INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE FIRST MEETING OF THE AIR NAVIGATION SYSTEMS IMPLEMENTATION GROUP

ANSIG/1

(Cairo, Egypt, 10 – 12 February 2015)

The views expressed in this Report should be taken as those of the ANSIG/1 Meeting and not of the Organization. This Report will, however, be submitted to the MIDANPIRG and any formal action taken will be published in due course as a Supplement to the Report

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

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PART I - HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The First meeting of the Air Navigation Systems Implementation Group (ANSIG/1) was held at the Meeting Room of the ICAO Middle East Regional Office in Cairo, Egypt, from 10 – 12 February 2015.

2. OPENING

2.1 The meeting was opened by Mr. Mohamed Khonji, Regional Director, ICAO Middle East Office, Cairo. Mr. Khonji welcomed all the participants to Cairo and thanked them for their attendance. He recalled that taking into consideration the global developments related to air navigation planning, implementation and performance monitoring of the air navigation systems, MIDANPIRG/14 agreed to a new MIDANPIRG Organizational Structure and revised Terms of Reference of the different Subsidiary Bodies, including the newly established ANSIG, which is a Group responsible mainly of the implementation issues.

2.2 Mr. Khonji emphasized that ANSIG should, inter-alia, monitor the status of implementation of the MID Region Air Navigation Systems and related ASBU Modules included in the MID Region Air Navigation Plan/Strategy as well as other required Air Navigation facilities and services, identify the associated difficulties and deficiencies and provide progress reports, as required. ANSIG should also ensure that the implementation of Air Navigation Systems in the MID Region is coherent and compatible with developments in adjacent Regions, and is in line with the ATM Operational Concept (Doc 9854), Global Air Navigation Plan (GANP), the Aviation System Block Upgrades (ASBU) methodology and the MID Region Air Navigation Plan/Strategy. He highlighted that the outcomes of the MIDANPIRG subsidiary bodies related to implementation issues, as endorsed by the ANSIG/1 meeting, will be presented to the MIDANPIRG/15 meeting (Bahrain, 8-11 June 2015).

3. ATTENDANCE

3.1 The meeting was attended by a total of thirty two (32) participants from seven (7) States (Bahrain, Egypt, Iran, Kuwait, Qatar, Saudi Arabia and United Arab Emirates) and two (2) Organizations/Industries (IATA and MIDRMA). The list of participants is at **Attachment A.**

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Adel H. Al-Aufi, Air Navigation Systems Engineer, General Authority of Civil Aviation (GACA), Saudi Arabia.

4.2 Mr. Mohamed Smaoui, ICAO Middle East Deputy Regional Director acted as the Secretary of the Meeting supported by:

Mr. Raza A. Gulam	-	Regional Officer, Communications, Navigation and Surveillance (CNS)
Mr. Adel Ramlawi	-	Regional Officer, Aerodrome and Ground Aids (AGA)
Mr. Elie El Khoury	-	Regional Officer, Air Traffic Management and Search and Rescue (ATM/SAR)

Mr. Abbas Niknejad - Regional Officer, Aeronautical Information Management/Air Traffic Management (AIM/ATM)

5. LANGUAGE

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

6. AGENDA

6.1 The following Agenda was adopted:

Agenda Item 1: Adoption of the Provisional Agenda and election of Chairpersons

Agenda Item 2: Follow-up on the outcome of MIDANPIRG/14 and MSG/4 Conclusions and Decisions

Agenda Item 3: Air Navigation Global and Regional Developments

Agenda Item 4: Performance Framework for Regional Air Navigation Implementation

Agenda Item 5: Air Navigation Safety Matters and Coordination with RASG-MID

Agenda Item 6: Air Navigation Deficiencies

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 CONCLUSIONS AND DECISIONS

DRAFT CONCLUSION 1/1: *MID CIVIL/MILITARY SUPPORT TEAM*

DRAFT CONCLUSION 1/2: *REGIONAL PERFORMANCE DASHBOARDS*

DRAFT CONCLUSION 1/3: *PROPOSAL FOR AMENDMENT TO THE MID BASIC ANP TABLE ATS 1*

DRAFT CONCLUSION 1/4:	*LETTER OF AGREEMENT TEMPLATE TO BE USED BY ATS UNITS IN THE MID REGION*
DRAFT CONCLUSION 1/5:	*MID SSR CODE MANAGEMENT PLAN (CMP)*
DRAFT CONCLUSION 1/6:	*SECOND MID REGION AIR NAVIGATION ENVIRONMENTAL REPORT*
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PART II: REPORT ON AGENDA ITEMS

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

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

1.2 Mr. Adel H. Al-Aufi, Air Navigation Systems Engineer, General Authority of Civil Aviation (GACA), Saudi Arabia, and Mr. Ehab Raslan Abdel Galil, ATCO and R & D Specialist, National Air Navigation Services Company (NANSC), Egypt, were unanimously elected as the Chairperson and Vice-Chairperson of the Air Navigation Systems Implementation Group (ANSIG), respectively.

REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG/14 AND MSG/4 CONCLUSIONS AND DECISIONS

2.1 The meeting reviewed the progress made with regard to the implementation of the MIDANPIRG/14 and MSG/4 Conclusions and Decisions as reflected in the Follow up Action Plans at **Appendices 2A** and **2B**, respectively. The meeting urged States and concerned stakeholders to take necessary measures to expedite the implementation of those Conclusions which have not yet been closed.

REPORT ON AGENDA ITEM 3: AIR NAVIGATION GLOBAL AND REGIONAL DEVELOPMENTS

MID REGION AIR NAVIGATION STRATEGY

3.1 The meeting recalled that further to the MIDANPIRG/14 Conclusion 14/6, the MSG/4 meeting (Cairo, Egypt, 24-26 November 2014) endorsed the final version of the MID Region Air Navigation Strategy at **Appendix 3A**, which was consolidated based on the outcome of the different MIDANPIRG subsidiary bodies and other inputs from States and concerned international organizations. Accordingly, the MSG/4 meeting agreed to the following MSG Conclusion:

MSG CONCLUSION 4/3: MID REGION AIR NAVIGATION STRATEGY

That,

a) the MID Air Navigation Strategy at Appendix 4B is endorsed as the framework identifying the regional air navigation priorities, performance indicators and targets; and

b) MID States be urged to:

i. develop their National Air Navigation Performance Framework, ensuring the alignment with and support to the MID Region Air Navigation Strategy; and

ii. provide the ICAO MID Regional Office, on annual basis (by end of November), with relevant data necessary for regional air navigation planning and monitoring.

3.2 The meeting urged States to implement the provisions of the above MSG/4 Conclusion.

ASBU IMPLEMENTATION IN THE DIFFERENT ICAO REGIONS

3.3 The meeting was apprised of some of the activities related to air navigation capacity and efficiency in the other ICAO Regions, in particular, the performance indicators, metrics and targets developed in the APAC, ESAF, EUR/NAT, NACC and SAM Regions as at **Appendices 3B, 3C, 3D, 3E** and **3F,** respectively.

3.4 The meeting appreciated the update on the experience of the different ICAO Regions related to ASBU implementation and underlined the need for inter-regional coordination to achieve the implementation of seamless ATM.

GLOBAL AND REGIONAL DEVELOPMENTS RELATED TO ENVIRONMENT

3.5 The meeting was apprised of the global developments related to environment, in particular the provisions of the ICAO 38th General Assembly Resolutions A38-17 and A38-18. In this respect, it was highlighted that States are encouraged to voluntarily submit more complete and robust data in their action plans to facilitate the compilation of global emissions data by ICAO. The level of information contained in an action plan should be sufficient to demonstrate the effectiveness of actions and to enable ICAO to measure progress towards meeting the global goals set by Assembly Resolution A38-18.

3.6 The meeting noted that Bahrain, Iraq, Jordan, Sudan and UAE have provided their action plans. In this respect and taking into consideration MIDANPIRG Conclusion 14/29, the meeting encouraged States to develop/update their Action Plans for CO_2 emissions and submit them to ICAO through the APER website on the ICAO Portal: http://www.icao.int/environmentalprotection/Pages/action-plan.asp with a copy to the ICAO MID Regional Office. In this regard, it was highlighted that States are invited to update and submit their action plans at least once every three years.

3.7 In connection with the above, the meeting encouraged States to attend the Seminar on International Aviation Environment and States' Action Plans, planned to be held in Dubai, UAE, 10-12 March 2015. The meeting noted also that as a follow-up action to Assembly Resolution A38-18 related to the development of a global Market-Based Measures (MBM) scheme for international aviation, Global Aviation Dialogues (GLADs) are being held at five ICAO Regional Offices throughout April 2015. Accordingly, the meeting encouraged States to attend the GLAD which will be held in the ICAO MID Office in Cairo, Egypt, 20-21 April 2015.

3.8 The meeting recalled that ICAO Headquarters issued State Letters Ref AN 1/17 – 14/57 and AN 1/17 - 14/56 dated 10 September 2014, which include questionnaires related to environment benefits that would be accrued from the implementation of the ASBU Block 0 Modules; Noise certification of Unmanned Aircraft System, certification of fuel availability and composition of commercial fuel, in addition to two requests related to information on radar data and alternative fuels. The meeting noted that only Egypt, Sudan, and UAE replied to the questionnaire related to the environment benefits that would be accrued from the implementation of the ASBU Block 0 Modules; and encouraged States to send their replies to the above-mentioned questionnaires, as soon as possible, if not already done.

3.9 Based on the replies received from Egypt, Sudan and UAE, the meeting noted that States were unable to answer several questions due to the lack of required information (difficulty to measure).

3.10 The meeting recognized the difficulty faced by many States in assessing the environmental benefits and urged Sates and Users to use the ICAO Fuel Savings Estimation Tool (IFSET) for the estimation of the CO_2 emissions accrued from the planned/implemented operational improvements.

3.11 The meeting noted with appreciation that ICAO developed the Operational Opportunities to Reduce Fuel Burn and Emissions Manual (ICAO Doc 10013) and the Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes Manual (ICAO Doc 10031); and encouraged States and Users to use the guidelines provided in these Documents when planning for the implementation of operational improvements and developing their associated environmental assessments.

REPORT ON AGENDA ITEM 4: PERFORMANCE FRAMEWORK FOR REGIONAL AIR NAVIGATION IMPLEMENTATION

ASBU Implementation

4.1 The meeting recalled that, in accordance with its Terms of Reference (TORs), the ANISIG is required to monitor the status of implementation of the different ASBU Module elements included in the MID Air Navigation Plan/Strategy and ensure that the associated performance targets are met.

B0-APTA, B0-CDO, AND B0-CCO

4.2 The meeting recalled that MIDANPIRG/14 agreed that the PBN Sub-Group be responsible for PBN implementation for Terminal and Approach, while the responsibility for PBN implementation for Enroute is assigned to the ATM Sub-Group.

4.3 The meeting noted that the implementation of GBAS Landing System (GLS) has not been considered as a priority for the short term (2014-2017) in the MID Region. Accordingly, it was agreed that the implementation of GLS would be required at some identified runway ends starting 2018 and beyond.

4.4 It was highlighted that the MID Region PBN Implementation Plan (Version 1, November 2014), endorsed by the MSG/4 meeting, is available on the ICAO MID website: https://portal.icao.int/RO_MID/Pages/eDocs.aspx .

4.5 The meeting reviewed and updated the status of implementation of the different elements of the ASBU Modules B0-APTA, B0-CCO and B0-CDO included in the MID Air Navigation Strategy, as reflected in the following Tables**:**

B0 – APTA: Optimization of Approach Procedures including vertical guidance				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
States' PBN Implementation Plans	All	Indicator: % of States that provided updated PBN implementation Plan Supporting metric: Number of States that provided updated PBN implementation Plan	80 % by Dec. 2014 100% by Dec. 2015	53% Jan.2015 *(8 States)*
LNAV	All RWYs Ends at International Aerodromes	Indicator: % of runway ends at international aerodromes with RNAV(GNSS) Approach Procedures (LNAV) Supporting metric: Number of runway ends at international aerodromes with RNAV (GNSS) Approach Procedures (LNAV)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2016	46% Jan.2015 *(83 out of 180 RWY Ends)*
LNAV/VNAV	All RWYs ENDs at International Aerodromes	Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-	21% Jan.2014 *(37 out of 180 RWY Ends)*

		Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)	up for precision approaches by Dec. 2017	

B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
PBN SIDs	in accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with PBN SID implemented as required. Supporting Metric: Number of International Aerodromes/ TMAs with PBN SID implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs 100% by Dec. 2018 for all the International Aerodromes/TMAs	To be determined by PBN SG/2 Nov. 2015 30% Jan. 2015 *(21 out of 71 int'l Aerodromes)* 31% Jan. 2015 *(56 out of 180 RWY Ends)*
International aerodromes/TMAs with CCO	in accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with CCO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CCO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs	To be determined by PBN SG/2 Nov. 2015

B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
PBN STARs	In accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with PBN STAR implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with PBN STAR implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs 100% by Dec. 2018 for all the International Aerodromes/TMAs	To be determined by PBN SG/2 Nov. 2015 34% Jan. 2015 *(24 out of 71 int'l Aerodromes)* 38% Jan. 2015 *(69 out of 180 RWY Ends)*

International aerodromes/TMAs with CDO	In accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with CDO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs	To be determined by PBN SG/2 Nov. 2015

4.6 The meeting noted that the source used for the collection of data is the States' Aeronautical Information Publications (AIPs). The detailed status of implementation of the elements related to B0-APTA, B0-CCO and B0-CDO is at **Appendix 4A**.

4.7 The meeting commended Qatar, Sudan and UAE for the provision of their updated National PBN Implementation Plan. However, the meeting noted with concern that Iran, Iraq, Lebanon and Libya have not yet submitted their National PBN Implementation Plan and that the Plans of Bahrain, Egypt, Jordan, Kuwait, Oman, Saudi Arabia, Syria and Yemen are outdated (developed 5 to 6 years ago). Accordingly, the meeting urged States to implement the provisions of the MSG/4 Conclusion 4/11- *"STATES' PBN IMPLEMENTATION PLANS"*.

4.8 It was highlighted that only Qatar and Sudan included plans for the implementation of CCO and CDO in their PBN Implementation Plans.

4.9 The meeting noted with concern that the implementation of PBN in the MID Region, including the implementation of Approach Procedures with Vertical Guidance (APVs), RNAV SIDs, RNAV STARs, CCOs and CDOs is far below expectation. Accordingly, the meeting identified the main challenges facing the implementation of PBN in the MID Region and recommended measures that would overcome these challenges as indicated at **Appendix 4B**. In this regard, the meeting encouraged all Stakeholders to collaborate together in order to foster the PBN implementation in the MID Region to meet the agreed targets.

B0-SURF

4.10 The meeting noted that the ANSIG is the main Regional monitoring body for the collection of data related to the B0-SURF implementation in the MID Region.

4.11 The meeting recalled that B0-SURF aims at enhancing safety and efficiency of surface operations through implementation of Advanced Surface Movement Guidance and Control System (A-SMGCS Level 1-2). In this respect, it was highlighted that Basic A-SMGCS provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome thus improving runway/aerodrome safety.

4.12 The meeting noted with appreciation Egypt's experience related to the implementation of A-SMGCS Levels 1 and 2 at Cairo International Airport. The need for coordination with various suppliers was underlined, due to the nature of A-SMGCS (system of systems). It was highlighted that in the case of Cairo International Airport, the System Data Fusion (SDF), the Surface Movement Radar (SMR) and the Multilateration System (MLAT) were supplied by different companies. Therefore, integration of the different systems was a challenging task.

4.13 The meeting noted also that Bahrain is in the process of implementing A-SMGCS at Bahrain international airport. The project is expected to be completed by the third quarter of 2015.

4.14 The meeting noted that the following aerodromes have already implemented A-SMGCS Levels 1 & 2: OMDB, OMAA, OMDW, OTBD, OTHH, and HECA.

4.15 The meeting reviewed and updated the status of implementation of the different elements of the ASBU Module B0-SURF included in the MID Air Navigation Strategy, as reflected in the Table below:

B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 1 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 1	70% by Dec. 2017	46% (6 ADs out of 13)
A-SMGCS Level 2*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 2 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 2	50% by Dec. 2017	46%

**Reference: Eurocontrol Document – "Definition of A-SMGCS Implementation Levels, Edition 1.2, 2010".*

4.16 The meeting reviewed and updated the B0-SURF Implementation Monitoring Table at **Appendix 4C**.

4.17 The meeting appreciated the progress made in implementation of this module and agreed that the targets are achievable by 2017. It was also noted that some aerodromes in the Region are planning to implement A-SMGCS Level 3 and Level 4, although they are not part of B0-SURF (it's part of B2-SURF elements).

B0-ACDM

4.18 The meeting noted that the ANSIG is the main Regional monitoring body for the collection of data related to the B0-ACDM implementation in the MID Region.

4.19 The meeting recalled that B0-ACDM aims at Improved Airport Operation through Airport Collaborative Decision Making (A-CDM). It was highlighted that A-CDM implementation will enhance surface operations and safety by making airspace users, ATC and airport operators better aware of their respective situation and actions on a given flight.

4.20 The meeting noted that Airport-CDM is a set of improved processes supported by the interconnection of various airport stakeholders information systems. It includes application designed to “Implement collaborative procedures that will allow the sharing of surface operations data among the different stakeholders at the airport”. The following A-CDM implementation elements have been underlined: Information Sharing, Milestone Approach, Variable Taxi Time, Pre-departure Sequencing, Adverse Conditions, and Collaborating Management of Flight Updates.

4.21 The meeting noted that the following aerodromes have plans to implement B0-ACDM: OBBI, OMDB, OMAA, OMDW, OTBD, and OTHH. However, none of the MID aerodromes has implemented yet A-CDM.

4.22 The meeting reviewed and updated the status of implementation of the different elements of the ASBU Module B0-ACDM included in the MID Air Navigation Strategy, as reflected in the Table below:

B0 – ACDM: Improved Airport Operations through Airport-CDM				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented improved airport operations through airport-CDM Supporting metric: Number of applicable international aerodromes having implemented improved airport operations through airport-CDMimplemented as required.	40% by Dec. 2017As	None

4.23 The meeting reviewed and updated the B0-ACDM Implementation Monitoring Table at **Appendix 4D**.

4.24 The meeting noted that the difficulties/challenges in implementation of this module include lack of guidance material and awareness, lack of coordination procedures, financial constraints, unavailability of IT supporting systems in the airports, lack of qualified human resources and training.

4.25 In connection with the above, the meeting noted that the ICAO MID Regional Office will organize a Workshop on A-CDM implementation in October 2015.

B0-FICE

4.26 The meeting noted that three (3) elements have been included in the MID Region Air Navigation Strategy under B0-FICE, as follows:

4.26.1 **AMHS Capability:** The meeting noted that AMHS is already implemented in: Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan and UAE.

4.26.2 **AMHS Implementation/interconnection:** The AMHS is already implemented and interconnected in Six (6) States (Egypt, Jordan, Oman, Qatar, Saudi Arabia, and UAE). It was highlighted that the 20% gap with the agreed performance target, is expected to be achieved as soon as Bahrain, Kuwait and Sudan complete the interconnection. The meeting urged States, that have not yet done so, to complete the interconnection and request support from the MIDAMC, as deemed necessary.

4.26.3 **Implementation of AIDC/OLDI between adjacent ACCs:** The meeting noted with concern that the status of implementation of AIDC/OLDI is far below the agreed target. The meeting recalled that the ICAO MID Regional Office conducted a Seminar in March 2014 to assist States in implementing AIDC/OLDI (Ground-Ground Integration) and the MSG/4 meeting endorsed the MID Region Strategy for the implementation of AIDC/OLDI, which is a comprehensive package to support implementation.

4.27 The meeting agreed that in order to achieve the target, States need to follow the steps in MID Region Strategy for the implementation of AIDC/OLDI. Accordingly, the meeting urged States to work closely with the focal points to expedite the implementation and provide the ICAO MID Regional Office with regular progress reports. It was also highlighted that bilateral meetings/workshops could also expedite the implementation, since most of the States have the necessary capabilities in the systems.

4.28 The meeting reviewed and updated the status of implementation of the B0-FICE as at **Appendix 4E** and agreed to include it in Volume III of the MID eANP. It was highlighted that the CNS SG is the main Regional monitoring body for the collection of data related to the B0-FICE implementation in the MID Region.

4.29 The meeting reviewed and updated the status of implementation of the different elements of the ASBU Module B0-FICE included in the MID Air Navigation Strategy, as reflected in the Table below:

Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***	***Status***
AMHS capability	*All States*	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	70% of States with AMHS capability by Dec. 2017	60% (9 States)
AMHS implementation /interconnection	*All States*	Indicator: % of States with AMHS implemented (interconnected with other States AMHS) Supporting metric: Number of States with AMHS implemented (interconnections with other States AMHS)	60% of States with AMHS interconnected by Dec. 2017	40% (6 States)

Implementation of AIDC/OLDI between adjacent ACCs	*All ACCs*	Indicator: % of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with neighboring ACCs Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70% by Dec. 2017	29% (4 FIRs out of 14 FIRs)

4.30 The meeting noted with appreciation that in addition to the implementation of AIDC/OLDI between ACCs, the following States have implemented AIDC/OLDI between ACCs and Approaches (Qatar, Saudi Arabia and UAE). The meeting encouraged States to continue this type of implementation, since the transfer of communication in a data link environment improves efficiency and reduces ATC workload.

B0-DATM

4.31 The meeting recalled that the MIDANPIRG AIM Sub-Group is the main Regional monitoring body for the collection of data related to the B0-DATM implementation in the MID Region. The main data collection mechanism on the implementation would be through the MID eANP and the AIM Sub-Group.

4.32 The meeting noted that, as a follow-up action to MIDANPIRG/14 Conclusion 14/19, the MSG/4 meeting, through MSG Conclusion 4/17, urged States to develop their National AIM implementation Roadmap. In this respect, it was highlighted that, so far, eleven (11) States have provided their AIM National Plans and/or Roadmap to the ICAO MID Regional Office.

4.33 The meeting noted that based on a survey which was carried out by the ICAO MID Regional Office in 2011 (State Letter Ref.: AN 8/4 – 11/091 dated 14 April 2011) and as per agreed by AIM SG/1 meeting (Cairo, Egypt, 6-8 May 2014), competent *Human Resource* and the *Financial Issues* are the most critical challenges faced by the States in the Transition from AIS to AIM.

4.34 The meeting reviewed and updated the status of implementation of the different elements of the ASBU Module B0-DATM included in the MID Air Navigation Strategy, as reflected in the Table below:

B0 – DATM: Service Improvement through Digital Aeronautical Information Management				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
1- National AIM Implementation Plan/Roadmap	*All States*	Indicator: % of States that have National AIM Implementation Plan/Roadmap Supporting Metric: Number of States that have National AIM Implementation Plan/Roadmap	80% by Dec. 2016 90% by Dec. 2018	73% (11 States)
2-AIXM	*All States*	Indicator: % of States that have implemented an AIXM-based AIS database Supporting Metric: Number of States that have implemented an AIXM-based AIS database	60% by Dec. 2015 80% by Dec. 2017 100% by Dec. 2019	47% (7 States)

3-eAIP	*All States*	Indicator: % of States that have implemented an IAID driven AIP Production (eAIP) Supporting Metric: Number of States that have implemented an IAID driven AIP Production (eAIP)	60% by Dec. 2016 80% by Dec. 2018 100% by Dec. 2020	27% (4 States)
4-QMS	*All States*	Indicator: % of States that have implemented QMS for AIS/AIM Supporting Metric: Number of States that have implemented QMS for AIS/AIM	70% by Dec. 2016 90% by Dec. 2018	53% (8 States)
5-WGS-84	*All States*	Indicator: % of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Supporting Metric: Number of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Indicator: % of States that have implemented WGS-84 Geoid Undulation Supporting Metric: Number of States that have implemented WGS-84 Geoid Undulation	Horizontal: 100% by Dec. 2017 Vertical: 90% by Dec. 2018	87% (13 States) 80% (12 States)
6-eTOD	*All States*	Indicator: % of States that have implemented required Terrain datasets Supporting Metric: Number of States that have implemented required Terrain datasets Indicator: % of States that have implemented required Obstacle datasets Supporting Metric: Number of States that have implemented required Obstacle datasets	Area 1 : Terrain: 50% by Dec. 2015, 70% by Dec. 2018 Obstacles: 40% by Dec. 2015, 60% by Dec. 2018 Area 4: Terrain: 50% by Dec. 2015, 100% by Dec. 2018 Obstacles: 50% by Dec. 2015, 100% by Dec. 2018	Area 1: Terrain: 40% (6 States) Obstacles: 33% (5 States) Area 4: Terrain: 40% (6 States) Obstacles: 33% (5 States)
7-Digital NOTAM*	*All States*	Indicator: % of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM Supporting Metric: Number of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM	80% by Dec. 2016 90% by Dec. 2018	60% (9 States)

4.35 The MID eANP Volume III Tables related to B0-DATM, as updated by the meeting, are at **Appendix 4F.**

B0-AMET

4.36 The meeting noted that the MIDANPIRG MET Sub-Group is the main Regional monitoring body for the collection of data related to the B0-AMET implementation in the MID Region. The main data collection mechanism on the implementation would be through the MET Sub-Group and the MID eANP.

4.37 With reference to the implementation of QMS for MET, the meeting noted that, implementation challenges may include human resource constraints and the need for QMS to be placed as a priority by the responsible Administration/Organization.

4.38 The meeting reviewed and updated the status of implementation of the different elements of the ASBU Module B0-AMET included in the MID Air Navigation Strategy, as reflected in the Table below:

B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety				
Elements	**Applicability**	**Performance Indicators/Supporting Metrics**	**Targets**	**Status**
1- SADIS 2G and Secure SADIS FTP	*All States*	Indicator: % of States that have implemented SADIS 2G satellite broadcast or Secure SADIS FTP service Supporting Metric: Number of States that have implemented SADIS 2G satellite broadcast or Secure SADIS FTP service	90% by Dec. 2015 100% by Dec. 2017	87% (13 States)
2-QMS	*All States*	Indicator: % of States that have implemented QMS for MET Supporting Metric: Number of States that have implemented QMS for MET	60% by Dec. 2015 80% by Dec. 2017	53% (8 States)

4.39 The MID eANP Volume III Tables related to B0-AMET, as updated by the meeting, are at **Appendix 4G.**

B0-FRTO

4.40 The meeting recognized that the monitoring of the implementation of B0-FRTO has been a difficult task, which requires effective cooperation and contribution from all concerned stakeholders. In this regard, the meeting reviewed the Draft Monitoring and Reporting Table for the implementation of B0-FRTO at **Appendix 4H**, which was developed by the ANP WG/2 meeting. Accordingly, the meeting agreed that the Table be included in Volume III of the MID eANP and to be used by the ATM SG/2 meeting for the determination of the status of implementation of the B0-FRTO.

4.41 The meeting reviewed the outcome of the ATM SG/1 meeting (Cairo, Egypt, 9-12 June 2014) related to Civil/Military Cooperation and Flexible Use of Airspace (FUA). The meeting recalled that the 38th ICAO General Assembly, through Resolution A38-12, emphasized that the airspace is a resource common to both Civil and Military Aviation. Moreover, the 38th Assembly recalled that the ICAO Global ATM Operational Concept States that all airspace should be a usable resource, any restriction on the use of any particular volume of airspace should be considered transitory, and all airspace should be managed flexibly.

4.42 The meeting recalled that MIDANPIRG/14, through Conclusions 14/12 and 14/13, urged States to take necessary measures to foster the implementation of Civil/Military Cooperation and to implement the FUA concept through strategic Civil/Military Coordination and dynamic interaction, in order to open up segregated airspace when it is not being used for its originally-intended purpose and allow for better airspace management and access for all users.

4.43 Based on the above, the meeting urged States to take necessary measures to implement the provisions of the Resolution A38-12 and MIDANPIRG/14 Conclusions 14/12 and 14/13 and provide the ICAO MID Regional Office with an update on the action(s) undertaken before **1 May 2015**.

4.44 The meeting recalled that MIDANPIRG/14, through Conclusion 14/14, established the MID Civil/Military Go-Team. Based on the outcome of the ATM SG/1 meeting, it was agreed to "Support Team" is more appropriate than "Go-Team". The meeting reviewed the Draft Objective and Working Arrangements for the MID Civil/Military Support Team at **Appendix 4I**.

4.45 Based on the above, the meeting agreed to the following Draft Conclusion which is proposed to replace and supersede the MIDANPIRG/14 Conclusion 14/14:

DRAFT CONCLUSION 1/1: MID CIVIL/MILITARY SUPPORT TEAM

That, a MID Civil/Military Support Team be established with a view to expedite the implementation of the Flexible Use of Airspace (FUA) Concept in the MID Region.

4.46 The meeting recognized the need for an awareness campaign to promote the implementation of the FUA Concept in the MID Region. Accordingly, the meeting encouraged States to request the ICAO MID Regional Office to arrange for a Civil/Military Support Team visit, whose programme would include a Workshop on Civil/Military Cooperation and FUA.

B0-NOPS

4.47 The meeting noted that the MSG/4 meeting recalled that Air Traffic Flow Management (ATFM) has been identified as one of the global air navigation priorities and agreed that the ASBU Block 0 NOPS be added to the list of priority 1 ASBU Block 0 Modules in the MID Region Air Navigation Strategy. The meeting agreed also that the subject be further addressed by the ATM Sub Group with a view to reach a final decision with regard to the necessity, feasibility, cost benefit analysis and timelines related to the eventual implementation of a regional/sub-regional ATFM system, which might be considered by the MAEP Board.

4.48 The meeting noted that the First meeting of the MAEP Steering Committee (MAEP SC/1) (Dubai, UAE, 20-22 January 2015) agreed to include in the MAEP Master Plan a project related to a regional/sub-regional ATFM system.

4.49 The meeting agreed that the ATM SG develop a Table for the reporting and monitoring of the implementation of the B0-NOPS elements.

4.50 Based on the above, the meeting urged States to provide the ICAO MID Regional Office with their plans related to the implementation of the B0-NOPS.

B0-ACAS

4.51 The meeting noted that for the implementation of B0-ACAS the States need to mandate the carriage of the TCAS version 7.1 through appropriate regulations.

4.52 The meeting reviewed and updated the status of implementation of the ASBU Module B0-ACAS element included in the MID Air Navigation Strategy, based on the data collected using the Table at **Appendix 4J**. The meeting agreed that this Table be included in Volume III of the MID eANP and be used by the CNS SG for monitoring purpose.

Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***	***Status***
Avionics	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: Number of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons	80% by Dec. 2015 100% by Dec. 2016	40% (6 States)

4.53 The meeting urged States to follow-up with the aircraft operators the implementation of the necessary avionics for their aircraft as described in B0-ACAS and develop/maintain a database related to the carriage of the TCAS v7.1, in accordance with their national regulations, since it will be needed in the near future for the performance dashboards.

B0-TBO

4.54 The meeting noted that the first element of the B0-TBO Module is the transmission of aircraft position information, forming the automatic dependent surveillance contract (ADS-C), principally for use over oceanic and remote areas where radar cannot be deployed.

4.55 The second element is Controller Pilot Data Link Communications (CPDLC) comprising a first set of data link applications allowing pilots and controllers to exchange ATC messages concerning communications management and ATC clearances.

4.56 The meeting reiterated that the implementation of the B0-TBO concerns initially Muscat and Sana'a Flight Information Regions (FIRs) to enhance the exchange of information and communications between air traffic controllers and pilots over the Indian Ocean.

4.57 The meeting was expected to update the status of implementation of the B0-TBO, but due to the absence of Oman and Yemen, the meeting agreed that the ICAO MID Regional Office to follow-up with the concerned States the provision of their plans related to the implementation of the B0-TBO.

Dashboards

4.58 The meeting recalled that the ICAO 38th Assembly approved the regional performance dashboards, since transparency and sharing of information are fundamental to a safe and efficient global air transportation system. These dashboards aim to provide a glance of both Safety and Air Navigation Capacity and Efficiency strategic objectives, using a set of indicators and targets based on the regional implementation of the Global Aviation Safety Plan (GASP) and the Global Air Navigation Plan (GANP). It was highlighted that the dashboards form a framework of nested reporting of results with an increased focus on implementation.

4.59 The meeting was provided with an online demonstration of the performance dashboards that can be accessed on the ICAO website at http://www.icao.int/safety/Pages/Regional-Targets.aspx. The meeting noted that the dashboards currently show the globally agreed indicators and targets related to the global priorities and their status at the regional level.

4.60 The meeting noted that the initial version of the Regional performance dashboards shows, for harmonization purpose, five global core indicators in both safety and air navigation, with either regional or global targets; and does not include, necessarily, all the regional indicators.

4.61 The meeting agreed that the dashboard should reflect also the status of implementation of the regionally agreed priority 1 Block 0 modules. Accordingly, the meeting urged States to provide the ICAO MID Regional Office with necessary data on the implementation of all the priority 1 Block 0 modules and requested ICAO to expedite the upgrade of the dashboards to include all the MID Region-specific indicators, metrics and targets.

4.62 Based on the above, agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/2: REGIONAL PERFORMANCE DASHBOARDS

That,

a) *States be urged to provide the ICAO MID Regional Office with necessary data related to the implementation of all the priority 1 Block 0 modules by **15 April 2015**; and*

b) *ICAO expedite the upgrade of the dashboards to include all the MID Region-specific indicators, metrics and targets.*

Non-ASBU ATM/SAR Implementation Issues

ATS Routes

4.63 The meeting recalled that the effective inter-regional coordination and collaboration between all stakeholders is essential in order to achieve seamless Air Traffic Management and more optimum routes through the airspace. Moreover, the implementation of Performance Based Navigation (PBN) routes can have significant efficiency benefits on flight operations in the Enroute environment.

4.64 The meeting noted that a number of States were still implementing changes to the Regional ATS Route Network without complying with the established procedures for the amendment of the MID Air Navigation Plan (ANP).

4.65 In connection with the above, the meeting noted with concern that the Proposal for Amendment (PfA) Serial No. MID Basic ANP 13/01 – ATM, which was approved by the President of the ICAO Council on 2 August 2013, has not yet been implemented by Egypt and Jordan. Accordingly, the meeting urged the concerned States to take necessary measures in order to resolve this pending issue.

4.66 The meeting commended Bahrain for being the first State in the Region that completed, on 9 January 2014, the implementation of a full RNAV 1 ATS route structure.

4.67 The meeting noted that Bahrain and Iraq are ready to implement the proposed RNAV 1 routes between Bahrain and Iraq through Kuwait FIR (Top Ten Routes TPR 9 and TPR 10, refers). The meeting noted that coordination is ongoing for the implementation of new RNAV routes between Bahrain, Kuwait and Iraq.

4.68 The meeting noted that Iran and Iraq restricted the use of G202 to certain airlines, which obliged Users to fly longer routes via Kuwait or Turkey. Accordingly, the meeting urged the concerned States to remove the restriction on the use of the Route G202.

4.69 In accordance with MIDANPIRG/14 Conclusion 14/11, the meeting reviewed the Top Ten Routes at **Appendix 4K**. The meeting agreed to include TPR 2, TPR5, TPR 6 and TPR 7 in the MID Basic ANP Table ATS 1- ATS Route Network.

