ICAO MID

MIDANPIRG/17

Seventeenth Meeting of the Middle East Air Navigation Planning and Implementation Regional Group

&

RASG-MID/7

Seventh Meeting of the Regional Aviation Safety Group-Middle East

Cairo, Egypt, 15-18 April 2019

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Report of the Seventeenth Meeting of The Middle East Air Navigation Planning and Implementation Regional Group and Seventh Meeting of The Regional Aviation Safety Group-Middle East

MIDANPIRG/17 & RASG-MID/7

(Cairo, Egypt, 15 – 18 April 2019)

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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PART I - HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The Seventeenth Meeting of the Middle East Air Navigation Planning and Implementation Regional Group and the Seventh Meeting of the Regional Aviation Safety Group-Middle East (MIDANPIRG/17 & RASG-MID/7) was held in the Royal Maxim Palace Kempinski Hotel, Cairo, Egypt, from 15 to 18 April 2019.

2. OPENING

2.1 Mr. Mohamed K. Rahma, Regional Director, ICAO Middle East (MID) Regional Office opened the meeting. He welcomed all the participants to Cairo to attend the Seventeenth Meeting of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG 17) and the Seventh Meeting of the Regional Aviation Safety Group-Middle East (RASG-MID 7), organized concurrently for the first time. Mr. Rahma highlighted that this is in line with the directives from the ICAO Council regarding PIRGs and RASGs arrangements. Mr. Rahma welcomed, in particular, His Excellency, Mr. Ali Khalil Ibrahim, the Director General of the Iraqi Civil Aviation Authority, and thanked him for his participation as a guest of honor.

2.2 Mr. Rahma recalled that the last MIDANPIRG meeting hosted by the ICAO MID Office was MIDANPIRG/9 held in April 2005; he highlighted also that no RASG-MID meeting had been hosted by the ICAO MID Office. In this respect, he expressed his gratitude and appreciation to the States that provided the resources to support the organisation of the meeting outside of the ICAO MID Office premises, namely the Civil Aviation Authority of Qatar, the General Authority of Civil Aviation -Saudi Arabia and the General Civil Aviation Authority -UAE. Mr. Rahma extended his thanks to the Exhibitors, EMPIC and United ATS, that participated also in the sponsorship of the meeting.

2.3 Mr. Rahma provided an overview of the state of air transport at the global and regional levels; and underlined that the continuing growth of traffic in the MID Region placed increased demand on airspace capacity, which necessitates an optimum utilization of the available airspace and Airports. He highlighted that the changes and developments in the civil aviation world happen very rapidly and frequently and stated that we need to keep pace with these developments. In this respect, he referred to the 13th Air Navigation Conference, which was held in ICAO HQ in Montreal, in October 2018 and to the upcoming ICAO 40th Assembly, which will be held in ICAO HQ, in Montreal from 24 September to 4 October 2019; as well as to the DGCA-MID/5 meeting, which will be held in Kuwait, 4-6 November 2019.

2.4 Mr. Rahma highlighted the main MID Region achievements during the past period and confirmed that these achievements would not have happened without the cooperation and dedication of all stakeholders. He listed also some of the challenges the MID Region is facing and emphasized on the necessary commitment and cooperation of all stakeholders to overcome these challenges and achieve the agreed performance targets, in line with the MID Region NCLB Strategy. Finally, Mr. Rahma thanked all participants for their presence wishing them successful and productive meeting.

2.5 His Excellency, Mr. Ali Khalil Ibrahim, the Director General of the Iraqi Civil Aviation Authority, addressed the meeting. He welcome all the participants and underlined that, the main objective of his presence is to demonstrate Iraq's high-level commitment to improve the civil aviation system and support the MIDANPIRG and RASG-MID activities. He wihed the meeting all the success.

2.6 Mr. Ismaeil Mohammed Al Blooshi, Chairman of RASG-MID thanked all delegates for their attendance. He highlighted the need for effective participation of all stakeholders within the framework of RASG-MID and MIDANPIRG, in order to achieve the desired objectives and goals.

2.7 Mr. Ahmed Al Jallaf, First Vice-Chairman of MIDANPIRG, welcomed also all participants to Cairo. He recalled that, after the MIDANPIRG/16 and MSG/6, he is honoured again to chair the MIDANPIRG/17 meeting, in the absence of the Chairman, Mr. Adel S. Boresli. Mr. Al Jallaf highlighted that the MSG/6 meeting held in Cairo, Egypt, 3 – 5 December 2018 addressed many important subjects and took decision on them on behalf of MIDANPIRG; yet the MIDANPIRG/17 agenda is very busy. He thanked all States and International Organizations that submitted WPs, IPs and/or PPTs to the meeting. He stated at the end that the MIDANPIRG/17 and RASG-MID/7 meetings are organised for the first time concurrently with a common agenda, some sessions in plenary and other agenda items addressed separately (parallel tracks); this would be a trial and at the end of the meeting, it would be decided if we should continue with the same setting, or some adjustements would be needed.

3. ATTENDANCE

3.1 The meeting was attended by a total of Ninety Eight (98) participants, which included experts from fourteen (14) States (Bahrain, Egypt, Iran, Iraq, Jordan, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE, UK, USA and Yemen) and nine (9) International Organizations/Agencies (ACAO, AIRBUS, CANSO, EUROCONTROL, IATA, IFAIMA, IFALPA, IFATCA and MIDRMA). The list of participants is at **Attachment A**.

OFFICERS AND SECRETARIAT

3.2 In the absence of the MIDANPIRG Chairman, Mr. Adel S. Boresli, the First-Vice Chairman, Mr. Ahmed Al Jallaf, Assistant Director General Air Navigation, General Civil Aviation Authority, UAE, and Mr. Ismaeil Mohammed Al Blooshi, Chairman of the RASG-MID, Assistant Director General, Aviation safety Affairs Sector, chaired the meetings.

3.3 Mr. Mohamed K. Rahma, Regional Director and Mr. Mohamed Smaoui, Deputy Regional Director, ICAO Middle East Office, acted as the Secretaries of the meetings, supported by the following Officers:

From the ICAO MID Office, Cairo:

Mr. Mashhor Alblowi	-	Regional Officer, Flight Safety
Mr. Elie El Khoury	-	Regional Officer, Air Traffic Management and Search and Rescue
Mr. Mohamed Chakib	-	Regional Officer, Safety Implementation
Ms. Muna Alnadaf	-	Regional Officer, Communication, Navigation and Surveillance
Mr. Mohamed Ihab	-	Regional Officer, Aerodromes and Ground Aids

From the Air Navigation Bureau, ICAO Headquarters:

Mr. Chris Dalton	-	Chief, Airspace Management and Optimization Section
Mr. Raza Gulam	-	Regional Programme Officer

From the ICAO EUR/NAT Office, Paris:

Mr. Christopher Keohan	-	Regional Officer Meteorology

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 Developments in Aviation *(Plenary)*

- Review of action taken by the ANC on MIDANPIRG/16 and RASG-MID/6 Reports
- New Terms of Reference of PIRGs and RASGs
- AN-Conf/13 Outcome

Agenda Item 3: Regional Developments in Aviation *(Plenary)*

- MID Region statistics and forecasts
- Implementation of the MID Region NCLB Strategy (priorities, status, achievements, challenges)
- Regional Projects/Initiatives

Agenda Item 4: Coordination between MIDANPIRG and RASG-MID *(Plenary)*

Agenda Item 5: RASG-MID Work Programme *(RASG-MID/7)*

5.1 Regional Performance Framework for Safety

- Follow-up on the RASG-MID/6 and RSC/6 Conclusions and Decisions
- Seventh MID Region Annual Safety Report
- Outcome of the Safety Teams
- Implementation Progress of the Safety Enhancement Initiatives (SEIs)
- MID Region Safety Strategy and the Progress achieved with regard to Safety Targets
- Strategy for the Enhancement of Cooperation in the Provision of AIG Services in the MENA Region

5.2 RASG-MID Working Arrangements and Future Work Programme

Agenda Item 6: MIDANPIRG Work Programme *(MIDANPIRG/17)*

6.1 Follow-up on MIDANPIRG/16 and MSG/6 Conclusions and Decisions

6.2 Air Navigation Planning and Implementation

- MID Region Air Navigation priorities and targets
- Specific Air Navigation issues

6.3 Air Navigation Deficiencies

6.4 MIDANPIRG Working Arrangements and Future Work Programme

Agenda Item 7: Dates and Venue of MIDANPIRG/18 & RASG-MID/8 *(Plenary)*

Agenda Item 8: Any other business *(Plenary)*

6. Conclusions and Decisions – Definition

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

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

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

7. List of Conclusions and Decisions

PIRG/RASG MID Conclusion 1:	*Aviation Data & Analyses and Airports & Air Navigation ChargesSeminars/Workshops*
PIRG/RASG MID Conclusion 2:	*State Letters Online Monitoring Tool (SLOMT)*
PIRG/RASG-MID Decision 3:	*Near Mid Air collision (NMAC) Action Group*
PIRG/RASG MID Conclusion 4:	*Workshop on Team Resource Management (TRM) for ATM*
RASG-MID Conclusion 7/1:	*RASG-MID Safety Advisory – GNSS Vulnerabilities*
RASG-MID Conclusion 7/2:	*7th MID ASR*
RASG-MID Conclusion 7/3:	*Provision of Safety Data for the development of the 8th MID ASR*
RASG-MID Conclusion 7/4:	*Revised MID Region Safety Strategy*
RASG-MID Decision 7/5:	*SSP Implementation AD-HOC Action Group*

RASG-MID Decision 7/6:	*AD-HOC Action Group For SMS Implementation by ANSPs*
RASG-MID Decision 7/7:	*ELP AD-HOC Action Group*
RASG-MID Decision 7/8:	*SEI Related To Dangerous Goods*
RASG-MID Conclusion 7/9:	*Roadmap For AIG Regional Cooperation*
RASG-MID Decision 7/10:	*Revised RASG-MID Organizational Structure*
RASG-MID Conclusion 7/11:	*SEI on Team Resource Management (TRM) for ATM*
MIDANPIRG Conclusion 17/1:	*MID Region AIM Database (MIDAD)*
MIDANPIRG Conclusion 17/2:	*Analysis of LHDs*
MIDANPIRG Conclusion 17/3:	*Procedure for the follow-up with States and the issuance of warning related to RVSM approved aircraft without valid height-keeping performance monitoring results*
MIDANPIRG Conclusion 17/4:	*MID RVSM Safety Monitoring Report Cycle*
MIDANPIRG Conclusion 17/5:	*MID RVSM SMR 2019*
MIDANPIRG Conclusion 17/6:	*RVSM Minimum Monitoring Requirements And Conditions*
MIDANPIRG Conclusion 17/7:	*MIDRMA Bulletin of Non-RVSM Approved aircraft*
MIDANPIRG Conclusion 17/8:	*MID RVSM Safety Monitoring Report (SMR) 2017*
MIDANPIRG Conclusion 17/9:	*Third Edition of the MID Region Air Navigation Report (2018)*
MIDANPIRG Conclusion 17/10:	*MID Region Air Navigation Report (2019)*
MIDANPIRG Conclusion 17/11:	*Joint ACAO/ICAO ASBU Symposium*
MIDANPIRG Conclusion 17/12:	*Publication of FIR Boundary Points*
MIDANPIRG Conclusion 17/13:	*Amendment to the MID eANP Volume III*
MIDANPIRG Conclusion 17/14:	*Interregional Workshop/Seminar on AIM/SWIM*

MIDANPIRG CONCLUSION 17/15:	*ICAO ROADMAP FOR THE TRANSITION FROM AIS TO AIM*
MIDANPIRG CONCLUSION 17/16:	*MID REGION AIM IMPLEMENTATION ROADMAP*
MIDANPIRG DECISION 17/17:	*ESTABLISHMENT OF THE DIGITAL DATASETS IMPLEMENTATION AD-HOC WORKING GROUP (DDI AD-HOC WG)*
MIDANPIRG CONCLUSION 17/18:	*MID RDWG AND MID REGION ATS ROUTE CATALOGUE*
MIDANPIRG CONCLUSION 17/19:	*SAFETY ASSESSMENTS DUE TO CONTINGENCY WITH IMPACT ON ATS ROUTE NETWORK*
MIDANPIRG CONCLUSION 17/20:	*ENHANCED FRAMEWORK FOR THE MID CCT*
MIDANPIRG DECISION 17/21:	*MID REGION GUIDANCE MATERIAL ON CIVIL/MILITARY COOPERATION AND IMPLEMENTATION OF FUA CONCEPT*
MIDANPIRG CONCLUSION 17/22:	*MULTI-NODAL ATFM SOLUTION FOR THE MID REGION*
MIDANPIRG CONCLUSION 17/23:	*ACTION PLAN FOR THE IMPLEMENTATION OF ATFM IN THE MID REGION*
MIDANPIRG CONCLUSION 17/24:	*ASSESSMENT OF THE MID REGION RVSM AIRSPACE STRUCTURE BASED ON THE EXPECTED TRAFFIC MOVEMENT FROM 1 NOVEMBER TO 31 DECEMBER 2022*
MIDANPIRG DECISION 17/25:	*AMENDMENT OF THE MID REGION HIGH LEVEL AIRSPACE CONCEPT (MID DOC 004)*
MIDANPIRG CONCLUSION 17/26:	*SITA INTEGRATION IN THE MID REGION*
MIDANPIRG CONCLUSION 17/27:	*KHARTOUM COM CENTRE*
MIDANPIRG CONCLUSION 17/28:	*PFA TO THE MID ANP VOLUME II-CNS*
MIDANPIRG CONCLUSION 17/29:	*AFTN/CIDIN/AMHS ROUTING TABLES*
MIDANPIRG CONCLUSION 17/30:	*UPDATE OF THE GUIDANCE FOR AIDC/OLDI IMPLEMENTATION IN THE MID REGION (MID DOC 006)*
MIDANPIRG DECISION 17/31:	*TERMS OF REFERENCE OF THE CNS SG*
MIDANPIRG DECISION 17/32:	*TERMS OF REFERENCE OF THE MIDAMC STG*

MIDANPIRG DECISION 17/33:	*FREQUENCY MANAGEMENT AD-HOC WORKING GROUP*
MIDANPIRG CONCLUSION 17/34:	*PFA TO THE MID ANP VOLUME II- CNS SPECIFIC REGIONAL REQUIREMENTS*
MIDANPIRG CONCLUSION 17/35:	*MID REGION PROCESS FOR MODE S IC CODES ALLOCATION*
MIDANPIRG CONCLUSION 17/36:	*THE MID REGION SURVEILLANCE PLAN*
MIDANPIRG CONCLUSION 17/37:	*MONITORING THE SURVEILLANCE IMPLEMENTATION*
MIDANPIRG DECISION 17/38:	*ANS CYBER SECURITY WORKING GROUP*
MIDANPIRG CONCLUSION 17/39:	*ATM DATA CYBER SECURITY (ADCS) PORTAL*
MIDANPIRG CONCLUSION 17/40:	*BASELINE SECURITY GUIDELINES FOR THE MID REGION*
MIDANPIRG CONCLUSION 17/41:	*GUIDELINES FOR THE IMPLEMENTATION OF OPMET DATA EXCHANGE USING IWXXM*
MIDANPIRG DECISION 17/42:	*UPDATE THE BMG TERMS OF REFERENCE*
MIDANPIRG CONCLUSION 17/43:	*FAST TRACK/APPROVAL BY PASSING PROCEDURE*
MIDANPIRG DECISION 17/44:	*DISSOLUTION OF ANSIG*
MIDANPIRG DECISION 17/45:	*CHAIRMANSHIP OF MIDANPIRG AND SUBSIDIARY BODIES*
MIDANPIRG DECISION 17/46:	*NEW EDITION OF THE MIDANPIRG PROCEDURAL HANDBOOK*

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: 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 DEVELOPMENT IN AVIATION

Air Navigation and Safety Global updates

2.1 The subject was addressed in PPT/1 presented by the Secretariat providing an update on the Global Aviation Safety Plan (GASP 2020-2022) and the 6th edition of the Global Air Navigation Plan (GANP) to be presented to the 40th ICAO Assembly for endorsement. The meeting was apprised also of the GASP and GANP associated implementation strategies.

2.2 The meeting was informed also on the upcoming global events in some specific areas, such as the Fourth Global RPAS Symposium (Montreal, 9-11 July 2019) and the Third UAS Drone Enable Symposium (UAS2019) (Montreal, 12-14 November 2019).

Review of Action taken by the ANC on MIDANPIRG/16 and RASG-MID/6 Reports

2.3 The subject was addressed in WP/2 presented by the Secretariat. The meeting noted that the Air Navigation Commission (ANC) reviewed the Reports of the MIDANPIRG/16 and RASG-MID/6 Meetings, at its 206th Session. It was highlighted that the ANC:

a) noted the MIDANPIRG/16 and RASG-MID/6 reports as contained in AN-WP/9167;
b) considered the suggested responses to conclusions and decisions aimed at ICAO Headquarters in the appendix to AN-WP/9167, and
c) noted that entry visa requirements and complex administrative arrangements in various States in MID Region are hampering attendance at the planned regional activities.

2.4 The meeting noted that the Council at its Seventh meeting of the 214th Session, considered C-WP/14758 – “Consolidated annual report on Planning and Implementation Regional Groups (PIRGs) and Regional Aviation Safety Groups (RASGs)” covering the period from April 2017 to March 2018 presented jointly by the ANC and the Air Navigation Bureau (ANB). The consolidated report included an Appendix on the common challenges faced by the different Regions.

New Terms of Reference of PIRGs and RASGs

2.5 The subject was addressed in WP/3 presented by the Secretariat. The meeting was informed that the Air Navigation Commission (ANC) prepared a report to the Council on the proposed reporting structure and update of the Terms of Reference (TORs) for the Planning and Implementation Regional Groups (PIRGs) and Regional Aviation Safety Groups (RASGs). The updated TORs strive to improve efficiency, and the working methodologies and involvement of States, International Organizations and Industry in the work, meetings and related activities of the Groups. The meeting noted that work on the PIRGs and RASGs TORs was initiated by a Secretariat Focus Group and progressed by the Commission.

2.6 The meeting also noted that the updated TORs developed for PIRGs and RASGs will serve as the basis, and may be further expanded by the Groups, as required, to maintain flexibility of their work. Additional TORs adopted by a PIRG or RASG must be approved by the President of the Council and be included in the relevant PIRG/RASG Procedural Handbooks.

AN-Conf/13 Outcome

2.7 The subject was addressed in WP/4 presented by the Secretariat. The meeting recalled that the Thirteenth Air Navigation Conference (AN-Conf/13) held in Montréal from 9 to 19 October 2018, discussed eight Agenda Items under two Committees:

- Committee A (Air Navigation Capacity and Efficiency) discussed Agenda Items 1, 2, 3, 4 and 5; and

- Committee B (Safety) discussed Agenda Items 6, 7 and 8.

2.8 The meeting noted that Conference adopted fifty-two Recommendations, which are contained in the Report of the AN-Conf/13 (Doc 10115). It was further noted that the Council approved all AN-Conf/13 Recommendations on 27 February 2019 (Supplement No. 12 to the AN-Conf/13 Report, detailing suggested follow-up actions on each of the Recommendations).

2.9 The meeting agreed that the different MIDANPIRG and RASG-MID subsidiary bodies should identify clearly the AN-Conf/13 Recommendations related to their terms of reference and agree on the necessary follow-up actions. Furthermore, the meeting urged States to appropriately address the Recommendations directed to States.

REPORT ON AGENDA ITEM 3: REGIONAL DEVELOPMENTS IN AVIATION

Development of an Economically Viable Aviation System in the MID Region

3.1 The subject was addressed in WP/5 presented by the Secretariat. The meeting was apprised of the global state of air transport in 2017; in particular, it was noted that the total number of passengers carried on scheduled services rose to 4.1 billions in 2017 with an increase of 7.2% compared to 2016 and the total number of departures reached 36.7 million in 2017, with an increase of 3.1% compared to 2016.

3.2 The meeting noted that the preliminary figures for 2018 released by ICAO showed that a total of 4.3 billion passengers were carried by air transport on scheduled services in 2018. This indicates a 6.1 per cent increase over 2017. The number of departures rose to approximately 38 million globally, and the world passenger traffic, expressed in terms of total scheduled revenue passenger-kilometers (RPKs), grew solidly at 6.7 per cent and reached approximately 8.2 trillion RPKs performed. This growth is a slowdown from the 7.9 per cent achieved in 2017.

3.3 According to the latest ICAO long-term air traffic forecasts, the 4.1 billion airline passengers carried in 2017 are expected to grow to about 10.0 billion by 2040, and the number of departures is projected to rise to some 90 million in 2040.

3.4 With regard to the MID Region state of air transport in 2017 (scheduled services), the meeting noted that the Region has been the fastest growing region for passenger and cargo traffic since 2011, and airlines in the MID Region have posted double-digit passenger traffic growth every year since 2012 except for 2017 (growth rate of 6.5 per cent compared to 2016). It was also highlighted that International traffic of air carriers in the Middle East represented 95.9% of the airlines' total RPK in 2017.

3.5 With regard to the total number of departures, the total number of scheduled commercial departures in 2017 grew at a pace of 5.4 per cent to reach about 1.37 million departures, compared to 1.3 million departures in 2016 and 1.08 million departures in 2013.

3.6 The meeting noted that, according to the ICAO Long Term Traffic Forecasts, the passenger traffic to, from and within the Middle East Region on the major route groups for the period 2015-2045 is expected to increase at an average annual rate between 3.4 and 6.5 per cent. The Middle East-Central South West Asia Route Group is expected to become the largest traffic route group to/from Middle East with an average annual growth rate of 6.5% per annum, followed by Africa-Middle East (4.6%), Europe-Middle East (4.0%), Middle East-North Asia and Pacific South East Asia (4.0%) and Middle East-North America (3.6%).

3.7 The meeting recalled that an ICAO Aviation Data and Analyses Seminar was held in Tehran, Iran, 20-23 February 2017; and the ICAO EUR/MID Aviation Data and Analyses Seminar was held in the ICAO EUR/NAT Office, Paris, France, 4 – 6 April 2018. The meeting noted with concern that the level of attendance to both Seminars was very low.

3.8 The meeting urged States to actively participate in the upcoming ICAO EUR/MID Aviation Data and Analyses Seminar to be held in July 2019. The Seminar will be hosted by Turkey in Istanbul.

3.9 The meeting was informed also that a Joint ACAO/IATA/ICAO Workshop on Airports and Air Navigation Charges was successfully held in Rabat, Morocco, 27-28 November 2018. The followings were part of the Recommendations endorsed by the Workshop:

- ACAO, IATA and ICAO, in coordination with ACI and CANSO to identify the best regional mechanism to provide a Forum for States (airports, ANSPs including MET Service Providers, regulators) and airlines to share information and best practices and address difficulties and challenges related to airports and air navigation charges, on regular basis;

- ICAO to consider the review of the Doc 9082 to split the MET charges from the air navigation charges;

- States should ensure that airports and ANSPs consult with users and that appropriate performance management systems are in place; the first step is to promulgate economic regulations; and

- States to exercise their economic oversight responsibilities over the airport operators and ANSPs, with clear definition of roles and powers.

3.10 The meeting agreed that the two Draft Conclusions contained in WP/5 reflecting the above Recommendations are beyond the terms of reference and scope of MIDANPIRG and the RASG-MID; and agreed that they should be referred to the DGCA-MID/5 meeting (Kuwait, 4-6 November 2019). However, based on the outcome of the MSG/6 meeting, the meeting agreed to the following Conclusion:

PIRG/RASG MID CONCLUSION 1: AVIATION DATA & ANALYSES AND AIRPORTS & AIR NAVIGATION CHARGES SEMINARS/WORKSHOPS

That, in order to foster dialogue on the development of an economically viable civil aviation system (airlines, airports, air navigation services providers, etc.) and enhance its economic efficiency and transparency:

a) ICAO organize jointly with ACAO on regular basis the Aviation Data and Analyses and the Airports and Air Navigation Charges Seminars/Workshops; and

b) States are encouraged to participate actively in these events.

State Letters Online Monitoring Tool (SLOMT)

3.11 The subject was addressed in PPT/2 presented by the Secretariat. The meeting noted with concern the low level of responses to the ICAO MID Office State Letters. It was highlighted that the level of replies to State Letters is very low at the regional and global levels. Accordingly, the meeting supported the following MSG/6 Conclusion related to the development of a State Letters online monitoring tool:

MSG CONCLUSION 6/38: STATE LETTERS ONLINE MONITORING TOOL (SLOMT)

That, in order to support States in the process of follow-up and effective provision of replies to the ICAO MID Office State Letters, ICAO is invited to explore/implement an online monitoring tool.

3.12 The meeting agreed that the development and implementation of the SLOMT would support States in the process of follow-up and effective provision of replies to the ICAO State Letters.

3.13 The meeting was apprised of the ICAO MID Office plan to develop the SLOMT, which would comprise the following Modules:

- Tracking Module- ICAO State Letter Distribution;
- Monitoring Module- State Action/ Response;
- Searching Module- Searching Criteria/ Features;
- Reporting Module- Print Tailored Reports; and
- Statistics Module- State Letter Statistics by Year/ Action.

3.14 The meeting was informed about the project's phases and timelines; and underlined the importance of designation of Focal Points from States to follow-up the development of the tool and contribute with feedback, in order to take into consideration States' needs. Accordingly, the meeting agreed to the following Conclusion to replace and supersede the MSG/6 Conclusion 6/38:

PIRG/RASG MID CONCLUSION 2: STATE LETTERS ONLINE MONITORING TOOL (SLOMT)

That, in order to support States in the process of follow-up and effective provision of replies to the ICAO MID Office State Letters:

a) ICAO to develop a State Letter Online Monitoring Tool (SLOMT); and

b) States to designate Focal Points to support the design, development, testing and implementation of the SLOMT.

MIDANPIRG and RASG-MID activities, achievements and challenges

3.15 Through PPT/3 and PPT/4 presented by the Secretariat, the meeting was apprised of the RASG-MID and MIDANPIRG activities, achievements and challenges, respectively. The meeting commended States, Stakeholders and ICAO MID Office for the achievements and activities conducted in 2017/2018. The meeting discussed, in particular, the challenges affecting the implementation of MIDANPIRG and RASG-MID work programmes and the activities of the ICAO MID Office. In this respect, the meeting recognized the difficulties faced by Iran related to their challenge in maintaining and upgrading their air navigation systems and ATM/CNS infrastructure due to the imposed sanctions, which are also affecting the achievement of the agreed safety and air navigation targets at regional level.

Regional Projects/Initiatives

3.16 The subject was addressed in PPT/5 presented by the Secretariat. The meeting was apprised with an update on the establishment of the following regional projects:

- Middle and North Africa Regional Safety Oversight Organization (MENA RSOO);
- MID Flight Procedure Programme (MID FPP);
- Air Traffic Flow Management (ATFM) System;
- MID Region AIM Database (MIDAD); and
- Common aeRonautical VPN (CRV).

Middle and North Africa Regional Safety Oversight Organization (MENA RSOO)

3.17 The meeting recalled that the primary objective of the MENA RSOO is to assist Member States to develop and implement State Safety Programme (SSP), as well as to improve States' safety oversight capabilities.

3.18 The meeting noted with appreciation that in addition to the hosting of the MENA RSOO, Saudi Arabia will provide financial and technical support for the operations.

3.19 Additional information on the MENA RSOO are covered under Agenda Item 5.1

MID Flight Procedure Programme (MID FPP)

3.20 With respect to the MID Flight Procedure Programme (MID FPP), the meeting reiterated that the MID FPP would be the optimal solution for States in order to improve their capabilities related to PANS-OPS (regulatory and service provision).

3.21 The meeting recalled that in order to start the operations of the MID FPP, at least five (5) States should sign the MID FPP Project Document (ProDoc) and the amount of USD 300,000 should be secured.

3.22 The meeting noted with appreciation that Saudi Arabia and UAE provided voluntary financial contribution (USD50,000 each) and ICAO allocated CAD 100,000 to the MID FPP from Qatar's financial contribution to ICAO.

3.23 The meeting recalled that majority of the States indicated their willingness to join and benefit for the MID FPP services. However, no formal written response was provided yet to the ICAO MID Office. Accordingly, the meeting strongly encouraged States to join the MID FPP through the signature of the MID FPP ProDoc in order to call for the First meeting of the MID FPP Steering Committee, which would agree on the funding mechanism and work programme of the MID FPP.

Air Traffic Flow Management (ATFM) System

3.24 The details for the ATFM Project are covered under Agenda Item 6.2.

MID Region AIM Database (MIDAD)

3.25 The meeting recalled that the MIDANPIRG/16 meeting agreed that the MIDAD TF should propose a new action plan for the implementation of the MIDAD project in accordance with the EUROCONTROL proposal based on the European AIS Database (EAD) experience. The meeting noted that based on the outcome of the EAD-MIDAD Workshop (EUROCONTROL, Brussels, Belgium, 5-6 October 2017), it was agreed that MIDAD would be implemented as per the following Phases:

Phase A: Individual migration of MID States to EAD
Phase B: Set-up of MIDAD Manager
Phase C: Implementation of MIDAD system and service

3.26 The meeting agreed that the development of a detailed action plan for the implementation of the MIDAD Project Phase B (set-up of MIDAD Manager) be initiated when at least 7 States complete their migration to EAD. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/1: MID REGION AIM DATABASE (MIDAD)

That:

a) the status of individual migration by MID States to EAD (MIDAD Project Phase A) be monitored by the AIM Sub-Group; and

b) the development of a detailed action plan for the implementation of the MIDAD Project Phase B (set-up of MIDAD Manager) be initiated when at least 7 States complete their migration to EAD.

<u>*Common aeRonautical VPN (CRV)*</u>

3.27 The details related to the CRV project are covered under Agenda Item 6.2.

Regional Cooperation between ACAO and ICAO MID

3.28 The subject was addressed in PPT/6 presented by ACAO. The meeting was apprised of the list of activities organized jointly by ACAO and ICAO MID Office, in accordance with the agreed Regional Cooperation Joint Action Plan for the period 2019-2021. The meeting was informed also about the joint ACAO/ICAO activities planned for the second half of 2019.

3.29 The meeting commended the ACAO and ICAO MID Office for joining efforts and improving cooperation between them and with other International Organizations for the benefit of States. The meeting encouraged States to participate actively in the events organized jointly by ACAO and ICAO MID Office.

REPORT ON AGENDA ITEM 4: COORDINATION BETWEEN MIDANPIRG AND RASG-MID

Subjects of Common Interest for MIDANPIRG and RASG-MID

4.1 The subject was addressed in WP/6 presented by the secretariat. The meeting recalled that the RASG-MID and MIDANPIRG have been coordinating safety-related issues based on the outcome of the PIRG-RASG Global Coordination meeting (Montreal, 5 February 2015) and in accordance with the Procedural Handbook of each Group.

4.2 The meeting reviewed the Table listing the subjects in which both MIDANPIRG and RASG-MID have interest with an assignment of the leading Group as at **Appendix 4A**, as updated by the Fourth MIDANPIRG/RASG-MID Coordination meeting (MRC/4, Bahrain 25 September 2017), held as a side meeting to the RASG-MID/6 meeting.

Accidents and Incidents Analysis

4.3 The meeting noted with concern the significant increase in the NMAC occurrences (Near Mid Air Collisions). The meeting, based on the outcome of the ATM SG/4 meeting, agreed on the establishment of an Action Group composed of Bahrain, Iran, Oman, Saudi Arabia, UAE, IATA and ICAO to carry out further analysis of the reported occurrences, based on the safety analyses and recommendations emanating from the SMSs of concerned States; and provide feedback to the ATM SG and the ASRT. Accordingly, the meeting agreed to the following Decision:

PIRG/RASG-MID DECISION 3: NEAR MID AIR COLLISION (NMAC) ACTION GROUP

That, the NMAC Action Group be:

a) established to carry out further analyses of the reported MAC incidents and provide feedback to the ATM SG and ASRT; and
b) composed of members designated by Bahrain, Iran, Oman, Saudi Arabia, UAE, IATA and ICAO.

Performance Based Navigation (PBN)

4.4 The meeting noted that the implementation of PBN is still far below the agreed target. The meeting recommended that priority for implementation of PBN with vertical guidance (PBN APV) should be given to the runway ends which are not served with ILS (55 runway ends in the MID Region without any type of vertical guidance).

4.5 The meeting noted with appreciation that the PBN OPS-Approval Course was conducted at the MID FPP premises in Beirut from 26-30 November 2018 free of charge as an in-kind contribution from IATA to the MID FPP; twenty-two (22) experts from the Region benefited from the Course.

4.6 The meeting encouraged States to participate in the ICAO PBN OPS-Approval Workshop, which is planned to be held at the MID FPP premises in Beirut, Lebanon from 25 to 29 November 2019. The cost is USD1999 per participant with 10% discount for registration before 31 October 2019. The meeting noted that the invitation letter would be issued by the ICAO MID Office by end of April 2019. Nevertheless, the registration to the Workshop is available through the following link: https://store.icao.int/pbn-operational-approvals-workshop-beirut-lebanon-november-2019-new-version.html

Remotely Piloted Aircraft (RPAS)

4.7 The meeting encouraged States to use the guidance material related to RPAS provided in the ICAO *Doc* 10019 and the information available on the RPAS webpage: https://www4.icao.int/rpas

4.8 The meeting encouraged States to consider the developments related to RPAS, and take necessary measures for the establishment of the required legislative and regulatory framework to ensure safe integration of the RPA into the non-segregated airspace. In accordance with the RASG-MID Conclusion 5/18, the meeting urged States to report any safety occurrence related to RPA operations to the ICAO MID Regional Office on regular basis.

Fatigue Risk Management

4.9 The meeting noted that Fatigue Risk Management (FRM) for Air Traffic Controllers (ATCOs) would be addressed by the ATM SG/5 meeting. It was also highlighted that a Workshop on FRMS-ATC will be organized jointly by ACAO, CANSO, ICAO and IFATCA as part of the IFATCA Regional Conference (Tunis, Tunisia, 13 – 15 November 2019). Accordingly, the meeting encouraged States to participate in the above-mentioned event.

Airborne Collision Avoidance Systems (ACAS)

4.10 The meeting recalled that all States shall require the carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons and provide the ICAO MID Office with the reference to their Civil Aviation Regulations. It was highlighted that only Iraq, Libya and Syria have not yet provided the ICAO MID Office with information related to their National Regulations. Accordingly, the meeting invited the ICAO MID Office to follow-up with the three States in order get the required information by **15 May 2019**.

Call sign similarity and confusion (CSC)

4.11 The subject was addressed in WP/46 presented by UAE and IATA. The meeting was provided with a progress report on the implementation of the CSC Initiative. The meeting noted with appreciation the progress achieved. The meeting commended the work and efforts of the CSC Initiative Team and the support provided by EUROCONTROL.

4.12 The meeting noted the challenges restricting airlines from utilising alpha numeric call signs (ANCS) such as the reluctance of airports and States to accept ANCS. It was noted with concern that some aerodromes continue to reject the use of ANCS for arriving and departing flights despite reports from ATC and/or airlines of call sign confusion. The denial of landing or departure flight plans with ANCS results in the flight having to remain on the commercial call sign for the entire flight, which may contribute to call sign confusion occurrences.

4.13 Based on the above, the meeting urged States to take necessary actions to ensure that their relevant authorities, including the airport operators, accept ANCS and to follow-up with their air operators to implement the procedures for the de-conflicting of call sign similarities in coordination with the CSC Initiative Team.

4.14 The meeting urged States to report call sign similarity/confusion cases using the template at **Appendix 4B** to the following email addresses: MIDCSC@icao.int and MENACSSU@iata.org, which will allow the CSC Initiative Team to follow-up with the concerned airline(s) to resolve the issue in a timely manner.

4.15 The meeting noted that during the contingency situation related to Pakistan/India that started on 27 February 2019, the MID Region in particular Bahrain, Emirates and Muscat FIRs experienced a drastic increase of additional traffic and ATC were confronted with a high rate of call sign similarities.

4.16 The Pakistan CCT activation reinforced the need for formal cross regional ANCS initiative across the ICAO Regions to assure harmonization of processes based on the Europe/MID experience.

4.17 The meeting was apprised of UAE's experience related to the establishment of the National UAE GCAA Call Sign Similarity Working Group to manage and mitigate the safety risks associated with call sign similarities. It was highlighted that the Working Group provided an effective platform to discuss and propose solutions for Call Sign Similarity/Confusion involving all stakeholders. It assists to determine and recommend the best course of action in order to minimize the risk of call sign confusion and to propose procedures for reporting and managing occurrences when call sign similarity leads to actual call sign confusion.

4.18 The meeting noted that UAE NASAC WG has identified and is currently working on the following topics:

- the requirement for setting up unified procedures of tactical call sign de-confliction between two adjacent ATC sectors;
- the ability that an operating crew can initiate the request for a tactical call sign change;
- collecting requirements for a future ATM system, that must have a 'built-in' detection/alerting tool and the identification of call sign conflicts before they happen;
- the requirement to easily record and report call-sign similarities and to address them immediately with the affected Airline; and
- supporting the tactical use of combining numbers of the Call Sign to mitigate a call sign similarity (e.g. ABC seven-twenty instead of ABC seven-two-zero).

4.19 Based on the above, the meeting encouraged States to support the ongoing work by UAE and establish National Call Sign Similarity Working Group.

RVSM Operations and Monitoring Activities in the MID Region

4.20 The subject was addressed in WP/7 and WP/8 presented by the Secretariat and the MIDRMA, respectively. States were invited to visit the Middle East Regional Monitoring Agency (MIDRMA) website (www.midrma.com) for more information, reports and tools related to the RVSM implementation.

4.21 The meeting reviewed the outcome of the ATM SG/4 meeting related to the MIDRMA Board/15 meeting (Muscat, Oman, 29 - 31 January 2018). The meeting urged States to take necessary measures to encourage the reporting of LHDs by air traffic controllers such as inclusion of the reporting of LHDs as part of their reporting system (SMS).

4.22 The meeting urged States to verify their LHDs prior to submission through the Online LHD Reporting Tool to avoid analysis of false reports by concerned ATS Units.

4.23 With a view to address the LHDs in an effective manner with the ATS Units concerned and to analyze the LHDs prior to presentation to the MIDRMA Board or ATM SG meetings for validation, the meeting agreed that the MIDRMA should conduct bilateral teleconferences with the adjacent ATS Units to analyze the relevant LHDs and present a consolidated report to the MIDRMA Board or the ATM SG meetings for validation in order to finalize the SMR for endorsement by MIDANPIRG. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/2: ANALYSIS OF LHDS

That, as part of the MIDRMA Scrutiny Group activities, the MIDRMA conduct bilateral teleconferences with the MIDRMA ATC focal points to analyze the relevant LHDs and present a consolidated report to the MIDRMA Board or the ATM SG meetings for validation in order to finalize the SMR for endorsement by MIDANPIRG

4.24 The meeting reviewed and agreed to the procedure at **Appendix 4C** for the follow-up with States and the issuance of warning related to RVSM approved aircraft without valid height-keeping performance monitoring results. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/3: PROCEDURE FOR THE FOLLOW-UP WITH STATES AND THE ISSUANCE OF WARNING RELATED TO RVSM APPROVED AIRCRAFT WITHOUT VALID HEIGHT-KEEPING PERFORMANCE MONITORING RESULTS

*That, the Procedure at **Appendix 4C** for the follow-up with States and the issuance of warning related to RVSM approved aircraft without valid height-keeping performance monitoring results, is endorsed.*

4.25 The meeting recalled that the SMRs had been issued once every 18 months (MIDANPIRG cycle). Taking into consideration the continuous traffic growth and the changes of the airspace structures in the Region, the meeting agreed to change the frequency of issuance of SMRs to be issued once every year. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/4: MID RVSM SAFETY MONITORING REPORT CYCLE

That, starting from 2018, the MID RVSM Safety Monitoring Report should be issued on annual basis (12 months) to facilitate tracking the risk trend of RVSM implementation in the MID Region.

4.26 The meeting noted that the MIDRMA Board/15 meeting was apprised of the advantages and the challenges related to the use of ADS-B for height-keeping performance monitoring. The MIDRMA Board/15 meeting supported in principle the concept. However, the meeting requested the MIDRMA to conduct further studies and analysis and present them along with a draft roadmap to the MIDRMA Board/16 for appropriate action. In this respect, the meeting encouraged States, that have already implemented ADS-B, to share their ADS-B data for height monitoring purposes, which would foster the testing process.

4.27 Taking into consideration that the MIDRMA Board/16 meeting will be held in January 2020, the meeting agreed to the following MIDANPIRG Conclusion for the collection of the FPL/traffic data for development of the MID RVSM SMR 2019:

MIDANPIRG CONCLUSION 17/5: MID RVSM SMR 2019

That,

a) the FPL/traffic data for the period ***1 – 31 August 2019*** *be used for the development of the MID RVSM Safety Monitoring Report (SMR 2019);*

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 2019 be ready for presentation to and endorsement by MIDANPIRG/18 or ATM SG/6 meetings.

4.28 The meeting supported and endorsed the following Conclusions emanating from the MIDRMA Board/15 meeting:

MIDANPIRG CONCLUSION 17/6: RVSM MINIMUM MONITORING REQUIREMENTS AND CONDITIONS

That, the MIDRMA Member States be urged to:

a) take necessary measures to ensure their aircraft operators fully comply with ICAO Annex 6 provisions related to long-term height monitoring requirements, based on the MMR Tables;

b) comply with the MID RVSM MMR Conditions published in the MIDRMA website; and

c) *withdraw the RVSM Approvals of aircraft not complying with the State MMR before 1 July 2019.*

MIDANPIRG CONCLUSION 17/7: MIDRMA BULLETIN OF NON-RVSM APPROVED AIRCRAFT

That,

a) the MIDRMA post on the MIDRMA website and share with the MIDRMA Board Members and focal points the Bulletin of non-RVSM approved aircraft on monthly basis; and

b) States be encouraged to:

i. develop a mechanism to identify the non-RVSM approved aircraft operating in the RVSM Airspace without compliance with Annex 6 provisions;
ii. submit their RVSM traffic data including aircraft registrations to be used for the RVSM risk analysis; and
iii. coordinate with the MIDRMA in case they are able to provide their RVSM traffic data on a monthly basis.

4.29 The meeting noted with appreciation that according to the data and methods used, the key safety objectives as set out by MIDANPIRG, through Conclusion 12/16, continue to be met.

4.30 The meeting reviewed and endorsed the MID RVSM Safety Monitoring Report (SMR) 2017 at **Appendix 4D**, and agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/8: MID RVSM SAFETY MONITORING REPORT (SMR) 2017

That, the MID RVSM Safety Monitoring Report (SMR) 2017 is endorsed.

4.31 The meeting noted with concern the challenges that are still facing the MIDRMA in collecting the required Flight Plan/Traffic Data that delayed the development of the RVSM SMR 2018, which was expected to be presented for the meeting for endorsement. Accordingly, the meeting urged States to take necessary measures to ensure that the required data are provided to the MIDRMA in a timely manner.

4.32 The meeting noted with appreciation that Bahrain, Iraq, Jordan, Kuwait, Oman and Saudi Arabia achieved above 98% MMR for SMR 2017. In this respect, the MIDRMA and ICAO MID Office awarded the mentioned States for their achievement. Accordingly, the meeting agreed that the same should be applied for future MID RVSM SMR as a reorganization for States' commitment and efforts to fulfil their obligations related to MMR.

GNSS Vulnerabilities

4.33 The subject was addressed in WP/9 presented by the secretariat. The meeting recalled that the MIDANPIRG/16 agreed to gather data on actual GNSS interference events and collect data from pilots. 174 GNSS interference incidents were reported by the users in 2018.

4.34 The meeting urged States to strengthen cooperation with their National Telecommunication Authorities in protecting GNSS signal and timely identification of the source of interference.

4.35 The meeting encouraged airspace users to report instantly to the relevant ATC Units GNSS interference occurrences following the reporting procedure in the RSA on the GNSS Vulnerabilities. Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 7/1: RASG-MID SAFETY ADVISORY – GNSS VULNERABILITIES

That, the RASG-MID Safety Advisory (RSA-14) on GNSS Vulnerabilities at ***Appendix 4E*** *is endorsed and be published by the ICAO MID Office.*

REPORT ON AGENDA ITEM 5.1: REGIONAL PERFORMANCE FRAMEWORK FOR SAFETY

Global Aviation Safety Developments

5.1.1 The subject was addressed in PPT/7, PPT/8 and PPT/9 presented by the Secretariat. The meeting was provided with an updated overview on the Global Aviation Safety development including the new 2020-2022 Global Aviation Safety Plan (GASP), Amendment 1 to Annex 19 and the new Safety Management Manual (ICAO Doc 9859, 4th edition), SSP Foundation, SSP Gap Analysis, safety management training programme, new SSP Implementation Assessment (SSPIA), as well as Global Aviation Safety Oversight System (GASOS).

5.1.2 The meeting raised some concerns regarding GASOS, which were also addressed by the AN-Conf/13 such as legal and commercial issues. The meeting noted that the subject will be presented to the 40th ICAO Assembly.

Follow-up on the RASG-MID/6 and RSC/6 Conclusions and Decisions

5.1.3 The subject was addressed in WP/10 presented by the Secretariat. The meeting reviewed the progress made for the implementation of the RASG-MID/6 and RSC/6 Conclusions and Decisions as at **Appendices 5.1A and 5.1B.**

Outcome of the Third Meeting of the Annual Safety Report Team (ASRT/3)

5.1.4 The subject was addressed in WP/11 and PPT/14 presented by the Secretariat. The meeting was apprised of the new risk assessment methodology to proactively identify the focus areas and emerging risks. Based on the analysis of the reactive and proactive safety information for the period 2013-2017, and in accordance with the agreed new methodology for the risk assessment, the meeting agreed that the main focus areas in the MID Region are:

1) Runway Safety (RS)- (mainly RE and ARC during landing);
2) Loss of Control Inflight - (LOC-I);
3) Controlled Flight Into Terrain- (CFIT); and
4) MID Air Collision- (MAC)

5.1.5 The emerging risks, which have been identified in the 7th MID ASR, based on the analysis of the data available, are five (5) emerging risks. However, the MID-ASRT/3 meeting consolidated the list of Emerging Risks based on the previously identified emerging risks and the new emerging risks identified in the seventh MID-ASR, as follows:

1) Fire/Smoke (F-NI);
2) Runway Incursion (RI);
3) System Component Failure –Non-Power Plant (SCF-NP);
4) Wake Turbulence (Vortex);
5) Birdstrike (BIRD);
6) Wildlife (WILD);
7) System Component Failure- Power Plant (SCF-PP);
8) Wind shear; and
9) Security risks with impact on safety (SEC).

5.1.6 The meeting reviewed and endorsed the 7th Edition of the MID-ASR and urged States and all Stakeholders to provide necessary safety data to the MID-ASRT for the development of the next Edition of the Annual Safety Report. Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 7/2: 7TH MID ASR

That, the seventh MID Annual Safety Report is endorsed and be posted by the ICAO MID Office on the website.

5.1.7 The meeting reiterated the importance of sharing the number of occurrences and their safety data analyses by the States in order to produce improved Annual Safety Reports in the future; and urged States to provide the ICAO MID Office by end of July 2019 with the number of accidents, serious incidents and incidents, safety data analysis, and their associated safety recommendations related to each occurrence category in **Appendix 5.1C** for the past 4 years (2015 – 2018), using the Template in **Appendix 5.1D.** Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 7/3: PROVISION OF SAFETY DATA FOR THE DEVELOPMENT OF THE 8TH MID ASR

That, in order to present an improved version of the 8th MID-ASR to the MID-ASRT/4 meeting, States, that have not yet done so, be urged to provide the ICAO MID Office by ***1 July 2019*** *with the number of accidents, serious incidents and incidents, safety data analysis, and their associated safety recommendations related to each occurrence category in* ***Appendix 5.1C*** *for the past 4 years (2015 – 2018), using the Template at* ***Appendix 5.1D.***

Implementation Progress of the Safety Enhancement Initiatives (SEIs)

5.1.8 The subject was addressed in WP/13 presented by the Secretariat. The meeting was apprised of the progress achieved in the implementation of the different SEIs.

5.1.9 With regard to the SEIs related to RGS, the meeting was informed by UAE that guidance materials on proactive oversight of Aerodrome Infrastructure Development (SEI MID-RAST/RGS/3) and Aerodrome Apron Management (SEI MID-RAST/RGS/7) could not be delivered, as initially planned. The meeting agreed that the two SEIs should be reviewed and updated by the RGS WG/6 meeting.

5.1.10 The meeting encouraged States to use the RASG-MID Safety Advisories, as appropriate, to enhance safety in the Region and agreed to circulate the Laser Attack Case-Study (supporting the RSA-12) to States.

5.1.11 With respect to upcoming safety related events, it was highlighted that a Ground Handling Seminar will be held back-to-back with the RGS WG/6 meeting and a Regional Seminar on Global Reporting Format (GRF) will be organized by the ICAO MID Office in 2020. The meeting encouraged States to participate actively in these events.

5.1.12 The meeting recalled that for the LOC-I and CFIT, global developments and measures should be followed by the MID-RAST. Accordingly, the meeting agreed that the MID-RAST should follow up on the subject and provide an update to the RSC/7 meeting, including proposed mitigation measures (SEIs) for the identified Emerging Risks.

Aerodrome Certification

5.1.13 The subject was addressed in WP/12 presented by the Secretariat. The meeting reviewed the updated status of Aerodrome Certification in the MID Region as at **Appendix 5.1E**. The meeting noted that Egypt certified Alexandria/Borg El-Arab International (HEBA) and Luxor International Airport (HELX). It was highlighted that 39 out of 58 International Aerodromes (representing 67%) had been certified in the MID Region.

5.1.14 The meeting noted with concern that there is a variation in the level of Aerodrome Certification implementation in the MID Region. The meeting urged States that have not yet completed the implementation of aerodrome certification, to establish a plan for the certification of aerodromes, incorporating the identification of gaps and implementation of solutions to overcome those gaps, including the assessment and development of mitigation measures in areas of non-compliance.

5.1.15 The meeting was informed that a Technical Assistance project related to aerodrome certification was approved by ICAO for the benefit of Iraq, Lebanon and Syria. The Project consists of the following:

- Conducting an Aerodrome Certification Workshop/Training Course in Beirut for the benefit of Lebanon, Syria and Iraq, in order to support them in the process of certification of aerodromes through training of their aerodrome inspectors and aerodrome operators' personnel.
- Conducting two Peer Review Visits to Rafic Hariri International Airport (OLBA) and Baghdad International Airport (ORBI).

5.1.16 The meeting encouraged States and International Organizations to support the Aerodrome Certification Capacity Building Project for Iraq, Lebanon and Syria. The meeting noted with appreciation that Lebanon confirmed to host the Aerodrome Certification Workshop/Training Course.

5.1.17 The meeting noted with appreciation that Saudi Arabia confirmed to sponsor/support a training course on Aerodrome Inspector.

Outcome of the Fourth MID Region Safety Summit & Revised MID Region Safety Strategy

5.1.18 The subject was addressed in WP/14 and PPT/11 presented by the Secretariat. The meeting was apprised of the outcome of the Fourth MID Region Safety Summit, which was successfully held in Riyadh, Saudi Arabia, 2 - 3 October 2018. The Summit was gratefully hosted by the General Authority of Civil Aviation (GACA) of Saudi Arabia. The Summery of Discussion of the Summit is at
https://www.icao.int/MID/Pages/2018/MID%20Region%20Safety%20Summit.ASPX.aspx

5.1.19 The meeting noted that the main outcome of the Fourth MID Region Safety Summit was the revised version of the MID Region Safety Strategy at **Appendix 5.1F**. The meeting noted that the revised Strategy includes selected goals and safety indicators from the new GASP 2020-2022 Edition, taking into consideration the regional specific objectives and priorities with specific timeframes in order to achieve the established safety targets. The MID Region Safety Strategy includes the following goals:

- Aspirational Goal: Zero fatality by 2030
- Goal 1: Achieve a continuous reduction of operational safety risks
- Goal 2: Strengthen States' safety oversight capabilities/Progressively increase the USOAP-CMA EI scores/results
- Goal 3: Improve aerodrome safety
- Goal 4: Expand the use of Industry Programmes
- Goal 5: Implementation of effective SSPs and SMSs
- Goal 6: Increase Collaboration at the Regional Level to enhance safety
- Goal 7: Ensure the appropriate infrastructure is available to support safe operations
- Goal 8: Monitor the fleet age

5.1.20 The meeting supported the proposed goals and safety indicators and targets and urged States and Stakeholders to provide necessary information/feedback to the ICAO MID Regional Office related to all the Safety Indicators included in the MID Region Safety Strategy Accordingly, the meeting agreed to the following RASG-MID Conclusion:

RASG-MID CONCLUSION 7/4: REVISED MID REGION SAFETY STRATEGY

That, the revised version of the MID Region Safety Strategy at ***Appendix 5.1F*** *is endorsed.*

5.1.21 The meeting noted the current status of the different Safety Indicators and Targets included in the previous version of the MID Region Safety Strategy.

ACI's Support to the MID Region Safety Strategy

5.1.22 The subject was addressed in WP/42 and PPT/13 presented by the Secretariat on behalf of ACI. The meeting was apprised of ACI's tools and programmes pertaining to aerodrome safety.

5.1.23 The meeting noted ACI's support to the aerodrome safety related goals and targets laid down in the MID Region Safety Strategy, as well as to the ICAO No Country Left Behind (NCLB) Initiative.

Outcome of the MID-SST/5 Meeting

5.1.24 The subject was addressed in WP/15 presented by the Secretariat. The meeting noted the progress made by the MID-SST for the implementation of the agreed SEIs.

5.1.25 The meeting noted that the RSC/6 meeting (Cairo, Egypt, 25-27 June 2018) updated the list of SEIs assigned to the MID-SST, as follows:

1) improve the status of implementation of State Safety Programme (SSP) and Safety Management System (SMS) in the MID Region;

2) strengthening of States' Safety Oversight capabilities;

3) improve Regional cooperation for the provision of Accident & Incident Investigation;

4) improve implementation of ELP requirements in the MID Region; and

5) sharing and analysis of safety recommendations related to accidents and serious incidents

5.1.26 With respect to the SSP/SMS implementation in the MID Region, the meeting supported the development of the Regional Roadmap for SSP implementation in the MID Region and agreed to the following RASG-MID Decision:

RASG-MID DECISION 7/5: SSP IMPLEMENTATION AD-HOC ACTION GROUP

That, an SSP Implementation Ad-Hoc Action Group composed of the following experts, is established to develop the Regional Roadmap for SSP implementation in the MID Region:

- *Mr. Khalid Alhumaidan from UAE (Champion)*
- *Mr. Mohammad Hushki from Jordan*
- *Mr. Mohamed Salah from Egypt*
- *Mr. Mohamed Chakib from ICAO*
- *Mr. Mashhor Alblowi from ICAO*

5.1.27 With regard to SMS implementation at MID International Aerodromes, the meeting noted with appreciation that an Aerodrome Customized SMS Workshop was conducted back-to-back with the RGS WG/5 meeting with technical support provided by experts from Egypt and UAE; and an Aerodrome SMS Compliance and Effectiveness Toolkit had been developed by UAE and presented during the SMS Workshop and circulated to the States for its use, as appropriate.

5.1.28 For the SMS implementation by ANSPs (ATM), the meeting noted with concern the slow progress related to the actions to improve the status of implementation of SMS by ANSPs (ATM) and agreed to the establishment of an Ad-hoc Action Group in order to expedite the process and foster the implementation of the required actions. Accordingly, the meeting agreed to the following RASG-MID Decision:

RASG-MID DECISION 7/6: AD-HOC ACTION GROUP FOR SMS IMPLEMENTATION BY ANSPS

That, an Ad-Hoc Action Group for SMS implementation by ANSPs composed of the following experts, is established to support ICAO and CANSO in the development and implementation (as appropriate) of actions/tasks in support of the SEI related to the improvement of the status of implementation of SMS by ANSPs (ATM):

- *Mr. Waleed Al Riyami from UAE (Champion)*
- *Mr. Ahmed Said from Egypt*
- *Mr. Ahmed Mostafa from Egypt*
- *Ms. Leena Ahmed Al-Kooheji from Bahrain*
- *Mr. Shayne Campbell form CANSO*
- *Mr. Mohamed Chakib from ICAO*
- *Mr. Elie El Khoury from ICAO*
- *Mr. Mashhor Alblowi from ICAO*

5.1.29 With regard to the status of SMS implementation by air operators, maintenance and training organizations, the meeting raised concern about the slow progress in the implementation of the agreed actions. The meeting noted the challenges faced. In this respect, the meeting noted that a survey was conducted by IATA to collect information on SMS implementation to ascertain the status of SMS implementation among MID Region operators.

5.1.30 The meeting noted with appreciation the extended invitation by ACAO and IATA to the ACAO/IATA SMS Implementation Workshop to be held from 10 to 12 June 2019 in Tunis, Tunisia.

5.1.31 With respect to the SEI related to the implementation of ELP requirements in the MID Region, the meeting noted with appreciation the progress of developing a questionnaire to be used as the basis of a survey to assess the implementation of ELP requirements in the MID Region. Accordingly, the meeting endorsed the final ELP Questionnaire at **Appendix 5.1G** and agreed to the following RASG-MID Decision:

RASG-MID DECISION 7/7: ELP AD-HOC ACTION GROUP

That, an ELP Ad-Hoc Action Group composed of the following experts is established to support the implementation of the SEI related to the improvement of the implementation of ELP requirements in the MID Region:

- *Mr. Ibrahim Addasi from UAE (Champion)*
- *Mr. Mutasim Aljawharji from Saudi Arabia*
- *Mr. Mohammad Hushki from Jordan*
- *Ms. Leena Ahmed Al-Kooheji from Bahrain*
- *Mr. Mohamed Chakib from ICAO*
- *Mr. Mashhor Alblowi from ICAO*
- *Mr. Elie El Khoury from ICAO*

5.1.32 The meeting supported the list of actions related to the agreed SEIs as at **Appendix 5.1H.**

5.1.33 The meeting noted with appreciation that in-depth analyses of the USOAP CMA results for the operations (OPS) and Aerodrome and Ground Operations (AGA) areas, were developed by the Secretariat and presented to the MID-SST/5 meeting. The meeting recognized that the in-depth analyses of the USOAP-CMA data could be very useful for the identification of areas of concern, common deficiencies, etc.; and would provide good insight for the prioritization of the assistance/NCLB activities in the MID Region. Accordingly, the meeting agreed to the following RASG-MID Decision:

RASG-MID DECISION 7/8: SEI RELATED TO DANGEROUS GOODS

That, the RSC develop a new SEI related to Dangerous Goods.

UAE Proposal for the Establishment of an Accident and Incident Investigation Group

5.1.34 The subject was addressed in WP/16 presented by the UAE. The meeting supported UAE's proposal to establish a dedicated group for Accident and Incident Investigation. This would be reflected in the revised RASG-MID Organizational Structure.

MENA RSOO

5.1.35 The subject was addressed in WP/18 presented by the Secretariat. The meeting was apprised of the progress related to the establishment of the MENA RSOO. The meeting noted that the First MENA RSOO Steering Committee meeting (DGs Level) was held on 1 October 2018, in Riyadh, Saudi Arabia, back-to-back with the Fourth MID Region Safety Summit (2-3 October 2018), including a visit to the MENA RSOO premises.

5.1.36 The Revised Letter of Intent (LoI) was signed by 15 States (Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Saudi Arabia, Somalia, Sudan, UAE and Yemen). This Letter of Intent represents a clear statement by those States that are committed to the establishment of the MENA RSOO and be a member State of the MENA RSOO. An action plan for the establishment of the MENA RSOO was included in the signed LOI leading to:

a) signing the Memorandum of Agreement (MOA) for the MENA RSOO as a legal entity; and

b) signing the MENA RSOO Project Document to enable recruitment of the MENA RSOO staff and start operation, subject to availability of funds.

5.1.37 The First MENA RSOO Technical meeting was held at the MENA RSOO premises (Riyadh, Saudi Arabia, 2-4 February 2019) with the objective to review and finalize the draft MOA and Project Document. The meeting came up with a set of Recommendations to be presented to the Second MENA RSOO Steering Committee meeting. The MOA was circulated to States by ACAO in preparation for signature during the Second MENA RSOO Steering Committee meeting.

Strategy for the Enhancement of Cooperation in the Provision of AIG Services in the MENA Region

5.1.38 The subject was addressed in WP/17 presented by the Secretariat. The meeting recalled that the DGCA-MID/4 meeting (Muscat, Oman, 17-19 October 2017), through Conclusion 4/6, endorsed the Strategy at **Appendix 5.1I**, and agreed with the RASG-MID/6 meeting recommendation to further finalize/revise the Roadmap.

5.1.39 The meeting reviewed the amended Roadmap for AIG Regional Cooperation at **Appendix 5.1J** and endorsed the following RASG-MID Conclusion:

RASG-MID CONCLUSION 7/9: ROADMAP FOR AIG REGIONAL COOPERATION

That, the Roadmap for AIG Regional Cooperation be amended as at ***Appendix 5.1J.***

5.1.40 The meeting noted with appreciation the analysis report of the AIG Questionnaire Level 1 at **Appendix 5.1K** and noted that replies to the AIG Questionnaire level 1 were received from eight (8) States, namely, Bahrain, Egypt, Iran, Morocco, Saudi Arabia, Sudan, UAE, and Yemen. and the meeting noted that Six (6) States (Bahrain, Iran, Morocco, Saudi Arabia, Sudan, and UAE) stated clearly that they are willing to move to the level 2 of cooperation, in accordance with the Strategy for the enhancement of cooperation among the Middle East and (MENA) States in the provision of AIG Functions.

5.1.41 The meeting reviewed and endorsed the Questionnaire at **Appendix 5.1K** on AIG level 2 cooperation to be used for the survey related to States' AIG capabilities.

5.1.42 The meeting reviewed the Draft AIG Regional Cooperation Mechanism (ARCM) at **Appendix 5.1L** and agreed to its presentation to the DGCA-MID/5 meeting for endorsement.

Qatar and UK Experiences related to SSP implementation

5.1.43 The subject was addressed in WP/49 and PPT/15 presented by Qatar and PPT/10 presented by the UK. The meeting was apprised of the States' experiences related to SSP implementation in Qatar and UK. The meeting thanked Qatar and UK for sharing their experiences, which was highly appreciated by the participants.

ICAO USOAP CMA Audit of Qatar

5.1.44 The subject was addressed in WP/50 and PPT/16 presented by Qatar. The meeting was apprised of Qatar's experience and practices related to the preparation and conduct of the USOAP CMA Audit of Qatar. The meeting noted with satisfaction that further to the last USOAP CMA audit of Qatar (11-21 November 2018), the overall EI would record an increase of more than 25%.

REPORT ON AGENDA ITEM 5.2: RASG-MID WORKING ARRANGEMENTS AND FUTURE WORK PROGRAMME

5.2.1 The subject was addressed in WP/19 and WP/20 presented by the Secretariat and WP/51 presented by Qatar.

5.2.2 The meeting noted and supported the feedback and proposals received from the stakeholders and different RASG-MID subsidiary bodies related to RASG-MID Organizational Structure and working arrangement, as follows:

- replace “Team” by “Group”;
- for harmonization purpose, all Groups will have a Chairperson and a Vice Chairperson to be elected;
- the Annual Safety Report Group (ASRG) should resume the responsibilities according to the established ToR of the MID-ASRT;
- considering the limited support provided to the MID-RAST and the slow progress in achieving its objectives to develop/implement mitigation measures for the Focus Areas and Emerging Risks; and in order to take advantage of the expertise supporting the MID-SST, the two bodies be merged into one Group: Safety Enhancement Implementation Group (SEIG);
- considering the importance and the volume of work of the RGS WG, which was established under the MID-RAST, a dedicated Group related to Aerodromes Safety, Planning and Implementation (ASPIG) be established; and
- according to the outcome of and proposals from MID-SST to establish a dedicated Group for Accident and Incident Investigation, a dedicated Group for Accident and Incident Investigation (AIIG) be established.

5.2.3 Based on the above, the meeting supported the establishment of the ASRG, ASPIG, SEIG and AIIG and endorsed the revised RASG-MID Organizational Structure at **Appendix 5.2A**. The meeting agreed that the ToRs for each Group should be developed by the Secretariat in coordination with the concerned stakeholders for review and endorsement by the RSC/7 meeting. It was agreed that the election of the Chairperson and Vice Chairperson for each Group be included in the Agenda of their first meeting.

5.2.4 The meeting highlighted the need to review and update the RASG-MID Terms of Reference, taking into consideration the new Terms of Reference of the RASGs and PIRGs, which will be presented to the ICAO Council for endorsement in June 2019. Accordingly, the meeting tasked the RSC to follow up on the subject including the required update to the ToRs of the RASG-MID and the RSC. Accordingly, the meeting agreed to the following RASG-MID Decision:

RASG-MID DECISION 7/10: REVISED RASG-MID ORGANIZATIONAL STRUCTURE

That,

a) *the revised RASG-MID Organizational Structure at **Appendix 5.2A** is endorsed; and*

b) *the Secretariat consolidate a new Edition of the RASG-MID Procedural Handbook reflecting the revised Organizational Structure and Terms of Reference (TORs) of the different Groups for presentation to the RSC/7 meeting before the formal endorsement by the RASG-MID/8 meeting.*

5.2.5 Taking into consideration the establishment of the new Groups, revised Organizational Structure and the new RASGs TOR, the meeting agreed that there is no need to change the current working arrangement of the RASG-MID, including the fast track/approval by passing procedure. The meeting was of the view that sufficient lead-time should be provided for the evaluation of the efficiency of the new Organizational Structure and working arrangements, before considering any change.

5.2.6 With respect to the Chairmanship of the RASG-MID, the meeting noted that the Chairman Mr. Ismaeil Mohammed Al Blooshi and the First Vice Chairperson Mr. Abdullah Omar Al Ojaili have completed their terms, as per the RASG-MID Procedural Handbook. The meeting agreed that, in order to ensure the necessary continuity in the work of the Group, the Chairperson, the First Vice-Chairperson and Second Vice-Chairperson be renewed for one (1) additional term. It was also agreed that the election of Chairpersons be included in the Agenda of the RASG-MID/8 meeting.

5.2.7 The meeting noted that the RSC/7 meeting is tentatively scheduled to be held in March 2020. The meeting agreed that the election of the vacant positions of the RSC Co-Chairs should be included in the RSC/7 meeting agenda.

REPORT ON AGENDA ITEM 6.1: FOLLOW-UP ON MIDANPIRG/16 AND MSG/6 CONCLUSIONS AND DECISIONS

Follow-up on MIDANPIRG/16 and MSG/6 Conclusions and Decisions

6.1.1 The subject was addressed in WP/21 presented by the Secretariat. The meeting reviewed the progress made in the implementation of MIDANPIRG/16 Conclusions and Decisions. The actions taken by States and the Secretariat on the above mentioned Conclusions and Decisions were reviewed and the updated list is provided at **Appendix 6.1A**.

6.1.2 The meeting was apprised of the progress made for the implementation of the MSG/6 Conclusions and Decisions as at **Appendix 6.1B**.

REPORT ON AGENDA ITEM 6.2: AIR NAVIGATION PLANNING AND IMPLEMENTATION

Status of Air Navigation priorities and targets

6.2.1 The subject was addressed in PPT/12 presented by the Secretariat. The meeting was apprised of the Status of implementation of the priority 1 ASBU Block 0 modules. The meeting noted that the overall implementation of priority 1 ASBU Block 0 Modules in the MID Region in 2018 reached 58% compared to 55% in 2017. Based on States' plans, it is envisaged that the status of implementation of the priority 1 ASBU Block 0 Modules would be around 77% in 2020 (outlook).

6.2.2 The meeting noted that Bahrain, Egypt, Jordan, Lebanon, Qatar, Sudan and UAE made a good progress in the implementation of the priority 1 ASBU Block 0 Modules. From a regional perspective, the progress for the implementation of B0-SNET, B0-AMET and B0-ACAS is very good. However, the progress for the implementation of B0-ACDM, B0-CDO and B0-CCO is far below expectation.

MID Air Navigation Report

6.2.2 The subject was addressed in WP/22 presented by the Secretariat. The meeting recalled that the MSG/6 meeting, through Conclusion 6/4, agreed that the ICAO MID Office should start the development of the Third Edition of the MID Region Air Navigation Report (2018), beginning of 2019.

6.2.3 The meeting reviewed and endorsed the Third Edition of the MID Region Air Navigation Report (2018). Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/9: THIRD EDITION OF THE MID REGION AIR NAVIGATION REPORT (2018)

That, the Third Edition of the MID Region Air Navigation Report (2018) is endorsed and be posted by the ICAO MID Office on the website.

6.2.4 The meeting urged States to provide the ICAO MID Office, with necessary data by 1 December 2019 for the development of the Fourth Edition of the MID Region Air Navigation Report (2019). Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/10: MID REGION AIR NAVIGATION REPORT (2019)

That,

*a) States be urged to provide the ICAO MID Office, with relevant data necessary for the development of the Fourth Edition of the MID Region Air Navigation Report (2019), by **1 December 2019;***

b) the MID Region Air Navigation Report (2019) be presented to the MSG/7 for endorsement.

