD (based on the agreement to include new deficiencies related to the non-provision of TOD for Area 2a/TOFP and OLS); five (5) related to QMS; four (4) related to AIXM; six (6) related to WAC; three (3) related to pre-flight information services; one (1) related to AIP and aeronautical charts; three (3) related to AIRAC adherence; and one (1) related to WGS-84.

- In the ATM field: as reported by MIDRMA, the meeting agreed to remove the deficiency against

Lebanon, Libya and Sudan related to provision of TDS to MIDRMA; the total number of deficiencies is fourteen (14); seven (7) priority "A" and seven (7) priority "B". Seven (7) related to the uncompleted signature of contingency agreements and seven (7) related to the non-implementation of planned regional ATS Routes.

- In the CNS field: the total number of CNS deficiencies is four (4); two (2) priority "A" and two (2) priority "B". Two (2) deficiencies are related to ATS Direct speech circuits, one (1) related to Inter-Regional Communication link with ICAO EUR/NAT Region and one (1) for HF service.

- In the MET field: as reported by MET SG/12, the meeting agreed to add deficiencies reported against Egypt, Iran, Iraq, Kuwait, Lebanon, Libya, Oman, Sudan, Syria and Yemen related to IWXXM; the total number of MET deficiencies was twenty-four (24) priority "A" deficiencies. five (5) related to QMS, eight (8) related to METAR, TAF, SIGMET and WAFS, ten (10) related to IWXXM and one (1) related to SADIS.

- In the SAR field: based on documents provided by Libya, the meeting agreed to remove the deficiency against Libya related to provision of SAR service; the total number of deficiencies was eight (8) priority "A". Four (4) related to the lack of implementation of SAR provisions; and four (4) related to non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

5.5 ***States' bilateral coordination***

5.5.1 The number of side meetings were conducted, to discuss common interest subjects and collaboration opportunities, which would further enhance the implementation of the regional programmes under the MIDANPIRG framework:

a) Libya – Egypt: to discuss the implementation plan of additional routing option between Cairo and Tripoli FIRs, to support operational requirements received from Airspace Users.
b) ICAO – Iraq – FAA – Boeing: regarding Capacity building activities for Iraq CAA.
c) ICAO – UAE: discussion on the upcoming MID Safety summit to be hosted in UAE in 2026.
d) Iran – Iraq: The following subjects have been discussed in this meeting:
    - Flight check of ILS for Abadan airport through Baghdad FIR;
    - Establishment of new ATS routes and FIR boundaries at the interface of both States;
    - Interruption of AFTN and AHMS connection; and
    - Surveillance system data sharing.
e) Iran – UAE: to discussed operational subjects related to update ATC Letter of Agreement; ATS routes deficiencies; and training.
f) MIDFPP– Iraq – Kuwait: to advancing the longstanding initiative to establish parallel RNAV ATS routes at the Kuwait–Iraq interface, aimed at improving regional airspace efficiency and safety.
g) Oman – Qatar – Saudi Arabia – UAE: to discuss common interest subject.
h) Oman – Qatar: to discuss common operational subjects.
i) First Pakistan – India Contingency Coordination meeting (CCT/1): as a matter of urgency, this meeting with participation of delegates from Egypt, Iran, Iraq, Kuwait, Oman, Qatar, UAE and IATA was conducted during MIDANPIRG/22 meeting.

5.5.2 The Chairman appreciated the efforts of the Secretariat of the meeting, attending and

providing support to three contingency coordination teams at the same time.

5.6 ***MIDANPIRG Working Arrangements and Election of Chairpersons***

5.6.1 The subject was addressed in WP/60 presented by the Secretariat.

5.6.2 The meeting recalled the discussion during the MIDANPIRG/21 meeting (Abu Dhabi, UAE, 4 – 8 March 2024), particularly related to the outcomes of the Action Group established during the meeting to review the number and tasks of experts group established under MIDANPIRG subgroups, and the revised MIDANPIRG Structure agreed by the meeting.

5.6.3 The meeting was informed that since the last MIDANPIRG meeting, the revised MIDANPIRG structure has met the expectations and relieved the experts group members and the secretariat from duplicate tasks and further meetings. Additionally the meeting noted that a revised Terms of Reference (ToRs) of the ATM and ASM were drafted and presented to the MIDANPIRG to ensure assignment of all the relevant tasks.

5.6.4 Based on the above, the meeting requested all MIDANPIRG Subgroups to revise the Terms of Reference, to ensure no duplication of the assigned tasks. Accordingly, the meeting agreed on the following Decision:

MIDANPIRG DECISION 22/34: REVISED TERMS OF REFERENCE FOR MIDANPIRG SUBSIDIARY BODY

That, all Subsidiary bodies include in its meeting agenda revision of Terms of Reference, in a collaborated manner with other subgroups to ensure less duplication of assigned tasks and responsibilities.

5.6.5 The meeting recalled the procedure included in the MIDANPIRG Procedural Handbook (MID Doc 001); related to Election of Chairpersons.

5.6.6 Mr. Ahmed Al Jallaf, Assistant Director General Air Navigation, GCAA, UAE, was unanimously reelected as Chairman of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG), Ms. Mariam Al-Naimi, Deputy Head of Integrated Management System, QCAA, Qatar, was elected as the First-Vice Chairperson and Mr. Mosa Al Bulushi, Director of Air Navigation Safety Department, Oman CAA, was elected as Second Vice Chairperson.

5.6.7 The meeting thanked Mr. Saleh Al Nesf, Head of Integrated Management System, QCAA, for his service, as vice chairperson, since his election during MIDANPIRG/19 and RASG-MID/9 (Riyadh, Saudi Arabia, 14 - 17 February 2022).

REPORT ON AGENDA ITEM 6: RASG-MID/ MIDANPIRG FUTURE WORK PROGRAMME

6.1 *Dates and Venue of MIDANPIRG/23 and RASG-MID/13*

6.1.1 The subject was addressed in WP/18 presented by the Secretariat.

6.1.2 The meeting noted that Iran reaffirmed the willingness to host MIDANPIRG/23 and RASG-MID/13, as stated in MIDANPIRG/21 and RASG-MID/11 Report. However, due to significant administrative changes within the Iran Civil Aviation Authority, Iran requested to defer the hosting offer, pending further coordination with the ICAO MID Office.

6.1.3 The meeting noted with appreciation Egypt's offer to host the MIDANPIRG/23 and RASG-MID/13 meetings. Egypt confirmed the commitment and requested the ICAO MID Office to coordinate with the designated focal point regarding the exact venue and dates. The final dates of the meetings will be coordinated among the ICAO MID Office, the Chairpersons of both Groups, and the host State.

REPORT ON AGENDA ITEM 7: ANY OTHER BUSINESS

The Introduction of Sustainable Aviation Fuel (SAF) in Saudi Arabia

7.1 The subject was addressed in WP/102 and PPT/104 presented by Saudi Arabia, highlighting its leadership in advancing SAF to support Vision 2030 and Net Zero 2060 goals. In response to the projected tripling of aviation emissions by 2050, Saudi Arabia joined ICAO's CORSIA schema as a volunteer state. A key milestone was reached in October 2024 with the delivery and storage of the first certified SAF at Red Sea International Airport (RSI).

7.2 The meeting noted that the SAF supply chain was designed to ensure full sustainability and traceability, aligning with international best practices and fully adheres to ISCC-EU (International Sustainability and Carbon Certification) standards. The SAF was initially loaded at Ghent Terminal, Belgium, into ISO-certified containers, transported via sea to Jeddah Port, and subsequently moved by truck to RSI. The logistics chain was optimized to reduce environmental impact, achieving exceptionally low shipping-related emissions of 0.0167 kg CO_2 per Liter.

7.3 The meeting noted also that the SAF used achieved a 91.5% reduction in greenhouse gas emissions compared to fossil jet fuel, even after accounting for shipping. It was indicated that the SAF complies with ASTM D7566 and D1655 standards, with strict quality control protocols in place to ensure safe handling, storage, and inspection.

7.4 It was further pointed out that the SAF is fully segregated from conventional Jet-A1 fuel, allowing for accurate GHG emissions accounting by airlines. This approach is in line with international sustainability frameworks and ensures transparency and traceability throughout the supply chain.

Proposal to Establish Environmental Working Group for ATM Enhancements

7.5 The subject was addressed in IP/28 submitted by Qatar awareness and future consideration, proposes the establishment of a dedicated Environmental Working Group (EnvWG) in the MID Region to support ATM-related enhancements, initially focusing on integrating CO_2 emissions tracking into trajectory-based operations under Flight and Flow Information for a Collaborative Environment (FF-ICE).

APPENDICES

APPENDIX 2A

IDENTIFIED PIRGS AND RASGS GLOBAL CHALLENGES

PART A: CHALLENGE IDENTIFICATION		**ISSUE and ID: 2024-01**
Challenge/ Issue	Lack of harmonized regional framework and global guidance material for the management of Contingency Coordination Teams (CCTs) in case of airspace disruption.	
Link to global plans	Global Aviation Safety Plan (GASP) and Global Air Navigation Plan (GANP)	
Initially reported by PIRGs/RASGs	☐ **RASG-AFI** ☐ **RASG-MID** ☐ **RASG-APAC** ☐ **RASG-PA** ☒ **APANPIRG** ☒ **APIRG** ☐ **GREPECAS** ☒ **MIDANPIRG** ☐ **NATSPG** ☒ **EASPG**	
Date first reported	2023	
Remarks	Effective management of contingencies require intensive human resources within the Secretariat and States as well as the supporting International Organizations to be able to handle the increasing number of airspace disruptions that in most cases have cross border implications. As part of the Priority Focus Area on crisis preparedness and response, the Secretariat is working with the regions through the PIRGs to develop a regional contingency management framework and guidance material, starting with air traffic management, but it could later be broadened to cover all areas. Reference is also made to the AN-Conf/14 Recommendation 1.1/2.	
PART B: Action by Council		
ID	Action proposed	Expected Timeline
	Council to note that the ANC requests the Secretary General to:	
1	provide the required support for the establishment of regional air traffic management contingency framework to ensure harmonization and effective collaboration between ICAO Regions.	Q2 2026
2	develop, in collaboration with States and industry, global guidance on air traffic management contingency management, including the recovery phase, as well as regional frameworks, to support the implementation of Annex 11 — *Air Traffic Services*.	Q4 2026
3	launch a training programme for building the States capabilities in preparing, responding and managing contingencies.	Q2 2025

PART A: CHALLENGE IDENTIFICATION		**ISSUE and ID: 2024-02**
Challenge/ Issue	Low Level of development and implementation of National Aviation Safety Plans (NASPs).	
Link to global plans	Global Aviation Safety Plan (GASP)	
Initially reported by PIRGs/RASGs	**☒ RASG-AFI ☒ RASG-MID ☒ RASG-APAC ☐ RASG-PA** **☐ APANPIRG ☐ APIRG ☐ GREPECAS ☐ MIDANPIRG ☐ NATSPG ☐ EASPG**	
Date first reported	2023	
Remarks	All regions have developed regional aviation safety plan (RASP) and 91 States have submitted their NASP to ICAO. Therefore, 47% of Member States have now published their NASP, in line with the GASP target. However, this is still a challenge, particularly in some regions. Although the MID Region had identified this issue as a challenge, the region saw a significant improvement with 5 additional States having published their NASP in 2024, for a total of 53% of States in the region having a plan. However, other regions have a far lower implementation rate (less than a quarter of ESAF and WACAF Member States combined published a NASP). The Secretariat has been conducting regional capacity-building workshops, delivering iPacks and support missions across regions to improve the level of implementation.	
PART B: Action by Council		
ID	Action proposed	Expected Timeline
	Council to note that the ANC requests the Secretary General to:	
1	conduct regional capacity-building workshops to support States with the development and implementation of national aviation safety plans (NASPs) based on the regional aviation safety plan (RASP) to improve the level of implementation.	Q4 2026

PART A: CHALLENGE IDENTIFICATION		**ISSUE and ID: 2024-03**
Challenge/ Issue	Slow progress in establishing independent aircraft accident investigation authorities and completion of accident investigation reports	
Link to global plans	Global Aviation Safety Plan (GASP)	
Initially reported by PIRGs/RASGs	**☒ RASG-AFI ☒ RASG-MID ☒ RASG-APAC ☐ RASG-PA** **☐ APANPIRG ☐ APIRG ☐ GREPECAS ☐MIDANPIRG ☐ NATSPG ☐ EASPG**	
Date first reported	2023	
Remarks	This challenge has two folds: one regarding establishing and sustaining an independent aircraft accident investigation (AIG) authority by States with limited capacity, and the second one is related to the inability to finalize investigations and issue final reports in a timely manner due to the lack of competent and qualified personnel, political influence, and/or conflict of interest. Based on the result of the USOAP CMA, the Secretariat has been working closely with States to support them in addressing the relevant findings. The Secretariat will be initiating an implementation support project to assist States in building their capacity in accident investigation, including writing, finalizing, and submission of accident investigation reports. In this context, the Secretariat believes regional cooperation such as regional accident and incident investigation organizations (RAIOs) and investigation cooperative mechanisms (ICMs) is a valuable solution for States with limited capacity for satisfying their obligations for accident investigation as per Annex 13 — *Aircraft Accident and Incident Investigation.* The AN-Conf/14 recognized the risk to the global aviation system when safety lessons learned from investigations are not drawn and acknowledged the ongoing work by ICAO and highlighted the need to further assist States in building capacity for accident investigation. While noting the challenges, it was reiterated the urgency for State accident investigation authorities to investigate and report on accidents in a timely manner.	

PART B: Action by Council		
ID	Action proposed	Expected Timeline
	Council to note that the ANC requests the Secretary General to:	
1	support States, that have not yet done so, in establishing independent aircraft accident investigation authorities.	Q4 2027
2	conduct regional capacity-building workshops to support States	Q4 2027
3	assist States in building their accident investigation capacity focusing on the prompt conduct of investigation, completion and making available of investigation reports.	Q4 2027
4	encourage States to join the regional accident and incident investigation organizations (RAIOs) or enter into agreement to delegate the whole or any part of the conducting of such investigation	Q4 2027

	to another State or a RAIO, as practicable, for effective collaboration and sharing of resources.	

PART A: CHALLENGE IDENTIFICATION		**ISSUE and ID: 2024-04**
Challenge/ Issue	Low level development of national air navigation plan (NANP)	
Link to global plans	Global Air Navigation Plan (GANP)	
Initially reported by PIRGs/RASGs	**☐ RASG-AFI ☐ RASG-MID ☐ RASG-APAC ☐ RASG-PA** **☒ APANPIRG ☒ APIRG ☒ GREPECAS ☒MIDANPIRG ☐ NATSPG ☐ EASPG**	
Date first reported	2023	
Remarks	The challenge is related to the available resources in the States to develop robust national air navigation plan in line with global air navigation plan and the ASBU framework. Regional workshops have been conducted to support the implementation of ASBUs and the development of NANP. Additional guidance material, as well as a template for the NANP, will be made available for A42.	
PART B: Action by Council		
ID	Action proposed	Expected Timeline
	Council to note that the ANC requests the Secretary General to:	
1	ensure that additional guidance material for ASBU implementation and the template for the NANP are made available for A42	Q3 2025
2	conduct regional capacity-building workshops to support States with the development and implementation of national air aviation plans (NANPs) based on the regional air navigation plans (ANPs) and the global air navigation plan (GANP).	Q4 2027

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RASG-MID SAFETY ADVISORY – 14

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MID-Region

GUIDANCE MATERIAL REALTED TO GNSS VULNERABILITIES

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Disclaimer

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TABLE OF CONTENTS

Acronyms…… 4

Introduction …….. 5

Description …….. 5

Risk Assessment…… 6

Mitigation Strategies……..… 7

Reducing the Likelihood of GNSS Interferences……..… 7

Reducing the Impact of GNSS Interferences…… 8

Monitoring…… 9

Reporting…… 10

References…….. 12

APPENDIX A: GNSS Interference Reporting Form to be Used by Pilots……..…… …… 13

APPENDIX B: Risk Assessment Methodology…….…….…….…… 15

APPENDIX C: GNSS Anomaly for the Period (January 2015- June 2018)…… 20

ACRONYMS

ABAS	AIRCRAFT BASED AUGMENTATION SYSTEM
ADS-B	AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST
AHRS	ATTITUDE AND HEADING REFERENCE SYSTEMS
ANS	AIR NAVIGATION SERVICES
ATC	AIR TRAFFIC CONTROLLER
DME	DISTANCE MEASURING EQUIPMENT
EGPWS	ENHANCED GROUND PROXIMITY WARNING SYSTEM
FIR	FLIGHT INFORMATION REGION
FMS	FLIGHT MANAGEMENT SYSTEM
GBAS	GROUND BASED AUGMENTATION SYSTEM
GLONASS	GLOBAL NAVIGATION SATELLITE SYSTEM
GNSS	GLOBAL NAVOGATION SATELLITE SYSTEM
GPS	GLOBAL POSITION SYSTEM
HAL	HORIZONTAL ALERT LIMIT
ILS	INSTRUMENT LANDING SYSTEM
IRS	INERTIAL REFERENCE SYSTEM
ITU	INTERATIONAL TELECOMMUNICATION UNION
MIDANPIRG	MID AIR NAVIGATION PLANNING AND IMPLEMENTATION GROUP
NAV	NAVIGATION
NOTAM	NOTICE TO AIRMEN
PBN	PERFORMANCE BASED NAVIGATION
POS	POSITION
RAIM	RECEIVER AUTONOMOUS INTEGRITY MONITORING
RF	RADIO FREQUENCY
RNAV	AREA NAVIGATION
RNP	REQUIRED NAVIGATION PERFORMANCE
SBAS	SPACE BASED AUGMENTATION SYSTEM
TAWS	TERRAIN AVOIDANCE WARNING SYSTEM
TSO	TECHNICAL STANDARD ORDER
VHF	VERY HIGH FREQYENCY
VNAV	VERTICAL NAVIGATION
VOR	VERY HIGH OMNI DIRECTIONAL RADIO RANGE
WAAS	WIDE AREA AUGMENTATION SYSTEM

GNSS VULNERABILITIES

1. INTRODUCTION

GNSS supports positioning, navigation and timing (PNT) applications. GNSS is the foundation of Performance Based Navigation (PBN), Automatic Dependent Surveillance – Broadcast (ADS-B) and Automatic Dependent Surveillance – Contract (ADS-C). GNSS also provides a common time reference used to synchronize systems, avionics, communication networks and operations, and supports a wide range of non-aviation applications.

GNSS Vulnerability has been identified as a safety issue and one of the main challenges impeding the implementation of PBN in the MID Region. The sixteenth meeting of the MID Air Navigation planning and Implementation Regional Group (MIDANPIRG/16 Kuwait, 13-16 February 2017) recognized the impact of the GNSS signal interference and vulnerabilities and agreed that the subject should be addressed by the Regional Aviation Safety Group-Middle East (RASG-MID) in order to agree on measures to ensure effective reporting of GNSS interferences, which could be mandated by the States' regulatory authorities. The meeting invited the RASG-MID to consider the development of a RASG-MID Safety Advisory (RSA) related to GNSS vulnerabilities, highlighting the Standard Operating Procedures (SOP) for pilots, including the reporting procedures.

The RASG-MID/6 (Bahrain, 26 – 28 September 2017) agreed that IATA and ICAO MID Office should develop RSA on GNSS vulnerabilities.

With the increasing dependence on GNSS, it is important that GNSS vulnerabilities be properly addressed. This Safety Advisory provides guidance on mitigation measures that States would deploy to minimize the GNSS vulnerabilities impact on safety and air operation. The RSA also includes the regional reporting and monitoring procedures of GNSS anomaly with the aim to analyze the threat and its impact on performance, and assess the effectiveness of the mitigation measures in place.

2. DESCRIPTION

Dependence on GNSS is increasing, as GNSS is used for an ever-expanding range of safety, security, business and policy critical applications. GNSS functionality is being embedded into many parts of critical infrastructures. Aviation is now dependent on uninterrupted access to GNSS positioning, navigation and timing (PNT) services.

Aviation relies heavily on GNSS for area navigation and precision approach. Aircraft avionics such as the Flight Management Systems (FMS) require GNSS timing for a large number of onboard functions including Terrain Avoidance Warning System (TAWS) or Enhanced Ground Proximity Warning Systems (EGPWS). Onboard avionics are highly integrated into commercial aircraft and are very dependent on GNSS timing data. At the same time, GNSS vulnerabilities are being exposed and threats to denial of GNSS services are increasing.

There are several types of threat that can interfere with a GNSS receiver's ability to receive and process GNSS signals, giving rise to inaccurate readings, or no reading at all, such as radio frequency interference, space weather induced ionospheric interference, solar storm, jamming and spoofing. The disruption of GNSS, either performance degradation in terms of accuracy, availability and integrity or a complete shutdown of the system, has a big consequence in critical infrastructure. For example, local interference in

an airport could degrade position accuracy or lead to a total loss of the GNSS based services, which could put safety of passengers in jeopardy.

There are two types of GNSS Interference Sources; Intentional and Unintentional sources, the latter is not considered a significant threat provided that States exercise proper control and protection over the electromagnetic spectrum for both existing and new frequency allocations. Solar Effect, Radio Frequency Interference and On-board systems are examples of Unintentional GNSS interference sources. However, the Intentional sources such as Jamming and spoofing are considered as serious threats to the continued safety of air transport.

GNSS Jamming occurs when broadcasting a strong signal that overrides or obscures the signal being jammed. The GNSS jamming might occur deliberately by a military activity or by Personal Privacy Devices (PPDs). GNSS jamming has caused several GNSS outages in the MID Region.

In some States, military authorities test the capabilities of their equipment and systems occasionally by transmitting jamming signals that deny GNSS service in a specific area. This activity should be coordinated with State spectrum offices, Civil Aviation Authorities and ANS providers. Military and other authorities operating jamming devices should coordinate with State/ANS providers to enable them to determine the airspace affected, advise aircraft operators and develop any required procedures.

Spoofing is another source of intentional interference, which is a deliberate interference that aims to mislead receivers into general false positioning solution.

Detailed information about the GNSS Implementation and Vulnerabilities can be found in MID DOC 011 – The Guidance on GNSS implementation in the MID Region.

3. RISK ASSESSMENT

The risk assessment covers affected operations during en-routre, terminal, and approach phase of flights. In addition, the aircraft impact at table (1), which presents an overview of different potential impacts from GNSS interference, needs to be considered for risk assessment.

Understanding the different types of threat and how likely they are to occur is key to conducting an accurate risk assessment. Broadly, the threat types break down as follows:

Threat Source	Threat Type	Description	Impact on the User
Solar Storms	Unintentional	Electromagnetic interference from solar flares and other solar activity “drowns out” the satellite signals in space.	Loss of signal, or range errors affecting the accuracy of the location or timing information.
Jamming	Intentional	Locally-generated RF interference is used to “drown out” satellite signals.	Loss of signal (if the jammer is blocking out all satellite signals) or range errors affecting the accuracy of the location or timing information

Spoofing	Intentional	Fake signals are broadcast to the device to fool it into believing it is somewhere else, or at a different point in time.	False location and time readings, with potentially severe impacts on automated and autonomous devices and devices that rely on precise GNSS timing.
RF Interference	Unintentional	Noise from nearby RF transmitters (inside or outside the device) obscures the satellite signals.	Loss of signal (if the transmitter is blocking out all satellite signals) or range errors affecting the accuracy of the location reading (if the receiver is at the edge of the transmitter's range).
Signal Reflection	Unintentional	Reflection due objects such as buildings	GNSS signals can reflect off relatively due to distant objects, such as buildings, which would cause gross errors in position accuracy if the receiver falsely locks onto the reflected signal instead of the direct signal
User Error	Unintentional	Users over-rely on the GNSS data they are presented with, ignoring evidence from other systems or what they can see.	Can lead to poor decision-making in a range of scenarios

Table 1: Threats types

Depending on the nature of the interference and the nature of the application, a user may be affected in several ways; the impact may range from a small nuisance to an economic, operational or a safety impact. The detailed risk assessment methodology is addressed at **Appendix B**.

4. MITIGATION STRATEGIES

To minimize the risks associated with GNSS vulnerabilities, several mitigation strategies can be deployed to reduce the likelihood and impact of the threat.

Operational / ATC mitigation procedures:

1. Provide familiarization for ATCo about the spoofing and jamming; including awareness of the possible impact,
2. If navigation performance degradation reported by pilot, ATCOs shall acknowledge and verify the aircraft position, if required, correlation with other ground NAVAIDS,
3. Monitor the traffic lateral adherence to the route centerline, and inform pilots in case they observed any significant deviation from the intended route,
4. Ensure adequate separation implemented and maintained with other traffic,
5. If deviation is significant, inform the flight crew to verify aircraft position,
6. Offer alternate navigation assistance (RADAR Vector, conventional navigation),
7. Inform adjacent ACCs/ATS Units, and relevant ATS supervisor to coordinate with relevant internal and external authorities,
8. Promulgate the information, advise other pilots, announce on ATS/ATIS Frequency, and if extended period consider issuing NOTAM,

9. Inform pilots of nearby ground NAVAIDs,
10. Coordinate with military authority to eliminate the possibility of interception and miss-identification of stray aircraft,
11. Coordinate with adjacent ACCs to apply longer separation and inform them regarding possibility of deviation, miss identification and strayed aircraft at common border;
12. Fill in incident report and provide brief to operations supervisor,
13. Sharing the information with Airspace users and operators.

4.1 REDUCING THE LIKELIHOOD OF GNSS INTERFERENCES

The likelihood of interference depends on many factors such as population density and the motivation of individuals or groups in an area to disrupt aviation and non-aviation services. To reduce the likelihood of GNSS interference, the following measures may be applied:

a) Effective spectrum management; this comprises creating and enforcing regulations/laws that control the use of spectrum and carefully assessing applications for new spectrum allocations.

b) The introduction of GNSS signals on new frequencies will ensure that unintentional interference does not cause the complete loss of GNSS service (outage) although enhanced services depending upon the availability of both frequencies might be degraded by such interference.

c) State should forbid the use of jamming and spoofing devices and regulate their importation, exportation, manufacture, sale, purchase, ownership and use; they should develop and enforce a strong regulatory framework governing the use of intentional radiators, including GNSS repeaters, pseudolites, spoofers and jammers. The enforcement measures include:

- detection and removal of jammers / interference sources; and
- direct or indirect detection (e.g. use of dedicated interference detection equipment).

d) Education activities to raise awareness about legislation and to point out that 'personal' jammers can have unintended consequences.

e) Multi-constellation GNSS would allow the receiver to track more satellites, reducing the likelihood of service disruption.

4.2 REDUCING THE IMPACT OF THE GNSS VULNERABILITIES

The GNSS signal disruption cannot be ruled out completely and States/ANSPs must be prepared to deal with loss of GNSS signals, and that States conduct risk assessment and implement mitigation strategies. The risk and impacts from these threats can be managed by evaluating the growing threat of GNSS interference, jamming and spoofing.

The disruption of GNSS signals will require the application of realistic and effective mitigation strategies to both ensure the safety and regularity of air services and discourage those who would consider disrupting aircraft operations. There are three principal methods, which can be applied in combination:

a) taking advantage of on-board equipment, such as Inertial Reference System (IRS);

IRS provides a short-term area navigation capability after the loss of GNSS updating. Many air transport aircraft are equipped with IRS and these systems are becoming more affordable and accessible to operators with smaller, regional aircraft. Most of these systems are also updated by DME.

b) Development of contingency procedures and processes to enable operations in a fallback mode in case of loss of GNSS (aircrew and/or ATC), using alternate NAVAIDS (ground-based).

Procedural (aircrew or ATC) methods can provide effective mitigation in combination with those described above, taking due consideration of:

- The avionics onboard
- aircrew and air traffic controller workload implications (consideration to ATC damand/capacity);
- The impact that the loss of GNSS will have on other functions, such as ADS-B based surveillance; and
- The potential for providing the necessary increase in separation between aircraft in the affected airspace.

c) Taking advantage of conventional navigation aids and radar, conventional aids can provide alternative sources of guidance.

The regulator should conduct safety oversight of the service provider's GNSS based Services and validate the safety aspects of mitigation strategies, considering the impact on ATM operations. Details on Risk assessment process including some examples are at **Appendix B.**

The data analysis of the reported GNSS vulnerabilities for the period January 2015to June 2018 showed that the impact of the GNSS interference on Aircraft Operations in the MID Region were as follows:

1. Loss of GPS1 (fault)/ Loss of GPS2 (fault)
2. Observation of "Map shift" on Navigation display
3. Switching to an alternative navigation mode (IRS displayed, VOR/DME)
4. Degraded PBN Capability (NAV Unable RNP)
5. GPS POS Disagree
6. EGPWS warning
7. ADS-B Traffic triggered

5. MONITORING

The success of many of countermeasures is dependent on having a detailed understanding of the threats. In order to establish this understanding and to maintain an up-to-date knowledge of the threats - in terms of both types and number of threats – it is necessary to States to monitor the threat environment and the impact on performance.

Monitoring and reporting is required to inform stakeholders of the threats that exist. This would help directly with enforcement (detecting and removing sources of interference) as well as monitoring the response to changes in legislation or education activities.

Receiver autonomous integrity Monitoring (RAIM) provides integrity monitoring by detecting the failure of a GNSS satellite. It is a software function incorporated into GNSS receivers.

In the event of GNSS performance degrading to the point where an alert is raised, or other cause to doubt the integrity of GNSS information exists, the pilot in command must discontinue its use and carry out appropriate navigation aid failure procedures. Should RAIM detect an out-of-tolerance situation, an immediate warning will be provided. When data integrity or RAIM is lost, aircraft tracking must be closely monitored against other available navigation systems.

States may consider the deployment of GNSS threat monitoring system, which allows monitoring of local GNSS interference environment; signal recording and monitoring for situational awareness of any drop in signal quality or signal outage and ground validation of GNSS-based flight procedures. The detection equipment may include localization utilities.

With reference to ICAO Doc 9849:

Given the variety of avionics designs, one service status model cannot meet all operators' requirements. A conservative model would produce false alarms for some aircraft. A less conservative model would lead to missed detection of a service outage for some and false alarms for others. Regardless, only the aircrew, not ATC, is in a position to determine whether, for example, it is possible to continue an ABAS-based instrument approach. In contrast, ATC has access to ILS monitor data and can deny an ILS approach clearance based on a failure indication. The real time monitor concept is neither practical nor required for GNSS ABAS operations. It may be practical for SBAS and GBAS, but implementation would depend on a valid operational requirement.
Aircraft operators with access to prediction software specific to their particular ABAS/RAIM avionics will find it advantageous to employ that software rather than use the general notification service. In the case of SBAS and GBAS, operators will rely on service status notifications.

6. REPORTING

ANSP must be prepared to act when anomaly reports from aircraft or ground-based units suggest signal interference. If an analysis concludes that interference is present, ANS providers must identify the area affected and issue an appropriate NOTAM.

From the perspective of the aircrew, a GNSS anomaly occurs when navigation guidance is lost or when it is not possible to trust GNSS guidance. In this respect, an anomaly is similar to a service outage. An anomaly may be associated with a receiver or antenna malfunction, insufficient satellites in view, poor satellite geometry or masking of signals by the airframe. The perceived anomaly may also be due to signal interference, but such a determination requires detailed analysis based on all available information.

In case of GNSS anomaly detected by aircrew, **Pilot** action(s) should include:

a) reporting the situation to ATC as soon as practicable and requesting special handling as required;
b) filing a GNSS Interference Report using the Template at **Appendix A**, and forwarding information to the IATA MENA (sfomena@iata.org) and ICAO MID Office (icaomid@icao.int) as soon as possible, including a description of the event (e.g. how the avionics failed/reacted during the anomaly).

Air Traffic Controller action(s) should include:

a) recording minimum information, including aircraft call sign, type, location, altitude and date/time of the occurrence;
b) cross check with other aircraft in the vicinity;

broadcasting the anomaly report to other aircraft and adjacent ATS units, as necessary;

ANSP action(s) should include:

a) ensuring the issuance of appropriate advisories and NOTAM, as necessary;

b) attempting to locate/determine the source of the interference, if possible;
c) notifying the agency responsible for frequency management (the Telecommunication Regulatory Authority);
d) locate and eliminate source in cooperation with local regulatory & enforcement Authorities;
e) tracking and reporting all activities relating to the anomaly until it is resolved; and
f) review the effectiveness of the mitigation measures for improvement.

ICAO MID Office action(s) should include:

a) collect anomaly related information and determine the course of action required to resolve reported anomalies;
b) follow-up with State having interference incident to ensure implementation of required corrective actions;
c) coordinate with concerned adjacent ICAO Regional Office(s) to follow-up with States under their accreditation areas, when needed; and
d) Communicate with ITU Arab Office and Arab Spectrum Management Group to resolve frequent interference incidents, when needed.

7. REFERENCES:

- Annex 10 Aeronautical Telecommunications, Volume I ─ Radio Navigation Aids
- Annex 11 Air Traffic Services
- ICAO Doc 4444 PANS-ATM,
- ICAO Doc 9613 PBN Manual
- ICAO Electronic Bulletin 2011/56, Interference to Global Navigation Satellite System (GNSS) Signals.
- GNSS Manual, ICAO Doc 9849
- Standardization of GNSS Threat reporting and Receiver testing through International Knowledge Exchange, Experimentation and Exploitation, STRIKE3 EUROPEAN Initiative, Paper 74
- The report of Vulnerabilities Assessment of the Transportation Infrastructure relying on the Global Position System, US Department of Transportation.
- Operational Impacts of Intentional GPS Interference. (A Report of the Tactical Operations Committee in Response to Tasking from the Federal Aviation Administration. March 2018.
- CANSO Cyber security and Risk Assessment guide.
- ICAO GNSS RFI Mitigation Plan and associated EUROCONTROL Efforts, 8 Nov 2016
- European Global Satellite Agency System, GNSS Market Report issue 4, March 2015
- MID Doc 007 (MID Region PBN Implementation Plan
- MID Doc 011 (The Guidance on GNSS implementation in the MID Region)

Appendix A

1. **GNSS interference reporting form to be used by pilots**
   ** Mandatory field*

Originator of this Report:	
Organisation:	
Department:	
Street / No.:	
Zip-Code / Town:	
Name / Surname:	
Phone No.:	
E-Mail:	
Date and time of report	
Description of Interference	
*Affected GNSS Element	[ ] GPS [ ] GLONASS [ ] other constellation [ ] EGNOS [ ] WAAS [ ] other SBAS [ ] GBAS (VHF data-link for GBAS)
Aircraft Type and Registration:	
Flight Number:	
*Airway/route flown:	

Coordinates of the first point of occurrence / Time (UTC):	UTC: Lat: Long:
Coordinates of the last point of occurrence / Time (UTC):	UTC: Lat: Long:
*Flight level or Altitude at which it was detected and phase of flight:	
Affected ground station (if applicable)	Name/Indicator; [e.g. GBAS]
*Degradation of GNSS performance:	[ ] Large position errors (details): [ ] Loss of integrity (RAIM warning/alert): [ ] Complete outage (Both GPSs), [ ] Loss of GPS1 or Loss of GPS 2 [ ] Loss of satellites in view/details: [ ] Lateral indicated performance level changed from:___to ___ [ ]Vertical indicated performance level changed from: __ to __ [ ] Indicated Dilution of Precision changed from __ to__ [ ] information on PRN of affected satellites (if applicable) [ ] Low Signal-to-Noise (Density) ratio [ ] Others
*Problem duration:	[ ] continuous for 20 minutes [ ] intermittent

Note: Only applicable fields need to be filled!

Appendix B

Risk Assessment

Threats and vulnerabilities

A threat assessment should be performed to determine the best approaches to securing a GNSS against a particular threat. Penetration testing exercises should be conducted to assess threat profiles and help develop effective countermeasures.

Table (B1) presents an overview of different potential impacts from GNSS interference. This is a snapshot of impacts based on input from two manufacturers and not intended to be a comprehensive list of all impacts:

Effect	Affected Operation	Impact
Loss of GNSS-based navigation	Enroute/ Terminal/ Approach	Aircraft with Inertial Reference Unit (IRU) or Distance Measuring Equipment (DME)/DME may have degraded RNP/RNAV. Aircraft may deviate from the nominal track May increase workload on aircrew and ATC May result in missed approach or diverting to other runway in case the aerodrome operating minima cannot be met through conventional precision or visual approaches. Conventional ATS routes, SIDs and STARs would be used.
Larger than normal GNSS position errors prior to loss of GNSS	Enroute/ Terminal/ Approach	Interference could cause the GNSS position to be pulled off but not exceed the HAL (2NM , 1NM, 0.3NM for enroute, terminal and approach phases, respectively).
Loss of EGPWS/ TAWS	Enroute/ Terminal/ Approach	Reduced situational awareness and safety for equipped aircraft. Terrain Awareness and Warning System (TAWS) is required equipment for turbine-powered airplanes > 6 passengers. Loss of GPS results in loss of terrain/obstacle alerting. Position errors as GPS degrades can result in false or missed alerts.
Loss of GPS aiding to AHRS	Flight Control	Can result in degradation of AHRS pitch and roll accuracy with potential downstream effects such as was experienced by a Phenom 300 flight.

Loss of GNSS to PFD/MFD	All flight phases	Can result in: -Loss of synthetic vision display and flight path marker on PFD -Loss of airplane icon on lateral and vertical electronic map displays, georeferenced charts, and airport surface maps without DME-DME or IRU -Loss of airspace alerting and nearest waypoint information without DME-DME or IRU Overall loss of situational awareness to flight crew and increased workload.
No GNSS position for ELT	Search and Rescue	Loss of GNSS signal could result in larger search areas for the Emergency Locator Transmitters (ELTs)

Table B1: Potential Impact from GNSS

Consequence/Impact of risk occurring

Category	Effect on Aircrew and Passengers	Overall ATM System effect
Catastrophic 1	Multiple fatalities due to collision with other aircraft, obstacles or terrain	Sustained inability to provide any service.
Major 2	Large reduction in safety margin; serious or fatal injury to small number; serious physical distress to air crew.	Inability to provide any degree of service (including contingency measures) within one or more airspace sectors for a significant time.
Moderate 3	Significant reduction in safety margin.	The ability to provide a service is severely compromised within one or more airspace sectors without warning for a significant time.
Minor 4	Slight reduction in safety margin.	The ability to provide a service is impaired within one or more airspace sectors without warning for a significant time
Negligible 5	Potential for some inconvenience.	No effect on the ability to provide a service in the short term, but the situation needs to be monitored and reviewed for the need to apply some form of contingency measures if the condition prevails.

Table B2: Impact of Risk Occurring

Likelihood of risk occurring

The definitions in the table (B3) were adopted for estimating the likelihood of an identified risk occurring, for this purpose, five situations are considered:

Event is expected to occur	
1	More frequently than hourly
2	Between hourly and daily
3	Between daily and yearly
4	Between yearly and 5 yearly
5	Between 5 and 50 years
6	Less frequently than once every 50 years

Table B3: Likelihood of risk occurring

Assessment of the level of risk and risk tolerance

All identified risks were reviewed and provided for each an overall risk ranking which is a combination of the two characteristics of consequence and likelihood. For example, a risk with a major consequence but a "5" likelihood would be described as having an "A" or "unacceptable" risk rating. The conversion of the combination of consequence and likelihood into a risk rating has been achieved by use of the following matrix.

Likelihood Criteria		**Consequence Criteria**				
Event expected to occur:		**Catastrophic 1**	**Major 2**	**Moderate 3**	**Minor 4**	**Insignificant 5**
1	**More frequently than hourly**	**A**	**A**	**A**	**A**	**C**
2	**Between hourly and daily**	**A**	**A**	**A**	**B**	**D**
3	**Between daily and yearly**	**A**	**A**	**B**	**C**	**D**
4	**Between yearly and 5 yearly**	**A**	**B**	**C**	**C**	**D**
5	**Between 5 and 50 years**	**A**	**B**	**C**	**D**	**D**
6	**Less frequently than once every 50 years**	**B**	**C**	**D**	**D**	**D**

Table B4: Risk Assessment Table

The previous matrix provides a guide to determine which risks are the highest priorities from the perspective of the timeliness of the corrective action required. The following table outlines the position in more definitive terms.

Safety tolerability risk matrix

Risk Index Range	Description	Recommended Action
A	Unacceptable	Stop or cut back operation promptly if necessary. Perform priority/immediate risk mitigation to ensure that additional or enhanced preventive controls are put in place to bring down the risk index to the moderate or low range
B	High Risk	Urgent action. Perform priority/immediate risk mitigation to ensure that additional or enhanced preventive controls are put in place to bring down the risk index to the moderate or low range
C	Moderate Risk	Countermeasures actions to mitigate these risks should be implemented.
D	Low Risk	Acceptable as is. No further risk mitigation required

Table B5: Risk Tolerability Matrix

Sample risk assessment

The risk assessment table (B6) could be used to identify and capture the threats, select the risk rating based on the risk matrix above considering the existing controls. In addition, recommended actions could be selected to minimize the risk.

L = Likelihood
C = Consequence
R = Risk

Threat	Initial Risk			Existing controls	Accept/Reduce	Recommended controls	Residual Risk		
	L	C	R				L	C	R

Table B6: Sample Risk Assessment tables

The table (B7) below is an example of risk assessment for approach phase of flight, the detailed Risk assessment process is at Appendix B

L = Likelihood
C = Consequence
R = Risk

Threat	Initial Risk			Existing controls	Accept/ Reduce	Recommended controls	Residual Risk		
	L	C	R				L	C	R
Between daily and yearly	**3**	**2**	A	-Error message notification by avionic	Reduce	1)using of on-board equipment (IRS); 2)Interference detector by ANSPs 3) executing miss-approach	3	4	C

Table B7: Example Risk Assessment for Approach phase of flight

Another example risk assessment for en-route phase of flight at table (B8)

L = Likelihood
C = Consequence
R = Risk

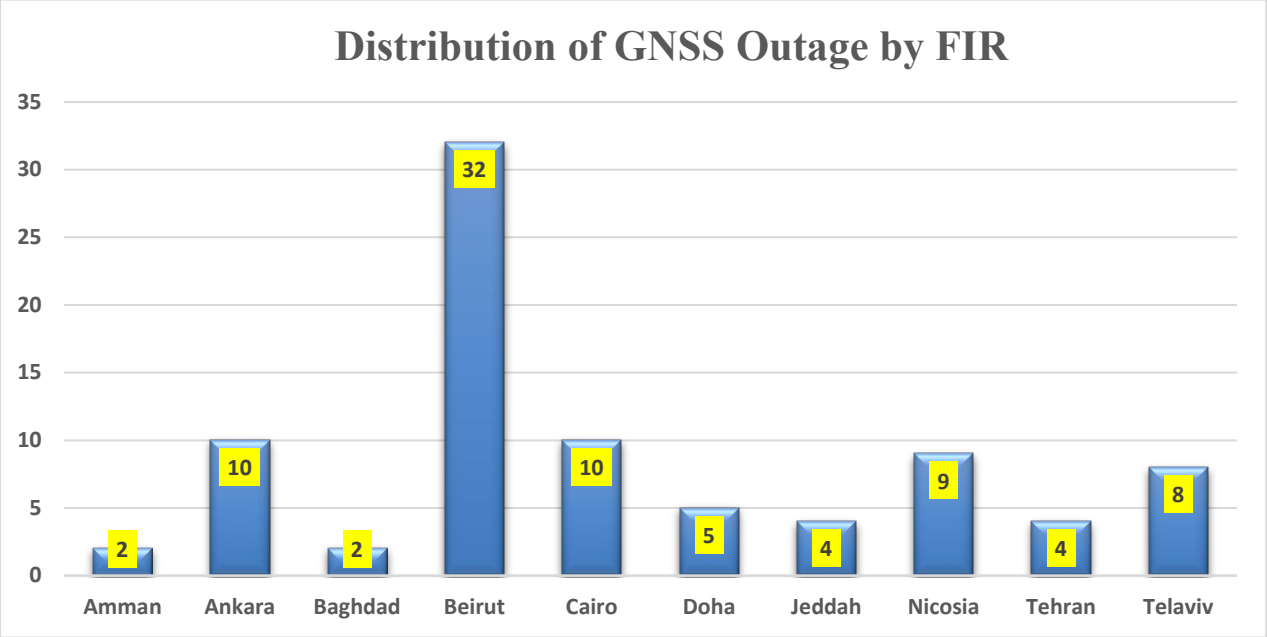
Threat	Initial Risk			Existing controls	Accept/Reduce	Recommended controls	Residual Risk		
	L	C	R				L	C	R
Between 5 and 50 years (short time GNSS Outage)	5	5	D	-Error message notification by avionic -Regulations/ law to protect the GNSS signal	Accept	-			

Table B8: Example risk assessment for enroute phase of flight

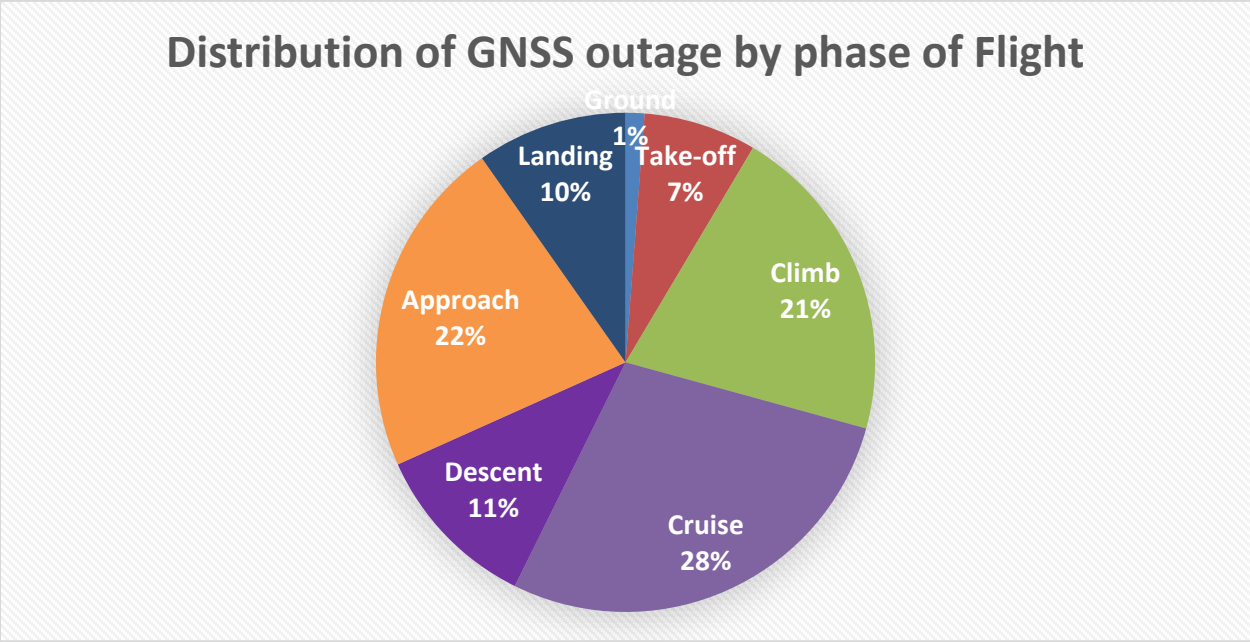
Appendix C

GNSS Anomaly for the Period January 2015- June 2018

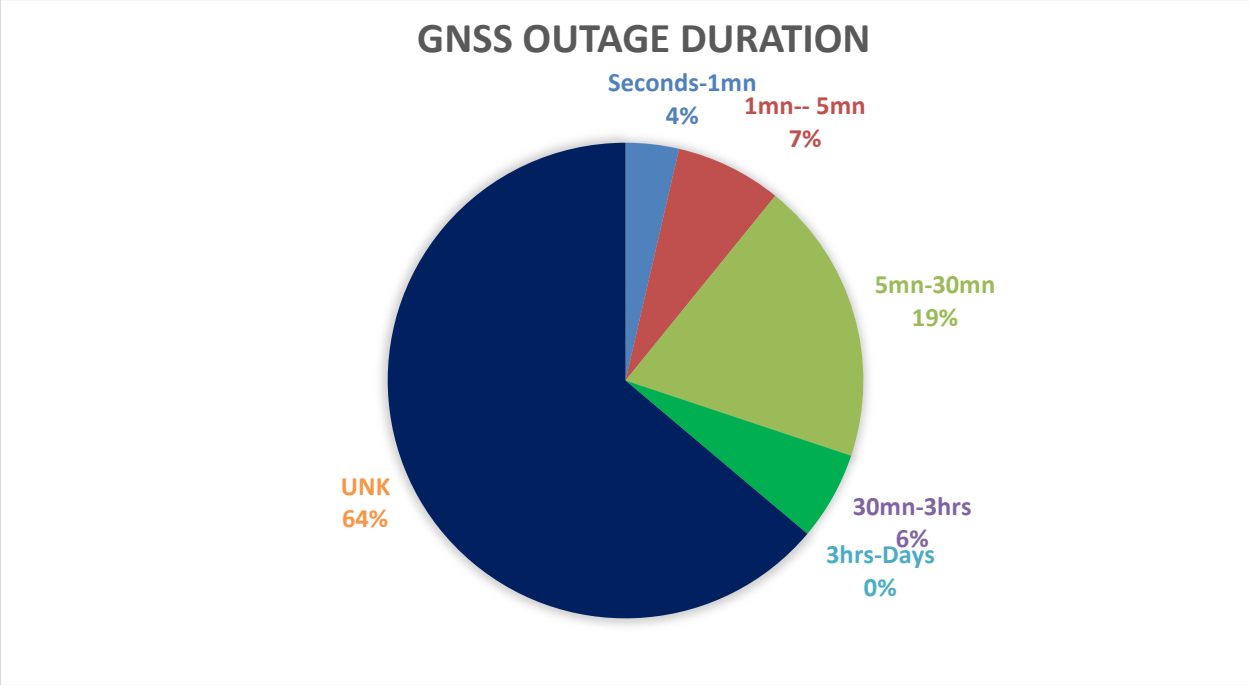
Brief data analysis of the incidents reported during Brief data analysis of the incidents reported by Air Operator is as follows:



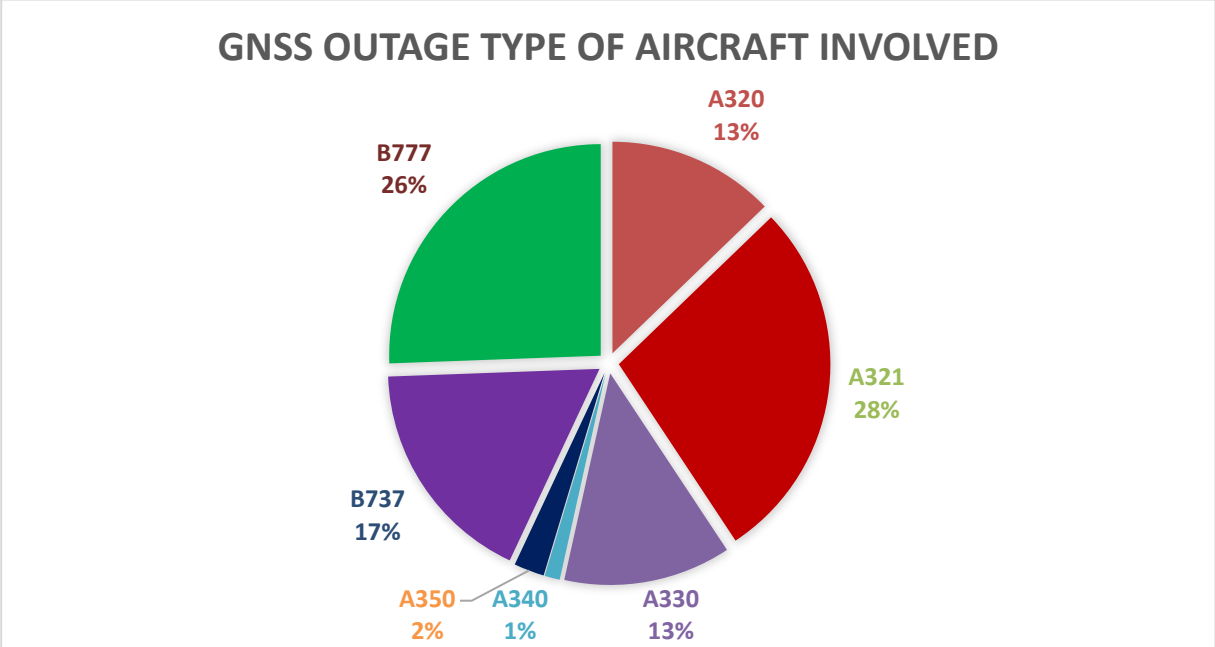
The data revealed that the most significant Flight Information Regions (FIRs) affected Beirut, followed by Cairo, Ankara, and Nicosia.



The data shows that the highest GNSS Outage occurred during the phase of flights cruise, approach, climb, and descent.



The data shows the highest GNSS outage duration was between 5 minutes- 30 minutes. Regarding the Unknown (UNK) it could not be determined as the data was not provided.



The A321, B777, and B737 were most flown aircraft type in areas most affected.

APPENDIX 3A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/21 & RASG-MID/11 CONCLUSIONS AND DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 1	**PUBLISHING OF THE NASP** That, States, be urged to publish their NASP and to provide it to ICAO HQ and ICAO MID Office for posting on the ICAO NASP Library website (www.icao.int/nasplibrary).	Compliance with Assembly Resolution A40-1	State Letter	States	April 2024	**Completed** SL Ref: ME 4-24/062 dated 8 April 2024
C. 2	**MENA ACRM** That States, States be encouraged to sign the MENA AIG Regional Cooperation Mechanism (MENA ARCM) MoU, if not yet done.	Enhancement of cooperation among MENA States in the provision of AIG area	Sign the MoU to support States in AIG area	States	May 2024	**Actioned** Discussed during MENA ARCM/5 meeting
D. 3	**ESTABLISHMENT OF THE MID REGION ACDM TASK FORCE (MID ACDM-TF)** That the MID Region Airport Collaborative Decision-Making Task Force (MID ACDM-TF) be established, subject to review and confirmation of ASPG/6, in accordance with the Terms of Reference at **Appendix 2A**.	Lack of efficient interface between the CAAs and the Server Providers	MID ACDM-TF (Confirmed by ASPIG/6)	ICAO Partners and States	May 2024	**Actioned** The ASPIG understood the MIDNPIRG concerns been raised regarding the increasing number of subsidiary bodies under MIDANPIRG. As an alternative to a standalone Task Force, the ASPIG agreed to conduct AOP Thread Go-Team to monitor the establishment and performance of ACDM at concerned airports. **This Decision is to be Closed.**
C. 4	**RISKS RELATED TO ALTIMETER SETTING ERRORS DURING APV BARO-VNAV AND NON-PRECISION APPROACH OPERATIONS**	To sensitizing the MID aviation community to vulnerabilities of Baro-VNAV approaches, in particular their	State Letter	States	June 2024	**Completed.** ICAO MID has disseminated the EUR OPS Bulletin 2023_001 to all of its Member States by means of State Letter

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	That, ICAO MID promotes the EUR OPS BULETIN at **Appendix 3B** on Risks related to altimeter setting errors during APV Baro-VNAV and non-precision approach operations and ensures the widespread dissemination of this bulletin among member States.	dependence on correct altimeter setting				

-

APPENDIX 4A

FOLLOW-UP ACTION PLAN ON RASG-MID/11 CONCLUSIONS AND DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 11/1	**12TH ASR** That, the Twelfth MID Annual Safety Report is endorsed and be posted on the ICAO MID Website.	Sharing the final 12th MID-ASR for the period 2018-2022 with identified MID Region safety priorities and an update on safety performance	MID-ASR 12th Edition published on the ICAO website	RASG-MID/11	April 2024	**Completed**
C. 11/2	**SHARING OF SAFETY DATA ANALYSIS** In respect of the next MID ASR edition, States are encouraged to provide necessary safety information and safety data analysis to the ICAO MID Office, by May 2024 related to each occurrence category in **Appendix 4B** for the past 5 years (2019– 2023) and using the templates in **Appendix 4C** and **Appendix 4D**. The Draft of the 13th edition of the MID ASR will be presented to the ASRG/6 meeting for review.	Collection of safety data analysis for a Harmonized database	Safety Data Analysis for development of ASR	States	April 2024	**Completed** SL Ref: ME 4-24/059 dated 4 April 2024
C.11/3	**GNSS INTERFERENCE AND SPOOFING** That, a) ICAO with the support of states and IATA to establish a regionally determined minimum operational network (MON) of conventional navigation aids for use in case of GNSS interference /Spoofing;	Definition of the minimum operational network (MON) of conventional navigation aids for use in case of GNSS interference/Spoofing.	minimum operational network (MON) of conventional navigation aids for use in case of GNSS interference/Spoofing.	ICAO, IATA and States	Tentatively October 2024	**Actioned** will be superseded with new conclusion that will be proposed to be endorsed by MIDANPIRG/22-RASG/12. **This conclusion is proposed to be**

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	b) States be urged to develop mitigation measures to be used in case of GNSS interference;	Lack of mitigation measures to be used in case of GNSS interference.	Proposed mitigation measures to be used in case of GNSS interference.	States		**closed**
	c) States to maintain adequate infrastructure to enable aircraft operators use of conventional navigation aids as appropriate during GNSS RFI or Spoofing;	Operations Continuity dung GNSS RFI or Spoofing	Alternatives ensuring Operations Continuity dung GNSS RFI or Spoofing	States		
	d) Original Equipment Manufacturers (OEMs) to provide further guidance and information on the effects and mitigations of GNSS RFI (including interference, jamming and spoofing) from the perspective of aircraft equipment;	Lack of coordination with Original Equipment Manufacturers (OEMs)	Establishment of coordination with OEMs	States		
	e) States to foster Civil-military coordination and cooperation; and	Lack of coordination with the Military	Establishment of coordination with the Military side	States		
	f) ICAO with the support of States, ACAO, IATA and IFALPA to amend RASG-MID Safety Advisory – 14 including the update of the GNSS RFI statistics and to include GNSS spoofing effect and mitigation measures.	Amendment of the current RSA 14	Amended RSA 14	ACAO, ICAO, IATA, IFALPA.		
C. 11/4	**IMPLEMENTATION PROGRESS ON THE SAFETY ENHANCEMENT INITIATIVES (SEIS)** That, a) The implementation progress of the Safety Enhancement Initiatives (SEIs) and safety actions included in the MID-RASP 2023-2025 Edition at **Appendix 4G** is endorsed; and b) States, international organizations and industry are urged to support the MID-RASP 2023-2025 Edition activities including SEIs and safety actions	support the MID-RASP 2023-2025 Edition activities including SEIs and safety actions	Implementation of SEIs and safety actions	States, organizations, and industry	April 2024	**Actionned**

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 11/5	**CARRIAGE AND TRANSPORT OF LITHIUM BATTERIES GUIDANCE MATERIAL** That, the guidance material document on the carriage and transport of lithium batteries at **Appendices 4H & 4I** is endorsed.	Continuous reduction of incidents related to Lithium batteries issues	Circulate GM material to all states	ICAO & IATA	May 2024	**Completed.** Email sent on 28 May 2024
C. 11/6	**DEVELOPMENT OF NATIONAL AVIATION SAFETY PLAN (NASP) IN MID STATES** That, States be: a) urged to develop and implement the NASP in line with the GASP and MID-RASP, if not yet done so; b) encouraged to share the latest version of their NASPs with ICAO HQ and ICAO Regional MID office for posting on the GASP public website; c) encouraged to continue to use existing ICAO guidance material and tools to implement their NASPs; d) encouraged to request assistance from the ICAO MID Regional Office related to the development of their NASPs including the conduct of assistance missions and/or customized NASP Workshop for each State; and e) encouraged to share their experiences related to the development of their NASPs during the SEIG meetings and/or Regional NASP Workshop to be organized by the ICAO MID Regional Office in 2025.	Compliance with Assembly Resolution A40-1	State Letter	ICAO	April 2024	**Actionned** *SL Ref: ME 4-24/062 dated 8 April 2024* *So far 9 states completed NASP development*
C. 11/7	**DEVELOPMENT OF SSP IN MID STATES** That, States be:					**Actionned** *SSP workshops being conducted.*

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	a. encouraged to effectively implement their State Safety Programme in a timely manner, and to strengthen the implementation of safety management systems in their aviation industry; b. encouraged to request assistance from the ICAO MID Regional Office related to the development and implementation of their SSPs including the conduct of assistance missions and/or customized SSP implementation and Safety Risk Management Workshops for each State; c. encouraged to support the SMIT activities; d. share their experiences on the development of their SSPs during the SEIG meetings; and e. encouraged to share their latest version of SSP manuals with ICAO MID Office.	Support States with the development and Implementation of SSP	MID States SSP development	ICAO	April 2024	
C. 11/8	**ANONYMOUS DATASET COLLECTION FOR AERODROMES SAFETY** That, in order to promote safety and improve the effectiveness of the corrective action process at the regional level, MID States and concerned Stakeholders are urged to: a) endorse the Template listing of Minimum Reporting Areas of non-compliance to be reported, as presented at **Appendix 4K,** to ICAO MID Office for consolidation and follow-up actions, and b) nominate a Main/National Focal Point responsible for the anonymous communication of these datasets using the Template.	promote safety and improve the effectiveness of the corrective action process at the regional level, MID States and concerned Stakeholders	Anonymous Dataset Collection for Aerodromes Safety	States	May 2024	**Completed** (List Finalized as the AGA Focal Points are the National Focal Points)

LIST OF OCCURRENCE CATEGORIES TAXONOMY

Scope: State of Occurrence

The data to be collected be based on scheduled commercial operations involving aircraft having a Maximum Take-off Weight (MTOW) above 5700 kg.

Occurrence Category	ADREP/CICTT taxonomy	Remarks
Runway Excursion (RE)	Veer off or overrun off the runway surface.	
Abnormal Runway Contact (ARC)	Any landing or take-off involving abnormal runway or landing surface contact.	
Loss of Control-Inflight (LOC-I)	Loss of Control while, or deviation from intended flight path, in flight.	
Controlled Flight Into Terrain (CFIT)	Inflight collision or near collision with terrain, water, or obstacles without indication of loss of control.	
MID Air Collision (MAC)/ NMACs	Airprox/TCAS Alerts, Loss of separation as well as NMAC or collisions between aircraft inflight.	
Fire/Smoke (F-NI)	Fire or smoke in or on the aircraft, in flight, or on the ground, which is not the result of impact.	
Runway Incursion (RI)	Any occurrence at aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for landing and takeoff of aircraft.	
System Component Failure –Non-Power Plant (SCF-NP)	Failure or malfunction of an aircraft system or component other than the power plant.	
Turbulence Encounter (TURB)	In-flight turbulence encounter.	
Birdstrike (BIRD)	Occurrences involving collisions/near collisions with bird(s).	
Navigation Errors (NAV)	Occurrences involving the incorrect navigation of aircraft on the ground or in the air	
System Component Failure- Power Plant (SCF-PP)	Failure or malfunction of an aircraft system or components related to the power plant.	

Security related (SEC)	Criminal/Security acts which result in accidents or incidents (per Annex 13 to the Convention on International Civil Aviation).	
Wind shear	Flight into wind shear or thunderstorm	

NB: States may share any other occurrence category or national safety concern.

TEMPLATE FOR THE COLLECTION OF

ACCIDENT, SERIOUS INCIDENT AND INCIDENT DATA AND SAFETY ANALYSIS

Name of State: ……...

1- Occurrences: *The data to be collected be based on scheduled commercial operations involving Aeroplane having a Maximum Take-off Weight (MTOW) above 5700 kg.*

#	Occurrence Category	2020			2021			2022			2023			2024		
		# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents
1	Runway Excursion (RE)															
2	Abnormal Runway Contact (ARC)															
3	Loss of Control-Inflight (LOC-I)															
4	Controlled Flight Into Terrain (CFIT)															
5	Mid Air collision (MAC)/ NMAC															
6	Fire/Smoke (F-NI)															
7	Runway Incursion-(RI)															
8	System Component Failure-Non-Power Plant (SCF-NP)															
9	Turbulence Encounter (TURB)															
10	BIRD															

11	Navigation Errors (NAV)															
12	System Component Failure-Power Plant (SCF-PP)															
13	Security related (SEC)															
14	Wind shear															

States should provide the number of accident, serious incidents, and incidents related to each category mentioned in the template above for the past five years (2020-2024)

Scope: State of Occurrence

2- Brief- Safety data Analysis (Root-cause analysis, Trends, Low probability high consequence (LPHC) events if any, etc.)

3- Identified Top Five safety risks

4- Safety mitigations/Recommendations

TEMPLATE FOR THE COLLECTION OF

ACCIDENT, SERIOUS INCIDENT AND INCIDENT DATA AND SAFETY ANALYSIS

Name of State: ……..

1- Occurrences: *The data to be collected involving commercial helicopters operations*

#	Occurrence Category	2020			2021			2022			2023			2024		
		# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents
1	Runway Excursion (RE)															
2	Abnormal Runway Contact (ARC)															
3	Loss of Control-Inflight (LOC-I)															
4	Controlled Flight Into Terrain (CFIT)															
5	Mid Air collision (MAC)/ NMAC															
6	Fire/Smoke (F-NI)															
7	Runway Incursion-(RI)															
8	System Component Failure-Non-Power Plant (SCF-NP)															
9	Turbulence Encounter (TURB)															
10	BIRD															
11	Navigation															

	Errors (NAV)															
12	System Component Failure-Power Plant (SCF-PP)															
13	Security related (SEC)															
14	Wind shear															

States should provide the number of accident, serious incidents, and incidents related to each category mentioned in the template above for the past five years (2020-2024)

Scope: State of Occurrence

2- Brief- Safety data Analysis (Root-cause analysis, Trends, Low probability high consequence (LPHC) events if any, etc.)

3- Identified Top Five safety risks

4- Safety mitigations/Recommendations

ICAO MID

SAFETY

MID-RASP

MIDDLE EAST REGIONAL AVIATION SAFETY PLAN



Second Edition 2023-2025

MIDDLE EAST REGIONAL AVIATION SAFETY PLAN (MID-RASP)

ICAO

SECOND EDITION 2023–2025

Executive Summary

The Global Aviation Safety Plan (GASP) presents the global strategy for the continuous improvement of aviation safety. The purpose of the GASP is to continually reduce fatalities, and the risk of fatalities, by guiding the development of a harmonized aviation safety strategy.

The GASP promotes the effective implementation of a State safety Programme (SSP) including National Aviation Safety Plan (NASP), a State's safety oversight system, and a risk-based approach to managing safety as well as a coordinated approach to collaboration between States, international organizations, and industry.

The vision of the GASP is to achieve and maintain the aspirational safety goal of zero fatalities in commercial operations by 2030 and beyond, which is consistent with the United Nations' *2030 Agenda for Sustainable Development*. The plan's mission is to continually enhance international aviation safety performance and resilience by providing a collaborative framework for States, regions and industry.

The Middle East Regional Aviation Safety Plan (MID-RASP) 2023-2025 Edition considers and supports the objectives and priorities of GASP 2023-2025 Edition. MID-RASP also emphasizes the importance of identifying and mitigating risks at MID region level. In addition, MID-RASP is to create a common focus on regional aviation safety issues as a continuation of the MID region work to improve aviation safety and to comply with ICAO standards and supports MID States and industry in implementing the GASP 2023-2025 Edition.

Furthermore, the States national aviation safety plan (NASPs) should be developed in alignment with the GASP and the MID-RASP. However, priority should be given to national safety concerns. Moreover, the NASP should be also aligned and coordinated with the MID-RASP (as appropriate) and with other efforts aimed at enhancing aviation safety.

MID-RASP provides a three-year plan for States in MID Region to strengthen its safety oversight capability and implement an effective safety management. This relates to the continuous reduction of regional operational risks and improvement in States' safety oversight and safety management capabilities. It adopts a risk-based approach to managing safety at regional-level through a coordinated approach and collaboration between States in the region, regional organizations and industry.

The RASG-MD is the governing body responsible for the development, implementation and monitoring of the MID-RASP, in collaboration with the ICAO MID Office, international and regional organizations and with the aviation industry. The MID-RASP is to be reviewed by the Safety Enhancement Implementation Group (SEIG) every year mainly to include new identified Safety Enhancement initiatives' (SEIs), review the existing SEIs, as well as their respective actions.

The MID Region's strategic approach to managing safety at the regional level is to address the region's operational risks and other safety issues in a timely manner. Therefore, the MID-RASP strategic approach would focus on organizational challenges/issues, regional operational safety risks, and emerging risks as indicated below.

a. Organizational challenges/issues including the States 'safety oversight, safety management, aircraft accident and incident investigation, human factors and competence of personnel, and Cybersecurity.
b. Regional operational safety risks, the focus would be on Regional high risks categories (R-HRC) identified in the GASP 2023-2025 Edition mainly the LOCI-I, CFIT, RE, RI, and MAC; and
c. Emerging risks, the focus would be on COVID-19 pandemic outbreak, Civil drones (Unmanned Aircraft Systems), GNSS outages, impact of security on safety, and 5G interference with Radar Altimeter frequency band.

MID Region safety indicators and targets were aligned with the 2023-2025 GASP goals and regional specific objectives and priorities. The RASG-MID would use the indicators listed in the MID Region Safety Performance Measurement & Monitoring (SPMM) to measure safety performance and monitor each regional safety target. Moreover, the RASG-MID would continuously monitor the implementation of the SEIs listed in the MID-RASP and measure safety performance of the regional civil aviation system, to ensure the intended results are achieved, using the MID Region SPMM.

The MID Region SPMM includes six (6) Goals in line with GASP 2023-2025 Edition. For each Goal established in the MID Region SPMM, identified SEI(s) be mapped to it including their respective actions. Thus, to address regional operational risks, organizational issues, and emerging risks; 24 SEIs and 61 safety actions have been identified, developed and proposed.

The MID-RASP provides guidance on how States should identify which top risks and key safety issues mentioned in the GASP and MID-RASP apply to their national context and then to be included in their NASPs. States should also add other safety issues which are unique to their operational context. Several MID-RASP SEIs which are intended for implementation by States at the national level are recommended for inclusion in their NASPs.

TABLE OF CONTENTS

Executive Summary

PART-I. PLANNING **7**
1. INTRODUCTION **7**
1.1 Objectives and Principles 7
1.2 Relationship between MID-RASP and GASP and other Plans 7
2. HOW MID-RASP IS STRUCTURED **10**
3. HOW MID-RASP IS DEVELOPED AND MONITORED **11**
4. OPERATIONAL CONTEXT **14**
4.1 Worldwide perspective 14
4.2 Middle East Perspective 14
5. STRATEGIC PRIORITIES **16**
5.1 Organizational Challenges/Issues 18
5.1.1 Strengthening of States' Safety Oversight Capabilities 18
5.1.2 Improve Regional Cooperation for the Provision of Accident & Incident Investigation 19
5.1.3 Sharing of Safety Recommendations related to Accidents and Serious Incidents 19
5.1.4 Improve Implementation of ELP Requirements 20
5.1.5 Enhance State Oversight on Dangerous Goods 20
5.1.6 Improve the Safety Management 20
5.1.7 Certification of International Aerodromes 22
5.1.8 Establishment of Runway Safety Teams at International Airports 22
5.1.9 Human Factors and Competence of Personnel 22
5.1.10 Cybersecurity Resilience 23
5.2 Regional Operational Safety Risks 23
5.2.1 Address Operational Safety Risks in Commercial Air Transport (CAT) Aeroplane Operations above 5,700 kgs 23
5.2.2 Aircraft Upset in Flight (Loss of Control-Inflight) 24
5.2.3 Runway Excursion 24
5.2.4 Runway Incursion (RI) 25
5.2.5 Controlled Flight into Terrain (CFIT) 25
5.2.6 Mid-Air Collision (MAC) 26
5.3 Emerging Risks 26
5.3.1 GNSS interference 26
5.3.2 COVID-19 Pandemic Outbreak- Safe return to operations 27
5.3.3 Ensure the safe operations of UAS 27
5.3.4 Management of security risks with safety impact 28
5.3.5 5G Operation on Radio Altimeter 28

PART-II. IMPLEMENTATION **30**
6. SAFETY IMPLEMENTATION **30**
6.1 Safety Monitoring and Implementation 30
6.2 Communication of Progress to RASG-MID and Regional Stakeholders 31

7. SAFETY ACTIONS.....31
7.1 Organizational Challenges/issues.....32
7.1.1 Goal 2: Strengthen States' Safety Oversight Capabilities.....32
7.1.2 Goal 3: Implementation of Effective States Safety Programme (SSP).....43
7.1.3 Goal 4: Increase Collaboration at the Regional Level.....46
7.1.4 Goal 5: Expand the Use of Industry Programmes and safety information sharing networks.....49
7.1.5 Goal 6: Ensure the Appropriate Infrastructure is available to Support Safe Operations.....50
7.2 Regional Operational Safety Risks.....52
7.2.1 Goal 1: Achieve a continuous reduction in Operational Risks.....52

Appendices:

Appendix A: SEIG Term of References

Appendix B: Identified safety issues as indicated in the 11th ASR

Appendix C: MID Region-Safety Performance Measurement &Monitoring (SPMM)

Appendix D: Safety Actions- List of consolidated SEIs for follow up

Appendix E: SEIs identified in MID-RASP and recommended to States for inclusion in their NASPs

Appendix F: Definitions

Appendix G: Abbreviations and acronyms

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PART-I. PLANNING

1. INTRODUCTION

1.1 Objectives and Principles

The MID Regional Aviation Safety Plan (MID-RASP) presents the **strategic direction** for the **management of aviation safety** at the regional level. It constitutes the regional safety plan for MID Region, setting out the strategic priorities, main risks affecting the regional aviation system and the necessary actions to mitigate those risks to further improve aviation safety.

The purpose of this MID-RASP is to continually reduce fatalities, and the risk of accidents, through the development and implementation of regional SEIs. A safe aviation system contributes to the economic development of MID Region, the States which comprise it, and their industries. In addition, MID-RASP is to create a common focus on regional aviation safety issues as a continuation of the MID Region work to improve aviation safety and to comply with ICAO standards. This approach complements the existing system of developing safety regulations, complying with them and investigating accidents and serious incidents when they occur.

The MID-RASP promotes the effective implementation of a State safety Programme (SSP) and Safety Management System (SMS) including National Aviation Safety plan (NASP), State's safety oversight system, and a risk-based approach to managing safety as well as a coordinated approach to collaboration between States, international organization, and industry. All stakeholders are encouraged to support and implement the MID-RASP as the regional strategy for the continuous improvement of aviation safety.

The MID RASP allows the region to define the strategy for improving safety within a specified timeframe, through defined Safety Enhancement Initiatives (SEIs).

The MID-RASP establishes the first layer of priorities which is further complemented at national level by national safety plans and Programmes. It builds a network for action; thus, coordination and close collaboration are key to keeping it up to date and effective.

The MID-RASP Edition 2023-2025 covers the three-year period between 2023 and 2025 and will be updated on a yearly basis, as required, to cover subsequent three years' periods. It is a rolling 3-year plan.

The planning activity would be followed up by a reporting activity, in which progress on the actions is evaluated and also documented. This feedback loop ensures that the process to manage risks continuously improves and may contribute to the identification of new safety issues.

MID Region is committed to enhancing aviation safety, to the resourcing of supporting activities and to increasing collaboration at the regional level.

1.2 Relationship between MID-RASP and GASP and other Plans

Aviation's contribution towards the United Nations 2030 Agenda for Sustainable Development and in order to maximize the benefits of aviation, the priorities of the aviation sector should be integrated and reflected in State's economic and social development planning with an appropriately balanced development of transport modes, including multi-modal and urban planning initiatives. In addition, recognizing that air transport is a catalyst for sustainable development and that it represents an essential lifeline for Least Developed Countries (LDCs), and especially for Landlocked Developing Countries (LLDCs).

ICAO Business Plan takes into consideration all of the work mandated to be undertaken by ICAO, regardless of source of funding. The Business Plan sets out the Strategic Objectives and priorities to guide the activities of the Organization to support Members States in their attainment of a safe, secure, efficient, economically viable and environmentally responsible air transport network.

ICAO's global plans are essential in supporting safe, secure, efficient, economically viable and environmentally responsible air transportation. They provide a means to advance ICAO's Strategic Objectives. The ICAO global plans include: the GASP, the GANP and the Global Aviation Security Plan (GASeP).

The GASP presents the global strategy for the continuous improvement of aviation safety. The purpose of the GASP is to continually reduce fatalities, and the risk of fatalities, by guiding the development of a harmonized aviation safety.

The purpose of the Global Air Navigation Plan (GANP) is to drive the evolution of the global air navigation system to meet the ever-growing expectations of all sectors in the aviation community by equitably accommodating all airspace user operations in a safe, secure and cost-effective manner while reducing the aviation environmental impact. To this end, the GANP provides a series of operational improvements to increase capacity, efficiency, predictability and flexibility, while ensuring interoperability of systems and harmonization of procedures. The implementation of the GANP is enabled by promoting the effective implementation of safety oversight and a safety management approach to oversight, including SRM to permit innovation in a managed way.

The GASP complements the GANP by providing States and industry with the tools to implement a safety management approach through their SSP and SMS. The GANP, through the evolution of the system described in the conceptual roadmap and the operational improvements detailed in the technical frameworks, supports the goals within the GASP and the GASeP by enhancing safety and security of the air navigation system as reflected in the performance ambitions.

The GASP goals and targets support the GASeP by providing best practices and models that can be as effective in managing security as they are in safety management. These include effective oversight, organizational culture, risk management and assurance processes. The GASeP in turn supports the GASP's vision of zero fatalities.

MID-RASP considers and supports the objectives and priorities of GASP. The purpose of GASP is to continually reduce fatalities, and the risk of accidents, by guiding the development of a harmonized aviation safety strategy and the development and implementation of regional and national aviation safety plans. A safe aviation system contributes to the economic development of States and their industries. The GASP promotes the effective implementation of SSP and SMS including NASP, a State's safety oversight system, and a risk-based approach to managing safety as well as a coordinated approach to collaboration between States, international organizations, and industry. One of the GASP goals is for States to improve their effective safety oversight capabilities and to progress in the implementation of SSPs including NASPs. Thus, GASP calls for States to put in place robust and sustainable safety oversight systems that should progressively evolve into more sophisticated means of managing safety.

Assembly Resolution A40-1 also calls for each State to develop and implement a national aviation safety plan (NASP), in line with the GASP goals, targets and the global high-risk categories of occurrences (G-HRCs). The NASP should also be developed having close regard for the RASP, while acknowledging that each State may have its own, specific safety issues and priorities, including addressing significant safety concerns (SSCs).

In addition, to addressing systemic safety, GASP addresses Global high-risk categories (G-HRC) of occurrences, which are deemed global safety priorities. These categories were determined based on actual fatalities from past accidents, high fatality risk per accident or the number of accidents and incidents. The following G-HRCs have been identified for the 2023-2025 edition of the GASP: controlled flight into terrain (CFIT); Loss of control in flight (LOC-I); Mid-air collision (MAC); runway excursion (RE); and runway incursion (RI). The GASP G-HRCs are addressed in MID-RASP.

The MID-RASP considers the objectives and priorities of the GASP to enhance the level of safety in aviation and to better prepare the Member States for the ICAO Universal Safety Oversight Audit Programme (USOAP) audits and State Safety Programme Implementation Assessment (SSPIA) of their SSPs.

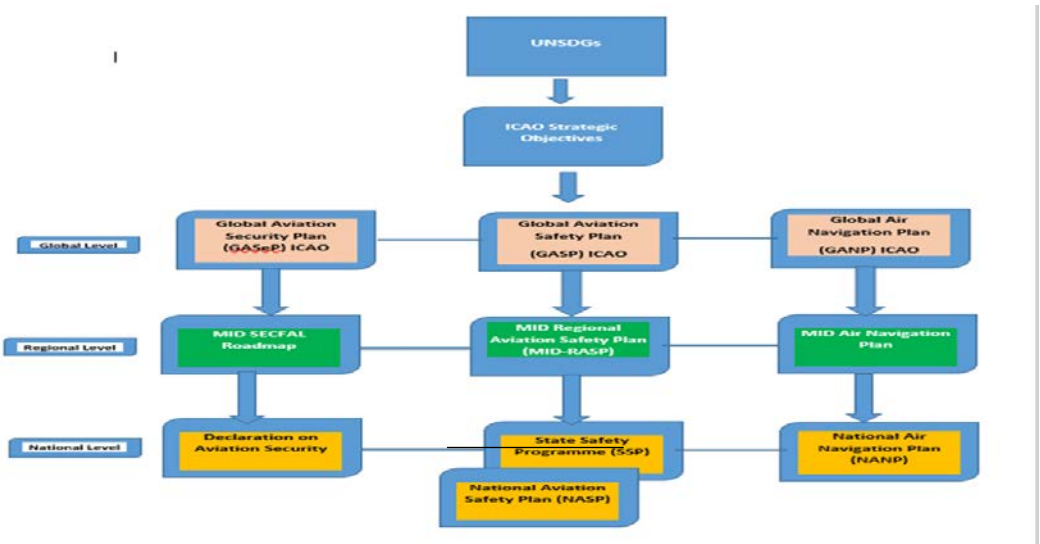
This MID-RASP edition 2023-2025 provides references to corresponding GASP 2023-2025 Safety Enhancement Initiatives (SEIs); covering organizational challenges, Regional operational risks, and emerging risks.

The 2023-2025 Edition of the GASP would set forth ICAO's Safety Strategy in support of the prioritization and continuous improvement of aviation. The plan guides the implementation of regional and national aviation safety plans.

The 2023-2025 Edition of the GASP includes a new set of goals, targets and indicators, in line with the United Nations' 2030 Agenda for Sustainable Development.

In respect of MID Region SPMM, the GASP provides the global strategic direction while the MID Region SPMM provides regional specific goals and support the region's strategic approach to managing safety at the regional level. Consequently, MID region safety indicators and targets were aligned with the 2023-2025 GASP goals and targets as relevant in the MID Region. Furthermore, the RASG-MID would continuously monitor the implementation of the identified SEIs in the MID-RASP and measure safety performance of the regional civil aviation system, to ensure the intended targets are achieved, using the MID Region safety performance measurement & monitoring to this plan. Moreover, MID safety performance measurement & monitoring Goals support the region's strategic approach to managing safety at the regional level. Therefore, for each Goal established in the MID Region SPMM identified SEI(s) is mapped to it including their respective actions.

The MID Region SPMM is included as an appendix and became an integral part of MID-RASP.



Graph 1: Relationship between MID-RASP and other Plans

2. HOW MID-RASP IS STRUCTURED

This MID-RASP presents the regional strategy for enhancing aviation safety for a period of three years. It is comprised of two parts and 7 chapters. The 2023-2025 MID- RASP Edition comprises two distinct parts:

- **Part I. Planning** provides an introduction, describes how the MID-RASP is developed and monitored and includes the safety priorities. It consists of **Chapters 1 to 5**.

- **Part II. Implementation** contains the safety performance measurement & monitoring and the detailed list of MID-RASP safety actions. It consists of **Chapters 6 and 7**.

- Both parts are supported by a number of appendices providing further details or assisting the reader.

Part-I. Planning

Part I provides an introductory explaining the main objective of this MID-RASP. Chapter 2, 3, and 4 explain how MID-RASP is structured, developed, monitored and presents the structure of the document. Chapter 5 presents safety priorities and the key actions taken as indicated below:

- 5.1 Organizational Challenges/issues
- 5.2 Regional operational safety risks
- 5.3 Emerging risks

Part-II. Implementation

Part II contains the safety performance measurement and monitoring and the detailed list of MID-RASP safety actions. It consists of Chapters 6 and 7.

Chapter **6** presents the MID Region safety indicators and targets.

In respect of **chapter 7**, it facilitates the identification of SEIs and their respective actions relevant for each Goal identified in the MID Region Safety performance measurement and monitoring as follows:

- Goal 1: Achieve a continuous reduction of operational safety risks;
- Goal 2: Strengthen States' safety oversight capabilities;
- Goal 3: Implement effective State safety Programmes (SSPs);
- Goal 4: Increase collaboration at the regional level;
- Goal 5: Expand the use of industry Programmes and safety information sharing networks ; and
- Goal 6: Ensure the appropriate infrastructure is available to support safe operations.

The MID Region SPMM includes six (6) Goals in line with GASP 2023-2025 Edition. For each Goal established in the MID Region SPMM, identified SEI(s) is mapped to it including their respective actions and the following information is provided:

Goal: Goal supports the region's strategic approach to managing safety at the regional level.

- **Name:** Goal #Number - SEI# Number: Description of the SEI
- **Target(s)/Metrics.** Targets which serve to fulfil their respective Regional Goal
- **Rationale** behind the safety issue (why it has been identified as an issue)
- **What it is to be achieved** (objective)
- **How we intend to monitor improvement** in the future
- **How we intend to achieve** the objective; here, the various actions contributing to mitigate

the identified risk in that area are described

- **Actions**: The tasks required for the implementation of the SEI. The actions support the SEI and Targets of the Regional Goal
- **References:**
  - Indicates key existing global documents from which the SEI is adopted, if applicable.

Stakeholders: The entities/ stakeholders in the MID region, to which the Actions are addressed
Example Action 1: Description of the Action to be taken
Subtask(s) if needed to be added **Owner(s)**: Appointed Group/State(s)/Organization(s) to further develop details for implementation of the respective Action. **Priority:** Low, Medium, High **Completion Date**: The date in which the respective Action is expected to be implemented. **Status**: new, ongoing, on hold, completed. (Provide also updated progress if any)
Example Action 2: Description of the Action to be taken
Subtask(s) if needed to be added **Owner(s):** Appointed Group/State(s)/Organization(s) to further develop details for implementation of the respective Action **Priority**: Low, Medium, High **Completion Date**: The year(s) in which the respective Action is expected to be implemented **Status:** new, ongoing, on hold, completed. (**Provide also updated progress if any**)

EXPECTED OUTPUT	
Deliverable(s)	**TIMELINE**
Description of the Result to be achieved	The year in which the respective Target is expected to be achieved

3. HOW MID-RASP IS DEVELOPED AND MONITORED

The RASG-MD is the governing body responsible for the development, implementation and monitoring of the MID-RASP, in collaboration with the ICAO MID Office, international and regional organizations and with the aviation industry. The MID-RASP was developed in consultation with States, regional organizations, and other stakeholders in the region, and in alignment with the 2023-2025 of the GASP. If required, RASG-MID would seek the support of MIDANPIRG and RASFG-MID, other sub-groups, States, regional organizations, and industry to ensure the timely implementation of SEIs to address safety deficiencies and mitigate risks. Through close monitoring of the SEIs, SEIG would make adjustments to the MID-RASP and its initiatives, if needed, and update the MID-RASP document accordingly.

Furthermore, the MID-RASP is to be reviewed by SEIG every year mainly to include new identified SEIs, review the existing SEIs, and their respective actions. In addition, the MID-RASP is to be updated/endorsed by RASG-MID at least every three years and as deemed necessary.

The SEIG is established to assist RASG-MID to develop and monitor the implementation of SEIs as at **Appendix A** related to identified regional operational risks, organizational challenges, and emerged risks. In addition, the SEIG takes the lead and ensures that SEIs are implemented in a timely, effective and efficient manner in coordination with RASG-MID, MIDANPIRG, and RASFG-MID groups and sub-groups (ASRG, ASPIG, AIIG, ATM-SG,..etc), States, regional organizations, and industry.

As a first step towards establishing this system and to facilitate MID-RASP implementation, it is necessary to enhance the communication and flow of safety data and information, as well as coordination processes, among RASG-MID and its subsidies, States, and regional organizations. There is also the need to continue to enhance collaboration with MIDANPIRG through coordinated processes to sustain the collection and sharing of regional air traffic management (ATM) data and the sharing and resolution of safety issues. This, in turn, would support the implementation of Aviation System Block Upgrade (ASBUs) and ensure that their implementation accounts for and properly manages existing and emerging risks, e.g. approaches with vertical guidance (APV) to mitigate risks associated with CFIT and runway excursions.

The MID-RASP was developed with the aim of addressing the MID region's operational and other safety issues in a timely manner, and as applicable. It is expected that this approach would facilitate MID States' support and participation in the implementation of these SEIs and their respective actions at both the regional and national levels. The three-year period of the MID-RASP, i.e. 2023 to 2025, was selected to coincide with the GASP review period of the same duration, to ensure continued alignment with the latest global plans.

States should ensure that a NASP is maintained and regularly reviewed. The MID-RASP provides the identified safety priorities in the region and States should identify which top risks and key issues mentioned in the GASP and MID-RASP which apply to their national context and identify suitable mitigations actions within their NASP. States should also add/consider other safety issues which are unique to their operational context. Furthermore, States to establish a NASP taking into account the GASP and MID-RASP; and based on their operational safety needs.

The key contents of the MID-RASP were developed using an eight-step process recommended by the GASP to develop RASPs and NASPs, similar to the Plan-Do-Check-Act (PDCA) continuous improvement cycle, as follows:

Step 1: Conduct self-evaluation;
Step 2: Identify hazards and safety deficiencies;
Step 3: Develop list of prioritized regional safety issues;
Step 4 – Define goals, indicators, and targets
Step 5: Perform gap analysis to identify SEIs;
Step 6: Develop a list of prioritized SEIs;
Step 7: Develop a Regional aviation safety plan; and
Step 8: Monitor implementation

The MID-RASP has been developed in congruence with the GASP, and supports the GASP aspirational goal of zero fatalities by 2030 and its objectives, goals, targets and indicators.

a. The MID-RASP structure adheres closely to GASP;
b. A comprehensive gap analysis was undertaken to identify the existing gaps between the existing work by RASG-MID, and subsequently also compared with ICAO Manual: Doc 10131, 'Manual on the Development of Regional and National Aviation Safety Plans;
c. The MID Region SPMM is aligned with GASP 2023-2025 Edition, retained and included as an Appendix in the MID-RASP; and
d. MID-RASP SEIs were selected taking into consideration relevant SEIs for the region in line with GASP 2023-2025 Edition as well as relevant work plan items of DCGA, RASG-MID, MIDANPIRG, and RASFG-MID meetings. Moreover, GASP SEIs for States and Industry (domestic) were not considered as these are more suitable to be included in the NASPs of the MID States.

The MID-RASP supersedes the previous work of the RASG-MID subsidy bodies (RAST and SST) initiatives to elevate the commitment of the MID Region to improve its safety oversight capability, which relates to the continuous reduction of regional operational risks and improvement in safety

oversight capabilities and safety management of States. In particular, the MID-RASP serves to raise awareness of safety risks and consequences, to States, industry and relevant stakeholders to commit and provide resources including financial, staffing and technical expertise, to making improvements in safety management, oversight capability and operational safety performance. It also provides a basis to facilitate information sharing between relevant stakeholders who can take actions or provide support to address issues.

At the regional level, the MID-RASP commits RASG-MID to continue the following efforts as indicated below:

a. Focus on the update and the development of the new regional SEIs to address the Regional High-Risk Categories (R-HRCs) of LOC-I, CFIT, MAC, RI and RE, and other priorities;
b. Support States to strengthen safety oversight capabilities
c. Assist States in the development and implementation of SSP and SMS including the development of NASPs;
d. Promote regional government and industry collaboration for sharing safety information and best practices in safety management;
e. Promote the effective implementation of AGA, with a focus on implementation of Aerodrome Certification including the SMS, runway safety Programmes including the establishment of Runway Safety Teams (RSTs) and Global reporting Format methodology (GRF);
f. Support States in the development of Unmanned aircraft system (UAS) national regulations;
g. Support States on COVID-19 pandemic activities to enable a safe and secure return to operations, the GNSS interference, the impact of security on safety, manage Cybersecurity risks; and 5G interference with Radar Altimeter frequency band.
h. Support States to establish and activate the MENA RSOO;
i. Provide continuous support for the MENA ARCM activities.
j. Continue implementation support to States and industry, including the development of improved guidance materials as well as the organization of workshops and training to provide assistance and guidance to MID States; and
k. Put in place a structure for the collection, analysis and sharing of safety and operational data in the region to support a comprehensive approach to risk management, and facilitate initiatives to develop regional data collection, and analysis.

States and industry are committed to the following efforts:

a. Implement, as appropriate, the GASP SEIs and MID-RASP SEIs and their respective actions in strategic and timely manner;
b. (For any States with SSCs), accord priority to the resolution of any SSCs identified by the ICAO USOAP CMA Programme. These should draw on the necessary resources available, including technical assistance from other States and Regional Programmes to resolve the SSCs promptly;
c. Accord priority to the implementation of SSP and SMS;
d. Use data-driven methodologies to identify R-HRCs and their safety issues, and implement collaborative solutions to reduce accident rates and fatalities in the Region, and likewise accord priority to the implementation of respective SEIs; and
e. Consider various options to leverage ICAO-recognized industry assessment Programmes such as the IATA Operational Safety Audit (IOSA), IATA Safety Audit for Ground Operations (ISAGO), IATA Standard Safety Assessment Programme (ISSA), and ACI APEX Programme. These options range from recognition of such Programmes to encouraging registration by all applicable operators as a means to strengthen their safety management and compliance.

4. OPERATIONAL CONTEXT

4.1 Worldwide Perspective

After the year 2020 when the global economy experienced the worst crisis since the Great Depression as a consequence of the COVID-19 pandemic, the activity in 2021 rapidly recovered and the prospects for the following years are that this trend will continue. However, it is too soon to draw firm conclusions, considering the uncertainties on the evolution of certain threats (not only the pandemic, but also climate change, increasing public debts and geopolitical changes).

According to the last general IMF forecast available at *(https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021)*, GDP fell by 3.3 % in 2020 and is expected to rebound by 5.9 % in 2021, to continue with a growth rate of 4.9 % in 2022. Behind these global figures quite diverse situations are found in national economies due to differences in the pace of vaccine roll-out and the capability of States to offer financial support. The pandemic also affected the job market, the employment conditions and other socio-economic factors. From a worldwide perspective, according to the International Labour Office, the unemployment rate grew by 1.1 point to 6.5 % in 2020, compared to 5.4 % in 2019, and will only slowly decrease to an expected 6.3 % in 2021 and 5.7 % in 2022. *(https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_795453.pdf). Table 1.2 Employment-to-population ratio, unemployment rate.*

From a worldwide aviation perspective, large aeroplane commercial passenger flights, constituting the bulk of the aviation activity, showed an unprecedented drop in 2020 and started to recover in 2021. The closure of borders fundamentally contributed to this drop in traffic, hitting airline international traffic far more than domestic traffic. If the current positive trend of pandemic recovery continues, the domestic traffic in terms of number of airlines' commercial passengers would recover in 2022 in comparison with the 2019 level. International traffic would only recover in 2024.

4.2 Middle East Perspective

The Middle East Region has been, for years, at the forefront of aviation growth and reshaping the global long-haul markets by elevating its hub position for connecting Europe and Asia-Pacific, in line with the west to east shift of the geographical centre of gravity of air transport operations. Growth of the Region started to undergo a significant transition and slow down recently. Air transport supports 2.4 million jobs and USD 130 billion in GDP in the Middle East.

With the further movement of the air transport centre of gravity from West to East, the geographic position of the Gulf hubs will continue to offer a strategic advantage to several airlines in the Region. According to ICAO long-term traffic forecasts, total passenger traffic of the Middle East Region is expected to grow by around 4.6 per cent annually up to 2045, the second fastest growth among all Regions after Asia and Pacific. The Middle East is expected to be the fastest growing Region in terms of freight traffic growth, and is projected to grow at 5.4 per cent annually up to 2045. This increase will, in turn, drive growth in the economic output and jobs that are supported by air transport in the next decade. By 2036, it is forecasted that the impact of air transport and the tourism it facilitates in the Middle East will have grown to support 4.3 million jobs (78 per cent more than in 2016) and a USD 345 billion contribution to GDP (an increase of 166 per cent).

The Middle East has to contend with situations unique to the Region such as fluctuating oil revenues, regional conflict and overcrowded air space. In addition, airlines in this Region are now facing challenges to their business models.

The growth of air transport requires a high-performing aviation system including airlines, airports and ATM. The overall efficiency of the ATM system commensurate with the level of predicted traffic growth should be increased through improved airspace design and organization. Furthermore, this

Region is in need of political commitment to market liberalization. Although the Middle East is home to some of the world's largest hub airports, the relations between States are still mostly bound by bilateral air services agreements that limit market access to each other. *(Source: Aviation Benefits Report-2019).*

The economic and social situation in the Middle East is similar to the world outlook provided above.
The COVID-19 pandemic has battered world-wide aviation in a way that could never have been imagined and we are still trying to assess the full extent of the impact that it will have on civil aviation in the longer term. While the pandemic is not yet over, there are signs at last that vaccination offers a viable way to reduce levels of infection and a basis to realistically plan for a full reopening. Throughout the pandemic, the ICAO MID Office has continued to work collaboratively with all stakeholders to ensure that the industry is equipped to resume the flight operations.
In addition, the MID-RPTF mechanisms continued to serve as a platform for coordination and cooperation amongst all stakeholders to support States with the implementation of the CART and HLCC recommendations as well as the recovery of aviation industry in the MID Region during the COVID-19 pandemic outbreak.

During 2021 the reduction in airline passenger flights due to COVID-19 continued, subsequently resulting also in lack of capacity to transport cargo in that aircraft The same can be stated for the complexity of operations, ranging from quarantine measures imposed on flight crews, disruption in training and scheduling, and the need to transport cargo in the cabin.

Airlines continued to have a large portion of their aircraft grounded, leaving flight and cabin crew members with uncertainty about the return to normal operations.

However, the recovery during the summer of 2021 was faster than expected. This was a positive development but led to difficulties for operators to cope with the increased demand, adding complexity in the return to service of aircraft and flight crews.

Over the last five years, the global scheduled commercial international operations accounted for approximately 24.96 million departures in 2021, compared to 36.3 million departures in 2017. The MID Region shows a decrease in traffic volumes during 2021. Total scheduled commercial departures in 2021 accounted for approximately 806,274 estimated departures compared to 1.37 million departures in 2017. In terms of aircraft accidents, the MID Region had no accident during the year 2021. The 5-year average accident rate for 2017-2021 is 2.21, which is slightly below the global average rate (2.41) for the same period. The MID Region accident rate in 2020 is higher than the global accident rate, which is 2.14 accidents per million departures.

The MID Region had no fatal accident in 2021. However, the 5-year average fatal accident rate for 2017-2021 is 0.42, which is almost similar to the global average rate (0.41) for the same period. The MID Region had no fatal accidents in 2017, 2019, and 2021. However, two fatal accidents occurred in 2018 and 2020. The 2018 accident caused 66 fatalities and the year 2020 caused 176 fatalities.

In terms of Safety Management, the average EI for SSP foundation PQs for States in the MID Region is 76, 1%. Implementation of SSP is one of the main challenges faced by the State in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top SEIs. In connection with this, the RASG-MID/9 endorsed the Safety Management Implementation Team (SMIT) handbook to support MID States in the implementation of the SSP in an effective and efficient way.

Common challenges in MID Region include:

a. The political/security situation in some States, the cross-national variation in Aviation development as well as the relatively small accreditation area, impede the provision of Technical assistance, implementation of Regional projects and the achievement of the Regional safety, air navigation and Security targets;

b. The drastic reduction in traffic volumes due to the COVID-19 crisis and the new risks induced by its impacts;
c. The lack of financial and human resources in some States, combined with the complexity of administrative arrangements for the approval of duty travel, political sensitivities, etc., affected the level of attendance to the activities organized by the ICAO MID Office as well as States' support to the MIDANPIRG, RASG-MID and the MID-RASFG Work Programmes and their subsidiary bodies;
d. Low level of reporting by States (inputs to the MID-Air Navigation Report and MID Annual Safety Report, incidents, national plans, success stories, replies to State Letters, etc; and
e. Resources constraints (financial and technical personnel) in the Regional Office, combined with a high rotation rate vs. necessary time for new staff/comers to cope with the way of doing business in ICAO considering the MID Region-specific challenges.

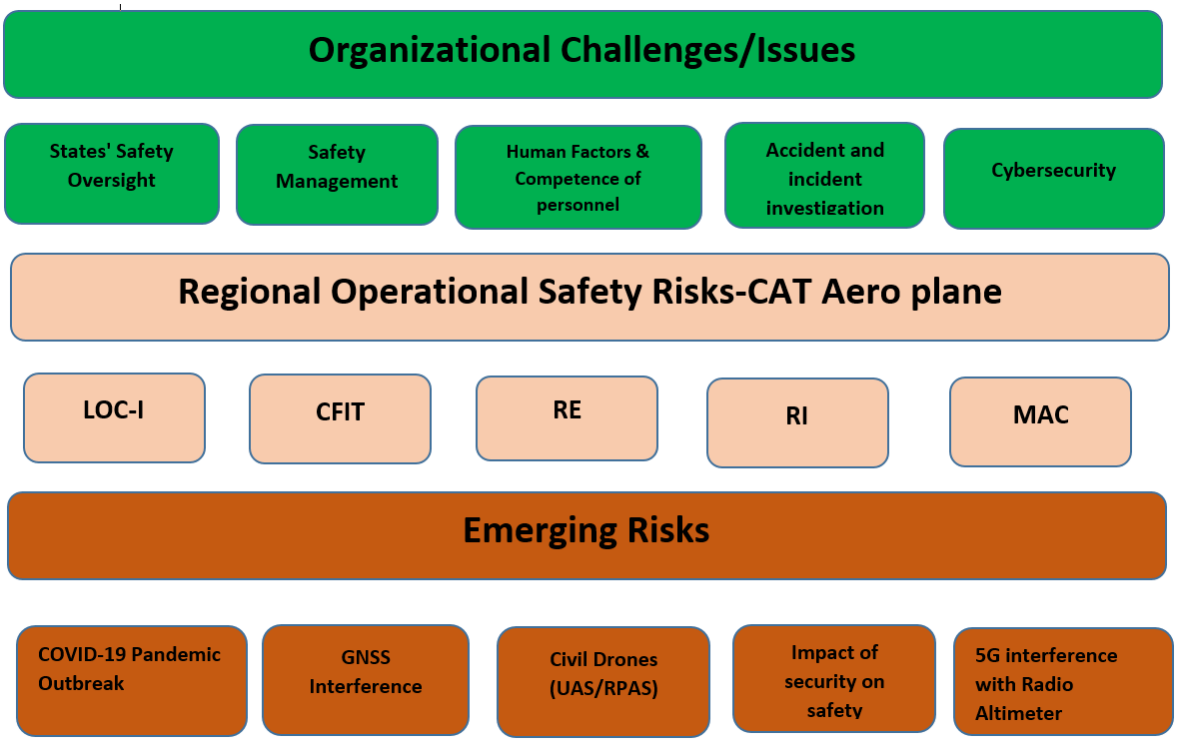
5. STRATEGIC PRIORITIES

The MID-RASP presents the safety priorities that were developed based on the ICAO GASP's including organizational challenges, operational safety risks, and emerging risks as well as region-specific issues identified by a safety risk assessment and published in MID Region Annual Safety Reports and RASG-MID activities. Additionally, the MID region's strategic approach to managing safety at the regional level is to address the region's operational issues and other safety issues in a timely manner. Therefore, the MID-RASP strategic approach would focus on organizational challenges/issues, regional operational safety risks, and emerging risks as indicated in graph 2 below.

a. Organizational challenges/issues including the States 'safety oversight, safety management, aircraft accident and incident investigation, Human factors and competence of personnel, and Cybersecurity. In terms of human factors and competence of personnel, as new technologies emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new challenges. It is equally important for aviation personnel to take advantage of the safety opportunities presented by new technologies;

b. In respect of regional operational safety risks, the focus would be on R-HRC identified in the GASP 2023-2025 Edition mainly the LOC-I, CFIT, RE, RI, and MAC; and

c. Regarding the emerging risks, the focus would be on the COVID-19 crisis and the new risks induced by its impacts, Civil drones (Unmanned Aircraft Systems), Management of security risks with safety impact, and GNSS interference, and 5G interference with Radar altimeter band frequency.



Graph 2: Safety Priorities

Therefore, the MID-RASP adopts three focus areas approach:

First focus area involves enhancing existing regional mechanisms to strengthen effective safety oversight capabilities and improve the implementation of effective safety management, in particular to:

a. Draft the MID-RASP 2023-20225 Edition and consider inputs from MID Annual Safety Report (MID ASR), MID Region safety management Roadmap, Runway Safety Go-Team; RASG-MID, MIDANPIRG, and RASFG-MID.
b. enhance coordination and communication with regional organizations including ACAO, ACI, CANSO, IATA, and other regional mechanisms, MENA ARCM, especially MENA RSOO once activated;
c. improve the scheduling and streamline the number of regional safety-related events including workshops, trainings, seminars; and
d. improve communication and sharing of safety information between States, international organizations, and industry.

In addition to the varying levels of safety oversight capabilities in the MID Region, other regional safety issues and activities have been identified and selected for inclusion in the MID-RASP. These were derived from the RASG-MID reports, analysis of USOAP data, accident and incident investigation reports, safety oversight activities over recent years from MID States, as indicated below:

a. Improve Regional Cooperation for the provision of Accident & Incident Investigation;
b. Improve implementation of ELP requirements;
c. Sharing of Safety Recommendations related to Accidents and Serious Incidents;
d. Enhance State Oversight on Dangerous Goods;
e. Need to manage the cybersecurity risks; and
f. 5G interference with Radio altimeter frequency band.

Second focus area involves addressing effectively regional operational safety risks including specific operational risks stemming from the crisis as the vision of the GASP is to achieve and maintain the goal

of zero fatalities in commercial operations by 2030 and beyond.

Third focus area involves addressing the emerging safety risks that might impact safety in the future including recovering from the COVID-19 crisis without adversely affecting the high level of safety performance GNSS outages/vulnerability, civil drones to ensure safe operation of unmanned aircraft system (UAS), impact of security on safety, and 5G interference with Radar Altimeter frequency band. Additionally, for emerging risks, SEIs/safety actions would be developed and covered under the focus areas (organizational challenges and Regional operational safety risks).

5.1 Organizational Challenges/Issues

Organizational challenges are systemic issues which take into consideration the impact of organizational culture, and policies and procedures on the effectiveness of safety risk controls. Organizations include entities in a State, such as the civil aviation authorities (CAAs) and service providers, such as operators of aeroplanes, ATS providers and operators of aerodromes. Organizations should identify hazards in systemic issues and mitigate the associated risks to manage safety. A State's responsibilities for the management of safety comprise both safety oversight and safety management, collectively implemented through an SSP.

It is crucial that States' safety oversight capabilities and safety management, and aviation infrastructure should keep pace with these regional safety issues.

Therefore, for the triennium of 2023-2025, the MID Region should continue to focus its efforts in addressing the following top Regional organizational issues:

a. Lower USOAP EI scores, especially States with EI below 60% as well as AIG, ANS, AGA, and OPS areas;
b. Slow pace of SSP development & implementation including the NASP development, as well as understanding of newer safety management and performance based concepts;
c. Slow pace of SMS acceptance and surveillance;
d. Slow pace of developing Risk Management framework to support decision-making and deploy the resources needed to mitigate risks effectively;
e. Improve Regional Cooperation for the Provision of Accident & Incident Investigation;
f. Enhance State Oversight on Dangerous Goods;
g. Support States related to Human factors and Competence of Personnel
h. Support States to manage the cybersecurity risks;
i. Management of security risks with safety impact;
j. Slow pace of implementation of RASG-MID conclusion/ MID-RASP SEIs/safety actions and tools to mitigate identified safety risks and safety deficiencies;
k. Insufficient resources and expertise to manage and collect safety data and safety information on a State level, and no formal mechanisms in place that allow for the sharing and benchmarking of information at the Regional level; and
l. Increasing risks associated with airspace structure including ATS networks and associated airspaces to accommodate the traffic flow in safe and efficient manner.

5.1.1 Strengthening of States' Safety Oversight Capabilities

Safety oversight is defined as a function by means of which States ensure effective implementation of the safety-related SARPs and associated procedures contained in the Annexes to the Convention on International Civil Aviation and related ICAO documents. States have overall safety oversight responsibilities, which emphasize a State's commitment to safety in respect of the State's aviation activity. An individual State's responsibility for safety oversight is the foundation upon which a safe global air transport system is built. States that experience difficulties in carrying out safety oversight functions can impact the state of International Civil Aviation.

USOAP-CMA audits had identified that States inability to effectively oversee aviation operations which remains a global concern. In respect of MID Region, the regional average overall Effective Implementation (EI) (13 out of 15 States have been audited) is 74, 67 %, which is above the world average 68.68 % (as of 29 May 2022). Three (3) States are currently below EI 60%.

All eight areas have an EI above 60%. However, the areas of AIG, AGA and ANS still need more improvement. Regarding the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (62.39%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (58. 89%) EI.

Moreover, the effective implementation in certification, surveillance, and resolution of safety concerns need to be improved.

Key Actions completed/planned
a. Conducted technical assistance and NCLB mission activities to States
b. Capacity building activities
c. Developed and implemented a specific NCLB plan of actions for prioritized States according to established criteria
d. Established MENA RSOO to assist States and start operations

5.1.2 Improve Regional Cooperation for the Provision of Accident & Incident Investigation

In respect of MID Region, the regional average overall Effective Implementation (EI) (13 out of 15 States have been audited) is 74.67 %, which is above the world average 68.68 % (as of29May 2022). Three (3) States are currently below EI 60%. Regarding the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (60.08%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%) EI. All eight areas have an EI above 60%. However, the area of AIG still need more improvement.

Key Actions completed/planned
a. AIG Strategy in the Provision of AIG Functions endorsed by the DGCA-MID/4
b. MENA AIG Regional Cooperation Mechanism (ARCM) endorsed by the DGCA meeting in Kuwait
c. Organized AIG capacity building activities
d. Draft MENA ARCM implementation action plan endorsed by the RSC/7 e. MENA ARCM Establishment and Activation

5.1.3 Sharing of Safety Recommendations related to Accidents and Serious Incidents

a. The Safety recommendations are the utmost results of investigation or safety studies conducted by States. In accordance with the provisions of Annex 13, a State shall send to ICAO a copy of the Final Report on its investigations into accidents and serious incidents involving aircraft of a maximum mass of over 5,700 kgs.

b. A safety recommendation is defined as a proposal by an accident investigation authority, based on information derived from an investigation. The intended purpose of a safety recommendation is the prevention of accidents or incidents, and the reduction of the consequences of such occurrences.

Key Actions completed/planned
a. Establishment of an Ad-hoc Action Group championed by Saudi Arabia and UAE
b. The Questionnaire on establishing safety recommendations platform developed and circulated to MENA ARCM Member States. The questionnaire analysis has been shared with MENA ARCM/2 meeting

5.1.4 Improve Implementation of ELP Requirements

The decision to address language proficiency requirements (LPRs) for pilots and air traffic controllers was first made by the 32nd Session of the ICAO Assembly in September 1998 as a direct response to several fatal accidents, including one that cost the lives of 349 persons, as well as to previous fatal accidents in which the lack of proficiency in English was identified as a contributing factor. The intent was to improve the level of language proficiency in aviation worldwide and reduce the communication breakdowns caused by a lack of language skills. LPRs have now moved beyond implementation (Assembly Resolution A38-8 refers), entering a phase of post implementation.

Key Actions completed/planned
a. Development and dissemination the Questionnaire on ELP
b. Analysis of the survey results and was reviewed by the RSC/7

5.1.5 Enhance State Oversight on Dangerous Goods

The data analysis results of the USOAP-CMA OPS area showed that Dangerous Goods is one of the unsatisfactory PQs in operations for some states in the region. The identified issues highlighted in the analysis report as indicated below:

a. States have not implemented an effective system for safety oversight of the various entities involved in the transport of dangerous goods, including shippers, packers, cargo handling companies and air operators. Regarding the latter, some States, the authorities have not effectively reviewed the dangerous goods procedures of air operators, contained in the operations and ground handling manuals, mostly due to a lack of qualified dangerous goods inspectors.
b. Some States have not kept records relating to dangerous goods-related approvals; and
c. In addition, in some States, dangerous goods inspector procedures have not been established and implemented.

Safety actions have been planned to be taken during the year 2020 and 2021. However, due to the COVID-19 pandemic some of the ICAO MID Office work Programme activities have been postponed for 2022 including Dangerous Goods workshop.

Key Actions completed/planned
a. Dangerous Goods webinar
b. Dangerous Goods Capacity building activities

5.1.6 Improve the Safety Management

Despite the fact that the last years have clearly brought continued improvements in safety across every operational domain, the latest accidents and serious incidents and the massive worldwide impact of the COVID-19 pandemic on the aviation system underline the complex nature of aviation safety and the significance of addressing human and organizational factor aspects.

Effective safety management including robust risk management policies and processes are essential in dealing with the multiple impacts of the pandemic on the aviation system, both at authority and organization level. This is supported by ICAO Annex 19 on the reporting, analysis and follow-up of occurrences in civil aviation and when applicable, by flight data monitoring (FDM) requirements.

Therefore, States should build upon fundamental safety oversight systems to fully implement SSPs according to Annex 19, States shall require that applicable service providers under their authority implement an SMS. The SMS enables service providers to capture and transmit safety information which contributes to safety risk management. In this context, the role of the State evolves to include the establishment and achievement of safety performance targets as well as effective oversight of its service providers' SMS. Individual States should provide safety information derived from their SSPs to their respective RASGs to contribute to Regional safety risk management activities. The average EI for SSP foundation PQs for States in the MID Region is 76, 18%.

An SSP requires increased collaboration across operational domains to identify hazards and manage risks. Aviation authorities and organizations should anticipate new emerging threats and associated challenges by developing SRM principles.

Implementation of SSP is one of the main challenges faced by the State in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top Safety Enhancement Initiatives (SEIs). In connection with this, the RSC/7 endorsed the safety management Roadmap and established the Safety Management Implementation Team (SMIT). Furthermore, the RASG-MID/9 endorsed the SMIT handbook to support MID States in the implementation of the SSP in an effective and efficient way

ICAO launched SSP Implementation Assessments (SSPIAs) phase 2 under the USOAP CMA. The assessments are based on a qualitative assessment of a State's progress in implementing a State Safety Programme (SSP), using SSP-related PQs.
The PQs are reflective of Annex 19- Safety Management and the Safety Management Manual (Doc 9859).

Unlike the USOAP CMA's audit activities, SSPIAs are linked to applicable SSP components rather than critical elements (CEs). The SSP components are:

1. State safety policy, objectives and resources;
2. State safety risk management;
3. State safety assurance; and
4. State safety promotion

The SSP assessment covers 8 areas as indicated below:

1. SSP general aspects (GEN);
2. safety data analysis general aspects (SDA);
3. personnel licensing and training (PEL);
4. aircraft operations (OPS);
5. airworthiness of aircraft (AIR), approved maintenance organization (AMO) aspects only;
6. air navigation services(ANS), air traffic services provider (ATSP) aspects only;
7. aerodromes and ground aids (AGA); and
8. aircraft accident and incident investigation (AIG).

In 2020, ICAO developed guidance supporting the determination of maturity levels for each SSP-related PQ. The SSP-related PQs, complemented by the maturity level matrices for each of the SSP audit areas, are available in the CMA Library of the USOAP CMA Online Framework (OLF) at www.soa.icao.int (restricted access). These matrices describe the level of progress for each element of the SSP, which can be described as:

- Not present and not planned;
- Not present but being worked on;
- Present; or
- Present and effective.

ICAO will use the SSP maturity level matrices for the scheduled SSPIAs under Phase 2, which will begin in 2021. This phase of assessments will utilize the maturity level matrices to provide a more detailed, quantitative measurement of a State's progress in the implementation and maintenance of its SSP. Two assessment missions have been planned for the year 2022.