4.70 Based on the above, the meeting urged concerned States to implement the Top Ten Routes and provide the ICAO MID Regional Office with an update on the actions undertaken by **1 May 2015.**

4.71 The meeting reviewed and updated the Draft Proposal for Amendment of the MID Basic ANP -Table ATS 1 at **Appendix 4L,** and agreed accordingly to the following Draft Conclusion:

DRAFT CONCLUSION 1/3: PROPOSAL FOR AMENDMENT TO THE MID BASIC ANP TABLE ATS 1

*That, the ICAO MID Regional Office issue a Proposal for Amendment to the MID Basic ANP (Doc 9708) in order to update the Table ATS 1, as at **Appendix 4L**.*

4.72 The meeting noted that the MID ATS Route Catalogue, as updated by the ATM SG/1 meeting, is available on the ICAO MID website: (https://portal.icao.int/RO_MID/Pages/eDocs.aspx).

4.73 The meeting invited States to take into consideration the proposed routes contained in the routes Catalogue in their planning process for the improvements of the ATS route structure.

4.74 The meeting emphasized the importance of a regional solution to enhance the MID Region ATS route network, rather than to concentrate on local improvements. In this regard, the meeting agreed that this could be achieved through the MID Region ATM Enhancement Programme (MAEP) with the implementation of the MID ATS Route Network Optimization Project (ARNOP).

4.75 The meeting noted that the third meeting of the Ad-hoc Afghanistan Contingency Group (AHACG/3) will be held in Muscat, Oman, from 11 to 14 May 2015. The meeting urged concerned States to attend this meeting, which will provide an opportunity to discuss inter-regional issues and agreement on necessary contingency arrangements for implementation in the event of the discontinuation of the ATS in Kabul FIR.

ACC LoA Template

4.76 The meeting recognized that the main purpose of the Letter of Agreement (LOA) Template between the adjacent Air Traffic Services Units (ATSUs) is the achievement of a high level of uniformity in respect of operational requirements throughout the MID Region, which will ensure the harmonization of the coordination procedures to be applied between two Area Control Centres (ACCs). Moreover, The LoA Template will assist the MID Air Traffic Service Providers in drafting their operational LoAs.

4.77 The meeting noted that the Draft LoA Template, at **Appendix 4M**, was prepared based on the Eurocontrol guidelines "Common Format Letter of Agreement between Air Traffic Service Units" *Edition 4, which are* available on EUROCONTROL website*:* (http://www.eurocontrol.int/sites/default/files/field_tabs/content/documents/nm/airspace/airspace-atmprocedures-common-format-loa-4.0.pdf).

4.78 The meeting reviewed the proposed Draft LoA Template and agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/4: LETTER OF AGREEMENT TEMPLATE TO BE USED BY ATS UNITS IN THE MID REGION

*That, States be urged to provide the ICAO MID Regional Office with their inputs and comments related to the Draft Letter of Agreement Template at **Appendix 4M** by **1 April 2015**, in order to consolidate the final version of the Template for endorsement by MIDANPIRG/15.*

SSR Codes

4.79 The meeting recalled that the Middle East Secondary Surveillance Radar (SSR) Code Management Plan (CMP) was endorsed by MIDANPIRG/13 through Conclusion 13/7, based on the outcome of the SSR Code Allocation Study Group (SSRCA SG).

4.80 The meeting reviewed a revised version of the MID SSR CMP and the MID eANP, Volume II, Table ATM II-MID-2 – *MID SSR Code Allocation List*, at **Appendices 4N** and **4O**, respectively, reflecting the SSR codes allocated to Libya and Sudan. Potential conflicts were identified as follows:

- 0100-0177: allocated for Transit use to Sudan and for Domestic use to Saudi Arabia;
- 4000-4077: allocated for Transit use to Libya and Oman;
- 5200-5277: allocated for Transit use to Saudi Arabia and for Domestic use to Sudan; and
- 5300-5377: should be reserved for temporary Transit use, it was allocated to Sudan for Domestic use.

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

DRAFT CONCLUSION 1/5: MID SSR CODE MANAGEMENT PLAN (CMP)

That,

a) States (regulator and service provider) be urged to take necessary measures to ensure strict compliance with the procedures included in the MID SSR CMP; and

b) ICAO prepare a revised version of the MID SSR CMP, for endorsement by MIDANPIRG/15, to solve the conflicts identified subsequent to the transfer of Libya and Sudan from the AFI to the MID ANP.

Second MID Air Navigation Environmental Report

4.82 The meeting recalled that the implementation of operational improvements will generally have benefits in areas such as improved airport and airspace capacity, shorter cruise, climb and descent times through the use of more optimized routes and an increase of unimpeded taxi times. These improvements have the potential to reduce fuel burn and lower levels of pollutants.

4.83 The meeting was apprised of the outcome of the APM TF/2 meeting and the progress report on the development of the Draft Second MID Air Navigation Environmental Report.

4.84 The meeting noted with concern that the provisions of the MIDANPIRG/14 Conclusion 14/29 have not been implemented, despite the follow-up actions undertaken by the ICAO MID Regional Office, in particular the issuance of the State Letter Ref: AN 6/15-14/247 dated 23 September 2014, urging States and Users to provide the ICAO MID Regional Office with their data related to the environmental benefits accrued from the implementation of operational improvements, before 20 October 2014, in order to be incorporated in the Second MID Air Navigation Environmental Report, which was supposed to be developed by the APM TF/2 meeting.

4.85 In connection with the above, the meeting raised concern related to the low level of attendance to the APM TF meetings by the MID States.

4.86 It was highlighted that only Bahrain, Jordan, Kuwait, Lebanon, and UAE provided a list of their planned/implemented operational improvements. Nevertheless, it was underlined that the IFSET Reports related to these operational improvements should have been generated, which necessitates additional information to be provided by the concerned States.

4.87 Based on the above, the meeting emphasized that the contribution of States and Users to the work programme of the APM TF is essential in particular for the development of the Air Navigation Environmental Report. Accordingly, the meeting urged Sates and Users to support the Task Force and ensure the implementation of the provisions of the MIDANPIRG Conclusion 14/29.

4.88 Due to the low level of inputs received, the meeting agreed that the Draft Second MID Region Air Navigation Environmental Report would be consolidated by the Secretariat and presented to the MIDANPIRG/15 meeting for endorsement. Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/6: SECOND MID REGION AIR NAVIGATION ENVIRONMENTAL REPORT

*That, States and Users be urged to provide their inputs/IFSET Reports to the ICAO MID Regional Office, before **1 April 2015**, for the development of the Second MID Region Air Navigation Environmental Report to be consolidated by the Secretariat for presentation to the MIDANPIRG/15 meeting, for endorsement.*

4.89 The meeting agreed that the reporting period for the development of the MID Region Air Navigation Environmental Report should be as follows:

a) 2009-2011: just a listing of the operational improvements which have been implemented during this period and which had environmental benefits;

b) 2012-2014: period to be used for the generation of the Second Regional IFSET Report; and

c) 2015 and beyond: listing of planned operational improvements which will have environmental benefits.

4.90 The meeting noted with appreciation that Bahrain issued AIP SUP Nr. 17/14 effective date 14 November 2014, related to the implementation of Single Engine Taxi Operations at Bahrain International Airport. In accordance with the survey conducted by Bahrain, emissions may vary between 22,000kg for medium category two engines aircraft and 88,000kg for heavy four engines aircraft. Accordingly, the meeting encouraged States to implement, as practicable, Single Engine Taxi Operations at their International Aerodromes and agreed to the following Draft Conclusion emanating from the APM TF/2 meeting:

DRAFT CONCLUSION 1/7: SINGLE ENGINE TAXI OPERATIONS

That,

a) States be encouraged to implement Single Engine Taxi Operations at their International Aerodromes, as practicable; as a possible measure for the reduction of CO_2 emissions; and

b) Bahrain be encouraged to share their experience on the subject with other States, as required.

4.91 The meeting encouraged States to organize at national level workshops related to the estimation of environmental benefits accrued from operational improvements with the support of ICAO and other interested stakeholders.

Outcome of the MAEP SC/1 meeting

4.92 The meeting was apprised of the outcome of the First Meeting of the MID Region ATM Enhancement Programme Steering Committee (MAEP SC/1), held in Dubai, UAE, from 20 to 22 January 2015.

4.93 The meeting noted that the MAEP SC/1meeting reviewed and updated the Scope and Strategic Objective of MAEP and recognized the need for the development of a MAEP Master Plan to drive the modernization and enhancement of the ATM operations in the MID Region for the period 2016-2028. The MAEP Master Plan will be a high level document providing essential information on the programme including the identified/agreed projects and associated outcomes, benefits, timelines, etc.

4.94 The MAEP SC/1 meeting reviewed the Draft MAEP Memorandum of Agreement (MOA), consolidated based on the inputs and comments received from all Stakeholders. In this regard, the meeting recognized that the current version of the MOA is mature enough to be presented, for endorsement by the DGCA-MID/3 meeting (Doha, Qatar, 27-29 April 2015). However, considering that several States have not yet provided their comments on the MOA (pending release by their Legal Departments), the meeting agreed that the deadline to provide comments to the ICAO MID Regional Office be extended to **1 April 2015**, with the understanding that "no reply means no comment" and concurrence with the current version of the MOA.

4.95 The meeting noted that the ICAO MID Regional Office issued State Letter Ref: AN 6/31 – 15/049 dated 9 February 2015, as a follow-up action to the MAEP SC/1 Draft Conclusion 1/1 and urged States to follow-up with their relevant authorities the review of the MAEP MOA and the provision of their comments, if any, to the ICAO MID Regional Office, before **1 April 2015**.

4.96 The meeting noted that the MAEP SC/1 meeting discussed options related to the funding of the MAEP projects. The meeting agreed that securing funds through indirect or direct contribution would support and ensure the implementation of the agreed MAEP projects in an expeditious manner. The meeting agreed that this should be further explored by the MAEP Board.

4.97 The MAEP SC/1 meeting reviewed the Draft MAEP Management Service Agreement (MSA) and the Draft MAEP Project Document (ProDoc), prepared by the Secretariat based on the templates provided by the ICAO Technical Cooperation Bureau (TCB). The meeting did not have major comments on the Draft MSA, however, it was highlighted that the Draft ProDoc needs further review, inputs and enhancements. Accordingly, the meeting agreed, through Draft Decision 1/2, to establish an Action Group, to review and finalize the Draft MAEP ProDoc and eventually the Draft MSA, before 1 April 2015. The meeting noted with appreciation that Bahrain, Egypt, Iran, Kuwait, Oman, Saudi Arabia and UAE will support the Action Group.

4.98 The meeting noted that the MAEP SC/1 meeting agreed to include in the MAEP Master Plan the following projects:

- MID ATS Route Network Optimization project (ARNOP)
- MID Flight Procedure Programme (MID FPP);
- MID Integrated Flight Plan Processing System (MID IFPS);
- MID IP Network; and
- MID Regional/Sub-regional ATFM system.

4.99 The MAEP SC/1 meeting was apprised of the progress of the MID Region AIM Database (MIDAD) project. In this respect, the meeting noted that a contract was signed with ITV on 10 February 2014 for the development of the specifications for the MIDAD Detailed Study. It was also highlighted with appreciation that Bahrain, Qatar, Saudi Arabia and UAE covered the cost of the mentioned contract on the basis of equal contribution. The meeting agreed that based on the results of the MIDAD detailed study, the MAEP SC would consider the inclusion of MIDAD (implementation phase) as a project under the framework of MAEP.

4.100 It was highlighted that in order to move forward with the agreed projects, detailed business plans should be developed by the MAEP PMO.

4.101 The meeting noted that the MAEP SC/1 meeting agreed that in addition to the above projects some "quick-wins" initiatives need to be identified and implemented in the short-term. In this respect, the meeting received with appreciation a proposal by IATA related to an initiative to reduce call sign confusion in the MID Region. The meeting agreed that an implementation outline should be developed for this initiative in coordination with relevant MIDANPIRG and RASG-MID subsidiary bodies.

4.102 The MAEP SC/1 meeting recognized that the process of establishment of the MAEP PMO might take long time. In order not to lose momentum and based on a proposal made by AACO/IATA, the meeting agreed that, until the formal establishment of the MAEP PMO, a MAEP Core Team should be established to act as an Interim PMO.

4.103 The MAEP SC/1 meeting noted with appreciation that AACO, CANSO and IATA are willing to support the Interim PMO. Accordingly, the meeting agreed to the following Draft Decision:

DRAFT DECISION 1/3: MAEP INTERIM PMO

That, until the formal establishment of the MAEP PMO:

a) the MAEP Core Team composed of IATA, AACO, CANSO, ICAO, the MAEP Board Chairperson and MAEP SC Co-Chairpersons, act as an Interim PMO; and

b) IATA is designated as the Team Leader of the MAEP Core Team.

4.104 The MAEP SC/1 meeting agreed that the first set of tasks to be performed by the Interim PMO includes mainly:

- development of an initial version of the MAEP Master Plan, for presentation to DGCA-MID/3 meeting;
- identification of additional quick-wins initiatives;
- exploration of viable options for the funding of MAEP and its projects;
- support and monitor the implementation of the call sign initiative; and
- coordination with all concerned stakeholders to initiate Phase 1 of the ARNOP project.

4.105 Based on the above, the meeting encouraged States to support the MAEP Interim PMO in executing its tasks, mainly through the provision of required information in a timely manner.

4.106 It was highlighted that the MAEP Board/2 meeting could not be convened before the signature of the MAEP MOA by at least eight (8) States. Accordingly, the MAEP SC/1 meeting agreed that based on the outcome of the DGCA-MID/3 meeting and the number of States that will sign the MOA, ICAO and the MAEP Board and SC Chairpersons will decide if the meeting planned to be held in Cairo, Egypt, 20-22 October 2015, will be a Board or SC meeting or a combination of both.

Search and Rescue Issues

4.107 The meeting reviewed the outcome of the ATM SG/1 meeting related to Search and Rescue (SAR).

4.108 The meeting noted that through Draft Decision 1/8, the ATM SG/1 meeting established a MID SAR Action Group composed of SAR Experts from volunteer States and ICAO.

4.109 The meeting noted with appreciation that the SAR AG developed a draft SAR bilateral Arrangements Template to be used by the adjacent ACCs in the MID Region. The Template is attached to the ACC Letter of Agreement Template. The meeting also reviewed and updated the Draft Matrix at **Appendix 4P** developed by the SAR AG for the consolidation and analysis of the status of SAR services in the MID Region.

4.110 The meeting noted that the SAR deficiencies in the MID Region concern mainly the:

a) lack of signature of SAR agreements;
b) lack of plans of operations for the conduct of SAR operations and SAR exercises;
c) training of SAR personnel and SAR inspectorate staff;
d) lack of provision of required SAR services; and
e) non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

4.111 The meeting was apprised of the outcome of the ICAO/IMO Search and Rescue-Global Maritime Distress and Safety System Conference (ICAO/IMO SAR GMDSS Conference), held in Bahrain 21-22 October 2014. The Conference was hosted by Bahrain and dedicated to the Gulf Cooperation Council (GCC) States. The Conference Recommendations are at **Appendix 4Q**.

4.112 The meeting noted that ACAC and ICAO are planning to organize a joint SAR Workshop in Morocco, in May 2015, back-to-back with a full scale exercise that will be conducted by the Moroccan relevant authorities. Accordingly, the meeting encouraged States to attend this Workshop and share their experience related to SAR.

4.113 The meeting emphasized the importance of the conduct of regional/sub-regional SAR training exercises. Accordingly the meeting agreed to the following Draft Decision:

DRAFT DECISION 1/8: MID REGIONAL/SUB-REGIONAL SEARCH AND RESCUE TRAINING EXERCISES

That, the ATM Sub-Group develop an action plan for the conduct of regional/sub-regional SAR training exercises.

4.114 The meeting reviewed and updated the status of SAR bilateral arrangements between ANSPs/ACCs, the list of the MID SAR Point of Contact (SPOC) for the reception of the COSPAS-SARSAT messages and the List of MID SAR Focal Points, at **Appendices 4R, 4S and 4T**, respectively.

4.115 The meeting was apprised of the global developments related to SAR, such as the recommendations emanating from the Multidisciplinary Meeting on Global Flight Tracking (MMGFT) (Montreal, Canada, 12-13 May 2014) related to flight tracking issues, and the outcome of the Second High Level Safety Conference 2015 (HLSC 2015) (Montreal, Canada, 2-5 February 2015) related to SAR.

4.116 The meeting noted the developments related to global flight tracking, which were initiated during the MMGFT following the disappearance of the Malaysia Airlines Flight MH370. The MMGFT meeting concluded that global flight tracking should be pursued as a matter of urgency and as a result, two groups were formed; the ICAO ad hoc Working Group, which developed a concept of operations to support future development of a Global Aeronautical Distress and Safety System (GADSS) and the Aircraft Tracking Task Force (ATTF), an industry-led group under the ICAO framework that identified near-term capabilities for normal flight tracking using existing technologies.

4.117 The meeting encouraged States to take into consideration the recommendations of the MMGFT meeting and the HLSC 2015.

<u>Non-ASBU CNS Implementation Issues</u>

4.118 The meeting was apprised of the CNS SG/6 meeting outcome related to non-ASBU CNS implementation issues.

MID Aeronautical Fixed Services

4.119 The meeting recalled that in accordance with MIDANPIRG/14, Conclusion 14/21, the CNS SG/6 meeting, through Draft Conclusion 6/1, agreed that the first AIRAC date following the training of the MID States key users be officially declared as the date of operation of the MIDAMC.

4.120 The meeting noted that the MIDAMC training was successfully conducted from 5 to 7 January 2015 at the IATA premises in Amman, Jordan. Accordingly, the ICAO MID Regional Office issued State letter Reference AN 7/5.1–15/041, dated 04 February 2015 announcing the official operation of the MIDAMC, effective 05 February 2015.

4.121 The meeting urged States to expedite their AMHS implementation and discouraged the implementation of AFTN and CIDIN Circuits specially at International level and agreed that the replacement of the AFTN or CIDIN connections between States by AMHS links shall be based on ICAO Standards and Guidance Material (ICAO Doc 9880 and the ICAO EUR DOCs 020 and 021). Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/9: AFTN/CIDIN AFS CONNECTIVITY AND AMHS IMPLEMENTATION

That State be urged to:

a) refrain establishing new AFTN and CIDIN connections at the International level;

b) gradually phase out the current connections based on AFTN or CIDIN standards; and

c) to expedite their AMHS implementation.

4.122 The meeting noted that some circuits in the MID Regional AFTN plan contained in the MID FASID Doc 9708, had not been implemented since long time and these connections were replaced by other circuits to meet the AFTN requirements in the MID Region.

4.123 The meeting reviewed and updated, the MID FASID Table CNS 1A as at **Appendix 4U** and agreed that the ICAO MID Regional Office process a proposal for amendment to the MID ANP, Volume II (FASID), to amend the Table CNS1A, in accordance with standard procedure. Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/10: PROPOSAL FOR AMENDMENT TO THE MID FASID – AFTN PLAN

That, the ICAO MID Regional Office process a proposal for amendment to the MID ANP, Volume II (FASID), to amend the Table CNS1A as at ***Appendix 4U****, in accordance with standard procedure.*

Aeronautical Frequency Issues

4.124 The meeting noted that the ITU WRC-15 meeting is scheduled to be held in Geneva at the end of 2015. In this regard, the ICAO position to WRC-15 was sent to States and concerned Organization as Attachment B to State letter E 3/5.15-13/57.

4.125 The meeting noted that the DGCA-MID/2 meeting urged States to ensure continuous coordination with their Radio Frequency Spectrum Regulatory Authorities (telecommunications authorities) and the regional groupings such as the Arab Spectrum Management Group (ASMG) for the support of the ICAO position at WRC and its preparatory meetings.

4.126 The meeting reiterated the importance that the Civil Aviation Authorities coordinate with their respective Frequency Regulatory Authorities and attend the regional preparatory meetings and the WRC-15 to ensure that the approved ICAO Position is supported. In view of the foregoing, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/11: SUPPORT ICAO POSITION TO WRC-15

That, States be urged to:

a) support the ICAO Position to the WRC-15;

b) make necessary arrangements for the designated Civil Aviation Personnel to participate actively in the preparatory work for WRC-15 at the national level; and

c) *attend the preparatory regional spectrum management groups meetings and WRC-15 to support and protect aviation interests.*

4.127 The meeting noted that the ICAO MID Regional Office with support from ICAO HQ will organize "Aeronautical Frequency Spectrum Workshop -WRC-15 preparation" in Cairo, 16- 17 February 2015, and back-to-back there will be the AFSM WG-F/32 meeting from 18 to 24 February 2015. In this regard, the meeting urged States to attend the Workshop along with their Telecommunication Regulatory Authorities (TRAs) in order to gain in-depth knowledge on aeronautical frequency spectrum issues and be prepared to support the ICAO Position at the WRC-15.

4.128 The meeting was apprised of the program for managing, assessing compatibility and presenting frequency assignments called Frequency Finder developed by ICAO. The meeting recognized the necessity for training on the use of the new program. Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/12: WORKSHOP ON THE USE OF THE ICAO FREQUENCY FINDER

That, ICAO consider the inclusion of a Workshop on the use of the new Frequency Finder in the work programme of 2016.

Use of Flight Plan "Converters" to Process the ICAO New FPL

4.129 The meeting noted that as a follow-up action to MIDANPIRG/14 Conclusion 14/25, the ICAO MID Regional Office issued State Letter Ref.: AN 6/2B –14/122 dated 4 May 2014 requesting concerned States to take necessary measures to upgrade their systems and provide the ICAO MID Regional Office with an update on the action(s) undertaken not later than 30 June 2014.

In this respect, the meeting noted with concern that the following States (Egypt, Iran, Iraq, Libya, Saudi Arabia, Syria and Yemen) are still using converters.

4.130 The meeting noted that, as a follow-up action to the CNS SG/6 Draft Conclusion 6/10, the ICAO MID Regional Office issued a second follow-up State Letter Ref.: AN 6/2B – 15/039 dated 3 February 2015 requesting the concerned States to provide their action plans. The meeting reiterated the importance of upgrading the Flight Data Processing Systems (FDPS) to take full benefit from the information included in the INFPL and urged the concerned States to take necessary actions.

GNSS Implementation in the MID Region

4.131 The meeting recognized that the introduction of GNSS multi-constellation, multi-frequency will entail number of new technical and regulatory challenges beyond those already associated with current GNSS implementation.

4.132 The meeting noted a GNSS Seminar would be organized jointly by ACAC and ICAO tentatively from 20 to 21 April 2015, to address the augmentation systems (ABAS, GBAS and SBAS), and Multi-constellations. Accordingly, the meeting encouraged States and IATA to participate actively in the Seminar. It was highlighted that coordination is still going on with ACAC to agree on the exact date and venue.

4.133 The meeting recognized that frequency interference-free operation of GNSS is essential, and that the frequency band 1 559 - 1 610 MHz, is used for elements of GNSS and recalled that the International Telecommunication Union (ITU) process, allows under footnotes No. 5.362B and 5.362C the operation of fixed service in some States on a secondary basis until 1 January 2015.

4.134 The meeting noted that the following States (Iraq, Jordan, Qatar, Saudi Arabia, Sudan, Syria and Yemen) still have their names in the footnotes 5.362B and/or 5.362C. In this regard, the meeting recalled MIDANPIRG/13, Conclusion 13/44: Protection of GNSS Signal, and urged the concerned States to delete their name from these footnotes.

4.135 The meeting was informed that EUR FMG carried out a review of potential sources of non-intentional GNSS Radio Frequency Interference (RFI) that may affect GNSS frequencies. It was noted that future GNSS multi-constellation/dual-frequency receivers are expected to provide significant mitigation against GNSS vulnerability. However, it will not provide a full mitigation and it is important to assess and address all vulnerabilities to threats that may impact safety of GNSS-based operations.

4.136 In view of the above, the FMG conducted a review of existing and new material on GNSS vulnerabilities. As a result, some guidance material was collated as at **Appendix 4V**, that would provide guidance to States when establishing and enforcing their regulatory provisions on the use of GNSS, in particular regulating the use of pseudolites and GNSS repeaters that may have potential safety impact on GNSS. In addition, GNSS jammers and spoofers are seen as significant threats to GNSS.

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

DRAFT CONCLUSION 1/13: GNSS RADIO FREQUENCY INTERFERENCE ISSUES

*That, States be invited to use the guidance at **Appendix 4V** for the development/amendment of their regulatory provisions related to the use of GNSS in particular those related to pseudolites and GNSS repeaters.*

ADS-B Implementation in the MID Region

4.138 The meeting recognized that ADS-B is one of the key technologies included in the GANP which supports many ASBU Modules in particular ASUR, SNET, ASEP, and OPFL.

4.139 The meeting noted that, in accordance with MIDANPIRG/14 Conclusion 14/27, the MSG/4 meeting reiterated that States share surveillance data and mainly the ADS-B when available to enhance safety, increase efficiency and achieve seamless surveillance. Accordingly, as a follow-up action to the MSG Conclusion 4/15, the ICAO MID Regional Office issued State Letter Ref.: AN 8/4.2.1-14/345 dated 29 December 2014, requesting States to provide their plans/progress reports related to ADS-B implementation. The meeting noted that Sudan and UAE are the only States that provided replies.

4.140 The meeting reviewed the Draft Template at **Appendix 4W** and agreed that it should be included in the MID eANP Volume III for the monitoring of the ADS-B out implementation.

REPORT ON AGENDA ITEM 5: AIR NAVIGATION SAFETY MATTERS AND COORDINATION WITH RASG-MID

RVSM

5.1 The meeting was apprised of the outcome of the MIDRMA Board/13 meeting (Bahrain, 9-12 March 2014).

5.2 The meeting noted with appreciation that the MIDRMA completed the validation of LHD Reports necessary for the development of the MID RVSM Safety Monitoring Report (SMR) 2014.

5.3 The meeting noted with concern that some States with high volume of traffic have been still reporting “NIL LHDs”, and that the level of reporting of some States has been unsatisfactory, despite the implementation of the Online LHD Reporting Tool. Accordingly, the meeting agreed that Egypt, Iran, Iraq, Kuwait and Yemen be included in the MIDANPIRG list of air navigation deficiencies.

5.4 The meeting reviewed the Draft MID SMR 2014 and noted that the safety objectives as set out by MIDANPIRG continue to be met. In this regard, the meeting encouraged States to review the MID RVSM SMR 2014 at **Appendix 5A**, and provide their comments, if any, to the MIDRMA. It was highlighted that the Final Report will be presented to MIDNAPIRG/15 for endorsement.

5.5 The meeting noted with appreciation that further to the MIDRMA Board/13 meeting, the MIDRMA purchased two new Enhanced GMU Units, which will improve the monitoring capabilities in the Region.

5.6 In the same vein, it was highlighted that for the first time the Horizontal Overlap Frequency (HOF) was calculated for all the MID RVSM airspace and not only within the congested airspaces, using the MID Risk Analysis Software (MIDRAS), which is developed based on the ICAO methodology.

5.7 The meeting noted the concerns raised by the MIDRMA related to the difficulties they are facing when conducting GMU missions. In this regard, the meeting reiterated the following MIDANPIRG/14 Conclusion:

CONCLUSION 14/37: ARRANGEMENTS FOR THE CONDUCT OF GMU MONITORING MISSIONS

That, prior to the conduct of any GMU monitoring mission:

a) the MIDRMA notify the concerned MIDRMA Board Member; and

b) the MIDRMA Board member is to undertake necessary arrangements at the national level with concerned authorities (CAA, Customs, Security, etc.) to facilitate the MIDRMA Team mission.

5.8 Based on the above, the meeting urged Sates to implement the provisions of the above Conclusion and agreed that this issue should be raised at the DGCA-MID/3 meeting, for appropriate action.

RASG-MID ACTIVITIES AND COORDINATION WITH MIDANPIRG

5.9 The meeting recalled that while RASGs have been established to initially deal with safety issues directly related to flight operations, planning should be initiated as soon as circumstances permit to adopt a systems approach so that RASGs address safety issues from an integrated perspective that includes flight operations, aerodrome and ATM safety.

5.10 The meeting was apprised of the RASG-MID activities. It was highlighted that the second edition of the MID Annual Safety Report (MID-ASR), which was endorsed by the RASG-MID/3 meeting (Kuwait, 27 - 29 January 2014), demonstrated that the top three Focus Areas (FAs) in the MID Region are Runway Safety (RS) including Ground Safety, LOC-I and CFIT (in line with the global priorities).

5.11 The meeting noted that the third meeting of the RASG-MID Steering Committee (RSC/3, Cairo, Egypt, 9 – 11 December 2014) reviewed the third edition of the MID-ASR which will be endorsed by the RASG-MID/4 meeting (Jeddah, Saudi Arabia, 30 March – 1 April 2015). It was highlighted that:

- the MID Region witnesses a stable and continuous growth in traffic volume (1.09 million departures in 2013 comparing to 0.877 million departure in 2009);
- the accident rate in the MID Region has been decreasing continuously since 2009 to 2012 from 14.8 accidents per million departures to 1.9, which is below the global rate 3.1;
- in 2013, the accident rate in the MID Region increased to 3.7 (approximately twice the rate in 2012), which is above the global rate 2.9; and
- the MID Region is the safest Region in terms of fatalities (no fatal accident in 2012 and 2013).

5.12 The following Emerging Risks have been identified: System/Component Failure or Malfunction-Non-Powerplant (SCF-NP); Near miss (Airprox/TCAS Alert or Loss of Separation); and laser attacks. It’s to be highlighted that the RSC/3 meeting recognized the need to review, analyze and categorize the accidents and incidents at regional level and agreed that, subject to the RASG-MID/4 approval, an Accidents and Incidents Analysis Working Group (AIAWG) be established under the MID Annual Safety Report Team (MID-ASRT) to review, analyze and categorize on annual basis the accidents and incidents. The AIA WG should be composed of experts from the safety and ATM fields with grounded knowledge and experience in Accident and Incident Investigation.

5.13 The meeting noted that revised/final version of the MID Region Safety Strategy was endorsed by the DGCAs and CEOs during the High-Level Briefing/Meeting, which was held on the third day of the Second MID Region Safety Summit (Muscat, Oman, 27-29 April 2014).

5.14 The meeting recalled that RASG-MID and MIDANPIRG have been coordinating some safety-related issues such as mitigation measures for CFIT (un-stabilized approaches) and call sign confusion and similarity. Other subjects of interest to both Groups have been identified, in particular those related to ATM safety such as SMS implementation for ANS/ATM, Language Proficiency for Air Traffic Controllers, RVSM safety monitoring, etc.

5.15 With respect to CFIT, it was highlighted that coordination is taking place with IATA to identify the top 10 airports/runways in the MID Region with the highest risk of Runway Excursion and CFIT due to the high number of un-stabilized approaches. This information will be used to implement the Detailed Implementation Plan (DIP) related to the implementation of PBN Approach procedures to all runways not currently served by precision approach procedures. Additional DIP is also being developed on specific training for pilots and air traffic controllers and promotion of pilot adherence to Standard Operating Procedures to reduce the number of un-stabilized approaches.

5.16 The meeting recalled that the MSG/4 meeting (Cairo, Egypt, 24 - 26 November 2014) recognized the urgency of implementing mitigation measures for the call sign confusion and similarity and agreed accordingly to the following Conclusion and Decision:

MSG CONCLUSION 4/22: CALL-SIGN CONFUSION

That,

a) a survey based on the questionnaire at Appendix 5A related to the acceptance/processing of flight plans containing "alphanumeric" call signs ending with letter(s) be conducted;

b) States that have not yet done so be invited to take necessary measures to comply with ICAO Annex 10 and Doc 4444 provisions related to the acceptance of the alphanumeric call signs; and

c) *States be invited to inform the ICAO MID Regional Office of the preferred option for the mitigation of the risks associated with the call sign confusion before 31 January 2015.*

MSG DECISION 4/23: CALL-SIGN CONFUSION AD-HOC WORKING GROUP

That, a Call Sign Confusion ad-hoc Working Group be established in order to:

a) analyze the results of the survey on the acceptance/processing of flight plans containing "alphanumeric" call signs ending with letter(s); and

b) develop solutions to mitigate the risk associated with call sign confusion and similarity.

5.17 The meeting noted that the First meeting of the Call Sign Confusion ad-hoc Working Group (CSC WG/1) will be held in Abu Dhabi, 16-18 February 2015 and encouraged States to attend.

5.18 The meeting emphasized that coordination between RASG-MID and MIDANPIRG is key for the improvement of safety in the MID Region and should be further promoted.

REPORT ON AGENDA ITEM 6: AIR NAVIGATION DEFICIENCIES

REVIEW OF AIR NAVIGATION DEFICIENCIES

6.1 The meeting noted with concern that the use of the MID Air Navigation Deficiency Database (MANDD) is far below expectation.

6.2 The meeting recalled that MIDANPIRG/14 recognized the need for a formal procedure to be used for the elimination of deficiencies from the MANDD. Accordingly, it was agreed that a deficiency would be eliminated only when a State submit a formal Letter to the ICAO MID Regional Office containing the evidence(s) that mitigation measures have been implemented for the elimination of this deficiency. Accordingly, the meeting agreed to the following Conclusion:

CONCLUSION 14/32: ELIMINATION OF AIR NAVIGATION DEFICIENCIES IN THE MID REGION

That, States be urged to:

a) use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies; and

b) submit a Formal Letter to the ICAO MID Regional Office containing the evidence(s) that mitigation measures have been implemented for the elimination of deficiency(ies) when requesting the elimination of deficiency(ies) from the MANDD.

6.3 The meeting recalled that MIDANPIRG/14 underlined the need to reduce, to the extent possible, the interference between the air navigation deficiencies and USOAP-CMA findings.

6.4 The meeting was apprised of the outcome of the different MIDANPIRG subsidiary bodies related to air navigation deficiencies. It was highlighted that in accordance with MIDANPIRG/14 directives, special consideration was given to the methodology used for the prioritization of the air navigation deficiencies and the interference/overlapping between the air navigation deficiencies and USOAP-CMA findings:

6.4.1 ***AIM SG/1 meeting***:

- agreed that all the priority “U” deficiencies in the AIM field (i.e. QMS, WGS-84 and AIRAC adherence) should be changed to priority “A”;
- noted that the overlap between the USOAP-CMA findings and the air navigation deficiencies concerns only the non-compliance with the AIRAC and QMS systems. The meeting further recalled that two (2) States in the MID Region have not yet been audited. Accordingly, the meeting agreed to maintain the current AIM deficiencies in the MANDD and to add in the Remarks column of the deficiencies related to AIRAC adherence and QMS a note referring to the USOAP-CMA finding; and
- agreed to add new deficiencies related to the lack of provision of eTOD data for Area 1 and Area 4.

6.4.2 ***ATM SG/1 meeting***:

- agreed that all the priority “U” deficiencies in the ATM field related to RVSM to be changed to priority “A”; and

- agreed that the air navigation deficiencies related to the SAR Agreements and the lack of plans of operations for the conduct of SAR operations and SAR exercises, be removed from the MANDD since they are fully addressed under USOAP-CMA framework. In addition, the meeting recognized that the signature of SAR agreements is far beyond the scope of the ANSPs or Civil Aviation Authorities and is addressed as such within the framework of USOAP-CMA.

6.4.3 ***CNS SG/6 meeting***:

- agreed that all the priority "U" deficiencies in the CNS field to be changed to priority "A"; and
- agreed that the deficiencies related to old AFTN connections be deleted from MANDD, pending the approval of the amendment to the MID ANP which will propose the removal of these connections.