MID Region Air Navigation Strategy

6.2.5 The subject was addressed in WP/23 presented by the Secretariat. The meeting recalled that the current version of the MID Region Air Navigation Strategy (MID Doc 002) was endorsed by

MSG/6, and further reviewed by the AIM SG/5 and CNS SG/9 meetings. The meeting agreed that the proposed changes by the CNS SG/9 meeting should be considered during the development of the next version of Strategy, which would be completely revisited further to the endorsement of the new GANP by the ICAO 40th Assembly.

6.2.6 In connection with the above, the meeting agreed that a Joint ACAO/ICAO ASBU Symposium be organized beginning of 2020. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/11: JOINT ACAO/ICAO ASBU SYMPOSIUM

That, a Joint ACAO/ICAO ASBU Symposium be organized beginning of 2020.

MID eANP

6.2.7 The subject was addressed in WP/36 presented by the Secretariat. The meeting was apprised of the proposals for amendment processed or under coordination since the endorsement of the MID eANP Volume I, II and III by MIDANPIRG/15 meeting (Bahrain, 8 – 11 June 2015) through Conclusion 15/11.

6.2.8 The MID eANP Volume I, II and III are available on the ICAO MID website: (http://www.icao.int/MID/Pages/MIDeANP.aspx). However, the ICAO eANPs web-based platform is accessible through the ANP application under SPACE/iSTARS:
(https://portal.icao.int/space/anp/Pages/newanp.aspx#)

6.2.9 The meeting reviewed and updated the list of MID eANP Focal Points as at **Appendix 6.2A**.

6.2.10 With respect to FIR Boundary Descriptions, the meeting noted that the MID eANP was published without the FIRs/UIRs boundary coordinates (Tables ATM I-1 *MID Region Flight Information Regions (FIRs)/ Upper Information Regions (UIRs)* and SAR I-1 *MID Region Search and Rescue Regions (SRRs)*). The publication of the FIR Boundary coordinates/descriptions necessitates bi-lateral/multi-lateral agreements between concerned States.

6.2.11 The meeting recalled that the MSG/5 meeting agreed that the Guidelines for the publication of FIR boundary points, at **Appendix 6.2B** should be taken into consideration for the publication of the FIR descriptions in the States' AIPs. The meeting reviewed the Draft Table ATM I-1 *MID Region Flight Information Regions (FIRs)/*Upper *Information Regions (UIRs)* at **Appendix 6.2C**, highlighting the inconsistencies between adjacent FIRs.

6.2.12 Based on the above the meeting agreed to the following MIDANPIRG Conclusion to replace and supersede MSG Conclusion 5/5:

MIDANPIRG CONCLUSION 17/12: PUBLICATION OF FIR BOUNDARY POINTS

That, States be urged to:

a) *take into consideration the Guidelines at **Appendix 6.2B** for the description of their FIR boundaries;*

*b) review the Table ATM I-1 MID Region Flight Information Regions (FIRs)/Upper Information Regions (UIRs) at **Appendix 6.2C** and coordinate with neighboring States, as appropriate, the definition of common boundaries; and*

c) *provide the ICAO MID Regional Office with their updates and comments before **15 August 2019**.*

6.2.13 The meeting reviewed and updated the MID eANP Volume III as at **Appendix 6.2D** and agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/13: AMENDMENT TO THE MID eANP VOLUME III

*That, the amendment to the MID eANP Volume III at **Appendix 6.2D** is approved.*

AIM matters

Implementation of Annex 15 (16th Edition) and PANS AIM

6.2.14 The subject was addressed in WP/24 presented by the Secretariat. The meeting reviewed the outcome of the AIM SG/5 meeting held at the ICAO Middle East Regional Office in Cairo, Egypt, from 22 to 24 January 2019.

6.2.15 The meeting recalled that with the adoption of Amendment 40 to Annex 15 and the publication of the new PANS-AIM (Doc 10066), the AIM documentation was reorganized, as follows:

a) high-level requirements are embodied in Annex 15;
b) technical specifications and operating procedures are incorporated into the new PANS-AIM (Doc 10066) (approved by the ANC on 15 June 2018); and
c) guidance material is developed to support implementation (Doc 8126; update in progress).

6.2.16 In order to support the implementation of the new AIS/AIM provisions in the MID Region; and as a follow-up to the Interregional PANS AIM Workshop (Paris, France, 10-12 July 2018), a Workshop on the 16th Edition of Annex 15 and the PANS AIM was conducted during the first day of the AIM SG/5 meeting.

6.2.17 The AIM SG/5 meeting discussed the changes introduced to the AIS/AIM provisions, the implementation challenges and States' experiences. The meeting also reviewed the Compliance Checklists for Annex 15 and PANS AIM, prepared by the ICAO Secretariat. The meeting commended the efforts of the Secretariat for the compilation of the Compliance Checklists and encouraged States to use them for the identification of changes and new provisions.

6.2.18 The meeting recalled that the MSG/6 meeting reviewed the outcome of the Inter-regional EUR/MID Workshop on PANS AIM and agreed to the following MSG Conclusion:

MSG CONCLUSION 6/8: IMPLEMENTATION OF THE 16TH EDITION OF ANNEX 15 AND THE PANS AIM

That, States be urged to:

a) *take necessary actions on the implementation of the 16th Edition of Annex 15 and the PANS AIM, including:*
   - *updating AIS/AIM National Regulations;*
   - *identification and notification of differences (EFOD and AIP GEN 1.7), if any;*
   - *coordination with their AISPs to develop necessary operational procedures/practices in order to implement the provisions of Annex 15 and the PANS AIM;*

b) *provide feedback to the ICAO MID Office on the implementation of the 16th Edition of Annex 15 and the PANS AIM (Implementation Plan, difficulties/challenges, need for assistance, etc).*

6.2.19 The meeting urged States to implement the provisions of the MSG Conclusion 6/8, and provide feedback to the ICAO MID Office.

Interregional Workshop/Seminar on AIM/SWIM

6.2.20 As a follow-up action to the AN-Conf/13 Recommendation 3.1/1, the meeting agreed with the AIM SG/5 meeting that an Inter-regional Workshop/Seminar on AIM/SWIM should be organized in 2020-2021. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/14: INTERREGIONAL WORKSHOP/SEMINAR ON AIM/SWIM

That, an Interregional Workshop/Seminar on AIM/SWIM be organized in 2020-2021.

ICAO Roadmap for the transition from AIS to AIM

6.2.21 The meeting noted that the ICAO Roadmap for the transition from AIS to AIM was developed by the AIS-AIM Study Group in 2009 and is no longer keeping pace with the developments. Furthermore, with the introduction of the ASBUs and the new provisions of Annex 15 and the PANS AIM, there is a need for a complete reshuffling of the Document. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/15: ICAO ROADMAP FOR THE TRANSITION FROM AIS TO AIM

That, ICAO consider the review/reshuffling of the Roadmap for the transition from AIS to AIM to keep pace with the developments.

MID Region AIM Implementation Roadmap

6.2.22 The meeting reviewed the MID Region AIM Implementation Roadmap, as updated by the AIM SG/5 meeting as at **Appendix 6.2E**. It was agreed that the Roadmap needs further review/update. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/16: MID REGION AIM IMPLEMENTATION ROADMAP

That, the MID Region AIM Implementation Roadmap at ***Appendix 6.2E*** *is endorsed.*

Guidance for AIM Planning and Implementation in the MID Region (MID Doc 008)

6.2.23 The meeting recalled that the Guidance for AIM implementation (MID Doc 008) was developed by the AIM Sub-Group. Taking into consideration the recent changes to the Global AIM Provisions, the MID Doc 008 needs critical review/update.

6.2.24 Based on the above, the meeting agreed to the establishment of an Ad-hoc Working Group to address the challenges associated with the implementation of digital datasets, develop a Regional Implementation Plan and review/update the MID Doc 008. Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/17: ESTABLISHMENT OF THE DIGITAL DATASETS IMPLEMENTATION AD-HOC WORKING GROUP (DDI AD-HOC WG)

That, the Digital Datasets Ad-hoc Working Group be:

a) *established to:*

- *address the challenges associated with the implementation of digital datasets;*
- *propose Regional Implementation Plan for Digital Datasets; and*
- *review/update the MID Doc 008; and*

b) *composed of:*

- *Abdulla Hasan AlQadhi (Bahrain)*
- *Moataz Abdel Aziz Ahmed (Egypt)*
- *Rouhalah Salehi (Iran)*
- *Mohammad Hussien Al Anezi (Kuwait)*
- *Bassem Ali Nasser (Lebanon)*
- *Mazen Mohammed Alshihri (Saudi Arabia)*
- *Sorin Dan. Onitiu (UAE, Rapporteur)*
- *Marek Franko (NG Aviation): and*
- *ICAO MID Office*

PBN Approach Charts – Transition From RNAV to RNP

6.2.25 The subject was addressed in WP/25 presented by the Headquarters. The meeting was apprised of ICAO Circular 353 related to the transition from RNAV to RNP for the PBN Approach Procedure Charts Titles. The meeting noted that ICAO Headquarters has developed a global plan to harmonize the transition to the new PBN Charts Titles. The meeting recalled that MSG/6 meeting endorsed a revised version of the MID Region PBN Implementation Plan (MID Doc 007) based on the outcomes of the PBN SG/3, CNS SG/8 and ATM SG/4 meetings. The PBN Plan includes the MID Region Roadmap for the transition to the new PBN Charts Titles to be completed by 8 September 2022.

6.2.26 The meeting requested the MID Office to coordinate with ICAO HQ for the provision of available data by **30 June 2019**. The meeting agreed that the PBN SG/4 meeting to review the template for the regional plan for the transition to RNP Charts developed by ICAO HQ and take action as appropriate.

AOP Matters

6.2.27 The subject was addressed in WP/26, presented by the Secretariat.

Airport Master Plan

6.2.28 The meeting underlined that the Airport Master Plan is a document that presents the short-term (1-5 years), intermediate-term (6-10 years) and long-term (10-20 year) development/goals of an airport and is typically evaluated and updated every 5 to 10 years. It was recalled that new ICAO provisions on airport planning have been proposed to be included in Annex 14, Volume I and PANS Aerodromes, to support the provision of airport capacity enhancements.

6.2.29 The meeting noted that the Airport Master Plan Task Force (AMPTF) had been established by the Aerodrome Design and Operations Panel (ADOP) and tasked with a complete rewrite of the guidance contained in Doc 9184, Airport Planning Manual, Part 1 - Master Planning.

A-CDM Implementation

6.2.30 The meeting noted with concern the slow progress in the implementation of A-CDM and agreed that States should develop an action plan for the A-CDM implementation in line with the MID Air Navigation Strategy (according to the applicability area included in the MID Air Navigation Strategy).

6.2.31 The meeting recalled that a Questionnaire was circulated to States on 28 February 2019 (State letter Ref.: AN 5/23-19/072 refers) and urged States to complete the A-CDM questionnaire and send it to the ICAO MID Office no later than 31 May 2019.

6.2.32 The meeting highlighted that the ICAO MID Office will organize jointly with ACAO a Workshop/Seminar on A-CDM, 21-23 October 2019; and encouraged States and stakeholders to actively participate in this event. The meeting noted with appreciation that CANSO and EUROCONTROL would support the A-CDM Workshop/Seminar.

Airspace Management issues

6.2.33 The subject was addressed in WP/27 presented by the Secretariat.

ATS Route Network

6.2.34 The meeting recalled that the MSG/6 meeting reviewed and endorsed the Terms of Reference (TORs) of the MID Route Development Working Group (MID RDWG) at **Appendix 6.2F**, as well as the MID Region ATS Route Catalogue through MSG Decision 6/12 and MSG Conclusion 6/13, respectively.

6.2.35 The meeting recognized that the main objective of the MID RDWG is to enhance the cooperative approach between States and stakeholders to avoid duplication of efforts related to the improvement of the ATS Route Network at National and cross-border levels. Accordingly, the meeting urged States and airspace users to use the MID RDWG as the main platform to facilitate bilateral and multilateral coordination related to the improvement of the ATS Route Network and airspace management in the MID Region.

6.2.36 The meeting noted that the MID Region ATS Route Catalogue (available on the ICAO MID Website https://icao.int/mid) includes the Airlines' ATS route proposals presented, in a prioritized manner with their associated benefits, for consideration by States to enhance the ATS Route Network.

6.2.37 Based on the above the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/18: MID RDWG AND MID REGION ATS ROUTE CATALOGUE

That, States be urged to:

a) use the MID Route Development Working Group (MID RDWG) as the main platform to facilitate bilateral and multilateral coordination related to the improvement of the ATS Route Network and airspace management in the MID Region; and

b) review the MID Region ATS Route Catalogue and take actions related to the implementation of the ATS proposals relevant to their FIRs.

6.2.38 The meeting noted that the Fourth meeting of the Advanced Inter-Regional ATS Route Development Task Force (AIRARD TF/4) will be held concurrently with the Asia/Pacific (APAC) ATM SG/7 meeting at the ICAO APAC Regional Office in Bangkok, Thailand from **5** to **7 August 2019**. The meeting recalled that the AIRARD TF was established by the ICAO APAC, EUR/NAT and MID Regions to discuss, coordinate and improve the inter-regional aspects of the ATS route network and ATM issues at the interfaces of the three ICAO Regions. Accordingly, the meeting encouraged States to actively participate in the AIRARD TF/4 meeting.

Outcome of the India/Oman/UAE/IATA Collaborative Operational Enhancement Meeting

6.2.39 The subject was addressed in WP/37 presented by UAE. The meeting was apprised of the outcome of the meeting between India, Oman, UAE and IATA that was hosted by the UAE on the 28 February 2019. The main objectives of the meeting were to:

a) discuss common ATM challenges and ways of collaboration in order to solve and improve air traffic flow over the Arabian Sea/Indian Ocean.

b) provide collaboration opportunities to ATS providers and airspace users over the Arabian Sea/Indian Ocean.

c) ensure that future traffic growth is sustainable and demand is accommodated.

6.2.40 The meeting commended the three States for the initiative and their efforts to enhance the traffic flow at the interface between the ICAO Asia/Pacific and MID Regions.

6.2.41 The meeting invited States and IATA to work under the framework of the MID RDWG, which should present updates to the ATM SG that would agree on follow-up actions, as required to support implementation.

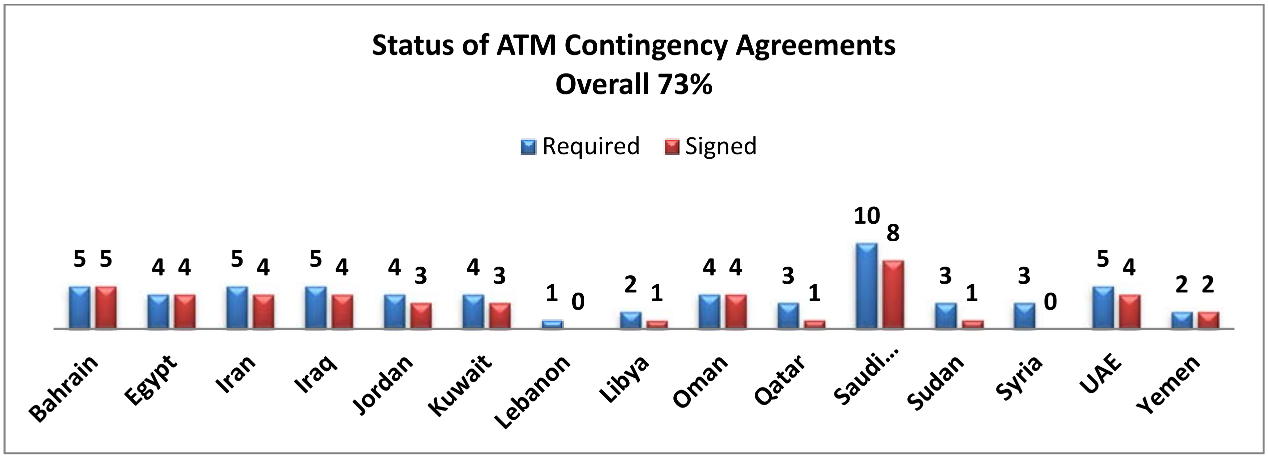
Contingency Planning

6.2.42 The subject was addressed in WP/29 presented by the Secretariat.

6.2.43 The meeting recalled that the MSG/6 meeting agreed that the signature of the contingency agreements with ACCs of the States at the interfaces with the ICAO MID Region be considered as "recommended" and not mandatory. Therefore, the meeting agreed that the deficiencies reported against the States at the interfaces for non-signature of contingency agreements should be removed.

6.2.44 The MSG/6 meeting through MSG Conclusion 6/15 agreed that the above requirement should be included in the MID eANP, Volume II Part IV under Specific Regional Requirements. The meeting noted that the proposal for amendment was circulated and approved on 8 April 2019.

6.2.45 The meeting reviewed and updated the status of the signed contingency agreements between adjacent ACCs as at **Appendix 6.2G**, which is reflected in the **Graph 1** below:



Graph 1

6.2.46 The meeting noted that some airspace users continue to circumnavigate Damascus, and Tripoli FIRs and Yemen Airspace due to the conflict zones.

6.2.47 Several Contingency Coordination Teams (CCTs) have been established in accordance with the MID Region ATM Contingency Plan, which provided a forum for sharing information, identifying the challenges and implementation of contingency measures/routes ensuring the safety of air traffic during contingency situations. The MID Region ATM Contingency Plan (MID Doc 003) is available on the ICAO MID Website: https://portal.icao.int/RO_MID/Pages/MIDDocs.aspx

6.2.48 The meeting commended States and Stakeholders for their commitment and excellent cooperation that ensured the success of the Contingency Coordination Team (CCT) framework.

6.2.49 The meeting recalled that the MSG/6 meeting, through Decision 6/14, established the MID ATM Contingency Plan Action Group to carry out a comprehensive review of the MID Region ATM Contingency Plan (MID Doc 003), taking into consideration the experience gained, the latest developments, and to include in the revised version of the measures and procedures enabling the CCTs to deal with airports and airspace disruptions due to weather or other factors in a timely and effective manner. The meeting agreed that the Action Group be composed of ATM experts from Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, UAE, AACO, IATA and ICAO.

6.2.50 The meeting noted with appreciation that a recovery Plan for the normalization of traffic operation through Baghdad FIR has been successfully implemented since 29 November 2017 with continuous enhancements.

6.2.51 The meeting was apprised of the outcome of the First ATM Contingency Coordination Meeting for Syria (Amman, Jordan, 10-11 March 2019), which was held based on the decision of the CCT for Syria considering the information received that some airlines might resume operation through Damascus FIR.

6.2.52 The meeting urged States to complete the signature of the contingency agreements with their adjacent States, if not yet done so; and continue their effective support to the contingency planning activities.

Disruption of Air Traffic Flow caused by Pakistan airspace closure on the UAE Air Traffic

6.2.53 The subject was addressed in WP/43 presented by UAE. The meeting was apprised of the impact of the Pakistan Airspace closure on air traffic flow within Emirates FIR since 27 February 2019 despite that UAE is not an immediately adjacent State to Pakistan.

6.2.54 The meeting noted that under normal circumstances, Pakistan's airspace serves as an important crossroad between Europe and Northern India/South East Asia. After the airspace closure on 27 February 2019 and due to the difficulties of overflying Chinese Territory, most flights were rerouted South of Pakistan through Muscat and Mumbai FIRs; this caused the demand to drastically exceed the available capacities on the day of disruption, requiring immediate implementation of flow measures to balance traffic to a manageable level.

6.2.55 The initial flow measures were implemented with immediate effect in response to the unexpected rise of traffic numbers by the directly affected FIRs. These flow measures comprised miles-in-trail combined with routing restrictions for flights depending on their destination. This caused further delays at upstream FIRs. In the UAE, these measures led to a situation of lower predictability for operations.

6.2.56 The immediate impact to the UAE following the Pakistan airspace closure was an increase in air traffic re-routing through UAE airspace peaking at 85 flights on the 28 of February 2019 and averaging out to 35 flights a day by 9 March 2019.

6.2.57 Furthermore, many flights departing from the UAE were subject to flow measures causing a substantial increase of the ground delay, spiking from 76 hours on 28 February 2019 to 162 and 154 hours on 1 and 2 March 2019, respectively.

6.2.58 In the days following the closure of Pakistan airspace, the flow measures were revised by the directly affected FIRs and communicated through NOTAM. The CCT shared some additional information in a timely manner.

6.2.59 Overall, the on-ground pre-departure time (off-block-time until actual take-off time) in the UAE has increased substantially in response to the contingency flow measures. The total daily average for the week prior to the airspace closure accounted for about 91 hours. This grew by about 60 hours totalling to 155 hours daily in the week following the airspace closure. In the subsequent week, the total daily average was still about 50 hours higher than before the airspace closure totalling to 145 hours per day.

6.2.60 The current contingency measures are imposed on a portion of the directly affected FIRs which, while locally effective, are a prolongation of the increased strain on upstream FIRs. This is limiting the efficiency of the network. The tactical adjustments of these flow measures in particular reduce predictability in the upstream FIRs and consequently increase the workload on operational staff and reducing utilisation of available airspace capacity.

6.2.61 Tactical re-routings and the allocation of non-economical flight levels as advised by NOTAM have reduced predictability to airspace users and made them carry extra fuel, which increases their costs. As an example, Emirates Airlines on the 19th of March added a total of 187 tonnes of extra fuel to flights to compensate for the unpredictability. The extra fuel causes substantial additional fuel burn with adverse effects on the environment. In addition, the current flow measures degraded the on-time performance for flights. Etihad Airways as an example reports a reduction from 88% before the disruption to now 41% on average.

6.2.62 The immediate and swift response to the disruption by the directly affected FIRs implementing flow measures in the short term is commendable and exemplary.

6.2.63 Due to the prolonged nature of the disruption, the collaboration between stakeholders is recommended in order to increase the effectiveness and efficiency of the measures undertaken with the objective of maximising the utilisation of the capacity. This collaboration requires the involvement of all stakeholders affected directly and indirectly by the disruption, specifically all major contributors to the traffic flow.

6.2.64 As the end of the disruption is not in sight and the situation is stabilising, the currently implemented flow measures do not guarantee enough predictability for planning by ANSPs and airspace users. However, increasing predictability requires collaboration at an inter-regional level to manage effective and efficient flow measures that assure predictability and improve network-wide efficiency.

6.2.65 It was advisable that the affected States agree to urgently collaborate on the implementation of guidelines identifying flow measures that progressively respond to excessive demands as required, but also release constrains in times with reduced traffic. The dynamics of how the flow measures are applied need to be transparently communicated.

6.2.66 The guidelines should be complemented by daily reviews and revisions of the flow measures as required to improve the effectiveness and to spread unavoidable delay in an equitable and manageable level with better planning for all stakeholders.

6.2.67 The progressive measures should be temporary until enhanced guidelines have collaboratively been developed and agreed.

Regional Collaboration for Managing Contingency Situations

6.2.68 The subject was addressed in WP/47 presented by Oman. The meeting was apprised of the actions being undertaken by Oman to deal with Pakistan and Afghanistan airspace closure and the need for further regional collaborative effort in managing contingency situations to ensure minimum disruption to ‘normal’ air transport operations

6.2.69 The meeting noted that on 27 February 2019 more than 480 flights rerouted through the Muscat FIR due to the closure of Pakistan and Afghanistan, resulting in airspace congestion particularly within Muscat FIR.

6.2.70 The meeting noted with appreciation that Oman is fully committed to take all necessary actions for safety, regularity and efficiency of aircraft operation within Muscat FIR in all circumstances.

6.2.71 As a direct result of Pakistan and Afghanistan airspace closure, Oman witnessed a significant increase in traffic, reaching up to +32% in a day, and all traffic to/from Mumbai FIR concentrated on RASKI (L301).

6.2.72 Oman carried out a safety risk assessment and applied contingency measures to manage the daily traffic and accommodate the additional flights. The measures varied from tactical rerouting, change of route direction, reduced separation and Flight Level Allocation Scheme. It achieved an acceptable balance between the air traffic demands and the air navigation system capacity.

6.2.73 The following are the main challenges that accompanied the management of the situation:

- Observations on the level of adherence to the published contingency measures.
- Capacity limitations due to limited surveillance and communication infrastructure over oceanic airspace adjacent to Muscat FIR.
- Restrictions to utilize the airspace due to several conflict zones within a relatively small geographical area.
- Unilateral and/or short noticed changes of published information related to airspace and route availability that impacted neighbouring FIRs.

6.2.74 On the other hand, it was highlighted that the outstanding level of coordination and collaboration between the States, ANSPs, ICAO and IATA and the majority of the airlines through Pakistan CCT facilitated the smooth flow of information and helped in addressing operational challenges.

6.2.75 It is known that, in addition to the existing situation, which Oman has been facing, since June 2017, with the implementation of a contingency plan for Qatari registered aircraft and the provision of access through contingency ATS routes (North/ South), which cross major flows of traffic along the existing ATS route network (East/ West); the Pakistan contingency measures have different objectives, resulting in several intersecting tracks and overlapping traffic streams within Oman's airspace.

6.2.76 The challenge is not only to decrease congestion, but also to keep the highest safety levels as traffic increases within Oman's airspace. Therefore, appropriate short and medium term measures should be taken to relieve the pressure of airspace congestion.

6.2.77 The meeting commended the involved States and the CCT for their immediate and swift response to the disruption and agreed to the following MIDANPIRG Conclusions:

MIDANPIRG CONCLUSION 17/19: SAFETY ASSESSMENTS DUE TO CONTINGENCY WITH IMPACT ON ATS ROUTE NETWORK

That,

a) *Bahrain, Iran, Oman, Qatar and UAE be urged to provide the outcomes of their safety assessment of the contingency routes and/or changes to the ATS Routes Network to the ICAO MID Office by **15 June 2019**, as well as the relevant data for the analysis of the disruption and its impact to the network;*

b) the ATM SG/5, with the MIDRMA support, carry out analyses of the data/inputs received form States to identify the challenges and agree on necessary measures to mitigate any safety risk; and

c) conduct a lessons-learned session during the ATM SG/5 meeting with the participation of affected stakeholders reviewing the impact of the disruption to the network, allowing all stakeholders to present their views and feedback.

MIDANPIRG CONCLUSION 17/20: ENHANCED FRAMEWORK FOR THE MID CCT

That,

a) States intending to restrict traffic or close all or part of their airspace be urged to consider adequate time before affecting the required change to minimize traffic disruption;

b) States, under the framework of the CCT, in coordination with airspace users, agree on interim guidance with a progressive set of flow measures to address the current Air Traffic Flow disruption caused by the closure of Pakistan airspace; and

c) the ATM SG/5:

i. develop guidelines on how extended disruptions in the network are to be managed in a balanced manner; and

ii. enhance the notification and coordination process of contingency operations in the frame of the MID CCT, particularly for:

- *consistency of interrelated contingency information promulgated by more than one State; and*
- *agreement on recovery plan for each contingency situation.*

Civil/Military Cooperation and Flexible Use of Airspace

6.2.78 The meeting was apprised of the outcome of the ACAC/ICAO Civil/Military Workshop (Algiers, Algeria, 26-28 March 2018) organized jointly by ACAC and ICAO (EUR/NAT and MID Regional Offices). The meeting encouraged States to implement the recommendations at **Appendix 6.2H** emanating from the Workshop. The Workshop documentation is available on the ICAO MID Website: https://www.icao.int/MID/Pages/2018/ACAC-ICAO%20Civ-Mil%20WS.aspx

6.2.79 The meeting noted that ICAO in collaboration with all Stakeholders upgraded the CIR 330 to a new ICAO Manual on Civil/Military Cooperation to provide more guidance on the implementation of Civil/Military cooperation and Flexible Use of Airspace (FUA) Concept. The FUA in accordance with the ICAO provisions should be implemented into three Levels:

- Strategic level – Level 1
- Pre-tactical level – Level 2
- Tactical level – Level 3

6.2.80 The meeting agreed to the development of MID Guidance Material related to Civil/Military cooperation and implementation of FUA Concept, including State aircraft operations under Due Regard in particular over the high seas, based on the new ICAO Doc on CIV/MIL Cooperation and EUR Doc 032. Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/21: MID REGION GUIDANCE MATERIAL ON CIVIL/MILITARY COOPERATION AND IMPLEMENTATION OF FUA CONCEPT

That, the ATM SG/5 develop draft guidance material related to Civil/Military Cooperation and implementation of FUA Concept, including State aircraft operations under Due Regard in particular over the high seas, to be coordinated with States before presentation to MIDANPIRG for endorsement.

6.2.81 The meeting encouraged States to participate in the ICAO Inter-regional Civil/Military Cooperation Workshop that will be held in Dubai, UAE, 9 – 12 December 2019.

Outcome of the ATFM TF/2 and FWC2022 TF/2 Meetings

6.2.82 The subject was addressed in WP/28 presented by the Secretariat. The meeting noted that the Terms of References of both Task Forces were developed by the ATM SG, reviewed by the ATFM TF/1 and FWC2022 TF/1 meetings and endorsed by MSG/6 meeting.

6.2.83 The meeting noted with appreciation that the ATFM TF and FWC2022 TF have been thankfully supported by Brazil, India, FAA, ACAO, AEROTHAI, CANSO, EUROCONTROL and IATA.

6.2.84 The meeting was apprised of the outcomes of the ACAO/ICAO ATFM Workshop (17 – 18 March 21019), ATFM TF/2 and FWC2022 TF/2 meetings, which were thankfully hosted by the Arab Civil Aviation Organization (ACAO) in Casablanca, Morocco from 17 to 20 March 2019.

6.2.85 The meeting encouraged States to implement the Recommendations emanating from the ACAO/ICAO ATFM Workshop (Casablanca, Morocco, 17 – 18 March 2019) at **Appendix 6.2I**. The meeting agreed that the Recommendations should be considered during the development of the ATFM CONOPS.

6.2.86 The meeting, based on the analysis of the survey results carried out by the ATFM TF, recognized that the MID Region is still in the first steps related to the establishment of ATFM capabilities. Accordingly, the meeting agreed that raising awareness related to ATFM and qualifying ATFM Specialists should be given high priority.

6.2.87 The meeting agreed with the ATFM TF/2 meeting that the Multi-Nodal Concept should be applied for the MID Region as a first phase, which would be evolved to a centralized ATFM system in the future. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/22: MULTI-NODAL ATFM SOLUTION FOR THE MID REGION

That,

a) the Multi-Nodal Concept be implemented in the MID Region, as a first phase, which would be evolved to a centralized ATFM system in the future; and *b) the ATFM Task Force develop the ATFM Concept of Operations for MID Region, accordingly, including the minimum flight data that should be exchanged by ATFM Units*

6.2.88 It was highlighted that for the Asia Pacific Multi-Nodal project; three documents have been prepared and agreed upon: CONOPS, Regional Framework and Common Operating Procedures, which would be used as basis for the development of the MID Region ATFM Documentation.

6.2.89 The meeting agreed to the Action Plan at **Appendix 6.2J** for the implementation of ATFM in the MID Region that includes the following six (6) Key Activities:

Key Activity 1: Agreement on the ATFM Regional Framework

Key Activity 2: Development of Draft CONOPS

Key Activity 3: Development of ATFM Regional Framework and draft Common Operating Procedures based on the agreed CONOPS

Key Activity 4: Implementation of the MID ATFM Regional Framework and Common Operating Procedures

Key Activity 5: Post Implementation Review of the MID ATFM Regional Framework

Key Activity 6: Training and raising awareness related to ATFM.

6.2.90 Based on the above the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/23: ACTION PLAN FOR THE IMPLEMENTATION OF ATFM IN THE MID REGION

That,

a) the Action Plan for the implementation of ATFM in the MID Region at ***Appendix 6.2J*** *is endorsed; and*

b) States and Stakeholders to support the work of the ATFM Task Force and implement the actions relevant to them.

6.2.91 The meeting agreed that raising awareness, training and building States' capabilities related to ATFM should start the soonest possible and it is a continuous process.

6.2.92 The meeting emphasized that the agreed deadlines/timelines are very tight. However, they are crucial for the establishment of regional ATFM Framework in a timely manner. Accordingly, the meeting urged States and Organizations to maintain to the extent possible the same ATFM Focal Points and the designated Members of the ATFM Task Force to ensure continuity and effectiveness.

6.2.93 The meeting noted that the FWC2022 TF/2 meeting recognized the need for an effective coordination process between all stakeholders during special and major events.

6.2.94 The meeting noted that the projected traffic to Qatar would reach 2000 movements per day during the FWC2022. Qatar has been working on making available the needed ground capacity. However, it was highlighted that diverting to airports in proximity to Doha might be required due to unforeseen circumstances such as weather, emergency, etc. Accordingly, the meeting agreed that this requires setting up a collaborative contingency procedure to cope with unforeseen circumstances.

6.2.95 The meeting recognized that the MID Region may not be able to accommodate the expected increase in traffic during the FIFA World Cup 2022 without introducing improvements to the current ATS route structure and airspace management; increasing capacity and implementation of collaborative air traffic flow measures.

6.2.96 Based on the above, the meeting agreed that the MIDRMA to conduct assessment to the MID Region airspace structure based on the expected traffic movement from 1 November to 31 December 2022, in order to identify the peak periods, hotspots, bottle necks, etc. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/24: ASSESSMENT OF THE MID REGION RVSM AIRSPACE STRUCTURE BASED ON THE EXPECTED TRAFFIC MOVEMENT FROM 1 NOVEMBER TO 31 DECEMBER 2022

That, the MIDRMA assess the MID Region RVSM airspace structure based on the expected traffic movement during FWC2022 to identify peak periods, Hotspots, Bottlenecks, etc. based on the FPL/traffic data provided by Qatar.

6.2.97 The meeting agreed that a FWC2022 Roadmap should be developed to include procedures and an action plan to address the issues associated with the expected increase of traffic during the FIFA World Cup 2022 and other major events, which would have significant impact on the traffic within and outside the MID Region. An action on the conduct of safety assessment(s) should be included for the agreed scenario(s).

6.2.98 The meeting agreed to the actions to be achieved before the FWC2022 TF/3 meeting as at **Appendix 6.2K**.

Radar Longitudinal Separation

6.2.99 The meeting reviewed the implementation status of radar longitudinal separation in the MID Region as at **Appendix 6.2L**. The meeting urged States to take necessary measures to expedite the implementation of 20 NM radar longitudinal separation to be further reduced to 10 NM and provide feedback to the ICAO MID Office.

SIDs and STARs New Phraseologies

6.2.100 The meeting noted that the amendment to phraseology related to SIDs and STARs has been included in the latest version of ICAO Doc 4444 (PANS-ATM) with applicability date 10 November 2016. In this respect, the meeting urged States to take necessary measures for the implementation of the SIDs and STARs new phraseologies, using the guidance material available on the ICAO website: http://www.icao.int/airnavigation/sidstar/pages/changes-to-sid_star-phra-seologies.aspx.

6.2.101 The meeting recognized that the new phraseologies have particular benefit as mitigation for inconsistent compliance with vertical profiles on SID/STAR and also supports effective and efficient use of PBN airspace and support the CCO/CDO concepts. Moreover, the continued global implementation would support further harmonization and ease transition for States.

6.2.102 The meeting reviewed and updated the status of implementation of **SIDs** and **STARs** new phraseologies in the MID Region as at **Appendix 6.2M**.

MID Region High Level Airspace Concept

6.2.103 The meeting recalled that the MID Region High Level Airspace Concept was endorsed by MIDANPIRG/15 as MID Doc 004. The objective of the High Level Airspace Concept is to consolidate the ATM operational requirements agreed upon by MIDANPIRG, in order to provide a generic set of characteristics to be applied by States, which would support the harmonization of the ATM operations in the MID Region.

6.2.104 The meeting noted that the MID Doc 004 needs amendment to reflect the latest developments, in particular the outcome of the MSG/6 and MIDANPIRG/16 and 17 meetings. Accordingly, the following MIDANPIRG Decision is proposed for the meeting consideration:

MIDANPIRG DECISION 17/25: AMENDMENT OF THE MID REGION HIGH LEVEL AIRSPACE CONCEPT (MID DOC 004)

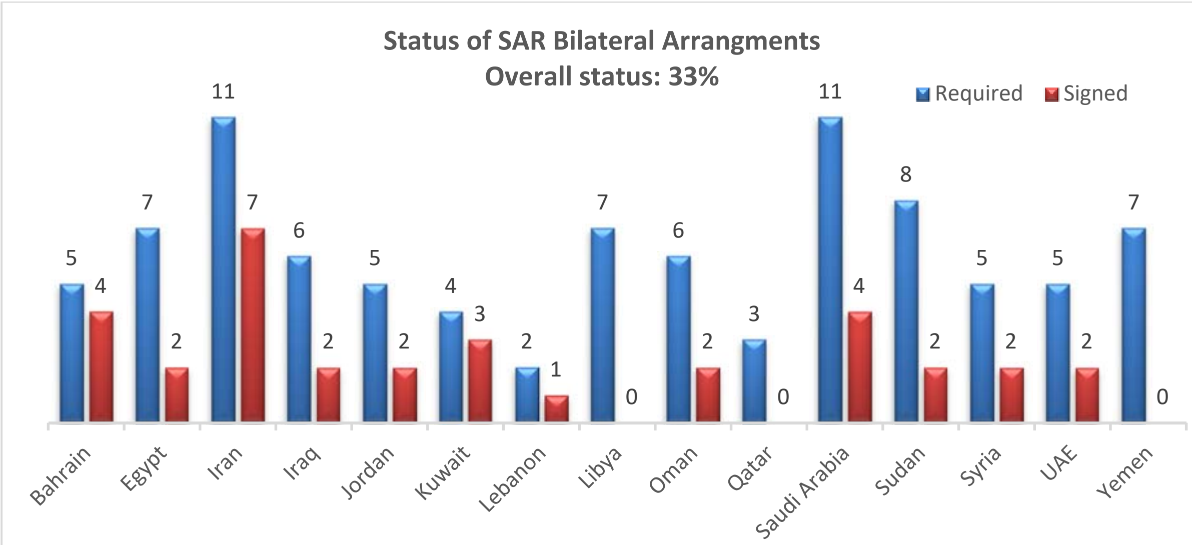
That, the ATM SG/5 review and prepare a revised version of the MID Region High level Airspace Concept (MID Doc 004) taking into consideration the latest developments, in particular the outcome of MSG/6 and MIDANPIRG/16 and 17 meetings, for presentation to MIDANPIRG/18.

Search and Rescue (SAR)

6.2.105 The subject was addressed in WP/30 presented by the Secretariat. The meeting noted that the SAR main USOAP-CMA findings in the MID Region are related to lack of:

- effective SAR oversight activities;
- English language proficiency for RCC radio operators;
- appropriate training programmes/plans of SAR experts;
- signature of SAR agreements;
- plans of operations for the conduct of SAR operations and SAR exercises;
- provision of required SAR services; and
- non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

6.2.106 The meeting reviewed and updated the status of SAR bilateral Arrangements as at **Appendix 6.2N**, which is also reflected in the following **Graph 2**:



Graph 2

6.2.107 The meeting recalled that based on the success of the ICAO AFI/APAC/MID Regional and Inter-regional SAR Workshop (Mahe, Seychelles, 19 - 22 July 2016), it was agreed to organize the SAR Inter-Regional Workshop between the 4 ICAO Regions on bi-annual and on rotation basis between the Regions. In this respect, the meeting encouraged States (Regulators, ANSPs and Military) to participate in the Inter-Regional Workshop, which is tentatively planned to be held in Salalah, Oman, from 15 to 18 July 2019.

6.2.108 The meeting noted that the MSG/6 meeting reviewed and endorsed, through MSG Conclusion 6/23, the MID SAR Implementation Plan developed by the MID SAR Action Group (SAR AG), which is available on ICAO MID Office Website (https://icao.int/mid). The Plan includes guidance material to support States to comply with global and regional requirements for SAR provisions, the Matrix that will be used for the analysis of the SAR status of implementation in the MID Region and Templates related to the conduct of SAREX. The meeting encouraged States to implement the provisions of the MID Region SAR Implementation Plan and approach the ICAO MID Office for any support required.

6.2.109 The meeting urged States to keep up-to-date their SAR Point of Contact (SPOC) contact details in their AIPs (GEN 3.6) and on the COSPAS-SARSAT website: http://www.cospas-sarsat.int/en/contact-lists-mccs-and-spocs

6.2.110 The meeting reviewed and updated the list of SAR focal points in the MID Region as at **Appendix 6.2O**.

Aeronautical Fixed Services (AFS) Matters

SITA Type X Integration

6.2.111 6.2.1 The subject was addressed in WP/31 presented by the Secretariat. The meeting noted that SITA Type X integration has been completed in the ICAO APAC, EUR/NAT and SAM Regions and the AFI Region is also progressing well. The SITA Type X integration date has been postponed several times in the MID Region and the transition could not be completed.

6.2.112 6.2.2 The meeting noted that the CNS SG/9 meeting agreed that the SITA Type X transition should not be impacted by bilateral specific issues to avoid any community impact, and agreed that States should:

a) implement necessary measures to enable SITA integration in the MID Region as soon as possible;
b) inform ICAO MID Office by 28 March 2019 about State's readiness to integrate SITA Type X;
c) be informed by ICAO MID Office about States that are not ready for SITA Type X Integration (if any) by 1 April 2019;
d) take necessary actions to avoid relaying messages through non-complied States; and
e) use new routing tables published by MIDAMC by 10 April 2019.

6.2.113 The meeting agreed to activate the SITA Type X integration in the MID Region at 1100 UTC on 25 April 2019. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/26: SITA INTEGRATION IN THE MID REGION

That, in order ensure seamless and efficient messages exchange within the MID Region and with other ICAO Regions, States are urged to complete SITA Type X Integration by ***25 April 2019****.*

6.2.114 The meeting noted that SITA Type X Transition Monitoring Cell (XTCM) will be formed for one week, from 25 April 2019 till 2 May 2019, on 24/7 basis, in collaboration with the MIDAMC Team and focal points from MID States; to monitor the network performance after the transition and resolve any problem in a timely manner. Moreover, a fall back procedure will be developed and circulated to States in due course.

6.2.115 The meeting reviewed and updated the list of XTCM focal points as at **Appendix 6.2P.** Furthermore, the meeting urged States to monitor and report to the XTMC any network anomaly in a timely manner.

6.2.116 The meeting noted that Saudi Arabia requested to establish additional Regional Type X connection in the MID Region in Jeddah COM Centre, in order to improve the reliability and the availability of AMHS/SITA interconnection. The meeting was informed that SITA stated that Saudi Arabia's proposal would be discussed internally within SITA and it was expected to receive feedback by 31 March 2019.

IWXXM Implementation and ROC Connectivity

6.2.117 The meeting recalled that the Thirteenth ICAO Air Navigation Conference (AN-Conf/13) urged States to provide ICAO with their ICAO Meteorological Information Exchange Model (IWXXM) implementation plans before 2020, and requested ICAO to ensure that the IWXXM format is the only standard exchange format by 2026.

6.2.118 The meeting reviewed and updated the AMHS plan of the MID ROC connectivity plan at **Appendix 6.2Q**, to enable the exchange of OPMET data in the new format between the MID and EUR Regions.

6.2.119 The meeting was informed that most of the AMHS systems in the MID Region are capable to run the extended services and in particular the File Transfer Body Part (FTBP). The current communication systems used (AMHS) have the required capabilities to meet the performance requirements of exchanging XML-based messages in the MID Region. Furthermore, joining the CRV Network will reduce the complexity of the current mixed communication environment (AFTN/AMHS/CIDIN).

6.2.120 The meeting agreed to monitor the FTBP capability through the FICE Module Table in the MID eANP Vol III and to monitor the implementation of required communication infrastructure for the exchange of the XML-based messages (IWXXM, FIXM, AIXM,.,etc.) over AMHS**.**

Inter-regional Connections and Missing Messages

6.2.121 The meeting recalled that MIDANPIRG/15, through Conclusion 15/30, urged States to refrain from establishing new AFTN and CIDIN connections at the International level, gradually phase out the current connections based on AFTN or CIDIN standards, and expedite their AMHS implementation.

6.2.122 The meeting noted that the majority of CIDIN connections within the MID Region have been removed and one CIDIN connection remains between Bahrain and Saudi Arabia. The inter-regional CIDIN links with Athens and Nicosia are pending SITA integration in the MID Region.

6.2.123 The meeting noted that, according to the MID Air Navigation Plan (MID ANP) VOL II, the following COM Centres are the entry/exit points with adjacent Regions:

1) Bahrain, Iran, and Oman are the entry/exit points with ASIA/PAC Region
2) Egypt and Saudi Arabia are the entry/exit points with AFI Region
3) Egypt, Kuwait and Lebanon are the entry/exit points with EUR Region

6.2.124 The meeting noted that Sudan requested to consider Khartoum COM Centre as a Main COM Centre and third gateway with the AFI Region. The meeting agreed that additional inter-regional connection with AFI Region could offer more channels for the Inter-regional communications. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/27: KHARTOUM COM CENTRE

That, in order to establish a third Gateway to the AFI Region, Khartoum COM Centre be changed to a main Centre.

6.2.125 6.2.15 The meeting agreed that the MID Air Navigation Plan (MID ANP) VOL II table CNS-II should be updated to reflect the Conclusion 15/30 and fulfil the current needs. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/28: PFA TO THE MID ANP VOLUME II-CNS

That, a Proposal for Amendment to the MID ANP Volume II – Table CNS II-1 related to the Aeronautical Fixed Telecommunication Network Plan as at ***Appendix 6.2R*** *be processed in accordance with the standard procedure, by* ***1 July 2019****.*

6.2.126 The meeting noted the actions that have been taken by the ICAO MID Office in order to eliminate the missing messages in the MID Region. It was underlined that States should notify the airspace users and ATS Units in case of communication failure and no alternate links are available. Furthermore, the meeting agreed to form a team from IATA, ICAO MID and the MIDAMC to coordinate and investigate missing messages, once reported.

6.2.127 The meeting noted that version 0.5 of the Routing Directory for AFTN and CIDIN Document in the MID Region was published in 2011 and does not include AMHS part. The meeting urged States to keep the routing tables up-to-date and to implement these routing tables. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/29: AFTN/CIDIN/AMHS ROUTING TABLES

That, in order to eliminate the messages loop problem within the MID Region:

a) States be urged to keep the AFTN/CIDIN/AMHS Routing Tables; and

*b) ICAO publish the updated version of the Routing Table for AFTN/CIDIN/AMHS in the MID Region by **1 July 2019**.*

CRV Project

6.2.128 The meeting was apprised of the CRV activities. The meeting agreed that the MIDAMC STG/5 meeting be held in the fourth quarter of 2019 to address the pending issues related to the CRV project. The meeting will be attended also by the CRV service provider (PCCW Global). It was highlighted that MID States should negotiate the price as a team in order to get better offer.

6.2.129 6.2.20 The meeting urged States to participate actively in the upcoming MIDAMC STG/5 (SME CRV).

AIDC/OLDI Implementation (B0-FICE)

6.2.130 The meeting recalled that the MSG/6 meeting urged States to initiate communication for AIDC/OLDI connection taking into consideration the guidance material in the MID Doc 006 - *MID Region Guidance for AIDC/OLDI Implementation in the MID Region*. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/30: UPDATE OF THE GUIDANCE FOR AIDC/OLDI IMPLEMENTATION IN THE MID REGION (MID DOC 006)

That, the ICAO MID Doc 006 - Guidance for AIDC/OLDI Implementation in the MID Region, Edition April 2019 is endorsed and be posted by the ICAO MID Office on the website.

6.2.131 The meeting recalled the reasons for non-implementation of AIDC/OLDI and the associated recommendations developed based on the challenges identified related to AIDC/OLDI implementation in MID Region.

6.2.132 The meeting agreed to the establishment of an AIDC/OLDI Implementation Support Team composed of Subject Matter Experts (SMEs) to assist States facing difficulties for the implementation of AIDC/OLDI, as required.

CNS SG and MIDAMC STG Terms of Reference

6.2.133 6.2.24 The meeting reviewed and updated the CNS SG and MIDAMC STG Terms of Reference (TORs) as at Appendices **6.2S** and **6.2T,** respectively. Accordingly, the meeting agreed to the following MIDANPIRG Decisions:

MIDANPIRG DECISION 17/31: TERMS OF REFERENCE OF THE CNS SG

*That, the Terms of Reference of the CNS SG be updated as at **Appendix 6.2S.***

MIDANPIRG DECISION 17/32: TERMS OF REFERENCE OF THE MIDAMC STG

*That, the Terms of Reference and Work Programme of the MIDAMC STG be updated as at **Appendix 6.2T**.*

Frequency Management Matters

6.2.134 The subject was addressed in WP/32 presented by the Secretariat. The meeting noted that the Nineteenth World Radio Conference (WRC-19) meeting will be held in Sharm El-Sheikh, 28 October to 22 November 2019.

6.2.135 The meeting recalled that the ICAO position has been developed and coordinated with all States. The meeting urged States to support the ICAO Position on issues of concern to International Civil Aviation.

6.2.136 The meeting noted that the actual day-to-day coordination of frequency assignments is being undertaken by ICAO. The challenges in updating the ICAO global frequency database with accurate information and resolving frequency usage conflicts were highlighted.

6.2.137 The meeting agreed to establish a Frequency Management Ad-hoc Working Group composed of representatives from States (CAA and TRA) to, amongst others, support States in fulfilling ICAO Radio Frequency Spectrum Requirements, related to Frequency Management and Spectrum Strategy; develop MID Region frequency assignment plan, etc. The Frequency Management Ad-hoc Working Group is also expected to find solutions for the interference occurrences between MID States in a timely manner. Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/33: FREQUENCY MANAGEMENT AD-HOC WORKING GROUP

*That, the Frequency Management Ad-hoc Working Group be established with Terms of Reference as at **Appendix 6.2U**.*

Surveillance matters

6.2.138 The subject was addressed in WP/33 and WP/44 presented by the Secretariat and UAE, respectively. The meeting was apprised of the outcome of the Surveillance/MICA Workshop (26-28 February 2019) at **Appendix 6.2V**.

6.2.139 The meeting agreed that all Mode S Radars in the MID Region should support the SI/II code operation by developing a PfA to the MID ANP Vol II, CNS Specific Regional Requirements. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/34: PFA TO THE MID ANP VOLUME II- CNS SPECIFIC REGIONAL REQUIREMENTS

That, a Proposal for Amendment to the MID ANP Volume II – CNS Specific Regional Requirements be processed in accordance with the standard procedure to add the following requirement: "States should ensure that all Mode S Radars support SI/II code operation".

6.2.140 The meeting recalled that MIDANPIRG/15, through Conclusion 15/32, agreed that, the Eurocontrol Document "Requirements process for the coordinated allocation and use of Mode S Interrogator Codes in the ICAO Middle East Region" (Edition 1.02 dated August 2014), be used for the allocation of the Mode S IC Codes. The meeting noted that the CNS SG/9 meeting reviewed and updated the Document (Edition 1.03 dated March 2019); and agreed accordingly to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/35: MID REGION PROCESS FOR MODE S IC CODES ALLOCATION

That, the Eurocontrol Document "Requirements process for the coordinated allocation and use of Mode S Interrogator Codes in the ICAO Middle East Region" (Edition 1.03 dated March 2019) is endorsed and be posted on the ICAO MID website, in order to be used for the allocation of Mode S IC Codes in the MID Region.

6.2.141 The meeting reviewed and endorsed the MID Region Surveillance Plan. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/36: THE MID REGION SURVEILLANCE PLAN

That the MID Region Surveillance Plan is endorsed and be published as MID Doc 013.

6.2.142 In order to monitor the Surveillance Implementation in the MID Region; the meeting reviewed and agreed to add the Surveillance Implementation Monitoring Table at **Appendix 6.2W** developed by the CNS SG/9 to the MID ANP Vol III, and agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/37: MONITORING THE SURVEILLANCE IMPLEMENTATION

*That, the Table at **Appendix 6.2W** be added to the MID eANP Vol III for the monitoring of Surveillance implementation in the MID Region.*

6.2.143 The meeting was apprised of the advantages of advanced Radar Technologies (Mode S Radar, ADS-B/out, MLAT).

6.2.144 The meeting noted that UAE issued ADS-B/Out carriage Mandate as of 01 January 2020 for all commercial operators operating under IFR in the Emirates FIR. This will ensure that the separation could be provided on ADS-B acquired targets without the need for legacy radar reports.

6.2.145 The meeting noted that Radar Data sharing can be implemented to complement Radar coverage in areas that require procedural separation due to the unavailability of surveillance. Therefore, the meeting encouraged States to consider sharing of surveillance data to assist in filling surveillance gaps.

6.2.146 The meeting encouraged States to consider ADS-B implementation in accordance with the MID Region Surveillance Plan.

6.2.147 The meeting was informed that the first space based ADS-B system is in trial. The trial launched on 2 April 2019. The Space Based ADS-B could be beneficial where ground based ADS-B siting is not possible for security or geographical reasons (e.g. oceanic areas).

Cybersecurity

6.2.148 The subject was addressed in WP/34 and WP/45 presented by the Secretariat and UAE, respectively. The meeting recalled that MSG/6 meeting agreed that the CNS SG/9 might develop detailed Terms of Reference for the ADSAG or Action Plan for the development of the MID Region ATM Data Security Plan.

6.2.149 In order to manage the ANS Cyber Security issues in the MID Region and assist/guide States in improving ANS systems' cyber resiliency; the meeting agreed that the ADSAG be renamed as ANS Cyber Security Working Group (ACS WG). Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/38: ANS CYBER SECURITY WORKING GROUP

That, the ATM Data Security Action Group be renamed ANS Cyber Security Working Group (ACS WG) with Terms of Reference as at ***Appendix 6.2X***.

6.2.150 The meeting recalled that, the MSG/6 meeting, through the Conclusion 6/34 agreed that a Cyber Security and Resilience Symposium be organized. The meeting was apprised that the Symposium will be held in Jordan, Amman, 15-17 October 2019. Accordingly, the meeting encouraged States to actively participate in the Cybersecurity & Resilience Symposium.

6.2.151 The meeting recalled that UAE developed and hosted the ATM Data Security Portal (ADCS) in order to strengthen the regional collective ability to detect and defend against malicious activities, by sharing information about adversaries and their behaviours. The meeting was apprised of the ADCS enhancements that have been recently done. The ADCS portal link is www.adcsportal.ae

6.2.152 The meeting urged States to register and use the ADCS Portal. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion to replace and supersede the MSG Conclusion 6/33:

MIDANPIRG CONCLUSION 17/39: ATM DATA CYBER SECURITY (ADCS) PORTAL

That,

a) the ADCS Portal be used as a prototype platform for ATM cyber security; and *b) States be encouraged to:*

i. assign ADCS focal point(s) to register on the ADCS Portal;
ii. provide feedback to the ADCS Admin by ***1 November 2019*** *for further enhancements; and*
iii. share their experience related to cyber security, through the ADCS Portal.

6.2.153 The meeting noted that UAE provided the Minimum Security Baselines (MSBs), which are seven volumes developed based on the ISO 27001 standards. These MSBs can be used for any ANSP system that requires data sharing and interconnectivity with other ANSPs or stakeholders.

6.2.154 The meeting agreed that the MSBs endorsed as the baseline security guidelines for the MID Region. Accordingly, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/40: BASELINE SECURITY GUIDELINES FOR THE MID REGION

That, the Minimum Security Baselines (MSBs) is endorsed as the baseline security guidelines for the MID Region.

6.2.155 The meeting encouraged States to develop and implement a clear and defined Cyber security/resilience strategy.

MET matters

MET implementation in the MID Region

6.2.156 The subject was addressed in WP/35 presented by the Secretariat providing an update on MET implementation in the MID Region, based on the outcome of the Seventh Meeting of the Meteorology Sub-Group (MET SG/7, Cairo, Egypt, 14-16 November 2017).

Global developments

6.2.157 The meeting was apprised of the global developments related to MET, in particular the requirement to exchange METAR and SPECI, TAF, SIGMET, AIRMET, Volcanic Ash Advisory (VAA), Tropical Cyclone Advisory (TCA) and Space Weather Advisory Information in XML/GML (applicable November 2020).

SIGMET and Special Air-Report Tests

6.2.158 The meeting noted the results of the SIGMET and Special Air-Report Tests conducted on 6 and 7 September 2017 for other phenomena and volcanic ash. All test messages were received at Regional OPMET Centre (ROC) Vienna from 2 States (Jordan and Sudan) while some test messages were received from 6 States (Bahrain, Egypt, Kuwait, Oman, Saudi Arabia and the United Arab Emirates). No test messages were received at ROC Vienna from 6 States (Iran, Iraq, Lebanon, Libya, Syria and Yemen); and therefore the meeting encouraged States to participate in the annual SIGMET and Special Air-Report Tests.

ROC Jeddah and back-up ROC Bahrain

6.2.159 The meeting noted that 9 out of the 15 MID States (60%; Iraq, Lebanon, Libya, Jordan, Oman, Qatar, Saudi Arabia, Sudan and United Arab Emirates) have implemented the OPMET exchange scheme that supports ROC Jeddah and back-up ROC Bahrain, while 4 States (Bahrain, Egypt, Iran and Kuwait) have partially implemented this scheme and 2 States (Syria and Yemen) have not started implementation in this regard.

6.2.160 The meeting noted that the main implementation challenge was coordination needed in determining what OPMET data was needed from ROC Jeddah to meet the users' needs. This required knowledge of international flight destinations as well as alternate aerodromes along the routes for those operators' operations within their respective State. The ROCs needed this information in order to provide the States with relevant OPMET data from the MID Region and other Regions. Consequently, the meeting reiterated that States, that have not yet done so, should complete the implementation of the OPMET exchange scheme that supports ROC Jeddah and back-up ROC Bahrain.

IWXXM Implementation

6.2.161 The meeting noted that only 5 MID States responded to the IWXXM survey dated 10 April 2018 and concurred with MSG/6 that States, that have not yet done so, be urged to complete the IWXXXM survey and provide their feedback to the ICAO MID Office as soon as possible in order to gather and analyse information on States' action plans for IWXXM implementation by the MID MET SG/8 meeting (1-3 July 2019, Cairo).

6.2.162 The meeting noted the availability of the '*Guidelines for the Implementation of OPMET data exchange* using *IWXXM*' provided by the Meteorology Panel (METP) Working Group on Meteorological Information Exchange (WG-MIE) for use by PIRGs as regional guidance material. The guidance was developed to assist States in the Regions in the implementation of IWXXM. Given the above, the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/41: GUIDELINES FOR THE IMPLEMENTATION OF OPMET DATA EXCHANGE USING IWXXM

That, the Guidance for Implementation of OPMET data exchange using IWXXM at ***Appendix 6.2Y*** *is endorsed as MID Doc 012.*

6.2.163 The meeting agreed the terms of reference of the MID OPMET Bulleting Management Group (BMG) be updated to reflect the implementation of ROC Jeddah and back-up ROC Bahrain and implementation of IWXXM. Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/42: UPDATE THE BMG TERMS OF REFERENCE

That, the Terms of Reference (TORs) of the Bulletin Management Group (BMG) be amended as at ***Appendix 6.2Z****.*

Wind Shear

6.2.164 The meeting noted that 8 States replied to the Questionnaire on Wind Shear warning/alert dated 21 February 2018. MSG/6 agreed that the replies provided by States on the Questionnaire could not effectively contribute to the identification of the Wind Shear warning/alerts requirement as the Questionnaire mainly focused on MET issues versus a safety perspective. Consequently, MSG/6 urged States to identify those International Airports, for which wind shear is a safety factor (based on the occurrences/incidents and statistics for the past 3 to 5 years); and inform the ICAO MID Office, in order to include them in the applicability area for wind shear warning/alerts requirement (MSG Conclusion 6/36 refers). The meeting noted that only 4 States replied to the associated State Letter dated 18 February 2019 and urged States to respond to the ICAO MID RO as soon as possible.

6.2.165 In connection with the above, the meeting noted that, further to the MSG/6 meeting, wind shear was identified by the MID-ASRT/3 meeting as an emerging Risk; and through Draft Conclusion 3/1, the MID-ASRT/3 meeting urged States to provide the ICAO MID Office by end of March 2019 with the number of accidents, serious incidents and incidents, for the period 2015-2018; the safety data analysis, and associated safety recommendations related to the identified occurrence categories (including wind shear). As a follow-up action, the ICAO MID Office issued a State Letter dated 20 December 2018 for which 7 States replied indicating the number of wind shear incidents. This information was reported by States using their safety data analysis.

6.2.166 The meeting noted that the information provided was still not specific enough (e.g. which aerodromes these wind shear incidents occurred and details related to wind shear events) and therefore the meeting agreed that the appropriate groups (e.g. MET SG and ASRT) continue identifying whether wind shear is a assessed to be a safety risk at specific airports; and if a wind shear system is necessary to deploy at these aerodromes.

6.2.167 Furthermore, the meeting noted that in selecting the appropriate wind shear system, it is important for States to know what wind shear types (e.g. microbursts due to convection) occur at their aerodromes. The meeting also recalled that the Manual on Low-Level Wind Shear (ICAO Doc 9817) could assist States in the selection of the appropriate wind shear system(s).

REPORT ON AGENDA ITEM 6.3: **AIR NAVIGATION DEFICIENCIES**

Review of Air Navigation Deficiencies

6.3.1 The subject was addressed in WP/38 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.

6.3.2 The meeting noted with concern that the majority of deficiencies listed in the MANDD have no specific Corrective Action Plan (CAP). The meeting urged States to implement the provisions of MIDANPIRG Conclusion 15/35 related to elimination of Air Navigation Deficiencies, in particular, the submission of a specific Corrective Action Plan (CAP) for each deficiency.

6.3.3 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: http://www.cairo.icao.int. The meeting noted that the total number of air navigation deficiencies recorded in MANDD is **104** deficiencies compared to **114** deficiencies approved by MIDANPIRG/16.

6.3.4 A quantitative analysis of the MID States' air navigation deficiencies is shown in the tables and graphs presented at **Appendices 6.3A** and **6.3B**.

6.3.5 The meeting highlighted the following:

- In the AOP field: the meeting agreed to remove the deficiencies reported against Egypt related to aerodrome certification after certifying Luxor and Borg El-Arab Airports. 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 80% of these deficiencies.

- In the AIM field: the meeting agreed to remove the deficiency reported against Saudi Arabia related to Pre-flight information service based on the information provided by Saudi Arabia. The total number of AIM deficiencies is forty-six (46); forty (40) priority "A" and six (6) priority "B". Seventeen (17) deficiencies related to eTOD; six (6) related to QMS; six (6) related to AIXM; six (6) related to WAC; three (3) related to pre-flight information services; three (3) related to AIP and aeronautical charts; three (3) related to AIRAC adherence; and two (2) related to WGS-84.

- In the ATM field: the meeting agreed to remove the deficiencies related to contingency planning reported against Oman and Yemen after signature with Saudi Arabia. The total number of deficiencies is twenty-four (24); fifteen (15) priority "A" and nine (9) priority "B". Eleven (11) related to the uncompleted signature of contingency agreements; Nine (9) related to the non-implementation of planned regional ATS Routes; and four (4) related to unsatisfactory reporting of large Height deviation (LHD) to the MIDRMA.

- In the CNS field: three (3) new deficiencies proposed by CNS SG/9 were added to the MANDD. The total number of CNS deficiencies is five (5); two (2) priority “A” and three (3) priority “B”. Three (3) 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: the total number of MET deficiencies is ten (10) priority “A” deficiencies. Six (6) related to QMS; and four (4) related to METAR, TAF, SIGMET and WAFS.

- In the SAR field: the total number of deficiencies is ten (10) priority “A”. Five (5) related to the lack of SAR provisions; and five (5) related to non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

REPORT ON AGENDA ITEM 6.4: MIDANPIRG WORKING ARRANGEMENTS AND FUTURE WORK PROGRAMME

MIDANPIRG Working Arrangements

6.4.1 The subject was addressed in WP/39 and WP/48 presented by the Secretariat and Qatar, respectivey. The meeting recalled that the Fourth meeting of the MIDANPIRG/RASG-MID Coordination meeting (Bahrain, 25 September 2017) agreed that, in many cases, there is a need for an expeditious decision-making process (fast track, approval by passing, etc).

6.4.2 The MSG/6 meeting discussed the propsal of a Fast Track/Approval by passing procedure that requires the inclusion of the following paragraph in the MIDANPIRG Procedural Handbook:

> "*In case an urgent follow-up action on an outcome from a MIDANPIRG subsidiary body is identified/needed, the ICAO MID Office may coordinate with the Chairperson(s) the approval by passing of the corresponding outcome, without waiting for the MIDANPIRG or MSG approval*".

6.4.3 The meeting noted the following extract from the APANPIRG Procedural Handbook:

> *"The Sub Groups would have the ability to agree, without further APANPIRG endorsement, any Conclusion or Decision (especially those concerning guidance to States in the implementation of ICAO SARPs) that does not have significant additional economic, environmental or political effects, which should be considered at a higher level at APANPIRG".*

6.4.4 The meeting noted that the "Fast Track/Approval by Passing Procedure" was not supported by all States and some States supported the idea providing that it is implemnbeted based on clear crietrea and procudeures for selecting the matters that requires approval by passing. Accordingly, the meeting agreed that Sattes be invited to provide their feedback to the ICAO MID Office on the Fast Track/Approval by Passing Procedure by **15 August 2019** for presentation to the MSG/7 meeting, for appropriate action.

6.4.5 Based on the above the meeting agreed to the following MIDANPIRG Conclusion:

MIDANPIRG CONCLUSION 17/43: FAST TRACK/APPROVAL BY PASSING PROCEDURE

*That, States be invited to provide the ICAO MID Office, not later than **15 August 2019**, with their views and proposals related to Fast Track/Approval by Passing Procedure, for presentation to the MSG/7 meeting, for appropriate action.*

The meeting reviewed the MIDANPIRG Organizational Structure and agreed to dissolve the Air Navigation Systems Implememtaion Group (ANSIG). Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/44: DISSOLUTION OF ANSIG

That,

a) the Air Navigation Systems Implememtaion Group (ANSIG) is dissolved, and the Terms of Reference of the MSG be updated, accordingly; and *b) the revised MIDANPIRG Organizational Structure at* ***Appendix 6.4A*** *is endorsed.*

6.4.6 The meeting raised concern about the absence of the current Chairman of MIDANPIRG for two consecutive meetings (MSG/6 and MIDANPIRG/17); and agreed to amend the MIDANPIRG Prcocedural Handbook to include the following:

In case of absence of the Chairperson for two consecutive meetings, unless otherwise determined by special circumstances, the election of Chairperson should be included in the agenda of the second meeting for the election of a new Chairperson, unless otherwise decided by the meeting.

6.4.7 The meeting agreed that the above should apply also to the MIDANPIRG Subsidiary bodies.

6.4.8 Based on the above, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG DECISION 17/45: CHAIRMANSHIP OF MIDANPIRG AND SUBSIDIARY BODIES

That, the MIDANPIRG Procedural Handbook be amended to refelect the following:

"In case of absence of the Chairperson for two consecutive meetings, unless otherwise determined by special circumstances, the election of Chairperson should be included in the agenda of the second meeting for the election of a new Chairperson, unless otherwise decided by the meeting."

6.4.9 The meeting noted that the MSG is authorized to approve on behalf of MIDANPIRG, those Draft Conclusions/Decisions emanating from MIDANPIRG subsidiary bodies, which necessitate urgent follow-up action(s); however, there's no established crieria/procedure to define the urgency. It was also highlighted that other criteria such as the nature of the subject addressed by the Conclusion/Decision (technical, operational, strategic, financial, etc) should be considered. Accordingly, the meeting agreed that the subject should be addressed by the MSG/7 meeting as part of the review/update of the MSG TORs and the MIDANPIRG Procedural Handbook.

MIDANPIRG Future Work Programme

6.4.10 The subject was addressed in WP/40 presented by the Secretariat. The meeting agreed that the MIDANPIRG TORs be reviewed by the MSG/7 meeting, taking into consideration thethe new PIRGs TORs expected to be approved by the ICAO Council by June 2019.

6.4.11 The meeting agreed that the MSG/7 meeting be held in April 2020. The venue will be the ICAO MID Office, unless a State is willing to host the meeting. The exact dates will be coordinated between the ICAO MID Office, the MIDANPIRG Chairpersons and eventually the hosting State.

Proposals to Amend MIDANPIRG Handbook

6.4.12 Based on all of the above, the meeting agreed that all the changes should be reflected in the MIDANPIRG Procedural Handbook (MID Doc 001) including the Terms of Reference (TORs) of MIDANPIRG and its subsidiary bodies. A new Edition of the MIDANPIRG Procedural Handbook should be presented to the MSG/7 meeting for review before the formal endorsement by the MIDANPIRG/18 meeting. Accordingly, the meeting agreed to the following MIDANPIRG Decision:

MIDANPIRG Decision 17/46: ***New Edition of the MIDANPIRG PROCEDURAL HANDBOOK***

That, the Secretariat consolidate a new Edition of the MIDANPIRG Procedural Handbook, for review by the MSG/7 meeting before the formal endorsement by the MIDANPIRG/18 meeting.

REPORT ON AGENDA ITEM 7: DATES AND VENUE OF MIDANPIRG/18 & RASG-MID/8

Dates and Venue of MIDANPIRG/18 & RASG-MID/8

7.1 The subject was addressed in WP/41 presented by the Secretariat. The meeting agreed that similar to the MIDANPIRG/17 and RASG-MID/7, the MIDANPIRG/18 and RASG-MID/8 meetings be organized concurrently in November 2020. The exact dates will be coordinated between the ICAO MID Office and the Chairpersons of both Groups.

7.2 With regard to the venue, the meeting noted with appreciation that the ICAO MID Office received an offer from Iraq for the hosting of MIDANPIRG/18 and RASG-MID/8 meetings. The meeting agreed to differ the decision on the venue to the MSG/7 and RSC/7 meetings, taking into consideration the outcome of the ICAO Council related to the new Terms of Reference of PIRGs and RASGs.

