INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE NINTH MEETING OF THE MIDANPIRG ATM SUB-GROUP

ATM SG/9

(Sharm El Sheikh, Egypt, 14 – 16 November 2023)

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

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

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ATTACHMENT

PART I - HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The Ninth meeting of the MIDANPIRG Air Traffic Management Sub-Group (ATM SG/9) was kindly hosted by the National Air Navigation Services Company (NANSC)-Egypt, in Sharm El Sheikh, Egypt, at the Cleopatra Luxury Resort, from 14 to 16 November 2023.

2. OPENING

2.1 The meeting was opened by Gen. Mohamed Hassan, Vice President of Egyptian Civil Aviation Authority - ECAA, Egypt, who thanked ICAO for organizing this important meeting in Egypt, and extended a warm welcome to all participants and wished them pleasant stay in Sharm El Sheikh. Gen. Hassan highlighted that Egypt realizes the importance of these activities in supporting traffic growth as a result of sustainability through continuous improvement of safety, security, efficiency and environmental footprint and collaborative effort and cooperation at national, regional and global levels, particularly in terms of ICAO compliance.

2.2 In his opening address, Mr. Ahmad Amireh, Regional Officer, Air Traffic Management and Search and Rescue (RO/ATM/SAR), ICAO Middle East Office, Cairo, welcomed all the participants to Sharm El Sheikh and highlighted the importance of the subjects addressed under the ATM SG and its subsidiary bodies. He expressed his gratitude and appreciation to His Excellency, Gen. Hassan, NANSC and the ECAA of Egypt for hosting the ATM SG/9 meeting. Mr. Amireh extended special thanks to the air navigation team for the preparation and facilitation of these meetings and for the excellent hospitality extended to the ICAO staff and all participants. He highlighted that the Egyptian Ministry of Civil Aviation, the CAA and NANSC's support to the ICAO MID Regional Office activities is an evidence of its active role and reflects Egypt's commitment to enhancing the overall safety and efficiency of air navigation in the MID Region.

2.3 Mr. Amireh provided the meeting with an overview of the subjects that will be addressed during the meeting and highlighted the main expected outcomes of the meeting. Mr. Amireh indicated that the Agenda of the meeting includes the inter-regional issues related to the continuation of ATS routes and contingency planning. In this respect, he thanked EUROCONTROL, IATA and the MIDRMA for their attendance and active participation in the subjects of common interest by submitting working papers and presentations.

2.4 Mr. Amireh recalled the Terms of Reference of the ATM SG, related to the review and enhancement of the MID Region ATS Route network, to meet users' demand, and the availability of different routing options and alternates, including the contingency routes, to support the international traffic flows. He also highlighted the priority of other implementation that supports the overall enroute traffic operations, including ATFM, CMC/FUA and RVSM implementation.

2.5 In closing, Mr. Amireh thanked all the participants for their presence and appreciated the efforts made by the States who provided Presentations and Working Papers on the developments at National level during the last period and on the plans for the coming years. He wished the meeting every success in its deliberations.

3. ATTENDANCE

3.1 The meeting was attended by a total of forty-six (46) participants from eleven (11) States (Bahrain, Egypt, Iran, Jordan, Kuwait, Libya, Oman, Qatar, Saudi Arabia, UAE and Yemen) and two (2) Organizations (EUROCONTROL and IATA). The list of participants is at **Attachment A**.

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Khalid Hussain Alharbi, Airspace Management Director - GACA, Saudi Arabia, who was elected unanimously by the meeting.

4.2 Mr. Ahmad Amireh, Regional Officer, Air Traffic Management and Search and Rescue (RO/ATM/SAR) and Mr. Ahmad Kavehfirouz, Regional Officer, Air Traffic Management (RO/ATM) were the Secretaries of the meeting. Ms. Dina El Karimy provided the Technical Assistance.

5. LANGUAGE

5.1 Discussions were conducted in English and documentation was issued in English.

6. AGENDA

6.1 The following Revised Agenda was adopted:

Agenda Item 1: Adoption of the Provisional Agenda

Agenda Item 2: Global and Regional Development

Agenda Item 3: Follow-up on MIDANPIRG/20 Conclusions and Decisions related to ATM/SAR

Agenda Item 4: Planning and Implementation issues related to ATM/SAR

Agenda Item 5: MID Air Navigation Priorities and Targets related to ATM/SAR

Agenda Item 6: Air Navigation Deficiencies in the ATM/SAR fields

Agenda Item 7: Future Work Programme

Agenda Item 8: Any other Business

7. CONCLUSIONS AND DECISIONS – DEFINITION

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

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

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

8. LIST OF DRAFT CONCLUSIONS AND DECISIONS

DRAFT CONCLUSION 9/1:	*PROPOSAL FOR AMENDMENT TO THE MID* eANP *VOLUME II, TABLE ATM II-MID-I: MID REGION ATS ROUTE NETWORK*
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PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ELECTION OF THE CHAIRPERSON AND ADOPTION OF THE PROVISIONAL AGENDA

Election of the Chairperson

1.1 The subject was addressed in WP/1, presented by the Secretariat. The meeting extended gratitude and thanks to Mr. Khalid Arabiyat, Director Air Traffic Management, Civil Aviation Regulatory Commission, Jordan, and Mr. Ahmed Mohammed Al-Eshaq, Director Air Navigation, Civil Aviation Authority, Qatar, for their outstanding support provided to the ATM SG and for the excellent management of the programme and Chairmanship of the ATM SG meetings.

1.2 The meeting unanimously elected Mr. Khalid Hussain Alharbi, Airspace Management Director, GACA, Saudi Arabia as the Chairperson and Mr. Hilal Ali Mohammed Al-Maqbali, Director of ATC, Civil Aviation Authority, Oman, as the Vice Chairperson of the ATM SG.

Provisional Agenda

1.3 The subject was addressed in WP/2, presented by the Secretariat. The meeting reviewed and adopted the Provisional Agenda as at paragraph 6 of the History of the Meeting.

REPORT ON AGENDA ITEM 2: GLOBAL AND REGIONAL DEVELOPMENTS

Outcomes of the Air Navigation World 2023

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

2.2 The meeting was apprised with a summary of the main outcomes of Air Navigation World 2023 (ANW2023) which was held in Singapore, from 23 to 27 October 2023.

2.3 The meeting identified the agreed Global Priorities – Priority Focus Areas to be further included in the programme of the coming ATM SG meetings, mainly related to ATM operational enhancements, and the Crisis response Mechanism/Framework (Contingency Planning) as a priority focus areas under the ATM.

REPORT ON AGENDA ITEM 3: FOLLOW-UP ON MIDANPIRG/20 CONCLUSIONS AND DECISIONS RELEVANT TO ATM/SAR

3.1 The subject was addressed in WP/4, presented by the Secretariat. The meeting noted that the ATM Sub-Group is tasked with the follow-up on the implementation process related to ATM and SAR to inform MIDANPIRG on the progress, achievement, and problems being encountered.

3.2 The meeting was updated on the status of MIDANPIRG/20 Conclusions and Decisions related to ATM and SAR as well as the follow-up actions taken by concerned parties as at **Appendix 3A**.

REPORT ON AGENDA ITEM 4: PLANNING AND IMPLEMENTATION ISSUES RELATED TO ATM/SAR

MID ANP, Volume I: FIR Boundaries PfA

4.1 The subject was addressed in WP/5, presented by the Secretariat.

4.2 The meeting noted that the following key issues and challenges have been identified through coordination meeting with States and development of the PfA. **Appendix 4A** provides a detailed overview on the inconsistencies:

a) non-adherence with guideline endorsed by the MIDANPIRG/17 meeting, at **Appendix 4B**;

b) lack of coordination between adjacent States to publish a common FIR coordinates;

c) lack of publication of the FIR description; and

d) non-adherence with the coordinates published in the MID ANP, Volume I, Chart ATS – 1.

4.3 The meeting recalled the MIDANPIRG Conclusion 20/13 and coordination was carried out with Iraq, Kuwait, Lebanon, Libya, Oman and Syria to include the lateral limits coordinates and vertical dimensions of their FIRs/UIRs and SRRs in Tables ATM I-1 and SAR I-1, respectively. Based on the outcomes of the side meetings conducted between the Secretariat and representative of the relevant States, the PfA at **Appendix 4C** incorporates the FIR boundary coordinates for Kuwait, Lebanon, Libya and Syria.

4.4 The meeting urged States to review the details of inconsistencies reported at **Appendix 4A** and take required coordination and action(s) with adjacent FIRs to develop coordinated FIR/SRR description in their respective AIPs based on the guideline at **Appendix 4B** and support the ICAO MID Office to coordinate the development of further PfA(s) for the remaining State FIR boundaries description.

Progress Report on C-DEC 225/10: Implementation of Doha FIR/SRR

4.5 The subject was addressed WP/6, presented by the Secretariat.

4.6 The meeting recalled the 255th session of the ICAO Council (11 March 2022) agreed to proceed with the establishment of the Doha FIR/SRR on the basis of a phased approach.

4.7 The meeting recalled the MIDANPIRG/20 meeting Conclusion 20/16:

MIDANPIRG CONCLUSION 20/16: IMPLEMENTATION OF C-DEC 225: ESTABLISHMENT OF DOHA FOR/SRR

That,

a) the ICAO MID Office to monitor the implementation of the C-DEC225/10 and facilitate coordination between the States concerned, as required;

b) States to carry out bilateral and multilateral coordination to finalize the operational and technical requirements, including the necessary letters of agreement;

c) MIDRMA to conduct a safety Monitoring assessment for the RVSM airspace within Bahrain and Doha FIRs, highlighting bottlenecks, hotspots and areas of traffic congestion;

d) Qatar to provide inputs for the development of the required proposal(s) for amendment to the MID ANP;

e) States and other Stakeholders to provide implementation feedback and comments to the MID Office on a quarterly basis for review by the ATM SG; and

f) the ATM SG to agree on necessary measures for the conduct of the technical study necessary to support the decision-making for the implementation of Phase 2 and develop a roadmap for the implementation of phase 2 to be presented to MIDANPIRG for endorsement.

4.8 The meeting commended the efforts made by the MID Regional Director in coordination with ICAO Headquarters, to support all States, for addressing the implementation at regional level, in accordance with the decisions agreed upon by the meetings of the Multi-lateral Group on the implementation of C–DEC 225/10, with the active participation of the relevant States including Bahrain and Qatar in regional platforms.

4.9 Additionally, the meeting noted with appreciation the progress made by the Multi-lateral Coordination Group in particular the arrangement for smooth and safe transition of operations and led to the implementation of Phase1A and Phase1B (complete Phase1).

4.10 The meeting recalled that the MID Office was tasked to develop and share a feedback form to collect information and comments from relevant States and stakeholders to ensure that Phase 1 has been implemented successfully and assess the readiness to start the planning for the implementation of Phase 2.

4.11 Accordingly, the MID Office in cooperation with the Multi-lateral Group members developed the Feedback Form and circulate State Letters (State Letters Ref.: AN 6/5.1.16 – 23/123 dated 6 June 2023 and AN 6/5.1.16 – 23/232 dated 18 October 2023) to collect feedback and comments from the relevant States and Airspace Users/IATA, The MID Office received replies on the first cycle. The received comments were reviewed by the Multi-lateral Group and were forwarded to the relevant State, for further necessary actions, if required. Additionally, it was agreed that the operational and safety teams from Bahrain and Qatar will meet on regular basis to address any operational issue and/or safety occurrence.

4.12 Bahrain emphasized that the satisfactory implementation of Phase 1 is a crucial prerequisite before any activities or discussions pertaining to Phase 2 can commence. The primary objective of such activities and discussion should be to provide support to the Council in making the discission regarding the implementation of Phase 2 according to C-DEC 225/10.

4.13 Qatar recalled their preparation during the last ATM SG/8 meeting about the readiness for Phase 2 to complete the implementation of C-DEC225/10 and emphasized that the planning for the implementation should be in the scope of the Region platforms even without timelines.

4.14 The concerned parties agreed that the focus now is on the post implementation of Phase 1, and the Multilateral group would be in a better situation (in direct coordination with the relevant State) to agree on further steps.

4.15 The meeting was apprised with the outcomes of the MIDRMA Board/19 meeting (Manama, Bahrain, 10 – 11 October 2023) in particular the list of requirements to be provided to the MIDRMA to support the development of the RVSM Airspace Assessment. The meeting encouraged Bahrain and Qatar to provide the required data to the MIDRMA, if not yet done so.

4.16 The meeting commended the work of the Multi-lateral Group, and agreed that the subject will be discussed in details within the Multi-lateral Coordination Group meetings, and requested the Group to present updates to the MIDANPIRG/21 meeting (planned in Abu Dhabi UAE, 4 – 8 March 2024).

MID ATS Route Network Table and Progress of PfA

4.17 The subject was addressed in WP/7, presented by the Secretariat.

4.18 The meeting recalled the MIDANPIRG/20 meeting Conclusion 20/27 as follows:

MIDANPIRG CONCLUSION 20/27: PROPOSAL FOR AMENDMENT TO THE MID EANP VOLUME II, TABLE ATM II-MID-I: MID REGION ATS ROUTE NETWORK

That, the ICAO MID Office process the Proposal for Amendment to the MID ANP Vol II, Table ATM II-MID-I, at Appendix 6.5A, in accordance with standard PfA procedure.

4.19 Accordingly, the required PfA (MID.II.2302-ATM) was developed and a standard PfA process was started by the Secretariat with coordination of MID States.

4.20 The meeting urged States to update their national publication based on MID ANP VOL II, Table ATM II-MID-I (deletion of prefix “Upper” and change ATS route designator, if required.

4.21 The meeting also encouraged the MID States to take required action with the support of ICAO MID Office for removing the remaining challenges, at **Appendix 4D**.

4.22 The route designators shall be assigned in accordance with the following principles:

a) the same basic designator shall be assigned to a main trunk route throughout its entire length, irrespective of terminal control areas, States or regions traversed.

b) where two or more trunk routes have a common segment, the segment in question shall be assigned each of the designators of the routes concerned, except where this would present difficulties in the provision of ATS, in which case, by common agreement, one designator only shall be assigned.

c) a basic designator assigned to one route shall not be assigned to any other route.

d) States’ requirements for designators shall be notified to the ICAO-MID for coordination.

4.23 The meeting also noted that the following group of ATS route designators have been allocated to the MID region. The total number of route designator allocated to the MID region is 426 (122 Non-RNAV & 304 RNAV), 66 Non-RNAV designators have been assigned (56 designators are available) and 205 RNAV designators have been already assigned (99 designators are available).

Regional & non-RNAV				**Regional & RNAV**			
A	B	G	R	L	M	N	P
400-424	400-424	650-674	650-674	300-324	300-324	300-324	300-324
775-799	524-549	775-799	775-799	550-574	550-574	550-574	550-574
				700-724	700-724	700-724	700-724

4.24 According to the study carried out by ICAO MID Office, the ATS route designator at interface of the MID region with adjacent regions and from one FIR to other is frequently changed, which is not according to the principles set out in paragraph 4.22.

4.25 Consequently, the meeting agreed that the main flows of the traffic in the MID region should be determined to maintain their ATS route designators, as much as practicable, within various consecutive FIRs and Regions based on the MIDRMA analysis provided to the MID States.

4.26 Based on the above, the meeting reviewed and agreed on the following Draft Conclusion:

DRAFT CONCLUSION 9/1: PROPOSAL FOR AMENDMENT TO THE MID eANP VOLUME II, TABLE ATM II-MID-I: MID REGION ATS ROUTE NETWORK

That the ICAO MID Office:

a) using the MIDRMA analysis, identify the main flaws of the region to maintain their ATS route designators as much as possible to optimize the usage of the available designators through various consecutive FIRs and regions with coordination of relevant States and ICAO Regions; and

b) develop required Proposal for Amendment (PfA) to the MID eANP Vol II, Table ATM II-MID-I.

4.27 Accordingly, the meeting supported the Secretariat to follow the standard process of the PfA related to the ATS Route network at **Appendix 4E**.

Challenges of Basic ATS Route Designator Management in the MID Region

4.28 The subject was addressed in WP/8, presented by Egypt.

4.29 The meeting noted that a recent study by Egypt found that there are many challenges towards full consistency with the requirements of Annex 11 related to ATS Route designator, including:

a) **ICAO guidance materials**. It does not clearly distinguish between regional and non-regional (domestic) ATS routes in terms of their definition and specifications.

b) **Shortage of available designators.** Due to the high demand for the establishment of new ATS routes, particularly PBN routes, there is a shortage of available designators. One possible solution to this problem is to agree on the extension of the use of the same designators across ICAO regions.

c) **Harmonization of ATS routes between ICAO regions.** This can be a challenge due to different requirements and practices in different regions. For example, some regions may use a different numbering system for ATS routes than others.

d) **Coordination with adjacent FIRs.** When extending an ATS route into an adjacent FIR, it is important to coordinate with the authorities of that FIR to ensure that the designator is not already in use and that the route is compatible with the adjacent FIR's airspace structure and traffic flow patterns.

e) **Compatibility with automated systems.** ATS route designators should be compatible with the data processing and display requirements of ATS and aircraft systems. This can be a challenge for older systems that may not be able to handle certain characters or designator formats.

f) **Future requirements.** ATS route designators should be assigned in a way that allows for future expansion and changes to the airspace structure without the need for fundamental changes to the designator system.

g) **The increasing complexity of the airspace structure.** with more and more routes being established to accommodate new technologies and traffic patterns.

h) **The need to integrate ATS routes with other airspace systems.** such as unmanned aircraft systems (UAS) traffic management (UTM) systems.

i) The need to make ATS route designators more flexible and adaptable to change.

4.30 The meeting was apprised with the development of the proposal in the pipeline for enhancing the route designators of Annex 11. Accordingly, the meeting agreed that the subject could be included in the coming ATM SG meeting.

MID Region ATM Contingency Plan

4.31 The subject was addressed in WP/11 and IP/3, presented by the Secretariat.

4.32 The meeting was apprised with the situation in Sudan and the developments related to Khartoum FIR Contingency Plan.

4.33 The meeting appreciated the inputs of the Action Group on the development of the comprehensive draft of MID Region ATM Contingency Plan (MID Doc 003 Version 5) at **Appendix 4F**.

4.34 Based on the lessons learned from different contingency situations during the year 2023 (including closure of the airspace) and activation of CCT, as well as dependency on new technologies and their related threats (GNSS vulnerability and Cybersecurity attack), a significant change to the content of MID Doc 003 has been made by the Action Group, with the following outlines:

a) Introduction
   i. Purpose
   ii. Contingency level and category
   iii. Objective
b) MID States' contingency plan requirement
   i. States requirements

ii. State contingency plan and structure

iii. States focal points

iv. States contingency notification and publication

v. Status Reporting of State ATM Contingency Plans

c) ICAO role and common regional procedures

i. General

ii. Contingency Coordination Team (CCT)

d) ATM volcanic ash contingency plan
e) ATM contingency planning principles
f) Contingency plan template
g) MID main regional routing options
h) GNSS vulnerabilities
i) ICAO cybersecurity policy guidance
j) Basic plan elements
k) MID Region ATM contingency FOCAL points
l) Status of contingency agreements in the MID Region
m) Measures taken by QCAA and ATS units during COVID-19
n) MID Region DME/DME coverage
o) MID Region surveillance coverage
p) MID Region ATM volcanic ash contingency plan

4.35 The Action Group also proposed the establishment of a suitable structure for updating States contingency plan, agreement and contact list on ICAO MID website so that the required stakeholders can be easily linked to each other in case of contingency.

4.36 Based on the above, the meeting reviewed and agreed on the following Draft Conclusions and Decision:

DRAFT CONCLUSION 9/2: MID REGIONAL ATM CONTINGENCY PLAN (V5.0)

That, the MID Regional ATM Contingency Plan (V5.0), at ***Appendix 4F****, is endorsed and be published as the MID Regional ATM Contingency Plan (V5.0).*

and

DRAFT CONCLUSION 9/3: DEVELOPMENT OF MID CONTINGENCY REPOSITORY

That, ICAO MID develop required structure on ICAO MID website containing MID States Contingency Plans, Contingency Letters of Agreement and contact list, and keep it up to date.

and

DRAFT CONCLUSION 9/4: DEVELOPMENT OF MID STATES CONTINGENCY PLAN

That,

a) based on the guidelines and template provided in MID ATM Contingency Plan (V5.0), MID States develop their national contingency plan and the required agreement with adjacent FIRs and share them with ICAO MID; and

b) by organising individual workshops, ICAO MID supports the development of National Contingency Plans by the MID States.

4.37 The meeting agreed that the Action Group delivered the assigned tasks. Accordingly, the meeting agreed on the following Draft Decision:

DRAFT DECISION 9/5: DISSOLUTION OF THE CONTINGENCY PLAN ACTION GROUP

That, the Contingency Plan Action Group is dissolved.

4.38 The meeting urged States to update the list of contingency planning focal points and the current status of contingency arrangements of the Contingency Plan, through official email to ICAO MID Office.

Business Continuity Management (BCM) in ATM

4.39 The subject was addressed in WP/13, presented by Egypt.

4.40 The meeting appreciated NANSC, in close collaboration with the Egyptian Civil Aviation Authority (ECAA) and adjacent FIR(s), has demonstrated its proficiency in BCM through a comprehensive theoretical framework and practical application, employing real-life scenarios, like the contingency procedures quick implemented under cooperation with ICAO MID as follows:

- Khartoum FIR Closure;

a) Facilitate air traffic flow from/to Khartoum FIR during its closure, all air traffic proceeding to/from Khartoum FIR have been immediately rerouted through Cairo and Jeddah FIRs, in a highly efficient and coordinated manner by both ACCs.

b) Cairo, Jeddah, Khartoum, ICAO MID team and all other affected stakeholders through CCT meetings coordinated to develop a rerouting plan. This plan takes into account the following factors:

i. type and volume of air traffic affected by the closure of Khartoum FIR
ii. airspace capacity of Cairo and Jeddah FIRs
iii. availability of air traffic control resources
iv. safety of air traffic

c) Cairo and Jeddah ACCs communicated the rerouting plan to all affected airlines and pilots. This is done through NOTAMs, AFTNs, and direct communication.

d) Cairo and Jeddah ACCs coordinated closely with each other to ensure that the rerouting is done in a safe and efficient manner. This includes communicating with each other about the position of all aircraft and any potential conflicts.

- Recent situation in Northern East Border of Egypt:

a) on October 2023, the Tel Aviv FIR restricted due to unforeseen circumstances. This resulted in a significant increase in air traffic in the Cairo FIR.

b) the Cairo FIR air traffic controllers handled this increase in traffic with great efficiency and professionalism. They accepted in-flight flight plans from aircraft that would have otherwise flown through the Nicosia FIR and rerouted them around the restricted airspace.

c) To facilitate traffic flow, the Cairo FIR air traffic controllers used a variety of techniques, including:

- **Sectorization**: The FIR was divided into smaller sectors, each with its own dedicated air traffic controller. This allowed the controllers to focus on their assigned airspace and traffic.
- **Sequencing**: The controllers sequenced aircraft so that they arrived at their destinations in a safe and efficient manner.
- **Coordination**: The controllers coordinated closely with each other and with Amman (Via ULINA) and Jeddah/Riyadh FIRs (Via KITOT) to ensure that traffic was flowing smoothly throughout the region.

d) As a result of the Cairo FIR air traffic controllers' efficient and professional handling of the situation, there were no major disruptions to air traffic. All aircraft were able to reach their destinations safely and on time.

4.41 The meeting received updates regarding the progress of Khartoum FIR CCT at IP/3, presented by the Secretariat. Due to unavailability of ANS within Khartoum FIR, CCT was activated on 15 March 2023 and the following development have been done:

a) establishment of “Diversionary Measures” through Cairo, Jeddah and Asmara FIRs.

b) development of Contingency plan for operation of traffic over South Sudan airspace through two unidirectional contingency routes.

c) development of contingency plan based on availability of Khartoum ACC sub-centre in Port Sudan for traffic to/from Port Sudan to Cairo and Jeddah FIRs. for contingency plan. The meeting noted the “” implemented during the Khartoum FIR CCT and commended the efforts made by the MID States to support Sudan, mainly Egypt for the Aeronautical Information publication on behalf of Sudan.

ANP, Volume II - MID SSR Code Allocation

4.42 The subject was addressed in WP/14, presented by the Secretariat.

4.43 The meeting recalled MIDANPIRG/20 meeting Conclusion 20/28 as follows:

MIDANPIRG CONCLUSION 20/28: PROPOSAL FOR AMENDMENT TO THE MID EANP VOLUME II, TABLE ATM II-MID-2: MID REGION SSR CMP

That, the ICAO MID Office processes the Proposal for Amendment to the MID eANP Vol II, Table ATM II-MID-2, at Appendix 6.5C, in accordance with standard PfA procedure.

4.44 The meeting noted the proposal developed by the Secretariat for the SSR Code Management Plan at **Appendix 4G** for the MID States, taking into account the followings procedures:

a) for temporary allocation of reserved SSR Code, the State is required to request officially from ICAO MID Office to provide temporary SSR Code.

b) the temporary reserved SSR code will be assigned to the requesting State for the duration of Six months from the date of allocation. After this period, the allocated

SSR code will be released unless the relevant state requests officially to extend duration of usage for another cycle or certain duration. At any case, this request shall be confirmed by ICAO MID Office.

c) ICAO MID Office maintains up to date the dashboard and reports to ATM SG meetings.

4.45 The meeting noted that based on the Council Decision C-DEC 225/10 related to the establishment of Doha FIR/SRR, it is required to allocate separate SSR codes for transit and domestic operations within Doha FIR. accordingly, the Secretariat with coordination of MID States issued PfA: MID-II 23/01-ATM to follow standard procedure.

4.46 The meeting noted the progress of the proposal for amendment (PfA) to the MID eANP VOL II, Table ATM II-MID-2: MID SSR CODE ALLOCATION LIST, at **Appendix 4H.**

MID Air Traffic Flow Management (ATFM) Plan

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

4.48 The meeting recalled the MID Doc.014 ATFM Plan (V2.0), in particular Phase 1A and the associated implantation timeline by 31 December 2023.

4.49 The meeting noted with appreciation that the MID Office successfully organized the MID ATFM Implementation Workshop (Doha, Qatar, 6 – 7 February 2023).

4.50 The meeting was apprised with the outcomes of the Workshop, including the review of the ATFM requirements, and the details of the MID implementation plan (Phase 1A), The Workshop provided an opportunity to support the MID States in taking the proper actions required for implementing Phase 1A of the MID ATFM Implementation Plan within the agreed timelines. Additionally, the Workshop was considered a venue for States and international Organizations to share their experience and challenges among the MID ATFM TF members. A summary of the outcomes of the Workshop are available under ICAO Website: https://www.icao.int/MID/Pages/2023/ATFM%20Workshop.aspx.

4.52 Moreover, the meeting reviewed the results of the MID ATFM Survey 2023, and noted the common areas identified by the ATFM TF/8 meeting (Virtual, 31 October - 1 November 2023), mainly related to:

a) National Regulations and organizational subjects including ATFM posts (56%);
b) capacity calculation (strategic level) at TMA(s) (40%);
c) optimize the operations within the TMA(s), ACC(s) and interface with adjacent ACCs (-100%);
d) daily pre-tactical capacity and demand analysis at TMA(s) (20%);
e) NOPS B0/1: Initial integration of collaborative airspace management with ATFM (30%);
f) ATFM Letter of Agreement/Procedures between the ACC(s) (34%); and
g) coordinated ATFM Daily Plan (ADP) and share with the concerned Stakeholders (20%).

4.53 The meeting highlight that the level of ATFM implementation would vary from one FIR to another based on the level of airspace complexity, number of movements, demand, etc. However, to meet the requirements of Annex 11 (para 3.7.5), the national ATFM position should be the basis of any level of ATFM implementation, starting with the basic capacity vs demand analysis.

4.54 Based on the above, the meeting reviewed the Draft Conclusion emanating from the MID ATFM TF and agreed on the following:

DRAFT CONCLUSION 9/6: DEVELOPMENT OF MID STATES ATFM PLAN

That,

a) based on the guidelines provided in ICAO MID Doc 014: ATFM Plan (V2.0), MID States develop their respective ATFM implementation plan and agreement with adjacent FIRs and share them with ICAO MID;

b) by organising individual workshops, ICAO MID supports the development of States National ATFM Plans and implementation of ICAO Doc 014 requirements for Phase I (including Phase IA & IB); and

c) the MID ATFM Task Force is tasked with the identification of Priority ATFM Implementation Areas within the MID Region, to enable further implementation support activities.

FF-ICE Implementation

4.55 The subject was presented in WP/16, presented by UAE.

4.56 The meeting recalled the outcomes of the ICAO Air Navigation World 2023, related to the shift from FLP2022 to FF-ICE, as an essential advisement in Air Traffic management. The proposed implementation plan by 20232.

4.57 The meeting reviewed the advanced benefits of the FF-ICE implementation and the requirements for implementation. And noted the need to develop a regional implementation plan to ensure the readiness of ANSPs and regional operators for smooth transition to FF-ICE, in line with the ICAO Document 9854.

4.58 Accordingly, the meeting agreed on the following Draft Decision:

DRAFT DECISION 9/7: ESTABLISHMENT OF MID FF-ICE ACTION GROUP

That, the MID FF-ICE Action Group is established, to develop MID FF-ICE Implementation Plan. The Action Group is composed of:

i. UAE (reporter),
ii. ATM SG Chairman,
iii. CNS SG Chairman,
iv. AIM SG Chairman,
v. Airspace user's representatives, and
vi. Industry representatives.

4.59 The MID FF-ICE Action Group is tasked to develop its Term of Reference and Action Plan including Action items, timeline, and champion for each task.

RVSM Implementation and Monitoring

4.60 The subject was addressed in WP/17, presented by the Secretariat on behalf of the MIDRMA.

4.61 The meeting recalled MIDANPIRG/20 Conclusion, related to the development of SMR 2023, and reviewed the preliminary results of the MID RVSM Safety Monitoring Report (SMR 2023) at **Appendix 4I**.

4.62 The meeting noted that based on the data provided to the MIDRMA (TDS and LHDs), the Safety Objectives continue to be met. The value computed for the overall risk is estimated **8.408×10^{-10}**, which is below the ICAO overall TLS. It was highlighted that the LHD period for SMR2023 extends to the end of the year 2023, accordingly the preliminary results are subject to changes according to the submission of further LHD.

4.63 The meeting noted with concern that Beirut, Khartoum and Tripoli FIRs were excluded from the SMR 2023 due to the non-provision of required data.

4.64 The meeting noted with concern the continued low level of LHD reporting within the MID Region, according to the following table:

MID FIRs	No. of Reported LHDs	No. of Related LHDs
Bahrain	-	-
Baghdad	1	-
Amman	2	2
Tehran	-	-
Cairo	24	10
Damascus	-	1
Khartoum	1	4
Kuwait	-	-
Muscat	68	33
Jeddah/ Riyadh	9	59
Tripoli	-	-
Emirates	4	4
Sana'a	136	8

4.65 The meeting noted that the MIDRMA will continue working on the development of the final version of SMR 2023, until the end of the reporting cycle (31 December 2023) and encouraged the States to provide the MIDRMA with the required data.

4.66 The meeting recalled the safety protocol opened at Muscat/Mumbai FIRs boundaries since 2017 due to the continued increased of LHD reports between both FIRs (included in the table below). The MIDRMA is in contact with Muscat FIR, to identify the route cause of the increase of reports and to encourage the implementation of corrective measures.

YEAR	LHD Reported by Muscat	LHD Reported by Mumbai
2022	16	41
2023	25	79

4.67 The meeting recalled the safety protocol opened at Sanaa and Mogadishu FIRs boundaries due to the increased number of LHD reports submitted by Sana'a ACC related to Mogadishu and to its neighbouring FIRs.

4.68 The MIDRMA reported that after the coordination meeting organized by ICAO MID and attended by ICAO ESAF ARMA, MIDRMA, IATA and relevant ATM representatives from the States near the Horn of Africa, the States were urged to implement corrective measures to resolve the communication and coordination issues and amend Letter of Agreements. The number of LHD reported has significantly decreased compared to previous years; as shown in the table below, there were no LHD reports were filed by Sanaa related to Mogadishu from January 1st until September 30th, 2023. Therefore, MIDRMA sees no reason to keep the safety protocol open and requested to close it.

Months	Addis Ababa	Asmara	Mogadishu	Djibouti	Jeddah	Mumbai	Muscat	Total
1-2023	1	0	0	2	1	1	9	14
2-2023	2	1	0	0	3	4	3	13
3-2023	0	1	0	4	3	0	16	24
4-2023	2	2	0	2	1	3	2	12
5-2023	2	2	0	2	1	0	0	7
6-2023	2	5	0	2	5	1	0	15
7-2023	3	10	0	2	6	4	0	25
8-2023	4	3	0	5	3	3	0	18
9-2023	3	0	0	1	2	1	1	8
Total Report	19	24	0	20	25	17	31	136

4.69 Additionally, the MIDRMA continued to provide the MIDRMA Bulletin of Non-RVSM Approved aircraft observed operating within the ICAO MID RVSM airspace and within the RVSM airspace. And invited the States authorities to take proactive steps to address approval issues well in advance, ensuring that approved aircraft operate within the RVSM airspace. This proactive approach aims to prevent undesirable actions against operators. Furthermore, invited the States to encounter such aircraft operating within their airspace will take appropriate measures.

4.70 The meeting noted the new product of the MIDRMA, amid receiving the new version of the MIDRAS software, particularly, the "Airway occupancy rate". The analysis of the MID Region FIR started to be delivered and will be presented to ATM SG meeting along with the annual SMR results, sample of the Airway occupancy is at **Appendix 4J**.

4.71 The meeting recalled the discussion during the last ATM SG meeting and the MIDRMA Board/19 meetings, in particular the operational benefits and the cost effectiveness of ADS-B implementation, and the availability of the required infrastructure within the region.

4.72 The meeting noted the results of the study conducted by the MIDRMA for the implementation of ADS-B for height monitoring (a detailed paper was presented to the MIDRMA Board/19 meeting), and accordingly, the plan proposed to the MIDRMA Board/19 meeting, the Board meeting had agreed to the following Draft Decision:

DRAFT DECISION 19/4: MID ADS-B HEIGHT MONITORING SYSTEM (MID AHMS)

That,

a) States implementing ADS-B to share the archived data with the MIDRMA for evaluation and analysis;

b) MIDRMA to coordinate with MAAR for:

i. sharing their experience in evaluating and analyzing samples of the received ADS-B data; and

ii. providing required training related to AHMS implementation for MIDRMA Staff.

c) MIDRMA to develop a mechanism and tools for submitting the ADS-B data by States;

d) MIDRMA provides the required training for CNS engineers from Member States responsible for extracting ADS-B data from their systems and submitting it to MIDRMA at regular, mutually agreed intervals;

e) MIDRMA to develop and document all required processes and procedures to be reflected in the training Manuals for the AHMS implementation, to be incorporated in the MIDRMA Tasks and responsibilities;

f) MIDRMA shall continue to provide GMU monitoring service until the AHMS is fully operational, and for the Aircraft not included in the MID-AHMS; and

g) the funding mechanism (including services charges) might be revised accordingly (based on cost -recovery basis). In accordance with ICAO Policies on charges for Airports and Air Navigation Services (Doc 9082), in coordination with IATA.

4.73 The meeting encouraged the States to share the archived ADS-B data with the MIDRMA for evaluation and analysis.

4.74 The meeting was apprised with the progress of the MIDRMA Sustainability Action Group (MSAG) tasked to develop a Strategic Plan for the MIDRMA to ensure business continuity and Sustainability. including the anticipated technical and managerial issues for the coming 6 years (period from 2024 to 2030).

Airspace Optimization over High Seas between MID and APAC Regions

4.75 The subject was addressed in WP/18, submitted by Oman.

4.76 The meeting noted the need for optimizing the airspace over the high seas between the Middle East and Asia Pacific regions to enhance safety, address capacity and inefficiencies constraints, reduce fuel consumption, thus CO_2 emissions from aircraft operations, and optimize available navigation systems.

4.77 The meeting was apprised with the airspace characteristic in the MID region adjacent to the APAC region, it is characterized by RNAV1/5 ATS routes. The separation minimum within the Muscat FIR is 5NM, 8NM at the boundary with the Emirates FIR and 20NM at the boundary with Jeddah FIR. However, the current operational procedures in the APAC region mandate a lateral separation minimum of 50NM and a longitudinal separation minimum of 10 minutes at the interface with Mumbai FIR and 30NM at the interface with Karachi FIR.

4.78 It is, moreover, obvious that the current airspace infrastructure may not be able to accommodate the projected surge in demand for air travel. This significant increase in aircraft numbers will require the development of more efficient and advanced airspace infrastructure to enable safe and efficient air travel.

4.79 Improving airspace over the high seas between the Middle East and the Asia-Pacific regions is a significant concern for several key factors that drive the need for such improvements:

- ***Increasing Air Traffic:*** The airspace between the Middle East and the Asia-Pacific regions is a critical corridor for global air travel. With the continuous growth of the aviation industry, there has been a significant increase in air traffic in this region. This increased congestion can lead to delays, increased operational costs, and decreased efficiency.

- ***Economic Impact:*** Inefficient airspace management can have substantial economic implications. Flight delays and inefficiencies can result in higher fuel costs, increased operational expenses for AOs, and potential losses in revenue for airlines.

- ***Safety:*** Safety is paramount in the aviation industry. Effective airspace management and communication systems are vital to ensuring the safety of flight operations. Improving airspace over the high seas can help prevent collisions, reduce the risk of LHDs, and enhance overall safety.

- ***Environmental Considerations:*** Inefficient flight paths and congested airspace can lead to increased fuel consumption and greenhouse gas emissions. By optimizing airspace management, it helps to reduce the carbon footprint of the aviation industry and contribute to environmental sustainability.

- ***Search and Rescue (SAR):*** In remote areas over the high seas, rapid response to emergencies or distress situations is critical. Improving airspace management can facilitate quicker response times and enhance search and rescue capabilities.

4.80 To address these issues, there is a need for international collaboration and coordination among the States and aviation authorities in the regions. This might involve the development of more efficient air traffic routes, the implementation of modern air traffic management systems, implementing reduced longitudinal separation of 20NM and the establishment of agreements and protocols to ensure safe and effective airspace management. International Civil Aviation Organization (ICAO) plays a crucial role in facilitating such cooperation.

4.81 The meeting recalled that MIDANPIRG/20 and RASG-MID/10 meetings Conclusion 20/6 as follows:

PIRG/RASG CONCLUSION 20/6: COORDINATION TO ENHANCE AIRSPACE OVER HIGH SEAS BETWEEN MID REGION AND APAC

That,

a) ICAO MID is tasked to initiate and foster inter-regional and sub-regional initiatives that aim to enhance the airspace at the interface with the ASIA Pacific region; and

b) States and aviation stakeholders are encouraged to collaborate and support airspace development initiatives aiming at enhancing safety, improve efficiency of the airspace over the high seas at the interface with Asia Pacific.

4.82 In the light of the above, Oman carried out a number of meetings with Mumbai (28th February 2023) and Pakistan on 2nd May 2023, in an ongoing effort to explore the possibilities of association with adjacent Asia Pacific States to enhance & optimise the airspace.

4.83 Moreover, Oman has already initiated the airspace optimization process through a joint effort with India who had offered, to introduce a new mechanism of reduced longitudinal separation limited to a single route at which is currently under a trial process planned to start during the month of November for a period of 3 months to analyse the implications on traffic capacity and movement, also to address the safety issues of LHD's as reported in the SMR 2017 the level of LHD reports filed by Muscat and Mumbai.

4.84 Oman is also engaged to have a workshop/meeting with Islamic Republic of Pakistan under the same scope of airspace optimization program which will be conducted between 26- 30 November 2023 in the Sultanate of Oman. This comes as another regional collaboration meeting.

4.85 In order to accommodate this projected growth, the Sultanate of Oman reiterates ICAO MID, States CAA, ANSPs, airspace users, and aviation stakeholders in the Middle East and Asia Pacific call for action to collaborate and support airspace development initiatives aiming at enhancing safety, improve efficiency of the airspace over the high seas at the interface with Asia Pacific. In this respect, ICAO MID with coordination of Oman will conduct the required meeting at regional and, if required, at inter-regional level, in coordination with the relevant ICAO Offices.

Progress related to CMC/FUA Action Group

4.86 The subject was addressed in WP/19, presented by the Secretariat.

4.87 The meeting noted that the MIDANPIRG/20 meeting appreciated the work of the CMC/FUA Action Group and noted its outcome that the ICAO Guidance material in Doc 10088: Manual on civil – aviation Cooperation in Air Traffic Management is fully meeting the needs and requirements of the MID States to develop the national CMC/FUA Plans.

4.88 The meeting also noted that the first workshop related to the implementation of Doc. 10088 has been successfully conducted by ICAO during the period 15 to 17 May 2022 in Tehran, Iran.

4.89 The meeting recalled the MIDANPIRG 20 meeting Decision 20/31 meeting invited ICAO to organize a workshop to raise awareness among all stakeholders regarding the CMC implementation, including operations of due regard aircraft over high seas. and agreed on the following Decision:

MIDANPIRG DECISION 20/31: CONTINUATION OF THE CMC/FUA ACTION GROUP

That, ICAO to organize a workshop to raise awareness among all stakeholders regarding the CMC implementation, including operations of due regard aircraft over high seas, and support State to develop the national CMC plan.

4.90 Based on the above, the MIDANPIRG/20 meeting encouraged States to take appropriate action to improve their national Civil – Military cooperation and the implementation of flexible use of Airspace, based on the guidance in ICAO Doc 10088.

4.91 The meeting agreed that the ICAO Doc. 10088 is sufficient for the MID Region to develop States National Civil and Military Cooperation and Flexible Use of Airspace procedures.

4.92 The meeting also agreed that the ICAO MID Office, in cooperation with the international ORGs, conducts a Seminar to raise awareness of all stakeholders regarding the CMC implementation in particular operations of due regard aircraft over high seas in line with "Article 3 d)" of the Chicago Convention. The Seminar will mainly support the implementation of Doc 10088 at National level and will address the challenges identified within the Region, including (but not limited to):

- State aircraft operations under Due Regard in particular over the high seas;
- CMC/FUA implementation;
- Drones-Airspace management applications; and
- NMAC reports between Civil and Military aircraft.

4.93 The meeting reviewed and agreed on a template to report the occurrences related to unknown aircraft operating over the highseas at **Appendix 4K**, to be recorded and further analyzed by the States concerned for appropriate actions.

4.94 Based on the above, the meeting encourages States to develop their national Civil and Military Cooperation and Flexible Use of Airspace procedure based on guidelines published in ICAO Doc 10088 and support the organization of the CMC/FUA Workshop/Seminar in 2024.

DRAFT DECISION 9/8: DISSOLUTION OF THE CMC/FUA ACTION GROUP

That, the CMC/FUA Group is dissolved.

Iran National CMC Implementation

4.95 The subject was presented in WP/20, presented by Iran.

4.96 The meeting noted that based on the outcomes of the workshop in Tehran, Iran CAA with participation of all relevant stakeholders and support of ICAO MID Office developed required action plan in line with ICAO guidance material Doc 10088 to implement Civil and Military Cooperation (CMC), Flexible Route of Airspace (FUA) and Free Route Airspace (FRA) concept in Tehran FIR.

GNSS Anomalies (Jamming and Spoofing reports in the MID Region)

4.97 The subject was addressed in WP/21, WP/22 and PPT/24, presented by UAE, MID PBN SG Chairperson and IATA, respectively.

4.98 The meeting recalled the different benefits of GNSS applications in positioning and navigation performance, and the dependency of other systems on the GNSS signals.

4.99 The meeting noted with concern the increased number of possible spoofing reports, within the MID Region during the last period, which disrupted the ATM operations, leading to operational disruptions and in some cases compromising safety, by miss leading Aircraft off the intended navigation course, and led it to penetrate reserved areas and possible FIR boarders.

4.100 The meeting recalled the SRA-014 issued by the MID Region, it was found that the SRA-14 identified is not addressing the newly introduced risk (spoofing), and the ATM operational requirements requires further guidance to develop mitigation procedures for ATC.

4.101 The MID Office identified the issue and recognized the possible risks related to mainly:

1. Losing of onboard NAV performance (possible total loss of performance until the Aircraft reached its destination);

2. Increased ATC Workload; and

3. Possible penetration of reserved areas and boundaries.

4.102 Accordingly, the MID Office coordinated with the relevant States to share the available information and ensure that the ATC units and Control rooms are at the relevant States are aware of the consequences and expectations and support the mitigation activities and the requirements of An 11 to related to the provision of Navigation assistance for a stray aircraft, and enhance the exchange of information, including the issue NOTAMs to inform the Operators about the Spoofing (rather than the usual jamming). Additionally, Baghdad ACC coordinated with Tehran ACC the required procedures to be included in the Letter of Agreement, related to the Stray aircraft identification procedures that might unintentionally led to operate near the boundary or even cross the boundary.

4.103 Accordingly, and due to the urgency of the subject, the meeting agreed on the following Draft Decision:

DRAFT DECISION 9/9: ESTABLISHMENT OF MID GNSS ANOMALIES ACTION GROUP

That, the MID GNSS Anomalies Action group is established, to develop GNSS Anomalies operational guidance material and to support the associated contingency procedures. The TF is composed of:

i. Oman,
ii. UAE (reporter),
iii. ATM SG Chairperson,
iv. AIM SG Chairperson,
v. CNS SG Chairperson,
vi. PBN Chairperson,
vii. IATA/ Airspace users, and
viii. The ICAO MID.

AIDC/OLDI Implementation

4.104 The subject was addressed in WP/23, presented by the Secretariat.

4.105 The meeting recalled the MIDRMA Board/14 noted that most of the LHDs were related to coordination failures between adjacent ACCs. Accordingly, States were encouraged to implement AIDC/OLDI, which would significantly improve the coordination process and would reduce the amount of coordination failures, thus enhancing safety.

4.106 The meeting noted that the OLDI/AIDC module is aimed at improving the flow of traffic by allowing neighbouring ATS units to exchange flight data automatically in the form of coordination and transfer messages. The greater accuracy of messages based on the updated trajectory information contained in the system and where possible updated by surveillance data, controllers have more reliable information on the conditions at which aircraft will enter his/her AoR with a reduction of the workload associated to flight coordination and transfer. The increased accuracy and data integrity is the one of the elements permits the safe application of reduced separations.

4.107 The meeting also recalled that the MSG/6 meeting agreed, through Conclusion 6/16, to include a requirement for AIDC/OLDI implementation (priority 1 interconnections) in the MID eANP Volume II Part IV-ATM, under Specific Regional Requirements. It was highlighted that the lack of implementation of priority 1 interconnection will result in additional ANS deficiency to the MID Air Navigation Deficiency Database (MANDD). Therefore, it was agreed that deficiencies related to the lack of implementation of Priority 1 AIDC/OLDI connections will be added by December 2023.

4.108 The meeting informed that based on document presented by EUROCONTROL in AIDC/OLDI workshop (Cairo, Egypt, 14 -16 February 2023), OLDI/AIDC are capable of covering a wide range of massages, but only 4 messages are mandatory in EURO region.

4.109 Based on the above, the meeting confirmed that the primary objective of the establishment of AIDC/OLDI at MID region was to deal with LHD reports which is almost covered by two OLDI/AIDC messages, "*Activate message (ACT)/Coordinate Initial*" and "*Revision Message (REV)/Coordinate Update*".

4.110 The meeting informed the implementation of a semiautomated coordination mechanism and agreement between Tehran ACC and Ankara ACC at its initial phase, with the subsequent extension to UAE, Bahrain, Qatar and Pakistan at **Appendix 4L**. Iran has achieved significant results to cover requirement of two messages in terms of reducing/eliminating number of coordination failures associated with adjacent FIRs.

4.111 Based on the above the meeting reviewed and agreed on the following Draft Conclusion:

DRAFT CONCLUSION 9/10: MID REGIONAL AIDC/OLDI IMPLEMENTATION

That,

*a) States which are subject to priority one in accordance with **MID ANP Volume II** are required to take necessary action to implement AIDC/OLDI capability to exchange at least messages "Activate message (ACT)/Coordinate Initial" and "Revision Message (REV)/Coordinate Update" or equivalent automation and agreement mechanism applicable to the above requirement until end of December 2024;*

b) ATM SG is responsible to assess equivalent automation and agreement mechanism proposed by States to meet at least the requirement of AIDC/OLDI capability indicated in item "a";

c) States which are subject to priority two for implementation and do not have AIDC/OLDI capability are urged to plan for an upgrade of their systems as soon as possible; and

d) ICAO MID Office provide required technical assistance to the States having difficulty to implement AIDC/OLDI capability with adjacent States.

4.112 The meeting also agreed to remove AIDC/OLDI capability from the MID ANP Volume II as a regional requirement and consider it as a part of MID ANP Volume III and MID Strategy plan (ICAO MID Doc 002). Accordingly, the meeting agreed on the following Draft Conclusion.

DRAFT CONCLUSION 9/11: NATIONAL REQUIREMENT FOR AIDC/OLDI IMPLEMENTATION

That, a Proposal for Amendment to the MID eANP Volumes II – Part IV-ATM to remove the requirement for AIDC/OLDI implementation (priority 1 interconnections) be processed in accordance with the standard procedure for amendment.

SAR Implementation Status

4.113 The subject was addressed in WP/25, presented by the Secretariat.

4.114 The meeting recalled the SAR related Standards, Recommended Practices and Procedures and guidance material related to the implementation of Search and Rescue (SAR) mainly contained in ICAO Annex 12, International Aeronautical and Maritime Search and Rescue Manual (IAMSAR - Doc 9731). And the regional requirements available in the MID SAR implementation Plan which was endorsed and published as MID Doc 010, in 2018.

4.115 The meeting noted that the challenges related to SAR Implementation in the MID Region were standing for long period.

4.116 The meeting reviewed the contact lists for the SAR Focal Points of the MID States and encouraged States to coordinate with the MID Office the required update and contact details.

4.117 The meeting noted the discussion during the MIDANPIRG/20 & RASG-MID/10 meetings (Muscat, Oman, 14 – 17 May 2023), related to the SAR findings and deficiencies, in particular, the organization of a SAR implementation Seminar. The MIDANPIRG/20 meeting had agreed on the following Conclusion:

MIDANPIRG CONCLUSION 20/34: SAR WORKSHOP

That, the ICAO MID Office organize a SAR Workshop in 2024, to address the challenges related to SAR in the MID Region.

4.118 The meeting invited the States and the stakeholders to support the organization of the Workshop.

Free Route Airspace (FRA)

4.119 The subject was addressed in WP/27, PPT/26E and PPT/26G, presented by IATA, Qatar and UAE, respectively.

4.120 The meeting noted the success story related to implementation of FRA in UAE FIR and establishment of a MID FRA PMT by IATA, in this respect, the meeting agreed to conduct the required workshop by the relevant States and IATA to allow coordinated and harmonized FRA implementation across the MID region. Accordingly, the meeting agreed on the following Conclusion:

4.121 Qatar informed the meeting regarding the implementation of FRA at designated airspace in Doha FIR from the beginning of the year 2024.

4.122 UAE updated the meeting regarding successful implementation of FRA which is appreciated by airspace users. In this respect, post implementation phase will be conducted accordingly.

DRAFT CONCLUSION 9/12: FREE ROUTE AIRSPACE (FRA) IMPLEMENTATION WORKSHOP

That, the ICAO MID Office, IATA and concerned States organize a FRA Workshop in 2024, to foster the implementation of FRA in the MID Region.

Traffic Exchange between MID and EUR/NAT Regions

4.123 The subject was addressed in IP/4, presented by EUROCONTROL.

4.124 The meeting reviewed and updated regarding the status of traffic exchange at the Regional interface between MID and EUR/NAT.

4.125 The meeting was also updated on interface airspace development requirements aiming to improve traffic distribution, resolve existing congestions and imbalance points loading. The focus was on interfaces between Athena FIR/Hellas UIR/Nicosia FIR and Cairo FIR, and Ankara FIR and Tehran FIR.

4.126 The meeting requested ICAO MID, in coordination with ICAO EUR/NAT, to organize cross-regional meetings with between the adjacent FIRs, to address issues.

MID States Presentations

4.127 The meeting received presentations (PPTs 26A - G) and WP/12 from Bahrain, Egypt, Iran, Qatar, Saudi Arabia, UAE and Libya, respectively, on the latest development within their respective FIR, including establishment of ATS routes, Free routes implementation, Airspace and other capacity enhancement projects, and contingency arrangements. The meeting appreciated the efforts made by MID States and ANSPs and tasked the secretariat to follow up, where required, on the coordination on Regional level.

REPORT ON AGENDA ITEM 5: MID AIR NAVIGATION STRATEGY

MID Air Navigation Priorities and Targets related to ATM/SAR

5.1 The subject was addressed in WP/28, presented by the Secretariat.

5.2 The meeting recalled the MIDANPIRG Conclusions 18/11, 18/12 and 19/6 related to the ANS Performance monitoring, the revised MID Air Navigation Strategy (MID Doc 002) including the initial list of MID Region Air Navigation KPIs and the Web-based MID Region Air Navigation Report 2022.

5.3 The meeting noted that the ICAO MID Workshop on the Global Air Navigation Plan and National Air Navigation Plan (GANP & NANP) was successfully held in the ICAO Middle East Office in Cairo, Egypt, from 5 to 8 March 2023. The meeting was provided with the highlights of the seventh edition of the GANP 7th edition. Also, the Workshop reviewed and updated the MID ANP Volume III and MID Region Air Navigation Strategy (ICAO MID Doc 002).

5.4 The meeting was apprised that the MIDANPIRG/20 meeting endorsed the revised version of the MID Region ANP Volume III and MID Air Navigation Strategy (ICAO MID Doc 002) through the following MIDANPIRG Conclusions:

MIDANPIRG CONCLUSION 20/7: REVISED MID AIR NAVIGATION STRATEGY

That, the Revised MID Air Navigation Strategy (Doc 002) is endorsed and be published by the ICAO MID Office.

and

MIDANPIRG CONCLUSION 20/8: REVISED MID ANP VOL III

That, the Revised MID ANP Vol III is endorsed and be published by the ICAO MID Office.

5.5 The meeting reviewed the revised documents in particular the items related to the ATM SG and noted that the ICAO MID will circulate a State Letter to the MID States including all the items of the plan and urged the States to provide updated status of implementation.

Development of MID States National Air Navigation Plan

5.6 The subject was addressed in WP/28 and PPT/10, presented by the Secretariat and Kuwait, respectively.

5.7 The meeting noted that the MIDANPIRG/20 meeting through Conclusion 20/9 urged States to expedite implementation of the performance-based approach and develop their National Air Navigation Plan (NANP) and tasked the ICAO MID to provide the assistance where required.

MIDANPIRG CONCLUSION 20/9: DEVELOPMENT OF NANP

That, in order to enable prioritization and optimum allocation of resources for all planned projects within States:

a) States be urged to develop NANP based on a performance-based approach and the six-step performance management process six-step performance

management process described in the Manual on Global Performance of the Air Navigation System (Doc 9883) and the Revised MID Air Navigation Strategy (Doc 002); and

b) ICAO MID to conduct assistance missions/Workshops at National level on GANP/NANP in 2023-2024.

5.8 Based on the above, the ICAO MID Office carried out a multidisciplinary State mission to Kuwait from 28 May to 1 June 2023 to provide assistance and guidance related to the implementation of several ANS Aspects in accordance with regional requirements and plans and support the development of National Air Navigation Plan (NANP) for Kuwait. Accordingly, Kuwait National Air Navigation Plan (KNANP) was developed.

5.9 In their presentation, Kuwait commended the efforts of the MID Office in the development of the national plan (KNANP) attached to the presentation and invited the States to consider the experience form Kuwait in the development of NANPs.

5.10 Additionally, the meeting noted the RANP/NANP Workshop planned to be organized at the ICAO MID Office during February 2024; and invited MID States and organizations to actively participate in the Workshop.

Air Navigation Report 2022

5.11 The meeting was apprised with the development of the Web-based MID Air Navigation Report for 2022, the report is available under the ICAO MID Website at the link: https://www.icao.int/MIDANReport/Pages/ANReport2022-Main.aspx.

5.12 Based on Air Navigation Report 2022, the status of implementation of the Priority 1 Thread/Elements related to ATM/SAR are available at **Appendix 5A**.

Development of Air Navigation Report 2023

5.13 The meeting recalled MIDANPIRG/20 meeting Conclusion 20/11, urging States to provide the ICAO MID Office, with relevant data necessary for the development of the MID Region Air Navigation Report (2023).

MIDANPIRG CONCLUSION 20/11: WEB-BASED MID REGION AIR NAVIGATION REPORT (2023)

That,

a) States be invited to provide the ICAO MID Office with the following data for the development of the MID Region Air Navigation Report (2023) by 1 December 2023:

i. Status of ASBU Implementation; and

ii. States' implementation of the Performance Based approach using the agreed Template as at Appendix 6.1A; and

b) the MID Air Navigation Report (2023) be presented to the MIDANPIRG/21 for endorsement.

5.14 Based on the above, the meeting requested to provide feedback regarding the following subjects to the ICAO MID Office not later than 15 December 2023, for the development of the MID Air Navigation Report-2023:

a) ASBU implementation status data and update;

b) State performance monitoring KPIs based on 6 steps approach in the MID ANP Vol III endorsed by the MIDANPIRG/20 meeting;

c) States successful story; and

d) Development of State's National Air Navigation Plan (NANP) based on the outcomes on GANP/NANP workshop and MID ANP Vol III endorsed by the MIDANPIRG/20 meeting.

REPORT ON AGENDA ITEM 6: AIR NAVIGATION DEFICIENCIES IN THE ATM/SAR FIELDS

Air Navigation Deficiencies in the ATM and SAR fields

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

6.2 It was highlighted that in the ATM field, most of the deficiencies are related to the non-implementation of regional ATS Routes described on the MID eANP Vol II, uncompleted signature of contingency agreements and unsatisfactory reporting of data to MIDRMA. In the SAR field, the deficiencies are related mainly to the lack of implementation of SAR provisions and non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

6.3 The meeting reviewed the list of deficiencies in the MANDD under the ATM and SAR fields as at **Appendices 6A** and **6B**, respectively, and urged States to take necessary measures to implement the provisions of the MIDANPIRG/15 Conclusion 15/35, in particular the submission of a specific Corrective Action Plan (CAP) for each deficiency and update the status accordingly.

6.4 The meeting noted that the list of deficiencies in the ATM, and SAR fields are reflected in the MID Air Navigation Deficiency Database (MANDD) at: https://www.mandd.icao.int. The current number of Air Navigation Deficiencies in MANDD reported to MIDANPIRG/20 meeting was 97 deficiencies compared to 105 deficiencies reported to MIDANPIRG/19 meeting.

a) *In the ATM field:* the total number of deficiencies is sixteen (16); nine (9) priority "A" and seven (7) priority "B". Eight (8) related to the uncompleted signature of contingency agreements; seven (7) related to the non-implementation of planned regional ATS Routes; and one (1) related to unsatisfactory reporting of large Height deviation (LHD) to the MIDRMA.

b) *In the SAR field:* the total number of deficiencies is nine (9) priority "A". Five (5) related to the lack of implementation of SAR provisions; and four (4) related to non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

6.5 Based on the MIDRMA and CNS SG/12 meeting reports, the MIDANPIRG/20 meeting decided the following:

a) as reported by MIDRMA, new deficiencies were proposed to be added against *Egypt* for the high percentage of extended period of expired MMR for Egyptian register aircraft; also *Lebanon* and *Kuwait* related to failure of submission of TDS data to the MIDRMA; therefore, the total number of deficiencies in the ATM field would be nineteen (19).

b) as reported by the CNS SG/12 meeting, new deficiencies were proposed to be added against *Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan* and *UAE* for not implementing the Priority 1 AIDC/OLDI connection; therefore, the total number of deficiencies in the CNS field would be sixteen (16).

6.6 The MIDANPIRG/20 meeting agreed to allow for corrective period up to 31 December 2023, then the items in para 6.5 will be included in the MANDD (total number of deficiencies would be 116) to be reported to the MIDANPIRG/21 meeting.

REPORT ON AGENDA ITEM 7: FUTURE WORK PROGRAMME

Revision of Terms of Reference (ToRs) and Future Work Programme

7.1 The subject was addressed in WP/30, presented by the Secretariat.

7.2 The meeting reviewed the ATM SG terms of reference at **Appendix 7A**.

7.3 The meeting agreed that the ATM SG/10 meeting will be held during the period 22 – 24 October 2024. The meeting noted with appreciation the tentative offer received from GACA/SANS Saudi Arabia to host the meeting.

7.4 Furthermore, and in accordance with the draft "Tentative MID Office Schedule for 2024", the ATM related activities are planned as follows:

Date (tentative)*	Regional event	Venue	Remarks
19 – 22 February	RANP and NANP TF/1		
4 – 8 March	MIDANPIRG/21 & RASG-MID/11 Meetings	Abu Dhabi, UAE	
May	ATM Contingency Planning Workshop		
April	SAR/GADSS Workshop		
June	Free Route Airspace Workshop		
July	Civil-Military Cooperation Workshop		
September	MIDRMA Board/20 Meeting		
September	ATFM TF/9 and FF-ICE		
22 – 24 October	ATM SG/10 Meeting		

* The final version of the Tentative MID Working Programme for the year 2024 will be posted in the ICAO MID Office Webpage before the end of the year 2023.

REPORT ON AGENDA ITEM 8: ANY OTHER BUSINESS

ATM SG Monitoring Dashboard

8.1 The meeting noted with appreciation the offer received from the Chairman to develop a dashboard to support the activities of the ATM SG and the monitoring of implementation levels, using the available expertise within GACA and SANS in Saudi Arabia.