6.4.4 ***MET SG/5 meeting***:

- with reference to quality management system, 8 out of 15 States in the MID Region (Iran, Iraq, Jordan, Lebanon, Libya, Oman, Syrian Arab Republic, and Yemen) have not yet met the relevant requirements in Annex 3, paragraph 2.2.3. The meeting agreed that these States be included in the list of deficiencies; and
- noted that the remarks section in the MANDD would indicate a reference to USOAP audits (excluding Iraq and Yemen).

6.5 The meeting recalled that the MSG/4 meeting supported the outcome of the MIDANPIRG subsidiary bodies with regard to the review and update of air navigation deficiencies and emphasized that States should develop a Corrective Action Plan (CAP) for each air navigation deficiency. In this respect, it was highlighted that the majority of the CAPs were not specifying a set of clear actions from States with specific timelines for the elimination of the deficiencies. Accordingly, the meeting agreed that the ICAO MID Regional Office delete all the current information reflected in the CAP column and urge States to use the MANDD to propose specific CAP for each deficiency. In this respect, the meeting noted that as a follow-up action to the above, the ICAO MID Regional Office issued State Letter Ref. AN 2/2 - 15/035 dated 2 February 2015 requesting States to use the MANDD for the submission of requests for addition, update, and elimination of Air Navigation deficiencies including the submission of a specific CAP for each deficiency not later than 1 April 2015.

6.6 The meeting reviewed and updated the list of deficiencies in the AIS/MAP, AOP, ATM, CNS, MET and SAR fields as reflected in MANDD, which can be accessed through the following link: http://www.cairo.icao.int/. The Table at **Appendix 6A** shows the number of air navigation deficiencies by State and by field.

6.7 The meeting urged States to implement the provisions of the MIDANPIRG/14 Conclusion 14/32 and provide updates on the status of their deficiencies using MANDD, including the submission of a specific CAP for each deficiency.

REPORT ON AGENDA ITEM 7: FUTURE WORK PROGRAMME

7.1 The meeting recalled that, through Decision 14/2, MIDANPIRG/14 endorsed the Seventh Edition of the MIDANPIRG Procedural Handbook, which included the new MIDANPIRG Organizational Structure and an updated version of the Terms of Reference (TORs) of the different subsidiary bodies including those of the ANSIG. The meeting agreed that the ANSIG TOR are still current and do not need any amendment.

7.2 Taking into consideration, the date of the MIDANPIRG/15 meeting (Bahrain, 8-11 June 2015) and the planned ICAO MID Regional events which are of relevance to the activity of ANSIG, it was agreed that the ANSIG/2 meeting be held during the second half of 2016; the venue will be Cairo, unless a State is willing to host the meeting.

REPORT ON AGENDA ITEM 8: ANY OTHER BUSINESS

8.1 Nothing has been discussed under this Agenda Item.

APPENDICES

APPENDIX 2A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/14 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 14/1: CONTINUED SUPPORT FOR CAPSCA-MID					Actioned
That, a) the ICAO MID Regional Office and MID States promote the development and growth of CAPSCA in the MID Region at local, national and international levels;	Implement the Conclusion	ICAO	State Letter	Apr. 2014	SL ME 6-14/133 dated 12 May 14
b) MID States, i. that have not yet done so, join the CAPSCA-MID Project; ii. request a CAPSCA State and Airport Assistance Visit; and iii. be encouraged to provide voluntary contributions to the CAPSCA-MID project.		States	Feedback	Sep. 2014	
DECISION 14/2: UPDATED OF THE MIDANPIRG PROCEDURAL HANDBOOK					Completed
That, the Seventh Edition of the MIDANPIRG Procedural Handbook be endorsed as at **Appendix 4.1B** to the Report on Agenda Item 4.1.	Update the MIDANPIRG Procedural Handbook and post it on the web	ICAO	Seventh edition of the Procedural Handbook	Feb. 2014	
DECISION 14/3: TERMS OF REFERENCE OF THE ATM PERFORMANCE TASK FORCE (APM TF)					Completed
That, the Air Traffic Management Measurement Task Force (ATM-M TF) be renamed Air Traffic Management Performance Measurement Task Force (APM TF) with Terms of Reference as at **Appendix 4.1C** to the Report on Agenda Item 4.1.	Implement the work programme of the APM TF	MIDANPIRG/14	TOR of the APM TF endorsement	Dec. 2013	
CONCLUSION 14/4: ASSISTANCE FOR THE DEVELOPMENT/UPDATE OF THE NATIONAL AIR NAVIGATION PERFORMANCE FRAMEWORK					Actioned
That, ICAO, in coordination with concerned States and Stakeholders (IATA, CANSO, ACI, etc): a) develop a plan for joint missions to identified States to support the development/update of the National Air Navigation Performance	Implement the Conclusion	ICAO States	State Letter Missions to States/ development of	Feb. 2014 Dec. 2014	SL AN 1/7-14/124 dated 6 May 2014 One mission was conducted to

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
Framework in an effective and timely manner; and b) agree on the priorities and plans of action to be reflected in the National Air Navigation Performance Framework to improve the efficiency of air navigation at national and regional level, in accordance with the MID Air Navigation Strategy.			National Performance Framework		assist Iran on 7-8 Sep. 2014
CONCLUSION 14/5: MID REGION AIR NAVIGATION PRIORITIES					Actioned
That,	Regular Review				
a) the ASBU Block 0 Modules prioritization Table at **Appendices 4.1E** to the Report on Agenda Item 4.1 be endorsed as the initial version of the MID ASBU Implementation Plan; and		MIDANPIRG/14	ASBU prioritization Table	Dec. 2013	Completed
b) the ASBU Block 0 Modules prioritization Table be reviewed on regular basis and be extended to cover Block 1 Modules, as appropriate.		MIDANPIRG Subsidiary bodies		Sep. 2014	Ongoing
CONCLUSION 14/6: DRAFT MID REGION AIR NAVIGATION STRATEGY					Completed
That, a) the Draft MID Region Air Navigation Strategy at **Appendix 4.1F** to the Report on Agenda Item 4.1 be:	Implement the Strategy				(Replaced and superseded by MSG Conclusion 4/3)
i. endorsed as the initial version of the MID Region Air Navigation Strategy; and		MIDANPIRG/14	Initial version of the Strategy	Dec. 2013	Strategy endorsed by MSG/4
ii. further reviewed and completed by the different MIDANPIRG subsidiary bodies		MIDANPIRG Subsidiary bodies	Review and Update Strategy	Sep. 2014	
b) MID States be urged to:		ICAO	State Letter	Feb. 2014	SL AN 1/7-14/123 dated 6 May 2014
i. develop their National Air Navigation Performance Framework, ensuring the alignment with and support to the MID Region Air Navigation Strategy;		States	National Performance Framework	May 2014	
ii. incorporate the agreed MID Region Performance Metrics into their National reporting and monitoring mechanisms; and		States	Feedback	Dec. 2014	SL AN 1/7–15/036 dated 2 Feb. 2015

<table>
<tr><th>CONCLUSIONS AND DECISIONS</th><th>FOLLOW-UP</th><th>TO BE INITIATED BY</th><th>DELIVERABLE</th><th>TARGET DATE</th><th>REMARKS</th></tr>
<tr><td>iii. provide the ICAO MID Regional Office, on annual basis, with relevant data necessary for regional air navigation planning and monitoring.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>CONCLUSION 14/7: SECOND REGIONAL RUNWAY SAFETY SEMINAR (MID-RRSS/2)
That,
a) the Second MID REGIONAL RUNWAY SAFETY SEMINAR (RRSS) be organised by ICAO in partnership with IATA and other interested safety partners;
b) the agenda of the RRSS take into account the RASG-MID work programme related to Runway Safety, in particular the SEIs and DIPs related to RSTs; and
c) MID States, Service Providers and International/Regional Organizations be encouraged to support and actively participate in the Seminar.</td><td>Convene the Seminar</td><td>ICAO</td><td>Seminar</td><td>June 2014</td><td>Completed</td></tr>
<tr><td>CONCLUSION 14/8: SEMINAR ON HELIPORTS
That,
a) ICAO consider organising a Seminar on Heliports; and
b) MID States and International/Regional Organizations be encouraged to host and support the Seminar and to invite Service Providers and Safety Partners for attendance and active participation.</td><td>Convene the Seminar</td><td>ICAO</td><td>Seminar</td><td>2015</td><td>Ongoing
Planned for December 2015</td></tr>
<tr><td>CONCLUSION 14/9: PROVISIONS FOR PRIOR APPROVAL TO AERODROME DEVELOPMENT
That, MID States, that have not yet done so, be urged to:
a) make a requirement for a prior approval of any development or change to the physical characteristics of an aerodrome;</td><td>Implement the Conclusion</td><td>ICAO</td><td>State Letter</td><td>Feb. 2014</td><td>Actioned
SL AN 5/3-14/134 dated 12 May 14</td></tr>
</table>

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
b) develop necessary procedures for the approval process supported by risk assessment and management as required; and c) inform the ICAO MID Regional Office of the actions taken before 1 May 2014.		States	Feedback	May 2014	
DECISION 14/10: TRANSFER OF AERODROMES ACTIVITIES TO RASG-MID That, a) the activities of the AOP SG and ADCI TF be transferred to the RASG-MID framework ; and b) Aerodrome Specialists from MID States and ICAO continue to support MIDANPIRG and its subsidiary bodies for aerodromes-related Air Navigation matters.	Implement the Conclusion	MIDANPIRG/14	AOP SG and ADCI TF disbanded and their activities transferred to RASG-MID	Dec. 2013	Completed
CONCLUSION 14/11: IMPLEMENTATION OF THE TOP TEN ATS ROUTES That, concerned States be urged to take necessary measures to implement the identified routes at **Appendix 4.3A** to the Report on Agenda Item 4.3.	Implement the Conclusion	ICAO States	State Letter Feedback	Jan. 2014 May 2014	Actioned SL AN 6/5.8-14/106 dated 16 April 2014
CONCLUSION 14/12: CIVIL/MILITARY COOPERATION That, States be urged to a) develop necessary institutional arrangements to foster Civil/Military cooperation; and b) arrange as necessary for the Military Authorities to be: i. involved in the airspace planning and management process; ii. aware of the new developments in civil aviation; and iii. involved in national, regional and international aviation meetings, workshops, seminars, etc., related to Air Traffic Management and Search and Rescue.	Implement the Conclusion	ICAO States	State Letter Feedback	Feb. 2014 Sep. 2014	Actioned SL AN 6/13-14/105 dated 16 Apr. 2014

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 14/13: FLEXIBLE USE OF AIRSPACE That, States be urged to take necessary: a) follow-up actions to implement the provisions of Recommendation 4/5 of the AN-Conf/12; and b) measures to implement the Flexible Use of Airspace (FUA) Concept through strategic Civil/Military coordination and dynamic interaction, in order to open up segregated airspace when it is not being used for its originally-intended purpose and allow for better airspace management and access for all users.	Implement the Conclusion	ICAO States	State Letter Feedback	Feb. 2014 May. 2014	Actioned SL AN 6/13-14/105 dated 16 Apr. 2014
CONCLUSION 14/14: MID CIVIL/MILITARY GO-TEAM That, a) a MID Civil/Military Go-Team be established to expedite the implementation of the Flexible Use of Airspace (FUA) Concept in the MID Region; and b) the details related to the scope, Tasks, Pre-Go-Team Visit arrangements, on-site activities, and outcomes of the Civil/military Go-Teams be discussed during the next ATM Sub-Group meeting.	Implement the Conclusion	MIDANPIRG/14 ATM SG	Civil/Military Go-Team established Go-Team scope, scope, tasks, activities, etc.	Dec. 2013 May 2014	Over taken by events (To be replaced and superseded by ATM SG/1 Draft Conclusion 1/5)
CONCLUSION 14/15: MID REGION ATM CONTINGENCY PLAN That, the MID Region ATM Contingency Plan be endorsed as at Appendix 4.3B to the Report on Agenda Item 4.3.	Implement the Conclusion	MIDANPIRG/14	MID Region ATM Contingency Plan	Dec. 2013	Completed
DECISION 14/16: SEARCH AND RESCUE COOPERATION That, the ATM Sub-Group develops a simplified MID Region Model of SAR Agreement/Bilateral Arrangements to foster the implementation of Annex 12 provisions related to SAR cooperation in a step-wise approach.	Implement the Conclusion	ATM SG	SAR Agreement/ Bilateral Arrangements Template	May 2014	Actioned (MID SAR AG established through ATM SG/1 Draft Decision 1/7)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 14/17: MID REGION ATM ENHANCEMENT PROGRAMME (MAEP) – SPECIAL COORDINATION MEETING That, States and Users be urged to provide the ICAO MID Regional Office with their proposals related to MAEP by 25 January 2014, for presentation to the MAEP-SCM scheduled for 18-20 February 2014.	Implement the Conclusion	ICAO States/Users	State Letter Proposals related to MAEP	Jan. 2014 Feb. 2014	Completed Meeting held on 18-20 Feb. 2014
CONCLUSION 14/18: NATIONAL AIS/AIM REGULATIONS That, States be urged to: a) include in the national plans for the transition from AIS to AIM actions related to the amendment of national AIS/AIM regulations as a consequence to the Amendment of Annex 4, Annex 15 and other AIM developments; b) take necessary action for a timely amendment of the national AIS/AIM regulations as a consequence to Amendment 37 to Annex 15; and c) inform the ICAO MID Regional Office of the actions taken before 1 March 2014.	Implement the Conclusion	ICAO States	State Letter Feedback	Feb. 2014 Mar. 2014	Completed SL AN 8/4-14/055 dated 20 Feb. 2014 Six (6) States replied
CONCLUSION 14/19: NATIONAL PLANS FOR THE TRANSITION FROM AIS TO AIM That, in order to keep pace with the AIM/SWIM developments and support seamless ATM in a SWIM environment**,** States be urged to: a) develop/update their national plans for the transition from AIS to AIM; and b) provide the ICAO MID Regional Office with an updated version of their national plans for the transition from AIS to AIM, before **1 March 2014**.	Implement the Conclusion	ICAO States	State Letter Feedback	Feb. 2014 Mar. 2014	Completed SL AN 8/4-14/055 dated 20 Feb. 2014 Six (6) States replied. (Replaced and superseded by MSG Conc. 4/17)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DECISION 14/20: MIDAD SUPPORT TEAM That, the MIDAD Support Team (MIDAD ST) a) be composed of members from Jordan, Iran, Kuwait and the ICAO MID Regional Office; and b) provide necessary support to Bahrain, Qatar, Saudi Arabia and UAE as well as to the MIDAD Study Group to successfully complete Phase 2 of the MIDAD Project.	MIDAD ST to provide necessary support	MIDANPIRG/14	MIDAD ST composition	Dec.2013	Completed
DECISION 14/21: ESTABLISHMENT OF MID-AMC STEERING GROUP That, a) a MID-AMC Steering Group is established with TOR as at **Appendix 4.5A** to the Report on Agenda Item 4.5; and b) States appoint a Member and Alternate for the MID-AMC Steering Group.	Implement the work programme of the MID-AMC STG	MIDANPIRG/14	MID-AMC STG established	Dec. 2013	Completed SL AN 7/5.1-14/084 dated 16 April 2014
CONCLUSION 14/22: MID-AMC OPERATION That, a) States be urged to: i. provide their AFTN/AMHS/CIDIN Routing tables to MID-AMC by 30 March 2014; ii. register users to MID-AMC according to the accreditation procedure defined at **Appendix 4.5B** to the report on Agenda Item 4.5; iii. complete testing of all MID-AMC functions by 30 June 2014; and b) the operation date of the MID-AMC be determined by the MID-AMC Steering Group.	Implement the Conclusion	ICAO States States MID-AMC STG	State Letter Routing Tables Testing/ feedback Operation date	Jan. 2014 Mar. 2014 Jun. 2014 Jun. 2014	Actioned SL AN 7/5.1-14/084 dated 16 April 2014 Reference MSG Conclusion 4/9) Training for MIDAMC conducted in Amman, Jan.2015

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 14/23: MID AIDC/OLDI IMPLEMENTATION SEMINAR That States, a) support ICAO in organising a Seminar on implementation of AIDC/OLDI; b) participate actively in the Seminar; and c) with the support of ICAO develop the MID AIDC/OLDI Implementation Plan.	Convene the Seminar	ICAO	Seminar	Mar. 2014	Completed
DECISION 14/24: DEVELOPMENT AND ENDORSEMENT OF THE MID eANP That, in support to the ICAO efforts to align the regional Air Navigation Plans (ANP) with the Fourth Edition of the Global Air Navigation Plan (GANP) (Doc 9750): a) the development of the MID eANP based on the Council-approved ANP Template, be included in the work programme of the different MIDANPIRG subsidiary bodies; and b) the relevant Parts of the MID eANP be presented, as soon as available, to MSG/4 and/or MIDANPIRG/15 for endorsement.	Implement the Conclusion	MIDANPIRG subsidiary bodies MSG/4 and MIDANPIRG/15	MID eANP Parts	TBD Sep 2014 May 2015	Completed (Replaced and superseded by MSG Conclusion 4/4)
CONCLUSION 14/25: INFPL POST IMPLEMENTATION-SYSTEM UPGRADES That, concerned States be urged to upgrade their systems to ensure the full handling of the ICAO New Flight Plan format before **30 June 2015**.	Implement the Conclusion	ICAO States	State Letter Feedback	Jan. 2014 Jun. 2015	Actioned SL AN 6/2B-14/122 dated 4 May 2014 (Refer also to CNS SG/6 Draft Conclusion 6/10) and SL AN 6/2B – 15/039 dated 3 February 2015

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 14/26: MID REGION GNSS IMPLEMENTATION STRATEGY That, the MID Region GNSS implementation Strategy be updated as at **Appendix 4.6x** to the Report on Agenda Item 4.6.	Implement the Strategy	MIDANPIRG/14	Updated Strategy	Dec. 2013	Completed
CONCLUSION 14/27: MID SURVEILLANCE STRATEGY That, the MID Surveillance Strategy be adopted as at **Appendix 4.6B** to the Report on Agenda Item 4.6.	Implement the Strategy	MIDANPIRG/14	Updated Strategy	Dec. 2013	Completed
CONCLUSION 14/28: MID REGIONAL PBN IMPLEMENTATION STRATEGY AND PLAN That, the MID Regional PBN Implementation Strategy and Plan be updated as at **Appendix 4.6C** to the Report on Agenda Item 4.6.	Implement the Strategy	MIDANPIRG/14	Updated Strategy	Dec. 2013	Completed
CONCLUSION 14/29: ESTIMATING AND REPORTING ENVIRONMENTAL BENEFITS That, in order to follow-up the implementation of the ATM operational improvements and estimate the accrued fuel savings and associated CO_2 emission reduction from the corresponding improvements on regional basis: a) States be encouraged to develop/update their Action Plans for CO_2 emissions and submit them to ICAO through the APER website on the ICAO Portal or the ICAO MID Regional Office; b) States be urged to: i. identify the operational improvements which have been implemented within their FIR and/or international aerodromes; ii. collect necessary data for the estimation of the environmental benefits accrued from the identified operational improvements; iii. use IFSET to estimate the environmental benefits accrued from operational improvements; and	Implement the Conclusion	ICAO States	State Letter States' Action Plan for CO_2 emissions IFSET Reports	Apr. 2014 Sep. 2014 Jun. and Dec. 2014	Actioned SL AN 6/15-14/247 dated 23 September 2014 APM TF/2 meeting held in Cairo, 10-12 November 2014)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
iv. send the IFSET reports/the accrued environmental benefits to ICAO on bi-annual basis; and c) IATA to: i) encourage users to support the APM TF in the development of the MID Region Air Navigation Environmental Reports; and ii) consolidate users' inputs and report the accrued environmental benefits to the ICAO MID Regional Office on bi-annual basis.		IATA	Inputs from users	Jun. and Dec. 2014	
CONCLUSION 14/30: ESTABLISHMENT OF MID REGIONAL OPMET CENTRE That, a) Saudi Arabia in coordination with ICAO establish a MID Regional OPMET Centre (ROC) by the first half of 2015 to improve the regional and inter-regional OPMET efficiency; b) Bahrain in coordination with ICAO establish a back-up Regional OPMET Centre (ROC); and c) MID States be encouraged to continue cooperation in the exchange of OPMET data in the MID Region.	Implement the Conclusion	Saudi Arabia in coordination with ICAO Bahrain in coordination with ICAO	Establishment of MID ROC Establishment of back-up MID ROC	Jun. 2015 Jun. 2015	Actioned Implementation plan for the establishment of ROC endorsed by MSG/4.
DECISION 14/31: UPDATE TO BULLETIN MANAGEMENT GROUP TERMS OF REFERENCE That, the Terms of Reference and future work programme of the Bulletin Management Group of the MET Sub-Group be updated as at **Appendix 4.7A** to the Report on Agenda Item 4.7.	Implement the Work Programme of the BMG	MIDANPIRG/14	BMG TOR	Dec. 2013	Completed
CONCLUSION 14/32: ELIMINATION OF AIR NAVIGATION DEFICIENCIES IN THE MID REGION That, States be urged to: a) use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies; and	Implement the Conclusion	ICAO	State Letter	Mar. 2014	Actioned SL 2/2-14/109 dated 17 Apr. 2014 SL AN 2/2 -

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
b) submit a Formal Letter to the ICAO MID Regional Office containing the evidence(s) that mitigation measures have been implemented for the elimination of deficiency(ies) when requesting the elimination of deficiency(ies) from the MANDD.		States	CAP and necessary updates/ evidences	When necessary	15/035 dated 2 Feb. 2015
CONCLUSION 14/33: TRAINING ON RVSM SAFETY ASSESSMENT That, with a view to raise the awareness related to the requirements for sustained RVSM safety assessment activity and improve the knowledge of the ATC, RVSM approval Authority and Air Operators personnel, the MIDRMA include in its work programme training activity/briefings on RVSM safety assessment requirements to be provided to concerned personnel either through missions to concerned States or through familiarization visits organized in the MIDRMA premises, when and where appropriate.	Implement the Conclusion	MIDRMA	Training on RVSM Safety Assessment	2014-2015	Ongoing
DECISION 14/34: SCRUTINY GROUP WORK PROGRAMME That, in order to improve the efficiency of the MID RVSM Scrutiny Group, its work programme be included in the agenda of the MIDRMA Board meetings.	Implement the Decision	MIDANPIRG/14	Scrutiny Group work programme included in the Agenda of MIDRMA Board meetings	Dec. 2013	Completed
CONCLUSION 14/35: PROVISION OF REQUIRED DATA TO THE MIDRMA That, considering the on-going requirement for RVSM safety monitoring in the MID Region: a) States provide the required data to the MIDRMA on a regular basis and in a timely manner. The data is to include, but is not necessarily limited to: i) approval of operators and aircraft for RVSM operations (on monthly basis or whenever there's a change); ii) Large Height Deviations (LHD) (on monthly basis);	Implement the Conclusion	States	Provision of necessary data to the MIDRMA	When necessary (as required)	Actioned AN 6/5.10.15A 14/007 dated 9 January 2014

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
iii) traffic data (as requested by the MIDRMA Board); iv) radar data as, when and where required; and v) airway structure (above FL 290) and waypoints. b) States not providing the required data to the MIDRMA on a regular basis and in a timely manner: i) be included in the MIDANPIRG list of air navigation deficiencies; and ii) might not be covered by the MID RVSM Safety Monitoring Report (SMR).					
CONCLUSION 14/36: RVSM MINIMUM MONITORING REQUIREMENTS That, States that have not yet done so, be urged to: a) take necessary measures to ensure that their aircraft operators fully comply with Annex 6 provisions related to long term height monitoring requirements, based on the MIDRMA MMR Tables; and b) provide feedback to the ICAO MID Regional Office before **1 March 2014**.	Implement the Conclusion	ICAO Concerned States	State Letter Action and Feedback	Jan. 2014 Mar. 2014	Completed AN 6/5.10.15A 14/005 and 14/006 dated 9 January 2014
CONCLUSION 14/37: ARRANGEMENTS FOR THE CONDUCT OF GMU MONITORING MISSIONS That, prior to the conduct of any GMU monitoring mission: a) the MIDRMA notify the concerned MIDRMA Board Member; and b) the MIDRMA Board member is to undertake necessary arrangements at the national level with concerned authorities (CAA, Customs, Security, etc.) to facilitate the MIDRMA Team mission.	Implement the Conclusion	MIDRMA States	Notification Necessary arrangements/ support	When planning a GMU mission	Actioned AN 6/5.10.15A-13/240 dated 13 September 2013

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 14/38: MID RVSM SMR 2014					Actioned
That,	Implement the Conclusion	ICAO States	State Letter FPL/traffic data	Jan. 2015 Mar. 2014	AN 6/5.10.15A 14/007 dated 9 January 2014
a) the FPL/traffic data for the period **15 January – 15 February 2014** be used for the development of the MID RVSM Safety Monitoring Report (SMR 2014); b) only the appropriate Flight Data form available on the MIDRMA website (www.midrma.com) should be used for the provision of FPL/traffic data to the MIDRMA; c) the initial results of the MID RVSM SMR 2014 be ready before 15/05/2014; and d) the final version of the MID RVSM SMR 2014 be ready for presentation to and endorsement by MIDANPIRG/15.		MIDRMA	MID RVSM SMR 2014	May 2015	

APPENDIX 2B

FOLLOW-UP ACTION PLAN ON MSG/4 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 4/1: GLOBAL AIR NAVIGATION PLAN (DOC (9750) REVIEW AND UPDATE					Completed
That, States and air navigation stakeholders in the MID Region be urged to:	Implement the Conclusion	ICAO	State Letter	Dec 2014	SL AN 1/5-14/339 dated 23 Dec. 2014
a) review and provide inputs to the questionnaire at Appendix 3A; and		States	Feedback	15 January 2015	
b) provide feedback on the use of the fourth edition of the GANP and its possible improvement before 15 January 2015.					
MSG CONCLUSION 4/2: MID REGION CONTINGENCY PLAN					Completed
That, the MID Region ATM Contingency Plan (Edition November 2014) is endorsed as a Regional Document to be available on the ICAO MID website.	Implement the Conclusion	MSG/4	MID Region ATM Contingency Plan	Nov. 2014	
MSG CONCLUSION 4/3: MID REGION AIR NAVIGATION STRATEGY					Actioned
That,					
a) the MID Air Navigation Strategy at **Appendix 4B** is endorsed as the framework identifying the regional air navigation priorities, performance indicators and targets; and	Implement the Conclusion	MSG/4	AN Strategy	Nov. 2014	
b) MID States be urged to:		ICAO	State Letter	Jan. 15	SL AN 1/7 - 15/035 dated 2 Feb. 2015
i. develop their National Air Navigation Performance Framework, ensuring the alignment with and support to the MID Region Air Navigation Strategy; and		States	National Plans		
ii. provide the ICAO MID Regional Office, on annual basis (by end of November), with relevant data necessary for regional air navigation planning and monitoring.		States	Feedback	On annual basis (Nov.)	

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 4/4: DEVELOPMENT OF THE MID eANP That, a) the ANP WG/2 finalize the MID eANP for endorsement by MIDANPIRG/15; and b) States be urged to review the MID eANP Volumes I, II and III available on the ICAO MID website, and provide updates/inputs to the ANP WG/2 meeting.	Implement the Conclusion	ANP WG/2 States	Draft MID eANP VOL I, II and III	Dec 2014 Dec 2014	Completed (Refer to ANP WG/2 Draft Conclusion 2/1)
MSG CONCLUSION 4/5: MAEP ESTABLISHMENT That, MAEP be established as an ICAO TCB project with a Project Management Office (PMO) hosted by the ICAO MID Regional Office.	Implement the Conclusion	MSG/4	MAEP establishment	Nov. 2014	Ongoing
MSG DECISION 4/6: MAEP STEERING COMMITTEE (MSC) That, the MAEP Steering Committee (MSC) is established with Terms of Reference as at **Appendix 4C.**	Implement the Conclusion	MSG/4	MAEP SC establishment	Nov. 2014	Completed
MSG CONCLUSION 4/7: MAEP FUNDING MECHANISM That, a) the running cost of the MAEP PMO be ensured through contributions from all MAEP Member States; b) the annual amounts to be paid by the MAEP Member States are, as follows: i. Bahrain, Iran, Oman, Qatar, Saudi Arabia and UAE annual contribution is US$ 30,000 each; ii. Egypt, Iraq, Kuwait and Libya annual contribution is US$ 20,000 each; and iii. Jordan, Lebanon, Sudan, Syria and Yemen annual contribution is US$ 10,000 each.	Implement the Conclusion	MSG/4	MAEP Funding Mechanism	Nov. 2014	Completed

CONCLUSIONS AND DECISIONS	**FOLLOW-UP**	**TO BE INITIATED BY**	**DELIVERABLE**	**TARGET DATE**	**REMARKS**
c) the funding of the projects/working packages: i. be addressed by the Board, on case-by-case basis; and ii. be ensured through contribution (cash or in-kind) by concerned States, stakeholders and sponsors/donors. d) the MAEP funding mechanism be revised by the MAEP Board, when necessary.					
MSG CONCLUSION 4/8: REGIONAL IFPS STUDY That, States be urged to provide the Flight Plan Data/Difficulties to the ICAO MID Regional Office **before 31 December 2014,** in order for Bahrain to carry out further analyses for the Region, necessary for the IFPS project.	Implement the Conclusion	ICAO States	State Letter	Dec 2014	Actioned SL AN 8/4.2.1-14/344
MSG CONCLUSION 4/9: LAUNCHING OF THE MID-AMC SERVICE That, a) States, that have not yet done so, be urged to assign their MIDAMC STG members before **30 December 2014**; and b) the first AIRAC date following the training of the MID States key users (5 February 2015) be officially declared as the date of operation of the MIDAMC application.	Implement the Conclusion	ICAO States	State Letter	Dec 2014	Completed SL AN 7/5.1-15/041 dated 4 Feb 2015
MSG CONCLUSION 4/10: MID REGION PBN IMPLEMENTATION PLAN That, the endorsed MID Region PBN Implementation Plan (Version 1, November 2014) be posted on the ICAO MID website.	Implement the Conclusion	MSG/4	MID Region PBN Implementation Plan	Nov. 2014	Completed

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 4/11: STATES PBN IMPLEMENTATION PLANS That, States be urged to: a) develop/update their PBN implementation Plan taking into consideration the MID Region PBN Implementation Plan, the MID Air Navigation Strategy and the Users requirements; and b) provide the ICAO MID Regional Office with their updated PBN Implementation Plan on an annual basis (by end of December).	Implement the Conclusion	ICAO States	State Letter Feedback	Dec. 2014 25 January 2015 thereafter on annual basis (by end of December)	Actioned SL AN 6/28-14/334 dated 21 Dec. 2014
MSG CONCLUSION 4/12: STRATEGY FOR IMPLEMENTATION OF AIDC/OLDI That, the endorsed MID Region Strategy for the implementation of AIDC/OLDI (Version 1, November 2014) be posted on the ICAO MID website.	Implement the Conclusion	MSG/4	Strategy for Implementation of AIDC/OLDI	Nov. 2014	Completed
MSG CONCLUSION 4/13: REGIONAL ICD FOR AIDC That, the PAN Regional ICD for AIDC version 1.0 endorsed as the official ICD for use in the MID Region be posted on the ICAO MID website.	Implement the Conclusion	MSG/4	Regional ICD for AIDC	Nov. 2014	Completed
MSG CONCLUSION 4/14: MID REGION PROCESS FOR MODE S IC CODES ALLOCATION That, the endorsed MID Region process for Mode S IC codes allocation be posted on the ICAO MID website.	Implement the Conclusion	MSG/4	MID Region Process for Mode S IC Codes Allocation	Nov. 2014	Completed
MSG CONCLUSION 4/15: ADS-B PLANNING AND IMPLEMENTATION That, recognizing the importance of ADS-B technology, States be encouraged to plan/implement ADS-B and provide the ICAO MID Regional Office with their plans/progress reports by **15 January 2015**.	Implement the Conclusion	ICAO States	State Letter	Dec 2014	Actioned AN 8/4.2.1-14/345

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 4/16: DRAFT METHODOLOGY FOR REPORTING AND ASSESSING THE PROGRESS RELATED TO THE TRANSITION FROM AIS TO AIM That, States be urged to provide the ICAO MID Regional Office with their comments/inputs related to the "Methodology for reporting and assessing the progress related to the transition from AIS to AIM" and the Finalization/Compliance Criteria, at **Appendices 4I** and **4J**, respectively.	Implement the Conclusion	ICAO States	State Letter Feedback	TBD	Ongoing
MSG CONCLUSION 4/17: NATIONAL AIM IMPLEMENTATION ROADMAP That, States: a) be invited to take into consideration the "MID Region AIM implementation Roadmap" at **Appendix 4L** in planning for the transition from AIS to AIM in a prioritized manner; and b) that have not yet done so, be urged to provide the ICAO MID Regional Office with their National AIM Implementation Roadmap using the Template at **Appendix 4K**, before **1 March 2015.**	Implement the Conclusion	ICAO States	State Letter Feedback	Mar 2015	Actioned ME 3/1-15/034 dated 1 Feb 2015
MSG CONCLUSION 4/18: MIDAD FOCAL POINTS That, for an improved coordination between all Stakeholders related to the MIDAD Project, States that have not yet done so, be urged to designate MIDAD Focal Points (FPPs) before **31 December 2014.**	Implement the Conclusion	ICAO States	State Letter Feedback	Dec 2014	Actioned AN 8/4.2.1-14/341 dated 24 Dec 2014
MSG DECISION 4/19: TERMS OF REFERENCE OF THE MIDAD TASK FORCE That, the Terms of Reference of the MIDAD Task Force be updated as at **Appendix 4O.**	Implement the work programme of the MIDAD TF	MSG/4	TOR of the MIDAD TF endorsement	Nov 2014	Completed

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 4/20: MID SCRAG NOMINATION That, Mr. Ahmed Alobadli from the United Arab Emirates is nominated as the MIDANPIRG member of the SADIS Cost Recovery Administrative Group.	Coordinate with the MIDANPIRG SCRAG Member	MSG/4	Assignment of new MID SCRAG member	Nov 2014	Completed
MSG CONCLUSION 4/21: AMHS ROUTING FROM MID TO EUR REGIONS That, the MID-AMC develop a plan to implement AMHS communication paths between Jeddah-Vienna, and Bahrain-Vienna before **31 March 2015**, to enable the exchange of OPMET data in digital form between the MID and EUR Regions.	Implement the Conclusion	MIDAMC	AMHS Plan	Apr. 2015	Ongoing
MSG CONCLUSION 4/22: CALL SIGN CONFUSION That, a) a survey based on the questionnaire at **Appendix 5A** related to the acceptance/processing of flight plans containing “alphanumeric” call signs ending with letter(s) be conducted; b) States that have not yet done so be invited to take necessary measures to comply with ICAO Annex 10 and Doc 4444 provisions related to the acceptance of the alphanumeric call signs; and c) States be invited to inform the ICAO MID Regional Office of the preferred option for the mitigation of the risks associated with the call sign confusion before **31 January 2015**.	Implement the Conclusion	ICAO States and Users	State Letter Feedback	Dec. 2014 Feb. 2015	Actioned SL AN 6/34-14/332 dated 21 Dec. 2014
MSG DECISION 4/23: CALL SIGN CONFUSION AD-HOC WORKING GROUP That, a Call Sign Confusion ad-hoc Working Group be established in order to: a) analyze the results of the survey on the acceptance/processing of flight plans containing “alphanumeric” call signs ending with letter(s); and	Implement the Decision	MSG/4	CSC WG	Nov. 2014	Actioned First meeting, 16-18 Feb. 2015

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
b) develop solutions to mitigate the risk associated with call sign confusion and similarity.					
DRAFT CONCLUSION 4/1: AVIATION STATISTICS AND TRAFFIC FORECASTS That, a) States be urged to: i. nominate Focal Points for aviation statistics; ii. provide the statistics required by ICAO in a timely manner and to the extent possible in an electronic format b) ICAO organise a Second Aviation Data Analyses Seminar in 2016 to keep the momentum and further enhance the technical knowledge of States.	 Implement the Conclusion	 ICAO States ICAO	 State Letter Focal Point Seminar	 Aug. 2015	Pending MIDANPIRG endorsement
DRAFT DECISION 4/2: AIR TRAFFIC FLOW MANAGEMENT That, the ATM Sub-Group develop a Draft Project Proposal addressing the necessity, feasibility, cost benefit analysis and timelines related to the eventual implementation of a regional/sub-regional ATFM system, to the MSC/2 meeting for consideration.	Implement the Conclusion	ATM SG/2 meeting	ATFM Draft Project Proposal	Dec. 2015	Pending MIDANPIRG endorsement
DRAFT CONCLUSION 4/3: DRAFT MID REGION HIGH LEVEL AIRSPACE CONCEPT That, States be urged to provide the ICAO MID Regional Office with their comments related to the Draft MID Region High Level Airspace Concept, at **Appendix 4E**, by **1 March 2015**, in order to present the final version to MIDANPIRG/15 for endorsement.	Implement the Conclusion	ICAO States and Users	State Letter Feedback	Dec. 2014 1 March 2015	Actioned SL AN 6/35-14/333 dated 21 Dec. 2014

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DRAFT DECISION 4/4: REVISED TORS OF THE MSG, CNS SG AND PBN SG That, the MIDANPIRG Procedural Handbook be updated to include the revised version of the MSG, CNS SG and PBN SG Terms of Reference (TORs) at **Appendices 7A, 7B** and **7C**, respectively.	Implement the Decision	MIDANPIRG/15	Eighth edition of MIDANPIRG Procedural Handbook	Jun..2015	Ongoing

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

MID REGION

AIR NAVIGATION STRATEGY

Version 1
November, 2014

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontier or boundaries.