Key Actions completed/planned
a. Conducted continuously SSP/SMS capacity building activities
b. Development of the MID Region Safety Management Implementation Roadmap
c. Establishment of the Safety Management Implementation Team (SMIT) and SMIT Handbook endorsed by RASG-MID/9
d. Establishment the MENA RSOO to support States in the expeditious implementation of SSP
e. Guidance material development
f. Technical Assistance missions

5.1.7 Certification of International Aerodromes

All eight areas have an EI above 60%. In respect of the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (60.08%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%) EI. However, the areas of AGA still need more improvement.

Key Actions completed/ planned
a. Conducted Aerodrome Safety Management Workshops
b. Wildlife hazard Management and Control Workshop
c. RSA on Wildlife Management and Control Regulatory Framework & Guidance Material.
d. Certification of Annex 14 training courses
e. GRF training courses

5.1.8 Establishment of Runway Safety Teams at International Airports

All eight areas have an EI above 60%. In terms of the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (60.08%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%) EI. However, the areas of AGA still need more improvement

Key Actions completed/planned
a. Runway Safety Go-Team Missions
b. Support States to implement the Global Reporting Format Methodology through capacity building activities

5.1.9 Human Factors and Competence of Personnel

As the aviation system changes, it is imperative to ensure that human factors and the impact on human performance are taken into account, both at service provider and regulatory levels.

Human factors and human performance are terms that are sometimes used interchangeably. While both human factors and human performance examine the capabilities, limitations and tendencies of human beings, they have different emphases:

- Human Factors (HF) – this term focusses on why human beings function in the way that they do. The term incorporates both mental processes and physical ones, and the

interdependency between the two.

- Human Performance (HP) – the output of human factors is human performance. This term focusses on how people do the things that they do.

As new technologies emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new challenges. CRM has been identified in the MID ASR as most important human factors issue in the domain of commercial air transport and safety actions would be identified and developed. In addition, Team Resource Management (TRM) was introduced into ATC following the success achieved with Crew Resource Management (CRM) in the airline community enhancing teamwork practices. The practice is applied within virtually every airline with training given to pilots and other operational staff Within the last decade in ATM there have been numerous advances in widespread acceptance of SMS under the guidance of ICAO. ICAO has now mandated the use of SMS Manual Doc 9859 to standardize the approach to safety. TRM as defined by ICAO is an integral component of SMS under human factor

Key Actions completed/planned
a. CRM and TRM workshops/webinars
b. FRMS workshops/webinars

5.1.10 Cybersecurity Resilience

The global civil aviation ecosystem is accelerating towards more digitalization. This implies that any exchange of information within any digital workflow of the aviation community needs to be resilient to information security threats which have consequences on the safety of flight or the availability of airspace and beyond. Aware of the complexity of the aviation system and of the need to manage the cybersecurity risk the MID Region needs to consider and address information security risks in a comprehensive and standardized manner across all aviation domains. In addition, it is essential that the aviation industry and civil aviation authorities share knowledge and learn from experience to ensure systems are secure from individuals/organizations with malicious intent.

Key Actions completed/planned
a. Cybersecurity symposium/workshops
b. Development of MID Region Cybersecurity Action Plan

5.2 Regional Operational Safety Risks

Operational safety risks arise during the delivery of a service or the conduct of an activity (e.g. operation of an aircraft, airports or of air traffic control). Operational interactions between people and technology, as well as the operational context in which aviation activities are carried out are taken into consideration to identify expected performance limitations and hazards. The RASG-MID utilizes available safety data and information to determine the region's operational safety risks which include G-HRCs and additional regional operational safety risks.

5.2.1 Address Operational Safety Risks in Commercial Air Transport (CAT) Aeroplane Operations above 5,700 kgs

In terms of an aircraft accident, the MID Region had no accident during the year 2021. The 5-year average accident rate for 2017-2021 is 2.21, which is slightly below the global average rate (2.41) for the same period The MID Region accident rate in 2020 is higher than the global accident rate, which is 2.14 accidents per million departures.

The MID Region had no fatal accident in 2021. However, the 5-year average fatal accident rate for 2017-2021 is 0.42, which is almost similar to the global average rate (0.41) for the same period. The MID Region had no fatal accidents in 2017, 2019, and 2021. However, two fatal accidents occurred in 2018 and 2020. The 2018 accident caused 66 fatalities and the year 2020 caused 176 fatalities.

The GASP 2023-2025 Edition identifies the G-HRCs as LOC-I, CFIT, MAC, RE and RI. In the MID Region in 2017-2021 the topmost frequent accidents related to the loss of control-inflight and runway safety, which includes RE and ARC during Landing. In terms of fatality risk, the fatal accidents for the period 2017- 2021 were attributed to LOC-I.

Therefore, for the triennium of 2023-2025, the MID Region should continue to focus its efforts on mitigating and minimizing occurrences related to the R-HRCs for this time period, namely:

1. Loss of Control-In Flight (LOC-I);
2. Runway Safety (RS); mainly (RE and ARC during landing);
3. Runway Incursion (RI);
4. Controlled Flight into Terrain (CFIT); and
5. Mid-Air Collision (MAC).

MAC is established as a top risk for the MID region based on the existing data driven approach used to determine the R-HRCs though there is no fatal accident during the last five years. Therefore, there is a need for the MID region to build up its capability to collect and analyze safety data pertaining to MAC.

In addition, safety issues have been identified in the MID ASR and need to be considered by the States while developing their NASP as well as the industry as indicated at **Appendix B.**

5.2.2 Aircraft Upset in Flight (Loss of Control-Inflight)

Aircraft upset or loss of control inflight is the most common accident outcome for fatal accidents in CAT aero plane operations. It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or intended aircraft flight parameters, regardless of whether the flight crew realized the deviation and whether it was possible to recover or not. It also includes the triggering of stall warning and envelope protections. During 2017-2021 aircraft upset, or loss of control contributed to one fatal accident involving MID Region aeroplane.

Key Actions completed/Planned
a. Organized and promoted training provisions on recovery from upset scenarios (UPRT workshops)
b. Assistance to States to implement the SSP/SMS through workshops/trainings
c. Development and publication of RSAs related to the LOC-I Airplane States Awareness (ASA) – Low Speed Alerting Standard Operating Procedures Effectiveness and Adherence Airplane States Awareness (ASA) –Training –Flight Crew training (Approach to stall & Up set recovery) Verification and Validation
d. Construction, approval and implementation of RNAV(GNSS) / RNP-AR procedures to all runways not currently served by precision approach procedure
e. Develop guidance material/share best practices on Ground Handling Service Provider Certification Process
f. Guidance material on flight crew proficiency
g. Advisory Circular: Mode Awareness and Energy State Management Aspects of Flight Deck Automation

5.2.3 Runway Excursion

Runway excursion covers materialized runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties in maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during

landing. During the period 2017-2021, Runway Excursions and abnormal runway contact accidents and serious incidents mainly occurred in the landing phase of flight.

Key Actions completed/planned	
a.	Conduct of assistance missions by the Runway Safety Go-Team (RST)
b.	Establishment of a MID-FPP to support states on the effective implementation of the PBN procedures
c.	Promoted operational improvements and safety enhancements associated with the implementation of ASBU modules, e.g. PBN, CDO. Implementation of Performance-Based Navigation (PBN); particularly Approaches with Vertical Guidance (APV)
d.	Assistance to States to implement the SSP/SMS
e.	RSA on Wildlife Management and Control Regulatory Framework & Guidance Material
f.	Support States to implement the Global Reporting Format (GRF) Methodology through Webinar/ Workshops/Training
g.	Guidance material on un-Stabilized Approach
h.	MID Region Action Plan/Milestones on the Global Reporting Format (GRF) Implementation.

5.2.4 Runway Incursion (RI)

A Runway Incursions refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection. Their accident outcome is runway collisions. While there were no fatal accidents or accidents involving MID States operators in the last years involving runway collision, the risk of the reported occurrence demonstrated to be very real. In addition to this, MID States should provide further data analysis regarding runway incursion to identify the root causes and associated safety issues.

Key Actions completed/planned	
a.	Conduct of assistance missions by the Runway Safety Go-Team (RST)
b.	Assistance to States to implement the SSP/SMS

5.2.5 Controlled Flight into Terrain (CFIT)

It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences, which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc. There was no fatal accident involving MID States operators during this period. This key risk area has been raised by some MID States and in other parts of the world that make it an area of concern. However, additional data is needed for further analysis to identify the underlying safety issues.

Key Actions completed/planned	
a.	Establishment of MID-FPP to support states on the effective implementation of the PBN procedures
b.	Promoted operational improvements and safety enhancements associated with the implementation of ASBU modules; e.g., PBN, CDO, CCO. Implementation of Performance-Based Navigation (PBN); particularly Approaches with Vertical Guidance (APV)
c.	Assistance to States to implement PBN routes for en-route and terminal airspace through meeting and workshops/seminars
d.	Assistance to States to implement the SSP/SMS

e.	Development and publication of RSAs
f.	Construction, approval and implementation of RNAV (GNSS) / RNP-AR procedures to all runways not currently served by precision approach procedure
g.	Guidance for designing RNP Approach

5.2.6 Mid-Air Collision (MAC)

Refers to the potential collision of two aircraft in the air. It includes direct precursors such as separation minima infringements, genuine TCAS resolution advisories or airspace infringements. Although there have been no aero-plane mid-air collision accidents in recent years within the MID States. This key risk area has been raised by some MID States specifically in the context of the collision risk posed by military aircraft operating in Gulf area over the high seas which are not subject to any coordination with related FIRs for airborne operation. This is one specific safety issue that is a main priority in this key risk area. However, additional data is needed for further analysis to identify the underlying safety issues.

Key Actions completed/planned	
a.	Assistance to States to implement the SSP/SMS
b.	Establishment of Near Mid-Air Collision (NMAC) Group to carry out further analyses of the reported NMAC incidents and provide feedback to the ATM SG and ASRG.
c.	Conduct workshop to implement Civil-Military cooperation
d.	Conduct seminar on raising awareness among stakeholders related to the potential risk of MAC over high seas

5.3 Emerging Risks

Emerging safety issues are risks that might impact Safety in the future. These may include a possible new technology, a potential public policy, a new concept, a business model or idea that, while perhaps an outlier today, could mature and develop into a critical mainstream issue in the future or become a major trend in its own right. Therefore, for the triennium of 2023-2025, the MID Region should continue to focus its efforts on mitigating and minimizing the safety impact of emerging risks for this time period, namely:

a. Support States on establishing the UAS regulatory framework.
b. Decrease the GNSS interference impact.
c. support on maintaining collectively the pre-pandemic high aviation safety level throughout the recovery phase and improving safety post-recovery due to the drastic reduction in traffic volumes due to the COVID-19 crisis and the new risks induced by its impacts.
d. Management of security risks with safety impact.
e. 5G interference with Radio Altimeter frequency band.

The emerging risks SEIs and safety actions will be covered under organizational issues and operational safety risk SEIs.

5.3.1 GNSS interference

GNSS interference, including intentional and unintentional signal interference, has been identified as a major safety issue.

Flight Data Exchange analysis showed that the majority of GPS Signal Lost was detected within or in vicinity of Turkish airspace (Ankara FIR and Istanbul FIR), and in Eastern Mediterranean area. Compared to previous analysis, the identified hot spots have been expanded into entire Anatolian peninsula, including Istanbul FIR.

The GNSS interference SEI /safety actions covered under CFIT SEI.

Key Actions completed/t planned
a. RSA on GNSS vulnerability has been developed and published
b. Safety data analysis shared by IATA
c. Raise awareness on the potential impact of GNSS interference on the aviation during the Civil-Mil Workshop
d. Urge States to follow the reporting procedure agreed by MIDANPIRG Conclusion 19/4 when needed

5.3.2 COVID-19 Pandemic Outbreak- Safe return to operations

It was noted that the rapidly evolving COVID-19 crisis heavily affected all aspects of civil aviation. The urgent need to coordinate all efforts to reduce the risks of the spread of COVID-19 by air transport and to protect the health of air travellers and aviation personnel, while maintaining essential aviation transport operations and ensuring an orderly return to normal operations in due course was underlined. The COVID-19 pandemic resulted in an extreme reduction in operations that began in late March 2020. Recovering from this crisis without adversely affecting the high level of safety performance is proposed as a strategic priority.

In addition to the specific operational risks stemming from the crisis, there are currently a substantial number of exemptions and extensions granted; however, the use of flexibility provisions is diminishing. The aviation safety issues arising as a result of the pandemic have been identified and those safety issues that were considered to constitute the highest risk to the aviation system were assessed and resulted in a number of safety interventions and the publication of guidance material including ICAO CART documents to support stakeholders with the management of the specific risks posed by the crisis.
The UAS SEIs /safety actions covered under MAC SEI.

Key Actions completed/planned
a. Establishment of MID Region Recovery Plan Task Force (MID-RPTF) to assist in developing regional restart and recovery planning
b. MID-RPTF activities
c. Conduct of teleconferences with DGCAs and Regional international organization
d. Development of MID CART Regional Implementation Roadmap
e. Continuous communication and coordination with MID States;
f. Development of a COVID-19 web page to communicate to States and all stakeholders the guidance material issued by ICAO, WHO, international organizations, States best practices and
g. Deployment of iPacks
h. Capacity building activities

5.3.3 Ensure the safe operations of UAS (drones)

The number of drones at the global level has increased. Available evidence demonstrates an increase of drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk. The civil aviation authority is responsible for, inter alia, ensuring aviation safety and protecting the public from aviation hazards. Operators of aircraft, whether manned or unmanned, are likewise responsible for operating safely. The rapid rise of UAS raises new challenges that were not considered in historic aviation regulatory frameworks. Before devising any regulatory framework for UAS operations, the regulator should understand and assess the UAS situation in its State.

UA operations will involve stakeholders' familiar with aviation as well as many who are not. It is important to include these stakeholders from the beginning when developing the UAS regulations. Their early involvement will ensure that the regulations appropriately address the needs of these groups while also serving to educate them on expectations and what is feasible.

Therefore, safety actions would be developed to support States to develop their national regulations in order to ensure safe operation of UAS.

Key Actions completed/planned
a. UAS iPack deployment
b. Drones symposium
c. Conduct survey on States UAS regulatory framework

5.3.4 Management of security risks with safety impact

The crash of flight MH17 immediately raised the question why the aero plane was flying over an area where there was an ongoing armed conflict. Similar events had occurred in the MID region. Thus, military or terrorist conflicts may occur in any State at any time and pose risks to civil aviation. This is why it's important for governments, aircraft operators, and other airspace users such as air navigation service providers (ANSPs), to work together to share the most up-to-date conflict zone risk-based information possible to assure the safety of civilian flights.

Furthermore, flying over or nearby conflict zones is related to both security and safety management and requires an integrated risk management process, as proposed by ICAO in the second edition of the Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones (Doc 10084) as an activity for further development. Several steps have to be taken, as part of the continuous risk assessment cycle including: the collection of information and intelligence; the subsequent threat analysis; the security risk assessment; the hazard identification; the safety risk assessment; the determination of the acceptable risk level and lastly information sharing. Each mitigating action should be accompanied with the identification of (new) hazards as a result of unintended consequences of the risk assessment mitigating actions.

The crash of flight MH17 shows, safety and security are intertwined. To manage the risks related to flying over conflict zones and other risks at the interface of safety and security as good as possible, closer cooperation between both worlds is necessary.

Key Actions taken/planned
a- Circulate ICAO Doc 10084 Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones
b- Organize seminar/Symposium to exchange experiences and good practices on assessing the risks and sharing of information related to the overflying of conflict zones in coordination with RASFG-MID and MIDANPIRG
c- Encourage States to issue NOTAMs to share threats information emanated from conflict zones within their airspaces.

5.3.5 5G Operation on Radio Altimeter

Radar altimeters (RA), operating at 4.2-4.4 GHz, are the only sensors onboard a civil aircraft which provide a direct measurement of the clearance height of the aircraft over the terrain or other obstacles (i.e. the Above Ground Level - AGL - information).

The RA systems' input is required and used by many aircraft systems when AGL is below 2500 ft. Any failures or interruptions of these sensors can therefore lead to incidents with catastrophic outcome, potentially resulting in multiple fatalities. The radar altimeters also play a crucial role in providing

situational awareness to the flight crew. The measurements from the radar altimeters are also used by Automatic Flight Guidance and Control Systems (AFGCS) during instrument approaches, and to control the display of information from other systems, such as Predictive Wind Shear (PWS), the Engine-Indicating and Crew-Alerting System (EICAS), and Electronic Centralized Aircraft Monitoring (ECAM) systems, to the flight crew.

There is a major risk that 5G telecommunications systems in the 3.7–3.98 GHz band will cause harmful interference to radar altimeters on all types of civil aircraft- including commercial transport airplanes; business, regional, and general aviation airplanes; and both transport and general aviation helicopters. If there is no proper mitigation, this risk has the potential for broad impacts to aviation operations in the United States as well as in other regions where the 5G network is being implemented next to the 4.2-4.4 GHz frequency band.

List of potential equipment failures:
Auto land functions, EICAS/ECAM, False or missing GPWS alert, Unreliable instrument Indications, and Abnormal behaviors in Automatic Flight Systems.

The 5G interference with Radar Altimeter SEIs/safety actions covered under CFIT SEI.

Key Actions taken/planned
a- Develop a guidance material on safeguarding measures to protect Radio Altimeter from potential harmful interference from 5G Operation
b- Conduct a Webinar addressing the matter to raise awareness and promote the guidance material developed by the RADALT AG.

PART-II. IMPLEMENTATION

6. SAFETY IMPLEMENTATION

6.1 Safety Monitoring and Implementation

This section presents an outline of the safety performance indicators reflecting the MID Region safety strategic priorities in the area of safety. The RASG-MID would use the indicators listed in the MID Region SPMM at **Appendix C** to measure safety performance and monitor each regional safety target. Furthermore, the MID Region SPMM includes six (6) Goals in line with GASP 2023-2025 Edition.

The RASG-MID would continuously monitor the implementation of the identified SEIs in the MID-RASP and measure safety performance of the regional civil aviation system, to ensure the intended targets are achieved, using the MID Region SPMM to this plan. Therefore, for each Goal established in the MID Region SPMM, identified SEI(s) be mapped to it including their respective actions.

MID region safety indicators and targets were aligned with the 2023-2025 GASP goals and targets as relevant in the MID Region. A MID Region Annual safety report would be annually published to provide stakeholders with relevant up-to-date information on the progress made in achieving the regional safety goals and targets, as well as the implementation status/progress of the SEIs.

In the event that the regional safety goals and targets are not met, the causes would be addressed and presented to stakeholders. If RASG-MID identifies critical operational safety risks, reasonable measures would be taken to mitigate them as soon as practicable, possibly leading to an earlier revision of the MID-RASP by SEIG.

The monitoring of safety performance and its enhancement is achieved through identification of relevant Goals and Safety Indicators, taking into consideration the GASP 2023-2025 and regional specific objectives and priorities, as well as the adoption and attainment of Safety Targets with a specific timeframe.

The MID Region Safety performance measurement and monitoring includes the following Goals:

Aspirational Goal: Zero fatality by 2030, the GASP aspirational goal of ‘zero fatalities in commercial operations by 2030 and beyond’.

Goal 1: Achieve a Continuous Reduction of Operational Safety Risks: This is related to2023-2025 GASP Goal 1. This is aligned with the high-level ICAO safety metrics, thereby facilitating comparison of MID Region performance with global averages. Indicators related to risk areas are identified through the MID Region risk assessment methodology and described in the MID Region ASR. These ‘operational’ safety indicators would continue to be monitored through the MID Region ASR.

Goal 2: Strengthen States’ safety oversight capabilities: This is related to 2023-2025 GASP Goal 2. The Monitoring will be based on the available data published through USOAP-CMA (OLF) and iSTARS. The Regional average overall Effective Implementation (EI) in the MID Region (13 out of 15 States have been audited) is 74.67 %, which is above the world average 68.68% (as of 29 May 2022). Three (3) States are currently below EI 60%. The objective is aligned with the 2023-2025 GASP requiring all States to improve their score for the effective implementation (EI) of the critical elements (CEs) of the State’s safety oversight system (with focus on priority PQs) as follows: a) by 2024 -75 per cent; b) by 2026 – 85 per cent EI score; c) by 2030 EI Score – 95 per cent EI score.
Goal 3: Implement effective State safety Programmes (SSPs): This is related to 2023-2025 GASP. Related indicators will mainly be based on data available through ICAO iSTARS and USOAP-CMA (OLF). Feedback provided by Member States and Regional organizations would also be considered.

MID Office will in addition collect relevant documentation and information from States (SSP and NASP). The objective is aligned with the 2023-2025 GASP requiring all States to implement the foundation of an SSP by 2023, all States to publish a national aviation safety plan (NASP) by 2024, all States to work towards an effective SSP with maturity levels – Present by 2025, and Present and Effective by 2028.

Goal 4: Increase Collaboration at the Regional Level: This is related to 2023-2025 GASP. Related indicators will mainly be based on data available through ICAO iSTARS and USOAP-CMA (OLF). Feedback provided by Member States would be also considered. The objective is aligned with the 2023-2025 GASP requiring all States to achieve a positive safety oversight margin, and an effective SSP, to actively lead RASGs' safety risk management activities, by 2025.

Goal 5: Expand the use of Industry Programmes and safety information sharing networks: This is related to 2023-2025 GASP. Related indicators will mainly be collected from IATA and other international and regional organizations. Feedback provided by Member States would also be considered. The objective is aligned with the 2023-2025 GASP requiring all States that do not expect to meet GASP Goals 2 and 3 to seek assistance to strengthen their safety oversight capabilities or facilitate SSP implementation, all States to contribute information on operational safety risks, including SSP safety performance indicators regional aviation safety group (RASG) by 2025, and all regions to publish an updated regional aviation safety plan (RASP), in line with the 2023–2025 edition of GASP by 2023.

Goal 6: Ensure the appropriate infrastructure is available to support safe operations: This is related to 2023-2025 GASP Goal 6. Related indicators will mainly be based on data available through ICAO iSTARS. Feedback provided by Member States would also be considered. The objective is aligned with the 2023-2025 GASP requiring all States to implement the air navigation and airport core infrastructure including aerodrome safety by 2025.

6.2 Communication of Progress to RASG-MID and Regional Stakeholders

A MID Region Annual safety report would be annually published to provide stakeholders with relevant up-to-date information on the progress made in achieving the regional safety goals and targets, as well as the implementation status of the SEIs. In addition, the abovementioned information would culminate in a report on progress of implementation of the MID-RASP SEIs and their respective actions as well as in achieving the regional safety goals and targets; would be presented at every SEIG and RASG-MID meetings as well as safety seminars. The progress report should cover at least the following aspects:

a. Brief overview of the overall implementation of the MID-RASP;
b. Analysis on delay/ challenges encountered in implementation of SEIs and their respective actions; and
c. If regional safety goals and targets are not met, causes would be addressed and presented to relevant stakeholders.

7 SAFETY ACTIONS

This chapter addresses system-wide problems that affect aviation as a whole including the SEIs and their respective actions. In most scenarios, these problems are related to organizational processes and procedures, regional operational safety risks, and emerging risks. The safety actions in this chapter are driven principally by the need to maintain or increase the current level of safety in the aviation sector for the region.

This chapter also facilitates the identification of SEIs and their respective actions relevant for each Goal established in the MID Region Safety performance measurement and monitoring as follows:

- **Goal 1:** Achieve a continuous reduction of operational safety risks.
- **Goal 2:** strengthen States safety oversight capabilities.
- **Goal 3:** Implementation of effective State safety Programmes.
- **Goal 4:** Increase collaboration at the regional level.
- **Goal 5:** Expand the use of industry Programmes and safety information sharing networks.
- **Goal 6:** Ensure the appropriate infrastructure is available to support safe operations.

7.1 Organizational Challenges/issues

7.1.1 Goal 2: Strengthen States' Safety Oversight Capabilities

The States safety oversight capabilities remains an issue mainly for AIG, AGA, ANS, and OPS areas. The lack of effective oversight remains an issue and the difficulties experienced by some authorities in properly discharging their oversight responsibilities is a concern also in the light of the size, scope and complexity of the aviation industry that some of them oversee.
Furthermore, while a number of CAAs have reached a suitable and stable level of maturity, certain continue to underperform and/or struggle in achieving sustainable improvements. Most notably, while progress has been noted in the implementation of Authorities' management systems, effective oversight of undertakings' safety management systems continues to be an area of concern in several domains.

7.1.1.1 G2-SEI-01: Strengthening States' Safety Oversight Capabilities

Target: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C.**

Rationale:
The CEs are essentially the safety defense tools of the State Safety Oversight system needed for the effective and sustainable implementation of a safety-related policy and associated procedures. The effective implementation of the CEs is an indication of a State's capability for safety oversight. States must establish CE-1 through CE-5 prior to the implementation of CE-6 through CE-8 in order to provide effective safety oversight and safety management. An individual State's responsibility for safety oversight is the foundation upon which a safe global air transport system is built. States that experience difficulties in carrying out safety oversight functions can impact the state of International Civil Aviation.

States should work to continually improve their effective implementation of the eight CEs of the State's safety oversight system in all relevant areas, as appropriate to their aviation system complexity. Through collaborative efforts, the level of effective implementation of the CEs of a State's safety oversight system can increase, particularly in those States where a State faces shortages of human, financial or technical resources.

The below elements are considered enablers of a robust safety oversight system, expected to be in place according to the requirements in force:

1. ability and determination to conduct effective oversight;
2. ability to identify risks through a process to collect and analyze data;
3. ability to mitigate the identified risks in an effective way, implying measurement of performance and leading to continuous improvement;
4. willingness and possibility to exchange information and cooperate with other CAAs;
5. ability to ensure the availability of adequate personnel, where 'adequate' includes the notion of sufficient training and proper qualification; and
6. focus on the implementation of effective management systems in industry, wherever required by the regulations in force.

What we want to achieve:
A robust oversight system across MID Region, where each CAA is able to properly discharge its oversight responsibilities, with particular care to exchange of information and cooperation with other

CAAs and to the implementation of management systems in all organizations, as well as to ensure the availability of adequate personnel in CAAs. In addition, to Support MID Region States' civil aviation authorities to Strengthen States' Safety Oversight Capabilities and increase progressively the USOAP-CMA EI results.

How we monitor improvement:
Significant increase of the number of States with an EI above 60% and implementing risk-based oversight.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: A1-A2-A3-A4-A5-A6-A7
A1- Conduct Capacity Building Activities to promote effective implementation of SARPs,
A2- Conduct technical assistance activities and NCLB missions to States with a focus on ANS, AGA, AIG, and OPS areas.
A3- Develop and implement a specific NCLB plan of actions for prioritized States
A4- Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course on Aerodrome Inspection) (Action addressed under **G6-SEI-01 A5)**
A5- Develop guidance material to assist MID Region States in the issuance of exemptions related to temporary deviations from standards
A6- Develop guidance material to support States for the conduct of remote surveillance
A7- Develop guidance material on the enhancement of understanding the concept of judicial enforcement for aviation inspectors

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 "Strengthen States' safety oversight capabilities"

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI-1: Consistent implementation of ICAO SARPs at the national level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.
- GASP SEI-4 & GASP SEI-10: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner.
- GASP SEI-5: Provision of the Regional safety information to ICAO by asking States to complete, submit and update all relevant documents and records.

Phase 2 — Implementation of a Safety Oversight System

- GASP SEI-6: Continued implementation of and compliance with ICAO SARPs at the Regional level.
- GASP SEI-8: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner.
- GASP SEI-9: Continued provision of the primary source of Regional safety information to ICAO by asking States to update all relevant documents and records as progress is made.

Stakeholders: RASG-MID, MIDANPIRG, States, international organizations, and industry

Action 1: Conduct Capacity Building Activities to promote effective implementation of SARPs

Owner: ICAO, States, international organizations, and industry

Priority: Medium

Completion date: 2025

Status: Ongoing

Action 2: Conduct technical assistance and NCLB missions to States with focus on ANS, AGA, AIG, and OPS areas

Owner: ICAO

Priority: High

Completion date: 2025

Status: Ongoing

Action 3: Develop and implement a specific NCLB plan of actions for prioritized States

Owner: ICAO and concerned States

Priority: High

Completion date: 2025

Status: Ongoing

Action 4: Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course on Aerodrome Inspection) (Action addressed under G6-SEI-01 A5)

Owner: Qatar and ICAO

Priority: Medium

Completion date: 2025

Status: New

A5- Develop guidance material to assist MID Region States in the issuance of exemptions related to temporary deviations from standards

Owner: Qatar supported by Iran, Sudan, UAE, and IATA

Priority: Medium

Completion date: 2025

Status: New

A6- Develop guidance material to support States for the conduct of remote surveillance

Owner: Qatar supported by Iran, Jordan, Saudi Arabia, Sudan, UAE, and ACAO

Priority: Medium

Completion date: 2025

Status: New

A7- Develop guidance material on the enhancement of understanding the concept of judicial enforcement for aviation inspectors

Owner: Qatar supported by Saudi Arabia and UAE

Priority: Medium

Completion date:	2025
Status:	New

EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
MID States to improve their score for the effective implementation (EI)	2025

7.1.1.2 G2-SEI-02: Improve Regional Cooperation for the Provision of Accident & Incident Investigation

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
States should work to continually improve their effective implementation of the CEs of the State's safety oversight system in the area of AIG. Through collaborative efforts and joining the MENA ARCM, the level of effective implementation of the CEs of a State's AIG can increase, particularly in those States where a State faces shortages of human, financial or technical resources.

What we want to achieve:
MID Region States to Strengthen States' Safety Oversight Capabilities and increase progressively the USOAP-CMA EI results in the area of AIG.

How we monitor improvement:
Increase of the number of States with an EI above 60% for AIG area and then establishing an independent aircraft accident and incident investigation authority.

How we want to achieve it:

Actions: A1-A2
A1- Support of MENA ARCM activities
A2- Conduct AIG Capacity Building Activities.

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 "Strengthen States' safety oversight capabilities"

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI-2: Establishment of an independent regional accident and incident investigation process, consistent with Annex 13.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.
- GASP SEI-4: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner.

Stakeholders: RASG-MID, States, international organization, and industry

Action 1: Support of MENA ARCM activities

Owner:	ICAO, ACAO, and MENA ARCM Member States
Priority:	High

Completion date:	2025
Status:	Ongoing

Action 2: Conduct AIG Capacity Building Activities

Owner:	ICAO, States, international organizations, and industry
Priority:	Medium
Completion date:	2025
Status:	Ongoing

EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
MID States to improve their score for the effective implementation (EI) especially the area of AIG	2025

7.1.1.3 G2-SEI-03: Sharing of Safety Recommendations related to Accidents and Serious Incidents

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
States should work to continually improve their effective implementation of the CEs of the State's safety oversight system in the area of AIG. Through collaborative efforts, the level of effective implementation of the CEs of a State's AIG can increase, particularly in those States where a State faces shortages of human, financial or technical resources.

What we want to achieve:
MID Region States' civil aviation authorities to Strengthen States' Safety Oversight Capabilities and increase progressively the USOAP-CMA EI results in the area of AIG. In addition, the prevention of accidents or incidents, and the reduction of the consequences of such occurrences.

How we monitor improvement:
Increase of the number of States with an EI above 60% for AIG area and establishing an independent aircraft accident and incident investigation authority.

How we want to achieve it:

Action: A1
A1- Establishing a Platform for Sharing Safety Recommendations for MENA ARCM Member States

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 "Strengthen States' safety oversight capabilities"

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities
- GASP SEI-4: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner

Stakeholders: RASG-MID, States, and international organization	
Action 1: Development of platform on sharing safety recommendations	
Owner:	ICAO, ACAO, and MENA ARCM Member
Priority:	Low
Completion date:	2025
Status:	On-hold
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
Improve MID States the effective implementation (EI) in the area of AIG	2025

7.1.1.4 G2-SEI-04: Enhance State Oversight on Dangerous Goods

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
States should work to continually improve their effective implementation of the eight CEs of the State's safety oversight system in the area of OPS.

What we want to achieve:
States to implement an effective system for safety oversight of the various entities involved in the transport of dangerous goods. In addition, MID Region States' to Strengthen States' Safety Oversight Capabilities and increase progressively the USOAP-CMA EI results in the area of OPS and enhance the state oversight on Dangerous Goods

How we monitor improvement:
Increase of the number of States with an EI above 60% for OPS area and then to Strengthen States' Safety Oversight Capabilities.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: A1
A1- Conduct Dangerous Goods (DG) capacity building activities including Lithium batteries fires/smoke risks in cabin
A2- Develop guidance material on carriage and transport of Lithium batteries

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 "Strengthen States' safety oversight capabilities" and ICAO Annex 18 "Safe Transport of Dangerous Goods by Air".

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

GASP SEI-1: Consistent implementation of ICAO SARPs at the national level

Phase 2 — Implementation of a Safety Oversight System

GASP SEI-6: Continued implementation of and compliance with ICAO SARPs at the Regional level

Stakeholders: RASG-MID, States, international organizations, and industry

Action 1- Conduct Dangerous Goods (DG) capacity building activities including Lithium batteries fires/smoke risks in cabin	
Owner:	ICAO, States, international organizations, and industry.
Priority:	Medium
Completion date:	2025
Status:	Ongoing

Action 2: Develop guidance material on carriage and transport of Lithium batteries	
Owner:	IATA
Priority:	Medium
Completion Date:	2025
Status:	Ongoing

EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
MID States to improve their score for the effective implementation (EI) especially the area of OPS	2025

7.1.1.5 G2-SEI-05: Human factors and Competence of Personnel

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
Human factors and competence of personnel are strategic priorities in the region. Human factors and the impact on human performance, as well as medical fitness are strategic priorities. As new technologies and/or operating concepts emerge on the market and the complexity of the system continues increasing, it is of key importance to properly address human factors and human performance, in terms of both limitations and its contribution to delivering safety, as part of the safety management implementation. CRM has been identified in the MID ASR as most important human factors issue in the domain of commercial air transport Aeroplanes above 5700 kgs. The safety actions related to competence of personnel mainly English language proficiency would be further developed in the future.

The main objectives of TRM for operational staff are the development of attitudes and behaviour, which will contribute to enhanced teamwork skills and performance in order to reduce teamwork failures as contributory factors in ATM related incidents and accidents. The benefits of TRM are considered to be enhanced Threat and Error Management capabilities, continuity and stability of teamwork, task efficiency, sense of working as a part of a larger and more efficient team, increased job satisfaction; and improved use of staff resources.

In addition, the safety action identified currently related to aviation personnel is also focusing on fatigue risk management (FRMS) by COVID-19 to mitigate safety issues in all domains such as personal readiness, flight crew perception or crew resource management (CRM) and communication, which play a role in improving safety across all aviation domains.

What we want to achieve:
Ensure continuous improvement in safety management activities as related to human factors and human performance.

How we monitor improvement:
Improvement in aviation personnel competence at all levels and then to Strengthen States' Safety Oversight Capabilities.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: A1-A2-A3-A4
A1- Advisory Circular: Crew Resource Management Training Programme (CRM). **(Action addressed under G1-SEI-04:CFIT)**
A2- Conduct Crew Resource Management capacity building activities
A3- Organize Team Resource Management capacity building activities.
A4- FRMS capacity building activities

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 "Strengthen States' safety oversight capabilities". ICAO Human Performance Manual (ICAO Doc 10151) and ICAO Safety Management Manual (ICAO Doc 9859).

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

GASP SEI-1: Consistent implementation of ICAO SARPs at the national level

Stakeholders: RASG-MID, States, industry, international organizations	
Action 2: Organize Crew Resource Management capacity building activities	
Owner:	ICAO, States, international organizations, and industry.
Priority:	Medium
Completion date:	2023
Status:	ongoing
Action 3: Organize Team Resource Management capacity building activities	
Owner:	ICAO, States, international organizations, and industry
Priority:	Medium
Completion Date:	2023
Status:	ongoing
Action 4: FRMS capacity building activities	
Owner:	ICAO, States, international organizations, and industry
Priority:	Medium
Completion Date:	2025
Status:	ongoing
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
MID States to improve their score for the effective implementation (EI) and mitigate contributing factors to accidents and incidents	2025

7.1.1.6 G2-SEI-06: Management of security risks with safety impact

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
The safety action in this area is aimed at mitigating the security related safety risks. The safety action in this area also include the mitigation of the risks posed by flying over zones where an armed conflict exists. Managing the impact of security on safety is a strategic priority in MID region.

What we want to achieve:
Increase safety by managing the impact of security on safety and mitigating related safety risks.

How we monitor improvement:
Continuous assessment and mitigation of security threats.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: A1
Action 1- Organize seminar/Symposium/workshop to exchange experiences and good practices on assessing the risks and sharing of information related to the overflying of conflict zones in coordination with RASFG-MID and MIDANPIRG

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 “Strengthen States’ safety oversight capabilities". ICAO Annex 17.

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI-1: Consistent implementation of ICAO SARPs at the national level

Stakeholders: RASG-MID, RASFG-MID, MIDANPIRG, States, international organizations, industry	
Action 1- Organize seminar/Symposium/workshop to exchange experiences and good practices on assessing risks and sharing of information related to the overflying of conflict zones in coordination with RASFG-MID and MIDANPIRG	
Owner:	ICAO
Priority:	High
Completion date:	2023
Status:	Ongoing
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
mitigate contributing factors to accidents and incidents	2025

7.1.1.7 G2-SEI-07: Managing cybersecurity risks

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
The safety action in this area is aimed at mitigating the cybersecurity related safety risks. Assess the safety impact of cybersecurity threats to aviation users, support the development of mitigations and specific Training actions, identify and mitigate the vulnerabilities of aviation products and identify the required changes to aviation standards.

What we want to achieve:
Increase safety by managing the impact of cybersecurity on safety and mitigating related safety risks.

How we monitor improvement:
Continuous assessment and mitigation of cybersecurity threats.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: A1-A2-A3
A1- Develop a Regional Action Plan to bridge the gap between ICAO Cyber Security Action plan and the implementation level of Cyber Resilience in the MID Region
A2- Conduct activities on Cyber Security and Resilience- (Jointly ANS and AVSEC)
A3- Develop a MID Region Cybersecurity Action Plan**.**

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 “Strengthen States’ safety oversight capabilities". ICAO Annex 17.

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI-1: Consistent implementation of ICAO SARPs at the national level

Stakeholders: RASG-MID, RASFG-MID, MIDANPIRG, States, international organizations, industry	
Action 1- Develop a Regional Action Plan to bridge the gap between ICAO Cyber Security Action plan and the implementation level of Cyber Resilience in the MID Region	
Owner:	ANS Cyber SeC Action group
Priority:	Medium
Completion date:	2025
Status:	New
Action 2- Conduct activities on Cyber Security and Resilience	
Owner:	ICAO
Priority:	Medium
Completion date:	2025
Status:	New
Action 3: Develop a MID Region Cybersecurity Action Plan	
Owner:	Cybersecurity Security Ad-hoc Group
Priority:	Medium
Completion date:	2025
Status:	New
EXPECTED OUTPUT	

Deliverable(s)	Timeline
mitigate contributing factors to accidents and incidents	2025

7.1.1.8 G2-SEI-08: Impact of COVID-19 pandemic- Safe return to operations

Target/Metrics: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
States should manage a dedicated safety promotion campaign in support of safe return to operations. The safety action in this area is aimed at mitigating the COVID-19 pandemic related safety risks. The safety action in this area would focus on continuous support to the MID-RPTF and sharing of guidance material/best practices to mitigate the risks stemmed from the pandemic.

What we want to achieve:
Increase safety by managing the impact of COVID-19 pandemic on safety and mitigating related safety risks.

How we monitor improvement:
Continuous assessment and mitigation of COVID-19 pandemic induced safety risks.
.
How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: A1-A2
A1- Continued support to the aviation industry through MID-RPTF meetings/Activities, as needed
A2- Sharing of guidance material/best practices

References: ICAO SARPs and guidance documents and 2023-2025 GASP Goal 2 “Strengthen States’ safety oversight capabilities".

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI-1: Consistent implementation of ICAO SARPs at the national level

Stakeholders: RASG-MID, RASFG-MID, MIDANPIRG, States, international organizations, industry
Action 1- Continued support to the aviation industry through MID-RPTF Activities, as needed
Owner: States, international organizations, and industry **Priority:** High **Completion date**: 2025 **Status**: Ongoing
Action 2: Sharing of guidance material/best practices
Owner: States, international organizations, and industry **Priority:** High **Completion date:** 2025

Status:	Ongoing
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
mitigate contributing factors/safety issues to accidents and incidents	2025

7.1.2 Goal 3: Implementation of Effective States Safety Programme (SSP)

7.1.2.1 G3-SEI-01: Implement an effective Safety Management

Target: The safety targets of this goal are indicated in the MID Region SPMM **at Appendix C.**

Rationale:
Management of safety in a systematic and proactive way enables authorities and organizations to set up management systems that take into consideration potential hazards and associated risks before aviation accidents occur. This global move is at the core of ICAO Annex 19. This safety area would enable further work to improve reporting processes, occurrence investigation at organizational level, and also the continued development of integrated data collection taxonomies.
What we want to achieve:
MID Region States to implement SSP and consequently their services providers to implement SMS. In addition, work with authorities and organizations to implement safety management.

How we monitor improvement:
ICAO Annex 19 framework requiring safety management is in place across all aviation domains, and organizations and authorities are able to demonstrate compliance.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

States to give priority to the work on SSPs
In the implementation and maintenance of the SSP, States should in particular:

- ensure effective implementation of the Annex 19 Requirements and address deficiencies in oversight capabilities, as a prerequisite for effective SSP implementation;
- ensure effective coordination between State authorities having a role in safety management;
- ensure that inspectors have the right competencies to support the evolution towards risk- and performance based oversight;
- ensure that policies and procedures are in place for risk- and performance based oversight, including a description of how an SMS is accepted and regularly monitored;
- establish policies and procedures for safety data collection, analysis, exchange and protection;
- establish a process to determine safety performance indicators at State level addressing outcomes and processes;
- ensure that an approved SSP document is made available and shared with other States; and
- ensure that the SSP is regularly reviewed and that SSP effectiveness is regularly assessed;
- ensure that the specific safety risks induced by COVID-19 be assessed and be included in the State risk picture.

SMS Assessment
States should make use of the available tools to support risk- and performance-based oversight. States also should regularly monitor status of compliance with SMS requirements of their industry.

SMS international cooperation
States should promote the common understanding of safety management and human factors principles and requirements in different countries, share lessons learned and encourage progress and harmonization, through active participation in the RASG-MID and other safety groups and fora.
FDM precursors of main operational safety risks

States in partnership with industry, other regional and international organizations should complete the good practice documentation which supports the inclusion of main operational safety risks such as RE, RI, LOC-I, CFIT and MAC into operators' FDM Programmes.

States to set up a regular dialogue with their national aircraft operators on flight data monitoring (FDM) Programmes

States to set up a regular dialogue with their national aircraft operators on flight data monitoring (FDM) Programmes, with the objectives of:

- promoting the operational safety benefits of FDM,
- fostering an open dialogue on FDM Programmes that takes place in the framework of just culture,
- encouraging operators to include and further develop FDM events relevant for the prevention of REs, MACs, CFIT and LOC-I, or other issues identified by the SSP

Actions: A1-A2
A1- Conduct SSP/SMS capacity building activities
A2- Conduct technical assistance missions by SMIT

References: ICAO Annex 19 and GASP 2023-2025 Goal 3 "Implement effective State Safety Programmes"

Component 2 — State Safety Programme

- GASP SEI-10: Start of promotion of SSP implementation at the regional level.
- GASP SEI-11: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes for SSP implementation.
- GASP SEI-12: Strategic collaboration with key aviation stakeholders to support SSP implementation.
- GASP SEI-13: Start of SSP implementation at the national level.
- GASP SEI-14: Regional allocation of resources to support continued development of the proactive use of risk modelling capabilities.
- GASP SEI-15: Regional collaboration with key aviation stakeholders to support the proactive use of risk modelling.
- GASP SEI-16: Advancement of safety risk management at the regional level.

Component 2 — State Safety Programme

GASP SEI-7: Strategic collaboration with key aviation stakeholders to complete SSP implementation

Stakeholders: RASG-MID, States, industry, international organizations	
Action 1- Conduct SSP/SMS training courses and workshops	
Owner:	ICAO, supported by organizations, and industry
Priority:	High
Completion Date:	2025
Status:	ongoing
Action 2- Conduct technical assistance missions by SMIT	

Owner:	ICAO and SMIT Team
Priority:	High
Completion Date:	2025
Status:	New

EXPECTED OUTPUT	
Deliverable(s)	Timeline
MID States to implement the foundation of an SSP	**2023**
MID States to implement an effective SSP	**2025**

7.1.2.2 G3-SEI-02: NASP Development & Implementation

Target: The safety targets of this goal are indicated in the MID Region SPMM **at Appendix C.**
Rationale:
States should ensure that a NASP is maintained and regularly reviewed. The MID-RASP provides the identified safety priorities in the Region and States should identify which top risks and key issues mentioned in the GASP and MID-RASP; which apply to their national context, and identify suitable mitigation actions within their NASP. States should also add/consider others which are unique to their operational context.
.
What we want to achieve:
MID Region States to develop NASP. Successful implementation of the NASP actions would require the commitment of resources from stakeholders within State, availability of data to effectively monitor the achievement of NASP Targets, and proper project governance. In addition to the actions, NASP shall also consider how to measure their effectiveness.

How we monitor improvement:
ICAO GASP requiring States to develop NASP and region to develop RASP.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

States to establish and maintain a National Aviation Safety Plan (NASP)
States should ensure that a NASP is maintained and regularly reviewed. NASP should:

- describe how the plan is developed and endorsed, including collaboration with different entities within the State, with industry and other stakeholders;
- include safety objectives, goals, indicators and targets in line with in line with GASP as well as regional safety plan;
- identify the main safety risks at national level in addition to the ones identified in MID-RASP as applicable to the State;
- include series of SEIs to address safety issues; and
- Reflect the GASP and MID-RASP SEIs as applicable to the State.

Actions: A1-A2
A1- Conduct NASPs workshops & technical assistance missions
A2- NASP iPacks deployment

References: ICAO Annex 19 and GASP 2023-2025 Goal 3 “Implement effective State Safety Programmes"

Component 2 — State Safety Programme

- GASP SEI-10: Start of promotion of SSP implementation at the Regional level.
- GASP SEI-11: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes for SSP implementation.
- GASP SEI-12: Strategic collaboration with key aviation stakeholders to support SSP implementation.
- GASP SEI-13: Start of SSP implementation at the national level.
- GASP SEI-14: Regional allocation of resources to support continued development of the proactive use of risk modelling capabilities.
- GASP SEI-15: Regional collaboration with key aviation stakeholders to support the proactive use of risk modelling.
- GASP SEI-16: Advancement of safety risk management at the Regional level.

Component 2 — State Safety Programme

GASP SEI-7: Strategic collaboration with key aviation stakeholders to complete SSP implementation

Stakeholders: RASG-MID, States, industry, international organizations	
Action 1- Conduct NASPs workshops & technical assistance missions	
Owner:	ICAO
Priority:	High
Completion Date:	2025
Status:	Ongoing
Action 2- NASP iPacks deployment	
Owner:	ICAO and States
Priority:	High
Completion Date:	2025
Status:	New

EXPECTED OUTPUT	
Deliverable(s)	Timeline
MID States to develop and implement NASP	2025

7.1.3 Goal 4: Increase Collaboration at the Regional Level

7.1.3.1 G4-SEI-01: Development and Implementation of MID-RASP

Target: The safety targets of this goal are indicated in the MID Region SPMM **at Appendix C.**

Rationale: The RASG-MD is the governing body responsible for the development, implementation and monitoring of the MID-RASP, in collaboration with the ICAO MID Office, international and regional organizations and with the aviation industry. The MID-RASP is to be reviewed by the Safety Enhancement Implementation Group (SEIG) every year mainly to include new identified Safety Enhancement initiatives' (SEIs), review the existing SEIs, as well as their respective actions.

What we want to achieve:
States, international organization, and industry to increase collaboration at the regional level so that to enhance safety.

How we monitor improvement:
MID region to publish an updated regional aviation safety plan (MID-RASP), in line with the 2023–2025 edition of GASP.

How we want to achieve it: This SEIs included in MID-RASP to be considered by States for inclusion in their NASPs.

References: GASP 2023-2025Goal 4 "Increase collaboration at the Regional level"

Action: A1
A1- Development and Implementation of MID-RASP 2023-2025 Edition

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI- SEI-1: Consistent implementation of ICAO SARPs at the Regional level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.
- GASP SEI-5: Provision of the Regional safety information to ICAO by asking States to complete, submit and update all relevant documents and records.

Phase 2 — Implementation of a Safety Oversight System

GASP SEI-9: Continued provision of the primary source of Regional safety information to ICAO by asking States to update all relevant documents and records as progress is made.

Stakeholders: RASG-MID, MIDANPIRG, RASFG-MID, States, International organizations, and industry.

Action 1: Development and Implementation of MID-RASP 2023-2025 Edition	
Owner:	SEIG
Priority:	High
Completion date:	2025
Status:	Ongoing
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
To manage and enhance safety at the regional	2025

7.1.3.2 G4-SEI-02: Enhance collaboration between States, international organizations, and industry

Target: The safety targets of this goal are indicated in the MID Region SPMM **at Appendix C.**

Rationale: cooperation and collaboration among all stakeholders through conducting MID RCM meetings and agreeing on joint activities to avoid duplication of effort.

What we want to achieve:
States, international organizations, and industry to increase collaboration at the regional level so that to enhance safety.

How we monitor improvement: Reinforce efficient and effective cooperation and collaboration with all stakeholders, avoiding duplication and optimizing the allocation of resources at the regional level.

How we want to achieve it: Joint Programme activities

References: GASP 2023-2025 Goal 4 "Increase collaboration at the Regional level"

Actions: A1-A2
A1- Develop and agree on joint work activities through MID-RCM meetings
A2- Support the establishment of MENA RSOO and its activities

Component 1 — State Safety Oversight (SSO) System

Phase 1 — Establishment of a Safety Oversight Framework

- GASP SEI- SEI-1: Consistent implementation of ICAO SARPs at the Regional level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.
- GASP SEI-5: Provision of the Regional safety information to ICAO by asking States to complete, submit and update all relevant documents and records.

Phase 2 — Implementation of a Safety Oversight System

GASP SEI-9: Continued provision of the primary source of Regional safety information to ICAO by asking States to update all relevant documents and records as progress is made.

Stakeholders: RASG-MID. MIDANPIRG, RASFG-MID, States, international organizations, and industry.

Action 1: Develop and agree on joint work activities through MID RCMs	
Owner:	ICAO, States, international organizations, industry
Priority:	High
Completion date:	2025
Status:	New
Action 2: Support the establishment of MENA RSOO and its activities	
Owner:	ICAO and States
Priority:	Medium
Completion date:	2025
Status:	New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
To increase States USOAP EI and SSP level of maturity.	2025

7.2.1 Goal 5: Expand the Use of Industry Programmes and safety information sharing networks

7.1.4.1 G5-SEI-01: Promote the Use of industry Programmes

Target: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C.**

Rationale:

What we want to achieve:
Work with authorities and organizations to increase the number of service providers participating in the corresponding ICAO recognized industry assessment Programmes.

H**ow we monitor improvement:**
Increase the number of service providers participating in the corresponding ICAO recognized industry assessment Programmes. The RASG-MID, IATA, and ACI will give feedback on the effectiveness of the activities.

How we want to achieve it:

Actions: A1-A2
A1- Encourage IATA's IOSA and ISAGO registrations through safety promotion
A2- Encourage the implementation of ACI Airport Excellence (APEX) in Safety Programme

References: This is related to 2023-2025 GASP Goal 5 "Expand the use of industry Programmes and safety information sharing networks"

Component 1 — State Safety Oversight (SSO) System

GASP SEI-1 — Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner.

Stakeholders: RASG-MID, States, industry, international organizations	
Action 1: Encourage IATA's IOSA and ISAGO registrations through safety promotion	
Owner:	IATA
Priority:	Medium
Completion Date:	2025
Status:	Ongoing
Action 2: Encourage the implementation of ACI Airport Excellence (APEX) in Safety Programme	
Owner:	ICAO and ACI
Priority:	medium
Completion Date:	2025
Status:	ongoing

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Increase the number of service providers participating in ICAO recognized industry assessment Programmes and maintain recurrent APEX Missions in the region:	2025

7.2.1 Goal 6: Ensure the Appropriate Infrastructure is available to Support Safe Operations

7.1.1.1 G6-SEI-01: Certification of International Aerodromes

Target/Metrics: The safety targets of this goal are indicated in the MID Region safety strategy at **Appendix C**.

Rationale:
Many International Airports are yet to be fully certified and many that are certified are facing challenges to apply the Standards and Recommended Practices (SARPs) as laid out in ICAO Annex 14-Aerodromes and the ICAO Manual on Certification of Aerodromes (Doc 9774).

What we want to achieve:
MID Region States to improve international aerodromes infrastructures and ensure continuous improvement.

How we monitor improvement:
The number of certified international airports. The RASG-MID, members States, and partners would provide feedback on the effectiveness of the activities.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions: **A1-A2-A3-A4-A5-A6**
A1- Support States on the implementation of the ICAO Annex 14 requirements to achieve compliance with regards to Aerodrome Design and Operations, through Workshops/Trainings
A2- Enhance capacity building for States CAAs and Airport operators related to aerodromes certification through Workshops/Training
A3 – Deployment of iPack on Aerodrome Re-Start
A4 - Support States in implementing aerodrome oversight/inspection mechanism through capacity building activities on Aerodrome Oversight
A5 – Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course + OJT)
A6 – Conduct a Wildlife Hazard Management Control capacity building Activities

References: ICAO SARPs and guidance documents and 2023-2025 GASP. This is related to 2023-2025 GASP Goal 6 “Ensure the appropriate infrastructure is available to support safe operations”

Component 1 — State Safety Oversight (SSO) System

- GASP SEI-1: Consistent implementation of ICAO SARPs at the Regional level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.
- GASP SEI-4: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner.

Stakeholders: RASG-MID, States, industry, International organizations
Action 1: Support States on the implementation of the ICAO Annex 14 requirements to achieve compliance with regards to Aerodrome Design and Operations, through capacity building activities
Owner: ICAO and ACI. **Priority:** High **Completion Date**: 2025 **Status**: Ongoing
Action 2: Enhance capacity building for States CAAs and Airport operators related to aerodromes certification through capacity building activities
Owner: ICAO and ACI

Priority:	High
Completion date:	2025
Status	ongoing
Action 3: Deployment of iPack on Aerodrome Re-Start	
Owner:	ICAO
Priority:	Medium
Completion Date:	2025
Status:	Ongoing
A4: Support States in implementing aerodrome oversight/inspection mechanism through capacity building activities on Aerodrome Oversight	
Owner:	ICAO and FAA
Priority:	Medium
Completion Date:	2025
Status:	New
A5: Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course + OJT)	
Owner:	TBD
Priority:	Medium
Completion Date:	2025
Status:	New
A6: Conduct a Wildlife Hazard Management Control capacity building Activities	
Owner:	ICAO, ACAO, WBA
Priority:	Medium
Completion Date:	2025
Status:	New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Increase the number of Certificated International Aerodromes	2025

7.1.5.2 G6-SEI-02: Establish Runway Safety Team (RST) at International Aerodromes

Target: The safety targets of this goal are indicated in the MID Region SPMM **at Appendix C.**

Rationale:
Many States have difficulties on the development of the Runway Safety Programme and the establishment of Runway Safety Teams (RSTs) at airports as an effective means to reduce runway related accidents and incidents.

What we want to achieve:
MID Region States' civil aviation authorities to establish an effective RSTs at their aerodromes which would significantly reduce the runway safety related risks.

How we monitor improvement:
Number of the RSTs established at international aerodromes and number of the RST missions

conducted. The RASG-MID, members States, and partners will give feedback on the effectiveness of the activities.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs.

Actions:	**A1-A2**
A1- Conduct of assistance missions by the Runway Safety Go-Team (RST)	
A2- Support States to implement the Global Reporting Format Methodology through capacity building activities: (A**ction addressed under G1-SEI-02: Runway Excursion**)	

References: ICAO SARPs and guidance documents and 2023-2025 GASP. This is related to 2023-2025 GASP Goal 6 "Ensure the appropriate infrastructure is available to support safe operations".

Component 1 — State Safety Oversight (SSO) System

- GASP SEI-1: Consistent implementation of ICAO SARPs at the Regional level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.
- GASP SEI-4: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner.

Stakeholders: RASG-MID, States, industry, international organizations	
Action 1: Conduct of assistance missions by the Runway Safety Go-Team (RST)	
Owner:	ICAO, RSP (Runway Safety Programme Partners)
Priority:	High
Completion date:	2025
Status:	Ongoing
Action 2: Support States to implement the Global Reporting Format Methodology through capacity building. (Action addressed under G1-SEI-02: Runway Excursion)	
Owner:	ICAO, ACI and Aircraft Manufactures
Priority:	High
Completion Date:	2025
Status:	Ongoing

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Increase the number of establishment RST at international aerodromes	2025

7.2 Regional Operational Safety Risks

7.2.1 Goal 1: Achieve a continuous reduction in Operational Risks

7.2.1.1 G1-SEI-01: Aircraft upset in flight (LOC-I)

Target: The safety targets of this goal are indicated in the MID Region safety strategy at **Appendix C.**

Rationale:

Loss of control usually occurs because the aircraft enters a flight regime which is outside its normal envelope, usually, but not always, at a high rate, thereby introducing an element of surprise for the flight

crew involved. Prevention of loss of control is a strategic priority. In addition, Aircraft upset or loss of control is the key risk area with the highest risk related to fatal accidents in CAT aeroplane operations having a maximum take-off weight above 5700 kg. It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or intended aircraft flight parameters, regardless of whether the flight crew realized the deviation and whether it was possible to recover or not. It also includes the triggering of stall warning and envelope protections.
During 2017-2021 Aircraft upset or Loss of control contributed to one accident and counted for around 27% of fatalities. During the year 2018, the LOC-I occurred during En-route phase of flight.

What we want to achieve:
Increase safety by continuously assessing and improving risk controls to mitigate the risk of loss of control.

How we monitor improvement:
Continuous monitoring of safety issues identified in the MID Region annual safety report for CAT aeroplane above 5,700 kgs.

How we want to achieve it:
States should set up a regular dialogue with their national aircraft operators on flight data monitoring (FDM) Programmes, with the objectives of: promoting the operational safety benefits of FDM, fostering an open dialogue on FDM Programmes that takes place in the framework of just culture, encouraging operators to include and further develop FDM events relevant for the prevention of LOC-I, or other issues identified by the SSP.

States to include LOC-I in national SSPs: LOC-I should be addressed by the States on their SSPs and included in NASPs. This should include as a minimum agreeing a set of actions and measuring their effectiveness.

Actions: **A1-A2-A3**
A1- Guidance material on flight crew proficiency
A2- Advisory Circular: Mode Awareness and Energy State Management Aspects of Flight Deck Automation
A3- Conduct Upset Recovery Workshops/Webinars
A4- Develop guidancematreial on the air cargo safety

References:

- GASP 2023-2025 Goal 1 “Achieve a Continuous Reduction of Operational Safety Risks".
- GASP SEIs (States, Region, and industry) – Mitigate contributing factors to LOC-I accidents and incidents.

Stakeholders: RASG-MID, States, industry, international organizations/associations	
Action 1: Guidance material on flight crew proficiency	
Owner	IATA and Aircraft manufacturers
Priority:	Medium
Completion Date:	2025
Status:	Ongoing
Action 2: Advisory Circular: Mode Awareness and Energy State Management Aspects of Flight Deck Automation	
Owner:	IATA and Aircraft manufacturers. Supported by KSA

Priority:	High
Completion Date:	2025
Status:	ongoing
Action 3: Conduct Upset Recovery workshop/Webinar	
Owner:	ICAO, IATA, Industry.
Priority:	High
Completion Date:	2025
Status:	Ongoing
A4- Develop guidance material on the air cargo safety	
Owner:	Oman
Priority:	Medium
Completion Date:	2025
Status:	New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Mitigate contributing factors to LOC-I accidents and incidents	2025

7.2.1.2 G1-SEI-02: Runway Safety- Runway Excursion

Target: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
Runway excursion covers materialized runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties in maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing. During 2017-2020, Runway Excursions and abnormal runway contact accidents and serious incidents mainly occurred in the landing phase of flights.

What we want to achieve:
Increase safety by continuously assessing and improving risk controls to mitigate the risk of RE.

How we monitor improvement:
Continuous monitoring of safety issues identified in the MID Region annual safety report for CAT aeroplane above 5,700 kgs.

How we want to achieve it:
States to set up a regular dialogue with their national aircraft operators on flight data monitoring (FDM) Programmes, with the objectives of: promoting the operational safety benefits of FDM, fostering an open dialogue on FDM Programmes that takes place in the framework of just culture, encouraging operators to include and further develop FDM events relevant for the prevention of REs.

States to include Runway Excursions in national SSPs: REs should be addressed by the States on their SSPs and included in NASPs in close cooperation with the aircraft operators, air traffic control, and airport operators. This should include as a minimum agreeing a set of actions and measuring their

effectiveness.

Actions:	**A1-A2**
A1- Support States to implement the Global Reporting Format (GRF) Methodology through capacity building activities	
A2- MID Region Action Plan/Milestones on the Global Reporting Format (GRF) Implementation	

References:

- GASP 2023-2025 Goal 1 "Achieve a Continuous Reduction of Operational Safety Risks".
- GASP SEIs (States, Region, and industry) – Mitigate contributing factors to RE accidents and incidents.

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations/associations	
Action 1: Support States to implement the Global Reporting Format (GRF) Methodology through capacity building activities (Reference: G3-SEI-02)	
Owner:	ICAO, ACI, and Aircraft Manufactures
Priority:	Medium
Completion Date:	2025
Status:	Ongoing
Action 2: MID Region Action Plan/Milestones on the Global Reporting Format (GRF) Implementation	
Owner:	ICAO
Priority:	High
Completion Date:	2025
Status:	ongoing
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
Mitigate contributing factors to RE accidents and incidents	2025

7.2.1.3 G1-SEI-03: Runway Safety- Runway Incursion

Target: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C**.

Rationale:
Collision on runway covers collisions between an aircraft and another object (other aircraft, vehicles, etc.) or person that occur on a runway of an aerodrome or other predesignated landing area; it does not include collisions with birds or wildlife. While there were no fatal accident or accident involving MID States operators in the last years involving runway collision, the risk of the reported occurrence demonstrated to be very real.

What we want to achieve:
Increase safety by continuously assessing and improving risk controls to mitigate the risk of RI.

How we monitor improvement:
Continuous monitoring of safety issues identified in the MID Region annual safety report for CAT aeroplane above 5,700 kgs.
How we want to achieve it:

States to include Runway Incursions in national SSPs: RIs should be addressed by the States on their SSPs and included in NASPs in close cooperation with the aircraft operators, air traffic control, and airport operators. This should include as a minimum agreeing a set of actions and measuring their effectiveness.

Action:	**A1**
A1- Conduct Capacity Building Activities on the Advanced Surface Movement Guidance and Control System (A-SMGCS) Implementation	

References:

- GASP 20232025 Goal 1 “Achieve a Continuous Reduction of Operational Safety Risks".
- GASP SEIs (States, Region, and industry) – Mitigate contributing factors to RI accidents and incidents.

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations	
Action 1: Conduct Capacity Building Activities on the Advanced Surface Movement Guidance and Control System (A-SMGCS) Implementation	
Owner:	ICAO
Priority:	High
Completion Date:	2025
Status:	New
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
Mitigate contributing factors to RI accidents and incidents	2025

7.2.1.4 G1-SEI-4: Controlled Flight into Terrain (CFIT)

7.2.1.4.1 G1-SEI-4A1- Controlled Flight into Terrain (CFIT)

Target: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C.**

Rationale:
It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences, which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc. There was no fatal accident involving MID States operators during this period. This key risk area has been raised by some MID States and in other parts of the world that make it an area of concern.

What we want to achieve:
Increase safety by continuously assessing and improving risk controls to mitigate the risk of CFIT.

How we monitor improvement:
Continuous monitoring of safety issues identified in the MID Region annual safety report for CAT aeroplane above 5,700 kgs.

How we want to achieve it:
States to set up a regular dialogue with their national aircraft operators on flight data monitoring (FDM) Programmes, with the objectives of: promoting the operational safety benefits of FDM, fostering an open dialogue on FDM Programmes that takes place in the framework of just culture, encouraging operators to include and further develop FDM events relevant for the prevention of CFIT

or other issues identified by the SSP.

States to include CFITs in national SSPs: CFIT should be addressed by the States on their SSPs and included in NASPs. This should include as a minimum agreeing a set of actions and measuring their effectiveness.

Actions: A1-A2-A3
A1- Advisory Circular: Instrument Approach Procedures Using Continuous Descent Final Approach Techniques
A2- Guidance for designing RNP Approach
A3- Advisory Circular: Crew Resource Management Training Programme (CRM)

References:

- GASP 2023-2025 Goal 1 “Achieve a Continuous Reduction of Operational Safety Risks".
- GASP SEIs (States, Region, and industry) – Mitigate contributing factors to CFIT accidents and incidents.
-

Stakeholders: ICAO, RASG-MID, MIDANPIRG States, industry, international organizations	
Action 1: Advisory Circular: Guidance for Operators on Training Programme on the use of GPWS	
Owner:	IATA and Aircraft manufacturers
Priority:	Medium
Completion Date:	2025
Status:	ongoing
Action 2- Guidance for designing RNP Approach	
Owner:	ICAO AND MID-FPP
Priority:	Medium
Completion Date:	2025
Status:	New
Action 3: Advisory Circular: Crew Resource Management Training Programme (CRM)	
Owner:	IATA and Aircraft manufacturers
Priority:	High
Completion Date:	2025
Status:	ongoing

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Mitigate contributing factors to CFIT accidents and incidents	2025

7.2.1.4.2 G1-SEI-4A2- 5G Operation on Radio Altimeter

-

Stakeholders: ICAO, RASG-MID, MIDANPIRG, RASFG-MID States, industry, international organizations	
Action 1: Develop a guidance material on safeguarding measures to protect Radio Altimeter from potential harmful interference from 5G Operation	
Owner:	Radio Altimeter action group (RADALT AG)

Priority:	Medium
Completion Date:	2025
Status:	New

Action 2: Conduct a Webinar addressing the matter to raise awareness and promote the guidance material developed by the RADALT AG

Owner:	ICAO and RADALT AG
Priority:	Medium
Completion Date:	2025
Status:	New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Mitigate contributing factors to CFIT accidents and incidents including LOC-I	2025

7.2.1.5 G1-SEI-05: Airborne Conflict (Mid-Air Collisions)

7.2.1.5.1 G1-SEI-05A1: Loss of separation/TCAS RA

Target: The safety targets of this goal are indicated in the MID Region SPMM **at Appendix C.**

Rationale:
Airborne collision includes all occurrences involving actual or potential airborne collisions between aircraft, while both aircraft are airborne, and between aircraft and other airborne objects. This also includes all separation-related occurrences caused by either air traffic control (ATC) or cockpit crew, AIRPROX reports and genuine ACAS alerts. It includes direct precursors such as separation minima infringements, genuine TCAS resolution advisories or airspace infringements.

Although there have been no aeroplane mid-air collision accident in recent years within the MID States, this risk area has been raised by some MID States specifically in the context of the collision risk posed by military aircraft operating in Gulf area over the high seas which are not subject to any coordination with related FIRs for airborne operation. This is one specific safety issue that is a main priority in this key risk area.

States must have due regard for the safety of civil aircraft and must have established respective regulations for national State aircraft.
Some States had reported an increase in incidents involving close encounters between civil and military aircraft and more particularly an increase in non-cooperative international military traffic over the high-sea waters. The States could consider the following recommendations:

1. Fully apply the ICAO Manual on Civil-Military Cooperation in Air Traffic Management (Doc 10088);
2. Closely coordinate to develop, harmonize and publish operational requirements and instructions for State aircraft to ensure that ‘due regard’ for civil aircraft is always maintained;
3. Support the development and harmonization of civil/military coordination procedures for ATM at MID Region level and beyond if possible; and
4. Report relevant occurrences.

What we want to achieve:
Increase safety by continuously assessing and improving risk controls to mitigate the risk of MAC.

How we monitor improvement:

Continuous monitoring of safety issues identified in the MID Region Annual Safety Report for CAT aeroplane above 5,700 kgs.

How we want to achieve it:

States to include MACs in national SSPs: MACs should be addressed by the States on their SSPs and included NASPs. This should include as a minimum agreeing a set of actions and measuring their effectiveness.
Sates to reinforce the appropriate reactions of flight crew in response to an airborne collision avoidance system (ACAS) resolution advisories (RA), which would help to mitigate the risk of mid-air collisions by providing safety promotion material and clear messages to pilots on the need to follow the instructions of the ACAS in high-risk situations.

Actions: A1-A2
A1- Conduct workshop to implement Civil-Military cooperation
A2- Conduct seminar on raising awareness among stakeholders related to the potential risk of MAC over high seas

References:

- GASP 2023-2025 Goal 1 “Achieve a Continuous Reduction of Operational Safety Risks".
- GASP SEIs (States, Region, and industry) – Mitigate contributing factors to MAC accidents and incidents.
- ICAO Doc 10088 ‘Manual on Civil/Military Cooperation in Air Traffic Management’

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations

Action 1: Conduct workshop to implement Civil-Military cooperation	
Owner:	ICAO, IATA, and States
Priority:	High
Completion Date:	2025
Status:	Ongoing
Action 2: Conduct seminar on raising awareness among stakeholders related to the potential risk of MAC over high seas	
Owner:	ICAO and States
Priority:	High
Completion Date:	2025
Status:	Ongoing

EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
Mitigate contributing factors to MAC accidents and NMAC incidents	2025

7.2.1.5.2 G1-SEI-05A2: GNSS Interference

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations

Action 1: Raise awareness on the potential impact of GNSS interference on the aviation during the Civil-Mil Workshop.	
Owner:	ICAO and IATA

Priority:	Medium
Completion Date:	2025
Status:	New
Action 2: Urge States to follow the reporting procedure agreed by MIDANPIRG Conclusion 19/4 when needed.	
Owner:	ICAO
Priority:	Medium
Completion Date:	2025
Status:	New
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
Mitigate contributing factors to MAC accidents and NMAC incidents	2025

7.2.1.5.3 G1-SEI-05A3: Ensure the Safe Operations of UAS (drones)

Target: The safety targets of this goal are indicated in the MID Region SPMM at **Appendix C.**

Rationale:
The civilian use of UAS has markedly increased in recent years. Research and development into the civilian applications of unmanned aircraft (UA) is a dynamic and rapidly evolving area. Control and guidance systems are now available that enable these aircraft to perform a variety of tasks that were previously unachievable, unreasonably expensive, or involved too much personal risk. As a result, UA have an increasing presence in controlled and uncontrolled airspace. In addition, available evidence demonstrates an increase of drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk. In connection with this, some States in the region developed their national regulations to ensure safe operations of UAS. However, there are currently some States in the region are unable to develop their national regulations to ensure safe operations of UAS. Therefore, guidance material to be developed to assist states' CAA personnel in the implementation and oversight of UAS operations and to mitigate the risk of the MAC.
When available, the guidance material would serve as an example for consideration by MID States to create, add, or amend, future or existing national UAS guidance material by the respective CAA.

What we want to achieve:
MID Region States' civil aviation authorities to develop national regulations to ensure safe operations of UAS and to create growth while maintaining a high and uniform level of safety.

How we monitor improvement:
Increase of number of states established national regulations to ensure safe operations of UAS. The RASG-MID, members States, and partners would give feedback on the effectiveness of the activities.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs

Actions: **A1-A2-A3**
A1- UAS iPack deployment
A2- Organize symposium

A3- Conduct survey on States UAS regulatory framework

References: ICAO SARPs and guidance documents and 2023-2025 GASP. This is related to 2023-2025 GASP Goal 1. “Achieve a Continuous Reduction of Operational Safety Risks"

Component 1 — State Safety Oversight (SSO) System

- GASP SEI-1: Consistent implementation of ICAO SARPs at the Regional level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations

Action 1: UAS iPack Deployment

Owner: ICAO

Priority: High

Completion date: 2025

Status: New

Action 2: Organize symposium related to drones (UAS)

Owner: ICAO, ACAO. Supported by FAA

Priority: Medium

Completion date: 2023

Status: Ongoing

Action 3- Conduct survey on States UAS regulatory framework

Owner: ICAO and States

Priority: Medium

Completion date: 2023

Status: New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Ensure the safe operations of UAS to mitigate the risk of MID-Air Collision (MAC).	2025

7.2.1.5.2 G1-SEI-05A2: GNSS Interference

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations

Action 1: Raise awareness on the potential impact of GNSS interference on the aviation during the Civil-Mil Workshop.

Owner: ICAO and IATA

Priority: Medium

Completion Date: 2025

Status: New

Action 2: Urge States to follow the reporting procedure agreed by MIDANPIRG Conclusion

19/4 when needed.	
Owner:	ICAO
Priority:	Medium
Completion Date:	2025
Status:	New
EXPECTED OUTPUT	
Deliverable(s)	**Timeline**
Mitigate contributing factors to MAC accidents and NMAC incidents	2025

7.2.1.5.3- G1-SEI-05A3: Ensure the Safe Operations of UAS (drones)

Target: The safety targets of this goal are indicated in the MID Region SPMM at Appendix C.

Rationale:
The civilian use of UAS has markedly increased in recent years. Research and development into the civilian applications of unmanned aircraft (UA) is a dynamic and rapidly evolving area. Control and guidance systems are now available that enable these aircraft to perform a variety of tasks that were previously unachievable, unreasonably expensive, or involved too much personal risk. As a result, UA have an increasing presence in controlled and uncontrolled airspace. In addition, available evidence demonstrates an increase of drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk. In connection with this, some States in the region developed their national regulations to ensure safe operations of UAS. However, there are currently some States in the region are unable to develop their national regulations to ensure safe operations of UAS. Therefore, guidance material to be developed to assist states' CAA personnel in the implementation and oversight of UAS operations and to mitigate the risk of the MAC.
When available, the guidance material would serve as an example for consideration by MID States to create, add, or amend, future or existing national UAS guidance material by the respective CAA.

What we want to achieve:
MID Region States' civil aviation authorities to develop national regulations to ensure safe operations of UAS and to create growth while maintaining a high and uniform level of safety.

How we monitor improvement:
Increase of number of states established national regulations to ensure safe operations of UAS. The RASG-MID, members States, and partners would give feedback on the effectiveness of the activities.

How we want to achieve it: This SEI should be considered by States for inclusion in their NASPs

Actions: **A1-A2-A3**
A1- UAS iPack deployment
A2- Organize symposium
A3- Conduct survey on States UAS regulatory framework

References: ICAO SARPs and guidance documents and 2023-2025 GASP. This is related to 2023-2025 GASP Goal 1. "Achieve a Continuous Reduction of Operational Safety Risks"

- GASP SEI-1: Consistent implementation of ICAO SARPs at the Regional level.
- GASP SEI-3: Regional safety enhancement initiatives to support consistent coordination of Regional Programmes in establishing adequate safety oversight capabilities.

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations

Action 1: UAS iPack Deployment

Owner: ICAO

Priority: High

Completion date: 2025

Status: New

Action 2: Organize symposium related to drones (UAS)

Owner: ICAO, ACAO. Supported by FAA

Priority: Medium

Completion date: 2023

Status: Ongoing

Action 3- Conduct survey on States UAS regulatory framework

Owner: ICAO and States

Priority: Medium

Completion date: 2023

Status: New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**
Ensure the safe operations of UAS to mitigate the risk of MID Air Collision (MAC)	2025

7.2.1.5.4 G1-SEI-05A4: Expansion of ATS route Networks

Stakeholders: RASG-MID, MIDANPIRG, States, industry, international organizations

Action 1: Conduct gap analysis to identify current ATS route networks gaps

Owner: ICAO and States

Priority: Medium

Completion Date: 2025

Status: New

Action 2: Establishment of parallel unidirectional ATS routes (De-confliction)

Owner: ICAO and States

Priority: Medium

Completion Date: 2025

Status: New

EXPECTED OUTPUT

Deliverable(s)	**Timeline**

Mitigate contributing factors to MAC accidents and NMAC incidents	2025

Appendix A- SEIG TORs

SAFETY ENHANCEMENT INITIATIVE GROUP

(SEIG)

TERMS OF REFERENCE

1. PURPOSE OF THE SEIG TO:

1.1 Support the RASG-MID in the development/update of the MID Regional Aviation Safety Plan (MID-RASP) and the monitoring of the implementation of Safety Enhancement Initiatives (SEIs) related to identified safety issues.

1.2 Assist in the development, implementation and review of SEIs to reduce aviation safety risks. These SEIs could be established based on the analysis of regional data, based on ICAO initiatives or the initiatives of other relevant organizations or based on the risks and issues identified through the USOAP audits process.

1.3 Recommend safety mitigations to the RASG-MID related to identified safety issues which would reduce aviation risks.

1.4 In order to meet its Terms of Reference, the SEIG shall:

a. follow-up the updates of the Global Aviation Safety Plan (GASP) and support the development, update and implementation of the MID Regional Aviation Safety Plan (MID-RASP) at the regional level and provide feedback to the RASG-MID;

b. identify and develop the SEIs, which are aligned with the regional priorities and targets, for implementation within the MID Region. The focus of these SEIs is to effectively and economically mitigate the safety risks identified by the ASRG;

c. identify difficulties, challenges and deficiencies related to the implementation of each SEI and propose mitigation measures;

d. identify assistance Programmes such as, but not limited to, workshops, seminars and capacity building activities to improve the level of implementation of the approved SEIs by the RASG-MID;

e. share expertise and experience and provide recommended actions for each SEI, in a prioritized manner based on best practices;

f. monitor the status of achieving related safety objectives and targets included in the MID Region Safety Strategy;

g. identify areas of concern to aviation safety that may be unique to the region, and develop data and mitigations to address those concerns;

h. work closely with States and stakeholders to ensure that SEIs and mitigation measures are implemented through a coordinated effort;

i. propose input to the RASG-MID for the development of the RASG-MID Annual Work Programme; and

j. Coordinate with relevant RASG-MID, MIDANPIRG and MID-RASFG subsidiary bodies issues with common interest.

2. COMPOSITION

The SEIG is composed of Members designated by the MID States and Partners.

3. ROLES AND RESPONSIBILITIES

- SEIG Chairpersons: – Coordinate SEIG activities and provide overall guidance and leadership;

- ICAO: Support; and

- Partners: collaborate in the development of materials as requested by the SEIG, and provide technical expertise and support, as required.

4. MEETINGS ARRANGEMENTS

- The Chairperson, in close co-operation with the Secretary, shall make all necessary arrangements for the most efficient working of the SEIG. The SEIG 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 SEIG to advance the work. Best advantage should be taken of modern communications facilities, particularly video-conferencing (Virtual Meetings) and e-mails.

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

Appendix B- Identified safety issues as indicated in the 11th MID ASR

Potential Accident Outcome							
Safety Issues	CFIT	LOC-I	MAC	GCOL	RE/ARC	Injury Damage inflight	Injury Damage on Ground
Monitoring of flight paremeters and automation modes	x	x			x		
Adverse Convective weather	x	x			x	x	
Un-stabilized Approach		x			x		x
Flight planning and preparation	x	x	x	x	x		
Crew Resource Management	x	x	x	x	x		
Handling of technical failure	x	x		x	x		x
Handling and execution of GOA	x	x			x		
Loss of separation in flight/ and/or airspace/TCAS RA			x			x	
Experience, training and competence of Flight Crews	x	x	x		x		
Deconfliction between IFR and VFR traffic			x				
Inappropriate flight control inputs		x			x		
Fatigue	x	x					
Entry of aircraft performance data		x					
Contained engine Failure/Power Plant Malfunctions		x			x	x	
Birdstrike/Engine Bird ingestion		x			x		
Fire/Smoke-non impact		x				x	
Wake Vortex		x				x	
Deviation from pitch or roll attitude	x	x			x		
Security Risks with impact on Safety		x					
Tail/Cross wind/Winds hear		x			x		x

Potential Accident Outcome							
Safety Issues	**CFIT**	**LOC-I**	**MAC**	**GCOL**	**RE/ARC**	**Injury Damage inflight**	**Injury Damage on Ground**
Runway Incursion				x	x		x
Maintenance events	x	x				x	
Contaminated runway/Poor braking action					x		x
Clear Air Turbulence (CAT) and Montain Waves		x				x	

Appendix C-MID Region-Safety Performance Measurement &Monitoring (SPMM)

Aspirational Goal: Zero Fatality by 2030

Goal 1: Achieve a Continuous Reduction of Operational Safety Risks

Safety Indicator	Safety Target	Timeline
Number of accidents per million departures	Regional average rate of accidents to be in line with the global average rate	2025
Number of fatal accidents per million departures	Regional average rate of fatal accidents to be in line with the global average rate	2025
Number of fatalities per million departures	Number of fatalities per billion passengers carried (fatality rate) to be in line with the global average rate	2025
Number of Runway Excursion accidents per million departures	Regional average rate of Runway Excursion accidents to be below the global average rate	2025
Number of Runway Incursion accidents per million departures	Regional average rate of Runway Incursion accidents to be below the global average rate	2025
Number of LOC-I related accidents per million departures	Regional average rate of LOC-I related accidents to be below the global rate	2025
Number of CFIT related accidents per million departures	Regional average rate of CFIT related accidents to be below the global rate	2025
Number of Mid Air Collision (accidents)	Regional average Mid Air Collision accident	2025

Goal 2: Strengthen States' Safety Oversight Capabilities

Safety Indicator	Safety Target	Timeline
USOAP-CMA Effective Implementation (EI) results: a. Regional average EI b. Number of audited States with an overall EI over 60% c. Regional average EI by area d. Regional average EI by CE e. Regional average EI of PPQs	a. Regional average EI to be above 80% : b. All MID audited States to be above 60% EI c. Regional average EI for each area to be above 70% d. Regional average EI for each CE to be above 70% e. Regional average EI PPQs above 75% :	a. 2023-2025 b. 2023-2025 c. 2023-2025 d. 2023-2025 e. 2023-2025

Goal 3: Implement effective State safety Programmes (SSPs)

Safety Indicator	Safety Target	Timeline
Regional Average SSP Foundation	85%	2023- 2025
Number of States having an SSP that is present*	At least 4 States	2023- 2025
Number of States that have developed and published a national aviation safety plan (NASP)	All States	2023- 2025
Number of States that require applicable service providers under their authority to implement an SMS	All States	2023- 2025

*: The term "present" is based on the maturity levels established in the ICAO SSP Implementation Assessment (SSPIA).

Goal 4: Increase Collaboration at the Regional Level

Safety Indicator	Safety Target	Timeline
Percentage of safety enhancement initiatives (SEIs)/Safety Actions completed	80%	2023-2025
Number of States seeking/receiving assistance, to strengthen their Safety Oversight capabilities through NCLB MID Strategy/Technical assistance	States with SSC as a first priority All States as a second priority having EI below 80%	2023-2025
Number of States seeking assistance to facilitate SSP & NASP implementation through NCLB MID Strategy/Technical assistance	All States	2023-2025
Number of States sharing safety information including operational safety risks and emerging issues to support the development of MID ASR	All States	2023-2025

Goal 5: Expand the use of Industry Programmes and safety information sharing networks

Safety Indicator	Safety Target	Timeline
Use of the IATA Operational Safety Audit (IOSA), to complement safety oversight activities.	a. Maintain at least 60% of eligible MID airlines to be certified IATA-IOSA at all times. b. All MID States with an EI of at least 60% use the IATA Operational Safety Audit (IOSA) to complement their safety oversight activities.	a. 2023-2025 b. 2023- 2025
Use of the IATA Safety Audit for Ground Operations (ISAGO) certification, as a percentage of all Ground Handling service providers	The IATA Ground Handling Manual (IGOM) endorsed as a reference for ground handling safety standards by all MID States. Pursue at least 25% increase in ISAGO registration	2023-2025
Coordinate the ACI Airport Excellence (APEX) in Safety Programme	At least 2 ACI APEX in Safety to be conducted for 2 Airports of the Region per year	2023-2025
Number of States that have established Safety data collection and processing system (SDCPS)	At least 12 States	2023-2025
Number of MID RASP developed in consultation with industry	MID-RASP 2023-2025	2023

Goal 6: Ensure Appropriate Infrastructure is available to Support Safe Operations

Safety Indicator	Safety Target	Timeline
Percentage of Certified International Aerodromes*	65%	2023-2025
Percentage of Runway Safety Team (RST) effectively implemented at International Aerodromes*	80%	2023-2025
Percentage of Global reporting Format (GRF) Plans implemented for International Aerodromes*	75%	2023-2025

*: International Aerodromes included in the MID ANP (Aerodromes Operations: AOP Table I-I)

Appendix D: Safety Actions- Consolidated List of SEIs with their respective Actions for follow up- Draft

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
Regional Operational Safety Risks					
Goal 1: Achieve a Continuous Reduction in Operational Risks					
G1-SEI-01:	Aircraft Upset in Flight (LOC-I)	**A1-** Guidance material on flight crew proficiency	IATA and Aircraft manufacturers/industry	To be supported by Airbus	2025
		A2- Advisory Circular: Mode Awareness and Energy State Management Aspects of Flight Deck Automation	IATA and Aircraft manufacturers/industry.	To be supported by Airbus	2025
		A3- Conduct Upset Recovery capacity building activities	UPRT Workshop. Airbus, ICAO, Kuwait		2025
		A4- Develop guidance material on the air cargo safety	Oman		2025
G1-SEI-02:	Runway Safety- Runway Excursion	**A1-** Support States to implement the Global Reporting Format (GRF) Methodology through capacity building activities.	ICAO and ACI		2025
		A2- MID Region Action Plan/Milestones on the Global Reporting Format (GRF) Implementation.	ICAO		2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
G1-SEI-03:	Runway Safety- Runway Incursion	**A1-** Conduct Capacity Building Activities on the Advanced Surface Movement Guidance and Control System (A-SMGCS) Implementation	ICAO	To be supported by Euro-Control, FAA	2023
G1-SEI-04A1:	Controlled Flight into Terrain (CFIT)	**A1-** Advisory Circular: Instrument Approach Procedures Using Continuous Descent Final Approach Techniques.	IATA and Aircraft manufacturers		2025
		A2- Guidance for designing RNP Approach	ICAO and MID FPP		2025
		A3- Advisory Circular: Crew Resource Management Training Programme (CRM)	IATA and Aircraft manufacturers		2025
G1-SEI-04A2	5G Operations on Radar Altimeter	**A1-** Develop a guidance material on safeguarding measures to protect Radio Altimeter from potential harmful interference from 5G Operation	Radio Altimeter Action Group (RADALT AG)	To be supported by Boeing	2025
		A2- Conduct a Webinar addressing the matter to raise awareness and promote the guidance material developed by the RADALT AG	ICAO and RADALT AG	To be supported by Airbus & Boeing	2025
G1-SEI-05B1:	MAC- Loss of Separation	**A1-** Conduct workshop to implement Civil-Military cooperation	ICAO, States, and International Organizations		2025
		A2- Conduct seminar on raising awareness among stakeholders related to the potential risk of MAC over high seas	ICAO, States, and international organizations		2025
G1-SEI-05B2:	GNSS Interference	**A1**: Raise awareness on the potential impact of GNSS interference on the aviation during the Civil-Mil Workshop	ICAO and IATA		2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
		A2- Urge States to follow the reporting procedure agreed by MIDANPIRG Conclusion 19/4 when needed	ICAO		2025
G1-SEI-05B3:	Ensure the Safe Operations of UAS (Drones)	**A1-** UAS iPack deployment	ICAO and States		2025
		A2- Organize symposium on Drones related subjects	ICAO and ACAO	Supported FAA and Boeing	2023
		A3- Conduct survey on States UAS regulatory framework	ICAO and States		2025
G1-SEI-05B4:	Expansion of ATS route Networks	**A1-** Conduct gap analysis to identify current ATS route networks gaps	ICAO and States		2025
		A2- Establishment of parallel unidirectional ATS routes (De-confliction)	ICAO and States		2025
Organizational Challenges/issues					
Goal 2: Strengthen States' Safety Oversight Capabilities					
G2-SEI-01:	Strengthening of States' Safety Oversight Capabilities	**A1-** Conduct Capacity Building Activities to promote effective implementation of SARPs	ICAO, States, International Organizations, and Industry	"Inspectors training" to be Supported by Airbus.	2025
		A2- Conduct technical assistance and NCLB missions to States , with focus on states with EI<80% as well as ANS, AIG, AGA, and OPS areas	ICAO and States		2025
		A3- Develop and implement a specific NCLB plan of actions.	ICAO, States, International Organizations, and Industry		2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
		A4 - Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course on Aerodrome Inspection) **(Action addressed under G6-SEI-01 A5)**	States (Qatar) and ICAO		2025
		A5- Develop guidance material to assist MID Region States in the issuance of exemptions related to temporary deviations from standards	Qatar	supported by Iran, Sudan, UAE, ACAO, and IATA	2025
		A6- Develop guidance material to support States for the conduct of remote surveillance	Qatar	supported by Iran, Jordan, Saudi Arabia, Sudan, UAE, and ACAO	2025
		A7- Develop guidance material on the enhancement of understanding the concept of judicial enforcement for aviation inspectors	Qatar	supported by Saudi Arabia and UAE	2025
G2-SEI-03:	Sharing of Safety Recommendations related to Accidents and Serious Incidents	**A1-** Establishing a Platform for Sharing Safety Recommendations for MENA ARCM Member States	ICAO, ACAO, and MENA ARCM Member States	On-hold	2025
G2-SEI-04:	Enhance State Oversight on Dangerous Goods	**A1-** Dangerous Goods (DG) capacity building activities including Lithium batteries fire/smoke risk in cabin	ICAO, States, International Organizations, And Industry		2025
		A2- Develop guidance material on carriage and transport of Lithium batteries	IATA, States, International Organizations, And Industry		2025
G2-SEI-05:	Human factors and Competence of Personnel	**A1-** Advisory Circular: Crew Resource Management Training Programme (CRM). **(Action addressed under G1-SEI-04: CFIT).**	IATA and Industry		2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
		A2- Organize Crew Resource Management Capacity building activities	ICAO &Jordan, States, International Organizations, and Industry	CBTA and EBT to be supported by Airbus and FAA	2025
		A3- Organize Team Resource Management Capacity building activities	ICAO & Jordan States, International Organizations, and Industry	FAA	2025
		A4- Conduct Fatigue Risk Management and Mental Health Best Practices Capacity building activities	ICAO & Jordan States, International Organizations, and Industry	To be supported by Airbus	20225
G2-SEI-06:	Impact of security on safety	**A1-** Organize seminar/Symposium/Workshop to exchange experiences and good practices on assessing the risks and sharing of information related to the overflying of conflict zones in coordination with RASFG-MID and MIDANPIRG.	ICAO		2025
		A2- Risk management on conflict zone workshop	ICAO/ACAO		2023
G2-SEI-07:	Managing cybersecurity risks	**A1-** Develop a Regional Action Plan to bridge the gap between ICAO Cyber Security Action plan and the implementation level of Cyber Resilience in the MID Region	ANS Cyber SeC Action Group		2025
		A2- Conduct activities on Cyber Security and Resilience- (Jointly ANS and AVSEC)	ICAO	To be supported by Boeing	2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
		A3- Develop a MID Region Cybersecurity Action Plan	Cybersecurity Security Ad-hoc Group		2025
G2-SEI-08:	Impact of COVID-19 pandemic- Safe return to operations	**A1-** Continued support to the aviation industry through MID-RPTF meetings/Activities, as needed	ICAO, States, International Organizations, and Industry		2025
		A2- Sharing of guidance material/best practices	ICAO, States, International Organizations, and Industry	To be support by Airbus	2025
Goal 3: Implementation of Effective States Safety Programme (SSP)					
G3-SEI-01:	Implement an effective Safety Management	**A1-** Conduct ICAO SSP/SMS Capacity building activities	SSP workshops for States. SMS & Flight Data analysis workshop for airlines. Airbus, ACAO and ICAO. 2023		2025
		A2- Conduct Technical Assistance missions by SMIT	ICAO and States		2025
G3-SEI-02:	NASP Development & Implementation	**A1-** Conduct NASPs workshops & technical assistance missions	ICAO		2025
		A2- NASP iPacks deployment	ICAO		2025
Goal 4: Increase Collaboration at the Regional Level					
G4-SEI-01:	Development and Implementation of	**A1-** Development and Implementation of MID-RASP 2023-2025 Edition	ICAO & SEIG		2023

	MID-RASP				
G4-SEI-02:	Enhance collaboration between States, international organizations, and industry	**A1-** Develop and agree on joint work activities through MID-RCM meetings	ICAO, States, Regional Groups, International Organizations, and Industry		2025
		A2- Support the establishment of MENA RSOO and its activities	ICAO and States		2025
Goal 5: Expand the Use of Industry Programmes and Safety Information Sharing Networks					
G5-SEI-01:	Promote the Use of industry Programmes	**A1-** Encourage IATA's IOSA and ISAGO registrations through safety promotion	IATA		2025
		A2- Encourage the implementation of ACI Airport Excellence (APEX) in Safety Programme	ICAO and ACI		2025
Goal 6: Ensure the Appropriate Infrastructure is available to Support Safe Operations					
G6-SEI-01:	Certification of International Aerodromes	**A1-** Support States on the implementation of the ICAO Annex 14 requirements to achieve compliance with regards to Aerodrome Design and Operations, through capacity building activities.	ICAO and ACI		2025
		A2- Enhance capacity building for States CAAs and Airport operators related to Aerodromes Certification through capacity building activities.	ICAO and ACI		2025
		A3 - Deployment of iPack on Aerodrome Re-Start	ICAO and States		2025
		A4 - Support States in implementing aerodrome oversight/inspection mechanism through capacity building activities on Aerodrome Oversight	ICAO	Supported by FAA	2025
		A5 – Conduct a Capacity Building Activity for Aerodrome Inspectors	States (Qatar) and ICAO		2025

		(Training Course on Aerodrome Inspection)			
		A6 – Conduct a Wildlife Hazard Management Control capacity building Activities	ICAO, ACAO, WBA	Supported by International Organizations	2025
G6-SEI-02:	Establish Runway Safety Team (RST) at International Aerodromes	**A1-** Conduct Runway Safety Go-Team (RST) assistance missions	ICAO	Supported RSP (Runway Safety Programme Partners)	2025
		A2: Support States to implement the Global Reporting Format Methodology through capacity building activities**: (Action addressed under G1-SEI-02: Runway Excursion).**	ICAO and ACI		2025

Appendix E:

SEIs identified in MID-RASP may be considered by States for inclusion in their NASPs, as appropriate

SEI Code	SEI name
Organizational Challenges	
Goal 2: Strengthen States' Safety Oversight Capabilities	
G2-SEI-01:	Strengthening of States' Safety Oversight Capabilities
G2-SEI-04:	Enhance State Oversight on Dangerous Goods
G2-SEI-05:	Human factors and Competence of Personnel
G2-SEI-06:	Impact of security on safety
G2-SEI-07:	Managing cybersecurity risks
G2-SEI-08:	Impact of COVID-19 pandemic- Safe return to operations
Goal 3: Implementation of Effective States Safety Programme (SSP)	
G3-SEI-01:	Implement safety management
G3-SEI-02:	NASP Development & Implementation
Goal 6: Ensure the Appropriate Infrastructure is available to Support Safe Operations	
G6-SEI-01:	Certification of International Aerodromes
G6-SEI-02:	Establish Runway Safety Team (RST) at International Aerodromes
Regional Operational Safety Risks	
Goal 1: Achieve a continuous reduction in Operational Risks	
G1-SEI-01:	Aircraft upset in flight (LOC-I)
G1-SEI-02:	Runway Excursion (RE)
G1-SEI-03:	Runway Incursion (RI)
G1-SEI-4A1:	Controlled Flight Into Terrain (CFIT)
G1-SEI-04A2:	5G operations on Radar Altimeter
G1-SEI-05A1:	MAC- Loss of separation/TCAS RA
G1-SEI-05A2:	GNSS Interference
G1-SEI-05A3:	Ensure the Safe Operations of UAS (drones)

Appendix F: Definitions

Accident Investigation Authority. The authority designated by a State as responsible for aircraft accident and incident investigations within the context of Annex 13.

Audit Area. One of eight audit areas pertaining to the Universal Safety Oversight Audit Programme (USOAP), i.e. primary aviation legislation and civil aviation regulations (LEG), civil aviation organization (ORG); personnel licensing and training (PEL); aircraft operations (OPS); airworthiness of aircraft (AIR); aircraft accident and incident investigation (AIG); air navigation services (ANS); and aerodromes and ground aids (AGA).

Contributing Factors. Actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident. the identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Critical Elements (CEs). The critical elements of a safety oversight system encompass the whole spectrum of civil aviation activities. They are the building blocks upon which an effective safety oversight system is based. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

Effective Implementation (EI). A measure of the State's safety oversight capability, calculated for each critical element, each audit area or as an overall measure. The EI is expressed as a percentage.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Safety. The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

Safety Audit. A USOAP CMA audit that a State requests and pays for (on a cost recovery basis). The State determines the scope and date of a safety audit. Also see definition of audit.

Safety Data. A defined set of facts or set of safety values collected from various aviation related sources, which is used to maintain or improve safety.

Note: such safety data is collected from proactive or reactive safety-related activities, including but not limited to:

a. accident or incident investigations;
b. safety reporting;
c. continuing airworthiness reporting;
d. operational performance monitoring;
e. inspections, audits, surveys; or
f. safety studies and reviews.

Safety Enhancement: initiative (SEI). One or more actions to eliminate or mitigate risks associated with contributing factors to a safety occurrence or to address an identified safety deficiency. There are two main types of SEIs to address safety risks and issues at the Regional level.

Safety Information. Safety data processed, organized or analyzed in a given context so as to make it useful for safety management purposes.

Safety Management System (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

Safety Oversight. A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

Safety Performance. A State or a service provider's safety achievement as defined by its safety performance targets and safety performance indicators.

Safety Performance Indicator. A data-based parameter used for monitoring and assessing safety performance.

Safety Performance Target. The State or service provider's planned or intended target for a safety performance indicator over a given period that aligns with the safety objectives.

Safety Risk. The predicted probability and severity of the consequences or outcomes of a hazard.

Significant Safety Concern (SSC). Occurs when the State allows the holder of an authorization or approval to exercise the privileges attached to it, although the minimum requirements established by the State and by the Standards set forth in the Annexes to the Convention are not met, resulting in an immediate safety risk to International Civil Aviation.

State Safety Programme (SSP). An integrated set of regulations and activities aimed at improving safety.

Appendix G: Abbreviations and Acronyms

AIIA:	Accident and Incident Investigation Authority
ACI:	Airports Council International
ADRM:	Aerodrome
AGA:	Aerodrome and Ground Aids
AIG:	Aircraft Accident and Incident Investigation
ALAR:	Approach and Landing Reduction
ANS:	Air Navigation Services
ANSP:	Air Navigation Service Provider
APV:	Approaches with Vertical Guidance
ARC:	Abnormal Runway Contact
ASBU:	Aviation System Block Upgrade
ASR:	Annual Safety Report
ATM:	Air Traffic Management
ATS:	Air Traffic Services
BIRD:	Bird Strike
CAA:	Civil Aviation Authority
CASI:	Civil Aviation Safety Inspectors
CAST:	Commercial Aviation Safety Team
CE:	Critical Element
CFIT:	Controlled Flight into Terrain
CICTT:	CAST/ICAO Common Taxonomy Team
CMA:	Continuous Monitoring Approach
CRM:	Crew Resource Management
CAST:	US Commercial Aviation Safety Team
DGCA:	Conference of Directors General of Civil Aviation
EI:	Effective Implementation
FDAP:	Flight Data Analysis Programme
FIR:	Flight Information Region
F-NI:	Fire/ Smoke (Non-Impact)
GADSS:	Global Aeronautical Distress and Safety System
GANP:	Global Air Navigation Plan
GASeP:	Global Aviation Security Plan
GASOS:	Global Aviation Safety Oversight System
GASP:	Global Aviation Safety Plan
GASP-SG:	Global Aviation Safety Plan Study Group
GEN:	General Aspects
GPWS:	Ground Proximity Warning System
G- HRC:	Global-High Risk Categories of Occurrences
IATA:	International Air Transport Association
ICAO:	International Civil Aviation Organization
IFALPA:	International Federation of Airline Pilots' Associations
IOSA:	IATA Operational Safety Audit
ISAGO:	IATA Safety Audit for Ground Operations
iSTARS:	Integrated Safety Trend Analysis and Reporting System
LOC-I:	Loss of Control In-flight
MAC:	AIRPROX/ TCAS alert/ loss of separation/ near miss collisions/ mid-air collisions
MTOW:	Maximum Take-Off Weight

NASP:	National Aviation Safety Plan
NCLB:	No Country Left Behind
NDP:	National Development Plan
OAG:	Official Airline Guide
OPS:	Flight Operations (USOAP Audit Area)
ORG:	Civil Aviation Organization (USOAP Audit Area)
PDCA:	Plan-Do-Check-Act methodology
RAMP:	Ground Handling
RASG:	Regional Aviation Safety Group
RASP:	Regional Aviation Safety Plan
RE:	Runway Excursion (departure or landing)
RI:	Runway Incursion
RS:	Runway Safety
RSOO:	Regional Safety Oversight Organization
RST:	Runway Safety Team
RTC:	ICAO Regional Training Centre of Excellence
SAFE:	ICAO Safety Fund
SARPs:	Standards and Recommended Practices
SCF-NP:	System/Component Failure or Malfunction – Non-power plant
SCF-PP:	System/Component Failure or Malfunction - Power plant
SDCPS:	Safety Data Collection and Processing System
SEI:	Safety Enhancement Initiatives
SISG:	ICAO's Safety Indicator Study Group
SMS:	Safety Management Systems
SPI:	Safety Performance Indicator
SSC:	Significant Safety Concern
SSO:	State Safety Oversight
SSP:	State Safety Programme
SRP:	Safety Reporting and Programme
TCAS:	Traffic Collision and Avoidance System
TOR:	Terms of Reference
UAS:	Unmanned Aircraft Systems
UNK:	Unknown or Undetermined
UPRT:	Upset Prevention and Recovery Training
USOAP:	Universal Safety Oversight Audit Programme
USOS:	Undershoot/ Overshoot

CREDITS

The RASG-MID thanks **Mr. Mohamed Chakib** for developing the MID-RASP 2023-2025 Edition.

ICAO MID

International Civil Aviation Organization
Middle East Office
Cairo International Airport
Cairo 11776, EGYPT

Tel.: +20 2 22674840/41/45/46
Fax: +20 2 22674843
Email: icaomid@icao.int



Consolidated List of SEIs with their respective Safety Actions

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
Regional Operational Safety Risks					
Goal 1: Achieve a Continuous Reduction in Operational Risks					
G1-SEI-01:	Aircraft Upset in Flight (LOC-I)	**A1-** Guidance material on flight crew proficiency	IATA to be supported by Airbus	Planned 2026	2023- 2025
		A2- Advisory Circular: Mode Awareness and Energy State Management Aspects of Flight Deck Automation	IATA to be supported by Airbus	Planned 2026	2023- 2025
		A3- Conduct Upset Recovery capacity building activities	UPRT Workshop. Airbus, ICAO, Kuwait	Regional ICAO UPRT Workshop (jointly involving Airbus, ICAO, Kuwait) conducted in Kuwait 7-11 May 2023. /UPRT webinar conducted 2024. **Completed**	2023-2025
		A4- Develop guidance material on the air cargo safety	Oman	Planned for 2025	2023-2025
G1-SEI-02:	Runway Safety- Runway Excursion	**A1-** Support States to implement the Global Reporting Format (GRF) Methodology through capacity building activities.	ICAO and ACI	**Completed for 2023**/ continuous for 2024/2025	2023-2025
		A2- MID Region Action Plan/Milestones on the Global Reporting Format (GRF) Implementation.	ICAO	**Completed for 2023/** continuous for 2024/2025	2023-2025
G1-SEI-03:	Runway Safety- Runway Incursion	**A1-** Conduct Capacity Building Activities on the Advanced Surface Movement Guidance and Control System (A-SMGCS) Implementation	ICAO To be supported by Euro-Control, FAA	**Completed** Conducted February 2023	2023-2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
G1-SEI-04A1:	Controlled Flight into Terrain (CFIT)	**A1-** Advisory Circular: Instrument Approach Procedures Using Continuous Descent Final Approach Techniques.	IATA is supported by aircraft manufacturers	Planned 2026	2023-2025
		A2- Guidance for designing RNP Approach	ICAO and MID FPP	To be presented to MIDANPIRG/22 **Completed**	2023-2025
		A3- Advisory Circular: Crew Resource Management Training Programme (CRM)	IATA supported by Aircraft manufacturers	Planned for 2026	2023-2025
		A4- Awareness Material on the vulnerabilities of BARO-VNAV approaches and mitigation actions	ICAO	Circulated to all States 2024. **Completed.**	2023-2025
G1-SEI-04A2	5G Operations on Radar Altimeter	**A1-** Develop a guidance material on safeguarding measures to protect Radio Altimeter from potential harmful interference from 5G Operation	Radio Altimeter Action Group (RADALT AG) To be supported by Boeing	**Completed** Publication of the guidance material: MID DOC 15 edition 1.0 in May 2023.	2023-2025
		A2- Conduct a Webinar addressing the matter to raise awareness and promote the guidance material developed by the RADALT AG	ICAO and RADALT AG To be supported by Airbus & Boeing	**Completed** The webinar has been conducted.	2023-2025
G1-SEI-05B1:	MAC- Loss of Separation	**A1-** Conduct workshop to implement Civil-Military cooperation.	ICAO supported by States and International Organizations	At national level, workshop has been conducted in Iran in 2022 and follow up meeting was conducted in Aug 2023. In this respect the action plan has been developed and agreed. **Completed**	2023-2025
		A2- Conduct seminar on raising awareness among stakeholders related to the potential risk of MAC over high seas	ICAO supported by States, and international organizations	To be planned for 2025	2023-2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
G1-SEI-05B2:	GNSS Interference & Spoofing	**A1**: Raise awareness on the potential impact of GNSS interference on the aviation during the Civil-Mil Workshop	ICAO and IATA	The CMC Workshop is planned for July 2025.	2023-2025
		A2- Urge States to follow the reporting procedure agreed by MIDANPIRG Conclusion 19/4 when needed	ICAO	SL has been issued. **Completed**	2023-2025
		A3- Capacity Building on GNSS operations and GNSS RFI	ICAO and ACAO	Regional GNSS Workshop **Completed.** GNSS symposium planned for 2025	2023-2025
G1-SEI-05B3:	Ensure the Safe Operations of UAS (Drones)	**A1**- UAS iPack deployment	ICAO and States	If requested by States	2023-2025
		A2- Organize symposium on Drones related subjects	ICAO and ACAO supported by FAA and Boeing	ACAO organized Drones symposium in Morocco during the period 4-5 October 2023. **Completed/**Continuous for 2025**.**	2023-2025
		A3- Conduct survey on States UAS regulatory framework	ICAO and States	To be circulated during 2025 in coordination with ICAO HQ. pending HQ Confirmation	2023-2025
		A4- Develop an AAM study	UAE	UAE presented WP during SEIG/6 meeting. **Completed**.	2023-2025
G1-SEI-05B4:	Expansion of ATS route Networks	**A1-** Conduct gap analysis to identify current ATS route networks gaps	ICAO and States	The required data and information have been gathered, and the dashboard was deployed. **Completed**.	2023-2025
		A2- Establishment of parallel unidirectional ATS routes (De-confliction)	ICAO and States	Establishment of the parallel airway at interface of Kuwait and Iraq is on process. In addition, Iran requested to establish new parallel ATS route between Iran and Iraq to accommodate regional traffic in the most safe and efficient manner. **Completed.**	2023-2025
Organizational Challenges/issues					

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
Goal 2: Strengthen States' Safety Oversight Capabilities					
G2-SEI-01:	Strengthening of States' Safety Oversight Capabilities	**A1**- Conduct Capacity Building Activities to promote effective implementation of SARPs	ICAO, States, International Organizations, and Industry.	USOAP workshops conducted 2023. 2024, and 2025. ACAO and Singapore CAA: an AOC certification & Flight Inspectors course conducted in Amman the 29 -2 Jun 2023. **Completed**/continuous for 2024. ICAO & GCAA Symposium: "The Future of Aviation safety and Aircraft Accident Investigation" in Dubai, during 3 to 4 May 2023. "The Prevention of Aircraft Accidents and Incidents through the Collection & Analysis of Safety Data & Information" Workshop held in Rabat, Morocco from 11 to 12 July 2023. Conference on "Assistance to Aircraft Accident Victims and their Families" (AAAVF 2024) conducted 8-9 May 2024. Aviation Safety and Aircraft Accident and Incident Investigation Symposium planned to be conducted this year in Abu Dhabi. ACAO and Singapore CAA conducted a course on resolution of safety issues CE8 in Amman the 19 -23 Jan 2025	2023-2025
		A2- Conduct technical assistance and NCLB missions to States , with focus on states with EI<80% as	ICAO and States	TAs conducted 2023 (Kuwait, Lebanon, Oman, Sudan, Libya).	2023-2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
		well as ANS, AIG, AGA, and OPS areas		ANS Technical assistance to Kuwait, Sudan, Jordan and Lebanon conducted. **Completed.** NCLB Missions conducted for Egypt and Kuwait 2024 and 2025.	
		A4 - Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course on Aerodrome Inspection) **(Action addressed under G6-SEI-01 A5)**	States (Qatar) and ICAO	Conducted February 2023. **Completed.**	2023-2025
		A5- Develop guidance material to assist MID Region States in the issuance of exemptions related to temporary deviations from standards	Qatar supported by Iran, Sudan, UAE, ACAO, and IATA	Planned to be presented to SEIG/7 meeting 2025.	2023-2025
		A6- Develop guidance material to support States for the conduct of remote surveillance	Qatar supported by Iran, Jordan, Saudi Arabia, Sudan, UAE, and ACAO	Planned to be presented to SEIG/7 meeting 2025.	2023-2025
		A7- Develop guidance material on the enhancement of understanding the concept of judicial enforcement for aviation inspectors	Qatar supported by Saudi Arabia and UAE	Planned to be presented to SEIG/7 meeting 2025.	2023-2025
G2-SEI-03:	Establishment of MENA ARCM Database	**A1-** Establishing a Platform for Sharing data for MENA ARCM Member States	ICAO, ACAO, and MENA ARCM Member States	ACAO has established a share folder as an initial step for sharing information. **Completed**	2023-2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
G2-SEI-04:	Enhance State Oversight on Dangerous Goods	**A1**- Dangerous Goods (DG) capacity building activities including Lithium batteries fire/smoke risk in cabin	ICAO, States, International Organizations, IATA, And Industry	Planned 2026	2023-2025
		A2- Develop guidance material on carriage and transport of Lithium batteries	IATA is supported by States, International Organizations, And Industry	Guidance material endorsed by RASG-MID/11 and circulated. **Completed.**	2023-2025
G2-SEI-05:	Human factors and Competence of Personnel	**A1**- Advisory Circular: Crew Resource Management Training Programme (CRM). **(Action addressed under G1-SEI-04: CFIT).**	IATA	Planned for 2026	2023-2025
		A2- Organize CBAT/EBT, Crew Resource Management Capacity building activities	ACAO, ICAO &Airbus,	. CBTA/EBT workshop conducted 25-26 Sep 2024. **Completed.**	2023-2025
		A3- Organize Team Resource Management Capacity building activities	ACAO, ICAO &Airbus	Planned for 2026	2023-2025
		A4- Conduct Fatigue Risk Management and Mental Health Best Practices Capacity building activities	ACAO, ICAO &Airbus	Webinar conducted 23 Sep 2024. **Completed**	2023-2025
		A5. Data analysis and Artificial intelligence study	UAE	**Completed**	
G2-SEI-06:	Impact of security on safety	**A1- Organize** seminar/Symposium/Workshop to exchange experiences and good practices on assessing the risks and sharing of information related to the overflying of conflict zones in coordination with RASFG-MID	ICAO	Planned 2026	2023-2025

SEI Code	SEI Name	Actions	Owner(s)	Status/Progress	Completion Date
		and MIDANPIRG.			
		A2- Risk management on conflict zone workshop	ICAO/ACAO	Planned for June 2025	2023-2025
G2-SEI-07:	Managing cybersecurity risks	**A1- Develop** a Regional Action Plan to bridge the gap between ICAO Cyber Security Action plan and the implementation level of Cyber Resilience in the MID Region	ANS Cyber SeC Action Group ACAO AFCAC ECAC	**Completed.** Conducted 3rd ed of Interregional Seminar on « Innovation & Cybersecurity » in Casablanca/ Morocco, 17- 19 July 2024	2023-2025
		A2- Conduct activities on Cyber Security and Resilience- (Jointly ANS and AVSEC)	ICAO supported by Boeing	**Completed** conducted Nov 2023	2023-2025
		A3- Develop a MID Region Cybersecurity Action Plan	Cybersecurity Security Ad-hoc Group	**Completed**	2023-2025
G2-SEI-08:	Impact of COVID-19 pandemic- Safe return to operations	**A1-** Continued support to the aviation industry through MID-RPTF meetings/Activities, as needed	ICAO, States, International Organizations, and Industry	**Completed** Aviation medicine workshop conducted Feb 2023	2023-2025
		A2- Sharing of guidance material/best practices	ICAO, States, International Organizations, and Industry	**Completed.**	2023-2025
Goal 3: Implementation of Effective States Safety Programme (SSP)					
G3-SEI-01:	Implement effective Safety Management	**A1**- Conduct ICAO SSP/SMS Capacity building activities	SSP workshops for States. 2023 SMS & Flight Data analysis workshop for airlines.	SSP training course and SSP workshop conducted. (Kuwait & Oman) 2023 SRM Workshop conducted 2024. SMS & Flight Data analysis workshop for airlines Conducted Nov 2023.	2023-2025

			ACAO, Airbus and ICAO. ACAO, ICAO & MENA RSOO States	**Completed**/Continuous for 2024. SSP workshops provided for UAE & Jordan. SRM workshop for Jordan **Completed**	
		A2- Conduct SSP Technical Assistance missions	ICAO and States	Conducted to Egypt Jan2025 **Completed**	2023-2025
G3-SEI-02:	NASP Development & Implementation	**A1- Conduct** NASPs workshops & technical assistance missions	ICAO. 2023	Workshop conducted in Kuwait and Qatar 2023 & 2024. **Completed**/Continuous for 2025. To be conducted Back-to-back with RASG-MID/12 meeting	2023-2025
		A2- NASP iPacks deployment	ICAO	If requested by states	2023-2025
Goal 4: Increase Collaboration at the Regional Level					
G4-SEI-01:	Development and Implementation of MID-RASP	**A1**- Development and Implementation of MID-RASP 2023-2025 Edition	SEIG	Published May 2023. **Completed**	2023-2025
G4-SEI-02:	Enhance collaboration between States, international organizations, and industry	**A1**- Develop and agree on joint work activities through MID-RCM meetings	ICAO, States, Regional Groups, International Organizations, and Industry	**Completed** Conducted Oct 2023	2023-2025
		A2- Support the establishment of MENA RSOO and its activities	ACAO, ICAO and States	States Signed the RSOO MoU on Dec 2023 and RSOO started its operations. **Completed.**	2023-2025

Goal 5: Expand the Use of Industry Programmes and Safety Information Sharing Networks					
G5-SEI-01:	Promoting the Use of industry Programmes	**A1-** Encourage IATA's IOSA and ISAGO registrations through safety promotion	IATA	**Completed**	2023-2025
		A2- Encourage the implementation of ACI Airport Excellence (APEX) in Safety Programme	ICAO and ACI	**Completed**	2023-2025
Goal 6: Ensure the Appropriate Infrastructure is available to Support Safe Operations					
G6-SEI-01:	Certification of International Aerodromes	**A1-** Support States on the implementation of the ICAO Annex 14 requirements to achieve compliance with regards to Aerodrome Design and Operations, through capacity building activities.	ICAO and ACI	Four (04) activities have coordinated with ACI for 2024 (Implementation Status**: Completed)**	2023-2025
		A2- Enhance capacity building for States CAAs and Airport operators related to Aerodromes Certification through capacity building activities.	ICAO and ACI	Planned activity for 2025	2023-2025
		A3 - Deployment of iPack on Aerodrome Re-Start	ICAO and States	If requested by states	2023-2025
		A4 - Support States in implementing aerodrome oversight/inspection mechanism through capacity building activities on Aerodrome Oversight	ICAO Supported by FAA	Planned activity for 2025	2023-2025
		A5 – Conduct a Capacity Building Activity for Aerodrome Inspectors (Training Course on Aerodrome Inspection)	States (Qatar) and ICAO	Conducted February 2023. **Completed.**	2023-2025
		A6 – Conduct a Wildlife Hazard Management Control capacity building Activities	ICAO, ACAO, WBA	Symposium planned Dec 2025	2023-2025

		A7- Conduct a Capacity Building Activity for States CAAs and airports regarding the introduction of ACR/PCR SARPS	ACAO, ICAO	Conduct an ICAO ACAO WS on ACR/PCR and SMS implementation, in rabat the 5 & 6 Jun 2024. **Completed**.	
G6-SEI-02:	Establish Runway Safety Team (RST) at International Aerodromes	**A1- Conduct** Runway Safety Go-Team (RST) assistance missions	ICAO. Supported RSP (Runway Safety Programme Partners)	Planned for 2025	2023-2025
		A2: Support States to implement the Global Reporting Format Methodology through capacity building activities**: (Action addressed under G1-SEI-02: Runway Excursion).**	ICAO and ACI	**Completed for 2023**/ continuous for 2025	2023-2025

ICAO Region	State	Location name	Location indicator (ICAO code)	RWY Safety Team Implemented (1=Yes, 0=No)	Date of Implementation (DD/MM/YYYY)	CAA Latest LRST Check Date (DD/MM/YYYY)	AD Planning for LRST Implementation (1=Yes, 0=No)	LRST Estimated Implementation Date (DD/MM/YYYY)	LRST Effective Implemention Date (DD/MM/YYYY)
MID	QATAR	HAMAD INTERNATIONAL	OTHH	1					
MID	QATAR	DOHA INTERNATIONAL	OTBD	1					

ICAO Region	State	Aerodrome Location name	Location Indicator [ICAO code]	AD GBF Deployed (1=Yes, 0=NO)	Date of Implementation [DD/MM/YYYY]	CAA Latest GBF Deployment Check Date [DD/MM/YYYY]	Is the Aerodrome planning GBF Deployment (1=Yes, 0=NO)	Estimated AD GBF Deployment Date [DD/MM/YYYY]	Effective AD GBF Deployment Date [DD/MM/YYYY]
MID	QATAR	HAMAD INTERNATIONAL	OTHH						
MID	QATAR	DOHA INTERNATIONAL	OTBD						

ACTION MILESTONES FOR THE ESTABLISHEMNT AND IMPLEMENTATION OF THE ICAO GLOBAL REPORTING FORMAT METHODOLOGY

(to be tailored/customized and detailed by each State)

[STATE NAME]

[State focal point name: xxxxxxxxx]

[State focal point email address: xxxxxxxxx]

Milestone ID	ACTION	ENTITY RESPONSIBLE	TARGET DATE[1]	EFFECTIVE DATE	REMARKS
GRF 1	Review ICAO provisions and guidance and other Organisations guidance (see below)	CAA	**31/01/2021**		
GRF 2	Designate a focal point to coordinate implementation activities at the national level	CAA	**31/01/2021**		
GRF 3	Identify concerned focal points in each entity (CAA, Airport, ANSP, Aircraft operators – include BA, GA and military as applicable)	CAA, Airports, ANSP, Aircraft operators	**31/01/2021**		
GRF 4	Establish an Implementation Coordination Team including staff from the identified stakeholder entities (as appropriate)	CAA	**15/01/2021**		
GRF 5	Coordinate and support the conduct the initial training for the CAA, Airports, ANSP and Aircraft Operators' personnel (e.g. ICAO/ACI/IATA online courses, national awareness workshop, etc.)	CAA	**15/02/2021**		
GRF 6	Identify regulations, standards, procedures and guidance material to be developed/amended	National Focal Point and the Implementation Coordination Team	**15/02/2021**		

[1] Target dates are indicative only and should be replaced by realistic dates determined by individual State

Milestone ID	ACTION	ENTITY RESPONSIBLE	TARGET DATE[1]	EFFECTIVE DATE	REMARKS
GRF 7	Develop a detailed national implementation plan and safety risk assessment. Each entity should also establish its specific implementation plan and safety risk assessment.	CAA, Airports, ANSP, Aircraft operators	**28/02/2021**		
GRF 8	Identify the necessary means and resources for the implementation (human, financial and material resources)	National Focal Point and the Implementation Coordination Team	**28/02/2021**		
GRF 9	Coordinate with Airport Runway Safety Teams	Airports	**28/02/2021**		
GRF 10	Develop and promulgate regulations and standards	CAA	**30/03/2021**		
GRF 11	Develop procedures and guidance material (translate if required)	National Focal Point and the Implementation Coordination Team	**15/04/2021**		
GRF 12	Provide the necessary means and resources for the implementation (human, financial and material resources)	CAA, Airports, ANSP, Aircraft operators	**31/05/2021**		
GRF 13	Conduct On-the-Job Training (OJT) on the implementation	CAA, Airports, ANSP, Aircraft operators	**30/06/2021**		
GRF 14	Perform tests/trials prior to the effective implementation	All	**31/07/2021**		
GRF 15	Applicability date for the new methodology for assessing and reporting runway surface conditions	All	**4/11/2021**		

Notes: ICAO Runway Safety Go-Team Assistance Missions are available to support States and Airports. ACI APEX Safety Reviews are also available to support Airports.