APPENDICES

FOLLOW-UP ON MIDANPIRG/20 CONCLUSIONS & DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 20/1	***MIDANPIRG CONCLUSION 20/1: MID RVSM SMR 2022*** *That, the MID RVSM Safety Monitoring Report (SMR) 2022 at Appendix 4.2A, is endorsed.*	RVSM Safety monitoring report	SMR2022	MIDRMA/States	2023	**Completed (to be closed)**
C. 20/2	***MIDANPIRG CONCLUSION 20/2: MID RVSM SMR 2023*** *That, in order to support the MIDRMA in the timely development of the MID RVSM Safety Monitoring Report (SMR 2023):* *a) States are required to provide the MIDRMA with:* *- the FPL/traffic data for the period 1 – 30 June 2023 before 1 August 2023, and* *- LHD data for the period 1 January to 31 December 2023.* *b) only the appropriate "Traffic Data Sample" 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 2023.*	RVSM Safety monitoring report	SMR2023	MIDRMA/States	2024	**On-going** The subject will be addressed in WP/17

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 20/3	***MIDANPIRG CONCLUSION 20/3: LACK OF HEIGHT MONITORING OF SYRIAN RVSM APPROVED AIRCRAFT*** *That,* *a) ICAO MID Office to contact the Syrian Civil Aviation Authority and address the issue of lack of height Monitoring of their RVSM approved aircraft; and* *b) MIDRMA to circulate the status of the Syrian RVSM approved aircraft to all member States to advise all ATCUs regarding the updated status of the Syrian RVSM approved aircraft within their RVSM Airspace. In coordination with Syria and MIDRMA.*	Monitoring the Syrian registered Aircraft				**On-going** The subject will be addressed in WP/17
C. 20/4	***MIDANPIRG CONCLUSION 20/4: AWARENESS AND TRAINING ON RVSM SAFETY ASSESSMENT*** *That, with a view to raise the awareness related to the requirements for sustained RVSM safety monitoring activities and improve the knowledge of the States' regulators, MIDRMA Focal Points, ATC and Air Operators personnel:* *a) the MIDRMA include in its work programme regular missions to the Member States, during which briefings on the MIDRMA activities and RVSM safety monitoring requirements be provided to concerned personnel;* *b) for improved effectiveness, the MIDRMA visit to a State be conducted, to the extent possible, back-to-back with the GMU height monitoring mission(s) related to the air operator(s) based in this State; and* *c) MIDRMA to issue on regular basis flyers and newsletters addressing trending and emerging challenges related to RVSM safety monitoring.*	to raise the awareness related to the requirements for sustained RVSM safety monitoring activities	Briefings material and activities	MIDRMA	2023	**Completed (to be closed)** (WP/17 refers)

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 20/5	***MIDANPIRG CONCLUSION 20/5: MID RVSM SAFETY ASSESSMENT SEMINAR*** *That, with a view to raise awareness related to the requirements for sustained RVSM safety monitoring and improve the knowledge of all involved parties, in particular with respect to the Vertical Collision Risk Methodology and Altimetry System Errors, the MIDRMA, in coordination with ICAO, organize a MID RVSM Safety Assessment Seminar, in 2023.*	*raise awareness related to the requirements for sustained RVSM safety monitoring and improve the knowledge of all involved parties*	Seminar	MIDRMA	2022	**Completed (to be closed)** (WP/17 refers)
D. 20/6	***MIDANPIRG DECISION 20/6: MIDRMA SUSTAINABILITY ACTION GROUP*** *That:* *a) the MIDRMA Sustainability Action Group is established to develop a Strategic Plan for the MIDRMA to ensure business continuity and sustainability; and* *b) the Action Group is composed of members designated by:* *i. Bahrain;* *ii. Jordan;* *iii. Oman;* *iv. UAE (Rapporteur);* *v. MIDRMA; and* *vi. ICAO MID.*	develop a succession plan for the MIDRMA addressing the staffing needs transfer of knowledge and training, business continuity; to ensure the continued success of the MIDRMA project.	MIDRMA strategic plan	Sustainability action group	2024	**On-going** The subject will be addressed in WP/17
D. 20/7	***MIDANPIRG CONCLUSION 20/7: REVISED MID AIR NAVIGATION STRATEGY*** *That, the Revised MID Air Navigation Strategy (Doc 002) is endorsed and be published by the ICAO MID Office.*	Revised MID Air Navigation Strategy, based on GANP 6th edition.	Doc 002	MID States, ICAO MID	2023	**Completed (to be closed)** (WP/9 and 28 refers)

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 20/8	***MIDANPIRG CONCLUSION 20/8: REVISED MID ANP VOL III*** *That, the Revised MID ANP Vol III is endorsed and be published by the ICAO MID Office.*	Revised the MID ANP Vol III, based on GANP 6th edition	ANP Vol II ATM II-MID1 table	MID States	2022	**Completed (to be closed)** (WP/9 and 28 refers)
C. 20/9	***MIDANPIRG CONCLUSION 20/9: DEVELOPMENT OF NANP*** *That, in order to enable prioritization and optimum allocation of resources for all planned projects within States:* *a) States be urged to develop NANP based on a performance-based approach and the six-step performance management process six-step performance management process described in the Manual on Global Performance of the Air Navigation System (Doc 9883) and the Revised MID Air Navigation Strategy (Doc 002); and* *b) ICAO MID to conduct assistance missions/Workshops at National level on GANP/NANP in 2023-2024.*	To foster the implantation of NANP using the 6-step approach	Assistance missions/Worksh op	MID States, ICAO MID	2023 – 2025	**On-going** (WP/9 and 28 refers) Mission to Kuwait conducted, Kuwait develop the NANP (PPT Kuwait refers)
C. 20/10	***MIDANPIRG CONCLUSION 20/10: WEB-BASED MID AIR NAVIGATION REPORT (2022)*** *That, the Web-based MID Air Navigation Report (2022) is endorsed.*	Updated implementation states within the MID Region	MID Air Navigation report 2022	ICAO MID	2023	**Completed (to be closed)**

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 20/11	***MIDANPIRG CONCLUSION 20/11: WEB-BASED MID REGION AIR NAVIGATION REPORT (2023)*** *That,* *a) States be invited to provide the ICAO MID Office with the following data for the development of the MID Region Air Navigation Report (2023) by December 2023:* *i. Status of ASBU Implementation; and* *ii. States' implementation of the Performance Based approach using the agreed Template as at Appendix 6.1A;* *b) the MID Air Navigation Report (2023) be presented to the MIDANPIRG/21 for endorsement.*	Updated implementation states within the MID Region	MID Air Navigation report 2023	MID States, ICAO MID	2024	**On-going** The subject will be discussed in WP/28
D. 20/12	***MIDANPIRG DECISION 20/12: RANP/NANP TASK FORCE*** *That,* *a) RANP/NANP Task Force be established to ensure alignment of the MID Region Air Navigation Strategy and MID ANP Vol III with the latest edition of the GANP and assist States developing NANPs* *b) the terms of reference of the RANP/NANP Task Force be developed during the first meeting of RANP/NANP Task Force; and* *c) States support the RANP/NANP Task Force through:* *i. assignment of Focal Point to contribute to the work of the Task Force; and* *ii. sharing states' experience and provision of required data in timely manner.*	*ensure alignment of the MID Region Air Navigation Strategy and MID ANP Vol III with the latest edition of the GANP and assist States developing NANPs*	Revised ANP Vol III	MID States, ICAO MID	2024	**On-going** The subject will be discussed in WP/28

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 20/13	***MIDANPIRG CONCLUSION 20/13: PROPOSAL FOR AMENDMENT TO THE MID EANP*** *VOLUME I, 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)* *That, the ICAO MID Office coordinate with the States concerned and process Proposal(s) for Amendment to the MID ANP Vol I, 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) in accordance with standard procedure.*	Support the ATM Contingency Planning within the MID Region	Revised version of MID Doc 003	ICAO MID, MID States	2022	**On-going** The subject will be addressed in WP/5
D. 20/14	***MIDANPIRG CONCLUSION 20/14: PROPOSAL FOR AMENDMENT TO THE MID EANP VOLUME II TO INCLUDE INFORMATION RELATED TO QATAR FACILITIES AND SERVICES*** *That, the ICAO MID Office process the Draft Proposal for Amendment to the MID eANP Vol II, at Appendix 6.1B, in accordance with standard procedure.*	Include the information related to Qatar inANP Vol II	Revised ANP Vol II, PfA process	Qatar, ICAO MID	2023	**On-going**
D. 20/16	***MIDANPIRG CONCLUSION 20/16: IMPLEMENTATION OF C-DEC225: ESTABLISHMENT OF DOHA FOR/SRR*** *That,* *a) the ICAO MID Office to monitor the implementation of the C-DEC225/10 and facilitate coordination between the States concerned, as required;* *b) States to carry out bilateral and multilateral coordination to finalize the operational and technical requirements, including the necessary letters of agreement;*	Support the implementation of C-DEC 225/10	*Develop a roadmap for the implementation of phase 2*	Qatar, MIDRMA, Multilateral coordination group		**On-going** The subject will be addressed in WP/6

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	c) MIDRMA to conduct a safety Monitoring assessment for the RVSM airspace within Bahrain and Doha FIRs, highlighting bottlenecks, hotspots and areas of traffic congestion; *d) Qatar to provide inputs for the development of the required proposal(s) for amendment to the MID ANP;* *e) States and other Stakeholders to provide implementation feedback and comments to the MID Office on a quarterly basis for review by the ATM SG; and* *f) the ATM SG to agree on necessary measures for the conduct of the technical study necessary to support the decision-making for the implementation of Phase 2 and develop a roadmap for the implementation of phase 2 to be presented to MIDANPIRG for endorsement.*					
D. 20/27	***MIDANPIRG CONCLUSION 20/27: PROPOSAL FOR AMENDMENT TO THE MID EANP VOLUME II, TABLE ATM II-MID-I: MID REGION ATS ROUTE NETWORK*** *That, the ICAO MID Office process the Proposal for Amendment to the MID ANP Vol II, Table ATM II-MID-I, at Appendix 6.5A, in accordance with standard PfA procedure.*	To update the ATS route network to meet the regional and operational requirements	Revised ANP Vol II, PfA process	MID States, ICAO MID	2023	**On-going** The subject will be addressed in WP/7
C 20/28	***MIDANPIRG CONCLUSION 20/28: PROPOSAL FOR AMENDMENT TO THE MID EANP VOLUME II, TABLE ATM II-MID-2: MID REGION SSR CMP*** *That, the ICAO MID Office process the Proposal for Amendment to the MID eANP Vol II, Table ATM II-MID-2, at Appendix 6.5C, in accordance with standard PfA procedure.*	Optimize the applications of SSR within the MID CMP	Revised CMP, PfA process	ICAO MID	2023	**On-going** The subject will be addressed in WP/14

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 20/29	***MIDANPIRG DECISION 20/29: DISSOLUTION OF THE FWC2022 TASK FORCE*** *That, the FWC2022 Task Force is dissolved.*					**Completed (to be closed)**
D. 20/30	***MIDANPIRG DECISION 20/30: MID ATM CONTINGENCY PLANNING AD-HOC ACTION GROUP*** *That,* *a) the MID ATM Contingency Planning Ad-hoc Action Group to continue working on a comprehensive review of the MID Region ATM Contingency Plan (MID Doc 003), taking into considerations the lessons learnt from recent events specifically contingency of Khartoum FIR;* *b) the MID ATM Contingency Planning Ad-hoc Action Group be composed of:* *- the Chairpersons of the ATM SG;* *- Abdulla Al Qadhi (Bahrain);* *- Ahmad Abu Ghalleb (Saudi Arabia);* *- Sharron Caunt (IATA);* *- Faisal Al Assosi (Kuwait);* *- Ehab Raslan (Egypt);* *- Saleh Al Nesf (Qatar);* *- Nasser Salem Al Mazroe (Oman);* *- Saqr Marashdah (UAE);* *- Meisam Shaker Arani (Iran);* *- Javier Vanegas (CANSO);* *- Travis Fiebelkorn (FAA); and* *- ICAO MID Office (Secretariat).* *c) present the revised version of the MID Region ATM Contingency Plan (MID Doc 003) to the ATM SG/9 for review and enhancement, before presentation to the MIDANPIRG/21 meeting for endorsement.*	Revised MID ATM Contingency Plan	Revised MID Doc 003	Ad hoc action group	2023	**On-going** The subject will be addressed in WP/12

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 20/31	***MIDANPIRG CONCLUSION 20/31: CONTINUATION OF THE CMC/FUA ACTION GROUP*** *That, ICAO to organize a workshop to raise awareness among all stakeholders regarding the CMC implementation, including operations of due regard aircraft over high seas, and support State to develop the national CMC plan.*	Implementation of ICAO guidance material available within Doc 10088	Implementation of National CMC/FUA	MID States	2023	**On-going** The subject will be addressed in WP/19
	MIDANPIRG CONCLUSION 20/32: MID HIGH LEVEL AIRSPACE CONCEPT V2.0 *That, the MID High Level Airspace Concept Version 2.0 at Appendix 6.5F is endorsed and be published as the MID High Level Airspace Concept V2.0.*					
D. 20/33	***MIDANPIRG DECISION 20/33: DISSOLUTION OF THE HIGH-LEVEL AIRSPACE CONCEPT ACTION GROUP (HLAC AG)*** *That, the High Level Airspace Concept Action Group (HLAC AG) Action Group is dissolved.*					**Completed (to be closed)**
C. 20/34	***MIDANPIRG CONCLUSION 20/34: SAR WORKSHOP*** *That, the ICAO MID Office organize a SAR Workshop in 2024, to address the challenges related to SAR in the MID Region.*	Raise awareness related to newly introduced SAR services	Workshop	ICAO MID	2024	**On-going** The subject will be addressed in WP/25
C 20/43	***MIDANPIRG CONCLUSION 20/42: MID REGION GUIDANCE FOR THE IMPLEMENTATION OF AIDC/OLDI (ICAO MID DOC 006)*** *That, the revised version of the MID Region Guidance for the Implementation of AIDC/OLDI as at Appendix 6.6E is endorsed and be published by ICAO MID.*	Development of guidance of AIDC/OLDI implementation	Doc 006	ICAO MID	2023	**Completed (to be closed)** (WP/23 refers)

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 20/46	***MIDANPIRG DECISION 20/46: NAV MON PLAN TEMPLATE*** *That, in order to develop the NAV MON Plan template, the ATM SG, CNS SG and PBN SG be tasked to review and update, as deem necessary, the NAV MON Plan Template to be presented to MIDANPIRG/21 for further review and endorsement.*	Develop a MON NAV Plan template				**On-going** The subject will be addressed in WP/23
D. 20/47	***MIDANPIRG DECISION 20/47: GNSS RFI MITIGATION*** *That, the ICAO MID Office is requested to:* *a) follow-up with Egypt and Iraq on actions taken to mitigate the likelihood and impact of GNSS RFI within Cairo and Baghdad FIRs; and* *b) collaborate with ACAO to assess the feasibility of establishing a Regional GNSS RFI monitoring System and report the outcome to the CNS SG/13 and MIDANPIRG/21 meetings.*					**On-going** The subject will be addressed in WP/21 and 22
C. 20/51	***MIDANPIRG CONCLUSION 20/51: MID REGION SURVEILLANCE PLAN (ICAO MID DOC 013)*** *That, the revised version of the MID Region Surveillance plan as at Appendix 6.6I, is endorsed.*					**On-going** The subject will be addressed in WP/23

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color code: implemented in accordance with GM; Not implemented Not in accordance with GM

FIR	Published in AIP *ENR 2.1*	Coordinate	Coordinates status with respect of requirements: Adjacent FIR (AIP)	ANP VOL I, Chart ATS 1	MID States publication based on Guideline: Clockwise *Guideline item "1-a"*	Back to beginning point *Guideline item "1-b"*	Coordinate in DMS *Guideline item "1-c"*	Delineation with arc *Guideline item "1-e"*	Follow sovereign boundary *Guideline item "2"*	Remarks
Amman *(OJAC)*	Includes the territory of the H.K.J 29 21 26N 034 57 43E 29 11 03N 036 04 20E 29 30 03N 036 30 21E 29 52 03N 036 45 21E 30 00 03N 037 30 21E 30 20 03N 037 40 21E 30 30 03N 038 00 21E 31 30 03N 037 00 21E 32 00 02N 039 00 22E 32 09 15N 039 12 03E At Jordan, Saudi Arabia and Iraqi boundaries. Then the point 321349N 391804E At the Southern corner of the Jordanian-Iraqi boundaries **SFC-UNL**	292126N 0345743E	Cairo & Jeddah							
		291103N 0360420E	Jeddah							
		293003N 0363021E	Jeddah							
		295203N 0364521E	Jeddah							
		300003N 0373021E	Jeddah							
		302003N 0374021E	Jeddah							
		303003N 0380021E	Jeddah							
		313003N 0370021E	Jeddah							
		320002N 0390022E	Jeddah							
		320915N 0391203E	Jeddah & Baghdad							
		321349N 0391804E	Baghdad							
Baghdad *(ORBB)*	Not Published	295100N 0484500E	Tehran & Kuwait							
		295100N 0482500E	Kuwait							
		300100N 0475500E	Kuwait							
		300146N 0480434E	Kuwait							
		295924N 0480042E	Kuwait							
		300113N 0475578E	Kuwait							
		300600N 0474200E	Kuwait							
		300613N 0472217E	Kuwait							
		300000N 0470900E	Kuwait							
		295105N 0470454E	Kuwait							
		294300N 0470000E	Kuwait							
		291500N 0464200E	Kuwait							
		290600N 0463300E	Kuwait & Jeddah							
		290340N 0462534E	Jeddah							
		291155N 0444318E	Jeddah							
		310642N 0420508E	Jeddah							
		312223N 0412627E	Jeddah							
		315653N 0402447E	Jeddah							
		320915N 0391203E	Jeddah & Amman							
		321349N 0391804E	Amman							
		332200N 0384800E	Damascus							
Bahrain *(OBBB)*	284400.00N 0494000.00E - F21:F23 - 265500.00N 0511000.00E - 264440.00N 0514359.00E - 261356.00N 0513849.00E - 262134.00N 0512301.00E - 262340.00N 0511220.00E - 262117.00N 0510420.00E - 261609.00N 0510016.00E - 261330.00N 0505513.00E - 261102.00N 0505503.00E then follow the limit of Qatar and Bahrain territorial waters then follow the sovereign boundary and limit of territorial waters between Qatar and Saudi Arabia to 243731N 0512406E 243747N 0512421E 243817N 0512608E 244247N 0513422E 244900N 0520000E 245046N 052221SE 240300N 0514700E then follow the sovereign boundary between Saudi Arabia and the United Arab Emirates to 224200N 0551200... And 250224N 0523054E - 245959N 0521837E - 245046N 0522215E - 250224N 0523054E **SFC-UNL** Bahrain FIR also includes the airspace defined by 260400.00N 0535700.00E - 254900.00N 0530600.00E - 253801.00N 0525744.00E - 261356.00N 0513849.00E - 264440.00N 0514359.00E **FL245-UNL**	284400.00N 0494000.00E	Kuwait & Tehran								
		270500.00N 0505500.00E	Tehran							
		265500.00N 0511000.00E	Tehran							
		264440.00N 0514359.00E	Tehran & Doha							
		261356.00N 0513849.00E	Doha							
		262134.00N 0512301.00E	Doha							
		262340.00N 0511220.00E	Doha							
		262117.00N 0510420.00E	Doha							
		261609.00N 0510016.00E	Doha							
		261330.00N 0505513.00E	Doha							
		261102.00N 0505503.00E	Doha							
		243731N 0512406E	Doha & Jeddah							
		243747N 0512421E	Doha & Jeddah							
		243817N 0512608E	Doha & Jeddah							
		244247N 0513422E	Doha & Jeddah							
		244900N 0520000E	Doha & Jeddah							
		245046N 0522215E	Doha, Jeddah & UAE							
		240300N 0514700E	UAE							
		224200N 0551200E	Jeddah, UAE, Muscat							
		250224N 0523054E	Doha & UAE							
		245959N 0521837E	Doha							
		260400.00N 0535700.00E	Doha, Tehran & UAE							
		254900.00N 0530600.00E	Doha & UAE							
		253801.00N 0525744.00E	Doha & UAE							
		261356.00N 0513849.00E	Doha							
Beirut *(OLBB)*	343800N 0355700E then along the Lebanon territorial borders to 330600N 0345300E – joining and following at 12 NM from seashore semi-arc at a radius of 45 NM centered on 334827N 0352910E and ending 343310N 0353548E - 343800N 0354300E then back to 343800N 0355700E. **SFC-UNL**	343800N 0355700E	Damascus							
		330600N 0345300E	Tel Aviv & Nicosia							Subject to PfA
		343310N 0353548E	Nicosia							
		343800N 0354300E	Damascus & Nicosia							
Cairo *(HECC)*	34 00N 024 10E – 34 00N 027 10E 33 30N 030 00E 31 50N 033 59E – 31 36N 034 30E then follow the International border to: 29 30N 034 55E – 29 30N 035 00E 29 27N 034 59E 29 21N 034 57E 28 06N 034 35E to 22 00N 038 00E 22 00N 038 00E – 22 00N 025 00E 22 00N 025 00E then follow the International border to: 31 41N 025 08E 34 00N 024 10E **SFC-UNL**	3400N 02410E	Athens & Tripoli							
		3400N 02710E	Athens							
		3330N 03000E	Athens & Nicosia							
		3150N 03359E	Nicosia & Tel Aviv							
		3136N 03430E	Tel Aviv							
		2930N 03455E	Tel Aviv							
		2930N 03500E	Tel Aviv & Amman							
		2927N 03459E	Amman							
		2921N 03457E	Amman & Jeddah							
		2806N 03435E	Jeddah							
		2200N 03800E	Jeddah & Khartoum							
		2200N 02500E	Khartoum & Tripoli							
		3141N 02508E	Tripoli							
Doha *(OTDF)*	253801N 0525744E - 250224N 0523054E - 245959N 0521837E - 245046N 0522215E - 244900N 0520000E - 244247N 0513422E - 243817N 0512608E 243747N 0512421E - 243731N 0512406E then follow the limit of territorial waters and the sovereign boundary between Qatar and Saudi Arabia then follow the limit of Qatar and Bahrain territorial waters to 261102N 0505503E - 261330N 0505513E - 261609N 0510016E - 262117N 0510420E 262340N 0511220E - 262134N 0512301E - 261356N 0513849E - 253801N 0525744E. **SFC-UNL** AND 260400N 0535700E - 254900N 0530600E - 253801N 0525744E - 261356N 0513849E - 264440N 0514359E - 260400N 0535700E. **SFC-FL245**	253801N 0525744E	Bahrain & UAE								
		250224N 0523054E	Bahrain & UAE							
		245959N 0521837E	Bahrain							
		245046N 0522215E	Bahrain & UAE							
		244900N 0520000E	Bahrain							
		244247N 0513422E	Bahrain & Jeddah							
		243817N 0512608E	Jeddah							
		243747N 0512421E	Jeddah							
		243731N 0512406E	Jeddah							
		261102N 0505503E	Bahrain							
		261330N 0505513E	Bahrain							
		261609N 0510016E	Bahrain							
		262117N 0510420E	Bahrain							
		262340N 0511220E	Bahrain							
		262134N 0512301E	Bahrain							
		261356N 0513849E	Bahrain							
		260400N 0535700E	Tehran, UAE & Bahrain							
		254900N 0530600E	Bahrain & UAE							
		253801N 0525744E	Bahrain & UAE							
		261356N 0513849E	Bahrain							
		264440N 0514359E	Tehran & Bahrain							
Damascus *(OSTT)*	From 355500N 0354000E to 355600N 0355500E then along the national border of Syria with Turkey and Iraq to a point 332200N 0384800E, then along 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. **SFC-UNL**	355500N 0354000E	Nicosia & Ankara							
		355600N 0355500E	Ankara							
		332200N 0384800E	Amman & Baghdad							
		324100N 0353800E	Amman & Tel Aviv							
		331500N 0353700E	Beirut & Tel Aviv							
		343800N 0355700E	Beirut							Subject to PfA
		343800N 0354300E	Nicosia & Beirut							
Emirates *(OMAE)*	262100N 0560600E 253600N 0561300E 250000N 0563500E 240000N 0553500E 224200N 0551200E to the point where the national borders of Oman, Saudi Arabia and U.A.E meet, then along the national border between Saudi Arabia and U.A.E to 240300N 0514700E 254900N 0530600E 260400N 0535700E 253800N 0552000E 262100N 0560600E **SFC-UNL**	262100N 0560600E	Tehran & Muscat							
		253600N 0561300E	Muscat							
		250000N 0563500E	Muscat							
		240000N 0553500E	Muscat							
		224200N 0551200E	Muscat & Jeddah							
		240300N 0514700E	Bahrain							
		254900N 0530600E	Bahrain & Doha							
		260400N 0535700E	Tehran, Bahrain & Doha							
		253800N 0552000E	Tehran							

Jeddah *(OEJD)*	292126N 0345743E - 291103N 0360420E - 293003N 0363021E - 295203N 0364521E - 300003N 0373021E - 302003N 0374021E - 303003N 0380021E - 313003N 0370021E - 320002N 0390022E - 320915N 0391203E - 315653N 0402447E - 312223N 0412627E - 310642N 0420508E - 291155N 0444318E - 290340N 0462534E - 290604N 0463311E then along KUWAIT NATL BDRY up to 281500N 0485200E - 275000N 0490800E - 265234N 0500855E - 263420N 0502759E - 263148N 0502315E - 262424N 0502219E - 262217N 0502027E - 261515N 0501908E - 261018N 0501852E - 260450N 0501611E - 255709N 0501735E - 255302N 0501807E - 254908N 0502201E - 254228N 0502503E - 254057N 0502608E - 253544N 0503148E - 253111N 0503544E - 252828N 0503653E - 252510N 0503716E - 252336N 0503741E - 252144N 0503818E - 251849N 0503855E - 251522N 0503848E - 251355N 0503918E - 251153N 0503940E - 250758N 0503951E - 250516N 0504101E - 250243N 0504239E - 245927N 0504329E - 245631N 0504438E - 245534N 0504543E - 245244N 0504738E - 244927N 0504804E - 244653N 0504828E - 244543N 0504828E - 244440N 0504842E - 244024N 0505134E- 243243N 0505544E - 243000N 0510000E - 242816N 0510555E - 242907N 0511849E - 243116N 0512154E - 243549N 0512449E - 243731N 0512406E - 243747N 0512421E - 243817N 0512608E - 244247N 0513422E - 241458N 0513526E - 240724N 0513526E - 225609N 0523452E - 223741N 0550814E - 224202N 0551210E - 224230N 0551230E - 220000N 0554000E - 200000N 0550000E - 190000N 0520000E - 184720N 0504700E - 183700N 0490700E - 181000N 0481100E - 172700N 0473600E - 170700N 0472800E - 165700N 0471100E - 165700N 0470000E - 171700N 0464500E - 171400N 0462200E - 171500N 0460600E - 172000N 0452400E - 172600N 0451300E - 172600N 0443900E - 172420N 0443400E - 172600N 0442800E - 172600N 0442158E then along YAMEN NATL BDRY up to 162415N 0424620E - 162415N 0420900E - 161724N 0414700E - 160000N 0420000E - 154700N 0415230E - 153955N 0413947E - 160000N 0410000E - 200000N 0383000E - 220000N 0380000E - 280600N 0343500E - 292126N 0345743E - 292126N 0345743E **SFC-UNL**	292126N 0345743E	Cairo & Amman							
		291103N 0360420E	Amman							
		293003N 0363021E	Amman							
		295203N 0364521E	Amman							
		300003N 0373021E	Amman							
		302003N 0374021E	Amman							
		303003N 0380021E	Amman							
		313003N 0370021E	Amman							
		320002N 0390022E	Amman							
		320915N 0391203E	Amman & Baghdad							
		315653N 0402447E	Baghdad							
		312223N 0412627E	Baghdad							
		310642N 0420508E	Baghdad							
		291155N 0444318E	Baghdad							
		290340N 0462534E	Baghdad							
		290604N 0463311E	Baghdad & Kuwait							
		281500N 0485200E	Kuwait & Bahrain							
		275000N 0490800E	Bahrain							
		265234N 0500855E	Bahrain							
		263420N 0502759E	Bahrain							
		263148N 0502315E	Bahrain							
		262424N 0502219E	Bahrain							
		262217N 0502027E	Bahrain							
		261515N 0501908E	Bahrain							
		261018N 0501852E	Bahrain							
		260450N 0501611E	Bahrain							
		255709N 0501735E	Bahrain							
		255302N 0501807E	Bahrain							
		254908N 0502201E	Bahrain							
		254228N 0502503E	Bahrain							
		254057N 0502608E	Bahrain							
		253544N 0503148E	Bahrain & Doha							
		253111N 0503544E	Doha							
		252828N 0503653E	Doha							
		252510N 0503716E	Doha							
		252336N 0503741E	Doha							
		252336N 0503741E	Doha							
		252144N 0503818E	Doha							
		251849N 0503855E	Doha							
		251522N 0503848E	Doha							
		251355N 0503918E	Doha							
		251153N 0503940E	Doha							
		250758N 0503951E	Doha							
		250516N 0504101E	Doha							
		250243N 0504239E	Doha							
		245927N 0504329E	Doha							
		245631N 0504438E	Doha							
		245534N 0504543E	Doha							
		245244N 0504738E	Doha							
		244927N 0504804E	Doha							
		244653N 0504828E	Doha							
		244543N 0504828E	Doha							
		244440N 0504842E	Doha							
		244024N 0505134E	Doha							
		243243N 0505544E	Doha							
		243000N 0510000E	Doha							
		242816N 0510555E	Doha							
		242907N 0511849E	Doha							
		243116N 0512154E	Doha							
		243549N 0512449E	Doha							
		243731N 0512406E	Doha							
		243747N 0512421E	Doha							
		243817N 0512608E	Doha							
		244247N 0513422E	Doha & Bahrain							
		241458N 0513526E	Bahrain							
		240724N 0513526E	Bahrain							
		225609N 0523452E	UAE							
		223741N 0550814E	UAE							
		224202N 0551210E	UAE & Muscat							
		224230N 0551230E	UAE & Muscat							
		220000N 0554000E	Muscat							
		200000N 0550000E	Muscat							
		190000N 0520000E	Muscat & Sanaa							
		184720N 0504700E	Sanaa							
		183700N 0490700E	Sanaa							
		181000N 0481100E	Sanaa							
		172700N 0473600E	Sanaa							
		170700N 0472800E	Sanaa							
		165700N 0471100E	Sanaa							
		165700N 0470000E	Sanaa							
		171700N 0464500E	Sanaa							
		171400N 0462200E	Sanaa							
		171500N 0460600E	Sanaa							
		172000N 0452400E	Sanaa							
		172600N 0451300E	Sanaa							
		172600N 0443900E	Sanaa							
		172420N 0443400E	Sanaa							
		172600N 0442800E	Sanaa							
		172600N 0442158E	Sanaa							
		162415N 0424620E	Sanaa							
		162415N 0420900E	Sanaa							
		161724N 0414700E	Sanaa							
		160000N 0420000E	Sanaa							
		154700N 0415230E	Sanaa							
		153955N 0413947E	Sanaa							
		160000N 0410000E	Asmara							
		200000N 0383000E	Asmara & Khartoum							
		220000N 0380000E	Khartoum & Cairo							
		280600N 0343500E	Cairo							
Khartoum *(HSSS)*	220000N 0250000E - 220000N 0380000E - 200000N 0383000E 130000N 0360000E - 080000N 0330000E - 040000N 0360000E 040000N 0301216E Along the border: SUDAN/CONGO (DRC) and SUDAN/CENTRAL AFRICAN REPUBLIC and SUDAN/CHAD 154212N 0235921E - 154227N 0240000E - 193000N 0240000E 200000N 0240000E - 200000N 0250000E - 220000N 0250000E **SFC-UNL**	220000N 0250000E	Cairo & Tripoli							
		220000N 0380000E	Cairo & Jeddah							
		200000N 0383000E	Jeddah & Asmara							
		130000N 0360000E	Addis Ababa							
		080000N 0330000E	Addis Ababa							
		040000N 0360000E	Addis Ababa & Nairobi							
		154212N 0235921E	N'djamena							
		154227N 0240000E	N'djamena							
		193000N 0240000E	N'djamena & Tripoli							
		200000N 0240000E	Tripoli							
		200000N 0250000E	Tripoli							
Kuwait *(OKAC)*	290604N 0463311E – 291502N 0464211E – 294319N 0470024E – 295105N 0470454E – 300001N 0470920E – 300613N 0472217E – 300613N 0474228E – 300113N 0475528E – 295924N 0480042E – 300146N 0480434E – 300120N 0480952E – 295110N 0482451E – 295100N 0484500E – 291300N 0494000E – 290000N 0492700E – 284400N 0494000E – 281500N 0485200E then following the Saudi Arabia territorial waters and Kuwait / Saudi Arabia International boundary to the point 290604N 0463311E. **SFC-UNL**	290604N 0463311E	Jeddah & Baghdad							Subject to PfA
		291502N 0464211E	Baghdad							
		294319N 0470024E	Baghdad							
		295105N 0470454E	Baghdad							
		300001N 0470920E	Baghdad							
		300613N 0472217E	Baghdad							
		300613N 0474228E	Baghdad							
		300113N 0475528E	Baghdad							
		295924N 0480042E	Baghdad							
		300146N 0480434E	Baghdad							
		300120N 0480952E	Baghdad							
		295110N 0482451E	Baghdad							
		295100N 0484500E	Baghdad & Tehran							
		291300N 0494000E	Tehran							
		290000N 0492700E	Tehran							
		284400N 0494000E	Tehran & Bahrain							
		281500N 0485200	Tehran & Bahrain							

Muscat *(OOMS)*	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 common national boundary Sultanate of Oman/Kingdom of Saudi Arabia – common national boundary Sultanate of Oman/United Arab Emirates – 224200N 0551200E – 240000N 0553500E – 250000N 0563500E **SFC-UNL**	250000N 0563500E	UAE							Subject to PfA
		253600N 0561300E	UAE							
		262100N 0560600E	UAE & Tehran							
		264100N 0562700E	Tehran							
		261000N 0564500E	Tehran							
		253500N 0564500E	Tehran							
		250000N 0573000E	Tehran							
		244000N 0612000E	Tehran & Karachi							
		233000N 0612000E	Karachi							
		233000N 0643000E	Karachi & Mumbai							
		194800N 0600000E	Mumbai & Sanaa							
		174000N 0570000E	Sanaa							
		154000N 0533000E	Sanaa							
		163800N 0530400E	Sanaa							
		172200N 0524400E	Sanaa							
		190000N 0520000E	Sanaa & Jeddah							
		224200N 0551200E	Jeddah & UAE							
		240000N 0553500E	UAE							
Sana'a *(OYSC)*	173000N 0443500E - 173500N 0430800E - 164100N 0430800E - 160800N 0412900E - 145406N 0420130E - 140000N 0422500E - 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 0552606E - 160718N 0541648E 154000N 0533100E - 163324N 0530612E - 190000N 0520000E **SFC-UNL**	173000N 0443500E	Jeddah							
		173500N 0430800E	Jeddah							
		164100N 0430800E	Jeddah							
		160800N 0412900E	Jeddah							
		145406N 0420130E	Asmara							
		140000N 0422500E	Asmara							
		123600N 0431800E	Addis Ababa & Djibouti							
		123142N 0432712E	Addis Ababa & Djibouti							
		121036N 0440206E	Addis Ababa & Djibouti							
		114500N 0441100E	Addis Ababa, Djibouti & Mogadishu							
		114730N 0444348E	Mogadishu							
		115900N 0470800E	Mogadishu							
		121100N 0504500E	Mogadishu							
		120718N 0510242E	Mogadishu							
		120000N 0513000E	Mogadishu							
		120000N 0600000E	Mogadishu & Mumbai							
		161400N 0600000E	Mumbai							
		194800N 0600000E	Mumbai & Muscat							
		174000N 0570000E	Muscat							
		164618N 0552606E	Muscat							
		160718N 0541648E	Muscat							
		154000N 0533100E	Muscat							
		163324N 0530612E	Muscat							
		190000N 0520000E	Muscat & Jeddah							
Tehran *(OIIX)*	The area bounded by two straight lines over Caspian sea joining 372100N 0535500E to 391200N 0510800E to 382630N 0485230E, thence along the Islamic Republic of Iran / Azerbaijan, Armenia, Turkey and Iraq territorial BDRY to Persian gulf 295110N 0484500E, 291300N 0494000E, 290000N 0492700E, 270500N 0505500E, 265500N 0511000E, 253800N 0552000E, 264100N 0562700E, 261000N 0564500E, 253500N 0564500E, 250000N 0573000E, 244000N 0612000E, thence along the Islamic Republic of Iran / Pakistan, Afghanistan and Turkmenistan territorial BDRY to 372100N 0535500E **SFC-UNL**	372100N 0535500E	Turkmenbashi							
		391200N 0510800E	Baku							
		382630N 0485230E	Baku							
		295110N 0484500E	Baghdad & Kuwait							
		291300N 0494000E	Kuwait							
		290000N 0492700E	Kuwait							
		270500N 0505500E	Bahrain							
		265500N 0511000E	Bahrain							
		253800N 0552000E	UAE							
		264100N 0562700E	Muscat							
		261000N 0564500E	Muscat							
		253500N 0564500E	Muscat							
		250000N 0573000E	Muscat							
		244000N 0612000E	Muscat & Karachi							
Tripoli *(HLLL)*	342000N 0113000E - 342000N 0233500E – 340000N 0241000E – 314100N 0250800E along Eastern Border Libya to 220000N 0250000E – 200000N 0250000E – 200000N 0240000E – 193000N 0240000E – 220000N 0190000E – 220000N 0113000E along Western Border Libya to 322200N 0113000E - 342000N 0113000E **SFC-UNL**	342000N 0113000E	Tunis & Malta							Subject to PfA
		342000N 0233500E	Malta & Athens							
		340000N 0241000E	Athens & Cairo							
		314100N 0250800E	Cairo							
		220000N 0250000E	Cairo & Khartoum							
		200000N 0250000E	Khartoum							
		200000N 0240000E	Khartoum							
		193000N 0240000E	Khartoum & Ndjamena							
		220000N 0190000E	Ndjamena							
		220000N 0113000E	Ndjamena & Niamey							
		322200N 0113000E	Tunis							

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

PROPOSAL FOR AMENDMENT OF THE ICAO MID REGION AIR NAVIGATION PLAN, VOLUME I

(Serial No.: MID-I-23/XX-ATM**)**

a) **Plan:** MID Air Navigation Plan - Volume I

b) **Proposed amendment:** **Volume I, Part IV-ATM – [Table ATM I-1] – FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) AND Part VI [Table SAR I-1] SEARCH AND RESCUE REGIONS (SRR)**

Add,
Baghdad, Beirut, Damascus, Kuwait, Muscat and Tripoli FIR/UIR boundaries description in MID ANP volume I TABLE ATM I-1 (FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) IN THE MID REGION) and TABLE SAR I-1 (SEARCH AND RESCUE REGIONS (SRR) IN THE MID REGION)

***Note**: amend the requirements as shown in the **Appendix A**.*

c) **Originated by:** MIDANPIRG/20 (Muscat, Oman, 14-17 May 2023) through MIDANPIRG Conclusion 20/13.

d) **Originator's reasons for amendment:** The establishment of the electronic Air Navigation Plan (eANP) has necessitated incorporation of Flight Information Regions/Upper Information Regions (FIR/UIR) and Search and Rescue Regions (SRR) boundary dimensions. MIDANPIRG/20 noted that the MID ANP Vol I was published without completing the Table ATM I-1 (FIRs/UIRs) and Table SAR I-1 (SRRs) with lateral limits coordinates and vertical dimensions of the FIRs/UIRs and SRRs, respectively. The meeting agreed that a step-by-step approach should be used in populating the Tables ATM I-1 and SAR I-1. Through Conclusion 20/13, MIDANPIRG tasked the ICAO MID Office to coordinate with concerned States to process a Proposal for Amendment of the MID eANP Vol I to incorporate in Table ATM I-1 and SAR I-1 the FIRs/UIRs and SRRs descriptions (Lateral and vertical dimensions).

e) **Intended date of implementation:** As soon as practicable after approval

f) **Proposal circulated to the following States and International Organizations:**

Afghanistan
Algeria
Armenia
Azerbaijan
Bahrain
Egypt
Eritrea
Ethiopia
Chad
Congo (Republic of)
Congo (Democratic
Iraq
Iran, Islamic Republic of
Israel
Jordan
Kenya
Kuwait
Lebanon
Libya
Niger
Malta
South Sudan
Sudan
Syrian Arab republic
Tunisia
Turkey
Turkmenistan
United Arab Emirates
Uganda
Yemen
International Organizations:
CANSO

Republic of)	Oman	EUROCONTROL
Cyprus	Pakistan	IATA
Djibouti	Qatar	IFALPA
Greece	Saudi Arabia	IFATCA
India	Somalia	

g) **Secretariat comments:** The ICAO Council approved the new eANP Template (Volumes I, II and III) and corresponding procedure for amendment on 18 June 2014. MIDANPIRG/15 meeting reviewed and endorsed the MID eANP VOL I, II and III (MIDANPIRG/15 Conclusion 15/11 refers).

Since the endorsement and publication of the MID eANP in 3 Volumes, the ICAO Secretariat has been following-up with States the subject of publication of the FIRs/UIRs and SRRs lateral limits coordinates and vertical dimensions in Tables ATM I-1 and SAR I-1, respectively. Many inconsistencies have been identified between the ICAO records and the information published by States in their AIPs and between the States and their neighbors.

As a follow-up to the MIDANPIRG/20 Conclusion 20/13, coordination was carried out with Iraq, Kuwait, Lebanon, Libya, Oman and Syria to include the lateral limits coordinates and vertical dimensions of their FIRs/UIRs and SRRs in Tables ATM I-1 and SAR I-1, respectively. Few inconsistencies have been identified and rectified.

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Appendix A

Table ATM I-1
FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) IN THE MID REGION

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	2	3
Amman (OJAC)	**FIR/UIR Amman** *To be incorporated*	
Baghdad (ORBB)	**FIR/UIR Baghdad** ~~*To be incorporated*~~ 3322N03848E along the Iraqi boundaries with Syria, Turkey, Iran, Kuwait, Saudi Arabia and Jordan to the point 3322N03848E.	Vertical limits: SFC to UNL
Bahrain (OBBB)	**FIR/UIR Bahrain** *To be incorporated*	
Beirut (OLBB)	**FIR/UIR Beirut** ~~*To be incorporated*~~ 343800N 0355700E then along the Lebanon territorial borders to 330600N 0345300E – joining and following at 12 NM from seashore semi-arc at a radius of 45 NM centered on 334827N 0352910E and ending 343310N 0353548E - 343800N 0354300E then back to 343800N 0355700E.	Vertical limits: SFC to UNL
Cairo (HECC)	**FIR/UIR Cairo** *To be incorporated*	
Damascus (OSTT)	**FIR/UIR Damascus** ~~*To be incorporated*~~ From 355500N 0354000E to 355600N 0355500E then along the national border of Syria with Turkey and Iraq to a point 332200N 0384800E, then along 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	Vertical limits: SFC to UNL
Doha (OTDF)	**FIR/UIR Doha** 253801N 0525744E - 250224N 0523054E - 245959N 0521837E - 245046N 0522215E - 244900N 0520000E - 244247N 0513422E - 243817N 0512608E - 243747N 0512421E - 243731N 0512406E then follow the limit of territorial waters and the sovereign boundary between Qatar and Saudi Arabia then follow the limit of Qatar and Bahrain territorial waters to 261102N 0505503E - 261330N 0505513E - 261609N 0510016E - 262117N 0510420E - 262340N 0511220E - 262134N 0512301E - 261356N 0513849E - 253801N 0525744E.	Vertical limits: SFC to UNL (C-DEC 225/10 – 11 March 2022)

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	2	3
	AND 260400N 0535700E - 254900N 0530600E - 253801N 0525744E - 261356N 0513849E - 264440N 0514359E - 260400N 0535700E.	Vertical limit: SFC to FL245
Emirates (OMAE)	**FIR/UIR Emirates** *To be incorporated*	
Jeddah (OEJD)	**FIR/UIR Jeddah** *To be incorporated*	
Khartoum (HSSS)	**FIR/UIR Khartoum** *To be incorporated*	
Kuwait (OKAC)	**FIR/UIR Kuwait** *To be incorporated* 290604N 0463311E – 291502N 0464211E – 294319N 0470024E – 295105N 0470454E – 300001N 0470920E – 300613N 0472217E – 300613N 0474228E – 300113N 0475528E – 295924N 0480042E – 300146N 0480434E – 300120N 0480952E – 295110N 0482451E – 295100N 0484500E – 291300N 0494000E – 290000N 0492700E – 284400N 0494000E – 281500N 0485200E then following the Saudi Arabia territorial waters and Kuwait / Saudi Arabia International boundary to the point 290604N 0463311E.	Vertical limits: SFC to UNL
Muscat (OOMM)	**FIR/UIR Muscat** ~~*To be incorporated*~~ 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 common national boundary Sultanate of Oman/Kingdom of Saudi Arabia – common national boundary Sultanate of Oman/United Arab Emirates – 224200N 0551200E – 240000N 0553500E – 250000N 0563500E	Vertical limits: SFC to UNL
Sana'a (OYSC)	**FIR/UIR Sana'a** *To be incorporated*	
Tehran (OIIX)	**FIR/UIR Tehran** *To be incorporated*	
Tripoli (HLLL)	**FIR/UIR Tripoli** ~~*To be incorporated*~~	

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	2	3
	342000N 0113000E - 342000N 0233500E – 340000N 0241000E – 314100N 0250800E along Eastern Border Libya to 220000N 0250000E – 200000N 0250000E – 200000N 0240000E – 193000N 0240000E – 220000N 0190000E – 220000N 0113000E along Western Border Libya to 322200N 0113000E - 342000N 0113000E	

TABLE SAR I-1 – SEARCH AND RESCUE REGIONS (SRR) IN THE MID REGION

SRR	Lateral limits coordinates	Remarks
1	**2**	**3**
Amman	**SRR Amman** *To be incorporated*	
Baghdad (ORBB)	**SRR Baghdad** ~~*To be incorporated*~~ 3322N03848E along the Iraqi boundaries with Syria, Turkey, Iran, Kuwait, Saudi Arabia and Jordan to the point 3322N03848E.	Vertical limits: SFC to UNL
Bahrain	**SRR Bahrain** *To be incorporated*	
Beirut (OLBB)	**SRR Beirut** ~~*To be incorporated*~~ 343800N 0355700E then along the Lebanon territorial borders to 330600N 0345300E – joining and following at 12 NM from seashore semi-arc at a radius of 45 NM centered on 334827N 0352910E and ending 343310N 0353548E - 343800N 0354300E then back to 343800N 0355700E.	Vertical limits: SFC to UNL
Cairo	**SRR Cairo** *To be incorporated*	
Damascus (OSTT)	**SRR Damascus** ~~*To be incorporated*~~ From 355500N 0354000E to 355600N 0355500E then along the national border of Syria with Turkey and Iraq to a point 332200N 0384800E, then along 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	Vertical limits: SFC to UNL
Doha (OTDF)	**SRR Doha** 253801N 0525744E - 250224N 0523054E - 245959N 0521837E - 245046N 0522215E - 244900N 0520000E - 244247N 0513422E - 243817N 0512608E - 243747N 0512421E - 243731N 0512406E then follow the limit of territorial waters and the sovereign boundary between Qatar and Saudi Arabia then follow the limit of Qatar and Bahrain territorial waters to 261102N 0505503E - 261330N 0505513E - 261609N 0510016E - 262117N 0510420E - 262340N 0511220E - 262134N 0512301E - 261356N 0513849E - 253801N 0525744E. AND 260400N 0535700E - 254900N 0530600E - 253801N	Vertical limits: SFC to UNL (C-DEC 225/10 – 11 March 2022)

SRR	Lateral limits coordinates	Remarks
1	2	3
	0525744E - 261356N 0513849E - 264440N 0514359E - 260400N 0535700E.	Vertical limit: SFC to FL245
Emirates	**SRR Emirates** *To be incorporated*	
Jeddah	**SRR Jeddah** *To be incorporated*	
Khartoum	**SRR Khartoum** *To be incorporated*	
Kuwait (OKAC)	**SRR Kuwait** *To be incorporated* 290604N 0463311E – 291502N 0464211E – 294319N 0470024E – 295105N 0470454E – 300001N 0470920E – 300613N 0472217E – 300613N 0474228E – 300113N 0475528E – 295924N 0480042E – 300146N 0480434E – 300120N 0480952E – 295110N 0482451E – 295100N 0484500E – 291300N 0494000E – 290000N 0492700E – 284400N 0494000E – 281500N 0485200E then following the Saudi Arabia territorial waters and Kuwait / Saudi Arabia International boundary to the point 290604N 0463311E.	Vertical limits: SFC to UNL
Muscat (OOMM)	**SRR Muscat** ~~*To be incorporated*~~ 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 common national boundary Sultanate of Oman/Kingdom of Saudi Arabia – common national boundary Sultanate of Oman/United Arab Emirates – 224200N 0551200E – 240000N 0553500E – 250000N 0563500E	Vertical limits: SFC to UNL
Sana'a	**SRR Sana'a** *To be incorporated*	
Tehran	**SRR Tehran** *To be incorporated*	
Tripoli	**SRR Tripoli** ~~*To be incorporated*~~ 342000N 0113000E - 342000N 0233500E – 340000N 0241000E – 314100N 0250800E along Eastern Border Libya to 220000N 0250000E – 200000N 0250000E – 200000N 0240000E – 193000N 0240000E – 220000N 0190000E – 220000N 0113000E along Western Border	Vertical limits: SFC to UNL

SRR	Lateral limits coordinates	Remarks
1	**2**	**3**
	Libya to 322200N 0113000E - 342000N 0113000E	

MID REGION ROUTE CHALLENGES

No.	ATS route and Challenge Description	Target date	Action	Champion and relevant FIR(s)	Supported by	Status / remarks
1.	A418 was from PAPAR to KUMUN deleted		Subject to MANDD	ATM SG, Iran, UAE	MID AIM SG	
2.	A424 was from LOVEK to LOTAN deleted		Subject to MANDD	ATM SG, KSA, Iraq	MID AIM SG	
3.	B15 is from BALMA (FIR boundary) to KRD It's not in Regional ATS route table		To add ANP	ATM SG, Lebanon	MID AIM SG	
4.	G2 is from ELIKA to KAD It's not in Regional ATS route table		To add ANP	ATM SG, Lebanon	MID AIM SG	
5.	G202 was from DAM to KAD entirely deleted. The segment between ELIKA to KAD was renamed		Subject to MANDD	ATM SG, Syria, Lebanon	MID AIM SG	
6.	G665 segment between AAR to ABD is not available		Subject to MANDD	ATM SG, Iraq	MID AIM SG	
7.	G667, segment between ABD and ALSAM was removed in Baghdad FIR (it's a deficiency against Iraq)		Subject to MANDD	ATM SG, Iraq	MID AIM SG	
8.	G795 was from BSR to RAF deleted		Subject to MANDD	ATM SG, Iraq	MID AIM SG	
9.	L53 is established from GENEX (FIR boundary) extended inside of Israel and beyond		To add ANP	ATM SG, Jordan, Saudi Arabia	MID AIM SG	
10.	L417 is established from VUSEB to MUTAG which entirely located in Baghdad FIR MUTAG-NADOX was deleted		Change the ATS route designator (non-regional) Deletion from ANP Regional ATS route table	ATM SG, Iraq	MID AIM SG	
11.	L513 Waypoints MALLA, ADRAA, RDIMA, SWIDA		Such 5LNCs do not exist in ICARD and apparently are invented points. They shall not be used in official ICAO	ATM SG, Syria	AIM SG	

No.	ATS route and Challenge Description	Target date	Action	Champion and relevant FIR(s)	Supported by	Status / remarks
			documentation as never reserved for Syria.			
12.	L602, this has the following segments: GEPAP-ELEXI (Baghdad/Damascus FIR boundary) has been suspended in Baghdad FIR			ATM SG, Syria, Iraq	MID AIM SG	
13.	L715 is established from GIBUX to LOVEK which entirely located in Baghdad FIR		Change the ATS route designator (non-regional)	ATM SG, Iraq	MID AIM SG	
14.	L718 is established from ALPET to INB (Two FIRs)		To add ANP	ATM SG, Iraq	MID AIM SG	
15.	M203 is established from PUSTO to ILMAP which entirely located in Baghdad FIR		Change the ATS route designator (non-regional)	ATM SG, Iraq	MID AIM SG	
16.	M703 is established from GADSI to PASIP (FIR boundary)		To add ANP	ATM SG, Iraq	MID AIM SG	
17.	M861 was from ELEXI to DRZ removed			ATM SG, Syria	MID AIM SG	
18.	P134 (PfA by EUR/NAT) from MON (Tunis) to MTG (Libya) Mitiga – NAZDE [340000N 0122235E] - RISER [342000N 0120603E] – (BIRSA) – (Monastir)		To establish and add ANP	ATM SG, Libya	MID AIM SG	Requested by EUR/NAT office and coordinated between Malta and Libya,
19.	P574 was from PAPAR to KUMUN FIR boundary deleted		- Subject to MANDD	ATM SG, Iran, UAE	MID AIM SG	
20.	P751, this route divided in two parts: - BRN to TOKAR (FIR boundary) - DEKRA (FIR boundary) ANGAL (FIR boundary)		Change the ATS route designator	ATM SG, Eritrea, Ethiopia	MID AIM SG	

No.	ATS route and Challenge Description	Target date	Action	Champion and relevant FIR(s)	Supported by	Status / remarks
	The deleted segment is named as A451/UA451 in Asmara FIR					
21.	T800 is from DOH to ULDUN (Two FIRs)		To add ANP Change the ATS route designator	ATM SG, Bahrain, Iran, Qatar,	MID AIM SG	
22.	Jordan QAA1 instead of QAA AMN01 instead of AMN QTR01 instead of QTR		5LNC should be changed	ATM SG	AIM SG	
23.	Syria Non-compliant SIDs/STARs such as NOVEMBER, KILO, LIMA, GOLF, DELTA, etc. … Damascus STARs named BRAVO, LIMA, KILO, SIERRA, TANGO SID to TAN (TANF) is named TANF		5LNC should be changed	ATM SG	AIM SG	
24.	B535 5LNC TAMIM duplicated with B411 in Jordan		Change 5LNC	Change 5LNC	Change 5LNC	

PROPOSAL FOR AMENDMENT OF THE ICAO MID REGIONS AIR NAVIGATION PLAN, VOLUME II

(Serial No.: MID-II-23/02-ATM**)**

a) **Plan:** Air Navigation Plan (ANP) - MID Regions, Volume II

b) **Proposed amendment:** **Part IV-ATM – [TABLE ATM II-MID-1] – MID REGION ATS ROUTE NETWORK**

Amend, MID ATS route network as follows:

TABLE ATM II-MID-1 MID REGION ATS ROUTE NETWORK

LOWER/UPPER AIRSPACE

Designator	Significant Points
1	2
A16	RASDA 330600N 0305700E MELDO 320201N 0310406E BALTIM (BLT) 313144N 0310721E DEGDI 311429N 0311035E CAIRO (CVO) 300532N 0312318E
A18	KADAR (KDR) 322200N0133700E RYHAN 321200N 0133000E TAWUS 315218N 0131736E MIZDA (IZD) 312709N 0130038E FUNGI 303636N 0120824E DERJE 294742N 0111900E (ZARZAITINE (IMN) 280412N 0093954E
A408	(SOLIR 135224N 421918E) SALEH 140000N 0422500E ORNIS 141615N 0423657E HODEIDAH (HDH) 144622~~.1~~N 0425911~~.1~~E
A410	KAFIA 084400N 0233100E ALMAM 093345N 0244451E RADAG 110340N 0270020E ELOBEID (OBD) 130641~~0.53~~N 0301335~~.25~~E IMSUT 142048N 0312230E RADKA 145006N 0315040E VATEN 153358N 0323312E
A411	(MITBA 333919N 0111142E) TANLI 332938N 0113000E CLAMS 331700N 0120800E DERKA 330900N 0132202E KAVOX 325700N 0145603E GARUS 324000N 0170000E PRAWN 324000N 0180500E BENINA (BNA) 320728N 0201513E MKILY 315900N 0222000E NASER 315112N 0235518E LOSUL 314100N 0250800E ~~SIDI BARANI (BRN) 313432N 0260020E~~
A412	TANF (TAN) 332900N 0383920E RAFIF 331247N 0381919E ZELAF 325700N 0380000E

DAXEN 324444~~5~~N 0374105E
NADEK 322728N 0371429E
ASLON 321211N 0365111E
KUPRI 320825N 0364530E
LUDAN 320256N 0363713E
GETUP 315833~~.47~~N 0363037~~.47~~E
QUEEN ALIA (QAA) 314423~~.41~~N 036092~~76.59~~E
OSAMA 315550N 0353706E

A414
DEBER 375006N 0580200E
BOJNORD (BRD) 372942~~.2~~N 057192~~43.8~~E
EGLUL 372407N 0564855E
ORSEK 370517N 0551109E
ALNIT 370022N 0544645E
GORGAN (GGN) 365545~~4.7~~N 0542233~~.3~~E
IMPIR 364958N 0535846E
DATOL 364717N 0534706E
DASHT-E-NAZ (DNZ) 363854~~3.6~~N 0531120~~.1~~E
LABET 360950N 0530127E
BUBUX 353023N 0524814E
DEHNAMAK (DHN) 351515~~.0~~N 0524312~~.0~~E

A416
TABRIZ (TBZ) 380854~~3.5~~N 046124~~76.5~~E
EGVON 381647N 0475421E
ARDABIL (ARB) 381857~~6.5~~N 048260~~5.1~~E
GIVTA 380050N 0484744E
GABMI 374115N 0491052E
RASHT (RST) 371935~~4.8~~N 0493657~~.1~~E
KOBUB 370621N 0501031E
EGMAN 370311N 0501827E
RAMSAR (RSR) 365413~~2.5~~N 050405~~049.6~~E
ALKUP 364702N 0510409E
NOSHAHR (NSR) 363946~~.1~~N 0512751~~.4~~E
IMKER 363938N 0515239[E]
MODEK 363918N 0523407[E]
DASHTE NAZ (DNZ) 363854~~3.6~~N 0531120~~.1~~E
GORGAN (GGN) 365545~~4.7~~N 0542233~~.3~~E
LOVEN 363926N 0553355E
ODKOL 363136N 0560702E
SABZEVAR (SBZ) 361011N 057341~~54.9~~E
LOXED 355854N 0580609E
RIBUX 360112N 0582647E
MASHHAD (MSD) 361352~~.2~~N 0593902E
SOGES 351600N 0595822E
SOKAM 331316N 0603754E

A418
KUMUN 254000N 0551515E
PAPAR 264000N 0542700E
*Note 7 (OI and OM)
~~Segment KUMUN-PAPAR~~*Note 4 (KUMUN-PAPAR)
SHIRAZ (SYZ) 293224N 0523520E

A420
TANLI 332938N 0113000E
FARWA 330000N 0121812E
ZAWIA (ZAW) 324643N 0123847E
TRIPOLI (TPI) 323940N 0130919E
LIBDA 323048N 0140000E
MISRATA (MIS) 321852N 0150440E
YAQUT 321300N 0170000E
HAMOR 320900N 0182400E
BENGHAZI BENINA (BNA) 320728N 0201513E

A422
UROMIYEH (UMH) 374114N 045050~~43.7~~E
RABEM 374841N 0452949E
SETNA 375615N 0455522E
TABRIZ (TBZ) 380854~~3.5~~N 046124~~76.6~~E
MURID 382744N 0463525E
DARUN 383339N 0464235E
DASDA 384135N 0465214E
PARSABAD-E-MOGHAN (PAD) 393443N 0475803E
PARSU 393748N 0480448E

A424 LOVEK 322208N 0444001E
*Note 4 (LOVEK-LOTAN)
LOTAN 295942N 0433848E
RAFHA (RAF) 293713N 04607463295 3E
LUDEP 290948N 0430646E
TAMRO 283838N 0424047E
SIKLI 275801N 0420721E
HAIL (HIL) 272530N 0414059E
*Note 7 (JDW-HIL)
HAMED 265133N 0411706E
LAKRO 263051N 0410241E
ORMAD 260353N 0404401E
GOMRA 253656N 0402534E
MIXUG 251537N 0401104E
MADINAH (PMA) 243251N 0394219E
DEGVU 234245N 0393941E
ORMEK 233454N 0393917E
RULEB 230059N 0393731E
DATAP 223927N 0392910E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E

A453 (GADER 294100N 0612800E)
PIRAN 293407N 0612809E
ZAHEDAN (ZDN) 292912.3N 0605406 5.7E
ULOVI 291948N 0603429E
DANOV 291444N 0602357E
PEKES 285929N 0595221E
NABOX 281630N 0582601E
DAVEP 274226N 0572009E
BANDAR ABBAS (BND) 271149.4N 0562200.3E
PAVON 270206N 0561149E
GHESHM ISLAND (KHM) 264547.1N 0555428 7.6E
*Note 7 (KHM-BAHKUA)
SERDU 264715N 0545757E
ROSUM 264741N 0543637E
KAPIP 264322N 0521403E
MIDSI 264142N 0515442E
BOTOB 263350N 0514505E
SOLOB 262241N 0513132E
TOBLI 262134N0512301E
SOGAT 262029N 0511443E
RIKET 261952N 0510954E
ASTAD 261812N 0505646E
BAHRAIN (BHR) 261530N 0503919E
ELOSO 262409N 0503550 1E
DESBU 263240N 0503241E
EGMOR 264211N 0502908 67E
LOTOR 264854N 0502200E
RAMSI 270249N 0500714E
ORNAK 272854N 0493248E
SOLEM 275229N 0491136E
KUMBO 281705N 0485526E
GESAK 283430N 0484353E
DEBTI 284407N 0482924 5E
KUWAIT (KUA) 291457N 0475717E

A454 (PARET 252518N 0645102E)
*Note 7 (PARET-PASOV)
TAPDO 242400N 0612000E
VUSET 235540N 0590812E
UMEKO N240620 E0583450
BORER N242623 E0573048
PASOV 243841N 0565037E

A647 NAZAR 363929N 0601926E
MASHHAD (MSD) 361352.2N 0593902.0E
SABZEVAR (SBZ) 361011.0N 0573415 4.9E
MITUS 360535N0565748E
ULANO 354937N 0550052E
ODKAT 354650N 0544146E
MIRUR 354221N 0541139E
RAPKI 353454N 0532208E

BUBUX 353023N0524814E
VARAMIN (VR) 352034~~3.6~~N 0513814~~3.8~~E
IMAMKHOMAINI (IKA) 352435~~4.8~~N 0511043~~2.5~~E
RUDESHUR (RUS) 352644~~3.7~~N 0505419~~.3~~E
LOXAM 350415N 0491601E
HAMADAN (HAM) 345201~~0.8~~N 0483301~~.0~~E
KERMANSHAH (KMS) 342023~~.0~~N 0471009~~8.9~~E
RAGET 333048N 0455348E