REPORT ON AGENDA ITEM 8: ANY OTHER BUSINESS

Implementation of Team Resource Management in Air Traffic Management (ATM)

8.1 The subject was addressed in WP/52 presented by Qatar. The meeting recognized that addressing human factors will bring safety improvements across all safety-related issues. Effective human performance is fundamental to operational safety in aviation and should not be considered in isolation but rather be integrated into all aspects of aviation including equipment and system design, procedures, training and competency. It was also highlighted that human performance should be addressed in future airspace concepts.

8.2 The meeting noted that the subject of changes in team roles and functions is one of the items that should be addressed in Team Resource Management (TRM) training of ATM personnel. Most of the training is aimed at individual controllers, be it in a simulator environment or during on-the-job training. It was highlighted that through TRM all available resources – people, equipment and information could be used in an optimal manner to enhance the safety and efficiency of Air Traffic Management.

8.3 The meeting noted that 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.

8.4 The meeting noted that TRM could be an element in selection, training and licensing of operational staff; accordingly, situation awareness, decision making, communication, teamwork, leadership and stress management constitute the main subjects of TRM training.

8.5 Based on the above, the meeting agreed that the RSC/7 meeting explore the possibility of endorsing a new Safety Enhancement Initiative on TRM for ATM, with Qatar as the Champion. A Detailed Implementation Plan (DIP) related to this SEI should be presented by Qatar to the next RSC/7 meeting. As a start, the meeting agreed that a Workshop on TRM should be organized jointly by ACAO and ICAO. Accordingly, the meeting agreed to the following Conclusions:

RASG-MID CONCLUSION 7/11: SEI ON TEAM RESOURCE MANAGEMENT (TRM) FOR ATM

That, Qatar present a Draft SEI/DIP on Team Resource Management (TRM) for for further review and consideration.

PIRG/RASG MID CONCLUSION 4: WORKSHOP ON TEAM RESOURCE MANAGEMENT (TRM) FOR ATM

That:

a) a Team Resource Management (TRM) Workshop for ATM be organized jointly by ACAO and ICAO, with support from Qatar; and

b) States be encouraged to participate actively in this Workshop.

8.6 The meeting noted that CANSO will support the TRM Workshop.

Entry Visa issues

8.7 The meeting noted with concern that many delegates from States and International Organizations were not able to attend many of the events organized by the ICAO MID Office (in the MID Office or hosted by States), due to the difficulties faced to obtain entry visa.

RVSM MMR Awards

8.8 The MIDRMA and the ICAO MID Office awarded Bahrain, Iraq, Jordan, Kuwait, Oman and Saudi Arabia for achieving above 98% of the RVSM Minimum Monitoring Requirements.

Sponsors and Exhibitors

8.9 Thanks were extended to the States who provided financial support to the meeting, namely, the Civil Aviation Authority of Qatar, the General Authority of Civil Aviation - Saudi Arabia and the General Civil Aviation Authority – UAE, to enable the ICAO MID Office to host the meeting outside its premises. The participation and sponsorship of the two Exhibitors: EMPIC and United ATS was also appreciated. Trophies were given to the Sponsors/Exhibitors as a recognition for their support.

APPENDICES

APPENDIX 4A

Coordination between MIDANPIRG and RASG-MID

Subjects of interest for MIDANPIRG and RASG-MID	Responsible/Leading Group	
	RASG-MID	MIDANPIRG
Aerodrome Operational Planning (AOP)		X
Runway and Ground Safety	X	
AIM, CNS and MET safety issues		X
CFIT	X	
SSP Implementation	X	
SMS implementation for ANS and Aerodromes	X	
Accidents and Incidents Analysis and Investigation	X	
English Language Proficiency	X	
RVSM safety monitoring		X
SAR and Flight Tracking		X
PBN		X
Civil/Military Coordination		X
Airspace management		X
Call Sign Similarity and Confusion		X
Contingency Planning		X
USOAP-CMA	X	
COSCAP, RSOO and RAIO	X	
Air Navigation Deficiencies		X
Training for ANS personnel		X
Training other civil aviation personnel	X	
Laser attack	X	
Fatigue Risk Management	X	
RPAS		X
GNSS vulnerability		X
Airborne Collision Avoidance System (ACAS)		X

Call Sign Similarity/Confusion Reporting Template

Case	**Reporting ANSP or AO**	**Place of occurrence** (Airport, sector, etc)	**Date of occurrence** (26/04/2013)	**Time** (UTC)	**Call signs** (one line for each)	**Departure airport** (ICAO 4-letter code)	**Arrival airport** (ICAO 4-letter code)	**Type of aircraft** (ICAO type desig)	**Aircraft Operator** (ICAO 3-letter code)	**Type of Occurrence** (CSS or CSC)	**AO using CSST** (YES or NO)
1											
2											
3											
4											
1											
2											

APPENDIX 4C

MIDRMA Procedure to Ensure the Compliance of RVSM Approved Aircraft Registered in the ICAO Middle East Region for Height Monitoring:

a) The MIDRMA will notify the States concerned every 3 months about their aircraft non-compliance with ICAO RVSM Height Monitoring requirements;

b) States should take remedial actions to rectify the situation and ensure that their relevant aircraft are complying with ICAO RVSM Height Monitoring requirements in a timely manner, and notify the MIDRMA about their corrective action plans;

c) States should develop corrective action plans in coordination with the airlines concerned and MIDRMA, which includes a time frame to allow the concerned airline operator rectify this violation as early as possible, this period should not exceed **<u>90 days</u>** to perform the height monitoring;

d) If **no** height monitoring would be conducted during the **<u>90 days</u>**, the concerned States must withdraw the RVSM approval of the aircraft concerned and inform the MIDRMA;

e) The MIDRMA should issue a warning to all MID States and RMAs related to non-compliance aircraft registered in the MID Region;

f) The MIDRMA in coordination with the ICAO MID Office will continue working closely with the States concerned to resolve the issue; and

g) Once the issue would be resolved, a notification should be issued by MIDRMA to all MID States and RMAs.

MIDRMA
MIDDLE EAST REGIONAL MONITORING AGENCY
الوكالة الإقليمية لرصد الحركة الجوية للشرق الأوسط

Attachment A

THE MID RVSM SAFETY MONITORING REPORT 2017
Prepared by the Middle East Regional Monitoring Agency (MIDRMA)

SUMMARY
The aim of the MID RVSM Safety Monitoring Report is to provide airspace safety review of the MID RVSM airspace and to highlight by means of argument and supporting evidence that the implementation of RVSM in the Middle East is acceptably safe.

1. Introduction:

1.1 Executive Summary

The MID RVSM Safety Monitoring Report is issued by the Middle East Regional Monitoring Agency (MIDRMA) for endorsement by the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG).

The report presents evidence that according to the data and methods used, the key safety objectives set out in the MID RVSM Safety Policy in accordance with ICAO Doc 9574 (2nd Edition) continue to be met in operational services in the Middle East RVSM airspace .

To conclude on the current safety of RVSM operations, the three key safety objectives endorsed by MIDANPIRG have to be met:

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 2.5×10^{-9} fatal accidents per flight hour.

The value computed for technical height risk is estimated **4.966×10^{-11}** this meets RVSM Safety Objective 1.

Objective 2 The overall risk of collision due to all causes which includes the technical risk and all risk due to operational errors and in-flight contingencies in the MID RVSM airspace meets the ICAO overall TLS of 5×10^{-9} fatal accidents per flight hour.

The value computed for overall risk is estimated **4.518×10^{-11}** this meets RVSM Safety Objective 2.

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.

1.2 **Conclusions**:

(i) The estimated risk of collision associated with aircraft height- keeping performance is **4.966 x10^{-11}** and meets the ICAO TLS of **2.5 x 10^{-9}** fatal accidents per flight hour (RVSM Safety Objective1).

(ii) 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 **4. 518 x10^{-11}** and meets the ICAO overall TLS of **5 x 10^{-9}** fatal accidents per flight hour (RVSM Safety Objective 2).

(iii) Based on currently available information (Except for Tripoli FIR), there is no evidence available to the RMA that the continued operations of RVSM adversely affects the overall vertical risk of collision.

1.3 Considerations on the RVSM Safety Objectives

When considering the three safety objectives for RVSM, the following considerations should be borne in mind:

1. The assessment of risk against the TLS, both for technical and overall risk estimates, relies on height keeping performance data to assess the risk in the vertical plane and studies of traffic density to calculate the risk in the horizontal plane. There are numbers of assumptions that must be verified to satisfy the reliability of the risk assessment, the verification of these assumptions deals primarily with monitoring of aircraft performance issues.
2. The Aircraft performance is assessed by individual airframe and by monitoring group. A monitoring group consists of aircraft that are nominally of the same type with identical performance characteristics that are made technically RVSM compliant using a common compliance method. Monitoring group analysis is necessary to verify that the Minimum Aviation System Performance Standards (MASPS) for that group is valid. Aircraft that are made RVSM compliant on an individual basis are termed non-group.
3. The RVSM Safety Objective 2, dealing with overall risk, takes into account the technical risk together with the risk from all other causes. In practice, this relates to the human influence and assessment of this parameter relies on adequate reporting of Large Height Deviation (LHD) Reports, and the correct interpretation of events for input to the CRM.
4. RVSM Safety Objective 3 requires the RMA to monitor long-term trends and to identify potential future safety issues, this compare the level of risk bearing incidents for the current reporting period. It also highlights issues that should be carried forward as recommendations to be adopted for future reports.

2.1 Discussion

Scope:

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*

T-1: FIRs/UIRs of the Middle East RVSM Airspace

*Note: Tripoli FIR excluded from the safety analysis due to lack of data.

The Data Sampling periods covered by SMR 2017 are as displayed in the below table

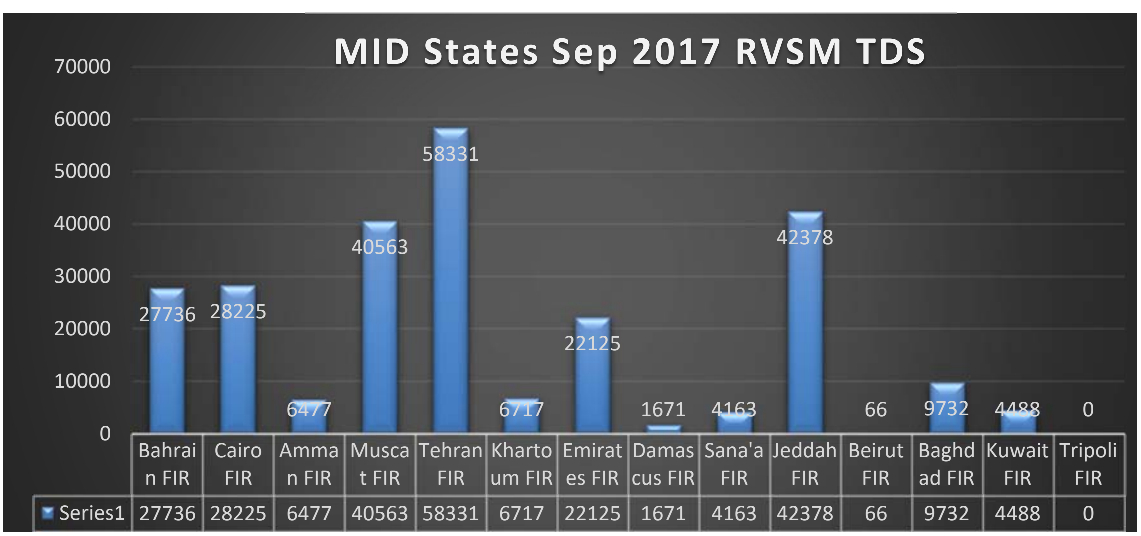
Report Elements	Time Period
Traffic Data Sample	01/09/2017 - 30/09/2017
Operational & Technical Errors	01/09/2017 - 31/08/2018

T-2: Time Period for the Reported Elements

MID States	**No. of Flights**	**Status**	**Received Dates**
Bahrain FIR	27736	Accepted	17/10/2017
Cairo FIR	28225	Accepted	19/10/2017
Amman FIR	6477	Accepted	29/10/2017
Muscat FIR	40563	Accepted	26/10/2017
Tehran FIR	58331	Accepted	18/11/2017
Khartoum FIR	6717	Accepted	26/10/2017
Emirates FIR	22125	Accepted	24/10/2017
Damascus FIR	1671	Accepted	03/10/2017
Sana'a FIR	4163	Accepted	17/10/2017
Jeddah FIR	42378	Accepted	25/02/2018
Beirut FIR	66	Accepted	30/01/2018
Baghdad FIR	9732	Accepted	18/02/2018
Kuwait FIR	4488	Developed by MIDRMA	01/03/2018
Tripoli FIR	-	No TDS Submitted	Excluded
Total	252,672	13 FIRs	

Table 1; Status of the MID States RVSM Traffic Data Sample (TDS) for Sep. 2017

2.1.1 The description of the traffic data processed for each MIDRMA Member State by the MID Risk Analysis Software (MIDRAS) is depicted in the graph below, a total of **252,672** flights were processed for the 13 FIRs, these flights were evaluated and processed very carefully to ensure accurate results according to the data submitted.



Top 20 Busiest FIR Entry / Exit Points

SN	Point	Location	No of Flights
1	**IMKAD**	Sana'a / Muscat FIRs	**9573**
2	**ULADA**	Bahrain / Jeddah FIRs	**9310**
3	**ROTOX**	Bahrain / Tehran FIRs	**8861**
4	**ALPOB**	Bahrain / Emirates FIRs	**8818**
5	**ULINA**	Amman / Cairo FIRs	**8715**
6	**PASAM**	Cairo / Jeddah FIRs	**8699**
7	**TUMAK**	Bahrain / Emirates FIRs	**7731**
8	**KUVER**	Bahrain / Tehran FIRs	**7623**
9	**DAROR**	Bahrain / Jeddah FIRs	**7070**
10	**NUBAR**	Cairo / Khartoum FIRs	**6913**
11	GABKO	Emirates / Tehran FIRs	6895
12	ALPEK	Emirates / Jeddah FIRs	6176
13	RASKI	Muscat / Mumbai FIRs	6162
14	KITOT	Cairo / Jeddah FIRs	5946
15	ASVIB	Karachi / Tehran FIRs	5812
16	ALRAM	Tehran / Ankara FIRs	5606
17	RASDA	Cairo / Nicosia FIRs	5430
18	LOTAV	Muscat / Mumbai FIRs	5351
19	NALPO	Bahrain / Emirates FIRs	5313
20	SILKA	Cairo / Jeddah FIRs	4984

2.1.2 As usual practice for the preparation of every safety monitoring report to ensure that attention is drawn to the need of collecting the traffic data sample, the MIDRMA circulated a reminder email to all the focal points responsible for submitting the TDS on 27th August 2017 to ensure their readiness for this task before the effective date of Conclusion 16/2, Unfortunately, the deadline for submitting the TDS to the MIDRMA passed and the same problems still exist for this report.

2.1.3 For the third consecutive Safety Monitoring Reports, the MIDRMA Board agreed to exclude Tripoli FIR temporary from the RVSM safety analysis due to lack of TDS and LHD reports, taking into consideration the MIDRMA never done any risk analysis for Tripoli FIR RVSM airspace since Libya joint the MIDRMA, this issue require MIDANPIRG to decide what action should be taken if RVSM operations resume again within Tripoli FIR in the future.

2.1.1 The Collision Risk Model (CRM)

2.2.1 The risk of collision to be modelled is that due to the loss of procedural vertical separation between aircraft flying above FL 290 in a given portion of an airspace. One collision between two aircraft is counted as the occurrence of two accidents. The risk of collision depends both on the total number and types of aircraft flying in the system and the system characteristics.

2.2.2 The CRM provides an estimate of the number of accidents within an airspace system that might occur per aircraft flight hour due to aircraft collisions resulting from the loss of procedural vertical separation in an RVSM environment analysis, is expressed in terms of quantifiable parameters. In the vertical dimension the CRM can be broken down in order to separately model a single route on which aircraft are flying in the same or opposite directions at adjacent flight levels, pairs of crossing routes and combinations of individual and intersecting routes, this model is applied equivalently to vertical, lateral and longitudinal separation.

2.2.3 Three parameters used within the CRM:

a. The Vertical Overlap Probability, denoted as Pz(1 000).

b. The Lateral Overlap Probability, denoted as Py(0).

c. The aircraft Passing Frequency are the most important quantities in determining the vertical collision risk. Of these, the vertical overlap probability is also an important parameter to calculate.

2.3 TECHNICAL HEIGHT KEEPING PERFORMANCE RISK ASSESSMENT

RVSM Safety 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 **2.5×10^{-9}** fatal accidents per flight hour.

2.3.1. Direct evidence of compliance with TLS for Technical Height-Keeping Error

The result shows the risk of collision due to technical height-keeping performance is estimated to be **4.966×10^{-11}** fatal accidents per flight hour, which is less than the ICAO TLS **2.5×10^{-9}**.

2.3.2 Supporting evidence of compliance with TLS for technical height-keeping performance

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 estimated **1.23×10^{-9}** valid and is less than the ICAO requirement of **1.7×10^{-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 on-going 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.

2.3.3 Calculating the Probability of Lateral Overlap (P_y (0))

The probability of lateral overlap $P_y(0)$ is the probability of two aircraft being in lateral overlap which are nominally flying on (adjacent flight levels of) the same route. The calculation of the Py (0) for the SMR 2017 has the following to consider:

a. Due to lack of radar data available for most of the congested airspace in the Middle East Region to calculate the probability of lateral overlap $\boldsymbol{P_y(0)}$ which is fundamental for the SMR, the MIDRMA continued to calculate the probability of lateral overlap $\boldsymbol{P_y(0)}$ for all the MID RVSM airspace and not only the congested airspace by adopting the ICAO methodology developed for this purpose and by adding this feature in the MID Risk Analysis Software (MIDRAS).

b. The MIDRMA calculated the average of the probability of lateral overlap $\boldsymbol{P_y(0)}$ for the whole MID RVSM airspace is estimated to be **7.68 x10^{-8}.**

c. Overall, the results are considered to be valid.

2.3.4 Pz(1000) Compliance

The Pz(1000) is the probability that two aircraft at adjacent RVSM flight levels will lose vertical separation due to technical height keeping errors. The value of the probability of vertical overlap Pz(1000), based on the actual observed ASE and typical AAD data is estimated to be of **1.23 x 10^{-9}** . This value meets the Global System Performance Specification that the probability that two aircraft will lose procedural vertical separation of 1000ft should be no greater than **1.7x10^{-8}**.

According to the technical risk values as shown in the table, the TLS value decreased and the MIDRMA continue to issue the minimum monitoring requirements (MMR) for each MIDRMA member states according to the latest RVSM approvals received from all member States, the MMR table valid for SMR 2017 is available in **Appendix B**.

Note: The MIDRMA is continuously updating the MMR for all Member States; all members are required to check and comply with their MMR through the MIDRMA website (www.midrma.com).

Technical Risk Values				
Year 2006	**Year 2008**	**Year 2010**	**Year 2011**	**Year 2012/13**
2.17x10^{-14}	**1.93x10^{-13}**	**3.96x10^{-15}**	**5.08x10^{-14}**	**6.37x10^{-12}**
Year 2014	**Year 2015**	**Year 2016**	**Year 2017**	
3.18x10^{-12}	**3.056 x 10^{-10}**	**6.347x10^{-11}**	**4. 966x10^{-11}**	

According to the technical risk values as shown in the above graph the TLS values still, meet the ICAO TLS.

2.3.5 Conclusions on Technical Vertical Collision Risk:

a. The current computed vertical-collision risk due to technical height-keeping performance meets the ICAO TLS.

b. The probability of vertical-overlap estimate, Pz(1000), satisfies the global system performance specification.

c. Most monitoring groups are complying with ICAO TVE component requirements (also known as technical height-keeping group requirements).

2.3.6 Recommendations for Safety Objective 1:

a. The MIDRMA shall review the content and structure of its aircraft monitoring groups.

b. The MIDRMA shall keep the methods of calculating the technical CRM parameters and the risk due to technical height keeping errors under review;

c. The MIDRMA shall carry out continuous survey and investigation on the number and causes of non-approved aircraft operating in RVSM airspace.

2.4 ASSESSMENT OF OVERALL RISK DUE TO ALL CAUSES AGAINST THE TLS OF 5 X 10^{-9} FATAL ACCIDENTS PER FLIGHT HOUR

RVSM Safety Objective 2

The overall risk of collision due to all causes which includes the technical risk and all risk due to operational errors and in-flight contingencies in the MID RVSM airspace meets the ICAO overall TLS of **5 x 10^{-9}** fatal accidents per flight hour.

The computed value for SMR 2017 is estimated **4.518 x10^{-11}**, this value meets the ICAO overall TLS of **5 x 10^{-9}** fatal accidents per flight hour.

Overall Risk Values				
Year 2006	**Year 2008**	**Year 2010**	**Year 2011**	**Year 2012/13**
Not calculated	**4.19x10^{-13}**	**6.92x10^{-12}**	**1.04x10^{-11}**	**3.63x10^{-11}**
Year 2014	**Year 2015**	**Year 2016**	**Year 2017**	
4.91x10^{-11}	**7.351x10^{-10}**	**5.691x10^{-10}**	**4.518 x10^{-11}**	

2.4.1 The vertical risk estimation due to atypical errors has been demonstrated to be the major contributor in the overall vertical-risk estimation for the MID RVSM airspace, The final conclusions of the data processed have been severely limited by the continued NIL reporting of Large Height Deviations (LHDs) from some members which does not support a high confidence in the result, the MIDRMA is reiterating the importance of submitting such reports especially from FIRs with high volume of traffic.

2.4.2 The table below represents the evaluation carried out by the MIDRMA for assessing the LHD reports for SMR 2017 reporting period (01st September 2017 until 31st August 2018) received from each Member State:

MID FIRs	No. of Reported LHD
Bahrain	**19**
Baghdad	**31**
Amman	**4**
Tehran	**136**
Cairo	**9**
Damascus	**-**
Khartoum	**31**
Kuwait	**178**
Muscat	**782**
Jeddah	**36**
Tripoli	**-**
Emirates	**15**
Sanaa	**-**

MID States LHD Reports Received for SMR 2017 Reporting Period

2.4.3 The MIDRMA noticed an increase in the LHD reports at the eastern FIR boundary of Muscat FIR, the reports filed from Muscat, Mumbai and Karachi ATCUs at their transfer of control points reached to a dangerous level and started to effect the ICAO TLS of RVSM implementation in the MID and APAC regions, therefore the MIDRMA requested from MIDRMA Board/15 meeting (Muscat – Oman 29 – 31 January 2018) to open a Safety Protocol for the purpose of resolving this issue as soon as possible.

Note: A Safety Protocol is a critical safety issue effecting the implementation of RVSM operations which require the concerned authority an immediate action to rectify/resolve the problem in a certain period of time under the supervision of MIDRMA and ICAO MID Office.

2.4.4 The MIDRMA Board/15 meeting agreed that a Special Coordination Meeting between Iran, India, Oman and Pakistan with the presence of MAAR, MIDRMA and ICAO APAC and MID Regional Offices, to meet during the ATM SG/4 on 02nd May 2018 to agree on clear action plan to mitigate the risk associated with the high level of coordination failures at the interfaces between the above mentioned States.

2.4.5 The special coordination meeting successfully held in Amman – Jordan during the ATM SG/4 but without the presence of Pakistan, the meeting adopted fruitful and effective short and long term solutions to be implemented by the concerned authorities to close the Safety Protocol.

2.4.6 The Safety Protocol is under continuous review by MIDRMA and MAAR and the LHD reports filed by all concerned ATC Units are investigated and evaluated through the MIDRMA online LHD system and further update will be addressed to the next MIDRMA Board meeting.

2.4.7 Table A below presents a summary of operational risk associated with Large Height Deviation (LHD) reports by LHD category, these reports have direct and serious impact to RVSM operations within the MID RVSM Airspace from 01st September 2017 until 31st August 2018.

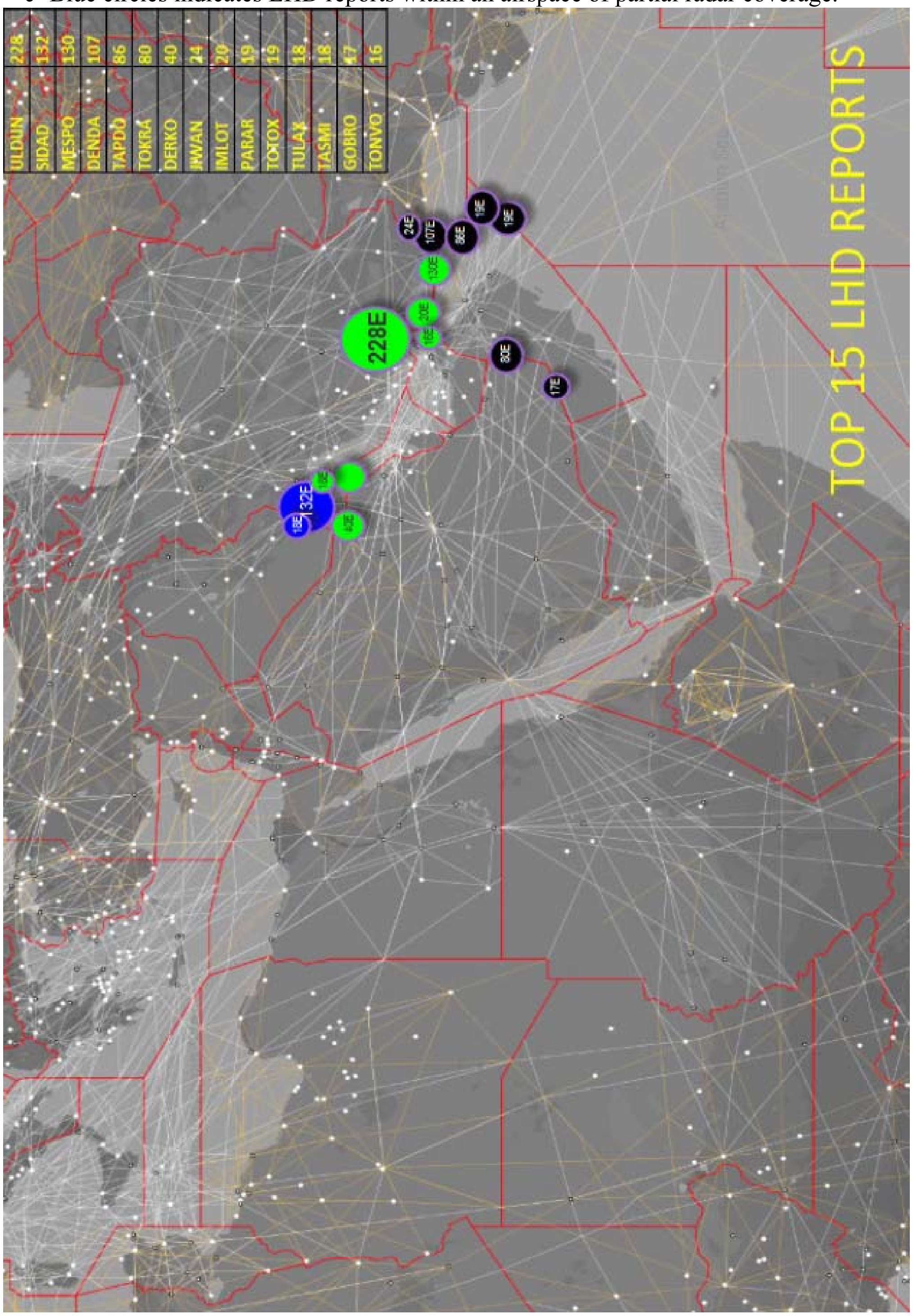
Code	Large Height Deviation (LHD) Category	No. of LHDs	Duration (Sec.)
A	Flight crew fails to climb or descend the aircraft as cleared	**1**	**40**
B	Flight crew climbing or descending without ATC clearance	**2**	**143**
C	Incorrect operation or interpretation of airborne equipment	**-**	**-**
D	ATC system loop error	**3**	**52**
E	ATC transfer of control coordination errors due to human factors	**-**	**-**
F	ATC transfer of control coordination errors due to technical issues	**-**	**-**
G	Aircraft contingency leading to sudden inability to maintain level	**-**	**-**
H	Airborne equip. failure and unintentional or undetected FL change	**-**	**-**
I	Turbulence or other weather related cause	**3**	**435**
J	TCAS resolution advisory and flight crew correctly responds	**-**	**-**
K	TCAS resolution advisory and flight crew incorrectly responds	**-**	**-**
L	An aircraft being provided with RVSM Sep. is not RVSM approved	**-**	**-**
M	Other	**-**	**-**
	Total	**9**	**670 Sec.**

Table A: Summary of Operational Risk associated with Large Height Deviation

2.4.8 The contributor to risk-bearing large height deviations within the MID RVSM airspace is split amongst only four classifications and a total of nine LHD reports. This number of LHD reports which reflects nearly 3 million movements in one year does not support high confidence in the calculated overall risk result.

2.4.9 The Map in the next page shows the approximate locations of the top 15 positions of reported LHD events received by the MIDRMA for SMR2017 reporting period. The approximate locations are marked with:

a- Black circles indicate LHD of traffic with procedure separation.
b- Green circles indicate LHD reports within an airspace of radar coverage.
c- Blue circles indicates LHD reports within an airspace of partial radar coverage.



2.4.10 Effects of Future Traffic Growth

The effect of future traffic growth on the vertical collision risk can be evaluated on the assumption of a linear relationship between traffic growth and frequency of horizontal overlap, which will directly affect the two components of the risk: the risk due to technical height-keeping performance and due to atypical operational errors.

It is clear that even for the most optimistic forecast range of 13%~~,~~ the overall risk of collision will continue to meet the TLS at least until 2021 unless the RVSM operations effected by large numbers of LHD which they have severe impact in the implementation of RVSM.

2.4.11 Conclusions on the overall vertical risk:

a. The overall risk of collision due to all causes which includes the technical risk and all risk due to operational errors and in-flight contingencies in the MID RVSM airspace, estimated from the operational and technical vertical risks, meets the ICAO overall TLS of **5 x 10^{-9}** fatal accidents per flight hour.

b. The effect of future traffic growth has also been assessed. The overall risk of collision will continue to meet the TLS at least until 2021.

2.4.12 Recommendations Applicable to Safety Objective 2:

a. The MIDRMA shall continue to encourage States to provide Large Height Deviation Reports (LHD) of all categories and not only related handover issues.

b. The MIDRMA, in coordination with concerned States, assure that incidents and violations which have direct impact on the implementation of RVSM within the MID Region are reported in a continuous basis and copy of those reports are sent to the MIDRMA in due time for operational safety assessment analysis.

2.5 ASSESSMENT OF SAFETY-RELATED ISSUES RAISED IN THIS REPORT

RVSM 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.

2.5.1 The identified safety-related issues are:

a. Confirmation of the approval status of aircraft filling RVSM flight plan (W in field 10), this is done through Bahrain and Emirates TDS received on a monthly basis.

b. Identification of operators requiring monitoring and address the minimum monitoring requirements to all MIDRMA member states.

2.5.2 Conclusions for Safety Objective 3

a. The MIDRMA improved its monitoring capabilities with the new Enhanced GMUs which gave the ability to respond for more height monitoring requests even from outside the Middle East Region.

b. The MIDRMA started to conduct studies and researches for implementing height monitoring using ADSB data.

c. The MIDRMA address the Hot Spots of each MID FIR generated by the (MIDRAS) Software (for information only).

d. Current risk-bearing situations have been identified by using the MIDRAS and the MID Visualization and Simulation of Air Traffic and actions will be taken to ensure resolving all violations to RVSM airspace by non-approved aircraft.

2.5.3 Recommendations for Safety Objective 3

a. The MIDRMA will start coordinating with Member States, which have ADSB to provide the ADSB archived data for RVSM height monitoring.

b. MIDRMA will continue to enhance the (MIDRAS) Software and shall include new features to overcome the issue of corrupted TDS (Traffic Data Sample).

c. The MIDRMA will continue to include in its work program briefings to the focal points appointed for airworthiness issues to ensure their follow up with their monitoring targets and to resolve any non-compliant RVSM approved aircraft. At the same time the MIDRMA will coordinate with the focal points appointed for ATC issues to deliver RVSM safety assessment briefing as necessary or when requested.

d. The MIDRMA shall continue to carry out continuous survey and investigation on the number and causes of non-approved aircraft operating in the MID RVSM airspace.

e. The MIDRMA will continue to encourage States to submit their Large Height Deviation Reports using the MIDRMA online reporting tool which has been upgraded to improve the level of reporting.

Therefore, it is concluded that this Safety Objective is currently met.

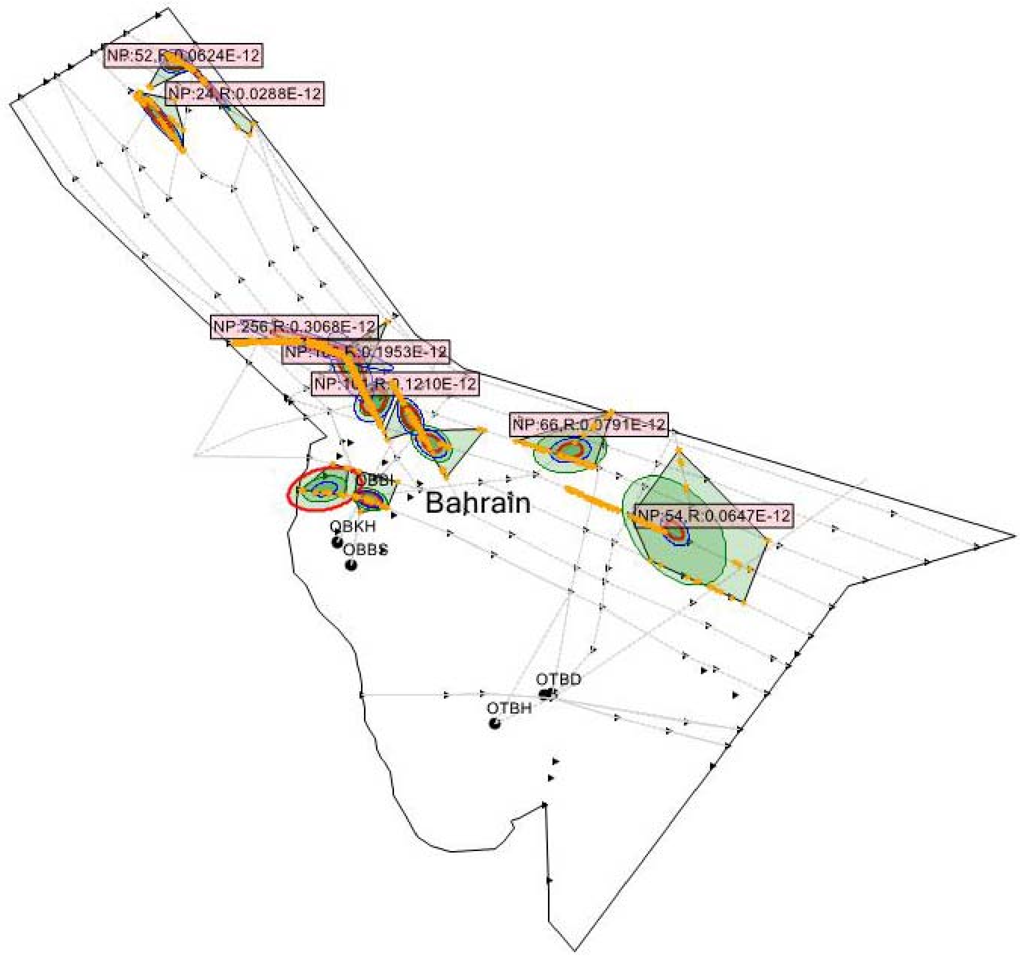
Appendix B

THE MID MMR as of August 2018

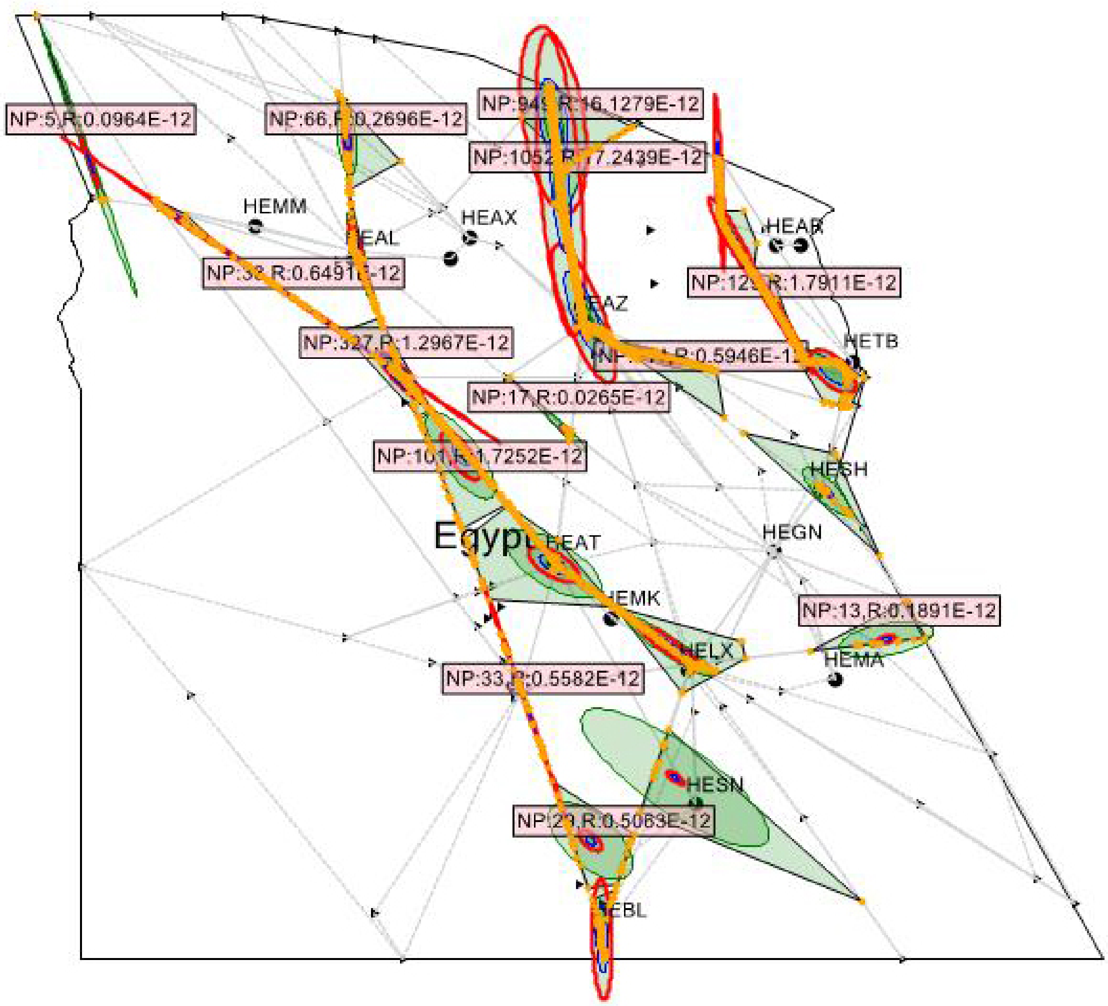
MID STATES	RVSM APPROVED A/C	HAVE RESULTS OR COVERED	NOT COVERED
BAHRAIN	53	53	0
EGYPT	137	128	9
IRAN	233	154	79
IRAQ	40	40	0
JORDAN	44	44	0
KSA	278	275	3
KUWAIT	54	54	0
LEBANON	32	31	1
LIBYA	15	13	2
OMAN	70	70	0
QATAR	259	247	12
SUDAN	14	2	12
SYRIA	11	0	11
UAE	585	570	15
YEMEN	9	0	9
TOTAL	1825	1681	144

Appendix C –MIDRMA Member States Hot Spots Generated from September 2017 TDS (for information ONLY)

Note: Damascus and Beirut FIRs TDS generated no hot spots.



Bahrain FIR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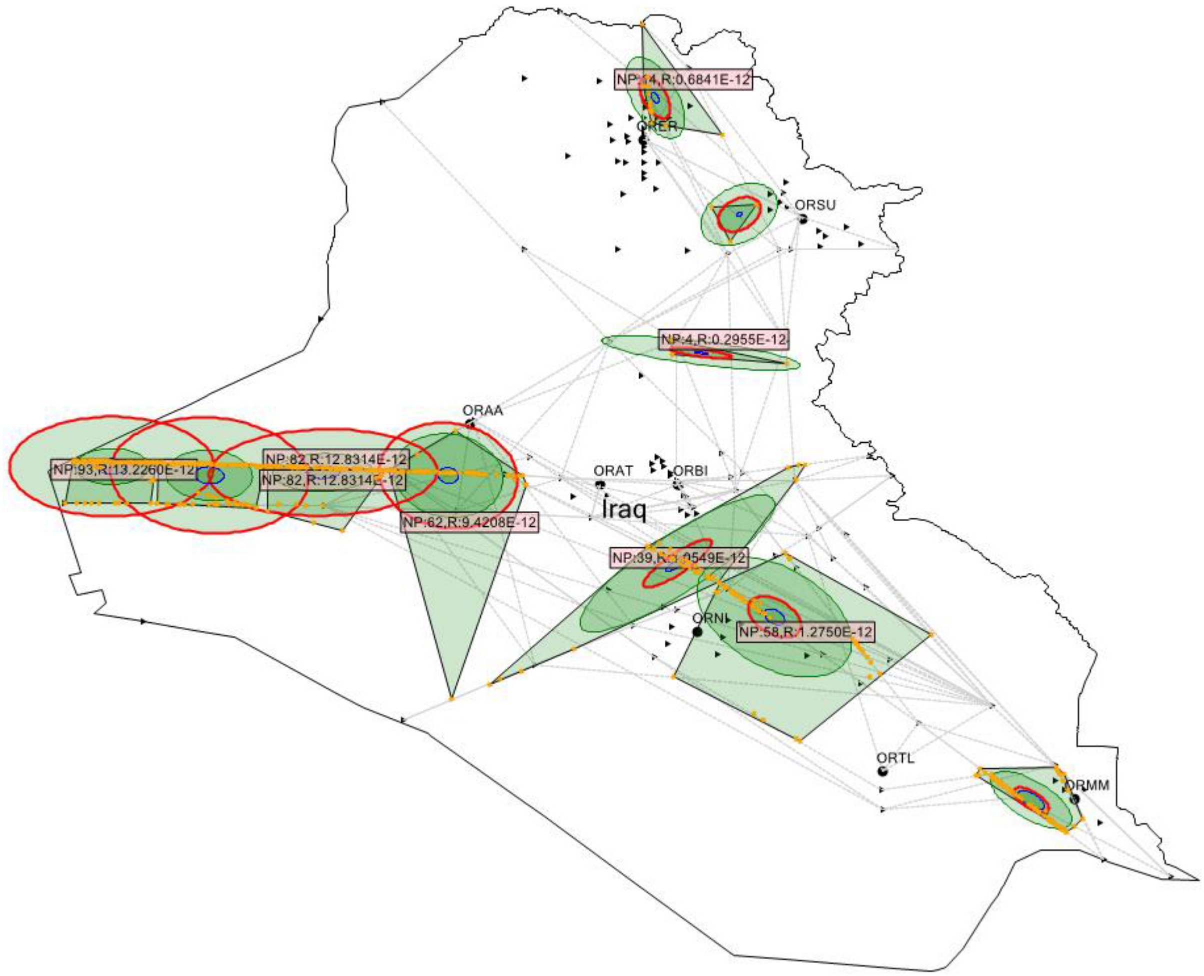
HEMM
HEAX
HETB
NP:17,R:0.0265E-12
HEGN
NP:13,R:0.1891E-12
HEMA
NP:33,R:0.5582E-12

Cairo FIR

Tehran FIR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ORER
ORSU
NP:4,R:0.2955E-12
ORAA
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NP:82,R:12.8314E-12
NP:82,R:12.8314E-12
NP:62,R:9.4208E-12
ORAT
ORBI
Iraq
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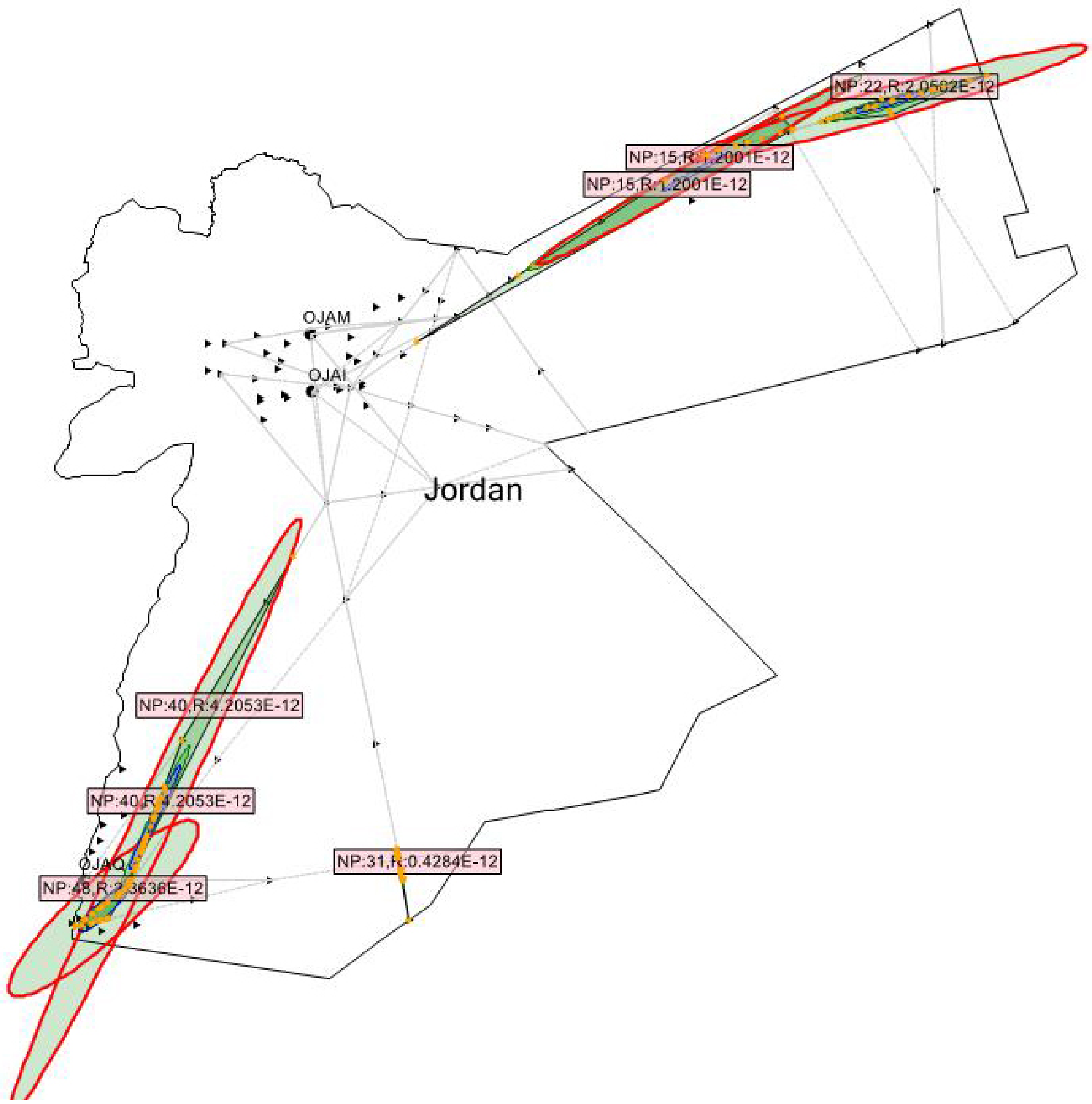
ORNI
NP:58,R:1.2750E-12
ORTL
ORMM

Baghdad FIR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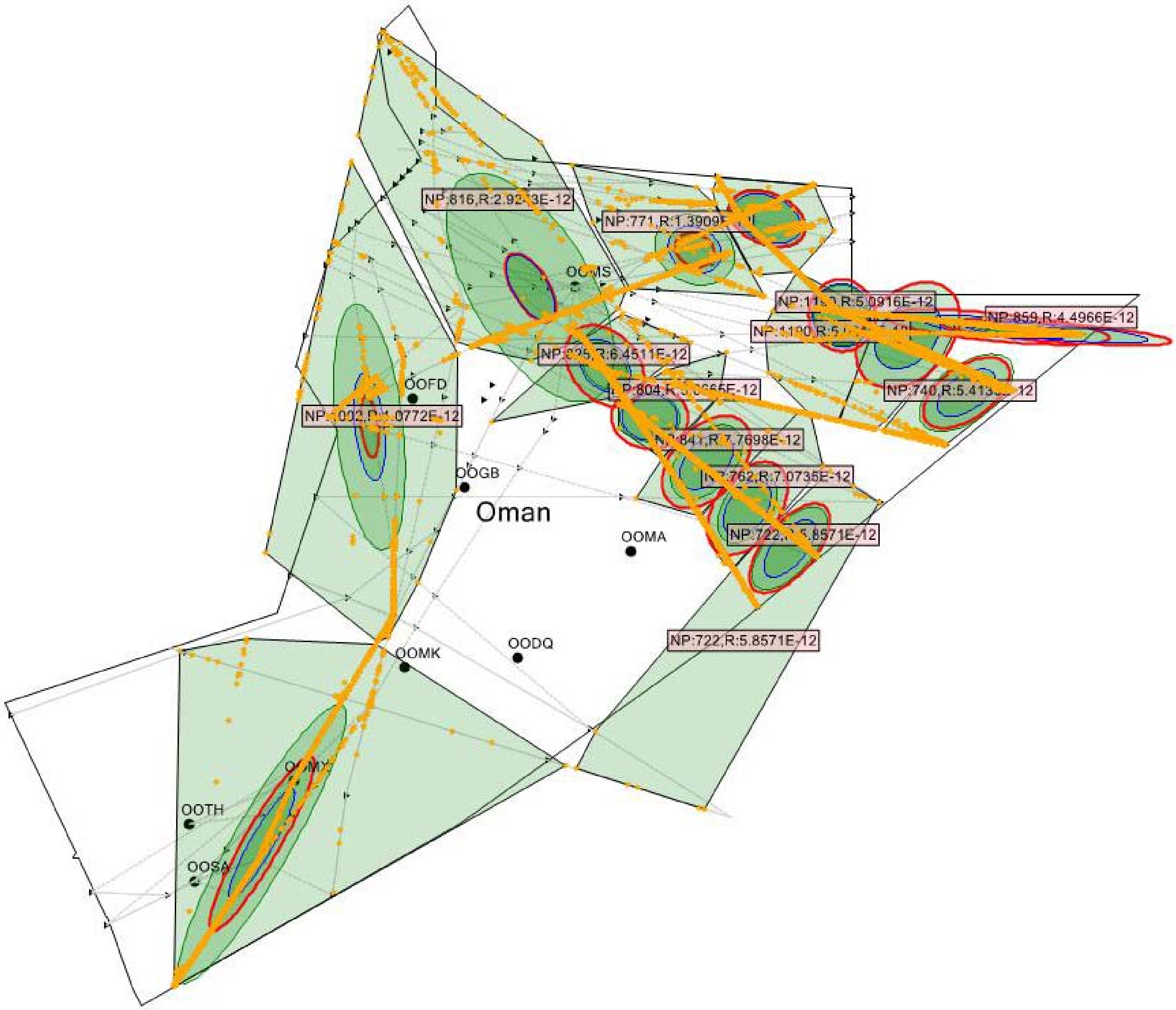
NP:15,R:1.2001E-12
NP:15,R:1.2001E-12
OJAM
OJAI
Jordan
NP:40,R:4.2053E-12
NP:40,R:4.2053E-12
OJAQ
NP:48,R:2.3636E-12
NP:31,R:0.4284E-12

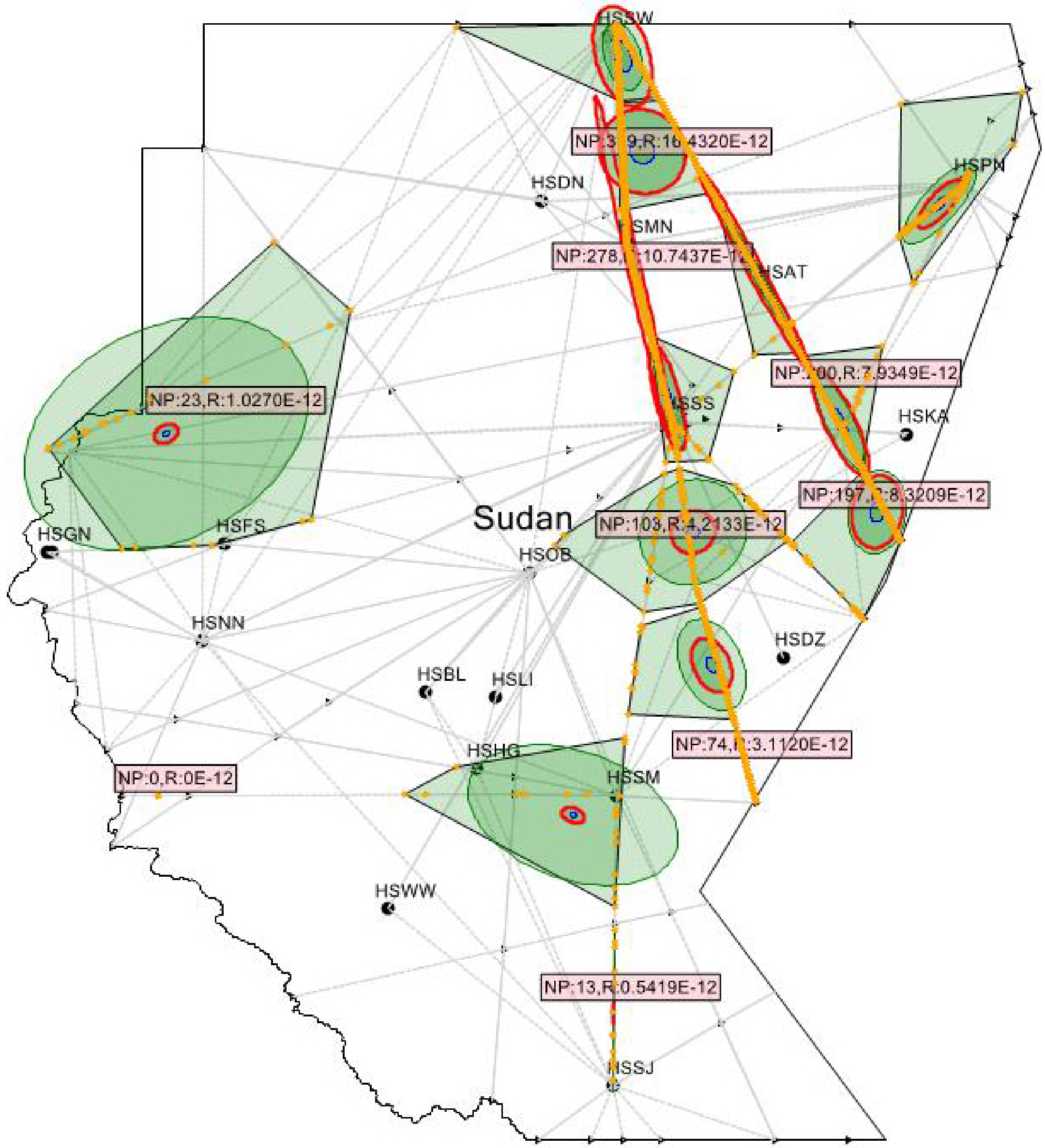
Amman FIR

Jeddah FIR

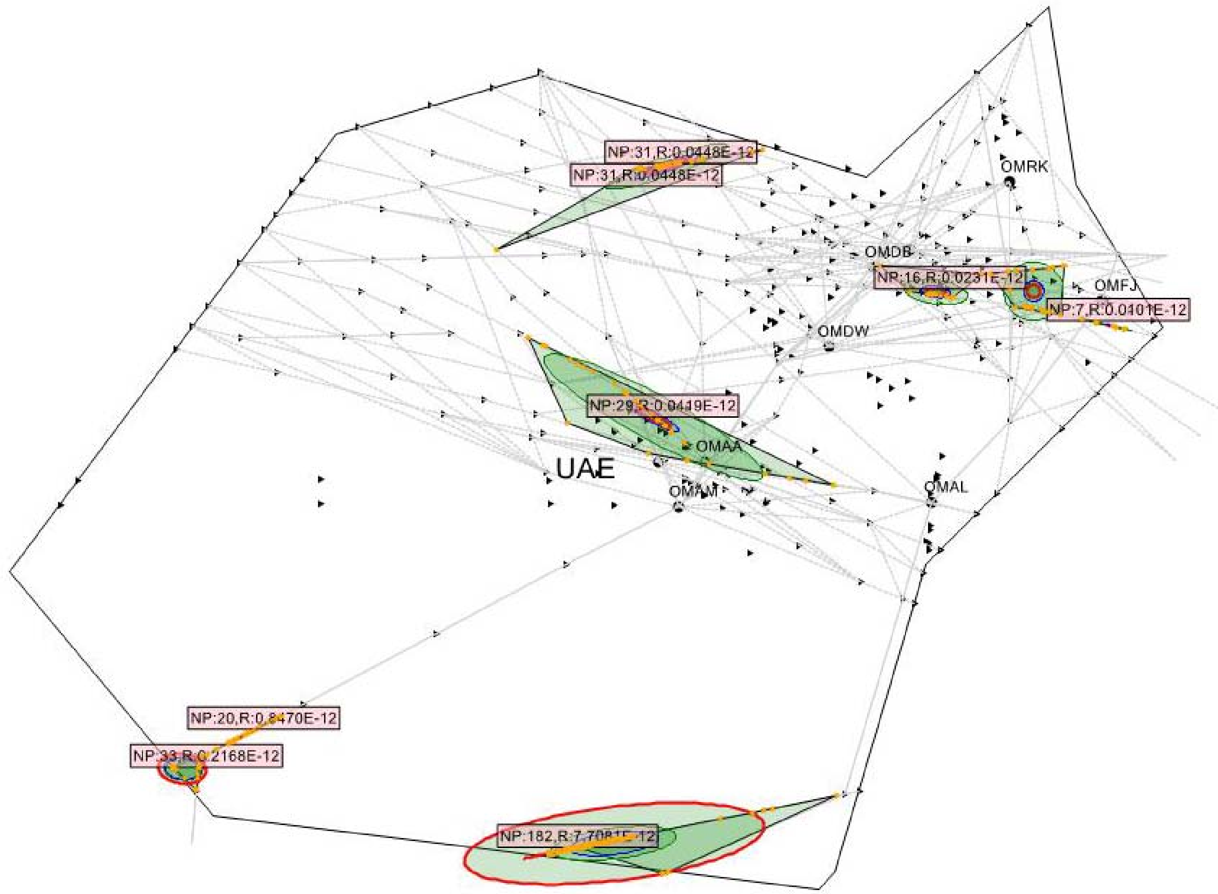


NP:859,R:4.4966E-12
OOFD
OOGB
Oman
OOMA
NP:722,R:5.8571E-12
OOMK
OODQ
OOTH

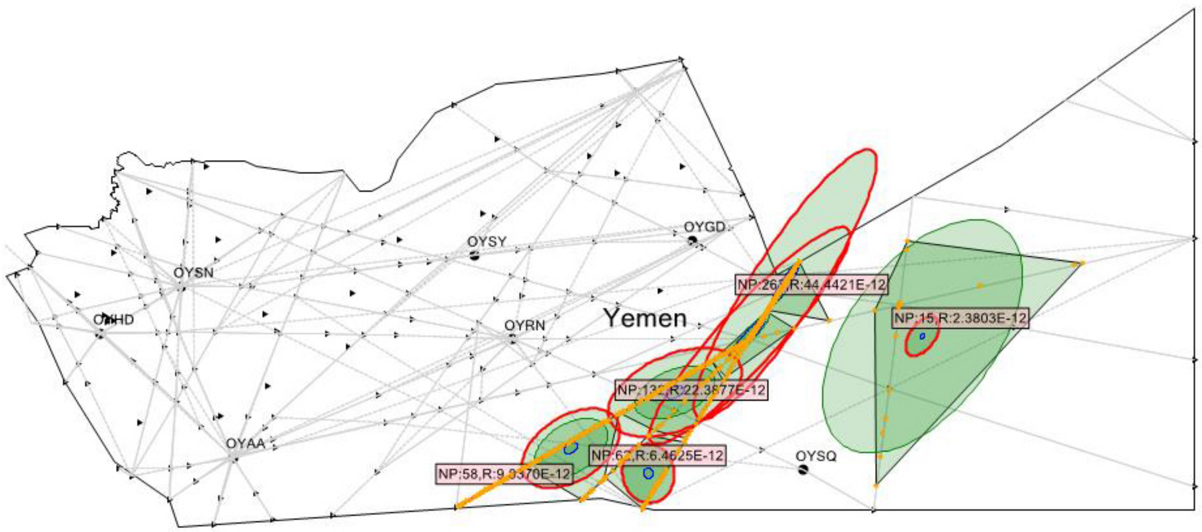
Muscat FIR



Khartoum FIR



Emirates FIR



Sana'a FIR

APPENDIX 4E

RASG-MID SAFETY ADVISORY – 14

(RSA-14)

April 2019

MID-Region

GUIDANCE MATERIAL REALTED TO GNSS VULNRABILTIES

Date of Issue:	April 2019
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Disclaimer

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TABLE OF CONTENTS

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/16Kuwait, 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 a 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 set of 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 on 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 GNSS Interference, which is a deliberate interference that aims to mislead GNSS receivers into general false positioning solution.

Detailed information about the GNSS Implementation and Vulnerabilities can be found in MID DOC 010 – 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 satellite 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.

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).

Procedural (aircrew or ATC) methods can provide effective mitigation in combination with those described above, taking due consideration of:

- ➢ the airspace classification;
- ➢ the available ATC services (radar or procedural);
- ➢ the avionics onboard
- ➢ aircrew and air traffic controller workload implications;
- ➢ 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).

Controller action(s) should include:

a) recording minimum information, including aircraft call sign, location, altitude and time of occurrence;
b) cross check with other aircraft in the vicinity;
c) broadcasting the anomaly report to other aircraft, as necessary;
d) notify the AIS Office in case NOTAM issuance is required; and enable the fallback mode and implement related procedure and process (contingency measures).

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
- PANS-ATM, ICAO doc 4444
- 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 010 (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

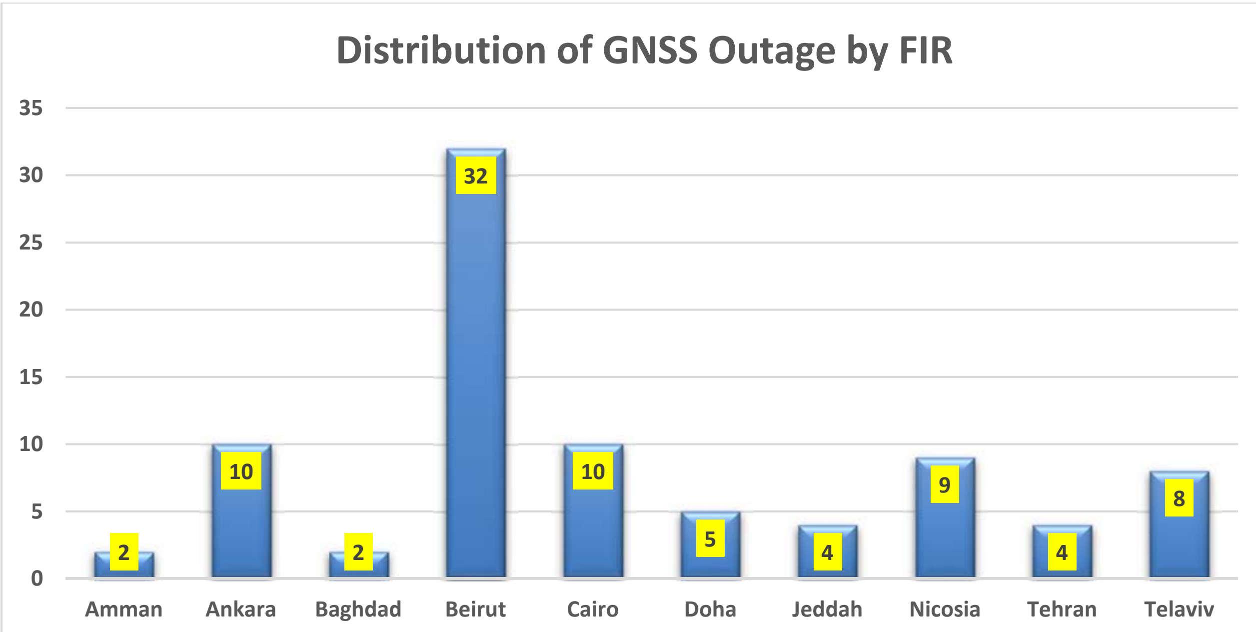
Threat	Initial Risk			Existing controls	Accept/Reduce	Recommended controls	Residual Risk		
	L	C	R				L	C	R
Between 5 and 50 years (short time GNSS Outage)	5	5	D	-Error message notification by avionic -Regulations/ law to protect the GNSS signal	Accept	-			

Table B8: Example risk assessment for enroute phase of flight

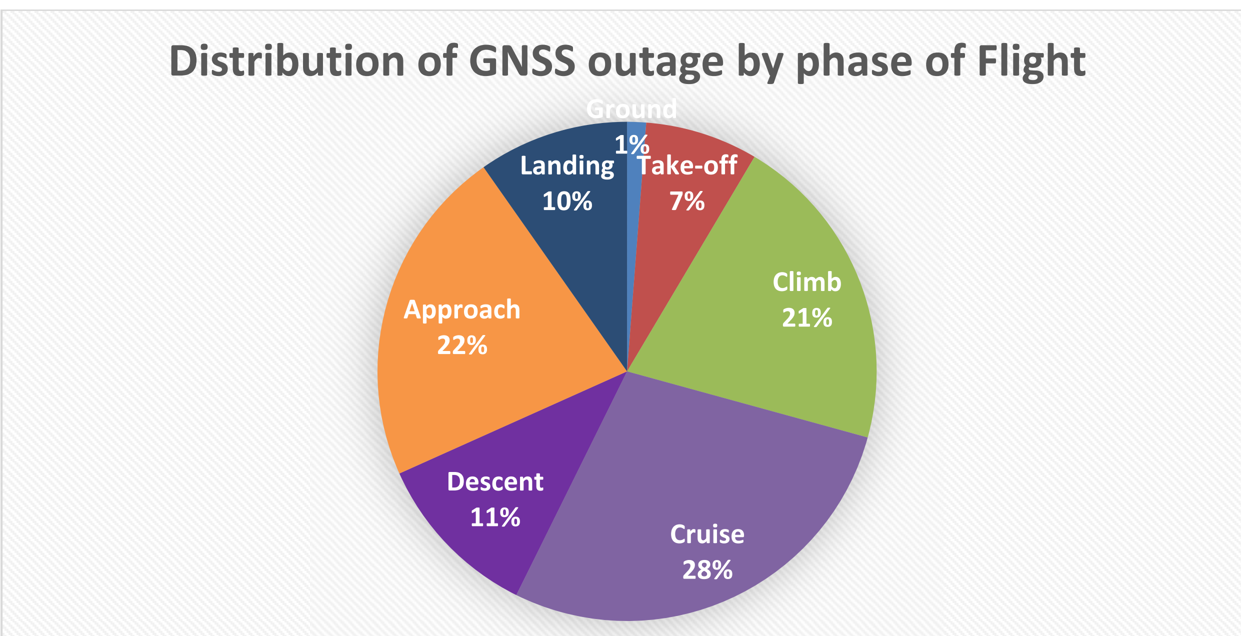
Appendix C

GNSS Anomaly for the Period January 2015- June2018

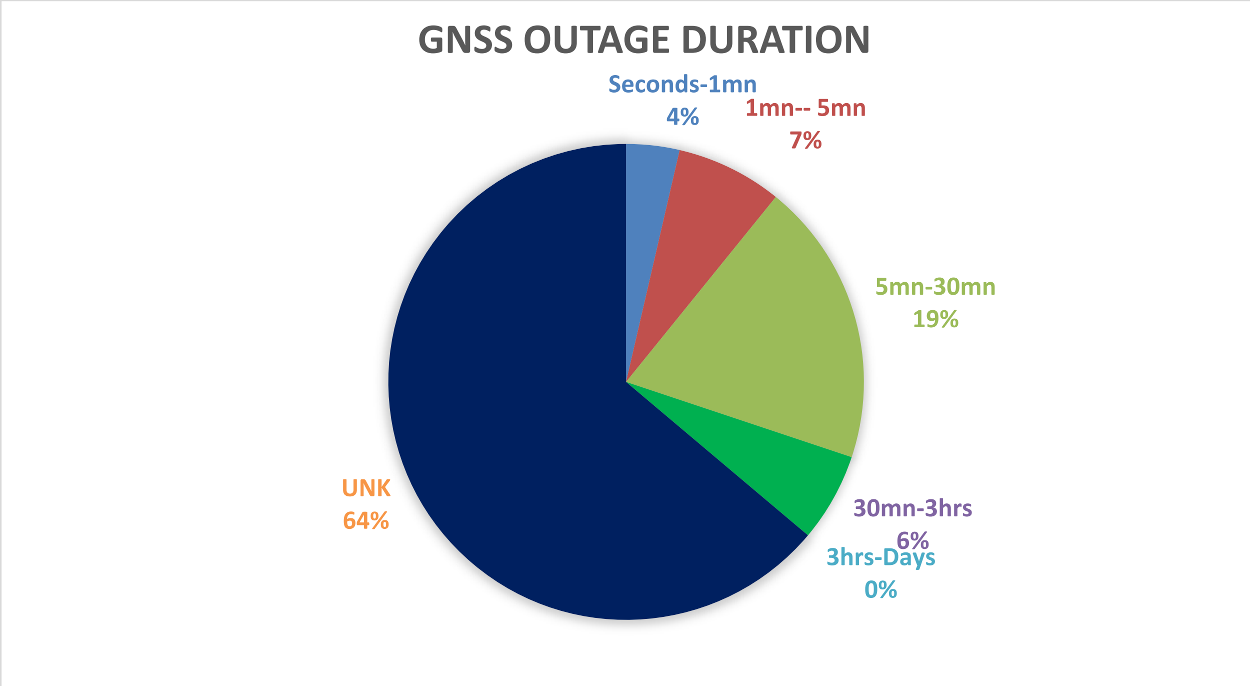
Brief data analysis of the incidents reported during Brief data analysis of the incidents reported by Air Operator is as follows:



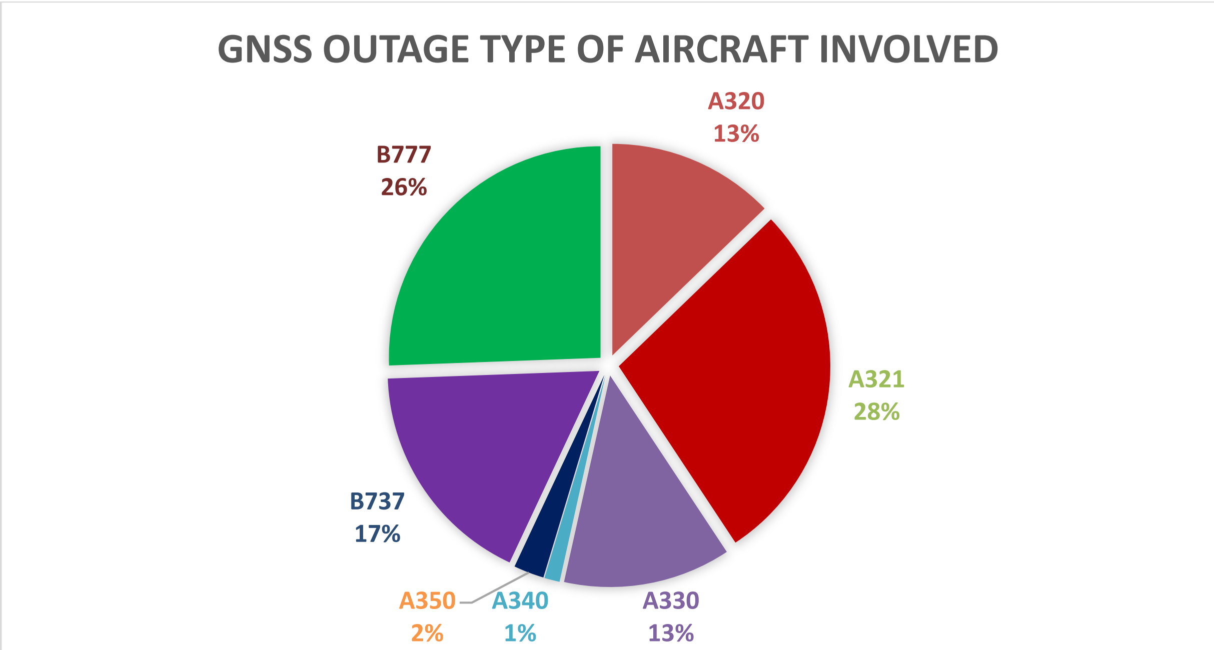
The data revealed that the most significant Flight Information Regions (FIRs) affected Beirut, followed by Cairo, Ankara, and Nicosia.