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MID REGION AIR NAVIGATION STRATEGY

1. Introduction

1.1 As traffic volume increases throughout the world, the demands on air navigation service providers in a given airspace increase, and air traffic management becomes more complex.

1.2 It is foreseen that the implementation of the components of the ATM operational concept will provide sufficient capacity to meet the growing demand, generating additional benefits in terms of more efficient flights and higher levels of safety. Nevertheless, the potential of new technologies to significantly reduce the cost of services will require the establishment of clear operational requirements.

1.3 Taking into account the benefits of the ATM operational concept, it is necessary to make many timely decisions for its implementation. An unprecedented cooperation and harmonization will be required at both global and regional level.

1.4 ICAO introduced the Aviation System Block Upgrades (ASBU) methodology as a systemic manner to achieve a harmonized implementation of the air navigation services. An ASBU designates a set of improvements that can be implemented globally from a defined point in time to enhance the performance of the ATM system.

1.5 Through Recommendation 6/1 - *Regional performance framework – planning methodologies and tools*, AN-Conf/12 urged States and PIRGs to harmonize the regional and national air navigation plans with the ASBU methodology in response to this, the MID region is developing MID Region Air Navigation Strategy that is aligned with the ASBU methodology.

1.6 Stakeholders including service providers, regulators, airspace users and manufacturers are facing increased levels of interaction as new, modernized ATM operations are implemented. The highly integrated nature of capabilities covered by the block upgrades requires a significant level of coordination and cooperation among all stakeholders. Working together is essential for achieving global harmonization and interoperability.

2. Strategic Air Navigation Capacity and Efficiency Objective

2.1 To realize sound and economically-viable civil aviation system in the MID Region that continuously increases in capacity and improves in efficiency with enhanced safety while minimizing the adverse environmental effects of civil aviation activities.

3. MID Air Navigation Objectives

3.1 The MID Region air navigation objectives are set in line with the global air navigation objectives and address specific air navigation operational improvements identified within the framework of the Middle East Regional Planning and Implementation Group (MIDANPIRG).

Near-term Objective (2013 - 2018): ASBU Block 0

3.2 Block '0' features Modules characterized by operational improvements which have already been developed and implemented in many parts of the world today. It therefore has a near-term implementation period of 2013–2018. The MID Region near-term priorities are based on the implementation of an agreed set of Block 0 Modules as reflected in **Table 1** below.

3.3 The MID Region Air Navigation Strategy is aimed to maintain regional harmonisation. The States should develop their national performance framework, including action plans for the implementation of relevant priority 1 ASBU Modules and other modules according to the State operational requirements.

Mid-term Objective (2018 - 2023): ASBU Block 1

3.4 Blocks 1 through 3 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2018, 2023 and 2028, respectively. Associated timescales are intended to depict the initial deployment targets along with the readiness of all components needed for deployment.

Long-term Objective (2023 - 2028): ASBU Block 2

3.5 The Block Upgrades incorporate a long-term perspective matching that of the three companion ICAO Air Navigation planning documents. They coordinate clear aircraft- and ground-based operational objectives together with the avionics, data link and ATM system requirements needed to achieve them. The overall strategy serves to provide industry wide transparency and essential investment certainty for operators, equipment manufacturers and ANSPs.

4. MID Region ASBU Block 0 Modules Prioritization and Monitoring

4.1 On the basis of operational requirements and taking into consideration the associated benefits, **Table 1** below shows the priority for implementation of the 18 Block "0" Modules**,** as well as the MIDANPIRG subsidiary bodies that will be monitoring and supporting the implementation of the Modules:

Table 1. MID REGION ASBU BLOCK 0 MODULES PRIORITIZATION AND MONITORING

Module Code	Module Title	Priority	Monitoring		Remarks
			Main	Supporting	
***Performance Improvement Areas (PIA) 1*: Airport Operations**					
B0-APTA	Optimization of Approach Procedures including vertical guidance	1	PBN SG	ATM SG, AIM SG, CNS SG	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	2			
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	2			
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	1	ANSIG	CNS SG	Coordination with RGS WG
B0-ACDM	Improved Airport Operations through Airport-CDM	1	ANSIG	CNS SG, AIM SG, ATM SG	Coordination with RGS WG
***Performance Improvement Areas (PIA) 2* Globally Interoperable Systems and Data Through Globally Interoperable System Wide Information Management**					
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	1	CNS SG	ATM SG	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	1	AIM SG	-	
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	1	MET SG	-	

Performance Improvement Areas (PIA) 3 **Optimum Capacity and Flexible Flights – Through Global Collaborative ATM**					
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	1	ATM SG		
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	1			
B0-ASUR	Initial capability for ground surveillance	2			
B0-ASEP	Air Traffic Situational Awareness (ATSA)	2			
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	2			
B0-ACAS	ACAS Improvements	1	CNS SG		
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	2			
Performance Improvement Areas (PIA) 4 **Efficient Flight Path – Through Trajectory-based Operations**					
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	1	PBN SG		
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	1	ATM SG	CNS SG	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	1	PBN SG		

Priority 1: Modules that have the highest contribution to the improvement of air navigation safety and/or efficiency in the MID Region. These modules should be implemented where applicable and will be used for the purpose of regional air navigation monitoring and reporting for the period 2013-2014.

Priority 2: Modules recommended for implementation based on identified operational needs and benefits.

5. Measuring and monitoring air navigation performance

5.1 The monitoring of air navigation performance and its enhancement is achieved through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets.

5.2 MIDANPIRG through its activities under the various subsidary bodies will continue to update and monitor the implementation of the ASBU Modules to achieve the air navigation targets.

5.3 The priority 1 Modules along with the associated elements, applicability, performance Indicators, supporting Metrics, and performance Targets are shown in the **Table 2** below.

***Note**: The different elements supporting the implementation are explained in detail in the ASBU Document which is attached to the Global Plan (Doc 9750).*

6. Governance

6.1 Progress report on the status of implementation of the different priority 1 Modules should be developed by the Air Navigation System Implemenation Group (ANSIG) and presented to the MIDANPIRG Steering Group (MSG) and/or MIDANPIRG on regular basis.

6.2 The MIDANPIRG and its Steering Group (MSG) will be the governing body responsible for the review and update of the MID Region Air Navigation Strategy.

6.3 The MID Region Air Navigation Strategy will guide the work of MIDANPIRG and its subsidary bodies and all its member States and partners.

6.4 Progress on the implementation of the MID Region Air Navigation Strategy and the achievement of the agreed air navigation targets will be reported to the ICAO Air Navigation Commission (ANC), through the review of the MIDANPIRG reports; and to the stakeholders in the Region within the framework of MIDANPIRG.

Table 2. MONITORING THE IMPLEMENTATION OF THE ASBU BLOCK 0 MODULES IN THE MID REGION

B0 – APTA: Optimization of Approach Procedures including vertical guidance

Description and purpose

The use of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures will enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of Basic global navigation satellite system (GNSS), Baro vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	Y

Applicability consideration:

This module is applicable to all instrument, and precision instrument runway ends, and to a limited extent, non-instrument runway ends.

B0 – APTA: Optimization of Approach Procedures including vertical guidance			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
States' PBN Implementation Plans	All	Indicator: % of States that provided updated PBN implementation Plan Supporting metric: Number of States that provided updated PBN implementation Plan	80 % by Dec. 2014 100% by Dec. 2015
LNAV	All RWYs Ends at International Aerodromes	Indicator: % of runway ends at international aerodromes with RNAV(GNSS) Approach Procedures (LNAV) Supporting metric: Number of runway ends at international aerodromes with RNAV (GNSS) Approach Procedures (LNAV)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2016
LNAV/VNAV	All RWYs ENDs at International Aerodromes	Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV) Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2017

Module N° B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

Description and purpose

Basic A-SMGCS provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome thus improving runway/aerodrome safety. ADS-B information is used when available (ADS-B APT).

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	Y

Applicability consideration:

A-SMGCS is applicable to any aerodrome and all classes of aircraft/vehicles. Implementation is to be based on requirements stemming from individual aerodrome operational and cost-benefit assessments. ADS-B APT, when applied is an element of A-SMGCS, is designed to be applied at aerodromes with medium traffic complexity, having up to two active runways at a time and the runway width of minimum 45 m.

B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)			
Elements	***Applicability***	**Performance Indicators/Supporting Metrics**	**Targets**
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 1 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 1	70% by Dec. 2017
A-SMGCS Level 2*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 2 Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 2	50% by Dec. 2017

**Reference: Eurocontrol Document – "Definition of A-SMGCS Implementation Levels, Edition 1.2, 2010".*

B0 – ACDM: Improved Airport Operations through Airport-CDM

Description and purpose

To implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	N

Applicability consideration:

Local for equipped/capable fleets and already established airport surface infrastructure.

B0 – ACDM: Improved Airport Operations through Airport-CDM			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented improved airport operations through airport-CDM Supporting metric: Number of applicable international aerodromes having implemented improved airport operations through airport-CDM	40% by Dec. 2017

B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Description and purpose

To improve coordination between air traffic service units (ATSUs) by using ATS Interfacility Data Communication (AIDC) defined by the ICAO *Manual of Air Traffic Services Data Link Applications* (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process particularly for oceanic ATSUs.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	N	Y

Applicability consideration:

Applicable to at least two area control centres (ACCs) dealing with enroute and/or terminal control area (TMA) airspace. A greater number of consecutive participating ACCs will increase the benefits.

B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
AMHS capability	*All States*	Indicator: % of States with AMHS capability Supporting metric: Number of States with AMHS capability	70% of States with AMHS capability by Dec. 2017
AMHS implementation /interconnection	*All States*	Indicator: % of States with AMHS implemented (interconnected with other States AMHS) Supporting metric: Number of States with AMHS implemented (interconnections with other States AMHS)	60% of States with AMHS interconnected by Dec. 2017
Implementation of AIDC/OLDI between adjacent ACCs	*All ACCs*	Indicator: % of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with neighboring ACCs Supporting metric: Number of AIDC/OLDI interconnections implemented between adjacent ACCs	70% by Dec. 2017

B0 – DATM: Service Improvement through Digital Aeronautical Information Management

Description and purpose

The initial introduction of digital processing and management of information, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical information exchange model (AIXM), migration to electronic aeronautical information publication (AIP) and better quality and availability of data

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	N	Y	Y	Y

Applicability consideration:

Applicable at State level, with increased benefits as more States participate

B0 – DATM: Service Improvement through Digital Aeronautical Information Management			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
1- National AIM Implementation Plan/Roadmap	*All States*	Indicator: % of States that have National AIM Implementation Plan/Roadmap Supporting Metric: Number of States that have National AIM Implementation Plan/Roadmap	80% by Dec. 2016 90% by Dec. 2018
2-AIXM	*All States*	Indicator: % of States that have implemented an AIXM-based AIS database Supporting Metric: Number of States that have implemented an AIXM-based AIS database	60% by Dec. 2015 80% by Dec. 2017 100% by Dec. 2019
3-eAIP	*All States*	Indicator: % of States that have implemented an IAID driven AIP Production (eAIP) Supporting Metric: Number of States that have implemented an IAID driven AIP Production (eAIP)	60% by Dec. 2016 80% by Dec. 2018 100% by Dec. 2020
4-QMS	*All States*	Indicator: % of States that have implemented QMS for AIS/AIM Supporting Metric: Number of States that have implemented QMS for AIS/AIM	70% by Dec. 2016 90% by Dec. 2018
5-WGS-84	*All States*	Indicator: % of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Supporting Metric: Number of States that have implemented WGS-84 for horizontal plan (ENR, Terminal, AD) Indicator: % of States that have implemented WGS-84 Geoid Undulation Supporting Metric: Number of States that have implemented WGS-84 Geoid Undulation	Horizontal: 100% by Dec. 2017 Vertical: 90% by Dec. 2018

6-eTOD	*All States*	Indicator: % of States that have implemented required Terrain datasets Supporting Metric: Number of States that have implemented required Terrain datasets Indicator: % of States that have implemented required Obstacle datasets Supporting Metric: Number of States that have implemented required Obstacle datasets	Area 1 : Terrain: 50% by Dec. 2015, 70% by Dec. 2018 Obstacles: 40% by Dec. 2015, 60% by Dec. 2018 Area 4: Terrain: 50% by Dec. 2015, 100% by Dec. 2018 Obstacles: 50% by Dec. 2015, 100% by Dec. 2018
7-Digital NOTAM*	*All States*	Indicator: % of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM Supporting Metric: Number of States that have included the implementation of Digital NOTAM into their National Plan for the transition from AIS to AIM	80% by Dec. 2016 90% by Dec. 2018

B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety

Description and purpose

Global, regional and local meteorological information:

a) forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC);
b) aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome including wind shear; and
c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

This module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

Applicability consideration:
Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
SADIS 2G and Secure SADIS FTP	***All*** *States*	Indicator: % of States having implemented SADIS 2G satellite broadcast or Secure SADIS FTP service Supporting metric: number of States having implemented SADIS 2G satellite broadcast or Secure SADIS FTP service	90% by Dec. 2015 100% by Dec. 2017
QMS	***All*** *States*	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	60% by Dec. 2015 80% by Dec. 2017

B0 – FRTO: Improved Operations through Enhanced En-Route Trajectories

Description and purpose

To allow the use of airspace which would otherwise be segregated (i.e. special use airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight length and fuel burn.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	N/A

Applicability consideration:

Applicable to en-route and terminal airspace. Benefits can start locally. The larger the size of the concerned airspace the greater the benefits, in particular for flex track aspects. Benefits accrue to individual flights and flows. Application will naturally span over a long period as traffic develops. Its features can be introduced starting with the simplest ones.

B0 – FRTO: Improved Operations through Enhanced En-Route Trajectories			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
Flexible use of airspace (FUA)	*All States*	Indicator: % of States that have implemented FUA Supporting metric*: number of States that have implemented FUA	40% by Dec. 2017
Flexible routing	*All States*	Indicator: % of required Routes that are not implemented due military restrictions (segregated areas) Supporting metric 1: total number of ATS Routes in the Mid Region Supporting metric 2*: number of required Routes that are not implemented due military restrictions (segregated areas)	60% by Dec. 2017

* *Implementation should be based on the published aeronautical information*

B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view

Description and purpose

Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in a way that minimizes delay and maximizes the use of the entire airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or Flight Information Region (FIR)/sector boundaries and re-route traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.

Experience clearly shows the benefits related to managing flows consistently and collaboratively over an area of a sufficient geographical size to take into account sufficiently well the network effects. The concept for ATFM and demand and capacity balancing (DCB) should be further exploited wherever possible. System improvements are also about better procedures in these domains, and creating instruments to allow collaboration among the different actors**.**

Guidance on the implementation of ATFM service are provided in the ICAO Doc 9971– Manual on Collaborative Air Traffic Flow Management

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	N/A

Applicability consideration:

Applicable to en-route and terminal airspace. Benefits can start locally. The larger the size of the concerned airspace the greater the benefits. Application will naturally span over a long period as traffic develops.

B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
ATFM Measures implemented in collaborative manner	*All States*	Indicator: % of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision Supporting metric: number of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision	100% by Dec. 2017

B0 – ACAS: ACAS Improvements

Description and purpose

To provide short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N/A	N/A	Y	N/A	Y

Applicability consideration:

Safety and operational benefits increase with the proportion of equipped aircraft.

B0 – ACAS: ACAS Improvements			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
Avionics	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons Supporting metric: Number of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons	80% by Dec. 2015 100% by Dec. 2016

B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)

Description and purpose

To use performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles and increase capacity in terminal areas.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

Applicability consideration:
Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers:

a) least complex – regional/States/locations with some foundational PBN operational experience that could capitalize on near term enhancements, which include integrating procedures and optimizing performance;

b) more complex – regional/States/locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation; and

c) most complex – regional/States/locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, region or location.

B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
PBN STARs	In accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with PBN STAR implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with PBN STAR implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs 100% by Dec. 2018 for all the International Aerodromes/TMAs
International aerodromes/TMAs with CDO	In accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with CDO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs

B0 –TBO: Improved Safety and Efficiency through the initial application of Data Link En-Route

Description and purpose
To implement an initial set of data link applications for surveillance and communications in ATC, supporting flexible routing, reduced separation and improved safety.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N/A	Y	N/A	N/A	Y

Applicability consideration:

Requires good synchronization of airborne and ground deployment to generate significant benefits, in particular to those equipped. Benefits increase with the proportion of equipped aircraft.

B0 –TBO: Improved Safety and Efficiency through the initial application of Data Link En-Route			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
ADS-C and CPDLC	Muscat and Sanaa FIRs	Indicator: % of FIRs having implemented data link en-route, as and where required Supporting Metric: Number of FIRs having implemented data link en-route, as and where required	50% by Dec. 2017

B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)

Description and purpose

To implement continuous climb operations in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles and increase capacity at congested terminal areas.

Main performance impact:

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N/A	N/A	Y	Y	Y

Applicability consideration:

Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers:

a) least complex: regional/States/locations with some foundational PBN operational experience that could capitalize on near-term enhancements, which include integrating procedures and optimizing performance;

b) more complex: regional/States/locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation; and

c) most complex: regional/States/locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, region or location.

B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)			
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
PBN SIDs	in accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with PBN SID implemented as required. Supporting Metric: Number of International Aerodromes/ TMAs with PBN SID implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs 100% by Dec. 2018 for all the International Aerodromes/TMAs
International aerodromes/TMAs with CCO	in accordance with States' implementation Plans	Indicator: % of International Aerodromes/TMA with CCO implemented as required. Supporting Metric: Number of International Aerodromes/TMAs with CCO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs

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APPENDIX 3B

APANPIRG Regional Priorities, Targets and Metrics

Priority	ASBU module or SeamlessElement	Targets	Target date (Seamless ATM Phase 1 Plan)	Metric
PBN	B0-APTA	1. <u>Approach</u>: Where practicable, **all high- density aerodromes** with instrument runways serving aeroplanes should have precision approaches or APV or LNAV. *Note 1: High density aerodrome is defined by Asia-Pacific Seamless ATM Plan as aerodromes with scheduled operations in excess of 100,000/year.* *Note 2: the Asia/Pacific PBN Plan Version 3 required RNP APCH with Baro-VNAV or APV in 100% of instrument runways by 2016*	12 November 2015	% of **high density aerodromes** with precision approaches or APV or LNAV.
Network Operations	B0-NOPS	2. **All High Density FIRs** supporting the busiest Asia/Pacific traffic flows and high-density aerodromes should implement ATFM incorporating CDM using operational ATFM platform/s. *Note: **High Density FIRs are defined as:*** *a) South Asia: Delhi, Mumbai;* *b) Southeast Asia: Bangkok, Hanoi, Ho Chi Minh, Jakarta, Kota Kinabalu, Manila, Sanya, Singapore, Vientiane; and* *c) East Asia: Beijing, Fukuoka, Guangzhou, Hong Kong, Kunming, Incheon, Shanghai, Shenyang, Taibei, Wuhan.* *[APANPIRG Conclusion 22/8 and 23/5 refer]*	12 November 2015	% of **High Density FIRs** supporting the busiest Asia/Pacific traffic flows and high density aerodromes using operational ATFM platforms incorporating CDM
Aeronautical Information Management	B0-DATM	3. ATM systems should be supported by digitally-based AIM systems through implementation of **Phase 1 and 2 of the AIS-AIM Roadmap**	12 November 2015	% of Phase 1 and 2 AIS-AIM elements completed

Flight and Flow Information for a Collaborative Environment (FF-ICE)	B0-FICE	4. All States between ATC units where transfers of control are conducted have implemented the messages ABI, EST, ACP, TOC, AOC as far as practicable.	12 November 2015	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs
Civil/Military	B0-FRTO	5. Enhanced En-Route Trajectories: All States should ensure that SUA are regularly reviewed by the appropriate Airspace Authority to assess the effect on civil air traffic and the activities affecting the airspace.	12 November 2015	% of States in which FUA is implemented
Civil/Military	Strategic Civil Military coordination (Regional)	6. Enhanced En-Route Trajectories: All States should ensure that a national civil/military body coordinating strategic civil-military activities is established.	12 November 2015	% of States which have established a national civil/military body that performs strategic civil-military coordination
Civil/Military	Tactical Civil Military coordination (Regional)	7. Enhanced En-Route Trajectories: All States should ensure that formal civil military liaison for tactical response is established.	12 November 2015	% of States which have established a formal civil military liaison for tactical response
Ground Surveillance	B0-ASUR	8. All Category S upper controlled airspace and Category T airspace supporting high density aerodromes should be designated as non-exclusive or exclusive as appropriate ADS-B airspace requiring operation of ADS-B.	12 November 2015	% of FIRs where Category S airspace and Category T airspace supporting high density aerodromes are designated as ADS-B airspace
Ground Surveillance	B0-ASUR	9. ADS-B or MLAT or radar surveillance systems should be used to provide coverage of all Category S-capable airspace as far as practicable, with data integrated into operational ATC aircraft situation displays.	12 November 2015	% of ACCs with ATS Surveillance using ADS-B, MLAT or radar in Category S airspace, and having data integrated into the ATC system situation display

Trajectory-Based Operations-Data Link En-Route	B0-TBO	10. Within Category R airspace, ADS-C surveillance and CPDLC should be enabled to support PBN-based separations.	12 November 2015	% of FIRs using data link applications to support PBN-based separations in Category R airspace

Note 1: **high density aerodromes:** based on 2012 ICAO data, as per Seamless Plan v1.0, the 21 busiest Asia/Pacific aerodromes were:

- Australia (Sydney, Melbourne);
- China (Beijing, Shanghai Pudong and Hong Jiao, Guangzhou, Hong Kong, Xi'an, Shenzhen, Chengdu, Kunming);
- India (New Delhi, Mumbai);
- Indonesia (Jakarta);
- Japan (Haneda, Narita);
- Malaysia (Kuala Lumpur);
- Philippines (Manila);
- Republic of Korea (Incheon);
- Singapore (Changi); and
- Thailand (Suvarnabhumi).

ICAO definition for Aerodrome traffic density included in Annex 14 is:
c) Heavy. Where the number of movements in the mean busy hour is of the order of 26 or more per runway or typically more than 35 total aerodrome movements.
Note 1.— The number of movements in the mean busy hour is the arithmetic mean over the year of the number of movements in the daily busiest hour.
Note 2.— Either a take-off or a landing constitutes a movement.

Responsibility matrix for ASBU modules and corresponding Seamless items

Seamless ATM Specification title	Seamless Reference	Regional Priority	ASBU Module	ASBU - Module title	Endorsing body
Airport Collaborative Decision-Making (ACDM)	70	2	B0-ACDM	Improved Airport Operations through Airport-CDM	**ATM SG**
Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	80	1	B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	**ATM SG**
Arrival Manager/Departure Management (AMAN/DMAN)	50	2	B0-RSEQ	Improve Traffic flow through Sequencing (AMAN/DMAN)	**ATM SG**
Aeronautical Information Management	300	1	B0-DATM	Service Improvement through Digital Aeronautical Information Management	**ATM SG**
Civil Military use of SUA	360	1	B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	**ATM SG**
Continuous Descent Operations (CDO)	90	2	B0-CDO	Improved Flexibility and Efficiency in Descent Profiles using Continuous Descent Operations (CDOs)	**CNS SG**
Continuous Climb Operations (CCO)	100	2	B0-CCO	Improved Flexibility and Efficiency Departure Profiles – Continuous Climb Operations (CCO)	**CNS SG**
Performance-based Navigation (PBN) Routes	140	2	B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	**CNS SG**
ATM systems enabling optimal PBN/ATC operations	250	2	B0-APTA	Optimization of Approach Procedures including vertical guidance	**CNS SG**
UPR and DARP	290	3	B0-FRTO	Improved Safety and Efficiency through the initial application of Data Link En-Route	**ATM SG**
Nil	440	3	B0-WAKE	Improved Access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B	**ATM SG**
Nil	450	3	B0-OPFL	Increased Runway Throughput through Optimized Wake Turbulence Separation	**ATM SG**
Performance-based Navigation (PBN) Approach	110	1	B0-APTA	Optimization of Approach Procedures including vertical guidance	**CNS SG**
ATS Surveillance	180	1	B0-ASUR	Initial Capability for Ground Surveillance	**CNS SG**
ATS Inter-facility Data-link Communications (AIDC)	220	1	B0-FICE	Increased Interoperability Efficiency & Capacity through Ground-Ground Integration	**CNS SG**

ATS surveillance with data integrated	270	1	B0-ASUR	Initial Capability for Ground Surveillance	**CNS SG**
ADS-C and CPDLC	280	1	B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	**CNS SG**
Standard Instrument Departures/Standard Terminal Arrivals (SID/STAR)	120	2	B0-CCO B0-CDO	Optimization of Approach Procedures including vertical guidance	**CNS SG**
Safety Nets	160	2	B0-SNET	Increased effectiveness of ground-based safety nets	**CNS SG**
Airborne Safety Systems	170	2	B0-ACAS	Airborne Collision Avoidance Systems (ACAS) Improvements	**CNS SG**
Nil	430	2	B0-ASEP	Air Traffic Situational Awareness (ATSA)	**CNS SG**
Safety and Efficiency of Surface Operations	40	3	B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	**CNS SG**
Meteorological Information	310	2	B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	**MET SG**

APPENDIX 3C

Air Navigation Capacity and Efficiency: ANS Indicators adopted by the AFI Plan Steering Committee (October 2014)

Objective	**Performance indicators/Metrics (Targets to be established by APIRG/20)**
1. Implement Performance Based Navigation (PBN) ASBU Module B0-APTA	• Number of PBN routes • Number of International Aerodromes/TMAs with PBN SIDs implemented • Number of International Aerodromes/TMAs with PBN STARs implemented • Number of International Aerodromes with Approach Procedures with vertical guidance (APV) • Number of International Aerodromes with Approach Procedures with lateral guidance (LNAV)
2. Implement Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO) ASBU Modules B0-CDO and CCO	• Number of International Aerodromes/TMA with CDO implemented • Number of International Aerodromes/TMAs with CCO implemented • Annual environmental benefits attained (reduced fuel consumption/GHG emissions)
3. Reduce Aircraft Proximity incidents (AIRPROX) due to ANS deficiencies	• Number of Aircraft Proximity incidents (AIRPROX) due to ANS • Number of ACAS Resolution Advisory (RA) events due to ATS deficiencies • Number of States with training programmes for ANS personnel implemented on yearly basis
4. Reduce risk of accidents related to ATM safety	• Number of accidents related to ATM safety
5. Implement Digital ATS Coordination/Transfer ASBU Module B0-FICE	• Number of FIRs within which all applicable ACCs have implemented at least one interface to use ATS Inter-facility Data Communications (AIDC) with neighboring ACCs • Number of reported incidents related to lack of coordination between ACCs
6. Establish effective and operational SAR Organization.	• Number of States with SAR Organization • Number of States with SAR Plans • Number of States with SAR Agreements
7. Implement en route Data Link Applications ASBU Module B0-TBO	• Number of FIRs having implemented Data Link (ADS-C/CPDLC, ADS-B) for en-route operations
8. Implement Aeronautical Information Management (AIM) Quality Management System (QMS)	• Number of States with AIM QMS implemented

Objective	**Performance indicators/Metrics (Targets to be established by APIRG/20)**
ASBU Module B0-DATM	
9. Implement Aeronautical Meteorology (MET) Quality Management System (QMS) ASBU Module B0-AMET	• Number of States with MET QMS implemented • Number of incidents/accidents with MET conditions as a sole or contributory factor

ASBU Modules – Planning Targets and Implementation Progress (APIRG/19)

ASBU B0-APTA: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
1. APV with Baro-VNAV	December 2016 – Service Providers and users
2. APV with SBAS	December 2017 – As per AFI-GNSS Strategy.
3. APV with GBAS	December 2018 – Initial implementation at some States (service providers)

ASBU B0-ASUR: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
1. Implementation of ADS-B	June 2018 – Users and service provider
2. Implementation of Multilateration	June 2018 – Users and service provider
3. Automation system (Presentation)	June 2017 – Users and service provider

ASBU B0-SURF: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
1. Surveillance system for ground surface movement (PSR, SSR, ADS-B or Multilateration)	December 2017 Service provider
2. Surveillance system on board (SSR transponder, ADS-B capacity)	December 2017 Service provider
3. Surveillance system for vehicle	December 2017 Service provider
4. Visual aids for navigation	December 2015 Service provider
5. Wildlife strike hazard reduction	December 2015 Aerodrome operator / Wildlife Committee
6. Display and processing information	December 2017 Service Provider

ASBU B0-ACAS: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
ACAS II (TCAS Version 7.1)	2013-2018

ASBU B0-FICE: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
1. Complete AMHS implementation at States still not counting with this system	December 2015 – Services provider
2. AMHS interconnection	December 2015 – Services provider
3. Implement AIDC/OLDI at some States automated centres	June 2014 – Services provider
4. Implement operational AIDC/OLDI between adjacent ACCs	June 2015 – Services provider
5. Implement the AFI Integrated Telecommunication Network	June2015– Services provider

ASBU B0-SNET: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
1. Short Term Conflict Alert (STCA)	June 2014 / Service provider 2013-2018
2. Area Proximity Warning (APW)	June 2014 / Service provider 2013-2018
3. Minimum Safe Altitude Warning (MSAW)	June 2014
4. Dangerous Area Infringement Warning (DAIW)	2013-2018

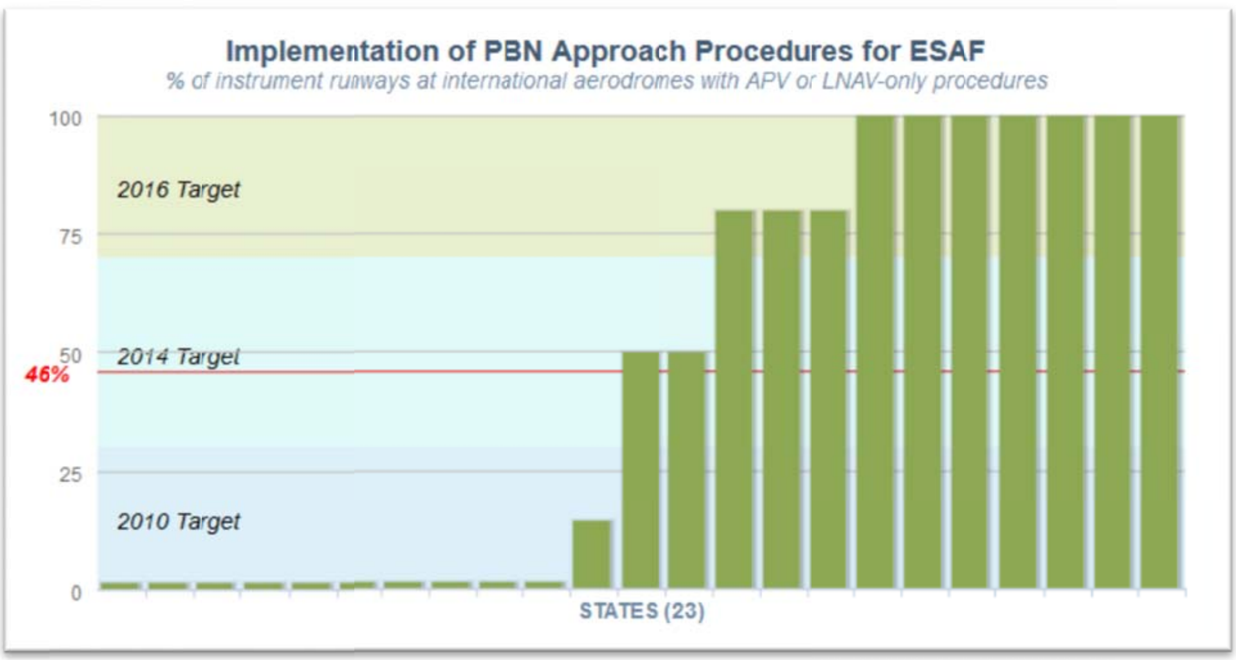
ASBU B0-AMET: Planning Targets and Implementation Progress