References:

- ICAO GRF web site https://www.icao.int/safety/Pages/GRF.aspx

ACTION MILESTONES FOR THE ESTABLISHMENT AND IMPLEMENTATION OF THE ICAO ACR-PCR METHODOLOGY

(to be tailored/customized and detailed by each State)

[STATE NAME]

[State focal point name: xxxxxxxxx]

[State focal point email address: xxxxxxxxx]

Milestones	ACTION	RESPONSIBLE ENTITY	TARGET DATE [1]	OBSERVATIONS
PCR 1	Designate a focal point to coordinate activities at National Level.	CAA		
PCR 2	Identify stakeholder focal points (aerodrome operator, aeronautical publication service provider).	CAA, (AGA and ANS), provider of aeronautical publications, aerodrome operators (AO)		
PCR 3	Establish a Mechanism/Team to ensure the proper implementation of the ACR-PCR Method, which includes personnel from the identified stakeholder	CAA		
PCR 4	Ensure the Training of the Team responsible of the Milestone PCR 3	CAA and concerned Stakeholders		
PCR 5	Identify regulations, standards, and procedures (e.g. overload operations) that will be developed/amended.	National focal point and work team		

[1] Target dates are indicative only and should be replaced by realistic dates by each State

Milestones	ACTION	RESPONSIBLE ENTITY	TARGET DATE [1]	OBSERVATIONS
PCR 6	Develop and promulgate regulations and standards, incorporating Amendment 15 to Annex 14, Vol. 1, adopted in March/2020 and in force on Nov/24/2024 (ACR/PCR).	CAA		
PCR 7	Develop and publish guidance material regarding PCR calculation.	National focal point and work team		
PCR 8	Conduct training/outreach events for AO staff.	CAA		
PCR 9	Develop an implementation schedule. Each AO must establish an implementation schedule (consider the need to carry out evaluations of the movement area pavements [2]).	CAA, AO		
PCR 10	Provide the means and resources (human, financial and material) necessary to determine the PCR(s) at the aerodrome [3].	AO		
PCR 11	Deadline to send information to the aeronautical information services for the preparation of the publications [*to be defined according to the State AIS regulations in coordination with the CAA´s ANS]*	All of them		
PCR 12	Date of effective application of the new methodology to report the resistance of the pavements of the movement area.	All of them	28 November 2024	

References:

- Annex 14 (Vol I) – date of applicability 28 Nov 2024.
- PANS Aerodromes (Doc 9981), Amendment No. 4.
- Aerodrome Design Manual (Doc. 9157) Part 3 « Pavements », Third Edition 2022.

[2] Those aerodromes that have a comprehensive evaluation of pavements older than 5 years (or at the discretion of the CAA).
[3] It is considered convenient for the determination of a long-term PCR, to carry it out through the Technical Method.

APPENDIX 4L

ICAO Region	State	Aerodrome Location name	Location indicator (ICAO code)	AD ACR-PCR Implemented	AD ACR-PCR Implementation Date (DD/MM/YYYY)	Ident CAA AD ACR-PCR Deployment Check (DD/MM/YYYY)	AD Planning ACR-PCR Deployment (Yes / No)	AD ACR-PCR Estimated Deployment Date (DD/MM/YYYY)	AD ACR-PCR Effective Deployment Date (DD/MM/YYYY)
MID	QATAR	HAMAD INTERNATIONAL	OTHH						
MID	QATAR	DOHA INTERNATIONAL	OTBD						

Guidance for IBIS State Focal Points on the Submission of **Current-Year** Wildlife Strike Reports (IBIS): Action Required by 31 March of the **Following Year**

IBIS State Focal Points should note that ICAO will be kindly **requesting the submission of the current wildlife reports on yearly basis**. As the designated IBIS Focal Point for your State, **no formal letter is required**. A **simple reply to the ICAO email with the relevant file attached will suffice**. Please ensure that you follow the submission guidelines outlined below:

a) **For those States not using ECCAIRS:** Submit the reports using the excel template developed by ICAO to ensure standardization. The template is available for download on the IBIS website, located in the Aerodromes Public Portal **(www.icao.int/aerodromes) under the "TEMPLATES" section**. If your State has its own system for collecting a large volume of reports, you may use an alternative Excel format that best suits your needs;

b) **For those States using ECCAIRS:** Submit the reports in the ECCAIRS file format. Please note that ICAO's current ECCAIRS version can only process files with "e5e" and "e5f" extensions. Files with the "e5x" extension cannot be opened. If your reports are in the "e5x" format, we kindly request you to use the Excel template mentioned above (see letter "a"); or

c) **For those States which have already submitted to ICAO wildlife reports for the Current Year:** If you have already submitted the Current reports in accordance with the instructions outlined in **this Appendix** and **have received confirmation of the submission**, you may disregard the ICAO email requesting the report. However, if there are updates or additional data to share, please feel free **to resubmit all Current reports, including any updated information**.

Additionally, please note that:

a) Beginning in 2023, the deadline for wildlife report submissions has been consolidated into a single annual deadline to simplify the process. Moving forward, the deadline will fall at the end of the first quarter of each year; and

b) All IBIS related messages should be sent to the email address wildlife@icao.int with a copy to icaomid@icao.int .

Lastly, ICAO kindly request that all Current wildlife reports be submitted by **31 March the following Year**. Your cooperation in meeting this deadline is greatly appreciated.

ANONYMOUS DATASET FOR AERODROME SAFEY

MINIMUM REPORTING AREAS OF CHALLENGING/SIGNIFICANT NON-COMPLIANCES

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	**National Reference**	**Description**	**First reporting Date**	**Remarks/ Impact of non-implementation**	**STATE/ Concerned Aerodrome (s)**	**Corrective Action Plan(s) (CAP(s))**		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	**Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon**	**Estimated Date for CAP completion / Status**
AERODROME DESIGN									
1.	Annex 14 - Vol 1, Chapter 1 PANS-Aerodromes, Part 1, 2		**Aerodrome Master Plan**		The lack of airports master plans affect their short to medium term capacity and efficiency enhancement projects; restricting their ability to fulfil operational needs.				
2.	Annex 14 - Vol 1, Chapter 2, 3 PANS-Aerodromes, Part 1, 2 MID ANP, Vol II - AOP		**Runways**		In view of the vital function of runways in providing for safe and efficient aircraft landings and take-offs, it is imperative that their design take into account the operational and physical characteristics of the aeroplanes expected to use the runway, as well as engineering considerations.				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
3.	Annex 14 - Vol 1, Chapter 2, 3 PANS-Aerodromes, Part 1, 2		**Taxiways**		A properly designed taxiway system ensures a smooth, continuous flow of aircraft ground traffic, operating at the highest level of safety and efficiency and contributes to optimum aerodrome utilization				
4.	Annex 14 - Vol 1, Chapter 2, 3 PANS-Aerodromes, Part 1, 2		**Aprons**		Apron design should take into account safety procedures for aircraft manoeuvring and contribute to a high degree of efficiency for aircraft movements and dispensing apron services.				
5.	Annex 14 - Vol 1, Chapter 2, 5, 6, 7 PANS-Aerodromes, Part 1 MID ANP, Vol II - AOP		**Visual Aids**		Visual aids contribute to the safety and operational efficiency of aircraft and vehicle movements. Design and Good maintenance of these aids is essential to ensure that the cues that they provide are available in all circumstances.				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	**National Reference**	**Description**	**First reporting Date**	**Remarks/ Impact of non-implementation**	**STATE/ Concerned Aerodrome (s)**	**Corrective Action Plan(s) (CAP(s))**		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	**Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon**	**Estimated Date for CAP completion / Status**
6.	Annex 10 - Vol 1, Chapter 3		**Radio Navigation Aids**		Radio Navigation Aids contribute to the safety and operational efficiency of aircrafts. Good maintenance of these aids is essential to ensure that the cues that they provide are available in all				
7.	Annex 14 - Vol 1, Chapter 8 PANS-Aerodromes, Part 1 MID ANP, Vol II - AOP		**Electrical Systems**		Electrical systems contribute to the safety and operational efficiency of aircraft and vehicle movements. Their design and good maintenance of these aids is essential to ensure that the cues that they provide are available in all circumstances				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
8.	Annex 14 - Vol 1, Chapter 1		**Terminals**		Architectural and infrastructure-related requirements for the optimum implementation of international civil aviation security measures shall be integrated into the design and construction of new facilities and alterations to existing facilities at an aerodrome.				
9.	Annex 14 - Vol 1, Chapter 9 PANS-Aerodromes, Part 1		**Fencing**		Lack of fences on an aerodrome could lead to the entrance to the movement area of animals large enough to be a hazard to aircraft.				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	**National Reference**	**Description**	**First reporting Date**	**Remarks/ Impact of non-implementation**	**STATE/ Concerned Aerodrome (s)**	**Corrective Action Plan(s) (CAP(s))**		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	**Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon**	**Estimated Date for CAP completion / Status**
AERODROME OPERATIONS									
10.	Annex 14 - Vol 1, Chapter 2 PANS-Aerodromes, Part 1, 2 MID ANP, Vol II - AOP		**Aerodrome Data**		Determination and reporting of aerodrome-related aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-users of aeronautical data				
11.	Annex 14 - Vol 1, Chapter 9 PANS-Aerodromes, Part 1		**Emergency planning**		Lack of adequately effective emergency planning can seriously affect the effects of an emergency, particularly in respect of saving lives and maintaining aircraft operations.				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
12.	Annex 14 - Vol 1, Chapter 2, 9 PANS-Aerodromes, Part 1 MID ANP, Vol II – AOP		**Rescue and Firefighting**		Lack of adequately effective rescue and firefighting service can affect capabilities to save lives in the event of an aircraft accident or incident occurring at, or in the immediate vicinity				
13.	Annex 14 - Vol 1, Chapter 2, 9 PANS-Aerodromes, Part 1		**Disable Aircraft Removal**		Disabled aircraft can interfere with normal activity of an aerodrome. In addition, runway and taxiway closures can substantially reduce the number of arrivals and departures and restrict movement around the aerodrome, resulting in the reduction of the aerodrome capacity.				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
14.	Annex 14 - Vol 1, Chapter 9 PANS-Aerodromes, Part 1		**Wildlife Strike Hazard Reduction**		Lack of measures (successful bird/wildlife control programme) on an airport and in its vicinity to minimize the likelihood of collisions between wildlife and aircraft will increase the risk to aircraft operations				
15.	Annex 14 - Vol 1, Chapter 2, 9 PANS-Aerodromes, Part 1		**Operational Area Management**		Lack of appropriate airport operational services will affect the safety and efficiency of aircrafts operations.				
16.	Annex 14 - Vol 1, Chapter 9		**Ground Servicing of Aircraft**		Lack of appropriate Ground Servicing of Aircraft will affect the safety and efficiency of aircrafts operations.				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
17.	Annex 14 - Vol 1, Chapter 4, 6 PANS-Aerodromes, Part 1		**Control of obstacles**		The airspace around aerodromes shall be maintained free from obstacles so as to permit the intended aeroplane operations at the aerodromes to be conducted safely and to prevent the aerodromes from becoming unusable by the growth of obstacles around the aerodromes				
18.	Annex 14 - Vol 1, Chapter 10 PANS-Aerodromes, Part 1		**Aerodrome Maintenance**		A maintenance programme, shall be established at an aerodrome to maintain facilities in a condition which does not impair the safety, regularity or efficiency of air navigation				

AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
19.	Annex 14 _ Vol1, Chapter 2 PANS-Aerodromes, Part 2		**Global Reporting Format**		Assessing and reporting the condition of the movement area and related facilities is necessary in order to provide the flight crew with the information needed for safe operation of the aeroplane. The runway condition report (RCR) is used for reporting assessed information.				
20.	Annex 14 - Vol 1, Chapter 1 PANS-Aerodromes, Part 1		**Safety Management**		Implementation of SMS seeks to proactively mitigate safety risks before they result in aviation accidents/ incidents and improve operational efficiencies.				

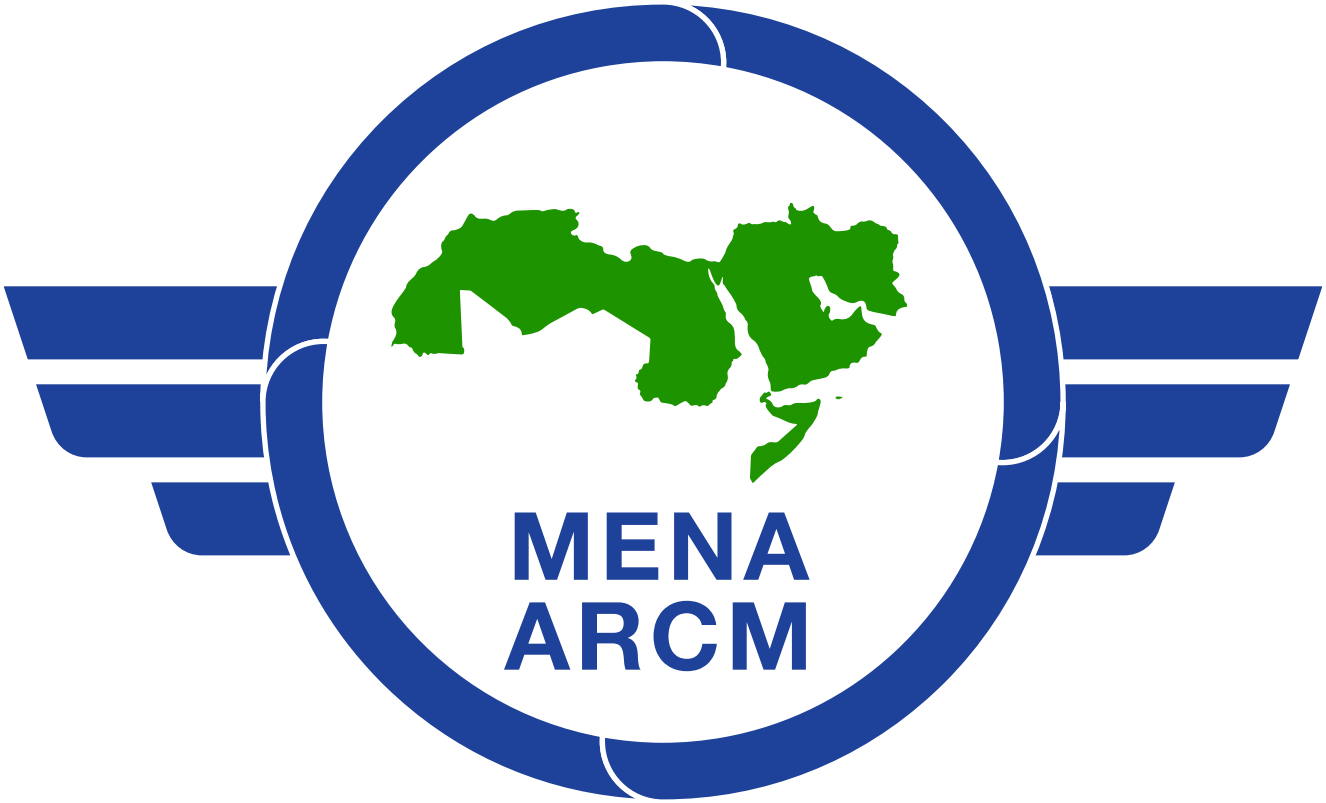
AERODROMES OPERATIONS (AOP)									
	ICAO Reference	National Reference	Description	First reporting Date	Remarks/ Impact of non-implementation	STATE/ Concerned Aerodrome (s)	Corrective Action Plan(s) (CAP(s))		
							Document of the Corrective Action Plan accepted by the State for each concerned Aerodrome	Residual impediment(s)/obstacles faced during the implementation of each CAP and action thereon	Estimated Date for CAP completion / Status
AERODROME CERTIFICATION									
21.	Annex 14 - Vol 1, Chapter 1 to 10 PANS-Aerodromes, Part 1, 2		**Aerodrome Certification**		Lack of certification of an aerodrome means that aerodrome does not meet the specifications regarding the facility and its operation				
22.	PANS-Aerodromes, Part 1		**Safety assessments and Aerodrome Compatibility**		The compatibility between aeroplane operations and aerodrome infrastructure and operations when an aerodrome accommodates an aeroplane that exceeds the certificated characteristics of the aerodrome should be assessed				

Important Note:

*** : Please include the reference of the CAP for each concerned Aerodrome with a hyperlink to the CAP Document as a separate Attachment/Folder.**

General Guidance on the minimum elements that any CAP should include:

Overall, establishing a CAP for each reported non-compliance is important for ensuring that safety concerns are addressed in a timely and effective manner. By investigating the non-compliance, **identifying the root causes and their related corrective measures**, **assigning responsibility**, **establishing timelines**, **monitoring progress**, and **evaluating effectiveness**, aerodrome operators and aviation authorities could ensure that safety risks are minimized, and that each aerodrome remains a safe environment for all users.


MENA
ARCM

قائمة الدول الموقعة على مذكرة التفاهم المتعددة الأطراف أعلاه

List of countries that signed the Multi-Lateral MoU above

التوقيع Signature	وضيفة صاحب التوقيع Title of signatory	الدولة State	م n°
		المملكة الأردنية الهاشمية **Hashemite Kingdom of Jordan**	1
		دولة الإمارات العربية المتحدة **United Arab Emirates**	2
		الجمهورية الإسلامية الإيرانية **Islamic Republic of Iran**	3
		مملكة البحرين **Kingdom of Bahrain**	4
		الجمهورية التونسية **Republic of Tunisia**	5
		جمهورية جيبوتي **Republic of Djibouti**	6
		الجمهورية الجزائرية الديمقراطية الشعبية **People's Democratic Republic of Algeria**	7
		المملكة العربية السعودية **Kingdom of Saudi Arabia**	8
		جمهورية السودان **Republic of Sudan**	9
		جمهورية الصومال **Republic of Somalia**	10
		جمهورية العراق **Republic of Iraq**	11
		سلطنة عمان **Sultanate of Oman**	12
		دولة فلسطين **State of Palestine**	13
	رئيس مرحلة التصفح في حوادث الطائرات	دولة قطر **State of Qatar**	14
		جمهورية القمر المتحدة **Republic of the Comoros**	15
		دولة الكويت **State of Kuwait**	16
		الجمهورية اللبنانية **the Republic of Lebanon**	17
		دولة ليبيا **the State of Libya**	18
		جمهورية مصر العربية **Arab Republic of Egypt**	19
		المملكة المغربية **Kingdom of Morocco**	20
		الجمهورية الإسلامية الموريتانية **the Islamic Republic of Mauritania**	21
		الجمهورية اليمنية **the Republic of Yemen**	22

Note: This multilateral MoU shall be signed by Authorized person from each state to do so, either by the person responsible for the authority of AIG/Unit if it is an independent entity, or the head of the Civil Aviation Authority if the AIG is under his authority, or by whomever they delegate.

ملاحظة: يوقع مذكرة التفاهم المتعددة الأطراف هذه المفوض له من قبل كل دولة للقيام بذلك، إما المسؤول عن هيئة/وحدة التحقيق في حوادث ووقائع الطائرات فيما إذا كانت كيانا مستقلا أو رئيس سلطة/هيئة الطيران المدني إذا ما كانت وحدة التحقيق منظمة تحت سلطته، أو من يفوضه كل منهما.

APPENDIX 5A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/21 CONCLUSIONS & DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 21/1	**RANP/NANP TASK FORCE TOR** That, the RANP/NANP Task Force Terms of Reference (ToR) at Appendix A are endorsed.					**Closed**
C. 21/2	**MID REGION AIR NAVIGATION STRATEGY, EDITION, FEBRUARY 2024** That, the MID Region Air Navigation Strategy, Edition February 2024 (ICAO MID DOC 002), is endorsed and be published by the ICAO MID Office.					**Closed**
C.21/3	**NATIONAL AIR NAVIGATION PLAN (NANP)** That, the MID States with support of ICAO MID Office develop their National Air Navigation Plan (NANP) by end of December 2024.	To support the development of NANPs	NANP	MID State with the support of the MID Office	December 2024	**On going** WP/42 refers
C. 21/4	**MID AIR NAVIGATION REPORT - 2023** That, the MID Air Navigation Report-2023 is endorsed and be published by the ICAO MID Office.					**Done**
C. 21/5	**OPTIMIZATION OF MID REGION ATS ROUTE DESIGNATOR** That, the ICAO MID Office: a) based on Traffic Data Sample (TDS) identify the main flows of the region to maintain their ATS route designators as much as possible through various consecutive FIRs and regions with coordination of relevant States and ICAO Regional Offices; and b) process required Proposal for Amendment (PfA) to the MID eANP Vol II, Table ATM II-MID-I					**On-going** WP/43 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 21/6	**WEBINAR ON PERFORMANCE-BASED AERODROME OPERATING MINIMA (PBN-AOM)** That, a Webinar on the Performance-Based Aerodrome Operating Minima (PB-AOM) be organized in 2024.	To provide a deep understanding of the PBAOM and its concept of operations.	Webinar	ICAO	2024	**Completed** A dedicated session on the on Performance-Based Aerodrome Operating Minima (PB-AOM) was held on 9 December 2024 during the PBN SG/9 meeting.
C. 21/7	**WORKSHOP ON PBN/GNSS** That, ICAO, jointly with ACAO organize a Workshop on GNSS/PBN in 2024.	To provide a forum for sharing the current developments and future evolutions related to GNSS along with implementation of different GNSS elements/options and associated challenges.	Workshop	ACAO and ICAO	2024	**On-going** The Workshop on PBN/GNSS is postponed to 2025. New Proposal to be replaced and superseded by a new Conclusion PPT/9 refers
D. 21/8	**PBN SID AND STAR CHARTING AD HOC WORKING GROUP** That a PBN SID and STAR Charting Ad Hoc Working Group, a) be established to develop guidance/Specimen of PBN SID and STAR Charts, in coordination with the AIM Sub Group. b) *be composed of:* *— Chairpersons of the PBN SG and the AIM SG* *— Mr. Taha Mohamed Taha (Egypt)* *— Rohallah Salehi (Iran)* *— Mohammad Mahanpour (Iran)* *—Mr. Raed Ghazawi (Jordan)*	To develop guidance/Specimen of PBN SID and STAR Charts to promote harmonization and consistency in the publication of PBN charts	Guidance/Specimen of PBN SID and STAR Charts	PBN SID and STAR Charting Ad Hoc Working Group	2024	**Completed** WP52 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	— *Mr. Sulaiman Selmi (Oman)* — *Mr. Suwarn Raj Upadhyay (Oman)* — *Mrs. Pamela Erice (Qatar)* — *Mr. Muhammad Aljuhani (KSA)* — *Mr. Ayed Murfat (KSA)* — *Mr. Saqr Obaid Al Marashda (UAE)* — *Mr. Kedari Manthanwar (UAE)* — *ICAO Secretariat* c) presents its outcome to the PBN SG/9 and AIM SG/11 meetings. d) be dissolved upon the successful completion of its assigned tasks.					
C. 21/9	**MID FPP FUTURE SUSTAINABILITY** That, ICAO MID Office initiates a survey, analyze the feedback received, and subsequently propose coordinated options in consultation with the Chairperson of the MID FPP SC to the DGCA MID/7 meeting for final decision regarding the future of the Programme.	To disseminate a survey and present coordinated recommendations regarding the future of the MIDFPP.	Survey	ICAO MID Office	2024	**Completed** State Letter Ref.: AN 6/33 – 24/047 dated 27 March 2024
D. 21/10	**MID AIRSPACE MANAGEMENT WORKING GROUP (ASM WG)** That, a) MID Airspace Management Working Group (ASM WG) be established to ensure the continuous development of airspace structure, Free Route Airspace, GNSS vulnerability and FF-ICE implementation at regional level in the most efficient and harmonized manner; b) The ASM TF to elect Chairperson and develop Terms of Reference during the first meeting of MID ASM Task Force; and	To establish a centralized entity to address airspace management challenges and further enhance the coordination on regional level.	ASM WG	MIDANPIRG	2024	**Completed (to be closed)** WP/47 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	c) States support the MID ASM WG through: i. assignment of Focal Point to contribute to the work of the Task Force; and ii. sharing states' experience and provision of required data in timely manner.					
D. 21/11	**DISSOLUTION OF THE MID ROUTE DEVELOPMENT ACTION GROUP (RDWG)** That, the MID Route Development Action Group (RDWG) is dissolved.	Superseded with the establishment of ASM WG	ASM WG TOR	MIDANPIRG	2024	**Completed (to be closed)**
C. 21/12	**MID RVSM SMR 2023** That, the MID RVSM Safety Monitoring Report (SMR) 2023 at **Appendix 5I**, is endorsed.	SMR2023	Endorsement of MID SMR2023	MIDANPIRG	March 2024	**Completed (to be closed)**
C. 21/13	**NON SUBMISSION OF REQUIRED DATA FOR THE DEVELOPMENT OF SMR2023** That, Lebanon, Libya and Sudan be included in the list of MID Air Navigation Deficiency.	Non submission of required data to the MIDRMA	Updated list of deficiencies	MIDANPIRG	March 2024	**Completed (to be closed)**
C. 21/14	**MID RVSM SMR 2024** That, a) the FPL/traffic data for the period 15 May – 15 June 2024 to be used for the development of the MID RVSM Safety Monitoring Report (SMR 2024); b) only the appropriate Flight Data form available on the MIDRMA website (www.midrma.com) should be used for the provision of FPL/traffic data to the MIDRMA, by 15 July 2024; and		SMR2024	MIDRMA	May 2025	**On going** WP/44 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	c) the final version of the MID RVSM SMR 2024 be ready for presentation and endorsement by the MIDANPIRG/22 Meeting.					
C. 21/15	**OFAC LICENCE APPLICATION** That, a) the Chairman of MIDRMA Board to submit an application on the OFAC website for the renewal of the OFAC Licence or waiver for the use of the EGMU unconditionally; and b) invited the FAA representative to support and follow-up the application process as appropriate.	Support the application of OFAC Licence	OFAC Licence	MIDRMA Chairman	2024	**Completed** WP/44 refers
D. 21/16	**MID ADS-B HEIGHT MONITORING SYSTEM (MID AHMS)** That, a) States implementing ADS-B to share the archived data with the MIDRMA for evaluation and analysis; b) MIDRMA to coordinate with MAAR for: i. sharing their experience in evaluating and analyzing samples of the received ADS-B data; and ii. providing required training related to AHMS implementation for MIDRMA Staff. c) MIDRMA to develop a mechanism and tools for submitting the ADS-B data by States; d) MIDRMA provides the required training for CNS engineers from member states responsible for extracting ADS-B data from their systems and submitting it to MIDRMA at regular, mutually agreed intervals; e) MIDRMA to develop and document all required processes and procedures to be reflected in the training Manuals for the AHMS implementation, to be incorporated in the MIDRMA Tasks and responsibilities;	Implement ADS-B technology for height monitoring	MID AHMS	MIDRMA	2024	**Ongoing** WP/44 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	f) MIDRMA shall continue to provide GMU monitoring service until the AHMS is fully operational, and for the Aircraft not included in the MID-AHMS; and g) the funding mechanism (including services charges) might be revised accordingly (based on cost -recovery basis). In accordance with ICAO Policies on charges for Airports and Air Navigation Services (Doc 9082), in coordination with IATA.					
C. 21/17	**MID REGIONAL ATM CONTINGENCY PLAN (V5.0)** That, a) the MID Regional ATM Contingency Plan (V5.0), at **Appendix 5J** is endorsed and be published as the MID Regional ATM Contingency Plan (V5.0); b) ICAO MID Office develop required structure on ICAO MID website and keep it up to date regarding MID States contingency plans, agreement, CCT meeting SoDs, contact list and etc.; c) based on the guidelines and template provided in regional contingency plan (V5.0), MID States develop their respective contingency plan and arrangement with adjacent FIRs and share them with ICAO MID; and d) by organizing individual workshops, ICAO MID supports the development of National Contingency Plans by the MID States	Support the States and operators in Contingency situations	MID ATM Contingency Plan V5.0	MIDANPIRG	2024	**On going** PPT/54 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 21/18	**DISSOLUTION OF THE CONTINGENCY PLAN ACTION GROUP** That, the Contingency Plan Action Group is dissolved.					
C. 21/19	**DEVELOPMENT OF MID STATES ATFM PLAN** That, a) based on the guidelines provided in ICAO MID Doc 014: ATFM Plan (V2.0), MID States develop their respective ATFM implementation plan and agreements with adjacent FIRs and share them with ICAO MID; b) by organizing individual workshops, ICAO MID supports the development of States National ATFM Plans and implementation of ICAO Doc 014 requirements for Phase I (including Phase IA & IB), where requested; and c) the MID ATFM Task Force is tasked with the identification of Priority ATFM Implementation Areas within the MID Region, to enable further implementation support activities.	To increase the level of ATFM implementation within the Region	National ATFM Plan	MID States	2025	**On going** WP/55 refers
C 21/20	**MID FF-ICE WORKSHOPS 2024-2025** That, the FF-ICE Workshops be conducted in 2025, with the support of the ATFM TF and the relevant Subgroups to address the FF-ICE planning and implementation in the MID Region.	To enhance the coordination on regional level on the preparedness for FF-ICE implementation and cessation of FPL2012.	FF-ICE Workshop	ICAO MID	2025	**Completed** WP/46 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 21/21	**DISSOLUTION OF THE CMC/FUA ACTION GROUP** That, the CMC/FUA Action Group is dissolved.					**Closed**
C. 21/22	**FREE ROUTE AIRSPACE (FRA) IMPLEMENTATION WORKSHOP** That, the ICAO MID Office organize Workshop in 2024 with support of IATA and concerned States and Stakeholder, to foster the implementation of FRA in the MID Region.	To support further implementation of FRA within the Region	FRA Workshop	ICAO MID	2025	**Completed** WP/47 refers
D. 21/23	**REVIEW OF THE MID REGION ALLOTMENT PLAN** That, in order to increase the amount of spectrum that can be used for Aeronautical Services, the CNS SG should adopt the revised planning Principle for Aeronautical Frequency Bands of 117.975-137 MHz and review and update, as deem necessary, the current MID allotment plan by **Q1 2025**.	To increase the availability and efficiency of spectrum usage for Aeronautical Services within the MID Region	Adoption of the revised planning principle for the 117.975–137 MHz frequency band and review/update of the current MID Region allotment plan, as necessary	CNS Sub-Group (CNS SG	Q1 2025	**On-Going** Coordination actions will be initiated in accordance with the recommendations emanating from MID FM WG
C. 21/24	**OPTIMIZATION OF FREQUENCY ASSIGNMENT IN THE MID REGION** That, in order to optimize the frequency assignment planning and mitigate VHF frequency congestion at regional level, States are urged to: a) coordinate with ICAO MID Office before assigning frequencies for aeronautical services (VHF COM, VHF NAV); b) perform an update/review of the data in the VHF-COM/NAV	To optimize frequency assignment planning and mitigate VHF frequency congestion at the regional level in the MID Region.	States are urged to coordinate with the ICAO MID Office before frequency assignments, update/review VHF-COM/NAV	States	By Q4 of 2024	**On-going** Coordination actions will be initiated in accordance with the recommendations emanating from MID FM WG

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	module; and c) Submit Frequency Requirements for the Period 2023 – 2030 using the Guidance Doc. at **Appendix 5L** by **Q4 2024.**		data, and submit frequency requirements for 2023–2030.			
C. 21/25	**INTER-REGIONAL COMMUNICATION LINKS** That, in order to enhance the AFS Network efficiency and performance, States be urged to: a) investigate the occurrences related to loss of AFTN Data, b) migrate inter-regional communication links to AMHS; c) rationalize the inter-regional connections established on bilateral basis, taking into consideration the regional requirements set in the MID ANP Vol II and operational needs; and d) provide the ICAO MID with update the outcomes of a) and their AMHS implementation plans/progress by **30 May 2024**.	To enhance the efficiency and performance of the Aeronautical Fixed Service (AFS) Network through improved communication link management and modernization.	States are urged to investigate AFTN data loss, migrate inter-regional links to AMHS, rationalize bilateral connections based on MID ANP Vol II, and update ICAO MID on progress.	States	30 May 2024	**On-going** Coordination actions will be initiated in accordance with the recommendations emanating from MID FM WG
C. 21/26	**NAV MON PLAN TEMPLATE** That, the CNS SG in coordination with ATM SG and PBN SG review and update, as deem necessary, the NAV MON Plan Template to be presented to MIDANPIRG/22 for endorsement.	Regional visibility on the available NAV MON	NAV MON Plan Template	CNS, PBN and ATM SGs	2025	**On-going** New proposal to be submitted to the MIDANPIRG for endorsement WP/49 refers

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C.21/27	**GNSS RFI MITIGATION** That, a) States affected with GNSS RFI take necessary mitigation measures and provide update to the ICAO MID Office by **30 May 2024**; and b) the ATM SG in coordination with AIM, CNS and PBN SGs to address the reported occurrences and review the MID RSA 014 on GNSS Vulnerabilities as deemed necessary to be presented to MIDANPIRG/22 – RASG-MID/12 for endorsement.	Review MID SRA014 to include operational mitigation measures to address GNSS RFI occurrences	Revised RSA014	MIDANPIRG subgroups	2025	**On-going** RSA Updated and ready for endorsement by the MIDANPIRG-RASG
C. 21/28	**CYBERSECURITY SYSTEMS RESILIENCE** That, States consider the recommendations in **Appendix 5M** which would support the enhancement of their cybersecurity systems resilience.	To support the enhancement of cybersecurity systems resilience and safeguard the integrity of air navigation and aviation operations.	Consideration by States of the recommendations outlined in Appendix 5M aimed at strengthening cybersecurity posture and response capabilities.	States	As part of their ongoing cybersecurity strategy and implementation efforts.	**Closed**

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 21/29	**AERONAUTICAL INFORMATION MANAGEMENT DIGITALIZATION & PLANNING TASK FORCE (AIMDP TF)** That, a) Aeronautical Information Management Digitalization & Planning Task Force (AIMDP TF) be established to ensure alignment of the DAIM thread/elements with GANP latest Edition, develop appropriate monitoring tables for inclusion in ICAO eANP Vol.III and to ensure a synchronized and harmonized deployment of digital AIM products in the MID Region; b) the terms of reference of the AIMDP TF be developed during the first meeting of Task Force; and c) States support the AIMDP Task Force through: i. assignment of Focal Point to contribute to the work of the Task Force; and ii. sharing states' experience, challenges and best practices related to Aeronautical Information Management Digitalization and Planning.	To ensure a synchronized and harmonized deployment of digital AIS datasets in the MID Region.	MID Regional Plan for the Digital AIS datasets	MID States, ICAO MID	Until the work is completed in accordance with the TF Terms of Reference (ToRs).	**Actioned (To be closed)** The first meeting of the TF was conducted WP/51 refers
C. 21/30	**REVISED NOTAM TEMPLATE FOR GNSS INTERFERENCE** That, a) ICAO and IATA in coordination with AIM SG Chairpersons to develop revised NOTAM template for GNSS interference including jamming and spoofing considering the global and regional developments; by Q4 2024 and b) ICAO MID Office circulate the revised NOTAM Template for GNSS interference through State Letter for implementation by States.	To provide States with an updated NOTAM template to be used for GNSS RFI, Jamming and spoofing events to facilitate operators in filtering and searching through the NOTAM	NOTAM template for GNSS RFI	ICAO	2025	**On-going** The subject will be addressed in WP/50

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 21/31	**RISK COMMUNICATION MODEL TO DISSEMINATE INFORMATION RELATED TO RISKS TO CIVIL AVIATION OVER OR NEAR CONFLICT ZONES** That, the guidance contained in the Appendix G of the ICAO Doc 10084, Risk Assessment Manual on Civil Aircraft Operations Over or Near Conflict Zones, Third Edition, 2023, be used to disseminate information regarding the nature and extent of threats arising from the conflict and its consequences for civil aviation.	To provide States with the guidance to disseminate information regarding the nature and extent of threats arising from the conflict and its consequences for civil aviation.	Guidance on the dissemination of information regarding the nature and extent of threats arising from the conflict and its consequences for civil aviation.	ICAO	May 2024	**Actioned (To be closed)**
C. 21/32	**ABU DHABI DECLARATION ON CONTINUOUS IMPROVEMENT OF ANS PROVISION IN THE MID REGION** That, the Abu Dhabi Declaration on Continuous Improvement of air navigation services provision in the MID Region in **Appendix 5O**, is endorsed.					**Closed**
D. 21/33	**MIDANPIRG REVISED STRUCTURE** That, the revised MIDANPIRG Structure in Figure 1 is approved and be included in MIDANPIRG Procedural Handbook.	Optimize the number of technical groups	Revised MIDANPIRG structure	MIDANPIRG	2025	**Completed** WP/60 refers

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AIR NAVIGATION REPORT

ICAO Middle East Region

2024



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TABLE OF CONTENTS

EXECUTIVE SUMMARY 4

1. INTRODUCTION 5
1.1 Objectives 5
1.2 Background 5
1.3 Scope 9
1.4 Collection of Data 11
1.5 Structure of the Report 12

2. STATUS AND PRORESS OF ASBU IMPLEMENTATION 13

2.1 ASBU Implementation status and progress in the MID Region 14
2.1.1 B1-DAIM 14
2.1.2 B0-AMET 16
2.1.3 B0-FICE 19
2.1.4 B0-APTA 21
2.1.5 B0-FRTO 24
2.1.6 B0-NOPS 26
2.1.7 B1-ACAS 28
2.1.8 B0-SNET 30
2.1.9 B1-GADS 32
2.1.10 B0-RSEQ 34
2.1.11 B0-SURF 36
2.1.12 B0 & 1-ACDM 38
2.1.13 B0-ASUR 40
2.1.14 B0-NAVS 42
2.1.15 B0 & 1-COMI 44

3. SUCCESS STORIES/BEST PRACTICES 46

Egypt 46
Iran 48
Iraq 50
Oman 50
Qatar 50
Qatar-UAE 53
Saudi Arabia 53
UAE 58
UAE-Oman 63

4. CONCLUSION 66

APPENDIX A
Status of implementation of Priority 1 ASBU Threads/ Elements 67



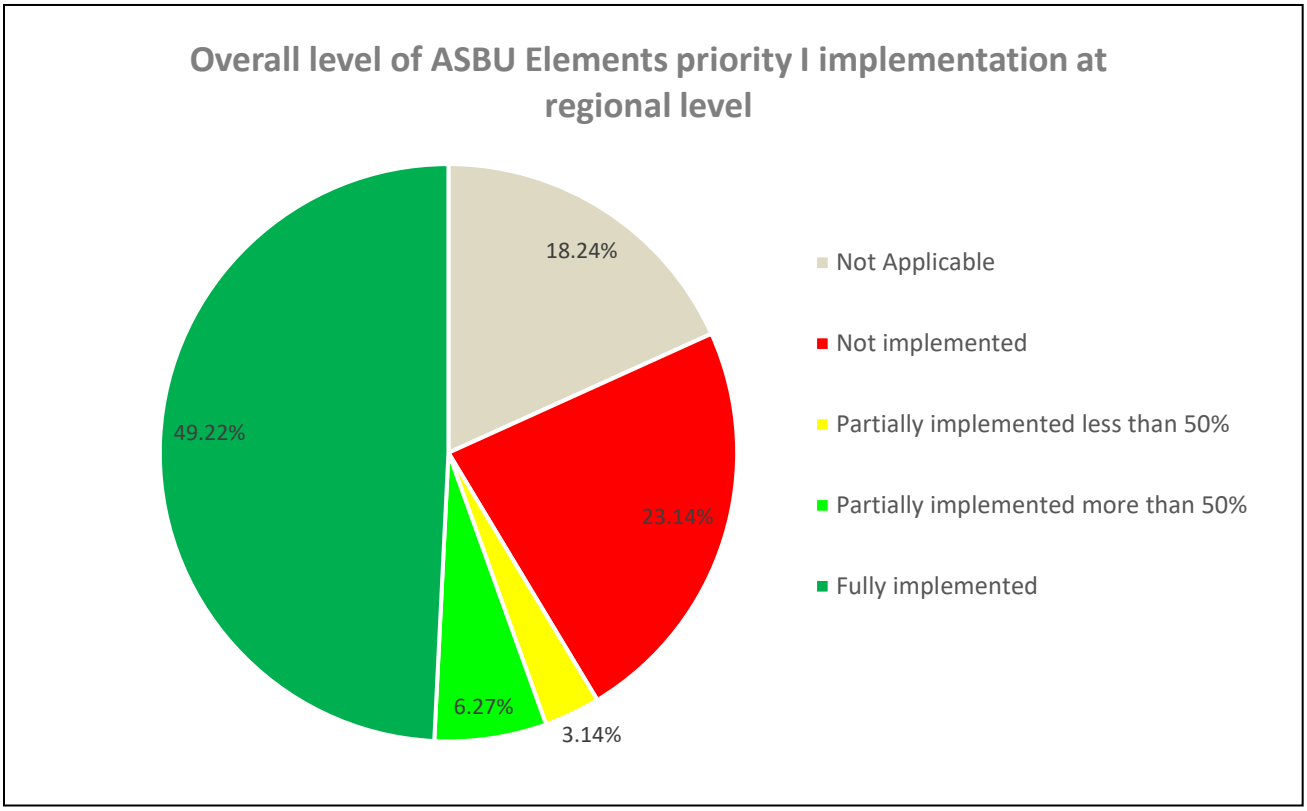
EXECUTIVE SUMMARY

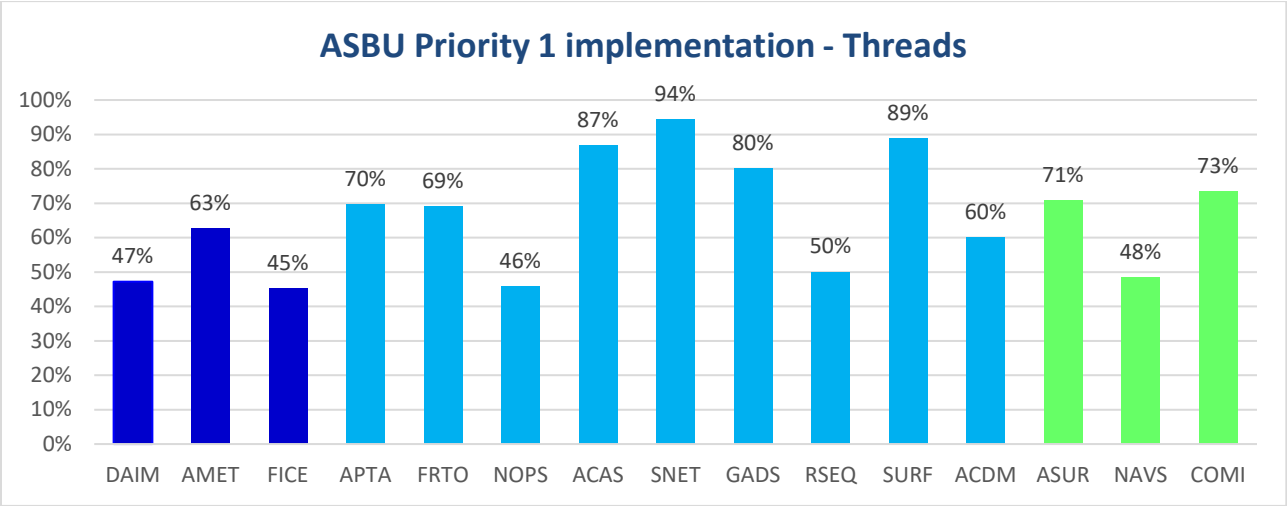
The ICAO MID Air Navigation Report - 2024 provides mainly an overview of the status of implementation of the Priority 1 ASBU Threads/ Elements in the MID Region.

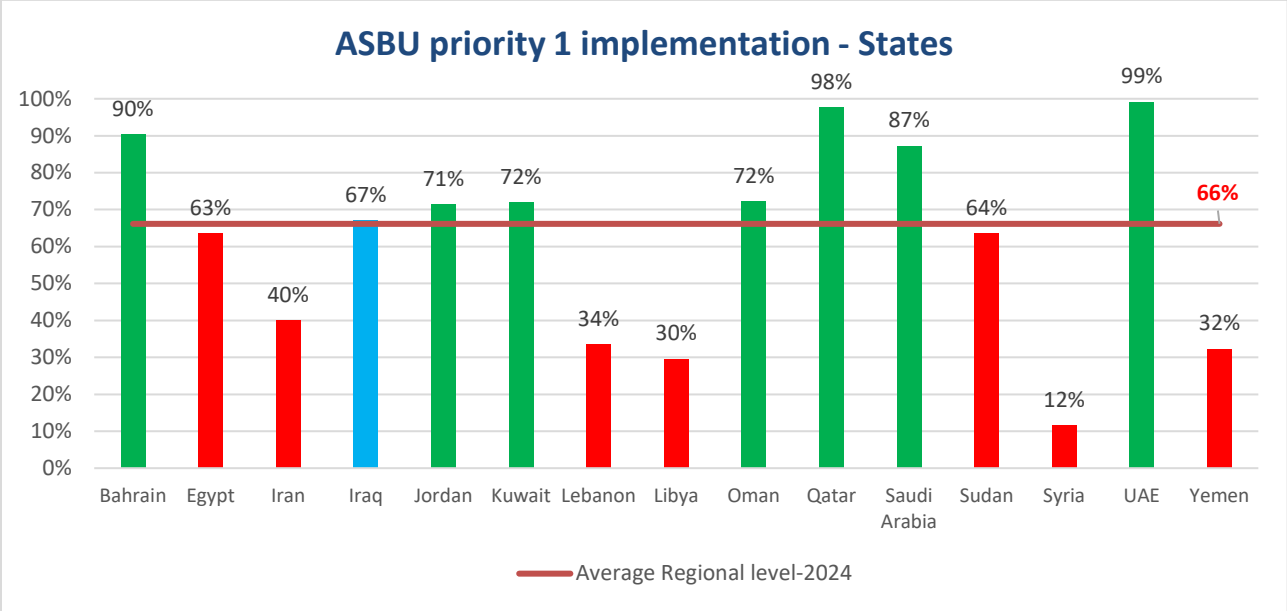
The overall implementation of priority 1 ASBU Threads/Elements in the MID Region is around **66.14%** in 2024. The MID Air Navigation Strategy (Edition March 2024) includes new Threads/ Elements that have been classified as Priority 1 for implementation in the MID Region. The implementation of some ASBU Threads has been acceptable/good (More than 70% per applicability area); such as, APTA, ACAS, SNET, GADS, SURF, ASUR, and COMI. Nevertheless, some States are still facing challenges to implement the majority of the priority 1 Threads/Elements and are still below the target.

The Overall Priority 1 ASBU Implementation in the MID States is as shown in the map below. Some States, in order, UAE, Qatar, Bahrain, Saudi Arabia, Kuwait, Oman & Jordan have a good implementation Status more than 70%.

To summarize the implementation status and progress of ASBU priority 1 ASBU Threads/Elements, the following Implementation Dashboards present status and progress achieved in the implementation of each Elements by State.







Note 1 – utmost care was taken in the calculation of percentages, figures and numbers, however the statistics and graphs in this report should be considered as approximate.

1. INTRODUCTION

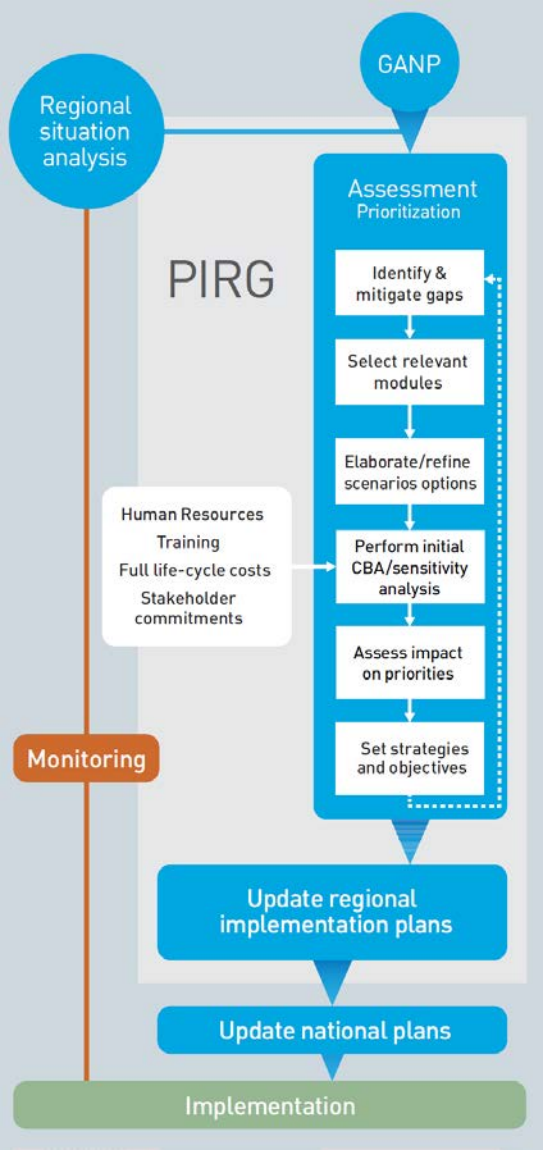
1.1 Objectives

The ICAO MID Region Air Navigation Report 2024 presents an overview of the planning and implementation progress for the Priority 1 ASBU Threads/Elements within the ICAO MID Region during the reporting period January till December 2024.

The implementation status data covers the fifteen (15) ICAO MID States.

GANP states that the regional national planning process should be aligned and used to identify those Modules which best provide solutions to the operational needs identified. Depending on implementation parameters such as the complexity of the operating environment, the constraints and the resources available, regional and national implementation plans will be developed in alignment with the GANP. Such planning requires interaction between stakeholders including regulators, users of the aviation system, the air navigation service providers (ANSPs), aerodrome operators and supply industry, in order to obtain commitments to implementation.

Accordingly, deployments on a global, regional and sub-regional basis and ultimately at State level should be considered as an integral part of the global and regional planning process through the Planning and Implementation Regional Groups (i.e. MIDANPIRG). The PIRG process will further ensure that all required supporting procedures, regulatory approvals and training capabilities are set in place. These supporting requirements will be reflected in regional online Air Navigation Plan (MID eANPs) developed by MIDANPIRG, ensuring strategic transparency, coordinated progress and certainty of investment. In this way, deployment arrangements including applicability dates can also be agreed and collectively applied by all stakeholders involved in the Region. The MID Region Air Navigation Report 2024 contains information on the implementation progress of the Priority 1 ASBU Threads/Elements of the MID Region Air Navigation Strategy (MID Doc 002 Edition March 2024) which is the key document for MIDANPIRG and its Subsidiary Bodies to monitor and analyze the implementation within the MID Region.



Regional Planning

1.2 Background

In accordance, with the Resolutions of the 40th Session of the ICAO Assembly, particularly Resolution A40-1 "ICAO global planning for safety and air navigation", the ICAO Assembly urged States and PIRGs to utilize the guidance provided in the GANP for planning and implementation activities which establish priorities, targets and indicators consistent with globally-harmonized objectives, taking into account operational needs. In response to this, the MID Region developed the MID Region Air Navigation Strategy, which is aligned with the GANP 7th Edition and ASBU Framework.

MIDANPIRG and its Subsidiary Bodies monitor the progress and the status of implementation of the following ASBU priority 1 Threads/Elements:

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
Information Threads							
DAIM							
DAIM	**B1/1**	Provision of quality-assured aeronautical data and information	1	2021	AIM SG	RANP/ NANP TF	
	B1/3	Provision of digital terrain data sets	1	2021	AIM SG	RANP/ NANP TF	
	B1/4	Provision of digital obstacle data sets	1	2021	AIM SG	RANP/ NANP TF	
AMET							
AMET	**B0/1**	Meteorological observations products	1	2014	MET SG	RANP/ NANP TF	
	B0/2	Meteorological forecast and warning products	1	2014	MET SG	RANP/ NANP TF	
	B0/3	Climatological and historical meteorological products	1	2014	MET SG	RANP/ NANP TF	
	B0/4	Dissemination of meteorological products	1	2014	MET SG	CNS SG, RANP/ NANP TF	
FICE							
FICE	**B0/1**	Automated basic inter facility data exchange (AIDC)	1	2014	CNS SG ATM SG	RANP/ NANP TF	
Operational Threads							
APTA							
APTA	**B0/1**	PBN Approaches (with basic capabilities)	1	2014	PBN SG	ATM SG, AIM SG, CNS SG, RANP/ NANP TF	
	B0/2	PBN SID and STAR procedures (with basic capabilities)	1	2014	PBN SG	ATM SG, AIM SG, RANP/ NANP TF	
	B0/4	CDO (Basic)	1	2014	PBN SG	ATM SG, RANP/ NANP TF	
	B0/5	CCO (Basic)	1	2014	PBN SG	ATM SG, RANP/ NANP TF	
	B0/7	Performance based aerodrome operating minima – Advanced aircraft	1	2021	PBN SG	AIM SG, CNS SG, ASPIG, RANP/ NANP TF	
FRTO							

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B0/2	Airspace planning and Flexible Use of Airspace (FUA)	1	2014	ATM SG	RANP/ NANP TF	
	B0/4	Basic conflict detection and conformance monitoring	1	2014	ATM SG	CNS SG, RANP/ NANP TF	
NOPS							
NOPS	**B0/1**	Initial integration of collaborative airspace management with air traffic flow management	1	2015	ATM SG	RANP/ NANP TF	
ACAS							
ACAS	**B1/1**	ACAS Improvements	1	2014	ATM SG CNS SG	RANP/ NANP TF	
SNET							
SNET	**B0/1**	Short Term Conflict Alert (STCA)	1	2017	ATM SG	CNS SG, RANP/ NANP TF	
	B0/2	Minimum Safe Altitude Warning (MSAW)	1	2017	ATM SG	CNS SG, RANP/ NANP TF	
	B0/3	Area Proximity Warning (APW)	1	2020	ATM SG	CNS SG, RANP/ NANP TF	
GADS							
GADS	**B1/2**	Contact directory service	1	2021	ATM SG	RANP/ NANP TF	
RSEQ							
RSEQ	**B0/1**	Arrival Management	1	2021	ATM SG	CNS SG, ASPIG, RANP/ NANP TF	
SURF							
SURF	**B0/1**	Basic ATCO tools to manage traffic during ground operations	1	2014	ASPIG	ATM SG, CNS SG, RANP/ NANP TF	
	B0/2	Comprehensive situational awareness of surface operations	1	2014	ASPIG	ATM SG, CNS SG, RANP/ NANP TF	
	B0/3	Initial ATCO alerting service for surface operations	1	2021	ASPIG	ATM SG, CNS SG, RANP/ NANP TF	
ACDM							
ACDM	**B0/1**	Airport CDM Information Sharing (ACIS)	1	2014	ASPIG	CNS SG, AIM SG, ATM SG, RANP/ NANP TF	

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B0/2	Integration with ATM Network function	1	2014	ASPIG	CNS SG, AIM SG, ATM SG, RANP/ NANP TF	
Technology Threads							
ASUR							
ASUR	**B0/1**	Automatic Dependent Surveillance – Broadcast (ADS-B)	1	2021	CNS SG	ATM SG, ASPIG, RANP/ NANP TF	
	B0/2	Multilateration cooperative surveillance systems (MLAT)	1	2021	CNS SG	ATM SG, ASPIG, RANP/ NANP TF	
	B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	1	2021	CNS SG	ATM SG, ASPIG, RANP/ NANP TF	
NAVS							
NAVS	**B0/3**	Aircraft Based Augmentation Systems (ABAS)	1	2021	CNS SG	PBN SG, ATM SG, AIM SG, RANP/ NANP TF	
	B0/4	Navigation Minimal Operating Networks (Nav. MON)	1	2021	CNS SG	PBN SG, RANP/ NANP TF	
COMI							
COMI	**B0/7**	AMHS	1	2014	CNS SG	RANP/ NANP TF	
	B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	1	2021	CNS SG	RANP/ NANP TF	

The MID Region Air Navigation Report is an integral part of the air navigation planning and implementation process in the MID Region; and the main tool for the monitoring and assessing the implementation of Air Navigation Systems and ASBUs in the MID Region.

1.3 Scope

This MID Air Navigation Report 2024 addresses the implementation status of the priority 1 ASBU Threads/Elements for the reference period January 2024 to December 2024.

The Report covers the fifteen (15) ICAO MID States: Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan, Syria, United Arab Emirates and Yemen.

ICAO MID Region



Figure 3. ICAO MID Region

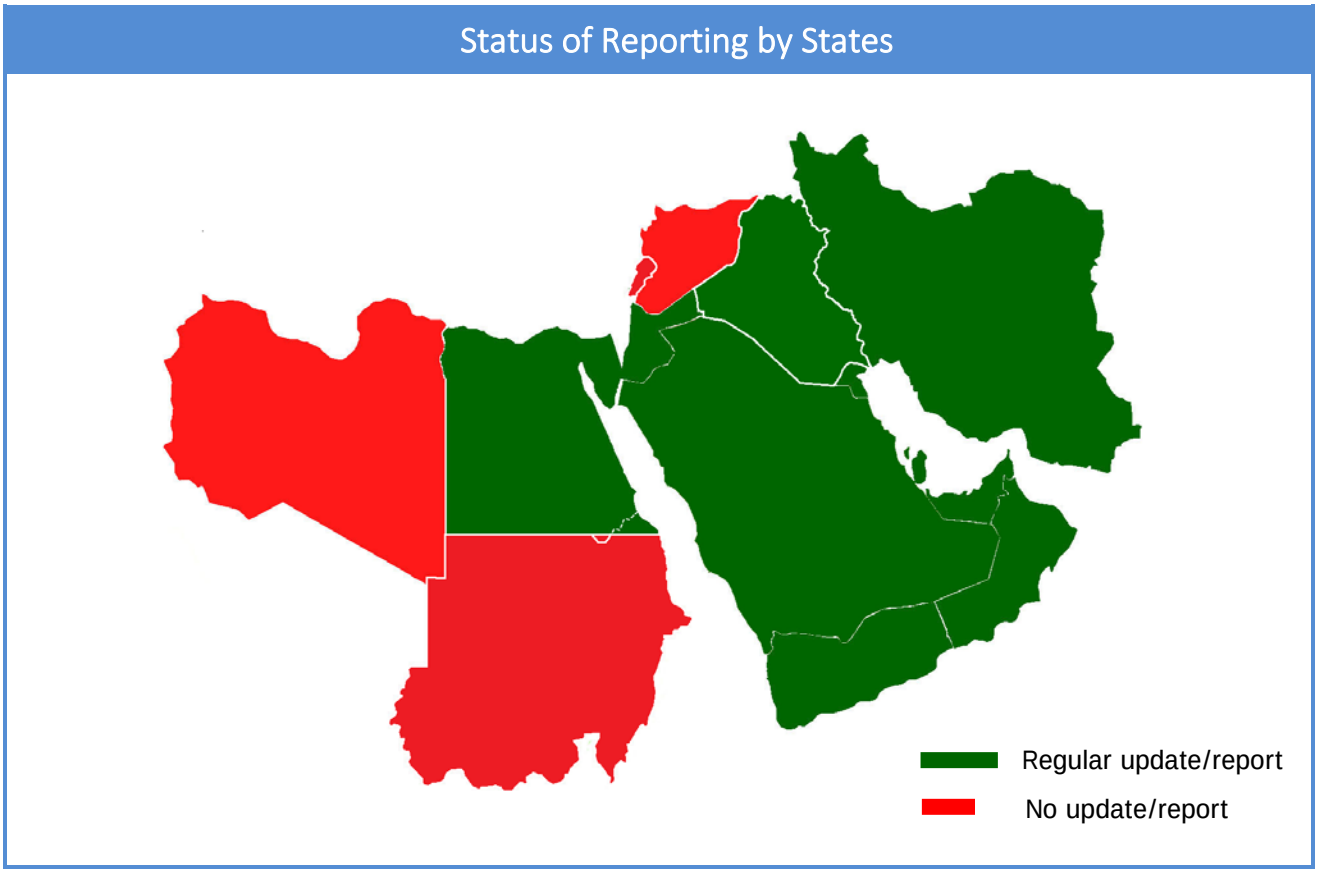
1.4 Collection of Data

For the purpose of collecting necessary data for the MID Air Navigation Report-2024, a State Letter Ref.: AN 1/7 – 24/185 was issued on 28 November 2024, to follow-up on the Report of the 21st Meeting of the MIDANPIRG, held in Abu Dhabi, UAE, 4 – 8 March 2024, and in particular to Section 5.2, which urged States to provide relevant data necessary for the development of the MID Region Air Navigation Report-2024. However, some States did not respond to the State Letter. The status of reporting by States is shown in the following map.

Data collected from States was complemented by some updates provided mainly through the MIDANPIRG Subsidiary Bodies and the MID ANP Volume III.

Where the required data was not provided, it is indicated in the Report by color coding (Missing Data) and the last update provided by the concerned States was considered.

Status of Reporting by States



1.5 Structure of the Report

- **Executive Summary** provides an overall review of the ASBU implementation in the MID Region.

- **Section 1** (Introduction) presents the objective and background of the report as well as the scope covered and method of data collection.

- **Section 2** lists the priority 1 ASBU Threads/Elements in the MID Region and presents the status of their implementation and their progress in graphical and numeric form.

- **Section 3** Success stories/best practices
Iraq, Kuwait and UAE

- **Section 4** Conclusion

- **Appendix A** provides detailed status of the implementation of Priority 1 ASBU Threads for the MID States.



2. STATUS AND PROGRESS OF ASBU IMPLEMENTATION

This chapter of the report gives an overview of the implementation progress for each of the Priority 1 ASBU Elements belonging to a particular ASBU Thread.

The following color scheme is used for illustrating the status of implementation:

Legend	
	Completed
	Partially Completed (50%+)
	Partially Completed/Late (50%-)
	Not Started/Not Implemented
	Not Applicable

2.1 ASBU Implementation Status and Progress in the MID Region

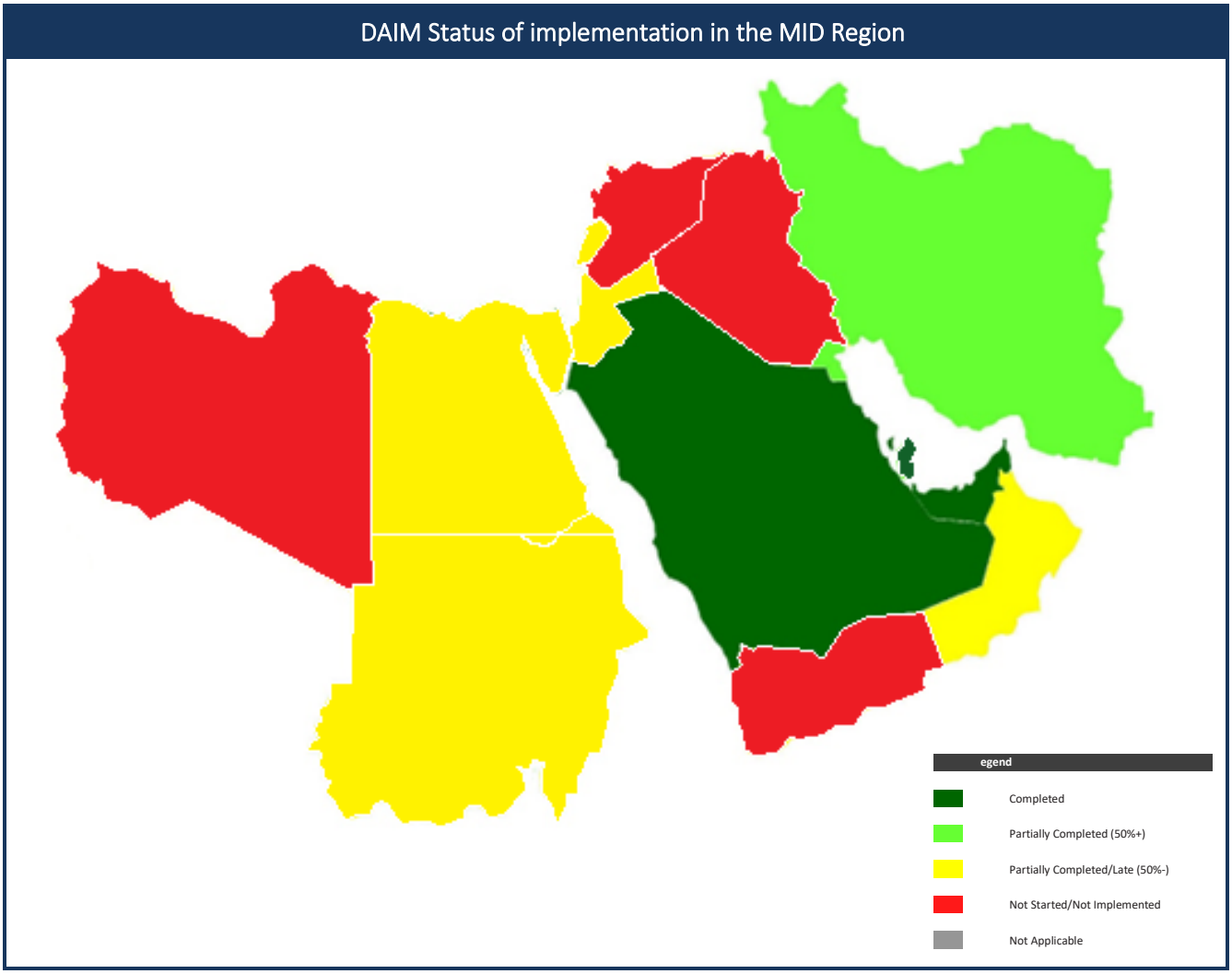
2.1.1 B1-DAIM

Improved aeronautical information based on enhanced data quality (accuracy, resolution, integrity, timeliness, traceability, completeness, format) to support Performance-Based Navigation (PBN), airborne computer-based navigation systems and ground automation. In addition, digital exchange and processing of aeronautical information allows a more efficient management of information by avoiding reliance on manual processing and manipulation.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Information Threads							
DAIM							
DAIM B1/1	Provision of quality-assured aeronautical data and information	All States	***Indicator*:*** Regional average implementation status of DAIM B1/1 (provision of quality-assured aeronautical data and information). ***Supporting Metrics:*** 1. Number of States that have implemented an AIXM-based AIS database (AIXM V5.1+) 2. Number of States that have established formal arrangements with at least 50% of their AIS data originators.	(2023) 53%	80%	Dec 2024	N/A
DAIM B1/3	Provision of digital terrain data sets	All States	***Indicator*:*** Regional average implementation status of DAIM B1/3(Provision of Terrain digital datasets). ***Supporting Metric:*** Number of States that provide required Terrain digital datasets	(2022) 35%	60%	Dec 2024	N/A
DAIM B1/4	Provision of digital obstacle data sets	All States	***Indicator*:*** Regional average implementation status of DAIM B1/4(Provision of obstacle digital datasets). ***Supporting Metric:*** Number of States that provide required obstacle digital datasets.	(2022) 35%	60 %	Dec 2024	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B1-DAIM	B1/1															
	B1/3															
	B1/4															

Average Regional Implementation is **47.19%**.



2.1.2 B0-AMET

Global, regional and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.

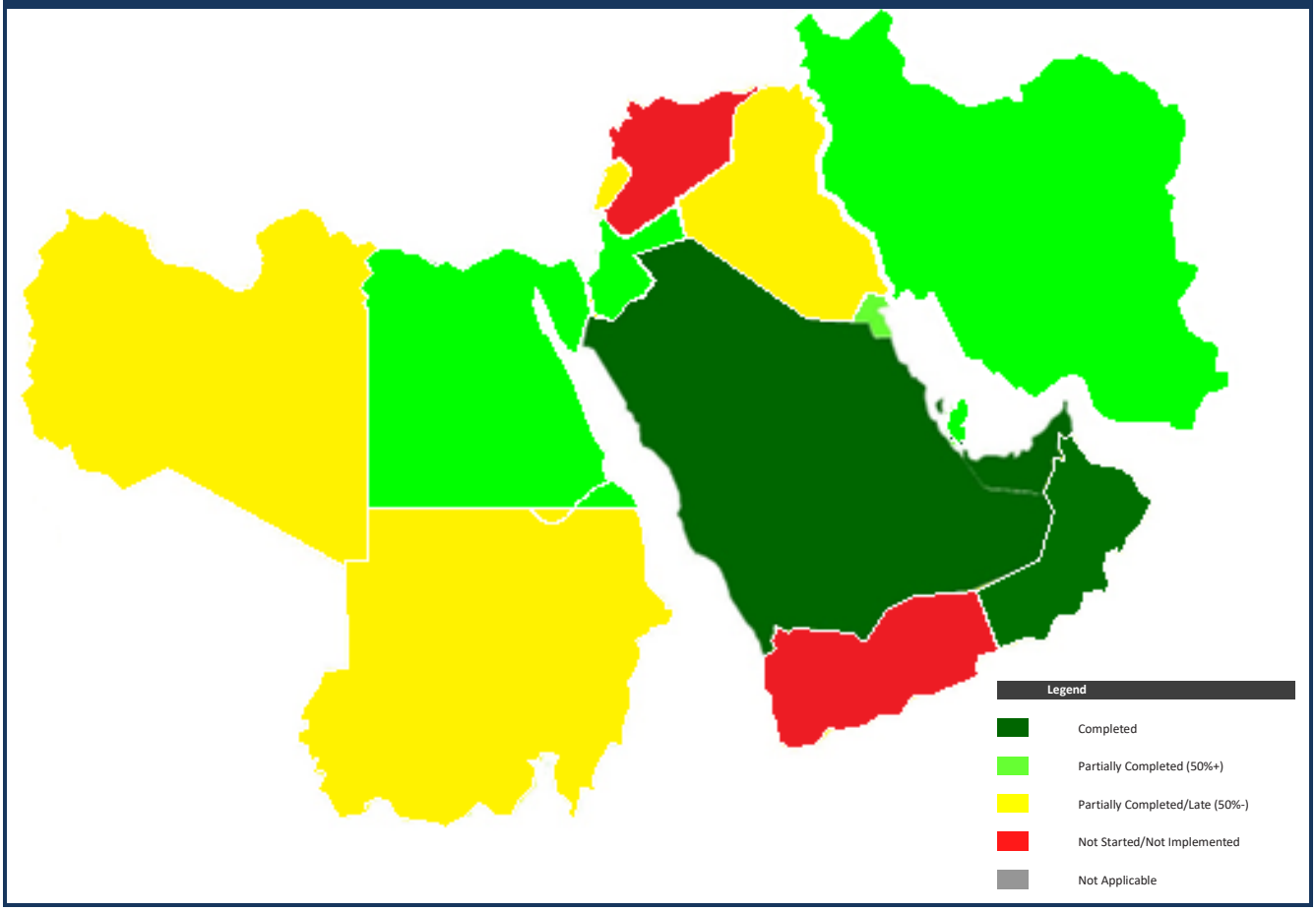
Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Information Threads							
AMET							
AMET B0/1	Meteorological observations products	All states	***Indicator*:*** Regional average implementation status of B0/1 (Meteorological observations products). ***Supporting Metrics:*** Number of States that provide the following Meteorological observations products, as required: 1. Automatic Weather Observation System (AWOS) information (including real-time exchange of wind and RVR data) 2. Local reports (MET REPORT/SPECIAL) 3. Aerodrome reports (METAR/SPECI) 4. Lightning Information 5. Ground-based weather radar information. 6. Meteorological satellite imagery 7. Aircraft meteorological report (ie. ADS-B, AIREP, etc.) 8. Vertical wind and temperature profiles 9. Wind shear alerts	(2022) 65%	80%	Dec 2021	N/A
AMET B0/2	Meteorological forecast and warning products	All states	***Indicator*:*** Regional average implementation status of B0/2 (Meteorological forecasts and warning products) ***Supporting Metrics:*** Number of States that provides the following Meteorological forecast and warning products, as required:	(2022) 60%	90%	Dec 2021	N/A

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			1. World Area Forecast System (WAFS) gridded products. 2. Significant Weather (SIGWX) 3. Aerodrome Forecast (TAF) 4. Trend Forecast (TREND) 5. Take-off Forecast 6. SIGMET 7. Aerodrome Warning 8. Wind Shear Warning				
AMET B0/3	Climatological and historical meteorological products	All states	***Indicator:*** % of States that provide Climatological and historical meteorological products, as required. ***Supporting Metric:*** Number of States that provide Climatological and historical meteorological products, as required.	(2022) 60%	85%	Dec 2021	N/A
AMET B0/4	Dissemination of meteorological products	All states	***Indicator:*** % of States disseminating Meteorological products using a variety of formats and means (TAC, Gridded, Graphical, BUFR code, IWXXM) ***Supporting Metric:*** Number of States disseminating Meteorological products using a variety of formats and means (TAC, Gridded, Graphical, BUFR code, IWXXM)	(2022) 60%	85%	Dec 2021	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-AMET	B0/1															
	B0/2															
	B0/3															
	B0/4															

Average Regional Implementation is **62.57%**.

AMET Status of implementation in the MID Region



2.1.3 B0-FICE

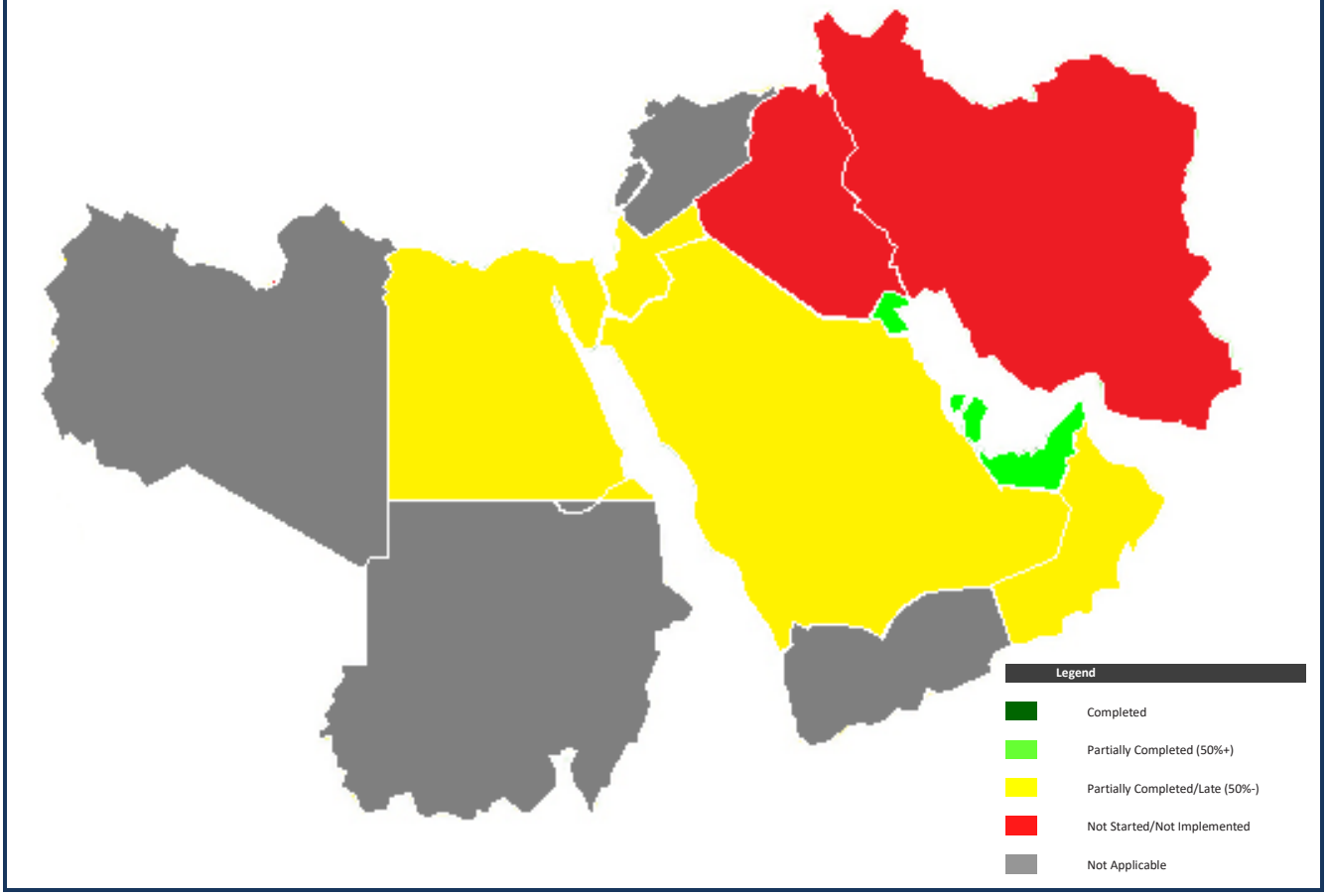
To improve coordination between air traffic service units (ATSUs) by using ATS interfacility flight data communication. The benefit is the improved efficiency through digital transfer of flight data.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Information Threads							
FICE							
FICE B0/1	Automated basic inter facility data exchange (AIDC)	According to the MID Region AIDC/OLDI Priority 1 Applicability Area	***Indicator*:*** % of priority 1 AIDC/OLDI Interconnection have been implemented. ***Supporting metric:*** Number of AIDC/OLDI interconnections implemented between adjacent ACCs.	(2023) 26%	70%	Dec 2026	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-FICE	B0/1															

Average Regional Implementation is **45.31%**.

FICE Status of implementation in the MID Region



2.1.4 B0-APTA

Procedures implemented as STARS in terminal airspace provide lateral path guidance to support improving the efficiency in the descent phase of flight by enabling near idle power operations from top of descent, to a point where the aircraft transitions to approach operations. For takeoff, SIDS provide a lateral path that can support continuous climb operations to the top of climb where the cruise phase of flight starts.

Enhanced STARS and SIDS with altitude constraints along the lateral path improve ATC management, and further support operational efficiency by providing vertical profiles that all aircraft can follow.

Performance based aerodrome operating minima (PB AOM) allows for implementation of vertically guided approaches at a wider range of aerodromes, and facilitates a phased approach to improvement in approach capabilities. Advanced aircraft with technology such as Enhanced Vision Systems (EVS) benefit from operational credits to continue operations below normal minima.

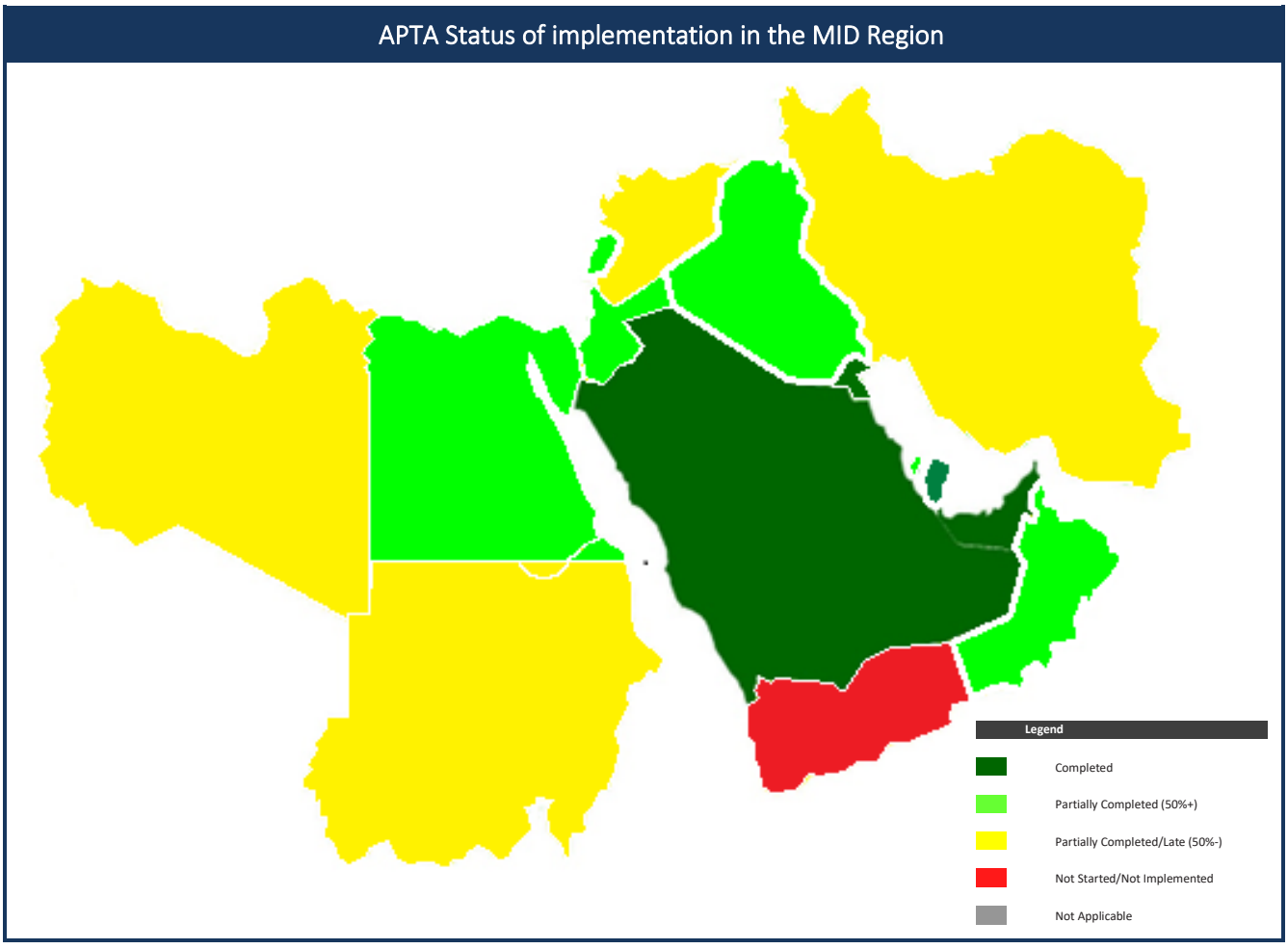
Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
APTA							
APTA B0/1	PBN Approaches (with basic capabilities)	All RWYs ENDs at International Aerodromes	***Indicator:*** % of Runway ends at international aerodromes served by PBN approach procedures with basic functionalities - down to LNAV or LNAV/VNAV Minima. ***Supporting metric:*** Number of Runways ends at international aerodromes served by PBN approach procedures with basic functionalities - down to LNAV or LNAV/VNAV minima.	(2017) 46.7%	100%	Dec 2018	Capacity/ KPI 10
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).	(2022) 55%	70%	Dec 2022	Efficiency Capacity/ KPI 10 KPI 11 KPI 17 KPI 19
APTA B0/4	CDO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI,	***Indicator*:*** % of International Aerodromes with CDO	(2022) 65%	100%	Dec 2022	Efficiency KPI 19

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
		OLBA, OOMS, OTHH, OTBD, OEJN, OEMA,OEDF, OERK, HSSK, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	implemented and published as required. ***Supporting Metric:*** Number of International Aerodromes with CDO implemented and published as required. *As per the applicability area				
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 with CCO implemented and published as required. ***Supporting Metric:*** Number of International Aerodromes with CCO implemented and published as required. *As per the applicability area	(2022) 65%	100%	Dec 2022	Efficiency KPI 17
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: 1- having provisions for operational credits to enable lower minima based on advanced aircraft capabilities. (Reference: Annex 6 Part I para. 4.2.8.2.1) 2- Number of States Putting in place an approval process for the operational credit to Aircraft operator conducting PBAOM operations for low visibility operations	(2022) 50%	80%	Dec 2025	Capacity KPI 10

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			(Reference: Doc 9365 (AWO Manual)), as applicable.				

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-APTA	B0/1															
	B0/2															
	B0/4															
	B0/5															
	B0/7															

Average Regional Implementation is **69.64%**.



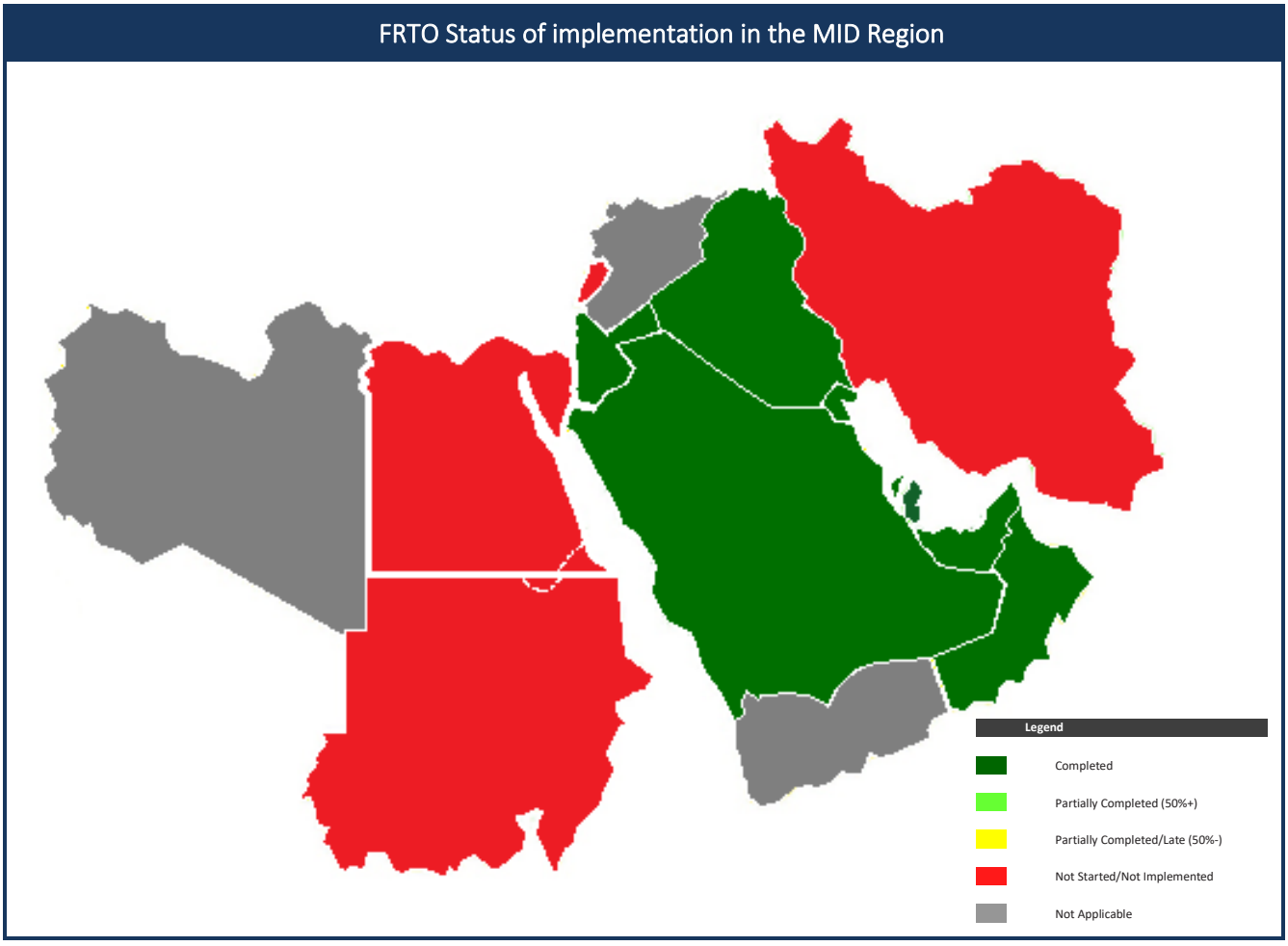
2.1.5 B0-FRTO

En-route trajectories are enhanced by using more direct routings, and collaborative airspace management process and tools. ATCOs are assisted by tools for the conflict identification and conformance monitoring.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
FRTO							
FRTO B0/2	Airspace planning and Flexible Use of Airspace (FUA)	Bahrain, Egypt, Jordan, Qatar, Saudi Arabia (2 ACCs), Sudan, UAE	***Indicator*:** % of ACCs using and implementing appropriate means (procedures and tools (automation)) to support Airspace planning and FUA and improve data exchange between Civil and Military to improve efficiency of Airspace. ***Supporting metric:*** Number of ACCs using and implementing appropriate means (procedures and tools (automation)) to support Airspace planning and FUA and improve data exchange between Civil and Military to improve efficiency of Airspace. * As per the applicability area	(2022) 63%	70%	Dec 2022	Efficiency Access and equity KPI 04 KPI 05 KPI 17 KPI 18/ KPI 19
FRTO B0/4	Basic conflict detection and conformance monitoring	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia (2 ACCs), Sudan, UAE	***Indicator*:** % States that implemented MTCD and MONA, for ACCs, as required. ***Supporting metric:*** The number of States that implemented MTCD and MONA for ACCs, as required. * As per the applicability area	(2022) 63%	100%	Dec 2022	Capacity KPI 06 Safety KPI 20 KPI 23

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-FRTO	B0/2															
	B0/4															

Average Regional Implementation is **69.05%**.



2.1.6 B0-NOPS

The Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in a way that minimizes delay and optimises the use of the entire airspace and available capacity. The management of airspace starts to be integrated with the management of the traffic flows. Some main processes are automated, however substantial procedural support is still required to balance demand with available capacity. Collaborative ATFM can manage traffic flows by:

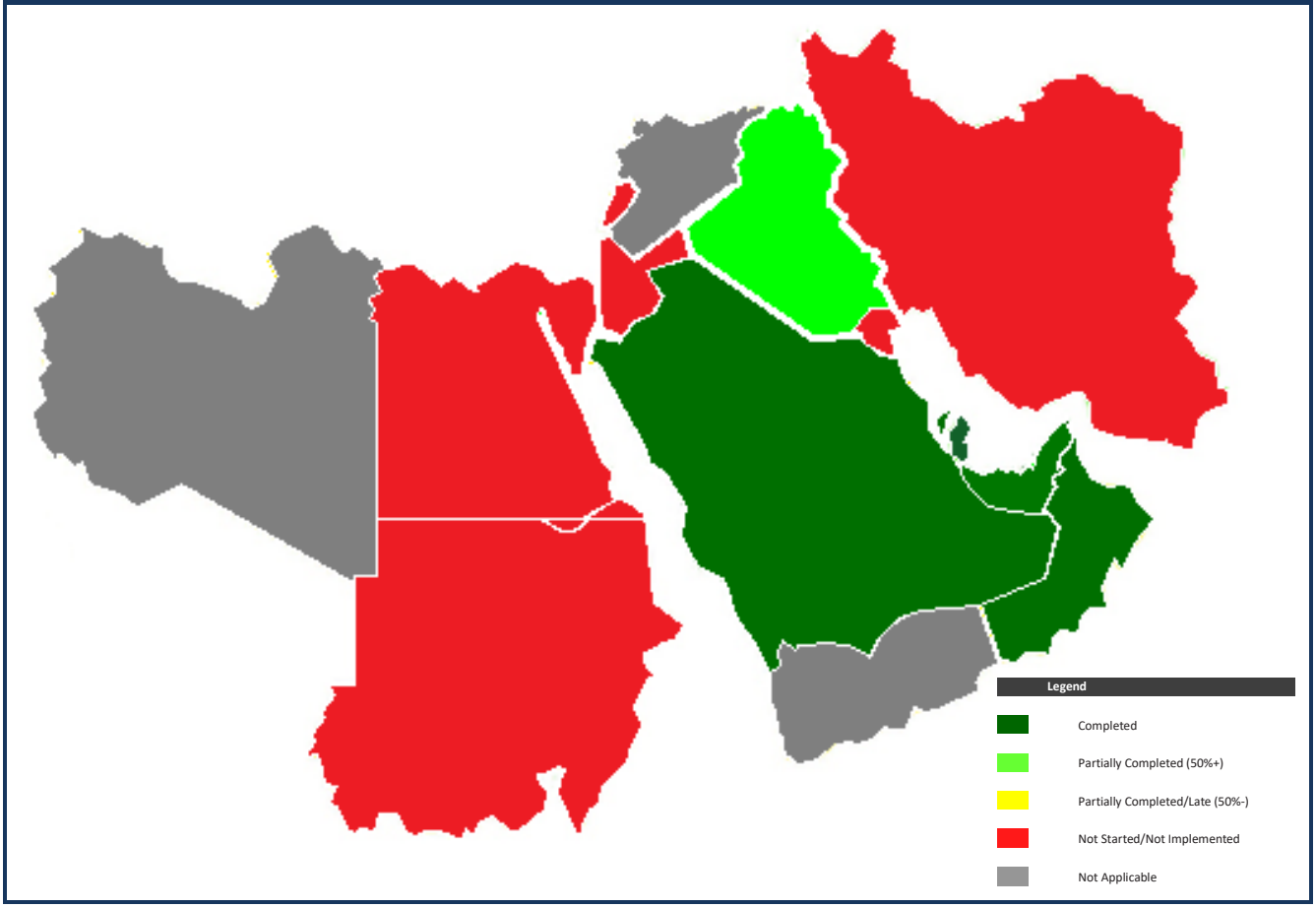
- smoothing flows and managing rates of sector entry;
- re-route traffic to avoid flow constraint areas;
- level capping;
- collaborative airspace management;
- ATFM slot management including departure information planning;
- adjust flow measures by use of enhanced collaborative flight planning and enhanced tactical flow management.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
NOPS							
NOPS B0/1	Initial integration of collaborative airspace management with air traffic flow management	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	***Indicator*:*** % of States implementing ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process ***Supporting metric:*** Number of States implementing ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process. * As per the applicability area	(2022) 42%	70%	Dec 2022	Efficiency Capacity KPI 04 KPI 05 KPI 17 KPI 18 KPI 19

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-NOPS	B0/1															

Average Regional Implementation is **45.83%**

NOPS Status of implementation in the MID Region



2.1.7 B1-ACAS

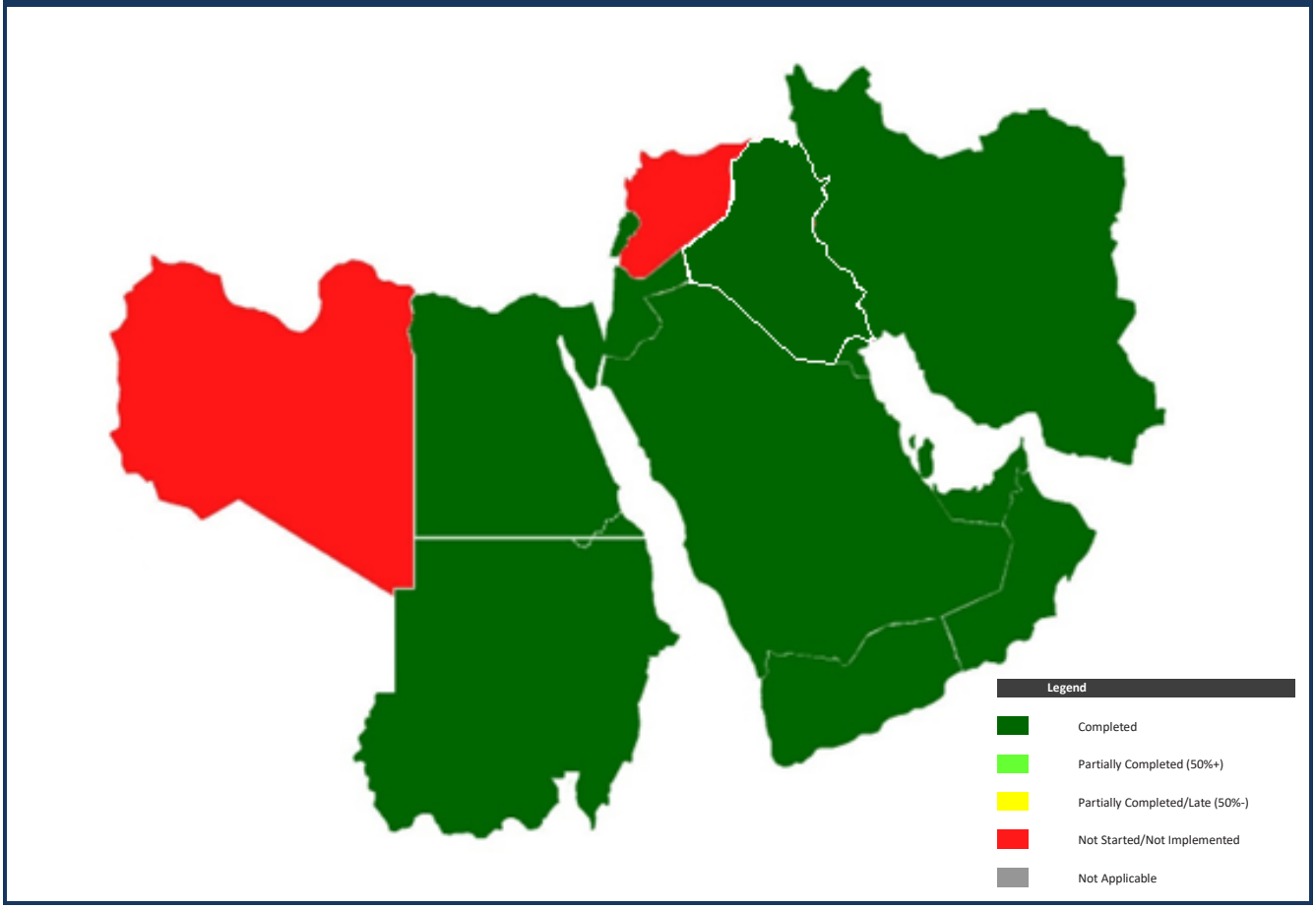
The traffic alert and collision avoidance system (TCAS) version 7.1 provides short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts as well as enhancing the logic for some geometries (i.e., Uberlinghen accident). This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
ACAS							
ACAS B1/1	ACAS Improvements Operational	All States	***Indicator:*** % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons ***Supporting metric:*** Number of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons	(2022) 87%	100%	Dec 2024	Safety KPI 20 KPI 23

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B1-ACAS	B1/1															

Average Regional Implementation is **86.67%.**

ACAS Status of implementation in the MID Region



2.1.8 B0-SNET

Ground Based Safety Nets are an integral part of the ATM system using primarily ATS surveillance data with warning times of up to two minutes. Upon receiving an alert, air traffic controllers are expected to immediately assess the situation and take appropriate action if necessary.

The goal of current Ground Based Safety Nets is collision avoidance, or the avoidance of collision with terrain or obstacles, or to warn the controllers of the unauthorized penetration of an airspace.

Alerts from short- term conflict alert (STCA), area proximity warnings (APW), minimum safe altitude warnings (MSAW) and approach path monitoring (APM) are proposed.

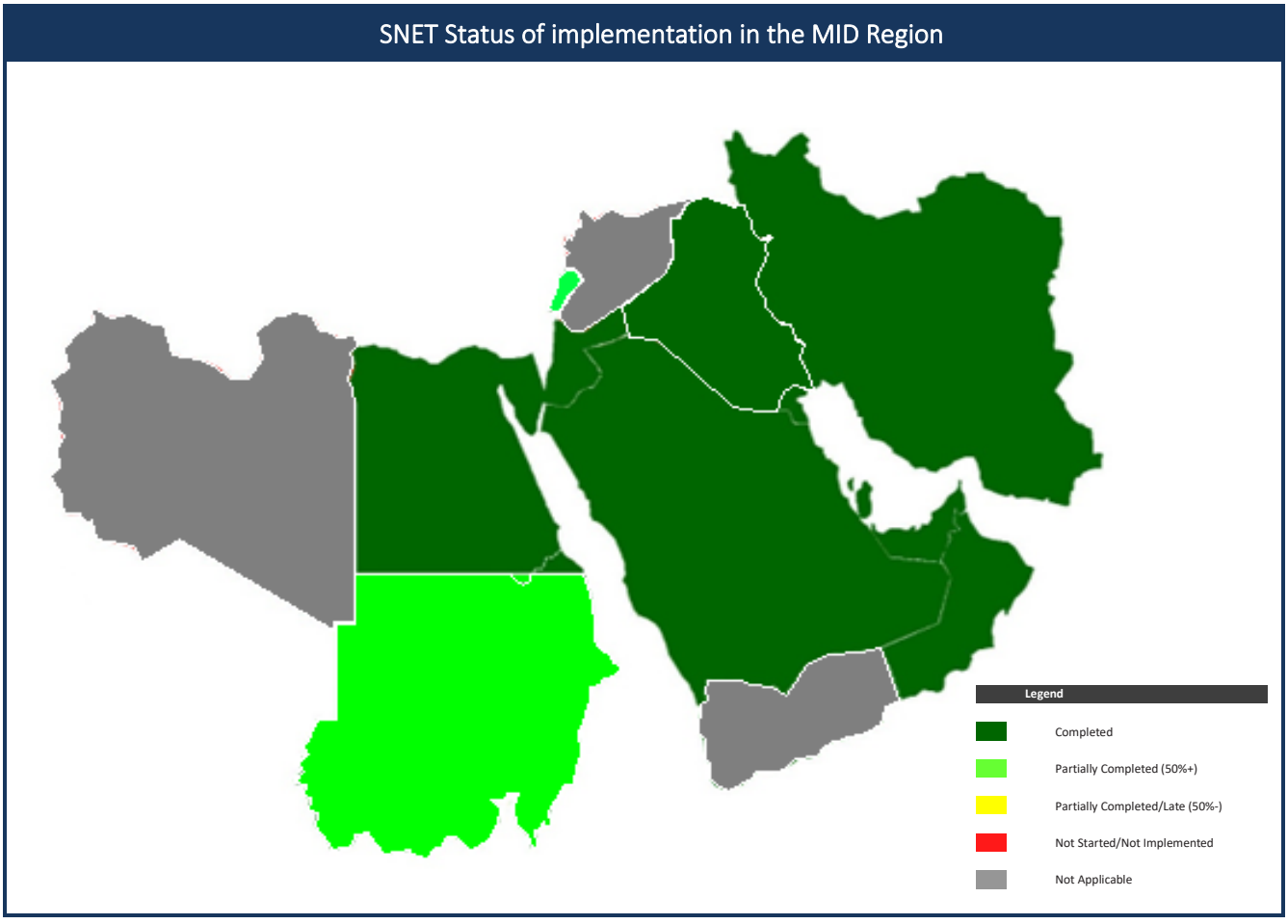
Ground-Based Safety Nets do not change the way air traffic controllers perform their work and have no influence on the calculation of the sector capacity.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
SNET							
SNET B0/1	Short Term Conflict Alert (STCA)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	***Indicator*:*** % of States that have implemented Short-term conflict alert (STCA) ***Supporting metric:*** Number of States that have implemented Short-term conflict alert (STCA) * As per the applicability area	(2018) 100%	100%	Dec 2018	Safety KPI 20 KPI 23
SNET B0/2	Minimum Safe Altitude Warning (MSAW)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	***Indicator*:*** % of States that have implemented Minimum safe altitude warning (MSAW) ***Supporting metric:*** Number of States that have implemented Minimum safe altitude warning (MSAW) * As per the applicability area	(2018) 100%	100%	Dec 2018	Safety KPI 20
SNET B0/3	Area Proximity Warning (APW)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	***Indicator*:*** % of States that have implemented Area Proximity Warning (APW) for ACCs, as required ***Supporting metric:*** Number of States that have Implemented Area	(2022) 67%	100%	Dec 2022	Safety KPI 20

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			Proximity Warning (APW) for ACCs, as required. * As per the applicability area				

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-SNET	B0/1															
	B0/2															
	B0/3															

Average Regional Implementation is **94.44%**.



2.1.9 B1-GADS

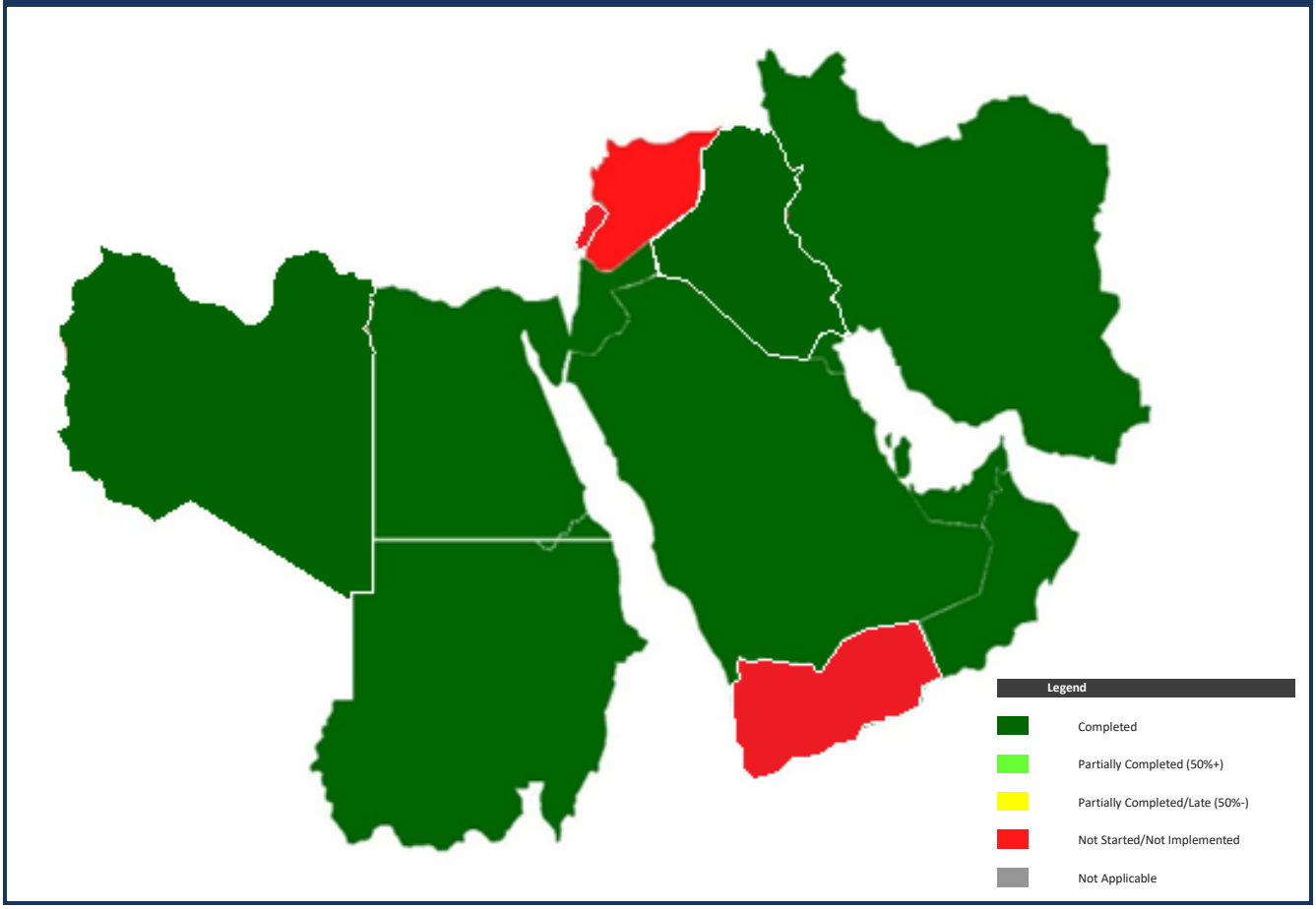
In oceanic areas without automatic surveillance, ATSU Alerting Service is supported with aircraft tracking capability implemented by the aircraft operator. Point of Contact (PoC) information is provided to facilitate establishing contact between relevant Stakeholders in emergency situations.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
GADS							
GADS B1/2	Operational Control Directory	All States	***Indicator:*** % of States that provided GADSS Point of Contact (PoC) information ***Supporting Metric:*** Number of States that provided GADSS Point of Contact (PoC) information.	(2022) 73%	100%	Dec 2022	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-GADS	B1/2															

Average Regional Implementation is **80%**.