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 5.1A

FOLLOW-UP ON RASG-MID/6 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 6/1: GLOBAL AVIATION SAFETY PLAN (GASP)					**Closed**
That, States:					SL ME4-17/305 dated 2 November 2017. *(Replies: Bahrain and Jordan)*
a) be requested to establish a national aviation safety plan, including goals and targets consistent with the MID Region Safety Strategy, and in line with the GASP objectives, including the global aviation safety roadmap, and based on their operational safety needs; and	- Development of national aviation safety plan	State Letter	ICAO	Nov. 2017	Reminder SL ME 4–18/233 dated 22 July 2018. *(No replies)* SL FS 1/2-18/271 dated 19 August 2018 Questionnaire on draft GASP 2020-2022 *(Replies: Bahrain, Jordan and UAE)*
b) be invited to provide ICAO feedback on the new global aviation safety roadmap and suggestions for the future 2020 -2022 edition of the GASP via email to GASP@icao.int, by March 2018.	- To get feedback on the safety roadmap	Feedback	States	March 2018	An overview on the GASP 2020-2022 will be presented to the RASG-MID/7 meeting (15-18 April 2019)
CONCLUSION 6/2: SAFETY MANAGEMENT IMPLEMENTATION *That States, regional and international organizations are invited to share tools and examples, which support effective safety management implementation, to be considered for posting on the ICAO safety management implementation website.*	Sharing of best practices	State Letter	ICAO	Jan. 2018	**Closed** SL ME4-18/027 dated 25 January 2018 Requesting States to take necessary measures to ensure the implementation of the provisions of this Conclusion

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 6/3: REGIONAL SAFETY OVERSIGHT ORGANIZATIONS					**Closed**
That, States support: *a) the proposed global strategy and action plan to improve RSOOs; and* *b) the conduct of a study related to the proposed global aviation safety oversight system (GASOS).*	Improvement of RSOO and establishment of GASOS	Supporting the proposed global strategy Study related to the proposed GASOS)	RASG-MID	Sept. 2017 Nov. 2017	The study was released. A Summary of Recommendations is at Appendix 2B of the RSC/6 meeting Report The subject was further addressed by the AN-Conf/13 (Rec 6.1.3/1)
CONCLUSION 6/4: SHARING OF SAFETY RECOMMENDATIONS					**Closed**
That, a) *States be urged to share their Safety Recommendations after investigation of accidents and incidents; and* b) *MID-SST to coordinate with MID-ASRT, ICAO and stakeholders the development of a RASG-MID Safety Advisory to consolidate a set of safety recommendations addressing the Focus Areas and Emerging Risks in the MID Region.*	Sharing of safety recommendations in order to agree on mitigation measures at regional level (Best practices)	State Letter RSA	ICAO MID-SST MID-ASRT ICAO Stakeholders	Jan. 2018 TBD	SL ME4-18/028 dated 25 January 2018, requesting State to take necessary measures to share with ICAO MID Office the safety recommendations emanating from the investigation activity. The RSC/6 meeting agreed that the SEI "Sharing and Analysis of Safety Recommendations" should be included in the MID-SST work Programme. Saudi Arabia and UAE will be the Champion for the implementation of this SEI.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 6/5: ADOPTION OF ISAGO AND IGOM FOR GROUND HANDLING OPERATIONS					**Completed**
That, States be invited to:		State Letter	ICAO	Jan. 2018	SL ME4-18/029 dated 25 January 2018, encouraging States to implement the provisions of this Conclusion.
a) *encourage airlines and aerodrome operators to implement the procedures contained in the IATA Ground Operations Manual (IGOM) for harmonization purpose and to improve safety of Ground Handling Operations; and*	Use of IATA Guidance material contained in the IGOM.				
b) *use the IATA Safety Audit for Ground Operations (ISAGO) as a source of safety data which provide complementary information for the safety oversight activities of ground handling operations services.*	Use of ISAGO as a source of complementary safety data for safety oversight activities				
CONCLUSION 6/6: DEVELOPMENT OF ADDITIONAL GROUND HANDLING OPERATIONS PROVISIONS					**Closed**
That, ICAO be invited to consider the development of additional Ground Handling Operations provisions.	Need for additional provisions/guidance on Ground Handling Operations	Additional Ground Handling Operations provisions	ICAO	TBD	Considered by the ANC through the review of the RASG-MID/6 Report

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 6/7: EXPANSION OF THE RSP SCOPE *That, ICAO be invited to consider the expansion of the ICAO Runway Safety Programme (RSP) scope to include the movement area (including aprons).*	Inclusion of the movement area in RSP scope	Expansion of the ICAO RSP scope	ICAO	TBD	**Closed** Considered by the ANC through the review of the RASG-MID/6 Report
DECISION 6/8: DISSOLUTION OF THE AIA WG *That,* a) *the AIA WG is dissolved; and* b) *the RASG-MID Organizational Structure contained in the RASG-MID Procedural Handbook be amended accordingly.*	Poor attendance and support	Dissolution of the AIA WG	RASG-MID	Sept. 2017	**Completed**
DECISION 6/9: REVISED TERMS OF REFERENCE (TORS) OF THE MID-ASRT *That, considering the dissolution of the AIA WG:* a) *the MID-ASRT develop revised version of its Terms of References (TORs) for review and endorsement by the RSC; and* b) *face-to-face meetings of the MID-ASRT be organized on an annual basis.*	To include the tasks previously assigned to AIA WG	State Letter Revised TORs	ICAO RSC	Dec. 2017 June 2018	**Completed** SL ME4-17/306 dated 2 November 2017 (ASRT Members) *(Replies: Bahrain, Iran, Iraq, Jordan, Oman, Saudi Arabia, UAE, IFATCA and IFALPA)* RSC Decision 6/1

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 6/10: ACCIDENT AND SERIOUS INCIDENTS FINAL REPORTS *That,* a) *States be urged to comply with Annex 13 provisions related to the release of Final Reports on accidents and serious incidents; and* b) *for the accidents and serious incidents involving aircraft of a maximum mass over 5700 kg, a copy of the Final Report should be sent to the ICAO HQ and MID Regional Office.*	Sharing of final reports on accidents and serious incidents	State Letter	ICAO	Jan. 2018	**Closed** SL ME4-18/025 dated 25 January 2018, requesting States to take necessary measures to ensure the implementation of the provisions of this Conclusion (*Replies: Egypt, Iran, Jordan, Kuwait, Saudi Arabia and UAE*)
CONCLUSION 6/11: SHARING OF INCIDENTS ANALYSES *That, States be invited to present to the ASRT/1 meeting their analyses related to the following top 5 areas of concern:* 1- *Near midair Collision (NMAC)-TCAS RA* 2- *Loss of Separation* 3- *Take off Clearance with Runway in use* 4- *Wake Turbulence –Encountered* 5- *Callsign Confusion*	Identification of trends and sharing of best practices for mitigation measures	State Letter Safety Data Analyses	ICAO States	Nov. 2018 Feb. 2018	**Completed** SL ME 4–17/306 dated 2 November 2017 *(Replies: Bahrain, Iran, Iraq, Jordan, Oman, Saudi Arabia, UAE, IFATCA & IFALPA)*

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 6/12: RASG-MID SAFETY ADVISORY - WILDLIFE MANAGEMENT AND CONTROL *That, the RASG-MID Safety Advisory (RSA/13) on Wildlife Management and Control at Appendix 3I is endorsed and be published by the ICAO MID Office.*	Guidance material to the Wildlife Management and Control	RSA	RASG-MID	Sept. 2017	**Completed** SL ME 4–17/292 dated 23 October 2017 RASG-MID Safety Advisory-13 (RSA-13) has been posted on the ICAO MID website.
DECISION 6/13: AMENDED RASG-MID SAFETY ADVISORY/12 – LASER ATTACK SAFETY GUIDELINES *That, the revised version of the RASG-MID Safety Advisory (RSA/12) on Laser Attacks at Appendix 3J is endorsed and be published by the ICAO MID Office.*	Updated guidance related to the Laser Attack Safety	RSA-Rev. 1	RASG-MID	Sept. 2017	**Completed** SL ME 4–17/291 dated 23 October 2017 RASG-MID Safety Advisory-12 (RSA-12) is available on the ICAO MID website.
CONCLUSION 6/14: REVISED MID REGION SAFETY STRATEGY *That, the revised version of the MID Region Safety Strategy at Appendix 3N is endorsed.*	Need to keep pace with developments, including the GASP 2017-2019	MID Region Safety Strategy (Edition 5)	RASG-MID	Sept. 2017	**Completed**

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 6/15: RASG-MID SAFETY ADVISORY (RSA)– WAKE TURBULENCE IN THE RVSM AIRSPACE *That, a RASG-MID Safety Advisory (RSA) on Wake Turbulence in the RVSM Airspace, be developed by ICAO, UAE and IATA, taking into consideration UAE safety alert 2017-10 dated 5 July 2017; and other existing practices.*	Guidance related to the Wake Turbulence in the RVSM airspace	RSA	ICAO UAE IATA	TBD	**Ongoing**
DECISION 6/16: RASG-MID SAFETY ADVISORY-04 (RSA 04) *That, the revised RSA-04 related to call sign confusion at Appendix 5B is endorsed.*	Guidance material related to the Call Sign Confusion	RSA	RASG-MID	Sept. 2017	**Completed**

APPENDIX 5.1B

FOLLOW-UP ON RSC/6 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC DECISION 6/1: MID-ASRT TERMS OF REFERENCE (TORS) *That, the Terms of Reference (TORs) of the MID Annual Safety Report Team (MID-ASRT) be revised as at* ***Appendix 3B.***	Further to the dissolution of the AIA-WG and the RASG-MID/6 Decision to include the main tasks in the ASRT TORs	Reviewed and endorsed by the RSC/6	RSC	June 2018	**Completed**
RSC DECISION 6/2: SIXTH MID ANNUAL SAFETY REPORT *That, the Final version of the Sixth Edition of the MID Annual Safety Report (ASR) be published on the ICAO MID website.*	Sharing the final 6th MID-ASR for the period 2012-2016	MID-ASR 6th Ed published on the ICAO website	ICAO	June 2018	**Completed** Posted on the ICAO MID website
RSC CONCLUSION 6/3: REVISED RASG-MID SAFETY ADVISORY (RSA-11) SAFEGUARDING OF AERODROMES . *That, the revised RASG-MID Safety Advisory on Aerodrome Safeguarding (RSA-11) at* ***Appendix 3N****, which includes Aerodrome Safeguarding Toolkit is endorsed.*	Improvement of Obstacles control on the aerodrome and in its vicinity	RSA on Aerodrome Safeguarding	ICAO	June 2018	**Completed** Posted on the ICAO MID website in June 2018.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC CONCLUSION 6/4: SURVEY ON AEP/ARFF LEVEL OF IMPLEMENTATION *That,* *a) a survey on ARFF/AEP level of implementation be carried out; and* *b) the results of the survey be presented to the RGS WG/5 meeting for further course of actions*	Effectiveness of Aerodrome Emergency Planning and the operability of the ARFF services at International Aerodromes	Questionnaire on AEP/ARFF Level of Implementation	Egypt supported by Saudi Arabia, UAE and ICAO	March. 2018	**Ongoing** Postponed for 2019
RSC CONCLUSION 6/5 : AERODROME APRON MANAGEMENT AND GROUND HANDLING SERVICES *That,* *a) an Advisory Circular be developed on Aerodrome Apron Management; and* *b) a Seminar on Ground Handling be organized and hosted by UAE and supported by ICAO, IATA and Ground Handlers in 2019.*	Ground Handling operations are a source of significant personnel safety and aircraft/equipment damage concerns	Advisory Circular on Aerodrome Apron Management Safety Seminar on Ground Handling	UAE supported by Egypt, Saudi Arabia and ICAO	Nov. 2018 Nov. 2019	**Ongoing** Draft Advisory Circular will be presented to RGS WG/6 Ground Handling Seminar will be held in Cairo in November 2019

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC CONCLUSION 6/6: AERODROME SMS COMPLIANCE AND EFFECTIVENESS TOOLKIT AND AERODROME SMS WORKSHOP					**Completed**
That, *a) an aerodrome SMS Workshop be organized by ICAO back-to-back with the RGS WG/5 meeting with the technical support of Egypt and UAE; and* *b) sample Aerodrome SMS Compliance and Effectiveness Tool-Kit be developed and presented at the Aerodrome SMS Workshop.*	Low level of SMS implementation at International Aerodromes	SMS compliance and effectiveness Tool Kit Regional Aerodrome SMS Workshop	UAE Supported by Egypt, Saudi Arabia and ICAO ICAO	Nov. 2018	Compliance and effectiveness Tool Kit developed The Workshop held back-to-back with the RGS WG/5
RSC CONCLUSION 6/7: FURTHER SAFETY ENHANCEMENTS RELATED TO RUNWAY EXCURSIONS					**Ongoing**
That, *a) a RASG-MID Safety Advisory on Monitoring and Reporting of Runway Surface Condition, be developed; and* *b) States be urged to report the Runway-Excursion-related occurrences on Annual basis to the ICAO MID Office.*	Enhance the runway surface condition monitoring and reporting	Draft Safety Advisory on Monitoring and Reporting of Runway Surface Condition	FAA supported by Egypt, UAE and ICAO	May 2018	RASG-MID Safety Advisory will be presented to RGS WG/6

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC CONCLUSION 6/8: REVISED RASG-MID SAFETY ADVISORY ON WILDLIFE HAZARDS MANAGEMENT AND CONTROL (RSA-13)					**Completed**
That, the revised RASG-MID Safety Advisory on WHMC (RSA-13) at ***Appendix 3Q,*** *which includes the WHMC Plan Template is endorsed.*	Effectiveness of Wildlife Hazards Management and Control	RSA on Wildlife Hazards Management and Control		Sep. 2017	Posted on the ICAO MID website in June 2018.
RSC DECISION 6/9: ESTABLISHMENT OF THE AIG CORE TEAM					**Completed**
That, the AIG Core Team composed of the following experts, is established to develop the Roadmap and to monitor the implementation of the Strategy for the enhancement of Regional Cooperation in the provision of AIG function for the MENA States: *Eng. Ismaeil Mohamed Al Hosani (Chairman)* *Mr. Ibrahim Addasi from UAE* *Mr. Abdulelah O. Felemban from Saudi Arabia* *Mr. Kamil Ahmed Mohammed from Sudan* *Mr. Theeb Abdullah Al Otaibi from Saudi Arabia* *Mr. Seyed Mohammad Hosein Mousavi Sajad from Iran* *Mr. M'barek Lfakir, from Morocco* *Mr. Mohamed Chakib from ICAO* *Mr. Mohamed Rejeb from ACAO*	Develop roadmap and monitor the implementation	AIG Core Team	RSC	Jun. 2018	

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC CONCLUSION 6/10: RSA ON GNSS VULNERABILITIES *That, States and stakeholders be invited to review the Draft Safety Advisory at **Appendix 4E**; and provide comments/inputs to the ICAO MID Office before **15 September 2018**, in order to consolidate the final version for endorsement by the RASG-MID/7 meeting.*	Guidance to reduce GNSS vulnerabilities in the MID Region	RASG-MID Safety Advisory	States and stakeholders	Sep. 2018	**Closed** SL ME4/1-18-230 dated 19 July 2018 *(Replies: Bahrain & IATA)* RSA-14 endorsed (RASG-MID Conclusion 7/1, refers)
DRAFT CONCLUSION 6/1: ROADMAP FOR AIG REGIONAL COOPERATION *That, the Roadmap for AIG Regional Cooperation at **Appendix 3U** is endorsed.*	To improve AIG Regional Cooperation	Roadmap	RASG-MID	Apr. 2019	**Completed** (Ref. MID SST/5 Draft Conclusion 5/3)

APPENDIX 5.1C

LIST OF FOCUS AREAS AND EMERGING RISKS 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.	Including occurrences which lead to the LOC-I accident
Controlled Flight Into Terrain (CFIT)	Inflight collision or near collision with terrain, water, or obstacles without indication of loss of control.	Including occurrences which lead to the CFIT accident
MID Air Collision (MAC)/ NMACs	Airprox/TCAS Alerts, Loss of separation as well as NMAC or collisions between aircraft inflight.	(including, RPAS/Drones, Call Sign Confusion)
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.	Mainly occurrences related to wake turbulence (Vortex)

Birdstrike (BIRD)	Occurrences involving collisions/near collisions with bird(s).	
Wildlife (WILD)	Collision with, risk of collision or evasive action by an aircraft to avoid wild life on the movement area of an aerodrome.	
System Component Failure- Power Plant (SCF-PP)	Failure or malfunction of an aircraft system or components related to the power plant.	
Wind shear	Flight into wind shear or thunderstorm	

NB: States may share any other national safety concern.

APPENDIX 5.1D

TEMPLATE FOR THE COLLECTION OF

ACCIDENT, SERIOUS INCIDENT AND INCIDENT DATA AND SAFETY ANALYSIS

Name of State: ……………………..

Traffic: Nb. of Departures per year [2015: …………] [2016: …………] [2017: …………] 2018: …………]

1- Occurrences: *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	2015			2016			2017			2018		
		# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accident s	# Serious incidents	# Incident s
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	Wake Turbulence												
10	BIRD												
11	Wildlife (Wild)												
12	System Component Failure-Power Plant (SCF-PP)												
13	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 three years (2015-2018)

Scope: State of Occurrence

2- Safety data Analysis (root-cause analysis, trends, etc.)

3- Main safety risks

4- Safety Recommendations

APPENDIX 5.1E

STATUS OF AERODROME CERTIFICATION IMPLEMENTATION IN MID REGION

	State	Number of Intl Aerodromes (AOP Table 1-1 -MID ANP)	Number of Certified Intl Aerodromes	Percentage Certified	List of Certified Intl Aerodromes	Remarks
1	Bahrain	1	1	100%	BAHRAIN/Bahrain Intl (OBBI)	
2	Egypt	7	7	100%	- CAIRO/Cairo Intl (HECA) - SHARM EL-SHEIKH/Sharm El Sheikh Intl (HESH) - HURGADA/Hurghada Intl (HEGN) - MARSA ALAM /Marsa Alam Intl (HEMA) - ASWAN/Aswan Intl (HESN) - LUXER/Luxor Intl Airport (HELX) - ALEXANDRIA/Borg El-Arab Intl (HEBA)	
3	Iran	9	4	44%	- TEHRAN/Mehrabad Intl (OIII) - ZAHEDAN/Zahedan Intl (OIZH) - YAZD/Shahid Sadooghi Intl (OIYY) - ESFAHAN/Shahid Beheshti Intl (OIFM)	
4	Iraq	6	5	83%	- AL NAJAF/Al Najaf Intl (ORNI) - BAGHDAD/Baghdad Intl (ORBI) - BASRAH/Basrah Intl (ORMM) - ERBIL/Erbil Intl (ORER) - SULAYMANIYAH/Sulaymaniyah Intl (ORSU)	
5	Jordan	2	2	100%	- AMMAN/Queen Alia Intl (OJAI) - AQABA/ King Hussein Intl (OJAQ)	
6	Kuwait	1	1	100%	KUWAIT/Kuwait Intl (OKBK)	
7	Lebanon	1	0	0%		
8	Libya	3	0	0%		

	State	Number of Intl Aerodromes (AOP Table 1-1 -MID ANP)	Number of Certified Intl Aerodromes	Percentage Certified	List of Certified Intl Aerodromes	Remarks
9	Oman	2	2	100%	- MUSCAT/Muscat Intl (OOMS) - SALALAH/Salalah (OOSA)	
10	Qatar	2	2	100%	- DOHA/Doha Intl (OTBD) - DOHA/Hamad Intl (OTHH)	
11	Saudi Arabia	4	4	100%	- DAMMAM/Kind Fahid Intl (OEDF) - JEDDAH/King Abdulaziz Intl (OEJN) - MADINAH/Prince Mohammad Bin Abdulaziz Intl (OEMA) - RIYADH/King Khalid Intl (OERK)	
12	Sudan	4	3	75%	-KHARTOUM/Khartoum (HSSS) - EL OBEID/El Obeid (HSOB) - PORT SUDAN/Port Sudan (HSPN)	
13	Syria	3	0	0%		
14	UAE	8	8	100%	- ABU DHABI/Abu -Dhabi Intl (OMAA) - ABU DHABI/Al Bateen Intl (OMAD) - DUBAI/Dubai Intl (OMDB) - DUBAi/Al Maktoum Intl (OMDW) - AL AIN/Al Ain Intl (OMAL) - FUJAIRAH/Fujairah Intl (OMFJ) - RAS AL KHAIMAH/Ras Al Khaimah Intl (OMRK) - SHARJAH/Sharjah Intl (OMSJ	
15	Yemen	5	0	0%		
	Total Certified	**58**	**39**	**67%**		**MID Region Safety Target 75% by end of 2017**

APPENDIX 5.1F

ICAO SAFETY

REGIONAL AVIATION SAFETY GROUP – MIDDLE EAST (RASG-MID)

MID REGION SAFETY STRATEGY

EDITION 6, APRIL 2019

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MID Region Safety Strategy

1. Strategic Safety Objective

1.1 Continuous improvement of aviation safety through a progressive reduction of the number of accidents and related fatalities in the MID Region to be in line with the global average, based on reactive, proactive and predictive safety management practices.

2. Safety Objectives

2.1 States and Regions must focus on their safety priorities as they continue to foster expansion of their air transport sectors.

2.2 The ICAO Global Aviation Safety Plan (GASP) establishes targeted safety objectives and initiatives while ensuring the efficient and effective coordination of complementary safety activities between all stakeholders.

2.3 The 2017-2019 GASP introduced a global aviation safety roadmap to ensure that safety initiatives deliver the intended benefits of the GASP objectives through enhanced coordination, thus reducing inconsistencies and duplication of efforts.

2.4 The GASP roadmap outlines specific safety initiatives supported by a set of actions associated with each of the four safety performance enablers (standardization, resources, collaboration and safety information exchange) which, when implemented by stakeholders, will address the GASP objectives and global safety priorities. These specific safety initiatives targeted to the different streams of stakeholders (States, regions and industry) at different levels of maturity.

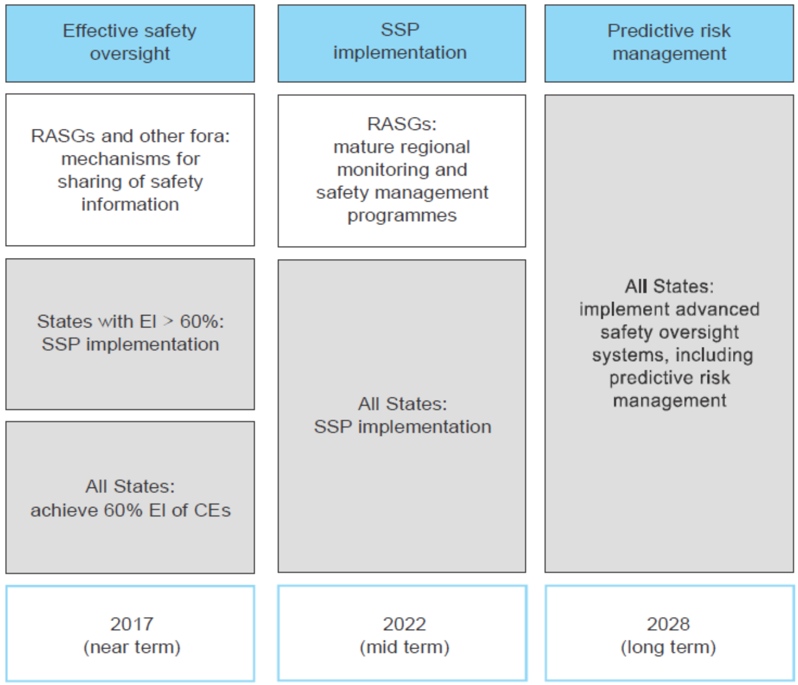
2.5 States, Regions (supported primarily by the RASGs) and industry are expected to use the roadmap individually and collectively as the basis to develop action plans that define the specific activities which should take place in order to improve safety at the regional or sub-regional and national levels.

2.6 The Draft 2020-2022 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.

2.7 The 2020-2022 Edition of the GASP includes a new set of goals, targets and indicators, in line with the United Nations' 2030 Agenda for Sustainable Development.

2.8 The global aviation safety roadmap, presented in the Draft 2020-2022 Edition of the GASP, would serve as an action plan to assist the aviation community in achieving the GASP goals.

2.9 The MID Region safety objectives are in line with the GASP objectives and address specific safety risks identified within the framework of the Regional Aviation Safety Group-Middle East (RASG-MID), based on the analysis of available safety data.



2017-2019 GASP Objectives

2.10 The enhancement of communication and information exchange between aviation Stakeholders and their active collaboration under the framework of RASG-MID would help achieving the MID Region safety objectives in an expeditious manner.

3. Measuring and monitoring Safety Performance:

3.1 The first version of the MID Region Safety Strategy was developed by the First MID Region Safety Summit (Bahrain, 28-29 April 2013) and endorsed by the DGCA-MID/2 meeting (Jeddah, Saudi Arabia, 20 -22 May 2013).

3.2 The monitoring of safety performance and its enhancement is achieved through identification of relevant Goals and Safety Indicators, taking into consideration the Draft GASP 2020-2022 and regional specific objectives and priorities, as well as the adoption and attainment of Safety Targets with a specific timeframe.

3.3 The MID Region Safety Strategy includes the following Goals:

- Aspirational Goal: Zero fatality by 2030
- Goal 1: Achieve a continuous reduction of operational safety risks
- Goal 2: Strengthen States’ safety oversight capabilities/Progressively increase the USOAP-CMA EI scores/results
- Goal 3: Improve aerodrome safety
- Goal 4: Expand the use of Industry Programmes
- Goal 5: Implementation of effective SSPs and SMSs
- Goal 6: Increase Collaboration at the Regional Level to enhance safety
- Goal 7: Ensure the appropriate infrastructure is available to support safe operations
- Goal 8: Monitor the fleet age

3.4 The MID Region Safety Goals, Indicators and Targets are detailed in the Table below:

MID Region Safety Targets

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	2016
Number of fatal accidents per million departures	Regional average rate of fatal accidents to be in line with the global average rate	2016
Number of fatalities per million departures	Number of fatalities per billion passengers carried (fatality rate) to be in line with the global average rate	2018
Number of Runway Excursion accidents per million departures	Regional average rate of Runway Excursion accidents to be below the global average rate	2016
Number of Runway Incursion accidents per million departures	Regional average rate of Runway Incursion accidents to be below the global average rate	2018
Number of LOC-I related accidents per million departures	Regional average rate of LOC-I related accidents to be below the global rate	2016
Number of CFIT related accidents per million departures	Regional average rate of CFIT related accidents to be below the global rate	2016
Number of Mid Air Collision (accidents)	Zero Mid Air Collision accident	2018

Safety Indicator	Safety Target	Timeline
Number of Near Mid Air Collision (serious incidents)	Regional average rate of Near Mid Air Collision (serious incidents per million departures) to be less than **0.1** All States to reduce the rate of Near Mid Air Collision (AIRPROX) within their airspace	2020

Goal 2: Strengthen States' Safety Oversight Capabilities/Progressively Increase the USOAP-CMA EI Scores/Results:

Safety Indicator	Safety Target	Timeline
USOAP-CMA Effective Implementation (EI) results: a. Regional average EI b. Number of States with an overall EI over 60% c. Regional average EI by area d. Regional average EI by CE	a. Regional average EI to be above 70% b. 11 MID States to have at least 60% EI c. Regional average EI for each area to be above 70% d. Regional average EI for each CE to be above 70%	a. 2020 b. 2020 c. 2020 d. 2020
Number of Significant Safety Concerns (SSC)	a. No Significant Safety Concern (SSC) b. SSC, if identified, to be resolved as a matter of urgency, and in any case within 12 months from its identification	2016

Goal 3: Improve Aerodrome Safety:

Safety Indicator	Safety Target	Timeline
Number of certified International Aerodrome as a percentage of all International Aerodromes in the MID Region	a. 50% of the International Aerodromes certified b. 75% of the International Aerodromes certified	a. 2015 b. 2017
Number of established Runway Safety Team (RST) at MID International Aerodromes.	50% of the International Aerodromes having established a RST	2020

Goal 4: Expand the use of Industry Programmes:

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. N/A b. 2018
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 50% increase in ISAGO registration (baseline 2017)	2020
Use of the ACI Airport Excellence (APEX) in Safety programme	At least 1 ACI APEX in Safety conducted in 1 Airport of the Region per year	N/A

Goal 5: Implementation of Effective SSPs and SMSs:

Safety Indicator	Safety Target	Timeline
Number of MID States that use ECCAIRS for the reporting of accidents and serious incidents.	a. 9 States b. 12 States	a. 2019 b. 2020
Number of States that have completed the SSP Gap Analysis on iSTARS	13 States	2020
Number of States that have developed an SSP implementation plan	13 States	2020
Regional Average SSP Foundation (in %)	70%	2022
Number of States that have fully implemented the SSP Foundation	10 States	2022
Number of States that have established an ALoSP	10 States	2025
Number of States that have implemented an effective SSP	7 States	2025
Number of States that have established a process for acceptance of individual service providers' SMS	2 States	2020
Number of States providing information on safety risks, including SSP SPIs, to the RASG-MID	7 States	2020
Establishment of a Regional mechanism for regional data collection, sharing and analysis	Regional Mechanism established	2018

Goal 6: Increase Collaboration at the Regional Level to Enhance Safety:

Safety Indicator	Safety Target	Timeline
Number of States attending the RASG-MID meetings	At least 12 States from the MID Region	2019
Number of States providing required data related to accidents, serious incidents and incidents to the MID-ASRT	All States from the MID Region	2020
Number of States requiring and actively seeking assistance/support Number of States that received assistance/support through the RASG-MID, MENA RSOO and/or other NCLB mechanisms	All States having an EI below 60% to be member of the MENA RSOO All States having an EI below 60% to have an approved NCLB Plan of Actions for safety (agreed upon with the ICAO MID Office) SEI or Technical Assistance Mission/Project implemented for each assistance need identified by the RASG-MID	2019 2019
Number of States, having an EI below 60% in some areas, delegating certain safety oversight functions to the MENA RSOO or other State(s)	Percentage of States, having an EI below 60% in some areas, delegating certain safety oversight functions to the MENA RSOO or other State(s), to be at least **50%**	2022
Number of States that contribute to the implementation of SEIs and Technical Assistance Missions/Projects	7 States	2020
Percentage of SEIs implemented in accordance with the agreed timeframe	80% of the SEIs	N/A

Goal 7: Ensure the Appropriate Infrastructure is available to Support Safe Operations:

Safety Indicator	Safety Target	Timeline
Number of Air Navigation Deficiency Priority “U” identified by MIDANPIRG	No Air Navigation Deficiency Priority “U”	2022

Goal 8: Monitor the Fleet Age:

Safety Indicator	Safety Target
*Average Fleet Age.	States are required to monitor their fleet age. No regional Safety Targets are defined.
*Percentage of fleet above 20 years of age.	

4. Governance

4.1 The MID Region Safety Strategy will guide the work of RASG-MID and all its member States and partners.

4.2 The RASG-MID will be the governing body responsible for the review and update of the Strategy, as deemed necessary.

4.3 Progress on the implementation of the MID Region Safety Strategy and the achievement of the agreed Safety Targets will be reported to the ICAO Air Navigation Commission (ANC), through the review of the RASG-MID reports; and to the stakeholders in the Region during the MID Region Safety Summits.

APPENDIX 5.1G

QUESTIONNAIRE

This questionnaire is about the implementation of Annex 1 English Language Proficiency by Contracting States supported by the Manual on the Implementation of ICAO Language Proficiency Requirements, ICAO Doc 9835.

1. Has your State promulgated English Language Proficiency regulations taking into account the required level of proficiency in accordance with Annex 1− *Personnel Licensing*?
(Reference: Annex 1, Chapter 1, 1.2.9)

Yes ☐
No ☐

If yes:

(a) since when? Year: __________

(b) did you refer to ICAO Doc 9835 in your regulation?

Yes ☐
No ☐

List differences from ICAO Doc 9835:

(c) List which of the following aviation discipline your Language Proficiency (local, national, regional, or English language) regulation covers:
(Reference: Annex 1, Chapter 1, 1.2.9)

1.	Air Traffic Controllers?	Yes ☐ No ☐	*Mention the language(s):*
2.	Pilots?	Yes ☐ No ☐	*Mention the language(s):*
3.	Flight engineers?	Yes ☐ No ☐	*Mention the language(s):*
4.	Glider pilots?	Yes ☐ No ☐	*Mention the language(s):*
5.	Free balloon pilots?	Yes ☐ No ☐	*Mention the language(s):*
6.	Flight navigators?	Yes ☐ No ☐	*Mention the language(s):*
7.	Aeronautical station operators?	Yes ☐ No ☐	*Mention the language(s):*
8.	Aeronautical station operators?	Yes ☐ No ☐	*Mention the language(s):*

If No:

(a) when are you planning to promulgate such regulation? Year: __________

(b) if your State is planning to promulgate regulation, does the regulation requires the implementation plan to consist of the following components?
(Reference: Doc 9835, Chapter 5, 5.2.2)

A regulatory framework to support the implementation of the requirements:

Yes ☐
No ☐

Comments

An estimate of the national level of implementation:

Yes ☐
No ☐

Comments

Language proficiency training programs:

Yes ☐
No ☐

A language proficiency assessment plan for licensing purposes:

Yes ☐
No ☐

Interim measures to mitigate risks:

Yes ☐
No ☐

2. Has the State implemented a system for the endorsement of language proficiency on the licence issued?
(Reference: Article 39B State letter AN 12/44.6-14/31
Annex 1, Chapter 1, 1.2.9.1 and Chapter, 5.1.1.2 XIII
Doc 9379, Part II, Chapter 6 and Attachment)

Yes ☐
No ☐

Comments

3. Has your State
promulgated regulation for language testing standards?
(Reference: Annex 1, 1.2.9.6 and 1.2.9.7, and Doc 9835, Chapter 4, 4.4.7)

Yes ☐
No ☐

Comments

4. Has your State promulgated regulations requiring formal demonstration of proficiency for individuals qualified below the Expert Level (Level 6)?
(Reference: Annex 1, Chapter 1, Section 1.2.9.6)

Yes ☐
No ☐

Comments

Are these individuals to be evaluated at intervals at least once every three years for those demonstrating language proficiency at the Operational Level (Level 4), and at least once every six years for those demonstrating language proficiency at the Extended Level (Level 5)?

Yes ☐
No ☐

Comments

5. Has your State promulgated regulation for implementation of English Level Proficiency Assessment bodies?
(Reference: Doc 9835, Chapter 6)

Yes ☐
No ☐

Comments

6. Does your State certify or approve English Level Proficiency assessment bodies?

Yes ☐
No ☐

Comments

7. Does your State aviation authority have an oversight system of English Level Proficiency assessment bodies?

Yes ☐
No ☐

Comments

8. Has your State promulgated regulation for assessors' qualifications?
(Reference: Doc 9835, Chapter 6)

Yes ☐
No ☐

Comments

9. Does your State monitor the test results and use the results for quality enhancement?

Yes ☐
No ☐

Comment

10. Does your State have process or mechanism to deal with foreign licence holders (ELP assessed in foreign territory) at time of conversion?

Yes ☐
No ☐

Comments

APPENDIX 5.1H

List of Actions to support the SEIs

Target Achieved	In Progress	Delayed

SEI: Improve the status of implementation of State Safety Programme (SSP) and Safety Management System (SMS) in the MID Region		
Actions	**Champion**	**Progress/Remarks**
Conduct of Safety Management Training Courses, Symposia and Workshops.	ICAO	**Ongoing** ICAO Safety Management for Practitioners (SMxP) Course held in Cairo, Egypt, 14 – 18 January 2018. APAC/MID Safety Management Symposium held in Singapore, 23-26 April 2018. Fourth MID Region Safety Summit (Riyadh, 2-3 October 2018). Safety Management Capacity Building Workshop (ICAO MID Office, Cairo, Egypt, 24-28 March 2019).
Establish the MENA RSOO to support States in the expeditious implementation of SSP.	Saudi Arabia, ACAO and ICAO	**In Progress** First MENA RSOO Steering Committee (Riyadh, 1 October 2018). Revised LoI was signed by 15 States. A MENA RSOO Technical Meeting (Riyadh, 2-4 February 2019) to review and finalize MOA and Project Document. The meeting came up with a set of recommendations. Second MENA RSOO Steering Committee is tentatively planned to be held in Rabat, Morocco concurrently with the ACAO Executive Council and General Assembly.
Improve the status of implementation of SMS at International Aerodromes.	Egypt, Saudi Arabia and UAE	**Ongoing** Aerodrome Customized SMS Workshop conducted back-to-back with the RGS WG/5 meeting with technical support provided by experts from Egypt and UAE.

SEI: Improve the status of implementation of State Safety Programme (SSP) and Safety Management System (SMS) in the MID Region		
Actions	**Champion**	**Progress/Remarks**
		Aerodrome SMS Compliance and Effectiveness Toolkit have been developed by UAE and presented during the SMS Workshop.
Improve the status of implementation of SMS by ANSPs (ATM) through: - Organize Joint Workshop with CANSO - States to share experience and best practices - Monitor the SMS implementation status; - Review and simplify the EUROCONTROL/CANSO Standard of Excellence in SMS Questionnaire - Disseminate the Questionnaire to the MID States. - Review and analyse feedback from States	CANSO/ICAO AD-Hoc Action Group for SMS by ANSPs ICAO	**Delayed** ICAO MID Office sent a reminder to States in order to urge their ANSPs to complete the EUROCONTROL/CANSO Standard of Excellence in SMS Questionnaire and send it back to CANSO before the end of October 2017 (only 2 replies received from Jordan and Oman). CANSO Middle East SMS Training Workshop (Muscat, Oman, 27-29 November 2017) with the objective to primarily focus on effective implementation of an SMS, mapping the CANSO Standard of Excellence in Safety Management Systems against Annex 19. AD-Hoc Action Group for SMS by ANSPs and ATM SG to follow up on the subject.
Improve the status of implementation of SMS by air operators.	IATA	**In Progress** A Survey was developed in coordination between ICAO MID Office and IATA and sent to the MID States through State Letters (December 2017) in order to measure and monitor the SMS implementation by air operators. A Reminder was sent on 10 January 2018. 6 replies received from Bahrain, Jordan, Oman, Qatar, Syria and Yemen. According to IATA, 29 air operators have SMS in place as part of IOSA

SEI: Improve the status of implementation of State Safety Programme (SSP) and Safety Management System (SMS) in the MID Region		
Actions	**Champion**	**Progress/Remarks**
Improve the status of implementation of SMS by maintenance organizations.	IATA	**In Progress** A Survey was developed in coordination between ICAO MID Office and IATA and sent to the MID States through State Letters (December 2017) in order to measure and monitor the SMS implementation by air operators. A Reminder was sent on 10 January 2018. 6 replies received from Bahrain, Jordan, Oman, Qatar, Syria and Yemen. No update provided
Improve the status of implementation of SMS by training organizations (involved in flight training).	ACAO and ICAO	**Delayed** A Survey was developed in coordination between ICAO MID Office and IATA and sent to the MID States through State Letters (December 2017) in order to measure and monitor the SMS implementation by air operators, A Reminder was sent on 10 January 2018. 6 replies received from Bahrain, Jordan, Oman, Qatar, Syria and Yemen.

SEI: Strengthening of States' Safety Oversight capabilities		
Actions	**Champion**	**Progress/Remarks**
Conduct USOAP CMA Workshops including cost-recovery.	ICAO	**Completed** USOAP-CMA Regional Workshop conducted in Cairo, Egypt 6-9 February 2017. Cost-Recovery Workshops provided when requested by States.
Establish the MENA RSOO to assist States to resolve safety oversight deficiencies and carry out tasks and functions in the area of PEL, OPS, AIR, AGA and ANS.	Saudi Arabia, ACAO and ICAO	**In Progress** First MENA RSOO Steering Committee (Riyadh, 1 October 2018). Revised LoI was signed by 15 States A MENA RSOO Technical Meeting (Riyadh, 2-4 February 2019) to review and finalize MOA and Project Document. The meeting came up with a set of recommendations. Second MENA RSOO Steering Committee is tentatively planned to be held in Rabat, Morocco during the ACAO Executive Council and General Assembly.
Organize Government Safety Inspector (GSI) Courses (OPS, AIR, ANS, and AGA).	ICAO	**Ongoing** GSI Course ATM (Cairo, Egypt, 17-21 September 2017). GSI-AIR Course (Cairo, Egypt, 1-18 July 2018).
Conduct ICAO missions to States to provide assistance related to the preparation of USOAP-CMA activities.	ICAO	**Ongoing** ICAO MID Office conducts mission to States to all States scheduled for USOAP-CMA activities.

SEI: Strengthening of States' Safety Oversight capabilities		
Actions	**Champion**	**Progress/Remarks**
Develop and implement a specific NCLB plan of actions for prioritized States according to established criteria.	ICAO/States/Stakeholders	**Ongoing** The MID Region NCLB Strategy endorsed by the DGCA-MID/4 Meeting (Muscat, Oman, 17-19 October 2017). ICAO MID Office develop/ implement NCLB plan of actions in accordance with the established criteria in the Strategy.

SEI: Improve Regional Cooperation for the provision of Accident & Incident Investigation		
Actions	**Champion**	**Progress/Remarks**
Improve the draft version of the Strategy for the establishment of a Middle East RAIO, in order to be presented and reviewed during the Workshop.	UAE in coordination with Bahrain, Saudi Arabia, Sudan and the ICAO MID Office	**Completed**
Organize the ACAO/ICAO AIG Workshop.	Saudi Arabia	**Completed** ACAO/ICAO AIG Workshop (Jeddah, Saudi Arabia, 25-27 April 2017).
Finalize the Strategy for the establishment of a Middle East RAIO by the ACAO/ICAO AIG Workshop.	States/ACAO/ICAO/Stakeholders	**Completed**
Final endorsement by RASG-MID and the ACAO Executive Council.	ICAO and ACAO	**Completed** The Strategy endorsed by the DGCA-MID/4 Meeting (Muscat, Oman, 17-19 October 2017). The Roadmap for the implementation of the Strategy be further finalized by the RASG MID.
Organize MENASASI 2017 Seminar in Saudi Arabia.	Saudi Arabia	**Completed** 5th Annual MENASASI Seminar & Workshop (7-9 Nov 2017)

SEI: Improve Regional Cooperation for the provision of Accident & Incident Investigation		
Actions	**Champion**	**Progress/Remarks**
Organize workshop on implementation processes and procedures in AIG	Saudi Arabia	**Ongoing** Workshop on implementation processes and procedures in AIG (26-28 March 2019 in Jeddah)
Establishment of the AIG Core Team	States/ICAO/ACAO	**Completed**
Roadmap for AIG Regional Cooperation	States/ICAO	**Completed** RSC/6 meeting reviewed and updated the Roadmap for AIG Regional Cooperation. (Cairo, Egypt, 25-27 June 2018)
Develop a questionnaire and disseminate to States for surveying the current status of bilateral cooperation between MENA States (Level 1)	AIG Core Team ICAO States	**Completed** Replies to the AIG Questionnaire were received from eight (8) States. (Bahrain, Egypt, Iran, Morocco, Saudi Arabia, Sudan, UAE, and Yemen)
Analyse the received responses including the assessment of the effective implementation of the cooperation elements as listed in the Strategy (Level 1)	AIG Core Team	**Completed** Analysis report reviewed by the SST-MID/5 meeting. The meeting agreed that the level 1 is completed
- Develop a Draft Questionnaire to survey States AIG capabilities (Level 2) - Draft to be presented to the RASG-MID/7 meeting for endorsement.	AIG Core Team	**On-going**
- Develop a Draft AIG Regional Cooperation Mechanism (ARCM) - AIG Core Team review the Draft ARCM and provide inputs/ comments to the Secretariat in order to consolidate an improved draft to be presented to the RASG-MID/7 for review before endorsement by the DGCA-MID/5 meeting	AIG Core Team	**On-going**

SEI: Improve implementation of ELP requirements in the MID Region		
Actions	**Champion**	**Progress/Remarks**
Finalize a Questionnaire to be used as the basis of a survey to assess the implementation of ELP requirements.	UAE in coordination with the ICAO MID Office Ad-Hoc Action Group for ELP	**On-going** UAE presented a Draft Questionnaire to the MID-SST/5
Disseminate the Questionnaire to the MID States.	ICAO	**Not started**
Analyse the survey results and agree on next course of actions.	Ad-Hoc Action Group for ELP MID-SST in coordination with the ATM SG	**Not started**

SEI: Sharing of Safety Recommendations related to Accidents and Serious Incidents		
Actions	**Champion**	**Progress/Remarks**
- Establish an Ad-hoc Action Group - Develop a study to select the best mechanism for sharing of safety recommendations, as well as a supporting Charter of Cooperation	Saudi Arabia and UAE	The RSC/6 meeting noted with appreciation that UAE will be the Champion for the implementation of this SEI. It was also agreed that details on actions and deliverables should be addressed by the MID-SST/5 meeting. It was agreed that the Regional Database should include safety recommendations related to accidents and serious incidents. UAE to provide update on the subject.

APPENDIX 5.1I

STRATEGY FOR THE ENHANCEMENT OF COOPERATION AMONG THE MIDDLE EAST AND NORTH AFRICA (MENA) STATES IN THE PROVISION OF AIG FUNCTIONS

1- Background

Whereas it is incumbent on the State in which an accident occurs to institute an inquiry into the circumstances of the accident in conformity with Article 26 of the Convention;

Whereas Assembly Resolution A36-10, inter-alia:

- urges Contracting States to undertake every effort to enhance accident prevention measures, particularly in the areas of personnel training, information feedback and analysis and to implement voluntary and non-punitive reporting systems, so as to meet the new challenges in managing flight safety, posed by the anticipated growth and complexity of civil aviation;

- urges Contracting States to cooperate with ICAO and other States in a position to do so, in the development and implementation of accident prevention measures designed to integrate skills and resources to achieve a consistently high level of safety throughout civil aviation;

Whereas, amendment 15 of Annex 13 (STD 3.2) stipulates that a State shall establish an accident investigation authority that is independent from State aviation authorities and other entities that could interfere with the conduct or objectivity of an investigation;

Whereas, owing to the growing sophistication and complexity of modern aircraft, the conduct of an accident or serious incident investigation requires participation by experts from many specialized technical and operational fields and access to specially equipped facilities for investigation;

Whereas many Contracting States do not have such specialized technical and operational expertise and appropriate facilities;

Whereas the costs of salvage and investigation of major aircraft accidents may place a heavy financial burden on the resources of the State where the accident occurred;

Whereas Assembly Resolution A37-15 (Appendix U), recommends that Contracting States cooperate in the investigation of major aircraft accidents or accidents in which the investigation requires highly specialized experts and facilities;

Whereas, the ICAO Universal Safety Oversight Audit Programme (USOAP) audit findings indicate that a number of States have not been able to implement an effective accident and incident investigation system for their aviation activities;

Recognizing that the USOAP findings have been associated, in general, with a lack of resources (both human and financial), lack of appropriate legislation and regulations, lack of an organization for the investigation of accidents and incidents, lack of a training system for investigators, lack of equipment to conduct investigations and lack of policies, procedures and guidelines for accident and incident investigations;

Recognizing that combined with the expected increase in air transport operations, the relatively unchanged trend in the accident rate over the past several years might lead to an increase in the number of accidents per year;
Recognizing that there are many challenges to effective accident prevention, and that more effective identification and correction of aviation hazards and system deficiencies are required in order to complement regulatory efforts in further reducing the number of worldwide accidents and to improve the accident rate;

Recognizing that a regional investigation system can provide economies of scale by allowing for the sharing of required resources, and that by working together, States of a region or sub-region can have a more persuasive voice on the world stage and can help secure a more favorable climate aimed at a safer international air transportation system;

Acknowledging that during the AIG Divisional Meeting (2008) several States highlighted that, in regions where individual States do not have investigation capability, implementing a regional accident and incident investigation organization (RAIO) would ensure the effectiveness of investigations, reinforce conformity with the provisions of Annex 13, and contribute to the enhancement of aviation safety;

Whereas, Annex 13 (STD 5.1 and 5.1.2) stipulates that the State of Occurrence shall institute an investigation into the circumstances of the accident and serious incident (maximum mass of over 2 250 kg) and be responsible for the conduct of the investigation, but it may delegate the whole or any part of conducting of such investigation to another State or a RAIO by mutual arrangement and consent. In any event, the State of Occurrence shall use every means to facilitate the investigation;

Considering that the DGCA-MID/2 meeting (Jeddah, Saudi Arabia, 20 - 22 May 2013) noted that it is widely considered that implementing a RAIO would ensure the effectiveness of investigations, reinforce conformity with the provisions of Annex 13, and contribute to the enhancement of aviation safety; and accordingly through Conclusion 2/11 endorsed the First version of the Strategy for the establishment of RAIO(s);

Considering the AIG needs and capabilities of the Middle East and North Africa (MENA) States; and the implementation of different levels of cooperation for the provision of AIG services/functions at the regional/sub-regional level; and

Considering the challenges related to the establishment of a RAIO;

A strategy is crucial for the enhancement of cooperation in the provision of AIG services/functions among the Middle East and North Africa (MENA) States.

2- Objective

Contribute to improvement of aviation safety in the MENA States by enabling States to conduct effective and independent investigations of aircraft accidents and incidents; and support States in fulfilling their investigation obligations in Annex 13.

3- Methodology

During the ACAC/ICAO AIG Workshop held in Jeddah, Saudi Arabia, 25-27 April 2017, three (3) levels of cooperation for the provision of AIG services/functions in the MENA States have been defined as

follows:
Level 1:

Cooperation among MENA States under the framework of Annex 13 and/ or a standard bilateral MOU to share, on ad-hoc basis, resources, training, information, documentation and capabilities; and strengthen conformity with Annex 13.

Level 2:

Cooperation among MENA States under the framework of a regional cooperation mechanism (well-defined scope and set of coordinated, organized and harmonized procedures and mechanisms) for the conduct of accidents and serious incidents investigations.

Level 3:

Establishment of a RAIO with well-defined mandate, roles and responsibilities, organization (human resources), funding mechanism, etc.; with a centralized decision-making process on RAIO activities.

The Table in **Attachment 1** provides more details about each level.

4- Strategic Plan

(a) States are urged to develop and further strengthen regional/sub-regional cooperation for accidents and incidents investigation.

(b) MENA States should take necessary measures to reach at least level 2.

(c) An implementation Roadmap for MENA States should be developed, under the framework of RASG-MID, to provide the details and timelines related to the implementation of the different levels.

(d) Key Performance Indicators (KPIs) should be developed for the monitoring of the implementation of the Roadmap to ensure that the agreed goals are achieved.

(e) The decision on whether to continue towards the establishment of a full MENA RAIO, or to be satisfied with level 2 cooperation, will be taken in due course, depending on the achievement of the expected KPIs/goals.

	Level 1 (Bilateral Agreements)	Level 2 (Regional Cooperation Mechanism)	Level 3 (RAIO)
Human resources	Shared between the two States	List of MENA States' investigators available to support States in the conduct of investigations, as required. The State conducting the investigation will hold the cost	Investigators from RAIO will lead/participate in investigation conducted by a member State, The cost share is determined by RAIO
AIG training	Shared between the two States	List of planned training courses in all member States is maintained by a voluntary State. Member States may benefit from training conducted by other member States.	- The syllabus of the basic training is RAIO-centralized. - Advanced and specialized trainings are determined by RAIO
Equipment, tools, and technology	Shared between the two States	List of MENA States' special equipment is determined and maintained by a voluntary State for use by all member States, as required. The State conducting the investigation will hold the cost	RAIO-centralized tools and equipment are used by member States. Cost share is determined by RAIO
Accidents and incidents database	Access may be granted to the other State's accident/incident database	Database is shared voluntary and managed by a voluntary State	Database is obliged to be shared and is RAIO-centralized
Data repository	Access may be granted to the other State's data repository	Common data repository is managed by a voluntary State	Data repository is RAIO-centralized
Knowledge, safety information, and procedures	Shared between the two States	- Knowledge and information is stored in data repository managed by a voluntary State - Procedure is common	- Knowledge and information is stored in RAIO-centralized data repository - Procedure is centralized
Services of State's National Centers of research, laboratories, institutions, experts, etc. (External to the AIG)	A State can utilize the other State's National Centers	List of MENA States' Centers that can be utilized by any member State. The State conducting the investigation will hold the cost	RAIO-centralized list of Centers. Cost share is determined by RAIO

	Level 1 (Bilateral Agreements)	**Level 2 (Regional Cooperation Mechanism)**	**Level 3 (RAIO)**
Investigation regulations	Individual, but a State can benchmark the other State	Harmonized and coordinated by a voluntary State	RAIO-centralized
Oversight of the State investigation authority	Individual, but a State may conduct a peer-review upon the other State request	Pooled peer-review group maintained by a voluntary State	RAIO oversight (either by a RAIO group or by outsourced organization)
Funding of conducting investigations	The State responsible for initiating the investigation holds the cost	The State responsible for initiating the investigation holds the cost	Investigations into certain category of accidents are conducted by RAIO based on published criteria. Cost share is determined by RAIO
Funding of regional investigation organization	-	-	Centralized fund by States' contributions

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APPENDIX 5.1J

ROADMAP FOR AIG REGIONAL COOPERATION

Level of Cooperation	Action		Target date	Deliverable	Champion	KPI
	No.	Description				
Level 1 Cooperation among MENA States under the framework of Annex 13 and/ or a standard bilateral MoU to share, on ad-hoc basis, resources, training, information, documentation and capabilities; and strengthen conformity with Annex 13	1	Develop a questionnaire and disseminate to States through a State Letter for surveying the current status of the MENA States in bilateral cooperation, and their willingness to move to Level 2	30 Sep. 2018	Survey	AIG Core Team ICAO States	• Number of States' responses
	2	Analyze the received responses including the assessment of the effective implementation of the cooperation elements as listed in the Strategy (Level 1)	31 Oct. 2018		AIG Core Team	• Number of bilateral agreements per State • Level of effective implementation of Level 1 elements • Number of States willing to move to Level 2
Level 2 Cooperation among MENA States under the framework of a regional cooperation mechanism (well-defined scope and set of coordinated, organized and harmonized procedures and mechanisms) for the conduct of accidents and serious incidents investigation	3	Develop a Draft Questionnaire to survey States AIG capabilities	31 Dec. 2018	Draft Questionnaire	AIG Core Team	
	4	Develop a Draft AIG RCM	31 Dec. 2018	Draft AIG RCM	AIG Core Team	
	5	Endorsement of the Questionnaire by the RASG-MID/7 Meeting	Apr. 2019	RASG-MID/7 Report	ICAO/RASG-MID	Questionnaire endorsed
	6	Endorse the Draft AIG RCM by the DGCA-MID/5 Meeting and ACAO EC	Nov. 2019	DGCA-MID/5 Report and ACAO EC Report	ICAO/DGCA-MID/5 ACAO EC	AIG RCM endorsed
Remaining level 2 actions will be detailed in due course						

APPENDIX 5.1K

Questionnaire on Accidents and Incidents Investigation (AIG) Level 2 Cooperation-MENA States

Questionnaire to survey States' AIG capabilities

State Name: …………………………….

Name of AIG organization: ………………………………………..

No.	Question	State Reply
1	Does the State have its own appropriately qualified personnel identified and charged with aircraft accident and serious incidents investigation duties? Please list the number of qualified investigators and their area of expertise.	
2	Has the State established and implemented a process to ensure that the AIG authority have sufficient financial resources?	
3	Has the State established an aircraft accident and incident investigation-training unit(s)? If yes, please list the name of the unit(s) institute/academy and the list of provided courses.	
4	Does the State have all the necessary equipment to enable the conduct of the investigation? If yes, please list the number and name of equipment.	
5	Does the State have all necessary protective equipment to address the biological hazards and other hazards at accident sites? If yes, please list them.	
6	Does the State have all necessary means of communication to enable the conduct of the investigation? Please list them.	
7	Does the State have all necessary modes of transportation to enable the investigators to reach difficult accident site? *Note.−Modes of transportation means land, sea, and aerial.*	

8	Has the State established an accident and incident database to facilitate effective analysis of data?	
9	If the answer of question (8) is yes: (a) is the database created in a standardised format to facilitate data exchange?	
	(b) is the taxonomy compatible with ADREP/ECCAIRS	
10	Does the State have the appropriate laboratories and expertise for downloading and analyzing CVR/FDR data?	
11	Does that State AIG have in place agreements with local centers, laboratories, institutions, to support the AIG's investigation analysis?	
12	Please describe briefly State needs in order to conduct its investigation functions effectively	

APPENDIX 5.1L

AIG Regional Cooperation Mechanism (ARCM)

Middle East and North Africa (MENA)

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1. VISION AND MISSION OF THE ARCM

1.1 The MENA AIG Regional Cooperation Mechanism (ARCM) is a mechanism, which will foster the cooperation among MENA member States for the provision of AIG functions. The ARCM will create a platform to support States requesting assistance for fulfilling their investigation obligations. This will make investigation capabilities and outcomes of the investigation within the Region more effective.

1.2 The ARCM is NOT an entity with legal status, and its work will be with no financial implications. Any expenses for applying this ARCM provisions will be covered by the Member State requesting such services or as agreed by both parties (requestor and provider(s)).

2. PARTICIPANTS

2.1 Participation in the ARCM is open to all MENA member States interested to join the ARCM.

3. ARCM OBJECTIVES

3.1 The main objectives of the ARCM are to:

a) increase and facilitate cooperation and collaboration among ARCM member States with respect to aircraft accident and incident investigation;

b) make utmost use of AIG resources available in the MENA member States, including expertise, training capabilities, equipment, investigation know-how and information, standards and guidance, etc.;

c) facilitate actions aiming at increasing the qualifications and experience of accident investigators in MENA member States;

d) encourage the development of investigation common standards, rules and regulations consistent with the ICAO provisions. The MENA member States will also be encouraged to use a standard Template of investigation regulations for the development of their National Regulations; and

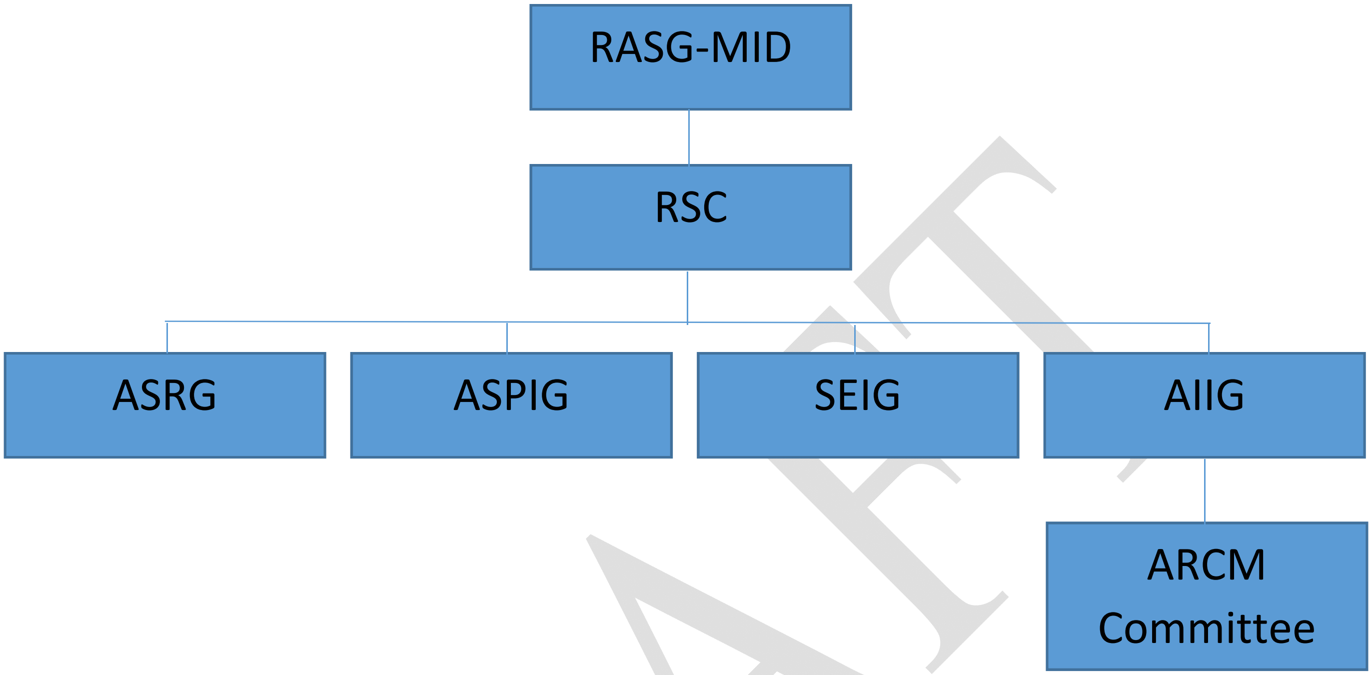
e) encourage the development of a common accident and incident database for the MENA member States, and utilize this database for identifying operational safety risks and their corresponding controls.