A727 CAIRO (CVO) 300532N 0312318E
SOLAM 294201N 0313106E
RASMI 285901N 0314506E
SEMRU 280200N 0320306E
NABED 271801N 0321706E
LUXOR (LXR) 254458N 0324607E
BOVAR 244140N 0322419E
LOPID 231900N 0315530E
ABU SIMBLE (SML) 222118N 0313719E
NUBAR 220000N 0313806E
MEROWE (MRW) 182449N 0314949E
ALPOX 171131N 0320831E
GOPDA 161115N 0325135
GAGNI 135430N 0324706E
KHARTOUM (KTM) 153358N 0323312E
KENANA (KNA) 130141N 0325423E
AVONO 092606N 0335418E
KUTOP 080408~~7.80~~N 0341704~~.20~~E
EPSIX 063808N 0344002E
AMATO 051836N 0350124E
ANTAX 040000N 0352248E
LODWAR (LOV) 030627N 0353646E

A775 REXOD 211230N 0613830E
TUMET 222307N 0595702E
IMDEK 224647N 0592217E
OBTIN 230216N 0585920E
*Note 7 (OBTIN-KUSRA)
KUSRA 232426N 0582611E

A777 TONVO 250500N 0563200E
*Note 7 (TONVO-VAXIM)
BUBAS 245938N 0570003E
NADSO 244957N 0574926E
MUNGA 242516N 0584533E
MIXOL 240523N 0592959E
VAXIM 231900N 0611100E

A788 HALAIFAH (HLF) 262603N 0391609E
LOXOR 270903N 0410002E
HAIL (HIL) 272530N 0414059E
ORNIL 273503N 0422443E
TOTAD 275043N 0433904E
LOXOM 275648N 0440832E
LOTOK 280834N 0450402E
HAFR AL BATIN (HFR) 282126N 0460703E
*Note 7 (HFR-PATIR)
DERKO 282751N 0465213E
SOROR 283417N 0473932E
WAFRA (KFR) 283715N 0475729E
DEBTI 284407N 0482925E
BOXIK 284814N 0484734E
DANAL 285128N 0490450E
RETEL 285236N 0491048E
PATIR 285606N 0492923E
KHARK ISLAND (KHG) 291550N 0501901~~0.7~~E
IVERA 292303N 0511540E
RUBAK 292617N 0514218E
SHIRAZ (SYZ) 293225~~4.6~~N 0523520~~19.6~~E

A791 LALDO 251806N 0563600E
GIDIL 251742N 0564923E
IMLOT 251708N 0570804E

KATUS 251600N 0574700E
PEDEX 251211N 0592131E
KINOX 250945N 0600942E
EGPIC 250811N 0603730E
EGRON 250444N 0613245E
(BIVIN 25035049.80N 0614744.40E)

B21 INDOT 342000N 0165653E
*Note 7 (DOLFI-INDOT)
OKLIR 335959.40N 0171049.80E
DOLFI 331248N 0174312N
PRAWN 324000N 0180500E
HAMOR 320900N 0182400E
BOURI 314124N 0184259E
MARSA BREGA (MB) 302506N 0193421E
DAYFA 281918N 0205236E
KARUB 273524N 0211524E
KUFRA (KFR) 240909N 0231827E
ORNAT 200000N 0250000E

B121 OXADU 350837N 0511226E
RUDESHUR (RUS) 352643.7N 0505419.3E
VEBER 354209N 0504400E
DAVMI 355657N 0503401E
PAXID 361703N 0502021E
ALTIV 364131N 0500330E
RARTA 365323N 0495516E
RASHT (RST) 371935 4.8N 0493657.1E
SIVIT 373553N 0490511E
DASDA 384135N 0465214E
MAGRI 385408N 0462300E

B400 MUSCAT (MCT) 233528.04N 0581536.48E
ITURA 232351N 0580720E
GEPOT N232351 1446N E0580720053E
GEVED N231446 0105N E0580053 75111E
IZKI (IZK) 225319 8.6N 0574543 2.73E
DARAT N222000N E0572830E
KEBAS N214330N E0570948E
ITSAG N213720N E0570640E
MEVLI N211632N E0565606E
VUTAP N205411N E0564449E
ORSIT N202306N E0562915E
HAIMA (HAI) 195813.31N 0561651 0.82E
*Note 7 (HAI-DAXAM)
KUKDI N193022N E0555953E
ITUVO N190315N E0554328E
LABED N182135N E0551827E
ASTUN 180832N 0551040E
DAXAM 171612N 0544715E
MUTVA 165325N 0543201E
IMKAD 155245N 0535147E
NODMA 152603 6N 0533359E
RIGAM 143932N 0530414E
RAPDO 132317N 0521532E
VEDET 120134N 05124 2 10E
(MOGADISHU) MOGDU 020024N 0451736E)

B403 (AXIKU 112332N 0493519E)
BOMIX 121002N 0502757E
ODBEN 123747N 0505648E
KAVAN 133250N 0515431E
RIGAM 143932N 0530414E

B404 (ESTIK 112206N 0471854E)
DEMGO 120258N 0483040E
PURKA 131208N 0503042E
GESIX 134440N 0512823E
RIGAM 143932N 0530414E

B407 JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
DENBU 210129N 0382031E

KAROX 205717N 0381547E
MAHDI 202600N 0373918E
PORT SUDAN (PSD) 192404~~.12~~N 0371430~~.21~~E

B411 TAKSU 293625N 0343623E
*Note 7 (TAKSU-ULINA)
KARIK 292633N 0344541E
ULINA 292451N 0345818E
ELETA 293201N 0352900E
TAMIM 293640N 0354840E
PETRA 294206N 0362210E
DEESA 294509N 0364102E
OBSOT 295451N 0373455E
AL SHIGAR (ASH) 300722N 0384753E
NEVOL 302446N 0393841E
KAVID 303552N 0401147E
ARAR (AAR) 305429N 0410832E
MURIB 311337N 0415136E
RALTI 314208N 0430001E
RUKAM 315008N 0431938
ELODI 320256N 0435126E
LOVEK 322208N 0444001E
LONOR 323839N 0450458E
NOLDO 324932N 0452129E
PAPUS 325334N 0452707E
PAXAT 332056N 0460519E
ILAM (ILM) 333442~~.3~~N 0462455~~.4~~E
YASER 335850N 0470456E
IVELI 343459N 0482952E
DAXIL 345135N 0493454E
SAVEH (SAV) 350107~~6.8~~N 0502217~~6.9~~E
SOGOL 350829N 0503128E
OXADU 350837N 0511226E
NAGIN 350619N 0515308E
DEHNAMAK (DHN) 351515N 0524312E
*Note 7 (DHN-MSD)
GIBAB 353213N 0543656E
ITELO 353534N 0550052E
RABAM 355442N 0572955E
LOXED 355854N 0580609E
RIBUX 360112N 0582647E
MASHHAD (MSD) 361352~~.2~~N 0593902E
TANBU 353422N 0603430E
PAMTU 351006N 0610806E

~~B412~~ ~~HALAIFA (HLF) 262603N 0391609E~~
~~RABIGH (RBG) 224731N 0390550E~~
~~[KING ABDULAZIZ] (JDW) 214244N 0390723E~~

B413 LADEN 185342N 0380506E
(DULAB 181006N 0390018E)
KOBAS 170428N 0402029E
DANAK 160800N 0412900E
RIBOK 154700N 0415230E
ERSAL 151352N 0422905E
MIPIN 150608N 0423735E
HODEIDAH (HDH) 144622~~.10~~N 0425911~~.10~~E
UKNAN 141839N 0432901E
ULBIR 1359~~19~~20N 0434940E
TAIZ (TAZ) 134150N 0440819E
GOMRI 131816N 0443224E
ADEN (KRA) 124952~~.20~~N 0450125E
UMEBU 121559N 0452325E
ZIZAN 115136N 0453~~912~~00E

B415 DOHA HAMAD INTL (DOH) 251500~~459.66~~N 0513635~~4.80~~E
*Note 8 (DOH-BUNDU)
KUPSA 250445N 0521151E
BUNDU 250024N 0522924E
*Note 7 (BUNDU-SIXIV)
ASNAX 245659N 0524054E
EGPOG 244727N 0531950E

UKILI 243816~~5.5~~5N 0535636~~.4~~E
KUGTO 243231N 0542224E
RURAL 243045N 0543156E
SIXIV 242009N 0550439E

B416 KUWAIT (KUA) 291457N 0475717E
*Note 7 (KUA-KUVER)
BOXIK 284814N 0484734E
IMDOX 283455N 0491438E
AMBIK 283222N 0492025E
*Note 8 (AMBIK-KUVER)
KUVER 280924N 0500600E
IMDAT 274100N 0511100E
DURSI 271219N 0520144E
PEGET 270434N 0521515E
EGMIT 263340N 0530825E
LEVNA 261535N 0533857E
ORSAR 260430N 0535730E
~~PEBAT 255153N 0542357E~~
~~DESDI 253603N 0544230E~~

B417 EGVEL 344258N 0503005E
UKITA 330657N 0500041E
IMKEN 314407N 0493611E
BANDAR MAHSHAHR (MAH) 303323~~2.8~~N 0490858E
UKNAR 295538N 0490450E
TULAX 293853N 0490301E
DESLU 292800N 0490150E
EGVAL 292448N 0484545E
ALVAX 292030N048241~~1~~22E
KUWAIT (KUA) 291457N 0475717E
*Note 3 (OKAC)
BONIM 285929N 0472925E
BOSID 284234N 0465228E
HAFR AL BATIN (HFR) 282126N 0460703E
KING SAUD AB (KMC) 275250N 0453321E
EMARO 273342N 0451330E
ALKIR 270758N 0444343E
RARLO 265939N 0443410E
ASNID 264600N 0441835E
GASSIM (GAS) 261753N 0434647E
*Note 7 (JDW-GAS)
AMBIV 254816N 0431649E
KINOB 253146N 0430018E
KURDO 245306N 0422158E
BIR DARB (BDB) 241951N 0414928E
ASVIV 235532N 0412121E
DASOR 234116N 0410459E
PATOR 231639N 0403657E
EGREP 222754N 0395007E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E

B418 PAMTU 351006N 0610806E
BIRJAND (BJD) 325821N 0591201E
IMPAT 322451N 0580856E
NADSA 321438N 0575002E
DARBAND (DAR) 314659N 0565940E
PURBO 311346N 0565832E
ALGUV 304702N 0565734E
KERMAN (KER) 301658N 0565632E

B419 KING FAHD (KFA) 262951N 0494643E
*Note 7 (KFA-RAMSI)
NAGTO 263717N 0495137E
KASES 264538N 0495709E
ITESA 265016N 0500014E
METLA 265645N 0500433E
RAMSI 270249N 0500714E

B424 ITOLI 152825N 0450927E
MEGPA 160017N 0461653E
LABRA 161813N 0465113E

IMTAN 163253N 0471943E
ALSOD 164203N 0473753E
TASBI 165853N 0481118E
KANEM 173700N 0492655E
IMPOS 183137N 0511848E
SABEL 185158N 0520339E
NOVNO 193313N 0535858E
OTISA 201000N 0554556E
KASIN 201853N 0555742E
VELIK 203322N 0561656E
TUBSA 204029N 0562626E
VUTAP 205411N 0564449E
*Note 7 (VUTAP-GISKA)
GISKA 213503N 0574014E

B441 NABOX 281630N 0582601E
SILKO 295558N 0584138E
BOPAG 304413N 0584929E
KUVAV 313426N 0585747E
BIRJAND (BJD) 325821~~0.7~~N 059120~~10.5~~E
BOPEB 331913N 0591448E
ASVIS 334633N 0591828E
NOTSO 351416N 0593034E
MASHHAD (MSD) 361352~~.2~~N 0593902E
ALMUX 362736N 0605121E
OTRUZ 363108N 0610956E
~~MARAD 363730.6N 06127.48E~~

B451 DEHNAMAK (DHN) 351514~~4~~5N 0524312E
RAPKI 353454N 0532208E
ITMEL 360729N 0542812E
SHAHROUD (SHR) 362522~~.3~~N 055052~~019.5~~E
RIBOB 371705N 0565226E
BOJNORD (BRD) 372942~~.2~~N 057192~~43.8~~E
DEBER 375006N 0580200E
~~(ASHGABAT) (ASB) 380011N 0582008E~~

B457 NARMI 261802N 0501939E
BAHRAIN (BHR) 261530N 0503919E
TULUB 260644N 0510041E
DENVO 260452N 0510509E
PATOM 255821N 0511836E
EMISA 254658N 0514207E

B505 LALDO 251806N 0563600E
*Note 7/8 (LALDO-PASNI)
NADSO 244957N 0574926E
ITLOB 244325N 0590701E
EGTAL 243458N 0603724E
APELO 243455N 0612000E
(PASNI (PI) 251717N 0632055E)

B524 NADSO 244957N 0574926E
*Note 7 (NADSO-ALPOR)
DAMUM 243236N 0591307E
ASLOM 242113N 0600552E
VEKAN 241235N 0604454E
ALPOR 240441N 0612000E

B526 KHARTOUM (KTM) 153358N 0323312E
DENDI 153006N 0341642E
KASSALA (KSL) 152427~~.47~~N 036201~~4.05~~E
TESON 152054N 0371042
(ASMARA (ASM) 151704~~.01~~N 038540~~32.92~~E)
(ZULAC 150136N 0410106E)
~~(~~PURAD 145500N 0415354E~~)~~
~~FARES 145400N 0420100E~~
EMABA 14513~~8~~7N 0421943E
HODEIDAH (HDH) 144622~~.10~~N 0425911~~.10~~E
UMILI 144609N 0435133E
SOKAT 144606N 0440145E
PAVEN 144602N 0441112E

OBNAM 144541N 0444448E
PEBIX 1444478N 0454637E
DASIT 144412N 0462931E
IVORA 144342N 0470342E
MEGPO 144257N 0473438E
RASBA 144124N 0484128E
MUKALLA (RIN) 144015.30N 0492329.30E
DANAN 144010N 0495334E
KUSOL 144009N 0501534E
KIRAD 143954N 0511241E
TATNA 144000N 0515200E
RIGAM 143932N 0530414E

B527 KHARTOUM (KTM)153358N 0323312E
SUVRI 135436N 0321800E
RABAK 130110N 0320957E
MALAKAL (MLK) 093347.40N 0313911.41E
JUBA (JUB) 045234N 0313559E
OVELA 040000N 0311454E
(GOTOD 014501.20N 0305150 49.80E)

B535 JUBA (JUB) 045234N 0313559E
TAPOS 055408N 0332002E
DAGAP 062400N 0341200E
(EPSIX 064014N 0343956E)
(IMTOR 064641N 0345102E)
(APKOD 074053N 0362448E)
(KOFTA 081258N 0372041E)
(ITPOT 084406N 0380951E)
(GAWASA (GWZ) 090622.33N 0384612 1.71E)
(ASOLE 095626N 0401357E)
(NIDEG 103632N 0412400E)
(LAKBE 110224N 0420939E)
(DJIBOUTI (DTI) 1132546 5.67N 0430533 76.77E)
(KASOL 115248N 0433546E)
TORBA 121036N 0440206E
KATAN 122724N 0442728E
ADEN (KRA) 124952.20N 0450125E
BANAR 130604N 0453855 4E
TAMIM 134751 0N 0471703E
ULAXI 141524N 0482317E
BAROM 142432N 0484533E
MUKALLA (RIN) 144015.30N 0492329.30E
NAKAD 150056N 0500402E
EGMIX 151811N 0503810E
NANRI 160754N 0521603E
ASMAK 162327N 0524634E
KAPET 163322N 0530614E
LADAR N165324 E0534655
SALALAH (SLL) 170259.35N 0540657 6.91E
*Note 7 (ASTUN-SLL)
DARAB 174632N 0544902E
ASTUN 180832N 0551040E

~~B538~~ ~~ALEPPO (ALE) 3610476.86N 03712343.76E~~
~~KARIATAIN (KTN) 3412487.82N 0371551.15E~~

B540 GERAR 240600N 0573616E
*Note 7 (GERAR-MIVEK)
DEGNU 242734N 0570613E
PASOV 243841N 0565037E
KUPMA 245148N 0562648E
ORKOB 245309N 0562421E
MIVEK 245240N 0561516E

B541 LAR (LAR) 2740310.7N 0542455 4.7E
NABEX 271157N 0541334E
DELBU 265021N 0540506E
KISH ISLAND (KIS) 2631310.6N 0535745 4.7E
ORSAR 260430N 0535730E

B544 (KILIS 364213N 0372402E)

TUSYR 363915N 0372341E
ALEPPO (ALE) 361047N 0371234E
TUDMU 343100N 0380754E
TANF (TAN) 332900N 0383939E
NAMBO 331826N0383939E
DAPUK 330139.44N 0384026.29E
MODAD 323540 39.88N 0384138.14E
SODAR 315602N 0384326E
TURAIF (TRF) 314146N 0384408E
EGPOL 311048N 0384522E
ORKAS 304725N 0384617E
AL SHIGAR (ASH) 300722N 0384753E
LABAD 291922N 0385411E
ENABI 290639N 0385550E
SOBAS 275600N 0390453E
HALAIFA (HLF) 262603N 0391609E
*Note 7 (PMA-HLF)
BELAL 254629N 0392523E
ALTEP 252157N 0393103E
MADINAH (PMA) 243251N 0394219E
*Note 7 (PMA-JDW)
SISUD 234505N 0392538E
ASLAD 233742N 0392305E
RABIGH (RBG) 224731N 0390550E
NOMDA 224257N 0390556E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
*Note 7 (NOBSU-JDW)
BOSUT 204705N 0393158E
LOVIL 201553N 0394537E
TORBI 195514N 0401610E
QUNFIDAH (QUN) 192211N 0410429E
RABGO 191452N 0411452E
ITESO 184436N 0415732E
ABHA (ABH) 181431N 0423925E
LALGI 173029N 0430453E
NOBSU 171554N 0431358E
MIXON 163035N 0432931E
IMSIL 155738N 0434112E
IMKAR 153511N 0435039E
MUTEX 152524N 0435445
NAGIL 152024N 0435651E
MISAN 150001N 0440522E
PAVEN 144602N 0441112E
GEVEL 141229N 0442547E
MOGEM 132655N 0444529E
ADEN (KRA) 124952.20N 0450125E

B547 PERSIAN GULF (PRG) 272137N 0524552E
LAVAN ISLAND (LVA) 264843N 0532121E
ALNOL 264055N 0533757E
KISH ISLAND (KIS) 263130N 0535745E
IBNUX 261617N 0541208E
SIRRI ISLAND (SIR) 255453N 0543207E

B549 THAMD 171700N 0495500E
ITELI 171310N 0502605E
GOGRI 170752N 0510857E
TONRO 165850N 0522235E
PUTRA 165432N 0525631E
LADAR 165324N 0534655E
MUTVA 165325N 0543201E
KIVEL 165306N 0553633E

B727 (ZARZAITINE (IMN) 280359.60N 0093939.30E)
NGIRT 285200N 0112700E
HAMRA 293200N 0125000E
SWIRF 295300N 0134300E
ALBEY 302600N 0150000E
TAMIT 304412N 0154654E
SIRTE (SRT) 310333N 163552.20E
CILBA 311800N 0172400E
BOURI 314124N 0184259E

BENGHAZI BENINA (BNA) 320728N 0201513E
EL BEDIA (LAB) 324641N 0220113E

G55 ABADAN (ABD) 302231~~.1~~N 0481314~~.2~~E
UKNAR 295538N 0490450E
KHARK ISLAND (KHG) 291550~~.0~~N 0501901~~0.7~~E
BUSHEHR (BUZ) 285705~~4.7~~N 0504934~~3.5~~E
TOTNO 291052N 0515336E
SHIRAZ (SYZ) 293225~~4.6~~N 0523520~~19.6~~E

G183 (KAROL 3252~~.~~00N 03229~~.~~00E)
PASOS 311300N 0330600E
NADOL 311734N 0334100E
EL ARISH (ARH) 310423N 0334955E
TABA (TBA) 293624N 0344751E

G202 (VELOX 3349~~.~~00N 03405~~.~~00E)
SILKO 33475~~4.9~~N 03435~~.~~00E
ELIKA 334455N 0343500E
KHALDEH (KAD) 334827N 0352910E
*Note 4 (~~OS~~KAD-DAM)
DAKWE 3338~~.9~~56N 0355459~~5.0~~E
DAMASCUS (DAM) 33215~~4~~N 0362807E
SOFIA 332301N 0364941E
ABBAS 332610N 0374320E
SULAF 332718N 0381027
TANF (TAN) 332900N 0383920E
MODIK 332806~~.1~~N 0390100E
RAPLU 332300N 0414530E
PUSTO 332100N 0424500E
DELMI 331918N 0431328E
LAGLO 331539N 0441457E
ITOVA 331951N 0444129E
SINKA 332137N 0444753E
RAGET 333048N 0455348E
ILAM (ILM) 333442~~.3~~N 0462455~~.4~~E
ALTET 333209N 0470047E
MIPON 332801N 0475344E
KHORAM ABAD (KRD) 332603~~.1~~N 0481731~~0.7~~E
UKSIS 332159N 0484002E
NOTSA 331745N 0490315E
RASLA 331202N 0493409E
UKITA 330657N 0500041E
BOMID 325904N 0504029E
IMRAG 325142N 0511643E
ESFAHAN (ISN) 334449~~.1~~N 0514941~~0.8~~E
PARUG 324704N 0522947E
LABOT 324839N 0530053E
ALNER 325124N 0540202E
MITET 325226N 0542850E
NODLA 325330N 0545850E
ORSOK 325502N 0554532E
IMSOG 325636N 0564649E
ROSOS 325815N 0584814E
BIRJAND (BJD) 325821~~0.7~~N 0591201~~0.5~~E
KAMAR 323900N 0604400E

G208 (PANJGUR (PG) 265710~~.21~~N 0640813~~.06~~E)
KEBUD 273552N 0625024E
DANIB 290706N 0611717E
ZAHEDAN (ZDN) 292912~~.3~~N 0605406~~5.7~~E
DAPAP 294630N 0602554E
TOVUS 300643N 0595235E
BOPAG 304413N 0584929E
DARBAND (DAR) 314659~~.4~~N 0565940~~.4~~E
NIVRA 315905N 0563810E
SOGOT 324008N 0552339E
NODLA 325330N 0545850E
ROVAD 333131N 0535240E
RADAL 345423N 0522023E
ELEDI 350136N 0520356E
IMAM KHOMAINI (IKA) 352435~~4.8~~N 0511043~~2.5~~E

VEBER 354209N 0504400E
GOLNU 355711N 0502052E
PAROT 361128N 0495841E
LOXUB 363640N 0484942E
ZANJAN (ZAJ) 364647~~6.8~~N 048211~~21.9~~E
AMBEX 370356N 0472143
GETOB 371227N 0465129E
PARAS 373133N 0454134E
TOTBO 373455N 0452858E
UROMIYEH (UMH) 374114N 045050~~43.7~~E
ALRAM 374230N 0443736E
~~(SIRT)~~

G216 LAKLU 232235N 0570401E
IVAKU 232919N 0574103E
MUSCAT (MCT) 233528~~.04~~N 058153~~6.48~~E
*Note 7 (LAKLU-SIDKA)
ITILA 234055N 0584817E
SODEB 234747N 0593023E
DERTO 235033N 0594746E
ALPOR 240441N 0612000E
(SIDKA 240844N 0614745E)

G452 SHIRAZ (SYZ) 293225~~4.60~~N 052352~~0~~~~19.60~~E
NALBI 294650N 0535357E
RIKAS 295337N 0543224E
DAVUT 300214N 0552301E
GETIS 301145N 0562226E
KERMAN (KER) 301658~~.1~~N 046563~~2.3~~E
ALKES 301045N 0573025E
ORDAD 300608N 0575454E
SILKO 295558N 0584138E
DANUS 293628N 0602030E
ZAHEDAN (ZDN) 292912~~.3~~N 060540~~6~~~~5.7~~E
DERBO 292542N 0611701E
(SOKIR 290801N 0642502E)

G462 ROVOS 241825N 0552143E
*Note 7 (ROVOS-TUMAK)
TUBGO 242403N 0551219E
ULODA 243530N 0545301E
KUVDA 244309N 0543909E
ORBOL 245134N 0542348E
UKUVO 251228N 0534707E
OXARI 252535N 0533458E
PURLI 253644N 0532436E
TUMAK 255031N 0531108E

G482 TABRIZ (TBZ) 380854~~3.5~~N 046124~~7~~~~6.6~~E
MAGRI 385408N 0462300E

G650 JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
RIBAM 204231N 0390551E
RASKA 190732N 0390329E
(DULAB 181006N 0390018E)

G652 ADEN (KRA) 12495~~2.20~~N 0450125E
IVOSO 131734N 0453107E
BORIL 132617N 0454029E
IVORA 144342N 0470342E
MEMTA 150322N 0472434
DEKMA 152226N 0474553E
NABUP 155417N 0482143E
DANIN 160544N 0483438E
GIBAX 162047N 0485137E
IVINA 163253N 0490514E
THAMD 171700N 0495500E
IMPOS 183137N 0511848E
DUDRI 190000N 0520000E
*Note 7 & 8 (NALKI-DUDRI)
DAVOX 194400N 0524817E
MIPUB 200004N 0530607E

GEROL 201443N 0532243E
OBSUS 203905N 0534952E
LONOV 211856N 0543516E
KOBES 214504N 0550526E
TOKRA 220925N 0553350E
*Note 7 (NALKI-TOKRA)
DEBAV 221532N 0554617E
DATBU 222243N 0560054E
NAMVA 223309N 0562223E
NALKI 224928N 0565614E
TULBU 230005N 0571827E
GEPOT 231446N 0580053E
KUSRA 232426N 0582611E
SODEB 234747N 0593023E
*Note 7 (TAPDO-SODEB)
VEKAN 241235N 0604454E
TAPDO 242400N 0612000E

G655 (ILDOR 200937.20N 180119.20E)
GARIN 220000N 0170636
ELGAN 245000N 0153754E
TOTOD 260051N 145942.60
SEBHA (SEB) 265944N 0142735E
HAMRA 293200N 0125000E
EBITO 301222.80N 122406.60E
FUNGI 303636N 0120824E
GALPO 311534.20N 0113851E
FARES 320949N 0105652E
(INSAT 330352.20N 0101135.40E)

G656 JUBA (JUB) 045234N 0313559E
ATUGA 040000N 0314800E

G660 (ARBEG 131355N 0205740)
GENEI 132859N 0222748E
EL FASHIR (FSR) 133554~~.09~~N 0251811~~0.66~~E
EL OBEID (OBD) 130641~~0.53~~N 0301335~~.25~~E
IMSUT 142048N 0312230E
RADKA 145006N 0315040E
KHARTOUM (KTM) 153358~~7.93~~N 0323312~~.16~~E
BOPID 163948N 0335142E
PORT SUDAN (PSD) 192404~~.12~~N 0371430~~.21~~E
BOGUM 200636N 0380300E
MIPOL 203322N 0382145E
*Note 7 (MI~~L~~POL-JDW)
EGMEG 205130N 0383336E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E

G662 BUSRA 322000N 0363700E
KUPRI 320826N 0364530E
DESLI 314900~~.10~~N 036590~~10.60~~E
ALKOT 313254N 0371122E
GURIAT (GRY) 312445N 0371712E
~~*Note 7 (ASH-GRY)~~ ITUNO 310913N 0373542E
AL SHIGAR (ASH) 300722N 0384753E
ODBAT 293221N 0392626E
NIMAR 290635N 0395425E
EGVOP 275458N 0411024E
HAIL (HIL) 272530N 0414059E
DAROP 270505N 0421936E
MODIV 263842N 0430840E
GASSIM (GAS) 261753N 0434647E
*Note 7 (GAS-KIA)
KUSRO 255138N 0444328E
VELOS 252126N 0454712E
KING KHALID (KIA) 245310N 0464534E

G663 UMENA 262832N 0483952E
*Note 7 (UMENA-ULADA)
TABTA 262837N 0484325E
~~*Note 7 (TABTA-ULADA)~~
KING FAHD (KFA) 262951N 0494643E

RABKA 263531N 0495728E
*Note 8 (ALSER)
ULADA 264527N 0501624E
LOTOR 264854N 0502200E
RAKAK 265221N 0502618E
TOLMO 265504N 0502927E
KOBOK 265839N 0503349E
GETAL 270410N 0504040E
*Note 7 (DASDO-GETAL)
VEDOR 270855N 0504630E
ALSER 271100N 0504900E
IMDAT 274100N 0511100E
DEPSU 283409N 0515047E
DASDO 285401N 0520551E
SHIRAZ (SYZ) 293225~~4.6~~N 0523520~~19.6~~E
KINOT 303207N 0531731E
DEDAK 305600N 0533439E
BONEG 312826N 0535815E
YAZD (YZD) 315352~~1.6~~N 0541658~~7.7~~E
BOMIT 321257N 0544414E
DANEM 322854N 0550717E
SOGOT 324008N 0552339E
ORSOK 325502N 0554532E
ALMUD 331758N 0561941E
RIBEN 332902N 0563620E
TABAS (TBS) 334021~~.2~~N 0565331~~0.9~~E
PATEN 340825N 0572334E
TASLU 342531N 0574131E
RAMIL 352909N 0584941E
MASHHAD (MSD) 361352~~.2~~N 0593902E

G665 ARAR (AAR) 305429N 0410832E
*Note 4 (AAR-ABD)
ABADAN (ABD) 30221631~~.1~~N 048134214~~.2~~E
DEMPO 301717N 0484329E
VATAN 300800N 0493533E
BOTAS 295241N 0505515E
KAVIL 294820N 0511704E
EGSIR 294615N 0512735E
SHIRAZ (SYZ) 293225~~4.6~~N 0523520~~19.6~~E
*Note 5 (~~OI~~SYZ-VAVAS)
VAVAS 291650N 0535340E
BOTUX 285828N 0552205E
SOLAK 285156N 0555215E
ASMET 284758N 0561019E
NANTO 284140N 0563831E
RIGUT 283136N 0572226E
NABOX 281630N 0582601E
LOXOL 274556N 0604538E
ASVIB 265724N 0631812E
(PANJGUR (PG) 265710~~.21~~N 0640813~~.06~~E)

G666 SHIRAZ (SYZ) 293225~~4.6~~N 0523520~~19.6~~E
KUPTO 282418N 0525432E
LAMERD (LAM) 272222~~.2~~N 0531102~~.3~~E
LAVAN ISLAND (LVA) 264843~~.4~~N 0532121~~.1~~E
DATUT 263332N 0533538E
ELIRA 262105N 0534502E
ORSAR 260430N 0535730E
LUDAM 255508N 0535859E
KIVUS 254522N 0540032E
TOTKU 253534N 0540410E
ULIVA 252647N 0540611E
VEGEK 251837N 0540803E
REVAV 250909N 0541012E
ITOMI 250152N 0541151E
ELOVU 245721~~.3~~N 0542018~~7.5~~E

G667 PUTMA 374800N 0515736E
NOSHAHR (NSR) 363946~~.1~~N 0512751~~.4~~E
DANEB 362001N 0512408E
NAGMO 360214N 0512055E

TEHRAN (TRN) 354149.1N 0511702 1.6E
RUDESHUR (RUS) 352644 3.7N 0505419.3E
SOGOL 350829N 0503128E
SAVEH (SAV) 350107 6.8N 0502217 6.9E
ARAK (ARK) 34081443.9N 04951144 3.8E
RASLA 331202N 0493409E
ALTAX 323014N 0492142E
NAGRO 321015N 0491549E
RABIM 315839N 0491225E
EGVAX 314337N 0490802E
AHWAZ (AWZ) 312015.3N 0484553 2.5E
GABSU 305319N 0483035E
ABADAN (ABD) 30221631.1N 048134214.2E
*Note 4 (ABD-ALSAN)
ALSAN 295707N 0481456E
RALKA 292611N 0481819E
KUWAIT (KUA) 291457N 0475717E
WAFRA (KFR) 283715N 0475729E
*Note 7 (KFR-KIA)
KATOD 283141N 0475554E
COPPI 275033N 0474359E
EMENI 273234N 0473848E
RADGI 272640N 0473708E
MANNI 270812N 0473152E
LUGAL 264603N 0472235E
MAGALA (MGA) 261720N 0471225E
AVOBO 260334N 0470719E
ESRAT 255117N 0470247E
KING KHALID (KIA) 245310N 0464534E
MUNTO 235345N 0463459E
~~DEBAS 231059N 0462728~~ ESIKNU 233328N 0463125E
KITUB 224922N 0462342E
TUGUP 215522N 0455541E
TABNA 211842N 0453653E
WADI ALDAWASIR (WDR) 203019N 0451219E
TASMU 190016N 0450120E
NEJRAN (NEJ) 173625N 0442456E
NETAS 172609 3N 0442305 4E
ELONA 165753N 0442124E
LABDO 164842N 0442032E
XABIP 161001N 0441653E
ASREM 154637N 0441443E
SANA'A (SAA) 153000N 0441311E
MISAN 150001N 0440522E
SOKAT 144606N 0440145E
DEPDA 143206N 0435807E
ULBIR 135919 20N 0434940E
PARIM 123142N 0432712E
(DJIBOUTI (DTI) 113255 4.67N 0430537 6.77E)

G669 AL SHIGAR (ASH) 300722N 0384753E
AL JOUF (AJF) 294722N 0400418E
VELAL 294602N 0403821E
PAXAN 294418N 0411833E
TOKLU 294213N 0420220E
RAFHA (RAF) 293713N 0432953E
NISER 293030N 0441825E
*Note 3 (OKAC)
SOLAT 290942N 0463810E
BUBER 291118N 0470057E
KUWAIT (KUA) 291457N 0475717E
SESRU 290909N 0485450E
NANPI 290457N 0493157E
VELUT 291001N 0495341E
KHARK ISLAND (KHG) 291550N 0501901 0.7E
IVERA 292303N 0511540E
RUBAK 292617N 0514218E
SHIRAZ (SYZ) 293225 4.6N 0523520 19.6E

G670 RASHT (RST) 371934.8N 0493657.1E
MODIL 374925N 0494117E

LALDA 381615N 0494511E

~~G674~~ ~~MADINAH (PMA) 243251N 0394219E~~
~~*Note 7 (BPN-PMA)~~
~~KUKNI 245451N 0403140E~~
~~EMURI 250545N 0405627E~~
~~ROSUL 253945N 0421519E~~
~~MUNPI 260112N 0430621E~~
~~GASSIM (GAS) 261753N 0434647E~~
~~MOBAD 263607N 0442629E~~
~~SERPU 264608N 0444833E~~
~~BOPAN (BPN) 270314N 0452643E~~

G775 ASHGHABAT (ASB) 380011N 0582008E
ORPAB 374200N 0583430E
MIDMO 370543N 0590124E
MASHHAD (MSD) 361352~~.2~~N 0593902E
NOTSA 351416N 0593034E
ASVIS 334633N 0591828E
BOPEB 331913N 0591448E
BIRJAND (BJD) 3258210~~.7~~N 0591201~~0.5~~E
~~*Note 1~~
ODBES 323050N 0592556E
ELOKA 312325N 0595922E
LUDAX 295658N 0604101E
ZAHEDAN (ZDN) 292912~~.3~~N 0605406~~5.7~~E

G781 ~~(VAN)~~
BONAM 380256300N 0441759800E
TUDNU 375301N 0444447E
UROMIYEH (UMH) 374114N 0450504~~3.7~~E
TUBAR 373018N 0452609E
ROVON 371601N 0455322E
ZANJAN (ZAJ) 364647~~6.8~~N 0482112~~1.9~~E
LABKA 364142N 0504342E
NOSHAHR (NSR) 363946~~.1~~N 0512751~~.4~~E

G782 JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
*Note 7 (KFR-JDW)
KAPAV 220645N 0394620E
VEMEM 221554N 0400118E
BOPEV 225127N 0410011E
DAFINAH (DFN) 231658N 0414310E
ASMUN 233116N 0424514E
TUKVU 234626N 0435319E
RAGAHBA (RGB) 235533N 0443547E
DURMA 242710N 0454610E
KING KHALID (KIA) 245310N 0464534E
ESRAT 255117N 0470247E
AVOBO 260334N 0470719E
MAGALA (MGA) 261720N 0471225E
LUGAL 264603N 0472235E
MAANI 270812N 0473152E
RADGI 272640N 0473708E
EMENI 273234N 0473848E
COPPI 275033N 0474359E
KATOD 283141N 0475554E
WAFRA (KFR) 283715N 0475729E
KUWAIT (KUA) 291457N 0475717E

G783 PURDA 210805N 0510329E
ASNUR 212654N 0514335E
SILBU 214512N 0522304E
ALROK 215400N 0524217E
IMGOV 221828N 0533624E
DANUX 223605N 0541558E
TANSU 224136N 0542828E
RIGIL 230146N 0551430E
UKRAG 233056N 0552306E
ELUDA 235107N 0552905E
ASPED 240036N 0553154E
VAVIM 241535~~.1~~N 0553623~~2.9~~E

*Note 7 (GIDIS-VAVIM)
DESVU 242222N 0554253E
GIDIS 243600N 0555600E

G792 ~~BODKA 3939.0N 05130.0E~~
GIRUN 380612N 0562018E
BOJNORD (BRD) 372942~~.2~~N 0571924~~3.8~~E
SILPO 370806N 0580006E
BOTEK 364755N 0583734E
MASHHAD (MSD) 361352~~.2~~N 0593902E
TANBU 353422N 0603430E
PAMTU 351006N 0610806E

G795 RALKA 292611N 0481819E
*Note 7 (RALKA-BSR)
TASMI 300120N 0475505E
BASRAH (BSR) 303132~~.30~~N 0472112~~.10~~E
*Note 4 (BSR-RAF)
RAFHA (RAF) 293713N 0432953E

~~G799~~ ~~MADINAH (PMA) 243251N 0394219E~~
~~*Note 7 (ELONU-PMA)~~
~~ELONU 240942N 0403053E~~

L12 TONBA 213518N 0195112E
*Note 7 (SUDIK-TONBA)
AKMID 253829.40N 185330.60E
KEPOS 272206N 182810.20E
DAHRA (DHR) 292803N 175554E
NAGDA 321500N 0162328E
LOTIN 342000N 0150959E
(SUDIK 352429.40N 143028.20)

L31 LOTIN 342000N 0150959E
*Note 7 (LOTIN-MIS)
IVAKI 325530N0150618E
MISRATA (MIS) 321852N 0150440E

L124 (VAN 382757.6N 0431930.6E)
BONAM 380256300N 0441759800E
TUDNU 375301N 0444447E
PARAS 373133N 0454134E
GETOB 371227N 0465129E
AMBEX 370356N 0472143
ZANJAN (ZAJ) 364647~~6.8~~N 048211~~21.9~~E
TULGU 362836N 0484235E
SAVEH (SAV) 350107~~6.8~~N 050221~~76.9~~E
EGVEL 344258N 0503005E
PEKAM 332904N 0510118E
SIVUD 330119N 0520009E
PARUG 324704N 0522947E
RANDU 323240N 0525917E
YAZD (YZD) 31535~~21.6~~N 054165~~87.7~~E
BOMUN 313648N 0544555E
UKVEV 310557N 0553718E
ALMOB 303434N 0562824E
KERMAN (KER) 301658~~.1~~N 046563~~2.3~~E
PEKES 285929N 0595221E
SODOK 281113N 0613652E
KEBUD 273552N 0625024E
(PANJGUR (PG) 265710~~.21~~N 0640813~~.06~~E)

L125 (NAKHCHIVAN (NAX) 39095~~4.30~~N 0452909~~.40~~E)
DULAV 385700N 0453800E
RABDI 384804N 0454431E
SIBVU 384444N 0454657E
BUDED 375313N 0472032E
MURPU 373043N 0480319E
ASPOK 365918N 0484948E
PAROT 361128N 0495841E
GOLNU 355711N 0502052E
VEBER 354209N 0504400E

IMAM KHOMAINI (IKA) 352435~~4.8~~N 051104~~32.5~~E
ELEDI 350136N 0520356E
RADAL 345423N 0522023E
ROVAD 333131N 0535240E
NODLA 325330N 0545850E
SOGOT 324008N 0552339E
NIVRA 315905N 0563810E
DARBAND (DAR) 314659~~.4~~N 0565940~~.4~~E
BOPAG 304413N 0584929E
TOVUS 300643N 0595235E
DAPAP 294630N 0602554E
ZAHEDAN (ZDN) 292912~~.3~~N 060540~~65.7~~E
DANIB 290706N 0611717E
KEBUD 273552N 0625024E

~~L126~~ ~~PUSTO 3321.00N 04245.00E~~
~~SOGUM 3412.12N 0435454.9E~~
~~SIGNI 340006.1N 0444200.2E~~
~~MIGMI 334554.9N 0452724.4E~~
~~ILAM (ILM) 333442N 0462455E~~

L200 OSAMA 315550N 0353706E
AMMAN (AMN) 320015~~4.65~~N 036035~~87.55~~E
LOXER 320256N 362500E
MESLO 320231N0363148E
LUDAN 320256N 0363713E
KUPRI 320825N 0364530E
ASLON 321211N 0365111E
NADEK 322728N 0371429E
DAXEN 324444N 0374105E
ORNAL 324755N0375153E
KAREM 325110N 0380324E
KUMLO 325811N 0382807E
DAPUK 330139N 0384026E
PASIP 330600N 0385600E
GIBUX 330500N 0411100E
SIGBI 330200N 0422000E
SILBO 325900N 0432900E

L223 (AGRI (ARI) 393845~~4.90~~N 043013~~87.50~~E)
*Note 7 (ARI-~~DASIS~~UMH)
DASIS 385435N 0441230E
~~*Note 7 (UMH-DASIS)~~
UROMIYEH (UMH) 374114N 0450503E
KAPES 372520N 0452004E
REXAN 355850N 0463935E
TAVNI 353807N 0465631E
TUKLO 351014N 0471751E
UKSIS 332159N 0484002E
ALTAX 323014N 0492142E
KIXOB 310917N 0502459E
EGSIR 294615N 0512735E
RUBAK 292617N 0514218E
TOTNO 291052N 0515336E
DASDO 285401N 0520551E
LAGSA 283306N 0522056E
LAMERD (LAM) 272222~~.2~~N 053110~~2.3~~E
KISH ISLAND (KIS) 263131~~0.6~~N 053574~~54.7~~E
SIRRI (SIR) 255452~~1~~N 0543211E
TATLA 254753N 0544008E
*Note 7 (TATLA-TARDI)
VUTEB 253645~~4.6~~N 054515~~049.4~~E
LOVEM 252645~~.4~~N 055144~~0.4~~E
IVOXI 2512~~4039.6~~N 055251~~3.1~~E
LAGTA 250602N 0553315E
ANVIX 244655.0N 0555616.0E
PEDUL 244116N 0560205E
KIPOK 243611N 0560719E
TARDI 243418N 0560915E
~~LAKLU 232235N 05704 01E~~

L300 LUXOR (LXR) 254458N 0324607E

*Note 7 (YEN-LXR)
MEMPO 252518N 0335457E
OTEMO 250341N 0350810E
GIBAL 243713 N0363443E
YENBO (YEN) 240858N 0380219E

L301 (ANKOX 220256N 0662842E)
RASKI 230330N 0635200E
VAXIM 231900N 0611100E
*Note 7 (VAXIM-RAGMA)
RAGMA 232301N 0603846E

L305 DOHA HAMAD INTL (DOH) 251500~~459.66~~N 0513635~~4.80~~E
*Note 7 (DOH- EMOTA)
*Note 8 (DOH-ASTOG)
ORMAL 252304N 0522201E
ENANO 252348N 0522559E
ALSEM 252703N 0524322E
ASTOG 252822N 0525025E
PURLI 253644N 0532436E
GODKI 254122N 0534347E
KIVUS 254522N 0540032E
ITBUL 254910N 0541227E
EMOTA 255254N 0542414E

~~L306~~ ~~TOKRA 220925N 0553350E~~
~~*Note 7 (TOKRA-LAKLU)~~
~~DEMKI 224941N 0562308E~~
~~LAKLU 232235N 0570401E~~

L308 ~~DAROR 270244N 0495815E~~
~~*Note 7 (NAGSA-DAROR)~~
~~EGREX 270433N 0492158E~~
~~SILBA 270554N 0485301E~~
~~GESOR 270322N 0475751E~~
~~SIBLI 265459N 0462334E~~
~~ALMUL 262943N 0450553E~~
~~NAGSA 261811N 0443117E~~
~~GASSIM (GAS) 261753N 0434647E~~
~~DEGSO 261054N 0531946E~~
~~OBNET 260032N 0534514E~~
~~ITITA 254410N 0541839E~~
~~DESDI 253603N 0544230E~~
~~RAGOL 252743N 0550739E~~
~~SERSA 251945N 0553118E~~
~~TUKLA 251936N 0554010E~~
~~NADNI 251915N 0555658E~~
~~LALDO 251806N 0563600E~~
~~IMLOT 251708.1N 0570804.1E~~
~~KATUS 2516005.9N 05747.00E~~
~~DIVAB 2510.7N 05952.1E~~
~~EGPIC 2508.6N 06029.5E~~
~~(JIWANI) (JI) 250350N 0614744E~~
~~LATEM 243144.7N 0644944.7E~~

~~L310~~ ~~BOXAK 244536N 0540032E~~
~~*Note 7 & 8 to LALDO~~
~~SIGBO 245526.4N 0545653.9E~~
~~NALTA 250242.7N 0553955.8E~~
~~AVAMI 250554.9N 0555647.8E~~
~~LALDO 251806N 0563600E~~

L311 KAROX 205717N 0381547E
MAHDI 202600N 0373918E
PASIL 161331N 0332010E
VATEN 153358N 0323312E
RADKA 145006N 0315040E
IMSUT 142048N 0312230E
ELOBEID (OBD) 13064~~0.53~~N 0301335~~.25~~E
RADAG 110340N 0270020E
ALMAM 093345N 0244451E
KAFIA 084400N 0233100E

L313 TARDI 243418N 0560915E
KIPOK 243611N 0560719E
IMPED 245825~~4.5~~N 0560406~~.2~~E
KULBA 251326N 0560153E
EGPEP 2557476.8N 055582~~32.5~~E

L314 NABAN 16312~~34~~N 043015~~0~~48E
DAROV 160637N 0431338E
GOBLO 154050N 0432550E
LUDOX 152034N 0433524E
RAMLO 151033N 0434007E
UMILI 144609N 0435133E
DEPDA 143206N 0435807E
EGNOL 140745N 0440929E
NOPVO 135436N 0441535E
GOMRI 131816N 0443224E

L315 CAIRO (CVO) 300532N 0312318E
*Note 7 (CVO-HGD)
OBTAV 280120N 0330657E
SOKOT 273104N 0333127E
HURGHADA (HGD) 271040N 0334747E
SOBEL 265011N 0341040E
*Note 7 (GIBAL-SOBEL)
MOGAP 260055N 0350455E
GIBAL 243713N 0363443E

L317 MAHDI 202600N 0373918E
AZAZA 173046N 0335009E
ASNON 150818N 0305312E
ITGAL 125209N 0281244E
KAPIB 104917N 0255200E
LOVAB 100147N 0245828E
KAFIA 084400N 0233100E

L319 BAHRAIN (BHR) 261530N 0503919E
*Note 7 (B~~A~~HR-DASDO)
DAVRI 264936N 0505732E
OBTAR 265934N 0510309E
DASDO 285401N 0520551E
IMGOD 301419N 0513050E
RADID 302444N 0512613E
NOTSA 331745N 0490315E
KEBEP 350454N 0474014E
PAREX 360527N 0465154E
ROVON 371601N 0455322E
PARAS 373133N 0454134E
TUDNU 375301N 0444447E
BONAM 380300N 0441800E

L320 KAROX 205717N 0381547E
RAKTA 190506N 0352358E
SOGAD 171404N 0324125E
DATIM 152833N 0301323E
DELAM 144001N 0290644E
HASAN 130129N 0265813E
KISAL 101811N 0232526E

L321 OBRAN 302957N 0290522E
*Note 7 (SML-OBRAN)
REXUM 301822N 0291917E
KUNKI 290726N 0291949E
SOBAM 264529N 0301336E
EGNAM 262856N 0301942E
GIBAD 253635N 0303807E
KUNAK 252745N 0304112E
LUGAV 224205N 0313722E
ABU SIMBEL (SML) 222118N 0313719E

L323 TONTU 223446N 0284313E
~~SISID~~ENABU 220000N0280838E

ELOXO 183827N 0255031E
ASKOL 154854N 0240005E

L324 (TEZAK 3327510.40N 0314712 1.60E)
LAKTO 323800N 0320500E
GENIV 314831N 0330714E

L333 (DORUK 391645N 0421107E)
DASIS 385435N 0441230E
BORES 382829N 0452137E
VUVAG 382529N 0452926E
TABRIZ (TBZ) 380854 3.5N 0461247 6.6E
RAKED 375621N 0470712E
BUDED 375313N 0472032E
RALGO 372840N 0490112E
RASHT (RST) 371935 4.8N 0493657.1E
KOBUB 370621N 0501031E
EGMAN 370311N 0501827E
RAMSAR (RSR) 365413 2.5N 0504050 49.6E
ALKUP 364702N 0510409E
NOSHAHR (NSR) 363946.1N 0512751.4E
LABET 360950N 0530127E
MIRUR 354221N 0541139E
GIBAB 353213N 0543656E
ALROT 351116N 0554136E
LUBIX 345214N 0563219E
TASLU 342531N 0574131E
ALPEX 340919N 0582221E
ASVIS 334633N 0591828E
SOKAM 331316N 0603754E
(DANOD 322422N 0620032E)

L417 VUSEB 361637N 0434800E
DAXOG 354612N 0434527E
UMESA 351741N 0434307E
MUTAG 343003N 0433834 E
LAGLO 335153 98.6N 0441457.0E
ELOSI 330800N 0441800E
LOVEK 322208.1N 04440.01E
ELIBA 320915N 0444645E
NADOX 310505N 0451851E

L425 BOSUT 204705N 0393158E
*Note 7 (BSH-BOSUT- BSH)
AMBAL 202506N 0401625E
GODSA 201258N 0404040E
BISHA (BSH) 195840N 0423728E
KATIX 200212N 0425406E
WADI ALDAWASIR (WDR) 203019N 0451219E
EGREN 202236N 0464422E
DENKU 201123N 0484331E
ASTIN 200410N 0495320E
MEDMO 194837N 0521027E
DAVOX 194400N 0524817E
GOBRO 193622N 0534741E
NOVNO 193313N 0535858E
ITUVO 190315N 0554328E
DEDSO 185811N 0560041E
BOVOS 182230N 0575844E
ASPUX 174404N 0600004E
(MAMIG 164100N 0614641E)

L427 KAROX 205717N 0381547E
BILAL 184044N 0330227E
ASRAV 172442N 0301943E
BOXIG 155958N 0272606E
GIPSA 150616N 0253946E
ELGENIENAD (GNA)132824.39N 0223207.30E

L430 VAXIM 231900N 0611100E
ASLOM 242113N 0600552E
MESPO 244817N 0595040E

PEDEX 251211N 0592131E
NOVSU 263407N 0573849E
MELMI 264625N 0572300E
VELAP 272556N 0565950E
TAVNO 281112N 0563253E
ASMET 284758N 0561019E
SIRJAN (SRJ) 293323̶2̶.̶5̶N 0553937E

~~L438~~ ~~LONOS 283027N 0491713E~~
~~LOPOL 281849N 0492845E~~
~~ATBAG 280842N 0493844E~~
~~GODRI 280256N 0494307E~~
~~RAKSO 275326N 0495032E~~
~~GOGRA 274918N 0495344E~~
~~OBNAX 272650N 0501103E~~
~~DEKTA 271605N 0501946E~~
~~VELOG 270215N 0503055E~~
~~KOBOK 265839N 0503349E~~
~~MOGAS 264759N 0503909E~~
~~TOSTA 262746N 0504912E~~
~~ASTAD 261811N 0505646E~~

~~L440~~ ~~KANIP 241040.7N 05520.7E~~
~~*Note 7~~
~~RETAS 235754N 0553423E~~

~~L443~~ ~~RABAP 283625N 0492722~~
~~TESSO 282852N 0492723E~~
~~LOPOL 281849N 0492845E~~
~~ENAVI 275552N 0493151E~~
~~GIRSI 274126N 0493310E~~
~~ORDAN 271706N 0495442E~~
~~RAMSI 270249N 0500714E~~
~~GASSI 270257N 0502229E~~

~~L444~~ ~~KIPOL 230410N 0612903E~~
~~*Note 7 (KIPOL-TOLDA)~~
~~VUSIN 225940N 0605510E~~
~~MIBSA 225400N 0601338E~~
~~KAXEM 225103N 0595243E~~
~~IMDEK 224647N 0592217E~~
~~TOLDA 224008N 0583624E~~

L513 MURAK 345600N 0364200E
BRAVO 344118N 0363500E
LEBOR 341656N 03634514E
LOTAX 335952N 0363231E
DAMASCUS (DAM) 332154N 0362807E
*Note 3 (OSTT)
BUSRA 322000N 0363700E
LOSAR 320930̶.̶0̶6̶N 0362850̶4̶9̶.̶7̶7̶E
LOXER 320148̶7̶.̶7̶6̶N 0362251̶.̶4̶6̶E
QUEEN ALIA (QAA) 314423.41N 0360927̶6̶.̶5̶9̶E
QATRANEH (QTR) 311454̶.̶4̶1̶N 0360334̶.̶3̶1̶E
MUNRA 304944N 0360835E

L519 PATAT 261613N 0560059E
*Note 7 (PATAT-ATUDO)
EGPEP 2557476̶.̶8̶N 0555823̶2̶.̶5̶E
ITLAP 254925N 0555010E
PUVAL 253558̶.̶0̶N 0554258̶.̶0̶E
DETGU 2526243̶.̶9̶N 0553605̶4̶.̶6̶E
SERSA 251945N 0553118E
IVOXI 2512403̶9̶.̶6̶N 0552513̶.̶1̶E
VEKAL 2503343̶.̶5̶N 0550341̶0̶.̶5̶E
KUTLI 245151̶.̶3̶N 0545618̶.̶0̶E
GEVIV 244118N 0545000E
ELEPO 243211N 0544410E
ODKUN 242608N 0544017E
VUXOD 242005N 0543625E
ATUDO 241708̶.̶0̶N 0543432̶.̶0̶E

L550 WAFRA (KFR) 283715N 0475729E
NIDAP 283857N 0473656E
BOSID 28423~~4~~N 0465228E
SIBSA 284506N 0462006E
LAKSO 284751N 0454129E
VATIM 285136N 0444443E
RASMO 285713N 0433119E
ORSAL 290235N 0421107E
TOLDI 290329N 0415621E
NORGI 290515N 0412546E
ULAKO 290758N 0403440E
NIMAR 290635N 0395425E
ENABI 290639N 0385550E
ASTUM 290628N 0382237E
OBNAK 290554N 0373032E
EGSIS 290515N 0362850E
KITOT 290205N 0345050E
NUWEIBAA (NWB) 290156N 0344016E
KARIK 292733N 0344641E
TAKSU 293625N 0343623E
DATOK 293624N 0341400E
SERMA 312200N 0330834E
GENIV 314831N 0330714E
PASOS 321300N 0330600E
(STEPA 324859N 0322349E)

L551 ANTAR 334800N 0281600E
*Note 7 (NOZ-ANTAR)
GOMVA 320010N 0292615E
NOGLI 321249N 0291811E
ALEXANDRIA (NOZ) 311115N 0295703E

L553 AXOTI 100330N 0341318E
GINPU 102031N 0312036E
RAMKO 102439N 0303926E
KAPIB 104917N 0255200E
KURAM 110204N 0225614E

L554 NUBAR 220000N 0313824E
PASAB 184553N 0313836E
SISOR 124543N 0313859E
ITOXA 102401N 0313908E
MALAKAL (MLK) 093347~~.40~~N 0313911~~.41~~E
KUNDI 083920N 0313819E
EGBIM 072916N 0313716E
JUBA (JUB) 045234N 0313559E

L555 TOTOX 215030N 0622230E
TUMET 222307N 0595702E
TOLDA 224008N 0583624E

L556 EGREN 202236N 0464422E
NONGA 205048N 0492014E
PURDA 210805N 0510329E
*Note 7 (PURDA-KUTVI)
IMVID 205718N 0520704E
IVABO 204749N 0530058E
SEMSI 204455N 0531724E
OBSUS 203905N 0534952E
IMDAM 202416N 0550801E
OTISA 201000N 0554556E
KEDON 200503N 0555901E
HAIMA (HAI) 195813~~.3~~N 0561651~~0.82~~E
GIVNO 195011N 0563059E
KUTVI 184306N 0582642E

L557 TUMAK 255031N 0531108E
*Note 7 (TUMAK-RAGAS)
VEDOM 260109N 0524456E
ORLUP 260651N 0523216E
VELAK 261307N 0521821E
RAGAS 263537N 0521337E

L558 DASTU 074921N 0330800E
IMDUR 074114N 0323107E
EGBIM 072916N 0313716E
DASAG 070454N 0294914E
ASKON 061745N 0262537E

L559 DAPOK 235956N 0572959E
*Note 7 (DAPOK-FJV)
PASOV 243841N 0565037E
MENSA 245750N 0563249E
FUJAIRAH (FJV) 250603N 0562116E

L560 LAKTO 323800N 0320500E
LOVEX 32095~~21.69~~N 03228~~47.72~~E
SERMA 312200N 0330834E
VUTAR 293627~~.47~~N 0334901~~.26~~E
SIMSA 291428~~.47~~N 03357~~165.76~~E
SHARM EL SHEIKH (SHM) 275953N 0342448E
SILKA 263400N 0352900E

L561 MAHDI 202600N 0373918E
SUVRI 135436N 0321800E
NABUS 110003N 0295910E
ZENUB 094106N 0285841E
ASKON 061745N 0262537E

~~L563~~ ~~MAHDI 202600N 0373918E~~
~~PORT SUDAN (PSD) 192404.12N 0371430.21E~~
~~ELUDU 143525N 0351202E~~
~~SODIL 105401N 0334204E~~
~~DEDVA 102746N 0333134E~~
~~IMDUR 074114N 0323107E~~

L564 DOHA/HAMAD (DOH) 251500~~459.66~~N 05136~~354.80~~E
LADEM 245545N 0513714E
EMEXA 245052N 0513604E
DATRI 244239N 0513407E
DENSI 242519N 0512959E
*Note 8 (DOH)
BATHA (BAT) 241257N 0512707E
SOMAL 232844N 0512716E
KUTNA 231341N 0512730E
MIGMA 225035N 0512749E
RAGPO 222759N 0510600E
LOTOS 220000N 0503912E
ALNUG 213009N 0500453E
NONGA 205048N 0492014E
DENKU 201123N 0484331E
GERUG 185530N 0473402E
ASKET 181905N 0470113E
PATOG 180241N 0464631E
VUVOD 173941N 0463200E
TULIS 173033N 0462616E
ULBON 171426N 046151~~2~~5E
RAGNI 163454N 0454815E
LOPAD 161651N 0453738E
ITOLI 152825N 0450927E
OBNAM 144541N 0444448E
GEVEL 141229N 0442547E
NOPVO 135436N 0441536E
TAIZ (TAZ) 134150N 0440819E
PARIM 123142N 0432712E

~~L566~~ ~~ASMAK 162327N 0524634E~~
~~TAKMI 160542N 0522012E~~
~~PURUG 151204N 0510142E~~
~~KUSOL 144009N 0501534E~~
~~NOTBO 142609N 0495530E~~
~~EMABI 141627N 0494139E~~
~~SOKEM 134235N 0485329E~~
~~DATEG 123549N 0471627E~~

L567	IMDUR 074114N 0323107E JUBA (JUB) 045234N 0313559E OVELA 040000N 0311454E
L570	ROTOX 283323N 0494809E AGHAJARI (AJR) 304441~~.1~~N 0494049~~.3~~E IMKEN 314407N 0493611E ALTAX 323014N 0492142E NOTSA 331745N 0490315E
L572	LESRI 370420N 0411348E KAMISHLY (KML) 370200N 0412006E HASSAKEH (HAS) 362900N 0404600E DIER ZZOR (DRZ) 351831N 0401102E TANF (TAN) 332900N 0383920E
~~L573~~	~~DAFINAH (DFN) 231658N 0414310E~~ ~~MADINAH (PMA) 243251N 0394219E~~ ~~WEJH (WEJ) 261045N 0362917E~~
L601	(ADANA (ADA) 365626~~.10~~N 0351237~~.40~~E) *Note 7 (ADA-KTN) TUNLA 355300N 0360200E SALIM 352908N 0361847E KARIATAIN (KTN) 341248N 0371551E
L602	TUMAK 255031N 0531108E *Note 7 (TUMAK-~~KTN~~GAZ) VEDOM 260109N 0524456E ORLUP 260651N 0523216E VELAK 261307N 0521821E LABOP 261907N 0520429E ALTOM 262230N 0515639E BOPOV 262430N 0515043E ALMOK 262832N 0513840E GITBO 263527N 0511750E VEDOS 264106N 05100445E MOGAS 264800N 0503909E TOLMO 265504N 0502927E EGLIT 270256N 0502006E TOKMA 270939N 0501159E ORSOL 272135N 0500208E ITNAS 274644N 0493957E DAMUR 280137N 049263~~7~~8E ITEVO 281558N 0491332E DAVUS 282346N 0490622E BOXIK 284814N 0484734E RALKA 292611N 0481819E TASMI 300120N 0475505E GADSI 303358N 0471116E ALPET 311219N 0461844E UROKO 314735N 0452917E MUTLO 321019N 0445703E LOVEK 322208N 0444001E DELMI 331918N 0431328E ASNOT 333000N 0425717E GEPAP 334906N 0422851E *Note 4 (GEPAP-GAZ) ELEXI 344130N 04140900E KUKSI 364508N 0374910E GAZIANTEP (GAZ) 3657051N 03728234E
L604	(PALEOCHORA (PLH) 351339~~.49~~N 0234051~~.04~~E) SALUN 340000N 0242700E SIDI BARANI (BRN) 313432N 0260020E DANAD 285106N 0280609E ALTAT 263602N 0294618E EGPAR 261448N 0300148E EL KHARGA (KHG) 252654N 03035274E KUNAK 252745N 0304112E EMENA 253749N 0315147E

LUXOR (LXR) 254458N 0324607E
ASRAB 254726N 0330619E
LORAS 255649N 0342714E
MOGAP 260055N 0350455E
IMRAD 260506N 0354444E
WEJH (WEJ) 261046N 0362917E
NADIK 261815N 0374637E
RABDA 262048N 0381440E
HALAIFA (HLF) 262603N 0391609E
MUPVI 262943N 0403437E
LAKRO 263051N 0410241E
DAXAP 262142N 0430228E
GASSIM (GAS) 261754N 0434647E
*Note 7 (GAS-NARMI)
NAGSA 261811N 0443117E
KUMTO 261815N 0445350E
LABIS 261815N 0451755E
PUSLA 261758N 0461706E
LOROX 261751N 0463021E
MAGALA (MGA) 261720N 0471225E
MUSRI 261647N 0474137E
KASOM 262111N 0480312E
UMENA 262832N 0483952E
TABTA 262837N 0484325E
KING FAHD (KFA) 262951N 0494643E
NARMI 261802N 0501939E
~~BAHRAIN (BAH) 261551N 0503855E~~
~~DENVO 260452N 0510509E~~
~~PATOM 255821N 0511836E~~
~~EMISA 254658N 0514207E~~
~~KAPAX 254218N 0515118E~~
~~ORSIS 252801N 0521636E~~
~~ENANO 252348N 0522559E~~
~~TOSNA 251612N 0524116E~~