GADS Status of implementation in the MID Region



2.1.10 B0-RSEQ

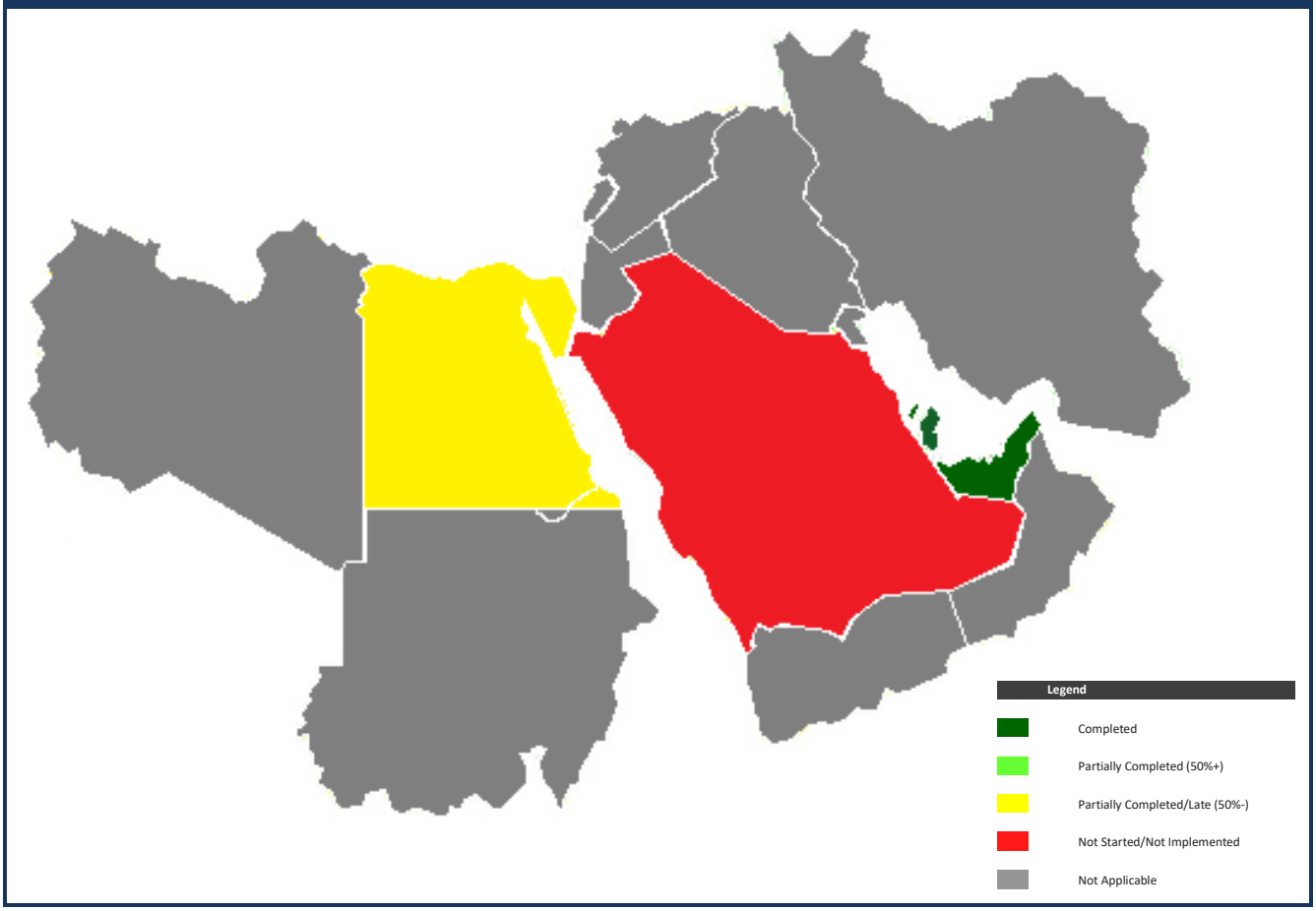
Arriving flights are "metered" and sequenced by arrival ATC based on inbound traffic predication information, optimizing runway utilization. Also departures are sequenced allowing improved start/push-back clearances, reducing the taxi time and ground holding, delivering more efficient departure sequences and reduce surface congestion.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
RSEQ							
RSEQ B0/1	Arrival Management	OBBI, HECA, HEBA, HELX, HESN, HESH, OTBD, OTHH, OEJN, OEDF, OEMA, OERK OMDB, OMAA	***Indicator*:*** % of Aerodromes that have implemented arrival manager (AMAN), where required/applicable ***Supporting Metric:*** Number of Aerodrome that have implemented arrival manager (AMAN), where required/ applicable. * As per the applicability area	(2022) 36%	80%	Dec 2024	Capacity Efficiency KPI 08 KPI 10 KPI 11 KPI 14

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-RSEQ	B0/1															

Average Regional Implementation is **50.00%**.

RSEQ Status of implementation in the MID Region



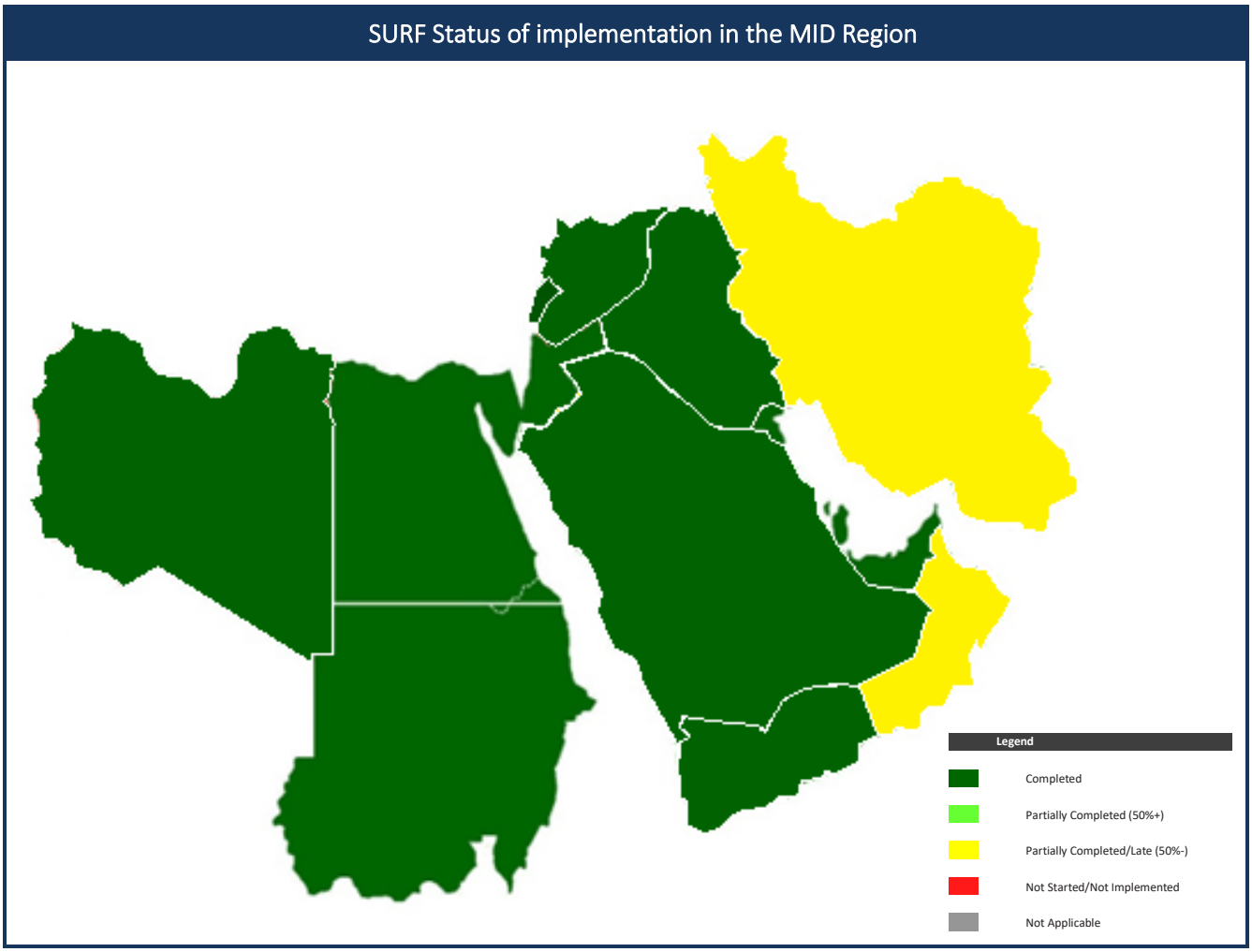
2.1.11 B0-SURF

This module aims to enhance the situational awareness of Air Traffic Controllers and pilots during ground operations by the provision of the aerodrome surface situation on their respective displays being A-SMGCS for the controller or electronic maps in the cockpit. Some initial alerting services for prevention of runway incursions are proposed to the controller.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
SURF							
SURF-B0/1	Basic ATCO tools to manage traffic during ground operations	All International Aerodromes	***Indicator:*** % of Aerodromes having implemented Basic ATCO tools to manage traffic during ground operations ***Supporting metric:*** Number of Aerodromes having implemented Basic ATCO tools to manage traffic during ground operations	(2022) 90%	100%	Dec 2022	Efficiency KPI 02 KPI 13 Safety KPI 20 KPI 21
SURF-B0/2	Comprehensive situational awareness of surface operations	OBBI, HECA, OIII, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OEMA, OMDB, OMAA.	***Indicator*:*** % of Airports having implemented the surveillance service of A-SMGCS ***Supporting metric:*** Number of Airports having implemented the surveillance service of A-SMGCS *As per the applicability area	(2022) 61%	80%	Dec 2022	Safety KPI 20 KPI 21
SURF-B0/3	Initial ATCO alerting service for surface operations	OBBI, HECA, OIII, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OEMA, OMDB, OMAA.	***Indicator*:*** % of Airports having implemented the A-SMGCS alerting service. ***Supporting metric:*** Number of Airports having implemented the A- SMGCS alerting service. * As per the applicability area	(2022) 74%	80%	Dec 2022	Safety/ KPI 20

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-SURF	B0/1															
	B0/2															
	B0/3															

Average Regional Implementation is **88.89%**.



2.1.12 B0 & 1-ACDM

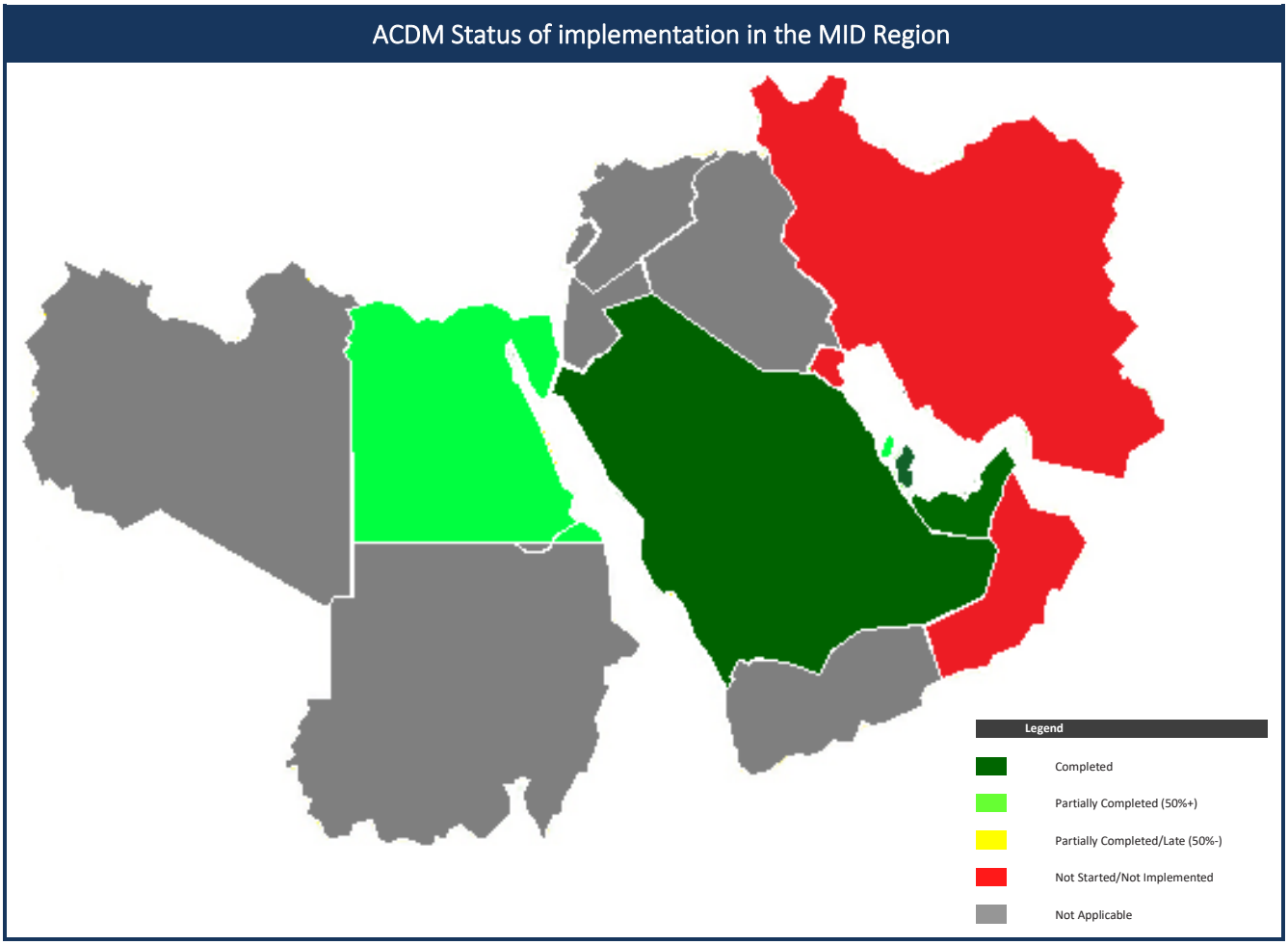
B0: Aerodrome operators, aircraft operators, air traffic controllers, ground handling agents, pilots and air traffic flow managers share live information that may be dynamic, in order to make better and coordinated decisions. This applies notably in day to day operations and also in case of severe weather conditions or in case of emergencies of all kinds; for these cases A-CDM procedures are referred to in the snow plan, the aerodrome emergency response plan and the aerodrome manual. In some cases, aerodromes are connected to the ATM network via the ATFM function or to ATC through data exchange.

B1: Aerodromes are integrated within the ATM Network, from the strategic through all tactical phases. Situational awareness and decision support information is made available to affected stakeholders to establish a common understanding of the various needs and capabilities and make adjustments to assets in order to cope with these needs. Support mechanisms include an Airport Operations Planning (AOP) and an Airport Operations Centre (APOC).

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Operational Threads							
ACDM							
ACDM B0/1	Airport CDM Information Sharing (ACIS)	HECA, OBBI, OIII, OKKK, OOMS, OTHH, OEJN, OERK, OMDB, OMAA	***Indicator*:*** % of Airports having implemented ACIS ***Supporting metric:*** Number of Airports having implemented ACIS. * As per the applicability area	(2022) 75%	90%	Dec 2024	N/A
ACDM B0/2	Integration with ATM Network function	HECA, OBBI, OIII, OKKK, OOMS, OTHH, OEJN, OERK, OMDB, OMAA.	***Indicator*:*** % of Airports having integrated ACDM with the ATM Network function. ***Supporting metric:*** Number of Airports having integrated ACDM with the ATM Network function * As per the applicability area	(2022) 25%	50%	Dec 2024	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-ACDM	B0/1															
	B0/2															

Average Regional Implementation is **60.00%**.



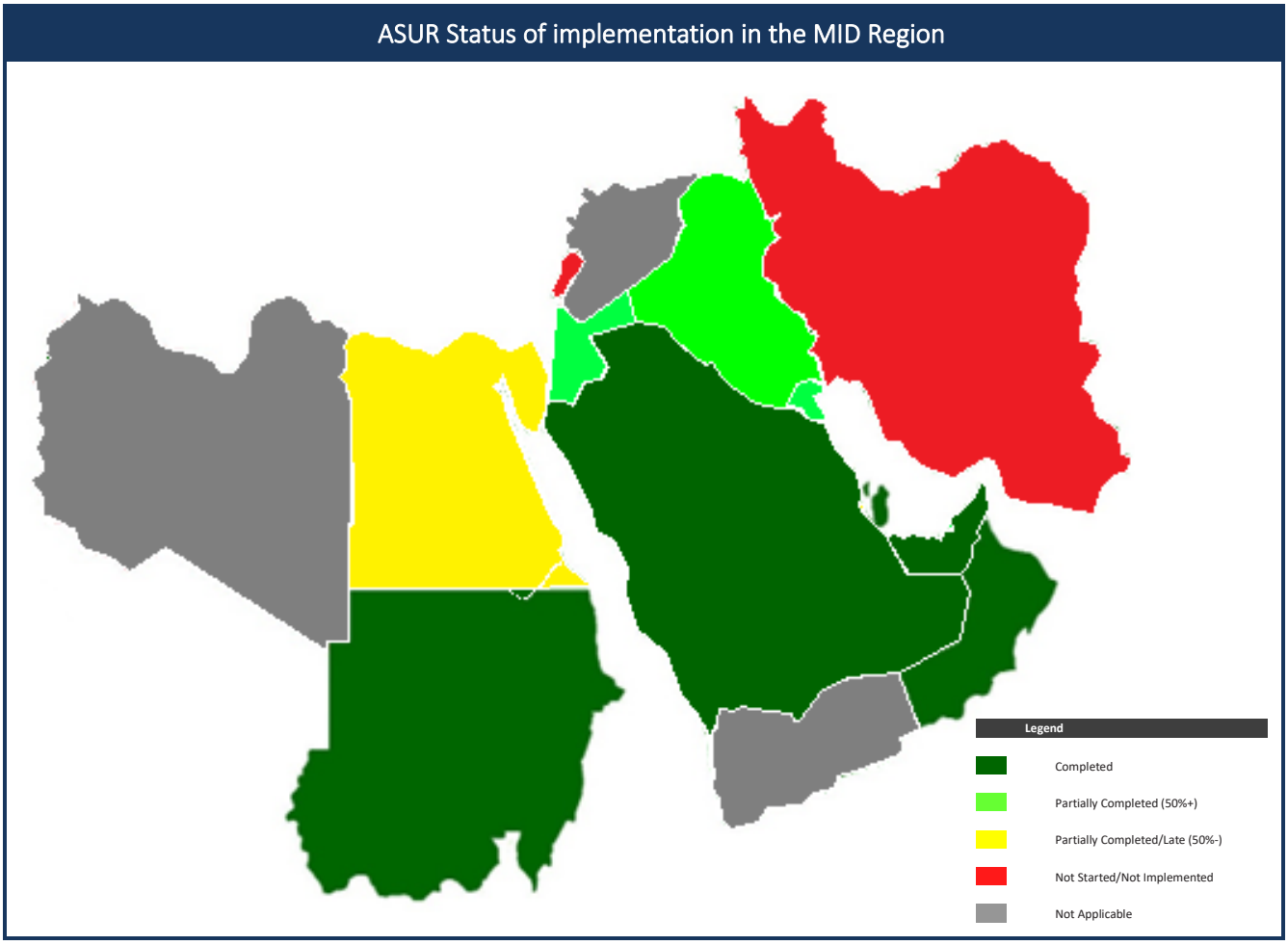
2.1.13 B0-ASUR

Surveillance is provided supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems. These capabilities will be used in various ATM services, e.g., traffic information, search and rescue, and separation provision. ADS-B OUT and MLAT systems complement existing cooperative surveillance radar and may be deployed independently or together. Depending on local airspace needs, ADS-B or MLAT may replace cooperative radar.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Technology Threads							
ASUR							
ASUR B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)	Bahrain, , Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, , Sudan, UAE	***Indicator*:** % of States that have implemented ADS-B to improve surveillance coverage/capabilities ***Supporting Metric:*** Number of States that have implemented ADS-B to improve surveillance coverage/capabilities. * As per the applicability area	(2022) 60%	80%	Dec 2022	N/A
ASUR B0/2	Multilateration cooperative surveillance systems (MLAT)	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE	***Indicator*:** % of States that have implemented Multi-lateration (M-LAT) ***Supporting Metric:*** Number of States that have implemented Multi-lateration (M-LAT) * As per the applicability area	(2022) 63%	80%	Dec 2022	N/A
ASUR B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	Bahrain, Egypt, Iran, Iraq, Kuwait, Lebanon, Jordan, Oman, Qatar, Saudi Arabia, Sudan and UAE	***Indicator*:** % of States that have implemented Downlink of Aircraft Parameters (SSR-DAPS) ***Supporting Metric:*** Number of States that have implemented Downlink of Aircraft Parameters (SSR-DAPS) * As per the applicability area	(2022) 83%	90%	Dec 2023	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-ASUR	B0/1															
	B0/2															
	B0/3															

Average Regional Implementation is **70.83%**.



2.1.14 B0-NAVS

GBAS is provided to support precision approach and landing operations at a specific airport, in particular Category I operation utilizing GBAS Approach Service Type C (GAST-C), with the improved accuracy, integrity, and availability of satellite navigation.

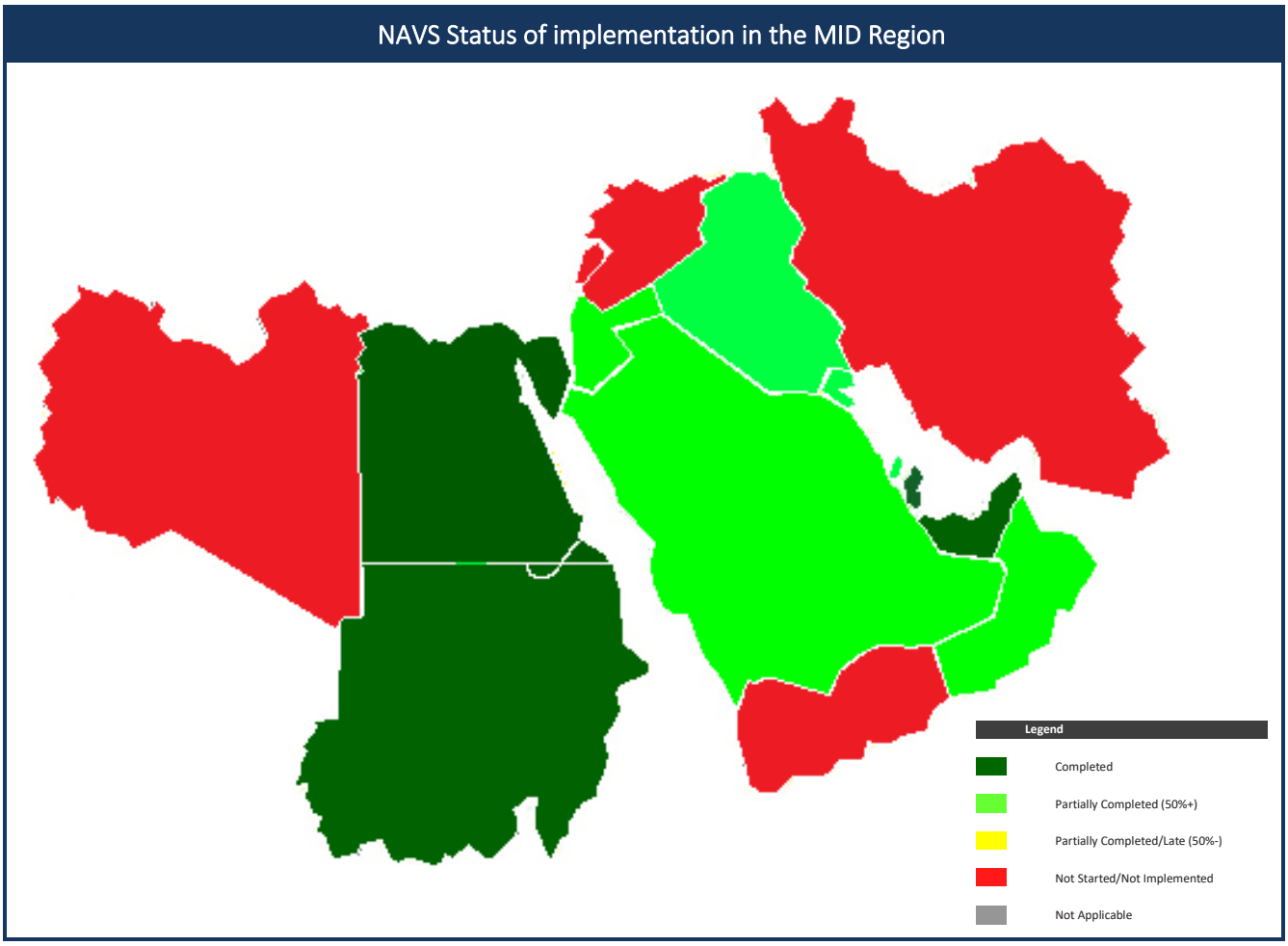
SBAS and ABAS are implemented as a mean to comply with ICAO Assembly Resolution A37-11 regarding Vertically-Guided Approach. SBAS is provided to support PBN in all phases of flight with increased accuracy and integrity. ABAS is provided to support non-precision (LNAV) and vertically-guided approach with Baro-VNAV as well as other terminal and en-route navigations.

Rationalization of conventional navigation aid infrastructure through Minimal Operating Networks starts to happen and supports a reduction in the number of NDBs, VORs, and, where appropriate in some States, ILS. Alternative Positioning, Navigation, and Timing is based upon a combination of existing ground navaids, airborne inertial systems and ATC procedures.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Technology Threads							
NAVS							
NAVS B0/3	Aircraft Based Augmentation Systems (ABAS)	All States	***Indicator:*** % of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations ***Supporting metric:*** Number of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations	(2022) 40%	70%	Dec 2022	N/A
NAVS B0/4	Navigation Minimal Operating Networks (Nav. MON)	All States	***Indicator:*** % of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation ***Supporting metric:*** Number of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation.	(2022) 47%	70%	Dec 2022	N/A

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-NAVS	B0/3															
	B0/4															

Average Regional Implementation is **48.33%**.



2.1.15 B0-COMI

B0: Air-Ground
VHF, HF and SATCOM \Communications:

- VHF Voice Communications remains the primary means of information exchange in most regions.
- Continued use of the ACARS Network to support the distribution of ATS message sets (FANS)
- Introduction of the ATN/OSI Network to to support B1
- Continued use of VDL Mode 2 to support ATN/OSI and FANS.
- Continued use of SATCOM Class C, VDL Mode0/A and VDL Mode 2 as Datalinks to support Terrestrial, Oceanic and Remote Airspace and as a complement to voice and in order to reduce voice channel congestion and increase capacity.
- Continued use of HFDL as the Datalink to support Oceanic Airspace as a complement to voice and in order to reduce voice channel congestion and increase capacity.

Ground-Ground
Deployment of IP based AMHS linked service:

- as an improvement over AFTN in term of bandwidth and length of the message,
- as a mean to enhance traffic transfer between ANSPs by expanding the use of ATS Inter-Facility Communication Data (AIDC) to improve efficiency of air traffic management by reducing the use of ATS voice service.

B1: Air-Ground
Improved Terrestrial Data Communications:

- VHF Voice Communications remains the primary means of information exchange in most regions.
- Introduction of the VDL Mode 2 Multi-Frequency design to accommodate increased capacity and reduce interference.
- Introduction of the New SATCOM Class B Satellite Datalinks to increase performance and deliver increased ATN/OSI and ACARS network connectivity.

Ground-Ground
Introduction of IP based network to replace point-to-point circuits:

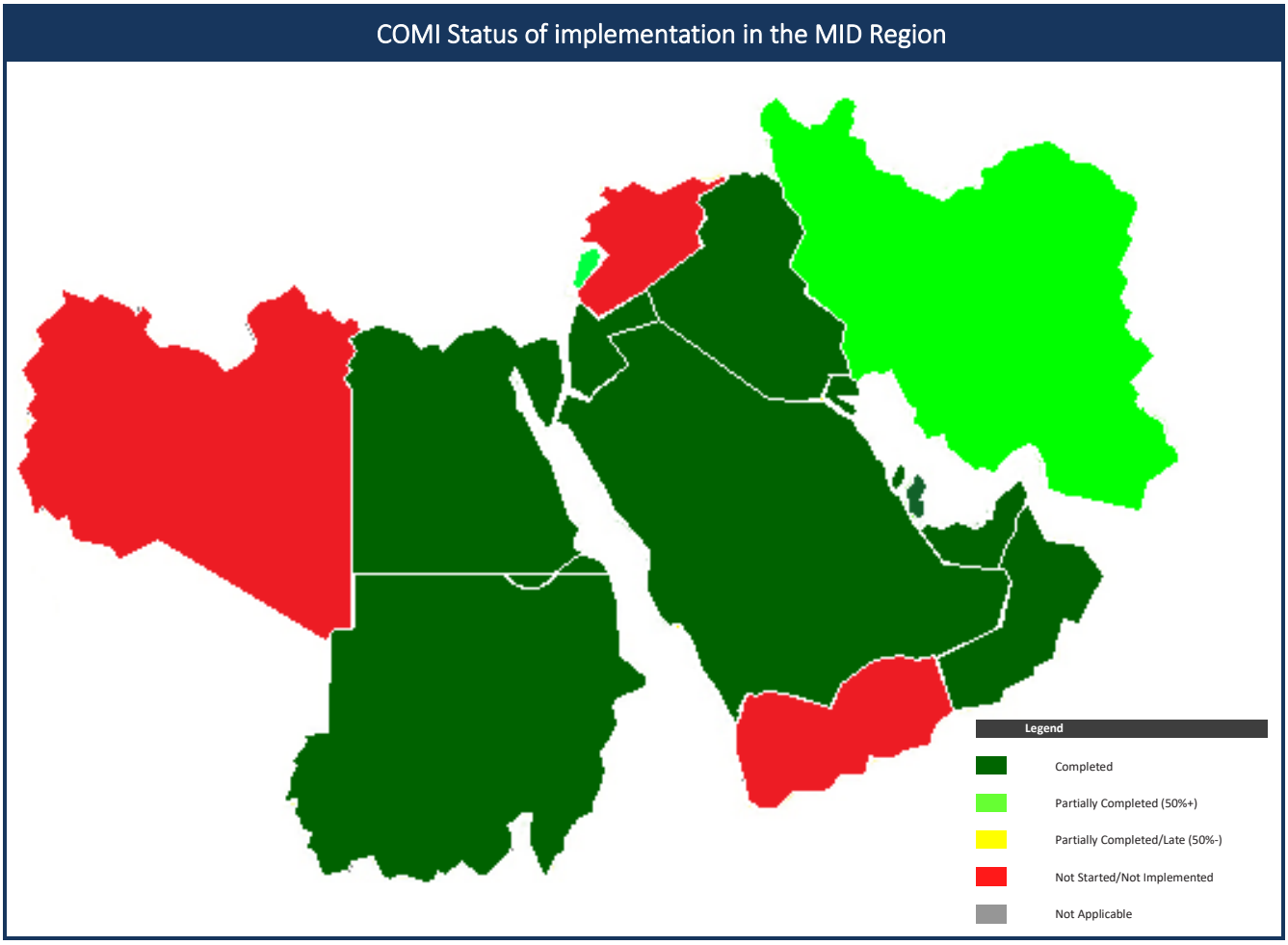
- AMHS with extension service to support XML, FTBP (IWXMM).
- Expansion of AIDC to enhance efficiency and safety.
- Implement regional IP networks.
- AeroMACS circuits for airport local communications.

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Technology Threads							
COMI							
COMI B0/7	ATS Message Handling System (AMHS)	All States	***Indicator:*** % of States that have established AMHS interconnections with adjacent COM Centres ***Supporting metric:*** Number of States that have established AMHS interconnections with adjacent COM Centres	(2022) 73%	90%	Dec 2022	N/A
COMI B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	All States	***Indicator:*** % of States that have established National IP Network for voice and data communication	(2022) 60%	80%	Dec 2022	N/A

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			Supporting metric: Number of States that have established National IP Network for voice and data communication				

Module	Elements	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0-COMI	B0/7															
B1-COMI	B1/1															

Average Regional Implementation is **73.33%**.



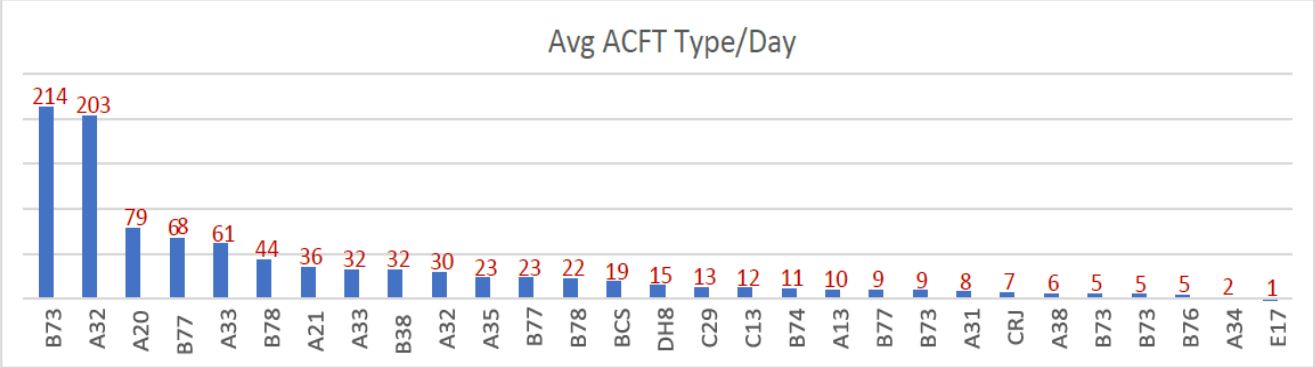
3. SUCCESS STORIES/BEST PRACTICES

Egypt

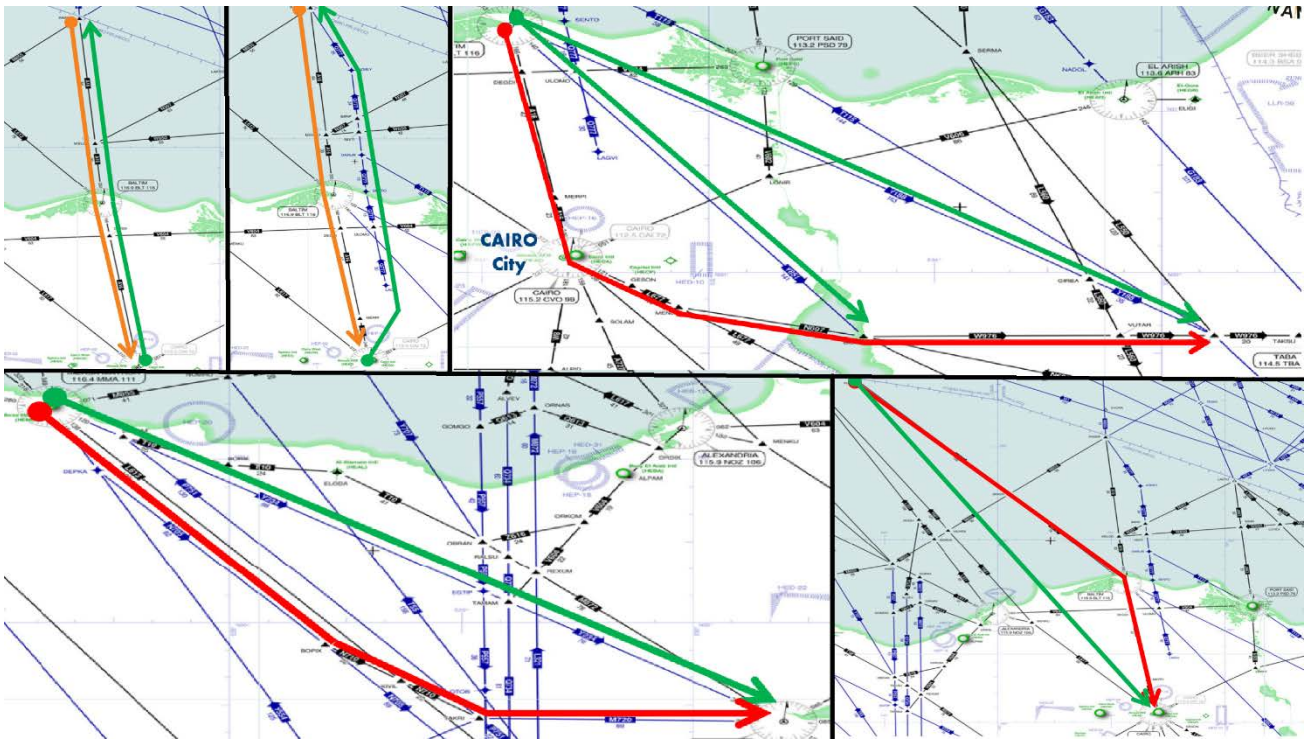
3.1 Cairo FIR optimization

3.1.1 The key findings from the Egypt Airspace Analysis regarding the type of aircraft operating in Cairo FIR:

- *Dominant Aircraft Types:* The Boeing 737-800 (B738) and Airbus A320 (A320) are the most prevalent aircraft in the Cairo FIR, followed by the Airbus A320neo (A20N).
- *Significant Wide-Body Traffic:* Boeing 777-300ER (B77W) and Airbus A330-300 (A333) aircraft exhibit substantial presence, with average daily frequencies of 68 and 61 respectively.
- *Boeing 787-9 Presence:* The Boeing 787-9 (B789) also contributes significantly, averaging 44 flights per day.
- *Other Notable Aircraft:* Airbus A321neo (A21N), Airbus A330-200 (A332), and Boeing 737 MAX (B38M) aircraft maintain a noticeable presence, albeit with lower daily frequencies.



3.1.2 As the majority of air traffic within the Cairo FIR consists of narrow-body aircraft, the optimization analysis will be conducted with a specific focus on the operational characteristics of the Boeing 737 and Airbus A320 series, which represent the most common aircraft types in this category.



Route	Current Distance (NM)	Proposed Distance (NM)	Distance Saving (NM)	Fuel Consumption (Current) (kg)	Fuel Consumption (Proposed) (kg)	Fuel Savings (kg)	Fuel Savings (%)	Carbon Emission Savings (kg)	Cost Savings per Flight (USD)
DATOK-PSD-MELDO-NEWPOINT	435.5	347.2	88.3	2300	1833.1	466.9	20.3	1475.4	391.45
BLT-DATOK	243.3	198	45.3	1300	1058.2	241.8	18.6	764.1	202.73
BLT-SISIK	162.3	141	21.3	800	695.2	104.8	13.1	331.2	87.87
KUMBI-CVO	264.8	255.3	9.5	1400	1349.6	50.4	3.6	159.3	42.26
KUNKI-TANSA	333.8	319.1	14.7	1700	1625.2	74.8	4.4	236.4	62.71
MENKU-ANTAR	197.2	192.3	4.9	1000	975	25	2.5	79	20.96
PAXIS-OBRAN	233.1	225.2	7.9	1200	1159.2	40.8	3.4	128.9	34.21
DASUM-FYM	220.3	200.8	19.5	1100	1002.1	97.9	8.9	309.4	82.08
SALUN-CVO-SILKA	757	726.5	30.5	3900	3744	156	4	493	130.79
BRN-NUBAR	652.6	647.4	5.2	3400	3372.8	27.2	0.8	86	22.8
SML-DEPKA	596.4	585.8	10.6	3100	3044.2	55.8	1.8	176.3	46.78
SISID-KUNAK	236.9	229.6	7.3	1200	1162.8	37.2	3.1	117.6	31.19
LUGAV-AST	269.9	261	8.9	1400	1353.8	46.2	3.3	146	38.73
LXR-GINDI	183.5	163.9	19.6	1000	893	107	10.7	338.1	89.71

3.2 Electronic Flight Strip System (EFSS) developed and implemented by Iran

3.2.1 The need to eliminate the paper-based flight strip writing process, standardize strip marking by air traffic control personnel, and provide services to facilitate this process, along with collecting flight strip data in digital format on databases and utilizing this data for statistical reporting and secondary processing, led us to initiate the design and implementation of the Electronic Flight Strip System.

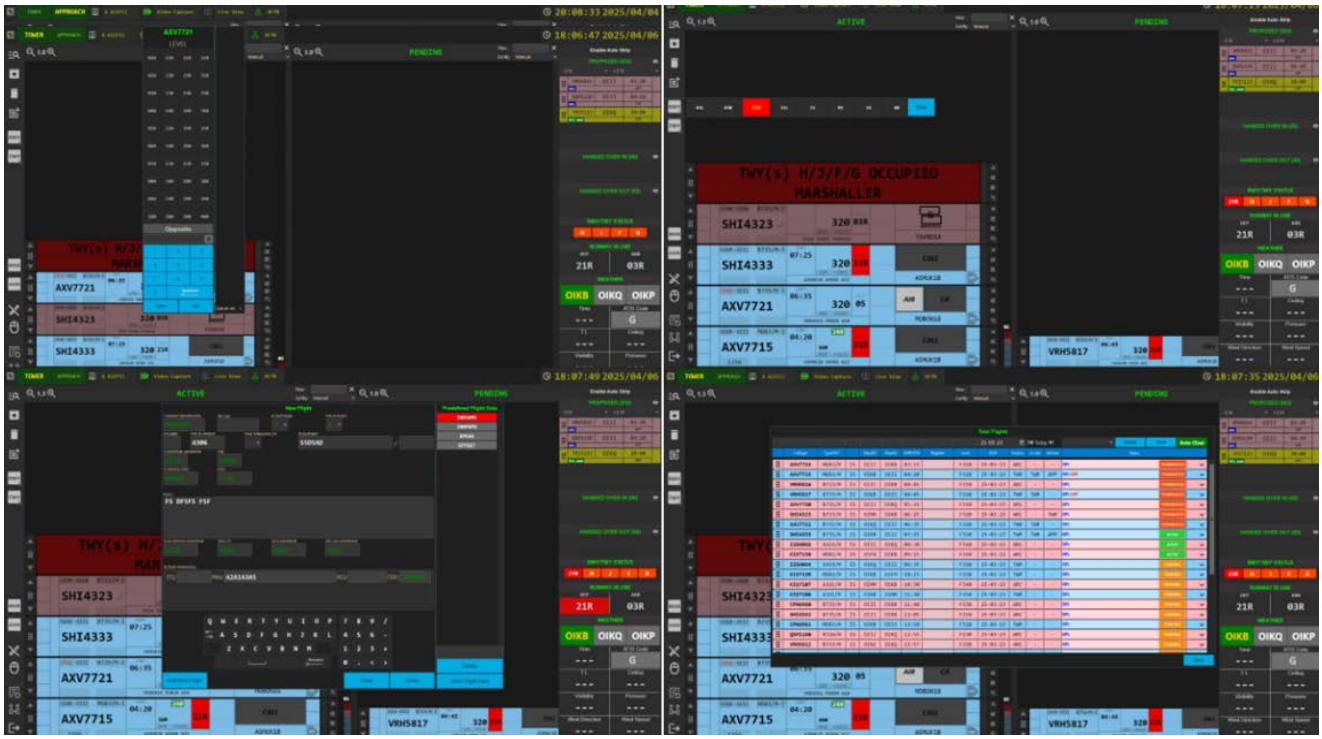
3.2.2 The design and implementation of the Electronic Flight Strip System have been carried out internally by experts from the General Directorate of Aeronautical Telecommunications and Information Technology at the Iran Airports and Air Navigation Company.

3.2.3 The Electronic Flight Strip System utilizes the AFTN service for sending and receiving aeronautical messages. It processes and categorizes all incoming aeronautical messages based on the standards outlined in Document 4444 and Annex 10, Volume II and other ICAO annexes and documents. Additionally, all messages generated and transmitted by the Electronic Flight Strip System comply with these referenced documents.

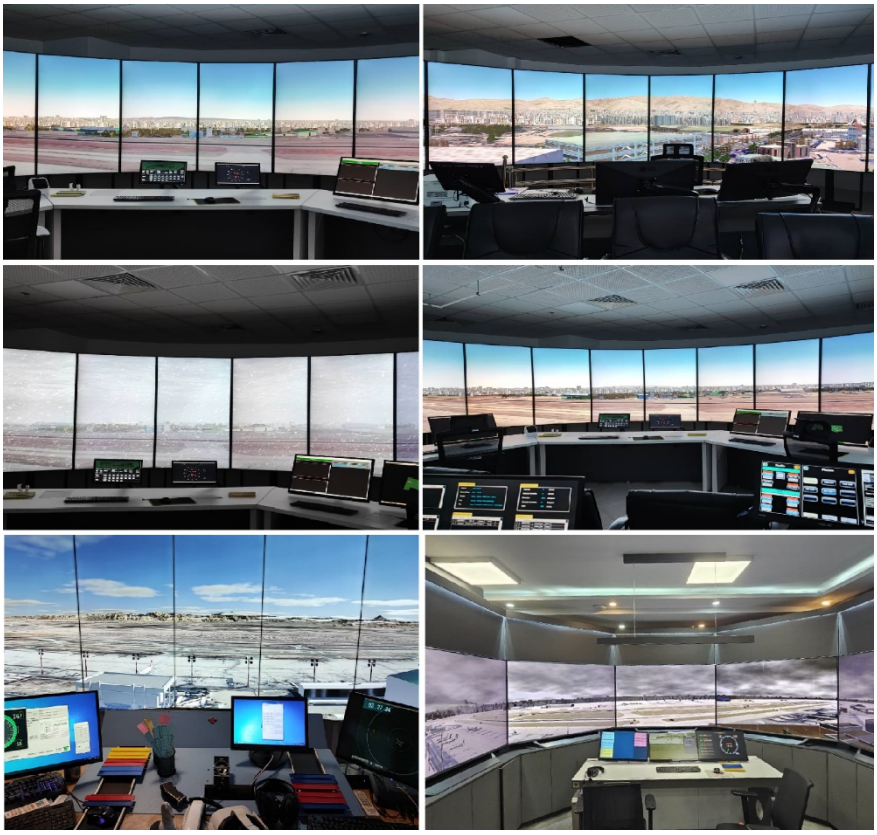
3.2.4 The Electronic Flight Strip System also integrates with other locally developed systems at the Iran Airports and Air Navigation Company, such as the Zagros System (ASUR) and Iran's e-FPL System via the AFTN service or through API connections. This integration facilitates the workflow of air traffic controllers by enabling seamless data exchange.

3.2.5 The Electronic Flight Strip System also provides features and solutions such as Mirroring Mode and Assist Mode to reduce verbal coordination between different air traffic control units such as Approach, Tower, Ground, and Clearance Delivery. These capabilities enhance the pre-planning process for flights that need to be hand over to the relevant unit and are particularly beneficial in high-traffic conditions.

3.2.6 The Electronic Flight Strip System is designed to eliminate verbal coordination between airport air traffic control units and ACC at airports equipped with RADAR automation system such as FDP and RDP. It functions as an interface between airport RADAR automation system and incoming aeronautical messages via the AFTN service, facilitating the exchange of EST and CPL messages between units for more coordination.



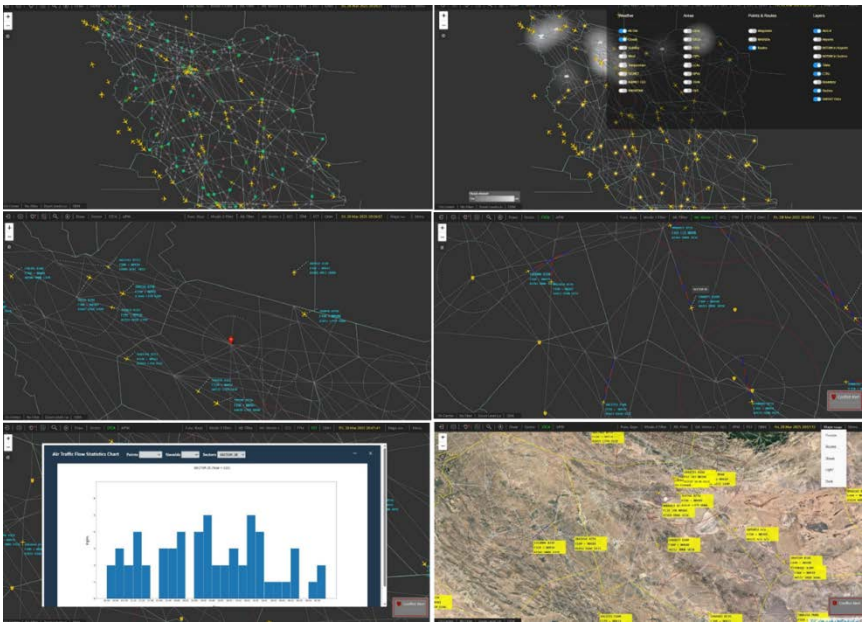
3.3 Development and installation of 3D Tower Simulators in Iran



3.3.1 The development of two advanced 3D Air Traffic Control (ATC) tower simulators at Zahedan (OIZH), Mehrabad (OIII) international airports and Iran Faculty is an important step in responding to the critical training needs of aviation professionals in Iran. These simulators are designed in accordance with the stringent requirements of the International Civil Aviation Organization (ICAO), particularly in training air traffic controllers to manage complex and unusual airport traffic, adapt to dynamic changes in airport infrastructure and flight instructions.

3.3.2 Iran Airports and Air Navigation Company, as the main ANS service provider in Iran, has developed an indigenous solution by leveraging domestic scientific and technological capacities. This initiative not only emphasizes our commitment to complying with ICAO safety and operational standards but also highlights the resilience of domestic innovation in overcoming shortcomings. By aligning the design of the simulators with ICAO training annexes and guidelines such as Annex 01 (Personnel Licensing) and Doc 9868 (Development of Training Programmes), we ensure that our aviation personnel, which currently number over 1,000, achieve globally recognized competency standards and provide a safe, secure and continuous service.

3.4 Development of Advanced Surveillance System (ASUR)



3.4.1 To ensure safe air traffic services and prevent disruptions, a domestically developed software called *Advanced Surveillance System (ASUR)* has been created in line with ANS requirements.

3.4.2 In airports without radar systems, those located below radar coverage, or border areas where surveillance radars deploying is neither practical nor cost-effective, alternative and low-cost surveillance systems like ADS-B offer the best solution. These systems enhance air traffic monitoring and provide better situational awareness for air traffic controllers (ATC), search and rescue centers, security agencies, and other stakeholders involved in aviation operations. Moreover, ADS-B has been identified, under ICAO GANP, as ICAO ABSU ASUR B0-1 element that supports the provision of Air Traffic Services and operational applications at reduced cost and increased surveillance coverage.

3.4.3 The ASUR alternative surveillance system is a GIS-based software infrastructure and the first system introduced by the Iran Airports and Air Navigation Company that utilizes ADS-B data for surveillance operations. In addition to leveraging the advantages of ADS-B-based systems—such as cost-effectiveness, accessibility, and high scalability—ASUR can also integrate and process data from installed radar systems across the country. This capability enables the development of a hybrid, domestically built surveillance system, contributing to the accumulation of expertise in aviation surveillance system development.

Iraq

3.5 FUA implementation Plan though Baghdad FIR (ORBB)

3.5.1 The FUA implementation plan was prepared by the ATS Dept. in the GCANS and case studies were made to explain the importance and necessity of the provision of more free airspace for civilian air traffic operations through the FIR throughout the shifting and reduction in the lateral and vertical limits of the segregated airspaces, those studies were demonstrated and given high priority especially in the areas nearing ATS routes.

3.5.2 A remarkable increase in the traffic density was noticed and continuous meetings are held to enhance the cooperation between civilian and military entities in charge of running the airspace.

3.5.3 Agreements on scheduling the airspace use for military training operations and understanding the importance of prioritizing civilian air traffic operations have led to the reduction in the risk and workload related to the co-use of airspace.

3.5.4 A daily schedule of military training is provided to the ATC operations unit and ATFM to update the ATFM Daily Plan (ADP) and to plan the flow of civilian air traffic in a safe an efficient manner.

Oman

3.6 Muscat South Runway 08R/26L Activation

In May 2024, Muscat Airport successfully inaugurated a new runway, 08R/26L, which increases its capacity with dual runways operating in a single mode. The main benefit of this new runway is as follows:

- increased airport capacity and reduced delays;
- improved traffic flow and efficiency; and
- enhanced safety margins.



Qatar

3.7 Approach and ACC unit

- CCO (New SIDs) TULUB 1A/LUBET 1A/ULIKA 1A New CCO SID Implementation 28 November 2024.
- Civil- Military Coordination Improvement.
- Flexible Use of Airspace (FUA) Improvements
- Qatar AIP Charts SID Initial Level Updates.
- Automation Systems Upgrades- Common Database (CDB), Flight Data Processing (FDP), Control and Monitoring System (CMS), Human Machine Interface (HMI) Improvements.
- Implementation of ATC Support Distance Base Separation Tool.
- Enhancement of Area Proximity Warning (APW) for FUA and Special Missions.
- RECAT6 Implementation.

- Enhancement of Contingency Plan to include New Qatar Air Traffic Control Center (QATCC) operations.
- Quick Reference Guidelines (Automation System and Voice Communication System) Updates for ATCOs.
- Redesignation of Missed Approach Procedures for OTHH.
- Redesignation of OTHH RNP Approaches (LNAV, LNAV/VNAV) to overlay the ILS LOC.
- Free Route Airspace (FRA) implementation.
- Digital platform implementation for Emergency/Abnormal Situations Checklists.
- Digital platform implementation for ATCOs to acknowledge operational instructions.
- QATCC – New Building. Transfer of the ACC Unit to a new building with state-of-the-art facilities.
- The seamless transition to a new building is testament to the Qatar Civil Aviation Authority (QCAA) extensive planning and commitment.
- To ensure minimal disruption, QCAA allocated comprehensive resources, including expert teams dedicated to managing logistics, equipment and communications.
- Importantly, extensive measures were implemented to mitigate any potential impact on neighboring units while ensuring the safety of the operations.
- Decrease in the number of ACC-APP related safety issues. The annual number of airspace incidents has significantly decreased, highlighting the improvements in both the performance of the Air Traffic Controllers and the overall aviation system.
- A new direct route between TOVOX and ULIKA has been implemented.
- A new route between ELIDU-SOLOB has been implemented in order to reduce the intensity of hot spots.
- Qatar implemented a shorter route for traffic departing Bahrain transiting into Kingdom of Saudi Arabia airspace to accommodate airline's requirements.
- Publication of a new APP and ACC LATCIs.
- Fast and real-time simulation of a new airspace design, to better respond to the demand of the traffic.
- Hiring and training of new or existing staff in order to be ready for the assumption of the responsibility to provide Air Traffic Services in the Northern portion of the airspace after ICAO Council decision for Doha FIR Phase 2 implementation.

3.8 Hamad Tower unit

- Electronic Flight Progress Strip (EFPS) System Update, OTBD Integration and new procedures such as SID Confidence Check.
- RRSM 24H implementation.
- RECAT 6 implementation.
- DMAN updates and advancements.
- Unit Competency Scheme (UCS) introduction.
- Introduction of Electronic Logs for instructions and digital platform for manuals etc.
- Introduction of digital seating plan database.
- New helicopter routes and procedures.
- FOD barrier installation.
- Introduction of observational flights for ATCOs.
- Additional modes of operation implemented for runway balancing.
- New equipment installation in VCR including additional PC console, vaisala and meteorological enhancements.
- New LATCI publication.
- Implementation of new LVP procedures.

3.9 Doha Tower unit

- EFPS implementation.
- RECAT 6 implementation.
- NEW VFR routes and procedures. For Fixed Wings and Rotary Wings
- New Reporting Points
- Introduction of Competency based Training and Assessment including updated Unit Training Plan (UTP). New Training Objectives
- Introduction Of Operational and Work Instructions Manuals. Radio Telephony (RT) Manual

3.10 CNS unit

- Bi-yearly routine flight checks of all navigational aids (ILS, DVOR and DME) operational at OTHH and OTBD.
- GBAS: Ionospheric data collection, analysis and feasibility study report completed.
- On-the-job training for OTHH DVOR and HP DME.
- On-the-job training for QFIR Radios for Engineering personnel.
- ATSEP basic training for new Engineering personnel.
- Familiarization Training on GNSS and argumentation system (GBAS/SBAS/ABAS).
- Decommissioning of all OTHH MMs (34L, 34R, 16L and 16R).
- Special flight check was conducted for ILS Critical and Sensitive area of RWYs 34L and 16R.
- Installed/commissioned OTHH DVOR & collocated High Power DME (as a replacement due obsolescence of old DVOR & HP DME).
- Integrated Controller Working Position (ICWP) Improvements - L5, Full Implementation will be completed by December 2025.
- L band Radar installed and commissioned for QFIR.
- Additional Radios (RX and TX) were installed for QFIR.
- EFPS delivered to support operations at OTBD and OTHH.

3.11 Communication Operations

- Upgradation of IFPS "Integrated Initial Flight Plan Processing System", to share the 3rd Party ORMs (Operational Reply messages) with Flight Plan originator. Improvement of System functionality.
- Provision of pilot portal for airlines operator to file flight plan.
- Online platform (Web based) for Qatar Landing and Overfly permission. Implementation status: Testing phase.

3.12 AIM Unit

- Design and develop New SID CCO at OTHH.
- Design and develop New RNP instrument approach procedure.
- Revision of OTHH ILS Circling Minima.
- Revision of OTHH RWY 16L Intermediate MOCA.
- Modification of OTHH ILS missed approach procedure.
- Design and develop five (5) new STARs at OTHH
- Revision of fifteen (15) STARs at OTHH due to the new STAR procedures.

3.13 ATFM Unit

- Contacts on improvements and flight planning with Major Airline Operator.
- Doha AIM involvement in ATFM for the access of PFIB & updates of publications were established.
- Doha Communications involvement in ATFM was established.
- Training for all ACC controllers in ATFM Tool installed in ACC.
- Metron Aviation software provider & Doha ATFM follow up meetings and improvements, adaptations, and new software releases.
- Developed ATFM Daily Plan (ADP) and CDM contacts specifically with Kingdom of Saudi Arabia and UAE.
- ATFM Audit certification conducted by QCAA ANSI.
- Providing OTHH TWR with predicted Runway fix balancing information for three peak departure periods.
- Runway SID Balancing since 27th October 2024 Winter Schedule.

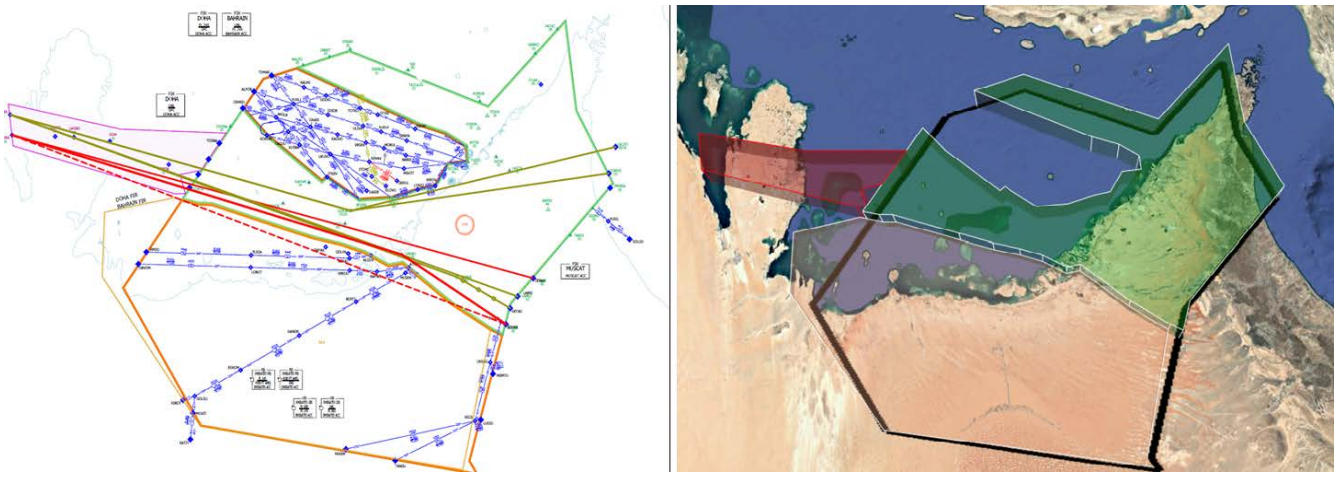
3.14 QMET

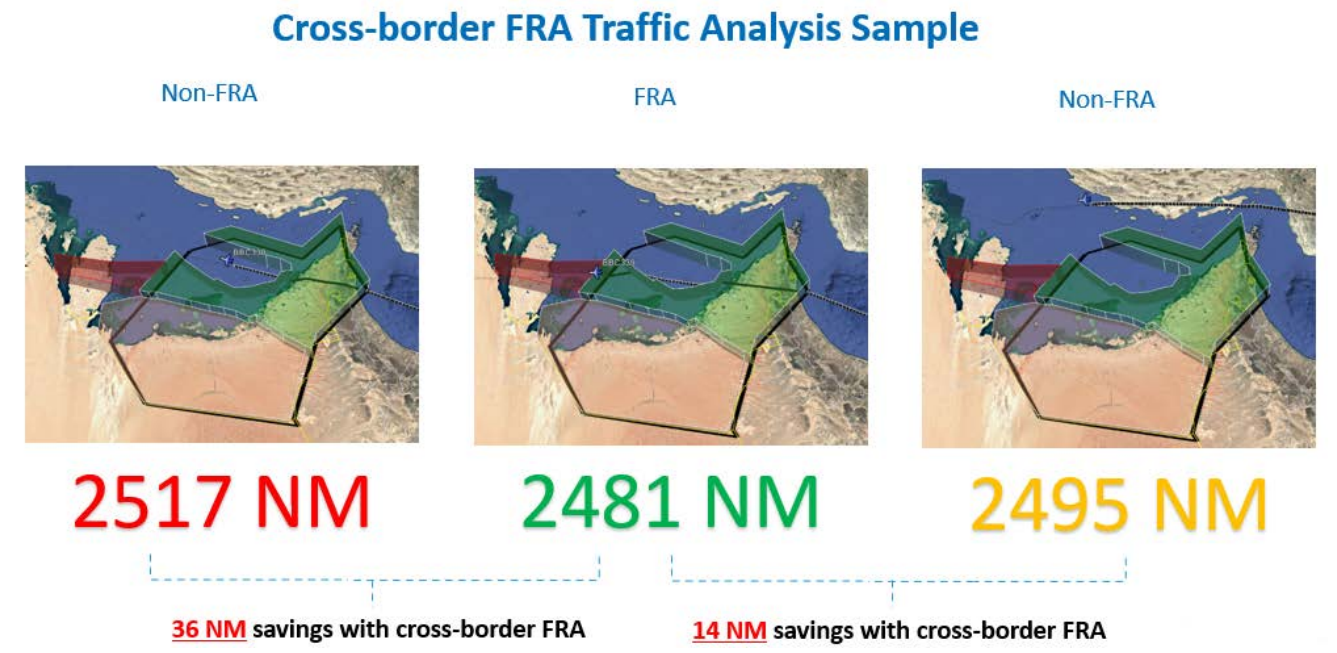
- Full implementation of Meteorological Watch Office (MWO) in OTHH.
- Installation & full operation of LIDAR for wind shear detection in OTHH.
- Successful conduction of QCAA Air Safety Department's audit on Meteorological Services.
- Development & Full Operation of Operational Webpage for Aeronautical Meteorological Services.

Qatar – UAE

3.15 Cross Border FRA Implementation

3.15.1 The cross-border Free Route Airspce concept is deeply rooted in ICAO's Global Air Navigation Plan (GANP) and related ASBU (Aviation System Block Upgrades) Threads and Elements particularly ACDM, FRTO, FFICE, NOPS and DAIM. This initiative is a critical step toward a more efficient, collaborative, and sustainable future for global aviation, undertaken collaboratively by Qatar and Emiratis.





Saudi Arabia

3.15 Development of plan to enhance the Airport and TMA operations - Airport CDM (A-CDM)

3.15.1 Concept of Operation (CONOPS)

3.15.1.1 Airport Collaborative Decision Making (A-CDM) is a set of processes aimed at improving air traffic management through a greater exchange of information between all stakeholders (airport operators, ground handling agents, airlines, air traffic controllers, etc.).

3.15.1.2 The implementation of A-CDM represents a significant enhancement in airport operations. A-CDM aims to improve the efficiency, predictability, and resilience of airport operations by optimizing resource utilization and parking area utilization, departure sequencing, and minimizing ground delays and fuel consumption. Furthermore, it is also beneficial for the environment and reduces the workload of air traffic controllers.

3.15.1.3 With the rise of digital technologies and the Internet of Things (IoT), the future of A-CDM will involve more intricate data integration. Machine learning and AI will be used to predict operational disruptions and offer mitigation strategies. Moreover, as airports grow and the airspace becomes more congested, the principles of ACDM will be increasingly adopted regionally, ensuring a harmonized approach not just at individual airports, but across entire regions or airspaces.

3.15.2 The A-CDM implementation Strategy in KSA will follow a stepwise approach:

- *Pilot Implementation:* Pilot projects for A-CDM are already foreseen under SFAC Programme in Riyadh and Jeddah international airports, under Seamless Operations Programme and at Yenbo airport (OEYN).
- *Integration of Systems and Stakeholders:* Develop an integrated platform that collates and distributes planning, flight progress information, and event predictions among all airport stakeholders.
- *Training and Awareness:* Conduct extensive training and awareness programs for all involved parties to understand the benefits and functionalities of A-CDM.
- *Continuous Monitoring and Feedback:* Implement mechanisms for continuous monitoring and feedback to ensure the system's adaptability

3.15.3 Operational Improvement Steps (OIS) Solution

- Improved Operations in Adverse Conditions through Airport Collaborative Decision Making.
- Improved Turn-Round Process through Collaborative Decision Making.
- Collaborative Pre-departure Sequencing.
- Basic Departure Management (Pre-departure Management).
- Collaborative Airport Planning Interface (AOP fully integrated with NOP & local business rules).
- A-CDM Process Enhanced through Integration of Landside (passenger and baggage) Process Outputs.
- Consolidation and facilitation of Target Times between local ATFM, Airport CDM and Extended Arrival Management.
- Improved De-icing Operation through Collaborative Decision Making (if and where applicable)

3.15.4 Operational Performance Measures

3.15.5 ASBU mapping with main architectural elements

3.16 Development of plan to Enhance the Airport and TMA operations - Advanced Surface Movement Guidance and Control System (A-SMGCS)

3.16.1 Concept of Operation (CONOPS)

3.16.1.1 Advanced Surface Movement Guidance and Control Systems (A-SMGCS) is a combination of visual and non-visual aids, procedures and tools for aerodrome's surface movement monitoring and control. It enhances situational awareness and airport capacity, ensuring a high level of safety and making ground operations more efficient in all weather conditions. The basic A-SMGCS consists of a surveillance service that provides the position, identification and tracking of mobiles.

3.16.1.2 The A-SMGCS system can include additional features, such as:

- Airport Safety Support Service: Runway Monitoring and Conflict Alerting (RMCA), Conflicting Air Traffic Control Clearances (CATC) alerts, Conformance Monitoring Alerts for Controllers (CMAC);
- Routing service generation and management of surface trajectories for aircraft and vehicles;
- Guidance service, automated switching of taxiway centreline lights (TCL), automated switching of stop bars and automated activation of advanced-visual docking guidance systems (A-VDGS).

3.16.1.3 To the benefit of controllers, the A-SMGCS provides:

- a representation of the actual aerodrome traffic on a display, independent of line-of-sight connection between the controller and the mobile;
- the position and identity of all cooperative mobiles, within the coverage volume independently of visibility conditions and the controller's line of sight;
- support to prevent collisions between all aircraft and vehicles, especially in conditions when visual contact cannot be maintained;
- detection and indication of the position of potential intruders;
- improved all-round management of traffic.

3.16.2 Operational Improvement Steps (OIS) Solution

- Airport Safety Nets for Controllers at A-SMGCS Airports.
- Ground Controller Situational Awareness in all Weather Conditions.
- Enhanced Ground Controller Situational Awareness in all Weather Conditions with ADS-B.
- Automated Alerting of Controller in Case of Runway Incursion or Intrusion into Restricted Areas.
- Automated Assistance to Controller for Surface Movement Planning and Routing
- Airport Safety Net for Vehicle Drivers.
- Airport Vehicle Driver's Traffic Situational Awareness.
- Enhanced Guidance Assistance to mobiles based on the automated switching of Taxiway lights and Stop bars
- according to the 'Airfield Ground Lighting'.
- Enhanced Runway Usage Awareness
- Improved Airport Safety with Better Prevention of Runway Excursions for Tower Controllers.

- Airport Safety Nets for Controllers at Secondary Airports.
- Enhanced safety in LVP through use of virtual block control.
- Extended Airport Safety Nets for Controllers at A-SMGCS Airports.
- Conflict Resolution for Tower Controllers.
- Airport Safety Enhanced by Prediction and by Detection of Adverse Traffic Patterns based on Ground Surveillance.
- Equivalent Visual Landing operations in Low Visibility Conditions with Head Mounted Display.
- Equivalent Visual Taxi operations in Low Visibility Conditions.
- Conformance Monitoring Safety Nets for Pilots.
- Traffic Alerts for Pilots during Runway and Taxiway Operations.
- Enhanced Runway Condition Awareness.
- Improved Safety with Better Prevention of Runway Excursions for Pilots.
- Datalink Services used for Provision of Ground-related Clearances and Information for trajectory-based operations.
- Guidance Assistance to Aircraft on the Airport Surface Combined with Routing for trajectory-based operations.

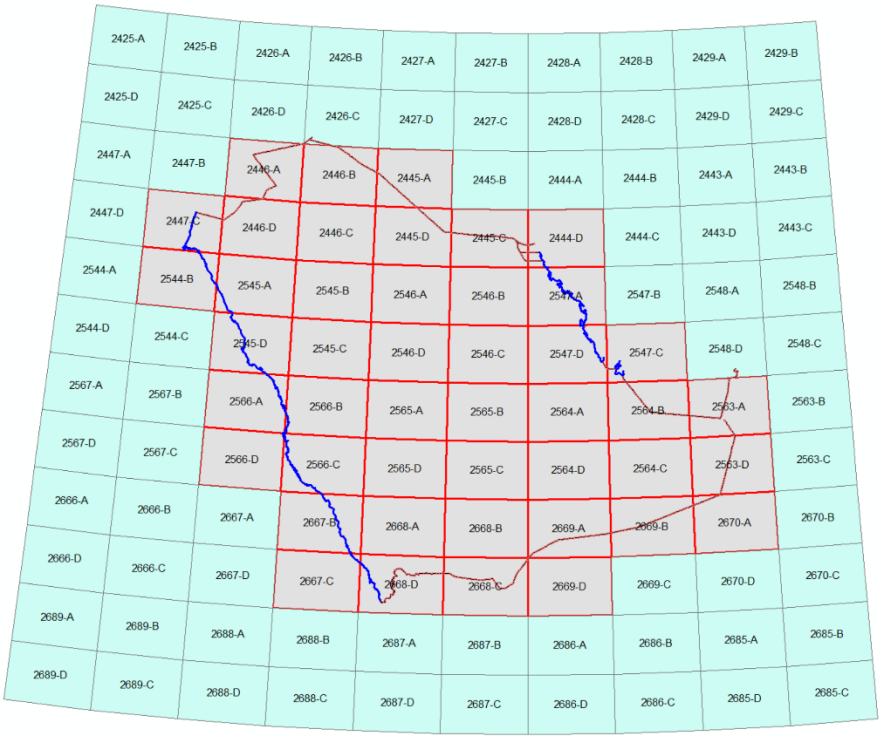
3.16.3 Operational Performance Measures

3.16.4 ASBU mapping with main architectural elements

3.17 Production of Aeronautical Chart – ICAO 1:500 000

3.17.1 Saudi Arabia developed and published the Aeronautical Chart – ICAO 1:500 000, compliant with national regulation and ICAO Annex 4 specifications. These charts are an essential element of the aeronautical information infrastructure and provide critical data for pre-flight planning, enroute navigation under Visual Flight Rules (VFR), and flight operations at low and intermediate altitudes.

3.17.2 This Chart comprises 45 sheets, each identified by the reference number of the corresponding World Aeronautical Chart – ICAO (WAC) 1:1 000 000 using quadrant-based suffixes (A: North-West, B: North-East, C: South-East, D: South-West) provides detailed topographical and operational data.



3.18 Implementation of SOIR on parallel instrument Runways at Jeddah and Riyadh International Airports

3.18.1 King Abdulaziz International Airport in Jeddah (OEJN) and King Khalid International Airport in Riyadh (OERK) are equipped respectively with three parallel instrument runways and two parallel instrument runways. All Runways are distant by more than 2 km which offer the operational flexibility to use each runway for either arrival or departure traffic, or to permit mixed-mode of operations.

3.18.2 The expected benefits of the SOIR operations at OEJN and OERK can be summarized as follows:

- *Increased Airports Capacity:* the SOIR will allow efficient use of parallel runways at OEJN and OERK, enabling a greater number of aircraft movements (takeoffs and landings) within a given timeframe.
- *Reduced Delays:* by increasing the throughput of aircraft operations at OEJN and OERK, SOIR will contribute to a reduction in departure and arrival delays, leading to improved schedule reliability and passenger satisfaction.
- *Enhanced Operational Efficiency:* optimized runway utilization at OEJN and OERK through SOIR will achieve shorter taxiing times for aircraft, potentially reducing fuel consumption and associated emissions during ground operations.
- *Improved Airspace Efficiency:* the SOIR procedures at OEJN and OERK are designed to safely manage simultaneous operations, which can lead to a more streamlined flow of air traffic in the vicinity of the two airports.

3.19 Saudi Arabia National Air Navigation Plan (SNAP)

3.19.1 The Saudi National Air Navigation Plan (SNAP) is a strategic initiative launched by GACA to meet the objectives of the Vision 2030 and address the challenges in KSA's Air Navigation System (ANS) in the next 15 years. SNAP aims to raise the level of capacity, operational efficiency, safety, flexibility, and environmental sustainability in Saudi Arabia air navigation, aligning with the nation's vision for sustainable growth and modernization. This plan is structured into five layers, SNAP encompasses comprehensive *data collection*, *stakeholder consultations*, *selection and prioritization of strategic initiatives and projects* to upscale the airspace and air navigation infrastructure/services.

3.19.2 Based on the above the SNAP is a strategic "*living*" plan that emerges as a crucial endeavour to address and bridge gaps in the KSA's aviation infrastructure and management systems and tackle the upcoming aviation challenges.

UAE

3.20 Implementation of new NOTAM Series "C"

3.20.1 The planning and implementation team conducted a statistical analysis to identify key challenges faced by the UAE NOF in NOTAM dissemination. The primary challenges include:

- A significant increase in UAS activities NOTAMs;
- The NOTAM checklists exceeded the ICAO-mandated 1,800-character limit, necessitating manual splitting of the checklist NOTAM, thus increasing workload and risks of human error; and
- NOTAM overload to international operators where operations at 400 feet and below mostly affect local traffic.

3.20.2 accordingly, the UAE International NOTAM Office effectively implemented a new NOTAM series designated as Series C to be used for NOTAMs related to:

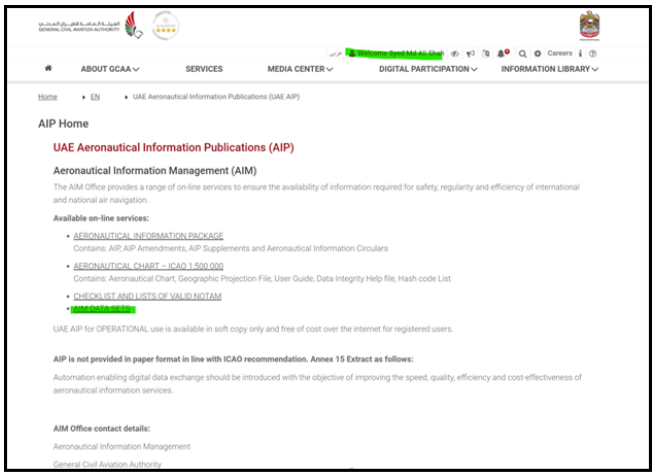
- UAS operations;
- Fireworks; and
- Laser activities.

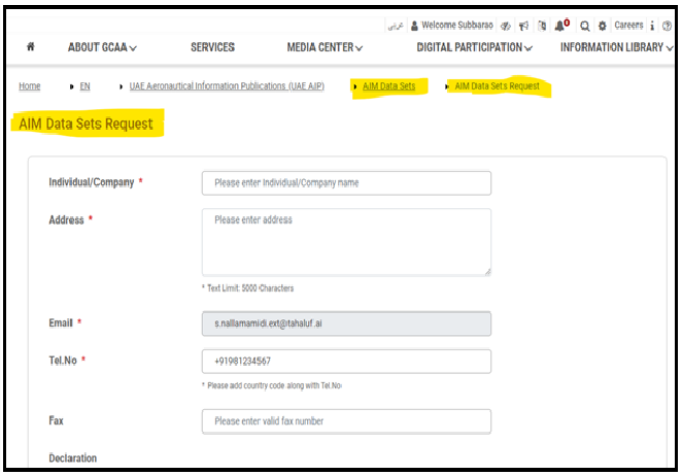
3.21 AIM - Automation of eTOD Data Area 1 and AIP Datasets Provision

3.21.1 UAE GCAA AIM is delivering UAE ETOD Area 1 Datasets in industry standard exchange format i.e. AIXM 5.1. The Dataset is delivered in line with UAE Local Regulations and ICAO SARP's Annex 15, Doc. 10066 and Doc. 9881.

3.21.2 To acquire the data the customers had to fill and sign a Self-Declaration form in PDF format. In line with UAE GCAA Strategic Objectives for continuous improvement to Air Navigation Services, the form is replaced with an online HTML check box making it a one-click self-service.

3.21.3 The online service has been expanded to include AIP Datasets as well. Screenshots of the enhancements are shown below:

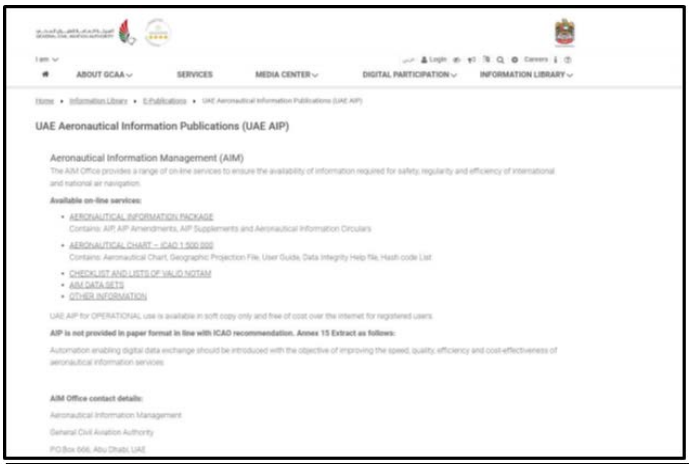


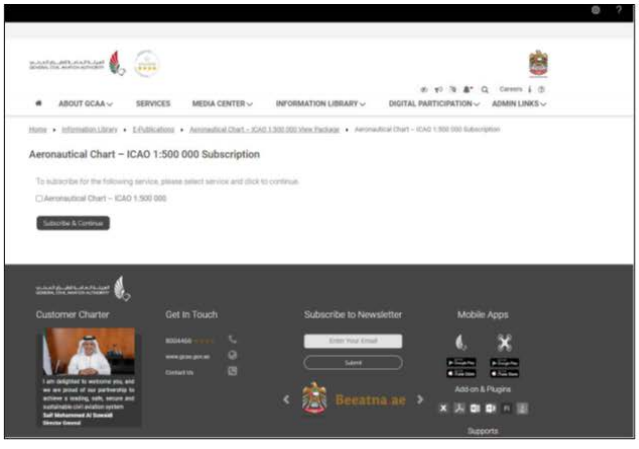


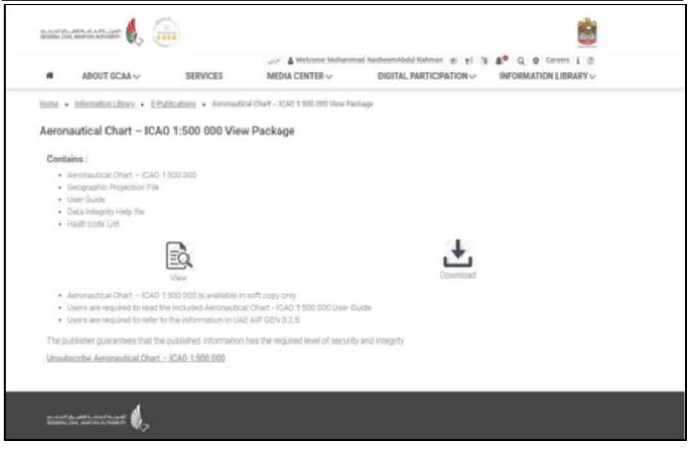
3.22 AIM - Provision of Aeronautical Chart ICAO – 1:500 000 Online

3.22.1 UAE GCAA AIM is delivering Aeronautical Chart ICAO – 1:500 000 in line with UAE Local Regulations and ICAO SARP's Annex 15, Doc. 8697. Aeronautical Chart was previously provided to customers in hard and soft copy only after filling a PDF request form.

3.22.2 In line with UAE GCAA Strategic Objectives for continuous improvement to Air Navigation Services, UAE GCAA AIM has eliminated this manual process by delivering the chart in Electronic Format online free of cost to customers as a self-service.







3.23 ATM - UAE Airspace 3D Visualization Using Google Earth Pro

3.23.1 The UAE Airspace 3D Visualization is a diversified solution developed by the ATM team in the GCAA to improve airspace visualization with 3D capability. This tool offers a comprehensive, interactive representation of the Emirates FIR, empowering users to explore and analyze complex airspace data with precision and clarity.

3.23.2 By visualizing key elements of the Emirates FIR, the tool provides critical support for decision-making, operational planning, and stakeholder collaboration. The tool integrates detailed spatial data to present an intuitive and accessible 3D environment, addressing the needs of airspace planning, analyzing, and research.

Benefits:

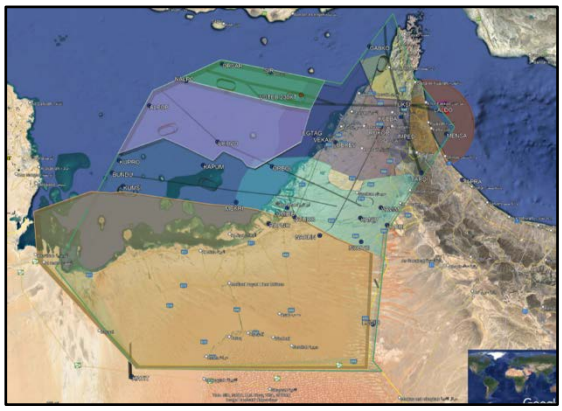
- Comprehensive 3D visualization of the UAE airspace.
- User-friendly interface for seamless interaction and analysis.

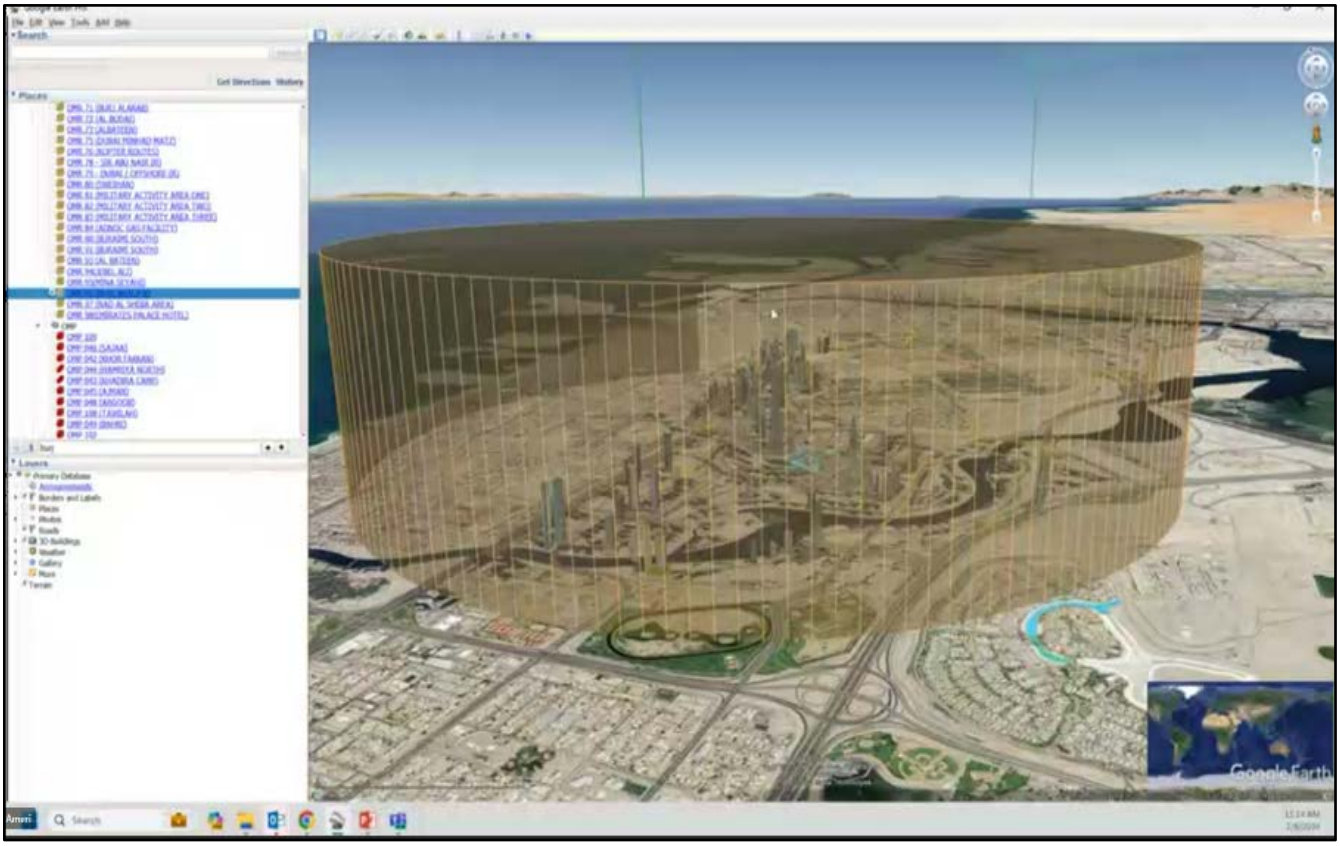
Coverage Details:

- Includes restricted, prohibited, dangerous, and training areas.
- Visualizes controlled traffic areas (CTAs) and military zones.
- Displays ICAO-designated names alongside local titles.

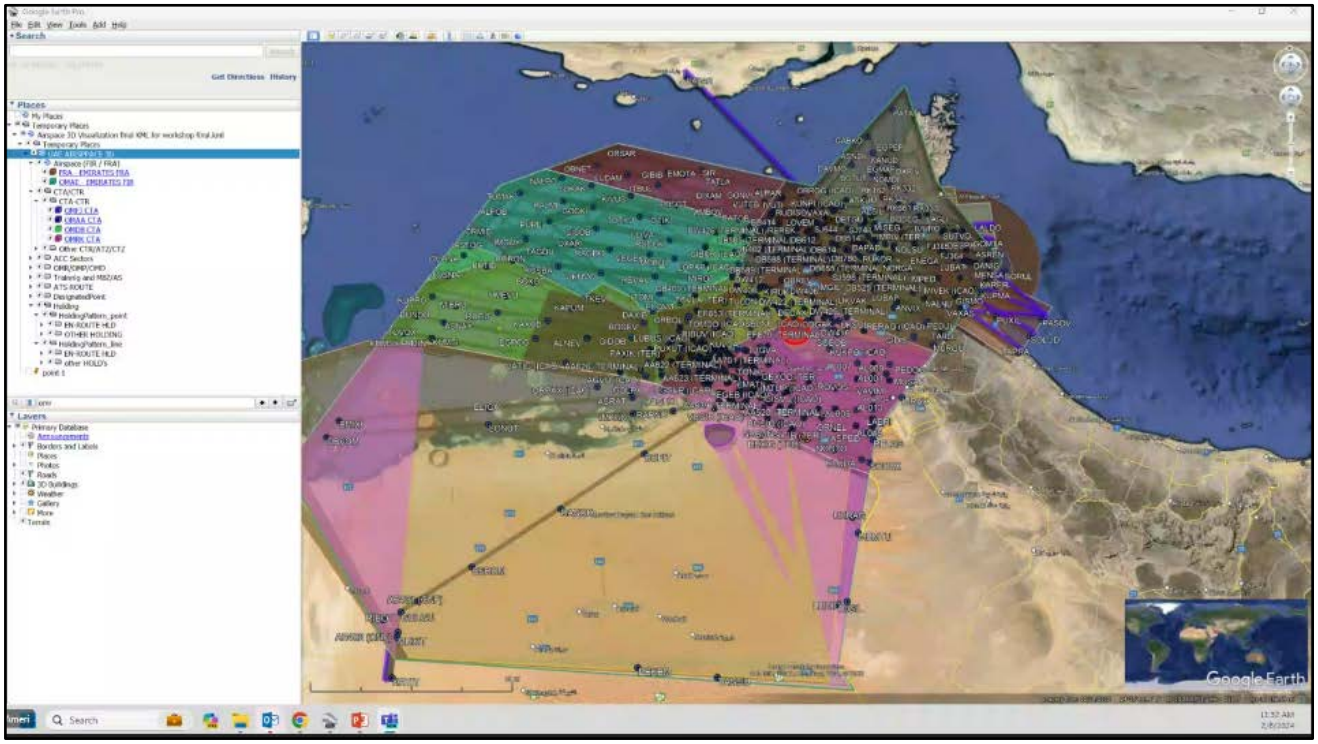
Additional Data:

- Provides heights and coordinates for key locations.
- Enables users to locate ICAO-designated points with ease.
- Facilitates navigation to terminal areas and airways.



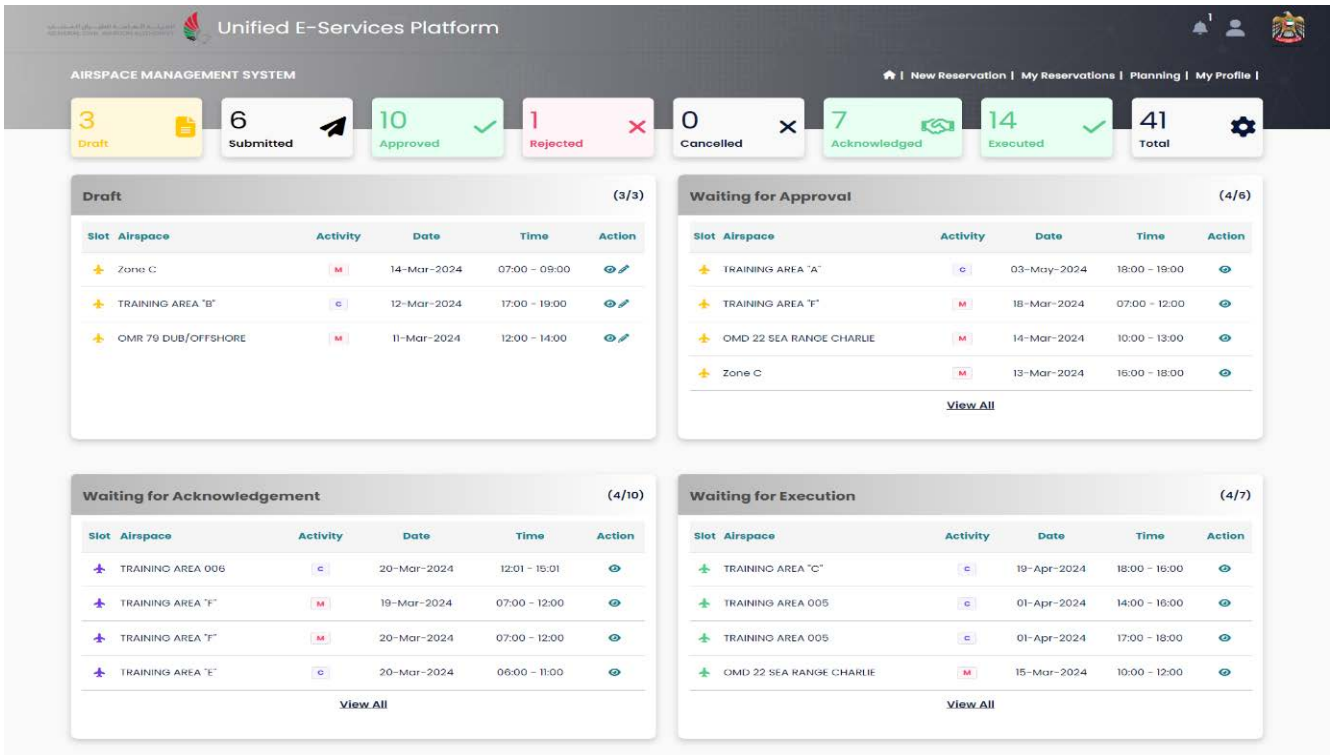


3.23.3 The UAE Airspace 3D Visualization has been instrumental in supporting strategic airspace planning, acts as one-stop shop for airspace volumes, and provides graphical data to be used in diversified practices. By simplifying complex airspace structures and providing detailed insights, the project has set an improved method in airspace management, aligning with the UAE's vision for innovative approaches in the work environment.

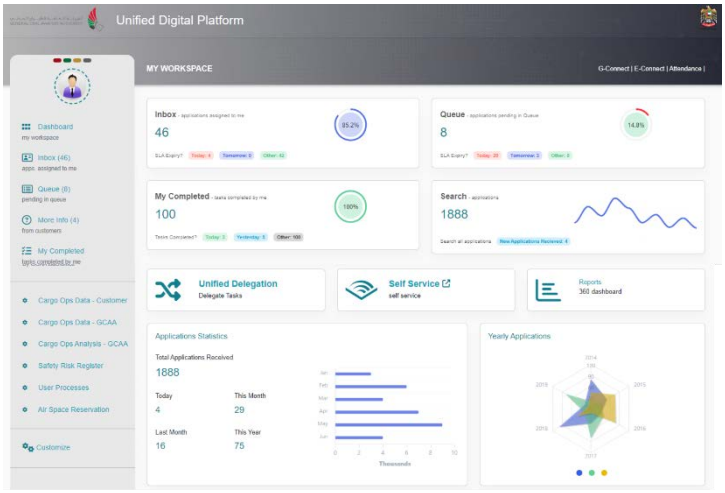


3.24 ATM - Airspace Reservation System

3.24.1 The newly developed airspace reservation system, created in-house by the GCAA, represents a significant technological achievement aimed at streamlining the process of reserving airspace training zones. This system, which is available to national operators and both civilian and military flight training academies, supports airspace management in line with the concept of Flexible Use of Airspace (FUA).

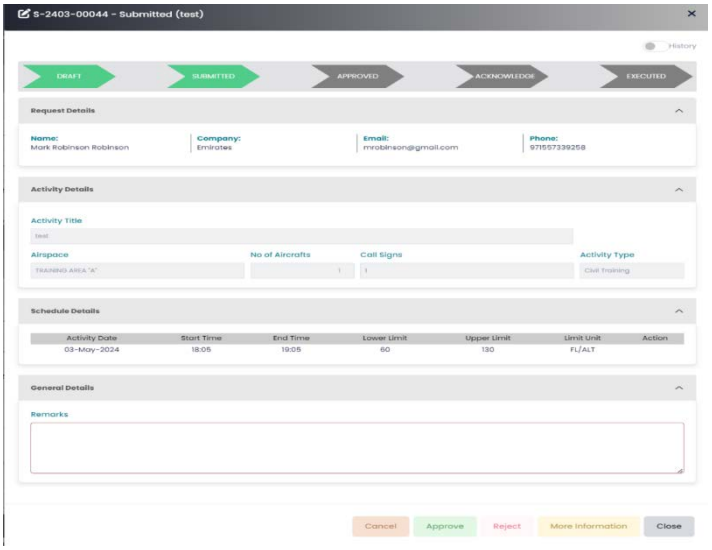


3.24.2 The system allows users from various entities to submit reservation requests for training areas with a high level of transparency. By providing advanced technical information, it enhances the user experience and simplifies the process.



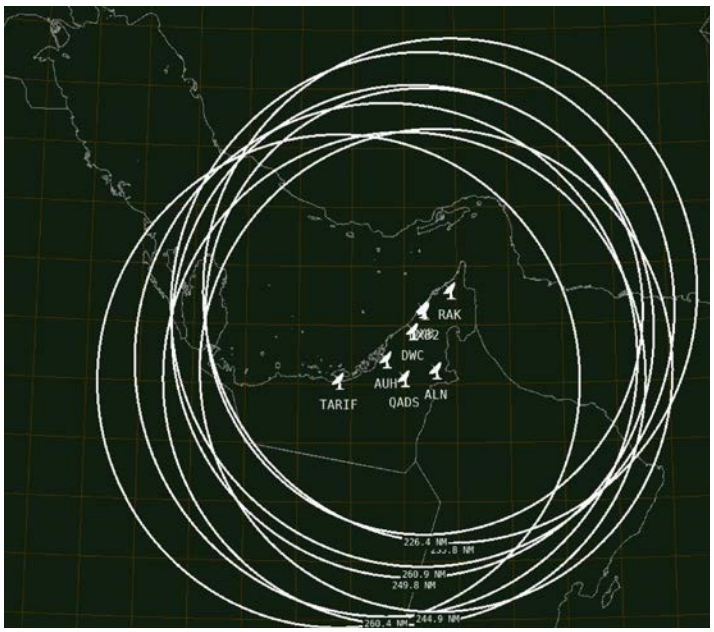
3.24.3 Developed using internal capabilities and resources, the system aims to proactively address the needs of the airspace users, improving the efficiency of airspace planning. As a result, it's expected to reduce unexpected airspace volume requests to 0% and achieve a 100% in digital transformation of the process.

3.24.4 This achievement is a clear example of the GCAA's commitment to innovation, contributing to more efficient and transparent airspace management, and improving operational performance in the aviation sector.



3.25 ATM - RLAT – Reduced Lateral Separation

3.25.1 Emirates ACC has implemented Reduced Lateral Separation, or RLAT, below FL195 within Emirates FIR, reducing the lateral surveillance separation minima has reduced from 5 NM to 3 NM.



3.25.2 The current phase of RLAT implementation facilitates the ATCOs using 3 NM surveillance separation on a tactical basis, while the next phase will enable capacity enhancements.

3.25.3 RLAT paves the way for significant capacity and efficiency enhancements within Emirates FIR. These advancements will enable the handling of a greater number of aircraft within the FIR, reducing congestion and minimizing delays. Additionally, by optimizing flight paths and improving air traffic flow, CO2 emissions can be lowered, contributing to a more sustainable aviation industry.

3.25.4 RLAT implementation is a crucial step towards meeting the General Civil Aviation Authority's vision of creating a safe, competitive, and sustainable civil aviation system. Commitment to safety remains a top priority, and with RLAT, GCAA is maintaining the highest safety standards while embracing technological advancements.

3.25.5 Being the first in the region to introduce RLAT in area control, Emirates ACC is proud to lead the way in aviation innovation. We believe this will not only benefit our operations but also set a new benchmark for air traffic management in the region.

3.26 ATM - TRAMON

3.26.1 TRAMON is traffic capacity monitoring system develop to aid operational supervisors in their decision making. TRAMON provides information on the exact number of aircraft currently under the control of each sector volume, and a short-term prediction for the expected demand for each sector. Information is presented in a graphical and intuitive manner.

3.26.2 TRAMON displays historic, actual and predicted demand in relation to simultaneous occupancy within each sector and combination of sectors. Demand is displayed by bar charts in one-minute intervals, and updated in real time. TRAMON presents colour coded alerts when capacity limits for sector volumes are met or exceeded, both in real time, and forecasted demand.

3.26.3 TRAMON also displays the actual number of aircraft currently in any of the enroute holds within the FIR.

3.26.4 TRAMON enables efficient resource utilization by dynamic opening and combining of ACC sectors.



UAE & Oman

3.27 ATM - Enhancing Regional Airspace Management and Reopening Training Areas for Aviation Training Academies

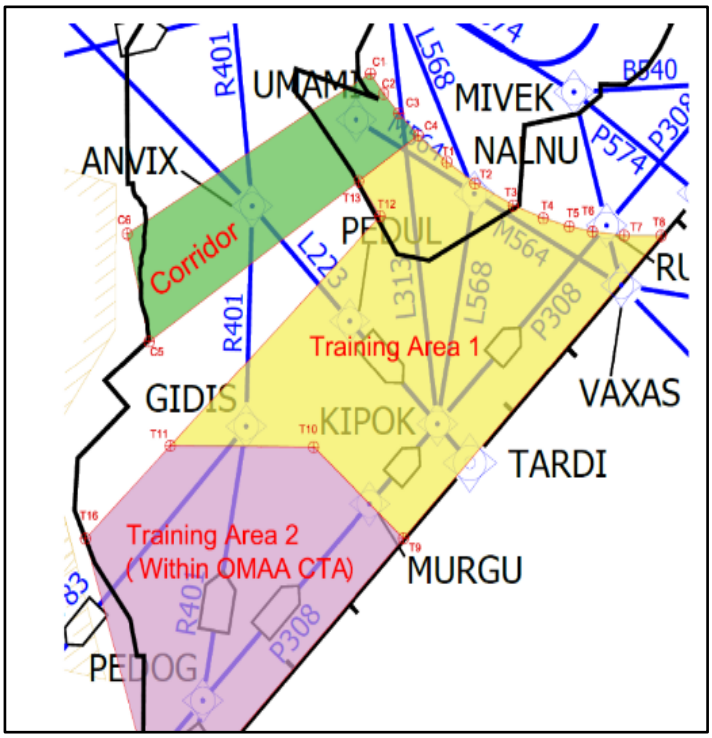
3.27.1 In a landmark achievement reflecting the spirit of regional collaboration, the UAE and Oman successfully enhanced airspace management and reopened critical training areas to support aviation training academies. This initiative aligns with the shared commitment of both states to uphold the principles of seamless and efficient airspace use, as advocated by the ICAO.

3.27.2 Addressing the Need for Optimized Airspace

3.27.2.1 With the growing demand for skilled aviation professionals, the availability of dedicated training areas has become increasingly vital. However, airspace complexities and competing demands for its use posed challenges to sustaining adequate access for training purposes. Recognizing this, the UAE and Oman embarked on a collaborative effort to resolve these issues, ensuring the safe and efficient use of airspace while supporting the growth of the aviation industry.

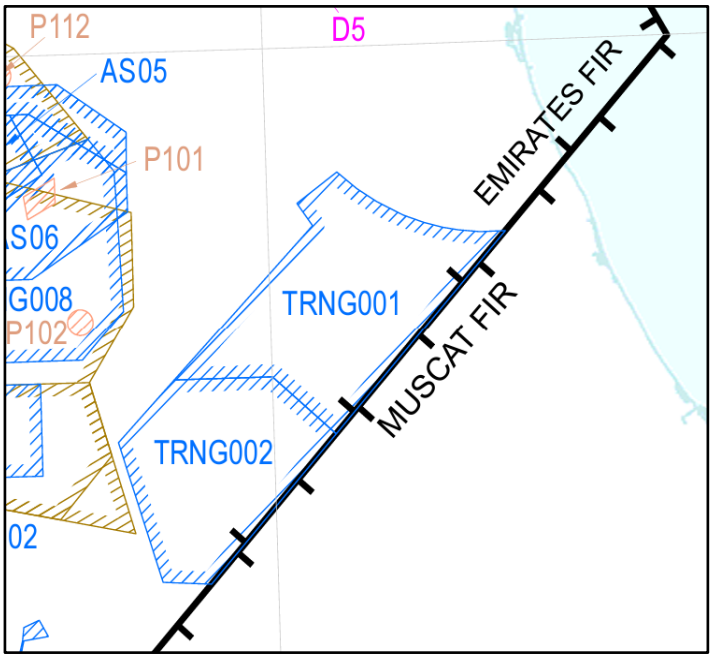
3.27.2.2 Key challenges included:

- **Congested Airspace**: The shared airspace faced increasing congestion due to escalating operational demands and limited areas for non-commercial use.
- **Operational Efficiency**: The need to optimize traffic flow while maintaining access for training operations in a manner consistent with both states provisions for safety and efficiency.
- **Economic and Educational Impact**: The lack of suitable training zones risked slowing the development of aviation professionals essential to supporting future industry growth.



3.27.3 Collaborative Solutions for Shared Progress

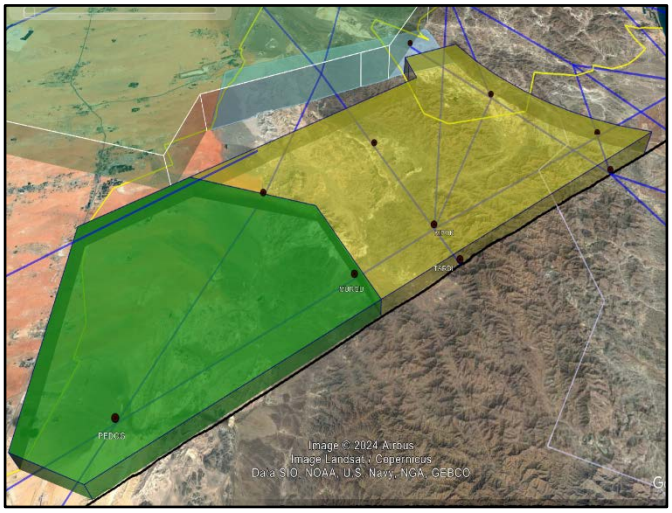
3.27.3.1 To address these challenges, the UAE and Oman engaged in detailed negotiations and airspace design initiatives. The result was a mutually beneficial agreement that reopened critical airspace segments for use by training academies in both states while maintaining operational integrity for all airspace users.



3.27.3.2 The key outcomes of this initiative include:

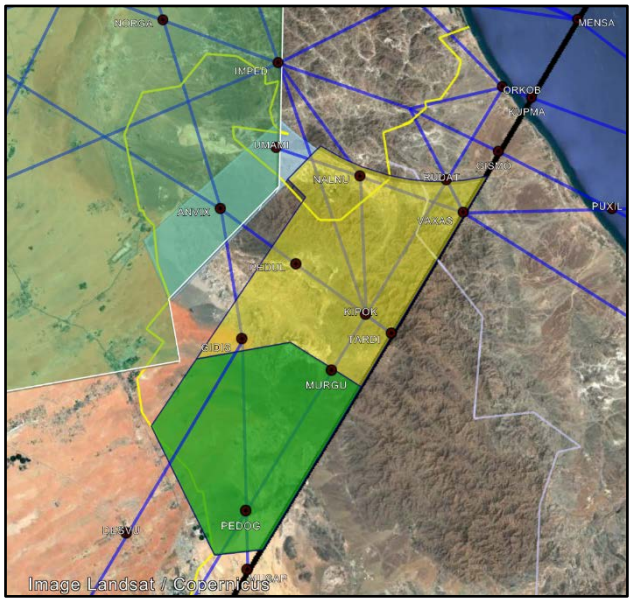
- **Designated Training Areas**: Dedicated zones for aviation academies were strategically reopened, ensuring uninterrupted access for training while adhering to national standards for airspace management.
- **Enhanced Coordination**: Both States implemented harmonized airspace management practices, fostering seamless operations and reducing coordination complexities between ANSPs.
- **Support for ICAO Strategic Objectives**: The initiative directly supports ICAO's strategic objectives of enhancing global aviation safety, optimizing airspace capacity, and fostering the development of human resources in aviation.

3.27.4 Impact and Future Benefits



3.27.4.1 The reopening of training areas between the UAE and Oman stands as a testament to the power of regional cooperation in advancing global aviation goals. This initiative not only addresses immediate operational needs but also contributes to the long-term growth of the aviation sector by:

- **Building Capacity**: Ensuring aviation academies have the resources necessary to train future professionals, thereby addressing the forecasted demand for pilots and other critical personnel.
- **Strengthening Safety**: Aligning operational practices with ICAO's Standards and Recommended Practices (SARPs) to uphold the highest safety levels in the shared airspace.
- **Driving Economic Growth**: Supporting the aviation industry as a key driver of economic prosperity for both nations.



3.27.5 Conclusion

3.27.5.1 The UAE and Oman have demonstrated the value of collaboration in overcoming challenges and fostering innovation in airspace management. This success story exemplifies the ICAO spirit of cooperation, highlighting how shared vision and action can enhance the global aviation system while promoting safety, efficiency, and sustainability.

3.27.5.2 This achievement sets a precedent for future collaborative endeavors, inspiring other regions to adopt similar approaches to address shared airspace challenges.

4. CONCLUSION

The overall implementation of priority 1 ASBU Threads/Elements in the MID Region is around **66.14%** compared to 60.14% in 2022. The implementation of some modules has been acceptable/good (more than 70%); such as APTA, ACAS, SNET, GADS, SURF, ASUR, and COMI. Nevertheless, some States are still facing challenges to implement the majority of the priority 1 ASBU Elements.

The status of implementation of the priority 1 ASBU Elements also shows that Some States, in order, UAE, Qatar, Bahrain, Saudi Arabia, Kuwait, Oman & Jordan) have a good implementation Status more than 70%.

For an improved quality and accuracy of the future MID Air Navigation Reports, States are strongly encouraged to provide the ICAO MID Office in a timely manner with the necessary data related to the planning, implementation and monitoring of the performance of their air navigation system, including the status of implementation of the ASBU Threads/Elements identified as priority 1 either at Regional or National Level. States are also strongly encouraged to implement the performance-based approach (6 step approach) and integrate the implementation of the priority 1 ASBU elements in their overall planning for the improvement of their air navigation system performance. States are requested to report to the ICAO MID Office the implementation of the identified performance objectives using the following Template available in the MID ANP Volume III.

MID Region Air Navigation Systems Performance Based Framework/Template

Column

(1) Scope of Performance Improvement
(2) KPA (from the ICAO defined 11 Key Performance Areas (KPAs))
(3) Performance Objectives (ambition/expectations)
(4) KPIs based on the ICAO list of KPIs and associated variant
(5) The Baseline of each KPI
(6) The target of the KPI
(7) Selected ASBU element(s) /Enabler(s) and/or Non ASBU solution(s) for each operational improvement
(8) Target Implementation date

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8

APPENDIX A: OVERALL STATUS OF PRIORITY 1 ASBU THREADS

	DAIM	AMET	FICE	APTA	FRTO	NOPS	ACAS	SNET	GADS	RSEQ	SURF	ACDM	ASUR	NAVS	COMI	Average State implementation
Bahrain	100.00%	100.00%	70.00%	85.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	50.00%	100.00%	50.00%	100.00%	90.33%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Egypt	27.78%	87.50%	37.50%	75.67%	0.00%	0.00%	100.00%	100.00%	100.00%	40.00%	100.00%	50.00%	33.33%	100.00%	100.00%	63.45%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Iran	61.11%	89.10%	0.00%	25.00%	0.00%	0.00%	100.00%	100.00%	100.00%	NA	33.33%	0.00%	0.00%	0.00%	50.00%	39.90%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Iraq	0.00%	45.49%	0.00%	61.00%	100.00%	66.67%	100.00%	100.00%	100.00%	NA	100.00%	NA	50.00%	50.00%	100.00%	67.17%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Jordan	33.33%	94.10%	25.00%	60.00%	100.00%	0.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	66.67%	50.00%	100.00%	71.47%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Kuwait	61.11%	78.13%	50.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	NA	100.00%	0.00%	66.67%	50.00%	100.00%	71.85%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Lebanon	16.67%	18.75%	NA	50.00%	0.00%	0.00%	100.00%	66.67%	0.00%	NA	100.00%	NA	0.00%	0.00%	50.00%	33.51%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Libya	0.00%	3.13%	NA	33.33%	NA	NA	0.00%	NA	100.00%	NA	100.00%	NA	NA	0.00%	0.00%	29.56%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Oman	33.33%	100.00%	33.33%	60.00%	100.00%	100.00%	100.00%	100.00%	100.00%	NA	33.33%	0.00%	100.00%	50.00%	100.00%	72.14%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Qatar	100.00%	97.22%	66.66%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.59%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Saudi Arabia	100.00%	100.00%	33.33%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%	100.00%	100.00%	75.00%	100.00%	87.22%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Sudan	33.33%	32.64%	NA	30.00%	0.00%	0.00%	100.00%	66.67%	100.00%	NA	100.00%	NA	100.00%	100.00%	100.00%	63.55%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Syria	0.00%	0.00%	NA	4.17%	NA	NA	0.00%	NA	0.00%	NA	100.00%	NA	NA	0.00%	0.00%	11.57%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
UAE	100.00%	100.00%	87.50%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.17%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Yemen	0.00%	0.00%	NA	58.33%	NA	NA	100.00%	NA	0.00%	NA	100.00%	NA	NA	0.00%	0.00%	32.29%
	B1/1 B1/3 B1/4	B0/1 B0/2 B0/3 B0/4	B0/1	B0/1 B0/2 B0/4 B0/5 B0/7	B0/2 B0/4	B0/1	B1/1	B0/1 B0/2 B0/3	B1/2	B0/1	B0/1 B0/2 B0/3	B0/1 B0/2	B0/1 B0/2 B0/3	B0/3 B0/4	B0/7 B1/1	
Average regional implementation	47.19%	62.57%	45.31%	69.64%	69.05%	45.83%	86.67%	94.44%	80.00%	50.00%	88.89%	60.00%	70.83%	48.33%	73.33%	66.14%

ICAO MID

International Civil Aviation Organization
Middle East Office
Cairo International Airport
Cairo 11776, EGYPT

Tel.: +20 2 22674840/41/45/46
Fax: +20 2 22674843
Email: icaomid@icao.int

www.icao.int/mid



APPENDIX 5C

MID AIR NAVIGATION PLAN

VOLUME III

(May 2025)

MID AIR NAVIGATION PLAN

VOLUME III

TABLE OF CONTENTS

PART 0 — Introduction

PART I — General Planning Aspects (GEN)

PART II – Performance Management Planning (PMP) and ANS Implementation

1. Step 1: Define scope, context and set ambitions/expectations
2. Step 2: Know your system – identify opportunities, issues and set objectives
3. Step 3: Quantify objectives and set targets
4. Step 4: Select solutions
5. Step 5: Implement solutions
6. Step 6: Assess achievements
7. MID Region Air Navigation Systems Performance Based Framework

APPENDICES

- Table DAIM 3-1
- Table DAIM 3-2
- Table DAIM 3-3
- Table AMET 3-1
- Table AMET 3-2
- Table AMET 3-3
- Table AMET 3-4
- Table APTA 3-1
- Table ACAS 3-1
- Table ASUR 3-1

MID ANP, VOLUME III

PART 0 – INTRODUCTION

1. INTRODUCTION

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction of Volume I. The procedure for amendment of Volume III is also described in Volume I. Volume III contains dynamic/flexible plan elements related to the application of a performance-based approach for a cost-effective and benefit-driven modernization of the air navigation system in line with the Global Air Navigation Plan (GANP).

1.2 Collaborative decision-making is key for a cost-effective modernization of the air navigation system and ensures that all concerned aviation stakeholders are involved and given the opportunity to influence decisions in order to reach defined performance objectives. Volume III guides the aviation community in the application of performance management process and identification of relevant and timely operational improvements to a given region's air navigation system including some within the Aviation System Block Upgrade (ASBU) framework.

1.3 The information contained in Volume III is, therefore, related to:

- Planning: objectives, priorities, targets and needs planned at regional or sub-regional levels;
- Monitoring and reporting: performance and implementation monitoring of the agreed targets. This information should be used as the basis for reporting purposes (i.e.: global and regional air navigation reports and performance dashboards); and/or
- Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.

1.4 MIDANPIRG is responsible for managing and updating Volume III on a regular basis.

1.5 Whereas ICAO addresses the planning strategy at the global and regional levels, planning at the national level is the responsibility of States. A national planning framework should be developed by each State based on its needs and in collaboration with regional and global partners. This will ensure to the greatest extent possible that solutions are internationally harmonized and integrated.

1.6 National air navigation plans, as well as other national plans dealing with other aspects of aviation such as safety, security and facilitation, should all be linked together in a broader national aviation plan to ensure an integrated strategic approach at the State level. This broader plan can be considered as a civil aviation "master plan" addressing all aspects of air transport at the State level. The objective is to provide a clear and comprehensive planning and implementation strategy for the future development of the entire civil aviation sector in terms of policies, legislation, objectives, facilities, equipment, organization and capacity-building.

1.7 The master plan should also emphasize the importance of air transport for the economic development of the State. As such, the master plan should be linked to the State's overarching national development plan, where applicable, in order to mobilize public and private resources and partnerships for the implementation of the plan and to strengthen the civil aviation sector.

1.8 A clearly defined relationship between national air navigation plans aligned with the global and regional plans (GANP and RANP), civil aviation master plans and States' national development plans will enable the prioritization and optimum allocation of resources for all planned projects within States and across all sectors of activity.

1. PLANNING METHOD

1.1 Planning for the modernization of the air navigation system must begin with a thorough understanding of user system requirements and take into account traffic density and complexity, and the level of sophistication required for the provision of necessary services, among other elements.

1.2 The Thirteenth Air Navigation Conference recommended that ICAO encourage the planning and implementation regional groups (PIRGs) to embrace a performance-based approach (PBA) for implementation and adopt the six-step performance management process, as described in the Manual on Global Performance of the Air Navigation System (Doc 9883), by reflecting the process in Volume III of all regional air navigation plans. Recommendation 4.3/1 — Improving the performance of the air navigation system, refers.

1.3 A PBA is results-oriented, helping decision makers set priorities and determine appropriate trade-offs that support optimum resource allocation while maintaining an acceptable level of safety performance and promoting transparency and accountability among stakeholders.