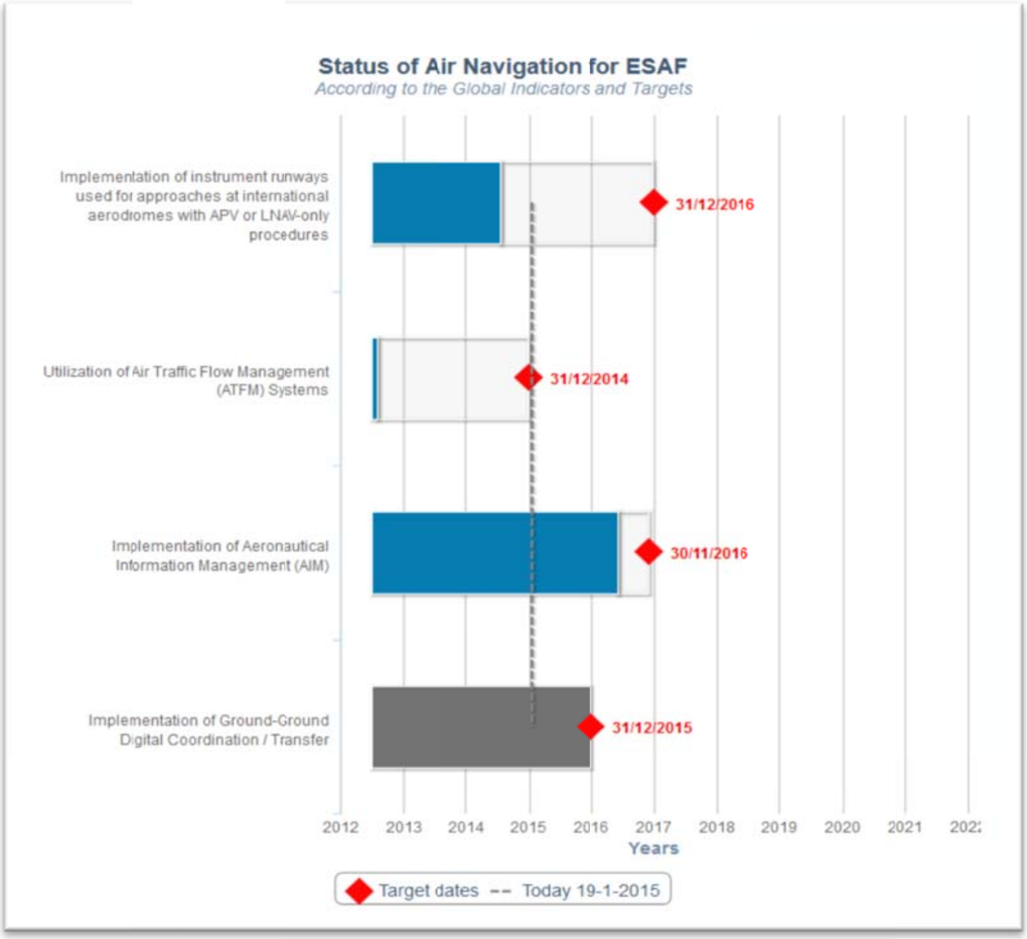
Elements	Targets and Implementation Progress (Ground and Air)
1. WAFS	In process of implementation
2. IAVW	In process of implementation
3. Tropical cyclone watch	In process of implementation
4. Aerodrome warnings	In process of implementation
5. Wind shear warnings and alerts	50% by December 2014
6. SIGMET	80% by December 2014
7. QMS/MET	75% by December 2014
8. Other OPMET Information (METAR, SPECI, TAF)	In process of improvement

ASBU B0-DATM: Planning Targets and Implementation Progress

Elements	Targets and Implementation Progress (Ground and Air)
1. QMS for AIM	**December 2014**
2. e-TOD implementation	**December 2016**
3. WGS-84 implementation	**Implemented**
4. AIXM implementation	**December 2016**
5. e-AIP implementation	**December 2014**
6. Digital NOTAM	**December 2017**

Results:




Status of Air Navigation for ESAF
According to the Global Indicators and Targets
Implementation of instrument runways used for approaches at international aerodromes with APV or LNAV-only procedures
31/12/2016
Utilization of Air Traffic Flow Management (ATFM) Systems
31/12/2014
Implementation of Aeronautical Information Management (AIM)
30/11/2016
Implementation of Ground-Ground Digital Coordination / Transfer
31/12/2015
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Years
Target dates
Today 19-1-2015

APPENDIX 3D

a) Capacity and efficiency targets;

EUR Region

Module Code	Module Title	Applicability Area	Indicator[1]	Target
B0-APTA	Optimization of Approach Procedures including vertical guidance	EUR	% of international aerodromes having at least one instrument runway provided with APV with Baro VNAV procedure implemented	100% in 2018 for applicable aerodromes.
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	Selected Aerodromes (list to be established in coordination with AU and ANSPs)	% of applicable international aerodromes having implemented A-SMGCS Level 2	100% in 2018 for applicable aerodromes.
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	EUR – AIDC/OLDI	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs	100% of FIRs within which all applicable ACCs have implemented AIDC or OLDI by 2015
B0-DATM	Service Improvement through Digital Aeronautical Information Management	EUR	- % States having implemented an integrated aeronautical information database - % States having implemented QMS	- 100% States having implemented an integrated aeronautical information database by 2018 - 100 % States having implemented QMS by 2018
B0-ACAS	ACAS Improvements	EUR	% of aircraft equipped with TCAS v 7.1	All new aircraft in Europe since March 2012 Retrofit: 12/2015
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	EUR – STCA Level 2	% of States having implemented ground-based safety-nets (STCA, APW, MSAW, etc.)	100% of States having implemented ground-based safety-nets (STCA, APW, MSAW, etc.) by 2018
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	EUR	% of States having implemented SADIS 2G satellite broadcast or Secure SADIS FTP service	90% by Dec 2015 and 100% by Dec 2017
AMET	VAAC information	EUR	i) status of implementation of volcanic ash advisory	100%

Module Code	Module Title	Applicability Area	Indicator[1]	Target
			information including in graphical format (EUR includes London, Toulouse, Tokyo and Anchorage Volcanic Ash Advisory Centers)	

NAT Region

Module Code	Module Title	Applicability Area	Indicator[2]	Target
B0-FRTO (RLongSM)	5min longitudinal separation between data link equipped a/c	Phase I - Shanwick and Gander OCA- validation trials 2012 Phase 2 -Full operations (TBD)	Increased capacity	Reduced average fuel burn and CO2 per a/c compare to current separation
B0-FRTO (RLatSM)	½ degree lateral separation between data link and RNP 4 a/c	Phase 1 – Nov 2015(validation trial, 2 tracks) Phase 2 – approx. 2016, all OTS Phase 3- TBD all NAT	Increased capacity	100% OTS capacity increase in Phase 2
B0-TBO B0-SNET (FANS data link impl)	FANS 1/A data link implementation	Phase 1-2013(2 tracks) Phase 2a –Feb 2015 (all OTS FL350-390) Phase 2b – dec 2017 all NAT FL 35-390 Phase 2 c- Jan 2020 All NAT FL290 above	Reduced GNEs and LHDs (see safety targets)	100% equipage
B0-FICE (AIDC)	AIDC implementation	Phase 1 – 2013 Phase 2 -	Reduced GNEs and LHDs (see safety targets)	100% implementation

Module Code	Module Title	Applicability Area	Indicator[2]	Target
B0-FRTO (MNPS to PBN transition)	MNPS to PBN transition plan			
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	NAT	% of States having implemented SADIS 2G satellite broadcast or Secure SADIS FTP service or WAFS Internet File Service (WIFS)	100% by Dec 2015
AMET	VAAC information	NAT	i) status of implementation of volcanic ash advisory information including in graphical format (EUR includes London, Toulouse, Tokyo and Anchorage Volcanic Ash Advisory Centers)	100%

b) Capacity and efficiency dashboard.

EUR Region

Module Code	Module Title	Current status (assessment)
B0-APTA	Optimization of Approach Procedures including vertical guidance	30% at applicable aerodromes.(CNS 4b Table of the EUR ANP)
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	TBD (list for applicable aerodromes TBD)
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	80% of FIRs (AFS Table of EUR ANP)
B0-DATM	Service Improvement through Digital Aeronautical Information Management	TBD
B0-ACAS	ACAS Improvements	TBD

Module Code	Module Title	Current status (assessment)
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	86.8% WAFS implementation
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	TBD
AMET VACC	i) status of implementation of volcanic ash advisory information including in graphical format (EUR includes London, Toulouse, Tokyo and Anchorage Volcanic Ash Advisory Centers)	100% - 2014 N/A- 2013

NAT Region

Module Code	Module Title	Current status
B0-FRTO (RLongSM)	5min longitudinal separation between data link equipped a/c	Validation trial ongoing
B0-FRTO (RLatSM)	½ degree lateral separation between data link and RNP 4 a/c	Planned Nov 2015
B0-TBO B0-SNET (FANS data link impl)	FANS 1/A data link implementation	70%
B0-FICE (AIDC)	AIDC implementation	100%
B0-FRTO (MNPS to PBN transition)	MNPS to PBN transition plan	RNAV 10 and RNP 4 equipage assessment ongoing
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	100% WAFS implementation
AMET VAAC	Status of implementation of volcanic ash advisory information including in graphical format (NAT includes London, Toulouse, Montréal and Washington Volcanic Ash Advisory Centers)	100%- 2014 N/A - 2013

APPENDIX 3E

a) Capacity and efficiency targets

The Port-of-Spain Declaration (under 2014 – Safety, paragraph 1 item a) includes the Regional Safety and Air Navigation targets that will be presented in the ICAO Regional Performance Dashboard as follows:

1. Approach - Performance-Based Navigation (PBN)

   - 80% of instrument approach runways to have Approach Procedures with Vertical Guidance (APV) with Barometric Vertical Navigation (Baro VNAV) implemented by service providers and users by December 2016

2. Air Traffic Flow Management (ATFM)

   - 100% of Flight Information Regions (FIRs) within which all Area Control Centres (ACCs) to have ATFM measures available by December 2018

3. Aeronautical Information Management Transition (AIM)

   - 100% of Aeronautical Information Services (AIS) to implement AIM Roadmap - Phase I required elements by December 2016

4. Ground-Ground Digital Coordination/Transfer

   - 50% of FIRs within which all applicable ACCs to have implemented at least one interface to use Air Traffic Services Inter-Facility Data Communication (AIDC)/On-Line Data Interchange (OLDI) with neighbouring ACCs by December 2016

5. Environmental Benefit

   - Reduce regional CO_2 emissions by 40,000 tons per year through PBN implementation by December 2016

Similarly, with the approval of the NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP) version 3.1 by the North American, Central American and Caribbean Directors of Civil Aviation, other ASBU-based key air navigation targets were adopted to accomplish the identified AN regional priorities as follows:

1. B0-65/APTA: Optimization of Approach Procedures Including Vertical Guidance

   - 20% of instrument runways to have APV with SBAS/WAAS implemented by December 2018– Service Providers and users
   - 20% of instrument runways to have APV with GBAS by December 2018 – Initial implementation at some States (services providers)

- 60% of instrument runways to have LNAV procedure implemented by December 2016 – Service Providers and users as per Assembly Resolution A37-11

2. B0-15/RSEQ: Improve Traffic Flow Through Runway Sequencing (AMAN/DMAN)

- 10% of selected aerodromes with AMAN and time based metering by Dec. 2016
- 10% of selected aerodromes with DMAN by Dec. 2016
- 20% of selected aerodromes with Airport-capacity calculated by Dec. 2016

3. B0-75/SURF Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

- 30% of selected aerodromes with SMR/ SSR Mode S/ ADS-B/ Multilateration for ground surface movement by June 2018
- 20% of aircraft on the NAM/CAR State registries to have surveillance system on board (SSR transponder, ADS B capacity) by June 2018
- 20% of vehicles at selected aerodromes with a cooperative transponder systems by June 2018
- 70% of selected aerodromes complying with visual aid requirements as per Annex 14 by December 2015
- 70% of selected airports with an aerodrome bird/wildlife organization and control programme by December 2018

4. B0-80/ACDM Improved Airport Operations through Airport - CDM

- 60% of selected aerodromes with Airport-CDM by Dec. 2018
- 48% of international aerodromes to be certified in the CAR Region by December 2016
- 30% of selected Heliports with operational approval by Dec. 2018

5. B0-25/FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

- 100% implementation of MEVA III IP Network by MEVA Member States by August 2015
- 4 States with Air Traffic Services Message Handling Services (AMHS) interconnected with other AMHS by December 2014
- 70% of ATN router structure implemented by June 2016

6. B0-30/DAIM: Service Improvement through Digital Aeronautical Information Management

- 10 % of States e-TOD Implemented by Dec.2018
- 40 % of States with AIXM 5.1 implemented by Dec.2018
- 45 % of States with e-AIP implemented by Dec.2018
- 35 % of States with Digital NOTAM implemented by Dec. 2018

7. B0-105/AMET: Meteorological Information Supporting Enhanced Operational Efficiency and Safety

- 100% of States implementation of WAFS Internet File Service (WIFS) by December 2014
- 70% of MWOs with IAVW procedures implemented by December 2014.
- 100% of MWOs with tropical cyclone watch procedures implemented by December 2014.
- 50% of selected aerodromes/AMOs with Aerodrome warnings implemented by December 2014
- 20% of selected aerodromes/AMOs with wind shear warnings procedures implemented (MET provider services) by December 2015
- 90% of selected aerodromes/MWOs with SIGMET procedures implemented (MET provider services) by Dec. 2014

8. B0-10/FRTO: Improved Operations through Enhanced En-Route Trajectories

- 100% of States to have completed a PBN plan by Dec. 2018
- 50% of selected segregated airspaces available for civil operations by Dec. 2016

9. B0-84/ASUR: Initial Capability for Ground Surveillance

- 30% of selected aerodromes with ADS-B implemented by Dec 2018
- 80% of multilateration system implemented in selected aerodromes by June 2018

10. B0-101/ACAS: ACAS Improvements

- 10% of aircraft on NAM/CAR State registries equipped with ACAS II (TCAS Version 7.1) by Dec 2018

11. B0-102/SNET: Increased Effectiveness of Ground-Based Safety Nets

- 80% of selected ATS units with ground based safety nets (STCA) implemented by Dec 2015
- 70% of selected ATS units with ground based safety nets (APW) implemented / 70% of selected ATS units with ground based safety nets (MSAW) implemented by Dec 2015
- 80% of selected ATS units with ground based safety nets (MTCA) implemented by Dec 2016

12. B0-05/CDO: Improved Flexibility and Efficiency in Continuous Descent Operations (CDOs)

- 50% of selected. Aerodromes with continuous descent operations (CDO) implemented by Dec.2016
- 80% of selected. Aerodromes with PBN STARs implemented by Dec.2016

13. B0-40/TBO: Improved Safety and Efficiency through the initial application of En-Route Data Link

- 80% of selected FIRs with ADS-C implemented by December 2016
- 80% of selected FIRs with CPDLC implemented by June 2018

14. B0-20/CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCOs)

- 60% of selected aerodromes with continuous climb operations (CCO) implemented by Dec.2016
- 60% of selected aerodromes with PBN SIDs implemented by Dec.2016

APPENDIX 3F

a) Capacity and efficiency targets

The Bogota Declaration (Bogota, 6 December 2013); issued by SAM States; set ten regional goals for capacity and efficiency for the period 2014 – 2016. In this context the targets are:

- PBN terminal: Full compliance with goals established in ICAO Assembly Resolution A37-11 regarding approach procedure with vertical guidance (APV).
- PBN en-route: 60% of the international aerodromes with standard instrument departure (SID) /standard instrument arrival (STAR) PBN.
- 60% of the routes/airspaces with performance based navigation (PBN).
- CDO: 40% of the international aerodromes / terminal control areas (TMA) with continuous descent operation (CDO).
- CCO: 40% of the international aerodromes / TMAs with continuous climb operations (CCO).
- ATFM: 100% of the area control centre (ACCs) providing air traffic flow management (ATFM).
- AIM: 100% of the required elements in PHASE I (aeronautical information services (AIS) to aeronautical information management (AIM) Roadmap).
- AMHS interconnection: 100% of the Air Traffic Services Message Handling Services (AMHS) regionally interconnected (Total: 26 interconnections)

- Interconnection of automated systems (ATS interfacility data communications (AIDC) exchange): 100% of the automated systems interconnected (Total: 15 interconnections)

- Implementation of national Internet protocol (IP) networks: 80% of the States with national IP communications networks implemented.

- Estimated fuel savings/ C02 emissions reduction based on the ICAO fuel savings estimation tool (IFSET) Reach 40,000 tons of regional CO_2 emissions reduction per year in en-route PBN implementation.

MID REGION TMAs PROCEDURES Implementation Status as of July 2014

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
BAHRAIN												
OBBI	12L	ILS	I	VORDME		Y						SIDs and STARs withdrawn
	30R	ILS	I	VORDME		Y						SIDs and STARs withdrawn
Total	2	2		2	Draft	2	0	0	0	0	0	
%		100		100	Nov 2009	100	0	0	0	0	0	
EGYPT												
HEAX	4			VORDME		Y						
	18											
	22			VORDME		Y						
	36			VORDME								
HEBA	14											
	32	ILS	I			Y		Y				
HESN	17			VORDME		Y		Y		Y		
	35	ILS	I	VORDME		Y		Y		Y		
HEAT	13					Y		Y		Y		
	31	ILS	I	VORDME		Y		Y		Y		
HECA	05L	ILS	I	VORDME		Y						
	05C	ILS	II	VORDME		Y						
	05R	ILS	I									
	23L	ILS	I	VORDME								
	23C	ILS	II	VORDME		Y						
	23R	ILS	I	VORDME		Y						
HEAR	16											
	34			VORDME								
HEGN	16			VORDME		Y		Y		Y		
	34	ILS	I	VORDME		Y		Y		Y		

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
HELX	2	ILS	I	VORDME		Y		Y		Y		
	20	ILS	I	VORDME		Y		Y		Y		
HEMA	15			VORDME								
	33			VORDME								
HEPS	10			VORDME								
	28											
HEOW	1			NDB								
	19											
HESH	04L	ILS	I	VORDME		Y		Y		Y		
	04R			VORDME		Y		Y		Y		
	22L			VORDME		Y		Y		Y		
	22R			VORDME		Y		Y		Y		
HESC	17			NDB								
	35			NDB								
HETB	4	ILS	I	VORDME		Y		Y		Y		
	22			VORDME		Y		Y		Y		
HEAL	13			VORDME		Y						
	31			VORDME		Y						
HESG	15			VORDME								
	33			VORDME								
Total	40	14		32	Y	23	0	15	0	14	0	
%		35		80	Jan. 2015	58	0	38	0	35	0	Plan needs update

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
I.R. IRAN												
OIKB	03L											
	03R			VORDME / NDB								
	21L	ILS	I	VORDME / NDB								
	21R											
OIFM	08L			VORDME / NDB								
	08R			VORDME / NDB								
	26L			VORDME / NDB								
	26R	ILS	I	VORDME / NDB								
OIMM	13L			VORDME								
	13R			VORDME								
	31L			VORDME / NDB								
	31R	ILS	I	VORDME / NDB								
OISS	11L											
	11R											
	29L	ILS	I	VORDME / NDB								
	29R			VORDME / NDB								
OITT	12L											
	12R											
	30L	ILS	I	VORDME								
	30R	ILS	I	VORDME								

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
OIIE	11L	ILS	I	VORDME / NDB								
	11R			VORDME / NDB								
	29L			VORDME								
	29R	ILS	II	VORDME / NDB		Y	Y					
OIII	11L			VORDME								
	11R			VORDME								
	29L	ILS	I	VORDME								
	29R											
OIZH	17											
	35	ILS	I	VORDME								
Total	30	10		22	N	1	1	0	0	0	0	
%		33		73		3	3	0	0	0	0	
IRAQ												
ORBI	15L	ILS	I	VORDME								
	15R					Y						
	33L					Y						
	33R	ILS	I	VORDME								
ORMM	14			VORDME								
	32	ILS	I	VORDME								
ORER	18	ILS	II			Y				Y		
	36	ILS	I			Y				Y		
ORSU	13	ILS	I	VOR								
	31	ILS	I	VOR								
ORNI	10											
	28	ILS		VOR								
ORBM												NO DATA
Total	12	8		7	N	4	0	0	0	2	0	
%		67		58		33	0	0	0	17	0	

Int’l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
JORDAN												
OJAM	6					Y	Y	Y		Y		
	24	ILS	I	VORDME / NDB		Y	Y	Y		Y		
OJAI	08L	ILS	I	NDB DME		Y	Y	Y		Y		
	08R			NDB DME		Y	Y	Y		Y		
	26L	ILS	II	VOR / NDB		Y	Y	Y		Y		
	26R	ILS	I	VORDME / NDB		Y	Y	Y				
OJAQ	1	ILS	I	VORDME		Y	Y	Y		Y		
	19	N/A	N/A			Y	N/A	Y		Y		LNAV/VNAV not feasible
Total	8	6		6	Y	8	8	8	0	8	0	
%		75		75	July 2009	100	100	100	0	100	0	Plan needs update
KUWAIT												
OKBK	15L	ILS	II			Y	Y	Y		Y		
	15R	ILS	II	VORDME		Y	Y	Y		Y		
	33L	ILS	II	VORDME		Y	Y	Y		Y		
	33R	ILS	II			Y	Y	Y		Y		
Total	4	4		2	Y	4	4	4	0	4	0	
%		100		50	Jan. 2010	100	100	100	0	100	0	Plan needs update
LEBANON												
OLBA	3	ILS	I	VORDME		Y				Y		
	16	ILS	I	VORDME		Y				Y		
	17	ILS	I	VORDME / NDB		Y				Y		
	21					Y				Y		
	34	N/A		N/A		N/A				N/A		Not used for landing
	35	N/A		N/A		N/A				N/A		Not used for landing
Total	6	5		5	N	6	0	0	0	6	0	
%		83		83		100	0	0	0	100	0	

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
LIBYA												
HLLB	15R			VORDME								VOR not flight checked
	15L			VORDME								VOR not flight checked
	33R			VORDME								VOR not flight checked
	33L	ILS	I	VORDME								ILS not flight checked
HLLS	13	ILS	I	VORDME								ILS not flight checked
	31			VORDME								VOR not flight checked
HLLT	9			VORDME								VOR not flight checked
	27	ILS	I	VORDME								ILS not flight checked
Total	8	3		8	N	0	0	0	0	0	0	
%		38		100		0	0	0	0	0	0	
OMAN												
OOMS	08R	ILS	I	VORDME								
	26L	ILS	I	VORDME								
OOSA	7	ILS	I	VORDME		Y	Y	Y		Y		
	25	ILS	I	VORDME		Y	Y	Y		Y		
Total	4	4		4	Y	2	2	2	0	2	0	
%		100		100		50	50	50	0	50	0	Plan needs update
QATAR												
OTBD	15	ILS	I	VORDME		Y	N/A	Y		Y		LNAV/VNAV not feasible
	33	ILS	II/III	VORDME/NDB		Y	Y	Y		Y		
OTHH	16L	ILS	I/II/III	VORDME		Y	Y	Y		Y		
	16R	ILS	I/II/III	VORDME		Y	Y	Y		Y		
	34L	ILS	I/II/III	VORDME		Y	Y	Y		Y		
	34R	ILS	I/II/III	VORDME		Y	Y	Y		Y		
Total	6	6		6	Y	6	6	6	0	6	0	
%		100		100	Aug. 2014	100	100	100	0	100	0	

Int’l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
SAUDI ARABIA												
OEDF	16L	ILS	II	VORDME								
	16R	ILS	II	VORDME								
	34L	ILS	II	VORDME								
	34R	ILS	II	VORDME								
OEJN	16L	ILS	I	VORDME		Y				Y		
	16C	ILS	II							Y		
	16R	ILS	II			Y				Y		
	34L	ILS	II			Y				Y		
	34C	ILS	II	VORDME						Y		
	34R	ILS	I	VORDME		Y				Y		
OEMA	17	ILS	I	VORDME		Y		Y		Y		
	18			VORDME		Y		Y		Y		
	35	ILS	I	VORDME		Y		Y		Y		
	36	ILS	I	VORDME		Y		Y		Y		
OERK	15L	ILS	I	VORDME								
	15R	ILS	I									
	33L	ILS	I									
	33R	ILS	I	VORDME								
Total	**18**	**17**		**13**	**Y**	**8**	**0**	**5**	**0**	**10**	**0**	
%		**94**		**72**	**May 2012**	**44**	**0**	**28**	**0**	**56**	**0**	**Plan needs update**

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
SUDAN												
HSKA	2											Charts are Not Published
	20											
HSSS	18	ILS	I	VORDME		Y	Y					
	36	ILS	I	VORDME		Y	Y					
HSPN	17			VORDME / NDB		Y	Y					
	35	ILS	I	VORDME / NDB		Y	Y					
Total	6	3		4	Y	4	4	0	0	0	0	
%		50		67	Apr. 2014	67	67	0	0	0	0	
SYRIA												
OSAP	9			VORDME								
	27	ILS	II	VORDME / NDB								
OSLK	17	ILS	I	VORDME / NDB								
	35											
OSDI	05L			VOR								
	05R	ILS	II	VORDME / NDB								
	23L			VORDME / NDB DME								
	23R	ILS	II	VORDME		Y	Y					
Total	8	4		7	Draft	1	1	0	0	0	0	
%		50		88	Dec. 2009	13	13	0	0	0	0	

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
UNITED ARAB EMIRATES												
OMAA	13L	ILS	II					Y		Y		
	13R	ILS	I	VOR				Y		Y		
	31L	ILS	II/III	VOR				Y		Y		
	31R	ILS	II					Y		Y		
OMAD	13			VORDME		Y				Y		
	31	ILS	I	VORDME		Y				Y		
OMAL	1	ILS	I	VOR								
	19			VOR								
OMDB	12L	ILS	I/II/III	VOR		Y	Y	Y		Y		
	12R	ILS	I/II/III	VOR		Y	Y	Y		Y		
	30L	ILS	I/II/III			Y	Y	Y		Y		
	30R	ILS	I/II/III	VOR		Y	Y	Y		Y		
OMDW	12	ILS	II/III			Y	Y	Y		Y		
	30	ILS	II/III			Y	Y	Y		Y		
OMFJ	11							Y				
	29	ILS	I	VOR		Y	Y	Y				
OMRK	16			VOR								
	34	ILS	I	VOR								
OMSJ	12	ILS	I			Y	Y	Y		Y		
	30	ILS	II			Y	Y	Y		Y		
Total	**20**	**16**		**12**	**Y**	**11**	**9**	**14**	**0**	**14**	**0**	
%		**80**		**60**	**Jan. 2015**	**55**	**45**	**70**	**0**	**70**	**0**	

Int'l Aerodrome (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO		CDO		Remarks
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	RNAV SID	CCO	RNAV STAR	CDO	
		xLS	CAT									
YEMEN												
OYAA	8	ILS	I	VORDME								
	26			VORDME								
OYHD	3			VOR								
	21			VOR / NDB		Y				Y		
OYRN	6											
	24			VORDME								
OYSN	18	ILS	I	VORDME/NDB		Y	Y	Y		Y		
	36			VOR		Y	Y	Y		Y		
OYTZ												NO DATA
Total	8	2		7	Draft Plan	3	2	2	0	3	0	
%		25		88	Jan. 2010	38	25	25	0	38	0	

Results

Total	**180**	**104**		**137**	**8**	**83**	**37**	**56**	**0**	**69**	**0**	**4 PBN APV + 104 ILS (108/180)**
Percentage (%)		**58**		**76**	**53**	**46**	**21**	**31**	**0**	**38**	**0**	**60% RWY Ends with Vertical guidance**
												PBN RWYs 83 + 4 = 87 **87/180 = 48 %**

Note. 6 RNP AR Approach were implemented in OMAA, UAE.

APPENDIX 4B

PBN Implementation challenges and recommended mitigation measures

Challenges	Mitigation measures
Shortage of PANS-OPS, Airspace Planners and OPS-approval experts	• States should ensure the training/recruitment of qualified experts in the fields of flight procedure design, airspace planning, and operations approval. • States are strongly encouraged to work cooperatively. • For the long term the MID Flight Procedure Programme, when established, would provide the optimum solution and foster the implementation of PBN. • States might request ICAO support for the training and implementation of PBN under the framework of the ICAO PBN Programme, all the required information are available on the programme website http://www.icao.int/safety/pbn/Pages/default.aspx • Other Stakeholders might also provide the necessary support.
Need to raise awareness of all stakeholders on PBN advantages and how to achieve an effective implementation,	• States are strongly encouraged to organize at national level PBN Workshops; ICAO is willing to support these Workshops if required. • Involvement of all stakeholders at national level in the planning and implementation process of PBN (application of the airspace concept, establishment of PBN National Committee, etc) • For the long term the MID Flight Procedure Programme, when established, would provide the optimum solution and foster the implementation of PBN. • PBN Publications and Bundles in addition to some PBN online courses are available on the ICAO PBN Programme website http://www.icao.int/safety/pbn/Pages/default.aspx
Unstable political and security situation in some States	

APPENDIX 4C

Table B0-SURF Implementation

EXPLANATION OF THE TABLE

Column:

1 Name of the State

2 Name of City/Aerodrome and Location Indicator

3 **Non-cooperative Surveillance Sensors (NCSS):** e.g. Surface Movement Radar (SMR). This is required for Level 1 and Level 2.
Implementation status of (NCSS) is indicated by:
Y – Yes, implemented
N – No, not implemented

4 **Cooperative Surveillance Sensor (CSS)**: e.g.; Multilateration and ADS-B. This is required for Level 1 and Level 2.
Implementation status of (CSS) is indicated by:
Y – Yes, implemented
N – No, not implemented

5 **Data Fusion (FS)**: The process of combining surveillance information from two or more sensor systems or sources. This is required for Level 1 and Level 2.
Implementation status of (FS) is indicated by:
Y – Yes, implemented
N – No, not implemented

6 **Alert**: Conflict/infringement detection. This is required for Level 2
Implementation status of Alert is indicated by:
Y – Yes, implemented
N – No, not implemented

7 Action Plan: short description of the State's Action Plan with regard to the implementation of A-SMGCS.

8 Remarks — additional information (e.g. case of difference between level 1 and level 2 applicability)

TABLE B0-SURF
Monitoring of A-SMGCS Elements Implementation

State	City/Aerodrome Location Indicator	NCSS	CSS	DF	Alert	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
BAHRAIN	Bahrain/Bahrain (OBBI)	N	N	N	N	A-SMGCS Level 1-2 Project is under Execution phase. expected completion on Sep 2015	
EGYPT	Cairo/Cairo Intl (HECA)	Y	Y	Y	Y		
IRAN	Tehran/Mehrabad (OIII)						
KUWAIT	Kuwait/Kuwait Intl (OKBK)						
OMAN	Muscat/Muscat Intl (OOMS)						
QATAR	Doha/Doha Intl (OTBD)						
QATAR	Doha/Hamad Intl (OTHH)						
SAUDI ARABIA	JEDDAH/King Abdulaziz Intl (OEJN)						
SAUDI ARABIA	Riyadh/King Khalid Intl (OERK)						
UAE	Abu Dhabi/Abu Dhabi (OMAA)	Y	Y	N	Y	Level 2 – Current Level 4 - 2017	Alert - RIMCAS
UAE	Dubai/Dubai Intl (OMDB)	Y	Y	N	Y	Level 2 – Current Level 4 - 2016	Alert - RIMCAS
UAE	DUBAI/Al Maktoum (OMDW)	Y	Y	N	Y	Level 1 – Current Level 4 - 2018	Alert - RIMCAS

APPENDIX 4D

Table B0 A-CDM Implementation

EXPLANATION OF THE TABLE

Column:

1 Name of the State.

2 Name of City/Aerodrome and Location Indicator

3 **Information Sharing (IS):** The Information Sharing Element defines the sharing of accurate and timely information between the Airport CDM Partners in order to achieve common situational awareness and to improve traffic event predictability. The Airport CDM Information Sharing Platform (ACISP), together with defined procedures agreed by the partners, is the means used to reach these aims.
Implementation status of (IS) is indicated by:
Y – Yes, implemented
N – No, not implemented

4 **Milestone Approach (MA**) : The Milestone Approach Element describes the progress of a flight from the initial planning to the take off by defining Milestones to enable close monitoring of significant events. The aim is to achieve a common situational awareness and to predict the forthcoming events for each flight with off-blocks and take off as the most critical events. The Concept Element Information Sharing needs to be implemented at the airport before it can successfully implement the Milestone Approach The Milestone Approach combined with the Information Sharing element is the foundation for all other Concept Elements.
Implementation status of (MA) is indicated by:
Y – Yes, implemented
N – No, not implemented

5 **Variable Taxi Time (VTT):** The Variable Taxi Time Element consists of calculating and distributing to the Airport CDM Partners accurate estimates of taxi-in and taxi-out times to improve the estimates of in-block and take off times. The complexity of the calculation may vary according to the needs and constraints at the CDM Airport. The aim is to improve the traffic predictability.
Implementation status of (VTT) is indicated by:
Y – Yes, implemented
N – No, not implemented

6 **Pre-departure Sequencing (PDS):** The pre-departure sequencing is the order that aircraft are planned to depart from their stands (push off-blocks) taking into account partners' preferences. It should not be confused with the pre-take off order where ATC organise aircrafts at the holding point of a runway. The aim is to enhance flexibility, increase punctuality and improve slot-adherence while allowing the airport partners to express their preferences.
Implementation status of (PDS) is indicated by:

Y – Yes, implemented
N – No, not implemented

7 **Adverse Conditions (AC)** : Adverse Conditions Element consists of collaborative management of the capacity of an airport during periods of a predicted or unpredicted reduction of capacity. The aim is to achieve a common situational awareness for the Airport CDM Partners, including better information for the passengers, in anticipation of a disruption and expeditious recovery after the disruption.
Implementation status of (AC) is indicated by:
Y – Yes, implemented
N – No, not implemented

8 **Management of Flight Updates (MFU):** The Collaborative Management of Flight Updates Element consists of exchanging Flight Update Messages (FUM) and Departure Planning Information (DPI) messages with the CDM Airport, to provide estimates for arriving flights and improve the ATFM slot management process for departing flights. The aim is to improve the coordination between Air Traffic Flow and Capacity Management (ATFCM) and airport operations at a CDM Airport.
Implementation status of (MFU) is indicated by:
Y – Yes, implemented
N – No, not implemented

9 Action Plan: short description of the State's Action Plan with regard to the provision of A-CDM elements and services.

10 Remarks — additional information,.

TABLE B0-ACDM
Provision of A-CDM Elements

State	City/Aerodrome Location Indicator	IS	MA	VTT	PDS	AC	MFU	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
BAHRAIN	Bahrain/Bahrain (OBBI)	N	N	N	N	N	N	Steering Committee has been establish, and MOA is under process between concern entities to establish different project frames such as milestones, cost, and deadlines.	
EGYPT	Cairo/Cairo Intl (HECA)	N	N	N	N	N	N	TBD	
IRAN,	Tehran/Mehrabad (OIII)								
KUWAIT	Kuwait/Kuwait Intl (OKBK)								
OMAN	Muscat/Muscat Intl (OOMS)								
QATAR	Doha/Doha Intl (OTBD)								
QATAR	Doha/Hamad Intl (OTHH)								
SAUDI ARABIA	JEDDAH/King Abdulaziz Intl (OEJN)								

SAUDI ARABIA	RIYADH/King Khalid Intl (OERK)								
UAE	Abu Dhabi/Abu Dhabi (OMAA)	N	N	N	N	N	N	Project in progress with full implementation of A-CDM Q3 2017	
UAE	Dubai/Dubai Intl (OMDB)	N	N	N	N	N	N	Project in progress with full implementation of A-CDM Q4 2016	
UAE	DUBAI/Al Maktoum (OMDW)	N	N	N	N	N	N	Project in progress with full implementation of A-CDM Q4 2017	

APPENDIX 4E

TABLE B0-FICE

EXPLANATION OF THE TABLE

Column

1 Name of the State

2, 3, 4 Status of AMHS Capability and Interconnection and AIDC/OLDI Capability, where:

Y – Fully Implemented
N – Partially Implemented

5 Status of AIDC/OLDI Implementation, where:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

6 Action plan — short description of the State's Action Plan with regard to the implementation of B0-FICE.

7 Remarks

State	AMHS Capability	AMHS Interconnection	AIDC/OLDI Capability	AIDC/OLDI Implementation	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*
Bahrain	Y	N	Y	NI	Sep 2015 for AMHS Int.	
Egypt	Y	Y	Y	PI		
Iran	N	N	Y	NI		Contract signed for AMHS
Iraq	N	N	N	NI		
Jordan	Y	Y	Y	NI		
Kuwait	Y	N	Y	NI	Dec 2015 for AMHS Int.	
Lebanon	Y	N	Y	PI		
Libya	Y	N	Y	NI		
Oman	Y	Y	Y	NI		
Qatar	Y	Y	Y	PI		
Saudi Arabia	Y	Y	Y	PI		
Sudan	Y	Y	Y	NI	AMHS Int. Feb 2015	
Syria	N	N	N	NI		
UAE	Y	Y	Y	PI		
Yemen	N	N	N	NI	Dec 2015 for AMHS	Contract signed for AMHS
Total Percentage						

Monitoring and reporting the status of Implementation of AIDC/OLDI between Adjacent ACCs

State	Location of AIDC/OLDI end system	Adjacent ACCs	Implementation Status (YES/NO)	Report for MID AN Strategy
1	2	3	4	5
Bahrain	Bahrain ACC	Jeddah ACC	NO	NO
		Riyadh ACC	NO	
		Kuwait ACC	NO	
		SZC Abu Dhabi ACC	NO	
		Tehran ACC	NO	
Egypt	Cairo ACC	Athens ACC	YES	YES
		Jeddah ACC	NO	
		Khartoum ACC	NO	
		Tripoli ACC	NO	
		Nicosia ACC	NO	
		Amman ACC	NO	
Iran	Tehran ACC	Bahrain ACC	NO	NO
		SZC Abu Dhabi ACC	NO	
		Ankara ACC	NO	
		Kabul ACC	NO	
		Kuwait ACC	NO	
		Baghdad ACC	NO	
		Turkmenistan ACC	NO	
Iraq	Baghdad ACC	Kuwait ACC	NO	NO
		Tehran ACC	NO	
		Amman ACC	NO	
		Ankara ACC	NO	
Jordan	Amman ACC	Baghdad ACC	NO	NO
		Damascus ACC	NO	
		Cairo ACC	NO	
		Jeddah ACC	NO	
Kuwait	Kuwait ACC	Bahrain ACC	NO	NO
		Jeddah ACC	NO	
		Tehran ACC	NO	
		Damascus ACC	NO	
		Nicosia ACC	NO	
Lebanon	Beirut ACC	Nicosia ACC	NO	NO
		Damascus ACC	NO	
Libya	Tripoli ACC	Tunis ACC	NO	NO
		Malta ACC	NO	
		Cairo ACC	NO	
		Khartoum ACC	NO	

State	Location of AIDC/OLDI end system	Adjacent ACCs	Implementation Status (YES/NO)	Report for MID AN Strategy
1	2	3	4	5
		N'Djamena ACC	NO	
Oman	Muscat ACC	SZC Abu Dhabi ACC	NO	NO
		Jeddah ACC	NO	
		Mumbai ACC	NO	
		Bahrain ACC	NO	
		Sanaa ACC	NO	
Saudi Arabia	Jeddah ACC	Bahrain ACC	NO	YES
		Cairo ACC	NO	
		Amman ACC	NO	
		SZC Abu Dhabi ACC	NO	
		Muscat	NO	
		Khartoum ACC	NO	
		Sanaa ACC	NO	
		Riyadh ACC	YES	
	Riyadh ACC	Jeddah ACC	YES	
		Bahrain ACC	NO	
			NO	
Sudan	Khartoum ACC	Cairo ACC	NO	YES
		Jeddah ACC	NO	
		N'Djamena ACC	YES	
		Kigali ACC	YES	
		Tripoli ACC	NO	
Syria	Damascus ACC	Beirut ACC	NO	NO
		Amman ACC	NO	
		Baghdad ACC	NO	
UAE	SZC Abu Dhabi ACC	Bahrain ACC	NO	NO
		Jeddah ACC	NO	
		Tehran ACC	NO	
		Muscat ACC	NO	
Yemen	Sanaa ACC	Jeddah ACC	NO	NO
		Muscat ACC	NO	
		Djibouti ACC	NO	
		Mogadishu ACC	NO	

APPENDIX 4F

Table B0-DATM 3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which the provision of AIS/AIM products and services based on the IAID is required.