L607 (SITIA (SIT) 350406~~.32~~N 0261121~~0.63~~E)
*Note 7 (SIT-NABSI)
PAXIS 335706N 0272000E
NABSI 314353N 0290419E

L612 (SITIA (SIT) 350406~~.32~~N 0261121~~0.63~~E)
*Note 7 (SIT-BLT)
KUMBI 334250N 0284500E
MIVOR 322922N 0300603E
BAL TIM (BLT) 313144N 0310721E

L613 ABU SIMBEL (SML) 222118N 0313719E
EL KHARGA (KHG) 252654N 0303527E
DEPNO 262438N 0301413E
BOPOS 264318N 0300722E
IMREK 290643N 291220E
KIVIL 293845N 0284415E
MERSA MATRUH (MMA) 311911N 0271320E
*Note 7 (MMA-AMAXI)
ITEXO 325832N 0265834E
TANSA 340000N 0264900E
(AMAXI 350552N 0254658E)

L617 CAIRO (CVO) 300532N 0312318E
*Note 7 (CVO-SIT)
MENKU 310531N 0301806E
ALEXANDRIA (NOZ) 311115N 0295703E
SOBAX 313508N 0291835E
NABSI 314353N 0290419E
TANSA 340000N 0264900E
(SITIA (SIT) 350406~~.32~~N 0261121~~0.63~~E)

L620 (ALSUS 350206N 0343924E)
BALMA 342856~~.30~~N 0350302~~.30~~E
KALDE (KAD) 334821~~6.70~~N 0352910~~9.53~~E

L631 TOTOX 215030N 0622230E

*Note 7 (TOTOX-MCT)
IVOMA 223408N 0605430E
DEBDA 224327N 0603525E
MIBSA 225400N 0601338E
AMBOS 230324N 0595405E
ELIGO 232458N 0590848E
KARAR 233042N 0585438E
MUSCAT (MCT) 233528.04N 0581536.48E

L677 CAIRO (CVO) 300532N 0312318E
MENLI 294700N 0315206E
KAPIT 291700N 0323606E
*Note 7 (PASAM-KAPIT)
SHARM EL SHIEKH (SHM) 275953N 0342448E
*Note 7 (PASAM-SHM)
PASAM 273045N 0345542E
DARAX 264713N 0354703E
WEJH (WEJ) 261046N 0362917E
*Note 7 (PASAM-JDW-WEJ)
RAGNO 251617N 0371123E
YENBO (YEN) 240858N 0380219E
RIDEP 233847N 0381558E
MIGDA 223829N 0384253E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
*Note 7 (JDW-ABKAR)
RIBAM 204231N 0390551E
PATUS 192945N 0393720E
ABKAR 190511N 0401612E
IMRAM 175604N 0413004E
MEKTU 172307N 0420445E
LUBAL 171544N 0421228E
JAZAN (GIZ) 165428N 0423439E
*Note 7 (GIZ-IMSIL)
NABAN 163123434N 0430150048E
IMSIL 155738N 0434112E
SANA'A (SAA) 153000 2959.60N 0441311 0.60E

L681 GESOR 270322N 0475751E
*Note 5 & 7 & 8 (GESOR-ULIKAORLEK)
LABLI 264522N 0482100E
RABSA 263050N 0483951E
TABTA 262837N 0484325E
EMOGA 261647N 0490230E
BOSIV 261258N 0490837E
DEMKA 261008N 0491310E
GISRA 253344N 0501047E
ULIKA 251545N 0503849EORLEK 252542N 0503712E

L692 ALRIK 220631N 0482535E
*Note 7 (ALRIK-GISKA)
LOTOS 220000N 0503912E
ORBEM 215758N 0512430E
DEBEP 215700N 0514434E
VATIX 215522N 0521638E
ALROK 215400N 0524217E
DEBIN 214716N 0543309E
KOBES 214504N 0550526E
DAPOL 214301N 0553416E
EMAVA 214208N 0554936E
ITSAG 213720N 0570640E
GISKA 213503N 0574014E

L695 PAROK 231030N 0590245E
*Note 7 (PAROK-ITURA)
ITURA 232351N 0580720E

L700 *Note 5 (KHM-MIXAM)
GHESHM ISLAND (KHM) 264547.1N 0555428 7.6E
ULDUN 262429N 0560924E
BOTOV 252812N 0564307.80E
GIDIL 251742N 0564923E

BUBAS 245938N 0570003E
GERAR 240600N 0573616E
MIXAM 234139N 0575523E

L702 TIMAD 115500N 0463500
IMPAG140637.8N0503924E
TATNA 144000N 0515200E
UKSAB 145200N 0521800E
NODMA152600N 0533400E

L703 LONOS 283027N 0491713E
LOPOL 281850N 0492845E
GEPUT 281307N 0493423E
GODRI 280257N 0494308E
GOGRA 274918N 0495344E
OBNAX 272651N 0501103E
DEKTA 271605N 0501946E
VELOG 270215N 0503056E
KOBOK 265839N 0503349E
RIKET 261952N 0510954E
RASDI 260425N 0512407E

L704 LONOS 283027N 0491713E
*Note 7 (LONOS-TOSNA)
LOPOL 281850N 0492845E
GEPUT 281307N 0493423E
GODRI 280257N 0494308E
GOGRA 274918N 0495344E
OBNAX 272651N 0501103E
DEKTA 271605N 0501946E
VELOG 270215N 0503056E
KOBOK 265839N 0503349E
DEBEN 265254N 0504856E
DAVRI 264936N 0505732E
SODAK 264634N 0510530E
DANOB 263946N 0512640E
BOTOB 263350N 0514505E
VEDED 260558N 0514628E
ORSIS 252801N 0521636E
ENANO 252348N 0522559E
TOSNA 251612N 0524116E

L710 UKRAG 233056N 0552306E
*Note 7 (UKRAG ~~to~~ DEDSO)
MEMTU 232517N 0552443E
GOGMI 230215N 0553159E
ITKUN 223731N 0553934E
DEBAV 221532N 0554617E
EMAVA 214208N 0554936E
ITETA 211618N 0555208E
IVENI 205158N 0555430E
KASIN 201853N 0555742E
KEDON 200503N 0555901E
KUKDI 193022N 0555953E
DEDSO 185811N 0560041E

L713 DASHT E NAZ (DNZ) 363854~~3.6~~N 0531120~~.1~~E
IMDUX 361511N 0534211E
GIBAB 353213N 0543656E
PAXER 350901N 0550000E
ULETA 342805N 0554002E
EMITI 335811N 0560845E
RIBEN 332902N 0563620E
OTISO 331451N 331451N
EGPOD 324901N 0571545E
NADSA 321438N 0575002E
TOVUS 300643N 0595235E
ULOVI 291948N 291948N
SODOK 281113N 0613652E
KEBUD 273552N 0625024E

L716 ULADA 264527N 0501624E

RABKA 263531N 0495728E
DAMMAM/KING FAHD (KFA) 262951N 0494643E
*Note 7 (KFA-EMUSA)
EMOGA 261647N 0490230E
EMUSA 261101N 0484317E

L717 RANRU 300115N 0610048
LUDAX 295658N 0604101E
PEKES 285929N 0595221E
(OGOGO 302457N 0630904~~.20~~E)

L720 RIKOP 374026N 0581450E
BOJNORD (BRD) 372942~~.2~~N 0571924~~3.8~~E
ODKOL 363136N 0560702E
IBRAV 362041N 0555430E
ULANO 355228N 0552043E
ITELO 353534N 0550052E

L721 LAVAN ISLAND (LVA) 264843~~.4~~N 0532121~~.1~~E
EGMIT 263340N 0530825E
IMLUV 262936N 0530101E
ELIDU 262424N 0525133E
*Note 7 (ELIDU-BAYAN)
UKNEP 262127N 0524818E
UKUBU 261428N 0524039E
ORLUP 260651N 0523216E
ITMUB 255919N 0522402E
ALKAN 255214N 0521615E
SENKI 254637N 0520928E
LABOV 25341~~2~~1N 0515521E
BAYAN 252926N 0514849E

~~L764~~ ~~MUSCAT (MCT) 233528N 0581536E~~
~~ALMOG 233524N 0574940E~~
~~IVETO 233520N 0570704E~~
~~PAXIM 240245N 0561631E~~

L768 ALPOB 254218N 0530055E
*Note 7 (ALPOB~~ to~~ FIRAS)
*Note 8 (ALPOB-COPPI)
ROTAG 255353N 0523621E
ITMUB 255919N 0522402E
MODOG 261012N 0515935E
RAMKI 261138N 0515625E
RABLA 261506N 0514834E
SOLOB 262241N 0513132E
ALREP 262541N 0512209E
ORDIG 262738N 0511603E
MEDMA 263421N 0505454E
OBMON 263832N 0504125E
EGMOR 264211N 0502907E
ULADA 264527N 0501624E
ITESA 265016N 0500014E
JUBAIL (JBL) 270043N 0492443E
LAKSI 271306N 0490004E
ITUDA 273432N 0481647E
IVOBA 274138N 0480219E
COPPI 275033N 0474359E
DUSBO 280616N 0465254E
AL QAISUMAH/HAFR AL BATIN (HFR) 282126N 0460703E
VATIM 285136N 0444443E
RAFHA (RAF) 293713N 0432953E
ARAR (AAR) 305429N 0410832E
OVANO 314801N 0390951E
OTILA 320131N 0390153E
MODAD 323542N 0384136E
KUMLO 325821~~.82~~N 0384138~~.14~~E
SOKAN 330806N 0382206E
RAFIF 331247N 0381919E
SULAF 332718N 038102~~4~~7E
FIRAS 335218N 0375512E

L852 UROMIYEH (UMH) 374114~~.0~~N 04505043~~.7~~E
TESVA 381709N 0442947E
(ESENK 384441~~.40~~N 4256176~~.80~~E)

L883 REXOD 211230N 0613830E
GADMA 211439N 0600938E
TAVKO 211519N 0593147E
UMILA 211555N 0584738E
*Note 7 (UMILA~~ to~~ ALNUG)
MEVLI 211632N 0565606E
KUROV 211627N 0561853E
ALNUN 211625N 0561041E
ITETA N211618 E0555208
SITOL 211604N 0552514E
LONOV 211856N 0543516E
DASAP 212047N 0540045E
EGSAB 212446N 0523634E
ASNUR 212654N 0514335E
EGSIT 212746N 0511956E
ALNUG 213009N 0500453E
~~*Note 7 (ALRIK to ALNUG)~~
ALRIK 220631N 0482535E
*Note 7 (ALRIK-KITUB)
KITUB 224922N 0462342E
~~UMRAN 231508N 0452023E~~
~~*Note 7 (PMA to URMAN)~~
~~DASTO 232236N 0445953E~~
~~NADLI 233725N 0441843E~~
~~TUKVU 234626N 0435319E~~
~~KODIS 240254N 0425312E~~
~~BIR DARB (BDB) 241951N 0414928E~~
~~GOKSA 242442N 0410403E~~
~~MEDRO 242730N 0403649E~~
~~MADINAH (PMA) 243251N 0394219E~~

L934 PATOM 255821N 0511836E
LUBET 261441N 0510347E
EGPUD 262904N 0505019E
OBMON 263832N 0504125E
OVUPI 265320N 0502727E
TOKMA 270939N 0501159E
ORSOL 272135N 0500208E
ITNAS 274644N 0493957E
DAMUR 280137N 0492638E
ITEVO 281558N 0491332E
DAVUS 282346N 0490622E

M1 (ARLOS 343731.20N 230000.60E)
RASNO 342000N 0212758E
REDFI 332030N 0205442E
WHALE 324436N 0203300E
BENINA (BNA) 320728N 0201513E

M7 BONAR 342999N 0190213E
*Note 7 (BONAR to MB)
RZAAN 324818N 0191536E
ASRAP 315251N 0192258E
RIGED 315250.40N 0192258.20E
MARSA BREGA (MB) 302506N 0193421E
LEBKO 284907.80N 193736.60E
MASIT 272815.60N 0194915.60E
LAGSI 252145N 0194418E
TONBA 213518N 0195112E

M214 (ILDOR 200937.20N 180119.20E)
GARIN 220000N 0170636E
ELGAN 245000N 0153754E
TOTOD 260051N 145942.60
SEBHA (SEB) 265944N 0142735E

M215 (KILDO 204517.40N 195807.80E)
TONBA 213518N 0195112E

*Note 7 (TONBA to UPLIT)
KANIR 254613.20N 182903.60E
NABUR 290307.80N 172011.40E
SOLAB 300234.80N 165832.40E
SIRTE (SRT) 310333N 163552.20E
TULIR 332240.20N 151613.80E
LUMED 342000N 0144203E
(UPLIT 363000N 0133222.80E)

~~M203~~ ~~PUSTO 332100N 0424500E~~
~~*Note 7 (PUSTO to ILMAP)~~
~~SILBO 325900N 0432900E~~
~~LOVEK 322208N 0444001E~~
~~KODAV 314500N 0460400E~~
~~ILMAP 312133N 0465702E~~

M300 (KADOL 190003N 0633602E)
LOTAV 203700N 0605700E
GADMA 211439N 0600938E
GOLBA 213318N 0594600E
EMURU 221357N 0585338E

M301 ~~(~~PURAD 145500N 0415354E~~)~~
KIPAM 150030N 0421526E
MIPIN 150608N 0423735E
LUDOX 152034N 0433524E
MUTEX 152524N 0435445E
SANA'A (SAA) 153000~~295960~~N 0441311~~0.60~~E
ITOLI 152825N 0450927E
PASAD 153634N 0460713E
PAPOR 154322N 0465652E
GIBIT 154849N 0473804E
NABUP 155417N 0482143E
SAYUN (SYN) 155743~~2.64~~N 0484710~~.18~~E
XAGAG 160206N 0492722E
GINBO 160349N 0494017E
RARBA 161021N 0503920E
SIMKO 161821N 0515526E
ASMAK 162327N 0524634E

~~M303~~ ~~MUSCAT (MCT) 233528.04N 0581536.48E~~
~~*Note 7 (MCT-KIPOL)~~
~~SEVLA 233321N 0591122E~~
~~KIPOL 230410N 0612903E~~

~~M305~~ ~~SIDI BARANI (BRN) 313432.5N 0260020.3E~~
~~ATMUL 200000N 0290527.4E~~
~~*Note 3~~

~~M309~~ ~~KING KHALED (KIA) 245310N 0464534E~~
~~*Note 1 (KIA-VEMEM)~~
~~DURMA 242710N 0454610E~~
~~RAGHBA (RGB) 235533N 0443547E~~
~~LAKMI 232424N 0430827E~~
~~DIPEX 231656N 0424758E~~
~~KUTOL 230718N 0422147E~~
~~ITOLO 224602N 0412244E~~
~~ALPUT 224019N 0410705E~~
~~VUTEX 223418N 0405044E~~
~~VEMEM 221554N 0400118E~~

M316 IMLOT 251708N 0570804E
KATUS 251600N 0574700E
SEVDA 260217N 0590549E
NAGES 262451N 0594514E
SOLUV 264157N 0601533E
GOKSO 265542N 0604012E

M317 GABKO 260404N 0554755E
RADEB 261140N 0554719E
NANPA 262301N 0553136E
ORPEN 263119N 0552008E

SERDU 264715N 0545757E
ROTAL 273241N 0535320E
KUPTO 282418N 0525432E
IMGOD 301419N 0513050E
RADID 302444N 0512613E
NOTSA 331745N 0490315E
KEBEP 350454N 0474014E
PAREX 360527N 0465154E
*Note 5 (RABEM-DASIS)
RABEM 374841N 0452949E
KHOY (KHY) 382601~~.4~~N 0445759~~8.9~~E
DASIS 385435N 0441230E

M318 RIKOP 374026N 0581450E
*Note 7 (ATUDO-RIKOP)
SILPO 370806N 0580006E
BONEM 363826N 0574647E
SABZEVAR (SBZ) 361011~~.0~~N 0573415~~4.9~~E
RABAM 355442N 0572955E
SITEL 351304N 0571825E
DAPIN 342034N 0570413E
TABAS (TBS) 334021~~.2~~N 0565331~~0.9~~E
OTISO 331451N 0564936E
IMSOG 325636N 0564649E
NIVRA 315905N 0563810E
PARID 313041N 0563358E
MIRER 305943N 0562926E
GETIS 301145N 0562226E
ASMET 284758N 0561019E
ASMUK 280952N 0560453E
GHESHM ISLAND (KHM) 264547~~.1~~N 0555428~~7.6~~E
RADEB 261140N 0554719E
GABKO 260404N 0554755E
DAVMO 255127~~.0~~N 0553900~~.0~~E
TOVIV 253302N 0551942E
LOVEM 252645~~.4~~N 0551440~~.4~~E
MITIX 251746~~.4~~N 0550730~~29.7~~E
EGTAG 250856N 0545652E
VEKOV 245750N 0544925E
TULON 245511~~.4~~N 0544739~~.1~~E
KUVDA 244309N 0543909E
IMLIP 243648N 0543549E
RURAL 243045N 0543156E
ATUDO 241708~~.0~~N 0543432~~.0~~E
MUSEN 241429N 0543236E
BOPIT 235947N 0540404E
DANOK 234220N 0533111E
ESROM 232424N 0525729E
GOLGU 231051N 0523109E
MUXIT 230229N 0523024E
KATIT 224928N 0522923E
MEDPO 222421N 0520751E
DEGPA 221801N 0520227E
DEBEP 215700N 0514434E
MIBDO 214340N 0513318E
EGSIT 212746N 0511956E
PURDA 210805N 0510329E
ASTIN 200410N 0495320E
KUTMA 182927N 0481202E
NITPO 174554N 0472624E
SHARURAH (SHA) 172813N 0470802E
NADKI 17141~~7~~8N 0464703~~6~~E
RAGNI 163454N 0454815E
IMDEN 162101N 0452744E
MUTAB 155314N 0444700E
~~RAKID~~RAYDE 154134N 0442959E
SANA'A (SAA) 153000~~2959.60~~N 0441311~~0.60~~E
NAGIL 152024N 0435651E
RAMLO 151033N 0434007E
HODEIDEH (HDH) 144622~~.10~~N 0425911~~.10~~E

M319 ULINA 292451N 0345818E

SESMO 293458N 0351159E
LOXUS 301301N 0352601E
LOSIL 304951N 0354841E
QATRANEH (QTR) 311454N 0360334E
MOUAB 314758.00N 0353559.00E

M320 KING FAHD (KFA) 262153N 0494910E
ALVAP 264547N 0493524E
KODAG 2703.3N 04920.4EGODBA 264905N 0493302E
JUBAIL (JBL) 270222N 0492426E
EGREX 270433N 0492158E
PUSRA 272031N 0491030E
ASNIS 275643N 0484412E
RAS MISHAB (RAS) 280441N 0483653E
KUWAIT (KUA) 291457N 0475717E
ASVIR 283220N 0482220E
KUWAIT (KUA) 291457N 0475717E

M321 HALAIFA (HLF) 262603N 0391609E
*Note 7 (KIA-HLF)
IMROV 260936N 0402145E
ORMAD 260353N 0404401E
ROSUL 253945N 0421519E
KINOB 253146N 0430018E
MIRAS 251508N 0443001E
OVEKU 250955 0445701E
IVONU 250323N 0454030E
KING KHALED (KIA) 245310N 0464534E
RESAL 240649N 0470427E
NAGUB 232752N 0473102E
AMBAG 230529N 0474611E
BOSOB 224130N 0480218E
ALRIK 220631N 0482535E
DAXOK 213157N 0485041E OBRUR 213852N 0484541E
NONGA 205048N 0492014E
ASTIN 200410N 0495320E
SILPA 184953N 0510158E
IMPOS 183137N 0511848E
LOTEL 180926N 0514103E
PUTRA 165432N 0525631E

M323 IMDUR 074114N 0323107E
BOTOK 102859N 0334548E
EGTOT 144511N 0353913E
MIPOL 203322N 0382145E

M324 RIKOP 374026N 0581450E
LOXED 355854N 0580609E
TABNI 353052N 0575840E
TASLU 342531N 342531N
ROXEK 331123N 0572138E
EGPOD 324901N 324901N
DARBAND (DAR) 314659.4N 0565940.4E
PURBO 311346N 0565832E
KERMAN (KER) 301658.1N 0565632.3E
NANTO 284140N 0563831E
BANDAR ABBAS (BND) 271149.4N 0562200.3E
MOBET 264406N 0560908E
PATAT 261613N 0560059E

M425 ELIKA 334955N 0343500E
CHEKA (CAK) 341802 1.81N 0354200159.64E

M428 IVURO 251940N 0560915E
*Note 7/8 (IVURO-MUNGA)
SUTVO 251531N 0562153E
GOMTA 251115N 0563447E
TARBO 244351N 0574637E
MUNGA 242516N 0584533E

M430 KING KHALID (KIA) 245310N 0464534E
*Note 5 (KIA-DOH)

*Note 7 (ULIKA-KIA)
DEGLA 250243N 0472847E
KOBOX 250716N 0475046E
GOLNO 251155N 0483658E
KIREN 251447N 0490724E
*Note 8 (KIREN-TOSNA)
AL AHSA (HSA) 251645N 0492903E
SALWA 251538N 0503048E
ULIKA 251545N 0503849E
GINTO 251606N 0510416E
LAGNO 251613N 0511518E
DOHA/HAMAD (DOH) 251500459.66N 0513635 4.80E
*Note 7 (OXARI-DOH)
BOVIP 251555N 0523135E
TOSNA 251612N 0524116E
PUTIB 251900N 0525755E
RORON 252053N 0530916E
TAGDU 252258N 0532153E
OXARI 252535N 0533458E

M434 UMESA 351741N 0434307E
OTALO 351700N 0441900E
TOTAM 351601N 0444006E
DAVAS 351724N 0451235E
BOXIX 351724N 0460921E
ASLAX 351607N 0463118E
NOLTO 351435N 0465623E
SANANDAJ (SNJ) 351420 19.7N 0470029.2E
TUKLO 351014N 0471751E
LOVID 350740N 0472841E
KEBEP 350454N 0474014E
HAMADAN (HAM) 345201 0.8N 0483301.0E
ORLOG 345512N 0490915E
SAVEH (SAV) 350107 6.8N 0502217 6.9E

M440 KING KHALED (KIA) 245310N 0464534E
OTALI 243313N 0474744E
SITER 241107N 0485443E
ITULU 232031N 0510948E
KUTNA 231341N 0512730E
BOPEK 230059N 0520007E
KATIT 224928N 0522923E
*Note 7 (KATIT-TULBU)
DAVLU 224136N 0533310E
DANUX 223605N 0541558E
MIDGU 222706N 0552230E
DEMKI 224941N 0562308E
TULBU 230005N 0571827E

M444 DOHA/HAMAD (DOH) 251500459.66N 0513635 4.80E
EMISA 254658N 0514207E
PATOM 255821N 0511836E
DENVO 260452N 0510509E
TULUB 260644N 0510041E
BAHRAIN (BHR) 261530N 0503919E
ELOSO 262409N 050355 01E
DESBU 263240N 0503241E
EGMOR 264211N 0502907E
LOTOR 264854N 0502200E
*Note 7 (LOTOR-DAVUS)
RAMSI 270249N 0500714E
ORDAN 271706N 0495442E
GIRSI 274126N 0493311E
ENASO 275707N 0491911E
EMORI 281434N 0491051E
DAVUS 282346N 0490622E

M449 BUSRA 322000N 0363700E
GIBOX 320700N 0363308E
MESLO 320231N 0363148E
GETUP 315833.47N 0363037.47E
ALNOR 313955.26N 0362508 7.52E

EGLOT 3116576.94N 0361824 3.86E
MUNRA 304944.29N 0360835 4.88E
KINOD 301200.30N 0361601 0.60E
PETRA 294206N 0362210E
GIBET 292620N0362501E
EGSIS 290515N 0362850E
RABUG 283622N 0363402E
TABUK (TBK) 282153N 0363637E
NETOL 270748N 0363226E
WEJH (WEJ) 261046N 0362917E

M550 GOLGU 231051N 0523109E
RIBOT 230844N 0522428E
BOPEK 230059N 0520007E
MIGMA 225035N 0512749E
*Note 7 (MIGMA-MEVDO)
ODBUK 224657N 0510720E
MEVDO 223205N 0494616E

M551 (DONSA 143518N 0651136E)
ANGAL 1614046N 0600046E
OTOTO 164004N 0570435E
KIVEL 165306N 0553633E
DAXAM 171612N 0544715E

M553 LADNA 262749N 0502245E
KING FAHD (KFA) 262951N 0494643E
EMOGA 261647N 0490230E
EMUSA 261101N 0484317E

M554 TOKAR 180624N 0374812E
MIPOL 203322N 0382145E

M555 ALRAM 374230N 0443736E
KAPES 372520N 0452004E

M556 ORMID 253354N 0525434E
DASLO 254537N 0523029E
ALKAN 255214N 0521615E
RABLA 261506N 0514834E
SOLOB 262241N 0513132E
ALREP 262541N 0512209E
ORDIG 262738N 0511603E
MEDMA 263421N 0505454E
BAHRAIN (BHR) 261530N 0503919E
NARMI 261802N 0501939E

M557 IVOXI 251240 39.6N 0552513.1E
MITIX 251746.4N 0550730 29.7E
RIDAP 252554 3.7N 0543701.2E
OTIKI 253229N 0541441E
TOTKU 253534N- 0540410E
GODKI 254122N- 0534347E
RALMI 254505N- 0533033E
TUMAK 255031N- 0531108E

M559 JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
*Note 7 (JDW-LABNI)
RIBAM 204231N 0390551E
PATUS 192945N 0393720E
IMLIL 171949N 0403219E
LABNI 165620N 0410921E
NISMI 162415 8N 0421838 6E
DAROV 160637N 0431338E
IMSIL 155738N 0434112E
ASREM 154637N 0441443E
RAKIDRAYDE 154134N 0442959E
ITOLI 152825N 0450927E
LONIS 151910N 0460016E
MEMTA 150322N 0472434E
OBNIS 145840N 0474903E
BOSAX 144740N 0484553E

MUKALLA (RIN) 144015.30N 0492329.30E
EMABI 141627N 0494139E
XANLO 135653N 0495628E
PURKA 131208N 0503042E
ODBEN 123747N 0505648E
VEDET 120134N 0512421 0E

M561 RAGAS 263537N 0521337E
*Note 7 (RAGAS-KIS)
EGMIT 263340N 0530825E
KISH ISLAND (KIS) 263131 0.6N 0535745 4.7E
MIVUN 263151N 0541953E
DENSA 263158N 0542920E
BANDAR LENGEH (LEN) 263210.1N 0545104.2E
BOSOS 264325N 0554311E
GHESHM ISLAND (KHM) 264547.1N 0555428 7.6E
*Note 7 (KHM-ASVIB)
PAVON 270206N 0561149E
RUKOT 265324N 0580339E
LADPA 265331N 0592514E
GOKSO 265542N 0604012E
ASVIB 265724N 0631812E
(PANJGUR (PG) 265710.21N 0640813.06E)

M562 VATEN 153358N 0323312E
PASIL 161331N 0332010E
BOPID 163948N 0335142E
IMTPARX 170609 2005N 034233 14026E
PORT SUDAN (PSD) 192405412N 037142930 21E
BOGUM 200636N 0380300E
MIPOL 203322N 0382145E

M564 PASOV 243841N 0565037E
*Note 7 (PASOV-UMAMI)
PUXIL 244117N 0563145E
VAXAS 244308N 0561807E
NALNU 244737N 0560925E
UMAMI 245114 3.7N 0560223.3E

M565 ALRAP 133945N 0361344E
*Note 7 (ALRAP-LUGAV)
EGTOAT 144511 5325N 035391 34256E
GIDARX 152731 2126N 035164 23107E
ELONO 163635N 0343934E
IMTPARX 170609 2005N 034233 14026E
DARIBREV 193159 4449N 033025 23656E
ENABUSISID 220000N 0322927E
LUGAV 224205N 0313722E

M568 NUBAR 220000N 0313824E
UMIDA 185115N 0311704E
ASNON 150818N 0305312E
KASAB 134346N 0304233E
KINOV 093414N 0301149E
DEKUM 043742N 0293936E

M572 NOLSU 251248.0N 0560738 7.8E
*Note 7 (NOLSU-GOMTA)
GOMTA 251115N 0563447E

M573 TEHERAN (TRN) 354149.10N 0511702 1.60E
DAMOS 372619N 0474521E
TABRIZ (TBZ) 380854 3.50N 046140 52473.95.70E
DASIS 385435N 0441230E

M574 NABIL 122200N 0600006E
BOTEM 135413N 0551418E
RIGAM 143932N 0530414E
UKSAB 145200N 0521800E
NODLI 150301N 0513549E
PURUG 151204N 0510142E
EGMIX 151811N 0503810E

UKORA 152407N 0501547E
TAVLI 153502N 0493430E
RALMO 153824N 0492155E
NABUP 155417N 0482143E
MUTOK 161005N 0472228E
LABRA 161813N 0465113E
OVABI 162442N 0462642E
RAGNI 163454N 0454815E
ELONA 165753N 0442124E
NOBSU 171554N 0431315~~8~~E

~~M600~~ ~~RANBI 251908N 0544500E~~
~~KISAG 251834N 0541408E~~
~~TUMAK 255031N 0531108E~~
~~*Note 7 (TUMAK-KUMBO)~~
~~VEDOM 260109N 0524456E~~
~~ORLUP 260651N 0523216E~~
~~VELAK 261307N 0521821E~~
~~LABOP 261907N 0520429E~~
~~ALTOM 262230N 0515639E~~
~~BOPOV 262430N 0515043E~~
~~ALMOK 262832N 0513840E~~
~~GITBO 263527N 0511750E~~
~~VEDOS 264106N 05100445E~~
~~MOGAS 264800N 0503909E~~
~~RAKAK 265221N 0502618E~~
~~RAMSI 270249N 0500714E~~
~~ORNAK 272854N 0493248E~~
~~SOLEM 275229N 0491136E~~
~~KUMBO 281705N 0485526E~~

M600 (ZARZAITINE (IMN) 280412N 0093954E)
TOKDA 303311.40N 0111143.80E
GALPO 311534.20N 011385100E
ZAWIA (ZAW) 324643N 0123847E
SARKI 342000N 0131447E

M620 (KUTOS 350625.80N 0183538.40E)
*Note 7 (KUTOS - BNA)
BONAR 342999N 0190213E
RAMLI 334300N 0192300E
PUFER 325901N 0194748E
ATOLL 324500N 0195454E
BENGHAZI BENINA (BNA) 320728N 0201513E
DAMUN 302805.40N 205530.60E
VATAX 275312N 0215601.20E
SODOR 273746.20N 220158.80E
KUFRA (KFR) 240912N 231831.20E

M621 (BEKNI 351215.60N 172807.80E)
*Note 7 (BNA-BEKNI)
OLMAX 342000N 0180750E
ERMIX 335819.20N 182401.80E
FARUJ 333124N 0184354E
RZAAM 324818N 0191536E
BENGHAZI BENINA (BNA) 320728N 0201513E

M622 (DIBAK 351610.80N 152759.40E)
*Note 7 (BNA-DIBAK)
INDOT 342000N 0165653E
LETNO 340000N 172810.80E
TUNAR 332448N 0182212E
RZAAM 324818N 0191536E
BENGHAZI BENINA (BNA) 320728N 0201513E

M628 ~~DAFINAH (DFN) 231658N 0414310E~~
~~*Note 7 (UMRAN-DFN)~~
~~DIPEX 231656N 0424758E~~
~~NALBA 231639N 0433419E~~
~~DAXUR 231537N 0445436E~~
~~UMRAN 231508N 0452023E~~
~~*Note 7 (UMRAN-MIGMA)~~

~~DEBAS 231059N 0462728E~~
AMBAG 230529N 0474611E
*Note 7 (MIGMA-AMBAG)
DEGNO 225945N 0485954E
OBSEP 225158N 0510742E
MIGMA 225035N 0512749E
~~BOSAK 225021N 0514213E~~
KATIT 224928N 0522923E
PEKEM 224648N 0535942E
RIGIL 230146N 0551430E
LUDID 230227N 0551800E
GOGMI 230215N 0553159E
*Note 7 (TULBU-LUDID)
LABSA 230153N 0555505
EGVAN 230127N 0561907
KUNGO 230034N 0565850E
TULBU 230005N 0571827
IZ~~I~~KI (IZK) 22531998~~.60~~N 05745432~~.73~~
TOLDA 224008N 0583624E
*Note 7 (PARAR-TOLD~~L~~A)
LOXOP 223722N 0594548E
LOSIM 223513N 0603238E
IVOMA 223408N 0605430E
PARAR 222630N 0630700E

M634 ANGAL 1614046N 0600046E
TOKPU 145122N 0571034E
BOTEM 135413N 0551418E
KEDAV 125553N 0531509E
VEDET 120134N 0512~~4~~210E
(IMTIS 112506N 0502858E)

M651 NADKI 171417~~7~~8N 0464703~~6~~E
OVABI 162442N 0462642E
MEGPA 160017N 0461653E
PASAD 153634N 0460713E
LONIS 151910N 0460016E
PEBIX 1444~~47~~8N 0454637E
LADLI 132724N 0451604E
ADEN (KRA) 124952~~.20~~N 0450125E
~~KORAB~~ULDAK 121109N 0445028E
OKTOB 114730N 0444348E
(IMVEB 112638N 0443753E)

M677 SESRU 290900N 0485450E
*Note 7 (SESR~~A~~U-TUKSI)
RETEL 285236N 0491048E
RABAP 283625N 0492722E
PASAK 282500N 0494847E
IVIVI 273734N 0502437E
DEBGU 272648N 0503252E
VEDOR 270855N 0504630E
TOSDA 270004~~5~~N 0505629E
TORBO 265223N 0511024E
SEVNI 264401N 0513815E
SOGAN 263915N 0515408E
MURUB 262455N 0523751E
UKNEP 262127N 0524818E
DEGSO 261054N 0531946E
OBNET 260032N 0534514E
LUDAM 255508N 0535859E
ITBUL 254910N 0541227E
DIXAM 254151N 0543557E
VUTEB 253645~~4.6~~N 0545149~~.4~~E
LOVEM 252645~~.4~~N 0551440~~.4~~E
KURTU 252211N 0554625E
MISEG 252134N 0555205E
TUKSI 252006N 0560525E
IVURO 251940N 0560915E
KUSEN 251828~~.0~~N 0562340~~.0~~E
LALDO 251806N 0563600E

~~M681~~ ~~TARBO 244351N 0574637E~~
~~*Note 7/8 (TARBO-DAMUM)~~
~~DAMUM 243236N 0591307E~~

M686 LUXOR (LXR) 254458N 0324607E
*Note 7 (JDW-LXR)
MEMPO 252518N 0335457E
OTEMO 250341N 0350810E
GIBAL 243713N 0363443E
ALPOV 232037N 0374252E
BOMOX 222949N 0382704E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E

M688 (OTKEP 375133N 0423936E)
*Note 7 (OTKEP-SIDAD)
RATVO 371426N 0435604E
KEDIM 364617N 0440909E
SOBIL 343000N 0451008E
VAXEN 331800N 0451500E
SISIN 325006N 0454113E
ULDUR 305023N 0472958E
SIDAD 295231N 0482944E

M690 ZELAF 325656N 0375959E
ORNAL 324755N 0375153E
KODER 323300N 0373800E
DESLI 314900N 0365901E
ELOXI 313401N 0364534E
KULDI 311847N 0363214E
MUNRA 304944N 0360835E
LONOL 300801N 0353500E
SESMO 293458N 0351159E
ULINA 292451N 0345818E
NUWEIBAA (NWB) 290156N 0344016E

M691 LADNA 262749N 0502245E
*Note 7 (ALPOT-LADNA)
KING FAHD (KFA) 262951N 0494643E
DASVA 264551N 0492301E
SILBA 270554N 0485301E
ALPOT 271841N 0480511E
KEDAT 272149N 0475901E
EMENI 273234N 0473848E
ITIXI 275031N 0470435E

M700 PARAR 222630N 0630700E
*Note 7 (AMBOS - PARAR)
AMBOS 230324N 0595405E

M701 LUMOM 371612N 0444924E
PAVOD 370204N 0451834E
ENEDA 355211N 0462718E
NOLTO 351435N 0465623E
KHORAM ABAD (KRD) 332603~~.1~~N 0481731~~0.7~~E
DAPEM 325126N 0484159E
NAGRO 321015N 0491549E
IMKEN 314407N 0493611E
MESVI 311057N 0500006E
BOTAS 295241N 0505515E
IVERA 292303N 0511540E
DEPSU 283409N 0515047E
DURSI 271219N 0520144E
KAVAM 265737N 0515818E
MIDSI 264142N 0515442E

M702 SILKA 263400N 0352900E
WEJH (WEJ) 261046N 0362917E
KULKI 254814N 0371445E
TULOK 251001N 0383037E
BOVET 245742N 0385436E
EGVED 244857N 0391129E
MADINAH/PRINCE MOHAMMAD BIN ABDULAZIZ (PMA) 243251N 0394219E

MEDRO 242730N 0403649E
GOKSA 242442N 0410403E
BIR DARB (BDB) 241951N 0414928E
AL DAWADMI (DAW) 242656N 0440709E
TASBA 243059N 0443028E
KAVUR 244246N 0454036E
RIYADH/KING KHALED (KIA) 245310N 0464534E
ETBAS 253451N 0473318E
AKRAM 255036N 0475133E
GETOT 260646N 0481025E

M705 DEESA 294509N 0364102E
BOSAL 292912N 0375933E
LABAD 291922N 0385411E
NIMAR 290635N 0395425E
*Note 7 (NIMAR-LOTOK)
DEDGI 285903N 0404128E
GENON 285119N 0412758E
TAMRO 283838N 0424047E
GEXUP 282724N 0433514E
VUTAD 282352N 0435158E
LOTOK 280834N 0450402E

M707 VARIG 342000N 0134350E
*Note 7 (VARIG-ABU)
NOSRO 325324N 0133148E
ABU ARGUB (ABU) 322746N 0131010E

M708 DAROR 270244N 0495815E
*Note 7 (DAROR-DASUT)
RAMSI 270249N 0500714E
GASSI 270257N 0502229E
VELOG 270215N 0503056E
TOSDA 270005N 0505629E
TORBO 265223N 0511024E
SEVNI 264401N 0513815E
SOGAN 263915N 0515408E
MURUB 262455N 0523751E
DASUT 261832N 0531108E

M709 BENGHAZI BENINA (BNA) 320728N 0201513E
MARSA BREGA (MB) 302506N 0193421E
DAHRA (DHR) 292803N 175554E
NABUR 290307.80N 172011.40E
FUGHA 281001N 0160541E
SEBHA (SEB) 265944N 0142735E
TAZIT 255624N 0115418E
GHAT (GHT) 255624N 0100820E
TWARG 250301N 0100200E

M710 DASIS 385435N 0441230E
REXUS 385624N 0451332E
DULAV 385700N 0453800E

M711 TOKRA 220924N 0553348E
*Note 7 (TOKRA-PMA)
DARER 221152N 0550332E
IMGOV 221828N 0533624E
MEDPO 222421N 0520751E
LABDU 222457N 0515807E
RAGPO 222759N 0510600E
MEVDO 223205N 0494616E
BOSOB 224130N 0480218E
KITUB 224922N 0462342E
DANOM 225454N 0450509E
ASMIS 225631N 0444014E
NALBA 231639N 0433419E
LAKMI 232424N 0430827E
ASMUN 233116N 0424514E
AMRAH 233928N 0421716E
BOXEB 234439N 0415921E
ALVIR 234825N 0414618E

ALKAV 235200N 0413348E
ASVIV 235532N 0412121E
NAGBO 240219N 0405720E
ELONU 240942N 0403053E
MADINAH/PRINCE MOHAMMAD BIN ABDULAZIZ (PMA) 243251N 0394219E

M713 EPLAS 040000N 0341148E
TAPOS 055408N 0332002E
IMDUR 074114N 0323107E
MALAKAL (MLK) 093347N 0313911E
GINPU 102031N 0312036E
EL OBEID (OBD) 130641N 0301335E

M715 ASVIB 265724N 0631812E
SARAVAN (SRN) 272454~~.1~~N 062193~~21.5~~E
PEKES 285929N 0595221E
SILKO 295558N 0584138E
EGRES 304855N 0573144E
PURBO 311346N 0565832E
PARID 313041N 0563358E
DANEM 322854N 0550717E
MITET 325226N 0542850E
PURKI 331140N 0535657E
KAVEK 332249N 0533814E
RERET 333336N 0532651E
OXADU 350837N 0511226E
IMLIM 351200N 0510400E
ELIPO 354046N 0502117E
ZANJAN (ZAJ) 364647~~6.8~~N 048211~~21.9~~E

M717 LADLI 132724N 0451604E
DASIT 144412N 0462931E
GIBIT 154849 N 0473804E
KANEM 173660N 0492655E
SILPA 184953 N 0510158E
SILPA 184953N 0510158E
*Note 7 (SILPA-PUTSO)
MEDMO 194837N 0521027E
METNO 201418N 0524050E
DAXUT 203706N 0530802E
SEMSI 204455N 0531724E
DASAP 212047N 0540045E
DEBIN 214716N 0543309E
DARER 221152N 0550332E
MIDGU 222706N 0552230E
ITKUN 223731N 0553934E
KATAK 224811N 0555708E
EGVAN 230127N 0561907E
GENIR 231111N 0563630E
PUTSO 232037N 0565322E

M718 ULDUS 380000N 0510100E
LABKA 364142N 0504342E
GOPKA 361256N 0503724E
DAVMI 355657N 0503401E
SAVEH (SAV) 350107~~6.8~~ 050221~~76.9~~E

M719 MESPO 244817N 0595040E
NAGES 262452N 0594514E

M720 DITAR 265903N 0250000E
DANAD 285106N 0280609E
TAKRI 292503N 0290432E
FAYOUM (FYM) 292351N 0302335E
CAIRO (CVO) 300532N 0312318E

M722 NARMI 261802N 0501939E
*Note 7 (NARMI-TOSNA)
TOSTA 262746N 0504913E
SOLOB 262241N 0513132E
VEDED 260558N 0514628E
ORSIS 252801N 0521636E

ENANO 252348N 0522559E
TOSNA 251612N 0524116E

M723 ORNAT 200000N 0250000E
EGSUM 185726N 0274545E
RAGEN 184724N 0281124E
LAMAB 182601N 0290548E
ALPOX 171131N 0320831E
KUVTI 163152N 0325025E

M726 (DOKIK 352822.80N 131333E)
*Note 7 (DISOL-DOKIK)
SARKI 342000N 0131447E
DISOL 334113N 0131428E
SHELL 3320224N 0131530E
MITIGA (MTG) 325338N 0131619E

M727 (EDELI 350452.20N 123800E)
*Note 7 (EDELI-ZAW)
ABRAM 342000N 0123816E
AMWAJ 332842N 0123754E
ZAWIA (ZAW) 324643N 0123847E
VASUT 295959.40N 124237.20E
UBARI (UBR) 263552.20N 0124648.60E
TUBET 250000N 124007.80E
DEKTU 220001N 122806E

M731 (DJERBA (JBA) 335238.40N 0104617.40E)
FARES 320949N 0105652E
NALUT 315101N 0105854E
NAFUS 304436N 0110954E
DERJE 294742N 0111900E
ORBEL 282236N 0113218E
TAZIT 255624N 0115418E
DEKTU 220001N 122806E
(DIRKOU (DIR) 185852.80N 125249.20E

M732 (GOZO (GZO) 360214.40N 141219.80E
*Note 7 (GZO-DITAR)
ELIMO 342000N 0162210E
EVRAN 340000N 0164634.80E
DOLFI 331248N 0174312E
RIGED 315250.40N 0192258.20E
ROTOD 312538.40N 0195724.60E
ANHAR 303100N 0210500E
DITAR 265903N 0250000E

M739 VARIG 342000N 0134350E
*Note 7 (VARIG-MIS)
REXUN 333206N0141539E
MISRATA (MIS) 321852N 0150440E

M740 (LAMPEDUSA (LPD) 352959.40N 0123751E)
*Note 7 (NOSRO-LPD)
SARKI 342000N 0131447E
HITAN 332736N 0132624E
NOSRO 325324N 0133148E
KADRA (KDR) 322200N 0133700E
KAVEN 295959.40N 0135957.60E
SEBHA (SEB) 265944N 0142735E

M762 REXOD 211230N 0613830E
*Note 7 (REXOD-VAXAS)
SUR (SUR) 223248~~7.9~~N 059293~~0~~29.70E
DELSO 225606N 0585233E
ITURA 232351N 0580720E
ALMOG 233524N0574940E
VELOD 234611N 0573435E
GEXAN 241257N 0565649E
TAPRA 242607N 0563803E
VAXAS 244308N 0561807E
RUDAT 244605~~.1~~N 0561714~~.1~~E

MIVEK 245240N 0561516E

M855 RASDA 330600N 0305700E
MIVOR 322922N 0300603E
GOMVA 320010N 0292615E
NABSI 314353N 0290419E
MERSA MATRUH (MMA) 311911N 0271320E
SIDI BARANI (BRN) 313432N 0260020E
LOSUL 314100N 250800E
VUSOR 300000N 0232117E
AMTAR 340000N 0215618E
RASNO 342000N 0212758E
(TIPAC 353910N 0194814E)

M860 (SIIRT (SRT) 375438~~.40~~N 0415255~~.10~~E)
*Note 7 (GADSI-SI~~I~~RT)
EFFEZ 373518N 0423919E
NINVA 372100N 0431300E
ROXOP 364445N 0433322E
VUSEB 361637N 0434800E
TOMSI 354858N 0440229E
OTALO 351700N 0441900E
NAMDI 343027N 0444133E
SEPTU 331300N 0444400E
RESAK 323305N 0451552E
KODAV 314500N 0460400E
GADSI 303358N 0471116E

M861 ELEXI 34412637~~1.105~~N 04108501~~0549.0~~E
DIER-ZZOR (DRZ) 351831N 0401114E
TABQA 354704N 0383432E
ALEPPO (ALE) 361047N 0371234E
NISAP 3647401N 0363805E
(MILBA 365705N 0362846E)

M863 JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
GIBAP 212218N 03809310E
TOMRU 204411N 0361950E
DA~~RIB~~REV 193159~~4449~~N 033~~0252~~3656E
SOMAK 190301N 0314717E
RAGSI 185526N 0312747E
UMIDA 185115N 0311704E
TAVNA 174808N 0283938E
SOGIN 171145N 0271200E
ASKOL 154854N 0240005E
KITOB 1521~~4~~36N 0225848E
(IPONO 150624N 0222436E)

M872 (LINGI 343043N 0243244E)
*Note 7 (REXUM-LINGI)
METRU 340000N 0250900E
ITEXO 325832N 0265834E
NABSI 314353N 0290419E
SOBAX 313508N 0291835E
ORNAS 311838N 0291845E
REXUM 301822N 0291917E
FAYOUM (FYM) 292351N 0302335E
LUBOS 284201N 0311306E
SEMRU 280200N 0320306E
BOPOB 272253N 0332316E
HURGHADA (HGD) 271040N 0334747E
*Note 7 (HGD-KIA)
ALMOD 270123N 0341349E
SILKA 263400N 0352900E
WEJH (WEJ) 261046N 0362917E
KULKI 254814N 0371445E
TULOK 251001N 0383037E
BOVET 245742N 0385436E
EGVED 244857N 0391129E
MADINAH (PMA) 243251N 0394219E
MEDRO 242730N 0403649E
GOKSA 242442N 0410403E

BIR DARB (BDB) 241951N 0414928E
AL DAWADMI (DAW) 242656N 0440709E
TASBA 243059N 0443028E
KAVUR 244246N 0454036E
KING KHALID (KIA) 245310N 0464534E
~~AKRAM 255036N 0475133E~~
~~*Note 8 (OB) to MIDSI~~
~~ALMAL 261553N 0482108E~~
~~DAVRI 264936N 0505732E~~
~~MIDSI 264142N0515442E~~

~~M877~~ ~~VUSET 235540N 0590812E~~
~~ITILA 2340155N 0584817E~~
~~KUSRA 232426N 0582611E~~

M979 (SUDIK 352428.80N 0143028.80)
*Note 7 (LAB-SUDIK)
INDOT 342000N 0165653E
NETAG 340032.40N 0181516.80E
RAMLI 334300N 0192300E
EL BEDIA (LAB) 324641N 0220113E

M980 (GODAK 353816.20N 0153659.40E)
*Note 7 (GODAK-LOSUL)
BONAR 342000N 0190213E
DARIP 333125N 0210045E
LOSUL 314100N 0250800E

M999 (ZARZAITINE (IMN) 280400~~359.60~~N 0093939~~.30~~E)
BUHRA 272234N 0124717E
SEBHA (SEB) 265944N 0142735E
HORUJ 270906N 0161442E
KEPOS 272230N 0182810E
MASIT 272816N 0194016E
ARRIG 272930N 0200112E
KARUB 273524N 0211524E
SODOR 273747N 0220159E
SARIR (GS) 273900N 0223000E
DITAR 265903N 0250000E
NAKDO 260554N 0282101E
DAMPO 254707N 0292708E
IMLAX 252924N 0302707E
EL KHARGA (KHG) 252654N 0303527E
KUNAK 252745N 0304112E
EMENA 253749N 0315147E
LUXOR (LXR) 254458N 0324607E
ELELI 251854N 0332934E
SEDVA 235813N 0354006E
DASPA 230121N 0370841E
DEDLI 224232N 0373719E
*Note 7 (DEDLI-JDW)
MUVOL 221749N 0381452E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E
*Note 7 (LABNI-JDW)
BOSUT 204705N 0393158E
LOVIL 201553N 0394537E
DAVUV 194408N 0395924E
ABKAR 190511N 0401612E
LABNI 165620N 0410921E
DANAK 160800N 0412900E
APDOS 153955N 0413947E
~~(~~PURAD 145500N 0415354E~~)~~

N39 ULDUS 380000N 0510100~~E~~E
ULEXI 374344N 0510631~~E~~E
NOSHAHR (NSR) 363946~~.1~~N 0512751~~.4~~E
ELEDI 350136N 0520356~~E~~E

N68 MARSA BREGA (MB) 302506N 0193421E
*Note 7 (MB-OLMAX)
GENIN 320840.20N 0185710.20E
ORGON 325245.60N 0184052.20E

MISIK 330715N 0183527~~E~~E
NETAG 340031.80N 0181516.80~~E~~E
OLMAX 342000N 0180750~~E~~E

N72 BATEV 381005N 0501419~~E~~E
UMERO 375524N 0501514~~E~~E
GOLNU 355711N 0502052~~E~~E
ELIPO 354046N 0502117~~E~~E
SESBI 353154N 0502130~~E~~E
PEDAR 350826N 0502206~~E~~E
SAVEH (SAV) 350107~~6.8~~6.8N 0502217~~6.9~~6.9~~E~~E
UKITA 330657N 0500041~~E~~E
IMKEN 314407N 0493611E
BANDAR MAHSHAHR (MAH) 303323~~2.8~~2.8N 0490858~~.0~~.0E
UKNAR 295538N 0490450E
TULAX 293853N 0490301E

N163 ABRAM 342000N 0123816E
*Note 7 (ABRAM-GRT)
ABU ARGUB (ABU) 322746N 0131010E
TAWUS 315218N 0131736E
GHERIAT (GRT) 302341N 0133509E

N300 DOHA/HAMAD (DOH) 251500~~459.66~~459.66N 0513635~~4.80~~4.80E
*Note 7 & 8 (DOH-LALDO)
ELOBI 250753N 0521722E
NAMLA 250532N 0523318E
MIBRU 250321N 0524540E
RUGIS 245916N 0530340E
KAXOB 245423N 0532450E
GIDOB 244445~~.3~~.3N 0535953~~2.6~~2.6E
ORBOL 245134N 0542348E
LORID 245552.5N 0543904.1E
VEKOV 245750N 0544925E
OBREV 250200N 0551135E
LAGTA 250602N 0553315E
RUKOR 250823N 0554603E
NOLSU 251248~~.0~~.0N 0560738~~7.8~~7.8E
SUTVO 251531N 0562153E
LALDO 251806N 0563600E

N302 SIDAD 295231N 0482944E
*Note 7 (SIDAD-ALV~~I~~AX)
ALVAX 292030N 0482422E

N303 (KASOL 283147N 0531533E)
PARIM 123142N 0432712E
ORNIS 141615N 0423657E
EMABA 145137N 0421943E
KIPAM 150030N 0421526E
RIBOK 154700N 0415230E
~~LABNI 165620.3N 0410921.4E~~

N307 MELDO 320201N 0310406E
LAKTO 323800N 0320500E

N310 BALMA 342856N 0350302E
CHEKA (CAK) 341802~~1.81~~1.81N 0354200~~159.64~~159.64E
*Note 7 (CAK-~~LATEB~~BASEM)
LATEB 340154N 0362404~~3.60~~3.60E
LOTAX 335952N 0363231E
BASEM 333338~~7.6~~7.6N 0373907~~.1~~.1E

N311 NUBAR 220000N 0313824E
TOVIL 175557N 0304439E
DATIM 152833N 0301323E
JEBRA 125520N 0291349E
SIGNO 094716N 0275031E
ASKON 061745N 0262537E

N312 ASVIB 265724N 0631812E
GENEV 264247N 0603757E

NOVSU 263407N 0573849E
MOBET 264406N 0560908E
GHESHM ISLAND (KHM) 264547~~.1~~N 0555428~~7.6~~E
SERDU 264715N 0545757E
ROSUM 264741N 0543637E
LAVAN ISLAND (LVA) 264843~~.4~~N 0532121~~.1~~E
MIDSI 264142N 0515442E

N314 ATMUL 220000N 0290530E
UMIDA 185115N 0311704E
KUVTI 163152N 0325025E
TIKAT 122418N 0353812E

N315 ASPUX 174404N 0600006~~4~~E
KUTVI 184306N 0582642E
*Note 7 (KUTVI-SITOL)
MOBAB ~~N~~201032N ~~E~~0564415E
ORSIT ~~N~~202306N ~~E~~0562915E
VELIK 203322N 0561656E
IVENI 205158N 0555430E
SITOL 211604N 0552514E
~~LOTOS 220000N 0503912E~~
~~RAPMA 232256N 0482028E~~
~~RESAL 240649N 0470427E~~
~~KING KHALED (KIA) 245310N 0464534E~~

N316 HALAIFA (HLF) 262603N 0391609E
NETOL 270748N 0363226E
PASAM 273045N 0345542E
*Note 7 (PASAM–HDG)
HURGHADA (HDG) 271040N 0334747E

N317 MENSA 245750N 0563249E
NOLSU 251248~~.0~~N 0560738~~7.8~~E
REXEV 251502~~.3~~N 0560137~~6.7~~E
NADNI 251915~~.2~~N 0555659~~8.9~~E

N318 ~~MOUAB 314758N 0353559E~~
~~QUEEN ALIA (QAA) 314423.41N 0360927~~6.59E
~~ALNOR 313955N 0362507E~~
~~KINUR 313626N 0363714E~~
~~ELOXI 313359N 0364536E~~
~~GENEX 312935N 370052E~~
~~GURIAT (GRY) 312445N 0371712E~~ KULDI 311847N 0363214E
*Note 7 (KULDI~~GRY~~-ORKAS)
TULEP 311537N 0371432E
ITUNO 310913N 0373542E
ORKAS 304725N 0384617E
NEVOL 302446N 0393841E
GIBAM 300018N 0401632E
VELAL 294602N 0403821E
SITOD 292143N 0412313E
TOLDI 290329N 0415621E
TAMRO 283838N 0424047E
NOTLI 281200N 0433714E
LOXOM 275648N 0440832E
MOGON 273847N 0444554E
EMARO 273342N 0451330E
DEBOL 272116N 0461843E
*Note 7 (DEBOL-REXOD)
MAANI 270812N 0473152E
*Note 8 (OB, OO)
GESOR 270322N 0475751E
NADEN 265250N 0484448E
DASVA 264551N 0492301E
OTERA 264110N 0493841E
NAGTO 263717N 0495137E
RABKA 263531N 0495728E
SIBGA 263416N 0500134E
LADNA 262749N 0502245E
ELOSO 262409N 0503551E
GOLKO 262149N 0504404E

ASTAD 261812N 0505646E
LUBET 261441N 0510347E
TOTIS 261119N 0511027E
RASDI 260425N 0512407E
VELAM 255426N 0514347E
VUTAN 255016N 0515218E
RESAR 253707N 0522328E
ALSEM 252703N 0524322E
OVONA 252443N 0524739E
PUTIB 251900N 0525755E
BOXOT 251039N 0531817E
KAPUM 245815N 0533450E
BOSEV 245013.3N 0540448.8E
MOGIM 244053N 0542820E
IMLIP 243648N 0543549E
ELEPO 243211N 0544410E
SIXIV 242009N 0550439E
KANIP 241040N 0552042E
LABRI 240344N 0553842E
EGROK 235253N 0560126E
LAKLU 232235N 0570401E
GEVED 230105N 0575111E
TOLDA 224008N 0583624E
REXOD 211230N 0613830E

N319 DERBO 292542N 0611701E
ZAHEDAN (ZDN) 292912~~.3~~N 0605406~~5.7~~E
KUVAV 313426N 0585747E
IMPAT 322451N 0580856E
ROXEK 331123N 0572138E
TABAS (TBS) 334021~~.2~~N 0565331~~0.9~~E
RABER 343656N 0555902E
ITELO 353534N 0550052E
ODKAT 354650N 0544146E
DASHT-E-NAZ (DNZ) 3638~~543.6~~N 0531120~~.1~~E
DASEL 371113N 0522020E
RIGAN 373543N 0514052E
ULDUS 380000N 0510100E
(NASIL 390100N 0495100E)

N320 KISAL 101811N 0232526E
GINKA 124701N 0250831E
BOXIG 155958N 0272606E
TAVNA 174808N 0283938E
LAMAB 182601N 0290548E
NUBAR 220000N 0313824E

N321 TIKAT 122418N 0353812E
BOPID 163948N 0335142E
BILAL 184044N 0330227E
NUBAR 220000N 0313824E

N323 PEKEM 224648N 0535942E
DAVLU 224136N 0533310E
MEDPO 222421N 0520751E

N324 ALNUG 213009N 0500453E
PURDA 210805N 0510329E
METNO 201418N 0524050E
MIPUB 200004N 0530607E
GOBRO 193622N 0534741E
~~ASTUN 180832N 0551040E~~

~~N430~~ ~~TARBO 244351N 0574637E~~
~~*Note: 7 (TARBO - ITLOB)~~
~~ITLOB 244325N 0590701E~~

N438 LITAN 333456~~.28~~N 0343759~~8.80~~E
KALDE (KAD) 3348276~~.70~~N 0352910~~9.53~~E
CHEKA (CAK) 3418021~~.81~~N 0354200~~159.64~~E
KLEYATE (RA) 343510N 0360010E

N440 MOBON 274414N 0552513E
*Note 7 (GABKO-MOBON)
BOSOS 264325N 0554311E
RADEB 261140N 0554719E
GABKO 260404N 0554755E

N558 DEKUM 043742N 0293936E
LOROG 093551N 0295448E
NABUS 110003N 0295910E
DATIM 152833N 0301323E
ASRAV 172442N 0301943E

N563 (KATBI 193133N 065002E)
REXOD 211230N 0613830E
*Note 8 (OB, OM)
*Note 7 (REXOD-ALPOB)
EMURU 221357N 0585338E
TULBU 230005N 0571827E
MEKNA 233309N 0560815E
KURTA 234205N 0554900E
SODEX 234954N 0553202E
ELUDA 235107N 0552905E
NOBTO 235525N 0551840E
SIGMO 240710N 0545837E
VUXOD 242005N 0543625E
UMIBU 242331N 0543027E
KUGTO 243231N 0542224E
BOSEV 245013~~.3~~N 0540449~~8.8~~E
ITKEV 250104N 0534526E
KUSBA 251634N 0532847E
TAGDU 252258N 0532153E
IMGUX 252950N 0531428E
ALPOB 254218N 0530055E
~~TOTLA 263806N 0504301E~~
~~RULEX 264529N 0501745E~~
~~SILNO 264026N 0475745E~~
~~GIBUS 255724N 0472829E~~

N565 KAMEL 322000N 036440E
ZELAF 325700N 0380000E

N567 SOMAD 372645N 0543255E
LOVEN 363926N 0553355E
IBRAV 362041N 0555430E
MUSEG 354656N 0562631E
IMKUK 345602N 0571346E
TASLU 342531N 0574131E
BIRJAND (BJD) 325821~~0.7~~N 059120~~10.5~~E

N568 AVONO 092606N 0335418E
DEDVA 102746N 0333134E
SUVRI 135436N 0321800E
TOVIL 175557N 0304439E
ATMUL 220000N 0290530E

N569 ~~BONUM 221252N 0393805E~~
~~RABTO 221608N 0400326E~~
~~VEMEM 221554N 0400118E~~
~~LOTOS 220000N 0503912E~~
~~*Note 7 (LOTOS-GOLNI)~~
TOKRA 220925N 0553350E
*Note 7 (GISKA-TOKRA)
SUTLI 220121N 0560404E
TOPSO 215653N 0562043E
MOGOK 215057N 0564236E
KEBAS 214330N 0570948E
GISKA 213503N 0574014E
UMILA 211555N 0584738E
GOLNI 210014N 0594130E
LOTAV 203700N 0605700E

N570 *Note 5 (ITURA-MIDSI)

ITURA 232351N 0580720E
*Note 7 (ITURA-IVIVA)
IVIVA 245945N 0574958E
KATUS 251600N 0574700E
GIGAB 253708N 0573231E
NOVSU 263407N 0573849E
BONIK 264444N 0562651E
MOBET 264406N 0560908E
GHESHM ISLAND (KHM) 264547~~.1~~N 0555428~~7.6~~E
SERDU 264715N 0545757E
ROSUM 264741N 0543637E
LAVAN ISLAND (LVA) 264843~~.4~~N 0532121~~.1~~E
DURSI 271219N 0520144E
KAVAM 265737N 0515818E
MIDSI 264142N 0515442E