4. ARCM ORGANIZATIONAL STRUCTURE

4.1 The ARCM Committee shall consist of focal points nominated by each Member State.

4.2 The ARCM Committee is responsible for the overall supervision, direction, and management of the ARCM.

4.3 The ARCM Committee will be reporting to the RASG-MID through the Accident and Incident Investigation Group (AIIG), as shown in the following Organization Structure:



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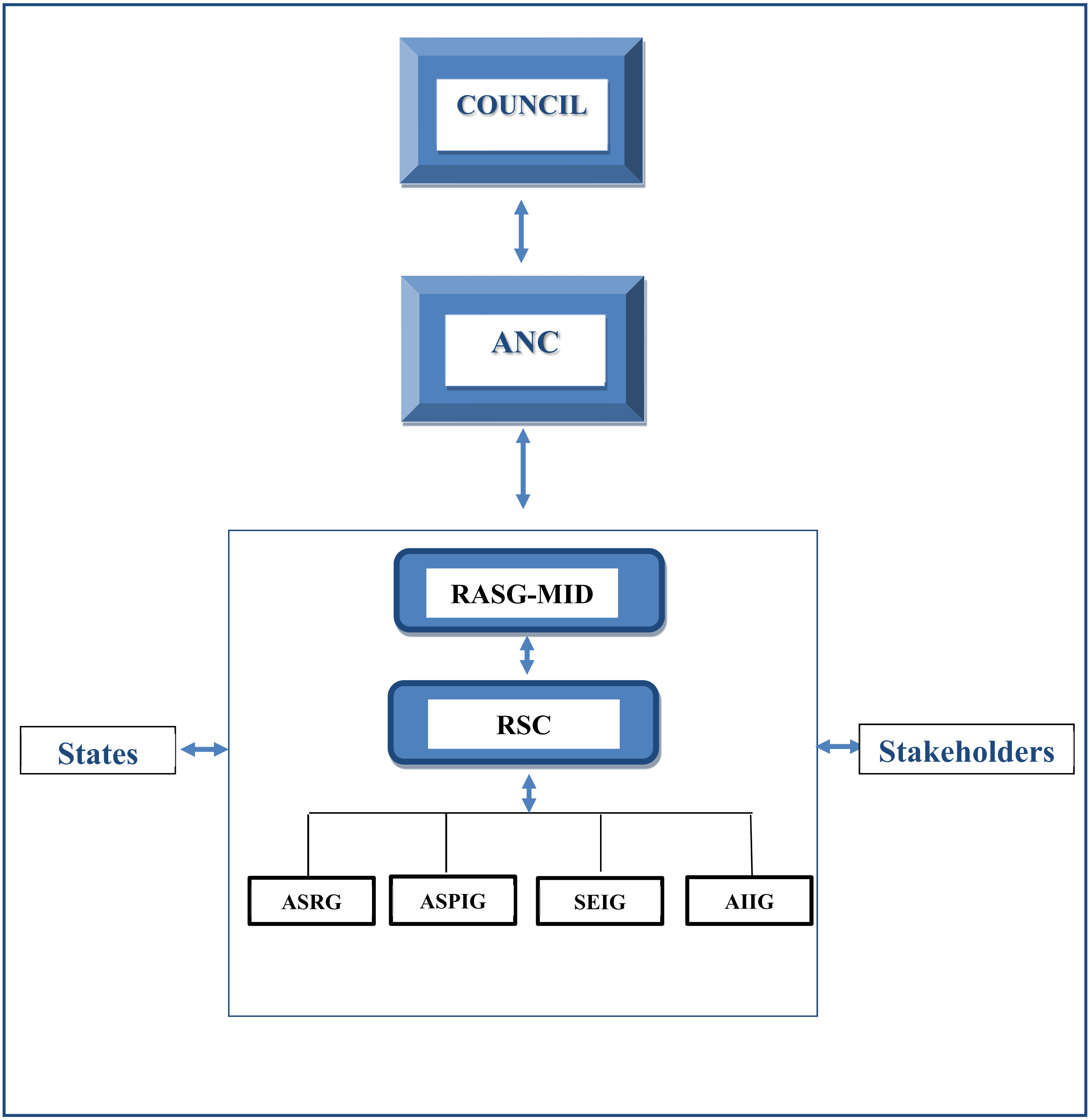
APPENDIX 5.2A

RASG-MID
ORGANIZATIONAL STRUCTURE



APPENDIX 6.1A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/16 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 16/1: MID RVSM SAFETY MONITORING REPORT (SMR) 2015 That, the MID RVSM Safety Monitoring Report (SMR) 2015 is endorsed.	Endorsement of the MID RVSM SMR 2015	MID RVSM SMR 2016	MIDANPIRG/16	Feb 2017	**Completed**
CONCLUSION 16/2: MID RVSM SMR 2017 That, a) the FPL/traffic data for the period **1 – 30 September 2017** be used for the development of the MID RVSM Safety Monitoring Report (SMR 2017); 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 2017 be ready for presentation to and endorsement by MIDANPIRG/17.	Development of the MID RVSM SMR 2015	State Letter Traffic Data	ICAO State	Aug 2017 Oct 2017	**Closed** SL Ref.: AN 6/5.10.15A dated 31 Aug 2017 Completed
CONCLUSION 16/3: MID REGION AIR NAVIGATION STRATEGY That, the revised MID Region Air Navigation Strategy (MID Doc 002, Edition February 2017) at Appendix 5.1A is endorsed.	To update the MID Region Air Navigation priorities and targets	MID AN Strategy (MID Doc 002)	MIDANPIRG/16	Feb 2017	**Completed**
CONCLUSION 16/4: APPROVAL OF THE AMENDMENT TO THE MID eANP VOLUME III That, the amendment to the MID eANP Volume III at Appendix 5.1B is approved.	To amend/update the MID eANP Vol III	Amendment Notification of Amendment	MIDANPIRG/16 ICAO	Feb 2017 May 2017	**Completed** Amendment was approved by MIDANPIRG/16 Notification of amendment issued on 18 June 2017

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 16/5: ASSESSMENT OF PBN IMPLEMENTATION That, States be invited to: a) explore means and ways to assess the benefit accrued from the implementation of PBN; and b) report on annual basis (by 1 November), the environmental benefits accrued from PBN implementation to the ICAO MID Office in order to be included in the MID Region Air Navigation Report.	Post assessment of PBN Implementation to estimate the benefits accrued that would be included in the MID AN Report	State Letter Benefits accrued form PBN Implementation	ICAO States	Apr2017 Nov 2017 (annual basis)	**Actioned** SL Ref.: AN 6/28 – 17/120 dated 12 April 2017 (Bahrain, Jordan, Sudan)
CONCLUSION 16/6: ACTION PLAN FOR A-CDM IMPLEMENTATION That, in line with the MID Air Navigation Strategy, States concerned: a) be urged to develop their A-CDM implementation plan, with the support of ICAO MID Office, if required; and b) provide the ICAO MID Office with a copy of their plan before 1 November 2017.	To collect information about ACDM implementation/planning in the MID region	State Letter States National Plan	ICAO States	Jun 2017 Nov 2017	**Closed** SL Ref.: AN 5/23 – 17/174 dated 27 June 2017 (Bahrain, Sudan, UAE) (replaced and superseded by MSG/6 Conclusion 6/6 and MSG/6 Conclusion 6/7)
CONCLUSION 16/7: MID REGION AIR NAVIGATION REPORT-2016 That, the MID Region Air Navigation Report-2016 is endorsed.	To monitor ASBU implementation in the MID Region and present the status of implementation of the priority 1 ASBU Block 0	MID AN Report	MIDANPIRG/16	Feb 2017	**Completed** The Report Posted and published

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	Modules and associated indicators and targets (Reporting period 2016)				
CONCLUSION 16/8: MID REGION AIR NAVIGATION REPORT-2017 That, MID States be urged to: a) develop/update their National ASBU Implementation Plan, ensuring the alignment with and support to the MID Region Air Navigation Strategy (MID Doc 002); and b) provide the ICAO MID Office, with relevant data necessary for the development of the MID Region Air Navigation Report-2017, by 1 November 2017.	To monitor ASBU implementation in the MID Region and present the status of implementation of the priority 1 ASBU Block 0 Modules and associated indicators and targets (Reporting period 2017)	State Letter National ASBU Implementation Plan Data for AN Report 2017	ICAO States	Sep 2017 Nov 2017 Nov 2017	**Completed** SL Ref.: AN 1/7-17/188 dated 2 July 2017 (Bahrain, Egypt, Jordan, Qatar, Sudan & UAE) The Report was endorsed by MSG/6
CONCLUSION 16/9: ESTABLISHMENT OF HELIPORTS DATABASE That, States be urged to establish and maintain a database for Heliports with information about location and type of use, as a minimum.	For better monitoring of safety information related to Heliports	State Letter	ICAO	Jun 2017	**Closed** SL Ref.: AN 6/25 – 17/185 dated 29 June 2017 (Bahrain, Jordan, Oman)
CONCLUSION 16/10: GUIDANCE FOR AIM PLANNING AND IMPLEMENTATION IN THE MID REGION That, a) the Guidance for AIM Planning and Implementation in the MID Region is endorsed as MID Doc 008; and b) States be encouraged to use the MID Doc 008 in their AIM planning and implementation.	To provide necessary guidance to States for AIM implementation	MID Doc 008 State Letter Updated National AIM Roadmaps	MIDANPIRG/16 ICAO States	Feb 2017 May 2017 Nov 2017	**Closed** SL Ref: AN 8/4-17/133 dated 30 April 2017 (UAE) The draft Guidance will be presented to AIM SG/5 for finalization.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 16/11: AIRAC ADHERENCE MONITORING					**Closed**
That, a) States be urged to:	To monitor the AIRAC adherence and identify cases of non-adherence				
i. implement a system for AIRAC adherence monitoring; and		AIRAC adherence monitoring system	State Letter	Nov 2017	
ii. report on annual basis (by 31 March) to the ICAO MID Office the case(s) of late publication of aeronautical information of operational significance and non-adherence to the AIRAC provisions, using the AIRAC Adherence Monitoring Questionnaire at Appendix 5.2.2D.		State Letter Filled Questionnaire	ICAO States	Mar. 2017/ continuous Apr.2017/ continuous	SL Ref.: AN 8/4 – 17/087 dated 23 Mar 2017 13 States Replied (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan and UAE)
b) IATA report to the concerned State(s) and the ICAO MID Office any case of late publication of aeronautical information of operational significance and non-adherence to the AIRAC provisions.			IATA	Nov 2017/ continuous	The result of the surveys were reviewed by AIM SG/3 and AIM SG/4.
CONCLUSION 16/12: INTERREGIONAL SEMINAR ON "SERVICE IMPROVEMENT THROUGH INTEGRATION OF DIGITAL AIM, MET AND ATM INFORMATION"					**Completed**
That, States, Organizations and Industry be invited to actively participate in the Interregional Seminar on "Service Improvement through Integration of Digital AIM, MET and ATM Information Services" (Brussels, Belgium, 2-5 October 2017).	To provide guidance and updates to States and share experiences and best practices	State Letter Actively participate in the Seminar	ICAO States, Organizations and Industry	Jun 2017 Oct 2017	SL Ref.: AN 8/28.1-17/175 dated 14 June 2017 Only 6 MID States participated
DECISION 16/13: DISSOLUTION OF THE MPCT					**Completed**
That, the MAEP Projects Coordination Team (MPCT) is dissolved and its duties and responsibilities be taken over by the MAEP Board.	Low level of attendance and support	Dissolution of MPCT	MIDANPIRG/16	Feb. 2017	

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 16/14: MAEP BOARD TERMS OF REFERENCE That, the MAEP Board Terms of Reference be endorsed as at **Appendix 5.2.2E.**	Revised ToR of MAEP Board	MAEP Board ToR	MIDANPIRG/16	Feb 2017	**Completed**
CONCLUSION 16/15: MID IP NETWORK PROJECT (CRV) That, a) States that have already committed to join CRV, are invited to engage with the recommended supplier to establish individual service contracts; and b) States that have not yet done so, are urged to carry out a comprehensive CBA related to the implementation of an IP Network under the CRV framework; and inform the ICAO MID Office, as soon as possible, about their decision related to the joining of CRV.	To establish MID IP Network in the MID Region	State Letter Engage with the recommended supplier	ICAO States	May 2017 Dec 2017	**Actioned/Ongoing** SL Ref.: AN 6/31.4-17/160 dated 29 May 2017 (Egypt)
DECISION 16/16: ATFM TASK FORCE That, a) an ATFM Task Force be established to develop an ATFM Concept of Operations for the MID Region; b) the ATM SG/3 meeting develop the terms of reference of the ATFM Task Force; and c) States support the ATFM Task Force through: i. assignment of ATFM Focal Point to contribute to the work of the Task Force; and ii. provision of required data in timely manner, and in particular to the survey that will be carried out related to the airspace and sectors capacity, hot-spots, ATFM measures/system, etc.	To develop an ATFM CONOPS for the MID Region	Establishment of ATFM TF ATFM Concept of Operations Assign ATFM FP Support ATFM TF and provide required data	MIDANPIRG/16 ATFM TF ICAO States	Feb 2017 Sep 2017 Apr 2017 May 2017 Jan 2018	**Closed** Completed SL Ref.: AN 6/5.5 – 17/121 dated 12 Apr. 2017 (Bahrain, Jordan, Kuwait) Completed

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 16/17: MID ROUTE DEVELOPMENT WORKING GROUP (MID RDWG)					**Completed**
That,	To provide a platform for States and Airlines to address issues related to airspace management and ATS routes and agree on measures for improvements				
a) a MID Route Development Working Group be established to support the route development within the MID Region and at the interfaces with ICAO AFI, APAC and EUR Regions; and		Establishment of RDWG	MIDANPIRG/16	Feb 2017	Completed
b) the ATM SG develop the terms of reference of the MID RDWG.		RDWG ToR	ATM SG	May 2017	ToR to be endorsed by the meeting
DECISION 16/18: WORLD CUP 2022 TASK FORCE					**Closed**
That,	To address the traffic flows challenges associated with major events and in particular the FWC2002				
a) a World Cup 2022 Task Force be established to develop and follow-up the implementation of a collaborative action plan to accommodate the expected high increase in traffic, in a safe and efficient manner, taking into consideration similar experiences;		Establishment of World Cup 2022	MIDANPIRG/16	Feb 2017	Completed
b) the Task Force address other major events such as the EXPO 2020; and					
c) the ATM SG develop the terms of reference of the Task Force.		TF ToR	ATM SG	May 2017	ToR endorsed by the meeting

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 16/19: IMPLEMENTATION OF REDUCED RADAR LONGITUDINAL SEPARATION IN THE MID REGION					**Closed**
That, a) States, that have not yet done so; i) be urged to implement 20 NM radar longitudinal separation; and ii) be encouraged to further reduce the radar longitudinal separation within the MID Region to 10 NM; b) the ATM SG monitor the status of implementation and take appropriate actions to foster the implementation., metrics and targets, for which the necessary data is available.	To reduce separation that would support in increasing capacity	State Letter	ICAO	Apr 2017	SL Ref.: AN 6/5.5 – 17/122 dated 12 Apr. 2017 Continuous
CONCLUSION 16/20: SIDs AND STARs NEW PHRASEOLOGIES					**Closed**
That, States be urged to: a) implement the provisions of amendment 7 to ICAO Doc 4444, in particular those related to the SIDs and STARs new phraseologies; and b) provide the ICAO MID Office with their implementation plan by 1 May 2017.	To harmonize the implementation of the SIDs and STARs new phraseologies	State Letter Implementation plans for the new SIDs and STARs phraseologies	ICAO States	Apr 2017 May 2017	SL Ref.: AN 6/5.5 – 17/123 dated 12 Apr. 2017
DECISION 16/21: SAR LONGSTANDING DEFICIENCIES					**Closed**
That, the ATM SG explore ways and means to support States in the elimination of the longstanding SAR deficiencies.	To support resolving the longstanding SAR deficiencies	ATM SG	Means to support States with SAR deficiencies	May 2017	Guidance included in the MID Region SAR Plan

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 16/22: MODE S INTERROGATOR CODE (IC) ALLOCATION That, States, that have not yet done so, be urged to: a) provide the ICAO MID Office with their Mode S Interrogator Code (IC) Focal Points; and b) register to the MICA application for the allocation of the Mode S Interrogator Code (IC) at: https://ext.eurocontrol.int/mica/Index.action	To manage the Mode S IC code allocation efficiently	State Letter Focal Point(s) MICA Registration	ICAO	Sep 2017 Dec 2017	**Closed** SL Ref.: AN 7/27 – 17/329 dated 26 Nov. 2017 (Egypt, Jordan, Kuwait, Saudi Arabia, Sudan) Regional Workshop conducted (Feb. 2019)
DECISION 16/23: MID REGION SURVEILLANCE PLAN That, the MID Region Surveillance Plan be developed by the CNS SG, based on the operational needs identified by the ATM SG.	To provide guidance to States on Surveillance planning and implementation	MID Region Surveillance Plan	CNS SG	Q1 2018	**Closed** (replaced and superseded by MSG Conclusion 6/32)
CONCLUSION 16/24: FTBP TESTING DOCUMENT That, the First Edition of File Transfer Body Part (FTBP) Testing Document at **Appendix 5.2.2N** is endorsed.	To provide guidance to States on testing the FTBP capability	FTBP Testing Document	MIDANPIRG/16	Feb 2017	**Completed**
DECISION 16/25: TERMS OF REFERENCE OF THE MIDAMC STG That, the Terms of Reference and Work Programme of the MIDAMC STG be updated as at **Appendix 5.2.2O**.	To add task to manage CRV project	MIDAMC STG TORs	MIDANPIRG/16	Feb 2017	**Completed**

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 16/26: ATM DATA SECURITY ACTION GROUP That, the ATM Data Security Action Group (ADSAG) be: a) established to develop the MID Region ATM Data Security Plan, to be presented to the CNS SG/8. b) composed of members from Bahrain, Iran, Kuwait, Oman, Saudi Arabia, UAE (Rapporteur), ICAO and IFAIMA.	To develop MID Region ATM Data Security Plan	State Letter MID Region ATM Data Security Plan	ICAO ADSAG members	Jun 2017 Q1-2018	**Closed** SL Ref: AN 6/38 – 17/334 dated 29 Nov. 2017 (Bahrain, Jordan, Kuwait, UAE) (replaced and superseded by MIDANPIRG Decision 17/37)
CONCLUSION 16/27: SPECIAL AIR-REPORT TEST That States be encouraged to participate in the EUR Special Air-Report Test in order to identify deficiencies and associated solutions in the reporting and dissemination of these reports.	Identify deficiencies and associated solutions in the reporting and dissemination of Special Air-Report	State Letter	ICAO	July 2017	**Completed** SL Ref: AN 10/16-17/208 dated 1 Aug 2017 (Bahrain)
CONCLUSION 16/28: MID REGIONAL SIGMET GUIDE That the MID Regional SIGMET Guide as provided at **Appendix 5.2.2Q** is endorsed and be published as ICAO MID Doc 009.	Harmonized implementation	MID Doc 009 updated	ICAO	Feb 2017	**Completed** (to be closed)
CONCLUSION 16/29: PROPOSAL FOR AMENDMENT TO MID ANP VOLUMES I AND II (MET PART) That ICAO initiate proposals for amendment to the MID ANP (Doc 9708) Volumes I and II, to include the changes at **Appendices 5.2.2R** and **5.2.2S,** respectively.	To amend the MET requirements in the MID eANP Vol I and II	Coordination with HQ	ICAO	Apr 2018	**Ongoing** Coordination with HQ ongoing

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 16/30: DISSOLUTION OF THE ATM PERFORMANCE MEASUREMENT TASK FORCE (APM TF)					**Completed**
That,					
a) the APM TF is dissolved; and	Low level of attendance and support to the TF	APM TF dissolution	MIDANPIRG/16	Feb 2017	Completed
b) the MIDANPIRG Organizational Structure contained in the MIDANPIRG Procedural Handbook (MID Doc 001) be amended accordingly.		MID Doc 001 updated	ICAO	May 2017	Completed
CONCLUSION 16/31: ENVIRONMENTAL PROTECTION					**Closed**
That, States that have not yet done so, be invited to:	To implement the Assembly Resolutions related to Environmental Protection, in particular State Action Plans on CO2 emission reduction				
a) provide the ICAO MID Regional Office with updated contact details of their State's CO2 Action Plan/Environment Focal Points;		State Letter	ICAO	May 2017	SL Ref: EN 1/5-17/171 dated 7 June 2017 (Egypt, Iraq, Qatar)
b) develop/update their State Action Plans on CO2 emission reduction, using the guidelines contained in the ICAO Doc 9988; and submit them to ICAO through the APER website or the ICAO MID Regional Office; and		CO2 Action Plans	States	2018	
c) take necessary actions for the implementation of the mitigation measures included in their Action Plan, commensurate with the establishment of a dedicated structure (e.g. Department, Section, etc.) within the Civil Aviation Authorities dealing with aviation environmental issues		Dedicated structure to Environmental protection			

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 16/32: REVISED ANSIG TERMS OF REFERENCE					**Completed**
That,					
a) the ANSIG Terms of Reference (TORs) be updated as at **Appendix 7A**; and	To add tasks related to Environment to ANSIG; and to update the TORs of some subsidiary bodies in the Procedural Handbook	Updated TORs	MIDANPIRG/16	Feb 2017	Completed
b) the MIDANPIRG Procedural Handbook (MID Doc 001) be amended accordingly.		MID Doc 001 updated	ICAO	May 2017	Completed

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APPENDIX 6.1B

FOLLOW-UP ACTION PLAN ON MSG/6 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG DECISION 6/1: FOLLOW-UP ON THE AN-CONF/13 RECOMMENDATIONS					**Ongoing**
That,	To support the implementation of the AN-Conf/13 Recommendations				
a) the Secretariat present a Working Paper to the MIDANPIRG/17 meeting to propose follow-up actions on relevant AN-Conf/13 Recommendations, for assignement to States and the different actors/stakeholders; and		Working Paper	Secretariat	Apr 2019	
b) the different MIDANPIRG subsidiary bodies should identify clearly the AN-Conf/13 Recommendations related to their terms of reference and agree on the necessary follow-up actions.		Identified Actions	MIDANPIRG Subsidiary Bodies	2019	
MSG CONCLUSION 6/2: AMENDMENT TO THE MID eANP VOLUME III					**Completed**
That, the amendment to the MID eANP Volume III at Appendix 5.2A is approved.	To amend/update the MID eANP Vol III	Amendment Notification of Amendment	MSG/6 ICAO	Dec 2018 Dec 2018	Amendment was approved by MSG/6 Notification of amendment issued on 19/12/2018
MSG CONCLUSION 6/3: SECOND EDITION OF THE MID REGION AIR NAVIGATION REPORT (2017)					**Completed**
That, the Second Edition of the MID Region Air Navigation Report (2017) at Appendix 5.2B is endorsed.	To monitor ASBU implementation in the MID Region and present the status of implementation of the priority 1 ASBU Block 0 Modules and associated indicators and targets (Reporting period 2017)	MID AN Report	MSG/6	Dec 2018	The Report Posted and published

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/4: MID REGION AIR NAVIGATION REPORT (2018)					**Closed**
That, MID States be urged to provide the ICAO MID Office, with relevant data necessary for the development of the Third Edition of the MID Region Air Navigation Report (2018), by **15 February 2019**.	To monitor ASBU implementation in the MID Region and present the status of implementation of the priority 1 ASBU Block 0 Modules and associated indicators and targets (Reporting period 2018)	State Letter Data for AN Report 2017	ICAO States	Dec 2018 Feb 2019	SL Ref.: AN 1/7-18/408 dated 19/12/2018 (Bahrain, Egypt, Jordan, Sudan) Report endorsed by MIDANPIRG/17 (Conclusion 17/9)
MSG CONCLUSION 6/5: MID REGION AIR NAVIGATION STRATEGY					**Completed**
That, the revised MID Region Air Navigation Strategy (MID Doc 002, Edition December 2018) at **Appendix 5.2E** is endorsed.	To update the MID Region Air Navigation priorities and targets	MID AN Strategy (MID Doc 002)	MSG/6	Dec 2018	
MSG CONCLUSION 6/6: SURVEY ON ACDM IMPLEMENTATION					**Actioned**
That, a) concerned States (according to the B0-ACDM applicability area included in the MID Air Navigation Strategy) be urged to provide the ICAO MID Office with the contact details of their designated ACDM Focal Points; and b) a Survey on ACDM implementation be carried out for the monitoring of ACDM implementation, using the template at Appendix 5.3A.	To monitor the effective implementation of the B0-ACDM module of the ASBU Block 0	Filled Questionnaire Questionnaire on ACDM implementation	States ICAO MID Office	20 March 2019 28 February 2019	 State Letter Ref.: AN 5/23-19/072

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/7: ACDM IMPLEMENTATION					**Actioned**
That,					
a) an ACDM Implementation Workshop be organized by the ICAO MID Office jointly with ACAO in 2019; and	To support the effective implementation of A-CDM	Filled Questionnaire	States	20 March 2019	
b) States be urged to develop an action plan for A-CDM implementation in line with the MID Air Navigation Strategy.		Questionnaire on ACDM implementation	ICAO MID Office	28 February 2019	State Letter Ref.: AN 5/23-19/072
MSG CONCLUSION 6/8: IMPLEMENTATION OF THE 16TH EDITION OF ANNEX 15 AND THE PANS AIM					**Actioned/Ongoing**
That, States be urged to:	For a harmonized implementation of the 16th Edition of Annex 15 and the PANS AIM	State Letter	ICAO	Dec 2018	SL Ref.: AN 8/2 – 18/409 dated 19/12/2018
a) take necessary actions on the implementation of the 16th Edition of Annex 15 and the PANS AIM, including: - updating AIS/AIM National Regulations; - identification and notification of differences (EFOD and AIP GEN 1.7), if any; - coordination with their AISPs to develop necessary operational procedures/practices in order to implement the provisions of Annex 15 and the PANS AIM;		Implement the Conclusion & Provide feedback	States	2019/ continuous	(Bahrain, Jordan)
b) provide feedback to the ICAO MID Office on the implementation of the 16th Edition of Annex 15 and the PANS AIM (Implementation Plan, difficulties/challenges, need for assistance, etc).					

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/9: REMOVAL OF PREFIX "U" FROM ROUTE DESIGNATORS					**Actioned**
That,					
a) States take necessary measures to remove the prefix "U" from the route designators published in their AIPs to be completed by December 2020;	To resolve the discrepancies between upper and lower ATS routes and Upper and lower airspaces	State Letter	ICAO	Feb 2019	SL Ref.: AN 6/12- 19/060 dated 20 Feb 2019
b) a Proposal for Amendment to the MID eANP Volume II-Specific Regional Requirements - Table ATM II-MID-1 - MID Region ATS Routes be processed to remove the prefix 'U"; and	The transition plan to be completed by Dec 2020	PfA for MID eANP Vol II	ICAO	Sep 2019	Draft to be reviewed by ATM SG/5
c) States support the MID Office to optimize the use of route designators in the MID Region.					
MSG DECISION 6/10: 5LNCS/ICARD REGIONAL REQUIREMENTS					**Completed**
That, the Secretariat process a Proposal for Amendment to the MID eANP Volume II-Specific Regional Requirements to mandate the use of ICARD as the only means for managing 5LNCs; and the alphanumeric codes for terminal airspace, in accordance with PANS-OPS (Doc 8168) provisions.	To mandate the use of ICARD to resolve the issue related to the use of name codes not from ICARD database.	Proposal for Amendment	ICAO	Jan 2019	PfA Serial No. MID-II 19/01 – ATM approved (SL Ref.: AN 6/5A – 19/121 dated 8 Apr 2019
MSG CONCLUSION 6/11: ICARD ISSUES					**Actioned**
That,					
a) States be urged to take necessary actions on the resolution of the issues related to ICARD/5LNCs, including: **i.** registration of all 5LNCs published in AIP into ICARD; **ii.** 5LNCs duplicates; **iii.** Non-ICAO codes;	To resolve the ICARD issues, Duplicate, like-soundings 5LNCs and to optimise the management of 5LNCs through ICARD.	State Letter Implement the Conclusion	ICAO States	Feb 2019 Dec 2019	SL Ref.: AN 8/15.1 - 19/060 dated 20 Feb 2019

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
iv. sound-like proximity; **v.** release of unused registered 5LNCs; and **vi.** use of Alphanumeric codes for terminal airspace, in accordance with PANS-OPS (Doc 8168) provisions. b) Users (IATA, IFALPA, Jeppesen, etc.) are invited to report issues related to ICARD/5LNCs in the MID Region to the ICAO MID Office; and c) an air navigation deficiency be filed against those States that are not complying with Annex 11 and Doc 8168 provisions related to 5LNCs	The task requires a lot of coordination and follow-up with States and willingness to implement the relevant requirements/solutions.	Users File deficiencies	Report ICARD ICAO	Continuous Continuous	
MSG DECISION 6/12: TERMS OF REFERENCE OF THE MID ROUTE DEVELOPMENT WORKING GROUP (MID RDWG) That, the MID RDWG Terms of Reference at **Appendix 5.3D** are endorsed.	Endorsement of MID RDWG TORs developed by the ATM SG.	TORs	MSG/6	Dec 2018	**Completed**
MSG DECISION 6/13: MID REGION ATS ROUTE CATALOGUE That, a) the MID Region ATS Route Catalogue at **Appendix 5.3E** is endorsed and be published on the ICAO MID and IATA MENA websites; and b) IATA is responsible to maintain the Catalogue up-to-date through the agreed process and the MID RDWG framework.	Development of more dynamic and up-to-date ATS route Catalogue to replace and supersede the previous one, which should be maintained by IATA	MID ATS Route Catalogue	MSG/6	Dec 2018	**Completed**

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG DECISION 6/14: MID ATM CONTINGENCY PLAN ACTION GROUP That, the MID ATM Contingency Plan Action Group, composed of ATM experts from Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, UAE, AACO, IATA and ICAO, be established to carry out a comprehensive review of the MID Region ATM Contingency Plan (MID Doc 003).	To carry out a comprehensive review and update of the MID ATM Contingency Plan	Establishment MID ATM Contingency Plan Action Group	MSG/6	Dec 2018	**Completed**
MSG CONCLUSION 6/15: DEFICIENCIES RELATED TO THE NON-SIGNATURE OF CONTINGENCY AGREEMENTS WITH STATES AT THE INTERFACE WITH ICAO MID REGION That, a) the MID eANP Volume II-Part IV (ATM) be amended to reflect the regional requirements related to the signature of ATM Contingency Agreements; and b) the deficiencies related to the non-signature of contingency agreements with the States at the interfaces with the ICAO MID Region be removed.	To update the regional requirements in the MID ANP related to the contingency agreements between adjacent ACCs and remove the deficiencies reported against States for not signing agreement with States at the interface with the ICAO MID Region	PfA for MID eANP Vol II Update MANDD	ICAO ICAO	Mar 2019 Feb 2019	**Completed** PfA Serial No. MID-II 19/01 – ATM approved (SL Ref.: AN 6/5A – 19/121 dated 8 Apr 2019 Completed
MSG CONCLUSION 6/16: REGIONAL MID REQUIREMENT FOR AIDC/OLDI IMPLEMENTATION That, a Proposal for Amendment to the MID eANP Volumes II – Part IV-ATM related to the requirement for AIDC/OLDI implementation (priority 1 interconnections) be processed in accordance with the standard procedure for amendment.	To add requirements for AIDC/OLDI in the MID ANP Vol II	PfA to MID eANP Vol II	ICAO	Mar 2019	**Completed** PfA Serial No. MID-II 19/01 – ATM approved (SL Ref.: AN 6/5A – 19/121 dated 8 Apr 2019

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/17: AMENDMENT OF THE MID SSR CMP AND MID eANP VOLUME II –TABLE ATM II-MID-2 That, a) ICAO process a Proposal for Amendment of the MID eANP Volume II-Table ATM II-MID-2 — MID SSR Code Allocation List, to reflect the changes at Appendix 5.3H; and b) the revised version of MID SSR CMP (MID Doc 005) at Appendix 5.3I is endorsed.	To resolve the interference at the interface between Tripoli FIR and EUR	PfA to MID eANP Vol II Revised MID SSR CMP	ICAO MSG/6	Mar 2019 Dec 2018	**Completed** PfA Serial No. MID-II 19/01 – ATM approved (SL Ref.: AN 6/5A – 19/121 dated 8 Apr 2019 Completed
MSG DECISION 6/18: TERMS OF REFERENCE OF THE MID ATFM TASK FORCE That, the MID ATFM Task Force Terms of Reference at Appendix 5.3J are endorsed.	Endorsement of MID ATFM TF TORs developed by the ATM SG.	ATFM TF TORs	MSG/6	Dec 2018	**Completed**
MSG DECISION 6/19: TERMS OF REFERENCE OF THE FIFA WORLD CUP 2022 TASK FORCE That, a) the name of the World Cup 2022 Task Force be changed to FIFA World Cup 2022 TF (FWC2022 TF); and b) the FWC2022 TF Terms of Reference at Appendix 5.3K are endorsed.	Endorsement of FWC2022 TF TORs developed by the ATM SG.	FWC2022 TF TORs	MSG/6	Dec 2018	**Completed**
MSG CONCLUSION 6/20: MID REGION PBN IMPLEMENTATION PLAN That the MID Region PBN Implementation Plan (MID Doc 007) - Edition December 2018 at Appendix 5.3L is endorsed and be published on the ICAO MID website.	Revised PBN regional Plan	Revised MID Region PBN Implementation Plan	MSG/6	Dec 2018	**Completed**

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/21: NATIONAL PBN IMPLEMENTATION PLANS That , the States' National PBN Implementation be published on the ICAO MID website to facilitate consultation and planning of the airspace users.	To facilitate consultation by users of States' national PBN plans	Publication of PBN national plans on the MID Website under eDocuments	ICAO	Continuous	**Completed**
MSG CONCLUSION 6/22: MID FLIGHT PROCEDURE PROGRAMME (MID FPP) That , States that have not yet done so, be urged to respond to the MID Office State Letter related to the MID FPP, join and support the Programme to benefit from its services.	To urge States to join the MID FPP	State Letter Feedback	ICAO States	Nov 2018 Dec 2018	**Actioned** Letters were sent and follow-up with each State has been carried out
MSG CONCLUSION 6/23: MID REGION SEARCH AND RESCUE IMPLEMENTATION PLAN That , the MID Region Search and Rescue Implementation Plan at Appendix 5.3O is endorsed as MID Doc 010 and to be published on the ICAO MID website.	To support States with the implementation of SAR	MID Region SAR Plan	MSG/6	Dec 2018	**Completed**
MSG CONCLUSION 6/24: SUPPORT ICAO POSITION TO WRC-19 That, States be urged to: a) work closely with the States Telecommunication Authorities to support the ICAO Position to the WRC-19; b) make necessary arrangements for the designated Civil Aviation Personnel to participate actively in the preparatory work for WRC-19 at the national level; and c) attend the preparatory regional spectrum management groups meetings and WRC-19 to support and protect aviation interests.	To support ICAO position to WRC-19	ICAO position is supported in the WRC-19	States	2019	**Ongoing**

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/25: FREQUENCY MANAGEMENT WORKSHOP That, ICAO consider the organization of a Workshop on the Frequency Finder Tool jointly with ACAO in 2020.	To provide guidance to States related to frequency management	Frequency Management workshop	ICAO MID	2020	**Ongoing**
MSG CONCLUSION 6/26: REGISTERED FREQUENCY UPDATE That, for an optimized frequency assignment process and in order to ensure that assigned frequencies to MID States are not interfering, States that have not yet done so, be urged to: a) verify and update existing registered frequencies in the COM list; b) add any missing frequencies with the full details, where applicable; c) delete unused frequencies; d) send the changes in excel format generated by the FF export function; and e) provide the ICAO MID Office with feedback before 15 February 2019.	To optimize frequency assignment process and reduce interferences	State Letter Registered frequency database is up to date	ICAO States	Dec. 2018 15 Feb. 2019	**Closed** SL Ref. AN 7/5.7 – 18/410 dated 19 December 2019. Replies received from Bahrain, Egypt, Iraq, Kuwait, Qatar, Saudi Arabia, Sudan, and UAE (Decision 17/32, refers)
MSG CONCLUSION 6/27: FREQUENCY MANAGEMENT FOCAL POINTS That, States, that have not yet done so, be invited to assign Frequency Management Focal Points by 15 February 2019, for a better coordination of frequency management issues, including harmful interference.	To resolve frequency interferences incidents in a timely manner	Frequency focal points	States	15 February 2019	**Completed** SL Ref. AN 7/5.7 – 18/411 dated 19 December 2019 Replies received from Bahrain, Egypt, Iraq, Jordan, Kuwait, Saudi Arabia, Sudan and UAE

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/28: MID CRV REQUIREMENT That, in order to request price revision from the CRV's Service provider (PCCW Global) for the MID Region, States that have not done so, are urged to complete the MID CRV requirements at Appendix 5.3P, not later than 15 February 2019.	To request price revision from CRV supplier (PCCW)	consolidated Network requirements	States	15 February 2019	**Actioned** SL Ref. AN 6/31.4 – 18/412 dated 19 December 2019 Replies received from Iran
MSG CONCLUSION 6/29: IMPLEMENTATION OF FILE TRANSFER BODY PART (FTBP) That, States are urged to: a) implement FTBP capability at National COM Centres (AMHS is a pre-requisite); b) implement P3/P7 with FTBP capability at the National OPMET Centre (NOC); and c) set the maximum overall AMHS Message size to 4 MB.	To enable IWXXM implementation	FTBP implemented	States	November 2020	**Actioned/Ongoing** SL Ref. AN 7/31 – 18/413 dated 19 December
MSG CONCLUSION 6/30: THE COMMUNICATION NETWORK FOR IWXXM DATA EXCHANGE That, the Main and Backup Regional OPMET Centres (Bahrain and Saudi Arabia) and the Main COM Centres in the MID Region be urged to join the CRV Project in order to enable the exchange of OPMET information in IWXXM format.	To reduce the network complexity	Main and Backup Regional OPMT Centres join CRV	Bahrain and Saudi Arabia	November 2020	**Actioned/Ongoing** SL Ref. AN 7/31 – 18/413 dated 19 December
MSG CONCLUSION 6/31: GUIDANCE ON GNSS IMPLEMENTATION That, the Guidance on GNSS Implementation in the MID Region at Appendix 5.3Q is endorsed and be published as ICAO MID Doc 011.	To provide guidance material to States on GNSS implementation	Guidance on GNSS implementation in the MID Region		December 2018	**Completed**

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/32: MID REGION SURVEILLANCE PLAN AND WORKSHOP					**Completed**
That, with a view to provide MICA Operator with necessary knowledge to implement MICA processes efficiently, and in order to develop a comprehensive Surveillance Plan in the MID Region:	Good and harmonized surveillance planning in the MID Region.	MID Region Surveillance Plan	CNS SG	April 2019	
a) a Surveillance/MICA Workshop with support of EUROCONTROL be organised in February 2019); b) States invited to participate actively in the Workshop; and c) the Draft MID Region Surveillance Plan be reviewed/updated during the Surveillance/MICA Workshop and presented to the CNS SG/9 meeting for further review, before presentation to the MIDANPIRG/17 meeting for endorsement.	To build capacity on Surveillance and MICA usage.	Organise Surveillance/MICA workshop	ICAO MID Office	February 2019	
MSG CONCLUSION 6/33: ATM DATA CYBER SECURITY (ADCS) PORTAL					**Closed**
That, a) the ADCS Portal be used as a prototype platform for ATM cyber security; and	To facilitate sharing experience on ATM Data cyber security	State Letter	ICAO MID Office	February 2019	Ref. SL AN 7/36 – 19/042 dated 11 February 2019
b) States be encouraged to: i) assign ADCS focal point(s) to register on the ADCS Portal; ii) provide feedback to the ADCS Admin by **15 February 2019** for further enhancements; and iii) share their experience related to cyber security, through the ADCS Portal.		ADCS focal points	States	March 2019	
MSG CONCLUSION 6/34: CYBER SECURITY AND RESILIENCE SEMINAR					**Actioned/Ongoing**
That, in order to enrich the cyber security awareness and strengthen the cyber resilience in the MID Region, ICAO organise a Cyber Security	To build capacity on cyber security, and develop	Cyber Security and Resilience	ICAO MID Office	October 2019	

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
and Resilience Seminar in 2019 jointly with ACAO.	policies on Cyber security resilience	Symposium			
MSG CONCLUSION 6/35: CYBER SECURITY SUBJECT MATTER EXPERT That, to strengthen States' Cyber-resilience capabilities in the MID Region, States be invited to ensure that they have qualified/trained Cyber Security Subject Matter Experts.	To ensure availability of required competencies on cyber security in States	State Letter Cyber Security SME	ICAO MID Office States	February 2019	**Closed** Ref. AN 7/36 – 19/042 dated 11 February 2019
MSG CONCLUSION 6/36: IDENTIFICATION OF INTERNATIONAL AERODROMES FOR WIND SHEAR WARNINGS/ALERTS REQUIREMENTS That, based on the occurrences/incidents and statistics related to wind shear for the past 3 to 5 years, States be urged to: a) identify those International Aerodromes for which wind shear is considered a safety factor for operation; and b) provide feedback to the ICAO MID Office before **15 February 2019**.	To determine the applicability area for the wind shear element under B0-AMET in the MID Region Air Navigation Strategy				**Actioned/Ongoing** SL Ref.: AN 10/12 – 19/057 dated 18 Feb. 2019
MSG CONCLUSION 6/37: MIDANPIRG WORKING ARRANGEMENTS That, States be invited to provide the ICAO MID Office, not later than **15 March 2019**, with their views and proposals related to the MIDANPIRG working arrangements and efficiency, and the MIDANPIRG Procedural Handbook (organizational structure, empowerment of the subsidiary bodies, approval by passing, etc.).	To receive proposals related to the MIDANPIRG Organizational Structure and working arrangements	State Letter Views and proposals	ICAO States	Feb 2019 Mar 2019	**Closed** SL Ref.: ME 3 – 19/056 dated 18 Feb. 2019 (Kuwait)

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
MSG CONCLUSION 6/38: STATE LETTERS ONLINE MONITORING TOOL That, in order to support States in the process of follow-up and effective provision of replies to the ICAO MID Office State Letters, ICAO is invited to explore/implement an online monitoring tool.	Low level of replies to State Letters	States Letters' online tool	ICAO	2019	**Actioned/Ongoing** (PIRG/RASG MID Conclusion 2, refers)
DRAFT CONCLUSION 6/1: AVIATION DATA & ANALYSES AND AIRPORTS & AIR NAVIGATION CHARGES SEMINARS/ WORKSHOPS That, in order to foster dialogue on the development of an economically viable civil aviation system (airlines, airports, air navigation services providers, etc.) and enhance its economic efficiency and transparency: a) ICAO organize jointly with ACAO on regular basis the Aviation Data and Analyses and the Airports and Air Navigation Charges Seminars/Workshops; and b) States are encouraged to participate actively in these events.	Enhance economic efficiency and transparency of the air navigation system	Aviation Data and Analyses and Airports and Air Navigation Charges Seminars/Workshops	ICAO	Regular basis	**Ongoing**
DRAFT CONCLUSION 6/2: KHARTOUM COM CENTRE That, in order to establish a third Gateway to the AFI Region, Khartoum COM Centre be changed to a main Centre.	To improve the data communication between AFI and MID Regions				**Closed** (replaced and superseded by Conclusion 17/26)

APPENDIX 6.2A

MID eANP FOCAL POINTS
(Last updated 05/03/2017)

	States	Main Focal Point		
		Name	Title	Email/Tel/Mobile
1	**Bahrain**	Abdulla Al Qadhi	Chief AIM & Airspace Planning	aalqadhi@mtt.gov.bh 0097317321180
2	**Egypt**	Khaled Mohamed Reda Ahmed	ANS Safety Oversight Inspector	Khaled.reda@civilaviation.gov.eg 01005648346
3	**Iran**			
4	**Iraq**			
5	**Jordan**	Daoud Abu-Hussein	Planning and studies Director	Daoud@carc.gov.go Mob: 00962795885779 Tel:+96264799145
6	**Kuwait**			
7	**Lebanon**			
8	**Libya**			
9	**Oman**			
10	**Qatar**			
11	**Saudi Arabia**	Mr. Anas I. Fallatah	Flight Procedures Manager	aifallatah@gaca.gov.sa Mob: +966553315571 Tel: +966115253589
12	**Sudan**	Abdulmonem Elsheikh Ahmed	ANS Director	aelsheikh78@gmail.com; a.elshiekh@scaa.gov.sd Mob: +249914101300
13	**Syria**			
14	**UAE**	Robert Novac Bara	ANS inspector (AIM)	rbara@gcaa.gov.ae Mob: +971565015900
15	**Yemen**			

APPENDIX 6.2B

GUIDELINES FOR THE PUBLICATION OF FIR BOUNDARY POINTS

1) Where FIR is a list of geographical coordinates:
   a) The list of points and their coordinates must follow a clockwise sequence.
   b) The list must have a beginning point and an ending point that are the same coordinate.
   c) The latitude and longitude coordinates must be reported in **DMS (degrees, minutes and seconds)**.
   d) Where an FIR shares a common point with another neighbouring FIR, coordinates should be mutually agreed.

      Note: *Transfer of Control Points, ATS route significant points or waypoints may not necessarily be aligned with boundaries delineation.*
   e) Where delineation of FIR/UIR follows an arc of specific dimension, it should be defined as follows:

      [starting point of ARC] *following an arc of a circle at a* ***radius of [distance]*** *NM centered on* ***[coordinates in DMS]*** *and ending at point* ***[coordinates in DMS]***.
2) Where FIR is described using "sovereign" boundaries
   a) The description should be simple
      i) Follow sovereign boundary between [State 1] and [State 2]). [1]
   b) Where delineation of FIR/UIR is made by reference to sovereign boundaries common to neighbouring FIR/UIR, the delineation shall be mutually agreed upon.
   c) Where an FIR/UIR follows a sovereign boundary, the United Nations international boundary data set is referred to by ICAO.

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[1] Use short names of States as shown at: http://www.icao.int/about-icao/pages/member-states.aspx

Review of MID Table ATM I-1

The table below shows columns from the MID ATM table, with two additional columns in gray: 1) "Comments" notes the clarification needed with regards to the lateral limits coordinates, and 2) # of FIR/UIR Description Requirements refers to the description of FIRs as listed in the Guidelines.

NOTE: The MID Table for the eANP will not include the additional columns.

MID TABLE ATM I-1

FIR/UIR Location Indicator	Lateral limits coordinates	COMMENTS FROM ICAO	# of FIR/UIR Description Requirement	Remarks
1	2		See FIR/UIR Definition #	3
Amman (OJAC)	FIR/UIR Amman 292125N 0345743E On the Gulf of Aqaba 291102N 0360420E 293002N 0363021E 295203N 0364521E 300003N 0373021E 302003N 0374021E 303003N 0380021E 313003N 0370021E 320002N 0390021E TO 320911N 0391206E At Jordan, Saudi Arabia and Iraqi boundaries. Then the point 321349N 0391804E At the Southern corner of the Jordanian-Iraqi boundaries and along Jordanian-Syrian-Israeli-boundaries then back to starting point 292125N 0345743E.	Coordinates should match with FIR JEDDAH	1a 1d 2c 2a	Source: the State's AIS Publication
Baghdad (ORBB)	FIR/UIR Baghdad Along the Iraqi boundaries with Iran, Kuwait, Saudi Arabia, Syria and Turkey. See coordinate description FIR Jeddah and FIR Kuwait	Coordinates should be defined in the description for Baghdad FIR for perfect alignment of FIRs delineation shared with FIRs Jeddah and Kuwait	1a 1d 2a	Source: the State's AIS Publication
Bahrain (OBBB)	FIR/UIR Bahrain 284400N 0494000E 270500N 0505500E 265500N 0511000E 260400N 0535700E 254900N 0530600E 240300N 0514700E thence along the Saudi Arabia / UAE national borders to the point			MID ANP PfA 00/1 ATS approved 7 March 2005 and

FIR/UIR Location Indicator	Lateral limits coordinates	COMMENTS FROM ICAO	# of FIR/UIR Description Requirement	Remarks
1	2		See FIR/UIR Definition #	3
	where the national borders of Oman, Saudi Arabia and UAE meet to 224200N 0551200E, then the Saudi Arabia / Oman territorial boundary to 190000N 0520000E 253000N 0490000E 263330N 0452130E 275000N 0455500E 275000N 0490800E thence along the limit of the Saudi Arabia territorial waters to 281500N 0485200E then back to starting point 284400N 0494000E	Description should match with the one in FIR Jeddah and Muscat This coordinate should match with FIR Kuwait and add starting point coordinate	1a 1d 2b 2c 2a	Source: the State's AIS Publication (AIP ENR 2.1-1 dated 17 October 2013) PfA (Serial MID Basic ANP 13/03 – ATM/SAR)-realignment of Bahrain and Jeddah FIRs pending approval
Beirut (OLBB)	FIR/UIR Beirut The geographical Lebanese/Syrian borders, then along the Lebanese/Palestinian borders, and a semicircular Arc, radius 45 NM centered KAD VOR		1d 2b 2c 2a 1e	Not Source: the State's AIS Publication
Cairo (HECC)	FIR/UIR Cairo *Northern border 340000N 0241000E 340000N 0271000E 333000N 0300000E *Eastern border 315000N 0335900E 313600N 0343000E then follow the International border to: 293000N 0345500E 293000N 0350000E 280600N 0343500E 220000N 0380000E *Southern border 220000N 0380000E 220000N 0250000E *Western border 220000N 0250000E 314000N 0251000E 340000N 0241000E	Coordinate should match with FIR Tripoli	1d 2a	Source: the State's AIS Publication
Damascus (OSTT)	FIR/UIR Damascus From 355500N 0354000E to 355600N 0355500E then along the national border of Syria with Turkey and Iraq to a point 332200N 0384800E, then along		1a 1d 2b 2c 2a	Source: the State's AIS Publication

FIR/UIR Location Indicator	Lateral limits coordinates	COMMENTS FROM ICAO	# of FIR/UIR Description Requirement	Remarks
1	2		See FIR/UIR Definition #	3
	the national border of Syria with Jordan to 324100N 0353800E then along the Western Syrian border to 331500N 0353700E then along the Lebanese Syrian border to a point 343800N 0355700E then to a point 343800N 0354300E then northwards along a line maintaining 12 NM from the coastline, to 355500N 0354000E			
Emirates (OMAE)	FIR/UIR Emirates 262100N 0560600E 253600N 0561300E 250000N 0563500E 240000N 0553500E 224200N 0551200E to the point where the national borders of Oman, Saudi Arabia and UAE meet, then along the national border between Saudi Arabia and UAE to 240300N 0514700E 254900N 0530600E 260400N 0535700E 253800N 0552000E 262100N 0560600E			Source MID ANP Serial No. EUR 85/02-ATS/88-COM/400-MET/75-SAR/16-AIS/1 dated 9 December 1986 and PfA Serial 00/1 ATS approved 7 march 2005
Jeddah (OEJD)	FIR/UIR Jeddah 292124N 0345718E 291131N 0360356E 293001N 0362956E 295201N 0364456E 300002N 0372956E 302002N 0373956E 303002N 0375956E 313002N 0365956E 320002N 0385956E 320915N 0391203E 315653N 0402447E 312223N 0412627E 310642N 0420508E 291155N 0444318E 290340N 0462534E 290604N 0463311E then along the national boundary between Kuwait and Saudi Arabia and then along the limit of Saudi Arabian territorial waters to: 275000N 0490800E 275000N 0455500E 263330N 0452130E 253000N 0490000E 190000N 0520000E clockwise to 184720N 0504700E 183700N 0490700E 181000N 0481100E 172700N 0473600E 170700N 0472800E 165700N 0471100E 165700N 0470000E 171700N 0464500E 171400N 0462200E	Coordinates do not match with neighboring FIR Amman Coordinates should be defined as in this description within Baghdad FIR for perfect alignment with Jeddah FIR This coordinate does not match with shared FIR Kuwait and Baghdad Coordinates should be defined as in this description within Sanaa' FIR for perfect alignment with Jeddah FIR	1a 1d 2b 2c 2a	Source: the State's AIS Publication (AIP ENR 2.1-1 dated 11 March 2010) PfA (Serial MID Basic ANP 13/03 – ATM/SAR) realignment of Bahrain and Jeddah FIRs pending approval

FIR/UIR Location Indicator	Lateral limits coordinates	COMMENTS FROM ICAO	# of FIR/UIR Description Requirement	Remarks
1	2		See FIR/UIR Definition #	3
	171500N 0460600E 172000N 0452400E 172600N 0451300E 172600N 0443900E 172420N 0443400E 172600N 0442800E 172600N 0442158E then follow Saudi Arabia and Republic of Yemen international boundaries in accordance with Jeddah treaty to the coast line boundary: 162415N 0424620E 162415N 0420900E 161724N 0414700E 160000N 0420000E 154700N 0415300E 153955N 0413947E 160000N 0410000E 200000N 0383000E 220000N 0380000E 280600N 0343500E then back to starting point 292124N 0345718E	This coordinate does not match with shared FIR Asmara coordinate Coordinates should match with FIR Amman and FIR Cairo		
Khartoum (HSSS)	FIR/UIR Khartoum 154500N 0240000E 200000N 0240000E 200000N 0250000E 220000N 0250000E 220000N 0380000E 200000N 0383000E 125500N 0360000E 080000N 0330000E 040000N 0360500E 040000N 0301200E Common national boundary: SUDAN /KINSHASA SUDAN/CONGO DROF SUDAN /BRAZZAVILLE SUDAN/CENTRAL AFRICA SUDAN/NDJMENA.	Replace text with the following to be consistent with the other MID FIR descriptions: Example: Then follow international boundary between Sudan and Congo, DRC, Central Africa and Chad then back to starting point 154500N 0240000E.	1a 2a	Source: the State's AIS Publication
Kuwait (OKAC)	FIR/UIR Kuwait 290604N 0463319E 291502N 0464211E 294319N 0470024E 295105N 0470454E 300001N 0470920E 300613N 0472217E 300613N 0474228E 300113N 0475528E 295924N 0480042E 300146N 0480434E 300120N 0480952E 295110N 0482451E 295121N 0484503E 291300N 0494000E 290000N 0492700E 284400N 0494000E 281500N 0485203E then following the Saudi Arabia territorial waters and Kuwait / Saudi Arabia International boundary to the point 290604N 0463319E	This coordinate does not match with shared FIR Jeddah and Baghdad These highlighted FIR Kuwait coordinates define the border shared with Baghdad FIR Shared coordinate with FIR Tehran and along FIR boundary of Baghdad Coordinates should match with FIR Bahrain As above in GREEN.	1a 1b 2b 2c 2a	Source: Limited MID RAN Jan 1996 the State's AIS Publication

FIR/UIR Location Indicator	Lateral limits coordinates	COMMENTS FROM ICAO	# of FIR/UIR Description Requirement	Remarks
1	2		See FIR/UIR Definition #	3
Muscat (OOMM)	FIR/UIR Muscat 250000N 0563500E 253600N 0561300E 262100N 0560600E 264100N 0562700E 261000N 0564500E 253500N 0564500E 250000N 0573000E 244000N 0612000E 233000N 0612000E 233000N 0643000E 194800N 0600000E 174000N 0570000E 154000N 0533000E 163800N 0530400E 172200N 0524400E 190000N 0520000E thence along the common national boundary Sultanate of Oman/Kingdom of Saudi Arabia and along the common national boundary Sultanate of Oman/United Arab Emirates to 224200N 0551200E 240000N 0553500E 250000N 0563500E	Coordinate should match with Sanaa' FIR Description should match with BAHRAIN FIR	1d 2b 2c 2a	Source: the State's AIS Publication
Sanaa' (OYSC)	FIR/UIR Sanaa' 190000N 0520000E 173000N 0443500E 173500N 0430800E 164100N 0430800E 160800N 0412900E 145106N 0422354E 141542N 0423630E 123600N 0431800E 123142N 0432712E 121036N 0440206E 114500N 0441100E 114730N 0444348E 115900N 0470800E 121100N 0504500E 120718N 0510242E 120000N 0513000E 120000N 0600000E 161400N 0600000E 194800N 0600000E 174000N 0570000E 164618N 0552436E 160718N 0541648E 154000N 0533100E 163324N 0530612E 190000N 0520000	Add Coordinates should be defined in the description within Sana'a FIR for perfect alignment as in descriptions of Jeddah FIR and AFI FIR Asmara,Addis Ababa, Mogadishu See Appendix C for an example of this issue. Please verify with FIR Mogadishu coordinates for perfect alignment Coordinate should match with Muscat FIR for perfect alignment	1a 1d 2b 2c 2a	Source: the State's AIS Publication MID ANP
Tehran (OIIX)	FIR/UIR Tehran 372100N 0535500E 382630N 0485230E thence along the Islamic Republic of Iran / Azerbaijan, Armenia, Turkey and Iraq territorial borders to Persian gulf to 295110N 0484500E 291300N 0494000E 290000N 0492700E 270500N 0505500E 265500N 0511000E 253800N 0552000E	Coordinates are not consistent with FIR Kuwait	1d 2b 2c 2a	Source: the State's AIS Publication

FIR/UIR Location Indicator	Lateral limits coordinates	COMMENTS FROM ICAO	# of FIR/UIR Description Requirement	Remarks
1	2		See FIR/UIR Definition #	3
	264100N 0562700E 261000N 0564500E 253500N 0564500E 250000N 0573000E 244000N 0612000E, thence along the Islamic Republic of Iran / Pakistan, Afghanistan and Turkmenistan territorial borders to 372100N 0535500E			
Tripoli (HLLL)	FIR/UIR Tripoli 342000N 0113000E 342000N 0233500E 340000N 0241000E 314100N 0250800E 200000N 0250000E 200000N 0240000E 193000N 0240000E 220000N 0190000E 220000N 0113000E to Western Border Libya-GSPAJ along Western Border Libya-GSPAJ to 322200N 0113000E 342000N 0113000E	This coordinate should match with FIR Cairo	1d 2b 2c 2a	Source: the State's AIS Publication

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MID AIR NAVIGATION PLAN

VOLUME III

MID AIR NAVIGATION PLAN

VOLUME III

TABLE OF CONTENTS

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 in 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 implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP).

1.2 The information contained in Volume III is related mainly to:

- Planning: objectives set, priorities and targets planned at regional or sub-regional levels;
- Implementation monitoring and reporting: monitoring of the progress of implementation towards targets planned. 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.

1.3 The management of Volume III is the responsibility of the MIDANPIRG.

1.4 Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements planned here above, through the use of tables/databases and/or references to online monitoring tools, as endorsed by MIDANPIRG. The status of implementation is updated on a regular basis as endorsed by MIDANPIRG.

2. AVIATION SYSTEM BLOCK UPGRADES (ASBUs), MODULES AND ROADMAPS

2.1. The ASBU Modules and Roadmaps form a key component to the GANP, noting that they will continue to evolve as more work is done on refining and updating their content and in subsequent development of related provisions, support material and training.

2.2. Although the GANP has a worldwide perspective, it is not intended that all Block Upgrade Modules are required to be applied in every State, sub-region and/or region. Many of the Block Upgrade Modules contained in the GANP are specialized packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. Accordingly, the Block Upgrade methodology establishes an important flexibility in the implementation of its various Modules depending on a region, sub-region and/or State's specific operational requirements. Guided by the GANP, ICAO MID regional, sub-regional and State planning should identify Modules which best provide the needed operational improvements.

MID ANP, VOLUME III

PART I - GENERAL PLANNING ASPECTS (GEN)

1. PLANNING METHODOLOGY

1.1 Guided by the GANP, the regional planning process starts by identifying the homogeneous ATM areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Modules from the Aviation System Block Upgrades (ASBUs) are evaluated to identify which of those modules best provide the needed operational improvements. Depending on the complexity of the module, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of modules by drawing on supporting technology requirements. This is an iterative planning process which may require repeating several steps until a final plan with specific regional targets is in place. This planning methodology requires full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

1.2 Block 0 features Modules characterized by technologies and capabilities which have already been developed and implemented in many parts of the world today. It therefore features a near-term availability milestone, or Initial Operating Capability (IOC), of 2013 for high density based on regional, sub-regional and State operational need. Blocks 1 through 3 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2018, 2023 and 2028 respectively.

2. REVIEW AND EVALUATION OF AIR NAVIGATION PLANNING

2.1. The progress and effectiveness against the priorities set out in the regional air navigation plans should be annually reported, using a consistent reporting format, to ICAO.

2.2. Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified global/regional 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. An Air Navigation Reporting Form (ANRF) reflecting selected key performance areas as defined in the Manual on Global Performance of the Air Navigation System (ICAO Doc 9883) has been developed for each ASBU Module. The ANRF is a customized tool which is recommended for the application of setting planning targets, monitoring implementation, and identifying challenges, measuring implementation/performance and reporting. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in the ANRF template. A sample of the ANRF is provided in **Appendix A**. A sample Template of a planning table which may be used to show the elements planned in an ICAO region is provided in **Appendix B**.

3. REPORTING AND MONITORING RESULTS

3.1 Reporting and monitoring results will be analyzed by the PIRGs, States and ICAO Secretariat to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets if needed. The results will also be used by ICAO and aviation partner stakeholders 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.

3.2 The reports will also provide the ICAO Council with detailed annual results on the basis of which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments to the GANP and the Block Upgrade Modules.

3.3 **Table GEN III-1** contains a minimum set of Implementation Indicator(s) for each of the eighteen ASBU Block 0 Modules necessary for the monitoring of these Modules (if identified as a priority for implementation at regional or sub-regional level). These indicators are intended to enable comparison between ICAO Regions with respect to ASBU Block 0 Modules and will apply only to commonly selected ASBU Modules. All regions/PIRGs reserve the right to select the ASBU Modules relevant to their needs and to endorse additional indicators, as deemed necessary. No reporting is required for ASBU Block 0 Modules that have not been selected.

Note: The priority for implementation as well as the applicability area of each selected ASBU Block 0 Module is to be defined by the MIDANPIRG.

TABLE GEN III-1 – IMPLEMENTATION INDICATOR(S) FOR EACH ASBU BLOCK 0 MODULE

Explanation of the Table

1 Block 0 Module Code
2 Block 0 Module Title
3 Implementation Indicator
4 Remarks

Module Code	Module Title	Implementation Indicator	Remarks
1	**2**	**3**	**4**
B0-APTA	Optimization of Approach Procedures including vertical guidance	% of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	% of applicable international aerodromes having implemented increased runway throughput through optimized wake turbulence separation	1. Not to be considered for the first reporting cycles due to lack of maturity. 2. List of ADs to be established through regional air navigation agreement.
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	% of applicable international aerodromes having implemented AMAN / DMAN	1. Not to be considered for the first reporting cycles due to lack of maturity. 2. List of ADs to be established through regional air navigation agreement.
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	% of applicable international aerodromes having implemented A-SMGCS Level 2	List of ADs to be established through regional air navigation agreement.
B0-ACDM	Improved Airport Operations through Airport-CDM	% of applicable international aerodromes having implemented improved airport operations through airport-CDM	List of ADs to be established through regional air navigation agreement.
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	- % of States having implemented an AIXM based AIS database - % of States having implemented QMS	

Module Code	Module Title	Implementation Indicator	Remarks
1	**2**	**3**	**4**
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	- % of States having implemented SADIS / WIFS - % of States having implemented QMS	
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	% of FIRs in which FUA is implemented	
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	% of FIRs within which all ACCs utilize ATFM systems	
B0-ASUR	Initial capability for ground surveillance	% of FIRs where ADS-B OUT and/or MLAT are implemented for the provision of surveillance services in identified areas.	Not to be considered for the first reporting cycles due to lack of maturity.
B0-ASEP	Air Traffic Situational Awareness (ATSA)	% of States having implemented air traffic situational awareness	Not to be considered for the first reporting cycles due to lack of maturity.
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	% of FIRs having implemented in-trail procedures	Not to be considered for the first reporting cycles due to lack of maturity.
B0-ACAS	ACAS Improvements	% of States requiring carriage of ACAS (with TCAS 7.1 evolution)	
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	% of States having implemented ground-based safety-nets (STCA, APW, MSAW, etc.)	
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	- % of international aerodromes / TMAs with PBN STAR implemented - % of international aerodromes/TMA where CDO is implemented	
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	% of FIRs utilising data link en-route in applicable airspace	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	- % of international aerodromes / TMAs with PBN SID implemented - % of international aerodromes/TMA where CCO is implemented	

Appendix A

SAMPLE TEMPLATE

1. AIR NAVIGATION REPORT FORM (ANRF)

(This template demonstrates how ANRF to be used.
The data inserted here refers to ASBU B0-05/CDO as an example only)

Regional and National planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-05/CDO: Improved Flexibility and Efficiency in Descent Profiles

**Performance Improvement Area 4:
Efficient Flight Path – Through Trajectory-based Operations**

3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)

	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	N	N	Y	Y	Y

4. ASBU B0-05/CDO: Planning Targets and Implementation Progress

5. Elements	**6. Targets and implementation progress (Ground and Air)**
1. CDO	
2. PBN STARs	

7. ASBU B0-05/CDO: Implementation Challenges

Elements	**Implementation Area**			
	Ground system Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. CDO				
2. PBN STARs				

8. Performance Monitoring and Measurement
8A. ASBU B0-05/CDO: Implementation Monitoring

Elements	Performance Indicators/Supporting Metrics
1. CDO	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARs	Indicator: Percentage of international aerodromes/TMAs with PBN STARs implemented Supporting metric: Number of international aerodromes/TMAs with PBN STARs implemented

8. Performance Monitoring and Measurement **8 B. ASBU B0-05/CDO: Performance Monitoring**	
Key Performance Areas (Out of eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF)	**Where applicable, indicate qualitative Benefits,**
Access & Equity	Not applicable
Capacity	Not applicable
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.
Environment	Reduced emissions as a result of reduced fuel burn
Safety	More consistent flight paths and stabilized approach paths. Reduction in the incidence of controlled flight into terrain (CFIT).
9. Identification of performance metrics: It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 5. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 5. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.	

AIR NAVIGATION REPORT FORM
HOW TO USE - EXPLANATORY NOTES

1. **Air Navigation Report Form (ANRF):** This form is nothing but the revised version of Performance Framework Form that was being used by Planning and Implementation Regional Groups (PIRGs)/States until now. The ANRF is a customized tool for Aviation System Block Upgrades (ASBU) Modules which is recommended for application for setting planning targets, monitoring implementation, identifying challenges, measuring implementation/performance and reporting. Also, the PIRGs and States could use this report format for any other air navigation improvement programmes such as Search and Rescue. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in this ANRF template. The results will be analysed by ICAO and aviation partners and utilized in the Regional Performance Dashboards and the Annual Air Navigation Report. The conclusions from the Air Navigation Report will serve as the basis for future policy adjustments, aiding safety practicality, affordability and global harmonization, amongst other concerns.

2. **Regional/National Performance objective:** In the ASBU methodology, the performance objective will be the title of the ASBU module itself. Furthermore, indicate alongside corresponding Performance Improvement area (PIA).

3. **Impact on Main Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations/benefits to the ATM community. The expectations/benefits are referred to eleven Key Performance Areas (KPAs) and are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. The KPAs applicable to respective ASBU module are to be identified by marking Y (Yes) or N (No). The impact assessment could be extended to more than five KPAs mentioned above if maturity of the national system allows and the process is available within the State to collect the data.

4. **Planning Targets and Implementation Progress:** This section indicates planning targets and status of progress in the implementation of different elements of the ASBU Module for both air and ground segments.

5. **Elements related to ASBU module:** Under this section list elements that are needed to implement the respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU Module (example: In ASBU B0-80/ACDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/DAIM, note that WGS-84 and eTOD are not included) but at the same time if they are closely linked to the module, ANRF should specify those elements. As a part of guidance to PIRGs/States, every Regional ANP will have the complete list of all 18 Modules of ASBU Block 0 along with corresponding elements, equipage required on the ground and in the air as well as metrics specific to both implementation and performance (benefits).

6. **Targets and implementation progress (Ground and Air):** Planned implementation date (month/year) and the current status/responsibility for each element are to be reported in this section. Please provide as much details as possible and should cover both avionics and ground systems. This ANRF being high level document, develop necessary detailed action plan separately for each element/equipage.

7. **Implementation challenges**: Any challenges/problems that are foreseen for the implementation of elements of the Module are to be reported in this section. The purpose of the section is to identify in advance any issues that will delay the implementation and if so, corrective action is to be initiated by the concerned person/entity. The four areas, under which implementation issues, if any, for the ASBU Module to be identified, are as follows:

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

Should be there no challenges to be resolved for the implementation of ASBU Module, indicate as "NIL".

8. **Performance Monitoring and Measurement:** Performance monitoring and measurement is done through the collection of data for the supporting metrics. In other words, metrics are quantitative measure of system performance – how well the system is functioning. The metrics fulfil three functions. They form a basis for assessing and monitoring the provision of ATM services, they define what ATM services user value and they can provide common criteria for cost benefit analysis for air navigation systems development. The Metrics are of two types:

    A. **Implementation Monitoring**: Under this section, the indicator supported by the data collected for the metric reflects the status of implementation of elements of the Module. For example- Percentage of international aerodromes with CDO implemented. This indicator requires data for the metric "number of international aerodromes with CDO".

    B. **Performance Monitoring**: The metric in this section allows to asses benefits accrued as a result of implementation of the module. The benefits or expectations, also known as Key Performance Areas (KPAs), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. Where applicable, mention qualitative benefits under this section.

9. **Identification of performance metrics:** It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 6. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 6. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.

Appendix B - Main Planning Table Template

	Objectives					Priorities and targets			Reference
Block	ASBU modules and elements Enablers	Performance Improvement Area	Applicable or not in [Region] (Yes/No)	Regional planning elements	Enablers	Priority allocated in [Region]	Target(s) in [Region]	Indicator(s) / Metric(s)	Supporting Planning Document (ANRF, other)

MID ANP, VOLUME III

PART II – AIR NAVIGATION SYSTEM IMPLEMENTATION

1. INTRODUCTION

1.1 The planning and implementation of the ICAO Aviation System Block Upgrades (ASBUs) should be undertaken within the framework of the MIDANPIRG with the participation and support of all stakeholders, including regulatory personnel.

1.2 The ASBU Blocks and Modules adopted by the MID Region should be followed in accordance with the specific ASBU requirements to ensure global interoperability and harmonization of air traffic management. The MIDANPIRG should determine the ASBU Block Upgrade Modules, which best provide the needed operational improvements in the ICAO MID Region.

2. ICAO MID REGION AIR NAVIGATION OBJECTIVES, PRIORITIES AND TARGETS

2.1 In accordance with Recommendation 6/1 of the Twelfth Air Navigation Conference (AN-Conf/12), PIRGs are requested to establish priorities and targets for air navigation, in line with the ASBU methodology.

2.2 The achievement of the intended benefits along each routing or within each area of affinity is entirely dependent on the coordinated implementation of the required elements by all provider and user stakeholders concerned.

2.3 Considering that some of the block upgrade modules contained in the GANP are specialized packages that may be applied where specific operational requirements or corresponding benefits exist, States and PIRGs should clarify how each Block Upgrade module would fit into the national and regional plans.

2.4 As Block 0 modules in many cases provide the foundation for future development, all Block 0 modules should be assessed, as appropriate, for early implementation by States in accordance with their operational needs.

2.5 In establishing and updating the MID air navigation plan, the MIDANPIRG and States should give due consideration to the safety priorities set out in the Global Aviation Safety Plan (GASP) and MID Region safety strategy.

2.6 States in the MID Region through the MIDANPIRG should establish their own air navigation objectives, priorities and targets to meet their individual needs and circumstances in line with the global and regional air navigation objectives, priorities and targets.

3. MONITORING OF ASBU MODULES IMPLEMENTATION

3.1 The monitoring of air navigation performance and its enhancement should be carried out through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets.

3.2 The monitoring of the regional implementation progress and performance metrics/indicators should be done for all elements planned by MIDANPIRG. The monitoring should allow global correlation of status and expectations, appreciation of benefits achieved for the airspace users, as well as corrective actions to be taken by the PIRG on implementation plans.

3.3 The MIDANPIRG should determine appropriate mechanisms and tools for the monitoring and the collection of necessary data at national and regional levels.

MID Region ASBU Block 0 Modules Prioritization and Monitoring

3.4 On the basis of operational requirements and taking into consideration the associated benefits, MID Region has prioritized the implementation of the Block "0" Modules**,** also agreed on the subsidiary bodies that will be monitoring and supporting the implementation of the modules as in Table below:

MID REGION ASBU BLOCK 0 MODULES PRIORITIZATION AND MONITORING

Module Code	Module Title	Priority	Start Date	Monitoring		Remarks
				Main	Supporting	
***Performance Improvement Areas (PIA) 1*: Airport Operations**						
B0-APTA	Optimization of Approach Procedures including vertical guidance	1	2014	PBN SG	ATM SG, AIM SG, CNS SG	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	2				
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	2				
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	1	2014	ANSIG	CNS SG	Coordination with RGS WG
B0-ACDM	Improved Airport Operations through Airport-CDM	1	2014	ANSIG	CNS SG, AIM SG, ATM SG	Coordination with RGS WG
Performance Improvement Areas (PIA) 2 Globally Interoperable Systems and Data Through Globally Interoperable System Wide Information Management						
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	1	2014	CNS SG	AIM SG, ATM SG	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	1	2014	AIM SG		
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	1	2014	MET SG		

Performance Improvement Areas (PIA) 3 Optimum Capacity and Flexible Flights – Through Global Collaborative ATM						
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	1	2014	ATM SG		
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	1	2015			
B0-ASUR	Initial capability for ground surveillance	2				
B0-ASEP	Air Traffic Situational Awareness (ATSA)	2				
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	2				
B0-ACAS	ACAS Improvements	1	2014	CNS SG		
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	1	2017	ATM SG		
Performance Improvement Areas (PIA) 4 Efficient Flight Path – Through Trajectory-based Operations						
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	1	2014	PBN SG		
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	2		ATM SG	CNS SG	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	1	2014	PBN SG		

Note:

Priority 1*: Modules that have the highest contribution to the improvement of air navigation safety and/or efficiency in the MID Region. These modules should be implemented where applicable and will be used for the purpose of regional air navigation monitoring and reporting for the period 2015-2018.*

Priority 2*: Modules recommended for implementation based on identified operational needs and benefits.*

APPENDIX

ASBU BLOCK 0 MODULES APPLICABLE IN THE MID REGION

B0 – APTA: Optimization of Approach Procedures including vertical guidance

Description and purpose
The use of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures will enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of Basic global navigation satellite system (GNSS), Baro vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	Y

Applicability consideration:
This module is applicable to all instrument, and precision instrument runway ends, and to a limited extent, non-instrument runway ends.