1.4 A PBA is a decision-making method based on three principles: strong focus on desired/required results; informed decision-making driven by those desired/required results; and reliance on facts and data for decision-making. The PBA is a way of organizing the performance management process.

1.5 Although there are several ways to apply a PBA, ICAO advocates for a globally harmonized performance management process based on six well-defined steps. The goal of this cyclic six-step method is to identify optimum solutions based on operational requirements and performance needs so that the expectations of the aviation community can be met by enhancing the performance of the air navigation system and optimizing allocation and use of the available resources.

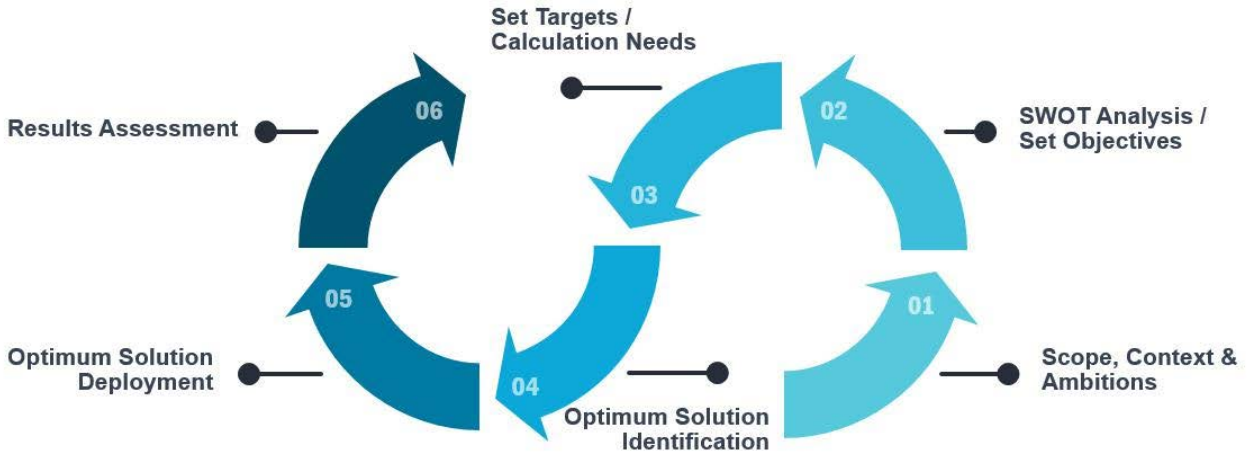


Figure 1 Six-step performance management process

1.6 Steps 1 and 2 serve to know the air navigation system, its strengths, weakness, opportunities and threats as well as how it is performing in order to set objectives. The catalogue of performance objectives that is part of the GANP global performance framework facilitates the definition of objectives.

1.7 Based on these objectives, targets can be set in step 3. An analysis of this data leads to the identification of potential solutions, in step 4, to achieve the targets by addressing the weaknesses and threats of the system. Once a set of potential solutions have been identified, a cost-benefits analysis, environmental impact assessment, safety assessment and human factor assessment should be performed to identify the optimum solution. In the GANP performance framework, a list of KPIs, linked to the relevant objectives in the performance objectives catalogue, is provided to set targets though the quantification of objectives **(See list below)**.

KPI 01	Departure punctuality	**KPI 13**	Taxi-in additional time
KPI 02	Taxi-out additional time	**KPI 14**	Arrival punctuality
KPI 03	ATFM Slot adherence	**KPI 15**	Flight time variability
KPI 04	Filed flight plan en-route extension	**KPI 16**	Additional fuel burn
KPI 05	Actual en-route extension	**KPI 17**	Level-off during climb
KPI 06	En-route airspace capacity	**KPI 18**	Level capping during cruise
KPI 07	En-route ATFM delay	**KPI 19**	Level-off during descent
KPI 08	Additional time in terminal airspace	**KPI 20**	Number of Aircraft Accidents
KPI 09	Airport peak capacity	**KPI 21**	Number of RWY Incursions
KPI 10	Airport peak throughput	**KPI 22**	Number of RWY Excursions
KPI 11	Airport throughput efficiency	**KPI 23**	Number of Airprox/TCAS Alert/Loss of separation/Near mid Air Collisions/Mid Air Collisions
KPI 12	Airport/Terminal ATFM delay		

1.8 Step 5 manages a coordinated deployment of the agreed solution by all stakeholders based on the previous steps. Regional plans might need to be developed for the deployment of solutions by drawing on supporting technology requirements.

1.9 Finally, step 6 consists of monitoring and reporting the performance of the system after the full deployment of the solution.

1.10 This is an iterative planning process, which may require repeating several steps until a final plan with specific targets is in place. This planning method requires full involvement of regulators (CAAs), service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

2. Review and evaluation of air navigation planning and reporting and monitoring results

2.1 The progress and effectiveness against the priorities set out in the National and Regional Air Navigation Plan should be annually reported to ICAO using a consistent reporting format.

2.2 Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified regional/national/local performance metrics are fundamental to the success of performance-based approaches.

2.3 The air navigation planning and implementation performance framework prescribes reporting, monitoring, analysis and review activities being conducted on a cyclical, annual basis.

2.4 Reporting and monitoring results will be used to develop the MID Annual Air Navigation Reports. They will be analyzed by MIDANPIRG to steer the air navigation improvements, recommend corrective actions and review the agreed objectives, priorities and targets, if needed. The results will also be used by ICAO to develop the annual Global Air Navigation Report. The Report results will provide an opportunity for the international civil aviation community to compare progress across different ICAO Regions in the establishment of air navigation infrastructure and performance-based procedures.

2.5 The Report will also provide the ICAO Council with detailed annual results on the quality of service provided worldwide as well as the performance areas, which require more attention. This will serve as input for the triennial policy adjustments to the GANP and its priorities.

PART II – PERFORMANCE MANAGEMENT PLANNING (PMP) AND ANS IMPLEMENTATION

1. STEP 1: DEFINE SCOPE, CONTEXT AND SET AMBITIONS/EXPECTATIONS

1.1 The purpose of Step 1 is to reach a common agreement on the scope and (assumed) context of the "system" on which the performance management process will be applied, as well as a common view on the general nature of the expected performance improvements. An important part of the PBA is the development of cause-effect relationships between these technical performance characteristics and the selected higher level KPAs from the eleven key performance areas (KPAs) as identified in the Global Air Traffic Management Operational Concept (Doc 9854).

1.2 Scope definition is important to avoid misunderstandings, in particular about the performance (improvement) which can be expected within the given scope. By defining the scope of the performance management activity, the limits of responsibility and accountability are also defined. Geographically, the scope could be an Aerodrome, FIR, TMA, CTA, etc., but the scope definition could include additional details such as type of traffic (international, overflight, IFR, VFR), etc.

1.3 Within a given scope, the purpose of identifying general ambitions and expectations is to develop a strategic view on the (performance) results that are expected.

1.4 States are requested to define the scope and context of the required performance improvements to the national air navigation system as well as the nature of the expected performance improvements.

1.5 The expectations of the global aviation community are defined in 11 Key Performance Areas (KPAs). The GANP considers all these areas through the performance ambitions. Although all these areas are equally important, as they are interrelated and cannot be considered in isolation, some areas are more visible to society than others.

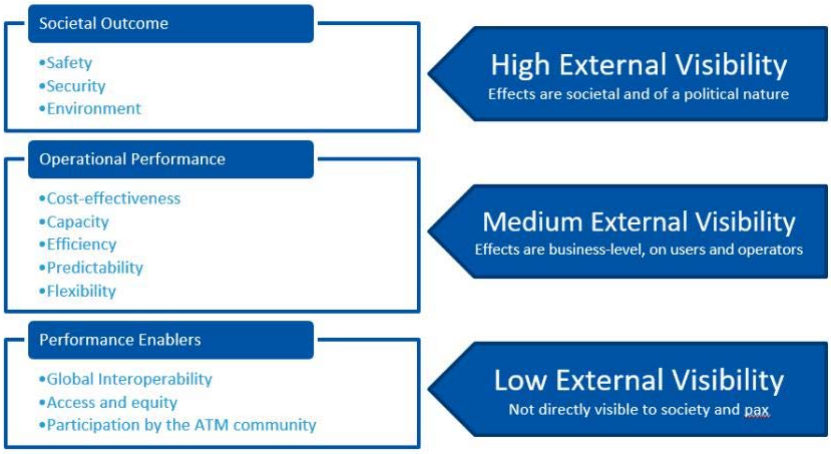


Figure 2 The 11 KPAs of the GANP

1.6 A Summary of the GANP Performance Ambitions is provided hereafter:

SUMMARY OF THE GANP PERFORMANCE AMBITIONS "A high performing system by 2040 and beyond"	
KPA	**Ambition**
ACCESS AND EQUITY	No aviation community member excluded or treated unfairly.
CAPACITY	Nominal capacity easily scalable with demand.
	Disruptive events do not interrupt service provision and do not significantly affect the performance of the system.
COST-EFFECTIVENESS	No increase of total direct ANS cost while maintaining the safety and quality of service.
	Significant increase of ANS productivity, irrespective of demand.
EFFICIENCY	Reduction of the gap between the flight efficiency achieved and the desired optimum trajectory of airspace users.
ENVIRONMENT	ANS-induced inefficiencies to be progressively removed to contribute to the global ICAO aspirational goals for CO_2 emissions.
	To benefit from achieved flight efficiency gains.
FLEXIBILITY	To absorb required changes to individual business and operational trajectories.
INTEROPERABILITY	Essential at an operational and technical level.
PARTICIPATION BY THE ATM COMMUNITY	Pre-agreed level of participation to make the maximum shared use of the air navigation resources.
PREDICTABILITY	No increase in ANS delivery variability including asset availability.
SAFETY	Zero ANS-related accidents and a significant (50%) reduction of ANS-related serious incidents.
SECURITY	Zero significant disruptions due to cyber incidents

Achieving the above ambitions and realizing the GANP vision will require a series of transformational changes.

2. STEP 2: KNOW YOUR SYSTEM – IDENTIFY OPPORTUNITIES, ISSUES AND SET OBJECTIVES

2.1 The purpose of Step 2 is to develop a detailed understanding of the performance behaviour of the system (this includes producing a list of opportunities and issues), and to decide which specific performance aspects are essential for meeting the general expectations. The essential performance aspects are those which need to be actively managed (and perhaps improved) by setting performance objectives.

2.2 Based on the scope, context and general ambitions/expectations which were agreed to during the previous step, the system should be analysed in order to develop an inventory of present and future opportunities and issues (weaknesses, threats) that may require performance management attention. This part of the process is generally known as the SWOT (strengths, weaknesses, opportunities and threats) analysis.

2.3 A SWOT analysis, requires the identification of:

- *Strengths*: internal attributes of a system or an organization that can help in the realization of ambitions or in meeting expectations.
- *Weaknesses*: internal attributes of a system or an organization that are a detriment to realizing ambitions or meeting expectations.
- *Opportunities*: are external conditions that help in the realization of ambitions or in meeting expectations.

- *Threats*: external conditions that are a detriment or harmful to realizing ambitions or meeting expectations.

2.4 Once the strengths, weakness, opportunities and threats are identified, action can be taken to target and exploit or remove these factors. The SWOT analysis should be conducted at local/national level.

Regional objectives

2.5 Based on regional performance and operational needs, differences, constraints and opportunities, MIDANPIRG is responsible for defining regional planning and implementation priorities, aligned with the GANP.

2.6 Considering the global objectives defined in the GANP and those identified by States, within the key performance areas prioritized in step 1, MIDANPIRG may set common objectives to be pursued by the States within the Region and to be monitored at regional level.

3. STEP 3: QUANTIFY OBJECTIVES AND SET TARGETS

3.1 The principle of "reliance on facts and data for decision-making" implies that objectives should be specific, measurable, achievable, relevant and time-bound (SMART). The purpose of Step 3 in the process is to ensure that these aspects are properly addressed.

3.2 During this step, the current/past performance (Perfromance Baseline), expected future performance, as well as actual progress in achieving performance objectives is quantitatively expressed by means of Key Performance Indicators (KPIs).

3.3 KPIs are not often directly measured. They are calculated from supporting metrics according to clearly defined formulas. Performance measurement is therefore done through the collection of data for the supporting metrics.

3.4 Data collection should take place at the most detailed level of granularity that can be afforded because the availability of detailed data greatly increases the effectiveness of the performance-based approach.

3.5 Performance targets are closely associated with performance indicators (KPIs) as they represent the values of performance indicators that need to be reached or exceeded to consider a performance objective as being fully achieved.

3.6 To understand how challenging it is to reach a target, one should know the baseline performance. The difference between the baseline and the target is called the performance gap. The determination of the baseline performance (calculation of baseline indicator values) is done based on the previous iteration of the process (historical data).

List of regional indicators

3.7 The GANP includes a series of KPIs linked to the catalogue of performance objectives within the 11KPAs. At the Regional level, MIDANPIRG defines regional performance objectives, using the key performance indicators (KPIs) of the GANP, to achieve regional performance ambitions. The list of KPIs to be used for the regional level is as follows:

Table 3. MID Air Navigation KPIs

KPI (KPAs)	Title / Definition	Measurement Units	Variants
KPI01 (predictability)	**Departure punctuality** Percentage of flights departing from the gate on-time (compared to schedule).	% of flights	Variant to be selected from those available in the GANP
KPI02 (Efficiency Environmental Impact)	**Taxi-out additional time** Actual taxi-out time compared to an unimpeded/reference taxi-out time.	Excess taxi-out time in Minutes/flight	Variant to be selected from those available in the GANP
KPI 04 (Efficiency)	**Filed flight plan en-route extension** Flight planned en-route distance compared to a reference ideal trajectory distance.	**% excess distance**	Variant, using a 40 NM cylinder around the departure airport and a 100 NM cylinder around the destination airport as the start/end of en-route airspace.
KPI06 (Capacity)	**En-route airspace capacity** The maximum volume of traffic an airspace volume will safely accept under normal conditions in a given time period.	Movements/hr	Variant to be selected from those available in the GANP
KPI09 (Capacity)	**Airport peak capacity** The highest number of operations an airport can accept in a one-hour time frame (also called declared capacity). Can be computed for arrivals, departures or arrivals + departures.	Number of arrivals / hour	Variant to be selected from those available in the GANP
KPI13 (Efficiency Environmental Impact)	**Taxi-in additional time** Actual taxi-in time compared to an unimpeded/reference taxi-in time	Excess taxi-in time in Minutes/flight	Variant to be selected from those available in the GANP
KPI14 (predictability)	**Arrival punctuality** Percentage of flights arriving at the gate on-time (compared to schedule)	% of flights	Variant to be selected from those available in the GANP
KPI20 (Safety)	**Number of Aircraft Accidents** Accident' is defined in ICAO Annex 13, Chapter 1-Definitions; ADREP: Accident Data Report	Number of accidents / year	Variant 1 (GASP): Aircraft MTOW > 2 250 kg 1.1 National accident occurrence level
KPI21 (Safety)	**Number of RWY Incursions** Number of occurrences at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft. (CICTT Taxonomy definition)	Number of runway incursions / year	None
KPI22 (Safety)	**Number of RWY Excursions** Number of veer offs or overruns of the runway surface.	Number of runway excursions / year	None
KPI23 (Safety)	**Number of Airprox/TCAS Alert/Loss of separation/Near mid Air Collisions/Mid Air Collisions** Number of airproxes, TCAS alerts, loss of separation as well as near collisions or collisions between aircraft in flight.	Number of airprox/TCAS alert/loss of separation/near midair collisions/midair collisions (MAC)/ year	Variants to be selected from those available in the GANP

3.8 The measurement of these KPIs, as well as the progress in achieving performance objectives will be monitored at the regional level. Yet, States, as part of their national air navigation plan, should use additional KPIs to measure the progress in achieving all their performance objectives.

4. STEP 4: SELECT SOLUTIONS

4.1 The purpose of this step is to combine the knowledge of baseline performance, opportunities and issues with the performance objectives and targets, in order to make decisions in terms of priorities, trade-offs, selection of solutions and resource allocation. The aim is to optimize the decisions to maximize the achievement of the desired/required (performance) results.

4.2 This is the part of the process where decision-makers need to know their options for mitigating pre-identified issues and therefore to exploit available opportunities. The list then needs to be analyzed in a performance oriented way, to assess/quantify the impact of drivers, constraints, impediments, etc., on the objectives under consideration. The solution might be ASBU or non-ASBU solution. Depending on the nature of the project, the output of this process is either a single preferred solution or a roadmap of selected solutions. In any case, decision-makers need to gain a good understanding of the strategic fit, the benefits, cost and feasibility of each option for operational improvement.

4.3 States should consider the operational improvements (ASBU elements) within the ASBU framework as potential solutions to improve the selected objectives/KPIs in the operational environment under analysis. In order to help States with this task, ICAO has developed the Air Navigation System Performance Analysis (AN-SPA) tool, available for free at:
https://www4.icao.int/ganpportal/ANSPA/Reports

4.4 Considering the identified needs at regional level, the ICAO SARPs linked to the ASBU framework, the required performance improvements, the States' needs and capabilities and users' requirements, MIDANPIRG sets in the MID Region Air Navigation Strategy (MID Doc 002) available at: *https://www.icao.int/MID/MIDANPIRG/Pages/MID-Docs.aspx*, the list of priority 1 ASBU Threads/Elements with their associated areas of applicability and targets, for implementation by States and monitoring at the regional level.

4.5 In addition to the priority 1 ASBU Elements, States should report to ICAO all the optimum solutions that they have identified for the achievement of the agreed performance objectives, in order to be included in the annual Web-based MID Air Navigation Report available at: *https://www.icao.int/MID/MIDANPIRG/Pages/MID-AN.aspx.*

5. STEP 5: IMPLEMENT SOLUTIONS

5.1 Step 5 is the execution phase of the performance management process. This is where the changes and improvements that were decided upon during the previous steps are organized into detailed plans, implemented, and begin delivering benefits.

5.2 Once the optimum solution/s has/have been identified, it is the moment to start the execution phase of the performance management process. The changes and improvements that have been identified as the optimum solution for the problem during the previous steps are organized into plans, implemented and begin delivering services to achieve the expected performance. During this execution phase, it is important to keep track of the project deployments (time, budget, etc.).

6. STEP 6: ASSESS ACHIEVEMENTS

6.1 The purpose of Step 6 is to continuously keep track of performance and monitor whether performance gaps are being closed as planned and expected.

6.2 Once the project is implemented, it is time to assess the benefits from the implementation. This means measuring the performance of the operational environment under analysis once the solution/s has/have been deployed.

6.3 First and foremost, this implies data collection to populate the supporting metrics with the data needed to calculate the performance indicators. The indicators are then compared with the targets defined during Step 3 to draw conclusions on the speed of progress in achieving the objectives.

6.4 This step also includes monitoring progress of the implementation projects, particularly in those cases where the implementation of solutions takes several years, as well as checking periodically whether

all assumptions are still valid and the planned performance of the solutions is still meeting the (perhaps changed) requirements.

6.5 With regard to the review of actually achieved performance, the output of this step is simply an updated list of performance gaps and their causes. In practice, the scope of the activity is often interpreted as being much wider and includes recommendations to mitigate the gaps.

6.6 This is then called performance monitoring and review, which in addition to this step, includes step 1, 2 and 3.

6.7 For the purpose of organizing performance monitoring and review, the task can be broken down into five separate activities:

- Data collection
- Data publication
- Data analysis
- Formulation of conclusions; and
- Formulation of recommendations.

6.8 As part of the process to assess the achievements, States should calculate/estimate the benefits accrued from the implementation of the solutions implemented in step 5.

6.9 States should also report to ICAO on annual basis the status of implementation of the selected solutions and progress achieved. The updates will be reflected in the annual Web-based MID Air Navigation Report available at: icao.int/MIDANReport/Pages/default.aspx; which will reflect also the priority 1 ASBU Threads/Elements implementation status against the objectives and targets as set forth in the MID Air Navigation Strategy (MID Doc 002), available at: MID Docs (icao.int).

6.10 The following Tables available in the **Appendix** are used for the collection of detailed information related to the implementation of associated priority 1 ASBU Threads/Elements, which are used also for the determination of the performance indicators included in the MID Region Air Navigation Strategy (MID Doc 002): DAIM 3-1, DAIM 3-2, DAIM 3-3, DAIM 3-4, AMET 3-1, AMET 3-2, AMET 3-3, AMET 3-4, APTA 3-1, ACAS 3-1 and ASUR 3-1. Other Tables might be developed for other Threads/Elements.

6.11 The monitoring of these Tables is assigned to the relevant MIDANPIRG Sub Groups.

7. MID Region Air Navigation Systems Performance Based Framework

7.1 The following Template could support States in the development of their National Air Navigation Plans (NANPs). It is used also to collect information from States on the implementation of the performance based approach (6 step approach) for the measurement of their air navigation system performance; and for the reporting and monitoring at regional level.

MID Region Air Navigation Systems Performance Based Framework/Template

Column

(1) Scope of Performance Improvement
(2) KPA (from the ICAO defined 11 Key Performance Areas (KPAs))
(3) Performance Objectives (ambition/expectations)
(4) KPIs based on the ICAO list of KPIs and associated variant
(5) The Baseline of each KPI
(6) The target of the KPI
(7) Selected ASBU element(s) /Enabler(s) and/or Non ASBU solution(s) for each operational improvement
(8) Target Implementation date
(9) Remarks/Progress

Note: The following is just a Sample

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8
Aerodrome	Predictability (Punctuality)	Maximize departure punctuality	**KPI 01** (Departure punctuality) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Aerodrome	Efficiency (Flight time/ distance)	Minimize Taxi-out time	**KPI 02** (Taxi-out additional time) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Aerodrome	Capacity (Capacity, throughput & utilization)	Increase airport peak arrival capacity	**KPI 09** (Airport peak capacity) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Aerodrome	Efficiency (Flight time/ distance)	Minimize Taxi-in time	**KPI 13** (Taxi-in additional time) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Aerodrome	Predictability (Punctuality)	Maximize Arrival punctuality	**KPI 14** (Arrival punctuality) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8
Aerodrome	Safety	Minimize Number of RWY Incursions Incidents & Accidents	**KPI 21** (Nr. of RWY Incursions)	TBD for each State/Airport	TBD for each State/Airport	TBD by each State/Airport	TBD by each State/Airport
Aerodrome	Safety	Minimize Number of RWY Excursions Incidents & Accidents	**KPI 22** (Nr. of RWY Excursions)	TBD for each State/Airport	TBD for each State/Airport	TBD by each State/Airport	TBD by each State/Airport
ATC (ACC Sectors)	Capacity (Capacity, throughput & utilization)	Enhance capacity of ACC Sectors	**KPI 06** (En-route Airspace capacity) **Variant X**	TBD for each ACC Sector	TBD for each ACC Sector	TBD for each ACC	TBD for each ACC
State/FIR	Safety	Minimize Number of Aircraft Accidents	**KPI 20** (Number of Aircraft Accidents) **Variant X**	TBD for each State/FIR	TBD for each State/FIR	TBD for each State/FIR	TBD for each State/FIR
FIR	Safety	Minimize Number of Airprox/TCAS Alert/Loss of separation/Near mid Air Collisions/Mid Air Collisions	**KPI 23** (Number of Airprox/TCAS Alert/Loss of separation/Near mid Air Collisions/Mid Air Collisions) **Variants X, Y, Z**	TBD for each FIR	TBD for each FIR	TBD for each FIR	TBD for each FIR

MID Region Air Navigation Systems Performance Based Framework Template (Sample)

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/Variant	KPI Baseline	KPI Target	Operational Improvements/ (ASBU Elements/Enablers & Non ASBU)	Target Date
3	1	2	4	5	6	7	8
Aerodrome	Predictability (Punctuality)	Maximize departure punctuality	**KPI 01** (Departure punctuality) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Aerodrome	Efficiency (Flight time/ distance)	Minimize Taxi-out time	**KPI 02** (Taxi-out additional time) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Cairo Airport-Egypt (HECA)	Efficiency (Flight time & distance)	Avoid taxi-out additional time resulting from adverse conditions	**KPI 02** **Variant 1** – basic (computed without departure gate and runway data) **Reference Taxi Time:** 15 min	5 Minutes 4 Seconds	4 Minutes	• SURF-B1/4 • AMET-B0/1 • SURF-B1/5 • Applying new procedures	end of 2025 end of 2024 end of 2025 end of 2025
Erbil Airport-Iraq (ORER)	Efficiency (Flight time/ distance)	Minimize Taxi-out time	**KPI 02** **Variant 1** – basic (computed without departure gate and runway data) **Reference Taxi Time:** 10 min	4min.	2min.	RSEQ B0/2 SURF B1/1 SURF B1/4 Layout improvement	Dec 2024 Dec 2024 Dec 2026 Dec 2026
Aerodrome	Capacity (Capacity, throughput & utilization)	Increase airport peak arrival capacity	**KPI 09** (Airport peak capacity) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport

SAMPLE

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/Variant	KPI Baseline	KPI Target	Operational Improvements/ (ASBU Elements/Enablers & Non ASBU)	Target Date
3	1	2	4	5	6	7	8
Aerodrome	Efficiency (Flight time/ distance)	Minimize Taxi-in time	**KPI 13** (Taxi-in additional time) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Aerodrome	Predictability (Punctuality)	Maximize Arrival punctuality	**KPI 14** (Arrival punctuality) **Variant X**	TBD for each Airport	TBD for each Airport	TBD by each State/Airport	TBD for each Airport
Khartoum Airport Sudan (HSSK)	Predictability (Punctuality)	Increase the number (%) of scheduled flights adhering to the scheduled on-block time	**KPI14 Variant 2A** – % of arrivals within ± 15 minutes of scheduled time of arrival	50%	80%	• RSEQ-B0/1 • New rapid exit taxiway	end of 2025 end of 2026
Aerodrome	Safety	Minimize Number of RWY Incursions Incidents & Accidents	**KPI 21** (Nr. of RWY Incursions)	TBD for each State/Airport	TBD for each State/Airport	TBD by each State/Airport	TBD by each State/Airport
Aerodrome	Safety	Minimize Number of RWY Excursions Incidents & Accidents	**KPI 22** (Nr. of RWY Excursions)	TBD for each State/Airport	TBD for each State/Airport	TBD by each State/Airport	TBD by each State/Airport

SAMPLE

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/Variant	KPI Baseline	KPI Target	Operational Improvements/ (ASBU Elements/Enablers & Non ASBU)	Target Date
3	1	2	4	5	6	7	8
ATC (ACC Sectors)	Capacity (Capacity, throughput & utilization)	Enhance capacity of ACC Sectors	**KPI 06** (En-route airspace capacity) **Variant X**	TBD for each ACC Sector	TBD for each ACC Sector	TBD for each ACC	TBD for each ACC
Jordan Amman ACC North Sector	Capacity	Enhance capacity of Amman ACC North Sector	**KPI 06** **Variant 1** – airspace throughput (entry flow rate)	30 Mvts per hour	50 Mvts per hour	COMI B0/4 NAV B0/3 CSEP B1/3	Dec 2024 Dec 2024 Dec 2026
State/FIR	Safety	Minimize Number of Aircraft Accidents	**KPI 20** (Number of Aircraft Accidents) **Variant X**	TBD for each State/FIR	TBD for each State/FIR	TBD for each State/FIR	TBD for each State/FIR
FIR	Safety	Minimize Number of Airprox/TCAS Alert/Loss of separation/Near mid Air Collisions/Mid Air Collisions	**KPI 23** (Number of Airprox/TCAS Alert/Loss of separation/Near mid Air Collisions/M A ions) **Variants**	TBD for each FIR	TBD for each FI	TBD for each FIR	TBD for each FIR
Iraq – Baghdad FIR (ORBB)	Safety	To reduce number of TCAS alerts & loss of separation	**KPI 23** **Variant 2**: TCAS alerts **Variant 3**: loss of separation	50 TCAS alerts/year 30 Loss of separation/year	30 TCAS alerts/year 20 Loss of separation/year	• Applying new procedures • Develop advanced training program	end of 2025 end of 2025

SAMPLE

Note: - The collection and processing of data related to Columns 1 to 7 is reflected in the MID Annual Air Navigation Reports: ***[****https://www.icao.int/MID/MIDANPIRG/Pages/MID-AN.aspx****.]***

- The monitoring of the priority 1 ASBU elements implementation is governed by the MID Region Air Navigation Strategy (MID Doc 002): ***[****https://www.icao.int/MID/MIDANPIRG/Pages/MID-Docs.aspx****]*** and the status of `implementation of the priority 1 ASBU elements is provided through the MID Annual Air Navigation Reports ***[****https://www.icao.int/MID/MIDANPIRG/Pages/MID-AN.aspx.****]***

The list of projects proposed by MID States to include in MID ANP Volume III for regional monitoring.

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
Kuwait ANS Performance Based framework	Capacity	Increase Planned En-route Airspace Capacity	KPI06/ Movements/ hour	79 Per hour	30 %	Reduce lateral separation through the implementation of RNAV1 parallel routes	2025	
						FICE B0/1 with Bahrain, Iraq and Saudi Arabia	2025	
						Increase individual sector capacity by reducing ATCO workload FRTO B0/4	2026	
						FRTO B0/4 – Basic conflict detection and conformance monitoring	2026	
						Improve ATS routes network interface with Iraq	2026	
						Increase maximum sector configuration by Application of vertical sector splitting	2026	
	Predictability / Punctuality	Improve Departure Punctuality	KPI01/ % of departures within ± 15 minutes of scheduled time of departure	52%	90%	Prevent early takeoffs by delaying pushback of flights ready at the gate/stand	2025	
						Airport runway expansion (Third runway)	2026	

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
						Optimize the number of scheduled flights adhering to the push-back tolerance window by reducing the number of scheduled flights with push-back before the tolerance window	2025	
						NOPS B0/1 - Initial integration of collaborative airspace management with air traffic flow management Enablers: AMET B0/1(implemented) FRTO B0/2 (Not implemented)	2026	
						~~Reduce Taxi-out time by implementing SURF B0/1~~	~~Implemented~~	
						Delay take-off clearance for flights arriving too early at the departure RWY	2025	
						RSEQ B0/2– Departure Management	2026	
	Safety	Maintain or improve Arrival Punctuality	KPI14/ % of arrivals within ± 15 minutes of	97.2%	98%	No action is required at this stage, the performance will be monitored regularly, and appropriate		

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
			scheduled time of arrival			action(s) will be identified when needed.		
		Reduce the risk of non collision related occurrences associated with incorrect or unsafe usage of runways	KPI21/ Number of runway incursion	14	0	~~SURF B0/1 – Basic ATCO Tools to manage traffic during ground Operations~~	~~Implemented~~	
						SURF B0/2 - Comprehensive situational awareness of surface operations	2025	
						SURF B1/5 - Enhanced vision systems for taxi operations	2026	
						SURF B2/2 - Comprehensive vehicle driver situational awareness on the airport surface	2028	
		Maintain or improve safety in the air	KPI23/ TCAS Alert	8 Pear	0	~~SNET B0/1: Short Term Conflict Alert Enablers (ASUR B0/1 or ASUR B0/2)~~	~~Implemented~~	
						~~SNET B1/1: Enhanced STCA with aircraft parameters~~	~~Implemented~~	
						~~SNET B1/2: Enhanced STCA in complex TMA~~	~~Implemented~~	
						~~ACAS B1/1~~	~~Implemented~~	
						FRTO B0/4: Basic conflict detection and conformance	2026	

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
						monitoring Enabler FRTO B0/1 (implemented)		
~~Doha FIR~~	~~Capacity (Capacity, throughput & utilization)~~	~~Enroute airspace capacity~~	~~KPI 06 Variant 2: airspace occupancy count~~	~~35 movements/hr.~~	~~56 movements/hr.~~	~~Enhanced Airspace and FIR implementation; FRTO B0/4; FRTO B1/1~~	~~Implemented~~	
~~OTHH~~	~~Capacity (Capacity, throughput & utilization)~~	~~Airport peak throughput~~	~~KPI 10 Variant AD: IFR Operations (arrivals + departures)~~	~~75 movements/hr.~~	~~86 movements/hr.~~	~~Independent Parallel Operations; Re-Categorization Wake Turbulence Separation Minima; Visual Guided Approach (Qatar Airway); Reduced Runway Separation Minima; High Intensity Runway Operation; Distance Based Separation Tool; APTA B0/1; APTA B0/2; APTA B0/7; RSEQ B0/1; RSEQ B0/2~~	~~Implemented~~	
~~OTBD~~ ~~OTHH~~	~~Efficiency (Flight time & distance)~~	~~Reduce taxi-out additional time~~	~~KPI 02 Variant 2: Advanced (computed with departure gate and runway data)~~	~~7.88 mins/flight~~ 9.24 mins/flight	~~7 mins~~ 8 mins	~~SURF B0/1; RSEQ B0/2~~	~~Implemented~~	
~~OTBD~~ ~~OTHH~~	~~Efficiency (Flight time & distance)~~	~~Reduce taxi-in additional time~~	~~KPI 13 Variant 2: Advanced (computed with landing runway and arrival gate data)~~	~~2.88 mins/flight~~ 1.31 mins/flight	~~2.5 mins~~ 1 min	~~SURF B0/1~~	~~Implemented~~	

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
~~OTBD OTHH~~	~~Predictability (Punctuality)~~	~~Increase the number (%) of scheduled flights adhering to the scheduled off-block time.~~	~~KPI 01 Variant 2A: % of departures within ± 15 minutes of scheduled time of departure~~	~~52% of flights 72% of flights~~	~~50% of flights 90% of flights~~	~~RSEQ B0/2~~	~~Implemented~~	
~~OTBD OTHH~~	~~Predictability (Punctuality)~~	~~Increase the number (%) of scheduled flights adhering to the scheduled on-block time.~~	~~**KPI 14** Variant 2A: % of arrivals within ± 15 minutes of scheduled time of arrival~~	~~44% of flights 52% of flights~~	~~50% of flights 90% of flights~~	~~ACDM B0/1; ACDM B0/2~~	~~Implemented~~	
~~FIR~~	~~Safety (Maintain or improve safety) Note: Occurrences where ATC was the main cause or a major contributory factor~~	~~Maintain or improve operational safety outcomes~~	~~**KPI 20** Variant 2.1 National accident occurrence level~~	~~0 accident/year~~	~~0 accident/year~~	~~SURF B0/1; SURF B0/2 SURF B0/3; SNET B0/1 SNET B0/2 SNET B0/3 SNET B0/4; ACAS B1/1; FRTO B0/4~~	~~Implemented~~	
~~OTBD OTHH~~	~~Safety (Maintain or improve safety) Note: Occurrences where ATC was the main cause or a major contributory factor~~	~~Reduce number of runway incursions~~	~~**KPI 21** The actual number of runway incursions at an aerodrome~~	~~OTBD: 6 incursions/year OTHH: 3 incursions /year~~	~~0.1 (1 per 10,000 mvts)~~	~~SURF B0/1; SURF B0/2~~	~~Implemented~~	
~~OTBD OTHH~~	~~Safety (Maintain or improve safety) Note: Occurrences where ATC was the main cause or a major contributory factor~~	~~Reduce number of runway excursions~~	~~**KPI 22** The actual number of runway excursions at an aerodrome~~	~~OTBD: 0 excursions/year OTHH: 0 excursions/year~~	~~OTBD: 0 excursions/year OTHH: 0 excursions/year~~	~~SURF B0/3~~	~~Implemented~~	
~~FIR~~	~~Safety (Maintain or improve safety) Note: Occurrences where ATC was the main cause or a major contributory factor~~	~~Maintain or improve safety in the air~~	~~**KPI 23** Variant 1: Number of airproxes Variant 2: TCAS alerts~~	~~5 airprox/year 4 TCAS alerts/year~~	~~SPIs alert levels~~	~~Procedures review Safety Nets review Training improvement Random sampling by Standard and Competency Unit~~	~~Implemented~~	
To allow the use of airspace	KPA 02 — Capacity	Flexible use of airspace (FUA	**N/A**	Increase in the FUA concept in coordination with	30% of the current D/P/R to	B0 – FRTO Improved Operations through	On Going	

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
which would otherwise be segregated (i.e. special use airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight length and fuel burn.	KPA-04 – Efficiency			the State stakeholders	be converted to FUA	Enhanced En-Route Trajectories		
To use performance-based airspace and arrival procedures allowing aircraft to fly their	KPA 04 — Efficiency	To use performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous	Indicator: % Aerodromes/TMA with PBN STAR implemented Supporting Metric: Number of International	60%	100%	APTA-B0/4 CDO : Improved Flexibility and Efficiency in Descent Profiles PBN STARs	2026	

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
optimum profile using continuous descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles and increase capacity in terminal areas		descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles and increase capacity in terminal areas.	Aerodromes/TMAs with PBN STAR implemented					
Manage arrivals and departures (including time-based metering) to and from a multi-runway aerodrome or locations with multiple dependent runways at closely proximate aerodromes, to efficiently utilize the inherent runway capacity. / Runways and terminal manoeuvring area in major hubs and metropolitan	KPA 01 — Access and equity KPA 04 — Efficiency	Arrival Manager (AMAN) & Departure Manager (DMAN)	Indicator: % of Aerodromes that are managed by AMAN/DMAN systems Supporting metric: Number of Aerodromes that are managed by AMAN/DMAN systems	N/A	100%	B0 – RSEQ Improved Traffic Flow through	On-going	

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date	Remarks/progress
1	2	3	4	5	6	7	8	9
areas will be most in need of these improvements. The improvement is least complex – runway sequencing procedures are widely used in aerodromes globally. However, some locations might have to confront environmental and operational challenges that will increase the complexity of development and implementation of technology and procedures to realize this Module.								

DAIM Digital Aeronautical Information Management

In order to assist States in the planning for the transition from AIS to AIM in an expeditious manner, the following Tables, should be used:

1- **Table DAIM 3-1** sets out the requirements for the Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID). It reflects the transition from the current product centric AIS to data centric AIM. For the future digital environment, it is important that the authoritative databases are clearly designated and such designation must be published for the users. This is achieved with the concept of the Integrated Aeronautical Information Database (IAID), a single access point for one or more authoritative databases (AIP, Terrain, Obstacles, AMDB, data-driven charting, etc.) for which the State is responsible. This Table will be used for the monitoring of the GANP and MID Region Air Navigation Strategy element DAIM-B1/1.

2- **Table DAIM 3-2** sets out the requirements for aeronautical data quality. It will be used for the monitoring of the GANP and MID Region Air Navigation Strategy element DAIM-B1/1.

3- **Table DAIM 3-3** sets out the requirements for the implementation of the World Geodetic System – 1984 (WGS-84). The requirement to use a common geodetic system remains essential to facilitate the exchange of data between different systems. The expression of all coordinates in the AIP and charts using WGS-84 is an important first step for the transition to AIM. This Table will be used for the monitoring of the GANP and MID Region Air Navigation Strategy element DAIM-B1/1.

4- **Table DAIM 3-4-1** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 1 and Area 4. It will be used for the monitoring of the GANP and MID Region Air Navigation Strategy elements DAIM-B1/3 and DAIM-B1/4.

5- **Table DAIM 3-4-2** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 2. It will be used for the monitoring of the GANP and MID Region Air Navigation Strategy elements DAIM-B1/3 and DAIM-B1/4.

6- **Table DAIM 3-4-3** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 3 and implementation of Airport Mapping Databases (AMDB). It will be used for the monitoring of the GANP and MID Region Air Navigation Strategy elements DAIM-B1/3, DAIM-B1/4 and B1/5.

TABLE ASBU-MID-DAIM 3-1
Automated Data-Centric Environment

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 *Level of Automation*, shown by:

0 – Manual

1 – Data Centric

2 – Automated Workflow

3 – Full AIM Integration

Note 1 – Guidance on automation and description of different levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, Chapter 7 (7.4).

3 Implementation of *Automated processes - Data collection (interfaces with data originators)*, shown by:

FI – Fully Implemented: *when Data collection is at level 3 automation*

PI – Partially Implemented: *when Data collection is at level 1 or 2 automation*

NI – Not Implemented: *when Data collection is at level 0 automation*

Note 2 — Guidance on the levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.4.

Note 3 — Additional guidance on the components of an automated AIM system (Data Input) are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.5.1.

4 Implementation of *Automated processes - Data processing*, shown by:

FI – Fully Implemented: *when Data processing is at level 3 automation*

PI – Partially Implemented: *when Data processing is at level 1 or 2 automation*

NI – Not Implemented: *when Data processing is at level 0 automation*

Note 5 — Guidance on the levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.4.

Note 6 — Additional guidance on the components of an automated AIM system (Core Processing System and Data

Storage) are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.5.2 and 7.5.3.

5 Implementation of *Automated processes - Data provision/distribution*, shown by:

FI – Fully Implemented: *when Data provision/distribution is at level 3 automation* PI – Partially Implemented: *when Data provision/distribution is at level 1 or 2 automation*

NI – Not Implemented: *when Data provision/distribution is at level 0 automation*

Note 7 — Guidance on the levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.4

State	Level of Automation (Overall)	Automated Processes			Automated data-centric environment based on (AIXM V5.1+)	Action Plan	Remarks
		Data collection (interfaces with data originators)	Data Processing	Data provision/ distribution			
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*

TABLE ASBU-MID- DAIM-3-2
Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 Implementation of Quality Assurance and Quality Control, shown by: FC – Fully Compliant
PC – Partially Compliant NC – Not Compliant

Note 1 – Guidance on the implementation of Quality Assurance and Quality Control are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, Chapter 6.

3 Establishment of formal arrangements with originators, shown by:
FC – Fully Compliant PC – Partially Compliant NC – Not Compliant

Note 4 – Provisions and guidance on formal arrangements with originators are contained in Annex 15, 2.1.5 and Doc 8126, 3.3.

Note 5 – Fully compliant (FC) means that the AIS has established formal arrangements with all data originators.

Note 6 – Relevant data quality requirements should be considered in the formal arrangements with originators. Since the Aeronautical Data Catalogue contains all the data elements that the AIS manages, each one being assigned an owner, the AIS can use the Aeronautical Data Catalogue to systematically establish and document formal arrangements with all identified data originators.

Note 7 – Formal arrangements with originators should include requirements related to the provision of metadata.

4 Action Plan – short description of the State's Action Plan with regard to aeronautical data quality requirements implementation and the establishment of formal arrangements with originators, especially for items with a "PC" or "NC" status, including planned date(s) of full compliance, as appropriate.

5 Remarks – additional information, including detail of "PC" and "NC", as appropriate.

State	Quality Assurance /Quality Control	Formal Arrangement with Originators	Action Plan	Remarks
1	*2*	*3*	*4*	*5*

TABLE ASBU-MID - DAIM-3-3
Provision of Digital Data Sets

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Terrain Data Set for area 1

3 Terrain Data Sets for airports (area 4, as applicable)

4 Terrain Data Sets for airports (area 2a)

5 Terrain Data Sets for airports (TOFP area)

6 Terrain Data Sets for airports (OLS)

7 Obstacle Data Set for area 1

8 Obstacle Data Sets for airports (area 4, as applicable)

9 Obstacle Data Sets for airports (area 2a)

10 Obstacle Data Sets for airports (TOFP area)

11 Obstacle Data Sets for airports (OLS)

12 AIP data sets

12 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets "PC" and "NC" status.

13 Remarks— additional information, including detail of "PC" and "NC"

Note – when status of implementation is reflected in the table, it is shown by: FC (Fully Compliant), PC (Partially Compliant), NC (Not Compliant), N/A (Not Applicable)

State	Terrain data sets					Obstacle data sets					AIP data sets	Action Plan	Remarks
	Area 1	Area 4	Area 2a	TOFP	OLS	Area 1	Area 4	Area 2a	TOFP	OLS			
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Table DAIM-3-4-2

Provision of Terrain and Obstacle data sets for Area 2, the take-off flight path area (TOFP) and the obstacle limitation surfaces (OLS)

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Area 2 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 2a, shown by:
- FC – Fully Compliant
- PC – Partially Compliant
- NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 2b, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not implemented
- N/A – Not Applicable

4 Compliance with requirement for the provision of Terrain data sets for Area 2c, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

5 Compliance with requirement for the provision of Terrain data sets for Area 2d, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

6 Compliance with requirement for the provision of Terrain data sets for the take-off flight path area (TOFP), shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

7 Compliance with requirement for the provision of Terrain data sets for the obstacle limitation surfaces (OLS) shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

8 Compliance with requirement for the provision of Obstacle data sets for Area 2a, shown by:

FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

9 Compliance with requirement for the provision of Obstacle data sets for Area 2b, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not implemented
N/A – Not Applicable

10 Compliance with requirement for the provision of Obstacle data sets for Area 2c, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

11 Compliance with requirement for the provision of Obstacle data sets for Area 2d, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

12 Compliance with requirement for the provision of Obstacle data sets for the take-off flight path area (TOFP), shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

13 Compliance with requirement for the provision of Obstacle data sets for the obstacle limitation surfaces (OLS), shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

14 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 2, especially for items with a "PC", "PI", "NC" or "NI" status.

15 Remarks— additional information, including detail of "PC", "PI" and "NC", "NI", as appropriate.

TABLE DAIM-3-4-2

Provision of Terrain and Obstacle data sets for Area 2, the take-off flight path area (TOFP) and the obstacle limitation surfaces (OLS)

State	Terrain data sets						Obstacle data sets						Action Plan	Remarks
	Area 2a	Area 2b	Area 2c	Area 2d	TOFP	OLS	Area 2a	Area 2b	Area 2c	Area 2d	TOFP	OLS		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

APPENDIX 5C

Table DAIM-3-4-3
Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping Databases (AMDB)

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Area 3 and AMDB are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 3, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

3 Compliance with requirement for the provision of Obstacle data sets for Area 3, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

4 Implementation of AMDB, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

5 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 3 and AMDB implementation, especially for items with a "PC", "PI", "NC" or "NI" status.

6 Remarks— additional information, including detail of "PI" and "NI", as appropriate.

APPENDIX 5C

TABLE DAIM-3-4-3

Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping Databases (AMDB)

State	Terrain data sets (Area 3)	Obstacle data sets (Area 3)	AMDB	Action Plan	Remarks
1	2	3	4	5	6

Table AMET 3-1

Meteorological observations products

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation of Automatic Weather Observation System (AWOS) information, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

3 Status of implementation of Local reports (MET REPORT/SPECIAL), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

4 Status of implementation of Aerodrome reports (METAR/SPECI), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

5 Status of implementation of Lightning Information, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

6 Status of implementation of Ground-based weather radar information, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

7 Status of implementation of Meteorological satellite imagery, where:
FI – Fully Implemented

PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

8 Status of implementation of Aircraft meteorological report (ie. ADS-B, AIREP, etc.), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

9 Status of implementation of Vertical wind and temperature profiles, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

10 Status of implementation of Wind shear alerts, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

11 Remarks

State	Implementation									Remarks
	AWOS	MET REPORT/SPECIAL	METAR/SPECI	Lightning Information	Ground-based weather radar information	Meteorological satellite imagery	Aircraft meteorological report	Vertical wind and temperature profiles	Wind shear alerts	
1	2	3	4	5	6	7	8	9	10	11

Table AMET 3-2

Meteorological forecast and warning products

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation of World Area Forecast System (WAFS) gridded products, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

3 Status of implementation of Significant Weather (SIGWX), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

4 Status of implementation of Aerodrome Forecast (TAF), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

5 Status of implementation of Trend Forecast (TREND), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

6 Status of implementation of Take-off Forecast, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

7 Status of implementation of SIGMET, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

8 Status of implementation of Aerodrome Warning, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

9 Status of implementation of Wind Shear Warning, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

10 Remarks

State	Implementation								Remarks
	WAFS	SIGWX	TAF	TREND	Take-off Forecast	SIGMET	Aerodrome Warning	Wind Shear Warning	
1	2	3	4	5	6	7	8	9	10

Table AMET 3-3

Climatological and historical meteorological Products

EXPLANATION OF THE TABLE

Column

1 Name of the State
2 Status of availability of Aerodrome climatological tables, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
3 Status of availability of Aerodrome climatological summaries, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
4 Remarks

State	Implementation		Remarks
	Aerodrome climatological tables;	Aerodrome climatological summaries	
1	2	3	4

Table AMET 3-4

Dissemination of meteorological products

Column

1 Name of the State

2 Dissemination of meteorological products using TAC, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

3 Dissemination of meteorological products using Gridded, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

4 Dissemination of meteorological products using Graphical, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

5 Dissemination of meteorological products using BUFR code, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

6 Dissemination of meteorological products using IWXXM (in XML/GML), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

7 Dissemination means includes AFTN, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

8 Dissemination means includes AMHS, where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

9 Dissemination means includes ssecure internet services (WIFS/SADIS), where:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

10 Remarks

State	Dissemination of meteorological products								Remarks
	Formats					Means			
1	**(**TAC) **2**	**(**Gridded) **3**	**(**Graphical) **4**	**(**BUFR) **5**	**(**IWXXM) **6**	**(**AFTN) **7**	**(**AMHS) **8**	**(**WIFS/SADIS) **9**	**10**
BAHRAIN	FI	FI	FI	FI	NI	FI	NI	FI	
EGYPT	FI	NI	NI	NI	NI	FI	NI	FI	
IRAN	FI	NI	FI	NI	NI	FI	NI	NI	

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)		AOP (17)	
		xLS	CAT		Update date				RWY	AD	RWY	AD	RWY	AD	RWY	AD	RWY	

ACAS Airborne Collision Avoidance System (ACAS)

Table ACAS 3-1

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation:
Y – Fully Implemented
N – Not Implemented

3 National Regulation(s) Reference(s)

4 Remarks

State	Status	Regulation Reference	Effective Date	Remarks
1	2	3	4	5

Table ASUR 3-1

Surveillance Implementation Monitoring Table

EXPLANATION OF THE TABLE

Column	
1	Name of the State / ATS Units where Radar service provided
2	Surveillance Gap Y – Yes, non-radar covered area (GAP) exist N – No, GAP areas not existed
3	Multi- Surveillance Data processing capability Y – Yes, implemented N – No, not implemented
4	Surveillance Sensor used Y – Yes, implemented N – No, not implemented
5	Dual Surveillance sources Y – Yes, available N – No, not available
6	Issuance of ADS-B Carriage Mandate N – No, not issued Date – effective date of ADS-B carriage mandate Reference - link to mandate regulation

State/ ATS Units Served	Surveillance Gaps	Multi-Surveillance Data Processing Capability	Surveillance Sensor Used						Dual Surveillance Sources	ADS-B carriage mandate	
			PSR	SSR Mode A/C	SSR Mode S	MLAT	ADS-B	Data Sharing		Date	Reference
1	2	3	4						5	6	
State											

MID DOC 002

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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

MID REGION

AIR NAVIGATION STRATEGY

EDITION MARCH 2024, REVISION FEBRUARY 2025

TABLE OF CONTENTS

AIR NAVIGATION PRIORITIES AND MONITORING OF THE STATUS OF IMPLEMENTATION

1. Introduction 1

2. Strategic Air Navigation Capacity and Efficiency Objective 1

3. MID Air Navigation Objectives 1

4. MID Region ASBU Threads/Elements Prioritization and Monitoring 2

   Table 1. MID Region ASBU Threads & Elements (block 0 & 1) prioritization and monitoring

5. Implementation and Monitoring of the priority 1 ASBU Elements 9

   Table 2. Monitoring the implementation of the priority 1 ASBU Threads/Elements (block 0 & 1) in the MID Region

6. Governance 9

AIR NAVIGATION PRIORITIES AND MONITORING OF THE STATUS OF IMPLEMENTATION

1. Introduction

1.1 As traffic volume increases throughout the world, the demands on air navigation service providers in a given airspace increase, and air traffic management becomes more complex.

1.2 It is foreseen that the implementation of the components of the ATM operational concept will provide sufficient capacity to meet the growing demand, generating additional benefits in terms of more efficient flights and higher levels of safety. Nevertheless, the potential of new technologies to significantly reduce the cost of services will require the establishment of clear operational requirements.

1.3 Taking into account the benefits of the ATM operational concept, it is necessary to make many timely decisions for its implementation. An unprecedented cooperation and harmonization will be required at both global and regional level.

1.4 ICAO introduced the Aviation System Block Upgrades (ASBU) framework as a systemic manner to achieve a harmonized implementation of the air navigation services. An ASBU designates a set of improvements that can be implemented globally from a defined point in time to enhance the performance of the ATM system.

1.5 In accordance, with the Resolutions of the 40th Session of the ICAO Assembly, particularly Resolution A40-1 "ICAO global planning for safety and air navigation", the ICAO Assembly urged States and PIRGs to utilize the guidance provided in the GANP for planning and implementation activities which establish priorities, targets and indicators consistent with globally-harmonized objectives, taking into account operational needs. In response to this, the MID Region developed the MID Region Air Navigation Strategy – Part 1, which is aligned with the GANP and ASBU Framework.

1.6 Stakeholders including service providers, regulators, airspace users and manufacturers are facing increased levels of interaction as new, modernized ATM operations are implemented. The highly integrated nature of capabilities covered by the block upgrades requires a significant level of coordination and cooperation among all stakeholders. Working together is essential for achieving global harmonization and interoperability.

2. Strategic Air Navigation Capacity and Efficiency Objective

2.1 The Strategic Objective related to Air Navigation Capacity and Efficiency is to realize sound and economically-viable civil aviation system in the MID Region that continuously increases in capacity and improves in efficiency with enhanced safety while minimizing the adverse environmental effects of civil aviation activities.

3. MID Air Navigation Objectives

3.1 The MID Region air navigation objectives are set in line with the global air navigation objectives and address specific air navigation operational improvements identified within the framework of the Middle East Regional Planning and Implementation Group (MIDANPIRG).

3.2 Blocks ‘0’ and “1” feature Elements are characterized by operational improvements, which have already been developed and implemented in many parts of the world. The MID Region priority 1 Block 0 & 1 Elements are reflected in **Table 1** below.

3.3 The MID Region Air Navigation Strategy aims to maintain regional harmonisation. The States should develop their National Air Navigation Plan (NANP), including action plans for the implementation of relevant priority 1 ASBU Elements and other ASBU elements or non ASBU solutions based on the States’ operational requirements and cost benefits analysis.

3.4 The implementation of the ASBU Block 0 Elements in the MID Region started before 2013 and is continuing. For the short and medium term, the MID Region priorities include identified ASBU Elements from Block 0 and Block 1.

4. MID Region ASBU Threads/Elements Prioritization and Monitoring

4.1 On the basis of operational requirements and taking into consideration the associated benefits, **Table 1** below shows the priority associated for each ASBU element from Block 0 and Block 1, as well as the MIDANPIRG subsidiary bodies that will be monitoring and supporting the implementation of these Threads/Elements:

Priority 1 ASBU Element*: Elements that have the highest contribution to the improvement of air navigation safety and/or efficiency in the MID Region. These Elements should be implemented where applicable and will be used for the purpose of regional air navigation monitoring and reporting.*

Priority 2 ASBU Element*: Elements recommended for implementation based on identified operational needs and benefits by States.*

Priority 1 Thread: *Any Thread with at least one priority 1 element*

Table 1. MID REGION ASBU THREADS & ELEMENTS (BLOCK 0 & 1) PRIORITIZATION AND MONITORING

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
Information Threads							
DAIM							
DAIM	**B1/1**	Provision of quality-assured aeronautical data and information	**1**	2021	AIM SG and AIMDP TF	RANP/ NANP TF	
	B1/2	Provision of digital Aeronautical Information Publication (AIP) data sets	1	2025	AIM SG and AIMDP TF	RANP/ NANP TF	
	B1/3	Provision of digital terrain data sets	**1**	2021	AIM SG and AIMDP TF	RANP/ NANP TF	
	B1/4	Provision of digital obstacle data sets	**1**	2021	AIM SG and AIMDP TF	RANP/ NANP TF	
	B1/5	Provision of digital aerodrome mapping data sets	2				
	B1/6	Provision of digital instrument flight procedure data sets	2				
	B1/7	NOTAM improvements	2				
AMET							
AMET	**B0/1**	Meteorological observations products	**1**	2014	MET SG	RANP/ NANP TF	
	B0/2	Meteorological forecast and warning products	**1**	2014	MET SG	RANP/ NANP TF	

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B0/3	Climatological and historical meteorological products	**1**	2014	MET SG	RANP/ NANP TF	
	B0/4	Dissemination of meteorological products	**1**	2014	MET SG	CNS SG RANP/ NANP TF	
	B1/1	Meteorological observations information	2				
	B1/2	Meteorological forecast and warning information	2				
	B1/3	Climatological and historical meteorological information	2				
	B1/4	Dissemination of meteorological information	2				
FICE							
FICE	**B0/1**	Automated basic inter facility data exchange (AIDC)	**1**	2014	CNS SG ATM SG	RANP/ NANP TF	
Operational Threads							
APTA							
APTA	**B0/1**	PBN Approaches (with basic capabilities)	**1**	2014	PBN SG	ATM SG AIM SG CNS SG RANP/ NANP TF	
	B0/2	PBN SID and STAR procedures (with basic capabilities)	**1**	2014	PBN SG	ATM SG AIM SG RANP/ NANP TF	
	B0/3	SBAS/GBAS CAT I precision approach procedures	2				
	B0/4	CDO (Basic)	**1**	2014	PBN SG	ATM SG RANP/ NANP TF	
	B0/5	CCO (Basic)	**1**	2014	PBN SG	ATM SG RANP/ NANP TF	
	B0/6	PBN Helicopter Point in Space (PinS) Operations	2				
	B0/7	Performance based aerodrome operating minima – Advanced aircraft	**1**	2021	PBN SG	AIM SG CNS SG ASPIG RANP/ NANP TF	

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B0/8	Performance based aerodrome operating minima – Basic aircraft	2				
	B1/1	PBN Approaches (with advanced capabilities)	2				
	B1/2	PBN SID and STAR procedures (with advanced capabilities)	2				
	B1/4	CDO (Advanced)	2				
	B1/5	CCO (Advanced)	2				
FRTO							
FRTO	**B0/1**	Direct routing (DCT)	1	2026	ATM SG and ASM WG	RANP/ NANP TF	
	B0/2	Airspace planning and Flexible Use of Airspace (FUA)	**1**	2014	ATM SG and ASM WG	RANP/ NANP TF	
	B0/3	Pre-validated and coordinated ATS routes to support flight and flow	1	2027	ATM SG and ASM WG	RANP/ NANP TF	
	B0/4	Basic conflict detection and conformance monitoring	**1**	2014	ATM SG	CNS SG RANP/ NANP TF	
	B1/1	Free Route Airspace (FRA)	1	2028	ATM SG and ASM WG	RANP/ NANP TF	
	B1/2	Required Navigation Performance (RNP) routes	2				
	B1/3	Advanced Flexible Use of Airspace (FUA) and management of real time airspace data	2				
	B1/4	Dynamic sectorization	1	2028	ATM SG and ASM WG	RANP/ NANP TF	
	B1/5	Enhanced Conflict Detection Tools and Conformance Monitoring	2				
	B1/6	Multi-Sector Planning	2				
	B1/7	Trajectory Options Set (TOS)	2				
NOPS							
NOPS	**B0/1**	Initial integration of collaborative airspace management with air traffic flow management	**1**	2015	ATM SG ATFM TF	RANP/ NANP TF	

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B0/2	Collaborative Network Flight Updates	2				
	B0/3	Network Operation Planning basic features	2				
	B0/4	Initial Airport/ATFM slots and A-CDM Network Interface	2				
	B0/5	Dynamic ATFM slot allocation	2				
	B1/1	Short Term ATFM measures	2				
	B1/2	Enhanced Network Operations Planning	2				
	B1/3	Enhanced integration of Airport operations planning with network operations planning	2				
	B1/4	Dynamic Traffic Complexity Management	2				
	B1/5	Full integration of airspace management with air traffic flow management	2				
	B1/6	Initial Dynamic Airspace configurations	1	2028	ATM SG and ASM WG	RANP/ NANP TF	
	B1/7	Enhanced ATFM slot swapping	2				
	B1/8	Extended Arrival Management supported by the ATM Network function	2				
	B1/9	Target Times for ATFM purposes	2				
	B1/10	Collaborative Trajectory Options Program (CTOP)	2				
ACAS							
ACAS	**B1/1**	ACAS Improvements	**1**	2014	ATM SG CNS SG	RANP/ NANP TF	
SNET							
SNET	**B0/1**	Short Term Conflict Alert (STCA)	**1**	2017	ATM SG	CNS SG RANP/ NANP TF	
	B0/2	Minimum Safe Altitude Warning (MSAW)	**1**	2017	ATM SG	CNS SG RANP/ NANP TF	
	B0/3	Area Proximity Warning (APW)	**1**	2020	ATM SG	CNS SG RANP/ NANP TF	
	B0/4	Approach Path Monitoring (APM)	2				

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B1/1	Enhanced STCA with aircraft parameters	2				
	B1/2	Enhanced STCA in complex TMA	2				
GADS							
GADS	**B1/1**	Aircraft Tracking	2				
	B1/2	Operational Control Directory	**1**	2021	ATM SG	RANP/ NANP TF	
RSEQ							
RSEQ	**B0/1**	Arrival Management	**1**	2021	ATM SG ATFM TF	CNS SG ASPIG RANP/ NANP TF	
	B0/2	Departure Management	2				
	B0/3	Point merge	2				
	B1/1	Extended arrival metering	2				
SURF							
SURF	**B0/1**	Basic ATCO tools to manage traffic during ground operations	**1**	2014	ASPIG	ATM SG CNS SG RANP/ NANP TF	
	B0/2	Comprehensive situational awareness of surface operations	**1**	2014	ASPIG	ATM SG CNS SG RANP/ NANP TF	
	B0/3	Initial ATCO alerting service for surface operations	**1**	2021	ASPIG	ATM SG CNS SG RANP/ NANP TF	
	B1/1	Advanced features using visual aids to support traffic management during ground operations	2				
	B1/2	Comprehensive pilot situational awareness on the airport surface	2				
	B1/3	Enhanced ATCO alerting service for surface operations	2				
	B1/4	Routing service to support ATCO surface operations management	2				
	B1/5	Enhanced vision systems for taxi operations	2				
ACDM							
ACDM	**B0/1**	Airport CDM Information Sharing (ACIS)	**1**	2014	ASPIG	CNS SG, AIM SG, ATM SG,	

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
						RANP/ NANP TF	
	B0/2	Integration with ATM Network function	**1**	2014	ASPIG	CNS SG, AIM SG, ATM SG, RANP/ NANP TF	
CSEP	**B1/1**	Basic airborne situational awareness during flight operations (AIRB)	**2**				
	B1/2	Visual Separation on Approach (VSA)	**2**				
	B1/3	Performance Based Longitudinal Separation Minima	**2**				
	B1/4	Performance Based Lateral Separation Minima	**2**				
DATS	**B1/1**	Remotely Operated Aerodrome Air Traffic Services	**2**				
OPFL	**B0/1**	In Trail Procedure (ITP)	**2**				
	B1/1	Climb and Descend Procedure (CDP)	**2**				
TBO	**B0/1**	Introduction of time-based management within a flow centric approach	**2**				
	B1/1	Initial Integration of time-based decision making processes	**2**				
Technology Threads							
ASUR							
ASUR	**B0/1**	Automatic Dependent Surveillance – Broadcast (ADS-B)	**1**	2021	CNS SG	ATM SG, ASPIG, RANP/ NANP TF	
	B0/2	Multilateration cooperative surveillance systems (MLAT)	**1**	2021	CNS SG	ATM SG, ASPIG, RANP/NA NP TF	
	B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	**1**	2021	CNS SG	ATM SG, ASPIG, RANP/ NANP TF	
	B1/1	Reception of aircraft ADS-B signals from space (SB ADS-B)	2				
NAVS							
NAVS	**B0/1**	Ground Based Augmentation Systems (GBAS)	2				

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
	B0/2	Satellite Based Augmentation Systems (SBAS)	2				
	B0/3	Aircraft Based Augmentation Systems (ABAS)	**1**	2021	CNS SG	PBN SG, ATM SG, AIM SG, RANP/ NANP TF	
	B0/4	Navigation Minimal Operating Networks (Nav. MON)	**1**	2021	CNS SG	PBN SG, RANP/ NANP TF	
	B1/1	Extended GBAS	2				
COMI							
COMI	**B0/1**	Aircraft Communication Addressing and Reporting System (ACARS)	2				
	B0/2	Aeronautical Telecommunication Network/Open System Interconnection (ATN/OSI)	2				
	B0/3	VHF Data Link (VDL) Mode 0/A	2				
	B0/4	VHF Data Link (VDL) Mode 2 Basic	2				
	B0/5	Satellite communications (SATCOM) Class C Data	2				
	B0/6	High Frequency Data Link (HFDL)	2				
	B0/7	AMHS	**1**	2014	CNS SG	RANP/ NANP TF	
	B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	**1**	2021	CNS SG	RANP/ NANP TF	
	B1/2	VHF Data Link (VDL) Mode 2 Multi-Frequency	2				
	B1/3	SATCOM Class B Voice and Data	2				
	B1/4	Aeronautical Mobile Airport Communication System (AeroMACS) Ground-Ground	2				
COMS							

Thread	Element code	Title	Priority	Start Date	Monitoring		Remarks
					Main	Supporting	
COMS	**B0/1**	CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace	2				
	B0/2	ADS-C (FANS 1/A) for procedural airspace	2				
	B1/1	PBCS approved CPDLC (FANS 1/A+) for domestic and procedural airspace	2				
	B1/2	PBCS approved ADS-C (FANS 1/A+) for procedural airspace	2				
	B1/3	SATVOICE (incl. routine communications) for procedural airspace	2				

5. Implementation and Monitoring of the priority 1 ASBU Elements

5.1 The monitoring of air navigation performance and its enhancement is achieved, inter-alia, through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets. The monitoring of the priority 1 ASBU Threads/Elements is carried out through the MID eANP Volume III.

5.2 MIDANPIRG through its activities under the various subsidary bodies will continue to update and monitor the implementation of the ASBU Threads and elements to achieve the air navigation targets.

5.3 The priority 1 Threads/Elements along with the associated elements, applicability, performance Indicators, supporting Metrics, and performance Targets are shown in the **Table 2** below.

***Note**: Further details on the ASBU elements objectives, description, implementation requirements and performance impact assessment can be found on the ICAO GANP Portal https://www4.icao.int/ganpportal/ASBU*

6. Governance

6.1 Progress report on the status of implementation of the different priority 1 Threads/Elements should be developed by MIDANPIRG Subsidary bodies. A consolidated MID Air Navigation Report showing the status of implementation of the different priority 1 ASBU Elements by Thread will be developed by the RANP/NANP TF on annual basis and presented to MIDANPIRG for endorsement.

6.2 The MIDANPIRG will be the governing body responsible for the review and update of the MID Region Air Navigation Strategy.

6.3 The MID Region Air Navigation Strategy will guide the work of MIDANPIRG and its subsidary bodies and all its member States and partners.

6.4 Progress on the implementation of the MID Region Air Navigation Strategy and the achievement of the agreed air navigation targets will be reported to the ICAO Air Navigation Commission (ANC), through the review of the MIDANPIRG Reports, MID Air Navigation Reports, etc.; and to the stakeholders in the Region within the framework of MIDANPIRG.

Table 2. MONITORING THE IMPLEMENTATION OF THE PRIORITY 1 ASBU THREADS/ELEMENTS (Block 0 & 1) IN THE MID REGION

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Information Threads							
DAIM							
DAIM B1/1	Provision of quality-assured aeronautical data and information	All States	Indicator*: Regional average implementation status of DAIM B1/1 (provision of quality-assured aeronautical data and information). Supporting Metrics: 1. Number of States that have migrated to AIM automated data-centric environment based on (AIXM V5.1+) 2. Number of States Implementing Quality Assurance and Quality Control (QA/QC) Processes 3. Number of States that have established formal arrangements with at least 50% of their AIS data originators.	(2023) 53%	80%	Dec 2024	N/A
DAIM B1/2	Provision of digital Aeronautical Information Publication (AIP) data sets	Egypt, Jordan, Oman, Qatar, Saudi Arabia and UAE	Indicator*: Regional average implementation status of DAIM B1/2 (Provision of digital Aeronautical Information Publication (AIP) data set). Supporting Metrics: Number of States that provide digital Aeronautical Information Publication (AIP) data sets	15%	75%	Dec 2027	N/A
DAIM B1/3	Provision of digital terrain data sets	All States	Indicator*: Regional average implementation status of DAIM B1/3 (Provision of Terrain digital datasets). Supporting Metric: Number of States that provide required Terrain digital datasets.	(2022) 35%	60%	Dec 2024	N/A
DAIM B1/4	Provision of digital obstacle data sets	All States	Indicator*: Regional average implementation status of DAIM B1/4(Provision of obstacle digital datasets).	(2022) 35%	60 %	Dec 2024	N/A

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			Supporting Metric: Number of States that provide required obstacle digital datasets.				
AMET							
AMET B0/1	Meteorological observations products	All states	Indicator*: Regional average implementation status of B0/1 (Meteorological observations products). Supporting Metrics: Number of States that provide the following Meteorological observations products, as required: 1. Automatic Weather Observation System (AWOS) information (including real-time exchange of wind and RVR data) 2. Local reports (MET REPORT/SPECIAL) 3. Aerodrome reports (METAR/SPECI) 4. Lightning Information 5. Ground-based weather radar information. 6. Meteorological satellite imagery 7. Aircraft meteorological report (ie. ADS-B, AIREP, etc.) 8. Vertical wind and temperature profiles 9. Wind shear alerts	(2022) 65%	80%	Dec 2021	N/A
AMET B0/2	Meteorological forecast and warning products	All states	Indicator*: Regional average implementation status of B0/2 (Meteorological forecasts and warning products) Supporting Metrics: Number of States that provides the following Meteorological forecast and warning products, as required: 1. World Area Forecast System (WAFS) gridded products. 2. Significant Weather (SIGWX) 3. Aerodrome Forecast (TAF) 4. Trend Forecast (TREND)	(2022) 60%	90%	Dec 2021	N/A

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			5. Take-off Forecast 6. SIGMET 7. Aerodrome Warning 8. Wind Shear Warning				
AMET B0/3	Climatological and historical meteorological products	All states	Indicator: % of States that provide Climatological and historical meteorological products, as required. Supporting Metric: Number of States that provide Climatological and historical meteorological products, as required.	(2022) 60%	85%	Dec 2021	N/A
AMET B0/4	Dissemination of meteorological products	All states	Indicator: % of States disseminating Meteorological products using a variety of formats and means (TAC, Gridded, Graphical, BUFR code, IWXXM) Supporting Metric: Number of States disseminating Meteorological products using a variety of formats and means (TAC, Gridded, Graphical, BUFR code, IWXXM)	(2022) 60%	85%	Dec 2021	N/A
FICE							
FICE B0/1	Automated basic inter facility data exchange (AIDC)	According to the MID Region AIDC/OLDI Priority 1 Applicability Area	Indicator*: % of priority 1 AIDC/OLDI Interconnection have been implemented. Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs.	(2023) 26%	70%	Dec 2026	N/A
Operational Threads							
APTA							
APTA B0/1	PBN Approaches (with basic capabilities)	All RWYs ENDs at International Aerodromes	Indicator: % of Runway ends at international aerodromes served by PBN approach procedures with basic functionalities - down to LNAV or LNAV/VNAV minima. Supporting metric: Number of Runways ends at international aerodromes served by PBN approach procedures with basic functionalities - down to	(2017) 46.7%	100%	Dec 2018	Capacity/ KPI 10

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			LNAV or LNAV/VNAV minima.				
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).	(2022) 55%	70%	Dec 2022	Efficiency Capacity/ KPI 10 KPI 11 KPI 17 KPI 19/
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 with CDO implemented and published as required. Supporting Metric: Number of International Aerodromes with CDO implemented and published as required. *As per the applicability area	(2022) 65%	100%	Dec 2022	Efficiency/ KPI 19
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 with CCO implemented and published as required. Supporting Metric: Number of International Aerodromes with CCO implemented and published as required. *As per the applicability area	(2022) 65%	100%	Dec 2022	Efficiency/ KPI 17
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 1- having provisions for operational credits to enable lower minima based on advanced aircraft capabilities. (Reference: Annex 6 Part I para. 4.2.8.2.1) 2- Number of States Putting in place an approval process for the operational credit to Aircraft operator conducting PBAOM	(2022) 50%	80%	Dec 2025	Capacity/ KPI 10

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			operations for low visibility operations (Reference: Doc 9365 (AWO Manual)), as applicable.				
FRTO							
FRTO B0/1	Direct routing (DCT)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of ACCs using and implementing appropriate means (procedures and tools (automation)) to support implementation of Direct routing to improve efficiency of Airspace. Supporting metric: Number of ACCs using and implementing appropriate means (procedures and tools (automation)) to support implementation of Direct routing to improve efficiency of Airspace. * As per the applicability area	30% (2024)	80%	Dec 2028	Efficiency KPI 04
FRTO B0/2	Airspace planning and Flexible Use of Airspace (FUA)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia (2 ACCs), Sudan, UAE	Indicator*: % of ACCs using and implementing appropriate means (procedures and tools (automation)) to support Airspace planning and FUA and improve data exchange between Civil and Military to improve efficiency of Airspace. Supporting metric: Number of ACCs using and implementing appropriate means (procedures and tools (automation)) to support Airspace planning and FUA and improve data exchange between Civil and Military to improve efficiency of Airspace. * As per the applicability area	(2022) 63%	70%	Dec 2022	Efficiency Access and equity/ KPI 04 KPI 05 KPI 17 KPI 18/ KPI 19
FRTO B0/3	Pre-validated and coordinated ATS routes to support flight and flow	Bahrain, Egypt, Iran, Iraq, Jordan, Oman, Qatar, Saudi Arabia, UAE	Indicator*: % of ACCs using Playbook routes that ATC can utilize to fit a particular set of circumstances, when the preferred routes are not available to improve capacity and flexibility of Airspace. Supporting metric: Number of ACCs using Playbook routes that ATC can utilize to fit a particular set of circumstances, when the preferred routes are not	10% (2024)	50%	Dec 2028	Capacity Flexibility

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			available to improve capacity and flexibility of Airspace. * As per the applicability area				
FRTO B0/4	Basic conflict detection and conformance monitoring	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia (2 ACCs), Sudan, UAE	Indicator*: % States that implemented MTCD and MONA, for ACCs, as required. Supporting metric: The number of States that implemented MTCD and MONA for ACCs, as required. * As per the applicability area	(2022) 63%	100%	Dec 2022	Capacity/ KPI 06 Safety/ KPI 20 KPI 23
FRTO B1/1	Free Route Airspace (FRA)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of ACCs using and implementing appropriate means (procedures and tools (automation)) to support implementation of Free Route Airspace to improve efficiency of Airspace. Supporting metric: Number of ACCs using and implementing appropriate means (procedures and tools (automation)) to support implementation of Free Route Airspace to improve efficiency of Airspace. * As per the applicability area	20% (2024)	80%	Dec 2028	Efficiency KPI 04
FRTO B1/4	Dynamic sectorization	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of ACCs using and implementing appropriate means (procedures and tools (automation)) to real-time support supervisor to select the most appropriate sector configuration (change of the ATC sector shapes by adding/removing the elementary sectors based on traffic demand and complexity. Supporting metric: Number of ACCs using and implementing appropriate means (procedures and tools (automation)) to real-time support supervisor to select the most appropriate sector configuration (change of the ATC sector shapes by adding/removing the elementary sectors based on traffic demand and complexity.	20% (2024)	60%	Dec 2028	Capacity

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			* As per the applicability area				
NOPS							
NOPS B0/1	Initial integration of collaborative airspace management with air traffic flow management	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of States implementing ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process. Supporting metric: number of States implementing ASM/ATFM techniques, procedures and tools for the initial establishment of an integrated collaborative airspace management and air traffic flow and capacity management process. * As per the applicability area	(2022) 42%	70%	Dec 2022	Efficiency Capacity/ KPI 04 KPI 05 KPI 17 KPI 18 KPI 19/
NOPS B1/6	Initial Dynamic Airspace configurations	Bahrain, Oman, Qatar, Saudi Arabia, UAE	Indicator*: % of ACCs using and implementing appropriate means (procedures and tools (automation)) to support ASM solutions and initial dynamic airspace configurations for ATFM planning, synchronisation of traffic flows and demand/capacity balancing. Supporting metric: Number of ACCs using and implementing appropriate means (procedures and tools (automation)) to support ASM solutions and initial dynamic airspace configurations for ATFM planning, synchronisation of traffic flows and demand/capacity balancing. * As per the applicability area	10% (2024)	50%	Dec 2028	Capacity
ACAS							
ACAS B1/1	ACAS Improvements Operational	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: Number of States requiring carriage of ACAS (TCAS v 7.1) for	(2022) 87%	100%	Dec 2024	Safety/ KPI 20 KPI 23

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			aircraft with a max certificated take-off mass greater than 5.7 tons				
SNET							
SNET B0/1	Short Term Conflict Alert (STCA)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of States that have implemented Short-term conflict alert (STCA) Supporting metric: number of States that have implemented Short-term conflict alert (STCA) * As per the applicability area	(2018) 100%	100%	Dec 2018	Safety/ KPI 20 KPI 23
SNET B0/2	Minimum Safe Altitude Warning (MSAW)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of States that have implemented Minimum safe altitude warning (MSAW) Supporting metric: number of States that have implemented Minimum safe altitude warning (MSAW) * As per the applicability area	(2018) 100%	100%	Dec 2018	Safety/ KPI 20
SNET B0/3	Area Proximity Warning (APW)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	Indicator*: % of States that have implemented Area Proximity Warning (APW) for ACCs, as required. Supporting metric: number of States that have Implemented Area Proximity Warning (APW) for ACCs, as required. * As per the applicability area	(2022) 67%	100%	Dec 2022	Safety/ KPI 20
GADS							
GADS B1/2	Operational Control Directory	All States	Indicator: % of States that provided GADSS Point of Contact (PoC) information Supporting Metric: Number of States that provided GADSS Point of Contact (PoC) information.	(2022) 73%	100%	Dec 2022	N/A
RSEQ							
RSEQ B0/1	Arrival Management	OBBI, HECA, HEBA, HELX, HESN, HESH, OTBD, OTHH, OEJN, OEDF, OEMA, OERK OMDB, OMAA	Indicator*: % of Aerodromes that have implemented arrival manager (AMAN), where required/applicable. Supporting Metric: Number of Aerodrome that have implemented arrival manager (AMAN), where required/ applicable.	(2022) 36%	80%	Dec 2024	Capacity Efficiency/ KPI 08 KPI 10 KPI 11 KPI 14/

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			* As per the applicability area				
SURF							
SURF-B0/1	Basic ATCO tools to manage traffic during ground operations	All International Aerodromes	Indicator: % of Aerodromes having implemented Basic ATCO tools to manage traffic during ground operations Supporting metric: Number of Aerodromes having implemented Basic ATCO tools to manage traffic during ground operations	(2022) 90%	100%	Dec 2022	Efficiency/ KPI 02 KPI 13 Safety/ KPI 20 KPI 21
SURF-B0/2	Comprehensive situational awareness of surface operations	OBBI, HECA, OIII, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OEMA, OMDB, OMAA.	Indicator*: % of Airports having implemented the surveillance service of A-SMGCS Supporting metric: Number of Airports having implemented the surveillance service of A-SMGCS * As per the applicability area	(2022) 61%	80%	Dec 2022	Safety/ KPI 20 KPI 21
SURF-B0/3	Initial ATCO alerting service for surface operations	OBBI, HECA, OIII, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OEMA, OMDB, OMAA.	Indicator*: % of Airports having implemented the A-SMGCS alerting service. Supporting metric: Number of Airports having implemented the A-SMGCS alerting service. * As per the applicability area	(2022) 74%	80%	Dec 2022	Safety/ KPI 20
ACDM							
ACDM B0/1	Airport CDM Information Sharing (ACIS)	HECA, OBBI, OIII, OKKK, OOMS, OTHH, OEJN, OERK, OMDB, OMAA	Indicator*: % of Airports having implemented ACIS. Supporting metric: number of Airports having implemented ACIS. * As per the applicability area	(2022) 75%	90%	Dec 2024	N/A
ACDM B0/2	Integration with ATM Network function	HECA, OBBI, OIII, OKKK, OOMS, OTHH, OEJN, OERK, OMDB, OMAA.	Indicator*: % of Airports having integrated ACDM with the ATM Network function. Supporting metric: Number of Airports having integrated ACDM with the ATM Network function * As per the applicability area	(2022) 25%	50%	Dec 2024	N/A

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
Technology Threads							
ASUR							
ASUR B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, , Sudan, UAE	Indicator*: % of States that have implemented ADS-B to improve surveillance coverage/capabilities for provision of ATS. Supporting Metric: Number of States that have implemented ADS-B to improve surveillance coverage/capabilities for provision of ATS. * As per the applicability area	(2022) 60%	80%	Dec 2022	N/A
ASUR B0/2	Multilateration cooperative surveillance systems (MLAT)	Bahrain, , Kuwait, Oman, Qatar, Saudi Arabia, UAE	Indicator*: % of States that have implemented Multi-lateration (M-LAT) for provision of ATS. Supporting Metric: Number of States that have implemented Multi-lateration (M-LAT) for provision of ATS. Indicator*: % of States that have implemented ADS-B to improve surveillance coverage/capabilities for provision of ATS. Supporting Metric: Number of States that have implemented ADS-B to improve surveillance coverage/capabilities for provision of ATS. * As per the applicability area	(2022) 63%	80%	Dec 2022	N/A
ASUR B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	Bahrain, Egypt, Iran, Iraq, Kuwait, Lebanon, Jordan, Oman, Qatar, Saudi Arabia, Sudan and UAE	Indicator*: % of States that have implemented Downlink of Aircraft Parameters (SSR-DAPS) Supporting Metric: Number of States that have implemented Downlink of Aircraft Parameters (SSR-DAPS) * As per the applicability area	(2022) 83%	90%	Dec 2023	N/A
NAVS							
NAVS B0/3	Aircraft Based Augmentation Systems (ABAS)	All States	Indicator: % of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-	(2022) 40%	70%	Dec 2022	N/A

Element		Applicability	Performance Indicators/ Supporting Metrics	Baseline	Target	Timeline	KPA/ KPI
			off mass greater than 5,700 Kg to enable PBN Operations Supporting metric: Number of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations				
NAVS B0/4	Navigation Minimal Operating Networks (Nav. MON)	All States	Indicator: % of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation Supporting metric: Number of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation.	(2022) 47%	70%	Dec 2022	N/A
COMI							
COMI B0/7	ATS Message Handling System (AMHS)	All States	Indicator: % of States that have established AMHS interconnections with adjacent COM Centres Supporting metric: Number of States that have established AMHS interconnections with adjacent COM Centres	(2022) 73%	90%	Dec 2022	N/A
COMI B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	All States	Indicator: % of States that have established National IP Network for voice and data communication Supporting metric: Number of States that have established National IP Network for voice and data communication	(2022) 60%	80%	Dec 2022	N/A

MID-RVSM SAFETY MONITORING REPORT 2024 (SMR 2024)

Prepared by the Middle East Regional Monitoring Agency (MIDRMA)

1. Executive Summary

The MID-RVSM Safety Monitoring Report (SMR) is prepared annually by the Middle East Regional Monitoring Agency (MIDRMA) for endorsement by the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG). This report provides evidence that all safety objectives outlined in the MID-RVSM Safety Policy, in accordance with ICAO Doc 9574 (3rd Edition), continue to be met within the operational services of the Middle East RVSM airspace.

The report demonstrates that the risk of collision due to technical height-keeping performance and operational errors remains below the ICAO Target Level of Safety (TLS). The findings confirm that MID-RVSM airspace continues to operate safely, with no significant adverse effects on the overall vertical risk of collision.

Results of the MID RVSM SMR 2024:

Implementation of RVSM in the Middle East must continue to be based on safety assessments that confirm compliance with all RVSM safety objectives, as set in ICAO Doc 9574 (3rd Edition).

To assess the current safety of RVSM operations, the three key safety objectives endorsed by MIDANPIRG must be achieved:

Objective 1 The risk of collision in MID-RVSM airspace due solely to technical height-keeping performance meets the ICAO target level of safety (TLS) of **2.5 x10^{-9}** fatal accidents per flight hour.

The value computed for technical height risk is estimated at **7.184 x 10^{-11},** which meets RVSM Safety Objective 1.

Objective 2 The overall risk of collision due to all causes, which includes the technical risk and all risks due to operational errors and in-flight contingencies in the MID-RVSM airspace, meets the ICAO overall TLS of **5x10^{-9}** fatal accidents per flight hour.

The value computed for the overall risk is estimated at **6.6399 x 10^{-10},** which is below the ICAO overall TLS.

Objective 3 Address any safety-related issues raised in the SMR by recommending improved procedures and practices and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

Middle East RVSM Airspace Average Aircraft Speed = **464.44 kts**			
Risk Type	**Risk Estimation**	**ICAO TLS**	**Remarks**
Technical Risk	**7.184×10^{-11}**	**2.5×10^{-9}**	**Below ICAO TLS**
Overall Risk	**6.6399×10^{-10}**	**5×10^{-9}**	**Below ICAO TLS**

1.1 Conclusions:

a. The estimated risk of collision associated with aircraft height-keeping performance is **7.184×10^{-11}** and meets the ICAO TLS of **2.5×10^{-9}** fatal accidents per flight hour (RVSM Safety Objective1).

b. The estimated overall risk of collision due to all causes, which includes the technical risk and all risk due to operational errors and in-flight contingencies, is **6.6399×10^{-10}**; this value is below the ICAO overall TLS of **5×10^{-9}** fatal accidents per flight hour (RVSM Safety Objective 2).

c. based on currently available information (Except for Khartoum FIR), there is no evidence available to MIDRMA that the continued operations of RVSM adversely affect the overall vertical risk of collision during the reporting cycle of the SMR.

d. In 2024, member states were required to submit Large Height Deviation (LHD) reports as part of RVSM safety monitoring. However, only Category E reports were submitted, which primarily relate to coordination failures between member states at FIR boundaries. While these reports are important, the majority of these incidents did not significantly impact RVSM operations in the Middle East region. Notably, no reports were submitted for critical LHD categories such as A, B, C, or D despite over 3.5 million RVSM movements in the region. This lack of reporting, especially for the high-risk categories, limits the accuracy and confidence of the overall risk analysis. MIDRMA emphasizes the importance of submitting all LHD reports, particularly from FIRs with high traffic volumes, to ensure a comprehensive and reliable risk assessment.

1.2 Considerations on the Safety Objectives for MID RVSM SMRs

1.2.1 When evaluating the three safety objectives for RVSM, the following key considerations should be taken into account:

1.2.1.1 **Risk Assessment Against TLS**:

The evaluation of risk, both technical and overall, in relation to the Target Level of Safety (TLS) depends on two primary factors:

a. Height-keeping performance data to assess vertical risk.
b. Traffic density studies calculating horizontal risk.
c. To ensure the reliability of the risk assessment, several assumptions must be validated. This validation primarily involves monitoring aircraft performance to confirm compliance with expected standards.

1.2.1.2 **Aircraft Performance Evaluation**:

Aircraft performance is assessed in two ways:

a. By individual airframe: Each aircraft is evaluated on its own merits.
b. By monitoring group: A monitoring group consists of aircraft of the same type with identical performance characteristics made compliant with RVSM technical requirements through a common method. Monitoring group analysis is essential to validate that that group's Minimum Aviation System Performance Standards (MASPS) remain accurate. Aircraft that achieve RVSM compliance individually rather than as part of a group are classified as non-group aircraft.

1.2.1.3 **RVSM Safety Objective 2 (Overall Risk)**: This objective encompasses technical risk and risks arising from all other causes, such as human factors. Accurate assessment of this parameter relies on the following:

a. Comprehensive reporting of Large Height Deviations (LHDs).
b. Proper interpretation of events for use in Collision Risk Modeling (CRM) analysis.

1.2.1.4 **RVSM Safety Objective 3**: This objective requires the Regional Monitoring Agency (RMA) to:

a. Monitor long-term trends to identify potential future safety concerns.
b. Highlight any emerging issues that should be addressed and carried forward as recommendations for future reports.

1.2.2 MIDRMA has consistently emphasized that all member states must submit the required data for proper assessment and calculation of safety parameters. Despite addressing this issue last year and in nearly every SMR, some states continue to submit traffic data late or provide corrupted data, causing significant delays in calculating the SMR safety parameters. This ongoing problem remains frustrating, as little improvement has been made.

2 Scope:

2.1 The geographic scope of the MID-RVSM Safety Monitoring Report covers the MID-RVSM airspace, which comprises the following FIRs/UIRs:

Amman	Bahrain	Beirut	Baghdad	Cairo	Damascus	Emirates
Jeddah	Kuwait	Khartoum*	Muscat	Sana'a	Tehran	Tripoli
			Doha			

T-1: FIRs/UIRs of the Middle East RVSM Airspace

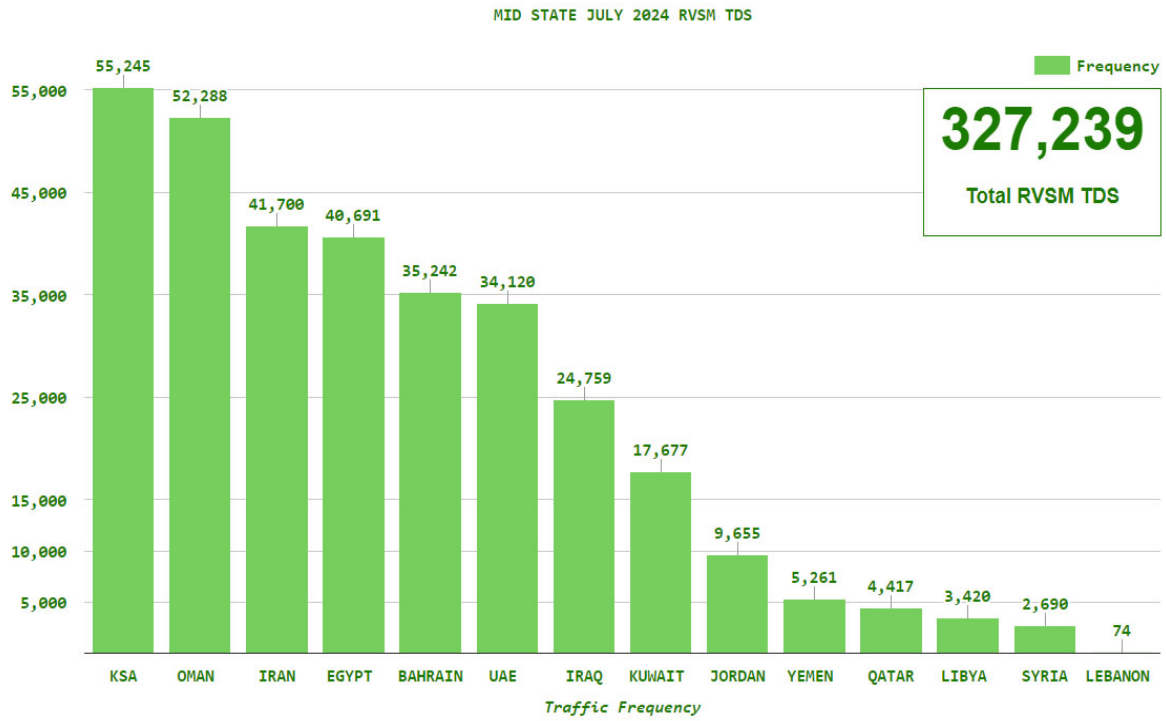
***Note: Khartoum FIR excluded from the RVSM safety analysis due to lack of data**

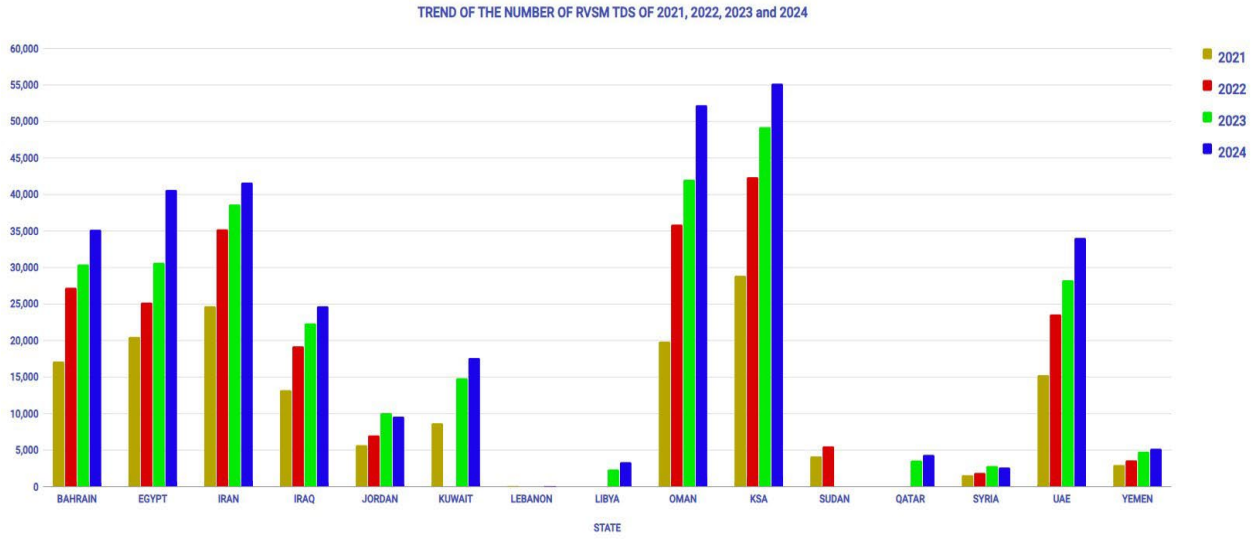
2.2 The Data Sampling periods covered by SMR 2024 are displayed in the below table

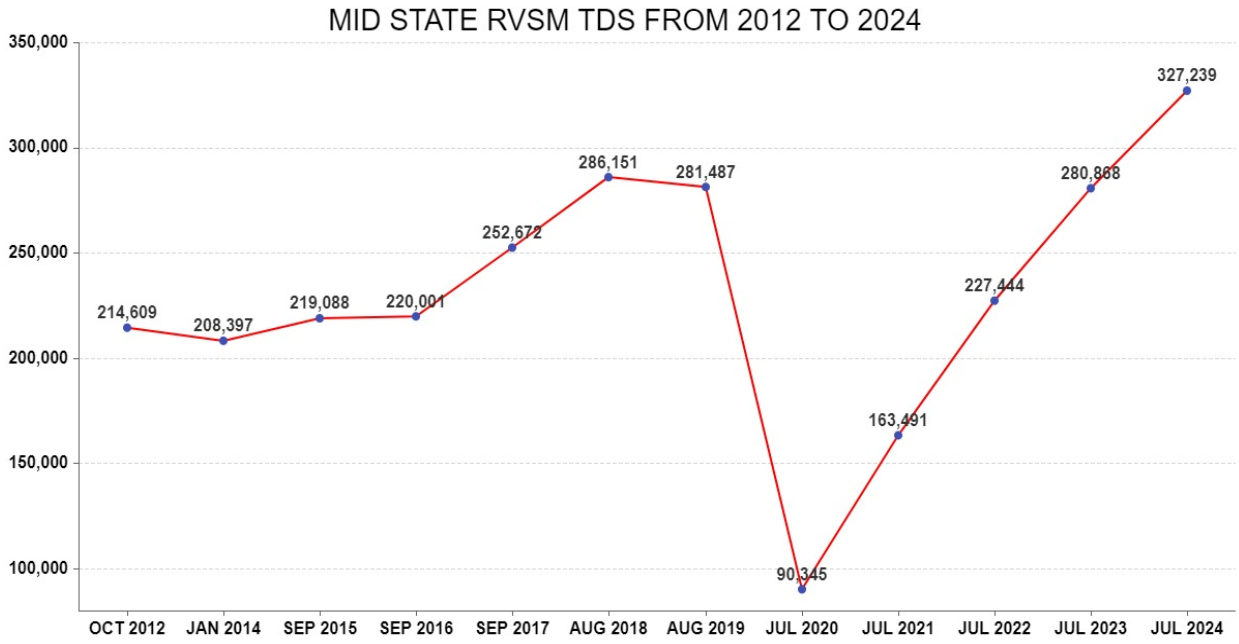
Report Elements	Time Period
Traffic Data Sample	15/05/2024 - 15/06/2024
Operational & Technical Errors	01/01/2024 - 31/12/2024

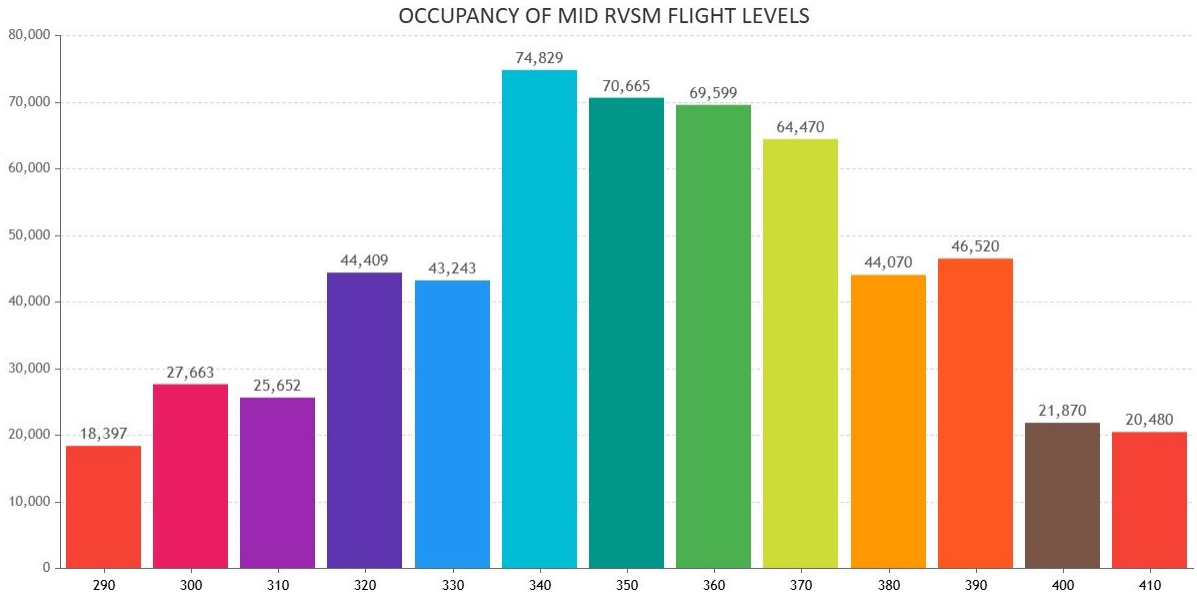
2.3 The descriptions of the traffic data collected from each MIDRMA Member State are depicted in the table below:

MID-States	No. of Flights	Received Date	Status
BAHRAIN	**35242**	7/11/2024	
EGYPT	**40691**	7/15/2024	
IRAN	**41700**	7/20/2024	
IRAQ	**24759**	6/23/2024	
JORDAN	**9655**	7/18/2024	
KUWAIT	**17677**	6/19/2024	
LEBANON	**74**	7/10/2024	
LIBYA	**3420**	7/14/2024	
OMAN	**52288**	8/1/2024	
KSA	**55245**	7/10/2024	
QATAR	**4417**	7/4/2024	
SUDAN	**-**	-	No Data Submitted
SYRIA	**2690**	6/26/2024	
UAE	**34120**	7/10/2024	
YEMEN	**5261**	7/15/2024	
Total	**327239**		


MID STATE JULY 2024 RVSM TDS
Frequency
327,239
Total RVSM TDS
55,000
45,000
35,000
25,000
15,000
10,000
5,000
55,245
52,288
41,700
40,691
35,242
34,120
24,759
17,677
9,655
5,261
4,417
3,420
2,690
74
KSA
OMAN
IRAN
EGYPT
BAHRAIN
UAE
IRAQ
KUWAIT
JORDAN
YEMEN
QATAR
LIBYA
SYRIA
LEBANON
Traffic Frequency


TREND OF THE NUMBER OF RVSM TDS OF 2021, 2022, 2023 and 2024
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
2021
2022
2023
2024
BAHRAIN
EGYPT
IRAN
IRAQ
JORDAN
KUWAIT
LEBANON
LIBYA
OMAN
KSA
SUDAN
QATAR
SYRIA
UAE
YEMEN
STATE


MID STATE RVSM TDS FROM 2012 TO 2024
350,000
300,000
250,000
200,000
150,000
100,000
214,609
208,397
219,088
220,001
252,672
286,151
281,487
90,345
163,491
227,444
280,868
327,239
OCT 2012
JAN 2014
SEP 2015
SEP 2016
SEP 2017
AUG 2018
AUG 2019
JUL 2020
JUL 2021
JUL 2022
JUL 2023
JUL 2024


OCCUPANCY OF MID RVSM FLIGHT LEVELS
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
18,397
27,663
25,652
44,409
43,243
74,829
70,665
69,599
64,470
44,070
46,520
21,870
20,480
290
300
310
320
330
340
350
360
370
380
390
400
410

POINT	FIRs	FREQUENCY
TASMI	BAGHDAD/KUWAIT	**10557**
DAVUS	BAHRAIN/KUWAIT	**9337**
SIDAD	BAGHDAD/KUWAIT	**8204**
TUMAK	BAHRAIN/EMIRATES	**7831**
RATVO	BAGHDAD/ANKARA	**7566**
NINVA	BAGHDAD/ANKARA	**7370**
MENSA	EMIRATES/MUSCAT	**7327**
RASKI	MUSCAT/MUMBAI	**6431**
GABKO	EMIRATES/TEHRAN	**6329**
ULADA	BAHRAIN/JEDDAH	**6222**
PASAM	CAIRO/JEDDAH	**6145**
ULINA	CAIRO/AMMAN	**5741**
ALPOB	BAHRAIN/EMIRATES	**5626**
DAROR	BAHRAIN/JEDDAH	**5561**
NALPO	BAHRAIN/EMIRATES	**5323**
SODEX	EMIRATES/MUSCAT	**5276**
TONVO	EMIRATES/MUSCAT	**5140**
BONAM	TEHRAN/ANKARA	**5014**
LONOS	BAHRAIN/KUWAIT	**4996**
PASOV	EMIRATES/MUSCAT	**4762**

Top 20 Busiest Points in the ICAO Middle East RVSM Airspace

2.4 Technical Height Keeping Performance Risk Assessment

2.4.1 RVSM Safety Objective 1

The risk of collision in MID RVSM airspace is due solely to technical height-keeping performance, which meets the ICAO target level of safety (TLS) of **2.5 x 10^{-9}** fatal accidents per flight hour.

2.4.3 The value computed for technical height-keeping performance risk is estimated at **7.184 x 10^{-11}** fatal accidents per flight hour, which meets the ICAO TLS of **2.5 x 10^{-9}**.

2.4.4 From June 2024 TDS, the following were calculated:

- Average Aircraft Diameter (lambda xy): 0.027642 NM (167.96 ft)
- Average Aircraft Wingspan (lambda y): 0.025488 NM (154.87 ft)
- Average Aircraft Height (lambda z): 0.0079406 NM 48.248 ft
- Number of Flights involved: **327,239**
- Flying Time: 226,260 hours
- Flying Distance: 104,448,064 NM
- Average Speed: 464.44 kts
- Average Passing Frequency: 1.17687E-001

2.4.5 To demonstrate that the result is reliable, it is necessary to demonstrate that the following assumptions are true:

a. The estimated value of the frequency of horizontal overlap, used in the computations of vertical collision risk, is valid.

b. Pz(1000) – the probability of vertical overlap due to technical height-keeping performance between aircraft flying 1000 ft. separation in MID-RVSM airspace is **1.819 x 10^{-9}** valid and is less than the ICAO requirement of **1.7 x 10^{-8}**.

c. All aircraft flying 1000ft separation in MID-RVSM airspace meet the ICAO Global Height Keeping Performance specification for RVSM.

d. All aircraft flying 1000ft separation in MID-RVSM airspace meet the individual ICAO performance specification for the components of total vertical error (TVE).

e. The monitoring target for the MID-RVSM height-monitoring programme is an ongoing process.

f. The input data used by the CRM is valid.

g. An adequate process is in place to investigate and correct problems in aircraft technical height-keeping performance.

h. The methodology used to assess technical height-keeping performance is aligned with ICAO-approved procedures, is periodically validated and incorporates enhancements to maintain accuracy and compliance with evolving standards.

2.4.6 Calculating the Probability of Lateral Overlap (Py (0))

The probability of lateral overlap, Py (0), represents the likelihood of two aircraft being in lateral overlap while nominally operating at adjacent flight levels along the same route. The calculation of Py (0) for the SMR 2024 takes the following factors into account:

a. The MIDRMA has continued to compute the probability of lateral overlap, Py(0), across the entire MID-RVSM airspace, following the ICAO-approved methodology specifically developed for this purpose and implemented through the MID Risk Analysis Software (MIDRAS AI).

b. The MIDRMA has calculated Py (0) for each MIDRMA Member State, confirming that all obtained results are valid.

1- Bahrain FIR
Passing Frequency (n_equiv): 4.587E-003
Probability of Lateral Overlap (Py(0)): 0.17037

2- Cairo FIR
Passing Frequency (n_equiv): 1.845E-001
Probability of Lateral Overlap (Py(0)): 0.15494

3- Baghdad FIR
Passing Frequency (n_equiv): 2.6901E-002
Probability of Lateral Overlap (Py(0)): 0.1808

4- Doha FIR:
Passing Frequency (n_equiv): 0.00000E+000
Probability of Lateral Overlap (Py(0)): 0.14204

5- Tehran FIR
Passing Frequency (n_equiv): 6.227E-002
Probability of Lateral Overlap (Py(0)): 0.15166

6- Amman FIR
Passing Frequency (n_equiv): 5.543E-002
Probability of Lateral Overlap (Py(0)): 0.14094

7- Muscat FIR
Passing Frequency (n_equiv): 3.835E-001
Probability of Lateral Overlap (Py(0)): 0.16865

8- Jeddah FIR
Passing Frequency (n_equiv): 3.58701E-002
Probability of Lateral Overlap (Py(0)): 0.15286

9- Kuwait FIR
Passing Frequency (n_equiv): 2.090E-002
Probability of Lateral Overlap (Py(0)): 0.18682

10- Damascus FIR
Passing Frequency (n_equiv): 3.884E-001
Probability of Lateral Overlap (Py(0)): 0.12012

11- Emirates FIR
Passing Frequency (n_equiv): 1.845E-002
Probability of Lateral Overlap (Py(0)): 0.16147

12- Sana'a FIR
Passing Frequency (n_equiv): 1.981E-001
Probability of Lateral Overlap (Py(0)): 0.1788

13- Tripoli FIR
Passing Frequency (n_equiv): 6.830E-002

Probability of Lateral Overlap (Py(0)): 0.13073

14- Beirut FIR

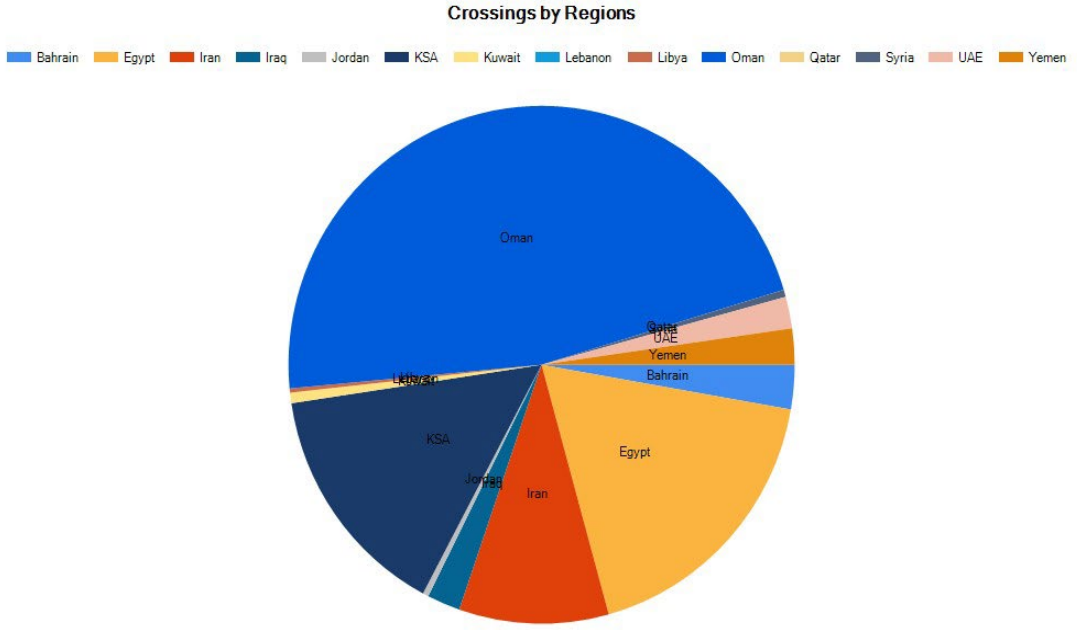
Passing Frequency (n_equiv): 0.00000E+000

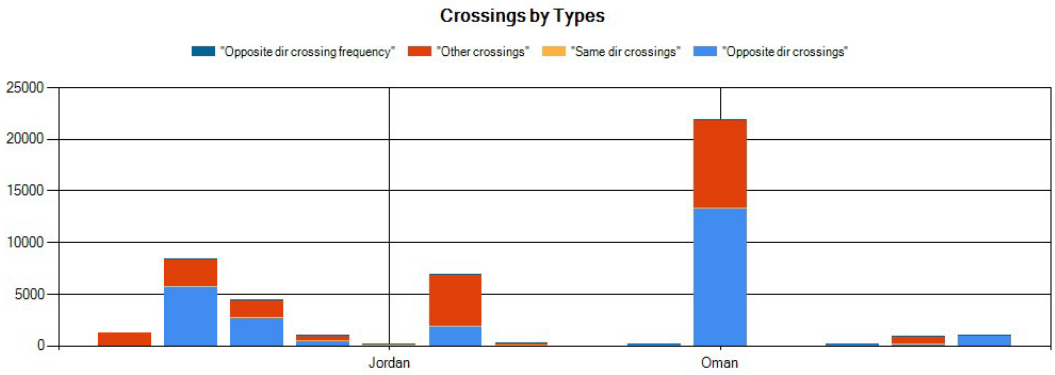
Probability of Lateral Overlap (Py(0)): 0.11332

a. Overall, the results are considered to be valid.

Average Passing Frequency: 1.177E-001

Note: MIDRMA's analysis has determined that Muscat FIR remains the most complex and congested FIR in the ICAO Middle East RVSM airspace. Although it faces significant complexity and high traffic levels, there has been no noticeable rise in risk values. This finding continues to hold true for the year 2024 as well.





2.4.7 Pz(1000) Compliance

2.4.7.1 The Pz(1000) represents the likelihood of two aircraft at adjacent RVSM flight levels losing vertical separation due to technical height-keeping errors. Based on the observed Altimetry System Errors (ASE) and typical Aircraft Altimetry Data (AAD), the estimated probability of vertical overlap Pz(1000) is calculated to be **1.819×10^{-9}**.

2.4.7.2 This result complies with the Global System Performance Specification, which states that the probability of losing the 1000ft procedural vertical separation between two aircraft must not exceed **1.7×10^{-8}**.

2.4.7.3 MIDRMA continues distributing the Minimum Monitoring Requirements (MMRs) using its automated MMR software. This software is designed to provide member states with updated monitoring requirements based on the most recent RVSM approvals. The MMR table, effective from 01st March 2025, is included in Attachment D of the SMR.

Note: All member states must review and adhere to their MMRs, which are accessible on the MIDRMA website (www.midrma.com).

2.4.8 RVSM Height Monitoring Activities

2.4.8.1 Height Monitoring of GACA, Saudi Arabia RVSM Approved Aircraft

2.4.8.1.2 The GACA in Saudi Arabia is very active in tracking the validity of all their RVSM-approved aircraft (a total of 360 RVSM-approved aircraft as of 06th March 2025). This requires continuous follow-up and direct instructions to all operators to perform the necessary checks within a specified time frame and before the RVSM approvals expire. If not, the approval to operate in RVSM airspace will be withdrawn. The MIDRMA extends its deep gratitude and appreciation to the responsible Airworthiness Inspector in KSA GACA for his excellent cooperation and continuous support.

2.4.8.1.2 More than 17 RVSM-approved aircraft registered by GACA, Saudi Arabia, have been checked by MIDRMA EGMUs in 2024. The Airworthiness Inspector is working with MIDRMA to complete the checks for the remaining aircraft to ensure full compliance with RVSM height monitoring.

2.4.8.2 Height Monitoring Missions of Iraq RVSM-Approved Aircraft

2.4.8.2.1 The Iraq CAA Flight Safety Department is one of the best in the MID region at keeping their approval list fully compliant with height monitoring. They are always committed to height monitoring and ensure that none of their approved aircraft operate without confirming their ASEs are within the allowable limits. The MIDRMA would like to thank the responsible ICAA Airworthiness Inspectors for their excellent cooperation and follow-up.

2.4.8.2.2 MIDRMA checked **17** aircraft in Baghdad under the supervision of the ICAA Flight Safety Department. Only **two** aircraft remain to be checked. The Airworthiness Inspector is working with MIDRMA to complete these checks and ensure full compliance with RVSM height monitoring.

2.4.8.3 Height Monitoring to Check Libya CAA RVSM Approved Aircraft

2.4.8.3.1 MIDRMA completed RVSM height monitoring for 23 aircraft registered by the Libyan

CAA in one mission to Tripoli. This was done professionally and smoothly with the support of the Libya CAA Airworthiness Section and the Libyan Wing operator. As of September 2024, the Libyan MMR fully complies with RVSM height monitoring. *(Two aircraft have been removed from the Libyan RVSM approval list because they were under maintenance).*

2.4.8.4 Height Monitoring Missions to Check **IRAN** CAA RVSM Approved Aircraft

2.4.8.4.1 MIDRMA requested the FAA to renew the OFAC License for monitoring Iranian aircraft in October 2021. After more than two years, the license was received on July 23, 2024, and is valid until July 22, 2026. The long wait and many requests have increased the number of non-RVSM compliant aircraft, affecting the safety of RVSM airspace in the Middle East and other regions since Iranian aircraft fly over many areas.

2.4.8.4.2 It's time to cancel the requirement for the OFAC license and use the EGMU equipment/software like the other MIDRMA Member States because this issue concerns RVSM airspace safety.

2.4.8.4.3 So far, MIDRMA has completed RVSM height monitoring for **70** aircraft registered by IRAN CAA in two missions to Tehran. This was done professionally and smoothly by FARSCO and supervised by the IRAN CAA. About **40** more aircraft need to be checked for IRAN CAA to be fully compliant with RVSM height monitoring. The plan is to cover these remaining aircraft in one monitoring mission next month.

2.4.9 ADSB Height Monitoring System (AHMS)

2.4.9.1 The implementation of the ADS-B Height Monitoring System (AHMS) in the ICAO Middle East region marks a transformative advancement in ensuring the safety, compliance, and efficiency of Reduced Vertical Separation Minimum (RVSM) operations. By leveraging Automatic Dependent Surveillance-Broadcast (ADS-B) technology, AHMS enhances the ability of the Middle East Regional Monitoring Agency (MIDRMA) to conduct large-scale and real-time monitoring of RVSM-approved aircraft, providing a significant improvement over traditional height monitoring methods. The system enables continuous surveillance and more accurate detection of Altimetry System Errors (ASE), ultimately strengthening RVSM safety oversight.