2 Requirement for the implementation and designation of the authoritative IAID, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented

Note 1 — The IAID of a State is a single access point for one or more databases (AIS, Terrain, Obstacles, AMDB, etc.). The minimum set of databases which should be integrated is defined in Annex 15.

Note 2 — Information providing detail of "PI" should be given in the Remarks column (the implemented components of the IAID).

Note 3 — The information related to the designation of the authoritative IAID should be published in the AIP (GEN 3.1)

3 Requirement for an IAID driven AIP production, shown by:
- FC – Fully compliant (eAIP: Text, Tables and Charts)
- PC – Partially compliant
- NC – Not compliant

Note 4 — AIP production includes, production of AIP, AIP Amendments and AIP Supplements

4 Requirement for an IAID driven NOTAM production, shown by:
- FC – Fully Compliant
- NC – Not compliant

5 Requirement for an IAID driven SNOWTAM production, shown by:
- FC – Fully Compliant
- NC – Not compliant

6 Requirement for an IAID driven PIB production, shown by:
- FC – Fully compliant
- NC – Not compliant

7 Requirement for Charting systems to be interoperable with the IAID, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

8 Requirement for Procedure design systems to be interoperable with the IAID, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented

Note 5 — full implementation includes the use of the IAID for the design of the procedures and for the storage of the encoded procedures in the IAID

9 Requirement for ATS systems to be interoperable with the IAID, shown by:

- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented

10 Action Plan — short description of the State's Action Plan with regard to the provision of AIM products and services based on the IAID, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

11 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

State	IAID	AIP	NOTAM	SNOWTAM	PIB	Charting	Procedure Design	ATS	Action Plan	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
BAHARAIN	PI	FC	FC	-	FC	FC	PI	FI	Bahrain AIM Roadmap & Strategy (2014)	Update to AIXM 5.1 by end 2015
EGYPT	PI	PC	NC	-	FC	NC	NI	NI	3 by 2015, 4-9 by 2016	
IRAN, ISLAMIC REPUBLIC OF	NI	NC	NC	NC	NC	NC	NI	NI	AIM National Plan (2009) / Roadmap Template (2014)	
IRAQ	NI	NC	NC	-	NC	NC	NI	NI	Roadmap Template (2014)	
JORDAN	PI	NC	FC	-	FC	PC	NI	NI	Roadmap Template (2014)	
KUWAIT	PI	NC	FC	-	PC	NC	NI	NI	AIS to AIM Roadmap (2009)	
LEBANON	NI	NC	NC	NC	NC	NC	NI	NI	Roadmap Template (2014)	
LIBYA	NI	NC	NC	-	NC	NC	NI	NI	No Action Plan	
OMAN	NI	NC	NC	-	NC	NC	NI	NI	Roadmap Template (2014)	
QATAR	PI	PC	FC	-	FC	PC	PI	NI	Roadmap transition AIS to AIM (2015) / Roadmap Template (2015)	
SAUDI ARABIA	FI	FC	FC	-	FC	FC	FI	FI		
SUDAN	PI	NC	FC	FC	FC	PC	PI	PI	National AIM Plan (2014) / Roadmap Template (2014)	1.AIS DB integrated with MET & ATM 2. Contract Signed for eAIP, AIXM connected with Charting SYS. 7. Contract signed. 8. Ongoing project
SYRIAN ARAB REPUBLIC	NI	NC	NC	-	NC	NC	NI	NI	No Action Plan	
UNITED ARAB EMIRATES	PI	FC	NC	-	PC	PC	NI	PI	Transition AIS to AIM (2011) / Roadmap Template (2014)	AMDB: 2016-2021 eTOD integration: 2016 PIB: AVBL at OMMA, OMDB, OMDW; other ADs 2020 Charing: 2016

										Procedure Design 2020 ATS: ACC AVBL, ADs 2020 Digital NOTAM 2016-2021
YEMEN	NI	NC	NC	-	NC	NC	NI	NI	No Action Plan	

Table B0-DATM-3-2
Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 Compliance with the requirement for implementation of QMS for Aeronautical Information Services including safety and security objectives, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

3 Compliance with the requirement for the establishment of formal arrangements with approved data originators concerning aeronautical data quality, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

4 Implementation of digital data exchange with originators, shown by:
- FI – Implemented
- PI – Partially Implemented
- NI – Not implemented

Note 1 — Information providing detail of "PI" and "NI" should be given in the Remarks column (percentage of implementation).

5 Compliance with the requirement for metadata, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

6 Compliance with the requirements related to aeronautical data quality monitoring (accuracy, resolution, timeliness, completeness), shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

7 Compliance with the requirements related to aeronautical data integrity monitoring, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

8 Compliance with the requirements related to the AIRAC adherence, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

9 Action Plan — short description of the State's Action Plan with regard to aeronautical data quality requirements implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

10 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-2
Aeronautical Data Quality

State	QMS	Establishment of formal agreements	Digital data exchange with originators	Metadata	Data quality monitoring	Data integrity monitoring	AIRAC adherence	Action Plan	Remarks
1	2	3	4	5	6	7	8	9	10
BAHARAIN	FC	FC	PI	PC	PC	PC	FC	Bahrain AIM Roadmap & Strategy (2014)	
EGYPT	FC	PC	PI	FC	PC	PC	FC	3, 4, 6 and 7 by 2016	
IRAN, ISLAMIC REPUBLIC OF	FC	PC	NI	NC	NC	NC	FC	AIM National Plan (2009) / Roadmap Template (2014)	
IRAQ	NC	NC	NI	NC	NC	NC	FC	Roadmap Template (2014)	
JORDAN	FC	NC	NI	PC	FC	FC	FC	Roadmap Template (2014)	
KUWAIT	FC	PC	NI	NC	NC	NC	FC	AIS to AIM Roadmap (2009)	
LEBANON	NC	NC	NI	NC	NC	NC	FC	Roadmap Template (2014)	
LIBYA	NC	NC	NI	NC	NC	NC	NC	No Action Plan	
OMAN	PC	NC	NI	NC	NC	NC	FC	Roadmap Template (2014)	
QATAR	FC	FC	PI	FC	PC	PC	FC	Roadmap transition AIS to AIM (2015) / Roadmap Template (2015)	
SAUDI ARABIA	FC	PC	NI	FC	FC	FC	FC	Roadmap transition AIS to AIM (2014) / Roadmap Template (2014)	SLA will be completed end 2015
SUDAN	NC	FC	NI	NC	FC	FC	FC	National AIM Plan (2014) / Roadmap Template (2014)	
SYRIAN ARAB REPUBLIC	NC	NC	NI	NC	NC	NC	NC	No Action Plan	
UNITED ARAB EMIRATES	FC	PC	NI	FC	FC	FC	FC	Transition AIS to AIM (2011) / Roadmap Template (2014)	Digital data exchange with originator: planned (2016-2021) CAAP 56 details of agreements
YEMEN	NC	NC	NI	PC	NC	NC	NC	No Action Plan	

Table B0-DATM-3-3

World Geodetic System-1984 (WGS-84)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which implementation of WGS-84 is required.

2 Compliance with the requirements for implementation of WGS-84 for FIR and Enroute points, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

3 Compliance with the requirements for implementation of WGS-84 for Terminal Areas (arrival, departure and instrument approach procedures), shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

4 Compliance with the requirements for implementation of WGS-84 for Aerodrome, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

5 Compliance with the requirements for implementation of Geoid Undulation, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

6 Action Plan — short description of the State's Action Plan with regard to WGS-84 implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

7 Remarks — additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-3
World Geodetic System-1984 (WGS-84)

State	FIR/ENR	Terminal	AD	GUND	Action Plan	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**
BAHARAIN	FC	FC	FC	FC		Plan to be updated by 2016
EGYPT	FC	FC	FC	FC		
IRAN, ISLAMIC REPUBLIC OF	FC	NC	FC	FC	AIM National Plan (2009) / Roadmap Template (2014)	
IRAQ	PC	PC	PC	NC	Roadmap Template (2014)	
JORDAN	FC	FC	FC	FC		
KUWAIT	FC	FC	FC	FC		Last survey FEB 2015
LEBANON	FC	FC	FC	NC	Roadmap Template (2014)	
LIBYA	PC	PC	NC	NC	No Action Plan	
OMAN	FC	FC	FC	FC		
QATAR	FC	FC	FC	FC		Annual Validation/Survey Updates planned up to 2017
SAUDI ARABIA	FC	FC	FC	FC		
SUDAN	FC	FC	FC	FC		
SYRIAN ARAB REPUBLIC	FC	FC	FC	NC	No Action Plan	
UNITED ARAB EMIRATES	FC	FC	FC	FC		
YEMEN	FC	FC	FC	FC		

Table B0-DATM-3-4-1

Provision of Terrain and Obstacle data sets for Areas 1 and 4

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Areas 1 and 4 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

4 Compliance with requirement for the provision of Obstacle data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

5 Compliance with requirement for the provision of Obstacle data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

6 Action plan — short description of the State’s Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Areas 1 and 4, especially for items with a “PC” or “NC” status, including planned date(s) of full compliance, as appropriate.

7 Remarks— additional information, including detail of “PC” and “NC”, as appropriate.

TABLE B0-DATM-3-4-1

Provision of Terrain and Obstacle data sets for Areas 1 and 4

State	Terrain data sets		Obstacle data sets		Action Plan	Remarks
	Area 1	**Area 4**	**Area 1**	**Area 4**		
1	**2**	**3**	**4**	**5**	**6**	**7**
BAHARAIN	FC	FC	FC	FC		
EGYPT	FC	FC	PC	PC	No Action Plan	
IRAN, ISLAMIC REPUBLIC OF	FC	FC	FC	FC		
IRAQ	NC	NC	NC	NC	Roadmap Template (2014)	
JORDAN	NC	NC	NC	NC	Roadmap Template (2014)	
KUWAIT	NC	NC	NC	NC	AIS to AIM Roadmap (2009)	
LEBANON	NC	NC	NC	NC	Roadmap Template (2014)	
LIBYA	NC	NC	NC	NC	No Action Plan	
OMAN	NC	NC	NC	NC	Roadmap Template (2014)	
QATAR	FC	FC	FC	FC		
SAUDI ARABIA	FC	FC	FC	FC		
SUDAN	NC	NC	NC	NC	National AIM Plan (2014) / Roadmap Template (2014)	
SYRIAN ARAB REPUBLIC	NC	NC	NC	NC	No Action Plan	
UNITED ARAB EMIRATES	PC	FC	PC	FC		
YEMEN	NC	NC	NC	NC	No Action Plan	

APPENDIX 4G

Table B0-AMET 3-1

SADIS 2G and Secure SADIS FTP

EXPLANATION OF THE TABLE

Column:

1 Name of the State
2, 3 Status of implementation of SADIS 2G and/or Secure SADIS FTP, where:

Y – Yes, Implemented
N – No, not implemented

State	Implementation	
	SADIS 2G	Secure SADIS FTP
1	2	3
BAHRAIN	Y	Y
EGYPT	Y	Y
IRAN (ISLAMIC REPUBLIC OF)	Y	N
IRAQ	Y	Y
JORDAN	N	Y
KUWAIT	Y	Y
LEBANON	N	N
LIBYA	Y	Y
OMAN	Y	Y
QATAR	Y	N
SAUDI ARABIA	Y	Y
SUDAN	N	N
SYRIAN ARAB REPUBLIC	Y	N
UNITED ARAB EMIRATES	Y	Y
YEMEN	Y	N

Table B0-AMET 3-4
Quality Management System

EXPLANATION OF THE TABLE

Column:

1 Name of the State

2,3,4,5 Status of implementation of Quality Management System of meteorological information – QMS: not started/ planning, ongoing/ partially implemented, Implemented/ISO 9001 Certified, Date of Certification.

6 Action Plan

7 Remarks

State	Not started/ planning	Ongoing/ partially implemented	Implemented/ ISO 9001 Certified		Action Plan	Remarks
			Status	Date of Certification		
1	2	3	4	5	6	7
BAHARAIN			√	2008		
EGYPT			√	23 May 2012		
IRAN, ISLAMIC REPUBLIC OF		√			No Action Plan submitted by State	
IRAQ	√				No Action Plan submitted by State	
JORDAN			√	2 Apr 2014		
KUWAIT			√	23 Aug 2013		
LEBANON	√				No Action Plan submitted by State	
LIBYA	√				No Action Plan submitted by State	
OMAN		√			TBD	
QATAR			√	Dec 2011		
SAUDI ARABIA			√	Aug 2014		
SUDAN			√	5 June 2014		
SYRIAN ARAB REPUBLIC	√				No Action Plan submitted by State	
UNITED ARAB EMIRATES			√	19 Dec 2012		
YEMEN	√				No Action Plan submitted by State	

APPENDIX 4H

B0 – FRTO: Improved Operations through Enhanced Enroute Trajectories
Monitoring and Reporting

EXPLANATION OF THE TABLE

Column
1 Name of the State
2 Status of implementation of Flexible Use of Airspace (FUA). The Implementation should be based on the published aeronautical information:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
3 Total Number of ATS Routes in the State.
4 Total number of required routes (through Regional Agreement) to be implemented through segregated areas
5 Number of routes that are NOT implemented in the State due to military restrictions (segregated areas)
6 Remarks

Applicability State	FUA Implemented	Total number of ATS Routes	Total number of required routes to be implemented through segregated areas	Number of routes that are NOT implemented due to military restrictions (segregated areas)	Remarks
1	2	3	4	5	6
Bahrain	FI	78	1 (UM430)	0	Time route
Egypt					
Iran					
Iraq					
Jordan					
Lebanon	PI	9	1 (M1)	M1 (KAD-LATEB)	
Libya					
Kuwait					
Oman					
Qatar					
Saudi Arabia	PI	153	1 (RC 083)	0	
Sudan	PI	16	4	2	
Syria	PI	19	0	0	
Unite Arab Emirates					
Yemen					
Total for the Region					
Percentage					

- END -

APPENDIX 4I

MID CIVIL/MILITARY SUPPORT TEAM

Objective and Working Arrangements

I. Objective

The overall objective of the MID Civil/Military Support Team is to provide States with high-level guidance and recommendations to enhance the civil/military cooperation and expedite the implementation of the Flexible Use of Airspace (FUA) Concept.

II. MID Civil/Military Support Team Composition

The MID Civil/Military Support Team will be composed of experts from ICAO, IATA and other representatives/subject matter experts from States and Stakeholders, as appropriate.

III. State Civil Aviation Authority Responsibilities

- Provide facilities and all kind of support for a successful conduct of the visit.
- Ensure that all stakeholders (civil and military) involved in the FUA implementation are represented during the visit.
- Provide required information and documentation.

IV. Working Arrangements

<u>Phase 1 – Coordination for the Visit</u>

- Identification of the candidate States in need of a MID Civil/Military Support Team by IATA, ICAO, or through the relevant MIDANPIRG subsidiary bodies.
- ICAO to coordinate with the candidate State the dates and pre-acceptance of the visits.
- Hosting State to formally confirm, to the ICAO MID Regional Office, the acceptance of the MID Civil/Military Support Team visit.
- Hosting State to appoint a Point of Contact (POC).
- Agenda, Work Programme, activities and expected outcomes of the visit to be communicated with the State.
- Teleconference(s) to be conducted with the POC jointly by IATA and ICAO to ensure good preparation for the visit.

PHASE III –Team Coordination

- IATA and ICAO to coordinate the establishment of the Team (call for experts).
- Team members to agree on the States to be visited.
- The team should prepare the Work Programme for the visit with the assigned tasks for each member.
- Priority work areas to be identified by the Team.
- The Team members should share the required information.
- The coordination between the Team members will be mainly through emails and teleconferences.

a)

PHASE IV – Support Team Tasks

Utilizing best practices and available ICAO provisions, the MID Civil/Military Support Team will assist States through the following process:

- Assessment of the existing ATS route network.
- Assessment of the existing airspace structure.
- Review the status of CNS infrastructure.
- Identify potential gaps and develop a list of recommended actions.
- Assist States in the development of measures to implement the FUA through strategic Civil/Military coordination and dynamic interaction, in order to open up segregated airspace when it is not being used for its originally-intended purpose and allow for better airspace management and access for all users.
- Address with the relevant authorities the ICAO provisions related to civil/military cooperation and FUA, as well as the recommendations emanating from the ICAO General Assembly, DGCA-MID and MIDANPIRG.
- Organize Workshop(s) as deemed necessary.

PHASE IV – Follow-up Activities.

- The MID Civil/Military Support Team will provide a report with a list of Recommendations/Action Plan, which would foster the FUA Implementation, within 30 days after the completion of the visit.

- State visited is requested to provide the ICAO MID Regional Office with a periodic update on the implementation of the Recommendations (Action Plan).

DRAFT

APPENDIX 4J

ACAS V7.1 Status and regulation reference

State	ACAS V7.1 requirement	Regulation Reference	Remarks
1	**2**	**3**	**4**
Bahrain	All fixed - wing turbine - engine aircraft having maximum take - off mass in excess of 5700 KG or approved passenger seating configuration of more than 19, will be required to be equipped with ACAS II	1.5.1.5 in Bahrain AIP	Air Navigation Technical Regulations (ANTR) – will be updated to reflect Annex 10 (Volume IV)
Egypt	ACAS II mandated		Need to update regulation
Iran	4.3.5.3.1. New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate. 4.3.5.3.2. After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.	Aeronautical Telecommunications bylaw, articles 3 and 4	According to articles 3 and 4 of Iran aeronautical telecommunications by law, ratified by board of ministers, Airborne collision avoidance systems are categorized as aeronautical telecommunications systems and should be manufactured, installed and maintained according to standards of Annex 10. -Since no difference to ICAO annex 10 is notified, ACAS V 7.1 is mandatory according to provisions of annex 10 amendment 85. -Airworthiness directives issued by FAA and EASA shall to be implemented by Iranian AOC holders.
Iraq			
Jordan			
Kuwait			
Lebanon			
Libya			
Oman			
Qatar	3.5.3.1 New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate. Note 1.— This overcomes the retention of an RA sense that would work only if followed. The revised vertical rate assumption is more	QCAR – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system	References: http://www.caa.gov.qa/en/safety_regulations

State	ACAS V7.1 requirement	Regulation Reference	Remarks
1	**2**	**3**	**4**
	likely to allow the logic to select the opposite sense when it is consistent with the non-complying aircraft' s vertical rate. Note 2.— Equipment complying with RTCA/DO-185 or DO-185A standards (also known as TCAS Version 6.04A or TCAS Version 7.0) do not comply with this requirement. Note 3.— Compliance with this requirement can be achieved through the implementation of traffic alert and collision avoidance system (TCAS) Version 7.1 as specified in RTCA/DO-185B or EUROCAE/ED143. 4.3.5.3.2 QCAR CNS Note: All ACAS shall be compliant with the requirement in 4.3.5.3.1. 4.3.5.3.3 After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.	QCAR Part 10 - Volume 4 Chapter 4 Airborne Collision Avoidance System	
Saudi Arabia			
Sudan			
Syria			
UAE	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 An operator shall not operate a turbine powered aeroplane: (a) Having a MCTOM (maximum certificated take-off mass) in excess of 5700 kg or a MAPSC (maximum approved passenger seating configuration) of more than 19 unless it is equipped with an airborne collision avoidance system (ACAS) II Change 7.0 . From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1. (b) Manufactured after 31 December 2012 and having a MCTOM in excess of 5700 kg or a MAPSC of more than 19 unless it is equipped with ACAS II, Change 7.1."	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 And AIP 1.5.6.6	https://www.gcaa.gov.ae/en/ePublication/Pages/CARs.aspx?CertID=CARs
Yemen	From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1		Reference need to be provided

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APPENDIX 4K

MID TOP 10 PROPOSED ATS ROUTES

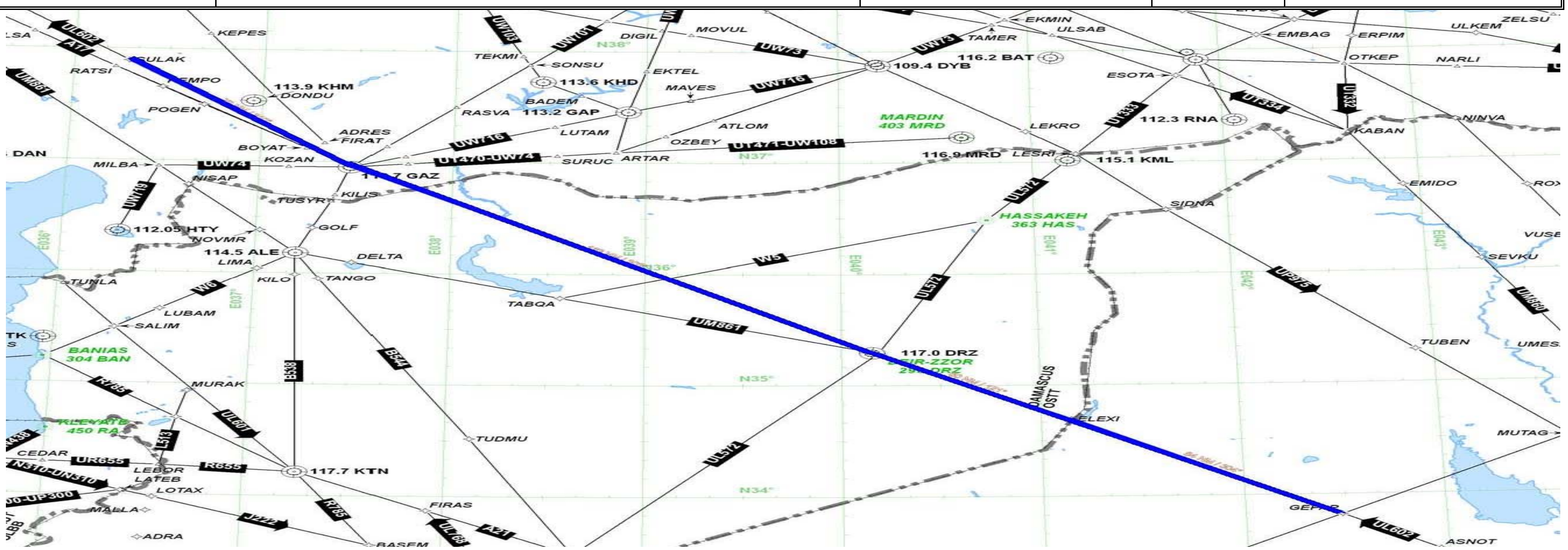
TPR	ATS Route Catalogue Reference	ATS Route Affected	States Concerned	Status			Remarks
				Reviewed by	Date	Changed	
(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*	*(g)*	*(h)*
1	RC-035	UL602	Iraq – Syria-Turkey	ATM SG/1	June 2014	Yes	Pending for Syria approval
2	RC-045	New	Saudi Arabia-Sudan	ATM SG/1	June 2014	Yes	Moved to ANP
3	RC-055	L315	Egypt-Saudi Arabia	ATM SG/1	June 2014	Yes	Saudi proposed SOBEL-DEDLI
4	RC-056	New	Egypt	ATM SG/1	June 2014	Yes	
5	RC-070	New	Egypt-Libya	ATM SG/1	June 2014	Yes	Moved to ANP
6	RC-082	New	Jordan-Saudi Arabia	ATM SG/1	June 2014	Yes	Route amended and moved to ANP
7	RC-083	New	Egypt-Libya-Saudi Arabia	ATM SG/1	June 2014	Yes	Route amended and moved to ANP
8	Eurocontrol Proposal 1	New	Egypt	ATM SG/1	June 2014	New	
9	UKMUG-SIDAD	New	Bahrain-Iraq-Kuwait	ATM SG/1	June 2014	New	RNAV 1 Routes
10	SIDNA-ASLAN	New	Bahrain-Iraq-Kuwait	ATM SG/1	June 2014	New	RNAV 1 Routes

Table explanation

a) TPR used as reference for the proposed Top 10 routes to be considered for implementation, numbers do not reflect the level of priority.
b) Source of the proposed routes.
c) Affected ATS Routes by the implementation of the new proposed routes.
d) States Concerned with the implementation.
e) The Group, Sub-Group or Task Force that had reviewed and updated the status of implementation of these top 10 routes.
f) Date of last status update.
g) Indicates if the status is changed or Not.
h) Remarks

MID/RC-035 (TPR 1)	**ATS Route Name:** UL602	**Entry-Exit:** TUMAK (OB-OM) – KUKSI (OS-LT) MAKOL (LT) END	**Inter-Rgional Cross Reference if any**		**Users Priority**	URGENT	**Originator of Proposal**	Iraq
							Date of Proposal	RDGE/11 (Oct 2009)

Route Description		**States Concerned**	**Expected Impl. date**	**Implementation Status**	**ANP Status**	**Action Taken / Required**	**Deadline for each Action**
GEPAP 334906N 0422851E **ELEXI 344130N 0410900E** **DRZ 351724N 0401124E** **GAZ 365701N 0372824E** **SULAK 375439N 0361712E**		Iraq Syria Turkey		Entire route Westbound	Suspended in the Damascus FIR GEPAP (OR) to SULSAK (LT) not implemented	Syria requested additional time to examine the communication requirements by concerned FIR's. Once the communication issues are resolved it is expected that the ATS route will be implemented. Iraq has no objection	Conditional on Communication Pending acceptance by Syria, based on the status of communication infrastructure
Flight Level Band: FL240-FL460							
Potential City Pairs:							
Conclusions/Remarks						**Last updated**	ATM SG/1 June 2014

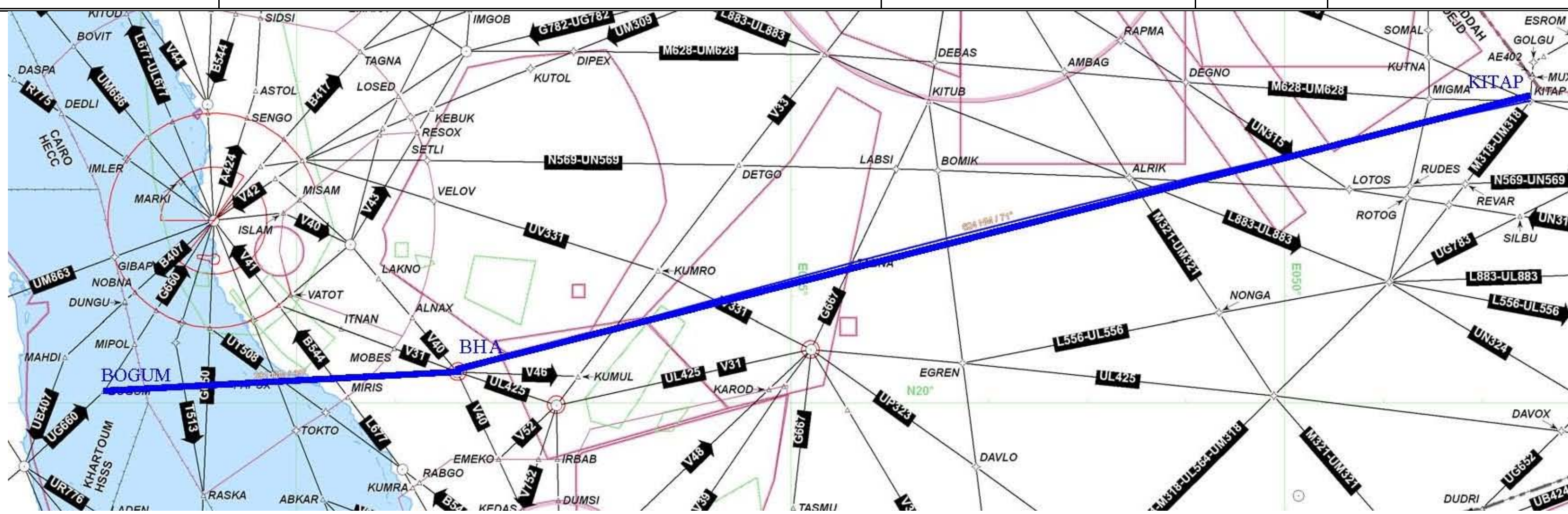


MID/RC-035 - (TPR 1)

MID/RC-045 (TPR 2)	ATS Route Name: New Route	Entry-Exit: PSD- KITAP	Inter-Regional Cross Reference if any		Users Priority		Originator of Proposal	IATA
							Date of Proposal	ARN TF/2

Route Description		States Concerned	Expected Impl. date	Implementation Status	ANP Status	Action Taken / Required	Deadline for each Action
Port Sudan (PSD) BOGUM Al BAHA (BHA) KITAP		Saudi Arabia, Sudan		Not implemented	Moved to ANP August 2014	Sudan has no objection from Port Sudan to SALWA (CDR) KSA suggest Port Sudan BHA-KITAP (Normal route) will avoid CDR KSA needs more time for studying.	
Flight Level Band:							
Potential City Pairs: DGAA, DNMM, HSSS, OEJN, SBGR to OBBI, OMAA, OMDB, OTBD (Central and Eastern Arabian Peninsula to Sudan, West Africa, South America)							

Conclusions/Remarks	Saves 58 miles and 3196 Kg of CO2 to recalculate		Last updated	ATM SG/1 June 2014



MID/RC-045 - (TPR 2)

MID/RC-055 (TPR 3)	**ATS Route Name:** New Route L315	**Entry-Exit:** HEMA-CVO	**Inter-Regional Cross Reference if any**		**Users Priority**		**Originator of Proposal**	IATA
							Date of Proposal	ARN TF/2

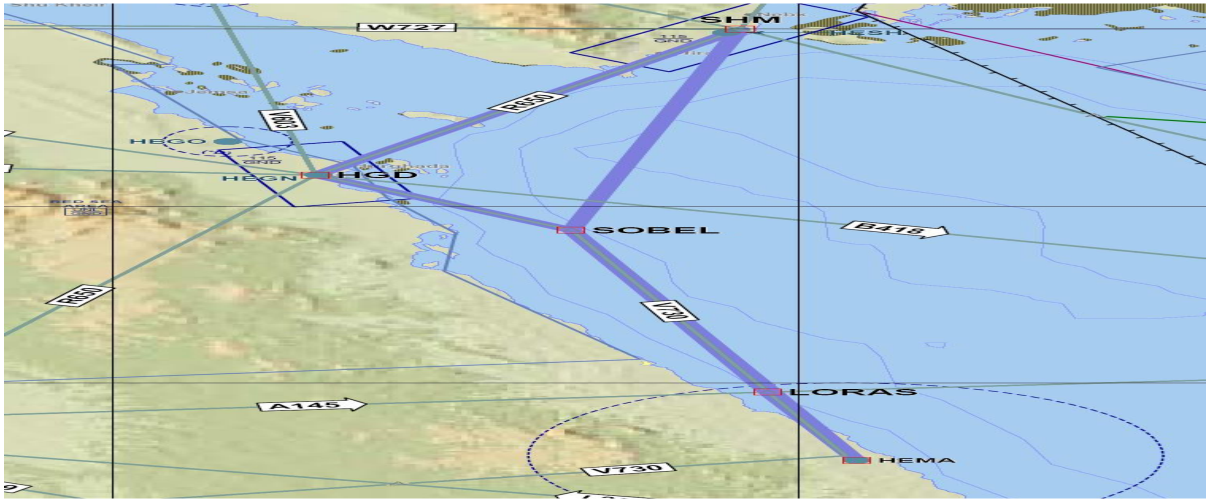
Route Description MAK-CVO		**States Concerned**	**Expected Impl. date**	**Implementation Status**	**ANP Status**	**Action Taken / Required**	**Deadline for each Action**
GIBAL HGD CVO		Egypt Saudi Arabia		Implemented with opposite direction CVO-HGD Eastbound GIBAL-HGD Westbound	Already in ANP	Saudi Arabia proposed L315 westbound and new Segment HDG or SOBEL-DEDLI for eastbound. This requires that CVO-HGD to be bi-directional. Pending Egypt approval	
Flight Level Band: Upper							
Potential City Pairs: North-western Red Sea to HECA and Europe							