N571 (DOGET 210703N 0660001E)
PARAR 222630N 0630700E
*Note 7 & 8 (PARAR-ALPOB)
KIPOL 230410N 0612903E
RAGMA 232301N 0603846E
SODEB 234747N 0593023E
VUSET 235540N 0590812E
TOVDI 240733N 0584021E
KIROP 243000N 0574700E
ASNIB 243949N 0572105E
MENSA 245750N 0563249E
LUBAT 250223N 0561749E
ENEGA 250556N 0560601E
RUKOR 250823N 0554603E
IVOXI 25124039~~.6~~N 0552513~~.1~~E
TUDIS 251009N 0550825E
SENPA 252000~~1959.6~~N 0543211~~0.5~~E
RUDUK 252408N 0541650E
ULIVA 252647N 0540611E
SISOB 253150N 0534509E
PURLI 253644N 0532436E
ALPOB 254218N 0530055E
~~SOLOB 262241N 0513132E~~
~~MEDMA 263412N 0505454E~~
~~TOTLA 263806N 0504301E~~
~~RULEX 264529N 0501745E~~
~~SILNO 264026N 0475745E~~
~~KUTEM 264359N 0473521E~~
~~BOPAN (BPN) 270314N 0452642E~~

N572 ROTEL 264015N 0502149E
*Note 7 (ROTEL-DASUT)
EGMOR 264211N 0502907E
DAVRI 264936N 0505732E
TORBO 265223N 0511024E
SEVNI 264401N 0513815E
SOGAN 263915N 0515408E
MURUB 262455N 0523751E
DASUT 261832N 0531108E

N574 ATMUL 220000N 0290530E
ASRAV 172442N 0301943E
KASAB 134346N 0304233E
KISOV 100955N 0310359E
JUBA (JUB) 045234N 0313559E

N629 TARDI 243418N 0560915E
*Note 7 (TARDI-TOTOX)
NOSMI 241757N 0563002E
BOTAM 240227N 0565320E
ELIVA 235335N 0570634E
MUSUK 234320N 0572148E
IVAKU 232919N 0574103E
GEPOT 231446N 0580053E
GIDAN 230104N 0582232E
LOXOP 223722N 0594548E

TOTOX 215030N 0622230E

N636
MAGRI 385408N 0462300E
ARDABIL (ARB) 3818576.5N 0482605.1E
UMERO 375524N 0501514E
ULEXI 374344N 0510631E
RIGAN 373543N 0514052E
GORGAN (GGN) 365545 4.7N 0542233.3E
SABZEVAR (SBZ) 361011.0N 0573415 4.9E
LOXED 355854N 0580609E
PAMTU 351006N 0610806E

~~N638~~
~~KING KHALED (KIA) 245310N 0464534E~~
~~OVEKU 250955N 0445701E~~
~~MADINAH (PMA) 243251N 0394219E~~

N685
DEBOL 272116N 0461843E
*Note 7 (DEBOL-LAKLU)
*Note 8 (TAGSO-TOSNA)
MAANI 270812N 0473152E
GESOR 270322N 0475751E
NADEN 265250N 0484448E
DASVA 264551N 0492301E
DAMMAM/KING FAHD (KFA) 262951N 0494643E
NARMI 261802N 0501939E
BAHRAIN (BHR) 261530N 0503919E
TULUB 260644N 0510041E
DENVO 260452N 0510509E
PATOM 255821N 0511836E
EMISA 254658N 0514207E
KAPAX 254218N 0515118E
ORSIS 252801N 0521636E
ENANO 252348N 0522559E
TOSNA 251612N 0524116E
UMEVU 250545N 0530653E
KAPUM 245815N 0533450E
GIDOB 244445.3N 0535953 2.6E
*Note 8 (OO)
SUVDU 243501N 0542410E
RURAL 243045N 0543156E
ODKUN 242608N 0544017E
NAPMA 241250N 0550312E
ORNEL 240312 1.7N 0551942.1E
RETAS 235754N 0553423E
KOBIM 233309N 0562701E
PUTSO 232037N 0565322E
LAKLU 232235N 0570401E

N687
KING KHALID (KIA) 245310N 0464534E
TAKTI 252153N 0474340E
KINIB 254108N 0482317E
MIBRA 255654N 0485053E
DEMKA 261008N 0491310E
SETBA 261346N 0491921E
DAMMAM/KING FAHAD (KFA) 262951N 0494643E
SIBGA 263416N 0500134E
*Note 7 (SIBGA-TORBO)
ROTEL 264015N 0502149E
~~EGMOR 264210.81N 0502906.73E~~
~~DAVRI 264936.05N 0505731.88E~~
~~TORBO 265222.68N 0511024.30E~~

~~N694~~
~~KING KHALD (KIA) 245310N 0464534E~~
~~TORKI 261400N 0463103E~~
~~SIBLI 265459N 0462334E~~
~~AKODI 275012N 0461320E~~
~~HAFR AL BATIN (HFR) 281949N 0460746E~~

N697
MENLI 294700N 0315206E
SISIK 293600N 0324106E
*Note 7 (NWB-SISIK)
NUWEIBAA (NWB) 290156N 0344016E

*Note 7 (NWB-KITOT above FL350)
KITOT 290205N 0345050E
NAGIP 284206N 0361133E
RABUG 283622N 0363402E
DAXEM 283224N 0364923E
NABEK 283030N 0365643E
SOBAS 275600N 0390453E
REVAB 273424N 0405710E
HAIL (HIL) 272530N 0414059E
*Note 7 (NARMI-HIL)
LOSEL 272135N 0422545E
NALBU 271420N 0434206E
PASIT 271011N 0442253E
ALKIR 270758N 0444343E
BOPAN (BPN) 270314N 0452643E
ANTER 270212N 0453359E
*Note 8 (BPN-TORBO)
SIBLI 265459N 0462334E
LUGAL 264603N 0472235E
MEDGO 264433N 0475257E
LABLI 264522N 0482100E
TAYMA 264556N 0484212E
DAMMAM/KING FAHD (KFA) 262951N 0494643E
NARMI 261802N 0501939E
BAHRAIN (BHR) 261530N 0503919E
*Note 7 (B~~A~~HR-TORBO)
GOLKO 262149N 0504404E
TOSTA 262746N 0504913E
MEDMA 263421N 0505454E
VEDOS 264106N 0510045E
SODAK 264634N 0510530E
TORBO 265223N 0511024E

N700
*Note 5 (ULDUN-DOH)
ULDUN 262429N 0560924E
KAVEG 261608N 0552434E
MENDI 254955N 0550522E
DAPER 254522N 0545731E
*Note 7 (DAPER-DOH ~~DAPER~~)
KUSBA 2516343~~.60~~N 0532847~~.40~~E
RORON 2520532~~.80~~N 0530916~~5.60~~E
OVONA 252443~~.20~~N 0524740~~39.60~~E
DOHA/HAMAD (DOH) 251500~~459.66~~N 0513635~~4.80~~E

N702
*Note 5 (TUMAK-ROTOX)
TUMAK 255031N 0531108E
*Note 7 (TUMAK-RAGAS)
VEDOM 260109N 0524456E
ORLUP 260651N 0523216E
VELAK 261307N 0521821E
LABOP 261907N 0520429E
ALTOM 262230N 0515639E
BOPOV 262430N 0515043E
ALMOK 262832N 0513840E
GITBO 263527N 0511750E
VEDOS 264106N 0510045E
MOGAS 264800N 0503909E
TOLMO 265504N 0502927E
EGLIT 270256N 0502006E
TOKMA 270939N 0501159E
ORSOL 272135N 0500208E
ITNAS 274644N 0493957E
GODRI 280257N 0494308E

N703
PASAM 273045N 0345542E
NEOM BAY (NEM) 275555N 0351733E
TABUK/PRINCE SULTAN BIN ABDULAZIZ (TBK) 282153N 0363637E
NABEK 283030N 0365643E
RANRI 283919N 0371730E
ASTUM 290628N 0382237E
LABAD 291922N 0385411E
ODBAT 293221N 0392626E

AL JOUF (AJF) 294722N 0400418E
GIBAM 300018N 0401632E
VELOT 300703N 0402257E
GADLI 302312N 0403821E
ARAR (AAR) 305429N 0410832E

N704
IMRAD 260506N 0354444E
WEJH (WEJ) 261046N 0362917E
NADIK 261815N 0374637E
RABDA 262048N 0381440E
HALAIFA (HLF) 262603N 0391609E
MUPVI 262943N 0403437E
LAKRO 263051N 0410241E
DAXAP 262142N 0430228E
GASSIM/PRINCE NAIF BIN ABDULAZIZ (GAS) 261753N 0434647E
NAGSA 261811N 0443117E
LABIS 261815N 0451755E
PUSLA 261758N 0461706E
LOROX 261751N 0463021E
MAGALA (MGA) 261720N 0471225E
MUSRI 261647N 0474137E

N705
MISUK 290507N 0290621E
*Note 7 (SALUN-MISUK~~–TORBO~~)
BOPIX 295154N 0282438E
MUPSO 310034N 0272139E
MERSA MATRUH (MMA) 311911N 0271320E
SALUN 340000N 0242700E

N707
KATOD 283141N 0475554E
*Note 7 (KATOD-KITUB)
COPPI 275033N 0474359E
EMENI 273234N 0473848E
RADGI 272640N 0473708E
MAANI 270812N 0473152E
LUGAL 264603N 0472235E
MAGALA (MGA) 261720N 0471225E
AVOBO 260334N 0470719E
ESRAT 255117N 0470247E
RIYADH/KING KHALED (KIA) 245310N 0464534E
MUNTO 235345N 0463459E
DEBAS 231059N 0462728E
KITUB 224922N 0462342E
MIDKA 222633N 0461148E
LABSI 221126N 0460358E
WADI AL DAWASIR (WDR) 203019N 0451219E

N708
RASNO 342000N 0212758E
EL BEDIA (LAB) 324641N 0220113E
*Note 7 (LAB-DITAR)
MKILY 315900N 0222000E
OBNUS 295400.60N 0232848E
DITAR 265903N 0250000E

N709
ROTEL 264015N 0502149E
SIBGA 263416N 0500134E
DAMMAM/KING FAHD (KFA) 262951N 0494643E
SETBA 261346N 0491921E
DEMKA 261008N 0491310
MIBRA 255654N 0485053E

N710
BOPIX 295154N 0282438E
KIVIL 293845N 0284415E
TAKRI 292503N 0290432E

N713
RASKA 190732N 0390329E
*Note 7 (RASKA-JDW)
EGMEG 205130N 0383336E
JEDDAH/KING ABDULAZIZ (JDW) 214244N 0390723E

N715
TONVO 250500N 0563200E
*Note 7 (UMEVU-TONVO)

LUBAT 250223N 0561749E
IMPED 245825~~4.5~~4N 0560406~~.2~~E
UKVAK 245147N 0553329E
GEVIV 244118N 0545000E
IMLIP 243648N 0543549E
KUGTO 243231N 0542224E
UKILI 243816~~5.5~~5N 0535636~~.4~~E
ALNEV 244601N 0534122E
KAXOB 245423N 0532450E
UMEVU 250545N 0530653E

N717 DASUT 261832N 0531108E
VEKEL 261929N 0535738E
MIRIT 262013N 0545411E
ORPEN 263119N 0552008E
GHESHM ISLAND (KHM) 264547~~.1~~N 055542~~8~~7~~.6~~E

N718 ITRAX 241248N 0554749E
*Note 7 (MCT - ITRAX)
LOPIL 235642N 0561400E
IVETO 233520N 0570704E
ALMOG 233524N 0574940E
MUSCAT (MCT) 233528.04N 0581536.48E

N720 PORT SUDAN (PSD) 192404N 0371430E
FEREB 183430N 0375818.60E
ULONI 172536N 0385842E

N722 DATRI 244239N 0513407E
RASBO 243342N 0512817E
LADBO 242004N 0511411E
SITER 241107N 0485443E

N764 NOBSU 171554N 043131~~5~~8E
LABDO 164842N 0442032E
IMDEN 162101N 0452744E
LOPAD 161651N 0453738E
MEGPA 160017N 0461653E
PAPOR 154322N 0465652E
DEKMA 152226N 0474553E
PAXUD 145436N 0485045E
MUKALLA (RIN) 144015~~.30~~N 0492329~~.30~~E
XABIL 142924N 0494809E
NOTBO 142609N 0495530E
~~ORBAT~~IMPAG140638N 0503924E
GESIX 134440N 0512823E
KAVAN 133250N 0515431E
RAPDO 132317N 0521532E
KEDAV 125553N 0531509E
SOCOTRA (SCT) 123748.~~80~~75N 0535428.~~70~~68E
SUHIL 120000N 0550000E
(AVELI 112201N 0560800E)

N767 PARAR 222630N 0630700E
*Note 7 (PARAR-ELIGO)
VUSIN 225940N 0605510E
ATBED 230352N 0603752E
ELIGO 232458N 0590848E

N881 RASKI 230330N 0635200E
SETSI 230412N 0614410E
KIPOL 230410N 0612903E
*Note 7 (TULBU-KIPOL)
ATBED 230352N 0603752E
AMBOS 230324N 0595405
MUSRU 230256N 0592223E
OBTIN 230216N 0585920E
GIDAN 230104N 0582232E
GEVED 230105N 0575111E
TULBU 230005N 0571827E

~~N929 DASLO 254537N 0523029E~~

~~*Note 7 & 8 to (DASLO-GIBUS)~~
~~NAGOG 255214N 0521615E~~
~~BONAN 260201N 0515505E~~
~~VEDED 260558N 0514628E~~
~~SOGAT 262029N 0511443E~~
~~TOSTA 262746N 0504913E~~
~~DANAG 264438N 0494856E~~
~~NADNA 264245N 0485309E~~
~~SILNO 264026N 0475745E~~
~~ASKOK 262623N 0474809E~~
~~MUSRI 261647.0N 0474137.0E~~
~~GIBUS 255724.0N 0472829.0E~~

N982 SARKI 342000N 0131447E
*Note 7 (MIS-SARKI)
ODGAX 333755N 135256E
MISRATA (MIS) 321852N 0150440E
KALIJ 313300N 0160000E
SIRTE (SRT) 310333N 163552.20E
DAHRA (DHR) 292803N 175554E
ARRIG 272930N 0200112E
KUFRA (KFR) 240912N 231831.20E

P32 (VANIX 344939N 0212327E)
EKLIS 342000N 0202855E
RAMLI 334300N 0192300E
ORGON 325245.60N 0184052.20E
CILBA 311800N 0172400E
DERNI 301328.20N 016401500E
HON (HON) 290800N 0155700E
ALGAF 281000N 0151600E
LOSAD 275441.40N 0150522.80E
SEBHA (SEB) 265944N 0142735E

P126 (SUDIK 352428.80N 0143028.80)
*Note 7 (GARIN-SUDIK)
LUMED 342000N 0144203E
SAMAK 332412N 0145236E
MISRATA (MIS) 321852N 0150440E
NAMWA 312542N 0151824E
NJEIM 305533.60N 0152736E
HON (HON) 290800N 0155700E
FUGHA 281001N 0160541E
HORUJ 270906N 0161442E
TMISA 262548N 0162054E
NADED 250000N 0163602.40E
GARIN 220000N 0170636E

P128 (DJERBA (JBA) 335238.40N 0104617.40E)
TANLI 332938N 0113000E
*Note 7 (LAB-TANLI)
AMWAJ 332842N 0123754E
HITAN 332736N 0132624E
SAMAK 332412N 0145036E
OJAAJ 331548N 0170000E
DOLFI 331248N 0174312E
PUFER 325901N 0194748E
EL BEDIA (LAB) 324641N 0220113E
LOSUL 314100N 0250800E

P146 RASHT (RST) 3719354~~.8~~N 0493657~~.1~~E
GODNA 382033N 0465457E
MURID 382744N 0463525E
SIBVU 384444N 0454657E
REXUS 385624N 0451332E
AGINA 391924N 0440512E
(AGRI (ARI) 3938454~~.90~~N 0430138~~7.50~~E)

P300 KALDE (KAD) 3348276~~.70~~N 0352910~~9.53~~E
LATEB 340154N 0362404~~3.60~~E

P302 MIDSI 264142N 0515442E

DASDO 285401N 285401N

~~P304~~ ~~EMISO 231734N 0562307E~~
~~DEMKI 224941N 0562308E~~
~~NAMVA 223309N 0562223E~~
~~TOPSO 215653N 0562043E~~
~~KUROV 211627N 0561853E~~
~~VELIK 203322N 0561656E~~

P307 SERSA 251945N 0553118E
*Note 7 (SERSA-VAXIM)
PAVAG 251546N 0554042E
ITBON 251426N 0555257E
KULBA 251326N 0560153E
NOLSU 25124~~8.0~~N 0560738~~7.8~~E
TONVO 250500N 0563200E
PURNI 243804N 0574354E
*Note 8 (OO)
KUNUS 241927N 0583226E
ALSAS 240054N 0591955E
DERTO 235033N 0594746E
VAXIM 231900N 0611100E
SETSI 230412N 0614410E
PARAR 222630N 0630700E

P309 AVONO 092606N 0335418E
BOTOK 102859N 0334548E
SODIL 105401N 0334204E
ELULA 143253N 0330853E
KUVTI 163152N 0325025E
SOGAD 171404N 0324125E
NUBAR 220000N 0313824E

P310 RASNO 342000N 0212758E
RAMLI 334300N 0192300E
FARUJ 333124N 0184354E
TUNAR 332448N 0182212E
DOLFI 331248N 0174312E
SOLUN 325912N 0170000E
CIBIA 324012N 0160112E
MISRATA (MIS) 321852N 0150440E

P312 MUKALLA (RIN) 144015~~.30~~N 0492329~~.30~~E
ULDIB 141148N 0485422E
AMBOD 133357N 0481527E
DATEG 123549N 0471627E
TIMAD 115500N 0463500E
(EGROV 112042N 0455900E)

P313 VATEN 153358N 0323312E
KAREP 151838N 0313308E
ASNON 150818N 0305312E
DELAM 144001N 0290644E
DEBOX 144424N 0281037E
GAMAR 150042N 0240843E
IPONO 150624N 0222436E

P315 NUBAR 220000N 0313824E
SOMAK 190301N 0314717E
MEROWE (MRW) 18244~~98.81~~N 03149498~~.95~~E
ITOMO 102133N 0322108E
IMDUR 074114N 0323107E

~~P316~~ ~~SALALLAH (SLL) 170259.35N 05406576.91E~~
~~*Note 7 (OO)~~
~~DAXAM 171612N 0544715E~~
~~*Note 7 (DAXAM-MCT)~~
~~KAPOP 174544N 0550930E~~
~~GAGLA 180505N 0552410E~~
~~NALTI 182012N 0553431E~~
~~DEDSO 185811N 0560041E~~

~~GIVNO 195011N 0563059E~~
~~MOBAB 201032N 0564415E~~
~~GISKA 213503N 0574014E~~
~~RADAX 220809N 0580230E~~
~~MUSCAT (MCT) 233528.04N 0581536.48E~~

P318 KABLA 035959N 0322130E
JUBA (JUB) 045234N 0313559E

P319 DAROR 270244N 0495815E
*Note 7 (DAROR-DASUT)
RAMSI 270249N 0500714E
GASSI 270257N 0502229E
VELOG 270215N 0503056E
TOSDA 270005N 0505629E
OBTAR 265934N 0510309E

~~M600~~ TUMAK 255031N 0531108E
P320
*Note 7 (TUMAK-KUMBO)
VEDOM 260109N 0524456E
ORLUP 260651N 0523216E
VELAK 261307N 0521821E
LABOP 261907N 0520429E
ALTOM 262230N 0515639E
BOPOV 262430N 0515043E
ALMOK 262832N 0513840E
GITBO 263527N 0511750E
VEDOS 264106N 05100445E
MOGAS 264800N 0503909E
RAKAK 265221N 0502618E
RAMSI 270249N 0500714E
ORNAK 272854N 0493248E
SOLEM 275229N 0491136E
KUMBO 281705N 0485526E

P322 AVONO 092606N 0335418E
SITIK 092556N 0310809E
DEMTI 093203N 0264506E
ALMAM 093345N 0244451E
MONAN 093300N 0234000E

P323 (DONSA 143518N 0651136E)
GIDAS 1420040N06000096E
TOKPU 145122N 0571103 4E
DAPAB 151115N 0552354E
NODMA 152603 6N 0533359E
NANRI 160754N 0521603E
ENADO 153333N 0532015E
DAVRA 155918N 0523209E
TAKMI 160542N 0522012E
AL GHAIDAH (GDA) 161117.00N 0520942.99E
SIMKO 161821N 0515526E
OBTAS 164633N 0505756E
KEBER 170444N 0502029E
THAMD 171700N 0495500E
KANEM 173700N 0492655E
ALNES 181818N 0482811E
KUTMA 182927N 0481202E
GERUG 185530N 0473402E
DAVLO 192343N 0465227E
WADI AL DAWASIR (WDR) 203019N 0451219E

P324 ELGENIENA (GNA) 132824N 0223207E
HAMID 140400N 0254023E
DELAM 144001N 0290644E

~~P425~~ ~~DAHRAN (DHA) 261538N 0500824E~~
~~*Note 8 to ALSER~~
~~BAHRAIN (BAH) 261551N 0503855E~~
~~DAVOV 262255N 0504012E~~
~~DATGO 262957N 0504130E~~

~~TOTLA 263806N 0504301E~~
~~MEMKO 264611N 0504427E~~
~~BOXOG 265403N 0504553E~~
~~ALSER 271100N 0504900E~~

P430 DOHA/HAMAD INTL (DOH) 251459.66N 05136354.80E
(DOH) 251459N 0513635E
*Note 7 & 8 (DOH-ALTOM) to MIDSI
BAYAN 252926N 0514849E
*Note 7 to MIDSI (BAYAN-ALTOM)
KAPAX 254218N 0515118E
VUTAN 255016N 0515218E
ALVEN 255418N 0515315E
BONAN 260201N 0515505E
RAMKI 261138N 0515625E
ALTOM 262230N 0515639E

P440 EMIXI 242105N 0520019E
*Note 7 (ALGUX-EMIXI)
ELIGA 242121N 0530148E
ASRAT 242114N 0535944E
ALGUX 242247N 0541209E

~~P513~~ ~~BUBAS 245938N 0570003E~~
~~GERAR 240600N 0573616E~~
~~MIXAM 234139N 0575523E~~
~~MUSCAT (MCT) 233528.04N 0581536.48E~~

~~P517~~ ~~WAFRA (KFR) 283715N 0475729E~~
~~DEKOB 283135N 0475106E~~
~~*Note 7 (DEKOB-EMARO)~~
~~GOVAL 281211N 0472908E~~
~~DUSBO 280616N 0465254E~~
~~KAPAG 280355N 0463845E~~
~~NONLU 275921N 0461137E~~
~~KING SAUD AIR BASE (KMC) 275250N 0453321E~~
~~EMARO 273342N 0451330E~~

P550 ALVEN 255418N 0515315E
BONAN 260201N 0515505E
*Note 7 (ALVEN-SYZ)
MODOG 261012N 0515935E
LABOP 261907N 0520429E
KUMLA 262609N 0520822E
RAGAS 263537N 0521337E
KAPIP 264322N 0521403E
PEGET 270434N 0521515E
MIXEM 271520N 0521556E
LAGSA 283306N 0522056E
SHIRAZ (SYZ) 2932254~~.6~~N 0523520~~19.6~~E
REXEB 295208N 0520923E
YASOUJ (YSJ) 304136~~.0~~N 0513324~~.1~~E
RASLA 331202N 0493409E
RIGOX 350618N 0475636E
TUGEL 361220N 0470444E
LAKLI 373730N 0455519E
VUVAG 382529N 0452926E
BORES 382829N 0452137E
DASIS 385435N 0441230E

~~P552~~ ~~DATEG 123549N 0471627E~~
~~SEPRO 132824N 0475035E~~
~~ULAXI 141524N 0482317E~~
~~RASBA 144124N 0484128E~~
~~BOSAX 144740N 0484553E~~
~~PAXUD 145436N 0485045E~~
~~DEMNA 151652N 0490626E~~
~~RALMO 153824N 0492155E~~
~~GINBO 160349N 0494017E~~
~~KEBER 170444N 0502029E~~
~~ITELI 171310N 0502605E~~
~~IMPOS 183137N 0511848E~~

P555 OBVOM 241503N 0515552E
LONUT 241520N 0530149E
IMKUD 241513N 0535956E
RAPNO 241452N 0541559E
ATUDO 241708~~.0~~N 0543432~~.0~~E

P556 ASKON 061745N 0262537E
PEDOS 094018N 0290715E
SISOR 124543N 0313859E
ELULA 143253N 0330853E
IMLAS 173413N 0354541E
BOGUM 200636N 0380300E

P557 NUBAR 220000N 0313806E
*Note 7 (NABSI-NUBAR)
ALKED 222152N 0313052E
ORLEX 225732N 0311859E
DESDO 251932N 0303034E
VUTAB 252648N 0302802E
IMLAX 252924N 0302707E
MEVDA 254818N 0302029E
DAVIX 262034N 0300904E
TUDSI 264114N 0300128E
MISUK 290507N 0290621E
LOTOB 293510N 0290601E
OBRAN 302957N 0290522E
GOMGO 311152N 0290446E
NABSI 314353N 0290419E

P558 SODEX 234954N 0553202E
*Note 7 (TULBU-SODEX)
DOLFI 233253N 0555024E
KUNGO 230034N 0565850E
TULBU 230005N 0571827E

P559 RASLI 315424N 0383648E
TURAIF (TRF) 314136N 0384408E
*Note 7 (TRF-VUTEB)
KAVID 303552N 0401147E
GADLI 302312N 0403821E
DELNI 300448N 0411627E
TOKLU 294213N 0420220E
LUDEP 290948N 0430646E
RASMO 285713N 0433119E
LOTOK 280834N 0450402E
KING SAUD AIR BASE (KMC) 275250N 0453321E
BOTEP 274420N 0461425E
RADGI 272640N 0473708E
ALPOT 271841N 0480511E
*Note 8 (ULOVO-NAPLO)
SILBA 270554N 0485301E
KURKA 270449N 0491636E
EGREX 270433N 0492158E
DAROR 270244N 0495815E
RAMSI 270249N 0500714E
GASSI 270257N 0502229E
KOBOK 265839N 0503349E
DEBEN 265254N 0504856E
DAVRI 264936N 0505732E
SODAK 264634N 0510530E
DANOB 263946N 0512640E
BOTOB 263350N 0514505E
ROSAN 263129N 0515220E
KUMLA 262609N 0520822E
ASPAK 262115N 0522257E
UKUBU 261428N 0524039E
TOMSO 260611N 0530214E
NALPO 255602N 0532945E
SOKAK 255131N 0534251E
KIVUS 254522N 0540032E
PUSOT 253919N 0542011E

AMBOV 253439N 0543512E
VUTEB 253645~~4.6~~N 0545149~~.4~~E

P560 ~~PORT SUDAN (PSD) 311743N 0321416E~~
~~BOGUM 200736N 0380360E~~
~~AL BAHA (BHA) 2017833N 04137845E~~
~~KITAP 224928N 0522923E~~
RAMLI 334300N 0192300E
*Note 7 (RAMLI-OLMAX)
OLMAX 342000N 0180750E

~~P561~~ ~~BENINA (BNA) 320728N 0201513E~~
~~KATAB 292501N 0290506E~~

~~P562~~ ~~DEESA 294509N 0364102E~~
~~ENABI 290739N 0385650E~~
~~TAMRO 283938N 0424147E~~
~~LOTOK 280857N 0450512E~~

P563 ~~HAIL (HIL) 272630N 0414159E~~
~~PASAM 273145N 0345642E~~
~~HURGHADA (HGD) 271140N 0334847E~~
MITIGA (MTG) 325338N 0131619E
*Note 7 (MTG-LUMED)
ODGAX 333755N 135256E
LUMED 342000N 0144203E

P565 KAFIA 084400N 0233100E
LOPON 100606N 0240338E
GINKA 124701N 0250831E
HAMID 140400N 0254023E
EGSUM 185726N 0274545E
ATMUL 220000N 0290530E

P566 VATEN 153358N 0323312E
KAREP 151838N 0313308E
ASNON 150818N 0305312E
DELAM 144001N 0290644E
ELFASHER (FSR) 133554~~.09~~N 025181~~10.66~~E
ILBIB 123242N 0222700E

P567 KAMAR 323900N 0604400E
BIRJAND (BJD) 32582~~10.7~~N 059120~~10.5~~E
PATEN 340825N 0572334E
DAPIN 342034N 0570413
ALROT 351116N 0554136E
ITELO 353534N 0550052E
ODKAT 354650N 0544146E
DASHT-E-NAZ (DNZ) 363854~~3.6~~N 0531120~~.1~~E
DASEL 371113N 0522020E
RIGAN 373543N 0514052E
ULDUS 380000N 0510100E
(NETON 394542N 0481142E)

P568 EPLAS 040000N 0341148E
KUNDI 083920N 0313819E
PEBOR 095738N 0305437E
RAMKO 102439N 0303926E
JEBRA 125520N 0291349E
DEBOX 144424N 0281037E
BOXIG 155958N 0272606E
~~ELUXO 182038N 0260126E~~ELOXO 183827N 0255031E
EMAMU 191646N 0252654E
ORNAT 200000N 0250000E

P570 (TEGOR 183503~~.30~~N 062300~~32.70~~E)
KITAL 200300N 0601800E
GOLNI 210014N 0594130E
TAVKO 211519N 0593147E
BONOM 213636N 0591800E
EMURU 221357N 0585338E
TOLDA 224008N 0583624E

GIDAN 230104N 0582232E
ITURA 232351N 0580720E
MIXAM 234139N 0575523E

P572 KISAL 101811N 0232526E
GAILY 123030N 0270639E
VATEN 153358N 0323312E

P573 ELIMO 342000N 0162210E
*Note 7 (ELIMO-BNA)
RZAAM 324818N 0191536E
BENGHAZI BENINA (BNA) 320728N 0201513E

P574 (BOLIS 203333N 0650002)
TOTOX 215030N 0622230E
LOSIM 223513N 0603238E
KAXEM 225103N 0595243E
MUSRU 230256N 0592223E
PAROK 231030N 0590245E
*Note 7 (PAROK-SERSA)
KUSRA 23~~17~~24~~2~~6N 0582611E
MIXAM 234139N 0575523E
DAPOK 235956N 0572959E
EMATA 242309N 0565721E
SOLUD 243223N 0564421E
PUXIL 244117N 0563145E
GISMO 244743N 0562236E
MIVEK 245240N 0561516E
IMPED 245825~~4.5~~N 0560406~~.2~~E
NORGA 250352N 0555415E
RUKOR 250823N 0554603E
SERSA 251945N 0553118E
TOVIV 253302N 0551942E
KUMUN 254000N 0551512E
*Note 4 (KUMUN-PAPAR)
PAPAR 264000N 0542700E
SHIRAZ (SYZ) 293225~~4.6~~N 0523520~~19.6~~E
ASNIT 303854N 0520948E
OBTUX 312223N 0515242E
LOXAK 314454N 0514344E
EGPAT 323330N 0512409E
IMRAG 325142N 0511643E
PEKAM 332904N 0510118E
EGVEL 344258N 0503005E
SAVEH (SAV) 350107~~6.8~~N 0502217~~6.9~~E
SOGOL 350829N 0503128E
RUDESHUR (RUS) 352644~~3.7~~N 0505419~~.3~~E
TEHRAN (TRN) 354149~~.1~~N 0511702~~1.6~~E
NAGMO 360214N 0512055E
DANEB 362001N 0512408E
NOSHAHR (NSR) 363946~~.1~~N 0512751~~.4~~E
ULEXI 374344N 0510631E
ULDUS 380000N 0510100E
(IBRUT 413524N 0510354E)

~~P634~~ ~~LALDO 251806N 0563600E~~
~~*Note 7~~
~~ATBOR 251007N 0551947E~~

P693 AL AHSA (HSA) 2516~~44~~5N 0492903E
LADBO 242004N 0511411E
*Note 8 to BUNDU
BATHA (BAT) 241257N 0512707E
DEMTA 241926N 0513533E
BUNDU 250024N 0522924E

P699 TUKSI 252006N 0560525E
*Note 7 (TUKSI-B~~A~~HR)
PAVAG 251546N 0554042E
IVOXI 2512403~~9.6~~N 0552513~~.1~~E

TUDIS 251009N 0550825E
EGTAG 250856N 0545652E
NABIX 251241~~.1~~N 0543147~~.3~~E
MOBUL 251559N 0541841E
VEGEK 251837N 0540803E
RAGDO 252212N 0535106E
OXARI 252535N 0533458E
IMGUX 252950N 0531428E
ORMID 253354N 0525434E
*Note 8 (ORMID-KFA)
DASLO 254537N 0523029E
ALKAN 255214N 0521615E
BONAN 260201N 0515505E
VEDED 260558N 0514628E
KUNDO 261631N 0512325E
SOGAT 262029N 0511443E
RIKET 261952N 0510954E
ASTAD 261812N 0505646E
BAHRAIN (BHR) 261530N 0503919E
NARMI 261802N 0501939E
~~KING FHAD (KFA) 262153N 0494910E~~

P700
*Note 5 (ROTOX-DENVO)
ROTOX 283323N 0494809E
*Note 7 (DENVO-ROTOX)
GEPUT 281307N 0493423E
DAMUR 280137N 0492638E
GIRSI 274126N 0493311E
ORDAN 271706N 0495442E
RAMSI 270249N 0500714E
LOTOR 264854N 0502200E
EGMOR 264211N 0502907E
DESBU 263240N 0503241E
ELOSO 262409N 0503551E
BAHRAIN (BHR) 261530N 0503919E
TULUB 260644N 0510041E
DENVO 260452N 0510509E

P702
LOTIN 342000N 0150959E
*Note 7 (LOTIN-NOSRO)
REXUN 333206N0141539E
NOSRO 325324N 0133148E

P703
NARMI 261802N 0501939E
DAMMAM/KING FAHD (KFA) 262951N 0494643E
TAYMA 264556N 0484212E

P705
ULIKA 251545N 0503849E
*Note 7 (ULIKA-KIA)
SALWA 251538N 0503048E
AL AHSA (HSA) 251645N 0492903E
KIREN 251447N 0490724E
GOLNO 251155N 0483658E
KOBOX 250716N 0474946E
DEGLA 250243N 0472847E
RIYADH/KING KHALED (KIA) 245310N 0464534E

P706
ABRAM 342000N 0123816E
*Note 7 (ABRAM-NOSRO)
SKATE 334500 0130018E
SHELL 3320224N 0131530E
NOSRO 325324N 0133148E

P707
DEMGO 120258N 0483040E
ALMIL133844N 0501022E
IMPAG 140638N 0503924E
KIRAD143953N 0511241E
NODLI 150301N 0513549E
DAVRA 155918N 0523209E
KAPET 163322N 0530614E

P708 LONOS 283027N 0491713E
ORGEL 281312N 0494614E
DATEN 273118N 0501832E
REVAX 272026N 0502651E
GETAL 270410N 0504040E
DEBEN 265254N 0504856E
RASDI 260425N 0512407E
VELAM 255426N 0514347E
VUTAN 255016N 0515218E
RESAR 253707N 0522328E
ALSEM 252703N 0524322E
OVONA 252443N 0524739E

P709 VARIG 342000N 0134350E
*Note 7 (VARIG-ZAW)
DISOL 334113N 0131428E
ZAWIA (ZAW) 324643N 0123847E

P710 PASAM 273045N 0345542E
GEPAG 275526N 0351738E

P711 GOBRO 193622N 0534741E
GEROL 201443N 0532243E
DAXUT 203706N 0530802E
IVABO 204749N 0530058E
EGSAB 212446N 0523634E
SILBU 214512N 0522304E
VATIX 215522N 0521638E
DEGPA 221801N 0520227E
LABDU 222457N 0515807E
MIGMA 225035N 0512749E

P712 NARMI 261802N 0501939E
*Note 7 (NARMI-KIA)
SETBA 261346N 0491921E
BOSIV 261258N 0490837E
EMUSA 261101N 0484317E
GETOT 260646N 0481025E
AKRAM 255036N 0475133E
ETBAS 253451N 0473318E
RIYADH/KING KHALED (KIA) 245310N 0464534E

P713 ROTOX 283323N 0494809E
*Note 5 & 7 (PATOM-ROTOX)
GODRI 280257N 0494308E
ITNAS 274644N 0493957E
ORSOL 272135N 0500208E
TOKMA 270939N 0501159E
OVUPI 265320N 0502727E
OBMON 263832N 0504125E
EGPUD 262904N 0505019E
LUBET 261441N 0510347E
PATOM 255821N 0511836E

P715 KUVER 280925N 0500600E
*Note 7 (MESVI-KUVER)
ALNIN 283306N 0501036E
KHARK ISLAND (KHG) 291550~~.0~~N 0501901~~0.7~~E
MESVI 311057N 0500006E

P718 PAXER 345612N 0551237E
ITELO 353534N 0550052E
SOMAD 372645N 0543255E

P720 TIKAT 122418N 0353812E
EMITA 142130N 0334442E

P721 DUDRI 190000N 0520000E
*Note 7 (DUDRI-MEDMO)
MEDMO 194837N 0521027E

P723
ULADA 264527N 0501624E
*Note 7 (ULADA-MEDGO)
KASES 264538N 0495709E
ALVAP 264547N 0493524E
DASVA 264551N 0492301E
TAYMA 264556N 0484212E
LABLI 264522N 0482100E
MEDGO 264433N 0475257E

P751
(ARLOS 343731N 0225959~~.40~~E)
AMIBO 345604~~.7~~N 213602~~.4~~E
METRU 340000N 0250900E
*Note 7 (KUNKI-METRU)
MERSA MATRUH (MMA) 311911N 0271320E
DASUM 310802N 0273234E
TAKRI 292503N 0290432E
KUNKI 290726N 0291949E
ASYUT (AST) 270152N 0310157E
LUXOR (LXR) 254458N 0324607E
DANOG 251341N 0330905E
UMINI 234900N 0341006E
ALEBA 220000N 0352700E
TOMRU 204411N 0361950E
PORT SUDAN (PSD) 192404~~.12~~N 0371430~~.21~~E
*Note 1 [ASMARA]~~ *Note 1~~ 151704N 0385403E
TOKAR 180624N 0374812E
DEKRA 123924N 0431544E
PARIM 123142N 0432712E
ARABO 123852N 0440401E
DIRAK 124211N 0442113E
ADEN (KRA) 124952.2~~0~~9N 0450125E
RABOL 125856N 0454119E
MIXAN 132222N 0472427E
SEPRO 132824N 0475035E
AMBOD 133357N 0481527E
SOKEM 134235N 0485329E
PAXED 135027N 0492759E
XANLO 135653N 0495628E
~~ORBAT~~IMPAG140638N 0503924E
RIGAM 143932N 0530414E
DAPAB 151115N 0552354E
ANGAL 1614046N 06000046E
(MAMIG 161404N 0600004E)

P752
PATOG 180241N 0464631E
ALROG 173458N 0464651E
SEVSA 172925N 0464655E
NADKI 171417N 0464703E
ALSIR 165804N 0471248E
UKPAD 165415N 047184~~9~~8~~.60~~E
ALSOD 164204~~3.60~~N 047375~~3.40~~E
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c) **Originated by:** MIDANPIRG 20 (Muscat, Oman, 14-17 May 2023) through MIDANPIRG CONCLUSION 20/27

d) **Originator's reasons for amendment:** The changes proposed herein are the result of the work undertaken by the ATM SG meetings, and the coordination with MID States and Airspace Users. The Proposal for Amendment takes also into consideration the remaining part of ATS route challenges and issues which were not included in the first PfA (Serial No. MID-II-22/01-ATM) as well as the recent airspace restructuring projects in the MID Region; aiming to enhance the ATS route network efficiency and availability during normal and contingency situations. Therefore MIDANPIRG 20 agreed to issue new PfA for remaining changes.

e) **Intended date of implementation:** As soon as practicable after approval

f) **Proposal circulated to the following States and International Organizations:**

Afghanistan	Iraq	South Sudan
Algeria	Iran, Islamic Republic	Sudan
Armenia	of	Syrian Arab republic
Azerbaijan	Israel	Tunisia
Bahrain	Jordan	Turkey
Egypt	Kenya	Turkmenistan
Eritrea	Kuwait	United Arab
Ethiopia	Lebanon	Emirates
Chad	Libya	Uganda
Congo (Republic of)	Niger	Yemen
Congo (Democratic	Malta	International Organizations:
Republic of)	Oman	CANSO
Cyprus	Pakistan	EUROCONTROL

Djibouti	Qatar	IATA
Greece	Saudi Arabia	IFALPA
India	Somalia	IFATCA

g) **Secretariat comments:** The proposal consolidates the previously approved proposal for amendments related to ATS routes as well as the input received from States and international organizations. The task was initiated by the ATM SG/4 meeting (Amman, Jordan, 29 April – 03 May 2018), finalized by the ATM SG/8 meeting (Amman, Jordan, 07 – 10 November 2022), endorsed by the MIDANPIRG/20 meeting (Muscat, Oman, 14-17 May 2023) and facilitated by the Secretariat.

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MID DOC 003

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MID REGION
ATM CONTINGENCY PLAN

Version 5.0 (Draft) November 2023

This concept was developed by the ICAO MID ATM SG.

Approved by MIDANPIRG/21 and published by the
ICAO MID Office, Cairo

RECORD OF AMENDMENTS

The MID Region ATM contingency plan should be reviewed and updated by the ATM Sub-Group and presented to MIDANPIRG for endorsement.

The table below provides a means to record all amendments. An up-to-date electronic version of the Plan will be available on the ICAO MID Regional Office website.

Edition Date	Description	Pages Affected
15 July 2014	First edition	• Focal Points • Status of Contingency Agreements
26 November 2014	Second edition	• Focal Points • Introduction • Chapter 2 (CCT)
11 June 2015	Third edition	• Chapter 2 (CCT) • Chapter 2 Notification Procedure
20 April 2016	Fourth edition	• Focal Points • Editorials
XX March 2024	Fifth edition	All pages

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1. GLOSSARY

1.1 Abbreviations and Acronyms

ACC	Area Control Centre
AGA	Aerodromes and Ground Aids
AIC	Aeronautical Information Circular
AIG	Accident investigation and prevention
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
AHRS	Attitude and Heading Reference System
ANP	Air Navigation Plan
ANSP	Air Navigation Service Provider
AOCG	ATM Operational Contingency Group
AOR	Area of Responsibility
ASM	Airspace Management
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
AU	Airspace User
AUP	Airspace Use Plan
BPE	Basic Plan Element
CCC	Central Coordinating Committee
CCT	Contingency Coordination Team
CDR	Conditional Route
CNS	Communication, Navigation and Surveillance
DME	Distance Measuring Equipment
EGPWS	Enhanced Ground Proximity Warning System
FIC	Flight Information Center
FIR	Flight Information Region
FLAS	Flight Level Allocation Scheme
GNSS	Global Navigation Satellite System
IATA	International Air Transport Association
ICARD	ICAO Codes and Routes Database
IRU	Inertial Reference Unit
LOA	Letter of Agreement
MET	Meteorological service
MIDANPIRG	MID Air Navigation Planning and Implementation Regional Group
MIDRMA	Middle east Regional Monitoring Agency
MoU	Memorandum of Understanding
NOTAM	Notice to Airmen
PBN	Performance-based Navigation
PFD	Primary Flight Display
RNAV	Area Navigation
RVSM	Reduced Vertical Separation Minimum
SAR	Search and Rescue
SMS	Safety Management System
SSP	State Safety Programme
SUP	Supplement
TAWS	Terrain Awareness Warning System
TDS	Traffic Data Sample

ToR	Terms of Reference
TOS	Traffic Orientation Scheme

1.2 Terminology and Definition

Air traffic flow management (ATFM). A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized to the maximum extent possible and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

Air traffic management system. A system that provides ATM through the collaborative integration of humans, information, technology, facilities, and services, supported by air and ground- and/or space-based communications, navigation and surveillance.

Conditional route (CDR). A non-permanent ATS route or portion thereof which can be planned and used under specified conditions.

A Conditional Route may have more than one category, and those categories may change at specified times:

a) *Category One - Permanently Plannable CDR:* CDR1 routes are in general available for flight planning during times published in the relevant national Aeronautical Information Publication (AIP). Updated information on the availability in accordance with conditions published daily AUP notification.

b) *Category Two - Not Plannable CDR:* CDR2 routes are not available for flight planning; however, ATC Units may issue tactical clearances on such route segments.

Note: *some regional contingency routes published in MID Air Navigation Plan (Doc 9708) under note 5 (Conditional Route).*

Global navigation satellite system (GNSS). A worldwide position and time determination system that includes one or more satellite constellations, aircraft receivers and system integrity monitoring, augmented as necessary to support the required navigation performance for the intended operation.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Regional ATS route. An ATS route shall be considered as the MID regional ATS route network provided that:

a) Cross-bordered (at least initiate/terminate from FIR boundary);

b) Route designator shall be assigned in accordance with Annex 11, Appendix 1 and the ICARD requirement; and

c) Published in ICAO ANP- Middle East Region (Doc 9708), Volume II, Table ATM II-MID-1 MID Region ATS Route Network.

CHAPTER 1

INTRODUCTION

Purpose

1.1 The various circumstances surrounding each contingency situation preclude the establishment of exact detailed procedures to be followed. The purpose of this plan is to assist in providing for the safe and orderly flow of international air traffic in the event of disruptions of air traffic services and related supporting services and in preserving the availability of major world air routes within the air transportation system in such circumstances.

1.2 The MID Region Air Traffic Management Contingency Plan is primarily for the information to operators and pilots planning and conducting operations in MID Region. This plan also intended to provide guidance to deal with a range of contingency situations and promote a regional harmonized response to contingencies that affect or may affect continuous provision of ATS in the MID Region and provide guidelines for the development of States national contingency plan in line with ICAO provision in Annex 11 paragraph 2.32.

Note 1: *Guidance material relating to the development, promulgation and implementation of contingency plans is contained in Annex 11, Attachment C.*

Note 2: *additional ATM contingency planning principles and template is contained in this document* ***Appendix A*** *and* ***Appendix B*** *respectively.*

1.3 Contingency plans are intended to provide alternative facilities and services to those provided in the regional air navigation plan when those facilities and services are temporarily not available.

1.4 Also contingency plans should be designed to provide alternative routes, using existing airways in most cases, which will allow aircraft operators to fly through or avoid airspace within their jurisdiction taking into consideration the nature of the MID Region airspace and the need to keep operators and other stakeholders informed. The Plan urges the MID states to publish individual contingency plans and contingency routes at their states level to meet the requirement of the operation at regional level to allow aircraft operators to fly through their airspace.

Note 1*: this plan is developed to provide* ***alternative*** *routes for each regional main flows based on MID ANP, Volume II, Part I, table Gen II-1 (Homogeneous ATM areas and/or major traffic flows identified in the MID region) as well as* ***Appendix C*** *on this document, which will allow aircraft operators to circumnavigate airspace in the MID Region, as deemed necessary, due to a perceived risk to the safety of flight with a minimum of disruption to flight operations.*

Note 2: *based on States ~~Traffic Data Sample (~~TDS~~)~~ reports and routing options to MIDRMA, MID Office is responsible to update the main regional routing options at* ***Appendix C*** *accordingly.*

Note 3: *to achieve the requirement in note 1, ICAO MID office based on ANP Volume II, Table I, ATS routes table, periodically should provide MID region ATS route network gap analysis report to ATM SG and RDWG meetings to take the required decisions and actions for further enhancement.*

Contingency level and category

1.5 The plan describes a hierarchy of contingency levels and categories of contingency events as follows:

a) Hierarchy of contingency plans:

i. **Level 1**, for internal State plans dealing with domestic coordination actions for the ANSPs;

ii. **Level 2**, for coordinated (inter-State) contingency plans involving two or more States; and

iii. **Level 3,** to detail contingency arrangements in the event of partial or total disruption of ATS designed to provide alternative routes, using existing airways in most cases, which will allow aircraft operators to fly through or avoid airspace within the relevant Flight Information Regions (FIRs).

b) Categories of contingencies:

i. **Category A – Safe Airspace, but Restricted or ~~with~~ No ATS**, due to causal events such as pandemic, earthquake affecting the provision of ATS, or ATM system failure or degradation;

ii. **Category B – Not Safe Airspace**, due to causal events such as volcanic ash cloud or military activity; and

iii. **Category C – Airspace Not Available**, due to causal events such as national security – normally a political decision.

Note: *any instance of "Airspace Not Available" in this document refers only to a State's sovereign airspace and is not applicable to "High Seas airspace".*

Objectives

1.6 The objectives of the Plan are:

a) to ensure timely, harmonized and appropriate responses to all events that may cause disruption to the provision of ATS;

b) to provide a contingency response framework for MID States to ensure continuation of aircraft operations in affected FIR(s); and

c) to provide a greater degree of certainty for airspace and aerodrome users during contingency operations.

1.7 In order to meet these objectives, the Plan:

a) provides uniform policy and guidance for responding to reasonably foreseeable operational restrictions, including short, medium and long term actions, prevention of overload of the ATSUs affected by contingency measures and guidance for implementation and resumption;

b) provides a framework for the review of the status of ATS contingency plans and preparedness of MID Region States;
c) enables to identify and reinforce areas where ATS contingency planning requires improvement;

d) provides principles for ATS contingency planning;

e) provides contingency planning templates for States; and

f) defines the ToR for the MID Contingency Coordination Team (CCT).

CHAPTER 2

MID STATES' CONTINGENCY PLAN REQUIREMENTS

States requirements

2.1 As indicated in Annex 11, Chapter 2, Para 2.32 as well as material related to contingency planning in Annex 11, Attachment C, States Air traffic services authorities shall develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services in the airspace for which they are responsible for the provision of such services. Such contingency plans shall be developed with the assistance of ICAO MID as necessary, in close coordination with the air traffic services authorities responsible for the provision of services in adjacent portions of airspace and with airspace users concerned. The States contingency plans should be supported by contingency agreements with adjacent ACCs as well as regional arrangements.

2.2 The responsibility for appropriate contingency action in respect of airspace over the high seas continues to rest with the State(s) normally responsible for providing the services until, and unless, that responsibility is temporarily reassigned by ICAO to (an)other State(s).

2.3 Similarly, the responsibility for appropriate contingency action in respect of airspace where the responsibility for providing the services has been delegated by another State continues to rest with the State providing the services until, and unless, the delegating State terminates temporarily the delegation. Upon termination, the delegating State assumes responsibility for appropriate contingency action.

2.4 States are reminded of their obligations under Annex 11, to conduct a safety risk assessment and implement appropriate risk mitigation measures to achieve the best arrangements which will avoid hazards to civil aircraft. Operators are reminded of their obligations under Annex 6 — Operation of Aircraft, to conduct a safety risk assessment and take appropriate risk mitigation.

Note 1: *when conducting safety risk assessments in accordance with Annex 11, para 2.19, coordination should include information that is as specific as possible regarding the nature and extent of threats and their consequences for civil aviation. All parties involved need to ask, and answer, sufficient and correctly phrased questions to enable them to complete a thorough safety risk assessment. For example, the stated risk from an anti-aircraft weapon may be initially given in terms of the threat range as understood from the point of view of effective defence; the range at which the weapon could pose an accidental threat to civil aviation may be greater.*

Note 2: *States shall take into consideration the following ICAO provisions and requirements as well as their national regulations to conduct safety assessment:*

- *Annex 6 (Operation of Aircraft);*
- *Annex 11 (Air Traffic Services);*
- *Doc 9554 (Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations);*
- *Doc 9859 (Safety Management Manual (SMM)).*
- *State Safety Programme (SSP)*
- *ANSPs Safety Management Manual (SMM)*

2.5 Time is essential in contingency planning if hazards to air navigation are to be reasonably prevented. Timely introduction of contingency arrangements requires decisive initiative and action, which again presupposes

that contingency plans have, as far as practicable, been completed and agreed among the parties concerned before the occurrence of the event requiring contingency action, including the manner and timing of promulgating such arrangements. Based on that States should take preparatory action, as appropriate, for facilitating timely introduction of contingency arrangements. Such preparatory action should include:

a) preparation of ***general contingency plans*** for introduction in respect of generally foreseeable events affecting the provision of air traffic services. States providing services in airspace over the high seas should take appropriate action to ensure that adequate air traffic services will continue to be provided to international civil aviation operations. Also States providing air traffic services in their own airspace or, by delegation, in the airspace of (an)other State(s) should take appropriate action to ensure that adequate air traffic services will continue to be provided to international civil aviation operations concerned, which do not involve landing or take-off in the State(s) affected by contingency situation;

b) ***assessment of risk*** to civil air traffic due to military conflict or acts of unlawful interference with civil aviation as well as a review of the likelihood and possible consequences of natural disasters, totally/partially CNS failure/degradation including GNSS vulnerabilities and Cybersecurity attack or public health emergencies. Preparatory action should include initial development of special contingency plans in respect of the above circumstances that are likely to affect the availability of airspace for civil aircraft operations and/or the provision of air traffic services. It should be recognized that avoidance of particular portions of airspace on short notice will require special efforts by States responsible for adjacent portions of airspace and by international aircraft operators with regard to planning of alternative routings and services, and the air traffic services authorities of States should therefore, as far as practicable, endeavour to anticipate the need for such alternative actions;

Note 1*: in order to develop the required contingency plan and respective safety assessment matrix in term of likelihood and severity for provision of air traffic services, States shall take into consideration the nature and frequency of contingency situations have been occurred in their ATS unit during last 5 years.*

Note 2*: to reduce impact of CNS equipment failure or degradation on air traffic operation and ATS, States shall ensure that the required equipment and backup in accordance with the requirements of ICAO Annex 10 (Aeronautical Telecommunications) and Doc 9613 (Performance-based Navigation (PBN) Manual), ICAO Doc 9849 (Global Navigation Satellite System (GNSS) Manual) and ICAO Cybersecurity Policy Guidance are in place and operational.*

Note 3*: States shall assess the contingency readiness of their operations and provide the information resulting from this assessment to the ICAO MID Regional Office and CCT meeting.*

Note 4: *processes should be implemented to ensure the outcomes of any testing, pre-activation or activation of a contingency plan or any contingency exercise are reviewed and analysed. accordingly, lessons learned shall be incorporated in contingency procedures and ATCOs training manual.*

Note 5*: the State shall be responsible for ensuring that its ATM contingency plan comply with the SSP requirements.*

Note 6: *States should include in their contingency plans provisions related to the spread of communicable diseases such as COVID-19, based on the ICAO guidance related to the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA). In this respect, the success story related to Qatar Civil Aviation Authority (QCAA) is at* ***Attachment A****.*

Note 7: *the required guideline to deal with GNSS vulnerabilities and Cybersecurity attack are at* ***Appendix D*** *(RASG-MID SAFETY ADVISORY – 14 (RSA-14) April 2019) and* ***Appendix E*** *(Cybersecurity Policy Guidance) respectively.*

c) ***monitoring*** of any developments that might lead to events requiring contingency arrangements to be developed and applied. States should consider designating persons/administrative units to undertake such monitoring and, when necessary, to initiate effective follow-up action;

d) ***designation/establishment of a central agency and focal point*** which, in the event of disruption of air traffic services and introduction of contingency arrangements, would be able to provide, 24 hours a day, up-to-date information on the situation and associated contingency measures until the system has returned to normal. A coordinating team should be designated within, or in association with, such a central agency for the purpose of coordinating activities during the disruption;

e) ***proactively nominate State focal point(s) to ICAO MID*** who will be responsible and accountable for informing ICAO MID in case of a contingency raised at that FIR, actively participate in the regional CCT meeting and update the meeting regarding progress of contingency and committed to carry out required follow up on decisions taken in CCT meetings with national and regional stakeholders;

f) State should ***periodically review its national contingency plan*** and coordinate any amendments with neighbouring States and ICAO MID Office; and

g) States are required to carry out ***recurrent training*** such as provision of procedural control services annually for ATCOs, in order to maintain their competency to deal with variety of contingency situation like ATS surveillance failure.

Note: *MIDANPIRG 19 meeting encouraged the MID States and ANSPs to maximize the use of realistic simulation to mitigate ATCOs skill fadeout.*

2.6 During the contingency operations, States concerned should take necessary measures to grant special over flight permissions to those flights avoiding the affected airspace.

State contingency plan and structure

2.7 The various circumstances surrounding each contingency situation preclude the establishment of exact detailed procedures to be followed. The outlines here in and in ***Appendices A*** & ***B*** are intended as a general guide to MID states to develop their own national contingency plan.

Basic Plan Elements

2.8 The plan includes ~~Basic Plan Elements (~~BPEs~~)~~, which define the minimum recommended considerations for inclusion in Levels 1, 2 and 3 Contingency Plans. The BPEs should include procedures and equipment related to administration, ASM, ATM, Pilot/Operator, CNS, aeronautical support services (AIS, NOTAM and MET), as well as related contact details. ***Appendix F*** of this document lists the required BPE.

Contingency Plan Coordination and Operations meetings

2.9 Each State should establish an ATM contingency Central Coordinating Committee (CCC) meeting for the development, maintenance, activation and conduct of contingency plans (level 1, 2 & 3), and for the forming and convening of an ATM Operational Contingency Group(s) (AOCG) meeting.

~~2.9~~ ***Note****: States may set up an appropriate Committee and a Group with different names.*

2.10 Representatives from all relevant authorities including regulatory, military, meteorological as well as representatives of AUs, ANSP, airports should be part of CCC meeting.

Note: *as a result of the contingency, an aircraft that is flying over contingency airspace may "deviate significantly from its intended track" or "reports that it has been lost" or "has been observed or reported to be operating in a given area but whose identity has not been established". In this respect, adjacent FIRs should take into consideration that "strayed" and "unidentified aircraft" may be reported at their respective FIRs. To handle this circumstance in the most safe and efficient manner, States are required to develop coordination procedure with relevant military authority and follow procedure in ICAO Doc 4444, paragraph 15.5.1.*

2.11 The AOCG meeting should be convened by the CCC with a primary responsibility to oversee the day-to-day operations under the contingency arrangements, and coordinate operational ATS activities, 24 hours a day, throughout the contingency period. The ToRs of the AOCG will be determined by the CCC. The AOCG meeting should include any necessary specialist input from ATM (ATS, ASM, ATFM), CNS, MET, AIM, AGA SAR and SMS.

2.12 The ToR of the AOCG should be developed for contingency plans (level 1, 2 & 3) not only cover, but also be extended to:

a) review and update of the Contingency Plan as required;
b) organize contingency teams in each of the specialized areas listed under 2.11;
c) keep in contact with and update all affected airspace and AUs and other relevant stakeholders;
d) exchange up-to-date information with the adjacent ATS authorities concerning contingency activities;
e) notify the designated organizations of the contingency situation in advance and/or as soon as possible thereafter;
f) take necessary action for issuing NOTAMs in accordance with the contingency plan or as otherwise determined by CCT. Where the contingency situation is sufficiently foreseeable the relevant notification should be issued at least 48 hours in advance of the contingency events; and
g) liaise with the ICAO MID Regional Office and CCT through accredited focal point.

Level 1 (Domestic) Plans

2.13 Level 1 contingency plans for Category A, B and C events, conforming with the principles and including the Basic Plan Elements of the Regional ATM Contingency Plan, should be developed and implemented for all ATS units.

2.14 Performance-based training and procedures for response to ATM contingency operations for all staff providing related ATS, including ATC, FIC, AIS, Aeronautical Telecommunication and CNS equipment maintenance staff should be developed and regular inter-unit coordinated exercises of all Level 1 contingency plans should be implemented.

Level 2 Contingency Arrangements

2.15 Level 2 contingency arrangements should be formalized for all cases where the pre- activation or activation of a Level 1 contingency plan would impact upon ATS within the Area of Responsibility (AoR) of a neighboring State.

2.16 These arrangements should include procedures for the tactical definition and promulgation by NOTAM of contingency ATS routes and levels, if required, to avoid airspace affected by Category B conditions with proper coordination with relevant adjacent FIR(s) and ICAO MID Office.

Level 3 Contingency Plans

2.17 Each State shall establish and publish its ATM Contingency Plan to comply with Annex 11 SARPs and regional agreements. All States providing ATS in the MID Region shall submit their Level 3 ATM contingency plan to the ICAO MID Regional Office, to then be published in ICAO MID and State websites repository for such purpose. A template for Level 3 contingency plans is provided in ***Appendix B***.

Note: *notification, by NOTAM, of anticipated or actual disruption of air traffic services and/or related supporting services should be dispatched to users of air navigation services as early as practicable. The NOTAM should include the associated contingency arrangements. In the case of foreseeable disruption, the advance notice should in any case not be less than 48 hours.*

States Focal Points

2.18 The List of the MID States ATM contingency focal points is at ***Appendix G***. In case of changes in their focal point or contact details, the States shall be responsible for notifying ICAO MID through the official channel. Also, this list should be reviewed and updated, as appropriate at least once a year through ATM SG meetings.

States contingency notification and publication

2.19 Based on paragraph 1.5, the status of contingency event in terms of level and category shall be assessed by relevant State to cascade the information to ICAO MID and other stakeholders through the legitimate channels.

2.20 In the worst-case scenario (level 3, category C), it is likely that the relevant ACC would be able to broadcast on appropriate frequencies that contingency procedures have been initiated before evacuation. In this circumstance, in conformity with regional and national contingency plans the relevant States should notify the appropriate authorities in adjacent FIRs and ICAO MID.

Note: *State contingency plan shall include an authorization to ICAO MID Regional Office to activate the plan and CCT on its behalf upon confirmation received from the State focal point refer to* ***Appendix G*** *that the provision of ATS is subject to significant degradation or disruption which is necessary to perform the expected level of services.*

2.21 For the broadcast of an evacuation warning on appropriate frequencies, it should be communicated in the form of following:

"Emergency evacuation of [ATC unit]) is in progress. No air traffic control service will be provided by [ATC unit]. Use extreme caution and monitor [control frequencies], emergency frequencies and air to air frequencies. Contact the next air traffic control unit as soon as possible".

2.22 Where State is unable to issue the required NOTAM, in accordance with its contingency agreement with adjacent FIRs, an alternative adjacent FIR acting on behalf of the State will issue the required NOTAM after notification has been received through legitimate channel.

2.23 Details of contingency Track Orientation Scheme (TOS) and associated Flight Level Allocation Scheme (FLAS) related to contingency plans (level 1, 2 & 3) shall be published in the State AIP Section ENR 3.5.

2.24 Relevant sections of contingency plans (level 1, 2 & 3) that may have an effect on international flights should be made available on the public internet website of the State/ANSP, and the hyperlink provided to ICAO MID Regional Office for inclusion in the MID Region ATM Contingency Plan.