B0 – APTA: Optimization of Approach Procedures including vertical guidance				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
LNAV	All RWYs Ends at International Aerodromes	Indicator: % of runway ends at international aerodromes with RNAV(GNSS) Approach Procedures (LNAV) Supporting metric: Number of runway ends at international aerodromes with RNAV (GNSS) Approach Procedures (LNAV)	100% (All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches)	Dec. 2016
LNAV/VNAV	All RWYs ENDs at International Aerodromes	Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV) Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)	100% (All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches)	Dec. 2017

B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)

Description and purpose
To implement continuous climb operations in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles and increase capacity at congested terminal areas.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N/A	N/A	Y	Y	Y

Applicability consideration:
Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers:

a) least complex: regional/States/locations with some foundational PBN operational experience that could capitalize on near-term enhancements, which include integrating procedures and optimizing performance;

b) more complex: regional/States/locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation; and

c) most complex: regional/States/locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, region or location.

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

B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)

Description and purpose

To use performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles and increase capacity in terminal areas.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

Applicability consideration:

Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers:

a) least complex – regional/States/locations with some foundational PBN operational experience that could capitalize on near term enhancements, which include integrating procedures and optimizing performance;

b) more complex – regional/States/locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation; and

c) most complex – regional/States/locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, region or location.

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

TABLE B0-APTA/CCO/CDO 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 B0-APTA (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
11, 12, 13	Elements of B0-CCO (Status of implementation of RNAV SID, CCO) per runway end and per aerodrome, where: Y – Yes, implemented N – No, not implemented
14, 15, 16	Elements of B0-CDO (Status of implementation of RNAV STAR, CDO) per runway end and per aerodrome, where: Y – Yes, implemented N – No, not implemented
18	Remarks

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

	30R	ILS	I	VORDME		Y	Y	Y			Y		Y		Y		
Total	4	2		4	Y	4	4	4	0	0	2	1	2	1	2	1	
%		50		100	Y	100	100	100	0	0	50	100	50	100	50	100	
EGYPT																	7
HEBA	14					Y		Y		Y							
	32	ILS	I			Y		Y	Y								
HESN	17			VORDME		Y	Y	Y	Y	Y			Y	Y			
	35	ILS	I	VORDME		Y	Y	Y	Y				Y				
HECA	05L	ILS	I	VORDME		Y		Y									
	05C	ILS	II	VORDME		Y		Y									
	05R	ILS	II			Y		Y									
	23L	ILS	II	VORDME		Y		Y									
	23C	ILS	II	VORDME		Y		Y									
	23R	ILS	I	VORDME		Y		Y									
HEGN	16L			VORDME		Y	Y	Y		Y				Y			
	16R			VORDME		Y	Y	Y									
	34L			VORDME		Y	Y	Y	Y				Y				
	34R	ILS	I	VORDME		Y	Y	Y	Y				Y				
HELX	2	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	20	ILS	I	VORDME		Y	Y	Y	Y				Y				
HEMA	15			VORDME		Y		Y	Y	Y			Y	Y			
	33			VORDME		Y		Y	Y				Y				
HESH	04L	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	04R			VORDME		Y	Y	Y	Y				Y				
	22L			-		Y	Y	Y	Y				Y				
	22R			-		Y	Y	Y	Y				Y				

Total	22	12		17	Y	22	12	22	13	6	0	0	12	5	0	0	
%		55		77	Y	100	55	100	59	86	0	0	55	71	0	0	
I.R. IRAN																	9
OIKB	03L																
	03R			VORDME / NDB													
	21L	ILS	I	VORDME / NDB													
	21R																
OIFM	08L			VORDME / NDB													
	08R			VORDME / NDB													
	26L			VORDME / NDB													
	26R	ILS	I	VORDME / NDB													
OIMM	13L			VORDME													
	13R			VORDME													
	31L			VORDME / NDB													
	31R	ILS	I	VORDME / NDB													
OISS	11L																
	11R																
	29L	ILS	I	VORDME / NDB													
	29R			VORDME / NDB													
OITT	12L			VORDME / NDB													
	12R			VORDME / NDB													
	30L	ILS	I	VORDME / NDB													
	30R	ILS	I	VORDME / NDB													

OIIE	11L	-	-	VORDME									Y	Y			
	11R			VORDME									Y				
	29L			-									Y				
	29R	ILS	II	VORDME		Y	Y	Y					Y				
OIII	11L			VORDME													
	11R			VORDME													
	29L	ILS	I	VORDME		Y	Y	Y									
	29R			VORDME													
OIZH	17					Y	Y	Y					Y	Y			
	35	ILS	I	VORDME		Y	Y	Y					Y				
OIYY	13			VORDME													
	31			VORDME													
Total	32	9		26	Y	4	4	4	0	0	0	0	6	2	0	0	
%		28		81	Y	13	13	13	0	0	0	0	19	22	0	0	
IRAQ																	6
ORBI	15L	ILS	I	VORDME													
	15R					Y		Y									
	33L					Y		Y									
	33R	ILS	I	VORDME													
ORMM	14			VORDME													
	32	ILS	I	VORDME													
ORER	18	ILS	II			Y		Y									
	36	ILS	I			Y		Y									
ORSU	13	ILS	I	VOR		Y		Y									
	31	ILS	I	VOR		Y		Y									
ORNI	10	ILS	I	VOR		Y	Y	Y	Y	Y			Y	Y			

	28	ILS	I	VOR		Y	Y	Y	Y				Y				
ORBM	15																
	33																-
Total	14	9		8	N	8	2	8	2	1	0	0	2	1	0	0	
%		64		57		57	14	57	14	17	0	0	14	16.67	0	0	
JORDAN																	2
OJAI	08L	ILS	I	NDB		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	08R			NDB		Y	Y	Y	Y				Y				
	26L	ILS	II	VOR		Y	Y	Y	Y				Y				
	26R	ILS	I	VORDME		Y	Y	Y	Y				Y				
OJAQ	1	ILS	I	-		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	19	ILS	I			Y	N/A	Y	Y				Y				LNAV/VNAV not feasible
Total	6	5		4	Y	6	6	6	6	2	2	2	6	2	2	2	
%		83		67		100	100	100	100	100	33	100	100	100	33	100	
KUWAIT																	1
OKBK	15L	ILS	II	VORDME		Y	Y	Y	Y	Y			Y	Y			
	15R	ILS	II	VORDME		Y	Y	Y	Y				Y				
	33L	ILS	II	VORDME		Y	Y	Y	Y				Y				
	33R	ILS	II	VORDME		Y	Y	Y	Y				Y				
Total	4	4		4	Y	4	4	4	4	1	0	0	4	1	0	0	
%		100		100		100	100	100	100	100	0	0	100	100	0	0	
LEBANON																	1
OLBA	3	ILS	I	VORDME		Y		Y			Y	Y	Y	Y	Y	Y	
	16	ILS	I	VORDME		Y		Y			Y		Y		Y		
	17	ILS	I	VORDME / NDB		Y		Y			Y		Y		Y		

	21					Y		Y			Y		Y		Y		
	34	N/A		N/A							Y						Not used for landing
	35	N/A		N/A							Y						Not used for landing
Total	4	5		5	N	4	0	4	0	0	6	1	4	1	4	1	
%		125		125		100	0	100	0	0	150	100	100	100	100	100	
LIBYA																	3
HLLB	15R			VORDME													
	15L			VORDME													
	33R			VORDME													
	33L	ILS	I	VORDME													
HLLS	13	ILS	I	VORDME													
	31			VORDME													
HLLT	9			VORDME													
	27	ILS	I	VORDME													
Total	8	3		8	N	0	0	0	0	0	0	0	0	0	0	0	
%		38		100		0	0	0	0	0	0	0	0	0	0	0	
OMAN																	2
OOMS	08L	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	26R	ILS	I	VORDME		Y	Y	Y	Y				Y				
OOSA	7	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	25	ILS	I	VORDME		Y	Y	Y	Y				Y				
Total	4	4		4	Y	4	4	4	4	2	0	0	4	2	0	0	
%		100		100		100	100	100	100	100	0	0	100	100	0	0	
QATAR																	2
OTBD	15	ILS	I	VORDME		Y	N/A	Y	Y	Y	Y	Y	Y	Y	Y	Y	LNAV/VNAV not feasible
	33	ILS	II/III	VORDME/NDB		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved

OTHH	16L	ILS	I/II/III	VORDME		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	CCO/CDO tactically achieved
	16R	ILS	I/II/III	VORDME		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
	34L	ILS	I/II/III	VORDME		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
	34R	ILS	I/II/III	VORDME		Y	Y	Y	Y		Y		Y		Y		CCO/CDO tactically achieved
Total	6	6		6	Y	6	5	6	6	2	6	2	6	2	6	2	
%		100		100		100	100	100	100	100	100	100	100	100	100	100	
SAUDI ARABIA																	4
OEDF	16L	ILS	I	VORDME													
	16R	ILS	I	VORDME													
	34L	ILS	I	VORDME													
	34R	ILS	I	VORDME													
OEJN	16L	ILS	I			-		-									
	16C	ILS	I														
	16R	ILS	I	VORDME		-		-									
	34L	ILS	I	VORDME		-		-									
	34C	ILS	I	VORDME													
	34R	ILS	I			-		-									
OEMA	17	ILS	I	VORDME		Y		Y	Y	Y			Y	Y			
	18			VORDME		Y		Y	Y				Y				
	35	ILS	I	VORDME		Y		Y	Y				Y				

	36	ILS	I	VORDME		Y		Y	Y				Y				
OERK	15L	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	15R	ILS	I			Y	Y	Y	Y				Y				
	33L	ILS	I			Y	Y	Y	Y				Y				
	33R	ILS	I	VORDME		Y	Y	Y	Y				Y				
Total	18	17		13	Y	8	4	8	8	2	0	0	8	2	0	0	
%		94		72		44	22	44	44	50	0	0	44	50	0	0	Plan needs update
SUDAN																	4
HSNN	4					Y	-	Y									
	22					Y	-	Y									
HSOB	1					Y	-	Y									
	19					Y	-	Y									
HSSS	18	ILS	I	VORDME		Y	-	Y	Y	Y			Y	Y			
	36	ILS	I	VORDME		Y	-	Y	Y				Y				
HSPN	17			VORDME / NDB		Y	-	Y									
	35	ILS	I	VORDME / NDB		Y	-	Y									
Total	6	3		4	Y	6	0	6	2	1	0	0	2	1	0	0	
%		50		67		100	0	100	33	25	0	0	33	25	0	0	
SYRIA																	3
OSAP	9			VORDME													
	27	ILS	II	VORDME / NDB													
OSLK	17	ILS	I	VORDME / NDB													
	35																
OSDI	05L			VOR													
	05R	ILS	II	VORDME / NDB													

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

	29	ILS	I	VOR		Y	Y	Y	Y		Y		Y		Y		
OMRK	16			VOR		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	34	ILS	I	VOR		Y	Y	Y	Y		Y		Y		Y		
OMSJ	12	ILS	I			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	RNP AR
	30	ILS	II			Y	Y	Y	Y		Y		Y		Y		RNP AR
Total	20	16		9	Y	20	18	20	20	8	20	8	19	8	19	8	
%		80		45		100	90	100	100	100	100	100	95	100	95	100	
YEMEN																	5
OYAA	8	ILS	I	VORDME													
	26			VORDME													
OYHD	3			VOR										Y			
	21			VOR / NDB		Y		Y					Y				
OYRN	6																
	24			VORDME													
OYSN	18	ILS	I	VORDME/NDB		Y	Y	Y	Y	Y			Y	Y			
	36			VOR		Y	Y	Y	Y				Y				
OYTZ	1																-
	19																
Total	10	2		7		3	2	3	2	1	0	0	3	2	0	0	58
%		20		70		30	20	30	20	20	0	0	30	40	0	0	
Results					**Plans**	**LNAV**	**LNAV/VNAV**	**PBN RWYs**		**SID**		**CCO**		**STAR**		**CDO**	
Total	**166**	**101**		**126**	**13**	**100**	**66**	**100**	**67**	26	**36**	14	**78**	30	**33**	14	**10 PBN APV + 101 ILS (111/166)**
Percentage (%)		**61**		**76**	**87**	**60**	**40**	**60**	**40**	45	**22**	24	**18**	52	**20**	24	**67% RWY Ends with Vertical guidance**

58	Aerodrm es									
Note. 6 RNP AR Approach were implemented in UAE (OMAA and OMSJ)										

B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

Description and purpose

Basic A-SMGCS provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome thus improving runway/aerodrome safety. ADS-B information is used when available (ADS-B APT).

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	Y

Applicability consideration:

A-SMGCS is applicable to any aerodrome and all classes of aircraft/vehicles. Implementation is to be based on requirements stemming from individual aerodrome operational and cost-benefit assessments. ADS-B APT, when applied is an element of A-SMGCS, is designed to be applied at aerodromes with medium traffic complexity, having up to two active runways at a time and the runway width of minimum 45 m.

B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 1 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 1	70%	Dec. 2017
A-SMGCS Level 2*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 2 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 2	50%	Dec. 2017

**Reference: Eurocontrol Document – "Definition of A-SMGCS Implementation Levels, Edition 1.2, 2010".*

TABLE B0-SURF 3-1
(A-SMGCS Level 1-2)

EXPLANATION OF THE TABLE

Column
1 Name of the State
2 Name of City/Aerodrome and Location Indicator
3 Status of implementation of A-SMGCS Level 1, where:
  Y – Yes, implemented
  N – No, not implemented
4 Status of implementation of A-SMGCS Level 2, where:
  Y – Yes, implemented
  N – No, not implemented
5 Action plan — short description of the State's Action Plan with regard to the implementation of A-SMGCS Level 1-2, especially for items with "N".
6 Remarks

State	City/ Aerodrome Location Indicator	Level 1	Level 2	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*
BAHRAIN	Bahrain/Bahrain Intl (OBBI)	Y	Y	~~A-SMGCS Level 1-2 Project is under Execution phase. expected completion on Dec 2015~~	
EGYPT	Cairo/Cairo Intl (HECA)	Y	Y		
IRAN	Tehran/Mehrabad Intl (OIII)	N	N		
KUWAIT	Kuwait/Kuwait Intl (OKBK)	N	N		
OMAN	Muscat/Muscat Intl (OOMS)	N	N		
QATAR	Doha/Doha Intl (OTBD)	Y	Y		
	Doha/Hamad Intl (OTHH)	Y	Y		
SAUDI ARABIA	Dammam/King Fahad Intl (OEDF)	N	N		
	JEDDAH/King Abdulaziz Intl (OEJN)	N	N		
	RIYADH/King Khalid Intl (OERK)	N	N		
UAE	Abu Dhabi/Abu Dhabi Intl (OMAA)	Y	Y	Level 4 2017	
	Dubai/Dubai Intl (OMDB)	Y	Y	Level 4 2017	
	DUBAI/Al Maktoum Intl (OMDW)	Y	N	Level 4 2018	
Total Percentage		**54%**	**46%**		

B0 – ACDM: Improved Airport Operations through Airport-CDM

Description and purpose

To implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	N

Applicability consideration:

Local for equipped/capable fleets and already established airport surface infrastructure.

B0 – ACDM: Improved Airport Operations through Airport-CDM				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA	Indicator: % of applicable international aerodromes having implemented improved airport operations through airport-CDM Supporting metric: Number of applicable international aerodromes having implemented improved airport operations through airport-CDM	50%	Dec. 2018

TABLE B0-ACDM 3-1

EXPLANATION OF THE TABLE

Column

1- Name of the State

2- Aerodrome and Location Indicator

3 & 4 Fundamental ACDM Elements

3-Information Sharing:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
Note 1- Information Sharing is essential since it forms the foundation for all the other subsequent elements.

4-The Milestones Approach (Turn- Round Process)
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
Note 2- The Milestones Approach (Turn- Round Process) aims to achieve common situational awareness by tracking the progress of a flight from the initial planning to the take off.

5 – 8 Other ACDM Elements

5- Variable Taxi Time
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
Note 3- Variable Taxi Time is the key to predictability of accurate take-off in block times especially at complex airports.

6-Collaborative Management of Flight Updates
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
Note 4- Collaborative Management of Flight Updates enhances the quality of arrival and departure information exchanges between the Network Operations and the CDM airports.

7-Collaborative Pre-departure Sequence
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 5- (Collaborative) Pre-departure Sequence establishes an off-block sequence taking into account operators preferences and operational constraints.

8-ACDM in Adverse Conditions

FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

Note 6- ACDM in Adverse Conditions achieves collaborative management of a ACDM during periods of predicted or unpredicted reductions of capacity.

9- Action Plan — short description of the State's Action Plan with regard to ACDM Implementation, especially for items with a "PI" or "NI" status, including planned date(s) of full compliance, as appropriate.

10- Remarks — additional information, including detail of "PI" or "N", as appropriate.

State	Aerodrome Location Indicator	ACDM IMPLEMENTATIOM ELEMENTS							
		Fundamental ACDM Elements		Other ACDM Elements				Action Plan	Remarks
		Information Sharing	Milestones Approach	Variable Taxi Time	Collaborative Management of Flight Updates	Collaborative Pre-departure Sequence	ACDM in Adverse Conditions		
1	2	3	4	5	6	7	8	9	10
Bahrain	OBBI								
Egypt	HECA								
Iran	OIII								
Kuwait	OKBK								
Oman	OOMS								
Qatar	OTBD								
	OTHH								
Saudi Arabia	OEJN								
	OERK								
UAE	OMDB								
	OMAA								

B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Description and purpose

To improve coordination between air traffic service units (ATSUs) by using ATS Interfacility Data Communication (AIDC) defined by the ICAO *Manual of Air Traffic Services Data Link Applications* (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process particularly for oceanic ATSUs.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	N	Y

Applicability consideration:

Applicable to at least two area control centres (ACCs) dealing with enroute and/or terminal control area (TMA) airspace. A greater number of consecutive participating ACCs will increase the benefits.

B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
AMHS capability	All States	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	90	Dec. 2020
AMHS implementation /interconnection	All States	Indicator: % of States with AMHS implemented (interconnected with other States AMHS) Supporting metric: Number of States with AMHS implemented (interconnections with other States AMHS)	90	Dec. 2020
Implementation of AIDC/OLDI between adjacent ACCs	As per the AIDC/OLDI Applicability Table*	Indicator: % of priority 1 AIDC/OLDI Interconnection have been implemented Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70%	Dec. 2020

* *Note – the required AIDC/OLDI connection is detailed in the MID eANP Volume II Part III*

TABLE B0-FICE 3-1

EXPLANATION OF THE TABLE

Column
1 Name of the State
2,3, Status of AMHS Capability and Interconnection and AIDC/OLDI Capability, where:
Y – Fully Implemented
N – Not Implemented
4 File Transfer Body Part (FTBP) Capability
Y – Fully Implemented
N – Not Implemented
5 Number of required AIDC/OLDI Interconnections
6 Number of implemented AIDC/OLDI Interconnection.
7 Remarks

State	AMHS Capability	AMHS Interconnection	FTBP Capability	AIDC/OLDI Capability	Required AIDC/OLDI Interconnections	AIDC/OLDI Implementation	Remarks
1	*2*	*3*	*4*	*4*	*5**	*6*	*7*
Bahrain	Y	Y		Y	5	1	connection with ABU Dhabi
Egypt	Y	Y		Y	4	1	
Iran	Y	N		Y	4	0	Contract signed for AMHS
Iraq	N	N		N	2	0	Thales Topsky ATM system
Jordan	Y	Y		Y	2	0	
Kuwait	Y	Y		Y	2	0	
Lebanon	Y	Y		Y	1	0	
Libya	Y	N		Y	0	0	0Contract signed for AMHS
Oman	Y	Y		Y	4	1	
Qatar	Y	Y		Y	2	1	local implementation for OLDI
Saudi Arabia	Y	Y		Y	7	2	local implementation for AIDC
Sudan	Y	Y		Y	4	0	
Syria	N	N		N	0	0	
UAE	Y	Y		Y	4	3	
Yemen	N	N		N	0	0	Contract signed for AMHS
Total Percentage / Number	**80%**	**67%**		**80%**	**42**	**9 (21%)**	

B0 – DATM: Service Improvement through Digital Aeronautical Information Management

Description and purpose

The initial introduction of digital processing and management of information, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical information exchange model (AIXM), migration to electronic aeronautical information publication (AIP) and better quality and availability of data

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	N	Y	Y	Y

Applicability consideration:
Applicable at State level, with increased benefits as more States participate

B0 – DATM: Service Improvement through Digital Aeronautical Information Management				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
AIXM	All States	Indicator: % of States that have implemented an AIXM-based AIS database Supporting Metric: Number of States that have implemented an AIXM-based AIS database	80%	Dec. 2018
eAIP	All States	Indicator: % of States that have implemented an IAID driven AIP Production (eAIP) Supporting Metric: Number of States that have implemented an IAID driven AIP Production (eAIP)	80%	Dec. 2020
QMS	All States	Indicator: % of States that have implemented QMS for AIS/AIM Supporting Metric: Number of States that have implemented QMS for AIS/AIM	90%	Dec. 2018
WGS-84	All States	Indicator: % of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Supporting Metric: Number of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Indicator: % of States that have implemented WGS-84 Geoid Undulation Supporting Metric: Number of States that have implemented WGS-84 Geoid Undulation	Horizontal: 100% Vertical: 90%	Dec. 2018 Dec. 2018

Agreement with data originators	All States	Indicator: % of States that have signed Service Level Agreements (SLA) with at least 50% of their AIS data originators Supporting Metric: Number of States that have signed Service Level Agreements (SLA) with at least 50% of their AIS data originators	80%	Dec. 2020

B0-DATM Enablers/Tables

In order to assist States in the planning for the transition from AIS to AIM in an expeditious manner, the following Tables, which provide more details than the standard ANRF, should be used:

1- **Table B0-DATM 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, etc) for which the State is responsible. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to elements Nr. 1 and 2 of the Module B0-DATM.

2- **Table B0-DATM 3-2** sets out the requirements for aeronautical data quality. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 3 of the Module B0-DATM.

3- **Table B0-DATM 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 Key Performance Indicators (KPIs) related to the element Nr. 4 of the Module B0-DATM.

4- **Table B0-DATM 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 Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

5- **Table B0-DATM 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 Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

6- **Table B0-DATM 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 Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

Table B0-DATM 3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which the provision of AIS/AIM products and services based on the IAID is required.

2 Requirement for the implementation and designation of the authoritative IAID, shown by:
FI – Fully Implemented
NI – Not Implemented

Note 1 — The IAID of a State is a single access point for one or more databases (AIP, Terrain, Obstacles, AMDB, etc). The minimum set of databases which should be integrated is defined in Annex 15.

Note 2 — The information related to the designation of the authoritative IAID should be published in the AIP (GEN 3.1)

3 Requirement for an IAID driven AIP production, shown by:
FI – Fully Implemented (eAIP: Text, Tables and Charts)
PI – Partially Implemented
NI – Not Implemented

Note 3 — AIP production includes, production of AIP, AIP Amendments and AIP Supplements

Note 4 — Charts' GIS-based database should be interoperable with AIP database

4 Requirement for an IAID driven NOTAM production, shown by:
FC – Fully Compliant
NC – Not Compliant

5 Requirement for an IAID driven SNOWTAM processing, shown by:
FI – Fully Implemented
NI – Not Implemented

6 Requirement for an IAID driven PIB production, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

7 Requirement for Procedure design systems to be interoperable with the IAID, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 5 — full implementation includes the use of the IAID for the design of the procedures and for the storage of the encoded procedures in the IAID

8 Requirement for ATS systems to be interoperable with the IAID, shown by:
FI – Fully Implemented
PI – Partially Implemented

NI – Not Implemented

9 Action Plan — short description of the State's Action Plan with regard to the provision of AIM products and services based on the IAID, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

10 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

State	IAID	AIP	NOTAM	SNOWTAM	PIB	Procedure Design	ATS	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
BAHARAIN	FI	FI	FC	FI	FC	PI	FI		**AIXM:** 5.1
EGYPT	FI	PI	FC	FI	FC	NI	PI		**AIXM:** 5.1 3 and 7 by2018
IRAN, ISLAMIC REPUBLIC OF	NI	NI	NC	NI	NC	NI	NI		**AIXM:** NI Separate semi-automated NOTAM/SNOWTAM system is operative
IRAQ	NI	NI	NC	NI	NC	NI	NI		**AIXM:** NI
JORDAN	NI	NI	FC	NI	FC	NI	NI		**AIXM:** database through EAD
KUWAIT	NI	NI	FC	NI	PC	NI	NI		**AIXM:** NI (5.1 in progress)
LEBANON	NI	NI	NC	NI	NC	NI	NI		**AIXM:** 4.5
LIBYA	NI	NI	NC	NI	NC	NI	NI		**AIXM:** NI
OMAN	NI	NI	NC	NI	NC	NI	NI		**AIXM:** NI (5.1 in progress)
QATAR	NI	PI	FC	NI	FC	PI	NI	Q4/2017 – Data Integration (AIP, Terrain, Obstacle, Procedure Design and AMDB)	**AIXM:** 5.1
SAUDI ARABIA	FI	FI	NC	NI	PC	FI	FI	AIXM 5.1 & NOTAM: 2019	**AIXM:** 4.5
SUDAN	NI	NI	FC	NI	FC	PI	PI		**AIXM:** NI
SYRIAN ARAB REPUBLIC	NI	NI	NC	NI	NC	NI	NI	No Action Plan	**AIXM:** NI
UNITED ARAB EMIRATES	NI	FI	NC	NI	PC	NI	PI	AMDB: 2016-2021; PIB: AVBL at OMAA, OMDB, OMDW, OMFJ, other ADs 2020; Procedure Design 2020; ATS: ACC AVBL, ADs 2020 Digital NOTAM: 2016-2021	**AIXM:** 5.1
YEMEN	NI	NI	NC	NI	NC	NI	NI	No Action Plan	**AIXM:** NI

Table B0-DATM-3-2
Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 Compliance with the requirement for implementation of QMS for Aeronautical Information Services including safety and security objectives, shown by:
  FC – Fully compliant
  NC – Not compliant

3 Compliance with the requirement for the establishment of formal arrangements with approved data originators concerning aeronautical data quality, shown by:
  FC – Fully compliant
  PC – Partially compliant
  NC – Not compliant

4 Implementation of digital data exchange with originators, shown by:
  FI – Implemented
  PI – Partially Implemented
  NI – Not implemented

  Note 1 — Information providing detail of "PI" and "NI" should be given in the Remarks column (percentage of implementation).

5 Compliance with the requirement for metadata, shown by:
  FC – Fully compliant
  PC – Partially compliant
  NC – Not compliant

6 Compliance with the requirements related to aeronautical data quality monitoring (accuracy, resolution, timeliness, completeness), shown by:
  FC – Fully compliant
  PC – Partially compliant
  NC – Not compliant

7 Compliance with the requirements related to aeronautical data integrity monitoring, shown by:
  FC – Fully compliant
  PC – Partially compliant
  NC – Not compliant

8 Compliance with the requirements related to the AIRAC adherence, shown by:
  FC – Fully compliant
  NC – Not compliant

9 Action Plan — short description of the State's Action Plan with regard to aeronautical data quality requirements implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

10 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-2
Aeronautical Data Quality

State	QMS	Establishment of formal agreements	Digital data exchange with originators	Metadata	Data quality monitoring	Data integrity monitoring	AIRAC adherence	Action Plan	Remarks
1	2	3	4	5	6	7	8	9	10
BAHARAIN	FC	PC	PI	FC	FC	FC	FC		
EGYPT	FC	PC	PI	FC	PC	PC	FC	3, 4, 6 and 7 by 2018	
IRAN, ISLAMIC REPUBLIC OF	FC	PC	NI	NC	FC	FC	FC		
IRAQ	NC	NC	NI	NC	NC	NC	FC		
JORDAN	FC	PC	NI	FC	FC	FC	FC		
KUWAIT	FC	PC	NI	NC	NC	NC	FC		
LEBANON	NC	PC	NI	PC	PC	PC	FC		
LIBYA	NC	NC	NI	NC	NC	NC	NC	No Action Plan	
OMAN	NC	NC	NI	NC	PC	PC	FC		
QATAR	FC	PC	PI	FC	PC	PC	FC		
SAUDI ARABIA	FC	FC	NI	FC	FC	FC	FC	4: 2019	
SUDAN	FC	FC	NI	NC	FC	FC	FC		
SYRIAN ARAB REPUBLIC	NC	NC	NI	NC	NC	NC	NC	No Action Plan	
UNITED ARAB EMIRATES	FC	PC	PI	FC	FC	FC	FC	4: implemented for some of internal stakeholders. Completion by 2020	
YEMEN	NC	NC	NI	PC	NC	NC	NC	No Action Plan	

Table B0-DATM-3-3

World Geodetic System-1984 (WGS-84)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which implementation of WGS-84 is required.

2 Compliance with the requirements for implementation of WGS-84 for FIR and Enroute points, shown by:
FC – Fully compliant
PC – Partially compliant
NC – Not compliant

3 Compliance with the requirements for implementation of WGS-84 for Terminal Areas (arrival, departure and instrument approach procedures), shown by:
FC – Fully compliant
PC – Partially compliant
NC – Not compliant

4 Compliance with the requirements for implementation of WGS-84 for Aerodrome, shown by:
FC – Fully compliant
PC – Partially compliant
NC – Not compliant

5 Compliance with the requirements for implementation of Geoid Undulation, shown by:
FC – Fully compliant
PC – Partially compliant
NC – Not compliant

6 Action Plan — short description of the State's Action Plan with regard to WGS-84 implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

7 Remarks — additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-3
World Geodetic System-1984 (WGS-84)

State	FIR/ENR	Terminal	AD	GUND	Action Plan	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**
BAHARAIN	FC	FC	FC	FC		
EGYPT	FC	FC	FC	FC		
IRAN, ISLAMIC REPUBLIC OF	FC	FC	FC	FC		
IRAQ	FC	FC	FC	NC		
JORDAN	FC	FC	FC	FC		
KUWAIT	FC	FC	FC	FC		Last survey FEB 2015
LEBANON	FC	FC	FC	FC		
LIBYA	PC	PC	NC	NC	No Action Plan	
OMAN	FC	FC	FC	FC		
QATAR	FC	FC	FC	FC		Annual Validation/Survey
SAUDI ARABIA	FC	FC	FC	FC		
SUDAN	FC	FC	FC	FC		
SYRIAN ARAB REPUBLIC	FC	FC	FC	NC	No Action Plan	
UNITED ARAB EMIRATES	FC	FC	FC	FC		
YEMEN	FC	FC	FC	FC		

Table B0-DATM-3-4-1

Provision of Terrain and Obstacle data sets for Areas 1 and 4

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Areas 1 and 4 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant
N/A – Not Applicable

4 Compliance with requirement for the provision of Obstacle data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

5 Compliance with requirement for the provision of Obstacle data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant
N/A – Not Applicable

6 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 Areas 1 and 4, especially for items with a "PC" or "NC" status, including planned date(s) of full compliance, as appropriate.

7 Remarks— additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-4-1

Provision of Terrain and Obstacle data sets for Areas 1 and 4

State	Terrain data sets		Obstacle data sets		Action Plan	Remarks
	Area 1	Area 4	Area 1	Area 4		
1	2	3	4	5	6	7
BAHARAIN	FC	FC	FC	FC		
EGYPT	FC	FC	NC	NC	Completion of area 4: Dec. 2019	
IRAN, ISLAMIC REPUBLIC OF	FC	FC	FC	FC		
IRAQ	NC	NC	NC	NC		
JORDAN	PC	FC	PC	FC		
KUWAIT	FC	FC	FC	FC		
LEBANON	NC	N/A	NC	N/A	2 & 4: Q2-2019	
LIBYA	NC	N/A	NC	N/A		
OMAN	NC	N/A	NC	N/A		
QATAR	FC	FC	FC	FC		
SAUDI ARABIA	FC	FC	FC	FC		
SUDAN	NC	N/A	NC	N/A		
SYRIAN ARAB REPUBLIC	NC	N/A	NC	N/A	No Action Plan	
UNITED ARAB EMIRATES	PC	FC	PC	FC		
YEMEN	NC	N/A	NC	N/A	No Action Plan	

Table B0-DATM-3-4-2
Provision of Terrain and Obstacle data sets for Area 2

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 Obstacle data sets for Area 2a, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

7 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

8 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

9 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

10 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.

11 Remarks— additional information, including detail of "PC", "PI" and "NC", "NI", as appropriate.

TABLE B0-DATM-3-4-2

Provision of Terrain and Obstacle data sets for Area 2

State	Terrain data sets				Obstacle data sets				Action Plan	Remarks
	Area 2a	Area 2b	Area 2c	Area 2d	Area 2a	Area 2b	Area 2c	Area 2d		
1	2	3	4	5	6	7	8	9	10	11
BAHARAIN	NC	NI	NI	NI	FC	FI	FI	FI		
EGYPT	PC	PI	PI	PI	NC	NI	NI	NI	To be completed by 2020	
IRAN, ISLAMIC REPUBLIC OF	FC	FI	FI	FI	FC	FI	FI	FI		
IRAQ	NC	NI	NI	NI	NC	NI	NI	NI		
JORDAN	PC	PI	PI	NI	PC	PI	PI	NI		Area 2a, 2b and 2c implemented for OJAI RWY 26R/08L
KUWAIT	NC	NI	NI	NI	NC	NI	NI	NI		
LEBANON	NC	NI	NI	NI	NC	NI	NI	NI	To be completed by Q4-2019	
LIBYA	NC	NI	NI	NI	NC	NI	NI	NI	No Action Plan	
OMAN	NC	NI	NI	NI	NC	NI	NI	NI		
QATAR	FC	FI	FI	FI	FC	FI	FI	FI		
SAUDI ARABIA	NC	NI	NI	NI	NC	NI	NI	NI	To be completed by 2020	
SUDAN	NC	NI	NI	NI	NC	NI	NI	NI		
SYRIAN ARAB REPUBLIC	NC	NI	NI	NI	NC	NI	NI	NI	No Action Plan	
UNITED ARAB EMIRATES	NC	NI	NI	PI	FC	FI	FI	PI	To be completed by 2020	TOD Area 2 (all sub-areas) survey & data acquisition through international airport service providers
YEMEN	NC	NI	NI	NI	NC	NI	NI	NI	No Action Plan	

Table B0-DATM-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.

TABLE B0-DATM-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
BAHARAIN	NI	FI	NI	To be completed by 2021	
EGYPT	NI	NI	NI	To be completed by 2020	
IRAN, ISLAMIC REPUBLIC OF	FI	FI	NI	No Action Plan	
IRAQ	NI	NI	NI		
JORDAN	PI	PI	NI		Area 3 implemented for OJAI RWY 26R/08L
KUWAIT	FI	FI	NI		
LEBANON	NI	NI	NI	Area 3: Q4-2019 AMDB: no plan	
LIBYA	NI	NI	NI	No Action Plan	
OMAN	NI	NI	NI		
QATAR	FI	PI	PI	Q4/2017 AMDB implementation	
SAUDI ARABIA	NI	NI	NI	No Action Plan	
SUDAN	NI	NI	NI		
SYRIAN ARAB REPUBLIC	NI	NI	NI	No Action Plan	
UNITED ARAB EMIRATES	FI	FI	NI	AMDB: completed by 2021	AMDB technical infrastructure (metadata, model) implemented in IAID, pending compatibility analysis AIXM 5.1 with revised AMDB model (RTCA DO-272D) when released.
YEMEN	NI	NI	NI	No Action Plan	

B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety

Description and purpose

Global, regional and local meteorological information:

a) forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC);
b) aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome including wind shear; and
c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

This module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

Applicability consideration:
Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
SADIS FTP	All States	Indicator: % of States having implemented SADIS FTP service Supporting Metric: Number of States having implemented SADIS FTP service	100%	Dec. 2018
QMS	All States	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	80%	Dec. 2018
SIGMET	All States with MWOs in MID Region	Indicator: % of States having implemented SIGMET Supporting metric: number of States having implemented SIGMET	100%	Dec. 2018
OPMET	All States	Indicator: % of States having implemented METAR and TAF Supporting metric: number of States having implemented METAR and TAF	95%	Dec. 2018
WIND SHEAR	TBD	Indicator: TBD Supporting metric: TBD	TBD	TBD

Table B0-AMET 3-1

SADIS FTP

EXPLANATION OF THE TABLE

Column

1 Name of the State
2 Status of implementation of SADIS FTP, where:
   Y – Yes, implemented
   N – No, not implemented
3 Action Plan
4 Remarks

State	Status	Action Plan	Remarks
1	**2**	**3**	**4**
BAHRAIN	Y		
EGYPT	Y		
IRAN (ISLAMIC REPUBLIC OF)	N	No Action Plan	
IRAQ	Y		
JORDAN	Y		
KUWAIT	Y		
LEBANON	N	No Action Plan	
LIBYA	Y		
OMAN	Y		
QATAR	Y		
SAUDI ARABIA	Y		
SUDAN	Y		
SYRIAN ARAB REPUBLIC	N	No Action Plan	
UNITED ARAB EMIRATES	Y		
YEMEN	Y		

Table B0-AMET 3-2

Volcanic Ash Advisory Centers

Not Applicable

Table B0-AMET 3-3

Tropical Cyclone Advisory Centers

Not Applicable

Table B0-AMET 3-4

Quality Management System

EXPLANATION OF THE TABLE

Column

1 Name of the State

2, 3, 4, 5 Status of implementation of Quality Management System of meteorological information – QMS: not started/ planning, ongoing/ partially implemented, Implemented/ISO 9001 Certified, Date of Certification.

6 Action Plan

7 Remarks

State	Not started/ planning	Ongoing/ partially implemented	Implemented/ ISO 9001 Certified		Action Plan	Remarks
			Status	Date of Certification		
1	2	3	4	5	6	7
BAHRAIN			√	2008		
EGYPT			√	23 May 2012		Recertification: May 2015
IRAN, ISLAMIC REPUBLIC OF			√	Oct 2015		
IRAQ	√				No Action Plan	
JORDAN			√	2 Apr 2014		Recertification: 14 April 2017
KUWAIT			√	23 Aug 2013		Recertification: 22 Aug 2016
LEBANON	√				No Action Plan	
LIBYA	√				No Action Plan	
OMAN		√			TBD	
QATAR			√	Dec 2011		
SAUDI ARABIA			√	Aug 2014		
SUDAN			√	5 June 2014		
SYRIAN ARAB REPUBLIC	√				No Action Plan	
UNITED ARAB EMIRATES			√	19 Dec 2012		Recertification: 18 Dec 2015
YEMEN	√				No Action Plan	

Table B0-AMET 3-5
SIGMET Availability

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation of SIGMET, where:
Y – Yes, implemented (at least one SIGMET received within a 5 month monitoring period, or as required)
N – No, not implemented (no SIGMET received within a 5 month monitoring period)

3 Status of implementation of SIGMET format, where:
Y – Yes, implemented (at least 95% of received SIGMET messages reveal the correct format (TTAAii CCCC in accordance to the MID SIGMET Guide; ATSU, MWO, FIR and FIR name in accordance to ICAO Doc 7910) for the first two lines of SIGMET)
N – No, not implemented (less than 95% of received SIGMET messages reveal the correct format for the first two lines of SIGMET)

4 Action Plan

5 Remarks

State	Implementation		Action Plan	Remarks
	SIGMET Reception	SIGMET Format		
1	2	3	4	5
BAHRAIN	Y	Y		
EGYPT	Y	Y		
IRAN, ISLAMIC REPUBLIC OF	Y	Y		
IRAQ	Y	Y		Verify the header for Iraq is WSIQ01 ORBI for FIR ORBB – if so, update to MID Doc 009
JORDAN	Y	Y		
KUWAIT	Y	Y		
LEBANON	Y	Y		
LIBYA	Y	N		Indicators HLMC for MWO and HLLL for FIR are not defined in ICAO Doc 7910
OMAN	Y	Y		
QATAR	N/A	N/A		These fields are not applicable to Qatar
SAUDI ARABIA	Y	Y		
SUDAN	Y	Y		
SYRIAN ARAB REPUBLIC	N	N	No Action Plan	
UNITED ARAB EMIRATES	Y	Y		
YEMEN	N	N	No Action Plan	

Draft Table B0-AMET 3-6

Draft OPMET Availability (METAR and TAF)

EXPLANATION OF THE TABLE

Column

1 Name of the State
2, 3 Status of availability of METAR and TAF for AOP aerodromes, where:
Y – Yes, implemented (95% availability of required METAR within a State; 95% availability of required TAF within a State)
N – No, not implemented
4 Remarks

State	Implementation		Remarks
	METAR	TAF	
1	**2**	**3**	**4**
BAHRAIN	Y	Y	
EGYPT	Y	Y	
IRAN, ISLAMIC REPUBLIC OF	Y	Y	
IRAQ	N	N	METAR and TAF needed for ORBM
JORDAN	Y	Y	
KUWAIT	Y	Y	
LEBANON	Y	Y	
LIBYA	Y	Y	
OMAN	Y	Y	
QATAR	Y	Y	
SAUDI ARABIA	Y	Y	
SUDAN	Y	Y	
SYRIAN ARAB REPUBLIC	N	N	METAR &TAF needed for OSAP
UNITED ARAB EMIRATES	Y	Y	
YEMEN	N	N	METAR & TAF needed for OYAA, OYHD, OYRN, OYSN and OYTZ

Table B0-AMET 3-7
WIND SHEAR Availability

TBD

B0 – FRTO: Improved Operations through Enhanced En-Route Trajectories

Description and purpose

To allow the use of airspace 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.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	N/A

Applicability consideration:

Applicable to en-route and terminal airspace. Benefits can start locally. The larger the size of the concerned airspace the greater the benefits, in particular for flex track aspects. Benefits accrue to individual flights and flows. Application will naturally span over a long period as traffic develops. Its features can be introduced starting with the simplest ones.

B0 – FRTO: Improved Operations through Enhanced En-Route Trajectories				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
Flexible Use of Airspace (FUA) Level 1 Strategic	All States	Indicator: % of States that have implemented FUA Level 1 Supporting metric*: number of States that have implemented FUA Level 1	50%	Dec. 2019
FUA Level 2 Pre-tactical	All States	Indicator: % of States that have implemented FUA Level 2 Supporting metric*: number of States that have implemented FUA Level 2	60%	Dec. 2020
FUA Level 3 Tactical	All States	Indicator: % of States that have implemented FUA Level 3 Supporting metric*: number of States that have implemented FUA Level 3	60%	Dec. 2022

Table B0-FRTO 3-1

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation of Flexible Use of Airspace (FUA) Level 1-Strategic.

3 Status of implementation of Flexible Use of Airspace (FUA) Level 2-Pre-tactical

4 Status of implementation of Flexible Use of Airspace (FUA) Level 3-Tactical

Implementation should be based on the published aeronautical information:

FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

5 Remarks

Applicability State	FUA Level 1	FUA Level 2	FUA Level 3	Remarks
1	2	3	4	5
Bahrain				
Egypt				
Iran				
Iraq				
Jordan				
Lebanon				
Libya				
Kuwait				
Oman				
Qatar				
Saudi Arabia				
Sudan				
Syria				
Unite Arab Emirates				
Yemen				
Total				
Percentage				

B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view

Description and purpose

Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in a way that minimizes delay and maximizes the use of the entire airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or Flight Information Region (FIR)/sector boundaries and re-route traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.

Experience clearly shows the benefits related to managing flows consistently and collaboratively over an area of a sufficient geographical size to take into account sufficiently well the network effects. The concept for ATFM and demand and capacity balancing (DCB) should be further exploited wherever possible. System improvements are also about better procedures in these domains, and creating instruments to allow collaboration among the different actors**.**

Guidance on the implementation of ATFM service are provided in the ICAO Doc 9971– Manual on Collaborative
Air Traffic Flow Management

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	N/A

Applicability consideration:

Applicable to en-route and terminal airspace. Benefits can start locally. The larger the size of the concerned airspace the greater the benefits. Application will naturally span over a long period as traffic develops.

B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
ATFM Measures implemented in collaborative manner	All States	Indicator: % of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision Supporting metric: number of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision	100%	Dec. 2018
ATFM Structure	All States	Indicator: % of States that have established an ATFM Structure Supporting metric: number of States that have established an ATFM Structure	100 %	Dec. 2019

Table B0-NOPS 3-1

EXPLANATION OF THE TABLE

Column
1 Name of the State
2 Mechanism for the implementation of ATFM Measures based on collaborative decision:
Y –Implemented
N – Not Implemented
3 ATFM Structure/Functions:
Y –Implemented
N – Not Implemented
4 Remarks

Applicability State	Mechanism for the implementation of ATFM Measures based on collaborative decision	ATFM Structure/Functions	Remarks
1	**2**	**3**	**4**
Bahrain	Y		
Egypt			
Iran			
Iraq			
Jordan			
Lebanon			
Libya			
Kuwait			
Oman			
Qatar			
Saudi Arabia			
Sudan			
Syria			
UAE			
Yemen			
Total			
Percentage			

B0 – ACAS: ACAS Improvements

Description and purpose:

To provide short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N/A	N/A	Y	N/A	Y

Applicability consideration:

Safety and operational benefits increase with the proportion of equipped aircraft.

B0 – ACAS: ACAS Improvements				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
Avionics (TCAS V7.1)	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	100%	Dec. 2017

Table B0-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
Bahrain	Y	Aeronautical Circular AC/OPS/05/2015 dated 10th of March 2015		Air Navigation Technical Regulations (ANTR) updated to reflect Annex 10 (Volume IV) Reference needs to be provided http://www.mtt.gov.bh/content/caa-laws-and-regulations
Egypt	Y	ECAR Part 121.356 & ECAR Part 91.221		Egyptian Civil Aviation Regulation (ECAR) Parts 121 and 91 have been updated in accordance with the relevant provisions of ICAO Annex 10, Volume IV, Ch.4 http://www.civilaviation.gov.eg/Regulations/regulation.html
Iran	Y	Aeronautical Telecommunications bylaw, articles 3 and 4	1 Jan 2017	According to articles 3 and 4 of Iran aeronautical telecommunications by law, ratified by board of ministers, Airborne collision avoidance systems are categorized as aeronautical telecommunications systems and should be manufactured, installed and maintained according to standards of Annex 10. -Since no difference to ICAO annex 10 is notified, ACAS V 7.1 is mandatory according to provisions of annex 10 amendment 85. -Airworthiness directives issued by FAA and EASA shall to be implemented by Iranian AOC holders.
Iraq	N			

State	Status	Regulation Reference	Effective Date	Remarks
1	2	3	4	5
Jordan	Y	JCAR-OPS.1 (1.668 airborne collision avoidance system)	15 April 2015	
Kuwait	Y	Kuwait Civil Aviation Safety Regulations – Part 6 – Operation of Aircraft, Para. 6.20.4		
Lebanon	Y	Lebanese Aviation Regulations Part V subpart 6 605.12		http://dgca.gov.lb/index.php/en/pd-cat-8-lar6-en/file/72-part-vi-subpart-5-general-operating-and-flight-rules-new-2015
Libya	N			
Oman	Y	CAR-OPS 1, Subpart K, CAR-OPS 1.668-Airborne Collision Avoidance System		Regulation reference needs to be provided
Qatar	Y	QCAR – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system QCAR Part 10 - Volume4 Chapter 4 Airborne Collision Avoidance System		References: http://www.caa.gov.qa/en/safety_regulations
Saudi Arabia	Y	GACAR PART 91 – Appendix C		
Sudan	Y	Amended Annex 10 (V4)- ANNESX 6 (V2)		According to adopted annexes to Sudan Regulations (SUCAR 10 V4 Par. 4.3.5.3.1 and SUCAR 6 V2 par 2.05.15)
Syria	N			
UAE	Y	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 and AIP 1.5.6.6	1 July 2011	https://www.gcaa.gov.ae/en/ePublication/Pages/CARs.aspx?CertD=CARs
Yemen	Y			Reference need to be provided

B0 – SNET: Increased Effectiveness of Ground-based Safety Nets

Description and purpose:

To enable monitoring of flights while airborne to provide timely alerts to air traffic controllers of potential risks to flight safety. Alerts from short-term conflict alert (STCA), area proximity warnings (APW) and minimum safe altitude warnings (MSAW) are proposed. Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human centered.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N/A	N/A	Y	N/A	Y

Applicability consideration:

Benefits increase as traffic density and complexity increase. Not all ground-based safety nets are relevant for each environment. Deployment of this Module should be accelerated.

B0 – SNET: Increased Effectiveness of Ground-based Safety Nets				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Timelines**
Short-Term Conflict Alert (STCA)	All States	Indicator: % of States that have implemented Short-term conflict alert (STCA) Supporting metric*: number of States that have implemented Short-term conflict alert (STCA)	80 %	Dec. 2018
Minimum Safe Altitude Warning (MSAW)	All States	Indicator: % of States that have implemented Minimum safe altitude warning (MSAW) Supporting metric*: number of States that have implemented Minimum safe altitude warning (MSAW)	80 %	Dec. 2018

Table B0-SNET 3-1

EXPLANATION OF THE TABLE

Column

1 Name of the State and ATS Units within a State providing En-route and Approach services

2 En-route and Approach ATS Units providing Radar services: "R"

3 En-route and Approach ATS Units providing Procedural services: "P"

4 En-route and Approach ATS Units within a State providing radar services where Short-Term Conflict Alert (STCA) was implemented (Y/N or N/A)

5 En-route and Approach ATS Units within a State providing radar services where Minimum Safe Altitude Warning (MSAW)was implemented (Y/N or N/A)

6 Action Plan for the implementation of STCA and MSAW

7 Status of implementation of STCA and MSAW (reference to column 2)

State/ ATS Units (ENR & APP)	ATS		STCA	MSAW	Action Plan	Status
1	*2*	*3*	*4*	*5*	*6*	*7*
Bahrain	**2**	**0**	**2**	**2**		**STCA 100%** **MSAW 100%**
Bahrain ACC	R		Y	Y		
Bahrain APP	R		Y	Y		
Egypt	**7**	**1**				**STCA 100%** **MSAW 100%**
Cairo ACC	R		Y	Y		
Alex APP	R		Y	Y		
Aswan APP	R		Y	Y		
Cairo APP	R		Y	Y		
Luxor APP	R		Y	Y		
Hurghada APP	R		Y	Y		
Marsa APP		P	N/A	N/A		
Sharm APP	R		Y	Y		
Iran	**5**	**2**				**STCA 100%** **MSAW 100%**
Tehran ACC	R		Y	Y		
Bandar Abbas APP		P	N/A	N/A		
Esfahan APP	R		Y	Y		
Mashhad APP	R		Y	Y		
Mehrabad APP	R		Y	Y		
Shiraz APP	R		Y	Y		
Tabriz APP		P	N/A	N/A		

State/ ATS Units (ENR & APP)	ATS		STCA	MSAW	Action Plan	Status
1	*2*	*3*	*4*	*5*	*6*	*7*
Iraq	**2**	**0**				**STCA 100%** **MSAW 100%**
Baghdad ACC	R		Y	Y		
Baghdad APP	R		Y	Y		
Jordan	**2**	**1**				**STCA 100%** **MSAW 100%**
Amman ACC	R		Y	Y		
Amman APP	R		Y	Y		
Aqaba APP		P	N/A	N/A		
Kuwait	**2**	**0**				**STCA 100%** **MSAW 100%**
Kuwait ACC	R		Y	Y		
Kuwait APP	R		Y	Y		
Lebanon	**2**	**0**				**STCA 100%** **MSAW 100%**
Beirut ACC	R		Y	Y		
Beirut APP	R		Y	Y		
Libya	**0**	**4**				**STCA 0%** **MSAW 0%**
Tripoli ACC		P	N/A	N/A		
Tripoli APP		P	N/A	N/A		
Benghazi Centre		P	N/A	N/A		
Benghazi APP		P	N/A	N/A		
Oman	**3**	**0**				**STCA 100%** **MSAW 100%**
Muscat ACC	R		Y	Y		
Seeb APP	R		Y	Y		
Salalah APP	R		Y	Y		
Qatar	**1**	**0**				**STCA 100%** **MSAW 100%**
Doha Radar	R		Y	Y		
Saudi Arabia	**6**	**0**				**STCA 100%** **MSAW 100%**
Jeddah ACC	R		Y	Y		
Riyadh ACC	R		Y	Y		
Jeddah APP	R		Y	Y		
Riyadh APP	R		Y	Y		
Madina APP	R		Y	Y		
Damam APP	R		Y	Y		
Sudan	**2**	**3**				**STCA 100%** **MSAW 100%**
Khartoum ACC	R		Y	Y		

State/ ATS Units (ENR & APP)	ATS		STCA	MSAW	Action Plan	Status
1	*2*	*3*	*4*	*5*	*6*	*7*
Khartoum APP	R		Y	Y		
Elobeid APP		P	N/A	N/A		
Nyala APP		P	N/A	N/A		
Port Sudan APP		P	N/A	N/A		
Syria	**0**	**4**				**STCA 0%** **MSAW 0%**
Damascus ACC		P				
Damascus ACC		P				
Aleppo APP		P				
Latakia APP		P				
UAE	**7**	**0**	**6**	**6**		**STCA 86%** **MSAW 86%**
SZC	R		Y	Y		
Al Ain APP	R		Y	Y		
Abu Dhabi Radar	R		Y	Y		
Al Maktoum APP	R		Y	Y		
Dubai Radar	R		Y	Y		
Fujairah APP	R		Y	Y		
RAS AL KHAIMAH	R		N	N		
Yemen		**3**				**STCA 0%** **MSAW 0%**
Sana'a ACC		P	N/A	N/A		
Aden APP		P	N/A	N/A		
Sana'a APP		P	N/A	N/A		
Total	**41**	**18**	**40 Y**	**40 Y**		**STCA 97%**
Percentage			**18 N/A**	**18 N/A**		**MSAW 97%**

- END -

MID REGION AIM IMPLEMENTATION ROADMAP

Steps/Elements		2018 and before		2019		2020		2021		2022		2023		2024		2025		Priority	Remarks
		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2		
AIXM database (AIXM V 5.X)																		**1**	(P07, P08)
AIP datasets																		**1**	(P06) (sub-datasets/grouping TBD)
eAIP																		**1**	(P11)
Terrain A-1 Dataset																		**1**	(P13)
Obstacle A-1 Dataset																		**1**	(P14)
Terrain A-4 Dataset(s)																		**1**	(P13)
Obstacle A-4 Dataset(s)																		**1**	(P14)
Terrain A-2a Dataset(s)																		**1**	(P13) Terrain area 2a dataset (and its supplementary areas according to Annex 15, 5.3.3.3.3)
Obstacle A-2a Dataset(s)																		**1**	(P14) Obstacle area 2a dataset (and its supplementary areas according to Annex 15, 5.3.3.4.5)
NOTAM Improvements																		**1**	(P21) Step 1 (2019): identification of operational conditions under which a NOTAM shall or shall not be originated Step 2 (TBD): replacement of current NOTAMs by a digital version through the use of AIXM
Agreement with data originators																		**1**	(P18)
Provision of quality-assured aeronautical data and information																		**1**	(P01, P02)
Training																		**1**	(P16) Continuous
Aeronautical Data Exchange																		**2**	(P09)
Instrument Flight Procedure (IFP) Dataset(s)																		**2**	(P06)
Dissemination of Aeronautical Information in SWIM environment																		**3**	(P09)
Aerodrome Mapping Dataset(s)																		**3**	(P15) Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs

6.2E-2

Steps/Elements		2018 and before		2019		2020		2021		2022		2023		2024		2025		Priority	Remarks
		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2		
Interoperability with MET																		**3**	(P19) Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs
Aeronautical Information Briefing																		**3**	(P12) (Digital briefing) Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs
Electronic Aeronautical Charts																		**3**	(P20) Based on the States' decision to be reflected in the States' national Regulations and AIM National Plans, in accordance with operational needs

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MID RDWG Scope, Terms of Reference, Composition, and Working Procedures

SCOPE:

The MID Route Development Working Group (RDWG) works on matters related to ATS route planning and implementation in the Middle East Region.

In order to achieve its mandate, The RDWG builds on previous work aiming at enhancing the regional ATS route network, including but not limited to: MIDRAR, CNS/ATM study, work of the Advanced Inter-regional ATS Routes Development Task Force (AIRARD TF), work of the Middle East ATM Enhancement Programme (MAEP), work of ICAO ARN Task Force, etc.

TERMS OF REFERENCE:

1. Based on airspace users' needs and in coordination with stakeholders (States, Regional and International Organizations, and other ICAO Regions), identify requirements and improvements for achieving and maintaining an efficient ATS route network in the MID Region.

2. Recommend measures and support the ATM SG in the development and maintenance of working procedures to plan and implement requirements/improvements to the MID ATS route network.

3. Facilitate the implementation of agreed ATS routes by engaging concerned parties including the Military Authorities.

4. In coordination with the MIDRMA, carry out safety assessment of the proposed changes to the ATS route network.

5. Support the implementation of the approved amendments to the ATS route network and MID ANP;

6. Coordinate and support implementation of the ATS routes over the high seas;

7. Address inter-regional ATS routes improvements with adjacent ICAO Regions, through the AIRARD Task Force, RDGE, AAMA SCM etc.

8. Report, regularly, to the ATM Sub Group and to MAEP Board the work progress of the RDWG.

COMPOSITION:

The RDWG will be composed of:

a) experts nominated by Middle East States from both Civil Aviation and Military Authorities;

b) Concerned Regional and International Organizations; and

c) Other representatives from adjacent States and Organizations as required.

In addition, the RDWG will have a core team composed of AACO, IATA and ICAO. The core team will be responsible for developing the activities of the RDWG through effective coordination between airspace users and RDWG members.

WORKING PROCEDURES:

The RDWG will meet as required and under the format of Task Forces gathering concerned States and stakeholders to carry its work, with the following work procedures:

- The Core Team will coordinate users' requirements based on trunk routes and city-pair priorities.

- For each set of requirements, concerned airspace users will submit proposals which will be communicated to the concerned States for review.

- Coordination will be carried out with concerned State(s) through correspondence and teleconferences and, if required, face-to-face meetings with stakeholders on case-by-case basis.

- The Core Team will continue to follow up with concerned States to ensure implementation of the agreed proposals and their migration to the MID ANP.

- The Core Team will follow-up with the concerned State(s) and air operators the conduct of post implementation review of the implemented ATS route improvements, to assess the impact and estimate the benefit accrued from the implementation.

STATUS OF CONTINGENCY AGREEMENTS IN THE MID REGION
As of April 2019

STATE	CORRESPONDING STATES			Status
BAHRAIN	☒ Iran ☒ Kuwait	☒ Qatar ☒ Saudi Arabia	☒ UAE	Completed
EGYPT	☒ Jordan ☒ Libya	☒ Saudi Arabia ☒ Sudan	☒ Cyprus (Recommended) ☒ Greece (Recommended) ☐ Israel (Recommended)	Completed
IRAN	☒ Bahrain ☒ Iraq	☐ Kuwait ☒ Oman	☒ UAE	4/5
	☒ Armenia ☐ Afghanistan	☐ Azerbaijan ☐ Turkmenistan	☒ Pakistan ☒ Turkey	Recommended
IRAQ	☒ Iran ☒ Jordan	☒ Kuwait ☒ Saudi Arabia	☐ Syria ☒Turkey (Recommended)	4/5
JORDAN	☒ Egypt ☒ Iraq	☒ Saudi Arabia ☐ Syria	☐ Israel (Recommended)	3/4
KUWAIT	☒ Bahrain ☐ Iran	☒ Iraq	☒ Saudi Arabia	3/4
LEBANON	☐ SYRIA	☐ CYPRUS (Recommended)		0/1
LIBYA	☒ Egypt ☐ Sudan	(Recommended) ☐ Algeria ☐ Chad	☐ Tunis ☐ Niger ☐ Malta	1/2
OMAN	☒ Iran ☒ Saudi Arabia	☒ UAE ☒ Yemen	☐ India (Recommended) ☐ Pakistan (Recommended)	4/4
QATAR	☒ BAHRAIN	☐ SAUDI ARABIA	☐ UAE	1/3
SAUDI ARABIA	☒ Bahrain ☒ Egypt ☒ Iraq ☒ Jordan	☒ Kuwait ☒ Oman ☐ Qatar ☐ Sudan	☒ UAE ☒ Yemen ☐ Eritrea(Recommended)	8/10
SUDAN	☒ Egypt ☐ Libya ☐ Saudi Arabia	(Recommended) ☐ Central African ☐ Chad	☐ Eritrea ☐ Ethiopia ☐ South Sudan	1/3
SYRIA	☐ Iraq ☐ Jordan	☐ Lebanon	☐ Cyprus (Recommended) ☐ Turkey (Recommended)	0/3
UAE	☒ Bahrain ☒Iran	☒ Oman ☐ Qatar	☒ Saudi Arabia	4/5
YEMEN	☒ Oman ☒ Saudi Arabia	(Recommended) ☐ India ☐ Djibouti	☐ Eritrea ☐ Ethiopia ☐ Somalia	2/2

☒ Agreement Signed ☐ Agreement NOT Signed Signed Agreements / Total No. of required Agreements

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ACAC/ICAO CIVIL/MILITARY Workshop
(Algiers, Algeria, 26-28 March 2018)

Recommendations

The Workshop emphasized the need to manage the airspace in a flexible and dynamic manner that should be shared between civil and military airspace users to cope with economic development as well as security and air defence aspects.

The Workshop encouraged States to take necessary measures to implement the ICAO provisions related to civil/military cooperation ensuring the effective implementation of the flexible use of airspace concept.

States were encouraged to:

a) establish necessary national legislative/regulatory framework for civil/military cooperation at the highest level;

b) develop National civil/military cooperation policy/principles and practices supported by national high-level commitment;

c) establish a high-level policy body, and the necessary civil/military committees and working groups of subject matters experts to address, among other things: identification of shared goals, airspace management principles, collaboration processes and procedures, technical considerations, sharing of information, and human factors, etc.;

d) review national provisions related to airspace management to accommodate the requirements of all airspace users (civil and military) to enhance major traffic flows and accommodate expected future growth of traffic;

e) develop/update and implement a National FUA Plan with clear procedures related to the application of the three FUA levels (strategic, pre-tactical and tactical) with due consideration to mutual understanding, trust and communication;

f) develop integrated plan for the use of technology in support of civil/military cooperation ensuring systems interoperability, effective data exchange, while addressing associated cyber security issues in a proactive manner;

g) establish key performance indicators to measure the performance/efficiency of the FUA implementation, where applicable;

h) organize workshops, seminars, meetings at national level related to civil/military cooperation and FUA (with the support of ICAO, ACAC and International Organizations);

i) share experience and best practices related to civil/military cooperation and FUA implementation;

j) participate in cross border initiatives to enhance the regional ATS route network, airspace management and Search and Rescue at regional and inter-regional levels; and

k) use the ICAO EUR Doc 032 (Interim Guidance material on Civil/Military Cooperation In ATM) in particular the guidance related to FUA over the high seas and the example for State aircraft operations under Due-Regard.

ACAO/ICAO ATFM Workshop (Casablanca, Morocco, 17 – 18 March 2019)

The main objectives of the ACAO/ICAO ATFM Workshop (Casablanca, Morocco, 17 – 18 March 2019) were to is to raise awareness about ATFM, share other ICAO Regions and States' experience as well as discuss and agree on recommendations for the implementation of ATFM in the MID Region based on the work carried out by the ATFM Core Team.

The Workshop recognized that:

- a regional solution to manage the traffic flow across the MID Region became a priority.
- collaboration between all stakeholders is a key success for effective development and implementation of regional framework for ATFM/CDM.
- development of ATFM Concept of Operations requires inputs/data from all stakeholders to ensure it meet the projected objectives.
- sharing information is the most important enabler for ATFM/CDM.

The Workshop agreed to the following Recommendations

1. States and Stakeholders are encouraged to support ACAO and ICAO efforts related to the implementation of ATFM/CDM and in particular the work of the MIDANPIRG ATFM Task Force related to the Development of ATFM Concept of Operations for the MID Region taking into consideration other experiences.

States are encouraged to:

2. establish ATFM framework at the national level (regulations, organizational structure, functions, operating procedures, etc.)
3. develop ATFM National Implementation Plan
4. ensure that ATFM personnel are trained and qualified to effectively carry out their tasks. ATFM Manager (decision maker) should have adequate ATC experience.
5. carry out necessary studies to determine airspace and airports capacities
6. exhaust all measures that would increase capacity and continue working on the airspace improvements and the enhancement of the air navigation services within their relevant FIRs taking into consideration the airspace users' requirements.
7. support the implementation of the IFPS at regional level
8. ensure the implementation of the Collaboration Decision Making (CDM) concept.
9. support flight data exchange for the management and monitoring of air traffic flow at regional and inter-regional levels

ATFM TF is invited to:

10. develop a training programme template to be used by States.
11. develop a Template for National ATFM Implementation Plan
12. support States in carrying out their airspace and sector capacity studies

ACAO and ICAO, supported by ATFM experts as required, are invited to:

13. organize workshops and training courses related to ATFM.
14. conduct visits to States to support the ATFM Implementation.