2.4.9.2 Enhanced Monitoring and Compliance

2.4.9.2.1 The widespread adoption of ADS-B technology across the aviation industry has allowed MIDRMA to expand its monitoring capabilities beyond conventional ground-based height monitoring stations and airborne GPS-based methods. ADS-B facilitates continuous, real-time data collection, allowing for a comprehensive assessment of aircraft altimetry system performance and RVSM compliance. By implementing AHMS, MIDRMA aligns its operations with ICAO Annex 6, Part I, ensuring regulatory compliance while optimizing air traffic management (ATM) processes.

2.4.9.3 Training and Capacity Building

2.4.9.3.1 Recognizing the technical expertise required for ADS-B data processing and analysis, MIDRMA has undertaken training programs to build capacity within its team. These training initiatives have focused on:

a. Data processing and analysis: Extracting, handling, and interpreting ADS-B data for RVSM height monitoring.
b. System architecture and integration: Understanding ADS-B system functionalities to enhance data utilization.
c. Data accuracy and verification: Implementing quality assurance protocols to ensure compliance with ICAO standards.

These efforts have significantly strengthened MIDRMA's ability to conduct RVSM monitoring efficiently and accurately.

2.4.9.4 Experimental Monitoring and Data Analysis

2.4.9.4.1 Following the completion of training programs, MIDRMA conducted extensive studies using archived ADS-B data, particularly from Bahrain's ADS-B data repository. However, it is important to note that we do not yet have the software to process the archived ADS-B data, as we are still waiting to receive it from the developers at AAMA and the FAA. Consequently, all the studies conducted thus far have been carried out with assistance from MAAR. The findings from these experimental monitoring exercises validated the effectiveness of ADS-B technology in detecting ASE in RVSM-approved aircraft. Key insights from these studies include:

b. Reliable ASE Detection: ADS-B consistently provided accurate data, enabling precise identification of altimetry system discrepancies.

a. Real-Time Data Utilization: Continuous monitoring allowed for proactive identification and mitigation of RVSM compliance issues.

These results underscore the capability of ADS-B data to enhance operational efficiency, reduce costs, and improve overall RVSM monitoring processes.

2.4.9.5 Development of Training Manuals

2.4.9.5.1 To standardize the use of ADS-B in RVSM height monitoring, MIDRMA has developed a comprehensive training manual outlining procedures for:

a. Extracting ADS-B data from various sources.
b. Conducting ASE analysis for RVSM compliance.
c. Submitting processed data to MIDRMA's monitoring infrastructure.

2.4.9.5.2 This manual ensures consistency in data handling and enhances the effectiveness of ADS-B-based monitoring across the region.

2.4.9.6 Collaboration with ICAO Member States

2.4.9.6.1 The successful implementation of AHMS requires strong collaboration among ICAO Middle East member states. Access to archived ADS-B data is essential for comprehensive RVSM height monitoring, and MIDRMA urges member states to:

a. Provide archived ADS-B data for aircraft under their jurisdiction.

b. Train engineers to extract and upload ADS-B data per MIDRMA's requirements.
c. Ensure the regular submission of ADS-B data to support ongoing RVSM monitoring.

2.4.9.6.2 By fostering regional cooperation, AHMS will enhance the safety, efficiency, and reliability of RVSM operations, ensuring continuous improvements in airspace safety across the Middle East.

Note: The Middle East Regional Monitoring Agency has officially requested the developers of the software used for processing and analyzing ADS-B data which is NARMO - FAA to grant approval for its handover. This step is crucial for the full-scale implementation of the ADS-B Height Monitoring System (AHMS) in the Middle East region. All concerned stakeholders eagerly anticipating the operationalization of this advanced monitoring method are assured that MIDRMA remains committed to expediting this process. Once the official approval is received, MIDRMA will proceed with the system's deployment, further enhancing RVSM safety and compliance in the region.

2.4.10 Conclusions on Technical Vertical Collision Risk:

a. The assessed vertical collision risk resulting from technical height-keeping performance remains within the ICAO Target Level of Safety (TLS).

b. The estimated probability of vertical overlap, Pz(1000), continues to comply with global system performance requirements.

c. Most monitoring groups are adhering to the ICAO Technical Vertical Error (TVE) component standards, also referred to as technical height-keeping group criteria.

2.4.11 Recommendations for Safety Objective 1:

a. The MIDRMA shall persist in reviewing and refining the classification and structure of aircraft monitoring groups as part of its ongoing efforts.

b. The MIDRMA will continuously oversee the methodologies used to compute technical Collision Risk Model (CRM) parameters and the risk linked to technical height-keeping errors. It will also update all parameters and datasets utilized in the MID Risk Analysis Software (MIDRAS AI), including those relevant to the newly

established Doha FIR.

Note: The newly upgraded MIDRAS AI is fully operational and actively utilized by the MIDRMA for risk analysis.

c. The MIDRMA shall continue conducting systematic height-monitoring surveys and investigations on aircraft operating within the MID-RVSM airspace, gathering TDS data from member states that voluntarily submit their RVSM TDS reports monthly.

d. More MIDRMA member states beyond Bahrain, Iraq, and the UAE are encouraged to provide their monthly RVSM traffic data to facilitate the identification of additional potential violations within the MID-RVSM airspace.

e. The MIDRMA should explore the feasibility of implementing enhanced data-sharing mechanisms with member states to improve the accuracy and efficiency of receiving TDS.

2.5 Assessment of the Overall Risk

2.5.1 RVSM Safety Objective 2

The overall risk of collision due to all causes, which includes the technical risk and all risks due to operational errors and in-flight contingencies in the MID-RVSM airspace, meets the ICAO overall TLS of **$5x10^{-9}$** fatal accidents per flight hour.

2.5.2 The value computed for the overall risk is estimated at **6.6399×10^{-10}**, below the ICAO overall TLS.

2.5.3 Large Height Deviation Reports (LHDs) 2024

2.5.3.1 The estimation of total risk, which includes Safety Objective 2, incorporates the results of Safety Objective 1 and evaluates risks arising from various other factors. This important component, commonly referred to as operational risk, depends on numerous factors such as airspace configuration, traffic density, ATC procedures, actions of individual controllers and pilots, and the specific operational characteristics of sectors. The operational risk assessment is based on the event magnitude and duration analysis derived from operational incident reports, which are then transformed into Large Height Deviation (LHD) reports.

2.5.3.2 MIDRMA has noted a significant and alarming decrease in Large Height Deviation (LHD) reporting from certain member states, particularly those with high traffic volumes. This reduction persists despite the ongoing issuance of monthly reminders to all member states. The lack of comprehensive reporting is especially in relation to LHD categories that involve loss or breakdown in separation between aircraft, which have been highlighted in nearly every report as critical safety risks. Without accurate and timely reporting, the integrity and reliability of safety assessments are compromised, undermining the trust in the overall results. The table below shows the reports received from all member states from January 1 to December 31st, 2024.

MID FIRs	No. of Reported LHDs	No. of Related LHDs
Bahrain	26	18
Baghdad	17	1
Amman	-	1
Tehran	-	5
Beirut	-	-
Cairo	12	14
Damascus	-	11
Khartoum	-	-
Kuwait	-	14
Doha	**23**	1
Muscat	**136**	61
Jeddah/ Riyadh	**23**	**143**
Tripoli	-	1
Emirates	-	7
Sana'a	**358**	17

MID FIRs	Related to other Adjacent FIRs	No. of Related LHDs
Sana'a	Addis Ababa	85
Sana'a	Asmara	8
Sana'a	Djibouti	10
Cairo	Athens	2
Muscat	Karachi	16
Muscat	Mumbai	118
Baghdad	Ankara	1

2.5.3.3 **Critical Observations on LHD Reporting Gaps and Their Impact on Safety Assessments:**

a. **Member States Failing to Report LHDs**:
As shown in the table in section 2.5.3.2, several member states, such as Kuwait and Iran, have not reported any Large Height Deviations (LHD) for an extended period. Notably, Emirates ATC has not reported any LHD during 2024, especially from Category E. This may be attributed to the fact that Emirates ACC is connected via OLDI with most of its neighboring FIRs, significantly reducing coordination failures and ensuring a smoother traffic flow to and from Emirates FIR. However, while this connectivity has likely minimized Category E occurrences, it is important to note that none of the other critical LHD categories have been reported by Emirates ATC

b. **Results of Safety Objective No. 2 with Low Level of Reporting LHDs**:

The absence or very low reporting of Large Height Deviations (LHDs) severely impacts RVSM operations by undermining the reliability of safety assessments and risk evaluations. Without sufficient LHD data, particularly for critical events such as loss of separation and TCAS resolution advisories, the accuracy of overall risk calculations is compromised. This lack of comprehensive reporting weakens confidence in the risk assessment process, potentially leading to an underestimation of actual safety threats within RVSM airspace.

c. **Nature of Reported LHDs**:
The vast majority of LHD reports received during 2024 are related to ATC transfer of control coordination errors (Category E), largely due to human factors. While these reports are essential, they have not had a severe impact on RVSM airspace operations. However, the ongoing lack of reporting for more critical LHD categories, such as loss or breakdown of separation between aircraft, TCAS resolution advisories, level busts, and other safety-critical events, further exacerbates concerns. These types of LHDs, which have been repeatedly highlighted in annual reports as significant safety risks, have not been reported by some member states for an extended period, raising doubts about the completeness and accuracy of the overall safety assessments.

2.5.3.4 The table below provides a summary of operational risk associated with Large Height Deviation (LHD) reports, categorized by LHD categories. These reports are used to calculate the overall vertical collision risk, which is presented for Safety Objective No. 2.

Note: The LHD reports in this table were validated for the whole SMR 2024 reporting cycle:

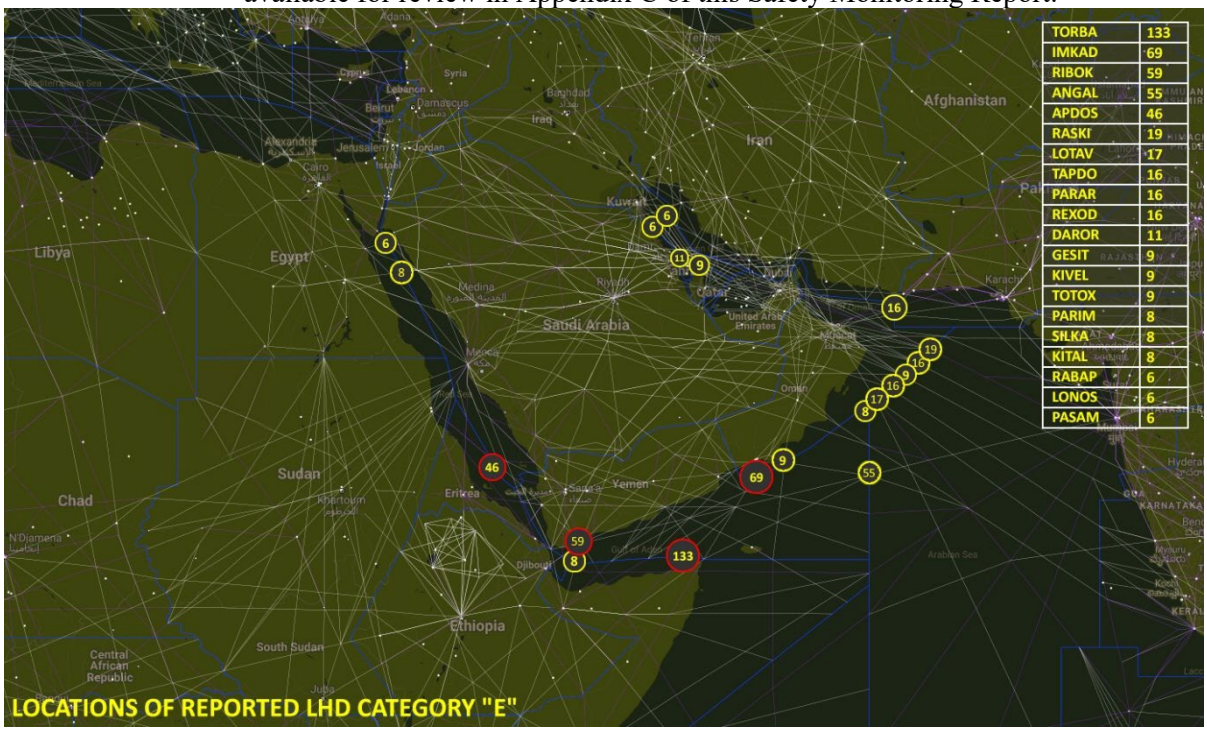
LHD Cat.	Large Height Deviation (LHD) Categories	No. of LHDs	LHD Duration (Sec.)
A	The flight crew fails to climb or descend the aircraft as cleared.	-	-
B	Flight crew climbing or descending without ATC clearance.	-	-
C	Incorrect operation or interpretation of airborne equipment	-	-

D	ATC system loop error	-	-
E	ATC transfer of control coordination errors due to human factors	**4**	**450**
F	ATC transfer of control coordination errors due to technical issues	-	-
G	Aircraft contingency leading to a sudden inability to maintain level	-	-
H	Airborne equip. Failure and unintentional or undetected FL change	-	-
I	Turbulence or other weather-related cause	**1**	**30**
J	TCAS resolution advisory and flight crew correctly responds	-	-
K	TCAS resolution advisory and flight crew incorrectly responds	-	-
L	ACFT being provided with RVSM separation is not RVSM-approved	-	-
M	Other	-	-
	Total	**5**	**480**

Summary of Operational Risk associated with Large Height Deviation Reports for the First 10 Months of SMR 2024 Reporting Cycle

Note 1: For the first time ever, an RVSM Safety Monitoring Report (SMR) has been issued with such a low number of Large Height Deviation (LHD) reports, raising serious concerns about the accuracy of the overall risk assessments. Particularly alarming is the complete absence of reports for LHD categories that have a severe impact on RVSM operations.

Note 2: The hotspots and the airways occupancy of all MIDRMA member states are available for review in Appendix C of this Safety Monitoring Report.



Locations of Reported LHD Category “E” by all Member States

2.5.3.5 RVSM Safety Protocols

2.5.3.5.1 RVSM Safety Protocol at the Eastern Boundaries of Muscat FIR and the increased

number of LHD reports submitted by Mumbai ATCU related to Muscat ATCU:

2.5.3.5.1.1 The table below provides a comparison of the number of LHD reports submitted by Mumbai and Muscat ATCUs related to each other in 2022, 2023 and 2024

YEAR	LHD Reported by Muscat	LHD Reported by Mumbai
2022	16	41
2023	25	79
2024	75	98

2.5.3.5.1.2 Despite the concerted efforts and measures taken since the initiation of the RVSM safety protocol at the eastern boundaries of Muscat Flight Information Region (FIR), there has been no visible improvement in the reduction of Large Height Deviation (LHD) reports between Muscat and Mumbai ATC units. In fact, as shown in the table above, the number of reported LHDs has steadily increased, which poses a serious and escalating risk to the RVSM airspace at the Eastern Boundaries of Muscat FIR and the western FIR boundaries of Mumbai FIR.

2.5.3.5.1.3 This increasing trend is extremely concerning and highlights the urgent need for immediate attention and action from both Muscat and Mumbai ATC units. The measures implemented so far, while well-intentioned, have not been sufficient to mitigate the risks posed by these LHD occurrences. We must focus on strengthening coordination, enhancing real-time reporting mechanisms, and ensuring that corrective actions are not only implemented but also monitored for effectiveness. Given the seriousness of the situation, it is imperative that both ATC units take decisive steps to address the root causes of these LHD incidents to prevent further risk to airspace safety.

2.5.3.5.1.4 Oman CAA has made significant progress in addressing the Large Height Deviation (LHD) issues between Muscat and Mumbai ACCs. Following the investigation of LHD occurrences over the RASKI waypoint:

1. **Timely LHD Reporting**: Mumbai ACC now sends monthly LHD reports directly to Muscat ACC via email, ensuring timely reporting and enabling faster responses to address issues. This bypasses the previous delays caused by routing reports through the Monitoring Agency of Asia Region (MAAR) and the MIDRMA.

2. **Internal Investigation Mechanism**: Oman CAA has developed an internal process for regularly investigating LHD reports and following up on corrective actions with the relevant parties.

3. **AIDC Connection Testing**: Automated Interfacility Data Communication (AIDC) tests were conducted between Muscat and Mumbai ACCs in September 2019, March 2021, February 2023, and August 2023. The most recent test showed success in all parameters except ABI (Airborne Initiation). The next phase of AIDC testing is pending Mumbai ACC's readiness. Once fully implemented, AIDC is expected to significantly reduce LHD occurrences by improving flight information exchange.

4. **Ongoing Coordination**: Oman CAA and India's Airports Authority (AAI) have agreed to hold regular coordination meetings to address LHD issues and take timely corrective actions to mitigate the root causes.

2.5.3.5.1.5 Appendix A in the SMR presents a detailed overview of the Large Height Deviation (LHD) reports submitted by both Air Traffic Control Units (ATCUs) from January to December 2024. Notably, there has been a sharp and significant increase in LHD reports from both ATC Units related to each other during 2024.

2.5.3.5.2 RVSM Safety Protocol for Sanaa FIR.

2.5.3.5.2.1 A comparative analysis of Large Height Deviation (LHD) reports between 2023 and 2024 highlights a significant increase in reported deviations, indicating a deterioration in RVSM airspace safety. In 2023, a total of 181 LHD reports were recorded, whereas in 2024, this number surged to 380, more than doubling the previous year's total. The most notable increase was observed in Jeddah, where reports skyrocketed from 35 in 2023 to 116 in 2024. Similarly, Addis Ababa experienced a drastic rise from 22 to 132, and Mumbai increased from 25 to 56. Muscat also saw a notable rise from 44 to 60 reports. This upward trend suggests that, after a period of improvement in 2023, the situation has worsened significantly in 2024. The spike in LHD incidents, particularly in the latter half of 2024, underscores the urgent need for reinforced safety measures, enhanced monitoring, and stricter adherence to RVSM protocols to prevent further degradation of airspace safety.

2.5.3.5.2.2 The two tables below display all the LHD reports filed by Sanaa ACC related to its neighboring ACCs for years 2023 and 2024, indicating a significant increase in the number of reports compared to the year 2023, especially related to Addis Ababa, Jeddah, Muscat, and Mumbai FIRs.

Months	Addis Ababa	Asmara	Djibouti	Jeddah	Mogadishu	Mumbai	Muscat	Total
1-2023	1	0	2	1	0	1	9	14
2-2023	2	1	0	3	0	4	3	13
3-2023	0	1	4	3	0	0	16	24
4-2023	2	2	2	1	0	3	2	12
5-2023	2	2	2	1	0	0	0	7
6-2023	2	5	2	5	0	1	0	15
7-2023	3	10	2	6	0	4	0	25
8-2023	4	3	5	3	0	3	0	18
9-2023	4	1	2	4	0	1	4	16
10-2023	1	3	2	2	0	3	4	15
11-2023	0	2	1	2	0	3	3	11
12-2023	1	1	0	4	0	2	3	11
Total	**22**	**31**	**24**	**35**	**0**	**25**	**44**	**181**

Months 2024	Addis Ababa	Asmara	Djibouti	Jeddah	Mogadishu	Mumbai	Muscat	Total

01-2024	1	0	1	8	0	0	3	**13**
02-2024	1	0	1	3	0	4	2	**11**
03-2024	6	1	1	3	0	5	3	**19**
04-2024	1	1	2	2	0	3	4	**13**
05-2024	5	2	1	1	0	0	0	**9**
06-2024	8	0	3	3	0	2	6	**22**
07-2024	39	0	0	3	0	2	8	**52**
08-2024	29	0	1	6	0	11	7	**54**
09-2024	17	1	0	4	0	10	3	**35**
10-2024	8	1	0	5	0	5	6	**25**
11-2024	7	0	0	63	0	7	7	**84**
12-2024	10	0	0	15	0	7	11	**43**
Total	132	6	10	116	0	56	60	**380**

2.5.4 RVSM Approvals

2.5.4.1 As a Regional Monitoring Agency (RMA) under the guidelines of ICAO Docs 9937 and 9574, the MIDRMA plays a crucial role in safeguarding the safety of RVSM airspace in the ICAO Middle East Region. One of its primary responsibilities is conducting systematic reviews to ensure that operators comply with State RVSM approval requirements. Through these reviews, the MIDRMA identifies any aircraft operating in RVSM airspace without the required approvals.

2.5.4.2 The tables in Appendix B of this SMR reflect the MIDRMA Bulletin of Non-RVSM Approved aircraft observed operating within the ICAO MID-RVSM airspace and within the RVSM airspace of other RMAs.

2.5.4.3 Assessment of Non-RVSM Approved Aircraft 2024

2.5.4.3.1 The MIDRMA continues to conduct comprehensive evaluations of all RVSM-approved aircraft operating within the ICAO Middle East Region's RVSM airspace to ensure they hold the necessary State approvals. This monitoring serves as a critical safety measure, enabling the identification of non-compliant aircraft and the mitigation of risks associated with unauthorized operations in RVSM-designated airspace.

2.5.4.3.2 Ongoing Compliance Monitoring Efforts:

While continuous, real-time compliance monitoring across the entire Middle East RVSM airspace would be the ideal approach, challenges in acquiring complete traffic data make this unfeasible. To align with ICAO Doc 9937 requirements, RMAs must conduct a comprehensive compliance assessment covering a minimum period of 30 days each year; this required assessment is carried out

during the annual submission of the RVSM Traffic Data Sample (TDS) by all member states.

2.5.4.3.2 Data Collection and Collaboration:

To facilitate the identification of non-RVSM-approved aircraft, MIDRMA primarily relies on RVSM traffic data collected on a monthly basis from Bahrain, Baghdad, and Emirates FIRs. This reliance is due to the ongoing challenge of obtaining consistent traffic data from all Member States. In this context, MIDRMA acknowledges and deeply appreciates the continued commitment of the Bahrain Civil Aviation Authority, the Iraq Civil Aviation Authority, and the UAE General Civil Aviation Authority. Their consistent submission of comprehensive, properly formatted RVSM traffic data plays a crucial role in ensuring effective assessment.

2.5.4.3.3 Proactive Measures for Non-Compliant Aircraft:

The tables in Attachment B of the SMR provide an overview of the MIDRMA's findings regarding non-RVSM approved aircraft operating within both the ICAO Middle East RVSM airspace and that of other RMAs. Based on this analysis, it is imperative that States exercise proactive oversight to address any approval deficiencies in a timely manner. By ensuring that only authorized aircraft enter RVSM-designated airspace, States can prevent operational disruptions and unnecessary regulatory actions against legitimate operators. Additionally, States detecting unauthorized operations within their airspace are encouraged to take appropriate corrective measures to uphold compliance and enhance airspace safety.

2.6 Safety Objective 3

Address any safety-related issues raised in the SMR by recommending improved procedures and practices and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

2.6.1 Recommendations for Safety Objective 3

1. Strengthening Monthly Traffic Data Submissions:

   Member States with the capability to submit their RVSM traffic data every month are strongly urged to do so. Consistent data submission allows MIDRMA to conduct detailed trend analysis, detect potential violations of RVSM airspace by non-approved aircraft, and assess monthly risk values to identify emerging threats before they escalate.

2. Expanding ADS-B Data Utilization:

   Member States utilizing ADS-B for surveillance are encouraged to share their archived ADS-B data with MIDRMA. This will support ongoing RVSM height monitoring trials and contribute to the refinement of monitoring methodologies. Particular emphasis should be placed on incorporating data from aircraft equipped with ADS-B Out operating within RVSM airspace to enhance real-time monitoring accuracy.

3. Advancing Large Height Deviation (LHD) Reporting Mechanism

To address discrepancies and enhance LHD reporting, MIDRMA should work with regional ATC units to establish standardized reporting formats and training programs. Encouraging timely and accurate LHD submissions will improve data reliability and facilitate proactive intervention measures.

4. Conducting Targeted RVSM Safety Workshops and Training Programs:

Building on the success of previous RVSM seminars, MIDRMA shall coordinate and facilitate additional workshops focused on ATC procedures, pilot awareness, and airworthiness compliance. These initiatives will enhance the understanding of RVSM regulations and foster improved collaboration among stakeholders.

Note: MIDRMA invites any Member State interested in hosting an RVSM safety seminar to coordinate with the ICAO MID Office and MIDRMA for planning and execution.

5. Implementing a Data-Driven Predictive Risk Assessment Model:

MIDRMA should explore advanced analytics, including artificial intelligence and machine learning, to enhance predictive risk assessments. By integrating real-time operational data, this model can help forecast potential risk-bearing situations, allowing for preemptive corrective actions.

6. Encouraging Regional Collaboration for Cross-Border Safety Monitoring:

To ensure seamless RVSM operations across FIR boundaries, Member States should strengthen data-sharing agreements with neighboring regions. Enhanced coordination with adjacent Regional Monitoring Agencies (RMAs) will improve oversight of RVSM compliance and prevent cross-border operational inconsistencies.

2.6.2 Conclusions of Achieving Safety Objective 3

1. Refined Risk Management and Proactive Mitigation:

Through continuous improvements in data collection, analysis, and real-time surveillance, MIDRMA has strengthened its ability to identify, assess, and mitigate potential RVSM safety risks. The integration of advanced monitoring techniques further ensures the proactive management of airspace safety.

2. Enhanced Transparency and Reporting Culture:

The establishment of more robust reporting mechanisms, including improved LHD submissions and ADS-B data utilization, has led to greater transparency in safety-related matters. This fosters a collaborative safety culture and enables timely interventions to mitigate risks.

3. Sustained Compliance with ICAO Safety Standards:

   The verification of compliance with ICAO RVSM regulations across the MID Region demonstrates that necessary procedural and technical safeguards are in place. The ongoing refinement of monitoring methodologies ensures long-term adherence to RVSM requirements.

4. Greater Stakeholder Involvement in Safety Enhancement Efforts:

   Increased participation in RVSM safety workshops and training programs has fostered stronger engagement from air traffic controllers, airline operators, and regulatory authorities. This collective commitment to RVSM safety enhances the region's ability to stay continuously aware of and aligned with RVSM requirements.

5. Leveraging Technological Innovations for Future Safety Improvements:

   By embracing emerging technologies, including predictive analytics and enhanced real-time data-sharing mechanisms, MIDRMA is well-positioned to address future challenges in RVSM operations. The continued evolution of risk assessment methodologies ensures that safety levels remain stable or improve over time.

6. MIDRMA's continuous monitoring and trend analysis have concluded that, barring any unforeseen geopolitical disturbances, RVSM safety in the MID region is projected to remain stable over the next three years. This proactive approach underscores MIDRMA’s commitment to maintaining long-term operational safety and compliance.

Note: Based on recent evaluations, MIDRMA has concluded that no significant findings or concerns are expected at least for the next three years. However, unforeseen events, such as political conflicts or regional unrest, could introduce unexpected risks requiring reassessment and mitigation strategies.

By implementing these recommendations and demonstrating these positive safety outcomes, Safety Objective 3 has been achieved, ensuring that RVSM operations in the Middle East region remain safe, secure, and aligned with global aviation safety standards.

Appendix A

LHD Reports Submitted by Muscat related to Mumbai

#	ID	Date of Occ	Reported By	Related to	Location	nature of the occurrence:	**Category**
1	11560	07-1-2024	Muscat	Mumbai	KITAL	ACFT Entered FIR Without Coordination	**E**
2	11561	07-1-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
3	11562	10-1-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
4	11563	11-1-2024	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	**E**
5	11564	07-1-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
6	11565	19-1-2024	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	**E**
7	11566	23-1-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
8	11567	24-1-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
9	11568	24-1-2024	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**
10	11569	31-1-2024	Muscat	Mumbai	ASPUX	Revised FL Not Coordinated	**E**
11	11615	04-2-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
12	11616	13-2-2024	Muscat	Mumbai	KITAL	ACFT Entered FIR Without Coordination	**E**
13	11617	13-2-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
14	11618	13-2-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
15	11619	20-2-2024	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**
16	11620	24-2-2024	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	**E**
17	11635	22-2-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
18	11636	24-2-2024	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**
19	11637	24-2-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
20	11638	24-2-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
21	11639	28-2-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
22	11671	01-3-2024	Muscat	Mumbai	ASPUX	Revised FL Not Coordinated	**E**
23	11672	01-3-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
24	11673	02-3-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
25	11674	05-3-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
26	11675	04-4-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
27	11676	05-4-2024	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	**E**

28	11677	07-4-2024	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**
29	11678	08-4-2024	Muscat	Mumbai	REXOD	Revised Estimate Not Coordinated	**E**
30	11679	11-4-2024	Muscat	Mumbai	KITAL	Revised FL Not Coordinated	**E**
31	11680	13-4-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
32	11681	13-4-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
33	11682	20-4-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
34	11683	20-4-2024	Muscat	Mumbai	KUTVI	ACFT Entered FIR Without Coordination	**E**
35	11684	23-4-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
36	11833	03-6-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
37	11887	03-6-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
38	11888	03-6-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
39	11889	07-6-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
40	11890	05-6-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
41	11891	08-6-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
42	11892	09-6-2024	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**
43	11893	09-6-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
44	11894	10-6-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
45	11895	11-6-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
46	11896	12-6-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
47	11897	14-6-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
48	11898	14-6-2024	Muscat	Mumbai	KITAL	ACFT Entered FIR Without Coordination	**E**
49	11899	14-6-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
50	11900	15-6-2024	Muscat	Mumbai	TOTOX	ACFT Entered FIR Without Coordination	**E**
51	11901	15-6-2024	Muscat	Mumbai	KITAL	ACFT Entered FIR Without Coordination	**E**
52	11902	16-6-2024	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	**E**
53	11903	16-6-2024	Muscat	Mumbai	TOTOX	ACFT Entered FIR Without Coordination	**E**
54	11904	16-6-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
55	11905	19-6-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
56	11906	27-6-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
57	11907	30-6-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
58	11908	02-6-2024	Muscat	Mumbai	IMKAD	ACFT Entered FIR Without Coordination	**E**
59	11909	02-6-2024	Muscat	Mumbai	IMKAD	ACFT Entered FIR Without Coordination	**E**
60	11910	02-6-2024	Muscat	Mumbai	IMKAD	ACFT Entered FIR Without Coordination	**E**
61	11911	07-6-2024	Muscat	Mumbai	IMKAD	Revised FL Not Coordinated	**E**
62	11912	08-6-2024	Muscat	Mumbai	IMKAD	Revised FL Not Coordinated	**E**
63	11954	03-7-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
64	11955	07-7-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
65	11956	13-7-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
66	11957	14-7-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
67	11958	14-7-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**

68	11959	15-7-2024	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	**E**
69	11960	16-7-2024	Muscat	Mumbai	KITAL	Revised FL Not Coordinated	**E**
70	11961	16-7-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
71	11962	16-7-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
72	11963	16-7-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
73	11964	19-7-2024	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	**E**
74	11965	22-7-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
75	11966	23-7-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
75	12021	01-09-2024	Muscat	Mumbai	KITAL	Revised FL Not Coordinated	**E**
75	12022	01-09-2024	Muscat	Mumbai	KUTVI	Revised FL Not Coordinated	**E**
75	12023	02-09-2024	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**
75	12024	02-09-2024	Muscat	Mumbai	TOTOX	ACFT Entered FIR Without Coordination	**E**
75	12025	05-09-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
75	12026	05-09-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
75	12027	05-09-2024	Muscat	Mumbai	LOTAV	Revised FL Not Coordinated	**E**
75	12028	14-09-2024	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	**E**
75	12029	18-09-2024	Muscat	Mumbai	LOTAV	ACFT Entered FIR Without Coordination	**E**
75	12030	19-09-2024	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	**E**
75	12031	20-09-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
75	12032	20-09-2024	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	**E**
75	12033	21-09-2024	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	**E**
75	12048	21-08-2024	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	**E**
75	12049	21-09-2024	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	**E**
75	12050	22-09-2024	Muscat	Mumbai	KITAL	Revised FL Not Coordinated	**E**
75	12051	24-09-2024	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	**E**
75	12052	25-09-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
75	12053	25-09-2024	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	**E**
75	12054	25-09-2024	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	**E**
75	12299	01-01-2025	Muscat	Mumbai	TOTOX	Revised FL Not Coordinated	**E**

LHD Reports related to Mumbai filed by Muscat

#	ID	Date of Occ	Reported By	Related to	Location	nature of the occurrence	Category
1	LHD002404	1/1/2024	Mumbai	Muscat	PARAR	No or late est. time rev.	E
2	LHD002405	5/1/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
3	LHD002406	6/1/2024	Mumbai	Muscat	LOTAV	No or late est. time rev.	E
4	LHD002407	7/1/2024	Mumbai	Muscat	TOTOX	No or late est. time rev.	E
5	LHD002408	7/1/2024	Mumbai	Muscat	RASKI	No transfer information	E
6	LHD002409	7/1/2024	Mumbai	Muscat	PARAR	No or late est. time rev.	E
7	LHD002410	8/1/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
8	LHD002411	9/1/2024	Mumbai	Muscat	PARAR	No or late est. time rev.	E
9	LHD002412	9/1/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
10	LHD002413	10/1/2024	Mumbai	Muscat	KITAL	No transfer information	E
11	LHD002414	11/1/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
12	LHD002415	13-1-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
13	LHD002416	14-1-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
14	LHD002417	16-1-2024	Mumbai	Muscat	RASKI	No transfer information	E
15	LHD002418	19-1-2024	Mumbai	Muscat	RASKI	No transfer information	E
16	LHD002419	20-1-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
17	LHD002420	21-1-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
18	LHD002421	29-1-2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
19	LHD002422	29-1-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
20	LHD002456	5/2/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
21	LHD002457	8/2/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
22	LHD002458	11/2/2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
23	LHD002459	12/2/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
24	LHD002460	19-2-2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
25	LHD002461	22-2-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
26	LHD002462	24-2-2024	Mumbai	Muscat	KITAL	No or late FL revision	E
27	LHD002463	24-2-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
28	LHD002466	26-2-2024	Mumbai	Muscat	KITAL	No or late FL revision	E
29	LHD002468	22-2-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
30	LHD002519	1/3/2024	Mumbai	Muscat	KITAL	No or late FL revision	E
31	LHD002521	9/3/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
32	LHD002522	11/3/2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
33	LHD002523	12/3/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
34	LHD002524	13-3-2024	Mumbai	Muscat	RASKI	No transfer information	E
35	LHD002525	14-3-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E

36	LHD002526	14-3-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
37	LHD002527	16-3-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
38	LHD002528	17-3-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
39	LHD002529	17-3-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
40	LHD002530	20-3-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
41	LHD002531	23-3-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
42	LHD002532	23-3-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
43	LHD002533	24-3-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
44	LHD002534	25-3-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
45	LHD002574	1/4/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
46	LHD002575	2/4/2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
47	LHD002576	4/4/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
48	LHD002577	4/4/2024	Mumbai	Muscat	REXOD	No or late FL revision	E
49	LHD002578	7/4/2024	Mumbai	Muscat	REXOD	No or late FL revision	E
50	LHD002579	10/4/2024	Mumbai	Muscat	PARAR	No transfer information	E
51	LHD002580	10/4/2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
52	LHD002581	13-4-2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
53	LHD002582	14-4-2024	Mumbai	Muscat	LOTAV	No transfer information	E
54	LHD002583	14-4-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
55	LHD002584	15-4-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
56	LHD002585	18-4-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
57	LHD002586	27-4-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
58	LHD002605	2/5/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
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61	LHD002608	9/5/2024	Mumbai	Muscat	REXOD	No or late FL revision	E
62	LHD002609	11/5/2024	Mumbai	Muscat	RASKI	No transfer information	E
63	LHD002610	15-5-2024	Mumbai	Muscat	ASPUX	No or late FL revision	E
64	LHD002611	16-5-2024	Mumbai	Muscat	REXOD	No or late FL revision	E
65	LHD002612	19-5-2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
66	LHD002613	27-5-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
67	LHD002614	27-5-2024	Mumbai	Muscat	REXOD	No transfer information	E
68	LHD002615	28-5-2024	Mumbai	Muscat	PARAR	No transfer information	E
69	LHD002616	30-5-2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
70	LHD002617	30-5-2024	Mumbai	Muscat	KITAL	No transfer information	E
71	LHD002618	31-5-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
72	LHD002644	1/6/2024	Mumbai	Muscat	KITAL	No or late FL revision	E
73	LHD002645	1/6/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
74	LHD002646	3/6/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
75	LHD002648	8/6/2024	Mumbai	Muscat	ASPUX	No transfer information	E
76	LHD002649	8/6/2024	Mumbai	Muscat	LOTAV	No transfer information	E
77	LHD002650	8/6/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
78	LHD002651	8/6/2024	Mumbai	Muscat	LOTAV	No or late FL revision	E

79	LHD002652	9/6/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
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81	LHD002655	19-6-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
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83	LHD002657	21-6-2024	Mumbai	Muscat	REXOD	No or late FL revision	E
84	LHD002658	28-6-2024	Mumbai	Muscat	RASKI	No transfer information	E
85	LHD002680	1/7/2024	Mumbai	Muscat	REXOD	No or late FL revision	E
86	LHD002681	2/7/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
87	LHD002682	7/7/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
88	LHD002683	9/7/2024	Mumbai	Muscat	PARAR	No or late FL revision	E
89	LHD002684	11/7/2024	Mumbai	Muscat	ASPUX	No transfer information	E
90	LHD002685	12/7/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
91	LHD002687	13-7-2024	Mumbai	Muscat	TOTOX	No transfer information	E
92	LHD002688	16-7-2024	Mumbai	Muscat	KITAL	No or late FL revision	E
93	LHD002689	19-7-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
94	LHD002690	31-7-2024	Mumbai	Muscat	LOTAV	No transfer information	E
95	LHD002734	1/8/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
96	LHD002735	3/8/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
97	LHD002736	5/8/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
98	LHD002737	17-8-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
99	LHD002897	5/9/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
100	LHD002898	6/9/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
101	LHD002899	13-9-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
102	LHD002900	14-9-2024	Mumbai	Muscat	KITAL	No or late FL revision	E
103	LHD002901	18-9-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
104	LHD002902	14-9-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
105	LHD002903	19-9-2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
106	LHD002904	20-9-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
107	LHD002905	20-9-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
108	LHD002906	21-9-2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
109	LHD002907	21-9-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
110	LHD002908	22-9-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
111	LHD002909	5/10/2024	Mumbai	Muscat	TOTOX	No or late FL revision	E
112	LHD002910	7/10/2024	Mumbai	Muscat	LOTAV	No or late FL revision	E
113	LHD002911	9/10/2024	Mumbai	Muscat	LOTAV	No transfer information	E
114	LHD002912	9/10/2024	Mumbai	Muscat	KITAL	No or late FL revision	E
115	LHD002913	9/10/2024	Mumbai	Muscat	REXOD	No or late FL revision	E
116	LHD002914	12/10/2024	Mumbai	Muscat	RASKI	No or late FL revision	E
117	LHD002915	15-10-2024	Mumbai	Muscat	RASKI	No or late FL revision	E
118	LHD002917	27-10-2024	Mumbai	Muscat	PARAR	No or late FL revision	E
119	LHD002918	2/11/2024	Mumbai	Muscat	KITAL	No transfer information	E
120	LHD002919	17-11-2024	Mumbai	Muscat	REXOD	No or late FL revision	E

Appendix B

NON-RVSM Approved Aircraft – Responsibility of MIDRMA Member States

#	ACFT Registration	ICAO Type	First Observed on	STATE Responsible
1	5ALEX	BE200	9/7/2022	LIBYA
2	STALL	CRJ1	11/6/2022	SUDAN

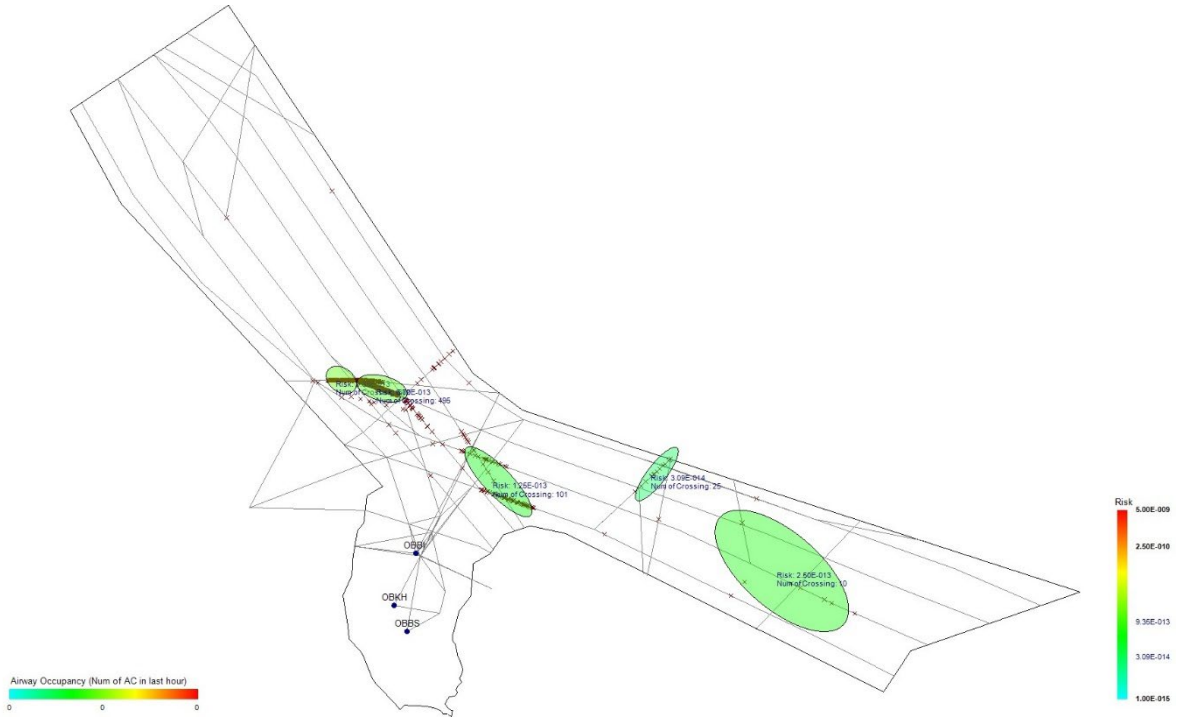
Non-RVSM approved Aircraft – Responsibility of other RMAs

#	Registration	ICAO Type	First Observed on	RMA Responsible
1	5HONE	GLF5	15-05-2024	AFIRMA
2	5HTCP	B39M	19-05-2024	AFIRMA
3	5HTCQ	B39M	15-05-2024	AFIRMA
4	5NADM	B744	28-05-2024	AFIRMA
5	5NBBN	B772	18-05-2024	AFIRMA
6	5NBYJ	E290	6/6/2024	AFIRMA
7	5NHMM	B744	15-05-2024	AFIRMA
8	5YFQA	B734	15-05-2024	AFIRMA
9	5YFQC	B734	20-05-2024	AFIRMA
10	9SPRR	IL76	9/6/2024	AFIRMA
11	TTDAB	H25B	31-05-2024	AFIRMA
12	XTEBO	IL76	7/6/2024	AFIRMA
13	N27GA	FA50	30-05-2024	NAARMO
14	N505MS	C55B	3/6/2024	NAARMO
15	N779CK	B77W	8/6/2024	NAARMO
16	N788DP	B737	25-02-2024	NAARMO
17	40001A	C17	25-01-2020	AAMA
18	60208A	C17	30-03-2020	AAMA
19	PKBGZ	B738	13-12-2022	AAMA
20	PKBKM	A320	30-11-2022	AAMA
21	PKLSU	B739	27-11-2022	AAMA
22	PKLSV	B739	21-12-2022	AAMA
23	PKLSW	B739	8/3/2023	AAMA
24	PKLVF	B739	20-01-2023	AAMA
25	PKSJH	A320	6/11/2022	AAMA
26	PKSTD	A320	19-01-2023	AAMA
27	PKSTH	A320	27-11-2022	AAMA
28	5NBOD	GLF4	28-01-2022	AFIRMA

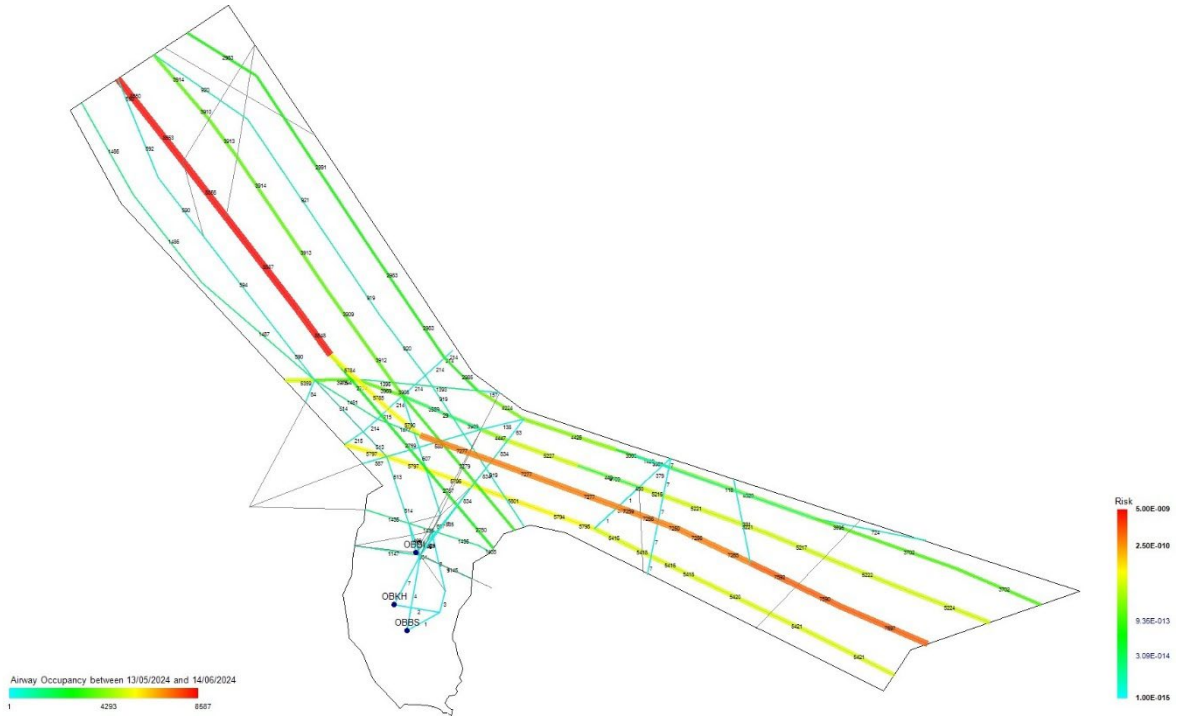
29	5YFAN	CRJ2	15-07-2020	AFIRMA
30	5YWBH	C56X	14-07-2020	AFIRMA
31	ETATF	B350	8/7/2020	AFIRMA
32	ZSCQP	CRJ9	7/7/2020	AFIRMA
33	CCBGV	B789	8/6/2022	CARSAM
34	FAB2857	KC39	22-05-2022	CARSAM
35	21140	IL76	19-06-2022	CHINARMA
36	EW550TH	IL76	4/12/2021	EURRMA
37	ICJSN	C25C	15-05-2023	EURRMA
38	UR11316	AN12	22-07-2020	EURRMA
39	URAZN	B753	1/2/2022	EURRMA
40	URAZO	B753	1/2/2022	EURRMA
41	URAZR	B77W	3/2/2022	EURRMA
42	URFSA	IL76	9/5/2021	EURRMA
43	URFSC	IL76	5/12/2021	EURRMA
44	URFSD	IL76	24-12-2021	EURRMA
45	URFSE	IL76	11/12/2022	EURRMA
46	URSQO	B738	2/12/2021	EURRMA
47	80002A	C17	23-07-2020	MAAR
48	CB8001	C17	29-07-2020	MAAR
49	CB8004	C17	24-07-2020	MAAR
50	IN307	IL38	3/12/2020	MAAR
51	K3604	E35L	17-07-2020	MAAR
52	KJ3452	IL76	3/8/2020	MAAR
53	KJ3454	IL76	16-03-2020	MAAR
54	N1112B	B350	16-07-2020	NAARMO
55	N145DB	E35L	22-01-2022	NAARMO
56	N298RB	GLF4	14-05-2021	NAARMO
57	N320MK	GLF3	24-09-2022	NAARMO
58	N411VP	EA50	1/5/2022	NAARMO
59	N44UA	CL60	7/6/2020	NAARMO
60	N46HB	F9000	22-08-2022	NAARMO
61	N605AS	PC12	11/4/2022	NAARMO
62	N651CV	C650	21-11-2022	NAARMO
63	N685MF	GLF4	8/12/2021	NAARMO
64	N800AJ	CL60	10/2/2023	NAARMO
65	N890DA	GLF5	25-02-2023	NAARMO
66	N981DB	H25B	5/4/2022	NAARMO

Appendix C

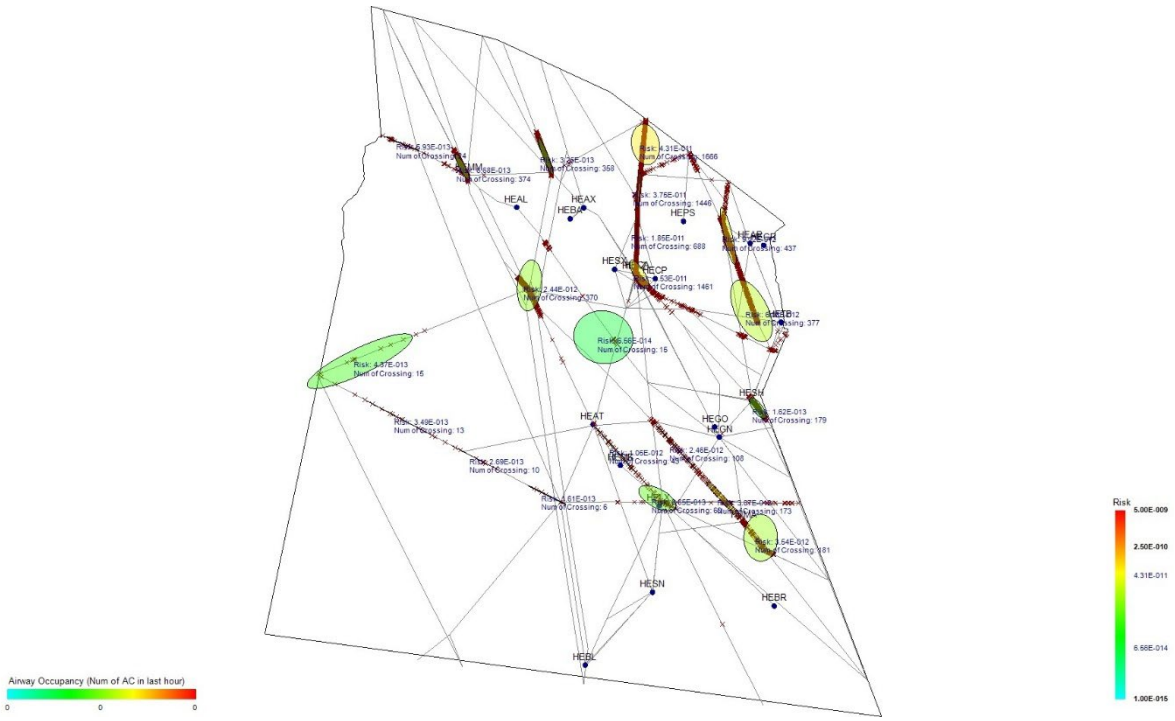
MID FIRs RVSM Airspace Hotspots & AWYs Occupancy



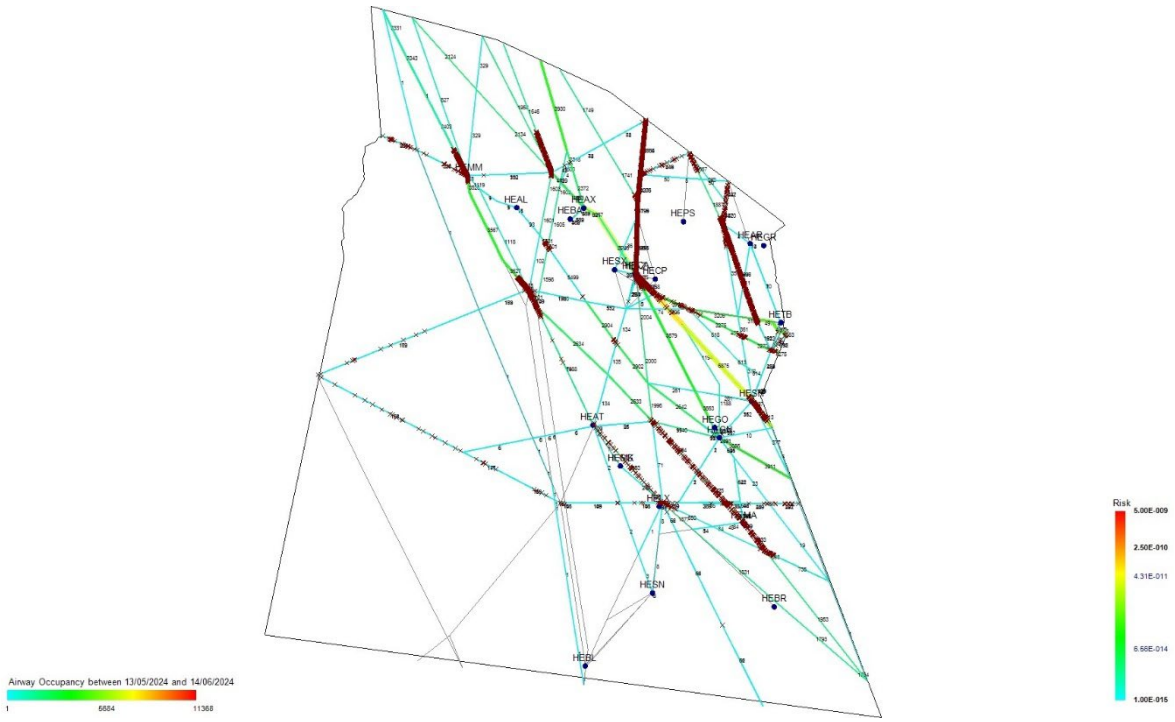
Bahrain FIR Hotspots – SMR 2024



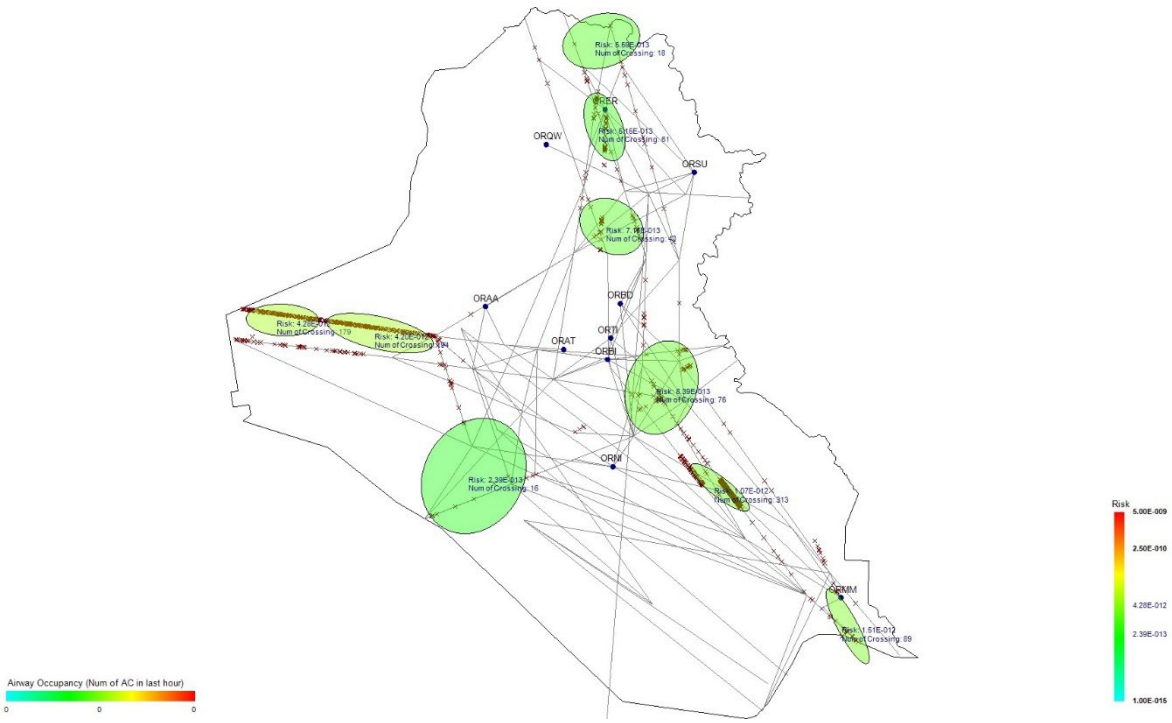
Bahrain FIR AWYs Occupancy – SMR 2024



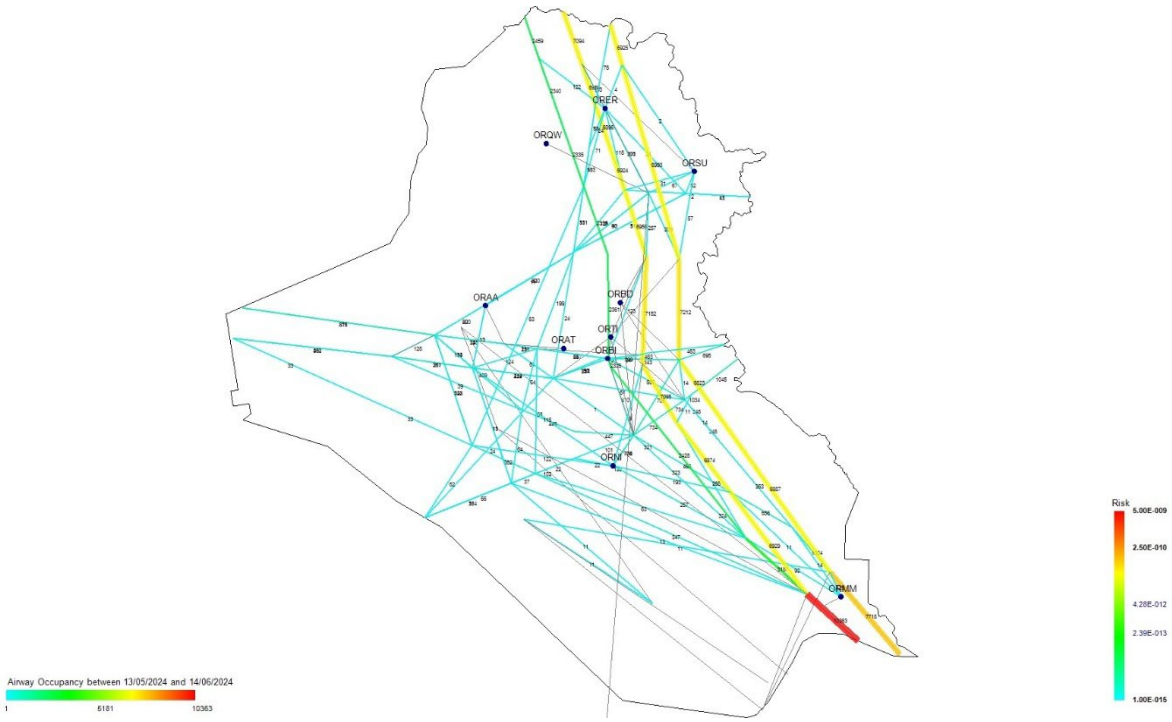
Cairo FIR Hotspots – SMR 2024



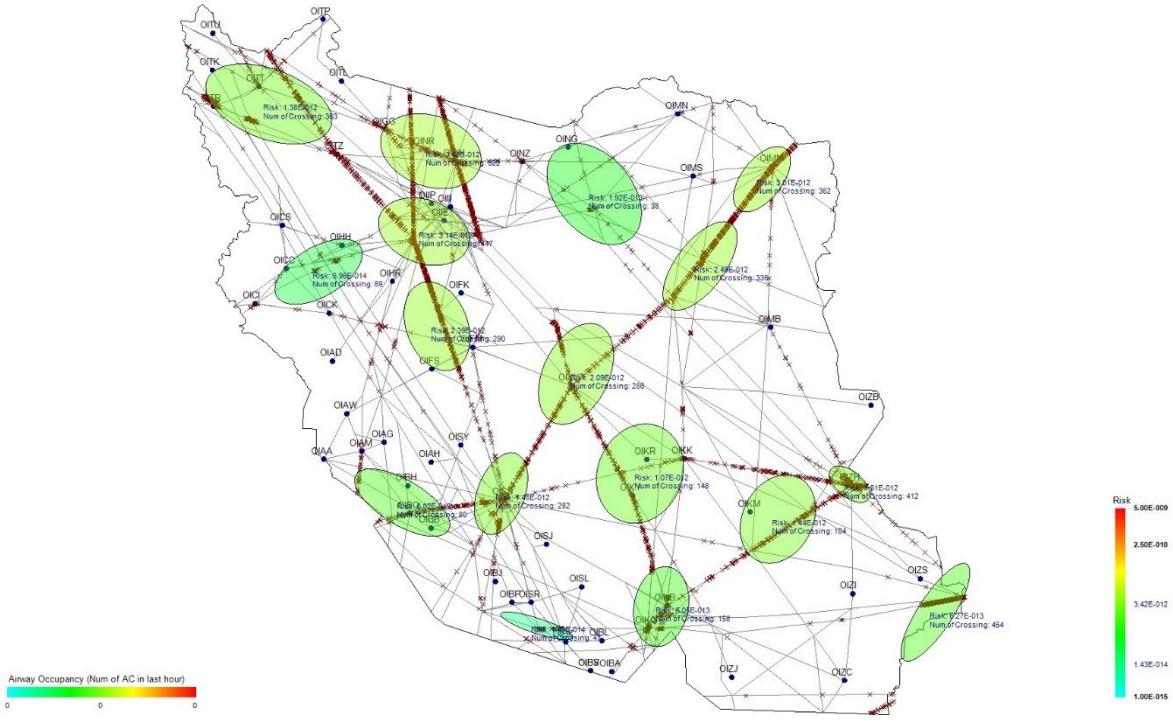
Cairo FIR AWYs Occupancy – SMR 2024



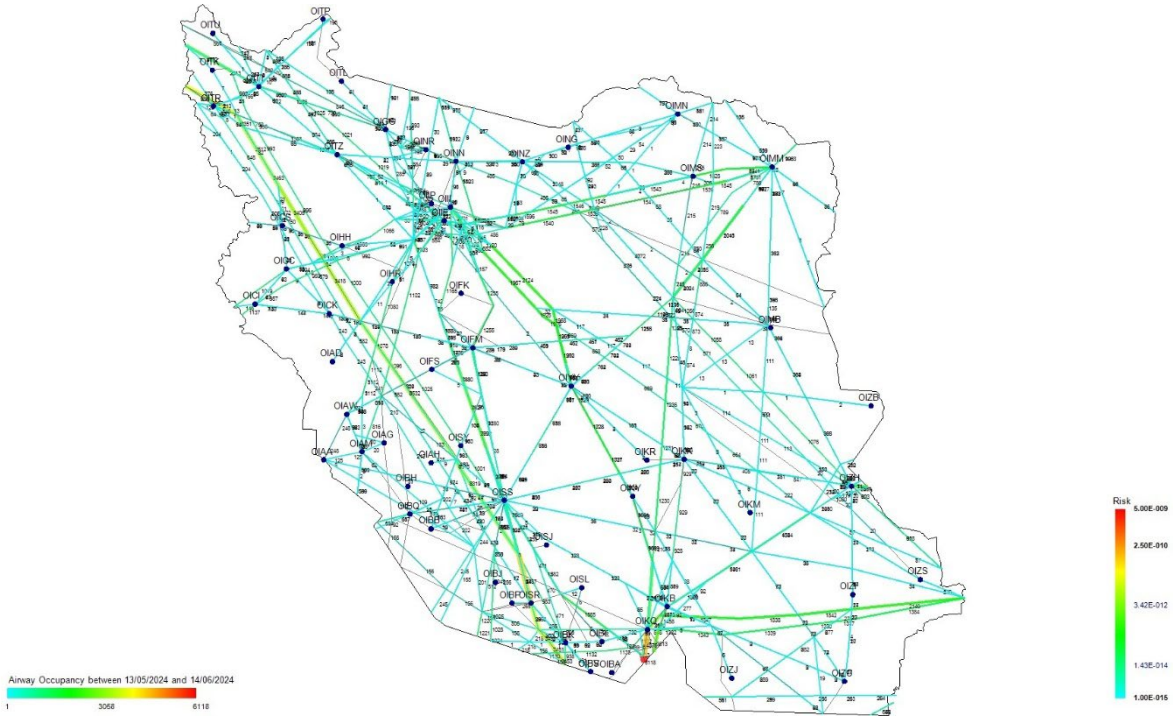
Baghdad FIR Hotspots – SMR 2024



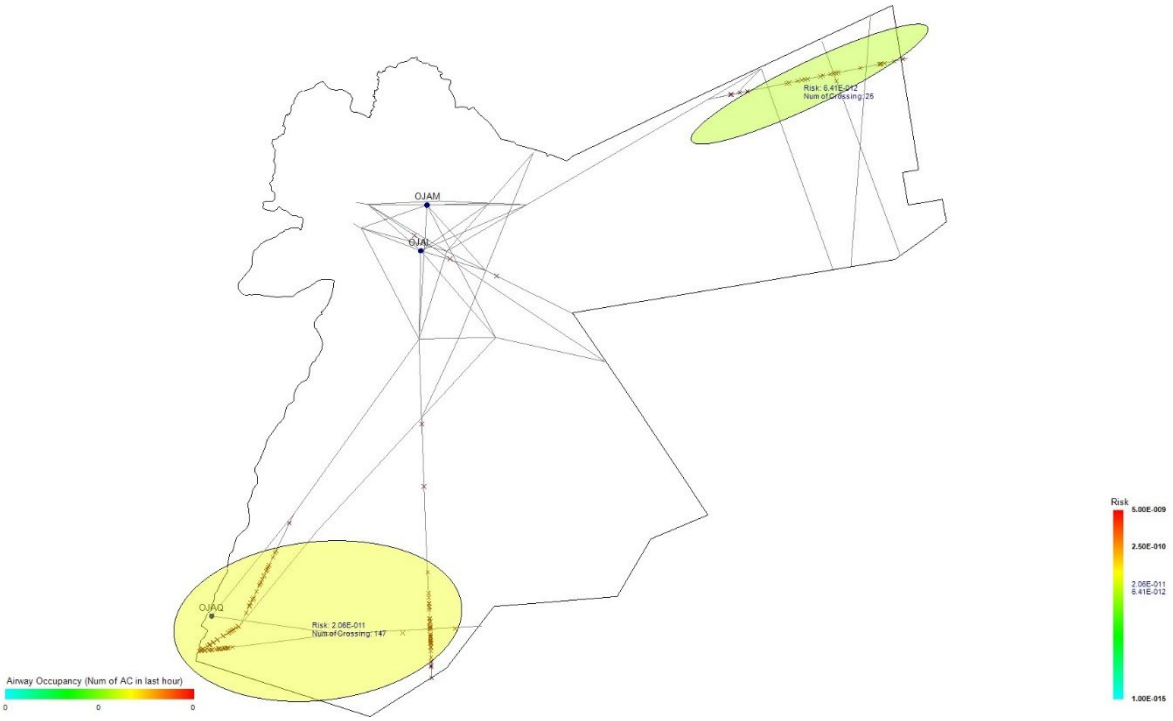
Baghdad FIR AWYs Occupancy – SMR 2024



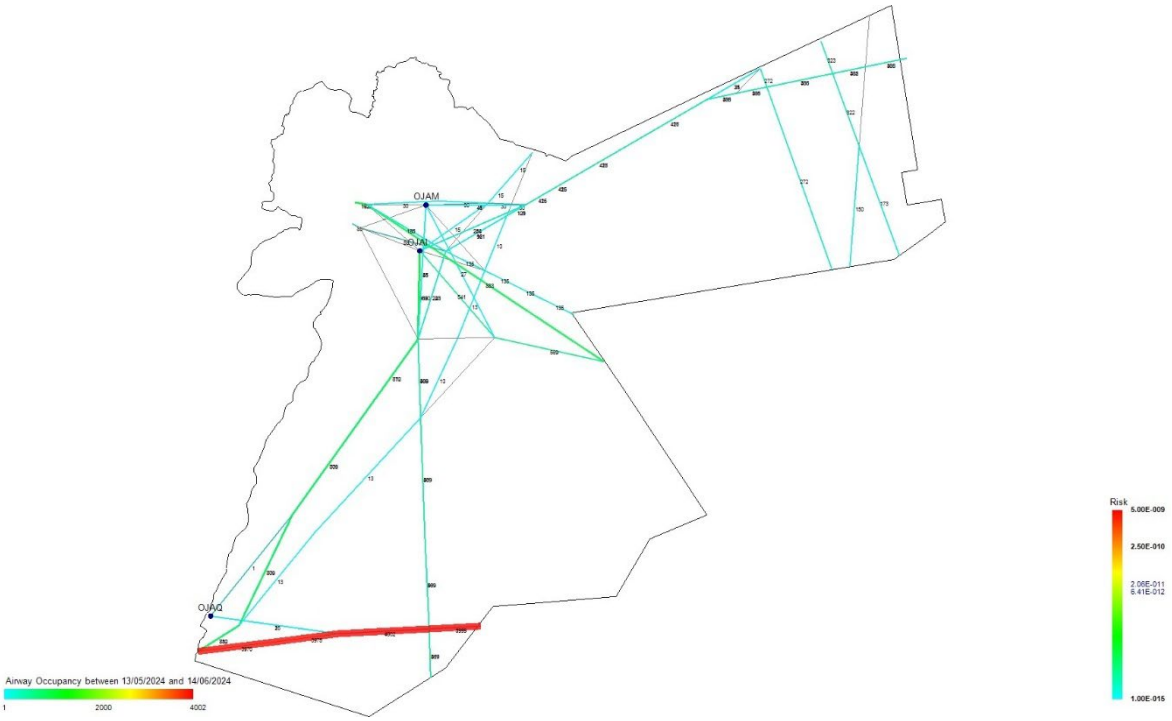
Tehran FIR Hotspots – SMR 2024



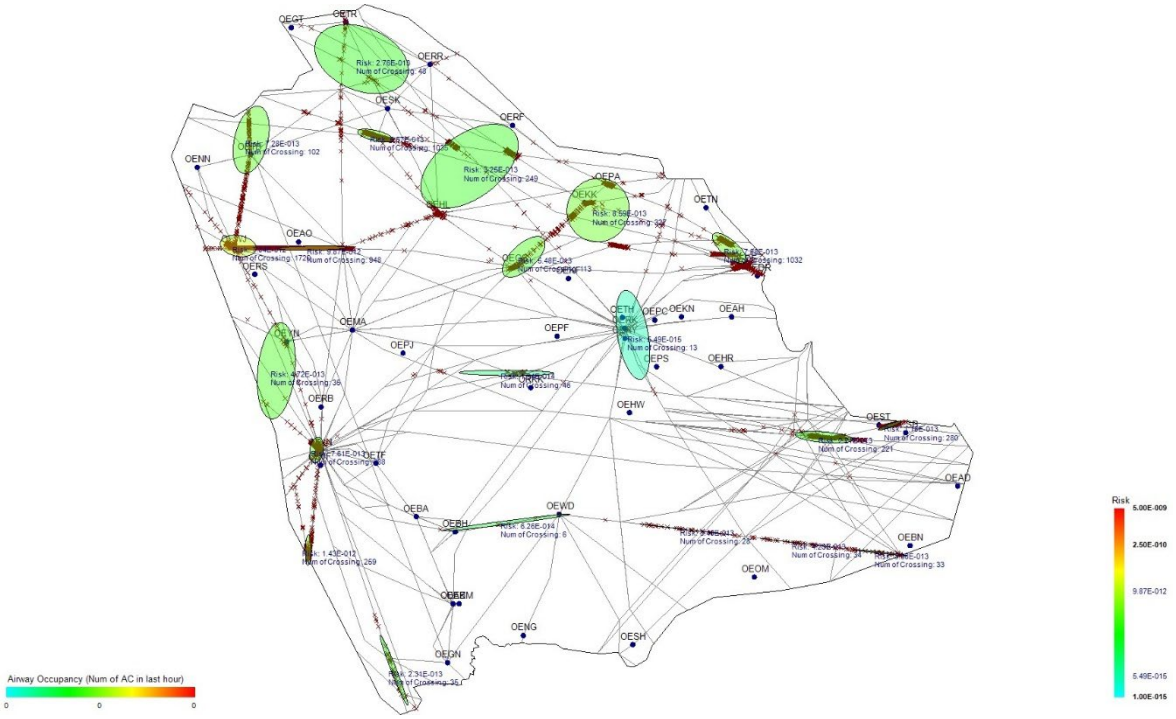
Tehran FIR AWYs Occupancy – SMR 2024



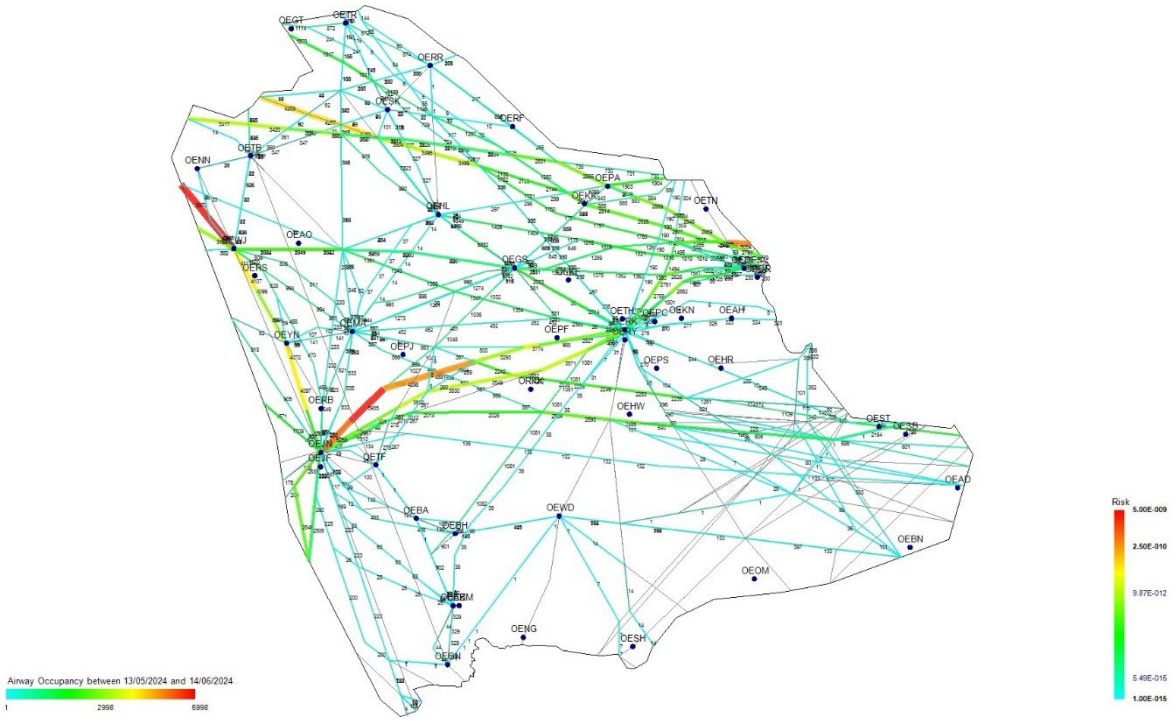
Amman FIR Hotspots – SMR 2024



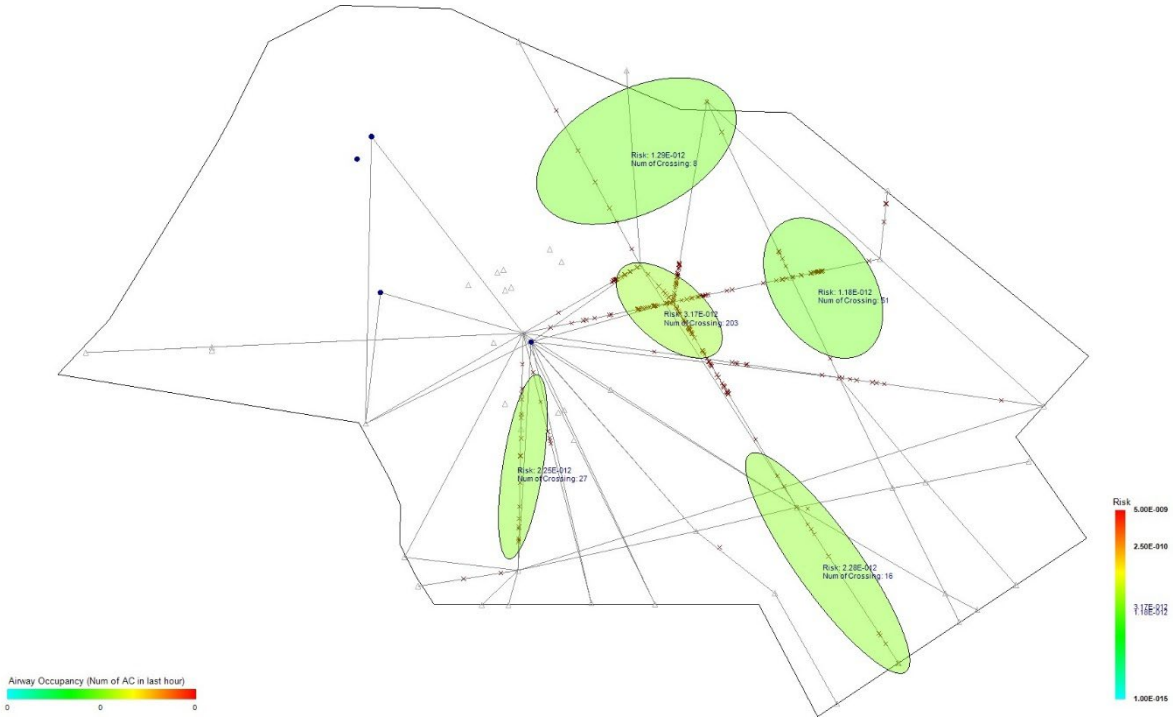
Amman FIR AWYs Occupancy – SMR 2024



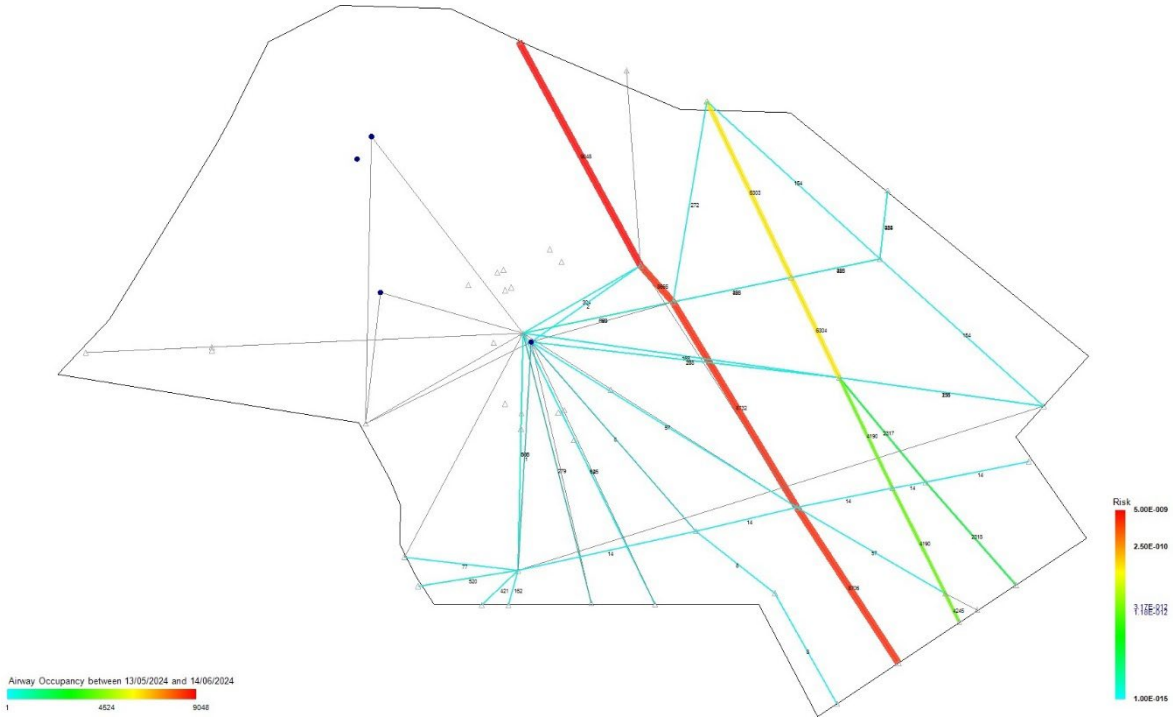
Jeddah FIR Hotspots – SMR 2024



Jeddah FIR AWYs Occupancy – SMR 2024



Kuwait FIR Hotspots – SMR 2024

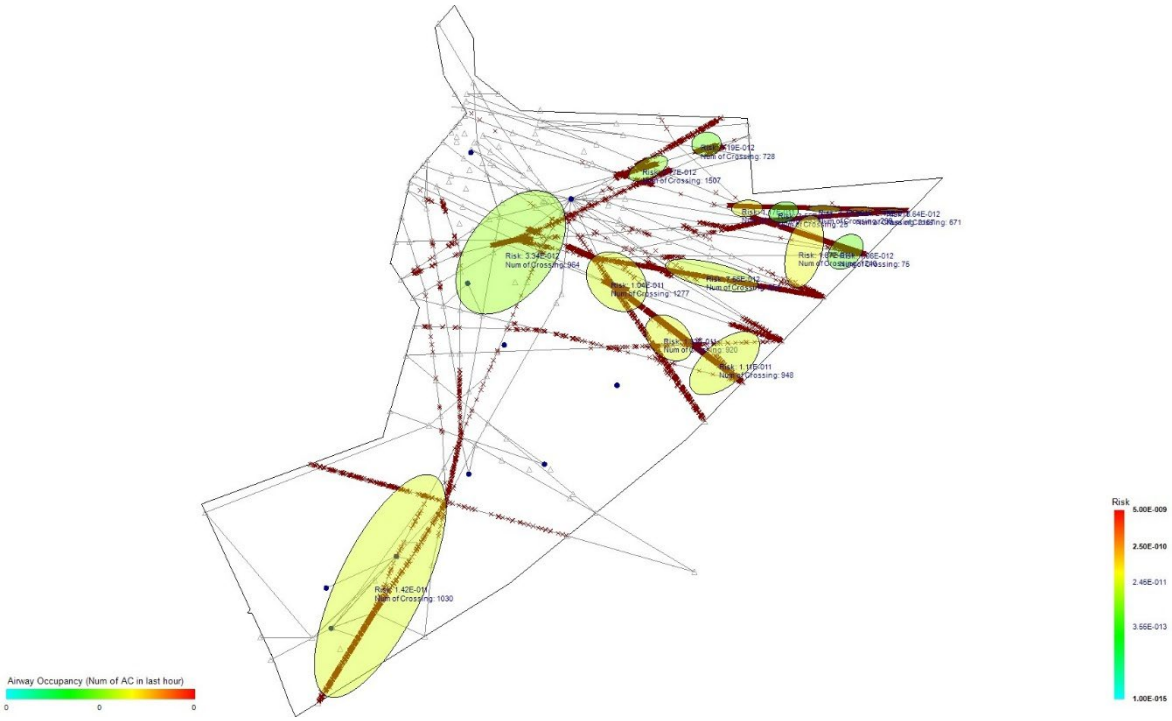


Kuwait FIR AWYs Occupancy – SMR 2024

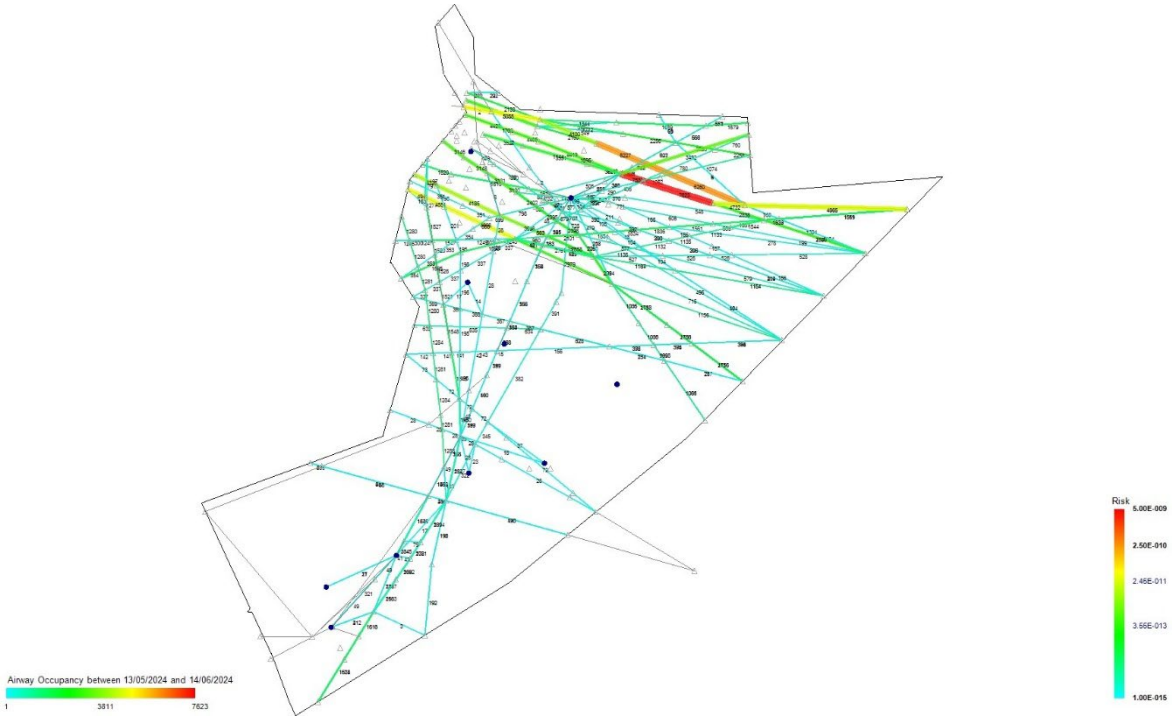
No Hotspots observed within Beirut FIR



Beirut FIR AWYs Occupancy – SMR 2024

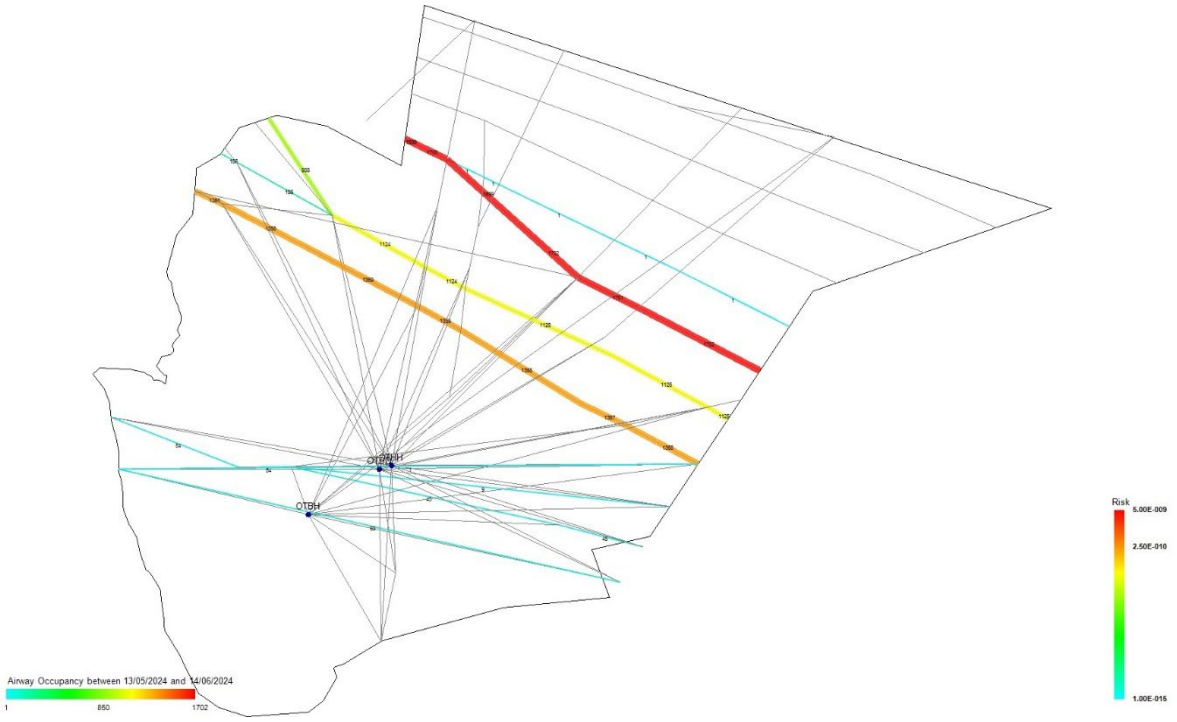


Muscat FIR Hotspots – SMR 2024

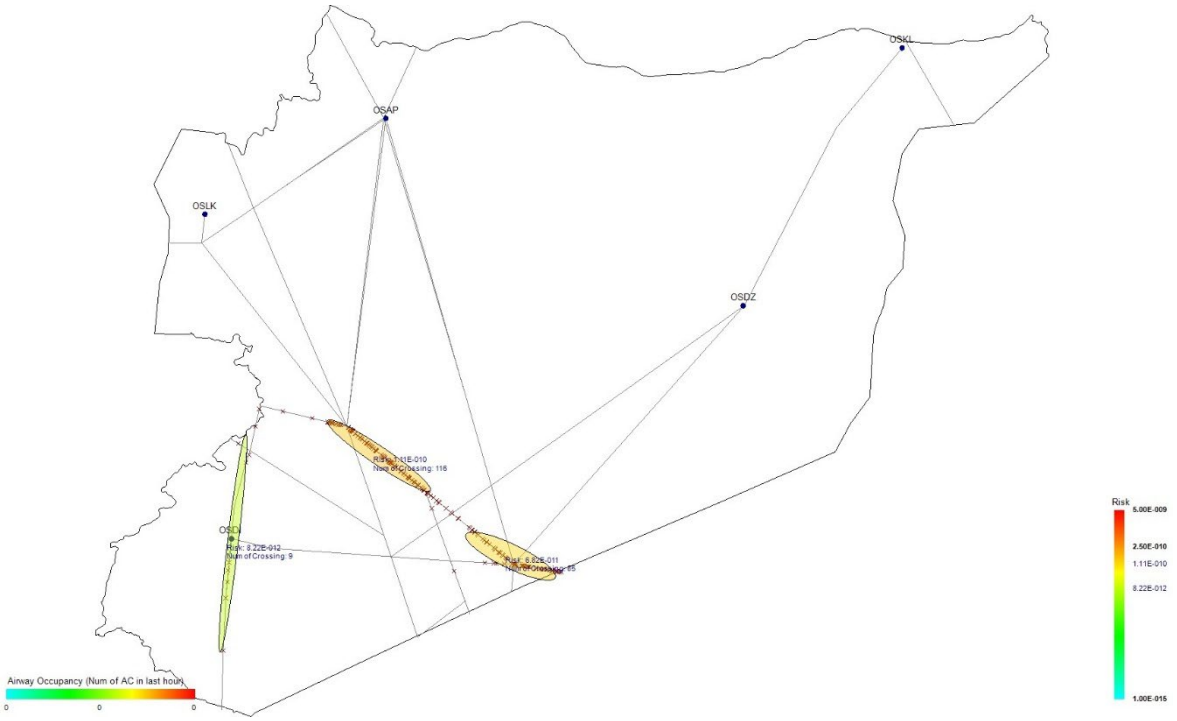


Muscat FIR AWYs Occupancy – SMR 2024

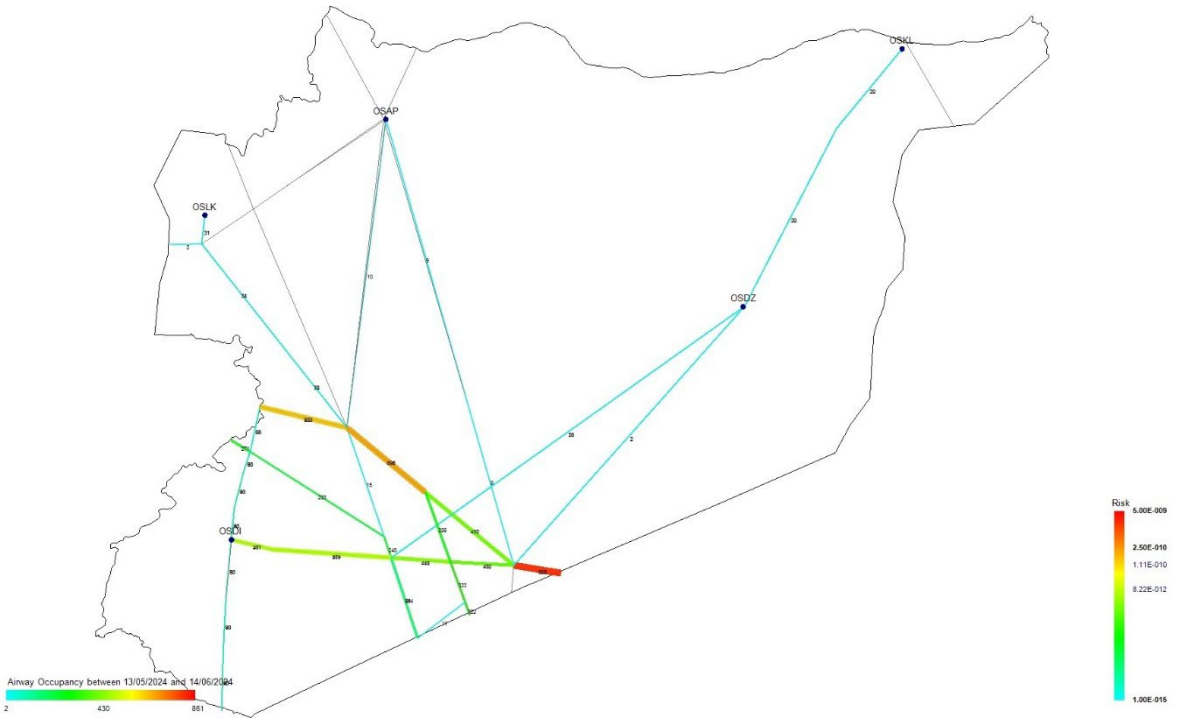
No Hotspots observed within Doha FIR



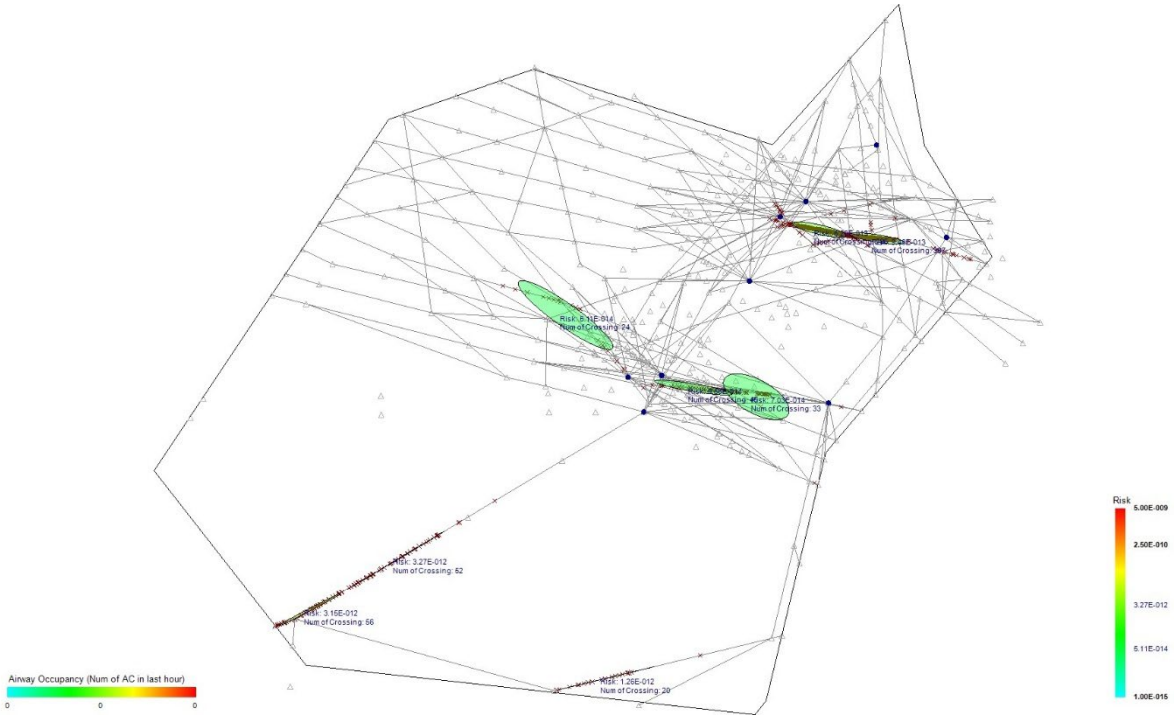
Doha FIR AWYs Occupancy – SMR 2024



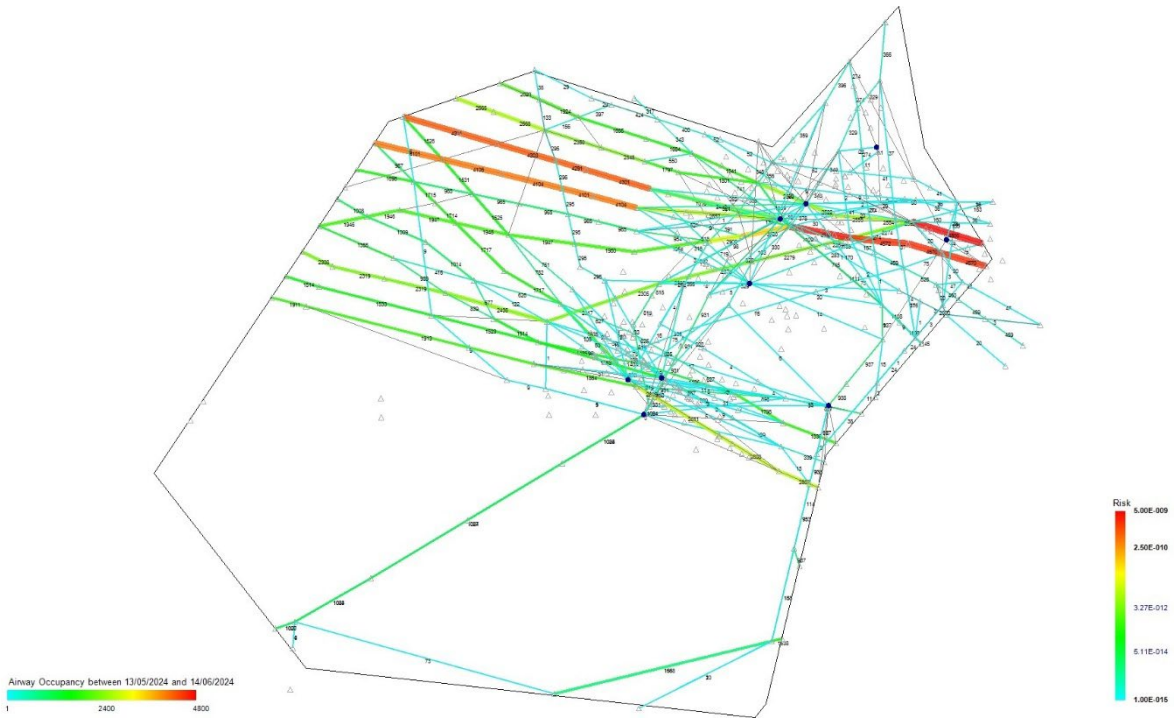
Damascus FIR Hotspots – SMR 2024



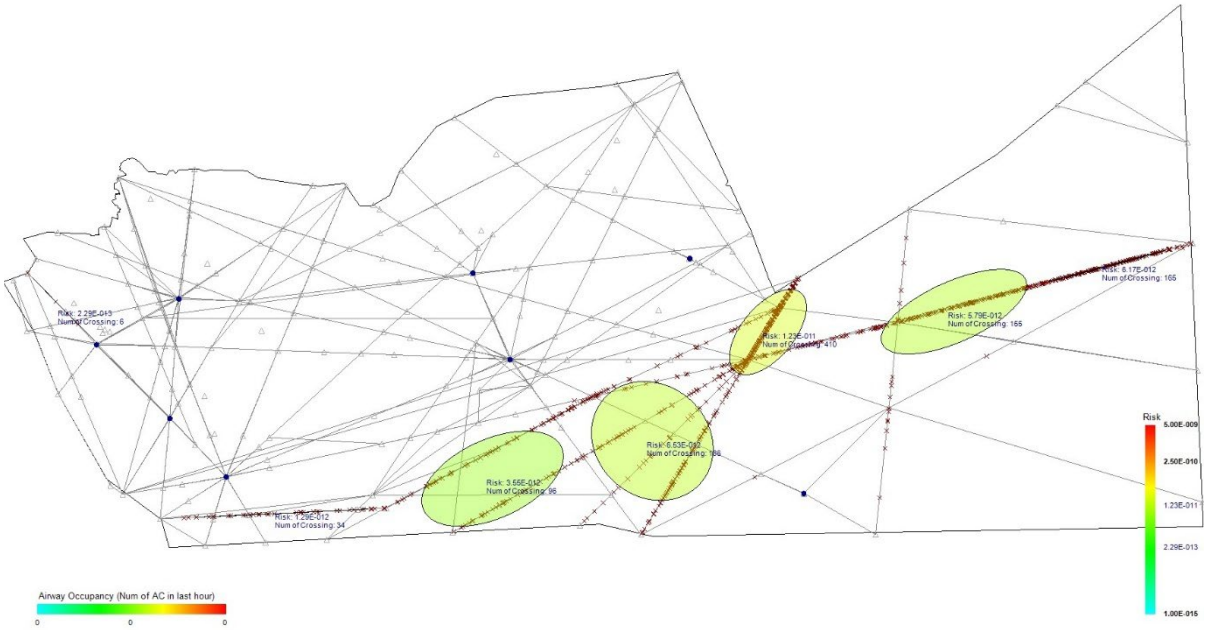
Damascus FIR AWYs Occupancy – SMR 2024



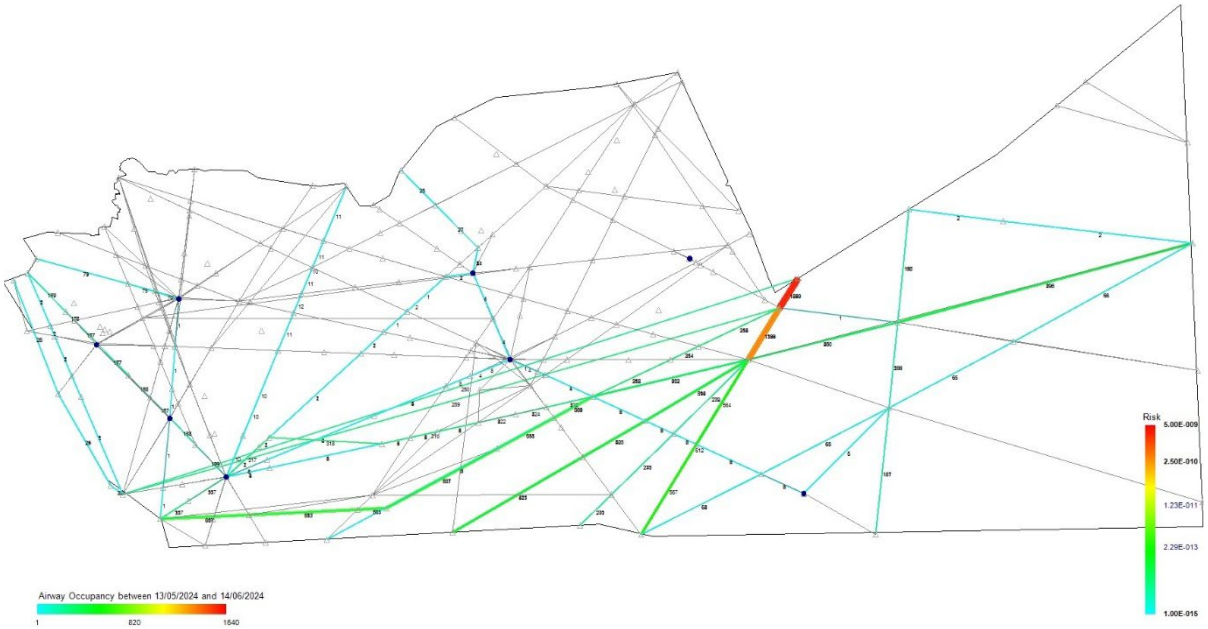
Emirates FIR Hotspots – SMR 2024



Emirates FIR AWYs Occupancy – SMR 2024



Sanaa FIR Hotspots – SMR 2024



Sanaa FIR AWYs Occupancy – SMR 2024

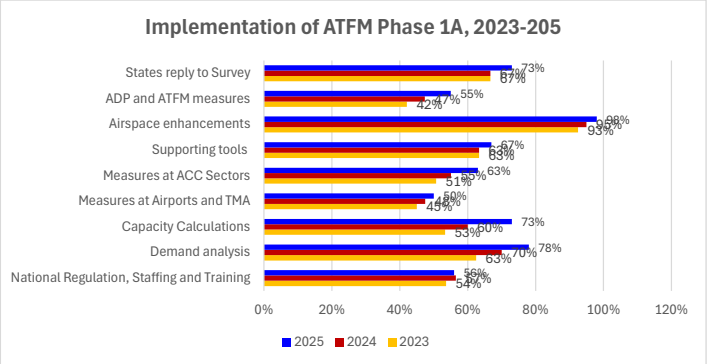
Appendix D

MIDRMA Member States ICAO RVSM Minimum Monitoring Requirement (MMR) Table, valid as of 01st March 2025

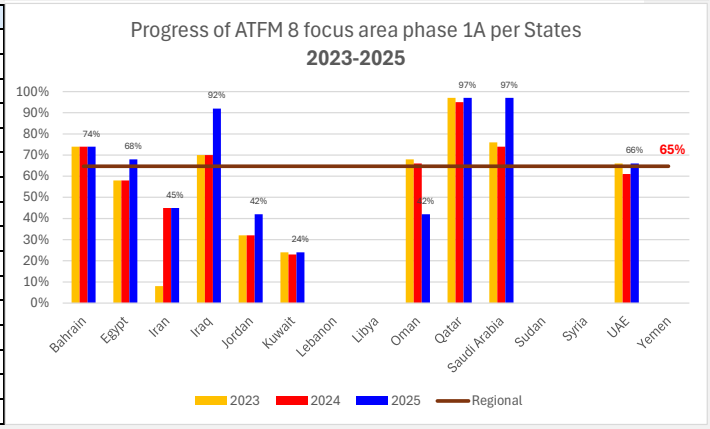
STATE	RVSM APPROVED A/C	HAVE RESULTS /COVERED	NOT COVERED	NOT COVERED IN %	A/C MMR
Bahrain	72	71	1	1%	1
Egypt	163	148	15	9%	9
Iran	199	125	74	37%	40
Iraq	55	53	12	22%	2
Jordan	47	46	1	2%	1
KSA	358	357	1	0%	1
Kuwait	72	68	4	6%	3
Lebanon	29	29	0	0%	0
Libya	48	29	19	40%	16
Oman	67	66	1	1%	1
Qatar	304	304	0	0%	0
Sudan	16	1	15	94%	11
Syria	17	11	6	35%	2
UAE	603	568	35	6%	19
Yemen	8	1	7	88%	4
TOTAL	2058	1877	191	9%	110

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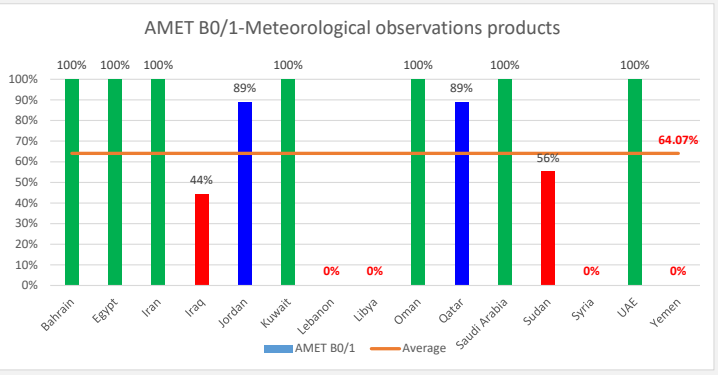
	2023	2024	2025
National Regulation, Staffing and Training	54%	57%	56%
Demand analysis	63%	70%	78%
Capacity Calculations	53%	60%	73%
Measures at Airports and TMA	45%	48%	50%
Measures at ACC Sectors	51%	55%	63%
Supporting tools	63%	63%	67%
Airspace enhancements	93%	95%	98%
ADP and ATFM measures	42%	47%	55%
States reply to Survey	67%	67%	73%



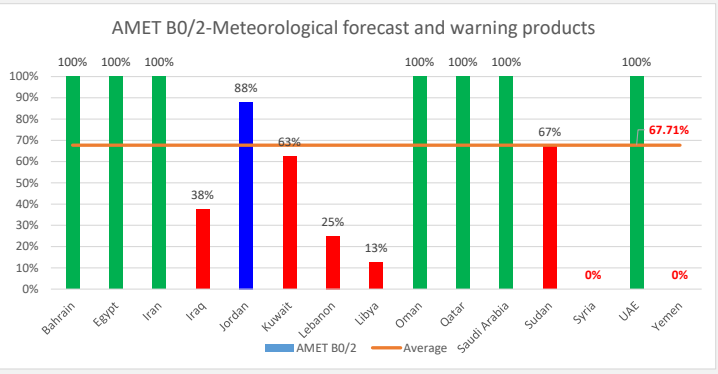
	2023	2024	2025	Regional
Bahrain	74%	74%	74%	65%
Egypt	58%	58%	68%	65%
Iran	8%	45%	45%	65%
Iraq	70%	70%	92%	65%
Jordan	32%	32%	42%	65%
Kuwait	24%	23%	24%	65%
Lebanon				65%
Libya				65%
Oman	68%	66%	42%	65%
Qatar	97%	95%	97%	65%
Saudi Arabia	76%	74%	97%	65%
Sudan				65%
Syria				65%
UAE	66%	61%	66%	65%
Yemen				65%
Regional	**57%**	**60%**	**65%**	65%



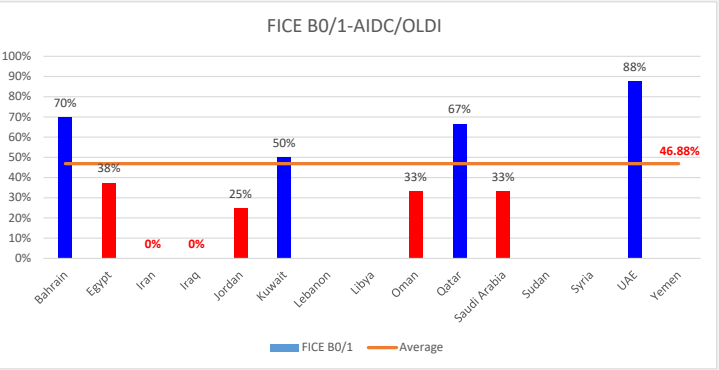
	AMET B0/1	Average
Bahrain	100.00%	64.07%
Egypt	100.00%	64.07%
Iran	100.00%	64.07%
Iraq	44.44%	64.07%
Jordan	89.00%	64.07%
Kuwait	100.00%	64.07%
Lebanon	0.00%	64.07%
Libya	0.00%	64.07%
Oman	100.00%	64.07%
Qatar	89.00%	64.07%
Saudi Arabia	100.00%	64.07%
Sudan	55.56%	64.07%
Syria	0.00%	64.07%
UAE	100.00%	64.07%
Yemen	0.00%	64.07%
Regional average		64.07%



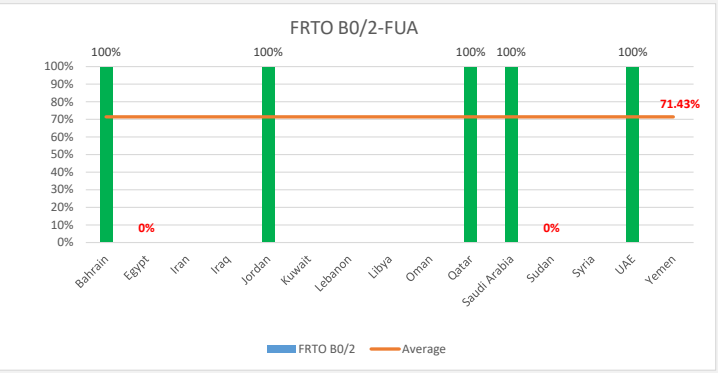
	AMET B0/2	Average
Bahrain	100.00%	67.71%
Egypt	100.00%	67.71%
Iran	100.00%	67.71%
Iraq	37.50%	67.71%
Jordan	88.00%	67.71%
Kuwait	62.50%	67.71%
Lebanon	25.00%	67.71%
Libya	12.50%	67.71%
Oman	100.00%	67.71%
Qatar	100.00%	67.71%
Saudi Arabia	100.00%	67.71%
Sudan	67.00%	67.71%
Syria	0.00%	67.71%
UAE	100.00%	67.71%
Yemen	0.00%	67.71%
Regional average		67.71%



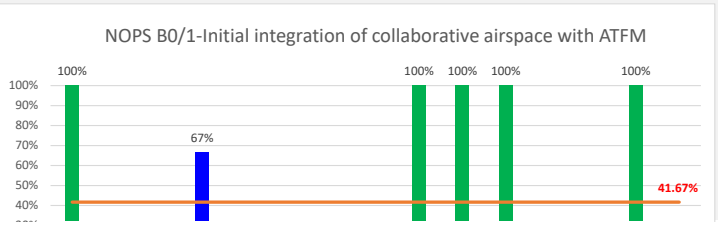
	FICE B0/1	Average
Bahrain	70.00%	46.88%
Egypt	37.50%	46.88%
Iran	0.00%	46.88%
Iraq	0.00%	46.88%
Jordan	25.00%	46.88%
Kuwait	50.00%	46.88%
Lebanon		46.88%
Libya		46.88%
Oman	33.33%	46.88%
Qatar	66.66%	46.88%
Saudi Arabia	33.33%	46.88%
Sudan		46.88%
Syria		46.88%
UAE	87.50%	46.88%
Yemen		46.88%
Regional average		46.88%



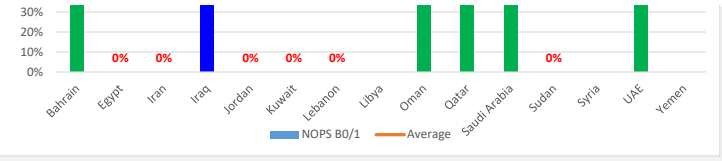
	FRTO B0/2	Average
Bahrain	100.00%	71.43%
Egypt	0.00%	71.43%
Iran		71.43%
Iraq		71.43%
Jordan	100.00%	71.43%
Kuwait		71.43%
Lebanon		71.43%
Libya		71.43%
Oman		71.43%
Qatar	100.00%	71.43%
Saudi Arabia	100.00%	71.43%
Sudan	0.00%	71.43%
Syria		71.43%
UAE	100.00%	71.43%
Yemen		71.43%
Regional average		71.43%



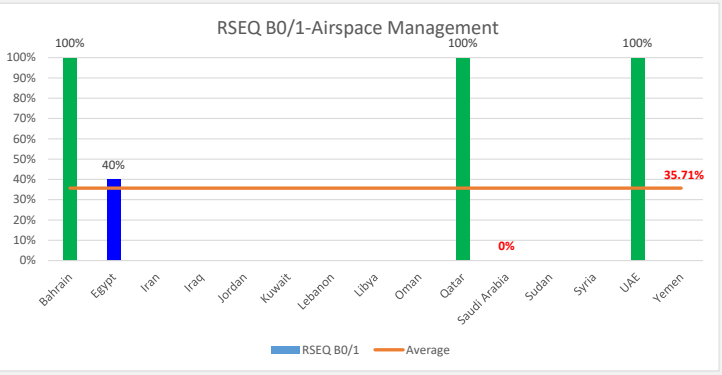
	NOPS B0/1	Average
Bahrain	100.00%	41.67%
Egypt	0.00%	41.67%
Iran	0.00%	41.67%
Iraq	66.67%	41.67%
Jordan	0.00%	41.67%
Kuwait	0.00%	41.67%
Lebanon	0.00%	41.67%
Libya		41.67%
Oman	100.00%	41.67%



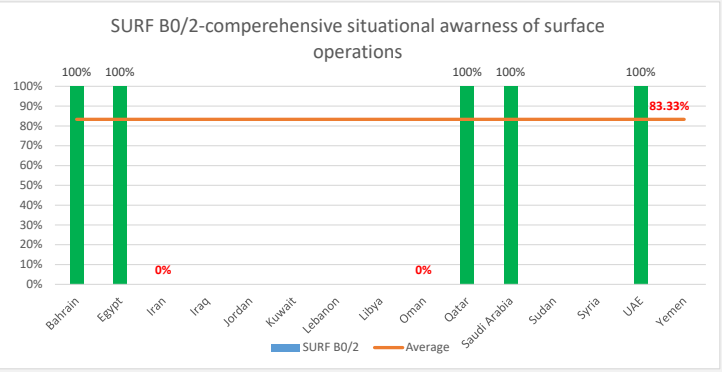
Qatar	100.00%	41.67%
Saudi Arabia	100.00%	41.67%
Sudan	0.00%	41.67%
Syria		41.67%
UAE	100.00%	41.67%
Yemen		41.67%
Regional average		41.67%



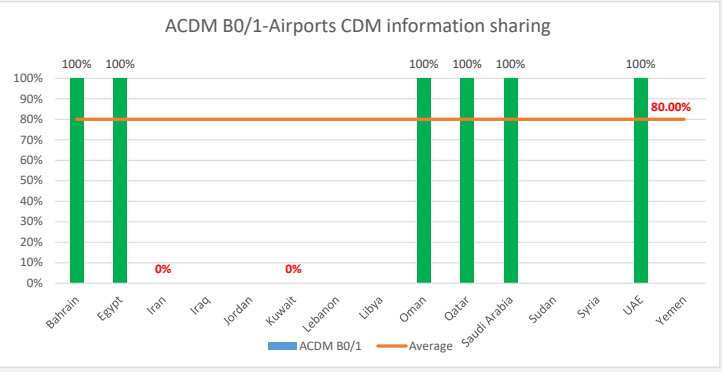
	RSEQ B0/1	Average
Bahrain	100.00%	35.71%
Egypt	40.00%	35.71%
Iran		35.71%
Iraq		35.71%
Jordan		35.71%
Kuwait		35.71%
Lebanon		35.71%
Libya		35.71%
Oman		35.71%
Qatar	100.00%	35.71%
Saudi Arabia	0.00%	35.71%
Sudan		35.71%
Syria		35.71%
UAE	100.00%	35.71%
Yemen		35.71%
Regional average		35.71%



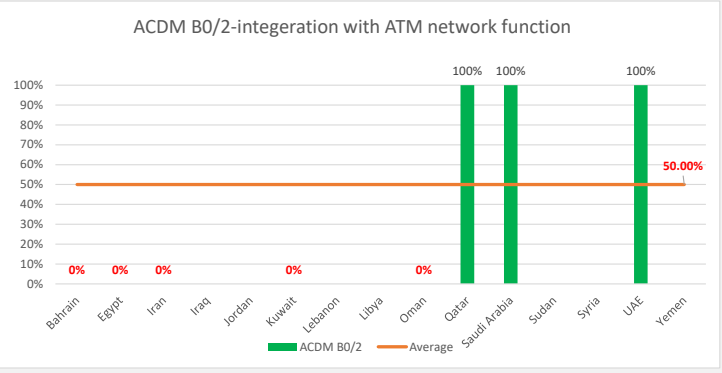
	SURF B0/2	Average
Bahrain	100.00%	83.33%
Egypt	100.00%	83.33%
Iran	0.00%	83.33%
Iraq		83.33%
Jordan		83.33%
Kuwait		83.33%
Lebanon		83.33%
Libya		83.33%
Oman	0.00%	83.33%
Qatar	100.00%	83.33%
Saudi Arabia	100.00%	83.33%
Sudan		83.33%
Syria		83.33%
UAE	100.00%	83.33%
Yemen		83.33%
Regional average		83.33%



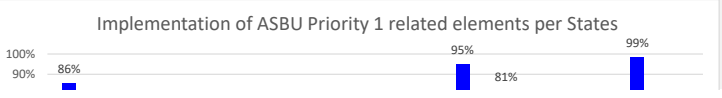
	ACDM B0/1	Average
Bahrain	100.00%	80.00%
Egypt	100.00%	80.00%
Iran	0.00%	80.00%
Iraq		80.00%
Jordan		80.00%
Kuwait	0.00%	80.00%
Lebanon		80.00%
Libya		80.00%
Oman	100.00%	80.00%
Qatar	100.00%	80.00%
Saudi Arabia	100.00%	80.00%
Sudan		80.00%
Syria		80.00%
UAE	100.00%	80.00%
Yemen		80.00%
Regional average		80.00%



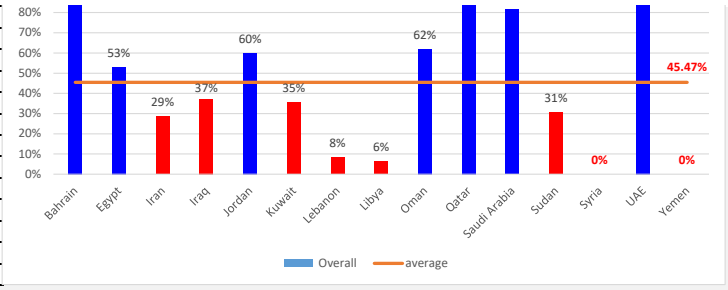
	ACDM B0/2	Average
Bahrain	0.00%	50.00%
Egypt	0.00%	50.00%
Iran	0.00%	50.00%
Iraq		50.00%
Jordan		50.00%
Kuwait	0.00%	50.00%
Lebanon		50.00%
Libya		50.00%
Oman	0.00%	50.00%
Qatar	100.00%	50.00%
Saudi Arabia	100.00%	50.00%
Sudan		50.00%
Syria		50.00%
UAE	100.00%	50.00%
Yemen		50.00%
Regional average		50.00%



	Overall	average
Bahrain	85.55%	45.47%
Egypt	53.05%	45.47%
Iran	28.57%	45.47%



Iraq	37.15%	45.47%
Jordan	60.04%	45.47%
Kuwait	35.41%	45.47%
Lebanon	8.33%	45.47%
Libya	6.25%	45.47%
Oman	61.90%	45.47%
Qatar	95.07%	45.47%
Saudi Arabia	81.48%	45.47%
Sudan	30.64%	45.47%
Syria	0.00%	45.47%
UAE	98.61%	45.47%
Yemen	0.00%	45.47%
Regional average		45.47%



APPENDIX 5H

TERMS OF REFERENCE (TOR) OF THE MIDANPIRG AIRSPACE MANAGEMENT WORKING GROUP (ASM WG)

I. TERMS OF REFERENCE

1.1 The Airspace Management Working Group was established by the MIDANPIRG/21 meeting to address the challenges in Airspace Management and provide a forum for the ATM specialists in the Region to work together to improve safety and efficiency, increase airspace capacity to meet future demand requirements; and reduce the environmental impact of increasing air traffic by offering improved ATM operations. Therefore, the **Airspace Management Working Group (ASM WG)** Terms of Reference are as follows:

a) Address the MID Region Airspace Management challenges:

i. conduct a holistic review and perform gap analysis of the MID ATS Routes Network in order to assess the regional capacity, hotspots and constraints;

ii. identify requirements and improvements for enhancing safety and achieving an efficient airspace structure within the MID Region;

iii. support states on coordinating the identified airspace and ATS route network requirements with relevant stakeholders (International Organizations, airspace user representative organizations and other ICAO Regions);

iv. address areas of conflicting traffic highlighted in the MIDRMA Annual Safety Monitoring Report (SMR);

v. support States in resolving interface issues with adjacent ICAO Regions;

vi. identify the Priority 1 ASBU elements with low level of implementation and support the States to overcome the challenges for the implementation of these elements; and

vii. address MID ATS route designators and 5LNCs challenges.

b) Support the enhancements of MID airspace structure and ATS route network:

i. improve connectivity and accessibility (specification, trajectory, spacing, etc.), considering the ability to offer additional routing options, to support operational requests, including contingency situations;

ii. foster a harmonized implementation of Performance Based Navigation (PBN) within the enroute environment;

iii. coordinate with the MIDRMA and IATA/airspace users to collect and analyse traffic data related to the proposed changes to the ATS Routes Network, as required;

iv. develop a working repository for route proposals to be used as a dynamic reference for the establishment / modification of ATS routes; and

v. support the development, coordination and submission of Proposals for Amendment (PfA) for processing to ensure the continuous and coherent development and update of the MID ANP in the respective subjects.

c) Endeavour to enhance safety and efficiency; increase capacity and reduce the environmental impact of increasing air traffic through the implementation of improved ATM operations:

i. support States to review and update their Letter of Agreement with adjacent FIRs to optimize utilization of the MID airspace in a harmonized manner;

ii. develop regional procedure to regulate and harmonize implementation of TOS, RAD and FLAS;

iii. foster the implementation of reduced Longitudinal Separation between FIRs;

iv. foster the implementation of Civil-Military Cooperation (CMC) and Flexible Use of Airspace (FUA);

v. support the planning and harmonized implementation of Free Route Airspace (FRA); and

vi. foster the implementation of (FF-ICE).

d) Support the planning for the operation/integration of new entrants such as Remotely Piloted Aircraft System (RPAS)/Unmanned Traffic Management (UTM) into the MID Region airspace;

e) Considering global and regional developments related to ATM, identify/propose necessary amendments to the MID Air Navigation Strategy for review by the ATM SG;

f) Report its activities to the ATM SG; and

g) Review periodically its Terms of Reference and propose amendments, as necessary.

h) The ASM AG would review and amend accordingly the action items and timelines based on the developments and progress.