2.25 State national ATM contingency plans (Level 3) should be published on both website of the State/ANSP as well as ICAO MID region.

Note 1: *information of a sensitive nature such as that related to matters of national security need not be included in published contingency plans.*

Note 2: *air navigation deficiencies may be raised against the provisions of Annex 11 for States that do not publish their own national contingency plan and related agreement with adjacent FIRs and fail to report promulgation of their national ATM contingency plan to MID Office.*

2.26 ASHTAM specifying alternate routing or other ATFM measures related to a volcanic eruption or volcanic ash cloud should be issued separately from the ASHTAM issued in accordance with Annex 15, 5.4.2 and Doc 10066, 5.2.5, 5.4.2, Appendices 3, 5 and 7.

Status Reporting of State ATM Contingency Plans

2.27 States shall report the status of their contingency planning to the ICAO MID Regional Office, as follows:

a) promulgation of the national ATM Contingency Plan, together with the hyperlink to the website location of the Plan, or a copy of the approved contingency plan;

b) State Contingency Points-of-Contact; and

c) the establishment of contingency arrangements and agreements with each adjacent FIR.

2.28 States shall report the status of implementation of the performance expectations of their ATM contingency plan at least once annually, by 31 September each year to ICAO MID for review by ATM SG meeting.

CHAPTER 3

ICAO ROLE AND COMMON REGIONAL PROCEDURES

General

3.1 ICAO MID will initiate and coordinate appropriate contingency action in the event of disruption of air traffic services and related supporting services affecting international civil aviation operations provided by a State wherein, for some reason, the authorities cannot adequately discharge the responsibility referred to in 1.1. In such circumstances, ICAO MID will work in coordination with States responsible for airspace adjacent to that affected by the disruption and in close consultation with other related ICAO office(s) and international organizations concerned. ICAO will also initiate and coordinate appropriate contingency action(s) at the request of States which has been agreed by CCT meeting.

3.2 ICAO will be available for monitoring developments that might lead to events requiring contingency arrangements to be developed and applied and will, as necessary, assist in the development and application of such arrangements. During the emergence of a potential crisis, a CCT will be established in the ICAO MID and at ICAO Headquarters, and arrangements will be made for competent staff to be available or reachable 24 hours a day. The tasks of these teams will be to monitor continuously information from all relevant sources, to arrange for the constant supply of relevant information received by the State AIS at the MID States and Headquarters, to liaise with international organizations concerned and their regional organizations, as appropriate, and to exchange up-to-date information with States directly concerned and States which are potential participants in contingency arrangements. Upon analysis of all available data, permission for initiating the action considered necessary in the circumstances will be obtained from the State(s) concerned.

3.3 ICAO MID office is responsible to:

a) assess conformity of States national contingency plans with MID region ATM contingency plan;

b) monitor the status of MID States' Contingency Plans and agreement with adjacent FIRs as presented in ***Appendix H***;

c) act as the Secretariate of the CCT;

d) conduct post-implementation review to identify what needs to be improved for the future;

e) carry out periodically communication drills and other simulation exercises to rehearse response to contingency scenarios;

f) keep up to date the list of MID region ATM contingency focal point contact details at ***Appendix G***;

g) periodically conduct ATS route network gap analysis;

h) keep up to date the list of MID main regional routing options at ***Appendix C***;

i) develop regional DME/DME and Surveillance coverages respectively at ***Attachments B*** and ***C*** as the additional safety net to support operation of air traffic during GNSS vulnerabilities.

Note*: based on MIDANPIRG Conclusion 20/50, States are encouraged to share Surveillance data with adjacent FIRs.*

j) provide update information in to CCT meeting and prepare required report to ATM SG.

3.4 The ICAO MID Regional Office will coordinate with ICAO HQ and the concerned Regional Offices regarding any amendment related to the Regional Contingency Plan.

3.5 ICAO MID contingency plan, MID States contingency plan Level 3 as well as agreements are available to users through the ICAO MID website https://www.icao.int/MID/MIDANPIRG/Pages/MID-Docs.aspx. In order to maintain the effectiveness of the plan, stakeholders are encouraged to provide the ICAO MID Regional Office (icaomid@icao.int) with their comments/suggestions and updates, on yearly basis.

Contingency Coordination Team (CCT)

Objectives and responsibilities

a) upon notification, activate the regional contingency arrangement;

b) enhance and expedite individual and regional response to contingencies or possible contingencies scenarios that may affect the ATS and all other activities related to ensuring that air transport operations can be maintained to provide continual ATS provision in the MID Region, identifying threats and communicating possible solutions.

c) liaise with States, international/regional organizations to support the exchange of information and improve the regional response to contingencies;

d) exchange information with international/regional organizations and humanitarian aid agencies such as Red Crescent and WFP;

e) exchange up-to-date information with States directly concerned and States which are potentially engaged in contingency arrangements;

f) review document prepared by the relevant States regarding safety and security assessment;

g) make the required consensus regarding actions and decision to be taken including but not limited to *development of contingency plan, development of Letter of Procedure, set date and time of implementation, content of required NOTAM* and etc.;

h) support the adequate implementation of the measures established in the individual contingency plans developed by CCT and monitor the progress of the contingency. The following valid, reliable and relevant information expected to be monitored, gathered and shared:

i. information regarding any situation, condition or phenomena that may threat the safe and continuous provision of air traffic/air transport services in the MID Region;

ii. possible and/or actual contingency measures, proposed or implemented;

iii. relevant information from ATM, AIM, AGA, safety, security, etc.;

iv. expected impact to operations;

v. time and date of the beginning of the contingency measures;

vi. airspace/airport availability for landing and overflying traffic and airspace to be avoided;

vii. availability of facilities and their limitation on provision of ATS;

viii. availability and status of contingency routes;

ix. status and availability of services by neighboring States/ATS units;

x. States progress reports and challenges to cover at least the following areas:

- status of hotspot areas;
- capacity constraints;
- status of CNS equipment and facilities;
- status of voice communication/coordination and data exchange with adjacent FIRs;
- changes to aeronautical publications; and
- any development having an impact on the implementation of the plan.

xi. procedures to be followed by airlines;

xii. feedback from humanitarian aid, including ability to provide aid, flight permissions, and status on the ground; and

xiii. any other details with respect to the disruption and actions being taken by aircraft operators.

Note: *to perform the requirement of the above item, IATA is responsible for providing the CCT with the required feedback from AUs.*

i) make a decision to deactivate CCT.

Note 1: *States which anticipate or experience disruption of air traffic services and/or related supporting services should advise, as early as practicable, the ICAO MID, and other States whose services might be affected. Such advice should include information on associated contingency measures or a request for assistance in formulating contingency plans.*

Note 2: *detailed coordination requirements agreed in CCT meeting should be reflected in the contingency plan, Letter of Procedure (LoP), agreement between States concerned to promulgate common NOTAM text at a commonly agreed effective date.*

Note 3: *notification, by NOTAM, of anticipated or actual disruption of air traffic services and/or related supporting services should be dispatched to users of air navigation services as early as practicable. The NOTAM should include the associated contingency arrangements. In the case of foreseeable disruption, the advance notice should in any case not be less than 48 hours.*

Note 4*: since State who is subject to contingency situation may encounter additional hidden challenges and shortcoming like degradation of ATCOs competency or CNS infrastructure, CCT shall take into account those requirements to develop recovery plan based on step-by step approach before terminating CCT activity.*

Note 5: *notification by NOTAM of discontinuance of contingency measures and reactivation of the services set forth in the regional plan should be dispatched as early as practicable to ensure an orderly transfer from contingency conditions to normal operation.*

Membership

3.6 A CCT should compose of members/focal points from the followings: :

- Core members

  - ICAO (HQ and Regional Office(s)). MID ATM Officer will serve as the Secretary;
  - IATA Africa & the Middle East (AME);
  - States and ANSPs concerned ; and

- Observers

  - Other States, Regional and international Organizations, Agencies, Associations, when deemed necessary, as temporary members.

Activation

3.7 Activation of the MID CCT will be based on;

a) the relevant State requested directly to ICAO MID; or

b) recommendation from ICAO MID (feedback from IATA and States) which is confirmed by the concerned State.

Note 1: *the plan might be also activated in cases when airspace users decided to circumnavigate airspace(s) due to a perceived risk to the safety of flight with a minimum of disruption to flight operations caused by man-made or natural events, which might have negative impact on provision of ATS services on the relevant FIR i.e. CNS equipment failure (fully or partially) consequences not only decrease airspace capacity over that FIR, but also significantly increase and change the flow of the traffic in other airspace(s).*

Note 2: *the MID region main AUs shall inform IATA, when they have a plan to change significantly on their flow of traffic due to any reason highlighted in "Note 1". Accordingly, IATA should inform ICAO MID, if deemed necessary.*

Working methods

a) CCT will conduct at least one test activation or table-top exercise every year during the month of May (actual date to be determined based on availability of majority of participant members).

b) once activated, the CCT will be conducted based on decision taken by previous meeting.

c) use the following for sharing/exchange of information.

i. e-mail notification;

ii. daily teleconferences, if required;
iii. bulletin (in case of significant changes); and
iv. CCT summary of discussion.

Contingency Plan

3.8 Development of a contingency plan is dependent upon circumstances, including the availability, or not, of the airspace affected by the disruptive circumstances for use by international civil aviation operations. Sovereign airspace can be used only on the initiative of, or with the agreement or consent of, the authorities of the State concerned regarding such use. Otherwise, the contingency arrangements must involve bypassing the airspace and should be developed by adjacent States or by ICAO in cooperation with such adjacent States. In the case of airspace over the high seas or of undetermined sovereignty, development of the contingency plan might involve, depending upon circumstances, including the degree of erosion of the alternative services offered, temporary reassignment by ICAO of the responsibility for providing air traffic services in the airspace concerned.

Note: *a contingency plan should be acceptable to providers and users of contingency services alike, i.e. in terms of the ability of the providers to discharge the functions assigned to them and in terms of safety of operations and traffic handling capacity provided by the plan in the circumstances.*

3.9 Development of a contingency plan presupposes as much information as possible on current and alternative routes, navigational capability of aircraft and availability or partial availability of navigational guidance from ground-based aids, surveillance and communications capability of adjacent air traffic services units, volume and types of aircraft to be accommodated and the actual status of the air traffic services, communications, meteorological and aeronautical information services. The principles and requirements in ***Appendix A*** should be considered for development of any contingency plan.

CHAPTER 4

ATM VOLACANIC ASH CONTINGENCY PLAN

4.1 The MID Region ATM Volcanic Ash Contingency Plan (MID ATM VACP) was developed based on the VACP prepared by the International Volcanic Ash Task Force (IVATF) in August 2012. The MID ATM VACP sets out standardised guidelines and procedures for the provision of information to airlines and en-route aircraft before and during a volcanic eruption. The plan and its appendices are at ***Attachment D*** to this Document.

4.2 The MID ATM VACP includes the pre-eruption, start of eruption, ongoing; and recovery phases. It is to be highlighted that most MID States would practice the ongoing and recovery phases only as the pre-eruption and start of eruption phases would only apply to the States where volcanoes erupt. Furthermore, the MID Region would receive volcanic ash advisories and volcanic ash advisories in graphic form from the Volcanic Ash Advisory Center (VAAC) Toulouse.

4.3 Volcanic contamination, of which volcanic ash is the most serious, is a hazard for safe flight operations. Mitigating the hazards posed by volcanic ash in the atmosphere and/or at the aerodrome cannot be resolved in isolation but through collaborative decision making (CDM) involving all stakeholders concerned. During an eruption, volcanic contamination can reach and exceed the cruising altitudes of turbine-powered aircraft within minutes and spread over vast geographical areas within a few days. Encounters with volcanic ash may result in a variety of hazards including one or more of the following:

a) the malfunction, or failure, of one or more engines leading not only to reduction, or complete loss of thrust but also to failures of electrical, pneumatic and hydraulic systems;

b) the blockage of pitot and static sensors resulting in unreliable airspeed indications and erroneous warnings;

c) windscreens rendered partially or completely opaque;

d) smoke, dust and/or toxic chemical contamination of cabin air requiring crew to don oxygen masks, thus impacting verbal communication; electronic systems may also be affected;

e) the erosion of external and internal aircraft components;

f) reduced electronic cooling efficiency leading to a wide range of aircraft system failures;

g) the aircraft may have to be manoeuvred in a manner that conflicts with other aircraft; and

h) volcanic ash deposition on a runway may degrade aircraft braking performance, most significantly if the volcanic ash is wet; and in extreme cases, this can lead to runway closure.

4.4 Operators are required by ICAO Annex 6 – Operation of Aircraft to implement appropriate mitigation measures for volcanic ash in accordance with their safety management system (SMS), as approved by the State of the Operator/Registry. The guidelines provided in the MID ATM VACP document assume that the ICAO requirements regarding safety management systems have been implemented by the operators. Detailed guidance on Safety Risk Assessments (SRAs) for flight operations with regard to volcanic ash contamination can be found in the

manual on Flight Safety and Volcanic Ash – Risk Management of Flight Operations with Known or Forecast Volcanic Ash Contamination (ICAO Doc 9974).

4.5 Based on the above, States' regulatory provisions and arrangements should be reviewed to ensure that, in accordance with the guidance provided in ICAO Doc 9974:

a) aircraft operators are to include in their SMS an identifiable safety risk assessment for operations into airspace forecast to be, or at aerodromes known to be, contaminated with volcanic ash; and

b) safety oversight procedures are used for the evaluation of operators' capability to conduct flight operations safely into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash.

4.6 Distribution of applicable Aeronautical Information Services (AIS) and Meteorological (MET) messages related to volcanic ash are set out in relevant ICAO Annexes, specifically Annex 15–Aeronautical Information Services and Annex 3 – Meteorological Service for International Air Navigation.

4.7 Volcanic ash can also affect the operation of aircraft at aerodromes. Volcanic ash deposition at an aerodrome, even in very small amounts, can result in the closure of the aerodrome until all the deposited ash has been removed. In extreme cases, the aerodrome may no longer be available for operation at all, resulting in repercussions on the ATM system, e.g. diversions, revised traffic flows, etc.

4.8 Some aircraft types or engine technologies are more vulnerable to volcanic ash contaminants than others; therefore, any specific mitigation measures to be applied would have to take into account any such variance. Considering that a commercial aircraft travels about 150 km (80 NM) in 10 minutes and that volcanic ash can rise to flight levels commonly used by turbine-engine aircraft in half that time, a timely response to volcanic eruptions and volcanic ash in the atmosphere is essential.

4.9 It is imperative that information on the volcanic activity is disseminated as soon as possible. In order to assist staff in expediting the process of originating and issuing relevant AIS and MET messages, a series of templates should be available for different stages of the volcanic activity. For the list of ICAO registered volcanoes see the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (ICAO Doc 9691). Volcanoes name, number and nominal position should be available at the State's International NOTAM office. Volcanic ash exercises (VOLCEX) should be conducted at a frequency determined by the ICAO Region concerned, in order to ensure the smooth implementation and effectiveness of the contingency plan in case of an actual volcanic eruption.

4.10 This document has been prepared and is in line with a proposal for amendment to the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) paragraph 15.8 Procedures for an ATC unit when a volcanic ash cloud is reported or forecast — which is expected to become applicable in November 2014.

4.11 Also based on the above reference, States' airspace and airport management policies and procedures should be reviewed to ensure that:

a) Airspace affected by volcanic ash cloud should not be 'closed'.

b) Specification in ASHTAM of alternate routing or other ATFM measures to manage airspace constraints arising from volcanic ash cloud should be solely for the purpose of ensuring the predictability and regularity of air traffic and should be based on an assessment of capacity and demand in airspace affected by volcanic ash and/or by aircraft avoiding the volcanic ash cloud.

c) ASHTAM specifying alternate routing or other ATFM measures related to a volcanic eruption or volcanic ash cloud should be issued separately from the ASHTAM issued in accordance with Annex 15, 5.4.2 and Doc 10066, 5.2.5, 5.4.2, Appendices 3, 5 and 7.

d) Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area.

e) Airport capacity limitations of alternate aerodromes, including apron capacity, should be considered, and recommendations for the use of other alternates considered for inclusion in ASHTAM as mentioned in c, above.

f) If required by State regulations, any declaration of a Danger or Restricted Area should be confined to the pre-eruptive or erupting volcano and the area containing its forecast or observed ejecta.

4.12 General considerations during the development of an ATM contingency plan for volcanic ash and anticipated flight crew issues when encountering volcanic ash are provided in Appendices A and B, respectively.

APPENDIX A

ATM CONTINGENCY PLANNING PRINCIPLES AND REQUIREMENTS

A.1 All ATS units should have a Level 1 Contingency Plan to ensure the safe transit of international traffic in the event of disruption or withdrawal of ATS, or unsafe airspace conditions.

A.2 The overriding principle is that safety has primacy over efficiency and optimal levels and routes.

A.3 Contingency operations over the concerned airspace will necessitate lower than airspace capacity to ensure safety.

Note 1: *collaborative ATFM measures should be the first priority response to Category A events, and for the management of deviating traffic during Category B and C events.*

Note 2*: amended ATS routes, whether published or promulgated Ad hoc, may be prescribed as part of the ATFM response to expected demand and capacity imbalance caused by contingency events.*

A.4 Reassignment of responsibility for providing air traffic services in airspace over the high seas or in delegated airspace should be considered.

A.5 If the State is not able to issue the required NOTAM(s), the relevant authority of this State shall agree with adjacent FIR under MoU to publish required NOTAM on its behalf in accordance with ICAO provisions in Annex 15.

A.6 System and ATC service redundancy is the most effective contingency capability.

A.7 All Contingency Plans should define the following where applicable:

a) re-routing of traffic to avoid the whole or part of the airspace concerned, normally involving establishment of additional routes or route segments with associated conditions for their use such as implementation of FLAS, if required;

Note 1: *establishment of a simplified route network such as unidirectional route through the airspace concerned together with a FLAS is highly recommended.*

Note 2: *contingency FLAS planning should include consideration of allocating the optimum flight levels to routes used by long haul aircraft, depending on the traffic density on the route, wherever practicable.*

b) provisions for tactical definition and coordination of additional routes/FLAS and priority for access to accommodate selected non-scheduled operations such as humanitarian, medical, evacuation, Red Cresent and WFP;

c) priority determination for routine scheduled and non-scheduled flights;

d) define ground and airborne navigation requirements if necessary;

Note*: the aircraft minimum operational requirement to operate over contingency airspace should include procedures to "display navigation and anti-collision lights", "transponders set on a discrete code assigned by ATC or, if code not assigned, select code 2000", "apply Strategic Lateral Offset Procedures (SLOP) (PANS-ATM, paragraph 16.5)",*

"ACAS operational and pilot watch for conflicting traffic both visually and by reference to ACAS" and if agreed by CCT meeting, "keep ADS-B operational" at all times;

e) specified minimum longitudinal separation between consecutive aircraft entering the contingency airspace;

***Note 1**: to maintain an increased agreed longitudinal separation, aircraft needs to maintain assigned speed, during entire flight within contingency airspace except in cases of emergency.*

***Note 2**: emergency and weather deviation descent procedures are contained in ICAO Doc 4444, paragraph 15.1.4 and paragraph 15.2.4 respectively.*

***Note 3:** contingency ATS routes should provide minimum lateral separation of 80 NM between aircraft that are not vertically separated under a FLAS, except where CCT upon safety assessment agreed to implement reduced lateral separation specified in ICAO Doc 4444.*

***Note 4:** States and CCT should specify any necessary buffers to minimum lateral separation requirements where meteorological phenomena may require aircraft to deviate from the ATS route to maintain flight safety. Information on the buffers should be provided in operational information provided on pre-activation or activation of the contingency plan.*

***Note 5:** minimum longitudinal spacing between aircraft operating on the same contingency route and not vertically separated should be 15 minutes or 120 NM. However, this may be reduced to 10 minutes or 80 NM in conjunction with application of the Mach number technique where authorized by the relevant authority and agreed in the LoA or CCT arrangement.*

f) contingency communication arrangements including means of communication within contingency airspace (Air - Ground and Ground – Ground) and communications transfer arrangements for aircraft entering and leaving the airspace;

***Note**: communication arrangements should include procedure for aircraft to maintain continuous listening watch on specified VHF frequencies in specified areas where air-ground communications are uncertain or non-existent as well as requirement for pilots to continuously guard the IATA In-flight Broadcast Procedure (IFBP).*

g) details of delegation of ATS arrangements (if any); and

h) contingency points of contact.

A.8 Level 2 Contingency Arrangements (arrangements between neighboring FIRs) should be included in bi-lateral or multi-lateral agreements between States in all cases where activation of any Level 1 Contingency Plan will impact upon a neighboring State's ATS Unit.

A.9 Level 1 Contingency Plans should include, either in detail or by reference, any relevant Level 2 Contingency Arrangements.

A.10 Close cooperation between neighboring FIRs, together with supporting mechanisms for the tactical definition and promulgation of contingency routes for the avoidance of Category B and C is essential.

A.11 Contingency ATS routes should be published in State AIP to permit the storing of route details in AUs' navigation databases.

A.12 State appropriate ATS authority or CCT should redefine classification of the airspace which is subject to contingency operation.

A.13 Alternate aerodromes should be specified where necessary in Level 1 contingency plans for airport control towers and terminal airspace.

A.14 The adjacent contingency FIRs should take into consideration that “strayed” and “unidentified aircraft” may be reported at their respective FIRs. To handle this circumstance, States are required to develop coordination procedures with relevant military authority and follow procedure in ICAO Doc 4444, paragraph 15.5.1.

A.15 States and ANSPs are required to maximize the use of realistic simulation to mitigate ATCOs skill fadeout.

A.16 Airspace affected by volcanic ash cloud should not be closed to international civil aviation.

A.17 Closure of airports affected by volcanic ash deposition should be supported by a safety assessment conducted in collaboration between airport operator, aircraft operators and the ANSP, in accordance with their respective SMS.

APPENDIX B

CONTINGENCY PLAN TEMPLATE

OBJECTIVE

B.1 This contingency plan contains arrangements to ensure the continued safety of air navigation in the event of partial or total disruption of ATS and is related to ICAO Annex 11- *Air Traffic Services*. The contingency plan should be designed to provide alternative routes, using existing airways in most cases, which will allow aircraft operators to fly through or avoid airspace which is subject to contingency.

AIR TRAFFIC MANAGEMENT

ATS Responsibilities

B.2 Tactical ATC considerations during periods of overloading may require re-assignment of routes or portions thereof.

B.3 Alternative routes should be designed to maximize the use of existing ATS route structures and CNS services.

***Note**: airspace should be designed in a way to minimize potential confliction of different traffic flows. In doing so, the establishment of unidirectional route as well as implementation of FLAS might be required.*

B.4 In the event that ATS cannot be provided within designated FIR or portion thereof, the State with coordination of ICAO MID, adjacent FIRs and if required, CCT shall publish the corresponding NOTAM/ASHTAM indicating the following:

a) time and date of the beginning of the contingency measures;

b) airspace available for landing and overflying traffic, and airspace to be avoided;

c) details of the facilities and services available or not available and any limits on ATS provision (e.g., ACC, Approach (APP), Tower (TWR) and Flight Information Service (FIS)), including an expected date of restoration of services if available;

d) information on the provisions made for alternative services;

e) ATS contingency routes;

f) procedures to be followed by adjacent ATS units;

g) procedures to be followed by pilots; and

h) any other details with respect to the disruption and actions being taken that aircraft operators may find useful.

B.5 If the State is not able to issue the required NOTAM(s), the relevant authority of this State shall agree with adjacent FIR under MoU to publish required NOTAM on its behalf.

Separation

B.6 Separation criteria will be applied in accordance with the Procedures for Air Navigation Services in ICAO Doc 4444 as well as decision that may be taken by CCT meeting.

Level Restrictions

B.7 Where possible, aircraft on long-haul international flights shall be given priority with respect to cruising levels.

Other measures

B.8 Other measures related to the closure of airspace and the implementation of the contingency scheme in the relevant FIR may be taken as follows:

a) suspension of all VFR operations;

b) delay or suspension of general aviation IFR operations; and

c) delay or suspension of commercial IFR operations.

TRANSITION TO CONTINGENCY SCHEME

B.9 During times of uncertainty when airspace closures seem possible, aircraft operators should be prepared for a possible change in routing while en-route, familiarization of the alternative routes outlined in the contingency scheme as well as what may be promulgated by a State via NOTAM, AIC, SUP or AIP.

B.10 In the event of airspace closure that has not been promulgated, ATC should, if possible, broadcast to all aircraft in their airspace, what airspace is being closed and ~~to stand~~stand by for further instructions.

B.11 ATS providers should recognize that when closures of airspace or airports are promulgated, individual airlines might have different company requirements as to their alternative routings. ATC should be ~~alert~~alerted to respond to any request by aircraft and react commensurate with safety.

TRANSFER OF CONTROL AND COORDINATION

B.12 The transfer of control and communication between ATS units should be at the common FIR boundary unless there is mutual agreement between adjacent ATS units. ATS providers should also review current coordination requirements in light of contingency operations or short notice of airspace closure.

PILOTS AND OPERATOR PROCEDURES

B.13 Pilots need to be aware that in light of current international circumstances, a contingency routing requiring aircraft to operate off of normal traffic flows, could result in an intercept by military aircraft. Aircraft

operators must therefore be familiar with international intercept procedures contained in ICAO Annex 2 –Rules of the Air, paragraph 3.8 and Appendix 2, Sections 2 and 3.

B.14 Pilots need to continuously guard the VHF emergency frequency 121.5 MHz and should operate their transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where Secondary Surveillance Radar (SSR) is used for ATS purposes. Transponders should be set on a discrete code assigned by ATC or select code 2000 if ATC has not assigned a code.

***Note**: additional safety net such as implementation of IFBP or SLOP may be considered by CCT meeting during contingency situation.*

OVERFLIGHT PERMISSION

B.15 Aircraft operators should obtain overflight permission from States for flights operating through their jurisdiction of airspace, where required. In a contingency situation, flights may be rerouted at short notice and it may not be possible for operators to give the required advanced notice in a timely manner to obtain approval. States responsible for the airspace in which contingency routes are established should consider making special arrangements to expedite flight permission in these contingency situations.

CONTINGENCY UNIT

B.16 The ATM national contingency unit assigned the responsibility of monitoring developments that may dictate the enforcement of the contingency plan and coordination of contingency arrangements. The contact details of this unit shall include the followings:

Name of Agency:
Contact Person:
Telephone:
Fax:
Email:

B.17 During a contingency situation, the State designated focal point in national contingency unit will coordinate with the adjacent ATS units and liaise with the ICAO MID Regional Office as well as CCT as appropriate.

CONTINGENCY ROUTE AND LEVEL SCHEME

B.18 Aircraft operators should file their flight plans using the alternative contingency routes and levels listed in the scheme below or published NOTAM(s) in order to operate in the airspace which is subject to contingency measures.

Present ATS route	Contingency routes and levels	FIRs involved
In lieu of: xxxx	(ATS unit) provides ATS on the following routings: *CR1 and FLAS, if required:* *CR2 and FLAS, if required:* *CR3 and FLAS, if required:*	xxxx: in coordination with xxxx
In lieu of: xxxx	(ATS unit) provides ATS on the following routings: *CR4 and FLAS, if required:* *CR5 and FLAS, if required:*	xxxx: in coordination with xxxx

B.19 All aircraft should establish and maintain contact on published VHF or HF frequencies with the (*xxx*) ATS unit (APP/ACC/FIC) responsible for the airspace being traversed.

APPENDIX C

MID MAIN REGIONAL ROUTING OPTIONS

C.1 This Contingency Plan has been developed based on existing ATS routes and making use of appropriate contingency routes in the MID Region. Priority has been given to safety considerations and to ensuring that to the extent possible, ATC operations are not complicated. Temporary routes may be established where necessary.

Note 1: *these alternative routes including permanent and temporary as well as conditional route (CDR) are based mainly on the existing route network or established earlier for this purpose. Concerned States and CCT in consultation with AUs, might establish additional temporary routes to be able to accommodate extra traffic in a safe manner.*

Note 2: *regional ATS routes which are allocated for provision of service during contingency situation are available in ANP Volume II, Table I, ATS route table under the condition of "Note 5-CDR" which will be used during specified period by issuing required NOTAM.*

C.2 The contingency routings are designed to take into consideration that disruptions to normal traffic flows have the potential to create an additional burden and complexity to ATC. Therefore, temporary contingency routes would be designed to be safe and instantly manageable by ATC. This may require additional track miles to be flown by the aircraft operator.

Note*: it is recognized that operators may incur economic penalties during application of the contingency scenarios by imposing additional track miles or implementation of air traffic flow management measures when deemed necessary.*

C.3 The alternative routings were given "CR" designators based on various scenarios that may be implemented. It is to be highlighted that the scenarios drawn on the charts were developed based on the existing route network, and do not reflect new routes. Furthermore, one scenario could be used to avoid different FIRs, subject to users' requirements. The scenarios are detailed in the Table below:

CR	FIR(s) to be Avoided	Routing options	Remarks
CR 1	Amman, Beirut and Damascus	***EUR/NAT region from/to APAC region*** ▪ Ankara, Tehran, Kabul/Karachi ▪ Nicosia, Cairo, Jeddah, Bahrain, Doha, UAE, Muscat, Karachi/Mumbai ***EUR/NAT region from/to Gulf States*** ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE and Muscat ▪ Ankara, Tehran, Bahrain/Doha/UAE/Muscat ▪ Nicosia, Cairo, Jeddah, Bahrain, Doha, UAE, Muscat	
CR 2	Baghdad and Kuwait	***EUR/NAT region from/to APAC region*** ▪ Ankara, Tehran, Kabul/Karachi ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, Doha, UAE, Muscat, Karachi/Mumbai ▪ Tel Aviv, Amman, Jeddah, Bahrain, Doha, UAE, Muscat, Karachi/Mumbai ***EUR/NAT region from/to Gulf States***	

		▪ Ankara, Tehran, Bahrain/Doha/UAE/Muscat ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, Doha, UAE, Muscat ▪ Tel Aviv, Amman, Jeddah, Bahrain, Doha, UAE, Muscat	
CR 3	Bahrain	***EUR/NAT region from/to APAC region*** ▪ Ankara, Tehran, Kabul/Karachi ▪ Nicosia, Cairo, Amman, Jeddah, Doha, UAE, Muscat, Karachi/Mumbai ▪ Tel Aviv, Amman, Jeddah, Doha, UAE, Muscat, Karachi/Mumbai ***EUR/NAT region from/to Gulf States*** ▪ Ankara, Tehran, Doha/UAE/Muscat ▪ Ankara, Baghdad, Kuwait, Doha, UAE and Muscat ▪ Nicosia, Cairo, Amman, Jeddah, Doha, UAE, Muscat ▪ Tel Aviv, Amman, Jeddah, Doha, UAE, Muscat ***Northeast Africa from/to Gulf States*** ▪ Cairo, Jeddah, Doha/UAE/Muscat ***Gulf States from/to APAC region*** ▪ Jeddah, Doha, Tehran, Karachi ▪ Jeddah, Doha, UAE, Muscat, Mumbai/Karachi	
CR 4	Doha	***EUR/NAT region from/to APAC region*** ▪ Ankara, Tehran, Kabul/Karachi ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, UAE, Muscat, Karachi/Mumbai ▪ Tel Aviv, Amman, Jeddah, Bahrain, UAE, Muscat, Karachi/Mumbai ***EUR/NAT region from/to Gulf States*** ▪ Ankara, Tehran, Bahrain/UAE/Muscat ▪ Ankara, Baghdad, Kuwait, Bahrain, UAE and Muscat ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, UAE, Muscat ▪ Tel Aviv, Amman, Jeddah, Bahrain, UAE, Muscat ***Northeast Africa from/to Gulf States*** ▪ Cairo, Jeddah, Bahrain/UAE/Muscat ***Gulf States from/to APAC region*** ▪ Bahrain, Tehran, Karachi ▪ Bahrain, Jeddah, Muscat, Mumbai/Karachi	
CR 5	Cairo	***EUR/NAT region from/to Gulf States*** ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE and Muscat ▪ Ankara, Tehran, Bahrain/Doha/UAE/Muscat ▪ Tel Aviv, Amman, Jeddah, Bahrain, UAE, Muscat ***Northeast Africa from/to EUR/NAT region*** ▪ Juba/Addis Ababa, Khartoum, Tripoli, Malta ▪ Juba, Khartoum, Jeddah, Amman, Tel Aviv ▪ Asmara, Jeddah, Amman, Tel Aviv ▪ Mogadishu/Djibouti/Addis Ababa, Sana'a, Jeddah, Amman, Tel Aviv ***North Africa from/to Gulf States and Asia*** ▪ N'djamena, Khartoum, Jeddah, Doha, UAE, Muscat, Mumbai	

		▪ Malta, Nicosia, Tel Aviv, Amman, Jeddah, Bahrain, Doha, UAE, Muscat, Mumbai	
CR 6	Tehran	***Northeast of Tehran FIR from/to Gulf States*** ▪ Turkmenbashi, Ashgabat, Turkmenabad, Kabul, Karachi, Muscat, UAE, Doha, Bahrain ▪ Baku, Yerevan, Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE, Muscat ***EUR/NAT region from/to Gulf States*** ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE and Muscat ▪ Tel Aviv, Amman, Jeddah, Bahrain, Doha, UAE, Muscat ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, Doha UAE, Muscat ***EUR/NAT region from/to APAC region*** ▪ Ankara, Yerevan/Tbilisi, Baku, Turkmenbashi, Ashgabat ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE and Muscat, Karachi/Mumbai ▪ Tel Aviv, Amman, Jeddah, Bahrain, Doha, UAE, Muscat, Karachi/Mumbai ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, Doha UAE, Muscat, Karachi/Mumbai ***Gulf States from/to APAC region*** ▪ Kuwait, Bahrain, Doha, UAE, Muscat, Mumbai/Karachi	
CR 7	Jeddah	***EUR/NAT region from/to Gulf States*** ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE and Muscat ▪ Ankara, Tehran, Bahrain/Doha/UAE/Muscat ▪ Tel Aviv, Amman, Baghdad, Kuwait, Bahrain, Doha, UAE, Muscat ***EUR/NAT region from/to APAC region*** ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, UAE and Muscat, Karachi/Mumbai ▪ Ankara, Tehran, Karachi ▪ Tel Aviv, Amman, Baghdad, Kuwait, Bahrain, Doha, UAE, Muscat, Karachi/Mumbai ***Northeast Africa from/to Europe*** ▪ Mogadishu, Sana'a, Asmara, Khartoum, Cairo, Nicosia/Athens ▪ Djibouti, Asmara, Khartoum, Cairo, Nicosia/ Athens ***Northeast Africa from/to APAC region*** ▪ Khartoum, Asmara, Sana'a, Mumbai ▪ Addis Ababa/Mogadishu, Sana'a, Mumbai ***South and east Africa from/to Gulf States*** ▪ Mogadishu/Addis Ababa, Sana'a, Muscat, UAE, Doha	
CR 8	Khartoum	***EUR/NAT region from/to Northeast Africa*** ▪ Nicosia/Athens, Cairo, Jeddah, Asmara ***Western Africa from/to Northeast Africa*** ▪ N'djamena/Brazzaville, Juba, Addis Ababa	
CR 9	UAE	***EUR/NAT region from/to APAC region*** ▪ Ankara, Tehran, Kabul/Karachi ▪ Nicosia, Cairo, Amman, Jeddah, Muscat, Mumbai ▪ Tel Aviv, Amman, Jeddah, Muscat, Mumbai	

		EUR/NAT region from/to Gulf States ▪ Ankara, Tehran, Bahrain/Doha/Muscat ▪ Ankara, Baghdad, Kuwait, Bahrain, Doha, Jeddah, Muscat ▪ Nicosia, Cairo, Amman, Jeddah, Bahrain, Doha, Muscat ▪ Tel Aviv, Amman, Jeddah, Bahrain, Doha, Muscat ***Northeast Africa from/to Gulf States*** ▪ Cairo, Jeddah, Bahrain, Doha, Muscat ***Gulf States from/to APAC region*** ▪ Bahrain, Doha, Tehran, Karachi ▪ Bahrain, Doha, Jeddah, Muscat, Mumbai/Karachi	
CR 10	Muscat	***EUR/NAT region from/to APAC region*** ▪ Ankara, Tehran, Kabul/Karachi ▪ Nicosia, Cairo, Amman, Jeddah, Sana'a, Mumbai ▪ Tel Aviv, Amman, Jeddah, Sana'a, Mumbai ***South and east Africa from/to Gulf States*** Mogadishu/Addis Ababa, Sana'a, Jeddah, Doha, UAE	
CR 11	Sana'a	***Northeast Africa from/to APAC region*** ▪ Khartoum, Asmara, Jeddah, Muscat, Mumbai ▪ Addis Ababa/Mogadishu, Mumbai ***Northeast Africa from/to Europe*** ▪ Djibouti, Asmara, Khartoum, Cairo, Nicosia/ Athens ***South and east Africa from/to Gulf States*** ▪ Addis Ababa, Asmara, Jeddah, UAE, Doha	
CR 12	Tripoli	***Western Europe from/to northeast Africa and Gulf States*** ▪ Malta, Cairo, Khartoum, Asmara/Addis Ababa/Juba ▪ N'djamena, Khartoum, Asmara/Addis Ababa/Jeddah, Doha, UAE, Muscat	

C.4 ICAO MID Office will proactively carry out the following actions based on the aforementioned CRs and taking into account the main flows of the MID region in line with the annual TDS and routing options reports submitted by MID States to MIDRMA.

a) periodically conduct ATS route network gap analysis;
b) with participation of IATA, and MID States, prepare required proposal to ATM SG and RDWG to develop MID ATS route network; and
c) keep up to date the content of the following table.

Main flow				**Permanent routing option(s)**		**Temporary routing option(s)**	
MID region entry point/departure airport	Name of the routes	Relevant FIRs	Exit point from MID region/destained at airport in the MID region	Route designators	Relevant FIRs	Route designators	Relevant FIRs
OMDB	M556, T602, L602, M860	UAE, Bahrain, Kuwait, Baghdad	NINVA				

APPENDIX D

GNSS VULNERABILITIES

INTRODUCTION

D.1 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.

D.2 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 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 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.

D.3 The RASG-MID/6 (Bahrain, 26 – 28 September 2017) agreed that IATA and ICAO MID Office should develop a RSA on GNSS vulnerabilities.

D.4 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~~performance and assess the effectiveness of the mitigation measures in place.

DESCRIPTION

D.5 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.

D.6 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.

D.7 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.

D.8 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.

D.9 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.

D.10 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.

D.11 Spoofing is another source of intentional GNSS Interference, which is a deliberate interference that aims to mislead GNSS receivers into general false positioning solution.

D.12 Detailed information about the GNSS Implementation and Vulnerabilities can be found in MID DOC 010 – The Guidance on GNSS implementation in the MID Region.

RISK ASSESSMENT

D.13 The risk assessment covers affected operations during en-route, 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.

D.14 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~~Category	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: Threat types

D.15 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.

MITIGATION STRATEGIES

D.16 To minimize the risks associated with GNSS vulnerabilities, several mitigation strategies can be deployed to reduce the likelihood and impact of the threat.

Reducing the likelihood of GNSS interferences

D.17 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.

Reducing the impact of the GNSS vulnerabilities

D.18 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.

D.19 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:

   i. the airspace classification;
   ii. the available ATC services (radar or procedural);
   iii. the avionics onboard
   iv. aircrew and air traffic controller workload implications;
   v. the impact that the loss of GNSS will have on other functions, such as ADS-B based surveillance; and
   vi. 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.

D.20 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.

D.21 The data analysis of the reported GNSS vulnerabilities incidents for the period from January 2015 to June 2018 showed that the impact of the GNSS interference on Aircraft Operations in the MID Region were as follows:

a) Loss of GPS1 (fault)/ Loss of GPS2 (fault)
b) Observation of "Map shift" on Navigation display
c) Switching to an alternative navigation mode (IRS displayed, VOR/DME)
d) Degraded PBN Capability (NAV Unable RNP)
e) GPS POS Disagree
f) EGPWS warning
g) ADS-B Traffic triggered

Monitoring

D.22 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.

D.23 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.

D.24 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.

D.25 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.

D.26 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.

Reporting

D.27 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.

D.28 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.

D.29 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; and

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).

D.30 **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).

D.31 **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.

D.32 **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.

Appendix D - Appendix A

GNSS interference reporting form to be used by pilots.
** Mandatory field*

Originator of this Report:	
Organization:	
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

Appendix D - 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	Scale	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, six 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 D-2.4

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 E

ICAO CYBERSECURITY POLICY GUIDANCE

Introduction

E.1 This guidance is in line with the ICAO Aviation Cybersecurity Strategy, and the Cybersecurity Action Plan, which action item CyAP0.1 recommends that the International Civil Aviation Organization (ICAO) develops a model Cybersecurity Policy for reference by Member States and industry when developing their own national/internal policies.

E.2 The model Cybersecurity Policy is included in Appendix A to this guidance.

Scope

E.3 The model Cybersecurity Policy outlined in Appendix A of this document addresses the protection and resilience of international civil aviation's critical infrastructure against cyber threats, and the multilateral collaboration requirement within civil aviation as well as with external authorities such as military, cybersecurity, and national security.

Objectives

E.4 The model Cybersecurity Policy is intended to serve as a guide to help States and industry focus resources and actions to achieve a systemic approach to cybersecurity in civil aviation, including current and legacy systems. The ultimate goal is for States and stakeholders to be able to develop a system-of-systems approach that enables civil aviation to be protected against cyber threats, and to respond to and recover from cyber incidents in a timely fashion, and, therefore, to withstand new threats without significant disruptions.

E.4 The main outcomes expected from implementing a Cybersecurity Policy are:

E.4.1 Ensure civil aviation is protected against cyber threats

The protection of civil aviation against cyber-attacks is addressed through the implementation of ICAO cybersecurity Standards and Recommended Practices, procedures, and guidance material. It includes the implementation of robust risk management practices, the identification of critical infrastructure, and the implementation of a holistic multilayered approach to cybersecurity. This approach should ensure that a successful attack on one layer does not compromise other layers of the system and/or lead to loss of safety, security or continuity of critical functions. The system should also adopt a continuous improvement approach to ensure that necessary enhancements to planned technical or procedural evolutions are coordinated, implemented, and kept up to date.

E.4.2 Ensure civil aviation is cyber-resilient

A cyber-resilient civil aviation system is a system that, under attack, can maintain its critical functionalities: i.e., supports safe and secure flight operations with minimal, if any, disruption. The system should also include appropriate cooperation and information-sharing mechanisms between aviation stakeholders, such as government, industry and, where appropriate, with civil law enforcement and military authorities.

E.4.3 Ensure civil aviation is self-strengthening by adopting a "Security by Design" approach

Adopting a security by design approach for civil aviation requires, at the outset of a system's conception, consideration of security objectives that need to be achieved during a system's design process, along with traditional operational and safety objectives. Ensuring the security of critical elements and processes "by design" changes the security paradigm from reactive to proactive, and fosters the development of a self-protected civil aviation system, therefore enabling it to evolve and enabling improved security and resilience.

E.4.4 Ensure coordination of aviation cybersecurity within civil aviation and with concerned non-aviation stakeholders

In order to ensure a consistent and complementary approach to aviation cybersecurity across aviation disciplines, the civil aviation system must ensure the comprehensive management of cyber risks to civil aviation by coordinating the safety and security aspects of aviation cybersecurity. In addition, coordination of aviation cybersecurity should extend beyond civil aviation to other concerned entities such as national/regional/international cybersecurity authorities, law enforcement, military, etc.

Elements of the Cybersecurity Policy

E.5 This section provides guidance on the elements included in the model Cybersecurity Policy in Appendix A. It is therefore recommended to be read together with the model Cybersecurity Policy.

E.5.1 Governance and Organization

E.5.1.1 States should designate an Appropriate Authority for Aviation Cybersecurity (AA/Cyber) with an overall mandate and responsibility for aviation cybersecurity and cyber resilience.

E.5.1.2 There is no one-size-fits-all model as to where the AA/Cyber would fit within individual States' civil aviation organizational structures. The decision would be impacted by several considerations related to the national aviation and relevant non-aviation set-up in terms of entities and mandates. It is important however that the AA/Cyber be provided with the required resources and authority to be able to discharge its mandate, including the negotiation and coordination with non-aviation concerned stakeholders.

E.5.1.3 Overall, the designated AA/Cyber should:

a) determine, in coordination with the national competent authority for cybersecurity, the roles and responsibilities to be undertaken by each authority;
b) lead the development of aviation cybersecurity regulations;
c) clearly define roles and responsibilities for the different civil aviation domains within the national competent authority for civil aviation;
d) coordinate the definition of roles and responsibilities of civil aviation entities overseen by the national competent authority for civil aviation through the national safety and security programmes;
e) define the elements of civil aviation cybersecurity culture and monitor its implementation;
f) define regulations, processes, requirements, and roles for cybersecurity crisis management, including testing requirements and frequencies; and
g) coordinate cross-cutting aviation cybersecurity issues with relevant non-aviation stakeholders involved in aviation cybersecurity such as information sharing and incident investigation.

E.5.2 Risk Management

E.5.2.1 Managing cybersecurity risks should draw on aviation safety and security risk management frameworks in order to develop an integrated and accurate assessment of cybersecurity threats and risks, and ensure the development and implementation of effective mitigation measures that take into account safety requirements and the implications of mitigation measures on safety and continuity of civil aviation.

E.5.2.2 All data and systems should have identified ownership at all times. Identifying and maintaining ownership establishes accountabilities and supports the management of data and systems from adoption to disposal. As such, rules and processes should be established by the owners to include physical locations of data and systems, access rights, management rights, and security requirements based on data and system classification. This will eventually support adequate usage of data and systems by the right people, setting and implementing quality control standards, and resolve issues and conflicts.

E.5.3 Critical Systems Security

E.5.3.1 Defence in depth principles should be applied to protect critical systems. Defence in depth integrates people, technology, and operations capabilities to establish variable barriers across multiple layers and missions of the organization. It is an approach to cybersecurity in which a series of defensive mechanisms are layered in order to protect critical systems, data and information. This multilayered approach with intentional redundancies increases the security of a system as a whole and addresses many different attack vectors.

E.5.3.2 The AA/Cyber should ensure that civil aviation entities identify and adequately protect their critical systems as well as develop the ability to detect, respond to, and recover from cyber incidents.

E.5.4 Data Security

E.5.4.1 Periodic offline secure backup of critical data should be considered as an enabler to support information availability and integrity. It is however paramount to develop a robust backup policy, in line with risk assessments, since an offline backup taken while a cyber-attack is in progress would be already compromised and therefore cannot be used to restore access to critical information.

E.5.4.2 Encryption of sensitive data should be considered as an enabler to support information confidentiality. It is however important to define, in line with risk assessments, processes for the use of encryption that strike the appropriate balance between the level of confidentiality and operational performance requirements, especially for "live" data required for flight safety, as well as taking into account the resources needed to manage the data.

E.5.4.3 Processes should be established to ensure continuity of critical functions in case of loss of data availability and/or integrity.

E.5.5 Supply Chain Security

E.5.5.1 Entities should ensure that software and hardware used in critical aviation functions comply with cybersecurity requirements throughout the life cycle of aviation systems, from design and development through operation and maintenance, continuing through the safe and secure disposal.

E.5.5.2 Service Level Agreements can be leveraged to include cybersecurity requirements for hardware and software as well as for the update, upgrade, and patching in case of discovered vulnerabilities.

E.5.6 Physical Security

E.5.6.1 Examples of physical security controls of relevance to aviation cybersecurity include, inter alia, defining physical access management and control policies, background checks of personnel with administrative rights on systems/databases, or with access to sensitive and/or critical data, recommendations for separation of duties and/or rotation in personnel with access to, or ability to modify critical systems, etc.

E.5.7 Information, Communication, Technology (ICT) Security

E.5.7.1 Examples of ICT security controls of relevance to aviation cybersecurity include, inter alia, access control policies and application of least privilege principles, software/hardware firewalls and network security, cryptography, organizational password policies, end-point protection, network monitoring and detection of anomalies, network separation, device management, etc.

E.5.8 Incident Management and Continuity of Critical Functions

E.5.8.1 The AA/Cyber should define regulations, processes, requirements, and roles for cyber incidents management, recovery and continuity of critical systems.

E.5.8.2 Existing crisis management and business continuity plans should be leveraged to include response to and recovery from cyber incidents.

E.5.8.3 Testing emergency response and business continuity plans should be periodically conducted with the aim to improve the plans as well as the capabilities of responders. Testing should include all relevant stakeholders and comprise a combination of Table Top Exercises (TTX) as well as live tests.

E.5.9 Cybersecurity Culture

E.5.9.1 Cybersecurity culture should be implemented across all aviation entities.

E.5.9.2 Cybersecurity culture should be endorsed by organizational leadership, and should include a programme to be undertaken by all personnel.

E.5.9.3 The programme should include recurrent cybersecurity education (including principles of cyber hygiene practices), awareness on latest threats, training, and testing (both as part of training and live simulation of attacks) to assess the level of cyber awareness/hygiene.

E.5.9.4 Cybersecurity culture should include elements from safety and security cultures, e.g. self-reporting, reporting of suspicious behaviour/practice, just culture, etc.

Appendix E - Appendix A
Model Cybersecurity Policy

1. **Introduction**

1.1 This cybersecurity policy shall be the framework for further development and implementation of aviation cybersecurity. It shall be published, disseminated to relevant stakeholders, and periodically reviewed.

1.2 Further guidance material shall be developed to support the implementation of this cybersecurity policy.

2. **Scope**

2.1 Aviation cybersecurity shall address the security and resilience of the civil aviation system, as well as support the collaboration with concerned non-aviation entities and authorities, including national cybersecurity authority, national security, law enforcement and military, as appropriate.

2.2 Aviation cybersecurity shall be coordinated at the national level with aviation safety, aviation security, critical infrastructure protection, cyber defence and military.

2.3 Aviation cybersecurity shall be coordinated at the international level with equivalent Foreign Appropriate Authorities designated for Aviation cybersecurity.

3. **Objectives**

3.1 The overall objectives of this aviation cybersecurity policy are to ensure the security, resilience, and self-strengthening of the civil aviation system against cyber threats and risks, and to ensure the coordination of aviation cybersecurity with concerned national authorities and entities.

4. **Governance and Organization**

4.1 In accordance with [Regulation/Legislation Reference for the designation], [Entity Name] shall be the Appropriate Authority for Aviation Cybersecurity (AA/Cyber) with an overall mandate for aviation cybersecurity and cyber resilience.

4.2 The AA/Cyber shall:

a) engage with the national competent authority for cybersecurity in order to define the civil aviation cybersecurity roles and responsibilities to be undertaken by each authority;
b) coordinate and contribute to the development of aviation cybersecurity regulations;
c) define, coordinate, and provide support to aviation safety and aviation security appropriate authorities to include aviation cybersecurity requirements, including oversight and quality control elements, in the national SSP and the National Civil Aviation Security Programme (NCASP);
d) define, support, and monitor the implementation of the cybersecurity culture programme by all civil aviation stakeholders;
e) define regulations, processes, requirements, and roles for cybersecurity crisis management; and
f) coordinate cross-cutting aviation cybersecurity issues with relevant non-aviation stakeholders involved in aviation cybersecurity.

5. **Risk Management**

5.1 Cybersecurity shall be intelligence driven, threat based and risk managed.

5.2 Risk management shall be an integral part of overall systems' life cycle.

5.3 All data and systems shall have identified ownership at all times.

6. **Critical Systems Security**

6.1 Critical functions, systems, and infrastructure shall be identified through risk management processes.

6.2 Security by design approach, coupled with Defence in depth principles, shall be applied to protect critical systems.

6.3 Redundancy of critical systems shall be considered as an enabler for system security.

7. **Data Security**

7.1 Data and information shall be protected during storage and transmission, in line with its sensitivity profile.

8. **Supply Chain Security**

8.1 End-to-end management of software/hardware supply chain shall be part of aviation cybersecurity management.

8.2 Software and hardware used in critical aviation functions shall comply with cybersecurity requirements throughout the life cycle of aviation systems.

9. **Physical Security**

9.1 Physical security (including personnel security) shall be part of aviation cybersecurity management.

9.2 Physical security shall safeguard people, infrastructure, facilities, equipment, material, and documents from unlawful interference and protect critical aviation systems from unauthorized physical access.

9.3 Physical security shall contribute to risk management through supporting the identification of threat actors and/or the likelihood of attacks on civil aviation critical infrastructure.

10. **Information, Communication, Technology (ICT) Security**

10.1 ICT security shall be part of aviation cybersecurity management.

10.2 ICT security shall define and implement logical security measures as well as contribute to cyber incident management, recovery, and operation continuity processes.

10.3 ICT security shall contribute to risk management through the identification of vulnerabilities, attack vectors, and monitoring the evolution of the aviation cybersecurity threat landscape.

11. **Incident Management and Continuity of Critical Functions**

11.1 Safety of operations and continuity of critical functions shall be the main drivers in incident management processes.

11.2 Testing crisis management and recovery plans shall be an integral part of incident management.

12. **Cybersecurity Culture**

12.1 An education, awareness, training, and exercise plan shall be an integral part of aviation cybersecurity management.

12.2 Cybersecurity culture shall be fully coordinated with existing safety and security cultures.

12.3 Cybersecurity culture shall be supported by robust internal and, to the extent possible, external information sharing practices.

APPENDIX F

BASIC PLAN ELEMENTS

Element 1: Administration

a) record of signatories, version control and records of amendment.

b) definition of the objectives, applicable airspace and operations, and exclusions.

Element 2: Plan Management

c) list of States and FIRs affected, and the agreed methods of notification in the event of pre-activation, activation and termination of the plan.
Contingency events may arise with insufficient advance notice to permit pre- activation of contingency plans

d) details of the arrangements in place for management of the plan, including:

i. provisions for a Central Coordinating Committee to authorize and oversee the activation of the plan and arrange for ATS restoration in the event of an extended outage;
ii. ATM Operational Contingency Group for 24-hour coordination of operational and supporting activities under the plan, and
iii. the ToRs, structure and contact details for the CCC and AOCG.

e) details of testing, review, and reporting actions:

i. Schedule of table-top and simulator testing;
ii. Post-Activation Review (PAR) requirements:

- completion of a preliminary PAR report within 28 days of any activation or testing of contingency plans, including any recommendations to address deficiencies and implement improvements in contingency plans, arrangements, procedures and training.
- a more comprehensive PAR report should be prepared for major contingency events, or any contingency event involving an air safety incident investigation.
  A full PAR analysis of major events could take many months to complete.
- input to the PAR from all parties affected by or involved in the response to the contingency is actively sought and considered;
- bi-lateral or multi-lateral PAR for activation or testing of Level 2 contingency arrangements; and
- Timely reporting to ICAO MID and other affected States of anticipated or experienced disruptions requiring activation of contingency plans.

Note: Annex 11 states that: States anticipating or experiencing disruption of ATS and/or related supporting services should advise, as early as practicable, the ICAO MID Regional Office and other States whose services might be affected. Such advice should include information on associated contingency measures or a request for assistance in formulating contingency plans.

f) inclusion of contingency plans/procedures in ATS training and refresher training programmes.

Element 3: Airspace

g) procedures and determinants for implementation and activation of Special Use Airspace (SUA) including, where necessary, Restricted or Prohibited Areas in territorial airspace, or Danger Areas over the high seas.

h) criteria for airspace classification changes and associated separation and CNS requirements.

i) Collaborative Trajectory Options for Category A, B and C events, and for Large Scale Weather Deviations (LSWD).

Element 4: ATM Procedures

j) details of re-routing to avoid the whole or part of the airspace concerned, normally involving establishment of:
    i. strategic and tactical collaborative trajectory options providing additional routes or route segments with associated conditions for their use; and/or
    ii. a simplified route network through the airspace concerned, together with a FLAS, to ensure that a standard minimum vertical separation is applied where less than a specified minimum lateral separation exists between routes.

k) details of how domestic traffic, departing and arriving flights and SAR, humanitarian and State aircraft flights will be managed during the contingency period.

l) procedures for transition from normal services levels to contingency services, and resumption of normal service.

m) procedures for joining or departing a contingency route.

n) details of reduced levels of service, if any, within the affected airspace.

o) establishment of arrangements for controlled access to the contingency area to prevent overloading of the contingency system, utilizing allocated airspace entry times or, where ATFM capability exists, tactical ATFM measures.

p) procedures for adjacent service providers to establish longitudinal spacing at the entry point, and to maintain such separation through the airspace;

q) reassignment of responsibility for providing ATS, to the extent possible, in non-sovereign airspace and to international aircraft transiting sovereign airspace; and/or

r) coordination and communications transfer procedures for aircraft entering and leaving the affected airspace.

Element 5: Pilot/Operator Procedures

s) requirements for flight plan submission during the contingency period, including contingency route planning requirements, and arrangements if airspace is restricted or not available and no contingency route is available.

t) emergency procedures, including In-flight requirements for broadcast of position and other information, and for continuous listening watch, on specified pilot-pilot and GUARD Very High Frequency (VHF) frequencies.

u) requirements for display of navigation and anti-collision lights.

v) requirements for climbing and descending well to the right of the centreline of specifically identified routes.

w) requirements for all operations to be conducted in accordance with Instrument Flight Rules (IFR), including operating at IFR flight levels from the relevant Table of Cruising Levels in Appendix 3 of Annex 2 – Rules of the Air, except where modified by a FLAS.

Element 6: Communications Facilities and Procedures

x) provision and operation of adequate air-ground communications, Aeronautical Fixed Telecommunication Network (AFTN) and ATS direct speech links.

y) specification of radio frequencies to be used for particular contingency routes.

z) log-on and connection management for Controller Pilot Data-link Communications (CPDLC) aircraft, where appropriate.

aa) use of Automatic Dependent Surveillance-Contract (ADS-C) automatic position reporting in lieu of voice position reporting to ATS.

Element 7: Aeronautical Support Services including AIS (AIM), NOTAM and MET

bb) AIP Information regarding the contingency planning, and notification by ASHTAM/NOTAM of anticipated or actual disruption of ATS and/or supporting services, including associated contingency arrangements, as early as practicable and, in the case of foreseeable disruption, not less than 48 hours in advance.

cc) reassignment to adjacent States of the responsibility for providing meteorological information and information on status of navigation aids.

Element 8: Contact Details

dd) contact details for the Rescue Coordination Centre (RCC) responsible for the affected FIR, and coordination arrangements.

ee) contact details of adjacent States ANSPs and other International Organizations participating in the contingency plan.

ff) prior notification requirements for adjacent FIR activation of Level 2 contingency arrangements.

Note: The first priority response to any short notice contingency response should be the immediate handling of the air situation, followed by the activation of the contingency plan.