ACTION PLAN FOR IMPLEMENTATION OF ATFM IN THE MID REGION

Key Activities	Action No	Action Description	Target date	Deliverable	Champion	Supported by	Status/RMK
Key Activity 1 Agreement on the ATFM Regional Framework	**1.**	Recommending the best Scenario for a regional ATFM framework	20 Mar 2019	Recommendation	ATFM TF/2 meeting		Completed
	2.	Presentation to the ACAO ANC/40	21 Mar 2019	Support	ACAO		
	3.	Preparing a Working Paper to MIDANPIRG/17	30 Mar 2019	WP	Secretariat	Chairman	
	4.	Agreement on the regional ATFM framework by MIDANPIRG	18 Apr 2019	MIDANPIRG Conclusion	MIDANPIRG/17	Secretariat	
	5.	Presentation to the ACAO Executive Council	28-29 Apr 2019	For support	ACAO		
	6.	Notifying States about MIDANPIRG/17 Conclusion and that the development of ATFM CONOPS started	30 Apr 2019	State Letter	ICAO	Chairman	
Key Activity 2 Development of Draft CONOPS	**7.**	Development of a Draft ATFM CONOPS	10 Jul 2019	Draft ATFM CONOPS	ATFM Core Team		
	8.	Circulating the Draft ATFM CONOPS to States	15 Jul 2019	State Letter	ICAO	ACAO	
	9.	Feedback form States on the Draft ATFM CONOPS	15 Aug 2019	Feedback	States		
	10.	Consolidation of the Draft ATFM CONOPS for presentation to the ATM SG/5 meeting	30 Aug 2019	Consolidated version of ATFM CONOPS	Secretariat	Chairman ATFM Core Team	
	11.	Agreement on the Draft ATFM CONOPS	11 Sep 2019	Draft ATFM CONOPS	ATM SG/5		
	12.	Circulating the Draft ATFM CONOPS	25 Sep 2019	State Letter	ICAO	ACAO	
	13.	Presentation to DGCA-MID/5	Nov 2019	For Info and Support	ICAO		
	14.	Presentation to ACAO Executive Council	Dec 2019	For Info and Support	ACAO		
Key Activity 3 Development of ATFM Regional Framework and	**15.**	Development of Initial Draft ATFM Regional Framework and draft ATFM Common Operating Procedures	31 Dec 2019	Initial Draft ATFM Regional Framework and draft Common Operating Procedures	ATFM Core Team	Face-to-face meeting(s) might be required	

draft Common Operating Procedures based on the agreed CONOPS	**16.**	Agreement on the Draft Regional Framework and draft Common Operating Procedures	13 Jan 2020	Draft ATFM Regional Framework and draft Common Operating Procedures	ATFM TF/3 meeting (12-13 Jan 2020)		
	17.	Circulating the Draft Regional Framework and draft Common Operating Procedures to States	20 Jan 2020	State Letter	ICAO	ACAO	
	18.	Feedback form States on the Draft ATFM Regional Framework and draft Common Operating Procedures	10 Mar 2020	Feedback	States		
	19.	Consolidation of a Draft Regional Framework and draft Common Operating Procedures for presentation to the MSG/7 meeting	25 March 2020	Consolidated version of Draft ATFM Regional Framework and draft Common Operating Procedures	Secretariat	Chairman ATFM Core Team	
	20.	Presentation to ACAO Executive Council	Apr 2020	For Info and Support	ACAO		
	21.	Endorsement of the ATFM CONOPS, Regional Framework and Common Operating Procedures including agreement on a roadmap for the implementation	17 Jun 2020	ATFM CONOPS, Regional Framework and Common Operating Procedures	MSG/7 (15-17 Jun 2020)		
	22.	Circulation of the CONOPS, Regional Framework and Common Operating Procedures and posting them on the ICAO MID Website	30 Jun 2020	State Letter	ICAO	ACAO	
	23.	Presentation to ACAO Executive Council	Dec 2020	For Info and Support	ACAO		
Key Activity 4 Implementation of the MID ATFM Regional Framework and Common Operating Procedures based on the agreed CONOPS	**24.**	Implementation of the MID ATFM Regional Framework and Common Operating Procedures	Cont.	Implementation of ATFM Regional Framework and Common Operating Procedures	States		
	25.	Implementation of ATFM framework at national level	Cont.	National ATFM framework	States		

Key Activity 5 Post Implementation Review of the MID ATFM Regional Framework	**26.**	Post implementation review	Each 3 months	Post Implementation review	ATFM Core Team		
	27.	Improvement of the ATFM Regional Framework and Common Operating Procedures	TBD 2021	Proposal for improved ATFM Regional Framework and Common Operating Procedures	ATFM TF	ATFM Core Team	
	28.	Review and continuous improvement of the ATFM Implementation in the MID Region with consideration of establishment of centralized ATFM system for the MID Region	TBD	Continuous improvement	ATFM TF	ATFM Core Team	
Key Activity 6 Training and raising awareness related to ATFM	**1.**	Development of Training Programme Template for qualifying ATFM Specialist	31 Dec 2019	Training Programme Template for ATFM Specialist	ATFM TF / ATFM Core Team		
	2.	Development of working arrangement for the ATFM Visits to States that would include ATFM Workshop and/or training courses	31 Dec 2019	working arrangement for the ATFM Visits	ATFM TF / ATFM Core Team		
	3.	Organizing an ATFM Workshop with the planned A-CDM Workshop	21-23 Oct 2019	A-CDM/ATFM Workshop	ICAO/ACAO	ATFM TF	
	4.	Organizing of ATFM Training Courses	TBD 2020/ 2021	ATFM Training Courses	ICAO/ACAO	TBD	
	5.	Conduct ATFM Support visits to States	TBD 2020/ 2021	ATFM Support visits	ATFM support Team	TBD	
	6.	Conduct familiarization visits to CADENA, Singapore, India, EUROCONTROL, FAA, etc.	TBD	ATFM Familiarization Visits	ACAO ICAO		

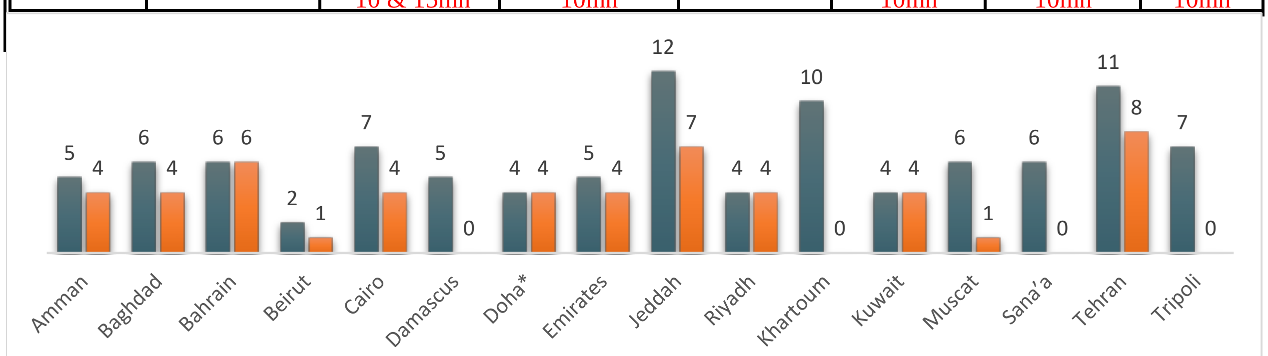
Actions to be achieved before the FWC2022 TF/3 meeting

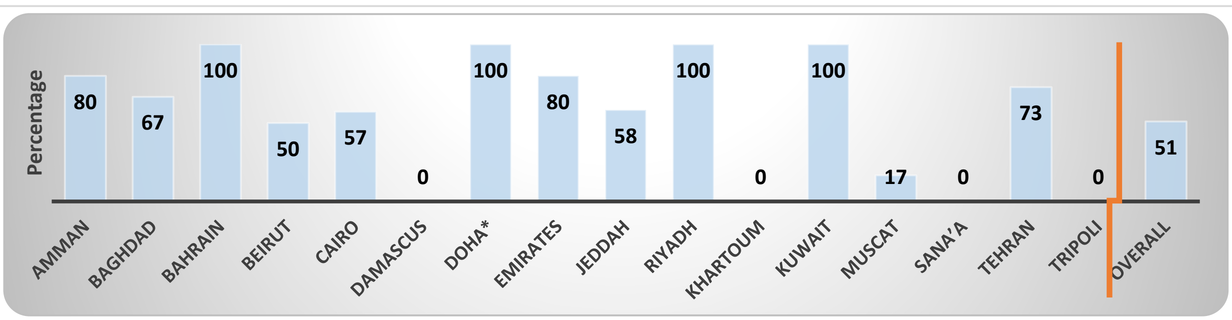
Action		Target date	Deliverable	Champion	Supported by	Status
No	**Description**					
1.	Prepare a working paper on the outcome of the FWC2022 to MIDANPIRG/17	30 Mar 2019	WP to MIDANPIRG *Combined with ATFM WP*	Secretariat	Chairman	
2.	Task the MIDRMA to carry out an airspace assessment for the MID Region based on the anticipated traffic flow during the FWC2022.	18 Apr 2019	MIDANPIRG Conclusion	MIDANPIRG	ICAO	
3.	Provide the projected Qatar FPL/Traffic data to the MIDRMA using the excel sheet template	30 May 2019	Qatar FPL/Traffic data for 15 Nov – 25 Dec 2022	Qatar	MIDRMA ICAO	
4.	Assess the airspace using the projected Traffic Data	15 Aug 2019	Airspace assessment	MIDRMA		
5.	Present the results of the airspace assessment to the ATM SG/5 meeting	8-11 Sep 2019	WP to ATM SG/5	MIDRMA	ICAO	
6.	Presentation to the DGCA-MID/5 meeting for appropriate action	4-6 Nov 2019	WP to DGCA-MID/5	Chairman	ICAO MIDRMA	
7.	Conduct familiarization visit(s) to State(s) or Organizations that would be managing major events	TBD	Familiarization visit(s)	Qatar and Members of FWC2022 TF, as required	FAA EUROCONTROL CANSO AEROTHAI	
8.	Prepare an initial FWC2022 Roadmap to be presented to FWC2022 TF/3 that includes all required procedures, action plan, contingency measures, etc.	13 Jan 2020	Initial FWC2022 Roadmap	Chairman ICAO	CANSO FAA EUROCONTROL	
9.	Provide update from Qatar to FWC2022 TF/3	13 Jan 2020	Update from Qatar	Qatar		

MID REGION Status of 20 NM Longitudinal Separation Implementation

As of April 2019

ACC	Adjacent ACCs (Longitudinal Separation in (NM) or Minutes "mn")						
Amman	Cairo (20)	Bagdad 10mn	Damascus (20)	Jeddah (20)	Tel Aviv (10)		
Baghdad	Amman 10mn	Ankara (20)	Damascus 10mn	Jeddah (20)	Tehran (20)	Kuwait (20)	
Bahrain	Doha (10)	Emirates (10)	Jeddah (10)	Kuwait (10)	Riyadh (10)	Tehran (20)	
Beirut	Damascus 10mn		Nicosia (20)				
Cairo	Amman (20)	Athena (20)	Jeddah (20) DEDLI 10mn	Khartoum 10mn	Nicosia (30)	Tel Aviv (20)	Tripoli 10&15mn
Damascus	Amman 10mn	Ankara 10mn	Bagdad 10mn	Beirut 10mn	Nicosia 10mn		
Doha*	Bahrain (10)	Emirates (10)	Jeddah (10)	Riyadh (10)			
Emirates	Bahrain (10)	Doha (10)	Jeddah 30	Muscat (10)	Tehran (20)		
Jeddah	Amman (20)	Asmara 10mn	Bagdad (20)	Bahrain (10)	Cairo (20) DEDLI 10mn	Doha (10)	Emirates 30
	Khartoum 10mn	20 Kuwait	Muscat 5mn	Riyadh (10)		Sana'a 10mn	
Riyadh	Bahrain (10)	Doha (10)	Kuwait (20)	Jeddah (10)			
Khartoum	Addis Ababa 10mn	Asmara 10mn	Brazzaville 10mn	Cairo 10mn	Entebbe 10mn	Jeddah 10mn	Kinshasa 10mn
	N'Djamena 10mn		Nairobi 10mn	Tripoli 10mn			
Kuwait	Bagdad (20)	Bahrain (10)	Jeddah (20)	Tehran (20)			
Muscat	Emirates (10)	Jeddah 5mn	Karachi 5mn	Mumbai 10mn	Sana'a 10mn	Tehran (50)	
Sana'a	Djibouti (Addis Ababa) 10mn	Asmara 10mn	Jeddah 10mn	Mogadishu 10mn	Mumbai 10mn	Muscat 10mn	
Tehran	Ankara (20)	Ashgabat (50)	Bagdad (20)	Bahrain (20)	Baku (20)	Emirates (20) URSAL&MIDSI (10)	Kabul (50) bl FL290 10mn
	Karachi (50)	Kuwait (20)	Muscat (50)	Yerevan (20)			
Tripoli	Algiers 10mn	Cairo 10 & 15mn	Khartoum 10mn	Malta 10mn	N'Djamena 10mn	Niamey 10mn	Tunis 10mn





Status of SIDs and STARs New Phraseology Implementation in the MID Region

As of April 2019

State	Implementation date	Planned Implementation Date	Remarks
Bahrain	16 Mar. 2017		
Egypt	23 May 2017		
Iran	Nov. 2018		
Iraq	June 2018		
Jordan	Aug. 2017		
Kuwait			
Lebanon			
Libya			
Oman	Oct. 2018		
Qatar	Dec. 2017		
Saudi Arabia	Jul 2017		
Sudan	Jul 2017		
Syria			
UAE	Feb. 2018		
Yemen		Dec 2018	
Status	**10/15 = 67%**		

MID REGION SAR AGREEMENT STATUS BETWEEN ANSPS/ACCS

As of April 2019

STATE	CORRESPONDING STATES			REMARKS
BAHRAIN	☒ IRAN ☒ SAUDI ARABIA	☒ KUWAIT ☒ UAE	☐ QATAR	4/5
EGYPT	☒ CYPRUS ☐ JORDAN ☐ SUDAN	☐ GREECE ☒ LYBIA	☐ Israel ☐ SAUDI ARABIA	2/7
IRAN	☒ ARMENIA ☒ BAHRAIN ☒ OMAN ☐ TURKMANISTAN	☒ AZERBAIJAN ☒ IRAQ ☐ PAKISTAN ☒ UAE	☐ AFGHANISTAN ☒ KUWAIT ☐ TURKEY	7/11
IRAQ	☒ IRAN ☒ JORDAN	☐ KUWAIT ☐ SAUDI ARABIA	☐ SYRIA ☐ TURKEY	2/6
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	2/6
QATAR	☐ BAHRAIN	☐ SAUDI ARABIA	☐ UAE	0/3
SAUDI ARABIA	☒ BAHRAIN ☐ IRAQ ☒ OMAN ☐ UAE	☐ EGYPT ☒ JORDAN ☐ Qatar ☐ YEMEN	☐ ERITREA ☒ KUWAIT ☐ SUDAN	4/11
SUDAN	☐ CENTRAL AFRICAN ☐ CHAD ☐ EGYPT	☒ ERITREA ☒ ETHIOPIA ☐ LIBYA	☐ SAUDI ARABIA ☐ SOUTH SUDAN	2/8
SYRIA	☐ IRAQ ☐ JORDAN	☐ LEBANON ☒ CYPRUS	☒ TURKEY	2/5
UAE	☒ BAHRAIN ☒ IRAN	☐ OMAN ☐ SAUDI ARABIA	☐ QATAR	2/5
YEMEN	☐ DJIBOUTI ☐ ERITREA ☐ ETHIOPIA	☐ INDIA ☐ OMAN ☐ SAUDI ARABIA	☐ SOMALIA	0/7

☒ Agreement Signed ☐ Agreement NOT Signed Signed Agreements / Total No. of required Agreements

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MID REGION SAR FOCAL POINTS CONTACT DETAILS

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Bahrain	Mr. Fareed Ibrahim	Head of Search and Rescue	Bahrain CAA P.O. Box – 586 Kingdom Of Bahrain	fbucheery@caa.gov.bh	+973 17 329 949	+973 17 329 969	
Egypt	Mr. Khaled Abdelraouf Kamel	General Director of Operations Centers & Crisis Management	Ministry of Civil Aviation Cairo - EGYPT	Operation-center-ecaa@hotmail.com Operation-center-ecaa@yahoo.com	+202 22681371	+202 22688387 +202 22678535	+2 011 47710035 +2 0100 1112375
Iran	Mr. Faramarz Faramarzpor	SAR Expert in charge Iran Airports Company		faramarzpor@airport.ir		(98-21) 4454 4107	
Iraq	Mr. Fadel Gatea	Director ATS	Iraq Civil Aviation Authority (ICAA)	atc@iraqcaa.com		+964 7716440448	+964 7828844998
Jordan	Mr. Ahmad Al Heders	Chief Amman ACC	Queen Alia Airport	Ahmad.al-hederes@carc.gov.jo			+962 796664328
Kuwait							
Lebanon	Mr. Kamal Nassereddine	Chief of Air Navigation Department	Directorate General of Civil Aviation (DGCA)	atm@beirutairport.gov.lb		+961 1 628178	
Libya							
Oman	RCC HQ RAFO		P.O. Box 722 Muscat P.C. 111, Oman	Hq.rafo.@rafo.gov.om AFS:- OOMSYCYX	+968 24334776	+968 24334211 +968 24334212	

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Qatar	Mr. Nasser Al-Khalaf	Senior Air Traffic Controller and SAR Coordinator	Hamad Int'l Airport-Doha	nasser.alkhalaf@caa.gov.qa			
Saudi Arabia	Mr. Fahad Saud Alharbi	Manager SAR Head of SAMCC	Saudi Air Navigation Services	fasalharbi@sans.com.sa	+966126402855	+966126717717/ 1840	+966 505329284
Sudan	Hashim Mohamed Ahmed	RCC Head	Sudan CAA PO BOX 165	BEGER124@gmail.com	+249 18352 8323	+249 183528323	+249 12327797 +249 912382433
Syria	Mr. Monif Abdulla	Head of S.A.R. Department Syrian Civil Aviation Authority	Damascus Airport	monif77@hotmail.com	+963-11 540 0312	+963-11 540 0312	+963 932 710351
UAE	Mr. Waleed Al Riyami	SAR Inspector	Air Navigation & Aerodrome Department GCAA- Abu Dhabi	walriyami@gcaa.gov.ae	+971 2 405406	+971 2 4054214	
Yemen	Mr. Mohamed Abdulrab Ali	SAR Director	CAMA Yemen			+967 777214088	

APPENDIX 6.2P

SITA Type S Transition Monitoring Cell (TMC)

State	Name	Tel.	Mobile	Email
Bahrain	Yaseen Hasan Al Sayed	+ 973 17321183	+973 3952 0025	y.alsayed@mtt.gov.bh
Egypt	Essam Helmy	+20222657946	+2010022505	Essamhelmi07@hotmail.com
	Mohamed Ahmed Mohamed Sultan		+2 01005197189	mohamed.a.sultan@gmail.com
Iran	Ali Akbar Salehi Valojerd		+989120186940	aasalehi@airport.ir
	Alireza Mahdavisefat			mahdavi@airport.ir
	Samad Aghajani	+9863146400	+989022368018	saghajani@airport.ir
Iraq	Haider Mahdi Sadeq Al-Hasani		+964 7901 889053	haidermahdy@gmail.com
Jordan	Yasser Zayyad	+9626 489 1473 ext.3230	+96279 578 1882	Yasser.Zayyad@CARC.GOV.JO
	Marwan Alqaddoumi	+9626 489 1473 ext. 3260	+962 7998335887	Marwan.Al-qaddoumi@CARC.GOV.JO
Kuwait	E. Hassan Alattar		+96599449454	Ha.alattar@dgca.gov.kw
	Naser J. Al-Hubail			nj.alhubail@dgca.gov.kw
Lebanon	Mohamad Abdallah Saad	+961-1 628 151	+961-3 280 299	msaad@beirutairport.gov.lb
Libya	Fadel Ageli Ghubbar	+21821 5630277	+021891 5076599	fadel.ghubbar@caa.gov.ly
Oman	Shabiba Khamis Al-Mandhari	+968 243 54757		shabiba@paca.gov.om
Qatar	Ibrahim Kozanli	+974 44705170	+97455245687	Ibrahim.Kozanli@caa.gov.qa
	Mehdi Sahbi		+974 330 57863	Mehdi.Sahbi@caa.gov.qa
Saudi Arabia	Loay Beshawri	+699 12 6717717	+966 562289944	lbeshawri@sans.com.sa
	Ali Awad Aldahri	+966 126717717	+966 503635266	adahri@sans.com.sa

Sudan	Omer Al-Gallabi			
	Mubark Galaleldin Abuzaid		+249 123499394	mubark_g@hotmail.com
Syria	Kaleem Sharaf		+963 933715222	eng.kaleem@yahoo.com
UAE	Yousif Al Awadhi	+971 2 5996859	+971 50 2226262	yawadi@szc.gcaa.ae
	Varghese Koshy	+971 2 599 6844	+971 50 818 6488	vkoshy@szc.gcaa.ae
Yemen				

APPENDIX 6.2Q

AMHS Plan for ROC Jeddah and Bahrain

	Task	Timeframe	Assigned to	Champion	Status
	AMHS Intra-regional Trunk Connections				
1	Establish Jeddah – Beirut IP Network.	Jul 2015	Saudi Lebanon	IM MS	Completed
2	Establish Bahrain – Beirut IP Network.	Feb 2016	Bahrain Lebanon	YH MS	Completed
3	Establish Cairo – Beirut IP Network.	July 2016	Egypt Lebanon	AF//MR MS	Completed
4	Establish Bahrain – Jeddah IP Network.	Mar 2016	Bahrain Saudi	IM YH	
5	Perform the Interoperability test between Jeddah and Beirut COM Centers.	July 2015	Saudi Lebanon	IB MS	Completed
6	Perform the Interoperability test between Bahrain and Beirut COM Centers.	July 2016	Bahrain Lebanon	MS YH	Completed
7	Perform the Interoperability test between Cairo and Beirut COM Centers	July 2016	Egypt Lebanon	AF/TZ/MR MS/EK	completed
8	Perform the Interoperability test between Bahrain and Jeddah COM Centers.	July 2016	Bahrain Saudi	YH IM	
9	Perform the Pre-operational test between Jeddah and Beirut COM Centers.	July2015	Saudi Lebanon	IM MS	Completed
10	Perform the Pre-operational test between Bahrain and Beirut COM Centers.	July 2016	Bahrain Lebanon	YH MS	Completed
11	Perform the Pre-operational test between Cairo and Beirut COM Centers.	~~July 2016~~ March 2017	Egypt Lebanon	AF/ /MR MS/EK	Completed
12	Perform the Pre-operational test between Bahrain and Saudi COM Centers.	July 2016	Bahrain Saudi	YH IM	
13	Place the AMHS link into operation between Jeddah and Beirut COM centers, and updating the Routing tables.	July 2015	Saudi Lebanon MID AMC	IM MS/EK MN	Completed July, 2015
14	Place the AMHS link into operation between Bahrain and Beirut COM centers, and updating the Routing tables.	July 2016	Bahrain Lebanon MID AMC	YH MS/EK MN	Completed On 3/5/2016
15	Place the AMHS link into operation between Cairo and Beirut COM centers, and updating the Routing tables.	~~Aug 2016~~ April 2017	Egypt Lebanon MID AMC	AF/TZ/MR MS/EK MN	Completed

16	Evaluate the Trunks connections bandwidth and increase it if required between (Bahrain, Beirut, Cairo and Jeddah).	July 2016	Bahrain Beirut Cairo Jeddah	YH MS/EK AF/TZ IM	Depends on testing of digital data exchanged Beirut and Cairo increased the bandwidth to 128 kbps
	The AMHS Interconnection with EUR Region Depends on Nicosia and Athens – pending SITA Type X transition				
17	Establish Cairo – Tunis IP Network.	*March2016 July 2016*		AF/TZ/MR IB/MA	Completed
18	Establish Nicosia – Beirut IP Network.	*Awaiting reply from EUR*		MS/EK	Pending SITA Type X Transition
19	Establish Nicosia – Jeddah IP Network.	Dec 2016		IM	Pending SITA Type X Transition
20	Establish Bahrain – Nicosia IP Network.	Dec 2016		YH	Pending SITA Type X Transition
21	Establish Cairo – Athens IP Network.	Dec 2016		AF/TZ/MR	Pending SITA Type X Transition
22	Perform the Interoperability test between Cairo and Tunis COM Centers.	*April 2016 August 2016*		AF/ /MR IB/MA	Completed
23	Perform the pre operational test between Cairo and Tunis COM Centers.	*Q3 2016*		AF/ /MR IB/MA	Completed
24	Place the AMHS link into operation between Cairo and Tunis COM Centers, and updating the Routing tables.	*Aug 2016*		AF/ /MR IB/MA	Completed
25	Perform the Interoperability test between Athens and Cairo COM Centers.	Mar 2017		AF/TZ/MR IB/MA	Pending SITA Type X Transition
26	Perform the Interoperability test between Bahrain and Nicosia COM Centers.	Q1 2017		YH	Pending SITA Type X Transition
27	Perform the Interoperability test between Nicosia and Jeddah COM Centers.	Q1 2017		IM	Pending SITA Type X Transition
28	Perform the Interoperability test between Nicosia and Beirut COM Centers.	Q1 2017		MS/EK	Pending SITA Type X Transition
29	Perform the Pre-operational test between Athens and Cairo COM Centers.	Mar 2017		AF/TZ/MR	Pending SITA Type X Transition
30	Perform the Pre-operational test between Bahrain and Nicosia COM Centers.	Q1 2017		YH	Pending SITA Type X Transition
31	Perform the Pre-operational test between Nicosia and Beirut COM Centers.	Q1 2017		MS/EK	Pending SITA Type X Transition

32	Perform the Pre-operational test between Nicosia and Jeddah COM Centers.	Q1 2017		IM	Pending SITA Type X Transition
33	Place the AMHS link into operation between Athens and Cairo COM Centers, and updating the Routing tables.	Q1 2017		MIDAMC AF/ /MR	Pending SITA Type X Transition
34	Place the AMHS link into operation between Bahrain and Nicosia COM Centers, and updating the Routing tables.	Q1 2017		MID AMC YH	Pending SITA Type X Transition
35	Place the AMHS link into operation between Nicosia and Jeddah COM Centers, and updating the Routing tables.	Q1 2017		MID AMC IM	Pending SITA Type X Transition
36	Place the AMHS link into operation between Nicosia and Beirut COM Centers, and updating the Routing tables.	Q1 2017		MS/EK	Pending SITA Type X Transition
37	Evaluate the inter-region connections bandwidth and increase it if required.	Q1 2017		MID AMC	
38	Transition of all regional AFTN/CIDIN Connections to AMHS.	Q2 2017	All MID States		2 CIDIN connections between Bahrain and UAE, Bahrain and Saudi Arabia

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APPENDIX 6.2R

TABLE CNS II-1 - AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

EXPLANATION OF THE TABLE

Column

1 The AFTN Centres/Stations of each State are listed alphabetically. Each circuit appears twice in the table. The categories of these facilities are as follows:
M - Main AFTN COM Centre
T - Tributary AFTN COM Centre
S - AFTN Station

2 Category of circuit:
M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and Tributary AFTN Communications Centre.
S - AFTN circuit connecting an AFTN Station to an AFTN Communication Centre.

3 Type of circuit provided:
LTT/a - Landline teletypewriter, analogue (e.g. cable, microwave)
LTT/d - Landline teletypewriter, digital (e.g. cable, microwave)
LDD/a - Landline data circuit, analogue (e.g. cable, microwave)
LDD/d - Landline data circuit, digital (e.g. cable, microwave)
SAT/a/d - Satellite link, with /a for analogue or /d for digital

4 Circuit signalling speed in bits/s.

5 Circuit protocols

6 Data transfer code (syntax):
ITA-2 - International Telegraph Alphabet No. 2 (5-unit code).
IA-5 - International Alphabet No. 5 (ICAO 7-unit code).
CBI - Code and Byte Independency (ATN compliant).

7 Remarks

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
BAHRAIN						
BAHRAIN						
ABU DHABI	M		64 ~~9.6Kbps~~	~~CIDIN~~	IA-5	All: AMHS by 2017
ANKARA	M		64Kbps	~~AFTN~~	IA-5	
BEIRUT	M		64 ~~9.6~~Kbps	AMHS	IA-5	
DOHA	T		64 ~~9.6~~Kbps	AMHS	IA-5	
JEDDAH	M		64 ~~9.6~~Kbps	AMHS	IA-5	
KUWAIT	M		64 ~~9.6~~Kbps	~~CIDIN~~	IA-5	
MUSCAT	M		64 ~~9.6~~Kbps	~~None~~	IA-5	
NICOSIA	M		~~649.6Kbps~~	~~CIDIN~~	IA-5	
SINGAPORE	M		64 ~~9.6~~Kbps	~~None~~	IA-5	
TEHRAN	M		64 ~~9.6~~Kbps	~~None~~	IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
EGYPT						
CAIRO	M					
AMMAN	M		64-9.6Kbps	AMHS	IA-5	
ATHENS	M		64-9.6Kbps	AMHS~~CIDIN~~	IA-5	
BEN GURION	M		64-9.6Kbps	AMHS~~None~~	IA-5	
BEIRUT	M		9.6 Kbps	AMHS~~CIDIN~~	IA-5	
JEDDAH	M		128-9.6Kbps	AMHS	IA-5	
KHARTOUM	T		9.6Kbps	AMHS~~None~~	IA-5	
NAIROBI	M		9.6Kbps	AMHS~~None~~	IA-5	
TUNIS	M		64-9.6Kbps	AMHS	IA-5	
TRIPOLI	T		64-9.6Kbps	AMHS~~None~~	IA-5	
TRIPOLI	T		9.6Kbps	AMHS~~None~~	IA-5	STNDBY
DAMASCUS	T		64-9.6Kbps	AMHS~~None~~	IA-5	
ASMARA	T		9.6Kbps	AMHS~~None~~	IA-5	
IRAN						
TEHRAN	M					
BAHRAIN	M		64 Kbps	AMHS~~None~~	IA-5	
KUWAIT	M		64 Kbps	AMHS~~None~~	IA-5	
ABU-DHABI	M		~~9.6 Kbps~~	AMHS~~None~~	IA-5	
KARACHI	M		64Kbps	AMHS~~None~~	IA-5	
ANKARA	M		64Kbps	AMHS~~AFTN~~	IA-5	
MUSCAT	M		64Kbps	AMHS~~None~~	IA-5	
DAMASCUS	T		~~50 BD~~	AMHS~~None~~	IA-5	
BAGHDAD	T		64Kbps	AMHS~~None~~	~~ITA-2~~ IA-5	Planned
IRAQ						
BAGHDAD	T		~~-~~			
AMMAN	T		2MBps	AMHS~~None~~	IA-5	VPN
BEIRUT	T		2MBps	AMHS~~None~~	IA-5	VPN
KUWAIT	T	SAT	9.6Kbps	AMHS~~None~~	IA-5	Planed
ANKARA	T			AMHS	IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
JORDAN						
AMMAN						
ABU DHABI	T		2MBps	AMHS	IA-5	VPN
ANKARA	M		64Kpbs	AMHS~~AFTN~~	IA-5	Land
BAGHDAD	T		2MBps	AMHS	IA-5	Line
BEIRUT	T		2MBps	AMHS	IA-5	VPN
BEN GURION	M		9.6 Kbps	AMHS~~None~~	IA-5	Planed
CAIRO	T		64 – 9.6Kbps	AMHS	IA-5	VPN
DAMASCUS	T		64 – 9.6Kbps	AMHS~~None~~	IA-5	Planed
JEDDAH	M		64Kbps	AMHS	~~X400~~	
NICOSIA	T		64Kbps	AMHS~~AFTN~~	IA-5	
KUWAIT	T					
KUWAIT	M	LDD/d	64 ~~– 9.6~~Kbps	AMHS~~None~~	IA-5	
BAHRAIN	M	LDD/a	64- ~~9.6~~ Kbps	AMHS~~None~~	IA-5	
DAMASCUS	T	LDD/a	64-~~9.6~~ Kbps	AMHS~~None~~	IA-5	
BEIRUT	T	LDD/a	64 – ~~9.6~~Kbps	AMHS~~None~~	IA-5	Back-up
DOHA	M		256Kbps	AMHS~~None~~	IA-5	
Hamad-Airport	M	LDD/d	64-~~9.6~~ Kbps	AMHS~~None~~	IA-5	
KARACHI	T	LDD/d	64 – ~~9.6~~Kbps	AMHS~~None~~	IA-5	
TEHRAN		SAT/ad	64 ~~9.6~~Kbps	AMHS~~None~~	IA-5	
BAGHDAD						
LEBANON						
BEIRUT	M					
AMMAN	M		2Mbps	AMHS	IA-5	VPN in
BAGHDAD	T		2Mbps	AMHS~~CIDIN~~	IA-5	process
BAHRAIN	M		64-~~9.6~~Kbps	AMHS~~CIDIN~~	~~A-5IA-5~~	VPN
CAIRO	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	planed
DAMASCUS	T		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
JEDDAH	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
KUWAIT	M		64-~~9.6~~Kbps	AMHS~~CIDIN~~	IA-5	
NICOSIA	M		64~~9.6~~ Kbps	AMHS	IA-5	
LIBYA						
TRIPOLI	T			AMHS	IA-5	
MALTA	T			AMHS	IA-5	
TUNIS	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
BENGHAZI	T		64 Kpbs	AMHS	IA-5	
CAIRO	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
KHARTOUM	T		64~~9.6~~Kbps	AMHS~~None~~	IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	**2**	**3**	**4**	**5**	**6**	
OMAN						
MUSCAT						
ABU DHABI	T		64Kbps	AMHS		
BAHRAIN	M		64Kbps	AMHS~~None~~	IA-5	
MUMBAI	M		64Kbps	AMHS~~None~~	IA-5	
JEDDAH	M		64Kbps	AMHS~~None~~	IA-5	
SANA'A	T		64 kbps~~100 BD~~	AMHS~~None~~	IA-5	
KARACHI	M		64Kbps	AMHS~~None~~	~~ITA-2~~	
TEHRAN	M		64Kbps	AMHS~~None~~	IA-5	
					IA-5	
QATAR						
DOHA						
BAHRAIN	M		2Mbps	AMHS~~AFTN~~	IA-5 (TCP)	
KUWAIT	M		2Mbps	AMHS	~~X400(TCP)~~ IA-5	
ABU DHABI	T		2Mbps	AMHS		
					~~X400(TCP)~~ IA-5	
SAUDI ARABIA						
JEDDAH	M					
ADDIS-ABABA	M	SAT	64~~9.6~~Kbps	AMHS~~None~~	IA-5	
BAHRAIN	M		64~~9.6~~Kbps	AMHS~~CIDIN~~	IA-5	AMHS
BEIRUT	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	(2015
CAIRO	M		128 ~~9.6~~Kbps	AMHS	~~X400~~	AMHS
MUSCAT	M		64 Kbps	AMHS~~None~~	IA-5	(2015
SANA'A	T	SAT	64 ~~9.6~~Kbps	AMHS~~None~~	IA-5	
AMMAN	M		64Kbps	AMHS	IA-5	AMHS
KHARTOUM	T		64Kbps	AMHS	IA-5	(2015
ABUDHABI	T	SAT	64Kbps	AMHS	IA-5	
NICOSIA	M		64Kbps	AMHS~~CIDIN~~	IA-5	
						AMHS EUR/ MID OPMET

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	**2**	**3**	**4**	**5**	**6**	
SUDAN						
KHARTOUM	T					
ADDIS ABABA	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
ASMARA	T		64~~9.6~~Kbps	AMHS ~~None~~	IA-5	
CAIRO	M		64~~9.6~~Kbps	AMHS ~~None~~	IA-5	
JEDDAH	M		64Kbps	AMHS	IA-5	
TRIPOLI	T		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
NDJAMENA	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
SYRIA						
DAMASCUS						
ATHENS	M		~~2 X 50 BD~~	AMHS~~None~~	IA-5	
AMMAN	T		64~~9.6~~Kbps	AMHS~~None~~	~~ITA-2~~	
BEIRUT	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
CAIRO	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
KUWAIT	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
TEHRAN	T		64 Kbps ~~50 BD~~	AMHS~~None~~	IA-5 ~~ITA-2~~	
UAE						
ABU DHABI						
BAHRAIN	M		64~~9.6~~Kbps	AMHS~~CIDIN~~	IA-5	
AMMAN	T	VPN	2 Mbps	AMHS	IA-5	VPN
MUSCAT	M		64Kbps	AMHS	IA-5	
DOHA	T		128Kbps	AMHS	IA-5	
TEHRAN	M		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
JEDDAH	T	SAT	64Kbps	AMHS	IA-5	
YEMEN						
SANA'A						
JEDDAH	T		64~~9.6~~Kbps	AMHS~~None~~	IA-5	
MUSCAT	T		64~~9.6~~Kbps	AMHS~~None~~	IA-5	

APPENDIX 6.2S

COMMUNICATION, NAVIGATION AND SURVEILLANCE SUB-GROUP

(CNS SG)

1. TERMS OF REFERENCE

1.1 The Terms of Reference of the CNS Sub-Group are:

a) ensure that the implementation of CNS in the MID Region is coherent and compatible with developments in adjacent Regions, and is in line with the Global Air Navigation Plan (GANP), the Aviation System Block Upgrades (ASBU) methodology and the MID Region Air Navigation Strategy;

b) monitor the status of implementation of the MID Region CNS-related ASBU Modules included in the MID Region Air Navigation Strategy as well as other required CNS supporting infrastructure, identify the associated difficulties and deficiencies and provide progress reports, as required;

c) keep under review the MID Region CNS performance objectives/priorities, develop action plans to achieve the agreed performance targets and propose changes to the MID Region CNS plans/priorities, modernization programmes through the ANSIG, as appropriate;

d) seek to achieve common understanding and support from all stakeholders and involved in or affected by the CNS developments/activities in the MID Region;

e) provide a platform for harmonization of developments and deployments of CNS facilities and procedures within Region and inter regional;

f) monitor and review the latest developments in the area of CNS, provide expert inputs for CNS-related issues; and propose solutions for meeting ATM operational requirements;

g) follow-up the developments of ICAO position for future ITU World Radio Communication (WRC) Conferences and provide expert advises to States;

h) follow-up the operation of the MID ATS Message Management Center (MIDAMC);

i) provide regular progress reports to the MSG and MIDANPIRG concerning its work programme; and

j) review periodically its Terms of Reference and propose amendments, as necessary.

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

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

b) provide necessary inputs to the MID Air Navigation Strategy through the monitoring of the agreed Key Performance Indicators related to CNS facilities and procedures;

c) identify and review those specific deficiencies and problems that constitute major obstacles to the provision of efficient CNS implementation, and recommend necessary remedial actions;

d) lead the work programme of the MID-AMC including the conduct of trainings and upgrades;

e) assist, coordinate, harmonize and support in the implementation of CNS facilities and procedures;

f) seek States support to ICAO Position at WRCs, and encourage States for the proper utilization of the Frequency Spectrum and Interrogation Code Allocations;

g) follow-up surveillance technologies implementation to be in line with the MID Region surveillance plan and the operational improvements in coordination with other Sub-Groups;

h) review, identify and address major issues in technical, operational, safety and regulatory aspects to facilitate the implementation or provision of efficient Surveillance services in the MID Region;

i) follow-up Global GNSS evolution, and provide assistance/guidance to states on available GNSS services;

j) address Datalink communication services and support implementation where operationally required; and

k) review and identify inter-regional and intra-regional co-ordination issues in the field of CNS, harmonize and recommend actions to address those issues.

2. COMPOSITION

2.1 The Sub-Group is composed of:

a) MIDANPIRG Member States;

b) Concerned International and Regional Organizations as observers; and

c) other representatives from provider States and Industry may be invited on ad-hoc basis, as observers, when required.

APPENDIX 6.2T

MIDAMC Steering Group

(MIDAMC STG)

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 Regional MID IP Network; the MIDAMC STG will drive the project which is called Common aeRonautical VPN (CRV), until the Operation Group is established; and

f) provide regular progress reports to the CNS SG, ANSIG 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 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 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;

j) define future liabilities and new participating States and ANSPs;

k) follow-up and review the work of similar groups in other ICAO Regions;

l) follow-up the implementation of IP Network in the MID Region, through joining relevant projects, like CRV and act as project manager; and

m) proposes appropriate actions for the early implementation also support the IP Network until the Operational Group is establish.

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 .

APPENDIX 6.2U

Frequency Management Working Group (FMWG)

1. TERMS OF REFERENCE (TOR)

The FMWG will undertake the following tasks in the work required to manage the MID Region frequency assignments in order to ensure sufficient access to the resource for the provision of aeronautical communication, navigation and surveillance services (CNS) in an efficient and safe manner:

a) develop MID Region frequency assignment plan including long term spectrum usage of radio systems;
b) validate the ICAO Global database and keep it up to date;
c) resolve current frequency assignments conflict in the ICAO Global database;
d) develop recommendation or proposal for improvement to the existing regional VHF frequency assignment process based on the ICAO Global Spectrum Management tool, ICAO 9718 Volume II Handbook provision and current coordination issues;
e) propose solutions for the interference incidents occurred in MID Region states in a timely manner;
f) escalate the intentional frequency interference matters and coordinate with other relevant international organizations, as and when required;
g) provide guidance/support to States to protect the GNSS signals;
h) collaborate with ITU and other relevant international organization to address frequent interference incidents;
i) support for ICAO Position at World Radio Communication Conference (WRC) and ensure MID States' support ICAO at ITU meetings;
j) collaborate with Regional Groups; Arab Spectrum Management Group (ASMG) and African Telecommunication Union (ATU), to support ICAO position at WRC;
k) ensure the continuous and coherent development of the relevant sections of the MID eANP, taking into account the evolving operational requirements in the MID Region and the need for harmonization with the adjacent regions in compliance with the Global Air Navigation Plan;
l) develops recommendations for CNS SG about how to address the future operational needs and limitations in VHF voice communications, aiming at avoiding introduction of 8.33 kHz spacing in the MID Region for as long as practicable; and
m) Frequency Management Working Group will be responsible for overall supervision of the frequency issues in the MID Region and will review/update the FMWG work plan whenever required.

2. COMPOSITION

a) ICAO MID Regional Office;
b) MIDANPIRG CNS Sub Group Chairpersons;
c) Members appointed by the MIDANPIRG member States; and
d) other representatives, who could contribute to the activity of the Working Group, could be invited to participate as observers.

APPENDIX 6.2V

SURVEILLANCE/MICA WORKSHOP

Summary of Discussions

(Cairo, Egypt, 26-28 February 2019)

PARTICIPATION

25 participants from 6 States (Egypt, Iran, Iraq, Qatar and Sudan) and 2 Organizations.
The workshop supported by EUROCONTROL.
Aireon participated via Webex

WORKSHOP OBJECTIVES

The objectives of the Workshop were to:

1) provide an overview of the Mode S principle and operation, the SSR Radio frequency, Avionic Monitoring, and the new Surveillance Standards;
2) provide the MICA Operators in the MID Region with necessary information to implement MICA processes efficiently; and
3) review and update the Draft MID Region Surveillance Plan.

DISCUSSIONS

The Workshop:

- was apprised of the Mode S principles; lockout, Radar coverage, clusters, IC codes, Elementary and enhanced Surveillance;
- noted MICA process and cycle, EUROCONTROL MICA website was presented;
- reviewed and updated MICA focal points in the MID Region;
- was apprised of the II and SI codes use, operation and allocation;
- noted IC Conflict causes and Management process;
- was apprised of Mode S Radar programming to reduce their contribution to 1030/1090MHz RF band usage;
- was apprised of the radar systems use the shared RF band 1030/1090, examples in Europe and simulation of future use;
- highlighted the impact of the Small Unmanned Aircraft System (sUAS) equipped ADS-B operation on Aircraft detection;
- was apprised of the space based ADS-B technology; constellation, coverage and validation algorithm; and
- noted that EU mandates ADS-B carriage version 2 for IFR flight and aircraft more than 5700kg from 2020.

CONCLUSIONS

- No IC allocation needed for mobile Mode S radars and WAM/MLAT (II Code 0).
- In the ICAO MID Region, II codes and matching SI codes are still not allocated to Mode S radar with overlapping coverage.
- EMS Coverage maps allocated by the MICA Cell when supported by Mode S radar and reported in the IC application. Otherwise, range per sector is provided.
- When IC conflict is detected, the Focal Point has to provide the necessary assistance and advice to achieve an early resolution of the IC conflict.

- Radar detection of outbound traffic and not inbound, would be a symptom of IC Code conflict (delayed acquisition of incoming aircraft by Mode S radar).
- Target disappearance could be resulted from transponder over interrogations, so it will be unable to reply to other interrogations. As too many interrogations may prevent the transponder to reply to some of them, and has an impact on surveillance systems.
- The output power and density of sUAS equipped ADS-B could impact the detection range of Aircraft.
- The detection range of aircraft decreases when the ADS-B squitter rate and/or number of aircrafts in sky increase.
- The importance to verify that transponders are not subject to excessive rate of interrogations (below ICAO minimum reply rate capability (50 reply/s)) was highlighted.
- ADS-B version 2 provides good position indicators.
- Space-based ADS-B provides more than a single source ADS-B (ground based ADS-B). With the redundancy of the satellite coverage the same message is received by more than 1 satellite, that means that space based ADS-B is not only providing to the ANSP the ADS-B message, but it is able also to validate the position of that message, independently from GPS or transponder quality. To do the same with ground stations, a complete WAM system will be required, with at least 3 sensors looking at the same target.
- Single source ADS-B means that an ADS-B coverage coming from a single ground sensor. In this case, if a transponder has a bad quality, the ANSP has no way to validate the position.
- Space based ADS-B does not require any modification on board of an ADS-B equipped aircraft. it is capable to receive ADS-B messages from all ADS-B transponder, so v.0, v.1, v.2.
- The Hardware needed by ANSP is the Service Delivery Point, a simple redundant router and server. As for data distribution, dual MPLS line can be used to connect SDP to the Space based ADS-B domain. If MPLS will not be available, a dedicated solution has to be investigated.

RECOMMENDATIONS

- States shall request coordinated IC code(s) and coverage map(s) (Surveillance and lockout) before start of operation, preferably one year in advance.
- States to plan carefully using active MLAT in order not to generate excess 1030/1090MHz FRUIT; and not to over occupy the Transponder (due to selective interrogations).
- States to monitor, if possible, the transmission on 1030/1090MHz to make sure that Aircraft are not over-interrogated (ICAO annex 10, Vol VI, section 3.1.2.10.3.7.3 & section 3.1.1.7.9.1).
- States to program radar to extract needed BDS register Data and not to extract unused ones.
- For the safety of the air traffic surveillance system, the coverage of two Mode S radars using the same IC shall not overlap.
- Target disappearance is a safety related issue, fall-back procedure should be in place including lockout override.
- ICAO MID to coordinate with IATA to get statistics on the percentage of SI equipped aircraft in the MID Region.
- Regulators and Radar Operators are encouraged to register to MICA website.
- ICAO MID to consider addressing the impact of vehicles equipped ADS-B (ex. sUAS, gladder, airports vehicles, etc.) on 1090MHz RF environment in future relevant Workshops.
- CNS SG/9 to consider requiring that Mode S Radars support the use of II/SI code operation.
- MID Region to consider allocating II code and matching SI for Military.

APPENDIX 6.2W

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 Level of A-SMGCS implemented

N – No, not implemented

1 – Level 1

2 – Level 2

3 – Level 3

4 – Level 4

ATS Units Served	Surveillance Gaps	Multi-Surveillance Data Processing Capability	Surveillance Sensor Used						Dual Surveillance Sources	Level of A-SMGCS Implemented
			PSR	SSR Mode A/C	SSR Mode S	MLAT	ADS-B	Data Sharing		
1	2	3	4						5	6
Bahrain										
Bahrain ACC										
Bahrain APP										
OBBI TWR/GND										
Egypt										
Cairo ACC										
Cairo APP										
HELX TWR/GND										
HECA TWR/GND										
Aswan APP										
HESN TWR/GND										
Alex APP										
Luxor APP										
Hurghada APP										
Sharm APP										
HEBA TWR/GND										
HESH TWR/GND										
HEGN TWR/GND										
Iran										
Tehran ACC										
Esfahan APP										

Mashhad APP										
Mehrabad APP										
Shiraz APP										
OIII TWR/GND										
OIIE TWR/GND										
Iraq										
Baghdad ACC										
Baghdad APP										
ORBS TWR/GND										
Jordan										
Amman ACC										
Amman APP										
OJAI TWR/GND										
OJAQ TWR/GND										
Kuwait										
Kuwait ACC										
Kuwait APP										
OKBK TWR/GND										
Lebanon										
Beirut ACC										
Beirut APP										
OLBA TWR/GND										
Oman										
Muscat ACC										

OOMS TWR/GND										
Seeb APP										
Salalah APP										
OOSA TWR/GND										
Qatar										
Doha ACC										
OTBD TWR/GND										
Saudi Arabia										
Jeddah ACC										
OEJN TWR/GND										
Riyadh ACC										
OERK TWR/GND										
Jeddah APP										
Riyadh APP										
Madina APP										
OEDF TWR/GND										
Damam APP										
Sudan										
Khartoum ACC										
Khartoum APP										
HSSS TWR/GND										
Syria										

UAE										
SZC										
Al Ain APP										
Abu Dhabi Radar										
Al Maktoum APP										
Dubai Radar										
Fujairah APP										
RAS AL KHAIMAH										
OMAE TWR/GND										
OMDB TWR/GND										

APPENDIX 6.2X

Air Navigation Services Cyber Security Working Group (ACS WG)

1. TERMS OF REFERENCE (TOR)

a) promotes cybersecurity awareness throughout the ANS community;
b) develop consolidated ANS cyber security plan in the MID Region;
c) develop a comprehensive understanding of the cyber vulnerabilities across the ANS systems, and develop policies, proactive approaches and measures to protect the ANS System;
d) encourage collaboration and exchange between States and other stakeholders for the development of an effective and coordinated Regional framework to address the challenges of cybersecurity in civil aviation;
e) review and update the content of the ADCS Portal and provide suggestions for improvement;
f) review and monitor cyber security incidents related to ANS, their causes, resolutions and development of defenses for future prevention;
g) collaborate with relevant ICAO Groups and International Organizations to address ANS Cyber Security; and
h) provide regular progress reports to the CNS SG and MIDANPIRG concerning its work programme.

2. COMPOSITION

a) ICAO MID Regional Office;
b) MIDANPIRG CNS Sub Group Chairpersons;
c) Members appointed by the MIDANPIRG member States; and
d) other representatives, who could contribute to the activity of the Working Group, could be invited to participate as observers, when required.

MID Doc 012

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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

GUIDELINES FOR THE IMPLEMENTATION OF OPMET DATA EXCHANGE USING IWXXM

EDITION – SEPTEMBER 2018

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1 Introduction

1.1 Purpose

The main intention of this document is to describe the activities relating to the transition of intra- and interregional operational meteorological (OPMET) data exchange until 2020and operational exchange beyond . During this period, the amendments to ICAO Annex 3, *Meteorological Service for International Air Navigation*, requiring this transition towards digital data exchange will become applicable for the international exchange of OPMET data.

1.2 Background

The bilateral exchange of IWXXM (ICAO Meteorological Information Exchange Model) based information was introduced in Amendment 76 to ICAO Annex 3 from November 2013, enabling States to exchange their OPMET data not only in TAC (Traditional Alphanumeric Code form) but also in extensible markup language (XML) and more precisely geography markup language (GML).

This represented the start of a significant change from the provision and exchange of textual OPMET data towards a digital environment supporting SWIM (System Wide Information Management). Since their inception, OPMET data have been promulgated to end systems and they were initially designed to be human readable, with a requirement to be highly compact due to bandwidth limitations.

The exchange of IWXXM information became a recommendation through Amendment 77 to ICAO Annex 3 from November 2016, with some States exchanging digital products (IWXXM) from early 2017 and is expected to be a standard from November 2020.

The use of OPMET in a TAC format presents an obstacle to the digital use of the data as it is not geo-referenced. This makes the handling of global data difficult to use correctly and expensive to maintain. These significant difficulties have been highlighted during past code changes. The coding practices in text form also present an obstacle to efficient automation as State coding exceptions are commonly used.

IWXXM represents the first step to move to an environment where the systems handling this data can make more use of standard applications and techniques. The development of new systems which provide and support digital OPMET requires initial investment but the use of enabling data exchange standards for other domains such as AIXM (Aeronautical Information Exchange Model) and FIXM (Flight Information eXchange Model) along with IWXXM will lead to a cost reduction due to the implementation of widely used data modelling techniques including OGC (Open Geospatial Consortium) segments. Consequently, users are presented with opportunities to create new products at a lower cost by fusing this data.

It is essential that the transition towards the use of IWXXM is adequately planned and equipped to make reliable data sets available to users for exploitation as soon as possible at both a Regional and a Global scale. This guidance document provides elements and steps for consideration in achieving that aim by defining common definitions and concepts, as well as structured phases to be implemented in relation to the International exchange of OPMET data.

1.3 Intended Audience

This document is intended to be used by centres considering being involved in the exchange of IWXXM data, both within a region and inter-regionally.

2 Current Operations and Capabilities

2.1 Current Capabilities

The current capabilities are dedicated to Traditional Alphanumeric Code (TAC) data exchange, via the Aeronautical Fixed Service (AFS), primarily the aeronautical fixed telecommunications network through AFTN and AMHS protocols, SADIS and WIFS.

AMHS provides a mechanism for the exchange of IWXXM information as attachments by utilising the AMHS File Transfer Body Part (FTBP) feature over the AFS.

2.2 Data Producer/Originating Unit

The TAC Data Producer provides TAC data only.

2.3 Data Aggregator

The function of the Data Aggregator is to take individual TAC reports, perform limited data validation and aggregate them into bulletins. Bulletins shall consist of one or more reports of the same type (e.g. METAR).

2.4 Data Switch

A Data Switch will route the data according to the WMO abbreviated header structure, TTAAiiCCCC, of the bulletin. The bulletin header fulfils the regulations described in WMO doc No 386, *Manual on the Global Telecommunication System*.

2.5 National OPMET Centre (NOC)

The role of the NOC is to collect and validate all - international required OPMET messages – required AOP and agreed exchanged non AOP - (refer to the Regional (electronic) Air Navigation Plans for AOP) generated by all originating units within a State, to compile national data into bulletins and to distribute them internationally according to the regional distribution schema.

A NOC should perform the following functions:

- Data Aggregator;
- Data Validator; and
- Data Switch.

2.6 Regional OPMET Centre (ROC)

A ROC is responsible for the collection from NOCs and validation of all required AOP and agreed exchanged non AOP OPMET data in its area of responsibility (AoR) according to the regional distribution schema.

Each ROC is responsible for the collection of required OPMET data from the other ROCs in the region and the dissemination to the other ROCs of the required data from its AoR.

A ROC should perform the following functions:

- Data Aggregator; and
- Data Switch.

2.7 Interregional OPMET Gateway (IROG)

An IROG is responsible for the collection of all required OPMET data from its interregional area(s) of responsibility (IAoR) and its dissemination to the ROCs in its region.

Furthermore, the IROGs are responsible for collection and dissemination of their region's required AOP and agreed non AOP exchanged OPMET data to their partner IROGs.

The IROG is responsible for the validation of the bulletins sent to the IROGs of its IAoR and received from their IAoR.

For TAC data exchange, an IROG should perform the following functions:

- Data Aggregator; and
- Data Switch.

2.8 International OPMET Databank

An International OPMET Databank provides the capability for users to interrogate TAC data through the AFTN or AMHS. In some regions the databank is known as a Regional OPMET Databank (RODB).

Operational principles:

- OPMET Databank Requests
  - Requests for TAC data can be sent via the AFS using AFTN or AMHS. These requests work as described in current Regional OPMET Data Bank (RODB) Interface Control Documents (ICD).
  - The above example describes the syntax of TAC requests:
    - "RQM/" is used as the start of the query
    - only the new T_1T_2 message types defined by the World Meteorological Organization (WMO) are allowed

      For example: RQM/SALOWW/WSEBBR/WSLFFF=
    - the request is sent to the AFTN address of the International Databank

- OPMET Databank Replies
  - Replies to TAC requests are described in the current RODB Interface Control Documents.
  - Reply reports of a request will be aggregated into one or more messages, according to the same rules used by the Data Aggregators, e.g. no mixing of message types in one file.
  - The RODB Interface Control Documents should specify a set of standardized information & error replies, specifically when the required data are not defined (example: request for a SIGMET with a wrong location indicator)

3 Inclusion of IWXXM within ICAO Annex 3

ICAO Annex 3 defines what IWXXM capability is required at different time frames. These capabilities can also be considered in context of the ICAO SWIM-concept (Doc 10039, *Manual on System Wide Information Management (SWIM) Concept*).

- Amendment 77 to Annex 3 recommends the international exchange of XML-formatted METAR/SPECI, TAF, AIRMET, SIGMET, VAA and TCA from November 2016.
- The planned Amendment 78 to Annex 3 will introduce the requirement for the international exchange of the aforementioned XML-formatted messages as a standard with effect from November 2020. In addition, Space Weather Advisories in XML format are expected to be a recommended practice and a standard from 2019 and 2020, respectively.

Note: The initial intention of this Guidelines document is not to define Net Centric services but to provide guidance as a stepping stone for a swift transition to IWXXM implementation as a first step towards SWIM.

4 Proposed service concept

4.1 Operating principles

This section outlines the general principles for transitioning the international exchange of OPMET data. These principles are still based on continued use of the WMO abbreviated header structure and all participating States using the ICAO Extended AMHS. The intention is to support the different identified phases that will lead to a managed IWXXM-based international exchange of METAR/SPECI, TAF, TCA, VAA, AIRMET and SIGMET, Space Weather data by the Amendment 78 to Annex 3 applicability date.

4.1.1 Managing the transition

A group responsible for managing the transition should be identified in each region, for the necessary intraregional and interregional coordination and should be guided by METP WG-MIE with the support of WMO. (**Recommendation 1**)

It is assumed that different regions will progress at different rates. It is necessary to create a plan that facilitates this different implementation pace.

The Meteorological Panel (METP) Working Group on Meteorological Information Exchange (WG-MIE) has developed this Guidelines document to assist all ICAO regions with the transition to IWXXM exchange. Each ICAO region may also establish a regional version of the document to provide regional information and references but it is important that this should maintain alignment to the global guidelines to ensure the inter-regional exchange is not affected. To simplify management of both the global and regional documentation, regions are encouraged to only modify or add appendices.

One example of regional information would be tests for National OPMET Centres for exchanging IWXXM via the Aeronautical Fixed Service using AMHS with FTBP and AMHS profile for IWXXM data, as indicated as guidance in the Appendix A and Appendix B of this document.

It would be recommended that this regional information be contained in an appendix to the main document, whereby it could be reviewed and agreed, in particular in those regions who have not yet established such regional information.

Note: Groups such as Data Management Group for EUR, the Bulletin Management Group for MID and the Meteorological Information Exchange working group (MET/IE) for APAC could be the right groups to manage this transition (or equivalent groups in other regions). Where AMHS is being used, close cooperation with the State COM Centre is advised to assure an efficient management of AMHS links and interconnections between adjacent regions.

4.1.2 Variances to the IWXXM Model

National extensions (such as remark sections) could only be supported when accompanied by necessary XML tags and in a globally agreed standard way. The international exchange of these extensions will only be supported for data fully compliant to the IWXXM model and abuse of extensions must be prevented.

Note: The term *"IWXXM model"* should be understood as the XML schema including all necessary GML components (including metadata) necessary for the exchange of IWXXM data. The use of extensions within the IWXXM is discouraged and should only be utilised where absolutely necessary.

4.1.3 Translation

A State will be required to produce IWXXM data **in addition** to TAC data for international exchange from November 2020. Generating both formats will help minimize, as much as possible, the translation between formats. It will also avoid operational translation/conversion from IWXXM to TAC and onward forwarding, as the bi-directional conversion will not necessarily result in the same TAC.

Where a translation from TAC to IWXXM is necessary and conducted, the translation centre and date/time of when the translation occurred will be identified within the XML message (refer to section 6.3).

4.1.4 Data collection

When creating a feature collection of the same type of IWXXM data (e.g. METAR), further named as “bulletin”, the aggregating centre identifier and date/time group of when the collection was created will be indicated within the XML message. The aggregating centre metadata will be defined as part of a globally accepted GML/XML model.

Only regular reports (e.g. METAR and TAF) will be aggregated. Non-regular reports (e.g. SIGMET, SPECI, AIRMET and VAA) will NOT be aggregated.

A single bulletin will only contain TAC or XML, never both.

A single file will contain only one bulletin.

4.1.5 Transmission & Routing

Given the size and character set of IWXXM messages, it will not be possible for these messages to be transmitted via AFTN. The file containing the bulletin will be compressed and FTBP (**File Transfer Body Part**) under Extended AMHS (**ATS Message Handling System)** will be used to exchange IWXXM data internationally through the AFS.

The principles of exchanging IWXXM data on AMHS are further described in section 5.1.4 but, in general, rules close to the ones governing the TAC transmission are applied.

The WMO abbreviated header structure (TTAAiiCCCC) will be part of the filename of the FTBP and used as data identifier. The routing of IWXXM messages will associate this data identifier with AMHS address(es) that the message should be sent to.

As a file name extension, the appropriate suffix developed by WMO will be used to identify compressed data using globally agreed compression techniques such as gzip.

<u>Note</u>: The number of FTBPs and the maximum message size are subject to the AMHS specifications and recipients User Capabilities. It would be highly desirable to have a common agreed maximum limit size for AMHS messages between all ICAO regions. A total size of AMHS message (including FTBP) up to 4MB should be considered, as already defined in some regions. The available network path between the Originator and Recipient must be completely AMHS with FTBP support for successful message delivery. It does not necessarily require each COM Centre in the path to operate AMHS in Extended Services to relay an AMHS message with FTBP. To ensure that delivery is within the capabilities of the recipient, it is advised that the User Capabilities are coordinated before the establishment of regular communications. In some regions, this information may be available through Directory Services (X.500/EDS). The available bandwidth for each ‘hop’ in the network should be considered by COM Centres when switching to AMHS FTBP operations.

4.1.6 Compliance Testing

IWXXM compliance testing platforms or software will be made available in order to allow States to test the compliance of their XML data to the IWXXM model before operational international exchange. This is to assure that the future internationally disseminated data are operationally usable. (**Recommendation 2**)

4.1.7 International OPMET Databank

In order to allow IWXXM data retrieval from International OPMET Databanks, a standard set of queries for IWXXM data will also need to be developed, agreed and documented. An Interface Control Document will be provided to describe the query structure, structure of the answer(s) and bulletin header(s) to be used by the International Databank, as well as all other information necessary for the automatic use of the query answers. The proposed query language for IWXXM data will follow similar rules as the TAC-requests (refer to section 5.1.5).

4.1.8 Aeronautical Information Metadata

The aeronautical information metadata are part of the XML model and should be transported by the IWXXM data. (**Recommendation 3**)

The metadata is additional information relevant to the type of the aeronautical information object i.e. an airport, a flight information region (FIR). A challenge resides in getting the correct state of this aeronautical information, especially for centres that will perform translation from TAC to XML that will require this. Therefore, obtaining this from an authorized source (details to be determined) is implied, in order to provide the right piece of information that characterizes the data (e.g. for a METAR, which airport location indicator and official name, its altitude, longitude, latitude etc …).

The access to aeronautical metadata should be provided by a link to the AIXM model, therefore avoiding possible inconsistencies between the transported metadata inside the IWXXM data and the current status of this aeronautical information as part of the AIXM model.

5 Functional requirements - Framework

This section is intended to describe the generalized elements which can be used to establish a framework for the exchange of IWXXM data, both intraregional and inter-regionally, with the neighbour Regions. One key aspect is that the framework needs to be flexible to permit development of an intra-regional structure suitable to the requirements, but at the same time allowing establishment of controlled and coordinated exchange between Regions.

The framework is organized into a basic set of functions/type of operations as described in section 5.1. A list of requirements that should be met to carry out each respective function as well as illustrations on how these functions may be performed/combined are provided in the same section.

In section 5.2, more complex regional entities which comprise some of the above functions are described.

5.1 Functional definitions

5.1.1 Data Producer/Originating Unit

<u>TAC Producer</u>
This producer provides TAC data only.

<u>IWXXM Producer</u>

This producer provides IWXXM. The IWXXM Producer may provide information in both TAC (until no longer required in Annex 3) and IWXXM forms.

The Data Producer-function may be performed by an aeronautical meteorological station (e.g. producing a METAR), a MWO producing AIRMET or SIGMETS or by an Aerodrome Meteorological Office (AMO) providing TAFs.

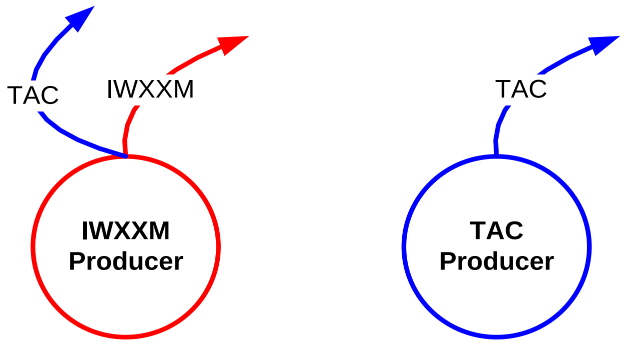


Figure 1: Comparison of IWXXM and TAC Producers

For an IWXXM Producer, the following functions could be the subject to compliance testing:

- The Producer output will conform to the IWXXM Schema;
- The Producer output will pass IWXXM Schematron/business rules; and
- The Producer will apply appropriate (defined) metadata following agreed ICAO rules and regulations.

5.1.2 Data Aggregator

This function takes individual IWXXM reports - decompresses them if already compressed – and aggregates them into bulletins and then compresses them. Bulletins shall consist of one or more reports of the same type (e.g. METAR).

When aggregating reports, the Aggregator shall collect and combine them as a bulletin – defined as a Feature collection - in conformance with the globally agreed GML/XML model. In particular, all required metadata information, as defined by the globally accepted GML model, should be indicated.

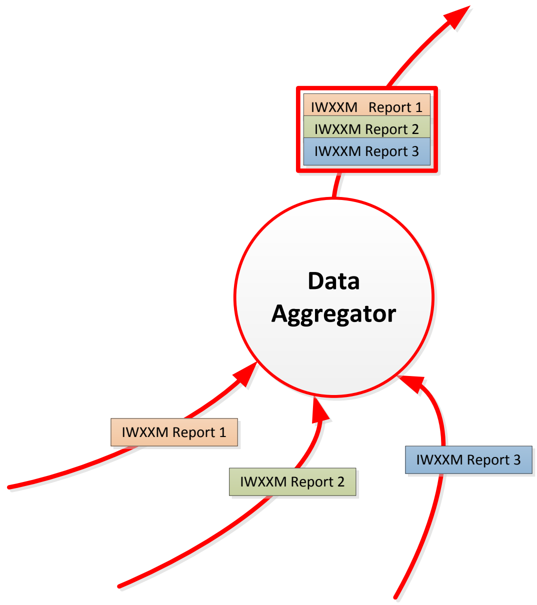


Figure 2: Data aggregation

For an IWXXM Aggregator, the following functions could be the subject of compliance testing.

- The Aggregator output will conform to the IWXXM Schema;
- The Aggregator output will pass IWXXM Schematron/business rules;
- The Aggregator will apply a correct filename to its output;
- The Aggregator correctly compresses data applying an appropriate suffix; and
- The Aggregator will apply appropriate (defined) metadata following agreed ICAO rules e.g. for monitoring and validation issues.

5.1.3 Data Translation Centre

A data translator converts TAC data into IWXXM on behalf of their State and/or another State (i.e. when the data producer is unable to do so). A bi-lateral or regional agreement should be defined for such circumstances. To do so, it shall be able to parse incoming TACs and apply the data to IWXXM schema. It is expected that this will be carried out on a bulletin basis so that the translator will always be associated with a Data Aggregator function.

It is highly likely that not all incoming TACs will be translatable due to of non-conformance with TAC standards. There will be a need to have procedures in place to deal with any non-compliant data, which may involve further translation where predefined arrangements have been made. Refer to section 6.3 for more details.

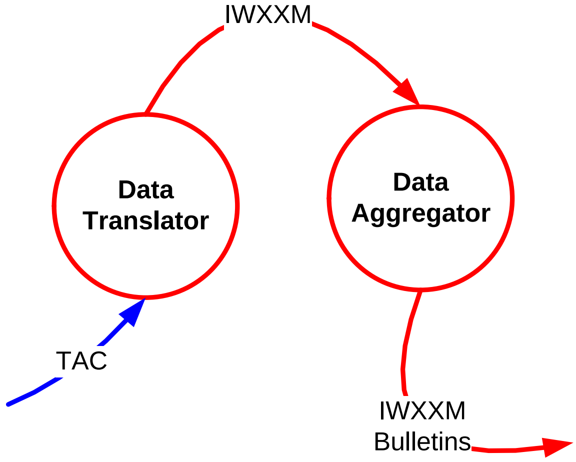


Figure 3: Data Translator generating IWXXM from TAC

<u>Note</u>: A Translation centre should also perform Aggregator functions. Whilst the IWXXM Schema may be extended for national translation purposes, an emphasis on maintaining the purity of the schema should be maintained. Where extensions to the schema are proposed to be disseminated internationally, these should follow an agreed method by ICAO for extending the schema and the extensions should be standardised where possible with other States, so that the benefits of the extensions use can be realised by all ICAO members.

5.1.4 Data Switch

A Data Switch will route IWXXM data according to the TTAAiiCCCC part of the filename of the File Transfer Body Part. The filename including the current WMO bulletin header will be structured as follows (WMO naming convention A):

A_TTAAiiCCCCYYGGgg*BBB*_**C**_CCCC_YYYYMMddhhmmss**.xml.[compression_suffix]**,

Where the elements in black and bold are fixed elements and:

TTAAiiCCCCYYGGgg is the current WMO header with the date time group

BBB is ***optional*** (as usual),

CCCC is the repeated CCCC part from TTAAiiCCCC,

YYYYMMddhhmmss is the date/time group

<u>Note</u>: [compression_suffix] is *typically gzip. The ideal situation is to define the same compression technique for all types of ICAO data. Compression software such as zip should be avoided as it may allow transportation of more than one file and directories as well. If different compression technique was to be required, this will need to be coordinated and agreed globally.*

The routing table will associate this TTAAiiCCCC data identifier with the AMHS addresses where the data should be sent to. The compressed file will be named with the suffix appropriate to the compression and sent onto AMHS.

FTBP name examples with METAR from LFPW:

A_LAFR31LFPW171500_C_LFPW_20151117150010.xml.**[compression_suffix]**

1st retarded bulletin: A_LAFR31LFPW171500RRA_C_LFPW_20151117150105.xml.**[compression_suffix]**

1st corrected bulletin: A_LAFR31LFPW171500CCA_C_LFPW_20151117150425.xml.**[compression_suffix]**

WMO defined T_1T_2 (from TTAAii) for the following data types:

- Aviation Routine Report (*METAR*) *LA*
- Aerodrome Forecast (*"short" TAF*) (VT < 12 hours) *LC*
- Tropical Cyclone Advisory *LK*
- Special Aviation Weather Reports (*SPECI*) *LP*
- Aviation General Warning (*SIGMET*) *LS*
- Aerodrome Forecast (*"long" TAF*) (VT >= 12 hours) *LT*
- Volcanic Ash Advisory *LU*
- Aviation Volcanic Ash Warning (*VA SIGMET*) *LV*
- AIRMET *LW*
- Aviation Tropical Cyclone Warning (*TC SIGMET*) *LY*
- *Space Weather Advisory (SWXA)* *LN **

*: T_1T_2 to be confirmed by WMO, Annex 3 recommendation from November 2019

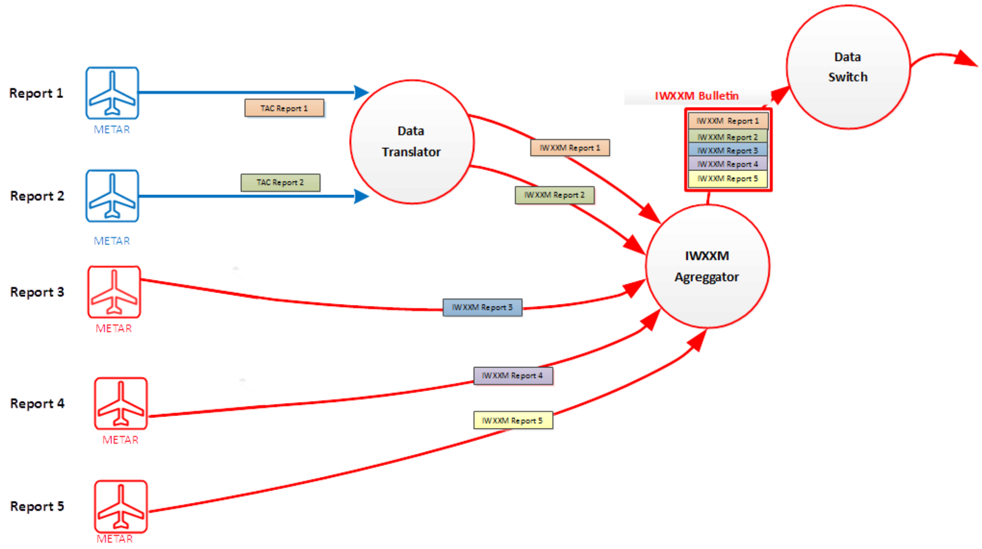


Figure 4: Aggregation of TAC and IWXXM data

5.1.5 International OPMET Databank

An International OPMET Databank (called Regional OPMET databank (RODB) in some regional documentation) will provide the capability for users to interrogate IWXXM data through the AFS in much the same way as the RODBs currently and provide global TAC data.