II. COMPOSITION

2.1 The Working Group is composed of:

a) MIDANPIRG Member States;

b) concerned International and Regional Organizations; and

c) other representatives from States from other ICAO Regions; provider States and Industry may be invited on ad hoc basis, as observers, when required.

III. WORKING ARRANGEMENTS

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

3.2 In person meetings will be conducted once a year and when deemed necessary.

FRA Workshop Key-Takeaways

- *Implementation of FRA at national level:*

1) Implementation of FRA contributes to operational efficiency by allowing for more flexible route planning and reducing air traffic complexity, enhances airspace utilization and contributes to the reduction of emissions.

2) States planning to implement FRA are encouraged to:

a) follow a step-by-step approach;

b) collect required data and coordinate with concerned stakeholders, including Military Authorities, ATCOs, flight procedure designers, airspace planners and airspace users, to assess the needs for implementation of FRA;

c) consider the traffic flows in adjacent FIRs and the impact of the FRA implementation;

d) in determining the vertical and horizontal dimensions of the airspace where FRA would be implemented, ensure that the selected airspace is able to accommodate the main traffic flows and the needs of airspace users (civil and Military);

e) foster the implementation of the pre-requisites for FRA implementation (FUA, ASBU FRTO B0/1 Direct Route, FICE B0/1 (AIDC/OLDI);

f) consider the neighboring ANSP's requirements in regards to use of certain routes/waypoints for certain destinations;

g) study and determine the most suitable flight level for the transition between FRA and non-FRA;

h) conduct necessary safety assessments and change management studies;

i) conduct necessary testing including through the use of simulators;

j) conduct a benchmarking exercise with a leading ANSP that has successfully implemented FRA;

k) consider the capabilities/upgrade of their ATM systems to accommodate the flight planning in a FRA environment and Medium-Term Conflict Detection (FRTO B0/4 Basic conflict detection and conformance monitoring (MTCD);

l) develop training package for ATCOs and concerned stakeholders and provide appropriate training to ATC personnel to acquire the skills necessary to properly conduct FRA operations (before implementation);

m) develop specific procedures for air traffic controllers and assistants to manage FRA operations effectively; and publish these procedures for all operational staff to ensure uniform understanding and application;

n) use real-time simulations to test and validate FRA procedures; and

o) coordinate with the ICAO MID Office and concerned AIS data service providers for the publication of the FRA related sections/parts in the AIP in a harmonized manner.

3) FRA implementation (ASBU FRTO B1/1):

In order to ensure a seamless and safe implementation/integration of FRA, States are encouraged to:

a) finalize the FRA design and ensure the readiness of all operational staff through comprehensive training and coordination with stakeholders;

b) monitor initial operations closely to identify and address any emerging issues;

c) maintain regular communication with stakeholders to provide updates and address any emerging challenge;

d) consider the implementation of Dynamic sectorization (ASBU FRTO B1/4 Dynamic Sectorization); and

e) measure the benefits accrued from FRA implementation using specific KPIs.

- Implementation of FRA at regional level:

The expansion of FRA implementation cross borders and ultimately across regions will increase operational efficiency and contribute to reduced fuel consumption.

Example for implementation of cross-border implementation of FRA.

1- Based on traffic statistic, identify the main flow which will bring maximum efficiency with minimum complexity;

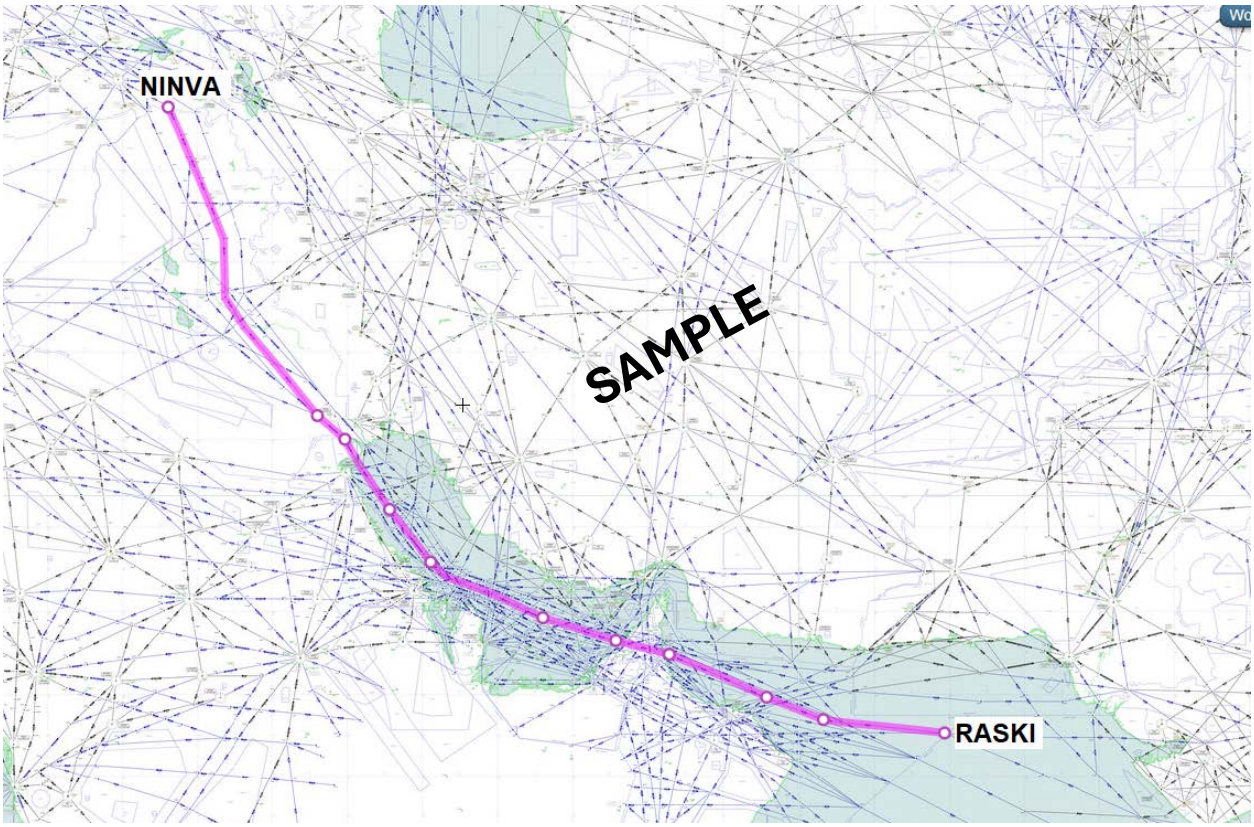
2- Determine the horizontal delineation of the FRA in each consecutive FIRs to cover operational needs including buffer;

3- Determine the vertical dimension of the volume in a coordinated manner considering that this portion of airspace should be free from conflict;

4- Make sure that FRA implementation prerequisites have been implemented and required enablers are available to support implementation of FRA at concerned FIRs;

5- Amend relevant agreements and procedures such as LoAs including longitudinal separation to be considered; and

6- Publish required procedures and FRA specifications in the AIPs of the concerned States in a harmonized manner and agree on a common implementation date in accordance with the AIRAC procedures.


NINVA
SAMPLE
RASKI

ASM Action Plan

I. List of ASM priority focus areas:

1. *Implementation of PBN in Enroute*
2. *Implementation of reduction of longitudinal separation*
3. *ATS route network (including establishment of ATS routes, designators and 5LNCs)*
4. *ASM improvements (CMC and FUA, FRA, RAD, TOS, FLAS & LoA)*
5. *RPAS/UTM*
6. *FF-ICE implementation*
7. *Others related tasks*

II. List of Action Items and implementation Status (as of 27 January 2025)

Focus area number	Action		Target date	Deliverable	Champion	Reference	Status / RMK
	No.	**Description**					
1	**1.1**	Publish implementation of RNAV 5 in their FIRs		RNAV 5 routes should be published in AIP ENR 3.2.	Lebanon	MIDANPIRG Conclusion 12/9	
					Libya		
					Syria		
	1.2	Implement RNAV 5 in the level band FL160 - FL460		Update State AIP, ENR 3.3 to indicate implementation of the RNAV 5 in the level band FL160 - FL460 (inclusive).	Egypt		On going
					Iran		
					Lebanon		
					Libya		
					Syria		
					Sudan		
	1.3	Publish RNAV routes in relevant part in the AIP		All RNAV routes either defined by RNAV designator or non-RNAV designator publish in ENR 3.2	Egypt		
					Kuwait		AIP Amend published Task completed
					Yemen		On going
		RNAV5 to RNAV1 within Baghdad and Kuwait FIR		3 parallel RNAV1 routes	Kuwait		

Focus area number	Action		Target date	Deliverable	Champion	Reference	Status / RMK
	No.	**Description**					
2	**2.1**	Coordinate with neighboring States to reduce surveillance longitudinal separation down to 10 NM, or non-surveillance to 30NM.		Detailed implementation plan	**Iraq** – Turkiye	MIDANPIRG Conclusion 13/5	
					Jordan		
					Kuwait		
					Libya – Chad		
					Oman – Pakistan & India		
					Yemen – Somalia		Not feasible
					Qatar - Iran		
3	**3.1**	Remove prefix “U” from ATS route designators		Revise AIP, ENR 3 to remove prefix “U”	**Iraq** (UL602, UM860, UP975, etc.)	MSG Conclusion 6/9	On going targeting Q2/2025
					Jordan (UM690, UR785, UB544, etc.)		AIRAC published Task completed
					Lebanon (UM425, UL620, UN438, etc.)		
					Oman (UB424, UL425, UB535, etc.)		AIRAC published Task completed
	3.2	Change ATS route designators		Revise AIP, ENR 3 to change the required ATS route designators in accordance with ANP volume II.	**Bahrain** (T557 to L557, Y604 to L704, Y856 to M556, T308 to M708, Z622 to M722, T872 to N572, T602 to N702, T319 to P319, T430 to P550, T444 to P700, T934 to P713)	Approved PfAs MID.II.2201-ATM & MID.II.2302-ATM	On going publication 12 Jun
					Oman (L695, M303, M681, M877, N430, P304, P316, P513, R402 to non-regional T507 to L559, T980 to L700, Q620 to M700, Z515 to M717, T970 to N570, Q978 to N718) Z855 to P558		AIP Amend published Task completed

Focus area number	Action		Target date	Deliverable	Champion	Reference	Status / RMK
	No.	**Description**					
					Qatar (Y604 to L704, T665 to N700, T430 to P550, T444 to P700)		Planning to change: T308 M708 T872 N872 T934 P713 Y856 M556 Z622 M722
					Saudi Arabia (G674, G799, M309 to non-regional H732 to M553, H741 to M320, J735 to P703, J749 to N709, J852 to M702, J874 to N704, T136 to L716, Y415 to M705, Y511 to M711, Z515 to M717, Q332 to N323, V13 to N703, J874 to N704, Y517 to N707, J749 to N709, T513 to N713, V975 to P705, Q510 to P710, T100 to P711, Q212 to P712, Q21 to P721, Q143 to P723, Q615 to P753, Q624 to P752)		On going, targeting Q4 2025.
					UAE (T665 to N700, Q415 to N715)		On going
					Yemen (L566 to Y101, P552 to Y103, R799 to Y105, Z515 to M717 and establish LADLI-PUTSO)		
		MID ATS Route PfA and Optimization of MID Region ATS Route Designator		develop plan and for review before processing the required PfA retain the designator	**All MID States**		

Focus area number	Action		Target date	Deliverable	Champion	Reference	Status / RMK
	No.	**Description**					
4	**4.1**	Continuation of FRA volume between UAE and Qatar		Detailed implementation plan	Qatar and UAE	ASM WG/1	On going, targeting Q4/2025
	4.2	Explore the feasibility of Development of Regional RAD/routing concept		RAD portal	Oman and Saudi Arabia. Other interested States	ASM WG/1	Oman: AIP Amend published. Saudi Arabia: On going targeting Saudi Arabia and Oman will provide PPT WG/3.
	4.3	Regional cooperation of optimization of major traffic flows		- Identification of the major traffic flow - Optimization of the network	Oman and MID States	ATM SG/10 WP/22 by Oman	On going
6	**6.1**	Preparation for FF-ICE implementation		- ICAO APAC/MID ATFM and FF-ICE Seminar 2025 (Dubai, UAE, 23 – 26 Feb 2025)			Conducted
	6.2	AIDC/OLDI applicability area (FF-ICE enabler)		Develop draft FF-ICE (B0/1) applicability area (based on operational needs)			
7	**7.1**	MID Region ATM Monitoring Dashboard		Support the development of the ATM Dashboard (offered by GACA/SANS)			On going

Focus area number	Action		Target date	Deliverable	Champion	Reference	Status / RMK
	No.	**Description**					
	7.2	Air Navigation Plan (Vol. II): Homogenous Areas and Major Traffic Flow (Table GEN II-1)		review and update ***Table GEN II-1*** for review before processing the required PfA			

ICAO Region	State	Location name	Location Indicator (ICAO code)	Visual Aids and Signals (1=Yes, 0=No)	Surveillance (1=Yes, 0=No)	RNAV& (1=Yes, 0=No)	CATC (1=Yes, 0=No)	CMAC (1=Yes, 0=No)	Routing (1=Yes, 0=No)	Automated Switching of TCL (1=Yes, 0=No)	Automated Switching of Stop Bars (1=Yes, 0=No)	Automated Activation of A-VDGS (1=Yes, 0=No)
MID	QATAR	HAMAD INTERNATIONAL	OTHH									
MID	QATAR	DOHA INTERNATIONAL	OTBD									

Implementation Dependencies between the A-SMGCS Services and Functions

A-SMGCS Services	ICAO GANP SURF Thread (corresponding Element)	A-SMGCS Components	Services/Functions Required ✓							
			Surveillance	RMCA	CATC	CMAC	Routing	Automated Switching of	Automated Switching of	Automated Activation A-VDGS
Surveillance	SURF – B0/2	Surveillance	⚙							(✓)
Airport Safety Support Service	SURF – B0/3	RMCA	✓	⚙						
	SURF – B1/3	CATC	✓		⚙		(✓)			
		CMAC	✓			⚙	(✓)			
Routing Service	SURF – B1/4	Routing	✓				⚙			
Guidance Service	SURF – B2/1	Automated Switching of TCL	✓				✓	⚙		(✓)
		Automated Switching of Stop Bars	✓				✓		⚙	
	-	Automated Activation of A-VDGS	(✓)							⚙

***Note 1**: The highlighted cells* ⚙ *indicates that **an ECI technical enabler is required**.*

Note 2**: The symbol (✓) denotes **Optional

Implementation Dependencies between the A-SMGCS Services and Functions

Acronyms / Descriptions:

- ***Automated Switching of TCL*** *: Automated Switching of Taxiway Centreline Lights (TCL). This Function provides individual guidance information to any mobile which has a cleared route. This is also known as Follow the Greens (FtG).*
- ***Automated Switching of Stop Bars*** *: This function provides the capability to switch off and on stop bars (some stop bars after being turned off are automatically turned back on after a specified time or when activated by sensors) following a Clearance input by the Controller. They can either be placed at a RWY Holding Position (as already in use at many airports) or across a taxiway.*
- ***Automated Activation of A-VDGS*** *: Automated Activation of Advanced-Visual Docking Guidance Systems (A-VDGS).This Function:*
  - *shall switch on the A-VDGS of an unoccupied assigned stand when the position of the mobile is D metres or T seconds away from the stand.*
  - *may be used to enhance the Surveillance Service for mobiles approaching the stand*
  - *should provide the Actual In/Off Block Time (AIBT/AOBT) and stand status to external systems*
- ***CATC*** *: Conflicting ATC Clearances (CATC)*
- ***CMAC*** *: Conformance Monitoring Alerts for Controllers (CMAC)*
- ***ECI*** *: Electronic Clearance Input*
- ***RMCA*** *: Runway Monitoring and Conflict Alerting (RMCA)*

Action Milestones

for the MID ACDM Planning and Implementation

State/: _ _ _ _ _ _ _ _ _ _ _ _ _ _

State ACDM Focal Point Name/email: _ _ _ _ _ _ _ _ _ _ _ _ _ _

Approach to implementation

1. **Is the A-CDM implementation a national program/project or a local airport by airport project?** *(Please select the applicable box)*

It is a national program where A-CDM is being implemented at several airports with one entity managing the overall program to facilitate common procedures and approach to the implementations	
It is an "airport-by-airport" approach where each project is managed at "local" level	
It is a combination of a national program and separate airport projects manager at "local" level	
There is not yet an implementation plan for A-CDM	

Please add free text comments if needed:

2. **If A-CDM has been/is Implemented / going to be implemented, please indicate at which airports and by what year:**

Airport	Year

Add additional lines as needed

For EACH airport mentioned above, please provide separate responses to QUESTIONS 3 to 22:

A-CDM Implementation Plan

Status of A-CDM implementation

3. **In which of the following phases is the A-CDM implementation?**
   (Please select the box that is the most suitable option)

No planning, i.e. nothing in relation to A-CDM has started yet	
Initial planning, i.e. collecting information about guidance material etc. to set the scope of the projects	
Planning well underway, i.e. scope set, engaged with stakeholders etc.	
Ready to launch A-CDM implementation project	
A-CDM implemented, i.e. procedures are in place and used in the "day-to-day" operations (Please indicate number of years for A-CDM used in day-to-day operations.	

A-CDM Project Scope

4. **Which one of the A-CDM conceptual elements are being implemented as part of the A-CDM** project? (*Please select the applicable box(es))*

Information sharing	
Milestone Management	
Variable Taxi Times	
Collaborative Management of Flight Updates	
Pre Departure Sequencing	
A-CDM in adverse conditions	
Integration with Air Traffic Flow Management (ATFM)	

Please add free text comments if needed:

5. **How is Information sharing implemented as par to the solution/planned A-CDM solution?**
   (*Please select the applicable box(es))*

Via Information Sharing platform collecting data in real-time from various systems.	
Via manual interaction and information exchange	
A combination of the two alternatives above	

Please add free text comments if needed:

6. **What Milestones (based on the Eurocontrol model) are captured/planned to be captured for the Milestone Management?** *(Please select the applicable box(es) and please indicate if the implementation/planned implementation uses any other names for the milestones)*

Eurocontrol Milestones	Applied	Alternative name
Milestone 1 - ATC Flight Plan Activated		
Milestone 2 - CTOT Allocation/EOBT – 2 Hrs		

Milestone 3 - Take off from Outstation		
Milestone 4 - Local Radar Update/FIR Entry		
Milestone 5 - Final Approach		
Milestone 6 - Landed		
Milestone 7 - In Block		
Milestone 8 - Aircraft at Gate		
Milestone 9 - TOBT Entered		
Milestone 10 - TSAT Issued		
Milestone 11 - Boarding Starts		
Milestone 12 - Aircraft Ready		
Milestone 13 - Start-up Request		
Milestone 14 - Start-up Approved		
Milestone 15 - Off Block		
Milestone 16 - Take Off		

Please add free text comments if needed:

7. Are you planning to apply the concept of Target Off Block Times?

(Please select the applicable box)

No	
Yes, and this will be the responsibility of the Airlines and/or appointed Ground Handlers to manage and update the Target Off Block Times (TOBT) in order to ensure that TOBT is accurate and reliable.	

a. If yes, will the project provide a solution that facilitates predictive TOBT calculations? *(Please select the applicable box)*

No	
Yes	

8. What methodology is applied/going to be applied for calculating Variable Taxi Time?

(Please select the applicable box)

"Table look up" utilizing fixed taxi time from gates to runways.	
Dynamic Variable Taxi Time using self-learning algorithms based on real-time and statistical surveillance data	

9. How is Target Start-Up Approval Time (TSAT) being calculated as part of Pre-Departure Sequencing?

(Please select the applicable box)

Manual TSAT calculations	
Automatic TSAT calculations utilizing a Pre Departure Sequence or full Departure Management system/capability	

a. If TSAT Is calculated automatically, at what key milestones are the TSAT calculated/re-calculated? *(Please select the applicable box(es))*

Milestone 1 - ATC Flight Plan Activated	
Milestone 2 - CTOT Allocation/EOBT – 2 Hrs	

Milestone 3 - Take off from Outstation	
Milestone 4 - Local Radar Update/FIR Entry	
Milestone 5 - Final Approach	
Milestone 6 - Landed	
Milestone 7 - In Block	
Milestone 8 - Aircraft at Gate	
Milestone 9 - TOBT Entered	
Milestone 10 - TSAT Issued	
Milestone 11 - Boarding Starts	

10. **How TSAT information is shared to Airlines operators/Ground Handling Agencies?**

(Please select the applicable box(es))

Via A-CDM portal/web interface/application	
Via mobile application	
Via Automatic Parking Aid displays at gate	
Data link	
Radio communication	

11. **What are the key parameters for data exchange between ACDM and ATFM?**
(Please specify in free text in the text box)

12. **To establish the A-CDM project, has any guidance material been used to facilitate the scope and objectives?**
(Please select the applicable box)

Yes	
No	

a. If yes, please indicate what guidance material has been used. *(Please select the applicable box(es))*

ICAO Doc 9971	
Eurocontrol A-CDM Manual	
CANSO A-CDM Guidance Material	
FAA Surface CDM material	
IATA Guidance material	
Specific airport “operational guidelines” materials	
Other material like Eurocae or ETSI standards for A-CDM (*Please specify)*	

Please add free text comments if needed:

Local Concept of Operations

13. **Has a “Local Concept of Operations” document for the A-CDM implementation been established?**
(Please select the applicable box)

Yes	
No	

a. If yes, please indicate the scope of the document. *(Please select the applicable box(es))*

It sets out the objectives that A-CDM is aiming to achieve	
It provides a common vocabulary with all definitions for A-CDM	
It provides information about information sharing and the sources for the information collected	
It provides information about the milestones used in the A-CDM process	
It defines each participating stakeholder's role and responsibilities as part of the A-CDM process	
It provides how A-CDM shall operate during irregular operations	
It provides descriptions of the process steps for various regular and irregular operations	
It includes how to measure the success of A-CDM once implemented, i.e. Key Performance Indicators (KPIs)	

Please add free text comments if needed:

Stakeholder Engagement

14. Which stakeholders are involved in the A-CDM implementation?
(Please select the applicable box(es))

Airport operator	
Airline operators	
Ground handlers	
Air Navigation Service Provider	
Network Operations/ATFM unit	
Others (*Please specify)*	

15. Has a Memorandum of Understanding (MOU) been established between the stakeholders?
(Please select the applicable box)

Yes	
No	

Please add free text comments if needed:

Project Implementation

16. Has a project group been established with all stakeholders involved?
(Please select the applicable box)

Yes	
No	

Please add free text comments if needed:

17. Is there a shared leadership or is the project management led by one organization?
(*Please select the applicable box)*

Shared leadership	

Leadership is appointed from one organization	

a. Please explain why one of the options is applied:

18. Is the project group meeting held on a regular basis or ad-hoc?
(*Please select the applicable box)*

Regular	
Ad-hoc	

a. Please explain why one of the options is applied:

19. What are the objectives identified in the project that A-CDM is aiming to achieve?
(Please select the applicable box(es))

Increase predictability	
Increase on-time performance	
Improve resource utilization	
Reduce taxi times	
Increase airport efficiency	
Reduce environmental nuisance	
Optimise the use of available capacity	
Improved safety	
Other *(please indicate what other objectives are identified in box below)*	

Please add free text comments if needed:

20. Has the project identified a more detailed Key Performance Framework with Key Performance Indicators to facilitate the measurements of the A-CDM implementation?
(Please select the applicable box)

Yes	
No	

a. If yes, would the project team be willing to share this work with the ICAO Regional officer for Aerodromes and Ground Aids (AGA) to aid in its future work such as the establishment of more detailed A-CDM guidelines? *(Please select the applicable box)*

Yes	
No	

Please add free text comments if needed:

Training

21. Has the project established training in any of the following areas for the implementation of A-CDM?

(Please select the applicable box(es))

Initial training for stakeholders to "what is A-CDM"	
Advanced training for stakeholders to "what is A-CDM"	
Training on how to operate under A-CDM procedures for all stakeholders	
Specialized/tailored training for each user in relation to "what do I need to do when A-CDM is operational at the airport"?	

Please add free text comments if needed:

Challenges

22. Please rank what hold most true in relation to your A-CDM implementation.
(Please use 1-5 where 1 indicates "no, do not agree at all" and 5 is "yes, agree completely").

A-CDM as a concept is too complicated and vague	
Developed guidelines are not enough to understand how A-CDM shall be implemented successfully	
It is challenging to understand what an A-CDM implementation is, i.e. what has to be achieved to say "yes, we have A-CDM at our airport"	
The challenge is to understand what system(s) is(are) and information are needed to implement A-CDM	
It is challenging to get all stakeholders engaged and committed to the A-CDM project	
It is challenging to manage the A-CDM project	
It is challenging to understand what value A-CDM will bring	
It is very complicated to establish how to measure the success of A-CDM	

Please add free text comments if needed:

MIDANPIRG/22 & RASG-MID/12-REPORT
APPENDIX 5O

ICAO Region	State	Location name	Location indicator [ICAO code]	ACDM Information Sharing (1=Yes, 0=No)	Milestones Approach (1=Yes, 0=No)	Variable Taxi Time Calculation (1=Yes, 0=No)	Collaborative Pre-Departure Sequencing (1=Yes, 0=No)	ACDM in Adverse Conditions (1=Yes, 0=No)	Colaborative Mangement of Fligh Updates (1=Yes, 0=No)
MID	QATAR	HAMAD INTERNATIONAL	OTHH						
MID	QATAR	DOHA INTERNATIONAL	OTBD						

Appendix B - Proposal for Amendment to MIDAMC Steering Group (MIDAMC STG) Terms of Reference

1. TERMS OF REFERENCE (TOR)

1.1 The Terms of Reference of the MIDAMC Steering are:

a) to promote the efficiency and safety of aeronautical fixed services in the MID Region through the operation and management, on a sound and efficient basis, of a permanent MID Regional ATS Messaging Management Center (MIDAMC);

b) foster the implementation of the Air traffic service Message handling service in the MID Region through provision of the guidance materials and running facilitation tools, utilizing the MIDAMC;

c) MIDAMC Steering Group will consist of a focal point from each Participating MID State who would represent the State and acts as the Steering Group Member;

d) MIDAMC Steering Group will be responsible for overall supervision, direction, evaluation of the MIDAMC project and will review/update the MIDAMC work plan whenever required;

e) the MID Region is considering the establishment of a Regional MID IP Network; the MIDAMC STG will drive the project which is called Common aeRonautical Virtual Private Network (CRV), until the Operation Group is established;

f) Develop and maintain a regional plan for the transition from AFS to SWIM services; and

g) provide regular progress reports to the CNS SG, and MIDANPIRG concerning its work programme.

1.2 In order to meet the Terms of Reference, the MIDAMC Steering Group shall:

a) develop/update the accreditation procedure for all users on the MIDAMC;

b) develop and maintain guidance materials for MIDAMC users;

c) discuss and identify solution for operational problems that may be arising;

d) provide support/guidance to States for AMHS Implementation, and monitor the AMHS activities;

e) assist and encourage States to conduct trial on the Implementation of the ATS extended services, and identify operational requirements;

f) provide guidance/support to States on implementation of XML-based data models (IWXXM, FIXM, AIXM, …etc) over AMHS;

g) monitor States' readiness to implement XML based data models over extended AMHS;

h) identify the need for any enhancement for the MIDAMC and prepare functional and technical specifications, and define its financial implications;

i) follow-up on ICAO standards and recommendations on the ATS messaging management and SWIM;

j) define future liabilities and new participating States and ANSPs in the progressive introduction of SWIM services;

k) follow-up and review the work of similar groups in other ICAO Regions including successful implementations of SWIM services to identify and adopt best practices;

l) Identify SWIM prerequisites in terms of infrastructure, including IP-based network; and monitor the status of implementation of those elements in the MID Region;

m) follow-up the implementation of IP Network in the MID Region supporting SWIM services, through joining relevant projects, like CRV and act as project manager; and

n) proposes appropriate actions for the early implementation also support the IP Network supporting the progressive introduction of SWIM services until the Operational Group is establish.

o) Develop and amend the relevant ICAO MID Regional documentation considering the progress made in SWIM implementation and considering the need for harmonization with the adjacent Regions in compliance with the GANP;

p) Coordinate with the relevant ICAO MID Regional Groups to ensure a gradual transition of AFS services to SWIM in the MID Region ensuring operational continuity and develop guidance material accordingly;

q) Provide guidance and training to MID States and stakeholders involved in SWIM implementation.

2. COMPOSITION

a) ICAO MID Regional Office;

b) Members appointed by the MIDANPIRG member States; and

c) Other representatives, who could contribute to the activity of the Steering Group, could be invited to participate 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 Study Group. The Study Group shall at all times conduct its activities in the most efficient manner possible with a minimum of formality and paperwork (paperless meetings). Permanent contact shall be maintained between the Chairperson, Secretary and Members of the Study Group 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.

APPENDIX 5Q

Outcomes of the

ICAO APAC/MID ATFM and FF-ICE Seminar 2025

Dubai, UAE, 23 – 26 February 2025

1. The Seminar was hosted by the General Civil Aviation Authority (GCAA) of the United Arab Emirates (UAE) in Dubai from 23 to 26 February 2025 and attended by 154 participants from APAC and MID States and international organizations.
2. The Seminar provided comprehensive background information on the ATFM and FF-ICE, including the requirements and the prerequisites, services and planning phases. In addition, the Seminar provided a forum for sharing experiences, lessons learned and perspectives from the States/ANSPs and airspace users with a highlight on cross-border solutions.
3. The Seminar was apprised of the ongoing work concerning the amendments of the ICAO provisions and guidance material related to ATFM and the cessation of FPL 2012.
4. The Seminar recalled the benefits of trajectory-based operations (TBO) and relationships between its key enablers (ATFM, SWIM, FF-ICE, Data Link).
5. The Seminar noted the importance of optimizing the airspace to enhance efficiency and increase capacity through the implementation of more efficient longitudinal separation, enhanced civil-military cooperation and flexible use of airspace, free route airspace, to meet growing air traffic demand.
6. The Seminar acknowledged that the level of preparedness to implement ATFM and FF-ICE would differ across various States and ICAO Regions. The Seminar stressed the importance of a well-prepared and coordinated implementation of these initiatives in order to achieve more substantial and immediate benefits on regional and global levels.
7. There is a strong need to expand the training and knowledge sharing among all stakeholders to support the planning and implementation of ATFM and FF-ICE.
8. The Seminar reminded of the critical importance of engaging all stakeholders at an early stage in planning the implementation of ATFM and FF-ICE.
9. The Seminar recalled the requirement of the PANS-ATM concerning the use of information services for the implementation of FF-ICE.
10. The Seminar recalled the importance of States taking necessary measures to support and foster the implementation of ATFM at the national level, which is essential for any sub-regional and regional solutions. It was highlighted that promulgating necessary ATFM civil aviation regulations and the development of a National ATFM Concept of Operations, among others, are key elements for the establishment of the ATFM Service.
11. The Seminar noted that the main enabler for effective ATFM service is strategic and operational capacity determination, accordingly, States must take necessary measures to determine these capacities.
12. The Seminar noted that the majority of the States indicated that the target date for the cessation of the ICAO 2012 Flight Plan could be met between 2032 – 2034.
13. Active participation and contributions in regional ATFM and FF-ICE meetings are essential to ensure harmonized procedures.
14. The Seminar observed that there is a need to establish a regional target date to terminate the mixed-mode operations.

15. The Seminar noted the necessity for a broader work programme to enhance the planning and synchronization of the development and execution of all pertinent TBO enablers, particularly the implementation of FF-ICE and ATFM.

16. The Seminar noted that the APAC FF-ICE Ad Hoc Group and MID ASM Working Group would draft the FF-ICE regional transition plan, for their respective region, for further review by the ATM SGs and endorsement by APANPIRG and MIDANPIRG.

17. The Seminar noted the benefits of integrating A-CDM into ATFM implementation.

18. ATFM post-operations analysis to be conducted as appropriate and data are shared to identify bottlenecks and areas for improvement.

19. The Seminar received with appreciation an offer from CANSO to further support the training and knowledge sharing on ATFM implementation.

20. Participants appreciated the value of joint events and invited ICAO to organize more joint events to support inter-regional cooperation and harmonization.

APPENDIX 5R

PROPOSED

FF-ICE REGULATORY REQUIREMENTS GUIDANCE & TEMPLATE

The proposed FF-ICE regulatory requirements guidance including 11 articles covering scope, definitions, responsibilities, technical requirements, oversight, and transitional arrangements.

Article 1 – Objective

1. Purpose: This regulation establishes the requirements and framework for the implementation of Flight and Flow Information for a Collaborative Environment (FF-ICE) within [State], in order to enhance collaborative flight planning, trajectory-based operations, and air traffic flow management. It aims to improve the efficiency and performance of Air Traffic Management (ATM) by enabling the sharing of comprehensive flight information among all stakeholders from the planning phase through completion of flight, consistent with ICAO's Global ATM Operational Concept (Doc 9854) and Global Air Navigation Plan (GANP, Doc 9750).

2. ICAO Alignment: The implementation of FF-ICE under this regulation shall be in accordance with ICAO provisions and guidance. FF-ICE is recognized as a cornerstone of a performance-based air navigation system, defining information requirements for flight planning, flow management, and trajectory management. This regulation therefore aligns with ICAO's Manual on Flight and Flow Information for a Collaborative Environment (Doc 9965) and relevant Standards and Recommended Practices (SARPs) in ICAO Annexes (including Annex 15 – Aeronautical Information Services) to ensure global standardization and interoperability.

3. Collaborative Environment: In pursuing these objectives, the regulation promotes a collaborative decision-making environment where flight information (including 4D trajectory, flight performance data, and flow constraints) is globally standardized and shareable. All ATM community members – Air Navigation Service Providers (ANSPs), aircraft operators, airport operators, and other stakeholders – shall have access to the appropriate flight data needed for strategic, pre-tactical, and tactical decision-making. This collaborative approach is intended to foster greater coordination, enhanced situational awareness, and the achievement of global performance targets in air navigation.

Article 2 – Scope

1. Applicability: This regulation applies to all flights and flight plan information exchanges under the jurisdiction of [State]'s civil aviation authority, including international and domestic flights for which flight plans are filed or managed within [State]'s Flight Information Region (FIR). It covers all stakeholders involved in the submission, processing, and use of flight plan data and flow management data, specifically:
• Airspace Users: All aircraft operators (civil, military operating as General Air Traffic, and other flight plan originators) filing flight plans for operations in the [State] FIR or as required by [State]'s Aeronautical Information Publication (AIP).
• Air Navigation Service Providers (ANSPs): The ANSP(s) responsible for Air Traffic Management within [State], including Air Traffic Control centers and Flow Management units, for processing and sharing flight information.
• Aeronautical Information Services (AIS)/Aeronautical Information Management (AIM) Units: Entities responsible for managing and distributing aeronautical information, to the extent they facilitate or interface with FF-ICE data (e.g., via System Wide Information Management services). SWIM

• Other Participants: Any other authorized stakeholders that receive or use flight data for operational purposes (e.g., airport operators, network managers, meteorological or aeronautical information service providers) as designated by the [Authority].

1. Phases of Flight: The provisions of this regulation address the flight information lifecycle from the strategic planning phase through pre-departure, and up to flight execution and post-operation as applicable. Initially, emphasis is on the pre-departure phase (FF-ICE Release 1 capabilities), with the framework adaptable to later phases of FF-ICE (during flight and post-flight information sharing) when those are implemented globally. The regulation is intended to accommodate future expansions of FF-ICE scope (such as trajectory updates during flight and real-time flow management data exchanges) without requiring fundamental changes to the legal framework.

3. Existing Provisions: This regulation complements and, where necessary, supersedes existing national provisions related to flight plan filing and air traffic flow management. Legacy practices. Beyond that transition, all relevant flight plan and flow information exchanges shall conform to the FF-ICE requirements set forth herein. Any differences between these requirements and applicable ICAO SARPs (Standards and Recommended Practices) or PANS shall be identified and notified by [State] in accordance with Article 38 of the Chicago Convention, if applicable.

Article 3 – Definitions

For the purpose of this regulation, the following terms shall have the meanings defined below. Where possible, these align with ICAO definitions in Doc 9965 and related guidance:

• **Flight and Flow Information for a Collaborative Environment (FF-ICE):** A concept and set of provisions for the sharing of flight information and related ATM data in a collaborative manner among stakeholders. FF-ICE encompasses globally standardized information elements and services that support flight planning, trajectory negotiation, and flow management across all phases of flight. (Note: In this regulation, "FF-ICE" generally refers to the initial implementation (Release 1) for flight planning/pre-departure unless otherwise specified.)

• **FF-ICE Services:** Distinct services defined under FF-ICE for exchanging flight information. FF-ICE Release 1 services include, but are not limited to: the Filing Service (submission of flight plans and revisions), Flight Data Request Service (query and retrieval of flight information), Planning Service (collaborative trajectory planning and negotiation), Trial Service (validation of flight plan feasibility without filing), Data Publication Service (distribution of flight plan data and updates to authorized users), and Notification Service (sharing of departure, arrival, or other event notifications) . These services are described in ICAO Doc 9965 and may be updated or expanded in future FF-ICE releases.

• **Flight Information Exchange Model (FIXM):** The global standard data format and schema for representing and exchanging flight information under FF-ICE. FIXM is an extensible markup language (XML) based model (with potential JSON or other encodings) that defines all required data elements (e.g., 4D trajectory, performance data, flight identifiers) for FF-ICE messages. FIXM version [X] refers to the specific edition of this model in use (e.g., FIXM 4.2 or later as specified by the [Authority]). Implementations must support the current ICAO-endorsed FIXM version and be backward-compatible as needed to ensure seamless data sharing.

• **System Wide Information Management (SWIM):** An interoperable environment for information management in ATM, enabling the sharing of ATM information (including flight and flow data) via standardized services, interfaces, and data formats. In the context of FF-ICE, SWIM provides the

underlying network and services through which FF-ICE services (flight plan filing, data requests, etc.) are implemented. SWIM principles include the use of internet-protocol networking, service-oriented architecture, and data exchange models like FIXM (Flight Information Exchange Model), AIXM (Aeronautical Information Exchange Model), and WXXM (Weather Information Exchange Model) for relevant data domains.

• **Global Unique Flight Identifier (GUFI):** A unique alphanumeric identifier assigned to each flight instance in the FF-ICE environment. The GUFI enables unambiguous tracking and correlation of flight data across different systems and services globally, avoiding confusion from callsign or flight number changes. It is a required data element in FF-ICE flight information exchanges for consistency across FIR boundaries.

• **Competent Authority:** The national authority responsible for civil aviation oversight and regulation in [State], typically the [State Civil Aviation Authority or appropriate designation]. This authority (hereafter referred to as "the Authority") is empowered to oversee the implementation of this regulation, ensure compliance, and grant approvals or exemptions as specified.

• **Air Navigation Service Provider (ANSP):** The entity (or entities) authorized by [State] to provide Air Traffic Management and related services (such as Air Traffic Control, Flight Information Services, Air Traffic Flow Management) within the designated airspace. The ANSP in [State] is the primary implementer of the technical and operational aspects of FF-ICE as required by this regulation.

• **Airspace User / Aircraft Operator:** Any entity responsible for operating an aircraft that requires the filing of a flight plan. This includes commercial airlines, air cargo operators, general aviation, and military units when operating as General Air Traffic in civil controlled airspace. Airspace users are responsible for submitting flight plan information in accordance with FF-ICE requirements.

(Other technical terms or acronyms used in this regulation (such as ATM, AIM, AFTN, AMHS, FIR, etc.) shall have the meaning commonly assigned to them in ICAO standards or [State]'s aviation regulations.)

Article 4 – General Requirements

1. Global Interoperability: [State]'s implementation of FF-ICE shall be interoperable with the global ATM system. Flight information exchanges must use globally standardized data definitions and formats to ensure that flight data can be understood and processed by other States' systems and by regional or global ATM networks. In particular, definitions of data elements shall be those globally standardized under ICAO's framework. The exchange mechanisms must allow the sharing of appropriate flight data across a wide set of participants, thereby facilitating collaborative decision-making and a common situational awareness among the ATM community.

2. Conformance to ICAO Related SARPS and FF-ICE Concept and Procedures: The design, operation, and maintenance of FF-ICE systems and procedures in [State] shall conform to applicable ICAO Standards and Recommended Practices. This includes (but is not limited to) relevant provisions in:
• Annex 11 – Air Traffic Services (as relates to flight plan requirements and ATS coordination),
• Annex 15 – Aeronautical Information Services (particularly data quality requirements, digital data exchange, and System Wide Information Management principles for aeronautical data),
• PANS-ATM (Doc 4444) provisions on flight plan submission, until such provisions are superseded by FF-ICE-specific procedures,

• PANS-AIM (Doc 10066) or other relevant procedural documents addressing information management and SWIM, and
• Guidance material such as Doc 9965 (FF-ICE Manual) and regional Air Navigation Plans.

The Global Air Navigation Plan (GANP, Doc 9750) and its Aviation System Block Upgrades (ASBU) strategy serve as the strategic context; accordingly, [State]'s implementation is intended to satisfy the applicable ASBU elements for FF-ICE (identified in the FICE thread of the GANP).

3. Performance-Based Approach: The implementation shall support a performance-based approach to air navigation. This means systems should be designed not only to meet minimum specifications but also to achieve performance objectives such as increased airspace capacity, improved flight efficiency, and enhanced predictability. Stakeholders should regularly review key performance indicators (e.g., delays, route efficiencies, throughput improvements attributable to improved information sharing) to ensure that FF-ICE is delivering the intended benefits in line with global and regional performance targets.

4. Infrastructure and Environment: The operation of FF-ICE in [State] shall be conducted in an appropriate technological environment. The ANSP is responsible for providing or procuring the necessary communication network and information management infrastructure (e.g., SWIM-compliant messaging systems, secure internet connections, message brokers, etc.) to transport and distribute FF-ICE data. This infrastructure should have the capacity and reliability to handle the increased volume and richness of flight data that FF-ICE entails (such as trajectory details, frequent updates, and multiple stakeholder access), ensuring timely and robust information exchange.

5. Regional Coordination: Recognizing that FF-ICE implementation is most effective when harmonized regionally, [State] shall coordinate its FF-ICE plans with neighboring States and through ICAO regional planning groups (e.g., [relevant PIRG/Regional group]) to facilitate a smooth transition. This includes participating in regional task forces, workshops, or trials for FF-ICE, sharing best practices, and agreeing on interface control documents or service level agreements for cross-border data exchange. Inter-state agreements may be established as needed to govern the exchange of flight data across FIR boundaries using FF-ICE, ensuring that data originating in [State] can be seamlessly used by adjacent FIRs and vice versa.

Article 5 – Responsibilities

5.1 – State Oversight and Authority Responsibilities:

1. Regulatory Oversight: The [Civil Aviation Authority] ("the Authority") is responsible for overseeing the implementation of FF-ICE as per this regulation. The Authority shall issue any necessary guidance material, directives, or supplementary procedures to ensure clarity in how FF-ICE is to be adopted by the ANSP and airspace users. The Authority will also integrate FF-ICE requirements into its safety oversight programme, ensuring that the transition to the new system maintains or enhances the level of safety.

2. Approval and Certification: The Authority shall approve the ANSP's FF-ICE implementation plan and any significant system upgrades, or procedural changes associated with FF-ICE. If required under national law, the Authority may certify or license specific FF-ICE systems or service components (for example, validating that the ANSP's FF-ICE system meets technical standards, or approving third-party service providers interfacing with the system). The Authority should also ensure that appropriate

training and competency requirements are defined for personnel (both regulatory and operational) involved in FF-ICE operations.

3. International Representation: The Authority shall represent [State] in international and ICAO forums regarding FF-ICE. It should actively engage in ICAO panels, working groups, and regional meetings to stay up to date with FF-ICE developments (such as new ICAO SARPs, FIXM version updates, or Release 2/Release 3 progress), and reflect those in national requirements. The Authority will coordinate the filing of any difference to ICAO standards (if any arise from this implementation) and ensure [State]'s AIP is updated accordingly to notify users of the new flight planning requirements.

4. Continuous Improvement: The Authority is responsible for monitoring the effectiveness of FF-ICE implementation and enforcing corrective actions if performance objectives are not met. In consultation with stakeholders, the Authority should periodically review this regulation and related procedures to incorporate lessons learned, new ICAO provisions, or technological advancements (such as improved data exchange techniques or cybersecurity measures).

5.2 – Air Navigation Service Provider (ANSP) Responsibilities:

1. Implementation of FF-ICE Services: The ANSP shall develop, deploy, and maintain the necessary technical systems and operational procedures to provide FF-ICE services as defined in Article 3. At minimum, the ANSP shall implement the Filing Service and Flight Data Request Service (the basic services) on introduction, and subsequently implement the other services (Planning, Trial, Data Publication, Notification) in accordance with the phased implementation plan in Article 10. Each service may be implemented as a SWIM-enabled service accessible to authorized users (e.g., via secure web services or message interfaces). The ANSP must ensure that the legacy flight plan processing (e.g., using the 2012 format via AFTN/AMHS) continues in parallel during the transition, and that both legacy and FF-ICE flight plans are correctly managed to avoid any operational discrepancies during the coexistence period.

2. Data Quality and Standards Compliance: The ANSP shall ensure all flight information handled under FF-ICE meets the data quality requirements set by ICAO. This includes accuracy, resolution, integrity, timeliness, completeness, and traceability of data, as applicable under Annex 15 and PANS-AIM provisions for aeronautical data. The ANSP must use the FIXM standard for all FF-ICE data exchanges and ensure that their systems validate incoming and outgoing messages against the FIXM schema (and any accompanying business rules or validation rules defined by ICAO or regional agreements). Rejection or error messages shall be generated for flight information that does not conform to the required format or contains invalid data, and clear feedback must be provided to the submitting user for correction (e.g., using Trial Service to validate plans before filing).

3. Interoperability and Interface Management: The ANSP is responsible for establishing and maintaining interfaces between the FF-ICE system and other relevant ATM systems, both internal and external. Internally, the FF-ICE data should interface with [State]'s flight data processing systems, Air Traffic Flow Management (ATFM) tools, surveillance tracking systems, etc., so that all ATM functions have access to enhanced information. Externally, the ANSP must connect with adjacent FIRs/ANSPs and any regional network centers (for example, ICAO regional SWIM hubs or a network manager) to exchange flight information. This may involve using standard protocols such as ATS Interfacility Data Communication (AIDC) messages or modern SWIM APIs to share data like boundary estimates, coordination messages, or flight updates. The ANSP should ensure that a flight plan filed once (in FF-ICE format) is made available to all air traffic service units that require it along the route, without the operator needing to re-file or provide redundant information for different FIRs – in line with the FF-ICE concept of a single shared flight object.

2. Training and Procedures: The ANSP shall develop new procedures and train its operational personnel (air traffic controllers, flow managers, flight data processors, etc.) on the use of FF-ICE tools and information. This includes training on how to interpret and utilize 4D trajectory data, how to conduct collaborative decision-making with flight operators during the planning phase (e.g., responding to trajectory negotiation proposals), and how to handle system alerts or error conditions related to FF-ICE messages. Updated manuals, checklists, and contingency procedures (for example, fallback to legacy flight plan in case of system outage) must be put in place. The ANSP should also conduct simulations or trials to ensure controllers and staff are familiar with the new information flows before full operational use.

5. Continued Service Provision: The ANSP is responsible for the continuous availability and reliability of the FF-ICE services. Service level targets (such as system uptime, response times for flight data requests, and capacity to handle peak filing rates) should be defined and met. In the event of planned outages (system upgrades, maintenance) or unplanned downtime, the ANSP must have contingency arrangements (e.g., reverting to legacy systems or manual coordination) to ensure that flight planning can continue, and safety is not compromised. The ANSP shall promptly notify the Authority and users of any major disruptions in the FF-ICE service and take remedial actions.

5.3 – Airspace User (Aircraft Operator) Responsibilities:

1. Submission of Flight Information: Airspace users, including aircraft operators or their designated agents (such as Flight Operations Centers or dispatch services), shall submit flight plans and associated flight information using the FF-ICE formats and systems designated by the ANSP under this regulation. This means that for flights planned on/after the implementation date, the operator must use the new electronic filing mechanism (e.g., a SWIM-enabled interface or web portal provided by the ANSP) rather than the old paper or AFTN message formats. The flight information provided shall include all required data elements as per the FIXM/FF-ICE schema – for example, complete 4D trajectory intent, aircraft performance parameters, preferred routes or scheduling constraints, and any additional data fields mandated by [State] (such as special status indicators, if applicable). Operators must ensure the data is accurate and timely, updating or canceling flight plans as needed in accordance with the procedures.

2. Use of Unique Identifiers: Operators shall use any unique identifiers or reference codes required by the FF-ICE system. This includes the Global Unique Flight Identifier (GUFI) assigned to the flight. An operator receiving a GUFI for a flight (either by creating one when first filing or by using one assigned by the system) must use that identifier in all subsequent communications or data exchanges about that flight. This ensures consistency in referencing the flight across different systems and stakeholders.

3. Compliance with Procedures: Operators must comply with any new procedures related to collaborative flight planning. For instance, if the ANSP's Planning Service proposes modifications or solutions (such as route adjustments to avoid congestion), the operator should engage in the collaborative decision-making process by responding within the required timeframes and providing necessary information or preferences. If using the Trial Service, operators should make use of the capability to pre-validate flight plans to reduce filing errors. Additionally, operators should follow any slot allocation or flow management measures that are communicated through the FF-ICE Notification or Data Publication services (for example, if a ground delay program is implemented, the relevant delay info will be provided via these services).

4. Equipment and Capability: It is the responsibility of airspace users to equip themselves (or make arrangements) with the necessary capability to interface with the FF-ICE system. This may involve updating flight planning software to support FIXM formats, obtaining digital certificates or network

access for SWIM services as required by the ANSP, and training dispatchers or flight operations officers on the new system. Operators are encouraged to participate in any trials or familiarization programmes offered by the ANSP or Authority ahead of the implementation date to ensure readiness.

5. Continued Adherence and Feedback: After implementation, operators shall continue to adhere to FF-ICE requirements for all relevant flights. If any issues or deficiencies are encountered (for example, difficulties in filing or errors in data exchanges), operators should promptly inform the ANSP and cooperate in resolving them. Regular user feedback may be solicited by the Authority or ANSP to improve the system. Operators that fail to use the FF-ICE system properly (or attempt to bypass it without authorization) may be subject to enforcement actions under Article 9.

Article 6 – Technical and Operational Requirements

1. Data Format and Exchange Standards: All flight plan and flow information exchanges under FF-ICE shall use the Flight Information Exchange Model (FIXM) standard for data representation. The [Authority/ANSP] shall specify the accepted FIXM version(s); initially this will be FIXM [current version]. Messages and data sets must conform to the FIXM XML schema definitions and associated business rules. The system must enforce schema validation for each submitted flight plan or message. In addition, for certain structured fields (e.g., aerodrome identifiers, aircraft type designators, route waypoints), data must comply with relevant ICAO coding standards (e.g., location indicators as per Doc 7910, aircraft types per Doc 8643, etc.).

2. System Wide Information Management (SWIM) Interfaces: The FF-ICE implementation shall be built upon SWIM principles. The ANSP must provide service interfaces (such as web service APIs or message queue endpoints) for the FF-ICE services, accessible to authorized users (airlines, adjacent ANSPs, etc.) over a secure network. The interface specifications (message patterns, access protocols, authentication methods) should follow international SWIM profiles so that external systems can connect with minimal custom adaptation. For example, the Filing Service and Flight Data Request Service could be offered as SOAP or RESTful web services with defined request/response message structures, or through publish/subscribe mechanisms for data like flight plan publications. These services should also be registered in any regional or global SWIM registry to facilitate discovery by stakeholders. Legacy telecommunications networks (AFTN/AMHS) should be bridged to the new system as necessary — for instance, a gateway that converts incoming traditional FPL messages into FF-ICE format or vice versa for distribution to users not yet on SWIM.

3. Unique Flight Identification: The technical system must implement the unique flight identifiers (such as GUFI) in all relevant processes. This ensures that if a flight's data is updated (e.g., a change in departure time or route), all systems (flight data processors, flow tools, airport systems) that reference that flight via the GUFI will automatically relate the updates to the same flight object. Mechanisms should be in place to handle cases like flight plan duplicates or revisions – for example, if an operator files a new plan for a flight already having a GUFI, the system should recognize it as an update rather than a separate flight, according to rules defined in Doc 9965. Coordination with international partners is required to ensure that the GUFI (or any future globally unique identifier) is recognized across FIR boundaries.

4. Data Elements and Extensions: The FF-ICE data model includes a comprehensive set of mandatory and optional data elements (e.g., departure times, 4D waypoints, fuel endurance, etc.). [State] shall adopt the full core dataset as defined by ICAO for FF-ICE Release 1. If [State] requires additional data elements (for example, a special indicator for security flights, or national routing preferences), these shall be implemented using the FIXM extension mechanism so as not to break compatibility with the core model. Such extensions must be clearly documented and shared with other stakeholders (through regional coordination) to facilitate their use or acceptance by other systems. Conversely, [State]'s

system should be capable of accepting FF-ICE messages from foreign operators/ANSPs that contain recognized regional extensions, even if [State] does not use that data, provided it does not compromise processing.

5. Time Synchronization and Reference: All time stamps in FF-ICE exchanges (e.g., estimated off-block time, take-off time, etc.) shall be in Coordinated Universal Time (UTC) and adhere to the format prescribed by ICAO (ISO 8601 date-time format if using XML). The system clocks of the ANSP's FF-ICE infrastructure must be accurately synchronized (for example, via GPS time or a Network Time Protocol NTP service) to avoid discrepancies in time-dependent data like trajectories or flow constraints.

6. Trajectory and Performance Data Use: The system shall be capable of processing 4D trajectory information provided in flight plans. This includes calculating or parsing latitude/longitude waypoints with altitude and time constraints and handling complex route elements (such as speed/level changes, cruise climb details, etc.). The ANSP's tools should use this rich trajectory data for conflict detection, demand-capacity balancing, and optimization. Additionally, performance data (aircraft weights, speed capabilities, etc.) provided under FF-ICE can be used to improve trajectory predictions. The regulation mandates that such data, when provided by operators, be used in accordance with ICAO guidance and local procedures to enhance ATM decision-making (e.g., more accurate calculation of sector loads, better predictions for coordination with meteorological conditions, etc.). The Authority may require the ANSP to demonstrate how these data are utilized effectively as part of safety assessment or efficiency reviews.

7. Legacy System Integration: During the transition and, if needed, beyond, the ANSP must maintain interoperability between the FF-ICE environment and legacy flight plan processing systems. For example, if certain external systems (like military flight plan systems or adjacent FIRs not yet on FF-ICE) continue to use the traditional FPL 2012 messages, the ANSP should implement conversion tools that can translate an FF-ICE flight plan into a standard FPL format (and vice versa) to ensure no loss of information. All converted legacy messages must be carefully constructed so that critical information (such as extensive route information or supplementary data) is not truncated or omitted due to format differences. The ANSP should also continue to support existing coordination messages (such as AIDC or OLDI messages between control centers) until such time as those too are transitioned to FF-ICE or equivalent modern protocols.

8. Validation and Testing: Prior to full operational use, the FF-ICE system and its components shall undergo rigorous testing and validation. This includes:

• **Conformance Testing:** Ensure the system correctly implements the FIXM schema and all message types – test with a wide range of flight plan scenarios (normal, alternate routes, various aircraft types, etc.) including edge cases.

• **Interoperability Testing:** Conduct tests with external partners (e.g., airlines connecting their flight planning software to the ANSP's system, or tests with neighboring ANSPs and the ICAO regional SWIM network) to verify that data exchange works end-to-end and that there are no data mismatches or connectivity issues.

• **Operational Trials:** Carry out shadow operations or parallel runs where flights are filed and managed through FF-ICE in simulation or in parallel to live operations, to gauge performance and identify any operational issues without impacting live traffic.

• **Certification (if applicable):** If [State] requires, an official certification process may be conducted. For instance, similar to the Network Manager's B2B certification in Europe, [State] may require that

aircraft operators or flight plan service providers successfully complete a validation process with the ANSP's system before being allowed to use FF-ICE operationally. The ANSP should provide a test platform and support for users to achieve this validation.

The technical requirements set out in this Article shall be updated as necessary by the Authority through amendments or advisory circulars, particularly to remain aligned with global standards (such as newer FIXM releases, or FF-ICE Release 2 requirements when they become available).

Article 7 – Interoperability and Regional/Global Harmonization

1. ASBU Alignment: [State]'s FF-ICE implementation shall align with the internationally agreed Aviation System Block Upgrades (ASBU) modules under the GANP for Flight Information Exchange. Specifically, this implementation corresponds to the FF-ICE related ASBU elements: B0-FICE (Ground-Ground Integration), B1-FICE (Pre-Departure Collaborative Flight Planning Applications), B2-FICE (Extended Multi-Center Flight Data Integration), and B3-FICE (Full FF-ICE implementation across all phases). In planning the rollout, [State] should consider the timelines suggested by the GANP for these blocks and coordinate its targets accordingly so as to be in step with global ATM evolution.

2. Adjacent FIR Coordination: The ANSP and Authority must coordinate with adjacent FIRs to ensure that flight plans do not need to be re-filed or manually adjusted when crossing FIR boundaries. This may involve bi- or multilateral agreements on how FF-ICE data is exchanged. For example, if a neighboring FIR is not yet FF-ICE capable, agree on an interim procedure where [State] will send a transformed flight plan in the legacy format to that FIR's ATC unit. Conversely, for neighbors that have implemented FF-ICE, establish connectivity (network links, security agreements) to directly share the flight object information. The goal is seamless gate-to-gate operation for the flight, with consistent information available to every ATC unit along the route.

3. Use of Regional Networks: Where a regional ATM network or centralized facility exists (such as a future ICAO regional SWIM node in the MID region), [State] shall make use of those for broader interoperability. [State]'s FF-ICE system should feed flight data into the regional network to assist in flow management beyond national boundaries and to receive regional constraints or updates. Participation in such networks may also reduce duplication (e.g., filing once to the network covers multiple FIRs). The Authority should ensure that any regional requirements (for example, specific data elements or performance criteria mandated by a regional implementation plan) are incorporated into [State]'s system.

4. Interoperability with Other Domains: FF-ICE will be one part of the wider information management environment, which also includes meteorological information exchange (IWXXM/WXXM), aeronautical information (AIXM), surveillance data sharing, etc. The system implemented under this regulation should be designed to eventually interoperate with these domains as well. For instance, if a trajectory management system uses both flight plan data and real-time weather information, the interfaces and data models should allow combining those. Similarly, if airports are sharing surface trajectory information (perhaps through the Airport Collaborative Decision-Making process or surface management systems), there should be pathways to integrate that with FF-ICE data for end-to-end trajectory optimization. The Authority should encourage an architecture where all these information exchanges use compatible standards and a common SWIM framework.

5. Global Updates and Compatibility: As ICAO and the global community refine FF-ICE (e.g., development of FF-ICE Release 2 for the tactical phase, or new concepts like Trajectory Based Operations integration), [State] shall strive to update its systems in a timely fashion so as to remain globally compatible. This includes adopting any future globally unique flight object concepts or revisions to message semantics. To avoid fragmentation, any change to the implementation that might

affect international partners (like a new data element that neighboring FIRs must handle) should be communicated well in advance through ICAO channels. The Authority should publish in the AIP (or other official publication) the necessary details of [State]'s FF-ICE system for international awareness, such as the effective date of FF-ICE usage, the communication addresses or endpoints for filing, accepted message formats, and any differences from the ICAO baseline.

Article 8 – Cybersecurity and Data Governance

1. Information Security Management: The ANSP and all participating stakeholders shall implement robust cybersecurity measures to protect FF-ICE related systems and data. FF-ICE being a mission-critical system for ATM, it is essential to ensure confidentiality, integrity, and availability of the information. The ANSP must develop an Information Security Management System (ISMS) or incorporate FF-ICE into existing aviation ISMS frameworks, consistent with ICAO's cybersecurity principles (such as those outlined in the ICAO Aviation Cybersecurity Strategy) and industry standards (e.g., ISO/IEC 27001 for information security). This includes conducting risk assessments for potential cyber threats (e.g. unauthorized access, data corruption, denial-of-service attacks on the flight plan system) and implementing controls such as firewalls, intrusion detection systems, access controls, and network segmentation to mitigate those risks.

2. Access Control and Authentication: Only authorized users and systems shall be permitted to access the FF-ICE services and data. The ANSP must enforce strong authentication mechanisms for any user or system connecting to the FF-ICE interface – for example, the use of digital certificates, secure tokens, or VPN access with multi-factor authentication for external users (like airline dispatch offices). Each connecting entity (whether an airline system, an adjacent ANSP, or an internal workstation) should be identified and granted role-based access permissions. Data access should be limited to what each party legitimately needs (principle of least privilege); for instance, an airline should only be able to access its own flight data (plus relevant ATM constraints), whereas an adjacent ANSP can access flights crossing into their FIR.

3. Encryption and Data Protection: All communications carrying FF-ICE data must be encrypted in transit using strong cryptographic protocols (such as TLS for IP-based communications). This ensures that flight plans or flow management messages cannot be intercepted or read by unauthorized parties. If any FF-ICE data is stored at rest (e.g., in databases or archives), appropriate encryption or security controls should protect it, especially if it contains sensitive operational information. Additionally, the integrity of data must be protected – mechanisms like digital signatures or message authentication codes can be employed so that any tampering of a flight message en route would be detected and rejected.

4. Data Governance and Privacy: Flight plan data generally contains operational information, but it may also include certain personal or sensitive details (for example, pilot contact information in supplementary information, or military mission data). The Authority and ANSP shall ensure that data governance policies are in place for all information handled in FF-ICE. This includes:

• **Data Ownership:** Clarifying that the originator of the flight data (the operator) retains ownership of the data they submit, while allowing the ANSP and other ATM participants to use that data for safety and efficiency purposes under this regulation.

• **Permitted Use:** Ensuring that FF-ICE data is used only for legitimate ATM and aeronautical purposes. Secondary use of the data (for example, for commercial data mining or non-ATM purposes) is prohibited unless explicitly authorized by the data owner and the Authority.

• **Data Retention:** Setting rules for how long flight data will be retained in the system. For instance, the ANSP might keep filed flight plan records for a certain period (e.g., 30 days post-flight for operational analysis, or longer if needed for incident investigations). Beyond the necessary retention period, data should be securely disposed of or archived in accordance with [State]'s data protection laws and ICAO guidelines.

• **Privacy Compliance:** Adhering to any applicable personal data protection laws for information contained in flight plans. While most FF-ICE data is not personal (being about flights), any personal elements (like names, telephone numbers in emergency contacts, etc.) should be safeguarded under privacy regulations. The Authority should ensure that the handling of such data by the ANSP or other parties is compliant with national privacy legislation or policies.

5. Resilience and Recovery: Cybersecurity is not only about prevention but also about resiliency. The ANSP must ensure that the FF-ICE system design is resilient to cyber incidents. This may involve redundant systems, regular backups of flight data, and the ability to revert to a safe state (like using the legacy system) if the FF-ICE system must be shut down or isolated due to a cyber-attack. Incident response plans shall be in place specifically for FF-ICE, detailing how to identify a security breach, contain it, eradicate any threats, recover operations, and report the incident to the Authority and relevant stakeholders. Regular cybersecurity drills or exercises involving the FF-ICE system should be conducted to practice these response plans.

6. Audit and Monitoring: The ANSP shall implement continuous monitoring of the FF-ICE infrastructure for security events. Audit logs should record key events (such as user logins, message submissions, data queries, and any administrative actions). These logs must be protected from alteration and should be reviewed periodically for signs of unauthorized activities. The Authority reserves the right to conduct or require independent security audits of the FF-ICE system. If such an audit finds deficiencies, the ANSP must address them promptly. Significant findings or breaches should be shared with ICAO or regional bodies if they have implications for global interoperability (for example, if a type of attack is observed that could threaten other states' FF-ICE systems, sharing that information will help improve collective security).

Article 9 – Compliance, Monitoring and Enforcement

1. Compliance Monitoring: The [Authority] shall monitor compliance with the requirements of this regulation through its safety oversight and audit programmes. This includes reviewing the ANSP's implementation (system design, test results, operational readiness) before and after commissioning, and verifying that airspace users are adhering to the new flight plan filing procedures. The Authority may inspect relevant documentation, require demonstration of system capabilities, and observe operations to ensure that all provisions (technical, operational, security) are properly in effect.

2. Incident Reporting: Any significant issues in the implementation or operation of FF-ICE that could affect service provision or safety must be reported to the Authority. For example, if the ANSP experiences a major system failure affecting flight plan processing or if an operator repeatedly encounters errors filing flight plans, these should be logged and reported. Based on such reports, the Authority can determine if further investigation or remedial action is needed. Additionally, the regulation encourages a just culture environment for reporting – meaning that unintentional errors or difficulties in using the new system should be reported by operators or controllers without fear of unnecessary punishment, so that the system can be improved. However, gross negligence or willful non-compliance is not protected.

3. Enforcement Actions – ANSP: If the ANSP fails to fulfill its obligations (for instance, significant delays in implementation without valid justification, not meeting data quality requirements, or

inadequate cybersecurity protections), the Authority is empowered to take enforcement measures. These may include directives to take corrective action by a set deadline, imposition of additional oversight (e.g., Authority representatives on-site to monitor implementation), or financial penalties as permitted under [State]'s aviation laws or the terms of the ANSP's certification. In extreme cases, if non-compliance severely jeopardizes safety or international obligations, the Authority could limit or suspend certain services of the ANSP until compliance is restored (recognizing this is a last resort given the impact on operations).

4. Enforcement Actions – Airspace Users: From the effective date of FF-ICE implementation (after any transition period in Article 10), it is expected that all flight plan filings be via the FF-ICE system. If an airspace user (airline or other operator) persistently fails to use the required system or format (e.g., continuing to file old-format plans without authorization, or submitting incomplete/incorrect FF-ICE data that does not meet requirements), the Authority or ANSP may take escalating actions. Initially, this could be warnings or targeted outreach to ensure the operator understands the requirements. If non-compliance continues, the ANSP may refuse to accept flight plans from that operator that are not compliant, meaning the flight would effectively not be authorized to operate in [State]'s airspace until a proper flight plan is filed. Additionally, administrative penalties or fines may be imposed on operators for violations of civil aviation regulations (consistent with [State]'s enforcement provisions). The Authority will ensure that any such actions are coordinated and communicated clearly to avoid unintended disruptions (for example, coordinating with an operator's State of Registry or issuing NOTAMs if needed to alert foreign operators).

5. Performance Reviews: As part of compliance monitoring, the Authority will also review whether the intended benefits of FF-ICE are being achieved. This ties into compliance in a broader sense – e.g., if some stakeholders are not using the system to its full capability (such as airlines not providing optional data that could improve ATM), the Authority may encourage or eventually mandate fuller compliance (like requiring certain data fields that were optional if it proves critical for ATM outcomes). Regular reports on metrics (e.g., the percentage of flights filed through FF-ICE, number of collaborative decisions made, reduction in last-minute flight plan changes, etc.) should be produced. These reviews ensure that compliance is not just procedural but also functional, leading to the desired enhancements in ATM. If the outcomes are lacking, the Authority might adjust the regulation or guidance accordingly (for example, tighten requirements or provide additional training).

Article 10 – Implementation Timeline and Transitional Provisions

1. Phased Implementation Plan: The implementation of FF-ICE in [State] shall be carried out in phases to allow a smooth transition from current operations. The phases are aligned with the FF-ICE release roadmap and ASBU blocks:

• Phase 1 – FF-ICE Release 1 (Pre-departure phase): Introduction of FF-ICE for flight planning prior to departure. This phase will include the deployment of the basic services (Filing Service and Flight Data Request Service) and at least initial versions of the Trial and Data Publication services. Phase 1 shall be completed by [Date], by which time all new flight plans for flights in [State] should be filed via FF-ICE (with legacy support as backup). This phase corresponds to achieving ASBU B1-FICE objectives, enabling collaborative pre-departure coordination.

• Phase 2 – Extended FF-ICE Services (Multi-center integration): Expansion of FF-ICE capabilities to cover more complex scenarios, such as multi-center coordination of flight plans, cross-border trajectory negotiation, and advanced flow management using shared data. In this phase, the Planning Service and Notification Service should become fully operational, and coordination between [State] and adjacent FIRs via FF-ICE will be active. Phase 2 is expected by [Date], aligning with ASBU B2-FICE, wherein

multiple ATS units exchange flight information seamlessly and possibly the early use of FF-ICE during the flight (execution phase updates) on a limited scale.

• Phase 3 – Full FF-ICE Implementation (All phases of flight): This final phase entails the use of FF-ICE for gate-to-gate management of flights, including in-flight trajectory updates and post-departure flow management. It assumes the development of FF-ICE Release 2 (for the en-route phase) and Release 3 (for post-flight or further integration) by ICAO. In Phase 3, the integration between air and ground becomes operational – e.g., linking with aircraft's onboard systems for trajectory synchronization if applicable. Tentatively by [Date] (not later than 2030/2031), [State] should reach this phase, in line with ASBU B3-FICE (Full FF-ICE) which ICAO envisions for the late 2020s or early 2030s. The exact timeline for Phase 3 may be adjusted based on global readiness and standards availability, but advance planning for necessary investments should be done in Phase 1 and 2.

2. Transition Period and Dual Operations: To minimize operational disruption, there will be an overlap period during which both the current flight plan process and the new FF-ICE system run in parallel. The transition period shall commence with the initial operational capability of Phase 1 and last for at least [X] months (or until a certain confidence level and usage threshold is met) but not exceeding [Y] years beyond the Phase 1 completion date. During this time:

• Operators may file flight plans either via the new FF-ICE system or using the legacy format/procedures, and the ANSP must accommodate both. However, operators are strongly encouraged to use FF-ICE, and after [some milestone or date], may be required on certain busy routes or for certain airspace.

• The ANSP will ensure that any flight plan filed in the legacy format is translated into the FF-ICE system to permit the advantages of FF-ICE (e.g., sharing with stakeholders, 4D trajectory processing). Conversely, if an FF-ICE flight plan is filed but needs to be delivered to a legacy system (like to a neighboring center not on FF-ICE), the ANSP handles that conversion.

• Adequate notice (via AIP Supplements or Aeronautical Information Circulars) will be given to all users about the start of FF-ICE operations and the expected end of the transition period when legacy filing will no longer be accepted. The target end-date for accepting legacy (FPL 2012) flight plans is [Date], after which all flight plans must be via FF-ICE unless exempted.

3. Temporary Exemptions: The Authority may grant temporary exemptions to certain operators or flights from the FF-ICE filing requirement, on a case-by-case basis, if justified by operational necessity or technical limitations. For example, State aircraft (military or other exempt flights) or general aviation operators without immediate access to the necessary technology might be allowed to continue using legacy filing for a limited time. Any such exemptions should have a clear expiration (e.g., not more than one year beyond the transition period) and may include conditions (like requiring the operator to coordinate by telephone or provide additional information to the ANSP). The Authority will document any exemptions and include them in the State's differences (if they affect international services) or publish them for transparency. The ultimate goal is that all regular operations transition to FF-ICE, so exemptions will be progressively withdrawn.

3. Progress Monitoring and Reporting: During each phase of implementation, the ANSP shall report progress to the Authority at regular intervals (e.g., quarterly or as determined). These progress reports should include statistics like the percentage of flight plans filed via FF-ICE vs. legacy, system performance data, any issues encountered, and feedback from users. The Authority will use these reports to determine if the next phase can proceed as scheduled. If significant issues arise, the Authority may decide to extend a phase or transition period to maintain safety and continuity. Furthermore, [State] will report its implementation status to ICAO (through regional implementation meetings or ICAO's monitoring tools) – for instance, confirming Phase 1 achievement (B1-FICE) and readiness for Phase 2

– so that regional coordination can occur (other States can adjust if needed, and any needed support can be identified).

5. Revision of Dates: The timeline stipulated in this Article is based on current expectations and ICAO's global plan. The [Minister/Authority] is empowered to revise the phase completion dates or transition end date via an official order or amendment to this regulation, if necessitated by new developments (for example, if ICAO significantly changes the target dates for FF-ICE in the GANP, or if technical challenges require more time). All stakeholders shall be consulted as practicable before adjusting timelines. Any revision will be promulgated with sufficient lead time.

6. Legacy System Decommissioning: After the successful completion of the transition period and once legacy flight plan acceptance is discontinued, the ANSP shall decommission or repurpose the legacy flight data processing systems in an orderly manner. Historical data should be archived, and any functions not replaced by FF-ICE (if any) must be addressed. The aim is to avoid maintaining dual systems in the long term due to cost and potential inconsistency. However, certain legacy capabilities may be retained as contingency backups if they can serve as a fallback (for example, an offline flight plan filing via AFTN as an emergency method if the FF-ICE network is completely unavailable). Such contingency use would be outside normal operations and only under the direction of the Authority.

Article 11 – Final Provisions

1. Entry into Force: This regulation [and its annexes] shall enter into force on [effective date]. The [Authority] shall ensure publication of the key dates and requirements in the Aeronautical Information Publication (AIP) at least [number] days prior to the commencement of Phase 1 to inform all international and domestic stakeholders.

2. Amendments: Any amendments to this regulation (for example, to update references to ICAO documents, incorporate FF-ICE Release 2 provisions, or adjust to new standards) shall be promulgated by the [Authority] in accordance with [State]'s rule-making procedures. Stakeholders will be given the opportunity to comment on significant changes, especially those affecting systems and costs.

3. Relationship with Other Regulations: This regulation shall be considered a specific provision related to ATM and AIS under [State]'s civil aviation law. In case of any conflict between this regulation and any existing national regulation on flight plans or ATFM, the provisions of this regulation shall prevail for matters concerning FF-ICE implementation. The [Authority] shall update or harmonize other regulatory documents (such as ATC operational manuals, AIP sections on flight plan requirements, etc.) to ensure consistency.

4. Compliance with Chicago Convention: This regulation is intended to assist [State] in meeting its obligations under the Convention on International Civil Aviation for the provision of Air Navigation Services and Facilitation of International Air Navigation. It is drafted in alignment with ICAO SARPs and global plans; therefore, implementation of this regulation will contribute to a globally interoperable system. [State] will notify ICAO of its FF-ICE implementation as required (through amendments to its eANPs or other channels) to enhance global awareness and coordination.

5. Review: The [Authority] shall review the effectiveness and adequacy of this regulation within [X years] of full implementation of Phase 1, and periodically thereafter (e.g., every [Y] years or upon major ICAO updates). This is to ensure the regulatory framework remains robust and up to date with technological and procedural evolutions in FF-ICE and related ATM enhancements.

APPENDIX A

TERMS OF REFERENCE (TOR) OF THE MIDANPIRG THE AERONAUTICAL INFORMATION MANAGEMENT DIGITALIZATION & PLANNING TASK FORCE (AIMDP TF)

I. TERMS OF REFERENCE

1.1 The Aeronautical Information Management Digitalization & Planning Task Force (AIMDP TF) was established by the MIDANPIRG/21 meeting to align the DAIM elements with the latest edition of the GANP, develop monitoring tables for inclusion in ICAO eANP Volume III, and ensure the synchronized and harmonized deployment of digital AIS datasets across the MID Region. The AIMDP TF aims to foster the harmonization and digitalization of the aeronautical data chain. Its Terms of Reference are as follows:

a) develop a clear vision and strategy for AIS service provision in MID Region, ensuring alignment and update of the Guidance for AIM Planning and Implementation in the MID Region (MID Doc 008).

b) Maintain regular updates to the MID Air Navigation Strategy parts related to the DAIM thread and its elements, ensuring alignment with the latest edition of the GANP.

c) Develop, review and maintain monitoring tables of DAIM elements for inclusion in ICAO ANP Volume III to track progress and implementation.

d) Promote synchronized and harmonized deployment of digital aeronautical information datasets across the MID Region.

e) Develop and align the Regional Plan for the provision of digital datasets, in accordance with ICAO Annex 15 , PANS-AIM and AIS Manual. This includes defining the required formats, coding specifications, and implementation timelines to ensure consistent deployment across the MID Region.

f) Identify and address challenges related to AIM digitalization, including data quality, standardization, and technological barriers.

g) Act as a forum for AIM specialists in the MID Region to collaborate, share best practices, and promote capacity building to foster the harmonization and digitalization of the aeronautical data chain.

1.2 The TF should organize its work and deliverables in different steps. After accomplishment of each step a milestone report will be provided to AIM SG and MIDANPIRG.

II. COMPOSITION

2.1 The TF aims to include a broad variety of competences from different stakeholders contributing to the entire aeronautical data chain. This should include, SMEs from:

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.

2.2 Secretariat support will be provided by ICAO MID.

III. WORKING ARRANGEMENTS

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

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

EUROCONTROL

PBN SID/STAR charts Harmonised AIP Publication

v1.0
29 January 2024



SUPPORTING EUROPEAN AVIATION

CONSORTIUM COORDINATOR sesar DEPLOYMENT MANAGER

FOUNDING MEMBER sesar JOINT UNDERTAKING

NETWORK MANAGER

Introduction

EUROCONTROL monitors the implementation of Performance-Based Navigation (PBN) procedures in ECAC using the PBN Map tool, integrating data from national AIPs and implementation plans derived from PBN Transition plans produced by ATM/ANS providers.

Each AIRAC cycle prompts a thorough examination of national AIPs, with a specific focus on identifying new PBN procedures, particularly Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs).

It was identified that PBN information is dispersed across various sections of SID/STAR charts, varying by country or airport, contrary to the specific promulgation principles outlined by ICAO. This inconsistency prompted EUROCONTROL to address the lack of harmonization in European PBN SID/STAR charts in various stakeholder groups. The need for harmonization was agreed, with the support for creating a factsheet, especially given the mandate by the European PBN implementing regulation (EU 1048/2018) that necessitates the implementation of PBN SID/STAR at every instrument runway where these procedures are published.

This factsheet, designed for specialists responsible for chart origination, includes illustrative examples and corresponding references to ICAO documentation. It is essential to note that this resource is intended to enhance understanding and promote harmonization but does not seek to replace or override state regulations or ICAO requirements regarding AIP publication and charting.

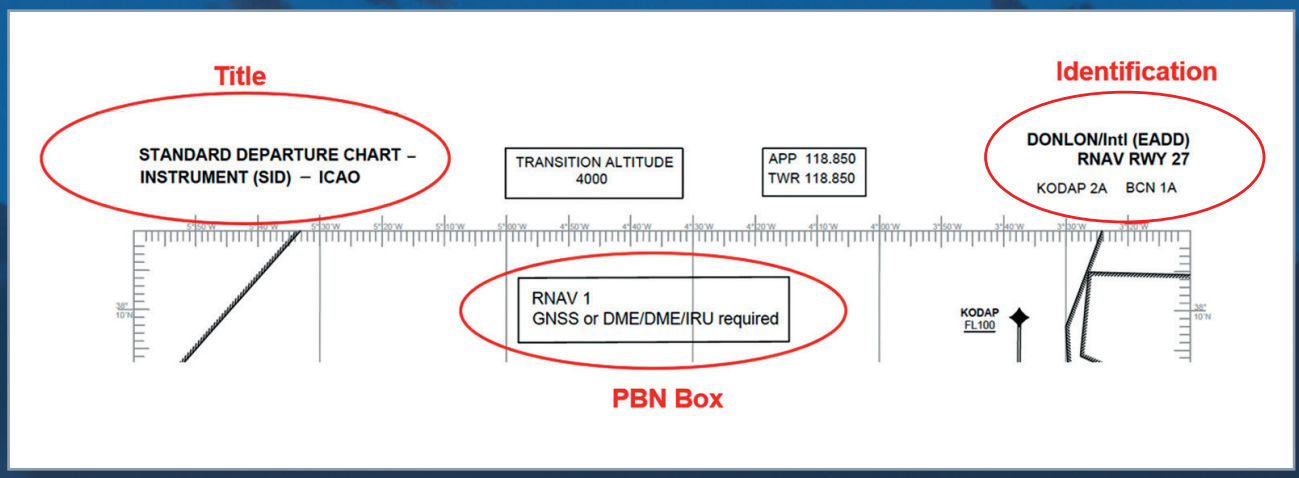


Objective

The development of this factsheet aims to heighten awareness regarding the charting of PBN SID/STAR in accordance with ICAO principles. The primary objective is to foster harmonization in the publication of these procedures across Europe, especially in anticipation of the increased number of PBN SID/STAR charts due to the PBN Implementing Regulation (EU 1048/2018).

Specifically, this factsheet concentrates solely on three key chart elements:

- Title
- Identification
- PBN box



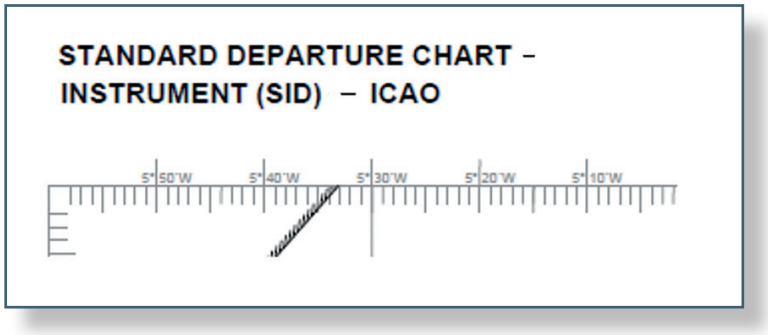
PBN SID/STAR - Chart Title

According to ICAO Doc 8697 Aeronautical Chart Manual, chapter 7.9 (SID):

Title

*"The title must be "**Standard Departure Chart - Instrument (SID) - ICAO**". Such title must not include "ICAO" unless the chart conforms with all Standards specified in Annex 4, Chapters 2 and 9. The chart title is placed at the top left corner of the chart in bold upper-case type".*

Example:

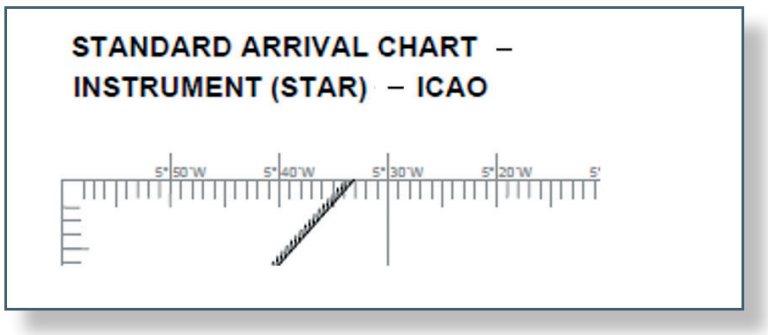


According to ICAO Doc 8697 Aeronautical Chart Manual, chapter 7.10 (STAR):

Title

*"The title must be "**Standard Arrival Chart - Instrument (STAR) - ICAO**". Such title must not include "ICAO" unless the chart conforms with all Standards specified in Annex 4, Chapters 2 and 10. The chart title is placed at the top left corner of the chart in bold upper-case type."*

Example:



PBN SID/STAR - Chart Identification

According to ICAO Doc 8168 PANS-OPS Vol II, Part III, Section 5, Chapter 1.3.2 "Chart Identification":

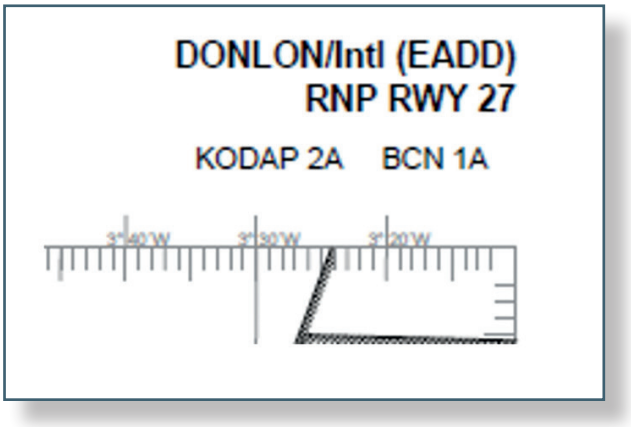
"The chart shall be identified in accordance with Annex 4, 9.5 for departures and 10.5 for arrivals and ***shall include the term RNAV or RNP, depending on the navigation specification****."*

According to ICAO Doc 8697 Aeronautical Chart Manual, chapter 7.9 (SID) and 7.10 (STAR) "Identification":

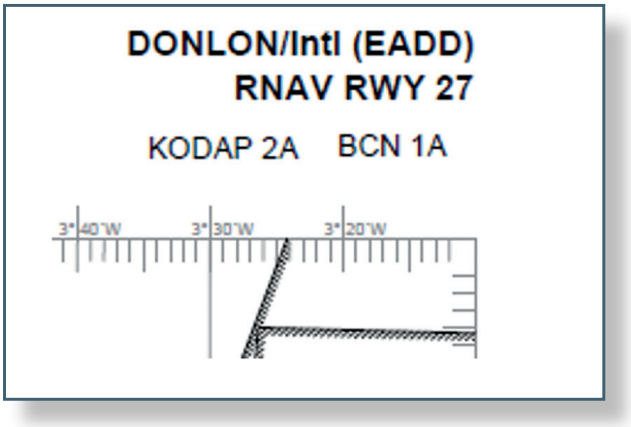
"The chart must be identified by the name of the city or town, or area, that the aerodrome serves, the name of the aerodrome, and the identification of the standard departure/arrival route(s) — instrument as established in accordance with the PANS-OPS, Volume II, Part I, Section 3. The identification of the standard departure/arrival route(s) — instrument is provided by the procedures specialist.

The ICAO location indicator may also be included with the name of the aerodrome. ***The chart identification is placed at the top right corner of the chart in bold upper-case type****."*

Example for PBN SID/STAR based on RNP:



Example for PBN SID/STAR based on RNAV:

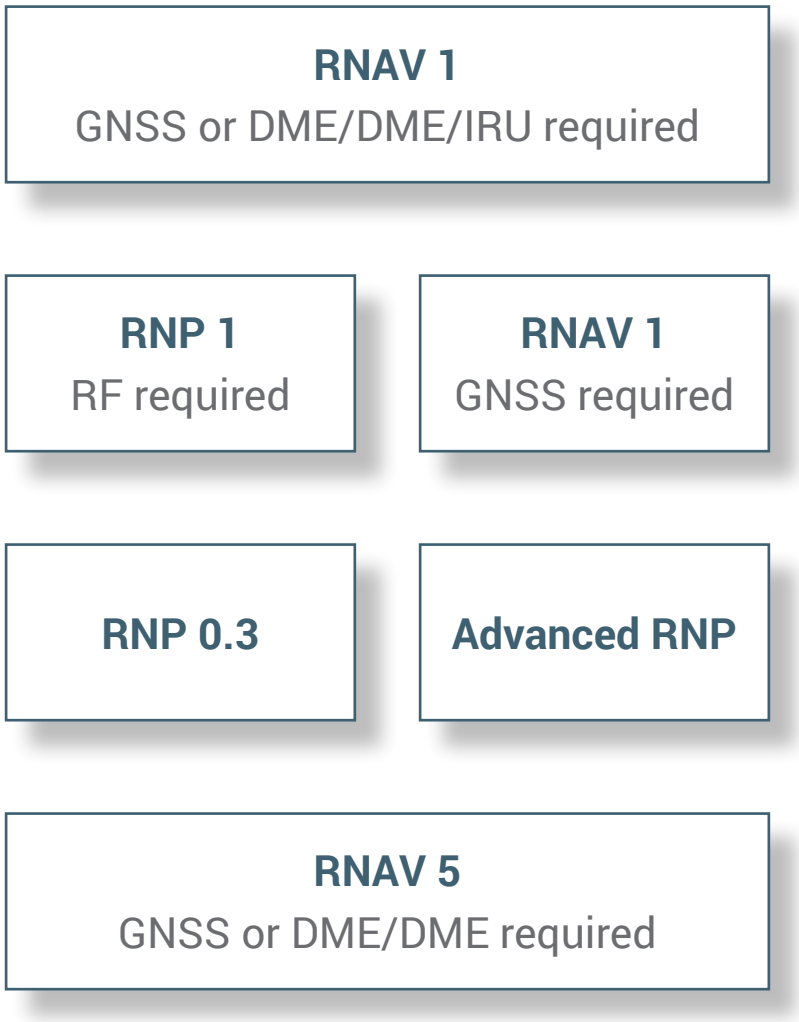


PBN SID/STAR - PBN BOX

According to ICAO Doc 8168 PANS-OPS Vol II, Part III, Section 5, Chapter 1.3.4 "Chart notes":

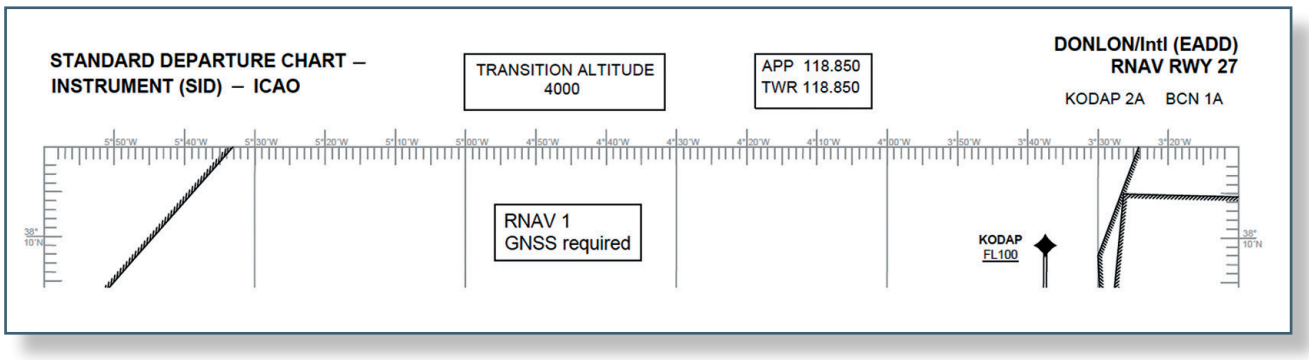
"Additional procedure requirements shall be provided as chart notes. ***PBN items shall be separated out and published in a PBN requirements box on the plan view of the chart*** *immediately below the chart identifier.* ***The PBN requirements box shall include the identification of the navigation specification used in the procedure design, any navigation sensor limitations (e.g. GNSS required, GNSS or DME/DME/IRU required), and any required functionalities (e.g. RF required)*** *that are described as options in the navigation specification, that is, not included in the core navigation specification."*

Examples of PBN boxes:

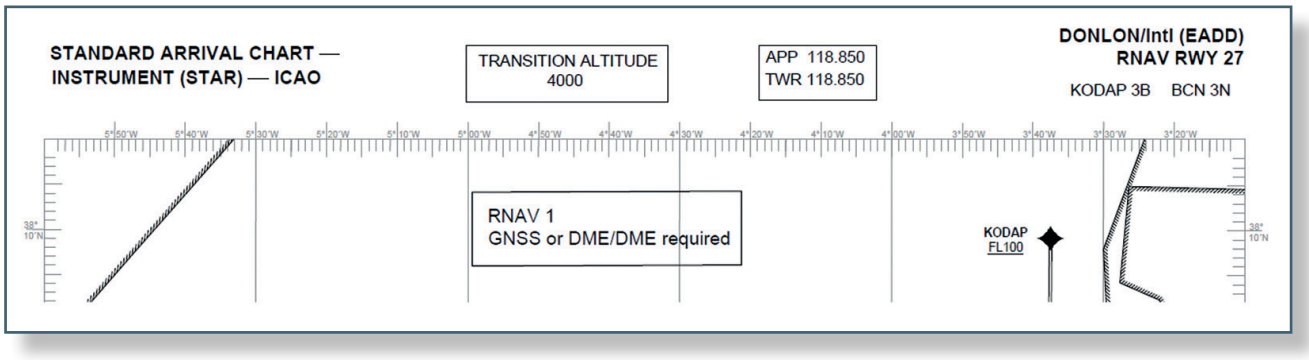


PBN SID/STAR EXAMPLES

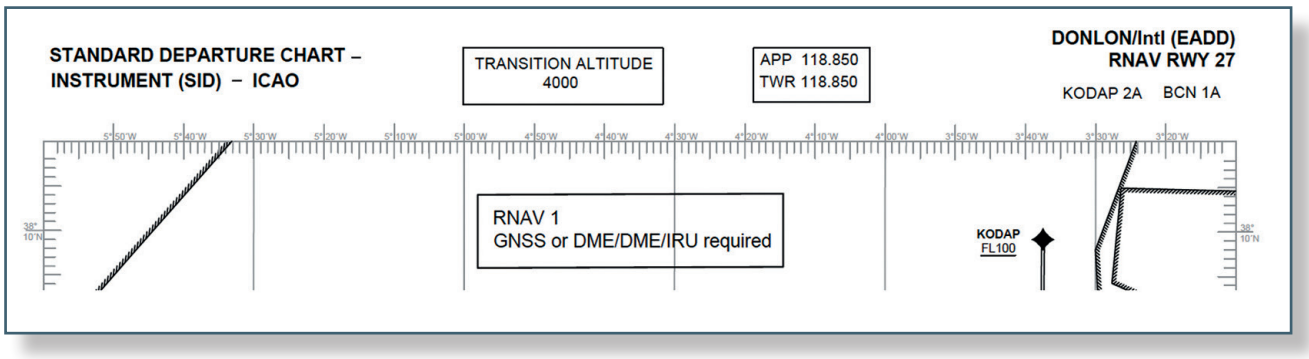
Navigation specification: ***RNAV 1***
Navigation sensor limitations: ***GNSS required*** *(DME/DME is not available)*
Functional requirement: ***None***



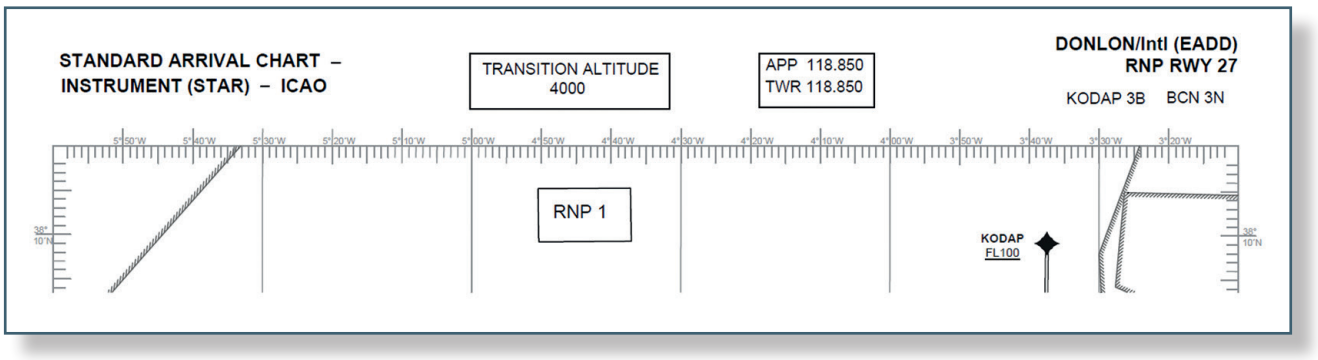
Navigation specification: ***RNAV 1***
Navigation sensor limitations: ***None*** (GNSS and DME/DME are available)
Functional requirement: ***None***



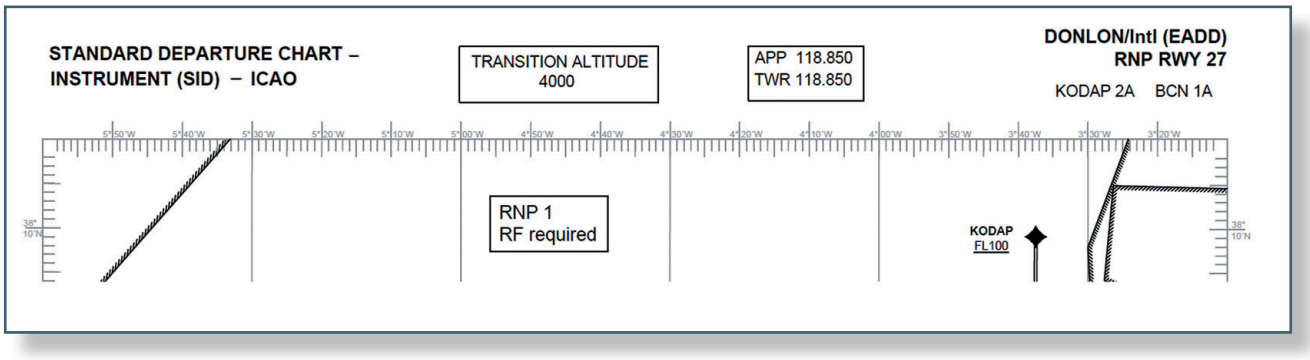
Navigation specification: ***RNAV 1***
Navigation sensor limitations: ***GNSS or DME/DME/IRU required.***
Functional requirement: ***None***



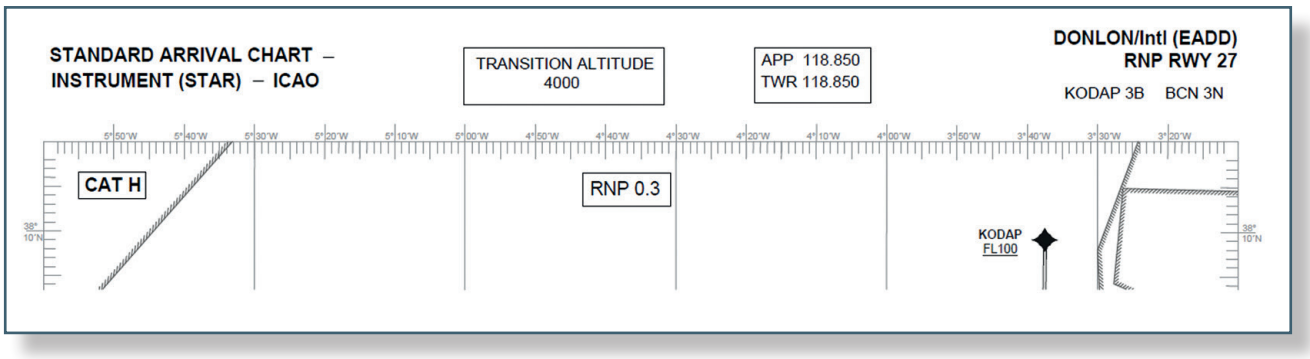
Navigation specification: ***RNP 1***
Navigation sensor limitations: ***None*** *(GNSS required)*
Functional requirement: **None**



Navigation specification: ***RNP 1***
Navigation sensor limitations: ***None*** *(GNSS required)*
Functional requirement: ***RF required***



Navigation specification: ***RNP 0.3*** *(CAT H)*
Navigation sensor limitations: ***None*** *(GNSS required)*
Functional requirement: ***None***



Glossary

AIP Aeronautical information publication
ANS Air navigation services
ATM Air traffic management
DME Distance measuring equipment
GNSS Global navigation satellite system
IRU Inertial reference unit
PBN Performance-based navigation
RF Radius to fix
RNAV Area navigation
RNP Required navigation performance
SID Standard instrument departure
STAR Standard instrument arrival

Further Information

The EUROCONTROL Navigation Steering Group (NSG) coordinates the activities necessary for the implementation of PBN procedures in ECAC.

For more information, please contact the nav.user.support@eurocontrol.int or visit our website: https://www.eurocontrol.int/communications-navigation-and-surveillance



SUPPORTING EUROPEAN AVIATION



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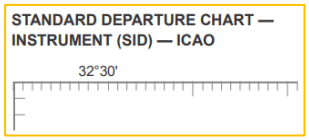
APPENDIX 5U

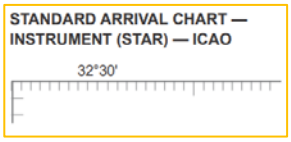
ICAO Charting Provisions

1. ICAO Provisions for Chart Titles:

References: ICAO Annex 4, Doc 8697 and Doc 8168 Vol. II

a. Chart shall be titled in accordance with Annex 4 specifications.
b. The chart title shall not include "ICAO" unless the chart conforms with all ICAO Standards mentioned in the Annex.
c. The title must be "Standard Departure Chart — Instrument (SID) — ICAO" for SID and "Standard Arrival Chart — Instrument (STAR) — ICAO" for STAR.
d. The chart title is placed at the top left corner of the chart in bold upper-case type.

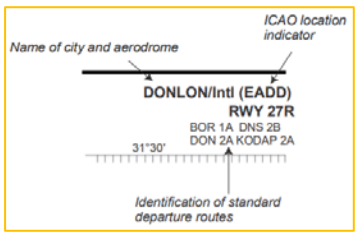


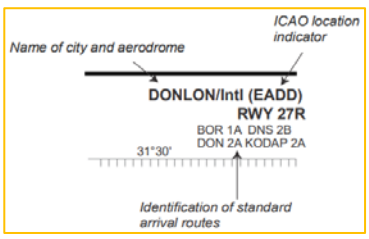


2. ICAO Provisions for Chart Identifications:

References: ICAO Annex 4, Doc 8697 and Doc 8168 Vol. II

a. The chart shall be identified in accordance with Annex 4 requirements and shall include the term RNAV or RNP, depending on the navigation specification.
b. The chart should include an identifier which is unique for that aerodrome and which may include reference to either a runway, fix or NAVAID.
c. The chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome, and the identification of the SID or STAR.
d. The ICAO location indicator may also be included with the name of the aerodrome.
e. The chart identification is placed at the top right corner of the chart in bold upper-case type.





3. ICAO Provisions for PBN Requirement Boxes:

Reference: Doc 8168 Vol. II

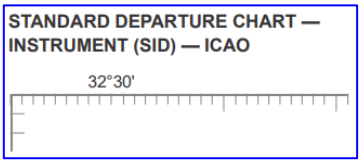
a. The provision of PBN requirement boxes is missing in Annex 4 and Aeronautical Chart Manual and specification charts except for those in Doc 8168, Vol. II.
b. PBN items shall be published in a PBN requirements box.
c. The PBN requirements box shall include:
   - the identification of the navigation specification used in the procedure design, such as RNAV 5, RNAV 2, RNAV 1, A-RNP, RNP AR and RNP 1.
   - any navigation sensor limitations, such as GNSS required, DME/DME required.
   - any required functionalities that are described as options in the navigation specification, such as RF required.

Guidance for Chart Harmonization:

1. Standardizing Chart Titles:

a. Ensure all SID charts are titled as “Standard Departure Chart - Instrument (SID) - ICAO” and all STARs charts as “Standard Arrival Chart - Instrument (STAR) - ICAO”.
b. The title should be placed at the top left corner of the chart in bold upper-case type.
c. Do not use ICAO in the chart title if the chart does not meet the Annex 4 charting criteria.
d. Do not use any other things, such as PBN, RNAV, RNP or DEP/ARR, in the chart titles.

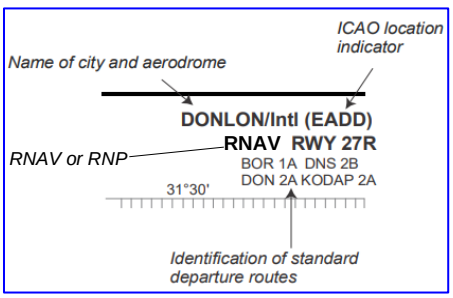
Example:



2. Consistent Chart Identification:

a. Identify charts by the name of the city or town, the aerodrome name, and the identification of the standard departure/arrival routes.
b. Include the ICAO location indicator with the name of the aerodrome.
c. The chart identification should be placed at the top right corner of the chart in bold upper-case type.
d. Use 'RNAV' or 'RNP' based on the navigation specification used in designing the SIDs or STARs. For example, use 'RNAV' for an RNAV1 SID or STAR, and use 'RNP' for an RNP1 SID or STAR, before the runway designation.

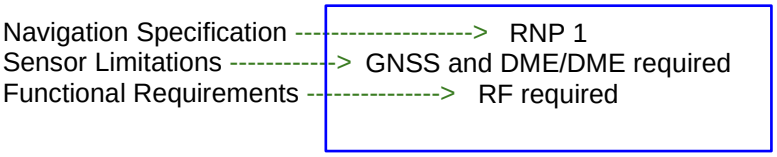
Example:



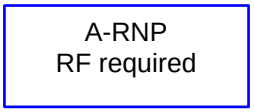
3. Requirements for PBN Boxes:

a. Include PBN items in the PBN requirements box, preferably on the plan view of the chart, not obscuring the chart information. Do not use such information in any places other than PBN requirement box.
b. The PBN box should contain the navigation specification (e.g., RNAV 1, RNP 1 or A-RNP) that is used for the design of PBN SID or STAR.
c. Clearly specify any sensor limitations (e.g., GNSS required or DME/DME required) within the PBN box, as required.
d. Include any additional functional requirements (e.g., RF required) in the PBN requirement box, as applicable.