APPENDIX G

MID REGION ATM CONTINGENCY FOCAL POINTS

Note: *since the nature of contingency is vary, ICAO MID is responsible to develop the exact list of contingency focal point and member of contingency coordination team (CCT) for each event accordingly.*

NAMES	PHONE (WORK)	PHONE (HOME)	MOBILE PHONE	FAX	E-MAIL	OTHER CONTACT DETAILS
BAHRAIN						
Mr. Abdulla Al Qadhi	9731732 1116		973 36639955	973 17321 9966	aalqadhi@mtt.gov.bh	Bahrain ACC Duty Supervisor Tel: 973 1732 1081/1080 Fax : 973 1732 1029 Email : bahatc@caa.mtt.bh
EGYPT						
Mr. Moatassem Baligh	202 265 7849	202 639 1792	01001695252	202 268 0627	moatassem_5@hotmail.com	
IRAN						
Mr. Masoud Nikbakht DG of ATM Department	98 21 445 44101		98-912326 3905	9821 44544102	masoudnikbakht@gmail.com	*Note*.- During New Year Holidays in Iran (20 March – 5 April) or for any urgent message Contact Tehran ACC on +9821-44544116
Mr. Ahmad Kavehfirouz Deputy Director of Tehran ACC	9821 44544119		98912323044 7	9821 44544102	ahmadkavehfirouz@gmail.com	

NAMES	PHONE (WORK)	PHONE (HOME)	MOBILE PHONE	FAX	E-MAIL	OTHER CONTACT DETAILS
IRAQ						
Mr. Fadhil Getea Director ATS	96418133370		964 7828844998		atc@iraqcaa.com	
JORDAN						
Mr. Nayef Al Marshoud Director, ATM	9626 489 7729	962 5 3862584	962 797498992 962 777789470	9626 4891 266	nayefmarshoud@hotmail.com datm@carc.gov.jo	
KUWAIT						
Mr. Adel S. Boresli Director Air Navigation	965 24710268		96599036556	965 24346221	as.buresli@dgca.gov.kw	
LEBANON						
Mr. Kamal Nasserddine Chief Air Navigation Dept.	+ 961 1 628178		+961 71309409	+961 1 629023	ATM@beirutairport.gov.lb	AFTN OLBAZPZX
LIBYA						
Mr. Mohamed E. Bakar Director of ATM	218-61 360 5535		218-91 219 4477	218-21 360 5535	mohamed.bakar@caa.gov.ly	
OMAN						
Mr. Mubarak Gheilani Director ATS	~~+968 24 354 867~~+966-12-6848121		~~+968 9507 6157~~+966-548184040	+966-12-6854016	m.alghelani@paca.gov.om	
SAUDI ARABIA						
Mr. ~~Waleed M. Madanii~~Ahmed Sami Abughallab	(966-12) 671 7717 Ext 1818		966-50 567 4867	9662 6401005	Asabughallab@sans.com.sa~~waleedmadani@gaca.gov.com~~	
SUDAN						
Mr. Abubakr Elsiddig Elamin	249183784964		249912146745	249183784964	abubakratco@live.com	ATM Director ANS P.O. Box 137 code 11112, Khartoum, Sudan
SYRIA						
Mr.Hassan Hamoud ATM Director	009631154010180	009631164603 95	00963 988235106	963 11 540101801	ans@scaa.sy hamoud_hasan@yahoo.com	P.O.BOX:6257 Damascus, Syria

NAMES	PHONE (WORK)	PHONE (HOME)	MOBILE PHONE	FAX	E-MAIL	OTHER CONTACT DETAILS
UNITED ARAB EMIRATES (UAE)						
Mr. Ahmed Al Jallaf Assistant Director General, ANS, GCAA	9712 599 6888		97150 614 9065	9712 599 6883	aljallaf@szc.gcaa.ae	9712 599 6999 SCZ
Mr. Muayyed Al Teneiji Senior Director ATM	971-2 5996830		+971 56 685 4505	971-2 5996836	mteneiji@szc.gcaa.ae	
YEMEN						
Mr. Abdullah Abdulwareth Aleryani	967-1-345403	967-1-344254	967777190602	967-1-345403	ernlabd@gmail.com	D.G ACC/FIC
Mr. Ahmed Mohammed Al-Koobati	967-1-344675	967-1-214375	967777241375	967-1-344047	CAMA70@yahoo.com	D.Air Navigation Operation
IATA						
Mr. George Rhodes	96 26 580 4200 Ext 1215			962 (6) 593 9912	rhodesg@iata.org SFOMENA@iata.org	
ICAO MID						
Mr. Ahmad Amireh (RO ATM/SAR) Mr. Ahmad Kaveh (RO ATM)	202 2267 4840/5 ext 4120 ext 4122		+201050214480 +201032182488	202 2267 4843	aamireh@icao.int icaomid@icao.int akaveh@icao.int	
ICAO APAC						
Mr. Leonard Wicks (RO ATM)	662 537 8189 ext 152				lwicks@icao.int	
ICAO ESAF						
~~Mr. Sebosese Machobane~~Ms. Keziah Ogutu (RO/-ATM)					kogutu@icao.int~~Smachobane@icao.int~~	
Mr. Colin Bryant (RO/ATM)					cbryant@icao.int	
ICAO EUR/NAT						
Mr. Sven Halle (RO/ATM)					shalle@icao.int	
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~~Mr. Albert Taylor~~Mr Tchanda Serge Guy RO/ATM)	+22133 869 24 13		+221763879139		~~Ataylor~~stchanda@icao.int	
ICAO Headquarters						
Mr. Chris Dalton (C/AMO)	1514 954-6711				cdalton@icao.int	

APPENDIX H

STATUS OF CONTINGENCY AGREEMENTS IN THE MID REGION

STATE	CORRESPONDING STATES			REMARKS*
BAHRAIN	☒ IRAN ☒ KUWAIT	☒ QATAR ☒ SAUDI ARABIA	☒ UAE	Completed
EGYPT	☒ GREECE ☒ JORDAN	☒ LYBIA ☒ CYPRUS	☒ SAUDI ARABIA ☒ SUDAN	Completed
IRAN	☒ ARMENIA ☐ AZERBAIJAN ☐ TURKMENISTAN ☐ AFGHANISTAN	☒ BAHRAIN ☒ IRAQ ☐ KUWAIT ☒ OMAN	☒ PAKISTAN ☒ TURKEY ☒ UAE	7/11
IRAQ	☒ IRAN ☐ JORDAN	☐ KUWAIT ☐ SAUDI ARABIA	☐ SYRIA ☐ TURKEY	1/6
JORDAN	☒ EGYPT ☐ IRAQ	☐ ISRAEL ☒ SAUDI ARABIA	☐ SYRIA	2/5
KUWAIT	☒ BAHRAIN ☐ IRAN	☐ IRAQ	☒ SAUDI ARABIA	2/4
LEBANON	☐ CYPRUS	☐ SYRIA		0/2
LIBYA	☐ ALGERIA ☐ CHAD ☒ EGYPT	☐ MALTA ☐ NIGER	☐ SUDAN ☐ TUNIS	1/7
OMAN	☐ INDIA ☒ IRAN	☐ PAKISTAN ☐ SAUDI ARABIA	☒ UAE ☒ YEMEN	3/6
QATAR	☒ BAHRAIN	☐ SAUDI ARABIA	☒ UAE ☒ Iran	2/3
SAUDI ARABIA	☒ BAHRAIN ☒ EGYPT ☐ ERITREA ☐ IRAQ	☒ JORDAN ☒ KUWAIT ☐ OMAN ☐ QATAR	☐ SUDAN ☒ UAE ☐ YEMEN	5/11
SUDAN	☐ CENTRAL AFRICAN ☐ CHAD ☒ EGYPT	☐ ERITREA ☐ ETHIOPIA ☐ LIBYA	☐ SAUDI ARABIA ☐ SOUTH SUDAN	1/8
SYRIA	☐ IRAQ ☐ JORDAN	☐ LEBANON ☐ CYPRUS	☐ TURKEY	0/5
UAE	☒ BAHRAIN ☒IRAN	☒ OMAN ☐ QATAR	☒ SAUDI ARABIA	4/5
YEMEN	☐ DJIBOUTI ☐ ERITREA	☐ INDIA ☒ OMAN	☐ SOMALIA	1/7

	☐ ETHIOPIA ☐ SAUDI ARABIA	

☒ Agreement Signed ☐ Agreement NOT Signed *Signed Agreements / Total No. of required Agreements

ATTACHMENT A

MEASURES TAKEN BY QCAA AND ATS UNITS DURING COVID-19

The COVID-19 Worldwide pandemic had a significant impact on a global air transport industry and the provision of air navigation services with a massive decrease in aircraft movements during this period. Several recommendations /guidelines for contingency measures for a navigation service provider by ICAO, Eurocontrol, CANSO AND IFATCA were subsequently published to ensure the health of employees, mitigate any safety risks associated with impacted services to ensure continuous and safe provision of air traffic services. QCAA/AND have been closely monitored the rapidly developing situation prior to COVID-19 being formally declared as a pandemic including the active engagement/discussion with the Qatar National pandemic preparation committee spearheaded by QATAR Ministry of Public Health. The QCAA/Air Navigation Department took extraordinary measures to prevent the infection of essential employees and maintain a continuous and safe Air Traffic Services with support and guidelines provided by the Qatar Ministry of Public Health and the Aerodrome Operator (MATAR). Measures taken by AND to prevent the infection of staff to ensure continuous provision of air traffic services include but are not limited to the following:

1. Limit facility access to essential personnel (ATCO and ATCA, ATSEPs to maintain the ATM/CNS critical system and equipment that directly supports Air Traffic Service by allowing administration staff to work from home. Non-essential training and visitors 'access was suspended. Exceptions were made for the ATCO's training to maintain their currency and some exceptions were agreed and approved with the QCAA Regulatory Authority.

2. The ATC roster was adapted to ensure that minimum staff was available. Excess staff, due to the reduction in traffic, would be on standby at home to avoid crowded operational rooms. Standby teams were established in the event of any emergency situation/late notice staffing requirements and were rostered as additional cover.

3. Health and Safety measures were implemented such as the installation of hydro alcoholic distributors in the operational buildings, provision of wipes to disinfect the equipment touched by ATC personnel (mouse, keyboards, and VCCS panels).

4. Increase the frequently of facility cleaning, including periods of routine planned "deep cleaning" (OPS rooms, break rooms, wash rooms).

5. Due to the number of CWPs/Position available in excess of operational and back up requirements at OTBD, OTHH Towers and Doha Approach room, social distancing between different working position in the ATC rooms was implemented.

6. A procedure for operational rooms deep cleaning and sterilization was established. Contingency COVID-19 operations rooms to deliver air traffic service from alternatives/backup site in case of confirmed case reported in the main operation room were established to enable sterilization and deep cleaning of any affected areas.

7. Additional break rooms/space were provided to staff.

8. Essential staff vaccination was prioritized by the Air Navigation Department in coordination with the Qatar Ministry of Public Health.

9. Employees were encouraged to follow the Qatar Ministry of Public Health recommendations and measures (social distancing, health and safety measures: washing hands, staying at home if not feeling well and self-testing, not sharing their headsets, encourage employees to clean their own position) . These were promoted by e-mails, circulars and posters located within the building.

10. Implement temperature taking stations at the building entrance and Etheraz checks.

11. COVID rapid antigen tests were provided to employees requesting these.

12. Providing sterilization materials on the facility (units, break rooms, elevators).

Factors that played a major role in facilitating the implementation of these measures and the measures which were either recommended or required to be taken as advised or mandated by the local Public Health Authority:

- the size of the operational rooms
- the numbers of back up working positions available
- the aircraft movement decrease
- the number of essential staff
- the establishment of COVID contingency rooms
- the awareness and communication with the employees

ATTACHMENT B

MID REGION DME/DME COVERAGE

TDB

ATTACHMENT C

MID REGION SURVEILLANCE COVERAGE

TDB

ATTACHMENT D

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MID REGION ATM VOLCANIC ASH CONTINGENCY PLAN

Edition 1.0:
December 2013

MID REGION AIR TRAFFIC MANAGEMENT VOLCANIC ASH CONTINGENCY PLAN

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1. TERMINOLOGY

1.1. Areas of Contamination

1.1.1. Information on areas of observed and/or forecast volcanic ash in the atmosphere is provided by means of appropriate MET messages in accordance with Annex 3 – *Meteorological Service for International Air Navigation.*[1]

1.2. Danger Areas

1.2.1. If it is considered that the volcanic event could pose a hazard to aviation, a danger area[2] may be declared by NOTAM. However, this option should only be applied over and in the proximity of the volcanic source. Normally, clearances will not be issued through the danger area unless explicitly requested by the flight crew. In this context it should be noted that the final responsibility for aircraft safety rests with the flight crew. Therefore, the final decision regarding route, whether it will be to avoid or proceed through an area of volcanic activity, is the flight crew's responsibility. Wherever this document discusses the possible establishment of danger areas, States are not prevented from establishing restricted or prohibited areas over the sovereign territory of the State if considered necessary by the State concerned.

1.2.2. Although it is the prerogative of the Provider State to promulgate a danger area in airspace over the high seas, it should be recognized that restrictions to the freedom of flight over the high seas cannot be imposed in accordance with the United Nations Convention on the Law of the Sea (Montego Bay 1982).

1.3. Phases of An Event

1.3.1. The response to a volcanic event that affects air traffic has been divided into four distinct phases in this document: Pre-Eruption, Start of Eruption, On-going Eruption and Recovery Phases as follows:

Pre-Eruption Phase (when applicable)**:** The initial response, "raising the alert", commences when a volcanic eruption is expected.

Appropriate AIS and MET messages may be issued in accordance with Annex 15 and Annex 3 respectively, and disseminated to affected aircraft in flight by the most expeditious means. It should be noted that, sometimes volcanoes erupt unexpectedly without any alert being raised; hence the pre-eruption phase may be omitted.

Start of Eruption Phase (when applicable)**:** The start of eruption phase commences at the outbreak of the volcanic eruption and entrance of volcanic ash into the atmosphere and mainly pertains to aircraft in flight. Appropriate AIS and MET messages may be issued as appropriate in accordance with Annex 15 and Annex 3 respectively, and a danger area may be declared by NOTAM. Normally, clearances will not be issued through the danger area unless explicitly requested by the flight crew.

On-Going Eruption Phase: The on-going eruption phase commences with the issuance of the first Volcanic Ash Advisory (VAA) containing information on the extent and movement of the volcanic ash cloud following completion of the previous reactive responses. Appropriate AIS and MET messages may be issued as appropriate in accordance with Annex 15 and Annex 3, respectively.

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[1] Principally this will include volcanic ash advisory messages (issued by volcanic ash advisory centres) and SIGMET information on volcanic ash (issued by meteorological watch offices).

[2] Depending on the State's regulation, the area may be established as a "danger area", "restricted area "or "prohibited area". Over the high seas only "danger area" may be established.

Recovery Phase: The recovery phase commences with the issuance of the first VAA containing a statement that "NO VA EXP" (i.e. "no volcanic ash expected") which normally occurs when it is determined that no volcanic ash is expected in the atmosphere and the volcanic activity has reverted to its pre-eruption state.

Note: These descriptions are amplified in Chapter 3 of this document.

1.3.2. Although the four distinct phases herein describe actions to be undertaken during an actual volcanic event, they are based on a theoretical scenario. Actual eruptions may not always be distinct with respect to ATM actions to be undertaken. Similarly, an eruption may occur without any pre-eruptive activity, or may cease and restart more than once. Hence, the first observation may be the presence of an ash cloud which is already some distance away from the volcano. It is essential that the contingency planning prepares the ATM system for an appropriate response depending on the actual conditions. Therefore, the "Pre-Eruption Phase" and "Start of Eruption Phase" described in this document are annotated "when applicable" in order to provide for flexibility in the application of the contingency plan in those parts of the world with insufficient volcano monitoring and alerting.

1.3.3. Flight crews are required to report observations of volcanic activity by means of a special air-report (Special AIREP). Arrangements should be put in place to ensure that such information is transferred without delay to the appropriate aeronautical institutions responsible for subsequent action. The communication and dissemination of pilot reports on volcanic activity is described in Appendix C.

2. PRE-ERUPTION PHASE

2.1. General

2.1.1. Where flight operations are planned in areas that are susceptible to volcanic eruptions, ATS units may expect to receive from flight crews the ICAO Volcanic Activity Report (VAR) form (published in the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444, Appendix 1).

2.1.2. The focus of this phase is to gain early recognition of volcanic events. This phase is frequently characterised by a very limited availability of information on the potential extent and severity of the impending eruption. The priority is to ensure the continued safety of aircraft in flight; this requires promulgating information as a matter of urgency. Notwithstanding the potentially limited extent of information available, the pre-eruption phase actions described below should be carried out for every expected eruption.

2.1.3. The initial response, "raising the alert", commences when a volcanic eruption is expected. Initial awareness of the event may be by means of a Special AIREP/VAR and/or from information provided by meteorological or volcano-logical agencies. Arrangements in each State between designated volcano observatories, meteorological and air traffic management agencies should ensure that alerting information is provided expeditiously by the most appropriate means to provide continued safety of flight.

2.1.4. Emphasis is placed on raising awareness of the hazard and to protect aircraft in flight. The actions are based on well-prepared, well-exercised contingency plans and standard operating procedures. Aircraft are expected to clear or avoid the volcanic ash affected area based on standard operating procedures.

2.2. Originating ACC Actions *(eruption expected in its own flight information region)*

2.2.1. In the event of significant pre-eruption volcanic activity, which could pose a hazard to aviation, an area control centre (ACC)[3], on receiving information of such an occurrence, should carry out the following:

[3] Where the term "ACC" is used throughout this document, it is intended to also include all ATS facilities.

a) ensure that appropriate AIS messages are originated in accordance with Annex 15. These must provide as precise information as is available regarding the activity of the volcano. It is imperative that this information is issued by the international NOTAM office and disseminated as soon as possible in accordance with the provisions of Annex 15;

b) when so required by the State, define an initial, precautionary danger area in accordance with established procedures. The size of the danger area should encompass a volume of airspace in accordance with the information available, aiming to avoid undue disruption of flight operations;

i. if no such procedures have been established, the danger area should be defined as a circle with a radius of xxx km (xx NM)[4]. The circle should be centred on the estimated or known location of the volcanic activity;

ii. although ATC would not normally initiate a clearance through a danger area, it will inform aircraft about the potential hazard and continue to provide normal services. It is the responsibility of the pilot-in-command to determine the safest course of action.

c) advise the associated MET service provider(s) in accordance with national/regional arrangements unless the initial notification originated from such provider(s), who will then inform the appropriate air traffic flow management (ATFM) units;

d) alert flights already within the area concerned and offer assistance to enable aircraft to exit the area in the most expeditious and appropriate manner. Flight crews should be provided with all necessary information required to make safe and efficient decisions in dealing with the hazards in the defined area. Aircraft that are close to the area should be offered assistance to remain clear of the area. Flights which would be expected to penetrate the area should be re-cleared onto routes that will keep them clear;

e) immediately notify other affected ACCs of the event and the location and dimensions of the area concerned. The ACC should also negotiate any re-routings necessary for flights already coordinated but still within adjacent Flight Information Regions (FIRs) and provide any information on potential implications on traffic flow and its capability to handle the expected traffic. It is also expected that adjacent ACCs will be asked to reroute flights not yet coordinated to keep them clear of the area. It should be noted that flight crews may make the decision not to completely avoid the area based on, for example, visual observations; and

f) implement flow management measures if necessary to maintain the required level of safety.

Note 1. — In order to assist staff in expediting the process of composing the AIS messages, a series of templates should be available for this stage of the volcanic activity.

2.2.2. In addition to sending the relevant AIS messages to the normal distribution list, it will be sent to the relevant meteorological facilities.

2.3. Adjacent ACC Actions

[4] The size of the area is to be agreed in the region concerned and should be based on local knowledge as regards the volcano concerned.

2.3.1. During the pre-eruption phase, ATC will not normally initiate clearances through a danger area; however, it will inform aircraft about the potential hazard and continue to provide normal services. Adjacent ACCs should take the following action to assist:

a) when advised, re-clear flights to which services are being provided and which will be affected by the area; and

b) unless otherwise instructed, continue normal operations and:

i. if one or more routes are affected by the area, suggest re-routings to the affected aircraft onto routes clear of the area; and

ii. maintain awareness of the affected area.

2.4. ATFM Unit Actions

2.4.1. The ATFM unit and the associated Volcanic Ash Advisory Centre (VAAC) will determine how their initial communications will take place on the basis of bilateral agreements. Upon reception of preliminary information on volcanic activity from the lead VAAC, the ATFM unit should initiate actions in accordance with its procedures to ensure exchange of information in order to support CDM between air navigation service providers (ANSPs), Meteorological Watch Offices (MWOs), VAACs and aircraft operators concerned.

3. START OF ERUPTION PHASE

3.1. General

3.1.1. This phase commences at the outbreak of a volcanic eruption, with volcanic ash being ejected into the atmosphere. The focus of the processes in this phase is to protect aircraft in flight and at aerodromes from the hazards of the eruption through the collection and use of relevant information.

3.1.2. In addition to relevant actions described under the pre-eruption phase, major activities of the start of eruption phase such as the issuance of relevant AIS and MET messages in accordance with Annex 15 and Annex 3, respectively and provision of information and assistance to airborne traffic. Danger areas will be declared via NOTAM, as appropriate. This phase will last until such time as the on-going eruption phase can be activated.

3.2. **Originating ACC Actions** (eruption in its own FIR)

3.2.1. The ACC providing services in the FIR within which the volcanic eruption takes place should inform flights about the existence, extent and forecast movement of volcanic ash and provide information useful for the safe and efficient conduct of flights.

3.2.2. If necessary, rerouting of traffic should commence immediately or may be in progress if the alerting time has been sufficient to facilitate activation of the pre-eruption phase. The ACC should assist in rerouting aircraft around the danger area as expeditiously as possible. Adjacent ACCs should also take the danger area into account and give similar assistance to aircraft as early as possible.

3.2.3. During the start of eruption phase, although ATC will not normally initiate a clearance through a danger area, it will inform aircraft about the hazard and will continue to provide normal services. It is expected that aircraft will attempt to remain clear of the danger area. However, it is the responsibility of the pilot-in-command to determine the safest course of action.

3.2.4. During the start of eruption phase the ACC should:

a) ensure that a NOTAM is originated to define a danger area delineated cautiously so as to encompass a volume of airspace in accordance with the limited information available. In determining the area, information on upper winds should be taken into account, if available. The purpose is to ensure safety of flight in the absence of any prediction from a competent authority of the extent of contamination;

b) maintain close liaison with MET facilities, who should issue appropriate MET messages in accordance with Annex 3;

c) devise and update ATFM measures when necessary to ensure safety of flight operations, based on these forecasts and in cooperation with aircraft operators and the adjacent ACCs using the CDM process;

d) ensure that reported differences between published information and observations (pilot reports, airborne measurements, etc.) are forwarded as soon as possible to the appropriate authorities to ensure its dissemination to all concerned;

e) begin planning for the on-going eruption phase in conjunction with the aircraft operators, the appropriate ATFM unit and ACCs concerned; and

f) issue appropriate AIS messages in accordance with Annex 15. Significant reductions in intensity of volcanic activity should take place during this phase and the airspace no longer is contaminated by volcanic ash. Otherwise, begin CDM planning for the on-going eruption phase in conjunction with aircraft operators, the appropriate ATFM unit and the affected ACCs.

3.3. Adjacent ACC Actions

3.3.1. During the start of eruption phase, adjacent ACCs should take the following actions:

a) maintain a close liaison with the appropriate ATFM unit and the originating ACC to design, implement and keep up to date ATFM measures which will enable aircraft to ensure safety of flight operations;

b) the adjacent ACC, in cooperation with the originating ACC and aircraft operators, should impose as required additional tactical measures to those issued by the appropriate ATFM unit;

c) maintain awareness of the affected area; and

e) begin planning for the on-going eruption phase in conjunction with the aircraft operators, the appropriate ATFM unit and ACCs concerned.

3.4. ATFM Unit Actions

3.4.1. During the start of eruption phase, depending on the impact and/or extent of the volcanic ash, the appropriate ATFM unit should organise the exchange of latest information on the developments with the associated VAACs, ANSPs, MWOs and operators concerned in order to support CDM.

4. ON-GOING ERUPTION PHASE

4.1. The on-going eruption phase commences with the issuance of the first volcanic ash advisory (VAA) by the lead VAAC which contains information on the extent and movement of the volcanic ash cloud in accordance with Annex 3 provisions.

Note 2 - Volcanic ash advisory information in graphical format (VAG) may also be issued by the VAAC, containing the same information as its text-based VAA equivalent.

4.2. The VAA/VAG should be used to:

a) prepare appropriate AIS and MET messages in accordance with Annex 15 and Annex 3 provisions, respectively; and

b) plan and apply appropriate ATFM measures.

4.3. The volcanic contamination may affect any combination of airspace; therefore, it is not possible to prescribe measures to be taken for all situations. Furthermore, it is not possible to detail the actions to be taken by any particular ACC. The following guidance therefore may prove useful during the on-going eruption phase but should not be considered mandatory or exhaustive:

a) ACCs affected by the movement of the volcanic ash should ensure that appropriate AIS messages are originated in accordance with Annex 15. ACCs concerned and the appropriate ATFM unit should continue to publish details on measures taken to ensure dissemination to all concerned;

b) depending on the impact and/or extent of the volcanic ash, the appropriate ATFM unit may take the initiative to organize teleconferences to exchange the latest information on the developments, in order to support CDM, with the VAACs, ANSPs and MWOs and operators concerned;

c) ACCs and ATFM units should be aware that for the purposes of flight planning, operators could treat the horizontal and vertical extent of the volcanic ash contaminated area to be over-flown as if it were mountainous terrain; and

d) any reported differences between published information and observations (pilot reports, airborne measurements, etc.) should be forwarded as soon as possible to the appropriate authorities (see Appendix C).

5. RECOVERY PHASE

5.1. The recovery phase commences with the issuance of the first VAA/VAG containing a statement that "NO VA EXP" (i.e. "no volcanic ash expected") — which normally occurs when it is determined that the volcanic activity has reverted to its pre-eruption state and the airspace is no longer affected by volcanic ash contamination. Consequently, appropriate AIS messages should be issued in accordance with Annex 15.

5.2. ACCs and ATFM units should revert to normal operations as soon as practical.

6. AIR TRAFFIC CONTROL PROCEDURES

6.1. If a volcanic ash cloud is reported or forecasted in the FIR for which the ATS unit is responsible, the following actions should be taken:

a) relay all pertinent information immediately to flight crews whose aircraft could be affected to ensure that they are aware of the ash cloud's position and levels affected;

b) request the intention of the flight crew and endeavour to accommodate requests for re-routing or level changes;

c) suggest appropriate re-routing to the flight crew to avoid an area of reported or forecast ash clouds; and

d) request a special air-report when the route of flight takes the aircraft into or near the forecast ash cloud and provide such special air-report to the appropriate agencies.

Note 3.— The recommended escape manoeuvre for an aircraft which has encountered an ash cloud is to reverse its course and begin a descent if terrain permits.

Note 4. — The final authority as to the disposition of the aircraft, whether to avoid or proceed through a reported or forecast volcanic ash cloud, rests with the flight crew.

6.2. When advised by the flight crew that the aircraft has inadvertently entered a volcanic ash cloud, the ATS unit should:

a) take such action applicable to an aircraft in an emergency situation; and

b) do not initiate modifications of route or level assigned unless requested by the flight crew or necessitated by airspace requirements or traffic conditions.

Note 5.— General procedures to be applied when a pilot reports an emergency situation are contained in Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444, *Chapter 15, 15.1.1 and 15.1.2).*

Note 6.— Guidance material concerning the effect of volcanic ash and the impact of volcanic ash on aviation operational and support services is provided in Chapters 4 and 5 of the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691).

7. ATFM PROCEDURES

7.1. Depending on the impact and/or extent of the volcanic ash and in order to support CDM, the appropriate ATFM unit should organize the exchange of the latest information on the developments with the associated VAACs, ANSPs, MWOs and operators concerned.

7.2. The ATFM unit will apply ATFM measures on request of the ANSPs concerned. The measures should be reviewed and updated in accordance with updated information. Operators should also be advised to maintain watch for relevant AIS and MET messages for the area.

APPENDIX A

GENERAL CONSIDERATIONS DURING THE DEVELOPMENT OF AN ATM CONTINGENCY PLAN FOR VOLCANIC ASH

1. In a contingency plan relating to volcanic ash contamination, certain steps need to be taken to provide a coordinated and controlled response for dealing with an event of this nature. Responsibilities should be clearly defined to ATS personnel. The plan should also identify the officials who need to be contacted, the type of messages that are to be created, the proper distribution of the messages and how to conduct business.

2. ATS personnel need to be trained and be made aware of the potentially hazardous effects if an aircraft encounters a volcanic ash cloud. Some particular aspects include:

a) volcanic ash contamination may extend for hundreds, or even thousands of miles horizontally and reach the stratosphere vertically;

b) volcanic ash may block the pitot-static system of an aircraft, resulting in unreliable airspeed indications;

c) braking conditions at aerodromes where volcanic ash has recently been deposited on the runway will affect the braking ability of the aircraft. This is more pronounced on runways contaminated with wet ash. Flight crews and ATS personnel should be aware of the consequences of volcanic ash being ingested into the engines during landing and taxiing. For departure, it is recommended that pilots avoid operating in visible airborne ash; instead they should allow sufficient time for the particles to settle before initiating a take-off roll, in order to avoid ingestion of ash particles into the engine. In addition, the movement area to be used should be carefully swept before any engine is started;

d) volcanic ash may result in the failure or power loss of one or all engines of an aircraft; and

e) aerodromes with volcanic ash deposition may be declared unsafe for flight operations. This may have consequences for the ATM system.

4. The area control centre (ACC) in conjunction with ATFM units serves as the critical communication link between affected aircraft in flight and the providers of information during a volcanic eruption. During episodes of volcanic ash contamination within the FIR, the ACC has two major communication roles. First and most important is its ability to communicate directly with aircraft enroute which may encounter the volcanic ash. Based on the information provided in SIGMET information for volcanic ash and volcanic ash advisories (VAAs), and working with MWOs, ATS personnel should be able to advise the flight crew of which flight levels are affected by the volcanic ash and the forecast movement of the contamination. Through various communication means, ATS units have the capability to coordinate with the flight crew alternative routes which would keep the aircraft away from the volcanic ash cloud.

5. Similarly, through the origination of a NOTAM/ASHTAM for volcanic activity the ACC can disseminate information on the status and activity of a volcano even for pre-eruption increases in volcanic activity. NOTAM/ASHTAM and SIGMET, together with AIREPs, are critical to dispatchers for flight planning purposes. Operators need as much advance notification as possible on the status of a volcano for strategic planning of flights and the safety of the flying public. Dispatchers need to be in communication with flight crew enroute so that a coordinated decision can be made between the flight crew, the dispatcher and ATS regarding alternative routes that are available. The ACC should advise the ATFM unit concerning the availability of alternative routes. However, it cannot be presumed that an aircraft which is projected to encounter ash will be provided with the most desirable route to avoid the contamination. Other considerations

have to be taken into account such as existing traffic levels on other routes and the amount of fuel reserve available for flights which may have to be diverted to other routes to allow for the affected aircraft to divert.

6. The NOTAM/ASHTAM for volcanic activity provides information on the status of activity of a volcano when a change in its activity is, or is expected to be, of operational significance. They are originated by the ACC and issued through the respective international NOTAM office based on the information received from any one of the observing sources and/or advisory information provided by the associated VAAC. In addition to providing the status of activity of a volcano, the NOTAM/ASHTAM also provides information on the location, extent and movement of the ash contamination and the air routes and flight levels affected. NOTAM can also be used to limit access to the airspace affected by the volcanic ash. Complete guidance on the issuance of NOTAM and ASHTAM is provided in Annex 15 — *Aeronautical Information Services*. Included in Annex 15 is a volcano level of activity colour code chart. The colour code chart alert may be used to provide information on the status of the volcano, with “red” being the most severe, i.e. volcanic eruption in progress with an ash column/cloud reported above flight level 250, and “green” at the other extreme being volcanic activity considered to have ceased and volcano reverted to its normal pre-eruption state. It is very important that NOTAM for volcanic ash be cancelled and ASHTAM be updated as soon as the volcano has reverted to its normal pre-eruption status, no further eruptions are expected by volcanologists and no volcanic ash is detectable or reported within the FIR concerned.

7. It is essential that the procedures to be followed by ATS personnel during a volcanic eruption, as well as supporting services such as MET, AIS and ATFM, should be translated into local staff instructions (adjusted as necessary to take account of local circumstances). It is also essential that such local staff instructions form part of the basic training for all ATS, AIS, ATFM and MET personnel whose jobs would require them to take action in accordance with the procedures. Background information to assist the ACC or Flight Information Centre (FIC) in maintaining an awareness of the status of activity of volcanoes in their FIR(s) is provided in the monthly Scientific Event Alert Network Bulletin published by the United States Smithsonian Institution and sent free of charge to ACCs/FICs requesting it.

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APPENDIX B

ANTICIPATED FLIGHT CREW ISSUES WHEN ENCOUNTERING VOLCANIC ASH

1. ATS personnel should be aware that flight crews will be immediately dealing with some or all of the following issues when they encounter volcanic ash:

a) smoke or dust appearing in the cockpit which may prompt the flight crew to don oxygen masks (could interfere with the clarity of voice communications);

b) acrid odour similar to electrical smoke;

c) multiple engine malfunctions, such as stalls, increasing exhaust gas temperature (EGT), torching, flameout, and thrust loss causing an immediate departure from assigned altitude;

d) on engine restart attempts, engines may accelerate to idle very slowly, especially at high altitudes (could result in inability to maintain altitude or Mach number);

e) at night, St. Elmo's fire/static discharges may be observed around the windshield, accompanied by a bright orange glow in the engine inlet(s);

f) possible loss of visibility due to cockpit windows becoming cracked or discoloured, due to the sandblast effect of the ash;

g) because of the abrasive effects of volcanic ash on windshields and landing lights, visibility for approach and landing may be markedly reduced. Forward visibility may be limited to that which is available through the side windows; and/or

h) sharp distinct shadows cast by landing lights as compared to the diffused shadows observed in clouds (this affects visual perception of objects outside the aircraft).

2. Simultaneously, ATS personnel can expect flight crews to be executing contingency procedures such as the following:

a) if possible, the flight crew may immediately reduce thrust to idle;

b) exit volcanic ash cloud as quickly as possible. The shortest distance/time out of the ash may require an immediate, descend and/or 180 degrees turn (if terrains permit);

c) don flight crew oxygen masks at 100 per cent (if required);

d) monitor airspeed and pitch attitude. If unreliable airspeed is suspected, or a complete loss of airspeed indication occurs (volcanic ash may block the pitot system), the flight crew will establish the appropriate pitch attitude;

e) land at the nearest suitable aerodrome; and

f) upon landing, thrust reversers may be used as lightly as feasible.

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APPENDIX C

COMMUNICATION AND DISSEMINATION OF PILOT REPORTS OF VOLCANIC ACTIVITY

1. INTRODUCTION

1.1. ICAO Annex 3-*Meteorological Service for International Air Navigation* (paragraph 5.5, g and h) prescribes that volcanic ash clouds, volcanic eruptions and pre-eruption volcanic activity, when observed, shall be reported by all aircraft. The ICAO *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444) contain detailed provisions on this special air report requirement in paragraphs 4.12.3 and 4.12.5, and the Volcanic Activity Report form in Appendix 1.

1.2. Experience has shown that reporting and sharing of information on volcanic ash encounters in accordance with the above mentioned provisions (in-flight and post-flight) varies across the world. The efficiency and quality of reporting currently depends heavily on regional characteristics and the level of regional integration. A high level of global harmonization is essential to achieve the desired level of implementation and consistency of the information.

2. PURPOSES OF VOLCANIC ASH REPORTING AND DATA COLLECTION

2.1. The main purposes for volcanic ash reporting and data collection are to:

a) locate the volcanic hazards;
b) notify immediately other aircraft (in-flight) about the hazard;
c) notify other interested parties: ANSPs (ATC, AIS, ATFM), VAACs, MWO, etc. to ensure the consistent production of appropriate information and warning products in accordance with existing provisions; and
d) analyse collected reports from the post-flight phase in order to:
   - identify areas of concern;
   - validate and improve volcanic ash forecasts;
   - improve existing procedures;
   - assist in defining better airworthiness requirements; and
   - share lessons learned, etc.

3. PHASE OF OPERATIONS

3.1. The roles and responsibilities of the participants in the collection, exchange and dissemination of the volcanic information are distinctly different in two distinct phases:

b) in-flight; and
c) post-flight.

3.2. The following section analyses these separately.

4. PARTICIPANTS IN THE REPORTING PROCESS, THEIR ROLES AND RESPONSIBILITIES

4.1. Identification of the participants as well as their roles and responsibilities in general, but specifically during the two different phases of operations, is an important element in improving collection, exchange and dissemination of volcanic information. The number of participants and their roles and responsibilities depends on the phase of operations (in-flight, post-flight), their position in the information chain within one of these two phases and national/regional arrangements. One of the main issues regarding participants' roles and responsibilities is that each of them is, at one time or another, both a data/information provider and user of the information.

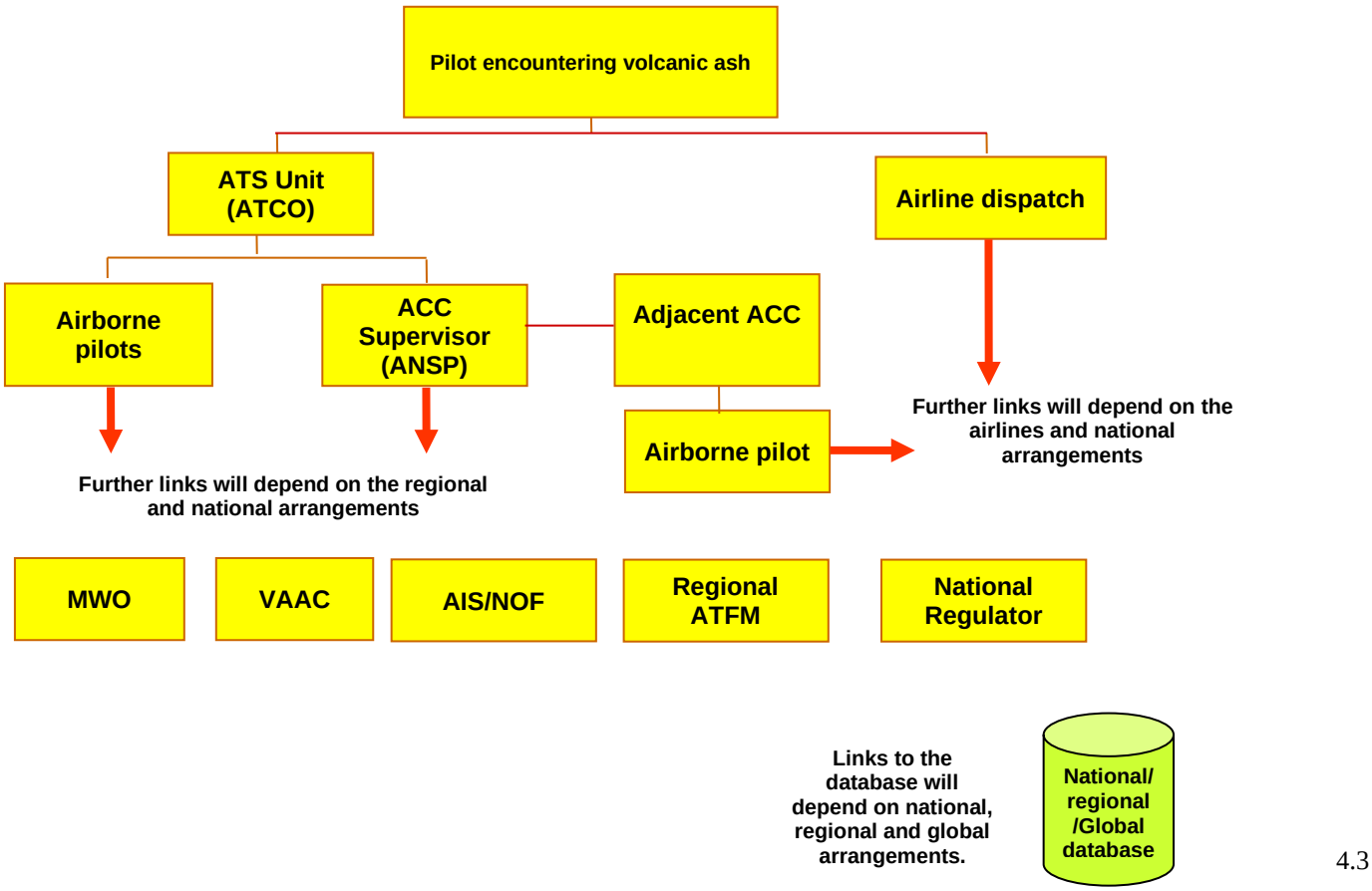
4.2. *In-Flight Phase*

4.2.1 Participants, Roles & Responsibilities:

Participants	Roles & Responsibilities
Pilots, civil and/or military, observing and/or encountering volcanic activity	To provide as much detailed information as possible about the type, position, colour, smell, dimensions of the volcanic contamination, level and time of the observation and forward VAR Part I immediately to the ATS unit with which the pilot is in radiotelephony (R/T) communication. Record the information required for VAR Part II on the appropriate form as soon as possible after the observation or encounter and file the report via data link, if available.
ATS unit receiving the information from the pilot encountering volcanic event	To ensure that information received by an air traffic controller from the pilot has been copied, clarified (if necessary), and disseminated to other pilots as well as to the ACC Supervisor. In addition, air traffic controllers could ask other pilots flying within the same area if they have observed any volcanic activity.
ATS unit/ACC Supervisor (if applicable) or other Air Navigation Service Provider responsible person	To use all means of communication and available forms to ensure that the information received from the air traffic controller has been: - passed on to the associated Meteorological organizations in accordance with national/regional arrangements; - fully and immediately disseminated across the organization, in particular to adjacent sectors and the associated NOTAM Office (NOF); - passed on to the neighbouring sectors and ACCs (if necessary); - passed on to the regional ATFM centre if existing (e.g. CFMU in Europe); - passed on to the national/regional authority responsible for the handling of contingency situations.
Neighbouring ANSPs (ACCs)	To ensure that information is provided to flight crews flying towards the area affected by the volcanic contamination; disseminated across the organization and the system prepared to cope with the possible changes of the traffic flows; and that the information is provided to the national authority responsible for the handling of contingency situations and passed on to the NOF and MWO as required.
MET Watch Office	To use the information originated by flight crews and forwarded by the ATS unit, in accordance with Annex 3.
VAAC	To use the information originated by flight crews, MWOs and other competent sources in accordance with Annex 3
AIS / NOF	To publish appropriate AIS messages in accordance with Annex 15
ATFM unit or centre (if existing)	To ensure that information received is stored and made available for information to all partners in its area of responsibility (ANSPs, airlines, VAAC, MET etc.). As part of the daily activity, coordinate ATFM measures with ACCs concerned.

4.2.2 *In-flight reporting – Sample Flow Chart of the volcanic ash information*

4.2.2.1 The chart below is a graphical representation of a possible path of the in-flight volcanic ash information and may differ between regions depending on regional arrangements. It also gives the position of the volcanic ash participants in the reporting chain. The flow chart is not exhaustive and the path of the information can be extended and new participants could be added depending of the national and regional requirements:



4.3

Post-Flight Operations Roles & Responsibilities and order of reporting

Participants	Roles & Responsibilities
Civil and/or military pilots/airlines having observed or encountered an eruption or volcanic contamination	To file the volcanic ash report with as much detailed information as possible about the volcanic activity and/or encounter (position, colour, smell, dimensions, FL, time of observation, impact on the flight, etc.). Ensure that the VAR is filed and transmitted to the relevant recipients as soon as possible after landing (if not filed via data link already during the flight). Make an entry into the Aircraft Maintenance Log (AML) in case of an actual or suspected encounter with volcanic contamination.
ANSP	To provide a summary report of effects of the volcanic activity that affected its operations at least once per day to the national authority with as much detailed information as possible about the number of encounters, impact on air traffic management, etc.).
AOC Maintenance - Post flight Inspection	To report about the observation of the aircraft surfaces, engine, etc., and to provide the information to the national, regional or global central data repository, where applicable.

Investigation authority	All aeronautical service providers (including operators, ANSPs, airports, etc.) shall investigate the effects of a volcanic activity, analyse the information, search for conclusions, and report the investigation results and relevant information to the national supervisory authority and any central data repository.
National Authority	To handle the national central data repository and report to the regional/global central data repository if any. To analyse reports from its aeronautical service providers and take action as appropriate.
Regional Central Data Repository	To collect the national data and make them available to interested stakeholders under agreed conditions.
MWO	To use the national and regional information coming from national and regional central data repositories.
VAAC	To use the information originated by flight crews, and other competent sources to: a) validate its products accordingly and; b) improve the forecast.
Global Data Repository (and research institutes - where appropriate)	To analyse the information stored in the regional central data repository and provide the research outcomes for lessons learnt process.
Knowledge management (e.g. SKYbrary)	To use the post-flight lessons learnt and disseminate them to interested stakeholders.
ICAO	To review/revise ATM volcanic ash contingency plans.

4.4 *Tools for presenting and sharing the volcanic ash information*

4.4.1 To report, transmit and disseminate the volcanic ash encounter information, different types of tools can be used. The list below is provided to give ideas as to what tools can be used. It could also be split into regulatory and general information tools. At any case, it is not an exhaustive list and can be updated with new elements depending on regional experiences.

a) Radiotelephony and Data link Communications;
b) VAR;
c) NOTAM/ASHTAM;
d) SIGMET;
e) VAA/VAG;
f) Central data repository e.g. CFMU Network Operations Portal (NOP);
g) Centralized web based sites with the regularly updated information and maps – e.g. http://www.eurocontrol.int/
h) Teleconferences;
i) Periodic Bulletins with the set of information defined by the data providers and data users; e.g. Smithsonian Institution Weekly Bulletin; and/or
j) Centralized internet-based sites for the sharing of lessons learnt (Knowledge management – e.g. SKYbrary http://www.skybrary.aero/index.php/Main_Page).

APPENDIX D

SIGMET and NOTAM EXAMPLES DURING VOLCANIC ASH

Volcanic Ash (VA) Cloud (CLD) in Kuwait FIR

WVKW31 OKBK 030900
OKBK SIGMET 1 VALID 030900/031500 OKBK-
OKAC KUWAIT FIR VA CLD OBS AT 0840Z W OF E48 FL180/320 MOV E 45KT NC FCST1500Z VA CLD APRX E OF E4730=

Cancellation SIGMET as volcanic ash cloud exits Kuwait FIR into Tehran FIR (sooner than expected)

WVKW31 OKBK 031400
OKBK SIGMET 2 VALID 031400/031500 OKBK-
OKAC KUWAIT FIR CNL SIGMET 1 030900/031500 VA MOV TO OIIX FIR=

VA CLD in Cairo FIR

WVEG31 HECA 030900
HECA SIGMET 1 VALID 030900/031500 HECA-
HECC CAIRO FIR VA CLD OBS AT 0840Z N OF LINE N3140 E2510 - N29 E30 W OF LINE N3150 E3359 – N29 E30 FL100/290 MOV SE 35KT NC FCST1500Z VA CLD APRX N OF LINE N3140 E2510 – N2806 E3435=

Cancellation SIGMET as volcanic ash cloud exits Cairo FIR into Jeddah FIR (sooner than expected)

WVEG31 HECA 031330
HECA SIGMET 2 VALID 031330/031500 HECA-
HECC CAIRO FIR CNL SIGMET 1 030900/031500 VA MOV TO OEJD FIR=

Example NOTAM based on SIGMET issued for Cairo FIR

Q) HECC/QWWXX/IV/NBO/W/100/290/999
A) HECC B) 1311030900 C) 1311031500
E) ATM AND ACFT TAKE NECESSARY ACTION DUE TO VOLCANIC ASH AREA OF HIGH/MEDIUM CONTAMINATION (FROM VOLCANO ETNA 211060, 37.734N 015.004E) AS FOLLOWS:
3400N 2410E – 3140N 2510E – 2900N 3000E – 3150N 3359E – 3330N 3000E – 3400N 2710E – 3400N 2410E
F) FL100 G) FL290

Special Air-Reports on Volcanic Ash

Special air-reports on volcanic ash sent to ACCs should then be sent via AFTN to the relevant Meteorological Watch Office (MWO) which is forwarded to the relevant Volcanic Ash Advisory Centre (VAAC) – for MID Region that is VAAC Toulouse.

SPECIAL AIREP □ACC □ MWO □ VAAC

Pilots should use the special air-reports format on volcanic ash as at Table A4-1 in Appendix 4 of ICAO Annex 3.

TABLE ATM II-MID-2 MID SSR CODE ALLOCATION LIST

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DOHA	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
0001-0077[2]															
0101-0177[1]										T					
0200-0277[1]									~~D~~	T					
0300-0377[2]															
0400-0477[2]	D							D		D					
0500-0577[1]								T							
0600-0677[1]					D			D			D				
0700-0777[1]	T														
1001-1077[1]		T													
1101-1177[1]	D							D						~~D~~	
1200-1277[1]		D	D							D		D			
1300-1377[1]		~~D~~						~~D~~	D					D	D
1400-1477[1]											T				
1500-1577[1]						T									
1600-1677[1]					T										
1700-1777[1]								T							
2001-2077[3]															~~T~~
2100-2177[1]			~~D~~			T									
2200-2277[1]			T												
2300-2377[1]					~~D~~									T	
2400-2477[1]	~~D~~														T
2500-2577[1]				D					D						
2600-2677[1]			T												
2700-2777[1]		D	~~D~~		D			D							
3000-3077[1]							D		D					D	
3100-3177[1]									T						
3200-3277[1]			~~T~~			T									
3300-3377[1]					T										
3400-3477[1]								T							
3500-3577[1]									~~D~~			T			
3600-3677[1]														T	
3700-3777[1]			D		D						~~D~~		D		
4000-4077[1]												T			
4100-4177[1]									D					D	
4200-4277[1]									T						

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DOHA	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
4300-4377[1]				T											
4400-4477[4]			~~T~~												
4500-4577[1]									T						
4600-4677[1]						D				D		D			
4700-4777[1]												T			
5000-5077[4]									~~D~~					T	
5100-5177[1]														~~T~~	
5200-5277[1]									T						
5300-5377[3]															
5400-5477[1]														T	
5500-5577[3]															
5600-5677[1]									D					D	
5700-5777[1]							T								
6000-6077[1]								D		~~D~~					
6100-6177[1]					D								D	D	
6200-6277[1]								T							
6300-6377[1]									D					D	
6400-6477[3]															
6500-6577[4]						D						~~D~~			
6600-6677[4]												~~D~~			
6700-6777[2]															
7001-7077[1]													T		
7100-7177[2]															
7200-7277[1]		T													
7300-7377[1]					T										
7400-7477		~~D~~													
7501-7577[2]															
7613-7677[2]															
7701-7775[2]															

PROPOSAL FOR AMENDMENT OF THE ICAO MID REGIONS AIR NAVIGATION PLAN, VOLUME II

(Serial No.: MID-II-23/01-ATM)

a) **Plan:** Air Navigation Plan (ANP) - MID Regions, Volume II

b) **Proposed amendment:** **Part IV-ATM – [TABLE ATM II-MID-2] – MID SSR CODE ALLOCATION LIST**

Amend MID SSR code allocation list as follows:

TABLE ATM II-MID-2 MID SSR CODE ALLOCATION LIST

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DOHA	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
0001-0077[2]															
0101-0177[1]										T					
0200-0277[1]									~~D~~	T					
0300-0377[2]															
0400-0477[2]	D							D		D					
0500-0577[1]								T							
0600-0677[1]					D			D			D				
0700-0777[1]	T														
1001-1077[1]		T													
1101-1177[1]	D							D						~~D~~	
1200-1277[1]		D	D							D		D			
1300-1377[1]		~~D~~						~~D~~	D					D	D
1400-1477[1]											T				
1500-1577[1]						T									
1600-1677[1]					T										
1700-1777[1]								T							
2001-2077[3]															~~T~~
2100-2177[1]			~~D~~			T									
2200-2277[1]			T												
2300-2377[1]					~~D~~									T	
2400-2477[1]	~~D~~														T
2500-2577[1]				D					D						
2600-2677[1]			T												
2700-2777[1]		D	~~D~~		D			D							
3000-3077[1]							D		D					D	
3100-3177[1]									T						
3200-3277[1]			~~T~~			T									
3300-3377[1]					T										
3400-3477[1]								T							

3500-3577[1]									~~D~~			T			
3600-3677[1]														T	
3700-3777[1]			D		D						~~D~~		D		
4000-4077[1]												T			
4100-4177[1]									D					D	
4200-4277[1]									T						
4300-4377[1]				T											
4400-4477[4]			~~T~~												
4500-4577[1]									T						
4600-4677[1]						D				D		D			
4700-4777[1]												T			
5000-5077[4]									~~D~~					T	
5100-5177[1]														~~T~~	
5200-5277[1]									T						
5300-5377[3]															
5400-5477[1]														T	
5500-5577[3]															
5600-5677[1]									D					D	
5700-5777[1]							T								
6000-6077[1]								D		~~D~~					
6100-6177[1]					D								D	D	
6200-6277[1]								T							
6300-6377[1]									D					D	
6400-6477[3]															
6500-6577[4]						D						~~D~~			
6600-6677[4]												~~D~~			
6700-6777[2]															
7001-7077[1]													T		
7100-7177[2]															
7200-7277[1]		T													
7300-7377[1]					T										
7400-7477		~~D~~													
7501-7577[2]															
7613-7677[2]															
7701-7775[2]															

T: codes allocated for Transit use
D: codes allocated for Domestic use

[1] Series allocated to the MID Region and Assigned to MID States

[2] MID Region SSR Reserve List for Domestic use

[3] MID Region SSR Reserve List for Transit use

c) **Originated by:** MIDANPIRG/20 (Muscat, Oman, 14-17 May 2023) through MIDANPIRG Conclusion 20/28

d) **Originator's reasons for amendment:** Since many requests have been received from MID States to allocate additional SSR code for transit and domestic flights, MIDANPIRG/20 in coordination with MID States agreed to improve the allocation of SSR code as amended here.

In addition, based on the Council Decision C-DEC 225/10 related to the establishment of Doha FIR/SRR, it is required to allocate separate SSR codes for transit and domestic operations within Doha FIR.

e) **Intended date of implementation:** As soon as practicable after approval

f) **Proposal circulated to the following States and International Organizations:**

Afghanistan	Iraq	South Sudan
Algeria	Iran, Islamic Republic of	Sudan
Armenia	Israel	Syrian Arab republic
Azerbaijan	Jordan	Tunisia
Bahrain	Kenya	Turkey
Egypt	Kuwait	Turkmenistan
Eritrea	Lebanon	United Arab Emirates
Ethiopia	Libya	Uganda
Chad	Niger	Yemen
Congo (Republic of)	Malta	International Organizations:
Congo (Democratic Republic of)	Oman	CANSO
Cyprus	Pakistan	EUROCONTROL
Djibouti	Qatar	IATA
Greece	Saudi Arabia	IFALPA
India	Somalia	IFATCA

g) **Secretariat comments:** The task was initiated by the ATM SG/7 meeting (Virtual, 15 – 18 November 2021), finalized by the ATM SG/8 meeting (Amman, Jordan, 07 – 10 November 2022) and endorsed by the MIDANPIRG/20 meeting (Muscat, Oman, 14-17 May 2023).

Preliminary Results of the MID RVSM SMR 2023 (First Draft Version)

1.1 Implementation of RVSM should be based on a safety assessment that demonstrates the continued fulfillment of all RVSM safety objectives outlined in the MID-RVSM Safety Policy, in accordance with ICAO Doc 9574, within the operational services of the Middle East RVSM airspace.

1.2 The results calculated for the MID RVSM SMR 2023 provide evidence that, based on the data and methods employed, the three safety objectives have been met thus far. However, it is worth noting that the level of reporting of LHD by some member states is unsatisfactory, particularly those with high volumes of traffic. Therefore, the results do not support a high level of confidence, and we shall await further data until the end of this year in 2023, which marks the completion of the SMR reporting cycle.

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 **1.019×10^{-10}** 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 the overall risk is estimated **8.408×10^{-10}** this is below the ICAO overall TLS.

Objective 3 Address any safety-related issues raised in the SMR by recommending improved procedures and practices; and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

Middle East RVSM Airspace Average Aircraft Speed = **440.3 kts**			
Risk Type	**Risk Estimation**	**ICAO TLS**	**Remarks**
Technical Risk	**1.019×10^{-10}**	**2.5×10^{-9}**	**Below ICAO TLS**
Overall Risk	**8.408×10^{-10}**	**5×10^{-9}**	**Below ICAO TLS**

Conclusions:

(i) The estimated risk of collision associated with aircraft height- keeping performance is **1.019×10^{-10}** and meets the ICAO TLS of **2.5×10^{-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 **$8.408x10^{-10}$**this value is below the ICAO overall TLS of **$5x10^{-9}$** fatal accidents per flight hour (RVSM Safety Objective 2)

(iii) based on currently available information (Except for Tripoli, Khartoum, and Beirut FIRs), there is no evidence available to MIDRMA that the continued operations of RVSM adversely affects the overall vertical risk of collision in the first nine months of the SMR reporting cycle.

(iv) 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 so far 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.

1.3 The MIDRMA continuously stressed the importance of all MIDRMA member states to submit the required data to adequately assess and calculate all relevant safety parameters and factors, however the MIDRMA still suffers problems with some member States due to the late submission of the traffic data and due to the corrupted data, which caused excessive delay for calculating the SMR safety parameters.

1.4 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*
			Doha			

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

***Note:** **Beirut and Khartoum FIRs excluded from the RVSM safety analysis due to lack of TDS, while Tripoli FIR excluded due to lack of their routing options.**

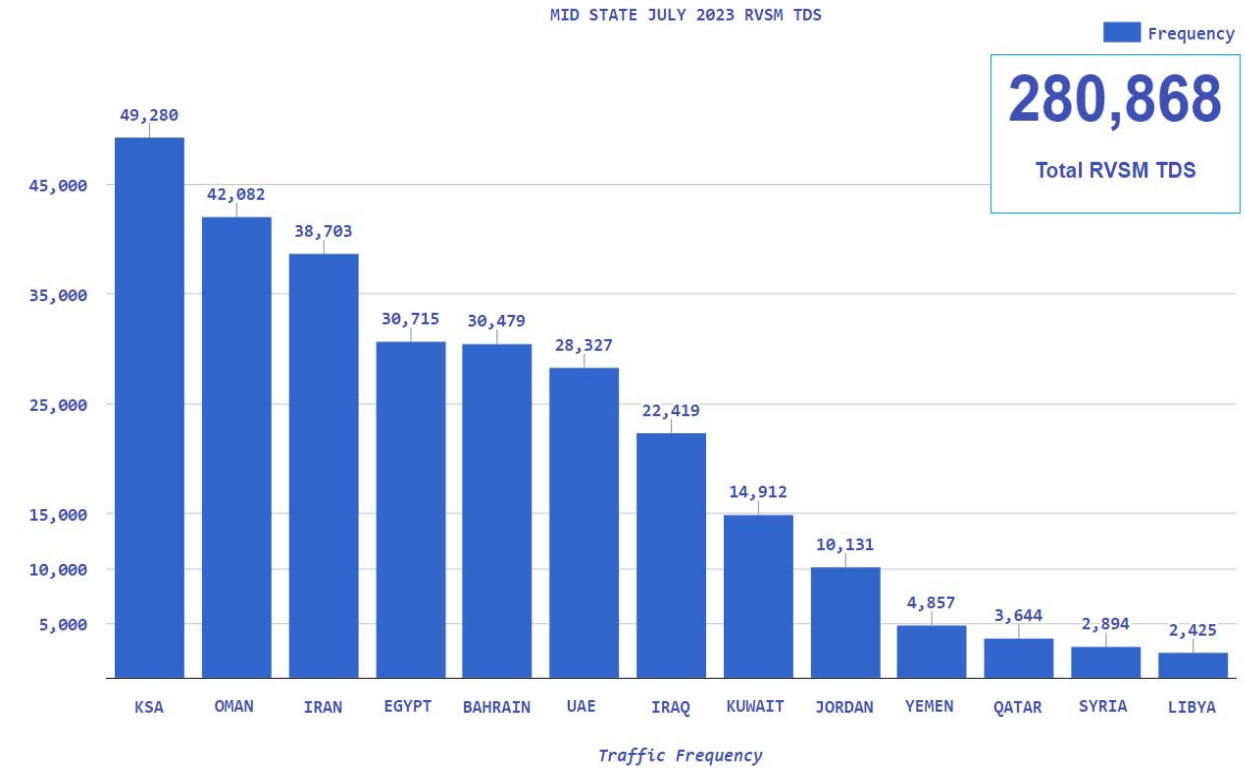
1.5 The Data Sampling periods covered by SMR 2023 are as displayed in the below table:

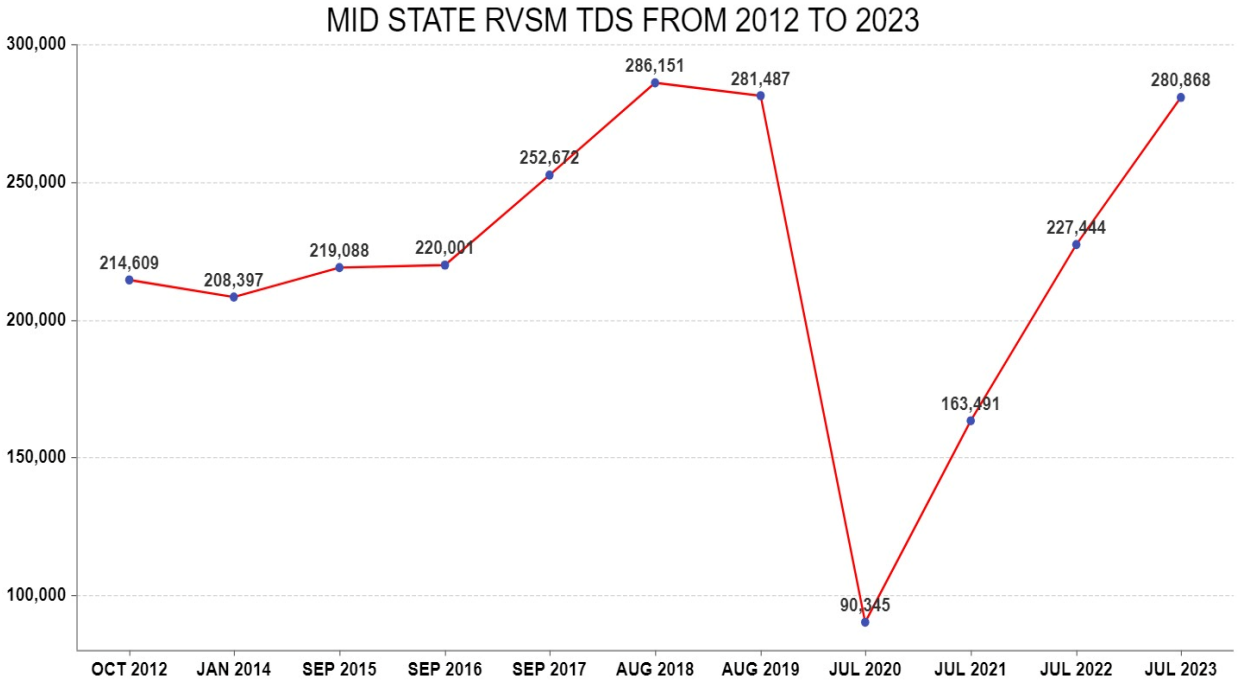
Report Elements	Time Period
Traffic Data Sample	01/06/2023 - 30/06/2023
Operational & Technical Errors	01/01/2023 - 30/09/2023

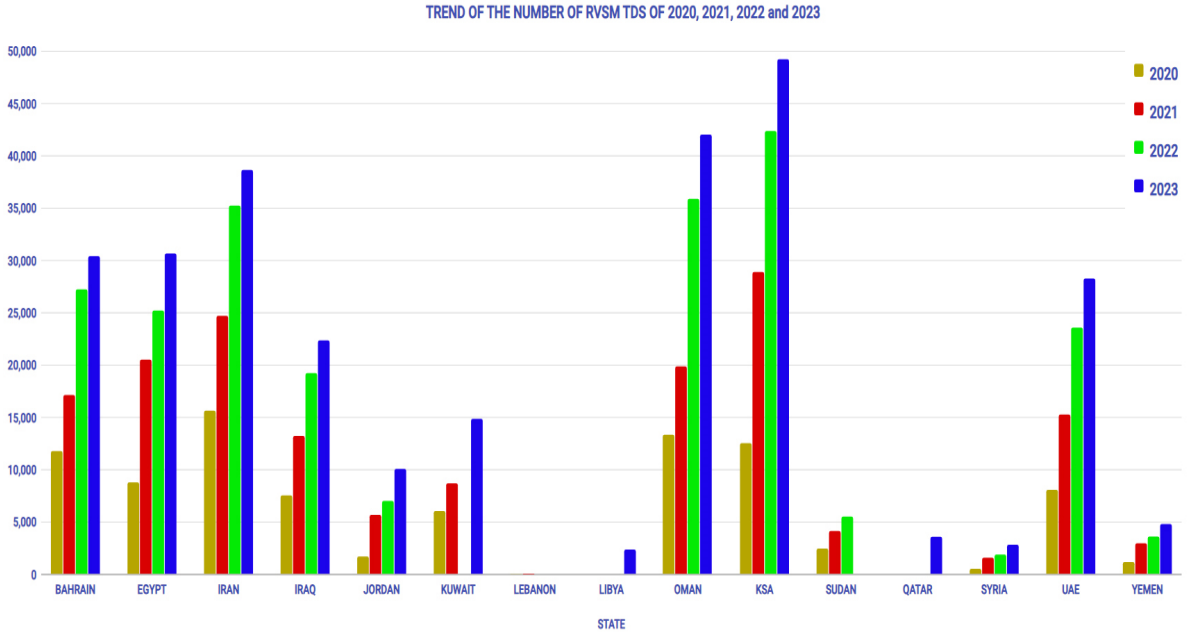
1.6 The descriptions of the traffic data collected from each MIDRMA Member State are depicted in table below:

MID States	No. of Flights	Received Date	Status
BAHRAIN	30479	2023-07-09	
EGYPT	30715	2023-08-06	
IRAN	38703	2023-09-25	
IRAQ	22419	2023-07-07	
JORDAN	10131	2023-07-05	
KUWAIT	14912	2023-07-03	
LEBANON			No Data Submitted
LIBYA	2425	2023-08-01	
OMAN	42083	2023-07-30	
KSA	49280	2023-08-01	
QATAR	3644	2023-08-07	
SUDAN			No Data Submitted
SYRIA	2894	2023-07-12	
UAE	28327	2023-07-25	
YEMEN	4857	2023-08-02	
Total	**279656**		

JUNE 2023 TDS Statistics


MID STATE JULY 2023 RVSM TDS
Frequency
280,868
Total RVSM TDS
49,280
42,082
38,703
30,715
30,479
28,327
22,419
14,912
10,131
4,857
3,644
2,894
2,425
45,000
35,000
25,000
15,000
10,000
5,000
KSA
OMAN
IRAN
EGYPT
BAHRAIN
UAE
IRAQ
KUWAIT
JORDAN
YEMEN
QATAR
SYRIA
LIBYA
Traffic Frequency


MID STATE RVSM TDS FROM 2012 TO 2023
300,000
250,000
200,000
150,000
100,000
214,609
208,397
219,088
220,001
252,672
286,151
281,487
90,345
163,491
227,444
280,868
OCT 2012
JAN 2014
SEP 2015
SEP 2016
SEP 2017
AUG 2018
AUG 2019
JUL 2020
JUL 2021
JUL 2022
JUL 2023



2 Large Height Deviation Reports (LHDs) 2023

2.1 The estimation of the total risk, encompassing Safety Objective 2, integrates the outcomes of Safety Objective 1 with the evaluation of risks originating from various other factors. This secondary component, often referred to as operational risk, is contingent on a multitude of factors, including airspace configuration, traffic density, ATC procedures, individual controller and pilot actions, and specific operational characteristics of sectors. The assessment of operational risk relies on the analysis of event magnitude and duration extracted from operational incident reports, which are subsequently transformed into Large Height Deviation reports.