There will be no TAC to IWXXM translation taking place by the Databank in case the requested OPMET is only available in TAC, as this translation should be done upstream by a Translation Centre, unless the databank has formal arrangements to convert TAC to IWXXM on behalf of a State.

Although the implementation of Net Centric Services is beyond the scope of this document, the Databank element could provide Net Centric services in addition to the AFS based IWXXM interrogation capabilities. As soon as agreed descriptions of the interface to request data via web-services are available, this additional feature may be added for the databank.

For an IWXXM OPMET Databank, the following functions could be the subject of compliance testing.

- The Databank output shall conform to the IWXXM Schema;
- The Databank output shall pass IWXXM Schematron/business rules;
- The Databank has an AMHS interface supporting FTBP;
- Databank shall only send the response back to the originator;
- The Databank shall aggregate the reply reports according to the same rules used by the Data Aggregators;
- The Databank shall apply a correct filename to its output;
- The Databank base correctly compresses data applying an appropriate suffix; and
- The Databank shall respond correctly to the standard interrogations.

The picture below illustrates a possible implementation of an OPMET Databank with combined TAC and IWXXM functionalities.

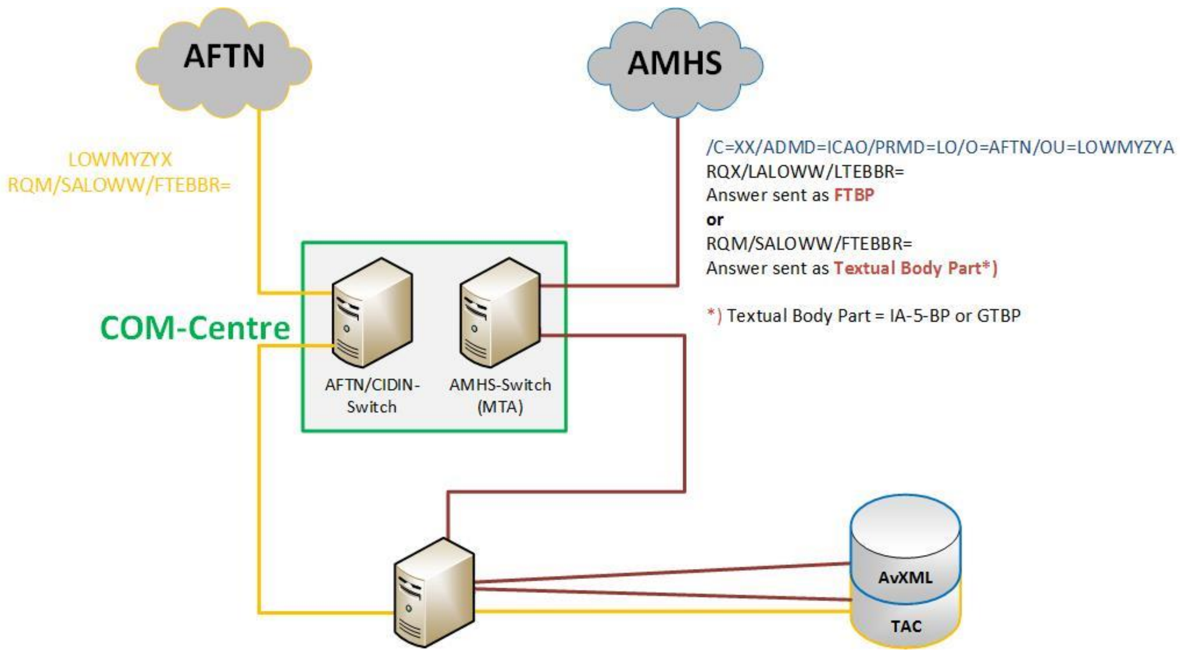


Figure 5: The implementation of a combined TAC & IWXXM Databank

Technical principles:

- Interfaces:
  - the Databank has an AMHS P3 connection to the AMHS Message Transfer Agent (MTA) of a COM centre; and
  - in case the COM Centre still serves AFTN users, the Databank may have a separate AFTN connection to the COM Centres AFTN switch or alternatively, the COM Centre will take care of the AFTN-AMHS conversion.

- Databank tables: data in IWXXM and data in TAC are stored in separate sets of tables.

Operational principles:

- DB Requests

  - Requests for TAC data can be sent via AFTN or via AMHS as international reference alphabet number 5 (IA5) text). These requests will continue to work as described in the current RODB Interface Control Documents;
  - Requests for IWXXM data shall be sent via AMHS as Textual Body Part;
  - Requesting data in IWXXM will work in a similar way as requesting TAC data. The above example uses a syntax similar to the TAC requests, but:
    - “RQX/” is used as the start of the query
    - only the new IWXXM T_1T_2 message types defined by WMO are allowed

    For example: RQX/LALOWW/LTEBBR/LSLFFF=
  - Requests for TAC data and requests for IWXXM data shall not be mixed
  - Any violation of the above principles (e.g. the request “RQX/LSLOWW=” received via AFTN), will result in an automatic reply sent by the databank, informing the user that this is not allowed.

- DB Replies

  - Replies to TAC requests will continue to work as described in the current RODB Interface Control Documents.
  - Reply reports of an IWXXM request will be aggregated into one or more files, according to the same rules used by the Data Aggregators, e.g. no mixing of message types in one file.
  - These files will be compressed and a correct file name with appropriate suffix supplied.
  - These files will be sent as FTBP through AMHS and directory services should be used to ensure the recipient is capable to receive this
  - The RODB Interface Control Documents will specify an extended set of standardized information & error replies.

5.2 Regional Centres Definitions

5.2.1 National OPMET Centre (NOC)

The role of the NOC is to collect and validate all required AOP and agreed exchanged non AOP OPMET messages generated by all originating units within a State, to compile national data into bulletins and to distribute them internationally according to the regional distribution schema.

Note: *It is assumed that the data provided by NOCs is in accordance with the similar specifications as applicable for an International Data Aggregator*

5.2.2 Regional OPMET Centre (ROC)

In its Area of Responsibility (AoR) according to the regional distribution schema, a ROC is responsible for the collection from NOCs of all required AOP and agreed exchanged non AOP OPMET data and for the validation of this OPMET data.

Each ROC is responsible for the collection of required OPMET data from the other ROCs in the region and the dissemination to the other ROCs of the required data from its AoR.

For IWXXM exchange, a ROC should perform the following functions:

- Data Aggregator;
- Data Translation centre; and

- Data Switch.

5.2.3 Interregional OPMET Gateway (IROG)

An IROG is responsible for the collection of all required AOP and agreed exchanged non AOP OPMET data from its Interregional Area(s) of Responsibility (IAoR) and its dissemination to the ROCs in its region. Furthermore, the IROGs are responsible for collection and dissemination of their Region's required OPMET data to their partner IROGs.

The IROG is responsible for the validation of the bulletins sent to the IROGs of its IAoR and received from their IAoR.

For IWXXM exchange, an IROG should perform the following functions:

- Data Aggregator
- Data Translation Centre
- Data Switch

5.2.4 International OPMET Databank

The International OPMET Databank(s) (called Regional OPMET databank (RODB) in some regional documentation and further labelled RODB in this document) are supplied with required OPMET data by the ROCs. These databases can be queried via the AFS by using a specified query language. Details on the query language as well as the supported data types can be found in Regional Interface Control Documents for OPMET Database Access Procedures. Those documents will be updated to integrate the new functions.

A RODB shall be able to fulfil the requirements to handle IWXXM-code as described in paragraph 5.1.5.

6 Generation and use of IWXXM

The IWXXM format is not intended to be read in its raw form by humans. It is intended as a structured, 'machine to machine' message that is then subsequently processed for human interpretation/interaction.

6.1 Operational Status Indicator (PermissableUsage)

Under certain circumstances it has been and will continue to be necessary to distribute meteorological information for test and exercise purposes. To support this need the IWXXM schema incorporates operational or non-operational flags.

6.1.1 Definition of Operational and Non-Operational messages

An operational message is one that is intended to be used as the basis for operational decision making. As such, the content of the message may result in decisions that may affect any or all phases of flight by any authorised and competent stakeholder (i.e. air navigation service providers, airport authorities, pilots, flight dispatchers etc). Recipients of such messages (either automatic or human) would therefore expect that the information is sourced from a competent entity and that originating equipment (sensors etc) are serviceable and that any human involvement is carried out by qualified, competent personnel.

A non-operational message is one that is not intended to be used for operational decision making, even though it may contain realistic data (particularly during an exercise). Recipients of such messages shall ignore the content of the message with regard to decision making. Non-operational messages may be further classified as either being related to TEST or EXERCISE.

Definition of Test and Exercise.

There is no known official definition of TEST or EXERCISE within the ICAO lexicon. In some instances, the two words are used interchangeably. Since the use of TEST or EXERCISE would only be used in messages identified as NON-OPERATIONAL, there are circumstances where one may be more appropriate than the other.

TEST messages may be issued for the following reasons:

- As an ad-hoc message to test distribution of a particular message, such as SIGMET when, for example, a new system is installed at an originating centre.
- As part of a more organised test of message routing for non-scheduled messages such as SIGMET.
- As part of the process to introduce IWXXM messages by a particular entity. In this instance, IWXXM messages may be issued on a regular basis over a period of weeks or months in advance of OPERATIONAL status.

In the above cases the messages may contain either realistic data or no data.

EXERCISE messages may be issued for the following reasons:

- As a national or regional (or more rarely 'global') organised event intended to permit stakeholders to become familiar with the data content of messages. An example would be for Regional Volcanic Ash Exercises where stakeholders wish to provide training and 'desk top' scenarios for rare events.
- Under exercise scenarios, the messages will contain realistic data (though not necessarily valid data). For instance, volcanic ash exercises sometimes use volcanic ash data based on historical wind patterns to ensure that the requisite training is provided (i.e. to ensure the volcanic ash data impacts particular FIRs).

6.1.2 Technical Detail on the Operational Status Indicator

Operational Messages:

- Every IWXXM message that is issued for operational purposes shall set the IWXXM element name 'permissibleUsage' to OPERATIONAL.
- Under such circumstances no other information relating to OPERATIONAL status shall be included.

Non-Operational Messages:

- Every IWXXM message that is issued for non-operational purposes shall set the IWXXM element name 'permissibleUsage' to NON-OPERATIONAL.
- Under such circumstances, it will be necessary to provide additional information relating to the reason for the non-operational status.
- The 'permissibleUsageReason' field shall be set to either TEST or EXERCISE.
- The 'permissibleUsageReason' field should contain a short description to provide further information. This is a free text field and is intended to contain the reason for the TEST or EXERCISE. For example;
    - A Volcanic Ash Exercise message may include the name of the exercise in this field 'EUR VOLCEX16'.
    - An organised regional SIGMET test may likewise include 'APAC SIGMET TEST 02 Nov 2016'.
    - For an entity initially issuing IWXXM data as it enters the final phase of transition to IWXXM, production may include 'TEST IWXXM DATA PRE-OPERATIONAL' or similar.
    - Whilst the 'permissibleUsageReason' field may be left empty, this is not considered to be good practice. Where possible, the field should contain some description of the reason for the TEST or EXERCISE.

The examples below are provided for reference:

Example 1: Operational IWXXM data

<IWXXM:CLASSNAME ... permissibleUsage ="OPERATIONAL">...</IWXXM:CLASSNAME>

Example 2: 'Test' IWXXM data

<IWXXM:CLASSNAME ... permissibleUsage ="NON-OPERATIONAL" permissibleUsageReason ="TEST" permissibleUsageSupplementary ="EUR SIGMET TEST 17/09/2018">...</IWXXM:CLASSNAME>

Example 3: 'Exercise' IWXXM data

<IWXXM:CLASSNAME ... permissibleUsage ="NON-OPERATIONAL" permissibleUsageReason ="EXERCISE" permissibleUsageSupplementary ="EUR VOLCEX 12/03/2018">...</IWXXM:CLASSNAME>

Notwithstanding the explicit inclusion of TEST and EXERCISE indicators in all IWXXM messages, it is considered to be best practice to always forewarn stakeholders of TEST events, and in particular EXERCISE events, whenever possible. The message originator, and/or the EXERCISE coordinator where applicable, should consider the most appropriate method to notify stakeholders. A non-exhaustive list of methods would include, State Letter, Exercise Directives, administrative messages, and emails.

It should be noted that, independently of the status of the data, the distribution of data should remain the same (whether the permissibleUsage is OPERATIONAL or NON-OPERATIONAL).

6.2 Unique GML.ID

The gml.id attribute is required to be unique within a XML/GML document. it is not difficult for an IWXXM message creator to make all gml:id unique with the use of, say, natural keys, however when similar types of IWXXM messages like METAR/SPECI or TAF are aggregated (with the use of the COLLECT schema for example), there may be cases of overlap if natural keys are used.

Therefore it is recommended Version 4 of Universal Unique Identifier (UUID - a 128-bit number) is used for gml:id to uniquely identify the object or entity. A fragment of IWXXM METAR message aggregated with COLLECT schema showing the use of UUIDv4 in gml:ids is as follow:

```
<collect:MeteorologicalBulletin … gml:id= "uuid.6f353602-12a1-40a7-b6b5-3edb14c6241e">

<collect:meteorologicalInformation>

<iwxxm:METAR … gml:id="uuid.15ff064a-6dc4-41e0-bafa-8ee78ed4dc25">

…
```

A schematron rule has been added to IWXXM v3 to mandate the use of UUIDs in gml:id for IWXXM messages.

6.3 Translating TAC to IWXXM

A Translation Centre will typically be placed after the National OPMET Centre (NOC) or Regional OPMET Centre (ROC) or Regional OPMET Data Bank (RODB) and its correction facilities, if any. Correction will not typically be applied by the Translation Centre but the ROC, NOC or RODB.

When generating the IWXXM, the translator shall include IWXXM fields which define where and when the translation has been carried out in order to provide traceability. This shall be achieved by introducing agreed metadata elements (centre identifier and time stamp) that is part of IWXXM.

Amendment 78 to ICAO Annex 3 will include TEST and EXERCISE fields in the TAC templates for SIGMET, AIRMET, VAA and TCA (with applicability of November 2019) since these non-scheduled messages are from time to time issued during tests and exercises. Until the anticipated changes are formally incorporated into Annex 3 it will be difficult for the translator to identify test messages. When uncertain, such as when translation fails, the IWXXM should always be presumed to be operational (refer to section 6.1) so that the original TAC message is available for reviewing by a human.

6.3.1 Pre-requisites for Translation Centres

The following items are considered pre-requisite for data translation centres:

- Operate on a permanent 24/7 basis with 24-hour support;
- Robust network between MET node and national AFS node (example, double adduction for the telecommunication links);
- Access to the incoming TAC data and outgoing IWXXM (an AFS Centre connected with AMHS with FTBP enabled that is able to send the IWXXM data to AFS and provide the external AMHS addressing;
- Provide bulletin compilation capability; and
- Archive of at least the last 28 days data and logs of at least on the last 2 months translation details (at minimum, full WMO header received, time of reception, rejection or not).

6.3.2 Data Validation

The data validation should be based upon the following:

- Annex 3 provisions / WMO regulations should be used as the basis of validating received TAC information.
- The most recent official version of the IWXXM schema/Schematron should be applied, unless an explicit agreement between the requiring centre and the Translation Centre is agreed.
- The format should be based upon WMO – No. 306, Manual on Codes, Volume I.1, Part A – Alphanumeric Codes FM where applicable; and the WMO FM201 (collect) and FM 205 (Met Information Exchange Model) should be followed.
- The aeronautical metadata descriptions follow AIXM schema. The process for updating metadata should be documented.

6.3.3 Incomplete (Partial) Translation

When TAC to IWXXM translation is necessary but fails, an IWXXM message of the corresponding type (METAR, TAF, …) without any translated MET parameters but containing the original TAC message should be disseminated to users for their manual interpretation. It is also recommended that, if possible and where agreed, an error message be sent to the TAC originator encouraging the TAC originator to re-issue a valid TAC message for subsequent translation and distribution. Another possible policy would consist in having regular monitoring for a past period and communicate back pertinent elements on errors in coding policy to data originators, regional data exchange working groups and/or some users, where agreed.

Transmitting an IWXXM message with minimum data will allow users to monitor only a single meteorological data stream, reducing the dependency on the TAC stream.

The following minimum set of data should be considered:

METAR:

METAR (COR) CCCC YYGGggZ

TAF :

TAF (COR/AMD) CCCC YYGGggZ

SIGMET/AIRMET:

CCCC SIGMET | AIRMET ... VALID YYGGgg/YYGGgg

VAA :

DTG, VAAC

TCA:

DTG, TCAC

where " | " indicates a logical "OR", "(group)" indicates an optional group

6.3.4 Monitoring Functions

The Translation Centre should monitor incoming TAC messages and keep statistics on the data received and IWXXM generated. The statistics collected should be based upon the detail of IWXXM Validation Statistics to be Gathered by ROCs an RODBs (section 8.1).

6.3.5 Validation of the Translator

A TAC to IWXXM Translator could be the subject of compliance testing of the following:

- The Translator output will conform to the agreed IWXXM Schema;
- The Translator output will pass IWXXM Schematron/business rules;
- The Translator will successfully translate a standard set of TAC test data;
- The Translator provides metadata related to when and where data have been translated (section)- such metadata conforms to the agreed metadata structure; and
- The Translator will apply appropriate (defined) metadata following agreed ICAO rules e.g. for monitoring and validation issues.

The tests cases and operated tests to demonstrate the capability of the translator should be made available on request.

The expected data quality on incoming TAC data should be clearly stated and the limitation on the translator (what will be done/what will not or cannot be done) should be stated.

6.3.6 Commencement of Translation Services

It is recommended that initially the Translator should generate data and set the Operational Status Indicator field as “non operational” and disseminate the IWXXM to a reduced number of recipients wishing to receive the IWWXM to ensure that all the relevant procedures and operations are in place and are clearly understood.

If felt necessary, a learning strategy could be applied such as the reception for an agreed defined period, prior to the operational emission of the IWXXM data. During that period, there could also be another defined contact point on the TAC-producer side to be reached during business hours. In case of an incorrect/rejected TAC message, a procedure should be in place to contact the appropriate State and to request corrections to the incoming TAC.

The date to start the exchange of data operationally should be agreed.

6.3.7 Translation Agreement

The following elements should be contained in the service agreement between the Translation Centre and applicant State:

- Hours of Translation Centre operations (24 hours, 365 days a year);
- Business contact details (e.g. name, phone, email) for both the Translation Centre and the applicant State;
- Operational (24Hr) contact details for both the Translation Centre and the applicant State;
- Details of which data is to be translated (e.g. WMO Header(s) of TAC data, locations indicators, frequency);
- Details of whether and when the originator should be notified when translation of individual messages fails;
- IWXXM distribution details (AMHS addresses);
- Details of which metadata should be used to derive the limits of airspace (boundaries, base, top).
- The aeronautical metadata descriptions follow AIXM schema. The process for updating metadata should be documented.
- Archiving requirements; and
- Procedure on what will be done in case of a failure of all or part of the Translation Centre functionality.

7 Requirements to Transition

The first necessary step is to define the prerequisites in order to be able to exchange IWXXM OPMET data. This will impact not only the network itself, but also the Message Switching Systems and most of the end-user systems.

7.1 Phase 1: Pre–Requisites to Transition

Phase 1 was enabled by Amendment 76 to Annex 3 in November 2013.

To achieve an efficient transition towards IWXXM, Phase 1 activities focused in the following areas and the particular elements identified per area.

7.1.1 Managing the Transition

Regional group(s) should be designated to deal with the transition in order to further define and monitor:

- Intra-regional plan on AMHS infrastructure/links planning and IWXXM data exchange between the ROCs, and between the ROCs and RODBs.
- Intra-regional implementation plan on IWXXM data exchange planning by the States to their ROC.
- Agreement to define how the testing platform and software should be made available and accessible to each State.

It is desirable that responsible group(s) for managing the transition in each ICAO regions be identified and established, that could be responsible for defining the Regions structure and capabilities in the context of the framework.

Furthermore a full liaison should be established and maintained between the ICAO groups in charge of meteorology & data exchange and groups in charge of the AFS network.

For data translation purposes, if there is a systematic need for the translation of data on behalf of a State, this may be performed by the dedicated ROC for the part of the region under its Area of Responsibility and the IROGs for the interregional distribution.

7.1.2 Documentation

The region should define and have a plan in place to provide IWXXM data. This plan shall be published and maintained by the designated responsible groups (FAQ's etc. should be available).

ICAO and WMO documentation and provisions should be published/available describing the IWXXM code itself as well as documentation referencing the appropriate schemas and rules made available in order to handle this new format.

Cyber Security

Appropriate AFS security elements should be defined by the ICAO groups in charge of information management / networks in order to introduce the operational exchange of IWXXM data via extended AMHS.

It is recommended that appropriate malware and anti-virus precautions are exercised as a bare minimum when dealing with FTBP messages.

7.1.3 Processes

An agreed process should be defined to ensure that data generated by Data Producers are compliant. In order to promote the use of IWXXM, the process should be widely known and shared and some tools to check the compliance state of the data easily accessible and usable.

An identical process should be agreed to initiate and enable the IWXXM exchange between regions.

An AMHS network will be available to support exchange IWXXM data by the use of FTBP between those States wishing to do so. Corresponding AMHS connections should be made available between those Regions exchanging IWXXM data.

Source of Metadata

Updated processes, or notification on modifications about Aeronautical information metadata by the States, should be in place at the end of the period, or metadata sources should be defined and agreed.

Action Plan to Reduce Formatting Errors

Actions plans based on monitoring results about OPMET data not following the agreed coding rules should be undertaken in order to assist States in detecting and correcting incorrect coding policies.

A task should be started to define a procedure that the ROC may use on how to deal with errors in IWXXM-messages, in particular taking into account errors detected in converting TAC-reports. This procedure would ideally provide a clear description on how to report errors to a State that provides these data and clearly define the service and its limitation.

Interregional Cooperation/Coordination

The following tasks should be started:

- The updated processes and notification on modifications on IWXXM bulletins headers between adjacent regions.
- Identification of the interregional exchanges solely based on required AOP and agreed exchanged non AOP required data: actions plans to define clearly the interregional data/bulletins to be exchanged.
- Interregional plan to follow the AMHS infrastructure/links planning between AFS nodes supporting interregional data exchange of neighbouring IROGs.
- Implementation plan for interregional exchange between IROGs.
- An update process to introduce IWXXM in the contingency plans for the IROGs.

7.2 Phase 2: From Nov 2016 until IWXXM Exchange is a Standard

The following elements should be ready prior to the exchange of OPMET data in IWXXM format becoming an ICAO Annex 3 standard, which is proposed to be defined in Amendment 78, with effect in November 2020:

7.2.1 Operations

- The ROCs & IROGs should have the capability to aggregate and switch IWXXM data.
- The ROCs & IROGs may have the capability to act as translation centres.
- Each NOC should to be ready to exchange IWXXM data at the end of the period.
- The RODBs should have all the capabilities to deal with IWXXM data as well as TAC data.
- Update process or notification on modifications about metadata should be in place not later than the end of the period.
- The standard set of queries for IWXXM data for a RODB should be implemented and documented.
- Updated processes and notification on modifications on IWXXM bulletins headers between adjacent Regions should be in place and tested.

7.2.2 Processes

Institutional and Technical Issues

- A communication plan should be established and enacted to inform States and users - both from ICAO and WMO - about the IWXXM code, the metadata use, and the new procedures to access the RODBs.
- The IWXXM model should integrate the metadata related to Data Aggregator and Data Translator functions.
- A procedure used by the ROC should be in place on how to deal with errors in IWXXM-messages, in particular taking into account errors detected when converting TAC-reports. This procedure includes items on how to report errors to a State that provides these data.

Action Plan about data validation

- 'Validation' (validation against the XML schema) is the specific monitoring and gathering of statistics on schema conformance rather than meteorological data quality.
- Action plans based on monitoring results about TAC data not following the agreed coding rules should be in place in order to assist States in detecting and correcting incorrect coding policies.
- A procedure that the ROC can use on how to deal with errors in IWXXM-messages, in particular taking into account errors detected in converting TAC-reports, should be agreed on and made available. This procedure would ideally provide information on how to report errors to a State that provides these data and clearly define this service and its limitation.
- Messages that do not pass validation against the XML schema will continue to be passed and not rejected by ROCs/RODBs.
- States shall arrange the validation of their IWXXM messages against the corresponding XML schema, and make corrections to the process of generating their IWXXM messages as necessary, as per quality management processes.
- The ROC/RODB should conduct validation of IWXXM messages within their region/area of responsibility, excluding validation of 'State extensions'.
- ROC/RODBs should collect statistics on long-term validation results, broken down by State and Region, and provide this information to the relevant ICAO Regional Office and the METP (in particular WG-MIE and WG-MOG) to identify common or troublesome data quality issues.
- Users should be encouraged to continue to validate messages and they will remain responsible for making sure that the received IWXXM messages are suitable for their purposes.
- Users should review the IWXXM PermissableUsage field to determine whether the message is suitable for operational, test or exercise purposes.

Regional Coordination/Planning

The regional group(s) designated to deal with the transition should define and monitor:

- Intra-regional plans regarding AMHS infrastructure/links and IWXXM data exchange between the ROCs, and between the ROCs and RODBs.
- Intra-regional plans regarding the IWXXM data exchange by the States to their ROC.
- The Contingency plans for the ROCs should integrate the IWXXM data and be ready before the end of the period.
- Testing platform and software are made available and accessible for every State.

Interregional Cooperation/Coordination

- The interregional mechanism to follow the AMHS infrastructure/links planning between AFS nodes supporting interregional data exchange between IROGs should be in place, as should the interregional procedure to notify the changes and new IWXXM bulletins introduction.
- The Contingency plans for the IROGs should include the IWXXM data exchange and be ready at the end of the period.
- It is proposed that bilateral agreements between neighbouring IROGs are set up for the translation of TAC data. This agreement should include notification processes on IWXXM data newly produced by the specific Region.

Figure 6 below provides an example of the ICAO Region 1 interfacing with two other ICAO Regions. In this example, it is assumed that:

- There is no operational exchange of IWXXM data between Region 1 and Region 3.
- There is operational exchange of IWXXM data between Region 2 and Region 1.

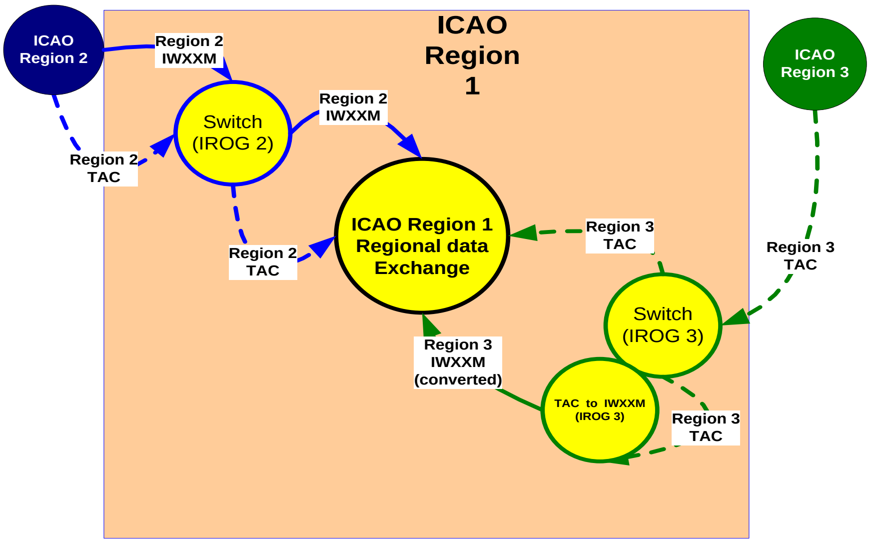


Figure 6: Phase 2, interregional exchange of OPMET with Region 2 (IWXXM & TAC capable) and Region 3 (TAC capable)

7.3 Phase 3: After IWXXM Exchange becomes a Standard

This section is reserved for capability that should be ready from ICAO Annex 3 Amendment 79 applicability date and is yet to be populated.

8 Data Validation and Statistics

8.1 IWXXM Validation Statistics to be Gathered by ROCs an RODBs

Regions should invite their ROCs, IROGs, and/or RODBs to provide statistics about IWXXM data reception, state of compliance of the received data, IWXXM version used, data volume etc. as a measure of the state of IWXXM implementation.

This section defines the general rules about gathering statistics with the aim of providing and proposing a globally consistent way of defining such statistics, assisting the inter-regional comparison and providing a solid bases for the regions to use those statistics as a way to measure IWXXM implementation progression.

8.1.1 Data and Type of Data

Regular Data

The location indicators for regular data should be ICAO compliant indicators (as available on integrated Safety Trend Analysis and Reporting System (iSTARS)) and in conformance with the MET tables defined in the eANPs. For METAR and TAF, it should be noted that the eANP is only required to reference the AOP aerodromes and therefore the minimum set of statistics should be the regular data (i.e. METAR, TAF) related to AOP aerodromes. In addition, if desired, statistics on the agreed exchanged non-AOP aerodromes data can be provided. A clear distinction should appear while presenting statistics to easily discriminate data related to AOP aerodromes from non-AOP aerodromes, where those last ones are presented.

The statistics for IWXXM data should be identical to those provided for TAC data, so as to provide a clear comparison between TAC and IWXXM data produced for the same location and to provide the number of received messages per day (not NIL, not corrected or amended).

Whilst the validation of all messages is encouraged, NIL data, TAF amendments and corrections should not be taken into consideration while producing statistics. The type of TAF (short or long) is defined in eANP Volume II and may be considered to measure the ad-equation to the requirements, if some indices are used in addition to basic statistics.

Non-regular data

The location indicators for non-regular data should also be ICAO compliant indicators (as available on iSTARS) and in conformance with the MET tables defined in the eANPs. For SIGMET, and where applicable AIRMET, they refer to FIR, FIR/UIR, CTA.

The statistics should also be available for VAA and TCA, and for space weather when implemented.

8.1.2 Proposed Statistics

Availability

Availability statistics for IWXXM data should be identical to those provided for TAC data, so as to provide a clear comparison between TAC and IWXXM data produced for the same location and provide the number of received messages per day, not NIL, not corrected, not amended (including not cancelled for TAF). For AIRMET and SIGMET, the cancelled data should not be considered. For VAA and TCA, the number of VAA and TCA per VAAC and TCAC respectively should be provided.

The statistics for VAA/TCA is by nature more complex as the VAA/TCA may refer to VA/TC in other regions, cover multiple FIRs and does not directly refer to location indicators. The distinction between a VAA/TCA that concerns specific region can only be derived by analysing the MET content. Therefore, basic statistics about VAA/TCA reception by the ROC/RODB from the VAAC/TCAC may be considered as a starting point, without any consideration of the content.

Timeliness

Timeliness statistics for IWXXM data should be identical to those provided for TAC data, so as to provide a clear comparison between TAC and IWXXM data produced for the same location. The statistics should take into consideration the same source of information as for availability.

Specific statistics about IWXXM model or version

IWXXM validation

The validation against schema/Schematron (i.e. success rate) should be provided. Statistics about the validation should be provided per IWXXM version, and will provide a good indication on what data are produced for which IWXXM version.

Acceptance of different versions of IWXXM model

It should be determined whether IWXXM data which is in conformance with a previous version of IWXXM could be considered as “valid” or only the last published official version of IWXXM by the World Meteorological Organization (WMO). A clear policy is yet to be developed by ICAO.

It should be understood that, for statistics purposes, the production of statistics for all received versions is the only correct way to have a good measure of the disseminated products. Therefore, a statistic per station and per version (with the limits previously explained) should be provided even if it should be unlikely to have different versions of IWXXM schema disseminated for the same location and same type of data. The statistics should provide which version is used for the dissemination of which data per location indicator (and VAAC/TCAC for VAA/TCA).

Operational/non-operational data

The statistics of non-operational versus the total number of data.

Incomplete/Partial Translations

The statistics of incomplete/partially translated versus the total number of reports.

Data volume

Statistics of total data volume for the same location indicator (VAAC/TCAC for VAA/TCA) and daily average/daily total volume.

Additional groups (extensions)

Some statistics could be presented about the number of data with extensions versus the total number of data (with and without extension) per location indicator (VAAC/TCAC for VAA/TCA).

Another statistic about the daily average/ daily total volume of extensions compared to the total volume of data per location indicator (VAAC/TCAC for VAA/TCA) could also be provided.

Optional statistics

ROCs/RODBs could also choose to provide additional statistics about validation failure, to identify deviations from the models, which could be used to derive systematic errors such as the inclusion of additional data elements via methods other than the global agreed way, non-conformance on cardinality or NIL reason for missing mandatory Annex 3 elements.

8.1.3 Statistics Presentation

Statistics should be made available and presented per ICAO region, then per State, then per location indicator (CCCC) with each time an aggregation of the provided statistics from the sub-levels to the upper level (CCCC → State → Region). For VAA/TCA, it should be presented per Region and then per VAAC/TCAC.

The statistics should be gathered on a daily basis, then by monthly basis. The statistics could be provided offline, the day after or some days after.

8.2 IWXXM Validation Statistics to be Gathered by SADIS & WIFS

The SADIS and WIFS Provider States are investigating the value and effort to produce global sets of statistics based upon the data received at their gateway. The details are likely to be the same or similar to those produced by ROCs or RODBs but this is yet to be confirmed.

9 Acronyms and Terminology

AFS	Aeronautical Fixed Service
AFTN	Aeronautical Fixed Telecommunication Network
AIXM	Aeronautical Information Exchange Model
AMHS	ATS Message Handling System
AMO	Aerodrome Meteorological Office
AoR	Area of Responsibility
APAC	ICAO Asia/Pacific Region
AvXML	Aviation XML
COM	Communication
DB	Databank
EUR	ICAO European Region
FAQ	Frequently Asked Questions
FASID	Facilities and Services Implementation Document
FIR	Flight information Region
FIXM	Flight Information Exchange Model
FTBP	File Transfer Body Part
GML	Geography Markup Language
IAoR	Interregional Area of Responsibility
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IHE	IPM Heading Extension(s)
IPM	Interpersonal Messaging (AMHS)
IROG	Interregional OPMET Gateway
IUT	Implementation Under Test
IWXXM	ICAO Meteorological Information Exchange Model
METAR	Meteorological Aerodrome Report
METP	ICAO Meteorology Panel
MTA	Message Transfer Agent
MWO	Meteorological Watch Office
NDR	Non-Delivery Report
NOC	National OPMET Centre
OGC	Open Geospatial Consortium
OID	Object Identifier
OPMET	Operational Meteorological information

P3	Message Submission and Delivery Protocol
ROC	Regional OPMET Centre
RODB	Regional OPMET Databank (International OPMET Databank)
RQM	Meteorological Databank Request in TAC-format
RQX	Meteorological Databank Request in IWXXM-format
SIGMET	Significant Meteorological Information
SPECI	Special Meteorological Report
SWIM	System Wide Information Management
TAC	Traditional Alphanumeric Code Form
TAF	Aerodrome Forecast
TCA	Tropical Cyclone Advisory
UA	User Agent
VAA	Volcanic Ash Advisory
WMO	World Meteorological Organization
XML	Extensible Markup Language

Appendix A: AMHS Profile Information to Support IWXXM Exchange

This section contains recommended AMHS Profile Information. This section may be updated by each ICAO region with regional specific parameters.

The following content is taken from the EUR AMHS Manual Appendix H (v12.0) detailing the proposed conformance tests for the IWXXM AMHS Profile. The conformance tests were adopted by the EUR AFSG/21 in April 2017.

References embedded in the Appendix H document are maintained throughout the Appendices presented herein. Please be aware that references are also made to earlier sections of Appendix H, Appendix D-UA and that some readers may wish to seek a full version of these documents for completeness.

3.2.4.4 Submission and delivery tests according to Appendix D-UA

3.2.4.4.1 The scope of the tests included in the following list is to ensure that UAs implemented for the sake of the exchange of OPMET IWXXM data will not malfunction upon reception of AMHS messages, fields or elements according to the standards but not defined by the profile specified in section 3.2.3. The main objective is to realize the behaviour of these specific UA implementations upon reception of such messages, fields or elements.

3.2.4.4.2 The execution of the delivery tests defined in EUR AMHS Manual Appendix D-UA is encouraged. However, if this is not possible the following test list is suggested.

Basic Delivery Operations (A2)	
CTUA201	Deliver an IPM to the IUT – basic capability (A2)
CTUA203	Deliver an IPM containing optional-heading-information in the ATS-message-header
CTUA204	Deliver an IPM containing different kinds of recipient addresses
CTUA206	Deliver an IPM with invalid originator address similar to CAAS
CTUA207	Deliver an IPM with invalid originator address similar to XF

Specific Delivery Operations	
CTUA401	Deliver a non-delivery report (NDR) to an AMHS user

Enhanced Delivery UA Capability	
CTUA601	Deliver an IPM with the implemented capability of one body-part
CTUA602	Deliver an IPM with the implemented capability of two body-parts

Delivery Operations (A2-IHE)	
CTUA1201	Deliver an IPM with IHE to the IUT – basic capability (A2-IHE)
CTUA1203	Deliver an IPM with IHE, containing optional heading information
CTUA1204	Deliver an IPM with IHE, containing different kinds of recipient address

Specific Submission Operations with IHE	
CTUA1303	Checking of default envelope elements (flag setting) in submitted IPMs with IHE

Specific Delivery Operations with IHE	
CTUA1401	Deliver a non-delivery report (NDR) to an AMHS user

Enhanced Delivery UA Capability with IHE	
CTUA1602	Deliver an IPM with IHE with the implemented capability of two body-parts

Appendix B: Sample Tests for NOCs to Conduct when Introducing IWXXM

This section contains sample tests for National OPMET Centres for exchanging IWXXM via the Aeronautical Fixed Service using extended AMHS and AMHS profile for IWXXM data. This section may be updated by each ICAO region with regional specific tests.

The following content is again taken from the EUR AMHS Manual Appendix H (v12.0) detailing the proposed conformance tests for the IWXXM AMHS Profile. The conformance tests were adopted by the EUR AFSG/21 in April 2017.

References embedded in the Appendix H document are maintained throughout the Appendices presented herein. Please be aware that references are also made to earlier sections of Appendix H, Appendix D-UA and that some readers may wish to seek a full version of these documents for completeness.

3.2.4 Proposed Conformance Tests

3.2.4.1 General description

3.2.4.1.1 This section proposes a list of functional tests that allows verification of conformance of User Agent (UA) implementations dedicated for OPMET IWXXM data exchange. UA conformance testing, as specified in Appendix D-UA, for such implementations needs to be adapted based on the profile specification defined in section 3.2.3.

3.2.4.1.2 The proposed conformance tests are divided to three categories:

- profile specific submission tests;
- profile specific delivery tests; and
- submission and delivery tests according to Appendix D-UA.

3.2.4.1.3 The scope of the profile specific submission and delivery tests is to ensure conformance of UA implementations specifically deployed for the conveyance of OPMET IWXXM data to the respective profile. A test identification scheme of the form WXMxnn has been used, where x=1 is used for submission tests and x=2 for delivery tests. Wherever applicable, reference to the respective Appendix D-UA test is made.

3.2.4.1.4 Reference to specific UA conformance tests as specified in Appendix D-UA is included in section 3.2.4.4, especially for the reception direction. The scope of these tests is to ensure that UA implementations dedicated for OPMET IWXXM data exchange will not malfunction upon reception of a field or element not defined by the specific profile, but classified as mandatory in the ISPs and thus also mandatory in AMHS.

3.2.4.2 Profile specific submission tests

WXM101	**Submission of an IPM including a bulletin consisting of METAR**
Test criteria	The test is successful if the UA submits an IPM including a bulletin consisting of METAR according to the profile defined in section 3.2.3.
Scenario description	Submit from the UA under test an IPM including a bulletin consisting of METAR. Check that: - the P3 submission-envelope includes the following parameters with the correct values: ○ *originator-name*: OR-name of the originator

	o *recipient-name*: OR-name of each recipient of the message o *content-type*: 22 o *encoded-information-types*: OID 2.6.1.12.0 o *priority*: non urgent - the following IPM heading fields are present with the correct values: o *originator*: address of the originating OPMET system (MET switch) o *primary-recipients*: recipient addresses as populated by the MET switch o *subject*: TTAAiiCCCCYYGGggBBB part of the filename of FTBP o *importance*: normal, if present o *authorization-time* of the IPM heading extensions field: equivalent to filing time o *precedence-policy-identifier* of the IPM heading extensions field: OID 1.3.27.8.0.0 o *originators-reference* of the IPM heading extensions field: absent - the following elements in the common data types are present with the corresponding values: o *precedence*: 28 o *formal-name*: originator address and recipient addresses - the elements *rn* and *nrn* in the common data types are absent - the message has exactly one file-transfer-body-part - the parameters composing FTBP are according to section A.2.4.2 of the EUR AMHS Manual Appendix B and the following elements are present with the correct values: o *document-type-name*: OID 1.0.8571.5.3 o *registered-identifier*: OID 1.3.27.8.1.2 o *user-visible-string*: ‘Digital MET’ o *incomplete-pathname*: bulletin file name as specified in section 5.1.4 of EUR Doc 033, for example: A_LAFR31LFPW171500_C_LFPW_ 20151117150010.xml.[compression_suffix] o If generated, check the element *date-and-time-of-last-modification* o If generated, check the element *actual-values*, the value of which represents the size of the Attachment data in bytes - the elements *related-stored-file*, *compression* and *extensions* of the FTBP parameters are absent - The IWXXM data itself are included in the FileTransferData element of the file-transfer-body-part; the octet-aligned encoding should be used.
Appendix D-UA ref:	CTUA1501, FTBP Capability

WXM102	**Submission of IPMs including bulletins of different file size consisting of METAR**
Test criteria	The test is successful if the UA submits several IPMs including bulletins of different file size consisting of METAR according to the profile defined in section 3.2.3.
Scenario description	Submit from the UA under test a sequence of several IPMs including each time a bulletin of different file size consisting of METAR. The size of the message should not exceed the limit defined in Appendix B, F.2.4.3 Check all parameters listed in test case WXM101, with the corresponding values.

	If the element *actual-values* is generated check each time the respective value, which represents the size of the Attachment data in bytes.
Appendix D-UA ref:	CTUA1501, FTBP Capability with different body-part size

WXM103	**Submission of an IPM including a bulletin consisting of SPECI or TAF**
Test criteria	The test is successful if the UA submits an IPM including a bulletin consisting of SPECI or TAF according to the profile defined in section 3.2.3.
Scenario description	Submit from the UA under test an IPM including a bulletin consisting of SPECI. Check that all parameters and their respective values are in accordance to test case WXM101, except that the value of the element *incomplete-pathname* is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033. The test is repeated with the submission of an IPM including bulletin consisting of TAF.
Appendix D-UA ref:	CTUA1501, FTBP Capability

WXM104	**Submission of an IPM including a bulletin consisting of AIRMET**
Test criteria	The test is successful if the UA submits an IPM including a bulletin consisting of AIRMET according to the profile defined in section 3.2.3.
Scenario description	Submit from the UA under test an IPM including a bulletin consisting of AIRMET. Check that all parameters and their respective values are in accordance to test case WXM101, except that: - the *priority* abstract value of the P3 submission-envelope is normal - the value of the element *precedence* is 57 - the value of the element *incomplete-pathname* is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033.
Appendix D-UA ref:	CTUA1501, FTBP Capability

WXM105	**Submission of an IPM including a bulletin consisting of SIGMET or VAA or TCA**
Test criteria	The test is successful if the UA submits an IPM including bulletin consisting of SIGMET or VAA or TCA according to the profile defined in section 3.2.3.
Scenario description	Submit from the UA under test an IPM including a bulletin consisting of SIGMET. Check that all parameters and their respective values are in accordance to test case WXM101, except that: - the *priority* abstract value of the P3 submission-envelope is normal - the value of the element *precedence* is 57 - the value of the element *incomplete-pathname* is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033. The test is repeated with the submission of an IPM including bulletin consisting of VAA. The test is repeated with the submission of an IPM including bulletin consisting of TCA.
Appendix D-UA ref:	CTUA1501, FTBP Capability

3.2.4.3 Profile specific delivery tests

<table>
<tr><th>WXM201</th><th>Delivery of an IPM including a bulletin consisting of METAR</th></tr>
<tr><td>Test criteria</td><td>The test is successful if an IPM, including a bulletin consisting of METAR, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.</td></tr>
<tr><td>Scenario description</td><td>The MTA sends an IPM including a bulletin consisting of METAR.

Check that the UA under test receives the IPM with the following parameters:

- the message delivery envelope includes the following parameters with the correct values:
o originator-name: OR-name of the originator
o this-recipient-name: OR-name of the recipient to whom the message is delivered
o content-type: 22
o encoded-information-types: OID 2.6.1.12.0
o priority: non urgent
o message-delivery-identifier: it shall have the same value as the message-submission-identifier supplied to the originator of the message when the message was submitted (X.411, section 8.3.1.1.1.1)
o message-delivery-time: it contains the time at which delivery occurs and at which the MTS is relinquishing responsibility for the message (X.411, section 8.3.1.1.1.2)

- the following IPM heading fields are present with the correct values:
o originator
o primary-recipients
o subject: TTAAiiCCCCYYGGggBBB part of the filename of FTBP
o importance: normal, if present
o authorization-time of the IPM heading extensions field: equivalent to filing time
o precedence-policy-identifier of the IPM heading extensions field: OID 1.3.27.8.0.0
o originators-reference of the IPM heading extensions field: absent

- the following parameters in the common data types are present with the corresponding values:
o precedence: 28

- the elements rn and nrn in the common data types are absent

- the message has exactly one file-transfer-body-part

- the parameters composing the FTBP are according to section A.2.4.2 of the EUR AMHS Manual Appendix B and the following elements are present with the correct values:
o document-type-name: OID 1.0.8571.5.3
o registered-identifier: OID 1.3.27.8.1.2
o user-visible-string: ‘Digital MET’
o incomplete-pathname: bulletin file name as specified in section 5.1.4 IWXXM CONOPS, for example: A_LAFR31LFPW171500_C_LFPW_ 20151117150010.xml.[compression_suffix]
o If generated, check the element date-and-time-of-last-modification</td></tr>
</table>

	o If generated, check the element *actual-values*, the value of which represents the size of the Attachment data in bytes - the elements *related-stored-file*, *compression* and *extensions* of the FTBP parameters are absent - The IWXXM data itself are included in the FileTransferData element of the file-transfer-body-part; the octet-aligned encoding should be used.
Appendix D-UA ref:	CTUA1601, FTBP Capability

WXM202	**Delivery of IPMs including bulletins of different file size consisting of METAR**
Test criteria	The test is successful if several IPMs, including bulletins of different file size consisting of METAR, sent by an MTA are received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	The MTA sends a sequence of several IPMs including each time a bulletin of different file size consisting of METAR. Check that the UA under test receives all IPMs and that the parameters described in test case WXM201 are received with the corresponding values. If the element *actual-values* is present check each time the respective value, which represents the size of the Attachment data in bytes.
Appendix D-UA ref:	CTUA1601, FTBP Capability with different body-part size

WXM203	**Delivery of an IPM including a bulletin consisting of SPECI or TAF**
Test criteria	The test is successful if an IPM, including a bulletin consisting of SPECI or TAF, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	The MTA sends an IPM including a bulletin consisting of SPECI. Check that the UA under test receives the IPM and the parameters described in test case WXM201 are received with the corresponding values, except the element *incomplete-pathname* which value is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033. The test is repeated with the delivery of an IPM including a bulletin consisting of TAF.
Appendix D-UA ref:	CTUA1601, FTBP Capability

WXM204	**Delivery of an IPM including a bulletin consisting of AIRMET**
Test criteria	The test is successful if an IPM, including a bulletin consisting of AIRMET, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	The MTA sends an IPM including a bulletin consisting of AIRMET. Check that the UA under test receives the IPM and the parameters described in test case WXM201 are received with the corresponding values, except that: - the *priority* abstract value of the P3 submission-envelope is normal - the value of the element *precedence* is 57 - the value of the element incomplete-pathname is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033.
Appendix D-	CTUA1601, FTBP Capability

UA ref:	

WXM205	**Delivery of an IPM including a bulletin consisting of SIGMET or VAA or TCA**
Test criteria	The test is successful if an IPM, including a bulletin consisting of SIGMET or VAA or TAF, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	The MTA sends an IPM including a bulletin consisting of SIGMET. Check that the UA under test receives the IPM and the parameters described in test case WXM201 are received with the corresponding values, except that: - the *priority* abstract value of the P3 submission-envelope is normal - the value of the element *precedence* is 57 - the value of the element incomplete-pathname is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033. The test is repeated with the delivery of an IPM including a bulletin consisting of VAA. The test is repeated with the delivery of an IPM including a bulletin consisting of TCA.
Appendix D-UA ref:	CTUA1601, FTBP Capability

APPENDIX 6.2Z

Terms of Reference of the MID OPMET Bulletin Management Group

(OPMET BMG)

1. Terms of Reference

a. Support Regional OPMET Centre (ROC) Jeddah and back-up ROC Bahrain in the exchange of routine and non-routine OPMET data; OPMET bulletin updates; monitoring and management procedures; and implementation of IWXXM.

b. Keep up-to-date the regional guidance material related to OPMET exchange;

c. Develop capabilities to support the ICAO Meteorological Exchange Model (IWXXM);

d. Develop key performance indicators for OPMET and keep under review;

e. Liaise with similar groups in the adjacent ICAO Regions in order to ensure harmonized and seamless OPMET exchange; and

f. The group will report to the MET Sub-Group of MIDANPIRG.

2. Work Programme

The work to be addressed by the MID OPMET BMG includes:

a. Supporting ROC Jeddah and back-up ROC Bahrain by:

i. Providing ROC Jeddah and back-up ROC Bahrain required routine OPMET data as per eANP, Volume II, Table MET II-2 for transmission to other Regions and to SADIS;

ii. Providing ROC Jeddah and back-up ROC Bahrain non-routine OPMET data: SIGMET as per eANP, Volume II, Table MET II-1 as well as special air-reports for transmission to other Regions and to SADIS;

iii. Requesting ROC Jeddah and back-up ROC Bahrain of necessary OPMET data from other Regions in order to support flight operations;

iv. Providing ROC Jeddah and back-up ROC Bahrain OPMET bulletin changes, when necessary, for implementation on AIRAC cycle;

v. Supporting ROC Jeddah and back-up ROC Bahrain on the development of monitoring and management procedures related to ROBEX exchange; and

vi. Coordinating with ROC Jeddah and back-up ROC Bahrain on the exchange of OPMET data using ICAO Meteorological Information Exchange Model (IWXXM).

b. Examine the existing requirements and any new requirements for the OPMET exchange in MID region and to assess the feasibility of satisfying these requirements, taking into account the availability of the data;

c. Review and amend the regional guidance materials on the OPMET exchange and include procedures for the exchange of all required OPMET message types: SA, SP, FC, FT WS, WC, WV, FK, FV, UA, WA, FN (IWXXM: LA, LP, LC, LT, LS, LY, LV, LK, LV, *special air-reports not defined yet*, LW, LN);

d. Develop procedures for monitoring and management of the OPMET information, based on similar procedures used in the EUR and APAC Regions; and

e. Support the Information Management Panel and MET Panel Working Group on Meteorological Information Exchange (WG-MIE) in Regional implementation of IWXXM within MID. The initial implementation emphasis will be placed on States hosting ROCs/RODBs. Progress report to be provided to MID MET SG;

f. Use results from monitoring to measure OPMET (METAR and TAF) availability in MID Region against the required data listed in Table MET II-2, *Aerodrome Meteorological Offices*, of the MID Air Navigation Plan to support key performance index for OPMET component of B0-AMET of the implementation methodology called Aviation System Block Upgrade (ASBU) and keep under review; and

g. Provide regular progress reports to MET SG meetings.

3. Composition

a. The OPMET/BMG is composed of Bahrain (Back-up ROC), Egypt, Iran, Kuwait (co-rapporteur), Libya, Oman, Qatar, Saudi Arabia (co-rapporteur, ROC) and United Arab Emirates; and

b. Experts from the EUR DMG, the VAAC Toulouse, APAC OPMET/M Task force and IATA are invited to participate in the work of the MID OPMET BMG.

4. Working Arrangements

It is expected that most of the work of the group will be conducted via correspondence by fax, e-mail or telephone. The group should establish a network of OPMET focal points at all MID COM/MET Centres dealing with OPMET data. When necessary, the Rapporteur, in coordination with the Regional Office, Cairo, will call teleconferences or meetings to discuss important issues.

APPENDIX 6.3A

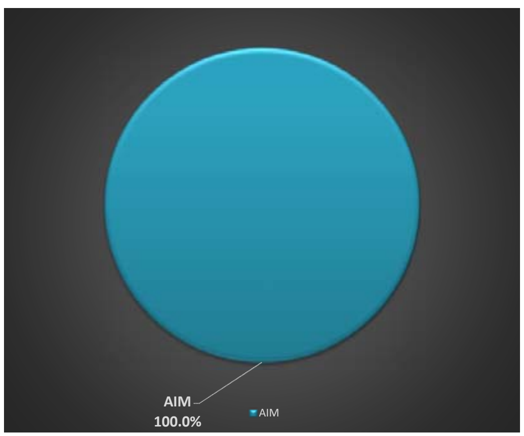
AIR NAVIGATION DEFICIENCIES IN THE THE MID REGION

STATE	AIM							Total	AOP							Total	ATM							Total
	Priority			Rational				AIM	Priority			Rational				AOP	Priority			Rational				ATM
	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
Egypt		1					1	1								0								0
Iran		1					1	1		1		1	1			1		1	2		1	1	2	3
Iraq		6	1	5	5	1	6	7		1		1	1		1	1		1	4			4	1	5
Jordan		2	1	3	3			3								0		1			1			1
Kuwait								0								0		1				1		1
Lebanon		3	1		2		2	4		1		1	1			1		1				1		1
Libya		5	1				6	6		1		1	1	1		1		2			1	1	2	2
Oman		4					4	4								0								0
Qatar								0								0		1				1		1
Saudi Arabia								0								0		1				1		1
Sudan		3					3	3		1		1	1			1		1			1	1	1	1
Syria		8	1	6	7	1	2	9		3		3	3			3		2	2		2	2	1	4
UAE								0								0		1	1			1	1	2
Yemen		7	1	4	2		4	8		1		1	1			1		2			2		2	2
Total	0	40	6	18	19	2	29	46	0	9	0	9	9	1	1	9	0	15	9	0	8	14	10	24

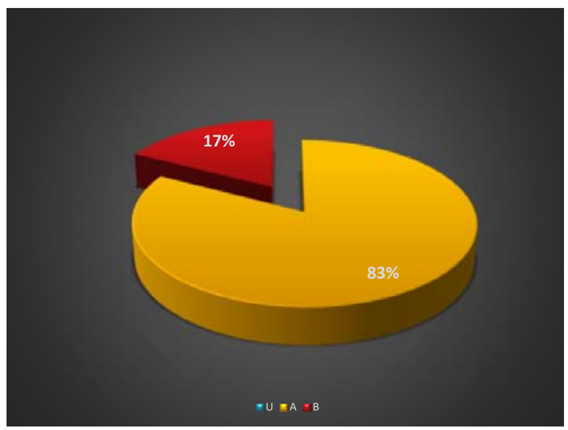
STATE	SAR							Total	CNS							Total	MET							Total
	Priority			Rational				SAR	Priority			Rational				CNS	Priority			Rational				MET
	U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O	
Bahrain								0								0								0
Egypt								0								0								0
Iran								0								0								0
Iraq		2					2	2								0		1					1	1
Jordan								0								0								0
Kuwait		1					1	1			1				1	1								0
Lebanon		1					1	1			1				1	1		2					2	2
Libya		2			2	2	2	2		1					1	1		1					1	1
Oman								0			1				1	1		1					1	1
Qatar								0								0								0
Saudi Arabia								0								0								0
Sudan								0								0								0
Syria		2					2	2								0		3					3	3
UAE								0								0								0
Yemen		2					2	2		1					1	1		2					2	2
Total	0	10	0	0	2	2	10	10	0	2	3	0	0	0	5	5	0	10	0	0	0	0	10	10

TOTAL DEFICIENCIES:104

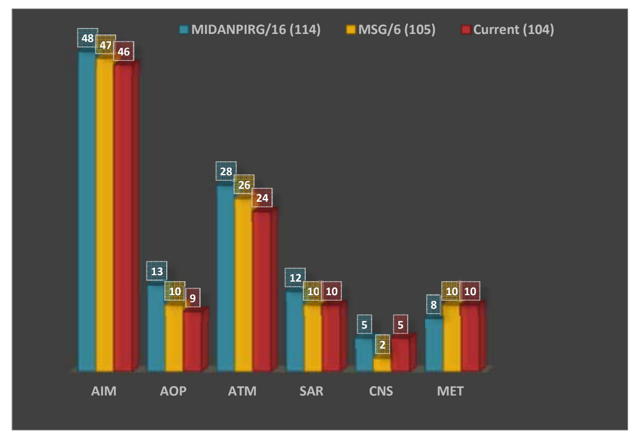
Distribution of Air Navigation deficiencies by field in %

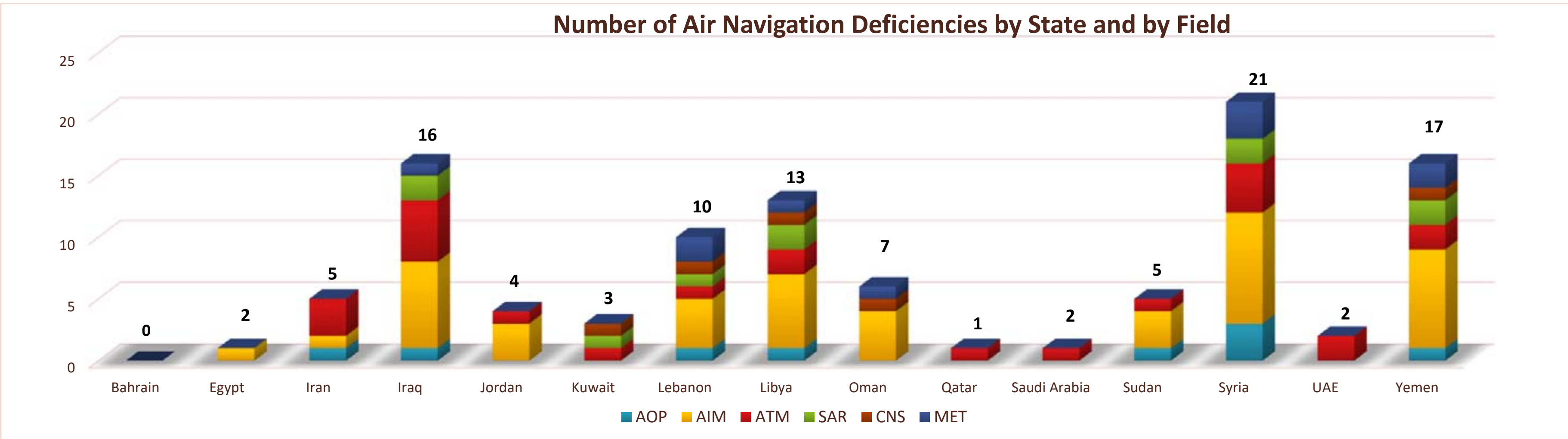


Distribution of Air navigation deficiencies by priority in %



Reported Deficiencies by field (MIDANPIRG/17 vs MSG/6 & MIDANPIRG/16)





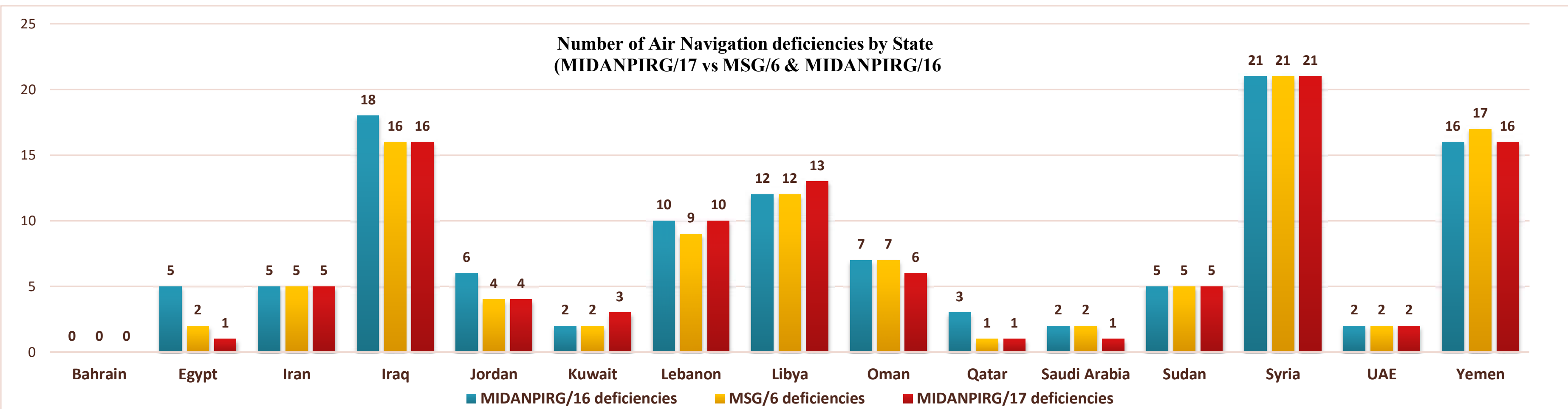
Deficiencies to be approved by MIDANPIRG/17

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
AOP	0	0	1	1	0	0	1	1	0	0	0	1	3	0	1	**9**
AIM	0	1	1	7	3	0	4	6	4	0	0	3	9	0	8	**46**
ATM	0	0	3	5	1	1	1	2	0	1	1	1	4	2	2	**24**
SAR	0	0	0	2	0	1	1	2	0	0	0	0	2	0	2	**10**
CNS	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	**5**
MET	0	0	0	1	0	0	2	1	1	0	0	0	3	0	2	**10**
TOTAL	**0**	**1**	**5**	**16**	**4**	**3**	**10**	**13**	**6**	**1**	**1**	**5**	**21**	**2**	**16**	**104**

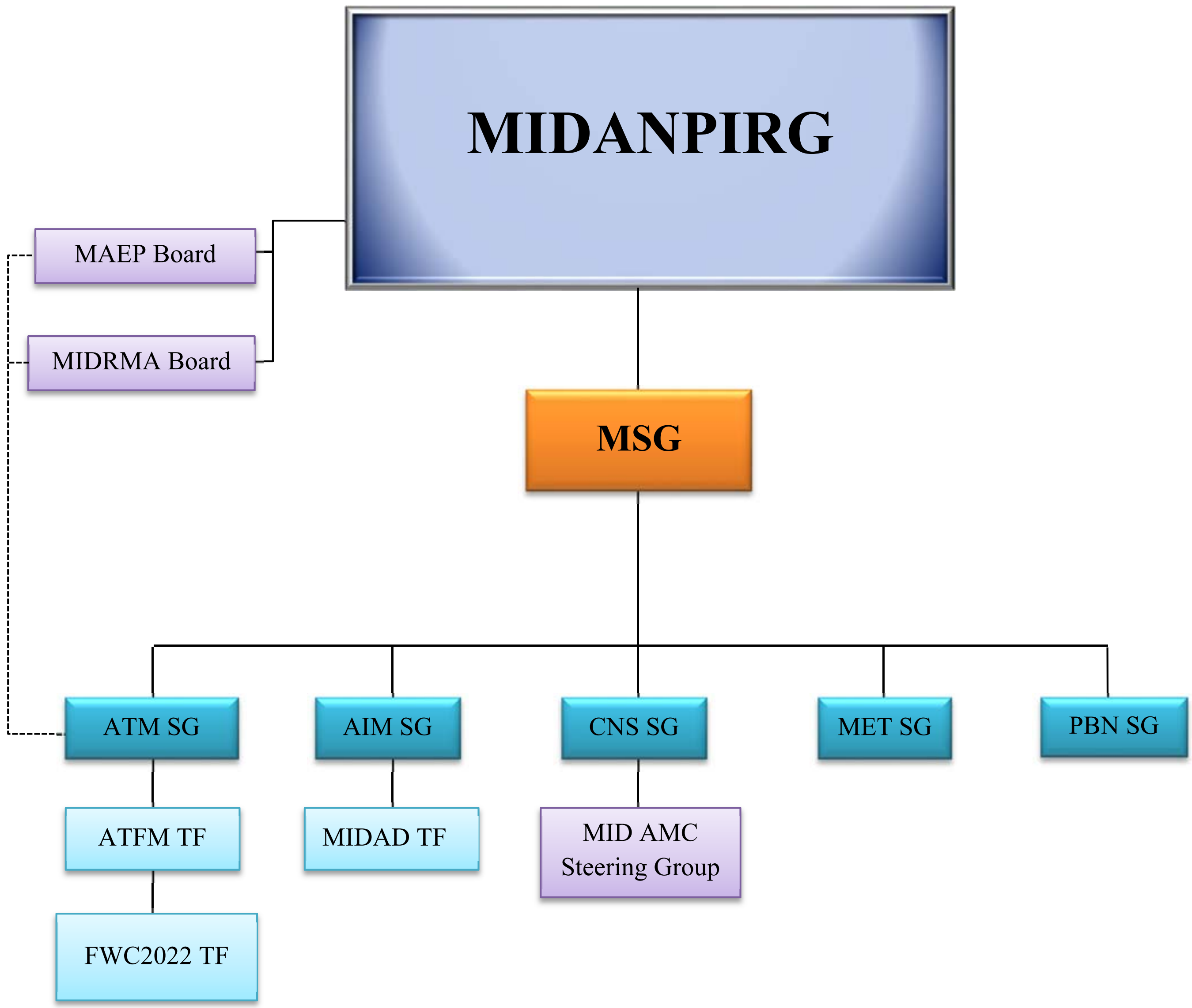
Deficiencies approved by MIDANPIRG/16

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
AOP	0	2	1	1	2	0	1	1	0	0	0	1	3	0	1	**13**
AIM	0	1	1	7	3	0	5	6	4	0	1	3	9	0	8	**48**
ATM	0	2	3	5	1	1	1	2	1	1	1	1	4	2	3	**28**
SAR	0	0	0	2	0	1	1	2	0	2	0	0	2	0	2	**12**
CNS	0	0	0	2	0	0	0	0	1	0	0	0	1	0	1	**5**
MET	0	0	0	1	0	0	2	1	1	0	0	0	2	0	1	**8**
TOTAL	0	5	5	18	6	2	10	12	7	3	2	5	21	2	16	**114**

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
MIDANPIRG/16 deficiencies	**0**	**5**	**5**	**18**	**6**	**2**	**10**	**12**	**7**	**3**	**2**	**5**	**21**	**2**	**16**	**114**
MSG/6 deficiencies	**0**	**2**	**5**	**16**	**4**	**2**	**9**	**12**	**7**	**1**	**2**	**5**	**21**	**2**	**17**	**105**
MIDANPIRG/17 deficiencies	**0**	**1**	**5**	**16**	**4**	**3**	**10**	**13**	**6**	**1**	**1**	**5**	**21**	**2**	**16**	**104**



APPENDIX 6.4A



MSG	MIDANPIRG Steering Group	ATFM TF	Air Traffic Flow Management Task Force
AIM SG	Aeronautical Information Management Sub-Group	FWC2022 TF	FIFA World Cup 2022 Task Force
ATM SG	Air Traffic Management Sub-Group	MIDAD TF	MID Region AIS Database Task-Force
CNS SG	Communication Navigation Surveillance Sub-Group	MID AMC Steering Group	MID Region ATS Message Management Centre Steering Group
MET SG	Meteorology Sub-Group	MAEP Board	MID Region ATM Enhancement Programme Board
PBN SG	Performance Based Navigation Sub-Group	MIDRMA Board	Middle East Regional Monitoring Agency Board

ATTACHMENT A

LIST OF PARTICIPANTS

NAME	TITLE
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Lt. Col. Ahmed Samir Raafat Morsi	Ministry of Defence Cairo Airport Road Cairo-EGYPT
Mr. Tayseer Mohamed Abdel Kareem	ATS General Egyptian Civil Aviation Authority (ECAA) Cairo Airport Road Cairo International Airport Road Cairo - EGYPT
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