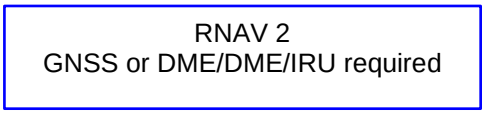
Example 1: With sensor limitations and functional requirement



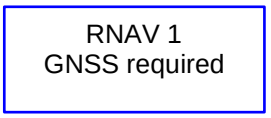
Example 2: No sensor limitations, but with a functional requirement for RF



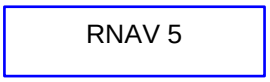
Example 3: GNSS or DME/DME/IRU only allowed, with no functional requirements



Example 4: GNSS only allowed, with no functional requirements



Example 5: No sensor limitations and functional requirements



INTERNATIONAL CIVIL AVIATION ORGANIZATION

European and North Atlantic Office



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EUR RNP APCH GUIDANCE MATERIAL

- Second Edition –
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EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO

International Civil Aviation Organization (ICAO)
European and North Atlantic (EUR/NAT) Office
3 bis, Villa Emile Bergerat
92522, Neuilly-sur-Seine CEDEX
FRANCE

e-mail : icaoeurnat@paris.icao.int
Tel : +33 1 46 41 85 85
Fax : +33 1 46 41 85 00
web: http://www. icao.int/EURNAT

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TABLE OF CONTENTS

1. INTRODUCTION 6

2. GLOSSARY OF MAIN TERMS 7

3. APPLICABLE STANDARDS AND DOCUMENTATION 11

4. PART A – INTRODUCTION TO RNP APPROACH OPERATIONS 13

4.1. BACKGROUND INFORMATION 133
4.2. APPROACHES WITH VERTICAL GUIDANCE 14
4.3. APPROACHES AND THE PBN CONCEPT 14
4.4. PROVISION OF VERTICAL GUIDANCE 14

5. PART B – GUIDANCE ON THE IMPLEMENTATION OF RNP APPROACH 13

5.1. GENERAL 137
5.2. AGREEING THE OPERATIONAL REQUIREMENT AND BUILDING THE IMPLEMENTATION PLAN 14
5.3. RNP APPROACH IMPLEMENTATION 31

ANNEX 1 - RNP APPROACH IMPLEMENTATION ACTIVITIES 42

1. INTRODUCTION

1.1. ICAO is encouraging all States to implement RNP Approach procedures and requesting the publication of a PBN Implementation Plan through the ICAO Assembly Resolutions 36-23 and 37-11. A first version of this document was developed in 2012 in response to an increasing need for guidance on RNP Approach implementation that had been expressed in several forums.

1.2. In 2020, the landscape for RNP Approach implementation in Europe had evolved significantly and the need to update the document became evident. The second version of the Guidance Material accounts for instance for the declaration of the EGNOS LPV200 service in 2015, the publication of the PBN Implementing Regulation [1] and the availability of new EASA standards for PBN in 2019. It also benefits from lessons learned throughout the implementation of the many RNP Approach procedures already published on the EUR region.

1.3. This guidance is primarily intended for States in the ICAO European region who wish to implement RNP Approach operations. It describes the generic steps that an ANSP and/or Airport should undertake to introduce such operations together with the applicable standards and relevant documentation that is available. The guidance also addresses aircraft operators by including an overview of the available standards that can be used to obtain airworthiness certification and operational approval.

1.4. RNP AR Approach procedures and the use of PBN specifications different from RNP APCH for initial and intermediate segments are outside the scope of this document.

2. GLOSSARY OF MAIN TERMS

ABAS - Aircraft-based augmentation system. An augmentation system that augments and/or integrates the information obtained from GNSS elements with other information available on board the aircraft. [2]. RAIM is a form of ABAS which uses GNSS information exclusively.

APV – Approach Procedures with Vertical Guidance. See definition of Instrument approach procedure (IAP).

- **APV I** – Refers to a set of performance criteria for navigation systems that support RNP Approach down to LPV minima designed using the SBAS APV I procedures design criteria (see ICAO Annex 10 [2] Table 3.7.2.4-1 "Signal-in-space performance requirements"). In Europe, EGNOS provides an APV I Service level meeting these performance requirements.

- **APV Baro-VNAV –** RNP Approach down to LNAV/VNAV minima based on barometric vertical navigation.

- **SBAS APV –** RNP Approach down to LPV minima. ICAO now reserves this term for procedures designed according to APV I criteria (excluding those designed according to SBAS Cat I criteria).

Area Navigation. A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these [4].

Area navigation system – There are two types of area navigation system: RNAV and RNP systems. Flying PBN applications requires such systems. An RNP system is required for an RNP APCH application.

Baro-VNAV – Barometric vertical navigation (Baro-VNAV) is a function of an area navigation system that presents computed vertical guidance to the pilot referenced to a specified vertical path angle (VPA), nominally 3°. The computer-resolved vertical guidance is based on barometric altitude and is specified as a VPA from reference datum height (RDH).

CDFA – CDFA is a flight operational technique for flying the final approach segment of an NPA as a continuous descent. The technique is consistent with stabilized approach procedures and has no level-off. A CDFA starts from an altitude/height at or above the FAF and proceeds to an altitude/height approximately 50 feet (15 meters) above the landing runway threshold or to a point where the flare manoeuvre should begin for the type of aircraft being flown. This definition is harmonized with the ICAO and the European Aviation Safety Agency (EASA).

CRC – Cyclic Redundancy Check

DA/H (Decision Altitude/Height) - A specified altitude or height in a 3D instrument approach operation at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

EGNOS – The European Geostationary Navigation Overlay Service. This is the European Satellite Based Augmentation System (SBAS).

EGNOS SoL – The EGNOS Safety of Life Service is the Service offered to aviation users as described in the EGNOS SoL Service Definition Document issued by the European Commission [16].

ESSP – The European Satellite Services Provider (ESSP) is the EGNOS operator. It holds an Air Navigation Service Provider certificate and is under EASA oversight.

Final approach segment (FAS) data block. The coding of procedures to LPV minima in the on-board navigation database includes a FAS Data Block. The FAS Data Block information is protected with high integrity using a cyclic redundancy check (CRC). GLS approaches based on GBAS also use a FAS data block which is slightly different.

GNSS – Global Navigation Satellite System. GNSS is a generic term for all satellite navigation systems including core constellations such as GPS, Galileo, Glonass and BeiDou augmented as necessary by ABAS, SBAS and GBAS to support the required navigation performance for the intended operation.

Instrument approach procedure (IAP). According ICAO Annex 6 [3]: A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:

- Non-precision approach (NPA) procedure. An instrument approach procedure designed for 2D instrument approach operations Type A.

  Note.— Non-precision approach procedures may be flown using a continuous descent final approach (CDFA) technique. CDFAs with advisory VNAV guidance calculated by on-board equipment are considered 3D instrument approach operations. CDFAs with manual calculation of the required rate of descent are considered 2D instrument approach operations. For more information on CDFAs, refer to PANS-OPS (Doc 8168), Volume I, Part II, Section 5.

- Approach procedure with vertical guidance (APV). A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A.

- Precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS CAT I) designed for 3D instrument approach operations Type A or B.

LNAV, LNAV/VNAV, LPV and LP distinguish the various minima lines on an RNP Approach chart. The minima line to be used depends on the aircraft capability.

LNAV – Lateral Navigation. The minima line on a chart for RNP approach without vertical guidance which does not require the use of SBAS.

LNAV/VNAV – the minima line on a chart for RNP Approach based on Baro-VNAV system performances that can be used by aircraft approved according to CS-ACNS [6] or equivalent. LNAV/VNAV minima can also be used by aircraft capable of RNP APCH to LPV minima if this is approved by the local regulatory authority.

LPV – Localiser Performance with Vertical Guidance: the minima-line on a chart for RNP Approach with vertical guidance based on SBAS performances that can be used by aircraft approved according to CS-ACNS (replacing AMC 20-28) or equivalent.

LPV 200 – the EGNOS SoL Service level declared by the EGNOS Service Provider in September 2015 which enables SBAS-based Category I precision approach (RNP Approach down to LPV minima as low as 200 ft) with a Vertical Alert Limit (VAL) equal to 35m. The LPV 200 service level is described in the SoL Service Definition Document.

LP – Localiser Performance: The minima line on a chart for RNP approach without vertical guidance which requires the use of SBAS. At some airports, it may not be possible to meet the requirements to publish an approach procedure to LPV minima. This may be due to: obstacles and terrain along the desired final approach path, airport infrastructure deficiencies, or the inability of SBAS to provide the desired availability of vertical guidance (i.e., an airport located on the fringe of the SBAS service area). When this occurs, a State may provide an RNP Approach to LP minima; an approach procedure with angular lateral guidance equivalent to a localizer approach, with lower minima than an RNP Approach to LNAV minima.

MDA/H (Minimum Descent Altitude/Height) - A specified altitude or height in a 2D instrument approach operation or circling approach operation below which descent must not be made without the required visual reference.

NPA – Non-Precision Approach. See definition of Instrument approach procedure (IAP).

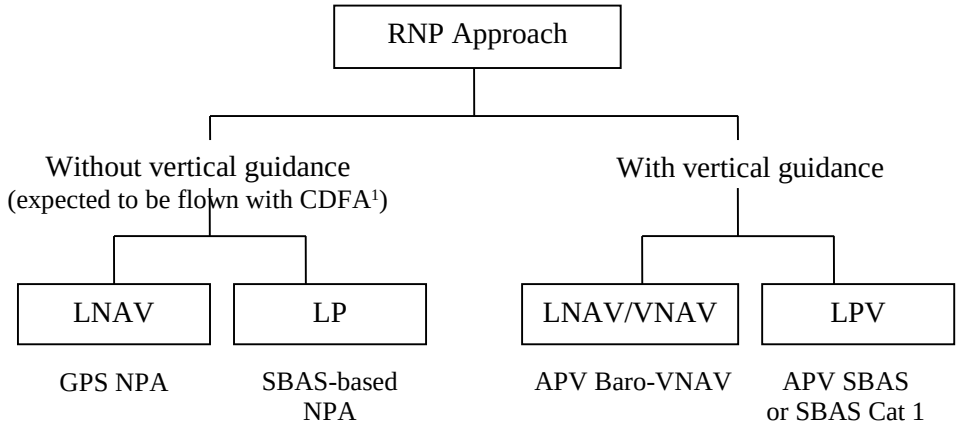
PA - Precision Approach. See definition of Instrument approach procedure (IAP)

PBN – Performance-Based Navigation. Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity and functionality needed for the proposed operation in the context of a particular airspace concept. Availability of GNSS SIS or some other NAVAID infrastructure is considered within the airspace concept in order to enable the navigation application. [4]".

RNP APCH – This is the name of the navigation specification in the ICAO PBN Manual [4] for the four approach types shown in Figure 1.

Figure 1: The four types of RNP Approach described in the ICAO PBN Manual [4]



RF – Stands for Radius to Fix. RF is an ARINC 424 path terminator which defines a precise curved path to be flown by RF-capable aircraft. The RF function is optional with the RNP APCH navigation specification. RF legs can be used outside of the final approach segment of an RNP Approach procedure and for the latter stages of a Missed Approach. This can be a useful procedure design tool in obstacle rich or constrained environments (e.g. better protection against obstacles, avoidance of noise sensitive areas).

RNP Approach –This is a generic name that refers to any kind of approach enabled by Global Navigation Satellite System (GNSS) and designed to be flown using the RNP system. RNP Approaches used to called "RNAV Approaches". ICAO prescribed the transition to new chart titles "RNP" to ensure alignment with the name of the RNP APCH navigation specification [5].

RNP AR APCH – An approach which always requires specific aircraft qualification and operational approval. Such procedures are useful in particular environments rich in obstacles and dense terminal areas.

RNP – Required Navigation Performance. A requirement for on-board navigation performance monitoring and alerting, by means of a navigation system that supports area navigation operations by integrating information from one or more positioning sensors and provides flight crew with the means to define a desired flight path [6].

SBAS – Satellite-Based Augmentation System. This is a generic name for a system based on geostationary satellites and accompanying ground stations used for the augmentation of core constellation GNSS signals. The European SBAS is called EGNOS, the US version is called WAAS and there are also other SBASs in different regions of the World such as GAGAN in India and MSAS in Japan.

SBAS Cat I – RNP Approach down to LPV minima, designed according to SBAS Cat I procedure design criteria.

VNAV – Vertical Navigation. Refers to a method of navigation based on a computed vertical path [6].

3. APPLICABLE STANDARDS AND DOCUMENTATION

[1] COMMISSION IMPLEMENTING REGULATION (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning performance-based navigation

[2] ICAO, Annex 10 to the Convention on International Civil Aviation, Aeronautical Telecommunications, Volume 1, Radio Navigation aids, Seventh Edition July 2018.

[3] ICAO Annex 6 to the Convention on International Civil Aviation, Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes, Tenth Edition, July 2016

[4] ICAO Doc 9613, Performance Based Navigation (PBN) Manual, 4th Edition, 2013

[5] ICAO Circular 353: Transition Planning for Change to Instrument Flight Procedure Approach Chart Identification from RNAV to RNP, 2018

[6] EASA Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance, CS ACNS, Issue 2, 26 April 2019.

[7] ICAO Doc 9750, The Global Air Navigation Plan (GANP), Sixth Edition, 2019

[8] ICAO Doc 9992 Manual on the use of PBN in Airspace Design. First Edition, 2013

[9] Regulation (EU) 2018/1139, EASA Basic Regulation, 4th July 2018

[10] EUROCONTROL Airspace Concept Handbook for PBN implementation, Edition 3.0, 2013

[11] ICAO Annex 14 to the Convention on International Civil Aviation, Aerodromes, Volume 1, Aerodrome Design and Operations, Seventh Edition, July 2016

[12] ICAO Doc 8168, Procedures for Air Navigation Services, Aircraft Operations, (PANS OPS), Volume II, Construction of Visual and Instrument Flight Procedures, Sixth Edition, 2014.

[13] ICAO Doc 9365, Manual of All Weather Operations, Fourth Edition, 2017

[14] COMMISSION REGULATION (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council EASA, AIR OPS

[15] SES Regulation - Regulation (EC) No 550/2004, The Service Provision Regulation, as amended by Regulation (EC) 1070/2009 - Article 10.

[16] EGNOS Safety of Life (SoL) Service Definition Document (SDD), Issue 3.3, March 2019 – available on the EGNOS User Support website: https://egnos-user-support.essp-sas.eu)

[17] ICAO Doc 9849, GNSS Manual, Third Edition, 2017

[18] ICAO Doc 8071, Manual on Testing of Radio Navigation Aids, Volume II, Testing of Satellite-based Radio Navigation systems, Fifth Edition, 2007

[19] ICAO Doc 4444, Procedures for Air Navigation Services, Air Traffic Management, PANS ATM, Sixteenth Edition, 2016.

[20] Integrated Initial Flight Plan Processing System (IFPS) User Manual, Edition 23.0, Eurocontrol. 07/05/2019

[21] ICAO Doc 9906, Quality Assurance Manual for Flight Procedure Design, Volume 2 — Flight Procedure Designer Training (Development of a Flight Procedure Designer Training Programme), First Edition, 2009.

[22] COMMISSION IMPLEMENTING REGULATION (EU) 2020/469 of 14 February 2020 amending Regulation (EU) No 923/2012, Regulation (EU) No 139/2014 and

Regulation (EU) 2017/373 as regards requirements for air traffic management/air navigation services, design of airspace structures and data quality, runway safety and repealing Regulation (EC) No 73/2010

[23] ICAO Annex 19 to the Convention on International Civil Aviation, Safety Management, Second Edition, July 2016.

[24] ICAO Doc 9859, Safety Management Manual, Fourth Edition, 2018

[25] COMMISSION IMPLEMENTING REGULATION (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight.

[26] ICAO Doc 9906, Quality Assurance Manual for Flight Procedure Design, Volume 5– Validation of Instrument Flight Procedures, First Edition, 2012

[27] ICAO Doc 9906, Quality Assurance Manual for Flight Procedure Design, Volume 1 – Flight Procedure Design Quality Assurance System, First Edition, 2009.

[28] ICAO Annex 4 to the Convention on International Civil Aviation, Aeronautical Charts, Eleventh Edition 2009.

[29] ICAO Annex 15 to the Convention on International Civil Aviation, Aeronautical Information Services, Sixteenth Edition, July 2018

[30] ICAO Doc 10066, Procedures for Air Navigation Services, Aeronautical Information Management, PANS AIM, First Edition, 2018

[31] ICAO Doc 8126 Aeronautical Information Services Manual, Sixth Edition, 2003

[32] RTCA DO 200B/EUROCAE ED-76A, Standards for Processing Aeronautical Data, 2015.

[33] COMMISSION REGULATION (EU) 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council.

4. PART A – INTRODUCTION TO RNP APPROACH OPERATIONS

4.1. Background Information

4.1.1. The widespread availability of high-performance area navigation systems on all types of aircraft and in particular the introduction of GNSS has made it possible to use area navigation in the approach phase of flight. Safety is improved by providing pilots with better situational awareness than on conventional Non-Precision Approaches (NPA), thereby reducing the risk of controlled flight into terrain (CFIT). Better access can also be provided to runways that are not equipped with precision approach and landing aids.

4.1.2. This guidance material is mainly intended for States in the ICAO European Region who wish to implement RNP Approach operations. It describes the steps that an ANSP and/or Airport should undertake to implement such operations and indicates the applicable standards and relevant documentation that is available. Finally, it provides guidance to air operators as to how to obtain approval for such operations.

4.1.3. Instrument Approach Procedures

Traditionally, there have been two types of Instrument Approach Procedure:

- Precision Approach (PA) using an instrument landing system (e.g. ILS, GLS, MLS, SBAS CAT I) which provides both lateral and vertical guidance on a geometrically defined continuous descent path along the final approach segment.

- Non-Precision Approach (NPA) using conventional navigation aids (e.g. NDB, VOR, DME) or GNSS providing only lateral guidance along the final approach segment.

4.1.4. Studies have shown that the risk of controlled flight into terrain (CFIT) on non-precision approaches could be significantly reduced. An improvement that gives pilots better situational awareness on NPA is to fly them using the RNAV or RNP capability of the aircraft. The area navigation system can be used for the approach phase of flight, provided RNP Approach procedures are designed and published. RNP Approaches are described by a series of waypoints, legs, altitude, glide path angles (GPA) and speed constraints published and stored in the navigation database.

4.1.5. GNSS-based RNP capabilities may be used to fly NPA procedures. These procedures are flown down to a Minimum Descent Altitude/Height (MDA/H), as with any conventional NPA procedure. The MDA/H is derived from the OCA/H indicated in the LNAV or LP minima line on the RNP instrument approach chart.

4.1.6. No modifications to the cockpit instruments (e.g. conventional Course Deviation Indicator – CDI, or electronic displays) are in principle necessary to use RNP Approach.

4.1.7. The level-off or “dive and drive” descent technique used along the conventional final approach segment in NPA procedures should be replaced by a stabilised vertical path. Operators are indeed encouraged[1] by Authorities to fly these procedures using the Continuous Descent Final Approach (CDFA) flying technique. This can be based on a manual calculation of the required rate of descent or it can make use of the VNAV guidance function available on many aircraft. The design of a NPA procedure is made according to a single set of design criteria in

[1] This is even mandatory for Commercial Air Transport (CAT) according EASA AIR OPS [14]

ICAO PANS-OPS and is not dependent on the flying technique. Charts include the nominal descent gradient. The minima are calculated in accordance with National Operating Regulations (based on EASA AIR OPS [14] in EASA States where values to be added to RVR minima are provided in case CDFA is not used). Whatever the flying technique (with or without CDFA) the aircraft must comply with MDA/H of the NPA.

4.1.8. RNP approaches with only lateral guidance are classed by ICAO as 2D approach operations Type A and therefore the lowest decision height to be used is 250ft.

4.2. Approaches with vertical guidance

4.2.1. In addition to lateral navigation capabilities, modern multi-sensor area navigation systems provide a VNAV function which allows a vertical path to be flown with a constant rate of descent based on the barometric altimeter, or on SBAS-augmented GPS position.

4.2.2. RNP Approaches using both lateral and vertical guidance are defined by ICAO in PANS OPS (Doc 8168) as Approach with Vertical Guidance (APV) or Precision Approach (PA). The vertical guidance is defined along the final segment only.

4.2.3. The RNP Approach procedures using barometric VNAV for vertical guidance are called APV Baro VNAV and are flown to a DA/H indicated in the LNAV/VNAV minima line on the chart. The lowest DH for APV Baro VNAV is 250ft. Aircraft equipped with SBAS and LPV-capable area navigation systems can also fly procedures designed for APV Baro VNAV if the State publishing the procedure permits it.

4.2.4. The RNP Approach procedures using SBAS for vertical guidance can be either SBAS APV or SBAS Cat I procedures depending on the criteria used for procedure design (APV I or Cat I criteria respectively). ICAO classifies these as 3D approach operations. They are flown to a DA/H derived from the OCA/H indicated in the LPV minima line on the chart. The lowest DH for SBAS APV is 250ft and for SBAS Cat I, 200ft.

4.3. Approaches and the PBN concept

4.3.1. ICAO’s PBN concept was originally published in the ICAO PBN Manual [4] in 2007 replacing the previous RNP Concept and RNP Manual. The PBN Concept aims to streamline RNAV and RNP applications on a global basis by reducing the number of navigation specifications in use worldwide and thus enhancing safety, improving interoperability and reducing costs for operators. To these ends, the PBN Manual [4] includes a limited set of PBN specifications for worldwide use in different phases of flight.

4.3.2. The RNP APCH navigation specification available in the ICAO PBN Manual,[4] Volume II, Part C, Chapter 5 can support all segments of an RNP APCH operation, from the initial approach to the final phase of the missed approach. Alternatively, the Initial segment of an RNP APCH can be replaced by a Transition based on RNP 1, RNAV 1 or Advanced RNP. The missed approach can be based on other than PBN criteria or additional requirements requiring compliance to other Navigation specifications can be attached to the final segment of the RNP APCH missed approach the .

4.3.3. RNP Approach procedures used to be published on charts with the title RNAV (GNSS) RWY XX. That is one reason why they were referred to so far as RNAV or RNAV (GNSS) approaches. ICAO now prescribes these procedures are published on charts with the title

RNP [5] . This is to ensure alignment with the PBN Manual [4] which refers only to RNP APCH or RNP AR APCH applications for approach procedures. These approach charts can have several minima lines depending on the type of final segment defined within the RNP Approach. The table below provides cross reference between PANS-OPS and PBN terminology.

Table 1: RNP Approach terminology as per PBN Manual [4]

PANS-OPS Terminology	PBN Terminology	Chart Minima	Minimum Sensor
GPS NPA	RNP APCH	LNAV (MDA/H)	ABAS
APV Baro-VNAV	RNP APCH	LNAV/VNAV (DA/H)	ABAS + Baro-VNAV
SBAS NPA	RNP APCH	LP (MDA/H)	SBAS
SBAS APV	RNP APCH	LPV (DA/H)	SBAS
SBAS Cat I	RNP APCH	LPV (DA/H)	SBAS

4.3.4. An example of an RNP Approach chart containing the different minima lines is provided in Section 5.3.8 describing Activity 15 concerning procedure publication.

4.4. Provision of vertical guidance

4.4.1. The important distinction between the different types of RNP Approach operations is the provision of vertical guidance. RNP Approach to LNAV and LP minima include only lateral guidance and are flown to a MDA/H while RNP Approach procedures with vertical guidance are flown to a DA/H, which is usually lower than the NPA minima thus potentially increasing airport accessibility. In addition, the provision of vertical guidance improves pilot situational awareness, reduced Flight Technical Error (FTE) and lower flight crew workload if flown with either autopilot (AP) or flight director (FD), thus improving safety.

4.4.2. The procedure design criteria and the construction of a vertical profile are different for the different RNP Approach operations. RNP Approach to LNAV/VNAV minima accounts for vertical guidance in addition to lateral guidance (which is the same as for LNAV-only). The theoretical vertical descent profile is defined by a geometrical path with fixed flight path angle. The vertical path angle is computed between 50ft above the runway threshold and a final capture point which corresponds to the location of the FAF associated with the LNAV procedure. Vertical deviations are usually linear. Given that the vertical path is based on barometric inputs, it is very important that the correct local pressure setting (QNH) is entered into the area navigation system.

4.4.3. The final descent for APV Baro-VNAV is also influenced by temperature: With temperatures lower than ISA, the true altitude of an aircraft is lower than what the altimeter indicates; obstacle protection is therefore reduced. Temperatures greater than ISA have the opposite effect. They make the true altitude higher than the indicated altitude, leading to a steeper descent to the runway with a higher risk of an unstabilised approach. Some area navigation system provide temperature compensation to protect the aircraft from the temperature effect. Aircraft without temperature compensation will operate safely on this type of approach as long as the temperature stays within limits published on the chart. Extreme high temperature conditions rarely happen in Europe and high temperature limits are rarely published in our region. A low temperature will always be promulgated on an instrument chart. Assumptions made for the design of the procedure will set this low temperature limit. Note that the temperature correction of all altitudes published on a chart, including DA/MDA, is a requirement (except

when under vectoring), regardless of the availability and use of a temperature compensation function on-board the aircraft.

4.4.4. RNP Approach to LPV minima is based on GNSS core constellation and SBAS. It assumes angular vertical guidance on the final approach segment defined in the Final Approach Segment Data Block (FAS DB). The vertical path angle is defined (not computed) and published in degrees (3° VPA is standard). Integrity of the FAS DB data is maintained through the use of a CRC.

5. PART B – GUIDANCE ON THE IMPLEMENTATION OF RNP APPROACH

5.1. General

5.1.1. Implementation of RNP Approach operations is a complex process covering a wide range of actors. In the following description the necessary activities are divided into two parts addressing the planning and implementation. These activities have been derived from the ICAO Manual on the use of Performance Based Navigation (PBN) in Airspace Design (ICAO doc 9992) methodology [8], adapted to RNP Approach implementation. Activities are presented here, as far as possible, in a chronological order. Annex 1 provides an illustration of the processes and their activities.

5.1.2. In the first part the objective is to gather information so that a decision can be taken on what type of RNP Approach should be implemented and where. The second part consists of the tasks needed to perform the actual implementation. General implementation considerations are provided here and States should feel free to adapt them to their specific situation.

5.2. Agreeing the operational requirement and building the implementation plan

5.2.1. General

5.2.1.1. The need to implement RNP Approach operations should be discussed and clarified. At this stage, the reasons for the deployment of RNP Approach are being considered.

5.2.1.2. The first part describes the activities required to take a decision on what type of RNP Approach should be implemented and at which locations. The output of this set of activities is a decision to implement RNP Approaches and a deployment strategy.

5.2.1.3. In case the implementation plan is developed at State level, the following activities will consist of selecting a pool of potential airports and selecting the preferred implementation locations. This activity must be performed in close co-operation with all the stakeholders such as Aircraft Operators, ANSPs, Regulators and Airport Operators in order to identify the most suitable airports/runway ends for RNP Approach implementation and the deployment sequence.

5.2.1.4. Alternatively, the implementation plan can be developed by an ANSP or at the level of an individual Airport. This would be mainly due to Aircraft Operator request. In this case, other stakeholders such as the Regulator need to be involved as soon as possible in the RNP Approach implementation process.

5.2.2. Activity 1: Assess the need for RNP Approach

5.2.2.1. Implementation of RNP Approach procedures may be triggered by a number of different factors, which can depend on the organisational and institutional arrangements. These inputs may include, though are not limited to, the following:

5.2.2.2. ICAO Assembly Resolutions and the Global Air Navigation Plan (GANP) [7]

5.2.2.2.1. The implementation of RNP Approach procedures with vertical guidance (APV) was primarily encouraged by ICAO Assembly Resolution 36-23 which urged the States to implement APV procedures to all instrument runway ends by 2016, either as primary or as backup approach procedures. RNP Approach to LNAV/VNAV and RNP Approach to LPV minima were the two options to fulfil the resolution. But the resolution A36-23 was updated at the 37th Assembly of ICAO, and resolution A37-11 (supersedes A36-23) now presents RNP Approach to LNAV minima as an acceptable alternative in places where APV implementation is not possible or does not make sense as no aircraft are suitably equipped. RNP Approach implementation is part of the resolution for ICAO PBN deployment, the main objective of which is to improve safety.

5.2.2.2.2. The executive part of the resolution A37-11 states:

[…]The Assembly:

1. Urges all States to implement RNAV and RNP air traffic services (ATS) routes and approach procedures in accordance with the ICAO PBN concept laid down in the Performance-based Navigation (PBN) Manual (Doc 9613);

2. Resolves that:

a) States complete a PBN implementation plan as a matter of urgency to achieve:

1) implementation of RNAV and RNP operations (where required) for en route and terminal areas according to established timelines and intermediate milestones; and

2) 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

3) implementation of straight-in LNAV only procedures, as an exception to 2) 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;

b) ICAO develop a coordinated action plan to assist States in the implementation of PBN and to ensure development and/or maintenance of globally harmonized SARPs, Procedures for Air Navigation Services (PANS) and guidance material including a global harmonized safety assessment methodology to keep pace with operational demands;

3. Urges that States include in their PBN implementation plan provisions for implementation of approach procedures with vertical guidance (APV) to all runway end serving aircraft with a maximum certificated take-off mass of 5 700 kg or more, according to established timelines and intermediate milestones;

4. Instructs the Council to provide a progress report on PBN implementation to the next ordinary session of the Assembly, as necessary;

5. Requests the Planning and Implementation Regional Groups (PIRGs) to include in their work programme the review of status of implementation of PBN by States according to the defined implementation plans and report annually to ICAO any deficiencies that may occur; and

6. Declares that this resolution supersedes Resolution A36-23. […]

5.2.2.2.3. Moreover, the Global Air Navigation Plan [7] has the objective of a future harmonised global navigation capability based on Performance Based Navigation (PBN) supported by the global navigation satellite system (GNSS). The GANP identifies PBN as the highest priority and outlines implementation issues involving PBN planning and implementation as part of the Aviation System Block Updates (ASBUs)

5.2.2.3. Strategic objectives (e.g. safety, accessibility)

5.2.2.3.1. RNP Approaches have the potential to provide better minima than conventional NPA. Consequently, better airport accessibility can be achieved at those airports without PA capability, as well as providing a back-up at airports where the precision approach aid is out of service.

5.2.2.3.2. Additionally, RNP Approach brings improved situational awareness for the pilots in both the horizontal and vertical domain (in the case of 3D operations), as well as the means to perform a better stabilised approach, both of which contribute to improve safety.

5.2.2.3.3. Those two issues are often identified as strategic objectives for airports in locations with challenging terrain and/or meteorology.

5.2.2.4. Aircraft operator requests

5.2.2.4.1. With the widespread availability of GNSS-based RNP and VNAV capability on many types of aircraft, operators may want to encourage RNP approaches to be published so that they can benefit from these on-board capabilities. The operators could be motivated by better airport accessibility and/or improved safety.

5.2.2.5. PBN implementation plans and airspace concept

5.2.2.5.1. States may have already identified the need for RNP approach implementation through the publication of a PBN implementation plan or through the development of a PBN compliant Airspace Concept. The PBN Manual [4] introduces the Airspace Concept as a formal way of setting strategic objectives to be satisfied by selected operations within an airspace. Airspace changes are triggered by operational requirements such as for example the addition of new runways, need to reduce aircraft noise over a residential area or improve airport accessibility. The Manual on the Use of PBN in Airspace Design [8] is the ICAO reference document on this matter.

5.2.2.6. ATM operational requirements

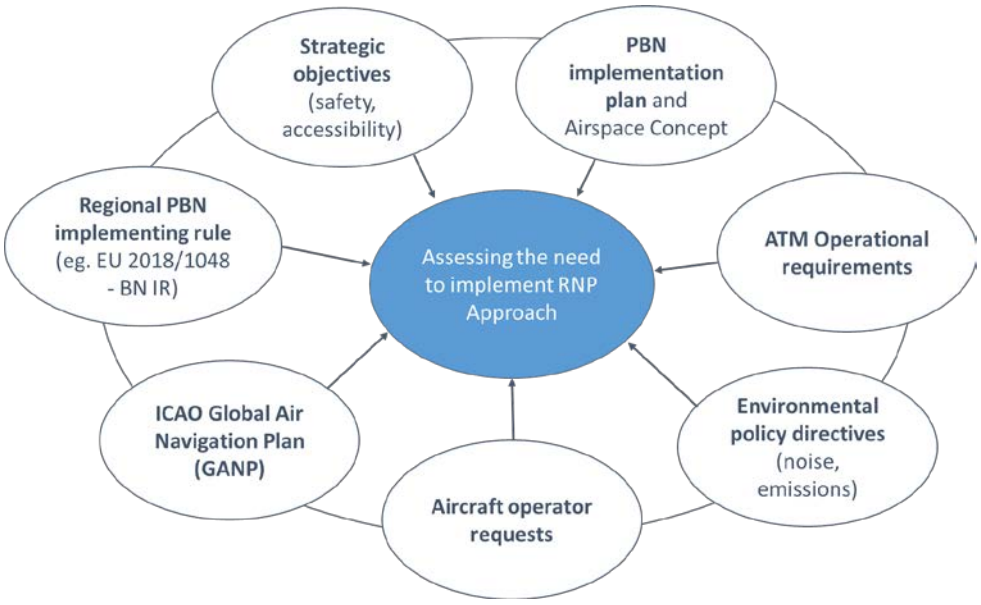
5.2.2.6.1. In Europe, the future ATM concept is described in the European ATM Master Plan and SESAR ATM Concept for 2020+. RNP Approach implementation is part of the near term Operational Improvement Steps, Enhancing Terminal Area, as identified by the European ATM Master Plan and Work Program. https://www.atmmasterplan.eu/ The key performance areas of RNP operations identified in the Master Plan are capacity, environmental sustainability, cost effectiveness, capacity and safety.

5.2.2.7. Environmental policy directives

5.2.2.7.1. Potential policy directives for noise and environment demanding changes to arrival and departure routes and the introduction of PBN terminal procedures may stimulate the need to implement RNP Approach operations.

5.2.2.7.2. Once the potential benefits are identified and agreed among all the stakeholders, there should be a high level consensus around the decision to implement RNP approach operations. At the same time, the actors need to comply with the applicable regulations in all areas of their activities. An additional reason to implement could be if it were required by a regional PBN regulation. This is the case in the European Union.

Figure 2: Assessing the need for RNP Approach implementation



5.2.2.8. The European Regulatory Framework

5.2.2.8.1. In July 2018, the European Commission adopted the PBN IR [1]. This regulation mandates the publication of RNP Approaches to LNAV, LNAV/VNAV and LPV minima at all instrument runway ends without precision approach capabilities by 3 December 2020 and at all instrument runway ends by 25 January 2024.

5.2.2.8.2. All aspects of RNP Approach implementation are covered by regulatory oversight. In the European Union area for instance, the EASA Basic Regulation [9] sets the regulatory framework.

5.2.2.8.3. In order to implement RNP Approach procedures all constituents in the area regulated by EASA, products, operations and services are under the responsibility of clearly identified organisations. This includes:

- Navigation Service Providers who provide radio-navigation signals.
- Aircraft and avionics design approval holders
- Aircraft operators
- Aerodrome operators
- Providers of Air Traffic Services
- Airspace/flight procedures designers
- AIS Service Providers
- Data suppliers

5.2.3. Activity 2: Create the implementation project team

5.2.3.1. A multi-disciplinary team is needed to ensure all necessary aspects of the implementation of RNP Approach procedures are recognised and adequately addressed, whether they are intended for a State, a set of airports or a single airport. The team composition may vary in different States, but principally, there should be a core team which can be extended on an "as needed" basis to include experts in particular domains as the implementation progresses. For example, it is recommended that the navigation data providers are consulted regarding the design of procedures when they rely on the use of new and not yet tested concepts within a state's airspace. This should be done well in advance of publication and prior to any validation flight to ensure it can be coded correctly.

5.2.3.2. Depending on arrangements in different States, implementation of RNP Approach operations may be initiated by different stakeholders, namely Aviation Authorities, ANSPs, or Airport operators. Regardless of which stakeholder is the initiator, they will all need to co-operate to ensure a smooth implementation and subsequent operation. ANSPs, whether they provide a service for a country or a specific airport, are recognised to be the key actor who will drive the implementation of the change.

Figure 3: Establish a national RNP Approach implementation team



5.2.4. Activity 3: Agree project objectives, scope and timescale

5.2.4.1. Once the implementation team has been established, it needs to define the objectives, scope and resources required to build the implementation plan.

5.2.4.2. The timing for preparation of this plan may not be compatible with the objectives set in the PBN IR [1] of the European Commission, but the priority should be put on enabling the first implementation as soon as possible in order to gain the necessary experience.

5.2.4.3. If the RNP Approach implementation is made in the frame of an airspace concept development, a sample estimation of project timescale is available in Attachment 1 to the EUROCONTROL Airspace Concept Handbook for the implementation of PBN [10].

5.2.5. Activity 4: Survey of candidate airports

5.2.5.1. When implementation of RNP Approach is planned on a national basis, or for a group of airports, a survey of airports should be performed.

5.2.5.2. As a first step, one or two candidate airports can be identified to be the first implementation locations. This will allow the national team to exercise all the necessary activities and gather the lessons learned before implementation on a wider scale.

5.2.5.3. The new runway classification of ICAO makes it possible to implement RNP Approaches to non-instrument runway ends or aerodromes without ATS services. However, such implementation will require a case by case analysis. The first

implementations should therefore take place at runways that already have an instrument approach procedure.

5.2.6. Activity 5: Assessment of Airport Capabilities

5.2.6.1. General

5.2.6.1.1. The capabilities of each of the airports chosen in the previous activity need to be assessed to determine whether RNP Approach operations can be implemented there, and if not, what modifications need to be made to enable the implementation.

5.2.6.1.2. The assessment should address the following domains:

5.2.6.2. Aerodrome infrastructure

5.2.6.2.1. An assessment of the aerodrome infrastructure should be performed in order to determine the type of runways on the airports of interest. The type of runway (instrument/ non-instrument, precision/non-precision as defined in [11]) will impact the minima that can be achieved.

5.2.6.2.2. According to ICAO PANS-OPS [12] the following principle applies:

- Non-precision instrument runways allow DH not lower than 250 ft.
- Precision instrument runways support approaches with DH lower than 250 ft.

5.2.6.2.3. Applicable aerodrome operating minima may be found in the ICAO All Weather Operations Manual [13] and in AMC&GM to Annex IV of EASA AIR OPS [14] for EASA countries.

5.2.6.3. Meteorological data

5.2.6.3.1. The project team may want to collect data on the meteorological conditions such as wind statistics, cloud ceiling and RVR per runway end. This data can be used as an input to estimating the benefits in terms of improved runway accessibility. Indeed, the potential for lower minima with RNP Approach allows a better runway use in case of bad weather. For more details about benefit assessment please refer to Activity 8.

5.2.6.4. GNSS infrastructure

5.2.6.4.1. All RNP Approach operations rely on the use of GNSS and the appropriate authority needs to agree to the use of GNSS in their airspace. Today, the US GPS and the Russian Federation’s GLONASS are the GNSS core constellations standardized in ICAO Annex 10 [2]. ICAO recommends the authority approves the use of all GNSS elements available in their area.

5.2.6.4.2. RNP Approaches flown to LPV minima rely on the use of GPS augmented by SBAS such as the European Geostationary Navigation Overlay Service (EGNOS) in Europe, the US WAAS in the northern and western part of the European region or the Russian Federation's SDCM under development. EGNOS and WAAS augment GPS, but SDCM is planned to augment GPS and GLONASS.

5.2.6.4.3. Any Pan-European Service used by aircraft and ANSPs provided by an organisation established in the territory of the EU Member States, is subject to the SES Regulations. This applies to the EGNOS Service Provider. Article 41 of the EASA Basic regulation [9] requires that the ATM/ANS Provider holds a certificate. The provider has to demonstrate compliance with the implementing acts referred to in Article 43 adopted to ensure compliance with the essential requirements referred to in Article 40.

5.2.6.4.4. The EGNOS Safety of Life (SoL) APV I service level was declared on 2 March 2011 and the LPV 200 service level in 2015. The EGNOS SoL services are provided free of direct user charges.

5.2.6.4.5. RNP Approach procedures flown to LPV minima relying on EGNOS and make use of the EGNOS SoL service. According the Single European Sky [15] and EASA Basic Regulations [9] an ANSP implementing LPV is required to have an agreement with the EGNOS service provider. The EGNOS Working Agreement (EWA) is the interface between the ESSP and ANSPs implementing RNP Approaches to LPV minima. However, an EWA can be established with organizations other than ANSPs, such as Aerodrome or Aircraft Operator if required.

5.2.6.4.6. RNP Approach to LPV minima relying on EGNOS can be planned at any airport within the EGNOS APV I or LPV200 service area published in the EGNOS Service Definition Document (SDD) [16]. However, a specific assessment can be made with support from the ESSP to confirm that the EGNOS service available at the aerodrome concerned is suitable for intended operations.

5.2.6.4.7. According to ICAO recommendations, a legal recording mechanism should be put in place for any navigation system to be used in operations. This recommendation applies to GNSS. The archived data will be useful in the context of post-accident/incident investigations. ANSPs or States do not necessarily have to set up their own recording system; they can have agreements with other parties to provide them with the necessary data (e.g. IGS for GPS or ESSP for EGNOS).

5.2.6.4.8. Concerning the availability of real-time monitoring for GNSS systems, there are a number of specific features of RNP Approach which make operational status monitoring neither practical nor required for such operations. I[2]. ICAO plans to provide further guidance on this topic in the future.

5.2.6.4.9. Impracticability includes considerations on the variety of avionics designs, the difference between performance observed on the ground and performance experienced on-board approaching aircraft and the fact that with PBN there is no longer a direct link between the navigation infrastructure and the aircraft's ability to perform an operation. The PBN Manual [4] also highlights the fact that ATC will not be aware of the type of minima an aircraft will fly to except when only one minima is available on the approach chart (approach clearance is according to the chart identification - RNP

[2] However ICAO requires the provision of information on the operational status of essential radio navigation services on a timely basis consistent with the use of the service involved.

– and not to the specific minima). SBAS monitors might therefore not always help ATC in managing PBN approach operations..

5.2.6.4.10. According to the PBN Manual [4], the absence of service monitoring for PBN operations can be mitigated even if they are essential operations. Mitigations include the availability of pre-flight GNSS prediction services, the provision of GNSS NOTAM and real-time information to ATC provided by pilots.

5.2.6.4.11. A signal availability and spectrum check should be performed as part of the validation of the procedure at the intended location, but real time GNSS signal monitoring is not required. Real-time information, in particular integrity is provided on-board the aircraft.

5.2.6.4.12. More details on these subjects are available in ICAO annex 10 [2], the GNSS Manual [17], the PBN Manual [4] and the Manual on Testing of Radio Navigation Aids [18].

5.2.6.5. Other infrastructure

5.2.6.5.1. RNP Approach operations are based upon GNSS including the missed approach segment. Nevertheless, an RNP APCH may have a conventional missed approach if desired. Some conventional navigation aids (VOR, DME) may therefore be maintained. The use of NDB is discouraged and should be limited only to cases where the use of VOR and/or DME is not possible.

5.2.6.5.2. No specific communication and surveillance requirements are identified for RNP Approach implementation.

5.2.6.5.3. RNP Approaches can be implemented in environments both with and without ATS surveillance. The availability of a local ATS service is not necessarily required. This should be verified through the local safety assessment to be performed in the scope of Activity 12.

5.2.6.5.4. The availability of a local QNH is a requirement for the publication of RNP approach to LNAV/VNAV minima. Remote QNH is acceptable in the case of RNP Approach to LNAV minima and as long as this is accounted for in the procedure design. Remote QNH for RNP Approaches down to LPV minima is permitted.

5.2.6.5.5. PANS-OPS states that the temperature used as an input for temperature corrections shall be that of the altimeter setting source. A local QNH source is required for RNP Approach to LNAV/VNAV minima, therefore the availability of a local temperature measurement is also a requirement for the publication of such procedure.

5.2.6.6. Achievable minima estimation

5.2.6.6.1. This will be useful in future steps to determine the minima reduction enabled by RNP Approach, and consequently to estimate the airport accessibility gain provided by the implementation of the procedure (see Activity 8).

5.2.6.7. Integration of the new procedure into the terminal area

5.2.6.7.1. An initial airspace analysis should be made in order to assess the impact that implementation of RNP Approach would have on departure and arrival routes.

5.2.7. Activity 6: Survey of Traffic Characteristics and Aircraft Operators

5.2.7.1. Survey of traffic characteristics

5.2.7.1.1. Fleet capability is evolving with time: GNSS-based navigation capabilities are spreading and the publication of the PBN IR [1] is expected to speed up the rate of SBAS equipage. However, it cannot be assumed that airspace users are capable to perform all types of RNP Approach. Traditionally, Baro-VNAV procedures were the preferred option for commercial air transport operators whose aircraft tend to be equipped with APV barometric VNAV functions rather than with SBAS APV capability. On the contrary, regional operators, business aviation and general aviation where VNAV capability based on barometric altimetry is not widely available were the first user segments to equip for RNP Approach operations based on SBAS. The type of aircraft flying to and from an airport is therefore likely to remain an influencing factor in the implementation of one or another type of RNP Approach. Nevertheless it is recommended to implement an RNP Approach procedure with all three minima lines (LNAV, LNAV/VNAV and LPV) to best serve all types of users at an airport: the cost of designing and publishing all types of minima at the same time will be lower than the sum of costs for the design and publication of the different minima one after the other. The PBN IR [1] even makes it a requirement to publish all three minima lines.

5.2.7.1.2. In certain cases, the team must work with an estimation of a future traffic sample, for example, if the approaches are planned to be implemented at a new airport or where significant changes in the airspace concept are planned.

5.2.7.2. Survey of Aircraft Operators

5.2.7.2.1. The RNP Approach implementation process should be conducted in close co-operation with Aircraft Operators. It is very important to collect information regarding current and projected PBN capabilities of aircraft operating at the airport of interest, through a survey of Aircraft Operators. The survey should also include questions regarding the Aircraft Operators preferred approach operations.

5.2.7.2.2. Information should be collected regarding the following:

- aircraft equipment and navigation capabilities
- current experience with RNP Approach procedures
- operator requirements and preferences for RNP Approach procedures
- plans in terms of future equipage and operational approval

5.2.7.2.3. As several terminologies have proliferated around the use of RNAV, RNP and GNSS equipment and operations, it is suggested to use simple and straightforward questions to operators. If possible, provide an introduction section before the questions introducing RNP Approaches in order to avoid ambiguity.

5.2.7.2.4. Some sample questions may be:

- Please list the types of aircraft that are being operated.
- Do you have certified GPS receivers onboard the aircraft? If yes, please list for each type of aircraft the kind of the GPS receiver (e.g. TSO-C129a, TSO-C145(), TSO-146() or corresponding E-TSO) installed onboard.
- Which PBN operations have been approved?
- Does the aircraft have Baro-VNAV capability?
- Does the aircraft have SBAS capability?
- Does the aircraft have an airworthiness approval for the use of GPS and/or EGNOS in the approach phase of flight? If yes, for which type of operation (among different types of RNP Approach)?
- Does the operator have plans to equip with RNP Approach capability in the future?
- What would motivate the operator to equip with RNP Approach capability in the future?
- What type of RNP Approach operation is preferred by the operator?
- Would the potential removal of a conventional procedure cause any particular problem? If yes, which one?
- At which airports would the operator like to have RNP Approach published and to which minima (LNAV, LNAV/VNAV and/or LPV)? At which runway end(s) and why?

5.2.7.2.5. Information regarding the airworthiness approvals of the aircraft operators registered in the State should be available from the Civil Aviation Authorities. Additional sources of information to the survey can be used to evaluate the fleet capabilities, including the EUROCONTROL CNS dashboard which analyses the capabilities declared in the ICAO flight plans submitted by operators (https://www.eurocontrol.int/dashboard/communication-navigation-and-surveillance-dashboard). In some cases given a particular type of aircraft, an estimate can be made regarding its navigation capability.

5.2.7.2.6. The data collected through the survey and other sources of information should be compiled to provide meaningful information to the project team for choosing among candidate RNP Approach procedures to be implemented. Indeed fleet capability will have a direct impact on how the procedures will be used when they are published (see Activity 14).

5.2.8. Activity 7: Assess the impact on ATS and NOTAM services

5.2.8.1. An assessment should be made of the impact that RNP Approach implementation may have on the ATS and AIS services.

5.2.8.2. PANS ATM, ICAO Doc 4444 [19] covers the case of RNP Approach and provides, in its version applicable from November 2022, improved applicable phraseology for ATS to manage/deal with RNP Approach clearances. With existing standards, ATS will not be aware of the specific minima line the crew will use.

5.2.8.3. In most cases, an RNP Approach will be performed on pilot demand and the chart identification 'RNP' is to be used in the approach clearance (e.g. "Cleared RNP Approach runway 26"). The chart identification will include any suffix used in chart names (e.g. 'Cleared RNP Zulu approach runway 26' for a procedure charted as 'RNP Z RWY 26').

5.2.8.4. PANS ATM provisions applicable from November 2022 better cover all cases, including those RNP Approaches with only an LPV line of minima and without an LNAV minima line entitled 'RNP RWY 26 (LPV only)'. Indeed, chart identification details provided within brackets in such cases will not be pronounced.

5.2.8.5. Amendment 1 to the 5th Edition of Doc 4444 [19] in 2012 introduced the new ICAO flight plan provisions including indicators for operators to declare the aircraft's PBN equipage in items 10 and 18 of the flight plan. ATM automated systems need to be upgraded to be able to extract this information from the FPL and it would need to be discussed if any such information needed to be displayed on ATS working positions. However, ATS do not require detailed information about the PBN equipment on-board an aircraft requesting or announcing its intention to carry out an RNP Approach because in that case, it is assumed to be capable. RNP Approach implementation can consequently be planned independently of the new flight plan provisions. EUROCONTROL makes available the IFPS User Manual [20] where PBN content of the flight plan is described in detail.

5.2.8.6. In order to support pre-flight planning, models of GPS and EGNOS allow the prediction of the impact of known and scheduled GNSS systems/subsystems outages. EUROCONTROL makes available a web-based service called AUGUR (http://augur.eurocontrol.int/) which provides GPS RAIM outage predictions to users.

5.2.8.7. GPS RAIM predicted unavailabilities may also be provided in the form of NOTAMs. EUROCONTROL proposes such a service as part of the catalogue of EAD services. The DFS is another provider of GPS RAIM NOTAM proposals.

5.2.8.8. EGNOS NOTAM proposals are provided by the EGNOS Service Provider to the AIS provider for validation and publication. The details of such a service are described and agreed in the scope of an EGNOS Working Agreement (EWA, as mentioned in section 5.2.6.4.6). Note that EGNOS availability to support operations to LNAV/VNAV and LPV minima is also available on the EGNOS User Support website (https://egnos-user-support.essp-sas.eu)

5.2.9. **Activity 8: Identify expected benefits and costs for RNP Approach implementation**

5.2.9.1. The outcome of a Cost and Benefits assessment can be one decision factor to implement RNP Approach. The following paragraphs discuss the different benefits and costs for such operations. Such aspects could be verified after implementation (e.g. under Activity 20 - post implementation review).

5.2.9.2. Benefits

5.2.9.2.1. The main benefit of implementing RNP Approach is to improve safety. RNP Approach operations reduce the risk of CFIT by providing better situational awareness to pilots leading to a stabilised approach. RNP Approach implementation can support the withdrawal of some conventional navigation aids thus saving costs for maintenance and flight calibration. This can lead to fewer building constraints on and around aerodromes and the possibility to develop and improve services.

5.2.9.2.2. The safety objective alone can be a sufficient argument to implement RNP Approach procedures, particularly in cases where most aircraft operators in a particular airspace already have PBN capabilities. Some States have already implemented RNP Approach procedures for this purpose and other States can benefit from this experience.

5.2.9.2.3. Nevertheless, if an ANSP or airport intends to perform a benefit assessment for implementing RNP Approach, the operational improvements that can be quantified are those associated with avoidance of delay and diversion that may result from the reduced operational minima. The RNP APCH may also support reversion operations when an ILS is out due to maintenance.

5.2.9.3. Costs

5.2.9.3.1. The costs to implement RNP Approaches should be estimated for all stakeholders such as ANSPs, Airports Operators and Aircraft Operators.

5.2.9.3.2. Costs for ANSPs and/or Airports Operators may emerge from the following:

- Procedure design and implementation costs which might include procedure designers' training, flight validation, chart preparation and AIP changes
- Safety assessment
- Runway upgrades as identified in Activity 5 – e.g. upgrade of runway lighting
- Operations' costs may include, but are not limited to, implementation of changes to airspace, design and publication of terminal procedures, update to operating procedures, etc.
- ATC training in PBN – the same cost as for training in conventional navigation

5.2.9.3.3. The implementation of RNP Approach procedures that are based on the use of GNSS do not require the installation of ground navigation aid infrastructure. Consequently, there is a potential for cost saving for ANSPs if a rationalisation of

conventional navigation aids is made together with the deployment of the RNP Approaches.

5.2.9.3.4. The costs for aircraft operators will depend on the type of aircraft used (see information collected in Activity 6). This cost may include:

- Equipment acquisition and installation
- Airworthiness certification
- Operating procedures and documentation
- Flight Crew training
- Operational authorization

5.2.9.3.5. It is acknowledged that the widespread use of RNP Approach operations will happen in the future. On the one hand, experience has shown that operators must see clear benefits before deciding to acquire and install avionics. On the other hand, Airport Operators tend to delay the provision of new navigation services to when the fleet is ready for it. It is therefore most important that all actors coordinate and synchronise their investments to maximise return on investment.

5.2.10. Activity 9: Choose which type of RNP Approach to implement

5.2.10.1. At this stage of the process, outputs from earlier activities are available to the team in order to arbitrate between different scenarios for implementing RNP Approach operations.

5.2.10.2. The rationale behind all the decisions taken should be documented in an implementation plan.

5.2.10.3. The implementation plan should include at least the following elements:

- The rationale behind the particular RNP Approach implementation, the target strategic objectives and the expected benefits.
- The target airspace users (air transport, business, general aviation etc.).
- A deployment strategy which clearly indicates which RNP Approach (with minima LNAV, LP, LNAV/VNAV and/or LPV) will be implemented and for which runway end.
- Note that LNAV, LNAV/VNAV and LPV minima lines of RNP Approach can be published on a single chart. In some cases it might be necessary to publish different minima lines on separate charts. For example, when the missed approaches are different or step-down fixes are used. The application of the ICAO duplicate procedure identification concept i.e. usage of a single letter suffix may also be considered.
- It is recommended that, whenever possible, all three types of RNP Approach procedure be implemented at the same time for a particular runway.
- It is recommended that an RNAV Missed Approach Procedure is implemented in the design, or if a conventional Missed Approach is retained, a coding table is provided such that it may be flown with an RNP system.

5.3. RNP Approach implementation

5.3.1. General

5.3.1.1. This part consists of all activities required to deploy the RNP Approach implementation plan resulting from the previous activities.

5.3.2. Activity 10: Procedure design

5.3.2.1. Early identification of any issue related to procedure design expertise would allow time for training and procurement of such know-how that is indispensable during the implementation phase. Special consideration should be given when designing an LNAV procedure using step-down fixes (SDF). The use of the SDF is a valid design criteria permitting additional descent within a segment by identifying a point at which a controlling obstacle has been safely over-flown. However, due to the fact that RNP Approach procedures rely on navigation databases and Flight Management Systems (FMS), it has been recognized that there are some avionics limitations in handling coded SDFs within the final approach segment. For instance, if SDFs are coded, the distance to the next waypoint given to pilots during final approach is not the runway threshold or the missed approach point and the comparison between the distance/altitude table on the approach chart and the actual flight profile can't be made. It is therefore clear that some State regulators will not accept SDFs in the final segment are coded in the navigation database under any circumstances. In that case, the State regulator that does not accept SDF coding, should advise the navigation data provider through an official letter. It is highly recommended not to name SDFs, because un-named points are normally not coded, and to publish for each SDF both the procedure altitude to be maintained to the SDF (along the profile) and the minimum obstacle clearance altitude (MOCA) available up to the SDF (as a shaded block). These two values are very often different and publishing both is of helpful for pilots.

5.3.2.2. ICAO Doc 8168 [12] Volume II, Part III, and ICAO Annex 10 [2] include requirements for PBN training for procedure designers. However, it is recognised that the current ICAO material does not provide for the complete training needs of procedures designers. ICAO Doc 9906 Volume 2 [21] —provides additional guidance for the establishment of flight procedure designer training. Training is the starting point for any quality assurance programme. This volume provides guidance for the establishment of a training programme. In the European Union, the Commission Implementing Regulation (EU) 2020/469 [22] sets the requirements for Providers of Flight Procedure Design services (Annex XI - Part- FPD).

5.3.2.3. Procedure design will be performed accounting for the categories of aircraft operating on the airport (see outcomes of Activity 6).

5.3.2.4. The procedures design criteria regarding different RNP Approach operations can be found in ICAO Doc 8168 [12].

5.3.2.5. The criteria for RNP Approach procedures to LNAV minima (NPA) are provided in ICAO PANS OPS Volume II, Part III, Section 3, Chapter 3.

5.3.2.6. The criteria for RNP Approach with vertical guidance based on Baro VNAV (APV Baro-VNAV) design are described in ICAO PANS OPS Volume II, Part III, Section 3, Chapter 4.

5.3.2.7. The criteria for RNP Approach based on SBAS (SBAS NPA (LP), SBAS APV and SBAS Cat 1) criteria are provided in ICAO PANS OPS Volume II, Part III, Section 3, Chapter 5.

5.3.3. Activity 11: Verification of expected benefits

5.3.3.1. At this stage of the process, the actual minima enabled by RNP Approach procedure are known (Activity 10). It is consequently recommended to confirm that the benefits that were identified in Activity 8 are still valid.

5.3.4. Activity 12: Local Safety Assessment

5.3.4.1. The Local safety assessment should start as soon as possible because the analysis can have an impact on the design or on the charting of the procedure.

5.3.4.2. The ICAO references for risk assessment and mitigation include Annex 19 [23] and Doc 9859 [24]. According to ICAO, service providers shall have processes in place to identify and manage the safety risks that may arise from changes; and no operation should take place in a changed system or operational context until all safety risks are evaluated. In the European Union, Regulation (EU) No 2017/373 [25] applies and requires that risk assessment and mitigation activities are carried out before implementing any change in the ATM/ANS. Implementing RNP Approach is a change which requires such activities under oversight of the competent authority.

5.3.4.3. Finally, and in anticipation of implementation, a performance and safety monitoring system and procedures should be defined. This will include an occurrence reporting mechanism.

5.3.5. Gate: Final decision to implement

5.3.5.1. Once Activities 10, 11 and 12 are completed, the implementation plan developed earlier can be updated according to the latest conclusions.

5.3.5.2. Additionally, the following tasks can be performed:

- A notice on any potential airspace design change that can result from RNP Approach implementation.
- Notification of intent to operators by ANSP to implement RNP Approach.
- Notification of intent to operators of the removal of conventional procedures, if any conventional procedures are to be removed.
- A planned date for implementation should be announced.

5.3.5.3. A notification of each of the above tasks to the navigation data providers is highly recommended.

5.3.6. Activity 13: Procedure validation

5.3.6.1. Once designed, the procedure should undergo a validation process. The objective of procedure validation is to verify obstacles and navigation data and assess the fly ability of the procedure.

5.3.6.2. Validation will consist of ground validation and maybe also flight validation. Ground validation must always be undertaken. This consists of an independent instrument flight procedure design review and pre-flight validation. The review requires appropriate knowledge of flight validation issues and the involvement of a flight validation pilot is best practice. When ground validation can validate the accuracy and completeness of all obstacles and data considered in the procedure design and any other factors normally considered in the flight validation, then the flight validation requirement may be dispensed with. More details on this subject are available in ICAO Doc 9906 Volume 5 – Validation of Instrument Flight Procedures [26].

5.3.6.3. The process of quality assurance regarding the elements of procedure design, such as procedure design documentation, verification and validation methods, and guidelines on acquisition and processing of source data are described in ICAO Doc 9906 Volume 1 – Quality Assurance Manual for Flight Procedure Design, [27].

5.3.7. Activity 14: Preparing the entry into operations (ATC considerations)

5.3.7.1. Depending on the fleet mix, it is very likely that a certain number of aircraft operating at the airports where RNP Approach operations are to be introduced would not be capable of performing them or capable but not approved. Therefore, ATC must be capable of retaining a sufficiently high level of safety and performance of its service provision even in a mixed-mode environment where there is a mix of aircraft using conventional and area navigation.

5.3.7.2. RNP Approach procedures providing vertical guidance may be published either as backup for precision approaches or as sole approaches when there is no ILS/MLS/GLS. When they are published as a back-up to a precision approach procedure it is helpful to design the RNP Approach procedures as an overlay of the existing precision approach in order to assist ATC in managing the transition in case the navigation aid support the precision approach becomes unavailable. Once the RNP Approach becomes the main approach procedure used in operations, the procedure might be redesigned to optimise it and maximise the benefits.

5.3.7.3. When an RNP Approach procedure is published, it is possible that not all the three minima lines will be available on the chart. Aircraft equipped with Baro-VNAV capability only are not capable of flying LPV procedures however aircraft capable of RNP APCH to LPV minima have the potential to be approved for LNAV/VNAV procedures. Where possible, all runway ends should have an RNP Approach to LNAV

minima and aircraft approved for either LNAV/VNAV or LPV may use it. It is common practice to publish all three minima lines on a single RNP approach chart.

5.3.7.4. If required, certain provisions should be implemented to enable the ATC to cope with mixed mode operations (conventional navigation versus area navigation where some aircraft are equipped to fly the RNP Approach and others are not). It may be necessary to provide navigation services to aircraft that are not capable and/or approved for RNP operations. Conventional procedures would therefore need to be retained. Conventional navigation aids may also be needed to support operators' contingency procedures in case of a GNSS outage.

5.3.7.5. In Europe and as defined in the PBN IR [1], the proportion of PBN non-capable aircraft is expected to reduce gradually so that providers of ATM/ANS can withdraw services using conventional procedures by 2030 (except for Cat II/III precision landing). A minimum network of conventional navigation aids will be retained for contingency situations.

5.3.8. **Activity 15: AIS Requirements**

5.3.8.1. Approach publication

5.3.8.1.1. For charting, general criteria apply as specified in ICAO PANS OPS Volume II. The title of the instrument approach chart shall be RNP RWY XX. The minima box could include OCA/H values for LNAV, LNAV/VNAV and LPV minima. An example of a chart that includes all three minima lines is provided in Figure 4.

5.3.8.1.2. If multiple RNP Approaches exist to the same runway, a suffix is added to each of the applicable approach identifiers, for example RNP Y RWY 27 and RNP Z RWY 27. Using a suffix is a common rule not specific to RNP Approach procedures. There is no harmonised use of suffices in Europe. The Z suffix often represents the preferential approach from an ATC perspective. But other suffices like 'N', 'S', 'W' or 'E' for approaches respectively from the North, South, West or East have also been observed. Suffix 'E' has also been used on approach charts with only an LPV minima ('E' refers to 'EGNOS' in that case), whereas suffix 'H' is sometimes used for Helicopter procedures.

5.3.8.1.3. To ensure that the procedures can be coded in ARINC 424 format, procedure designers have to be familiar with the path terminators used to code PBN procedures and their use. Understanding the functional capabilities of different area navigation systems for each path terminator is not a requirement. A close co-operation should exist between procedure designers, those involved in procedure validation and the navigation data providers that compile the coded data for the navigation database. Both procedure designers and data providers belong to the ANSP family as manifested in the EASA Regulatory framework (see [25] Part FPD[3] and Part DAT). All procedures must be based upon WGS-84 coordinates.

5.3.8.1.4. The State AIP should clearly indicate that the navigation application is RNP APCH. This should be indicated in the PBN Box of the approach chart, together with

[3] Previously known as Part ASD

optional on-board PBN functions which might be required (e.g. RF). The navigation data published in the State AIP for the procedures and supporting navigation aids must meet the charting requirements of Annex 4 [28], Chapter 11, paragraph 11.10.9; Annex 15 [29] and Doc 10066 [30] (as appropriate).

5.3.8.1.5. A coding table or a formal textual description should be published on the back of the chart providing the coordinates of all the waypoints (and fixes) used in the procedure. If it is not possible to put this information on the back of the chart a separate, properly referenced sheet can be used.

5.3.8.1.6. In the case of LPV, the data required to code the procedure includes an SBAS FAS Data Block, which contains an eight character hexadecimal representation of the calculated remainder bits called the CRC remainder. The CRC remainder is used to determine the integrity of the FAS data during transmission and storage and it is computed electronically using a FAS data block software tool. The content of the SBAS FAS Data Block should be published on the verso of the chart in order to ensure that the LPV portion of the procedure is correctly coded in the navigation database.

5.3.8.1.7. An SBAS FAS DB tool is made available on the EUROCONTROL web site (https://fasdb.eurocontrol.int/fasdb/). This tool allows the calculation of the CRC value for an SBAS FAS DB, generates an electronic version of the Data Block and converts electronic Data-Block into a textual form. Generally, FAS DB tools also generate a Data Block representation as a hexadecimal string. The textual description only, together with the CRC remainder value can be made available on the verso of the chart.

5.3.8.1.8. Project management should allow a reasonable amount of time for unexpected events, especially those related to procedure validation and coding.

5.3.8.1.9. Another detail concerning the publication of LPV procedures is that a unique SBAS channel number is needed for every published approach. Until 2019 and as agreed with ICAO and FAA, EUROCONTROL was the focal point in Europe for SBAS channel allocation. ICAO has now set up a global system of SBAS Channel assignments (https://www4.icao.int/SBAS/). Procedure designers are expected to request the channel number through National points of contacts. The SBAS channel number is a five digit number that must be globally unique and shall be in the range of 40,000 to 99,999. Channel number assignments are required for RNP Approach to LPV and LP minima and will be promulgated on the approach charts respectively. It should be noted that either an LP or an LPV minima is expected to be published to a single runway end, not both.

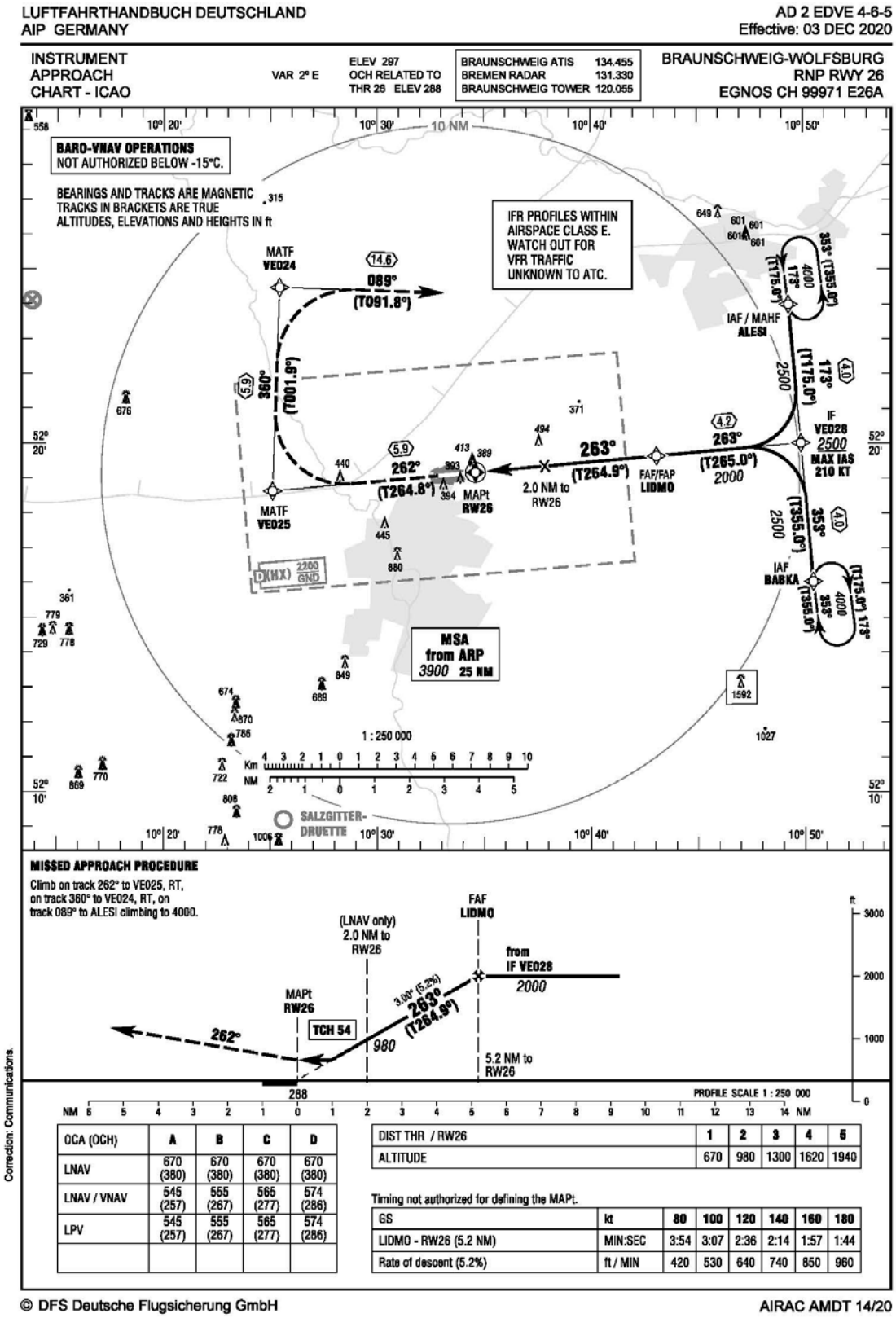
5.3.8.1.10. The information regarding the establishment of new RNP Approach procedures will need to be provided in accordance with the AIRAC publication system. It is recommended that new RNP Approach procedures are considered by States AIS as ‘major changes’ in respect of circumstances listed in Appendix 4, Part 3 of ICAO Annex 15 [29] (guidance on what constitutes a ‘major change’ is included in Doc. 8126

'AIS Manual' [31]). Therefore, it is recommended that new RNP Approach information is distributed by the AIS unit at least 56 days in advance of the planned effective date.

5.3.8.2. AIC and AIP publication

5.3.8.2.1. States are recommended to use AIC and AIP to provide information to users regarding GNSS, including SBAS. PANS AIM is in the process of being updated and it is expected that GNSS-related elements providing the navigation service are published in the State AIP General (GEN 3.4) and En-Route (ENR 4.3) sections. Even if the same aid (GNSS core constellations and/or SBAS) is used for both en-route and aerodrome purposes, a description will not be needed in AIP AD 2 and/or (if appropriate) AD 3 sections, as these sections will be dedicated to local systems.

Figure 4 Example RNP Approach Chart including all three minima lines



5.3.9. Activity 16: Navigation Database

5.3.9.1. The navigation database should be obtained from a supplier that complies with RTCA 200B/EUROCAE ED-76A 'Standards for Processing Aeronautical Data [32] (EUROCAE ED-76/RTCA DO-200A may also be acceptable). Such compliance shall be overseen by the appropriate regulatory authority. In States applying EASA rules, the Commission Implementing Regulation (EU) 2017/373 [25] applies since 1st January 2019. It sets the requirements for the certification of organisations processing aeronautical data for use on aircraft (DAT providers).

5.3.9.2. Virtually all aeronautical databases are loaded according to the specifications in the Aeronautical Radio, Incorporated (ARINC) 424 standard 'Navigation System Data Base'. While the ARINC 424 specification covers a large percentage of the aeronautical requirements, it is impossible to write a specification that wraps up every combination of factors used to design and fly instrument procedures.

5.3.9.3. Many of the differences between charts and databases are because there can be no standard implemented to have the information in both places depicted in exactly the same way. It is recognized that the basic design for most aeronautical information contained in instrument procedures i.e. conventional ones has been created for the analogue world. The art of entering data into an aeronautical database i.e. translation of the textual & graphical description of a procedure with the help of Path and Terminator (P/T) codes is one that balances the intent of the original procedure designer and the requirements of Flight Management Systems(FMS). With the implementation of PBN applications, a high degree of standardization and harmonization of chart and database information has been reached due to the following reasons:

- RNP Approach procedure standard shape 'Y' or 'T';
- Mostly straight segments (TF leg);
- Curved segments (RF legs) – optional outside of the final approach and initial missed approach segments;
- Small sub-set of Path Terminators compatible for PBN procedure coding;
- ICAO requirement for formal or tabular procedure description on chart verso which significantly reduced the misinterpretation of procedures by coders;

5.3.9.4. However, there are many different types of avionics equipment utilizing the same baseline navigation database. The same database information may be presented differently on certain types of airborne equipment even being manufactured by the same FMS vendor. In addition, some equipment may be limited to specific types of navigation database information, omitting other database information.

5.3.9.5. Since 1995, navigation data provider experts have been working with all avionics vendors to achieve as much standardization of PBN procedures as possible. In certain cases, alternative coding (such as path terminators, speed and altitude restrictions) may be used to enable specific area navigation systems to better follow the intended track.

5.3.9.6. Within an ARINC 424 output file for an RNP Approach to LPV minima, the SBAS FAS DB data is carried in a dedicated type of record called the Path Point (PP) file. The PP Primary record description contains all FAS data fields (twenty-one fields including the CRC remainder field) as required for the data wrap for CRC

calculations. The specific order and coding of the twenty-one fields should be followed rigorously when computing the CRC to ensure avionics compatibility. When 'un-wrapping 'the FAS Data Block, the navigation data provider and avionics must compare the resulting CRC remainder i.e. representing the integrity field with the value provided by the procedure designer. If the values do not match, the FAS Data Block cannot be validated and extracted from database.

5.3.9.7. Additionally, the Path Point record has been further extended following industry requirements with a continuation record. The PP Continuation record containing fields such as LTP and FPAP orthometric heights, FPAP ellipsoid height and SBAS channel number. Therefore, States are also required to provide these parameters to the data provider in addition to the FAS DB.

5.3.9.8. In conclusion, RNP Approach procedures authorized for SBAS navigation demand a complex work-process for generation and extraction of the complete set of records by the navigation database supplier.

5.3.9.9. From a data quality and integrity level stand point, some elements of the SBAS FAS DB are classified as critical data requiring the highest possible resolution for latitude/longitude & elevation (hundredth of sec and 1 foot respectively). Therefore, attention should be paid throughout the entire chain of involved actors i.e. procedure designer – AIS expert – navigation data specialist – avionics representative in order that the highly demanding navigation database requirements for RNP Approach should be closely coordinated in a collaborative process.

5.3.10. **Activity 17: Training Requirements**

5.3.10.1. Training for ATC

5.3.10.1.1. Air traffic controllers, who provide control services at airports where RNP Approaches have been implemented, should have completed training that covers the items listed below.

5.3.10.1.2. Core training

How area navigation systems work:

- include functional capabilities and limitations;
- accuracy, integrity, availability and continuity including on-board performance monitoring and alerting;
- GPS receiver, RAIM, FDE, and integrity alerts;
- waypoint fly-by versus flyover concept (and different turn performances);

Flight plan requirements;

ATC procedures;

- ATC contingency procedures;
- separation minima;
- mixed equipage environment;
- transition between different operating environments; and
- phraseology.

5.3.10.1.3. Training specific to RNP Approach

a) Related control procedures:
- radar vectoring techniques (where appropriate);

b) RNP Approach and related procedures:
- including T and Y approaches; and
- approach minima;
- RF legs

c) impact of requesting a change to routing during a procedure.

Some items of the training are general. Local considerations may be added as a result of the local safety assessment.

5.3.10.2. Training for Flight Crew

Commission Regulation (EU) 2016/539 amended Regulation (EU) No 1178/2011 [33] as regards pilot training, testing and periodic checking for performance-based navigation (Part-FCL). This eliminated the specific operational approval for most PBN operations, including for RNP Approach, for CAT, SPA, NCC and NCO operators. AMC and GM to Part FCL contain theoretical knowledge and flight instruction elements on PBN and RNP Approach

5.3.11. **Activity 18: Final Review before implementation**

5.3.11.1. Once the above steps are performed, a final verification should be made so that the deployment can proceed.

5.3.11.2. The following list is proposed as a check list for this final review:

- Demonstrate how the targets set for the implementation of the RNP Approach procedures are to be met.
- The risk assessment and mitigation for the change must be accepted by the competent authority.
- The validation of the procedures must have demonstrated that the procedures can be successfully implemented.
- The impact on training and the level of fleet equipage on implementation date must be considered and if needed, a new target date for implementation should be agreed.
- In case a GO decision has been made, a commitment to implement and the agreed target date for the publication of the procedures should be announced.

5.3.12. **Activity 19: Introduction into service**

5.3.12.1. At this stage, predefined safety and performance monitoring tools and procedures need to be put in place, including an occurrence reporting mechanism.

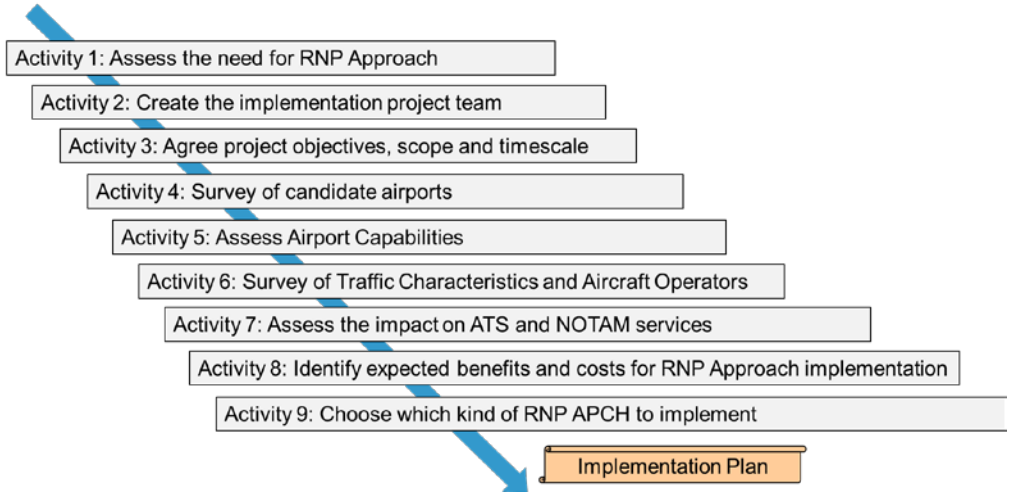
5.3.13. **Activity 20: Post-implementation activities**

5.3.13.1. Once the RNP Approach operations are introduced, their performance should be monitored. For this purpose, data on success and failure rates of RNP Approaches should be collected. This will allow for instance the verification of any expected safety improvements. A Post Implementation Review (PIR) should be undertaken after a suitable period of operational experience, typically one year.

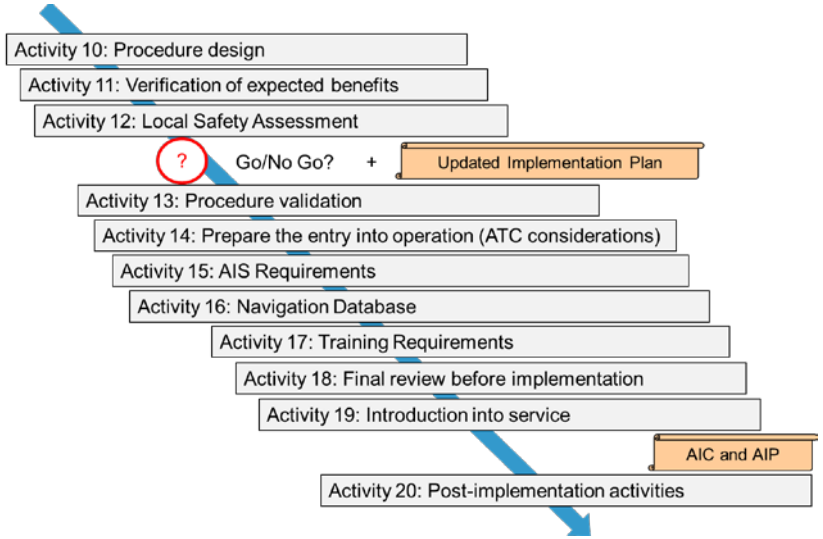
5.3.13.2. If unacceptable events occur during initial operations, the procedures should be removed and the operational concept should be reviewed in order to put in place the appropriate mitigations.

ANNEX 1: RNP APPROACH IMPLEMENTATION ACTIVITIES

Agreeing the operational requirements and building the implementation plan



RNP Approach implementation



APPENDIX 5W

METEOROLOGY SUB-GROUP (MET SG) TERMS OF REFERENCE

1. Terms of Reference

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

a) ensure that the implementation of MET 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 MET-related ASBU threads/elements included in the MID Region Air Navigation Strategy as well as other required MET facilities and services, identify the associated difficulties and deficiencies and provide progress reports, as required;

c) keep under review the MID Region MET performance objectives/priorities, develop action plans to achieve the agreed performance targets, and propose changes to the MID Region MET plans/priorities through the MIDANPIRG as appropriate;

d) seek to achieve common understanding and support from all stakeholders involved in or affected by the MET developments/activities in the MID Region;

e) provide a platform for harmonization of developments and deployments in the MET domain;

f) monitor and review the latest MET developments that support Air Navigation and provide expert inputs for the implementation of the Air Navigation Systems related to MET based on ATM operational requirements;

g) provide regular progress reports to the MIDANPIRG concerning its work programme; and

h) review periodically its Terms of Reference and propose amendments, as necessary.

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

a) monitor the status of implementation of the required MET facilities and services in the MID Region;

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

c) provide necessary inputs to the MID Region Air Navigation Strategy through the monitoring of the agreed Key Performance Indicators related to MET;

d) identify and review those specific deficiencies and problems that constitute major obstacles to the provision of efficient MET services, and recommend necessary remedial actions;

e) keep under review the adequacy of ICAO SARPs requirements in the area of MET, taking into account, inter alia, changes in user requirements, the evolution of operational requirements and technological developments;

f) develop proposals for the updating of relevant ICAO documentation related to MET, including the amendment of relevant parts of the MID ANP, as deemed necessary;

g) monitor and review technical and operating developments in the area of MET and foster their implementation in the MID Region in a harmonized manner;

h) foster the integrated improvement of MET services through proper training and qualification of the MET personnel;

i) coordinate with relevant MIDANPIRG and RASG-MID Subsidiary bodies for issues with

common interests; and j) liaise with other States providing services and/or serve as inter-regional exchange of meteorological information for international civil aviation (e.g. SADIS (U.K.), VAAC Toulouse (France), TCAC New Delhi (India), Regional OPMET Centre Vienna (Austria)).

k) monitor and review developments in space weather information services, foster the integration of space weather advisories into MET services, and provide guidance to States on mitigating the impact of space weather phenomena on international civil aviation in alignment with ICAO provisions and global best practices.

2. Composition

2.1 The Sub-Group is composed of:

a) MIDANPIRG Member States; b) World Meteorological Organization (WMO) and other 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 paperwork (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.

MID REGION SAR AGREEMENT STATUS BETWEEN ANSPS/ACCS
March 2025

STATE	CORRESPONDING STATES			REMARKS*
BAHRAIN	☒ IRAN ☒ SAUDI ARABIA	☒ KUWAIT ☒ UAE	☐ QATAR	4/5
EGYPT	☒ CYPRUS ☐ JORDAN ☐ SUDAN	☒ GREECE ☒ LIBYA	☐ Israel ☒ SAUDI ARABIA	4/7
IRAN	☒ ARMENIA ☒ BAHRAIN ☒ OMAN ☐ TURKMENISTAN	☒ AZERBAIJAN ☐ IRAQ ☐ PAKISTAN ☒ UAE	☐ AFGHANISTAN ☒ KUWAIT ☐ TÜRKIYE	6/11
IRAQ	☐ IRAN ☒ JORDAN	☐ KUWAIT ☐ SAUDI ARABIA	☐ SYRIA ☐ TÜRKIYE	1/6
JORDAN	☐ EGYPT ☒ IRAQ	☐ ISRAEL ☒ SAUDI ARABIA	☐ SYRIA	2/5
KUWAIT	☒ BAHRAIN ☒ IRAN	☐ IRAQ	☒ SAUDI ARABIA	3/4
LEBANON	☒ CYPRUS	☐ SYRIA		1/2
LIBYA	☐ ALGERIA ☐ CHAD ☐ EGYPT	☐ MALTA ☐ NIGER	☐ SUDAN ☐ TUNIS	0/7
OMAN	☐ INDIA ☒IRAN	☒ SAUDI ARABIA ☐ PAKISTAN	☒ UAE ☒ YEMEN	4/6
QATAR	☐ BAHRAIN	☒ SAUDI ARABIA	☒ UAE	1/3
SAUDI ARABIA	☒ BAHRAIN ☐ IRAQ ☒ OMAN ☐ UAE	☒ EGYPT ☒ JORDAN ☒Qatar ☐ YEMEN	☐ ERITREA ☒ KUWAIT ☐ SUDAN	6/11
SUDAN	☐ CENTRAL AFRICAN ☐ CHAD ☐ EGYPT	☒ ERITREA ☒ ETHIOPIA ☐ LIBYA	☐ SAUDI ARABIA ☐ SOUTH SUDAN	2/8
SYRIA	☐ IRAQ ☐ JORDAN	☐ LEBANON ☒ CYPRUS	☒ TÜRKIYE	2/5
UAE	☒ BAHRAIN ☒ IRAN	☒ OMAN ☒ SAUDI ARABIA	☒ QATAR	3/5
YEMEN	☐ DJIBOUTI ☐ ERITREA ☐ ETHIOPIA	☐ INDIA ☒ OMAN ☐ SAUDI ARABIA	☐ SOMALIA	1/7

☒ Agreement Signed ☐ Agreement NOT Signed *Signed Agreements / Total No. of required Agreements

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APPENDIX B

LIST OF GADSS FOCAL POINTS

MARCH 2025

State	Name	Title	Email	Tel. & Mobile
Bahrain	Mr. Ahmed Al Shamlan	Head of Search & Rescue Air Navigation Directorate	ahmed.alshamlan@mtt.gov.bh bahrainsar@mtt.gov.bh	Tel.: +973 17329969/9959
Egypt	Mr. Hesham AbdelBasset AbdelAziz	GM, Crisis Management	crimang@civilaviation.gov.eg	Tel. +202 22677 617 Mob. +201141130 557
	Mr. Mohamed Abbass Elgamal	Search and Rescue Senior Inspector	Visaversa82@yahoo.com	Mob. +201061826970
Iran	Mr. Hamid Reza Saanei	Aeronautical Operations Chief Expert and Aerodrome Expert	h-saanei@cao.ir saanei@gmail.com	Tel: +982 166073534 Mob: +989125935990
Iraq	Mr. Thaer Hasan Salim	CNS Inspector/ flight safety Iraq Civil Aviation Authority	ans.sur@icaa.gov.iq thaerhasan1976@gmail.com	Tel.: +964 7702974405
Jordan	Eng. Mohammed Ali ALmomani	Chief Of Safety & Standard ANS	ma.almomani@carc.gov.jo	Tel: +962 6 4892282 Mob: +962 777307032
	Mr. Ali Taleb	Chief of Amman TACC & RCC	ali.taleb@carc.gov.jo	Tel: +96264799120 ext. 5689 Mob: +962799766728
Kuwait	Mr. Mustafa A. Al-Tarrah	Head of Air Navigation Services Inspectors	ma.altarrah@dgca.gov.kw	Tel.: +965 244336699 Ext.12370 Mob: +965 999 77440
Lebanon	Mr. Kamal Nassereddine	Director of Air Navigation Department	atm@beirutairport.gov.lb	Tel: +961 1 628178, +961 1 628000 1, 2 ,3 // Ext 3013 Mob: +961 3 331974 +961 71 309409
Libya	Abdulmonaam Abaza	Director of Air Navigation Service	abdulmonaam.abaza@caa.gov.ly	+218 91 760 6406

State	Name	Title	Email	Tel. & Mobile
Oman	Mr. Jaffer Abdul Amir Moosani	AIM Director	jaffer@caa.gov.om	Tel: +968-24354945 Mob: +968-99316040
Qatar	Ahmad Eshaq	ANS Directorate	Ahmed@QCAA.gov.qa	Tel.: +974 55550440
Saudi Arabia	Mr. Fahad Saud Alharbi	Head of Aeronautical Search and Rescue Center	fasalharbi@sans.com.sa	Tel: +966 11 525 3779 Mob: +966 505329284
	Mr. Hamdan Alshaibani	Safety Inspector	hmalshaibani@gaca.gov.sa	
Sudan	Mr. Hashim Basheer	Head of SAR	Berger124@gmail.com hashim_sar@scaa.gov.sd HSSSYCYX	+249 123179582 +249 912382433
Syria	Mr. Hassan Hamoud	ATM Director	hamoud_hasan@yahoo.com	Tel: +963 11 54010180 Mob. +963 988235106
UAE	Mrs. Mouza Al Sawafi	SAR Inspector	malsawafi@gcaa.gov.ae	+97150 616 8228
Yemen				

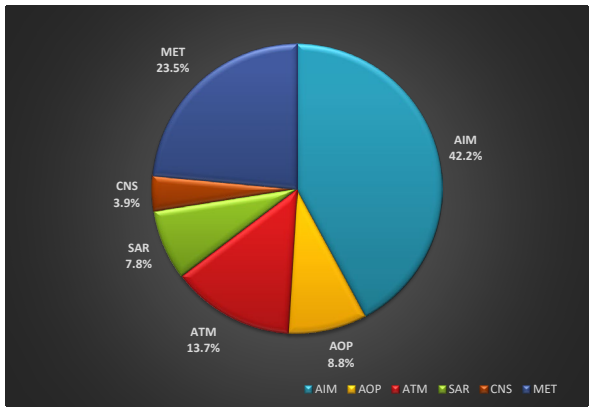
APPENDIX 5Z

AIR NAVIGATION DEFICIENCIES IN THE THE MID REGION

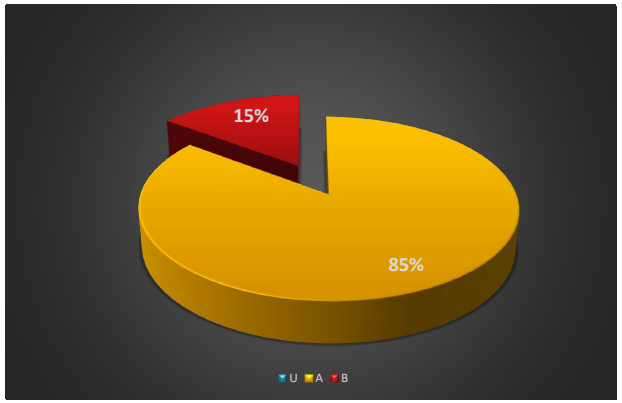
STATE	AIM							Total AIM	AOP							Total AOP	ATM							Total ATM	SAR							Total SAR	CNS							Total CNS	MET							Total MET
	Priority			Rational					Priority			Rational					Priority			Rational					Priority			Rational					Priority			Rational					Priority			Rational				
	U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O	
Bahrain								0								0								0								0		0						0								0
Egypt		2					2	2								0								0								0		0						0		1			1			1
Iran		3					3	3		1		1	1			1			1			1	1	1								0		0						0		1			1			1
Iraq		4	1	3	3	1	4	5		1		1	1		1	1		1	3			3	1	4		1					1	1		0						0		3		2			2	3
Jordan		2	1	3	3			3								0		1			1			1								0		0						0								0
Kuwait								0								0								0		1					1	1		0	1				1	1		1			1			1
Lebanon		3	1		2		2	4		1		1	1			1		1				1		1		1					1	1		0	1				1	1		3			3			3	3
Libya		4	1				5	5		1		1	1	1		1		1				1	1	1		1			1	1	1	1		1					1	1		4			1		1	3	4
Oman		2					2	2								0								0								0		0						0		1			1			1	1
Qatar								0								0		0				0		0								0		0						0								0
Saudi Arabia		0					0	0								0		1				1		1								0		0						0								0
Sudan		2					2	2		1		1	1			1		1			1	1	1	1								0		0						0		2		1		1	1	2
Syria		8	1	6	7	1	2	9		3		3	3			3		1	2		1	2	1	3		2					2	2		0						0		4		1			4	4
UAE		0					0	0								0		0	1			1	0	1								0		0						0								0
Yemen		7	1	4	2		4	8		1		1	1			1								0		2					2	2		1					1	1		4		2	1	1	1	4
Total	0	37	6	16	17	2	26	43	0	9	0	9	9	1	1	9	0	7	7	0	3	11	8	14	0	8	0	0	1	1	8	8	0	2	2	0	0	0	4	4	0	24	0	12	1	3	18	24

TOTAL DEFICIENCIES:102

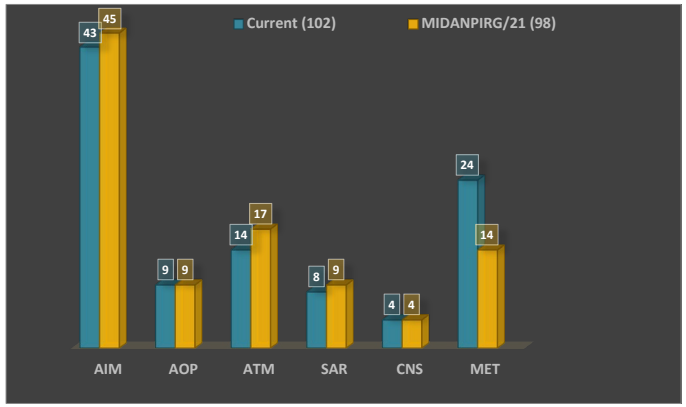
Distribution of Air Navigation deficiencies by field in %

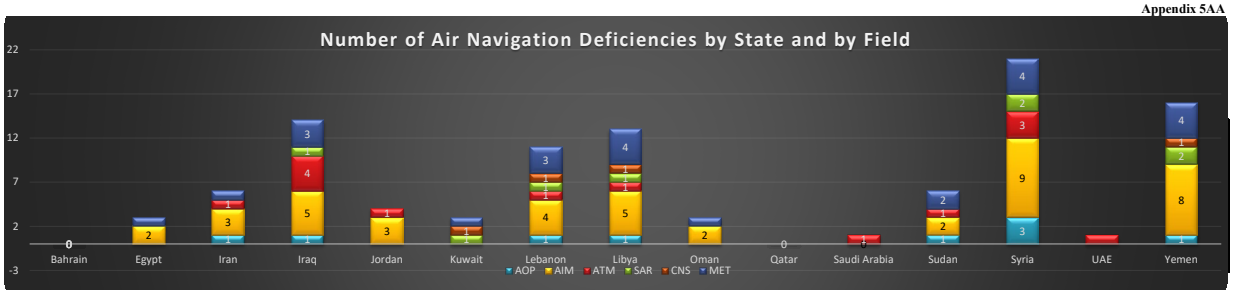


Distribution of Air navigation deficiencies by priority in %

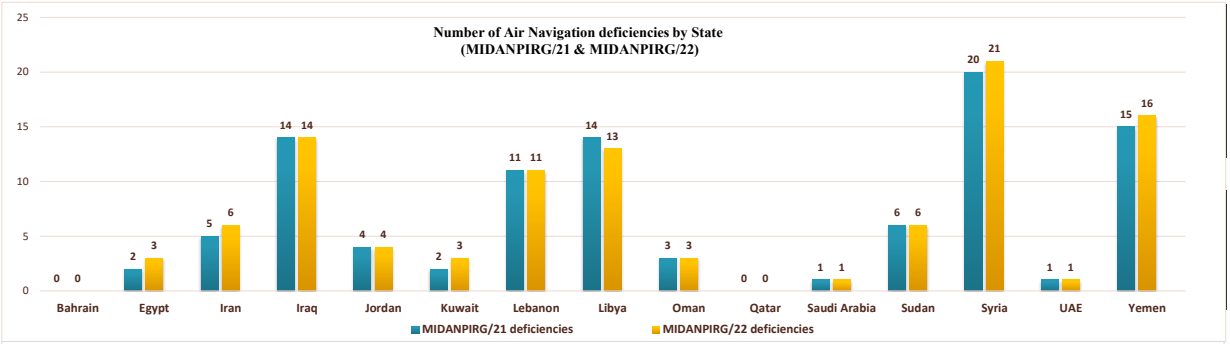


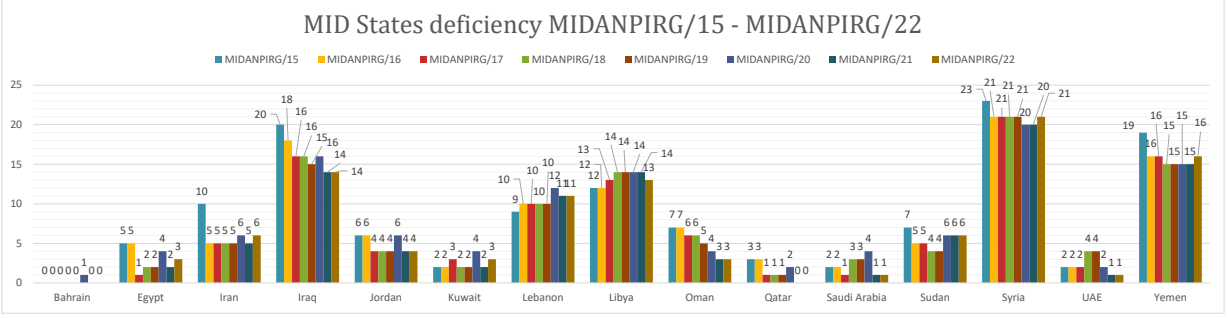
Reported Deficiencies by field (MIDANPIRG/21 & MIDANPIRG/20)

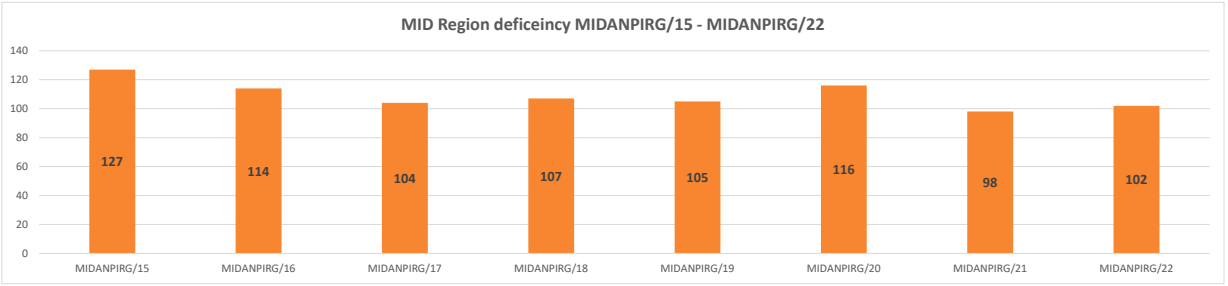




Deficiencies approved by MIDANPIRG/21







ATTACHMENT A

LIST OF PARTICIPANTS

Column	State/Organizations:	Full Name:	Job Title/Official Position:
1	Bahrain	Maysa Mohamed Hazeem	Director Air Traffic Management
2	Bahrain	Mohamed Khalid Mohamed Almarzouqi	Senior Air Navigation Audit Specialist
3	Egypt	Hossam Eldin Mohamed Sayed	Vice Head of the Technical Secretariat Sector
4	Egypt	Mohamed Farghaly	General Manager of Research and Development
5	Egypt	Khaled Elsayed Elsharkawy	Safety General Manager
6	Egypt	Waheed Solaiman Ahmed Abdeldayem	Director of Cairo NavAids Systems
7	Egypt	Mohamed Nabil Ibrahim	ATC
8	Egypt	WaeL Ezzat Mahmoud Mohamed Ammar	Senior Vice CEO NASMC
9	Egypt	Abdelaziz Mahmoud Abdelaziz Abouelmal	GD AIRSPACE AFFAIRS AND AIS
10	Egypt	Mohamed Ali Mohamed	General Director of Air Traffic Services Standards
11	Egypt	Jehan hassan abdel ghany	senior ANS inspector / senior AIS officer
12	Egypt	Mohammed Sadek Abdelkader Sadek	Safety Inspector
13	Egypt	Ramy Ahmed Mansour	Head of Egyptian Aircraft Accident Investigation Directorate
14	Egypt	Nourelhoda Mahmoud Mohamed Fahmy Mahmoud	Aerodromes lead Inspector
15	EGYPT/NASMC	Fouad Elsayed Abdelaty	Air Traffic Controller at NASMC
16	EGYPT/NASMC	AbdelRahman Mohamed Mahfouz	APP.SUPV
17	Iran	Mohammad Noushin Pijani	Deputy of AICT
18	Iran	Masoud Kharazan	Deputy Director of Flight Operations Dept
19	Iran	Jaber Goodarzi	General Director of Safety & Quality Assurance
20	Iran	Masoud Nikbakht	Assistant of Aeronautical Operation
21	Iran	Esmaeil Mahgoli	Deputy Director (CNS department)
22	Iran	Behzad Soheil	Deputy D.G. of Iran ATM
23	Iran	Mohammad Adel Nazari	Expert of Aeronautical
24	Islamic Republic of Iran	Vahid Shamlou	Director of ANS Safety and Standard
25	Iraq	Thaer Hasan Salim	Chief Engineer/DASS Manager/CNS Inspector
26	Iraq	Hayder Majid Samor	Senior weather forecaster
27	Iraq/GCANS	Hayder Akram Ibrahim	Voice Communication Suppervisor
28	Iraq/GCANS	Mustafa shaker	Q&safety manager
29	Iraq/GCANS	Mohamed Nayef Hasan	Safety officer
30	Iraq / GCANS	Mudher Thamer Hasan	ATS Manager
31	Iraq/GCANS	Ali safaa Mohammed salih	Approach procedures manager
32	Iraq - GCANS	Ahmed Muneer Ismael	Aerodrome procedures

33	Jordan	Ahmad Mahmoud Odeh	Director of ANS
34	Jordan	Mohammed Hushki	Director, Compliance Monitoring
35	Kuwait	Mustafa Abdullah Altarrah	Head Air Navigation Services Inspectors
36	Kuwait	Faisal Alasousi	SUP of ATC
37	Libya	Abdulmonaam Ahmad Ammar A Abaza	Director of ANS Department
38	Libya	Khaled Khalifa Abosnaina	Director of Flight Safety Department
39	Oman	Rawya Nasser Al Adawi	Act. Director General of Civil Aviation Regulation (DGCAR), OMAN (NCMC)
40	Oman	Husam Ahmed Abdullah Al Muhandis	Air Navigation Director
41	Oman	Saleh Abdullah Al Harthy	DG Air Navigation
42	Oman	Hilal Said AL Hatmi	Director, Flight Safety
43	Oman	Hilal Ali AL-Maqbali	Director of ATM
44	Oman	Shadha Salim Al Shuaibi	Aviation Safety Specialist
45	Oman	Khalifa Mohammed Salim Al-Abdali	AIR Accident Investigation Team Lead
46	Oman	Capt. Serge Denis DIVOUNGUY	Civil Aviation Expert
47	Oman	Mubarak Faiz Al Dhafri	Chief of Search and Rescue Team
48	Oman	Nasser Said Abdyllah Ismaili	Director of Forecasting and Early Warning System
49	Oman	Ahmed Salim Said Ghawas	DIRECTOR OF METEOROLOGY DEPARTMENT
50	Oman	Abdulla Hamdan Al balushi	Commander of Military Civil coordination centre
51	Oman	Hanaa Sultan Said Al-Maskari	Change& Stakeholder Engagement Manager - Oman Airspace Strategic Project
52	Oman	Nasser Salim Al-Mazroui	Chief Muscat ACC
53	Oman	Mashaal Albalushi	Director AIM
54	Qatar	Ahmed Al Eshaq	Director Air Navigation
55	Qatar	Majed Al Atawi	Director of Air Safety Department
56	Qatar	Khalifa alMaadeed	Head of Integrated Management System
57	Qatar	Samina Razaq	Head of Compliance & Quality
58	Qatar	Maryam AlNaimi	Deputy Head of Integrated Management System
59	Qatar	Marion Murel	Deputy Safety Manager
60	Qatar	Arvin Prudente	Document Controller/Change Management
61	Qatar	Mohammad Tufail	IMS-Investigator
62	Qatar	Gonca Demiroz	DEPUTY HEAD OF APPROACH
63	Qatar	Nayif Nasser AlJaber	Head ANSI
64	Qatar	Allan van der Heiden	QCAA Training Material and Development
65	Qatar	Eissa Al Meabid	Head of ATC
66	Qatar	Mohd Al-Asmakh	Head of AIS
67	Qatar	Maurah Sheedy	ATCO
68	Qatar	Ashley Diane Brantley	ATCO
69	Qatar	Gonca Demiroz	ATCO

70	Qatar	Erwin Obergruber	ANS Advisor
71	Qatar	Allen John Knibbs	ATCO
72	Qatar	Gavin James Morris	ATCO
73	Qatar	Shikha Nasser Altemais	Head of Engineering
74	Qatar	Ali Mohd Al-Hail	Head of Radar Engineering
75	Qatar	Mohammed A.Rahman A Al-Nuaimi	Electronics Engineer
76	Qatar	Fatima Hamad Al Marri	Electronics Engineer
77	Qatar	Yousuf Saleh Al-Mohannadi	ATCO
78	Qatar	Abdulla Abdulqader Al-Haj	Head of Doha Tower
79	Qatar	David Shaw	ATCO
80	Qatar	Jacob Antony Zaslona	ATCO
81	Qatar	Adam David Simpson	ATCO
82	Qatar	Abdulla Mubarak Al-Asam	ATCO
83	Qatar	Allan Douglas Van Der Heiden	ATCO
84	Qatar	Tyrone John Appel	ATCO
85	Qatar	Pamela Erice	AIM specialist
86	Qatar	Pieter Jacobus De Bruyn	ATCO
87	Qatar	Mohammed Abdulaziz Al-Muhamadi	Head of Training
88	Qatar	Nasser Al Khalaf	Air Navigation Advisor
89	Qatar	Jason Osgood	Lead Investigator
90	Qatar	Awad Soliman Naimat	Airworthiness Inspector
91	Qatar	Erdal Yesilbas	Acting Head of Safety and Risk Management Section
92	Qatar	Ahsan Zahid	Aviation Safety Analyst- Safety & Risk Mangt. Air Safety Dept
93	Qatar	Otto Vanha	Aviation Data Analyst
94	Qatar	DHIRAJ RAMDOYAL	AVIATION SAFETY SPECIALIST
95	Qatar	Gladys Mathew	Aviation Licenses Technician
96	Qatar	Sabrina Fernandes	Aviation Licenses Technician
97	Qatar	Antonio Cardoso	ANS Inspector
98	Qatar	Dr. Ramy Saad	ANS Inspector
99	Qatar	Hadeel Atari	Senior Electronic Engineer
100	Qatar/DJRCC	Zubair Ahmed	Search and Rescue Mission Coordinator SMC
101	Qatar/DJRCC	Dr. Vladislav Studenov	Advisor
102	Qatar/DJRCC	Shouq Hamad Alkaabi	First Lieutenant
103	Qatar/DJRCC	Noor Hamad Althani	Warrant officer first class
104	Qatar	Peliyagoda Pathiranage Asiri Christo	AIM Supervisor
105	Qatar	Onder Turker	Aerodrome Inspector

106	QATAR	Dan Ioan Cucu	QCAA ADVISOR
107	Qatar	Onder Turker	Aerodrome Inspector
108	Qatar	Muneera Al-Kawari	Flight Information Researcher
109	QATAR	Ahmed Madany	Aerodrome Inspector
110	Qatar	Ahmed Nasser Awadh	Aerodrome technician
111	Qatar	Emmanuel Nkwanta HAYFORD	Acting Head of Aerodromes Standard and Safety Section
112	Qatar	Etab Abdul Majid Al Othman	AIM officer
113	Qatar	RACHID RAHIM	Acting, Head Aviation Environmental Affairs
114	QATAR	Anuoluwapo Rita Joseph	Aviation Medical Examiner
115	Qatar	Christos Kalogirou	Head of Flight Operations Section and national SAFA Coordinator
116	Qatar	Mubarak Salem Ali Almohannadi	Aviation Operations Management Researcher
117	QATAR	Umair Ahmed	Communication Supervisor
118	Qatar	Markos Kandilakd	Director of QCMFHSE Of Guld Helicopters Company
119	Qatar	Mirko Vidovic	ANS Inspector
120	Qatar	Mohamed Elmegharbal	Ground Safety Manager
121	Qatar	Abdulla Almarafi	
122	Qatar	Babatubde Oladele	Medical Assessor (QCAA)
123	Qatar	Naveen George	Desiun Manager, Fusion Q Technology
124	Qatar	Ajeesh Jose	Engineering Manager, Fusion Q Technology
125	Qatar	Mohammed Alhuaimi	
126	Qatar	CharlMathew	System Engineer Fusion Q technology
127	Qatar	Mubarak Alnuaimi	
128	Qatar	Ezzine Maria	communication Technicain
129	Qatar	Lubna Fuad Alsalman	Air Traffic Controller
130	Qatar	Muna Alghailani	Senior Air Traffic Control Specialist
131	Qatar	Hamad Alhumaidi	
132	Qatar	Saeed Alasmi	
133	Qatar	Hassan Almousawi	
134	Qatar	Arben Gashi	AIR Accident Investigation
135	Qatar	Muhammad Usman Ghani	Air Accident Investigation
136	Qatar	Mohamed Abdullah Ali	
137	Qatar	Alvaro Eduardo Correia Neves	MOT QAAI Aviation Consultant & Chief Investigator
138	Qatar	Abdulla Ahmed	Manager Quality, Amiri Flight
139	Qatar	Sara Salat	Vice President Safety Qatar Airways
140	Qatar	Viktor Kariagin	Manager Technical Quality, Qatar Excetitve Qatar Airways
141	Qatar	Osama Saad	Complince Monitory Manager

142	Saudi Arabia	Sulaiman S. Almuhaimedi	EVP of Aviation Safety and Environmental Sustainability
143	Saudi Arabia	Tariq Mohammed Alqasem	Genral Manager Air Operation Safety
144	Saudi Arabia	Michael Victor Elmir	Post Holder Safety & Quality/Senior Director Safety & Quality
145	Saudi Arabia	Abdulhalim Habibullah Bukhari	Continuous Airworthiness Director
146	Saudi Arabia - SANS	Mazen M Alshihri	Airspace Management Director
147	Saudi Arabia	Khalid I. Bukhari	Director - Safety Perfromance
148	Saudi Arabia - NCMC	SAMI MANSOUR ALWAFI	DIRECTORATE OF METEOROLOGICAL AVIATION
149	Saudi Arabia - NCMC	Mr.MAJED KHALID MAHJOUB	SUPERVISOR OF REGIONAL OPMET CENTER
150	Saudia Arabia / DACO	Abdullah Moshabbab Romman Alsaeed	Aerodrome Safety / Aerodrome Safety Director 001
151	Saudi Air Navigation Serv	Haitham S. Alrebdi	Area & Approach Executive Director
152	Saudi Arabia	Abdullah Hmad Alrshedee	Air Navigation Safety Inspector
153	Saudi Arabia	Ibrahim B. Aljabri	GM of Air Navigation Safety
154	Saudi Arabia / Cluster2 A	Bandar Khalid Mohammad Sayyad	Safety Director
155	Saudi Arabia	SalehAlzahrani	COO
156	Saudi Arabia	Raa Alsayed	
157	Sudan	Mohammed Abdulrahman A. M. Ali	Sudan NCMC
158	Sudan	Yasser Rabih Hassan Mudather	Director of Air Navigation Services Department
159	UAE	Ahmed Ibrahim Al Jallaf	Assistant Director General ANS
160	UAE	Abdalla Al Rashidi	Director - Aeronautical Information Management
161	UAE	Aysha Mohammed Al Hamili	Assistant Director General - Air Accident Investigations
162	UAE	Rashed Ahmed Alshehhi	Senior Manager ANS engineering
163	UAE	Aqeel Ahmed Al Zarouni	Assistant Director General - Aviation Safety Affairs
164	UAE	Ahmed Saleh Obaid Yousef Al Shehhi	Senior Manager - Airspace
165	UAE	Sulaiman Almarzooqi	Aerodrome Inspector
166	UAE	Ghalya Eissa Alhammadi	Administration officer
167	UAE	Ahmed Al Shamsi	Analyst - Airspace
168	UAE	HANAN ALHMOUDI	Senior Officer – Airspace Management
169	UAE	Saqr Almarashda	Senior Manager Airspace Management
170	UAE	Hammadi GHAZOUANI	Senior Specialist Policy and Regulation
171	UAE	Rashed Belrumaitha	Senior Manager - Strategic Safety & Performance
172	UAE	Ammar AlMazrouei	Senior Director - Policies, Regulation and Planning
173	UAE	Humaid Saif Ebrahim Alshamsi	Specialist airworthiness
174	UAE	Nasser Akbar Jalal Juma	Vice President Air Navigation Services
175	UAE - DCAA	Ahmed Salim Al Saabri	Director Aviation & Airports Safety
176	UAE - DANS	Janine Hendriette Pretorius	Team Leader Safety & Governance
177	UAE - DANS	Rovshan Sultanov	Manager of Airspace design and Development

178	UAE - Ministry of defense	Abdullah mallah Abdullah Al Qubaisi	Head of safety, environment and merit department
179	UAE	Sripathi Janakirman	
180	UAE	Praveen Gangvla	Engineer Manager
181	UAE	Mohamed Majid Almazroua	Deputy Director Air Navigation
182	United States of America	Amer Younossi	Senior Representative
183	United States of America	Sarbhpreet Sawhney	Operational Safety Specialist
184	Yemen	Dr. Younis Saeed Ahmed Alkader	Director General of air navigation
185	Yemen	Abdulmalik Saeed Gizan	Manager of Aden ACC project
186	Yemen	Abdulkareem Mana Nasher	AIS manager
	Organizations/Industries		
187	ADL Coordinates Pvt Ltd	Sumit Khinvasara	Director
188	Airbus	Anthony Okera Odonde	Regional Safety Director
189	BOEING	AHSAN NASEER	Manager Aviation Safety Strategy - Middle East & Africa
190	Boeing	Kayode Ariwodola	Director, Global Safety & Regulatory Affairs
191	CANSO	Saad Alkahtani	CANSO Middle East Region Director
192	IATA	Jehad Faqir	Head Regional Safety Africa & Middle East
193	IATA	Lindi-Lee Kirkman	Regional Head Flight Operations, Air Traffic Management & Infrastructure
194	IFALPA	Rola Hoteit	Captain
195	IFALPA	Arnaud du Bédat	Senior Technical Officer
196	IFATCA	Fateh Bekhti	IFATCA MENA
197	IFATSEA	Khaled Nsiri	IFATSEA Chief of COM office MENA Region - Former AFRICA Director
198	MIDRMA	Fareed AlAlawi	MIDRMA Manager
199	MIDRMA	Fathi Althawadi	MIDRMA IT Manager
200	ICAO MID	Mohamed Abu Baker Faarea	Regional Director
201	ICAO MID	Ahmad Amireh	RO ATM/SAR
202	ICAO MID	Mohamed Chakib	RO-SAF/IMP & A/DRD
203	ICAO MID	Radhouan Aissaoui	RO-IM
204	ICAO MID	Ahmad Kaveh	Regional Officer-Air Traffic Management (RO/ATM)
205	ICAO MID	Mashhor Alblowi	RO/FLS
206	ICAO MID	Mohamed Iheb Hamdi	RO/AGA
207	ICAO MID	Manal Wissa	Programme Analysis Associate
208	ICAO MID	Ahmed Shaker	Technical Assistance
209	ICAO EUR/NAT	Nino Gelovani	Regional Officer Meteorology EUR/NAT &MID
210	ICAO HQ	Matin Maurino	Technical Officer, Global Aviation Safety
211	ICAO HQ	Elie El Khoury	ANB Regional Coordinator