2.2 MIDRMA has observed a decrease in Large Height Deviation (LHD) reporting from certain member states, particularly those with high traffic volumes, despite the continuous issuance of monthly reminders to all member states. The level of reporting has remained exceedingly low. The table below illustrates the reports received from all member states for the period from January 1st to September 30th, 2023.

P IG#IIJv#	Qr1#ri#Jhsruwhg#DKGv#	Qr1#ri#Jhcdwhg#DKGv#
Edkudlg#	0#	0#
Edjkgdg#	4#	0##
Dp p dq#	5#	5#
Whkudq#	#0#	0##
Fdlur#	57#	43#
Gdp dvfxv#	#0#	4#
Nkduwrxp #	4#	7#
Nxz dlv#	#0#	0##
P xvfdv#	9;#	66#
Mhggdk2#Jl|dgk#	<#	8<#
Wulsrd#	#0#	#0#

Hp ludwhv#	7#	7#
Vdqdgd#	469#	;#

Large Height Deviation Received from Member States
from 01st Jan 2023 until 30th Sep 2023

Note: In reference to the table above in 2.2.2, there are member states that didn't report any LHD for a long time, such as Bahrain, Kuwait, and Iran, while Iraq ATC reported only ONE LHD since the beginning of 2023.

2.3 Despite the fact that MIDRMA Member States have submitted a small number of LHD reports to date, and considering that the SMR cycle has not yet been completed (with three more months remaining), there is a possibility that the results presented for Safety Objective No. 2 could change if critical LHD reports are submitted.

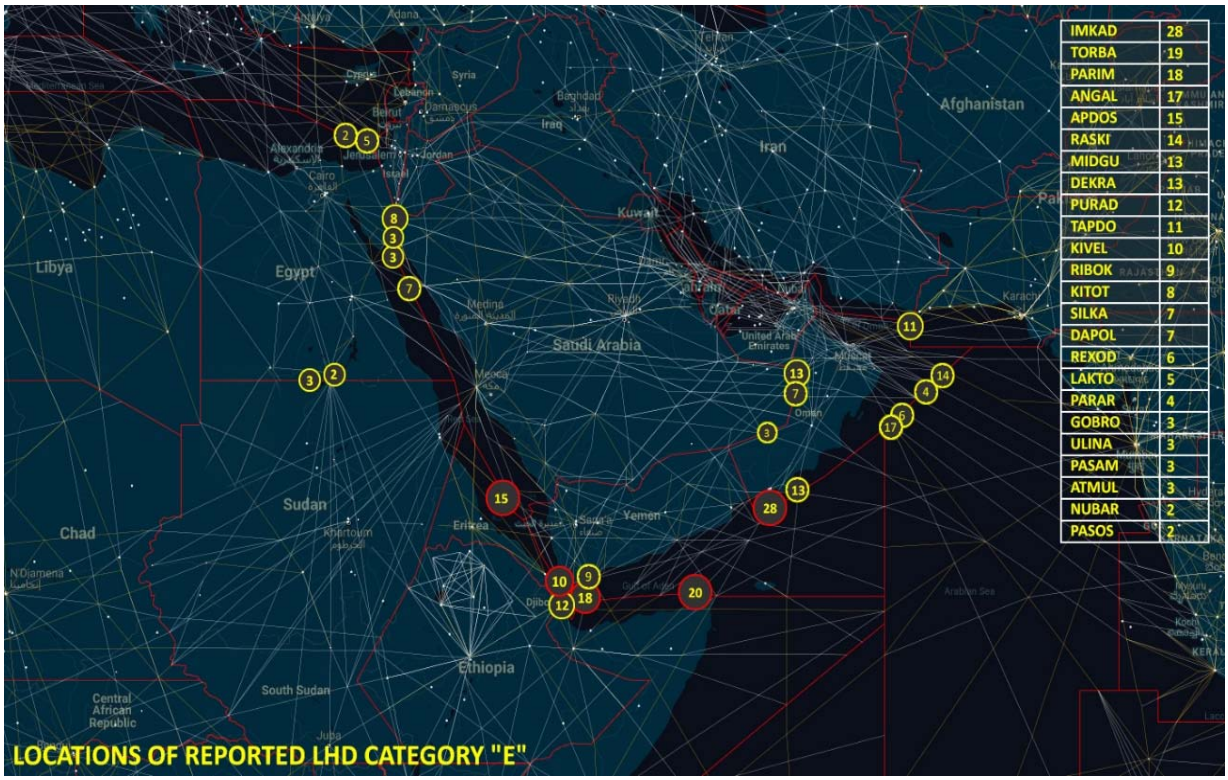
Note: The extreme majority of the received LHD reports are related to ATC transfer of control coordination errors due to human factors (Cat. E) and did not have severe impact on the RVSM airspace operations.

2.4 The table below provides a summary of operational risk associated with Large Height Deviation (LHD) reports, categorized by LHD categories. These reports are used to calculate the overall vertical collision risk, which is presented for Safety Objective No. 2.

LHD Cat.	**Large Height Deviation (LHD) Categories**	**No. of LHDs**	**LHD Duration (Sec.)**
A	Flight crew fails to climb or descend the aircraft as cleared	-	**-**
B	Flight crew climbing or descending without ATC clearance	-	**-**
C	Incorrect operation or interpretation of airborne equipment	4	**65**
D	ATC system loop error	5	**280**
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	1	**10**
J	TCAS resolution advisory and flight crew correctly responds	-	**-**
K	TCAS resolution advisory and flight crew incorrectly responds	-	**-**
L	ACFT being provided with RVSM separation is not RVSM approved	-	**-**
M	Other		
	Total	10	**355**

Summary of Operational Risk associated with Large Height Deviation Reports

2.5 During the last MIDRMA Board meeting, MIDRMA highlighted the issue of non-responsiveness to the received Large Height Deviation (LHD) reports, particularly in relation to the feature allowing direct responses to the reporting unit. This feature is crucial for ensuring that all responses are properly documented and can be readily referenced when necessary. Regrettably, the vast majority of Member States persist in neglecting the utilization of this feature and do not make the effort to investigate and provide replies to the LHD reports they receive.



3 RVSM Safety Protocol at the Eastern Boundaries of Muscat FIR and the increased Number of LHD reports submitted by Mumbai ATCU related to Muscat ATCU:

3.1 MIDRMA has maintained its vigilance in monitoring the Large Height Deviation (LHD) reports along the eastern boundaries of Muscat FIR, as filed by Mumbai and Muscat ACCs. The MIDRMA wishes to bring to the meeting's attention the ongoing status of the Muscat/Mumbai RVSM safety protocol, which has remained open since 2017. It is imperative that a decision be made to close this protocol, given that the associated risks should either be eliminated or reduced to the absolute minimum. Regrettably, MIDRMA does not perceive this happening without confirmation of the installation of OLDI/AIDC systems in both ACCs.

3.2 In **Attachment A** of this working paper, a comprehensive account of Large Height Deviation (LHD) reports, as filed by both Air Traffic Control Units (ATCUs), from January 1st to August 31st, 2023, is provided. It is noteworthy that a significant and abrupt surge in LHD reporting from Mumbai related to Muscat, has been observed during this period. In light of this development, an official communication has been initiated with the Muscat Air Traffic Control, seeking an explanation for the underlying causes behind this sudden escalation. Furthermore, Oman has been formally requested to outline the corrective measures undertaken to address this longstanding issue.

3.3 The table below provides a comparison of the number of LHD reports submitted by Mumbai and Muscat ATCUs in 2022 and 2023.

\HDU#	OKG#Jhsruwhg#e|#P xvfdw#	OKG#Jhsruwhg#e|#P xp ed]#
5355#	49#	74#
5356#	58#	:<#

4 RVSM Safety Protocol between Sanaa and Mogadishu FIRs.

4.1 The MIDRMA Board/18 has decided to open an RVSM Safety Protocol between Sanaa and Mogadishu FIRs in response to the increasing number of LHD reports submitted by Sana'a ACC related to Mogadishu and to its neighbouring FIRs. It is worth noting that the first coordination meeting, organized by ICAO MID and attended by ICAO ESAF ARMA, MIDRMA, IATA and relevant ATM representatives near the Horn of Africa, discussed the surge in LHD reports from Sana'a ACC concerning its neighbouring FIRs. During this meeting, the ATM representatives attended this meeting were briefed of the escalating risk associated with the rising number of LHD reports and their impact on the overall ICAO TLS within the MID region. They were urged to promptly implement corrective measures to resolve this problem as soon as possible.

4.2 The table below displays all the LHD reports filed by Sanaa ACC related to its neighbouring ACCs, indicating a significant decrease in the number of reports compared to the year 2022.

4.3 No LHD reports were filed by Sanaa related to Mogadishu from January 1st until September 30th, 2023. Therefore, MIDRMA sees no reason to keep the safety protocol open and requests to close it.

Months	Addis Ababa	Asmara	Mogadishu	Djibouti	Jeddah	Mumbai	Muscat	Total
1-2023	1	0	0	2	1	1	9	14
2-2023	2	1	0	0	3	4	3	13
3-2023	0	1	0	4	3	0	16	24
4-2023	2	2	0	2	1	3	2	12
5-2023	2	2	0	2	1	0	0	7
6-2023	2	5	0	2	5	1	0	15
7-2023	3	10	0	2	6	4	0	25
8-2023	4	3	0	5	3	3	0	18
9-2023	3	0	0	1	2	1	1	8
Total Report	19	24	0	20	25	17	31	136

5 Assessment of Non-RVSM Approved Aircraft 2023

5.1 The MIDRMA, in accordance with its role as a Regional Monitoring Agency (RMA), as specified in ICAO Doc 9937 and 9574, conducts systematic reviews to assess operator compliance with State RVSM approvals within the ICAO Middle East Region. This essential function is carried out to safeguard the safety of the RVSM airspace by identifying aircraft that operate within it without the required approvals.

5.2 While it would be ideal to conduct daily compliance monitoring across the entire ICAO Middle East airspace, challenges in collecting traffic information render this impractical. In alignment with the guidelines set forth in ICAO Doc 9937, the responsible RMA is mandated to monitor full airspace compliance for a minimum of 30 days annually. In fulfilling this obligation, MIDRMA conducts monthly assessments.

5.3 MIDRMA relies on RVSM traffic data from Bahrain, Baghdad, and Emirates FIRs as the primary source for monitoring non-RVSM approved aircraft within its area of responsibility. This approach is necessitated by the challenge of obtaining monthly traffic data from all Member States. In light of this, MIDRMA wishes to express its sincere appreciation to the Bahrain Civil Aviation Authority, the Iraq Civil Aviation Authority, and the UAE General Civil Aviation Authority for their unwavering commitment to providing their FIRs' RVSM traffic data on a monthly basis. The data received from these Member States is consistently comprehensive and conforms to the required format. And invites the other Member States to provide similar information on regular basis.

5.4 The tables in **Attachment B** of this working paper reflect the MIDRMA Bulletin of Non-RVSM Approved aircraft observed operating within the ICAO MID RVSM airspace and within the RVSM airspace of other RMAs. The expectation derived from this analysis is that States exercising operational authority will take proactive steps to address approval issues well in advance, ensuring that approved aircraft operate within the RVSM airspace. This proactive approach aims to prevent undesirable actions against legitimate operators. Furthermore, it is expected that States encountering such aircraft operating within their airspace will take appropriate measures.

ATTACHMENT A

LHD Reports Submitted by Muscat related to Mumbai

#	ID	Date of Occ	Reported By	Related to	Location	Nature of the occurrence:	Category
1	11226	Mar 03, 2023	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	E
2	11227	Mar 03, 2023	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	E
3	11228	Apr 04, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
4	11229	Apr 04, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
5	11230	Apr 04, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
6	11231	Apr 07, 2023	Muscat	Mumbai	KITAL	ACFT Entered FIR Without Coordination	E
7	11232	Apr 12, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
8	11375	Aug 03, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
9	11376	Aug 04, 2023	Muscat	Mumbai	PARAR	Revised FL Not Coordinated	E
10	11377	Aug 05, 2023	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	E
11	11378	Aug 06, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
12	11379	Aug 07, 2023	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	E
13	11380	Aug 08, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
14	11381	Aug 09, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
15	11382	Aug 09, 2023	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	E
16	11383	Aug 10, 2023	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	E
17	11384	Aug 12, 2023	Muscat	Mumbai	REXOD	Revised FL Not Coordinated	E
18	11385	Aug 16, 2023	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	E
19	11386	Aug 18, 2023	Muscat	Mumbai	RASKI	Revised FL Not Coordinated	E
20	11387	Aug 19, 2023	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	E
21	11388	Aug 22, 2023	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	E
22	11389	Aug 28, 2023	Muscat	Mumbai	PARAR	ACFT Entered FIR Without Coordination	E
23	11390	Aug 30, 2023	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	E
24	11391	Aug 30, 2023	Muscat	Mumbai	RASKI	ACFT Entered FIR Without Coordination	E
25	11392	Aug 30, 2023	Muscat	Mumbai	REXOD	ACFT Entered FIR Without Coordination	E

LHD Reports Submitted by Mumbai related to Muscat

#	ID	Date of Occ	Reported By	Related to	Location	Nature of the occurrence	Category
1	LHD001819	06/01/2023	Mumbai	Muscat	KITAL	No or late estimate time revision	E
2	LHD001820	15/01/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
3	LHD001859	02/02/2023	Mumbai	Muscat	BIBGO	No transfer information (i.e. 'negative transfer')	E
4	LHD001863	08/02/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
5	LHD001864	14/02/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
6	LHD001865	16/02/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
7	LHD001866	19/02/2023	Mumbai	Muscat	PARAR	No transfer information (i.e. 'negative transfer')	E
8	LHD001867	10/03/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
9	LHD001868	14/03/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
10	LHD001869	16/03/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
11	LHD001870	16/03/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
12	LHD001877	16/03/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
13	LHD001878	19/03/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
14	LHD001879	20/03/2023	Mumbai	Muscat	LOTAV	No transfer information (i.e. 'negative transfer')	E
15	LHD001880	24/03/2023	Mumbai	Muscat	PARAR	No or late route revision	E
16	LHD001881	24/03/2023	Mumbai	Muscat	PARAR	No or late route revision	E
17	LHD001882	24/03/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
18	LHD001883	24/03/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
19	LHD001884	24/03/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
20	LHD001885	26/03/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
21	LHD001886	29/03/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
22	LHD001887	31/03/2023	Mumbai	Muscat	REXOD	No or late FL revision	E
23	LHD001963	08/04/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
24	LHD001964	17/04/2023	Mumbai	Muscat	SAPNA	No transfer information (i.e. 'negative transfer')	E
25	LHD001965	18/04/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
26	LHD001966	27/04/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
27	LHD001967	30/04/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
28	LHD002011	04/05/2023	Mumbai	Muscat	RASKI	No transfer information (i.e. 'negative transfer')	E
29	LHD002012	13/05/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
30	LHD002013	18/05/2023	Mumbai	Muscat	ANGAL	No or late FL revision	E
31	LHD002014	23/05/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
32	LHD002015	25/05/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
33	LHD002016	25/05/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
34	LHD002017	30/05/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
35	LHD002018	31/05/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
36	LHD002019	06/06/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
37	LHD002020	19/06/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
38	LHD002021	23/06/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
39	LHD002022	26/06/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E

40	LHD002038	04/07/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
41	LHD002039	05/07/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
42	LHD002040	21/07/2023	Mumbai	Muscat	PARAR	No transfer information (i.e. 'negative transfer')	E
43	LHD002041	26/07/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
44	LHD002042	29/07/2023	Mumbai	Muscat	ORLID	No or late estimate time revision	E
45	LHD002043	29/07/2023	Mumbai	Muscat	ORLID	No or late estimate time revision	E
46	LHD002091	05/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
47	LHD002092	07/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
48	LHD002093	08/08/2023	Mumbai	Muscat	REXOD	No or late FL revision	E
49	LHD002094	10/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
50	LHD002095	13/08/2023	Mumbai	Muscat	REXOD	No or late FL revision	E
51	LHD002096	14/08/2023	Mumbai	Muscat	PARAR	No transfer information (i.e. 'negative transfer')	E
52	LHD002097	15/08/2023	Mumbai	Muscat	TOTOX	No or late estimate time revision	E
53	LHD002098	15/08/2023	Mumbai	Muscat	REXOD	No or late FL revision	E
54	LHD002099	16/08/2023	Mumbai	Muscat	ORLID	No transfer information (i.e. 'negative transfer')	E
55	LHD002101	17/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
56	LHD002102	17/08/2023	Mumbai	Muscat	REXOD	No or late FL revision	E
57	LHD002103	18/08/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
58	LHD002104	19/08/2023	Mumbai	Muscat	ORLID	No or late estimate time revision	E
59	LHD002105	20/08/2023	Mumbai	Muscat	RASKI	No or late estimate time revision	E
60	LHD002106	20/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
61	LHD002107	20/08/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
62	LHD002108	21/08/2023	Mumbai	Muscat	KITAL	No or late estimate time revision	E
63	LHD002109	22/08/2023	Mumbai	Muscat	ANGAL	No transfer information (i.e. 'negative transfer')	E
64	LHD002110	23/08/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
65	LHD002111	23/08/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
66	LHD002112	23/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
67	LHD002113	23/08/2023	Mumbai	Muscat	TOTOX	No or late FL revision	E
68	LHD002114	24/08/2023	Mumbai	Muscat	ORLID	No or late FL revision	E
69	LHD002115	24/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
70	LHD002116	24/08/2023	Mumbai	Muscat	ORLID	No or late FL revision	E
71	LHD002117	24/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
72	LHD002118	25/08/2023	Mumbai	Muscat	KITAL	No or late FL revision	E
73	LHD002119	25/08/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
74	LHD002120	25/08/2023	Mumbai	Muscat	RASKI	No or late estimate time revision	E
75	LHD002121	27/08/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
76	LHD002122	29/08/2023	Mumbai	Muscat	LOTAV	No or late FL revision	E
77	LHD002123	29/08/2023	Mumbai	Muscat	PARAR	No or late FL revision	E
78	LHD002124	31/08/2023	Mumbai	Muscat	RASKI	No or late FL revision	E
79	LHD002125	31/08/2023	Mumbai	Muscat	KITAL	No or late estimate time revision	E

ATTACHMENT B

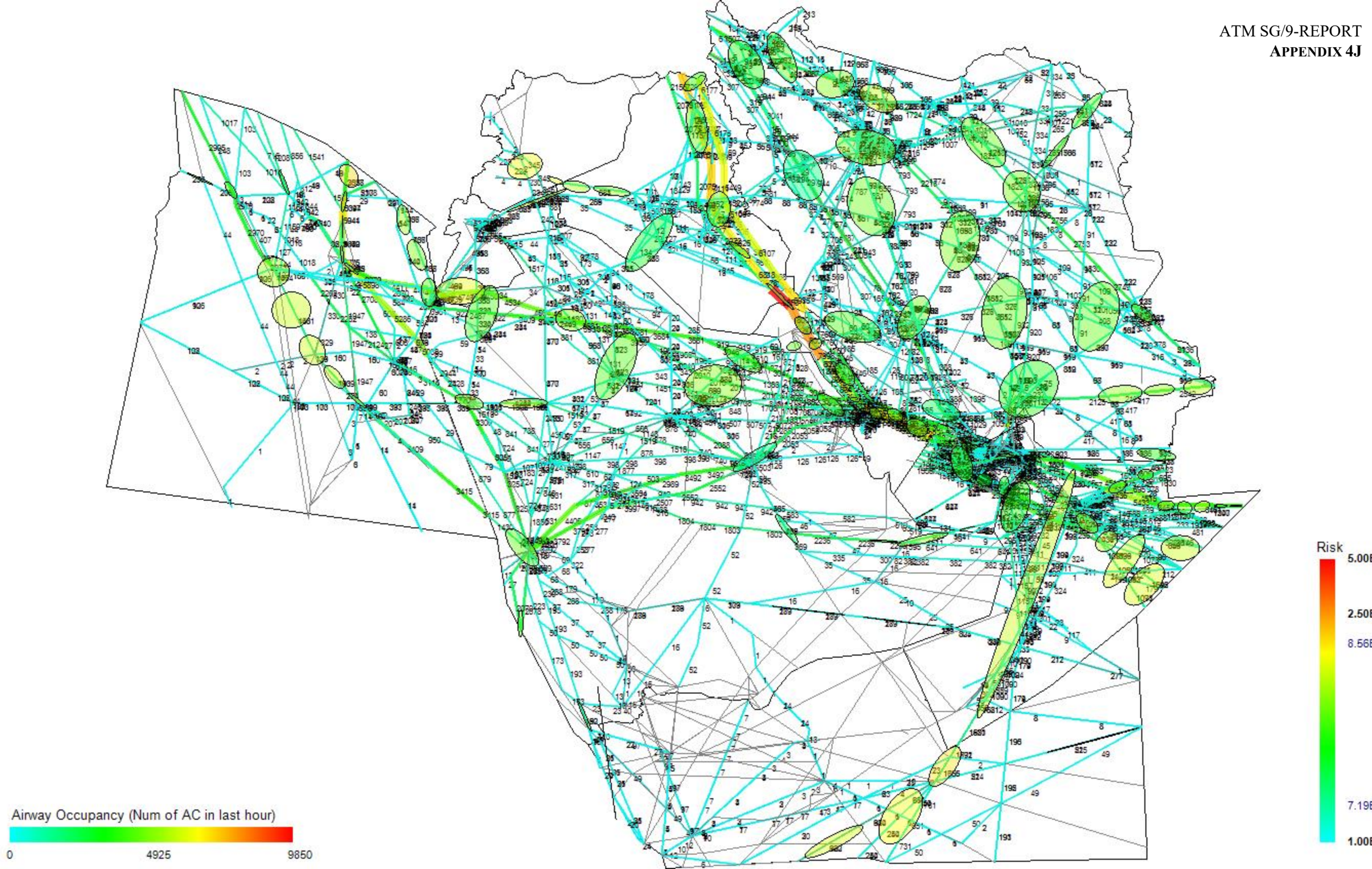
NON-RVSM approved aircraft – Responsibility of MIDRMA Member States

&#	Observed Operating RVSM in	ACFT Reg.	ICAO Type	First Observed on	Responsible State
1	Jeddah	STALL	CRJ1	11-06-2022	SUDAN
2	EURRMA	5ALEX	BE200	09-07-2022	LIBYA

NON-RVSM approved aircraft – Responsibility of other RMAs

#	ACFT Reg.	ICAO Type	First Observed on	Responsible RMA
1	PKSJH	A320	06-11-2022	AAMA
2	PKLSW	B739	08-03-2023	AAMA
3	PKBGZ	B738	13-12-2022	AAMA
4	PKSTD	A320	19-01-2023	AAMA
5	PKLVF	B739	20-01-2023	AAMA
6	PKLSV	B739	21-12-2022	AAMA
7	40001A	C17	25-01-2020	AAMA
8	PKLSU	B739	27-11-2022	AAMA
9	PKSTH	A320	27-11-2022	AAMA
10	60208A	C17	30-03-2020	AAMA
11	PKBKM	A320	30-11-2022	AAMA
12	ZSCQP	CRJ9	07-07-2020	AFIRMA
13	ETATF	B350	08-07-2020	AFIRMA
14	5YWBH	C56X	14-07-2020	AFIRMA
15	5YFAN	CRJ2	15-07-2020	AFIRMA
16	5NBOD	GLF4	28-01-2022	AFIRMA
17	CCBGV	B789	08-06-2022	CARSAM
18	FAB2857	KC39	22-05-2022	CARSAM
19	21140	IL76	19-06-2022	CHINARMA
20	URAZN	B753	01-02-2022	EURRMA
21	URAZO	B753	01-02-2022	EURRMA
22	URSQO	B738	02-12-2021	EURRMA
23	URAZR	B77W	03-02-2022	EURRMA
24	EW550TH	IL76	04-12-2021	EURRMA
25	URFSC	IL76	05-12-2021	EURRMA
26	URFSA	IL76	09-05-2021	EURRMA
27	URFSE	IL76	11-12-2022	EURRMA
28	ICJSN	C25C	15-05-2023	EURRMA
29	UR11316	AN12	22-07-2020	EURRMA

30	URFSD	IL76	24-12-2021	EURRMA
31	KJ3452	IL76	03-08-2020	MAAR
32	IN307	IL38	03-12-2020	MAAR
33	KJ3454	IL76	16-03-2020	MAAR
34	K3604	E35L	17-07-2020	MAAR
35	80002A	C17	23-07-2020	MAAR
36	CB8004	C17	24-07-2020	MAAR
37	CB8001	C17	29-07-2020	MAAR
38	N411VP	EA50	01-05-2022	NAARMO
39	N267LG	GLF4	02-01-2023	NAARMO
40	N981DB	H25B	05-04-2022	NAARMO
41	N980BA	GLEX	05-11-2022	NAARMO
42	N44UA	CL60	07-06-2020	NAARMO
43	N685MF	GLF4	08-12-2021	NAARMO
44	N800AJ	CL60	10-02-2023	NAARMO
45	N605AS	PC12	11-04-2022	NAARMO
46	N866G	GALX	14-02-2022	NAARMO
47	N298RB	GLF4	14-05-2021	NAARMO
48	N28JV	PRM1	15-05-2023	NAARMO
49	N1112B	B350	16-07-2020	NAARMO
50	XAASP	CL60	17-11-2022	NAARMO
51	N920SA	F2TH	18-02-2021	NAARMO
52	N651CV	C650	21-11-2022	NAARMO
53	N145DB	E35L	22-01-2022	NAARMO
54	N46HB	F9000	22-08-2022	NAARMO
55	N320MK	GLF3	24-09-2022	NAARMO
56	N890DA	GLF5	25-02-2023	NAARMO
57	N604DT	CL60	26-02-2022	NAARMO
58	XAAYL	GLEX	26-04-2023	NAARMO
59	N405LL	H25B	29-05-2022	NAARMO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9850
Risk
5.00E-009
2.50E-010
8.56E-011
7.19E-015
1.00E-015

Airway Occupancy (Num of AC in last hour)

0 4925 9850

Risk

5.00E-009

2.50E-010

8.56E-011

7.19E-015

1.00E-015

Airway Occupancy (Num of AC in last hour)

0 6941 13882

Risk

5.00E-009

2.50E-010

8.56E-011

4.01E-014

1.00E-015

Airway Occupancy (Num of AC in last hour)

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Risk

5.00E-009

2.50E-010

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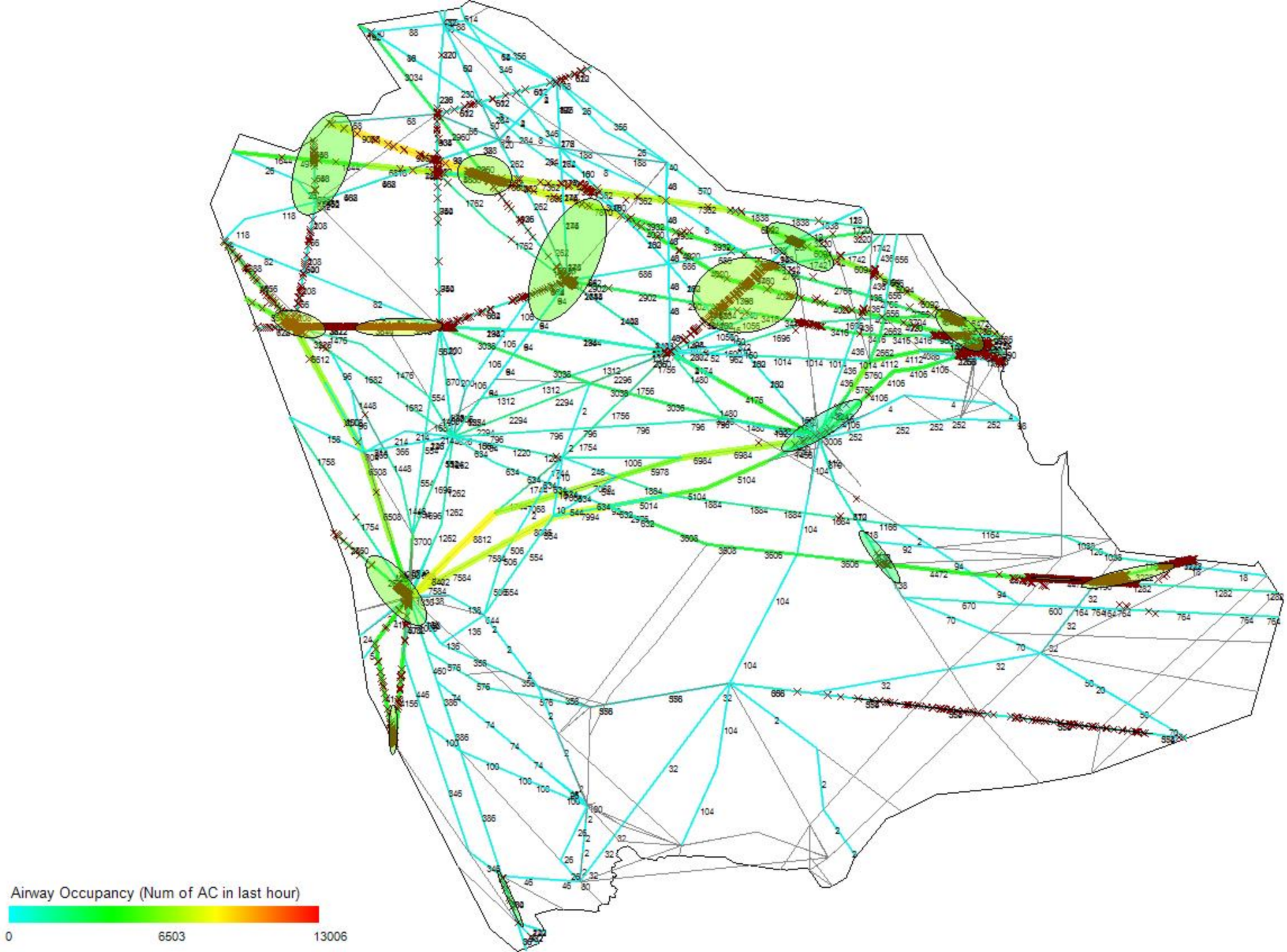
1.69E-014

1.00E-015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13006
Risk
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1.25E-011
7.19E-015
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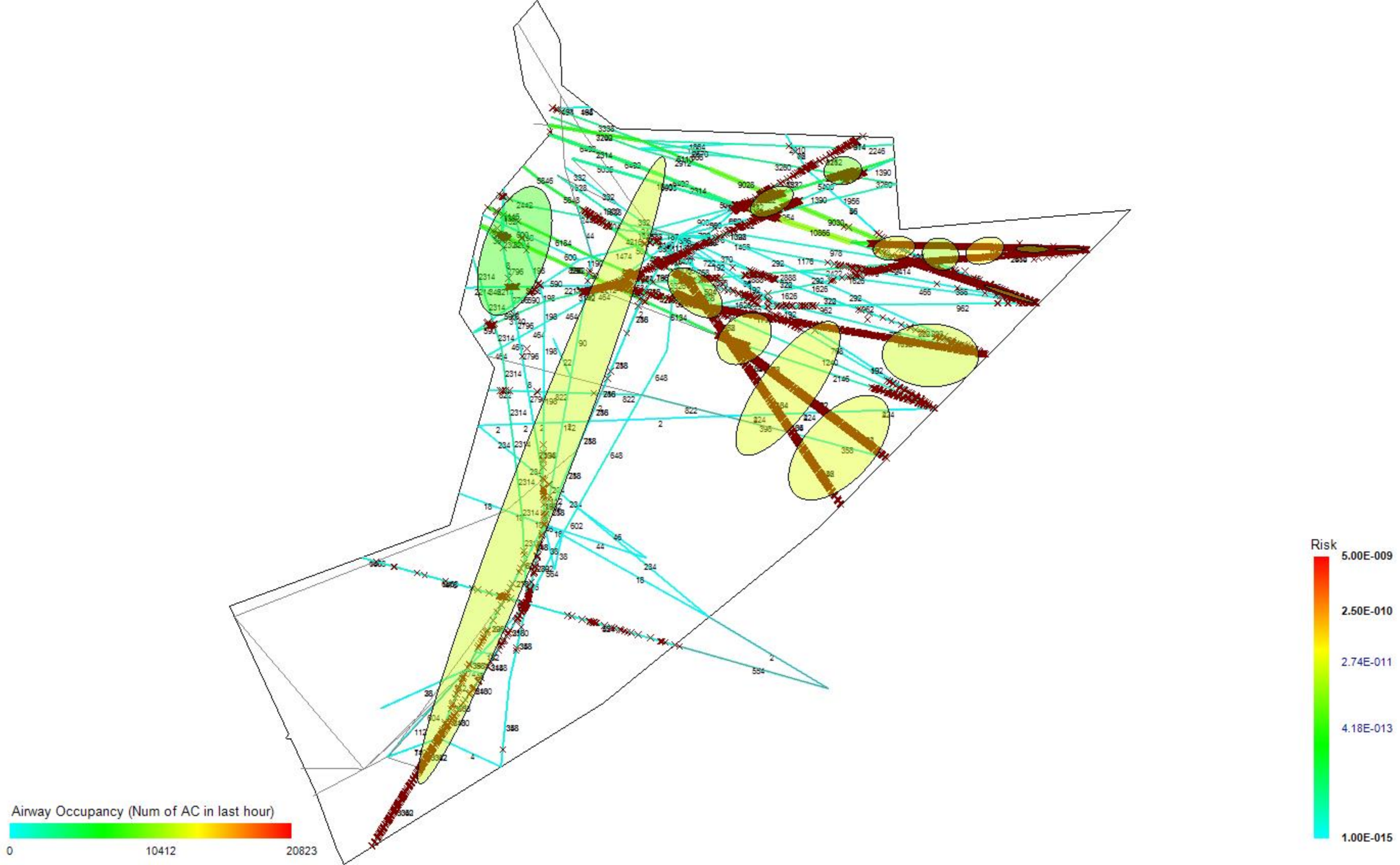
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20823
Risk
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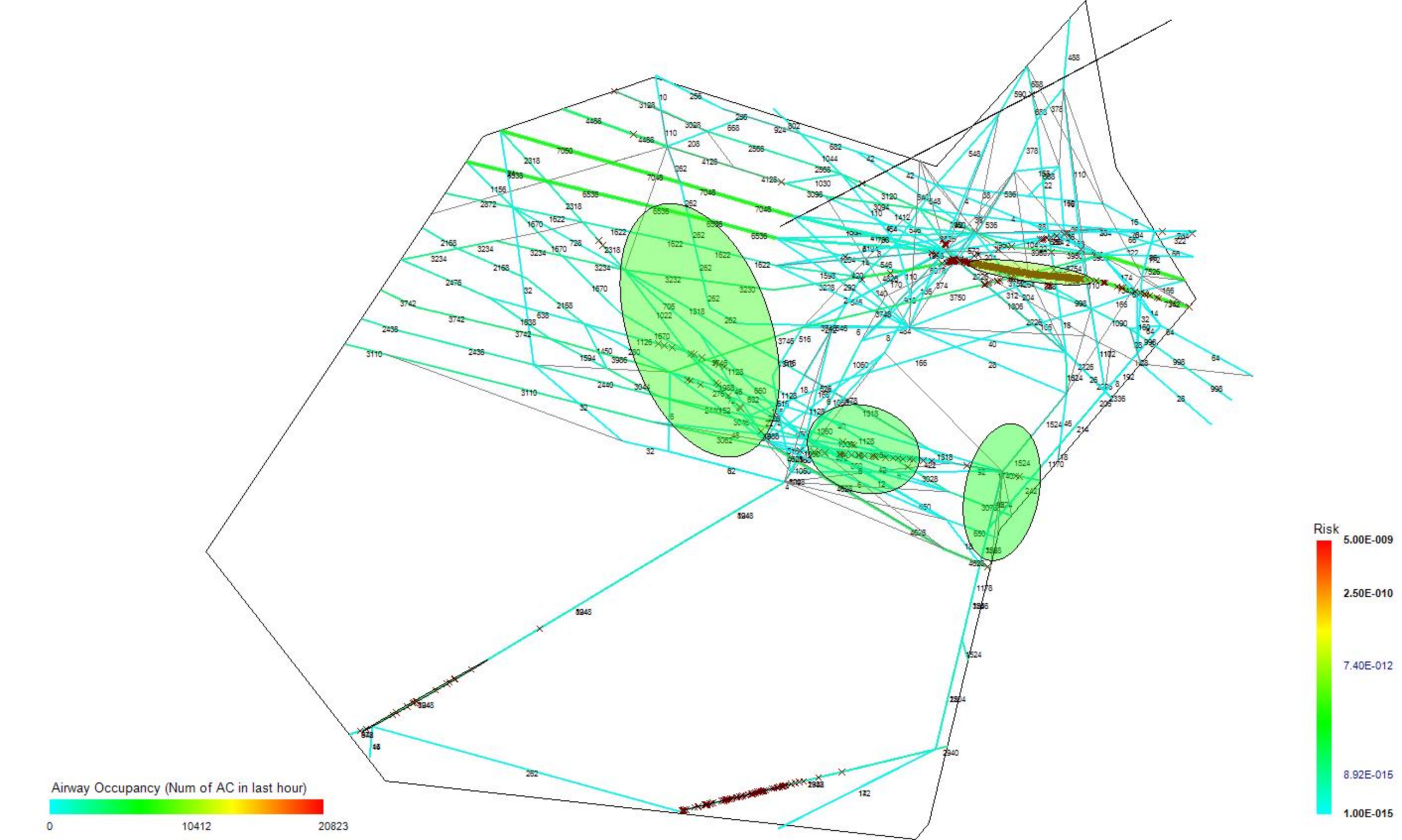
1.00E-015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0
10412
20823
Risk
5.00E-009
2.50E-010
7.40E-012
8.92E-015
1.00E-015

TEMPLATE TO REPORT THE OCCURRENCES RELATED TO UNKNOWN AIRCRAFT OPERATING OVER THE HIGH SEAS

	Date	Time UTC	Duration Minutes	ATS unit(s) concerned	FIR(s) concerned And Airspace Classification	Coordinates of the main area which was subject to unknown operation and direction (heading)	FL(s) *If known*	Speed *If known*	ACFT Type and registration *If known*	Identification (SSR, PSR, Visual by other ACFT)	Type of operation impact (Safety, Efficiency…)	Remarks

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EXCHANGE OF FLIGHT PLAN MESSAGES THROUGH AFTN

To exchange traffic data automatically through AFTN, the followings are required:

a) ACC automation system shall be set up and operational in both ACCs;
b) each ACC shall have its own individual AFTN address;
c) ATFN directly connected to both ACC automation systems;
d) both ACC automation systems are required to generate the required estimate and revision messages based on ICAO Doc 4444, Chapter 11 and send it through AFTN to the accepting ACC's address;
e) both ACC automation systems are required to receive and process AFTN massages based on ICAO Doc 4444, Chapter 11 to activate and update flight plan (revision messages);
f) ATS surveillance service shall be available at both ACCs and each ACC shall have adequate coverage in the adjacent FIR;
g) ATCO shall set up situational display in the right manner to ensure that the required coverage is visible;
h) the required procedure in ACC operation manual as well as contingency plan shall be developed;
i) the required letter of agreement between adjacent FIR shall be signed and operational;
j) required theoretical and practical training for ATCOs shall be conducted; and
k) States needs to conduct the required safety assessment to make sure that safety of flights will not be infringed in all cases.

Automatic Data Exchange

a) transferring ACC shall automatically generate and pass the ''EST'' messages to accepting ACC **xx minutes** before the aircraft is estimated to pass the transfer of control point.

b) after passing ''EST'' messages, any revision including flight level, route, estimate shall be automatically generated and passed to accepting ACC to update respective flight plan.

c) in case the accepting ATCOs finds out that an aircraft is approaching FIR boundary, but no data has received via automatic exchange, they should call transferring unit in order to obtain information related to the aircraft.

d) any coordination failure shall be reported to the relevant ACC supervisor.

Verbal Estimates

For condition that are not supported by the automatic data exchange such as AFTN failure or in case of surveillance failure, verbal estimates will be exchanged.

a) a verbal estimate shall be passed to the accepting ATS unit at least xx minutes prior, but not earlier than xx minutes before the aircraft is estimated to pass the transfer of control point.

b) any change in the flight conditions (FL, Route, Estimate etc.) after the transmission of the "EST" message shall be given via DSC line between the two ACCs.

MONITORING THE IMPLEMENTATION OF THE PRIORITY 1 ASBU RELATED ATM/SAR THREADS/ELEMENTS

As reported by States in September 2023

100%	More than 50% but less than 100%	Less than 50%	Not applicable	No information

Element		Applicability	Targets	Timelines	Status
APTA B0/1	PBN Approaches (with basic capabilities)	All RWYs ENDs at International Aerodromes	100%	Dec 2017	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 57%, below target
APTA B0/2	PBN SID and STAR procedures (with basic capabilities)	All RWYs ENDs at International Aerodromes	70%	Dec 2022	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 55%, below target
APTA B0/4	CDO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI, OLBA, OOMS, OTHH, OTBD, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	100%	Dec 2021	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 44%, below target

APTA B0/5	CCO (Basic)	OBBI, OIIE, OIKB, OIFM, OJAI, OLBA, OOMS, OTHH, OTBD, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMAL, OMAD, OMDW, OMDB, OMSJ, OMRK and OMFJ	100%	Dec 2021	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 44%, below target
APTA B0/7	Performance based aerodrome operating minima – Advanced aircraft	All States	50%	Dec 2021	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 42%, below target
FRTO B0/2	Airspace planning and Flexible Use of Airspace (FUA)	Bahrain, Egypt, Jordan, Qatar, Saudi Arabia (2 ACCs), Sudan, UAE	50%	Dec 2022	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 57%, below target
FRTO B0/4	Basic conflict detection and conformance monitoring	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia (2 ACCs), Sudan, UAE	70%	Dec 2021	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman

					Qatar Saudi Arabia Sudan Syria UAE Yemen Average 60%, below target
NOPS B0/1	Initial integration of collaborative airspace management with air traffic flow management	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	50%	Dec 2022	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 41.6%, below target
SNET B0/1	Short Term Conflict Alert (STCA)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE	80%	Dec 2018	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 100%, above target
SNET B0/2	Minimum Safe Altitude Warning (MSAW)	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, Syria, UAE	80%	Dec 2018	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 91.6%, above target
SNET	Area Proximity		70%	Dec 2021	Bahrain Egypt

B0/3	Warning (APW)	Bahrain, Egypt, Iran, Iraq, Kuwait, Jordan, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, UAE			Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 62.5%, below target
GADS B1/2	Contact directory service	All States	100%	Dec 2021	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 73%, below target
RSEQ B0/1	Arrival Management	OBBI, HECA, HEBA, HELX, HESN, HESH, OTBD, OTHH, OEJN, OEDF, OEMA, OERK OMDB, OMAA	80%	Dec 2022	Bahrain Egypt Iran Iraq Jordan Kuwait Lebanon Libya Oman Qatar Saudi Arabia Sudan Syria UAE Yemen Average 35.7%, below target

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Deficiencies in the ATM field IRAN										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities / Services**	**Description**	**Date first reported**	**Remarks / Rationale for non-elimination**		**Facilities / Services**	**Executing body**	**Date of completion**	**Priority for action**
1	MID ANP TABLE ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS routes A418/UP574 not implemented	Dec 2006	KUMUN-PAPAR segment not implemented.	SO	Corrective Action Plan has not been formally provided by the State	Iran- UAE	Dec 2021	B

Deficiencies in the ATM field IRAQ										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities / Services**	**Description**	**Date first reported**	**Remarks / Rationale for non-elimination**		**Facilities / Services**	**Executing body**	**Date of completion**	**Priority for action**
1	MID ANP Table ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS route G667 not implemented	Sep 2006	Segment ALSAN-ABD not implemented	S	Corrective Action Plan has not been formally provided by the State	Iraq- Iran-Kuwait	Dec 2021	B
2	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Nov 2006	Contingency Agreement to be signed with Syria	S	Corrective Action Plan has not been formally provided by the State	Iraq	Dec 2021	A
3	MID ANP Table ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS route G795 not implemented	May 2008	RAF-BSR segment not implemented	S	Corrective Action Plan has not been formally provided by the State	Iraq- Saudi Arabia	Dec 2021	B
4	MID ANP Table ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS route A424 not implemented	May 2008	LOTAN-LOVEK segment not implemented	O	Corrective Action Plan has not been formally provided by the State	Iraq	Dec 2021	B

Deficiencies in the ATM field JORDAN										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities / Services**	**Description**	**Date first reported**	**Remarks / Rationale for non-elimination**		**Facilities / Services**	**Executing body**	**Date of completion**	**Priority for action**
1	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Nov 2006	Contingency agreements not signed with Syria.	H	Corrective Action Plan has not been formally provided by the State. State comment: due to political impact in the region Jordan is not able to complete the signature of contingency agreements with all adjacent States	Jordan	Dec 2021	A

Deficiencies in the ATM field

LEBANON

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date first reported	Remarks/ Rationale for non-elimination		Facilities/ Services	Executing body	Date of completion	Priority for action
1	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Nov 2006	Contingency agreements not signed with Syria	S	Corrective Action Plan has not been formally provided by the State	Lebanon	Dec 2021	A

Deficiencies in the ATM field

LIBYA

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities / Services	Description	Date first reported	Remarks / Rationale for non-elimination		Facilities / Services	Executing body	Date of completion	Priority for action
1	Annex 11 Para 3.3.5.1	-	Not reporting the required data to the MIDRMA in a timely manner.	Dec 2013	-	HO	Corrective Action Plan has not been formally provided by the State	Libya	Dec 2021	A
2	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs	Dec 2014	Agreement signed only with Egypt	SO	Corrective Action Plan has not been formally provided by the State	Libya	Dec 2021	A

Deficiencies in the ATM field QATAR										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities/ Services**	**Description**	**Date first reported**	**Remarks/ Rationale for non-elimination**		**Facilities/ Services**	**Executing body**	**Date of completion**	**Priority for action**
1	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Nov 2006	Contingency agreements not signed with UAE.	S	Corrective Action Plan has not been formally provided by the State	Qatar-Bahrain	Dec 2021	A

Deficiencies in the ATM field

SAUDI ARABIA

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date first reported	Remarks/ Rationale for non-elimination		Facilities/ Services	Executing body	Date of completion	Priority for action
1	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Nov 2006	Contingency Agreements not signed with Iraq, Qatar and Sudan.	S	Corrective Action Plan has not been formally provided by the State	Saudi Arabia	Dec 2021	A

Deficiencies in the ATM field

SUDAN

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities / Services	Description	Date first reported	Remarks / Rationale for non-elimination		Facilities / Services	Executing body	Date of completion	Priority for action
1	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Dec 2014	Contingency Agreement signed only with Egypt	HSO	Corrective Action Plan has not been formally provided by the State	Sudan	Dec 2021	A

Deficiencies in the ATM field SYRIA										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities / Services**	**Description**	**Date first reported**	**Remarks / Rationale for non-elimination**		**Facilities / Services**	**Executing body**	**Date of completion**	**Priority for action**
1	MID ANP Table ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS route G202 not implemented	Dec 1997	Segment DAKWE - Damascus not implemented	S	Corrective Action Plan has not been formally provided by the State	Syria	Dec 2021	B
2	MID ANP Table ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS route UL602 not implemented	Dec 2003	Segments ELEXI-DRZ-GAZ not implemented.	S	Corrective Action Plan has not been formally provided by the State	Syria	Dec 2021	B
3	Annex 11 Para. 2.31	-	Development of contingency plan for implementation in the event of disruption or potential disruption of ATS and related supporting services. The Plan should also address natural disasters and public health emergencies. Contingency agreements should be signed with all adjacent ACCs.	Nov 2006	No signed agreement yet	H O	Corrective Action Plan has not been formally provided by the State	Syria	Dec 2021	A

Deficiencies in the ATM field UAE										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities / Services**	**Description**	**Date first reported**	**Remarks / Rationale for non-elimination**		**Facilities / Services**	**Executing body**	**Date of completion**	**Priority for action**
1	MID ANP Table ATM II-MID-1 MID REGION ATS ROUTE NETWORK	-	ATS routes A418/UP574 not implemented	Dec 2006	KUMUN-PAPAR segment not implemented.	S	Corrective Action Plan has not been formally provided by the State	Iran- UAE	Dec 2021	B

Deficiencies in the SAR field IRAQ										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities / Services**	**Description**	**Date first reported**	**Remarks / Rationale for non-elimination**		**Facilities / Services**	**Executing body**	**Date of completion**	**Priority for action**
1	Annex 12 Para. 2.1	-	Lack of provision of required SAR services	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Iraq	Dec 2021	A

Deficiencies in the SAR field KUWAIT										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities/ Services**	**Description**	**Date first reported**	**Remarks/ Rationale for non-elimination**		**Facilities/ Services**	**Executing body**	**Date of completion**	**Priority for action**
1	Annex 6 Part I chap. 6 and Part II chap. 2 Annex 10, Vol III, Chap. 5 Annex 12 para. 2.6.4	ELT	Non-compliance with carriage of Emergency Locator Transmitter (ELT) requirements	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Kuwait	Dec 2021	A

Deficiencies in the SAR field

LEBANON

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date first reported	Remarks/ Rationale for non-elimination		Facilities/ Services	Executing body	Date of completion	Priority for action
1	Annex 12 Para. 2.1	-	Lack of provision of required SAR services	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Lebanon	Dec 2021	A

Deficiencies in the SAR field

LIBYA

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date first reported	Remarks/ Rationale for non-elimination		Facilities/ Services	Executing body	Date of completion	Priority for action
1	Annex 6 Part I chap. 6 and Part II chap. 2 Annex 10, Vol III, Chap. 5 Annex 12 para. 2.6.4	-	Non-compliance with carriage of Emergency Locator Transmitter (ELT) requirements	Dec 2014	-	H S O	Corrective Action Plan has not been formally provided by the State	Libya	Dec 2021	A
2	Annex 12 Para. 2.1	-	Lack of provision of required SAR services	Dec 2014	-	H S O	Corrective Action Plan has not been formally provided by the State	Libya	Dec 2021	A

Deficiencies in the SAR field SYRIA										
Item No	**Identification**		**Deficiencies**				**Corrective Action**			
	Requirement	**Facilities/ Services**	**Description**	**Date first reported**	**Remarks/ Rationale for non-elimination**		**Facilities/ Services**	**Executing body**	**Date of completion**	**Priority for action**
1	Annex 12 Para. 2.1	-	Lack of provision of required SAR services	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Syria	Dec 2021	A
2	Annex 6 Part I chap. 6 and Part II chap. 2 Annex 10, Vol III, Chap. 5 Annex 12 para. 2.6.4	-	Non-compliance with carriage of Emergency Locator Transmitter (ELT) requirements	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Syria	Dec 2021	A

Deficiencies in the SAR field

YEMEN

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date first reported	Remarks/ Rationale for non-elimination		Facilities/ Services	Executing body	Date of completion	Priority for action
1	Annex 12 Para. 2.1	-	Lack of provision of required SAR services	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Yemen	Dec 2021	A
2	Annex 6 Part I chap. 6 and Part II chap. 2 Annex 10, Vol III, Chap. 5 Annex 12 para. 2.6.4	-	Non-compliance with carriage of Emergency Locator Transmitter (ELT) requirements	Apr 2012	-	O	Corrective Action Plan has not been formally provided by the State	Yemen	Dec 2021	A

Terms of Reference (ToR)
AIR TRAFFIC MANAGEMENT SUB-GROUP (ATM SG)

(Ref. MIDANPIRG Handbook, Feb 2022)

1. TERMS OF REFERENCE

1.1 The Terms of Reference of the ATM Sub-Group are:

a) ensure that the planning and implementation of ATM in the MID Region is coherent and compatible with developments in adjacent regions, and is in line with the Global Air Navigation Plan (GANP), the Aviation System Block Upgrades (ASBU) framework and the MID Region Air Navigation Strategy;

b) monitor the status of implementation of the MID Region ATM-related ASBU threads/elements included in the MID Region Air Navigation Strategy as well as other required ATM facilities and services; identify the associated difficulties and deficiencies and provide progress reports, as required;

c) keep under review the MID Region ATM performance objectives/priorities, develop action plans to achieve the agreed performance targets and propose changes to the MID Region ATM plans/priorities;

d) seek to achieve common understanding and support from all stakeholders involved in or affected by the ATM developments/activities in the MID Region;

e) provide a platform for harmonization of developments and deployments in the ATM domain;

f) based on the airspace user needs and in coordination with stakeholders (States, International Organizations, user representative organizations and other ICAO Regions), identify requirements and improvements for achieving and maintaining an efficient route network in the MID Region;

g) foster and initiate actions aimed at improving civil/military cooperation and Flexible Use of Airspace (FUA) implementation;

h) keep under review the adequacy of requirements in Search and Rescue field, taking into account, *inter alia*, changes to aircraft operations and new operational requirements or technological developments;

i) ensure the effectiveness of the SSR code allocation system in the MID Region;

j) identify, State by State, those specific deficiencies that constitute major obstacles to the provision of efficient air traffic management and recommend specific measures to eliminate them;

k) develop the MID Region ATM Contingency Plan and ensure that its maintained up to date;

l) monitor the implementation of the MID Region ASBU Modules included in the MID Region Air Navigation Strategy related to the ATM, provide expert inputs for ATM related issues; and propose solutions for meeting ATM operational requirements;

m) monitor and review the latest developments in the area of ATM;

n) coordinate with relevant MIDANPIRG and RASG-MID Subsidiary bodies issues with common interests;

o) provide regular progress reports to the MIDANPIRG concerning its work programme; and

p) review periodically its Terms of Reference and propose amendments as necessary.

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

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

b) provide necessary inputs to the MID Region Air Navigation Strategy through the monitoring of the agreed Key Performance Indicators related to ATM;

c) review the MID ATS Routes Network in order to assess its capacity and constraints;

d) identify requirements and improvements for achieving and maintaining an efficient ATS route network in the MID Region;

e) propose a strategy and prioritized plan for development of improvements to the route network, highlighting:

- areas that require immediate attention
- interface issues with adjacent ICAO Regions

f) develop a working depository for route proposals that will be used as a dynamic reference document for ongoing discussions on routes under development/ modification. In this respect, the Task Force should explore the utility that can be realized from the route catalogue concept/ATS routes database;

g) engage the necessary parties regarding routes under consideration, especially the Military Authorities;

h) promote civil/military cooperation and the implementation of the concepts of Flexible Use of Airspace (FUA), free flight, flexible tracks;

i) facilitate effective civil/military cooperation and joint use of airspace in the MID Region;

j) in coordination with the MIDRMA, carry out safety assessment of the proposed changes to the ATS Routes Network;

k) submit completed route proposals for amendment of the Basic ANP Table ATS-1, to the ICAO MID Regional Office for processing;

l) monitor the RVSM operations and support the continued safe use of RVSM in the MID Region;

m) review and maintain the MID Region SSR Code Allocation Plan and monitor the implementation of the SSR codes allocation procedures in the Region;

n) assist States in the development and co-ordination of contingency plans and ensure that the Regional contingency plan is maintained up-to-date;

o) assess the effectiveness of the agreed Contingency measures/procedures and propose mitigation measures, as appropriate;

p) address ATM and SAR interface issues with other regions and make specific recommendations to achieve seamlessness and harmonization;

q) review the requirements and monitor the status of implementation of ATM and SAR services;

r) analyse, review and monitor deficiencies in the ATM and SAR fields;

s) develop proposals for the updating of relevant ICAO documentation, including the amendment of relevant parts of the MID ANP, as deemed necessary;

t) establish and monitor ATM performance objectives for the MID Region; and

u) taking into account human factors studies and available guidance material, make operational recommendations related to ATM personnel in the changing technological environment.

2. COMPOSITION

2.1 The Sub-Group Is Composed of:

a) MIDANPIRG Member States;

b) experts nominated by Middle East Provider States from both Civil Aviation Authority and Military Authority;

c) concerned International and Regional Organizations as observers; and

d) other representatives from provider States and Industry may be invited on ad hoc basis, as observers, when required.

3. WORKING ARRANGEMENTS

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

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

ATTACHMENT A

LIST OF PARTICIPANTS

State	Name	Title
BAHRAIN	Mr. Ahmed Yousif Al Malki	A/Chief Air Traffic Management
	Mr. Ali Ahmed Mohammed	Advisor
EGYPT	Gen. Mohamed Hassan	Vice President of Egyptian Civil Aviation Authority - ECAA
	Mr. Amr Ibrahim Abdel Latiff	ATS Inspector - ECAA
	Mr. Ahmed El Refaey	Air Traffic Controller, Sharm El Sheikh Airport - NANSC
	Mr. Ahmed Mohamed AbdelAlim	Air Traffic Controller, Sharm El Sheikh Airport - NANSC
	Mr. Ehab Raslan Abdel Galil	General Manager of Research and Development - NANSC
	Mr. Hossam Mohamed Omran	Head of Air Navigation Administration - ECAA
	Mr. Khaled El Fishawy	Vice Head of ATC Sector - NANSC
	Mr. Khaled Saed Elmadany	Manager of ATC Directorate, Sharm El Sheikh Airport - NANSC
	Nav. Mohamed Aly Mohamed Aly	General Manager Safety and Standards
	Mr. Mohamed Farghaly Mohamed	Manager of R & D Directorate (ATC) - NANSC
	Mr. Mostafa Mohamed Hassan	General Manager of ATC, , Sharm El Sheikh Airport - NANSC
	Mr. Osama Atta	Head of ATC Sector - NANSC
	Mr. Wael Ezzat Mahmoud Ammar	General Manager of Cairo ACC - NANSC
	Mr. Waleed Hassan Morgan	General Manager of Airports - NANSC
IRAN	Mr. Behzad Soheil	Deputy Director General of ATM

State	Name	Title
	Mr. Mansour Sadri Koupaei	Deputy Director General of Airworthiness Office
	Mr. Seyed Hamid Reza Sanei	Director of ANS and Aerodromes Safety and Standards Directorate
JORDAN	Mr. Ahmad Odeh	Air Navigation Director / Queen Alia Airport
	Mr. Mahmoud Marji Faour Allahem	Director of Air Traffic Management (DATM)
KUWAIT	Mr. Mustafa Abdullah Al-Tarrah	Head of Air Navigation Service Inspectors, DGCA / ASD (CAA)
LIBYA	Mr. Alhasan Salem Ramadan Hareweda	Libyan A.I.S
	Mr. Moftah M. Khaliefa Ahmed	ATS Officer, Head of AIP WG
OMAN	Mr. Hilal Ali Mohammed Al-Maqbali	ATC Director
	Mr. Nasser Salim Al-Mazruai	Chief of ACC
	Ms. Hanaa Sultan Said Al-Maskari	Chief of ATC HR
	Mr. Said Saif Al-Kiyumi	Area ATCO - ATM Specialist
QATAR	Mr. Eissa Al-Meabid	Head of ATC
	Mr. Mohd Al-Asmakh	Air Traffic Advisor
	Mr. Keith Jordan Crawford	ATFM Advisor
SAUDI ARABIA	Mr. Ahmed J. Albadrani	Air Navigation Safety Inspector - GACA
	Mr. Ahmed Matar Almajnuni	Airspace Planning Specialist - SANS
	Mr. Khalid Hussain Alharbi	Airspace Management Director - GACA
	Mr. Mazen M Alshihri	Airspace Management Manager - SANS
UAE	Mr. Abdullah Ahmed Alaraimi	Head of ATC DXB Approach, Dubai Air Navigation Svcs
	Mr. Nasser Al Kharusi	Senior Specialist Airspace Management, GCAA

State	Name	Title
	Mr. Omar Obaid Al Abdouli	Senior Manager Air Traffic Operations, GCAA
	Mr. Yaser Rahmatalla Yar Mohammed	Senior Specialist - Air Traffic Operations, GCAA
YEMEN	Mr. Abdul Malek Saeed Ahmed Gaizan	Director of ACC Project - CAMA
	Mr. Awsan Anwar Ahmed Taher	Director of Air Traffic Services Department, Aden Int'l Airport - CAMA

Org/Industry	Name	Title
EUROCONTROL	Mr. Tihomir Todorov	Head of Section Airspace Design - Network Management Directorate, Airspace and Capacity Division, Operations Planning Unit Section Airspace Design
IATA	Mr. Jehad Faqir	Head Regional Safety Africa and Middle East
ICAO MID	Mr. Ahmad Amireh	Regional Officer, Air Traffic Management and Search and Rescue (RO/ATM/SAR)
	Mr. Ahmad Kavehfirouz	Regional Officer, Air Traffic Management (RO/ATM)
	Ms. Dina El Karimy	Technical Assistant (ATM/SAR and ASF)

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