Conclusions/Remarks	Saves 9 miles		**Last updated**	ATM SG/1 June 2014

MID/RC-056 (TPR 4)	**ATS Route Name:** New Route	**Entry-Exit:** HEMA-SHM	**Inter-Regional Cross Reference if any**		**Users Priority**		**Originator of Proposal**	IATA
							Date of Proposal	ARN TF/2

Route Description HEMA-SHM		**States Concerned**	**Expected Impl. date**	**Implementation Status**	**ANP Status**	**Action Taken / Required**	**Deadline for each Action**
		Egypt		No progress reported		IATA to provide further details Tied with L315 await further discussions from Egypt.	
Flight Level Band: Upper							
Potential City Pairs: HESH, Eastern Mediterranean, Europe to Western Red Sea Coast							

Conclusions/Remarks	Saves 17 miles		**Last updated**	ATM SG/1 June 2014

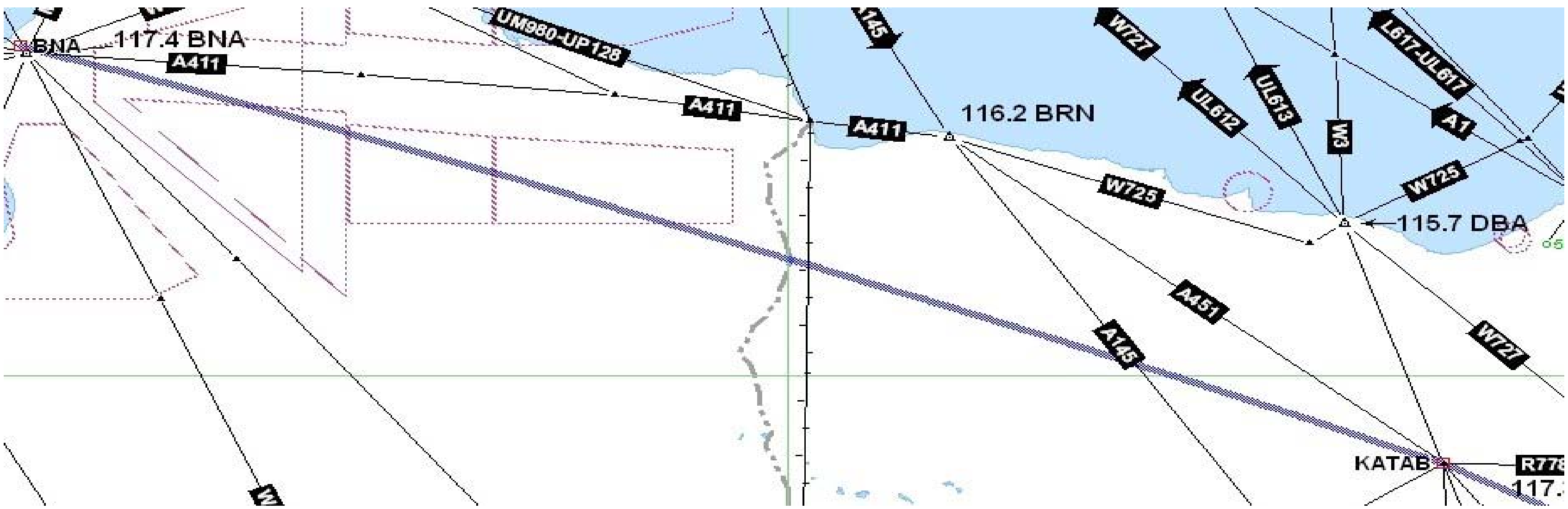


MID/RC-056- (TPR 4)

MID/RC-070 (TPR 5)	**ATS Route Name:** New Route	**Entry-Exit:** BNA-KATAB-SEMRU	**Inter-Regional Cross Reference if any**		**Users Priority**	High	**Originator of Proposal**	IATA
							Date of Proposal	ARN TF/1

Route Description		**States Concerned**	**Expected Impl. date**	**Implementation Status**	**ANP Status**	**Action Taken/Required**	**Deadline for each Action**
BNA (N32 07.5 E020 15.2) – KATAB (N29 25.0 E029 05.1)		Egypt Libya		New ATS route.	Moved to ANP	Differed for the future Implement if possible Priority Routes Requires further coordination with concerned States Egypt and Libya to implement the route	
Flight Level Band: FL290 – FL410							
Potential City Pairs: CMN/ALG/TUN/TIP-DOH							

Conclusions/Remarks	This AWY would save considerable track miles BNA – KATAB – SEMRU Libya FIR to Egypt FIR		**Last updated**	ATM SG/1 June 2014

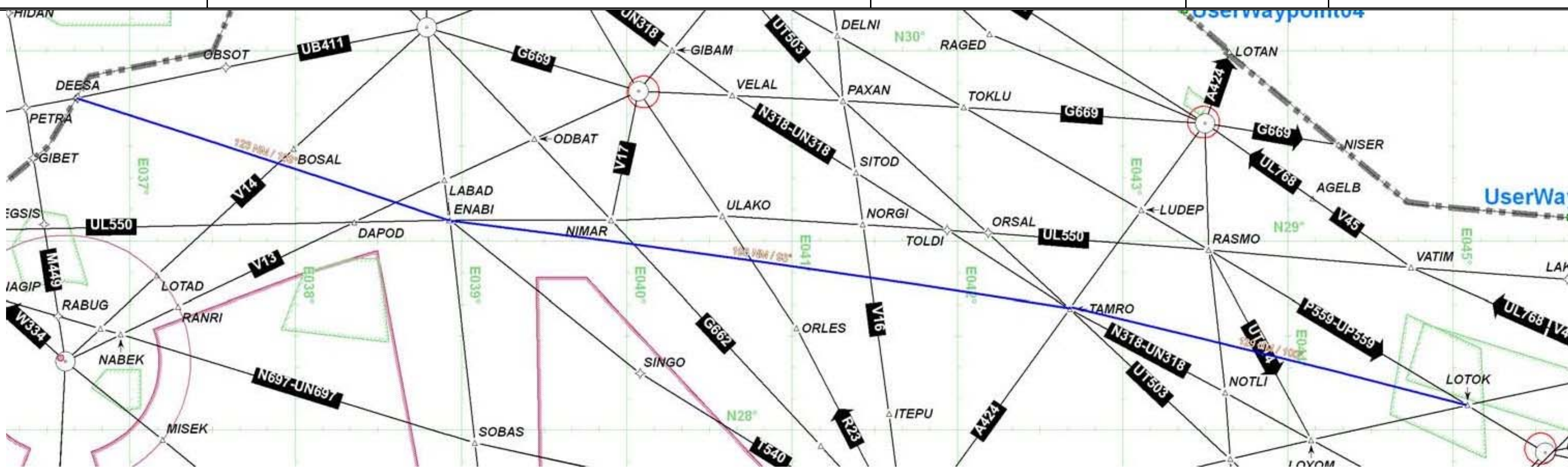


MID TPR 5

MID/RC-082 (TPR 6)	ATS Route Name:	Entry-Exit:	Inter-Regional Cross Reference if any		Users Priority	High	Originator of Proposal	IATA iFLEX Proposal
	New Route UQ597 Eastbound	DANAD - METSA – ASH – ULOVO					Date of Proposal	17 May 2011

Route Description		States Concerned	Expected Impl. date	Implementation Status	ANP Status	Action Taken/Required	Deadline for each Action
DEESA ENABI TAMRO LOTOK		Jordan Saudi Arabia			Moved to ANP	Connecting to UP559. Implement if possible Priority Routes Saudi Arabia to implement the route	TBD
Flight Level Band:							
Potential City Pairs: Dakar FIR, Algiers FIR, Tripoli FIR, Cairo FIR, Jeddah FIR							

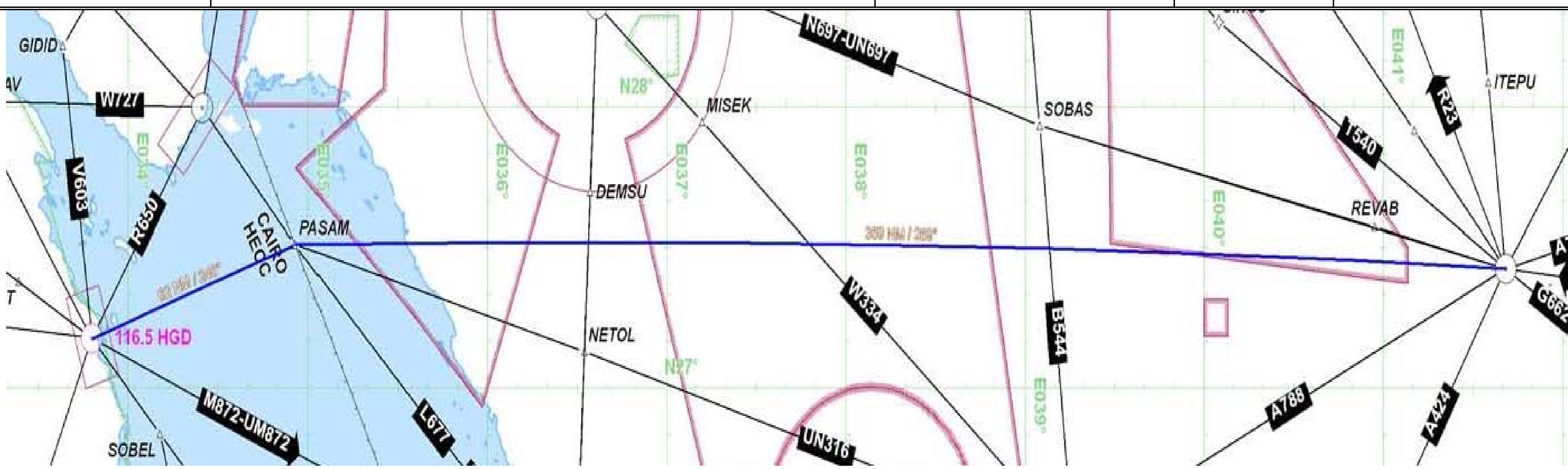
Conclusions/Remarks	Proposals agreed to by some State during the iFLEX workshop Dubai		Last updated	ATM/AIM/SAR SG/13 SEP 2013



MID TPR 6

MID/RC-083 (TPR 7)	**ATS Route Name:** New Route UQ598 Westbound	**Entry-Exit:** DITAR – NABED – PASAM – HIL - ANTER - KUTEM	**Inter-Regional Cross Reference if any**		**Users Priority** High	**Originator of Proposal** IATA iFLEX Proposal **Date of Proposal** 17 May 2011

Route Description		**States Concerned**	**Expected Impl. date**	**Implementation Status**	**ANP Status**	**Action Taken/Required**	**Deadline for each Action**
HIL PASAM HGD	Egypt Saudi Arabia				Moved to ANP	Implement if possible Priority Routes Important Segment HGD-PASAM It's a west bound direction (FUA) N697 - HIL-PASAM-HGD -V608 RC 083 amended to include segment AST-DITAR only Concerned States to implement the route	TBD
Flight Level Band:							
Potential City Pairs:							
Conclusions/Remarks						**Last updated**	ATM SG/1 June 2014

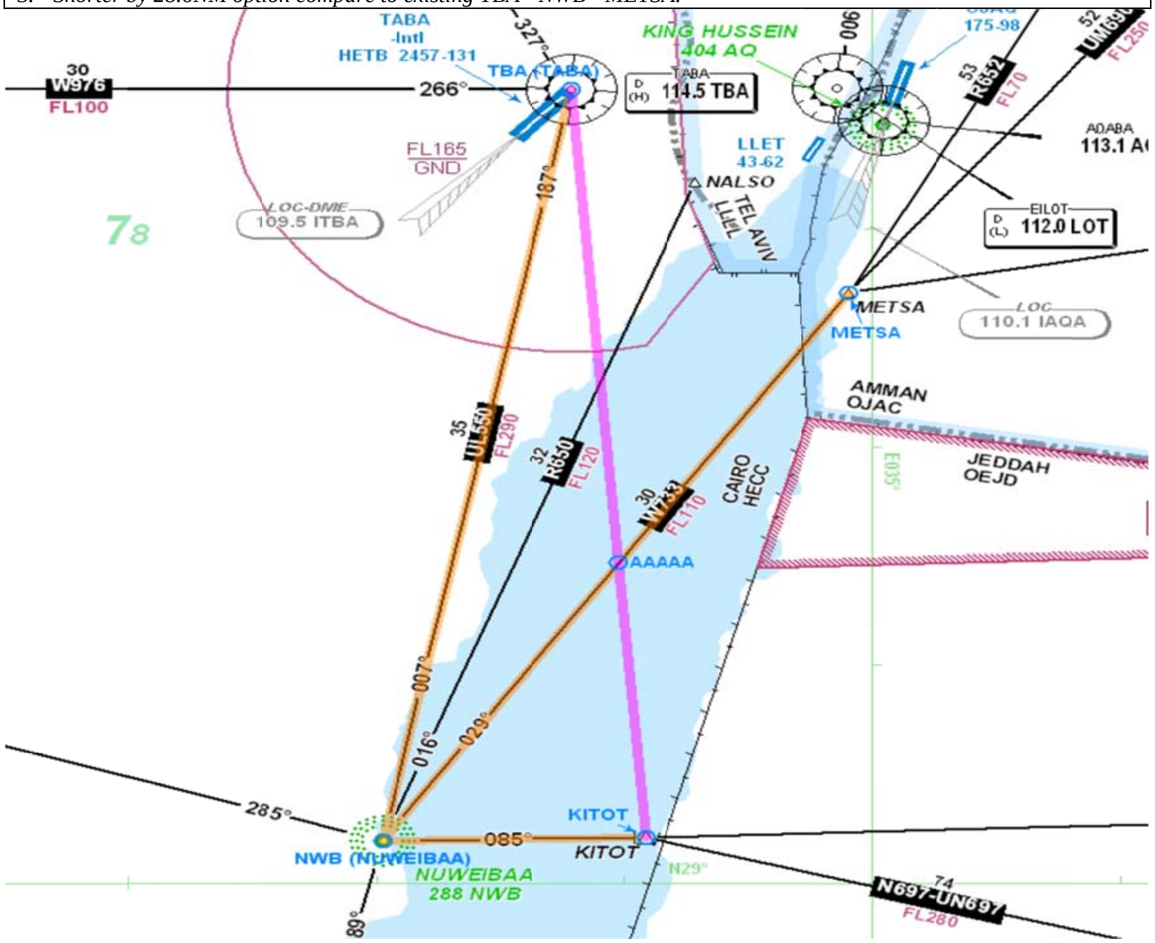


MID (TPR 7)

Eurocontrol proposals

Reference	Objective and Proposal	State(s) concerned
TPR 8	*Objective: To further improve ATS route network within Cairo FIR.* To implement bi-directional ATS route **TBA - AAAAA - KITOT**.	EGY **Originator** EUROCONTROL

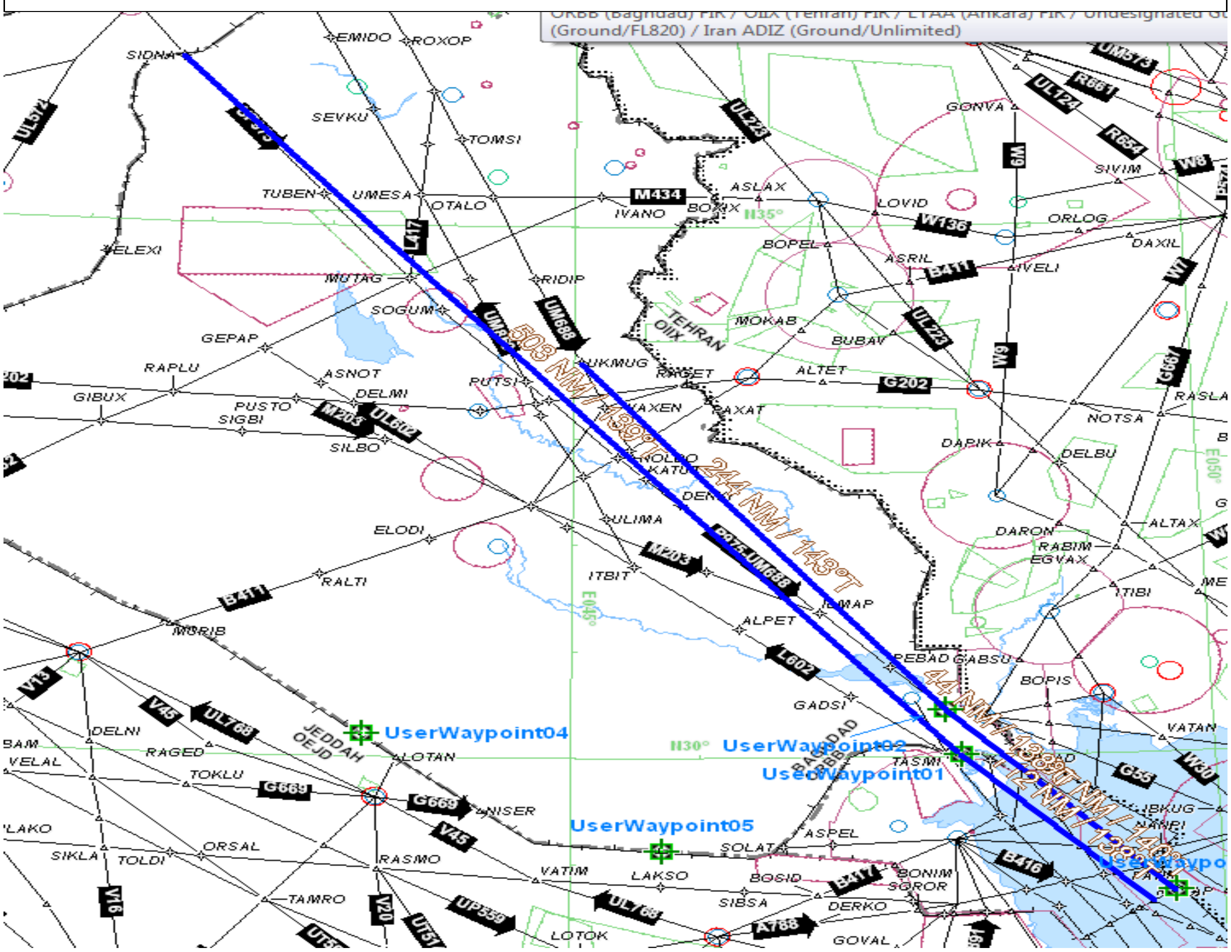
Notes:
1. *AAAAA - crossing point between new TBA - KITOT and existing ATS route W733 allowing connection to/from METSA.*
2. *Shorter by 9.2NM option compare to existing TBA - NWB - KITOT.*
3. *Shorter by 28.6NM option compare to existing TBA - NWB - METSA.*



(TPR 8)

Reference	Objective and Proposal	State(s) concerned
TPR 9	<u>*Objective:*</u> *To further improve ATS route network between Baghdad and Kuwait FIRs.* To implement ATS route **UKMUG-SIDAD- New Point East of RABAP then join the ATS Route network within Bahrain.**	Bahrain-Iraq-Kuwait **Originator** ATM/AIM/SAR SG13 Oct 2013
Notes: *1. RNAV 1 Routes, target date of implementation second quarter of 2014.*		

Reference	Objective and Proposal	State(s) concerned
TPR 10	<u>*Objective:*</u> *To further improve ATS route network between Baghdad and Kuwait FIRs.* To implement ATS route **SIDNA-New point West of ASLAN-RABAP**.	Bahrain-Iraq-Kuwait **Originator** ATM/AIM/SAR SG13 Oct 2013
Notes: *2. RNAV 1 Routes, target date of implementation second quarter of 2014.*		



TPR 9 and 10

APPENDIX 4L

PROPOSAL FOR AMENDMENT OF THE ICAO
MID AIR NAVIGATION PLAN (DOC 9708), VOLUME I BASIC ANP

(Serial No. MID Basic ANP 15/XX - ATM)

a) Plan: MID Basic Air Navigation Plan

b) Proposed amendment: Editorial note: Amendments are arranged to show "deleted text" using strikeout (~~text to be deleted~~), and "added text" with grey shading (text to be inserted)

Amend requirement for ATS routes: A453/UA453, B415/UB415, B416/UB416, B419/UB419, B458/UB457, G663/UG663, L305/UL305, L564/UL564, L602/UL602, L604/UL604, L768/UL768, M318/UM318, M430/UM430, M557/UM557, M600/UM600, M677/UM677, N300/UN300, N318/UN318, N685/UN685, N687/UN687, N697/UN697, P425/UP425, P430/UP430, P559/UP559, P699/UP699 and P975/UP975 as follows:

LOWER AIRSPACE		UPPER AIRSPACE	
Designator	**Significant Points**	**Designator**	**Significant Points**
1	**2**	**1**	**2**
A453	**PIRAN 2934.1N 06128.1E**	UA453	**PIRAN 2934.1N 06128.1E**
	ZAHEDAN (ZDN)		**ZAHEDAN (ZDN)**
	BANDAR ABBAS (BND)		**BANDAR ABBAS (BND)**
	GHESHM (KHM)		**GHESHM (KHM)**
	BANDAR LENGEH (LEN)		**BANDAR LENGEH (LEN)**
	KISH		**KISH**
	MIDSI 264142N0515242E		**MIDSI 264142N0515242E**
	BOTOB 263350N 0514505E		BOTOB 263350N 0514505E
	ALMOK 262832N 0513840E		ALMOK 262832N 0513840E
	SOLOB 262241N 0513132E		SOLOB 262241N 0513132E
	TOBLI 262134N0512301E		**TOBLI 262134N0512301E**
	SOGAT 262029N 0511443E		SOGAT 262029N 0511443E
	ASTAD 261811N 0505646E		ASTAD 261811N 0505646E
	~~OTATA 261843N0510052E~~		**~~OTATA 261843N0510052E~~**
	BAHRAIN		**BAHRAIN**
	*** Note 7 (OB, OI)**		*** Note 7 (OB, OI)**
	ELOSO 262409N 0503550E		ELOSO 262409N 0503550E
	EGMOR 264210N 0502906E		EGMOR 264210N 0502906E
	LOTOR 264854N 0502200E		LOTOR 264854N 0502200E
	RAMSI 270249N 0500714E		RAMSI 270249N 0500714E
	ORNAK 272853N 0493248E		ORNAK 272853N 0493248E
	~~PEBOS 262722N0503043E~~		**~~PEBOS 262722N0503043E~~**
	~~RULEX 264529N0501745E~~		~~RULEX 264529N0501745E~~
	~~ALVUN 271028N0494455E~~		**~~ALVUN 271028N0494455E~~**
	SOLEM 275229N0491136E		**SOLEM 275229N0491136E**
	KUMBO 281705N0495526E		**KUMBO 281705N0495526E**
	AWADI 2834.5N 04843.9E		**AWADI 2834.5N 04843.9E**
	DEBTI 2844.1N 04829.4E		**DEBTI 2844.1N 04829.4E**
	KUA 2913.1N 04759.1E		KUA 2913.1N 04759.1E

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator 1	**Significant Points 2**	**Designator 1**	**Significant Points 2**
B415	**DOHA ~~(DOH)~~**	UB415	**DOHA ~~(DOH)~~**
	HAMAD INTERNATIONAL (DOH)		HAMAD INTERNATIONAL (DOH)
	251459N 0513634E		251459N 0513634E
	***Note 8 (DOH-BUNDU)**		***Note 8 (DOH-BUNDU)**
	KUPSA 250445N 0521151E		KUPSA 250445N 0521151E
	~~AFNAN 2508.9N 05155.9E~~		**~~AFNAN 2508.9N 05155.9E~~**
	BUNDU 2500.4N 05229.4E		**BUNDU 2500.4N 05229.4E**
	***Note 7 (BUNDU-ADV)**		***Note 7 (BUNDU-ADV)**
	GADVO 2441.4N 05343.0E		GADVO 2441.4N 05343.0E
	KUNGU 2437.9N 05356.4E		**KUNGU 2437.9N 05356.4E**
	ABU DHABI		ABU DHABI
	ADV 2425.1N 05440.4E		**ADV 2425.1N 05440.4E**
B416	**KUWAIT (KUA)**	UB416	**KUWAIT (KUA)**
	AMBIK 283222N 0492025E		**AMBIK 283222N 0492025E**
	***Note 8 (AMBIK-KUVER)**		***Note 8 (AMBIK-KUVER)**
	TESSO 282852N0492723E		**TESSO 282852N0492723E**
	GEVAL ~~283625N0492722E~~		**GEVAL ~~283625N0492722E~~**
	282101N 0494300E		282101N 0494300E
	GOGMA 281421N 0495612E		**GOGMA 281421N 0495612E**
	KUVER 280924N0500600E		**KUVER 280924N0500600E**
	IMDAT 2741.0N 05111.0E		**IMDAT 2741.0N 05111.0E**
	ORSAR 2604.5N 05357.5E		**ORSAR 2604.5N 05357.5E**
	PEBAT 2551.9N 05423.9E		**PEBAT 2551.9N 05423.9E**
	DESDI 2536.0N 05442.5E		**DESDI 2536.0N 05442.5E**
B419	**(DHA) 261538N 0500824E**	UB419	(DHA) 261538N 0500824E
	*** Note 8 (DHA-RAMSI)**		* Note 8 (DHA-RAMSI)
	KING FAHD (KFA)		**KING FAHD (KFA)**
	*** Note 7 (KFA-RAMSI)**		*** Note 7 (KFA-RAMSI)**
	METLA (FIR BDRY)		METLA (FIR BDRY)
	265645.21 0500432.59E		265645.21 0500432.59E
	~~ASTOM 265552N 0500408E~~		**~~ASTOM 265552N 0500408E~~**
	RAMSI 270249N 0500714E		**RAMSI 270249N 0500714E**
B457	NARMI 261802N 0501939E	UB457	NARMI 261802N 0501939E
	(OEJD FIR BDRY)		(OEJD FIR BDRY)
	BAH 261551 0503855		BAH 261551 0503855
	DENVO 260452N 0510509E		DENVO 260452N 0510509E
	PATOM 255821N 0511836E		PATOM 255821N 0511836E
	EMISA 254658N 0514206E		EMISA 254658N 0514206E
	~~BAHRAIN (BAH)~~		~~BAHRAIN (BAH)~~
	~~* Note7~~		~~* Note7~~
	~~ELOSA 2548.8N 05142.6E~~		~~ELOSA 2548.8N 05142.6E~~

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator 1	**Significant Points 2**	**Designator 1**	**Significant Points 2**
G663	**KING KHALID (KIA)** **SILNO 2640.4N 04757.7E** ***Note 7 (KIA-KFA)** **GIBUS 255724N 0472829E** ***Note 8 (GIBUS-ALSER)** **KING FAHD (KFA)** ULADA 264526N0501623E (OEJD FIR BDRY) LOTOR 264854N 0502200E RAKAK 265221N 0502618E TOLMO 265504N 0502927E KOBOK 265839N 0503349E ITIXA 270141N 0503735E GETAL 270409N 0504039E VEDOR 270855N 0504630E ALSER 271100N 0504900E ~~**ALSER 2710.8 05049.5E**~~ **SHIRAZ (SYZ)** **YAZD (YZD)** **NODLA 3253.3N 05458.8E** **TABAS (TBS)** **MASHAD (MSD)**	UG663	**KING KHALID (KIA)** **SILNO 2640.4N 04757.7E** ***Note 7 (KIA-KFA)** **GIBUS 255724N 0472829E** ***Note 8 (GIBUS-ALSER)** **KING FAHD (KFA)** ULADA 264526N0501623E (OEJD FIR BDRY) LOTOR 264854N 0502200E RAKAK 265221N 0502618E TOLMO 265504N 0502927E KOBOK 265839N 0503349E ITIXA 270141N 0503735E GETAL 270409N 0504039E VEDOR 270855N 0504630E ALSER 271100N 0504900E ~~**ALSER 2710.8 05049.5E**~~ **SHIRAZ (SYZ)** **YAZD (YZD)** **NODLA 3253.3N 05458.8E** **TABAS (TBS)** **MASHAD (MSD)**
L305	DOHA /~~(DOH)~~ HAMAD INTL (DOH) 251459N 0513634E ORMAL 252303N 0522200E ENANO 252348N 0522558E ALSEM 252703N 0524322E ASTOG 252822N 0525025E FIR BDRY *Note 7 (DOH-ITITA) *Note 8 (DOH-ASTOG) ~~ASTOG 252822N 0525025E~~ ~~ITITA 2544.2N 05418.7E~~	UL305	DOHA / ~~(DOH)~~ HAMAD INTL (DOH) 251459N 0513634E ORMAL 252303N 0522200E ENANO 252348N 0522558E ALSEM 252703N 0524322E ASTOG 252822N 0525025E FIR BDRY *Note 7 (DOH-ITITA) *Note 8 (DOH-ASTOG) ~~ASTOG 252822N 0525025E~~ ~~ITITA 2544.2N 05418.7E~~
L564	~~DOHA (DOH)~~ DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E PASOM 245545N 0513713E DATRI 244239N 0513407E FIR BDRY DENSI 242519N 0512959E DENSI 242519N 0512959E *Note 8 (DOH-PURDA) ~~NAJMA 250346N 0513908E~~ BATHA (BAT) 241257N 0512707E MIGMA 225035N 0512749E ~~PURDA 210805N 0510329N~~ ~~ASTIN 200410N 0495320E~~ ~~SHARURAH (SHA)~~ ~~ATBOT 171418N 0464706E~~ LOTOS 2200.0N 05039.2E ALNUG 213009N 0500453E NONGA 2050.8N 04920.2E DENKU 201123N 0484331E GERUG 185530N 0473402E	UL564	~~DOHA (DOH)~~ DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E PASOM 245545N 0513713E DATRI 244239N 0513407E FIR BDRY DENSI 242519N 0512959E DENSI 242519N 0512959E *Note 8 (DOH-PURDA) ~~NAJMA 250346N 0513908E~~ BATHA (BAT) 241257N 0512707E MIGMA 225035N 0512749E ~~PURDA 210805N 0510329N~~ ~~ASTIN 200410N 0495320E~~ ~~SHARURAH (SHA)~~ ~~ATBOT 171418N 0464706E~~ LOTOS 2200.0N 05039.2E ALNUG 213009N 0500453E NONGA 2050.8N 04920.2E DENKU 201123N 0484331E GERUG 185530N 0473402E

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LOWER AIRSPACE		**UPPER AIRSPACE**	
Designator **1**	**Significant Points** **2**	**Designator** **1**	**Significant Points** **2**
	ASKET 181905N 0470113E PATOG 180241N 0464631E VUVOD 173941N 0463200E TULIS 173033N 0462616E ULBON 171425.318N 0461514.915E (Jeddah / Sana'a FIR BDRY POINT) RAGNI 163454N 0454815E LOPAD 161651N 0453738E ITOLI 152825N 0450927E OBNAM 144541N 0444448E GEVEL 141229N 0442547E NOPVO 135436N 0441536E TAZ 134149.53N 0440818.98E PARIM 123142N 0432712E		ASKET 181905N 0470113E PATOG 180241N 0464631E VUVOD 173941N 0463200E TULIS 173033N 0462616E ULBON 171425.318N 0461514.915E (Jeddah / Sana'a FIR BDRY POINT) RAGNI 163454N 0454815E LOPAD 161651N 0453738E ITOLI 152825N 0450927E OBNAM 144541N 0444448E GEVEL 141229N 0442547E NOPVO 135436N 0441536E TAZ 134149.53N 0440818.98E PARIM 123142N 0432712E
L602	TUMAK 255031N 0531108E (OMAE FIR BDRY) VEDOM 260109N 0524456E VELAK 261307N 0521821E LABOP 261907N 0520429E ALTOM 262230N 0515639E DASOS 262429N 0515043E ALMOK 262832N 0513840E VEDOS 264105N 0510044E NABOS 264354N 0505145E MEMKO 264611N 0504427E MOGAS 264759N 0503909E TOLMO 265504N 0502927E EGLIT 270255N 0502005E TOKMA 270938N 0501159E ORSOL 272135N 0500207E ITNAS 274643N 0493957E ENAVI 275552N 0493151E **DAMUR 280137N 0492637E** DAVUS 2823468N 0490622E (OKAC FIR BDRY)	UL602	TUMAK 255031N 0531108E (OMAE FIR BDRY) VEDOM 260109N 0524456E VELAK 261307N 0521821E LABOP 261907N 0520429E ALTOM 262230N 0515639E DASOS 262429N 0515043E ALMOK 262832N 0513840E VEDOS 264105N 0510044E NABOS 264354N 0505145E MEMKO 264611N 0504427E MOGAS 264759N 0503909E TOLMO 265504N 0502927E EGLIT 270255N 0502005E TOKMA 270938N 0501159E ORSOL 272135N 0500207E ITNAS 274643N 0493957E ENAVI 275552N 0493151E DAMUR 280137N 0492637E ~~BAHRAIN (BAH)~~ ~~*Note 7~~ ~~PEBOS 262722N0503043E~~ ~~RULEX 264529N 0501745E~~ ~~RAMSI 270249N 0500714E~~ ~~IVONI 275911N 0492131E~~ DAVUS 282346N 0490622 DARVA 284814N 0484734E ALVIX 2919.3N04824.2E FALKA 292611N 0481819E TASMI 300120N 0475505E LOVEK322206N 0444000E DELMI331911N 0431731E ELEXI 344237N 0411054E DRZ 351724N 0401124E KUKSI 364508N 0374910E GAZ 365701N 0372824E

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator	**Significant Points**	**Designator**	**Significant Points**
1	**2**	**1**	**2**
L604	PLH 3513.7N 02340.9E	UL604	PLH 3513.7N 02340.9E
	SALUN 340000N 0242700E *		SALUN 340000N 0242700E *
	BRN 3134.5N 02600.3E		BRN 3134.5N 02600.3E
	KHG 2526.9N 03035.4E		KHG 2526.9N 03035.4E
	LUXOR (LXR) 254458 N 0324607E		LUXOR (LXR) 254458 N 0324607E
	IMRAD 260500N 0354400E		IMRAD 260500N 0354400E
	WEJH (WEJ) 261048~~.8~~N 0362918~~.3~~E		WEJH (WEJ) 261048~~.8~~N 0362918~~.3~~E
	HLF 262600N 03916.1E		HLF 262600N 03916.1E
	GASSIM (GAS) 2617.9N 04346.8E		GASSIM (GAS) 2617.9N 04346.8E
	*Note 7 (GAS-KFA)		*Note 7 (GAS-KFA)
	PUSLA 261758N 0461706E		PUSLA 261758N 0461706E
	*Note 8 to TOSNA		*Note 8 to TOSNA
	MGA 2617.3N 04712.4E		MGA 2617.3N 04712.4E
	ALMAL 2615.9N 04821.1E		ALMAL 2615.9N 04821.1E
	KING FAHD (KFA) 2621.9N 04949.2E		KING FAHD (KFA) 2621.9N 04949.2E
	NARMI 261802N 0501939E		NARMI 261802N 0501939E
	FIR BDRY		FIR BDRY
	BAHRAIN DVOR/DME (BAH) 261551N 0503855E		BAHRAIN DVOR/DME (BAH) 261551N 0503855E
	DENVO 260452N 0510509E		DENVO 260452N 0510509E
	~~ASNIX 260452N 0510509E~~		~~ASNIX 260452N 0510509E~~
	PATOM 255821N 0511836E		PATOM 255821N 0511836E
	EMISA 254658N 0514207E		EMISA 254658N 0514207E
	KAPAX 254218N 0515118E		KAPAX 254218N 0515118E
	ORSIS 252801N 0521636E		ORSIS 252801N 0521636E
	ENANO 252348N 0522559E		ENANO 252348N 0522559E
	TOSNA 251612N 0524116E		TOSNA 251612N 0524116E
L768	ALPOB 254218N 0530055E	**UL768**	ALPOB 254218N 0530055E
	* Note 7 to FIRAS		* Note 7 to FIRAS
	* Note 8 (ALPOB-COPPI)		* Note 8 (ALPOB-COPPI)
	ROTAG 255353N 0523621E		ROTAG 255353N 0523621E
	SOLEG 260159N 0521756E		SOLEG 260159N 0521756E
	MODOG 261012N 0515935E		MODOG 261012N 0515935E
	RAMKI 261138N 0515625E		RAMKI 261138N 0515625E
	RABLA 261506N 0514834E		RABLA 261506N 0514834E
	SOLOB 262241N 0513132E		SOLOB 262241N 0513132E
	MEDMA 263421N 0505454E		MEDMA 263421N 0505454E
	TOTLA 263806N 0504301E		TOTLA 263806N 0504301E
	EGMOR 264210.81N 0502906.73E		EGMOR 264210.81N 0502906.73E
	ULADA 264526.72N 0501623.55E		ULADA 264526.72N 0501623.55E
	(OEJD FIR BDRY)		(OEJD FIR BDRY)
	JBL 270222N 0492426E		JBL 270222N 0492426E
	COPPI 2750.6N 04744**.0E**		COPPI 2750.6N 04744.0E
			HFR
			VATIM 2851.6N 04444.7E
			RAFHA (RAF)
			ARAR (AAR)
			OVANO3148.0N 03909.9E
			OTILA 3201.5N 03901.9E
			MODAD 3235.7N 03841.6E
			SOKAN 3308.1N 03822.1E
			RAFIF 3312.8N 03819.3E
			SULAF 3327.3N 03810.4E
			FIRAS 3352.3N 03755.2E

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator **1**	**Significant Points** **2**	**Designator** **1**	**Significant Points** **2**
M318	**DARAX 260942N 0555300E** ***Note 8 (DARAX-MUXIT)** **SERSA 251945N 0553118E** **MIADA 245112N 0545736E** **ABU DHABI (ADV) 242508N 0544023E** **ATUDO 241708N 0543532E** **MUSEN 241429N 0543336E** **GOLGU 231151N 0523109E** **MUXIT 230230N 0523024E** **KITAP 224928N 0522923E** **PURDA 210805N 0510329E** **SHARURAH (SHA)** NADKI 171418N 0464706E SAA 153059.6N 0441310.6E HDH 144622N 0425911E	UM318	**DARAX 260942N 0555300E** ***Note 8 (DARAX-MUXIT)** **SERSA 251945N 0553118E** **MIADA 245112N 0545736E** **ABU DHABI (ADV) 242508N 0544023E** **ATUDO 241708N 0543532E** **MUSEN 241429N 0543336E** **GOLGU 231151N 0523109E** **MUXIT 230230N 0523024E** **KITAP 224928N 0522923E** **PURDA 210805N 0510329E** **SHARURAH (SHA)** NADKI 171418N 0464706E SAA 153059.6N 0441310.6E HDH 144622N 0425911E
M430	*Note 5 (KIA-DOH) KING KHALID (KIA) KOBOX 250716N 0475046E KIREN 251447.0N 0490724.0E *Note 8 (KIREN-TOSNA) HAS 2516.7N 04929.0E ULIKA 251545N 0503848E (OEJD FIR BDRY) GINTO 251605N 0510415E LAGNO 251613N 0511518E DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513630E BOVIP 251554N 0523135E TOSNA 251612N 524116E (OMAE FIR BDRY) *Note 7 (DOH-KISAG) KISAG 251834N 0541408E	UM430	*Note 5 (KIA-DOH) KING KHALID (KIA) KOBOX 250716N 0475046E KIREN 251447.0N 0490724.0E *Note 8 (KIREN-TOSNA) HAS 2516.7N 04929.0E ULIKA 251545N 0503848E (OEJD FIR BDRY) GINTO 251605N 0510415E LAGNO 251613N 0511518E DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513630E BOVIP 251554N 0523135E TOSNA 251612N 524116E (OMAE FIR BDRY) *Note 7 (DOH-KISAG) KISAG 251834N 0541408E
M557	ATBOR 251007N 0551947E *Note7 & 8 to MIDSI NADIL 252252N 0544717E NABOP 252607N 0540405E EMAGO 253456N 0535751E VUVOK 254408N 0533024E ~~TUMAK 255031N 0531108E~~ ~~ALTOM 262230N 0515639E~~ ~~TOXEL 263020N 0515553E~~ ~~MIDSI 264142N 0515442E~~	UM557	ATBOR 251007N 0551947E *Note7 & 8 to MIDSI NADIL 252252N 0544717E NABOP 252607N 0540405E EMAGO 253456N 0535751E VUVOK 254408N 0533024E ~~TUMAK 255031N 0531108E~~ ~~ALTOM 262230N 0515639E~~ ~~TOXEL 263020N 0515553E~~ ~~MIDSI 264142N 0515442E~~
M600	RANBI 251908N 0544500E KISAG 251834N 0541408E **TUMAK 255031N 0531108E (OMAE FIR BDRY)** VEDOM 260109N 0524456E VELAK 261307N 0521821E LABOP 261907N 0520429E ALTOM 262230N 0515639E DASOS 262429N 0515043E ALMOK 262832N 0513840E VEDOS 264105N 0510044E	UM600	RANBI 251908N 0544500E KISAG 251834N 0541408E **TUMAK 255031N 0531108E (OMAE FIR BDRY)** VEDOM 260109N 0524456E VELAK 261307N 0521821E LABOP 261907N 0520429E ALTOM 262230N 0515639E DASOS 262429N 0515043E ALMOK 262832N 0513840E VEDOS 264105N 0510044E

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator 1	**Significant Points 2**	**Designator 1**	**Significant Points 2**
	NABOS 264354N 0505145E MOGAS 264759N 0503909E RAKAK 265221N 0502618E RAMSI 270249N 0500714E ORNAK 272853N 0493248E SOLEM 275229N 0491136E KUMBO 281705N 0485526E (OKAC FIR BDRY) ~~SINGU 253706N 052570E~~ ~~NOBLA 255111N 0522740E~~ ~~TOBLI 262134N 0512301E~~ ~~RULEX 264529N 0501745E~~		NABOS 264354N 0505145E MOGAS 264759N 0503909E RAKAK 265221N 0502618E RAMSI 270249N 0500714E ORNAK 272853N 0493248E SOLEM 275229N 0491136E KUMBO 281705N 0485526E (OKAC FIR BDRY) ~~SINGU 253706N 052570E~~ ~~NOBLA 255111N 0522740E~~ ~~TOBLI 262134N 0512301E~~ ~~RULEX 264529N 0501745E~~
M677	SESRA 2908.0N 04854.9E RABAP 283625N 0492722E (OKAC FIR BDRY) PASAK 282459N 0494846E GOGMA 281421N 0495612E IVIVI 273734N 0502437E VEDOR 270855N 0504630E TOSDA 270004N 0505629E TORBO 265222N 0511024E SOGAN 263915N 0515408E DEGSO 261054N 0531946E OBNET 260032N 0534514E (OMAE FIR BDRY) ~~GEVAL 282101N 0494300E~~ ~~UMAMA 265831N 0504648E~~	UM677	SESRA 2908.0N 04854.9E RABAP 283625N 0492722E (OKAC FIR BDRY) PASAK 282459N 0494846E GOGMA 281421N 0495612E IVIVI 273734N 0502437E VEDOR 270855N 0504630E TOSDA 270004N 0505629E TORBO 265222N 0511024E SOGAN 263915N 0515408E DEGSO 261054N 0531946E OBNET 260032N 0534514E (OMAE FIR BDRY) ~~GEVAL 282101N 0494300E~~ ~~UMAMA 265831N 0504648E~~
N300	DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E *Note 7 & 8 to TONVO ELOBI 250752N 0521721E NAMLA 2505.5N 05233.3E BOXAK 244536N 0540032E MIADA 245112N 0545736E TONVO 250500N 0563200E	UN300	DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E *Note 7 & 8 to TONVO ELOBI 250752N 0521721E NAMLA 2505.5N 05233.3E BOXAK 244536N 0540032E MIADA 245112N 0545736E TONVO 250500N 0563200E

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	LOWER AIRSPACE		**UPPER AIRSPACE**
Designator 1	**Significant Points 2**	**Designator 1**	**Significant Points 2**
N318	QAA 314423N 0360926E	UN318	QAA 314423N 0360926E
	ALNOR 313955N 0362507E		ALNOR 313955N 0362507E
	KINUR 313626N 0363714E		KINUR 313626N 0363714E
	ELOXI 313359N 0364536E		ELOXI 313359N 0364536E
	GENEX 3129.6N 3700.9E		GENEX 3129.6N 3700.9E
	GURIAT (GRY)		GURIAT (GRY)
	ORKAS 3047.4N 03846.3 E		ORKAS 3047.4N 03846.3 E
	NEVOL 3024.7N 03938.6E		NEVOL 3024.7N 03938.6E
	VELAL2946.0N 04038.4E		VELAL2946.0N 04038.4E
	TAMRO 2838.6N 04240.8E		TAMRO 2838.6N 04240.8E
	* Note7 (OE, OB, OM, OO)		* Note7 (OE, OB, OM, OO)
	MOGON 2738.8N 04445.9E		MOGON 2738.8N 04445.9E
	TAGSO 272744N 0454510E		TAGSO 272744N 0454510E
	*Note 8 (OB, OO)		*Note 8 (OB, OO)
	EGNOV 270301N 0474713E		**EGNOV 270301N 0474713E**
	KUSAR 264741N 0490218E		**KUSAR 264741N 0490218E**
	ASPAN 263255N 0494903E		**ASPAN 263255N 0494903E**
	DEDAS 263011N 0501427E		**DEDAS 263011N 0501427E**
	LADNA OEJD FIR BDRY 262749.34N 0502244.63E		LADNA OEJD FIR BDRY 262749.34N 0502244.63E
	ELOSO 262409.19N 0503550.70E		ELOSO 262409.19N 0503550.70E
	DAVOV 262255.00N 0504012.54E		DAVOV 262255.00N 0504012.54E
	GOLKO 262149.22N 0504404.35E		GOLKO 262149.22N 0504404.35E
	ASTAD 261811.64N 0505646.41E		ASTAD 261811.64N 0505646.41E
	TOTIS 261119.11N 0511026.91E		TOTIS 261119.11N 0511026.91E
	RASDI 260425.38N 0512407.37E		RASDI 260425.38N 0512407.37E
	VELAM 255426.12N 0514347.13E		VELAM 255426.12N 0514347.13E
	VUTAN 255015.91N 0515218.39E		VUTAN 255015.91N 0515218.39E
	RESAR 253707.00N 0522328.00E		RESAR 253707.00N 0522328.00E
	ALSEM 252703.45N 0524322.04E		ALSEM 252703.45N 0524322.04E
	OVONA FIR BDRY 252443.00N 0524739.00E		OVONA FIR BDRY 252443.00N 0524739.00E
	~~**ASTAD 261812N 0505646E**~~		~~**ASTAD 261812N 0505646E**~~
	~~VUTAN 255016N 0515218E~~		~~VUTAN 255016N 0515218E~~
	~~RESAR 253707N 0522328E~~		~~RESAR 253707N 0522328E~~
	~~UMABA 252703N 0524322E~~		~~UMABA 252703N 0524322E~~
	(segment LOXAT - REXOD		**(segment LOXAT-REXOD)**
	KATIK 2517.1N 05315.2E		**KATIK 2517.1N 05315.2E**
	KANIP 2410.7N 05520.7E		**KANIP 2410.7N 05520.7E**
	LABRI 240344N 0553842E		**LABRI 240344N 0553842E**
	EGROK 235253N 0560126E		**EGROK 235253N 0560126E**
	LAKLU 232235N 0570401E		**LAKLU 232235N 0570401E**
	GEVED 230105N 0575111E		**GEVED 230105N 0575111E**
	TOLDA 223720N 0583503E		**TOLDA 223720N 0583503E**
	REXOD211230N 0613830E		REXOD211230N 0613830E
N685	TAGSO 272744N 0454510E	UN685	TAGSO 272744N 0454510E
	*Note 7 (TAGSO-KUSAR)		*Note 7 (TAGSO-KUSAR)
	*Note 8 (TAGSO-TOSNA)		*Note 8 (TAGSO-TOSNA)
	DEBOL 272116N 0461843E		DEBOL 272116N 0461843E
	TORTA 271906N 0462911E		TORTA 271906N 0462911E
	ALSAT 270611N 0473118E		ALSAT 270611N 0473118E
	EGNOV 270301N 0474713E		EGNOV 270301N 0474713E
	KUSAR 264741N 0490218E		KUSAR 264741N 0490218E
	KING FAHAD (KFA)		KING FAHAD (KFA)
	NARMI 261802N 0501939E (OEJD FIR BDRY)		NARMI 261802N 0501939E (OEJD FIR BDRY)

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator	**Significant Points**	**Designator**	**Significant Points**
1	**2**	**1**	**2**
	BAHRAIN (BAH) 261551N 0503856E ~~ASNIX 260452N 0510509E~~ PATOM 255821N 0511836E EMISA 254658N 0514207E *Note 7 to LAKLU KAPAX 254218N 0515118E ORSIS 252801N 0521636E ENANO 252348N 0522558E TOSNA 251612N 0524116E TOPSI 250910N 0531200E BOXAK 244536N 0540032E ADV 242508N 0544024 RETAS 235754N 0553423E *Note 8 (OO) PUTSO 232037N 0565322E LAKLU 232235N 0570401E		BAHRAIN (BAH) 261551N 0503856E ~~ASNIX 260452N 0510509E~~ PATOM 255821N 0511836E EMISA 254658N 0514207E *Note 7 to LAKLU KAPAX 254218N 0515118E ORSIS 252801N 0521636E ENANO 252348N 0522558E TOSNA 251612N 0524116E TOPSI 250910N 0531200E BOXAK 244536N 0540032E ADV 242508N 0544024 RETAS 235754N 0553423E *Note 8 (OO) PUTSO 232037N 0565322E LAKLU 232235N 0570401E
N687	KING KHALID (KIA) KINIB 254108N 0482317E *Note 5 & 7 & 8 KING FAHAD (KFA) ROTEL 264015N 0502149E (OEJD FIR BDRY) EGMOR 264210N 0502906E ~~MUTAR 263611N 0500627E~~ MEMKO 264611N 0504427E DAVRI 264936N 0505732E TORBO 265223N 0511024E	UN687	KING KHALID (KIA) KINIB 254108N 0482317E *Note 5 & 7 & 8 KING FAHAD (KFA) ROTEL 264015N 0502149E (OEJD FIR BDRY) EGMOR 264210N 0502906E ~~MUTAR 263611N 0500627E~~ MEMKO 264611N 0504427E DAVRI 264936N 0505732E TORBO 265223N 0511024E
N697	MENLI 2947.0N 03152.1E SISIK 2936.0N 03241.E NUWEIBAA * Note 7 (NWB-KITOT below FL350) KITOT 2902.1N 03450.8E SOBAS 2756.0N 03904.9E HAIL (HIL) *Note 7 (HIL–KFA) BPN 2703.2N 04526.7E *Note 8 (BPN-TORBO) KING FAHD (KFA) NARMI 261802N 0501939E (OEJD FIR BDRY) BAHRAIN DVOR/DME (BAH) 261551N 0503855E *Note 7 GOLKO 262149N 0504404E TOSTA 262746N 0504912E MEDMA 263421N 0505454E VEDOS 264105N 0510044E SODAK 264634N 0510530E TORBO 265223N 0511024E	UN687	MENLI 2947.0N 03152.1E SISIK 2936.0N 03241.E NUWEIBAA * Note 7 (NWB-KITOT below FL350) KITOT 2902.1N 03450.8E SOBAS 2756.0N 03904.9E HAIL (HIL) *Note 7 (HIL–KFA) BPN 2703.2N 04526.7E *Note 8 (BPN-TORBO) KING FAHD (KFA) NARMI 261802N 0501939E (OEJD FIR BDRY) BAHRAIN DVOR/DME (BAH) 261551N 0503855E *Note 7 GOLKO 262149N 0504404E TOSTA 262746N 0504912E MEDMA 263421N 0505454E VEDOS 264105N 0510044E SODAK 264634N 0510530E TORBO 265223N 0511024E

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LOWER AIRSPACE		UPPER AIRSPACE	
Designator **1**	**Significant Points** **2**	**Designator** **1**	**Significant Points** **2**
P425	DAHRAN (DHA) *Note 8 to ALSER BAHRAIN DVOR/DME (BAH) 261551N 0503855E DAVOV 262255N 0504012E DATGO 262957N 0504130E TOTLA 263806N 0504301E MEMKO 264611N 0504427E BOXOG 265403N 0504553E ALSER 271100N 0504900E (OIIX FIR BDRY)	UP425	DAHRAN (DHA) *Note 8 to ALSER BAHRAIN DVOR/DME (BAH) 261551N 0503855E DAVOV 262255N 0504012E DATGO 262957N 0504130E TOTLA 263806N 0504301E MEMKO 264611N 0504427E BOXOG 265403N 0504553E ALSER 271100N 0504900E (OIIX FIR BDRY)
P430	DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E *Note 8 to MIDSI BAYAN 252926N 0514849E *Note 7 to MIDSI KAPAX 254218N 0515118E VUTAN 255016N 0515218E ALVEN 255418N 0515315E BONAN 260201N 0515505E RAMKI 261138N 0515625E ALTOM 262230N 0515639E ~~TOXEL 263020N 0515553E~~ ~~MIDSI 264142N 05155442E~~	UP430	DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E *Note 8 to MIDSI BAYAN 252926N 0514849E *Note 7 to MIDSI KAPAX 254218N 0515118E VUTAN 255016N 0515218E ALVEN 255418N 0515315E BONAN 260201N 0515505E RAMKI 261138N 0515625E ALTOM 262230N 0515639E ~~TOXEL 263020N 0515553E~~ ~~MIDSI 264142N 05155442E~~
P559	TURAIF (TRF) *Note 7 to DESDI KAVID 3035.9N 04011.8E TOKLU 2942.1N 04202.4E RASMO 2857.2N 04331.3E KMC ULOVO 274830N 0455420E *Note 8 (ULOVO-NAPLO) MUSKO 2726.7N 04737.1E KEDAT 2721.8N 04759.0E JUBAIL (JBL) DAROR 270244N 0495815E (OEJD FIR BDRY) RAMSI 270249N 0500714E GASSI 270257N 0502229E KOBOK 265839N 0503349E BOXOG 265403N 0504553E DAVRI 264936N 0505731E SODAK 264634N 0510530E DANOB 263946N 0512640E BOTOB 263350N 0514505E ROSAN 263129N 0515220E KUMLA 262609N 0520822E ASPAK 262115N 0522257E TOMSO 260611N 0530214E NALPO 255602N 0532945E (OMAE FIR BDRY) RAPSA 253700N 0541700E DESDI 253603N 0544230E	UP559	TURAIF (TRF) *Note 7 to DESDI KAVID 3035.9N 04011.8E TOKLU 2942.1N 04202.4E RASMO 2857.2N 04331.3E KMC ULOVO 274830N 0455420E *Note 8 (ULOVO-NAPLO) MUSKO 2726.7N 04737.1E KEDAT 2721.8N 04759.0E JUBAIL (JBL) DAROR 270244N 0495815E (OEJD FIR BDRY) RAMSI 270249N 0500714E GASSI 270257N 0502229E KOBOK 265839N 0503349E BOXOG 265403N 0504553E DAVRI 264936N 0505731E SODAK 264634N 0510530E DANOB 263946N 0512640E BOTOB 263350N 0514505E ROSAN 263129N 0515220E KUMLA 262609N 0520822E ASPAK 262115N 0522257E TOMSO 260611N 0530214E NALPO 255602N 0532945E RAPSA 253700N 0541700E DESDI 253603N 0544230E

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LOWER AIRSPACE

Designator 1	Significant Points 2
P699	ATBOR 251007N 0551947E
	*Note 7 (ATBOR-BAH)
	SITAT 251105N 0544500E
	KISAG 251834N 0541408E
	ITMUS 252322N 0535429E
	ALSOK 252607N 0533904E
	RUBAL 252957N 0531723E
	ORMID 253354N 0525434E
	*Note 8 (ORMID-KFA)
	DASLO 254537N 0523029E
	NAGOG 255214N 0521614E
	BONAN 260200N 0515505E
	VEDED 260558N 0514627E
	KUNDO 261631N 0512325E
	SOGAT 262029N 0511443E
	ASTAD 261811N 0505646E
	BAHRAIN DVOR/DME(BAH) 261551N 0503855E
	NARMI 261802N 0501939E
	(OEJD FIR BDRY)
	KING FHAD (KFA) 262153N 0494910E
P975	NOLDO 324932N 0452129E
	*Note7
	KATUT 323737N 0453439E
	DENKI 322228N 0455122E
	ILMAP 312133N 0465702E
	PEBAD 305023N 0472958E
	SIDAD 295231N 0482944E
	LOVAR 2924.4N 04846.1E
	SESRA 2908000N 004854.9E
	DANAL 2851.5N 04904.8E
	IMDOX 2834.9N 04914.6E
	LONOS 283027N 0491713E
	(OKAC FIR BDRY)
	ORGEL 281312N 0494614E
	DATEN 273118N 0501832E
	REVAX 272026N 0502651E
	GETAL 270409N 0504039E
	LOSIS 270118N 0504208E
	BOXOG 265403N 0504553E
	NABOS 264354N 0505145E
	TOTIS 261119N 0511026E
	~~DETKO 280550N 0493130E~~
	~~TOLMO 2655.1N 05029.4E~~
	~~TORNA 2633.6N 05042.2E~~
	~~MEMBO 262425N 0504737E~~

UPPER AIRSPACE

Designator 1	Significant Points 2
UP699	ATBOR 251007N 0551947E
	*Note 7 (ATBOR-BAH)
	SITAT 251105N 0544500E
	KISAG 251834N 0541408E
	ITMUS 252322N 0535429E
	ALSOK 252607N 0533904E
	RUBAL 252957N 0531723E
	ORMID 253354N 0525434E
	*Note 8 (ORMID-KFA)
	DASLO 254537N 0523029E
	NAGOG 255214N 0521614E
	BONAN 260200N 0515505E
	VEDED 260558N 0514627E
	KUNDO 261631N 0512325E
	SOGAT 262029N 0511443E
	ASTAD 261812N 0505646E
	BAHRAIN DVOR/DME(BAH) 261551N 0503855E
	NARMI 261802N 0501939E
	(OEJD FIR BDRY)
	KING FHAD (KFA) 262153N 0494910E
UP975	(ELAZIG) EZS
	*Note7
	(DYB) 384225N 0391328E
	LESRI 370420N 0411348E
	SIDNA 3634.0N 04141.0E
	TUBEN 351724N 0425434E
	MUTAG 343003N 0433834E
	SOGUM 341212N 0435454E
	SINKA 332137N 0444753E
	NOLDO 324932N 0452129E
	KATUT 323737N 0453439E
	DENKI 322228N 0455122E
	ILMAP 312133N 0465702E
	PEBAD 305023N 0472958E
	SIDAD 295231N 0482944E
	LOVAR 2924.4N 04846.1E
	SESRA 2908000N 004854.9E
	DANAL 2851.5N 04904.8E
	IMDOX 2834.9N 04914.6E
	LONOS 283027N 0491713E
	(OKAC FIR BDRY)
	ORGEL 281312N 0494614E
	DATEN 273118N 0501832E
	REVAX 272026N 0502651E
	GETAL 270409N 0504039E
	LOSIS 270118N 0504208E
	BOXOG 265403N 0504553E
	NABOS 264354N 0505145E
	TOTIS 261119N 0511026E
	~~DETKO 280550N 0493130E~~
	~~TOLMO 2655.1N 05029.4E~~
	~~TORNA 2633.6N 05042.2E~~
	~~MEMBO 262425N 0504737E~~

	LOWER AIRSPACE		**UPPER AIRSPACE**
Designator 1	**Significant Points 2**	**Designator 1**	**Significant Points 2**

Add requirement for ATS routes: L319/UL319, L438/UL438, L443/UL443, M444/UM444, P560/UP560, P531/UP561, P562/UP562 and P563/UP563 as follows:

L319	BAH DVOR/DME 261551N 0503855E DAVRI 264936N 0505731E OBTAR 265934N 0510309E (OIIX FIR BDRY)	UL319	BAH DVOR/DME 261551N 0503855E DAVRI 264936N 0505731E OBTAR 265934N 0510309E (OIIX FIR BDRY)
L438	LONOS 283027N 491713E FIR BDRY 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	UL438	LONOS 283027N 491713E FIR BDRY 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
L443	RABAP 283625N 0492722 FIR BDRY TESSO 282852N 0492723E LOPOL 281849N 0492845E ENAVI 275552N 0493151E GIRSI 274126N 0493310E ORDAN 271706N 0495442E RAMSI 270249N 0500714E GASSI 270257N 0502229E	UL443	RABAP 283625N 0492722 FIR BDRY TESSO 282852N 0492723E LOPOL 281849N 0492845E ENAVI 275552N 0493151E GIRSI 274126N 0493310E ORDAN 271706N 0495442E RAMSI 270249N 0500714E GASSI 270257N 0502229E
M444	DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E EMISA 254658N 0514206E PATOM 255821N 0511836E DENVO 260452N 0510509E BAHRAIN DVOR/DME (BAH) 261551N 0503855E ELOSO 262409N 0503550E EGMOR 264210N 0502906E LOTOR 264854N 0502200E RAMSI 270249N 0500714E ORDAN 271706N 0495442E GIRSI 274126N 0493310E ENASO 275706N 0491911E DAVUS 282346N 0490622E (OKAC FIR BDRY)	UM444	DOHA/HAMAD INTL DVOR/DME (DOH) 251459N 0513634E EMISA 254658N 0514206E PATOM 255821N 0511836E DENVO 260452N 0510509E BAHRAIN DVOR/DME (BAH) 261551N 0503855E ELOSO 262409N 0503550E EGMOR 264210N 0502906E LOTOR 264854N 0502200E RAMSI 270249N 0500714E ORDAN 271706N 0495442E GIRSI 274126N 0493310E ENASO 275706N 0491911E DAVUS 282346N 0490622E (OKAC FIR BDRY)

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P560	PORT SUDAN (PSD) 311743N 0321416E BOGUM 200736N 0380360E AL BAH (BHA) 201832.9N 0413844.9E KITAP 224928N 0522923E	UP560	PORT SUDAN (PSD) 311743N 0321416E BOGUM 200736N 0380360E AL BAH (BHA) 201832.9N 0413844.9E KITAP 224928N 0522923E
P561	BENINA (BNA) 320728N 0201513E KATAB 292501N 0290506E	UP561	BENINA (BNA) 320728N 0201513E KATAB 292501N 0290506E
P562	DEESA 294509N 0364102E ENABI 290739N 0385650E TAMRO 283938N 0424147E LOTOK 280857N 0450512E	UP562	DEESA 294509N 0364102E ENABI 290739N 0385650E TAMRO 283938N 0424147E LOTOK 280857N 0450512E
P563	HAIL (HIL) 272630N 0414158E PASAM 273145N 0345642E HURGHADA (HGD) 271139.9N 0334847E	UP563	HAIL (HIL) 272630N 0414158E PASAM 273145N 0345642E HURGHADA (HGD) 271139.9N 0334847E

c) **Originated by:** The First meeting of the Air Navigation Systems Implementation Group (ANSIG/1).

d) **Originator's reasons for amendment**: The ANSIG/1 meeting reviewed and updated the Table ATS 1-ATS Routes of the MID Basic ANP, based on the outcome of the ATM SG/1 meeting and the inputs received from States.

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

f) **Proposal circulated to following States and organizations:**

Bahrain	Saudi Arabia
Egypt	Syrian Arab Republic
Islamic Republic of Iran	United Arab Emirates
Iraq	Yemen
Jordan	CANSO
Kuwait	EUROCONTROL
Lebanon	IACA
Oman	IATA
Qatar	IFALPA

g) **Secretariat's comments:** The changes proposed herein are the result of work undertaken by the MIDANPIRG ANSIG/1; the ICAO MID Regional Office and individual MID States to enhance MID Region ATS route network efficiency.

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APPENDIX 4M

TEMPLATE FOR

LETTER OF AGREEMNT

BETWEEN

AREA CONTROL CENTRES

DRAFT

Draft version 2
Date, February 2015

UNIT 1 LOGO

UNIT 2 LOGO

LETTER OF AGREEMENT

between

[Authority]	**and**	**[Authority]**
[ATS Unit 1]		**[ATS Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

1 General

1.1 Purpose

The purpose of this Letter of Agreement is to define the co-ordination procedures to be applied between [Unit 1] and [Unit 2] when providing ATS to General Air Traffic (IFR/VFR) and/or Operational Air Traffic.

These procedures are supplementary to those specified in ICAO, Community Regulations, inter-State or inter air traffic services provider's agreements and/or National Documents.

1.2 Operational Status

Both ATS units shall keep each other advised of any changes in the operational status of the facilities and navigational aids which may affect the procedures specified in this Letter of Agreement.

2 Areas of Responsibility for the Provision of ATS

2.1 Areas of Responsibility

The lateral and vertical limits of the respective areas of responsibility are as follows:

2.1.1 [Unit 1]

Lateral limits:

Vertical limits:

ICAO airspace classification for the area of responsibility of [Unit 1] along the common boundary of the areas of responsibility of [Unit 1] and [Unit 2] is described in Appendix B to this Letter of Agreement.

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2.1.2 [Unit 2]

Lateral limits: [………….]

Vertical limits: […………]

ICAO airspace classification for the area of responsibility of [Unit 2] along the common boundary of the areas of responsibility of [Unit 1] and [Unit 2] is described in Appendix B to this Letter of Agreement.

2.2 Areas for Cross Border Provision of ATS

The areas defined as a result of the:
- An inter-State Level Agreement for the delegation of the responsibility for the provisions of ATS; or
- A direct designation by a Member State of an air traffic service provider holding a valid certificate in the Community; or
- An air traffic service provider availing itself of the services of another service provider that has been certified in the Community

are to be considered areas for cross border provision of ATS.

These areas defined in other agreements as shown above will be described in this section. The description should address physical dimension as well as the rules and regulations applicable to those areas.

3 Procedures

3.1 The procedures to be applied by [Unit 1] and [Unite 2] are detailed in the Appendices to this Letter of Agreement:

Appendix A: Definitions and Abbreviations
Appendix B: Area of Common Interest
Appendix C: Exchange of Flight Data
Appendix D: Procedures for Co-ordination
Appendix E: Transfer of Control and Transfer of Communications
Appendix F: ATS Surveillance Based Co-ordination Procedures
Appendix G: Air Traffic Flow Management
Appendix H: Contingency Procedures
Appendix I: SAR Bilateral Arrangements

3.2 These procedures shall be promulgated to the operational staff of the ATS units concerned.

4 Revisions and Deviations

When deemed necessary by the signatories, the content of the present Letter of Agreement can be reviewed at regular intervals to assess the need for revisions of the Letter of Agreement and its Appendixes.

4.1 Revision of the Letter of Agreement

The revision of the present Letter of Agreement, excluding Appendices and their Attachments, requires the mutual written consent of the signatories.

4.2 Revision of the Appendices to the Letter of Agreement

The revision of Appendices to the present Letter of Agreement requires mutual consent of the respective authorities as represented by signatories.

4.3 **Temporary Deviations**

Where special situations or unforeseen developments arising at short notice require immediate action, the Supervisors of the two ATS units may, by mutual agreement, effect temporary provisions to meet such requirements.

Such provisions shall, however, not exceed 48 hours in duration unless sanctioned by signatories to this LoA.

4.4 **Incidental Deviations**

4.4.1 Instances may arise where incidental deviations from the procedures specified in the Appendices to this Letter of Agreement may become necessary. Under these circumstances air traffic controllers and operational supervisors are expected to exercise their best judgement to ensure the safety and efficiency of air traffic.

5 Cancellation

5.1 Cancellation of the present Letter of Agreement may take place by mutual agreement of the respective Approving Authorities.

6 Interpretation and Settlement of Disputes

6.1 Should any doubt or diverging views arise regarding the interpretation of any provision of the present Letter of Agreement or in case of dispute regarding its application, the parties shall endeavour to reach a solution acceptable to both of them.

6.2 Should no agreement be reached, each of the parties shall refer to a higher level of its national aviation administration, to which the dispute shall be submitted for settlement.

7 Validity

This Letter of Agreement becomes effective [date]and supersedes previous Letter of agreement between [Unit 1] and [Unit 2].

Date:	Date:
____________________________	____________________________
Name Title Authority 1	Name Title Authority 2

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Appendix A.

Definitions and Abbreviations.

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

A.1 Definitions

The Definitions in this Annex have been developed since there are no corresponding ICAO definitions and, as such, no common interpretation exists. The definitions so defined should result in a common interpretation and application. The definitions may change based on the ATS units requirements

A.1.1 ATS Area of Responsibility

An Airspace of defined dimensions where a sole ATS unit has responsibility for providing air traffic services.

A.1.2 Area of Common Interest

A volume of airspace as agreed between 2 ATS Units, extending into the adjacent/subjacent Areas of Responsibility, within which airspace structure and related activities may have an impact on air traffic co-ordination procedures.

A.1.3 General Air Traffic (GAT)

All flights which are conducted in accordance with the rules and procedures of ICAO and/or the national civil aviation regulations and legislation.

A.1.4 Operational Air Traffic (OAT)

All flights which do not comply with the provisions stated for GAT and for which rules and procedures have been specified by appropriate national authorities.

A.1.5 Reduced Vertical Separation Minimum (RVSM)

A vertical separation minimum of 300 m (1 000 ft) which is applied between FL 290 and FL 410 inclusive, on the basis of regional air navigation agreements and in accordance with conditions specified therein.

A.1.5.1 RVSM Approved Aircraft

Aircraft that have received State approval for RVSM operations.

A.1.6 Release

A.1.6.1 Release for Climb

An authorization for the accepting unit to climb (a) specific aircraft before the transfer of control.

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Note: The transferring unit/sector remains responsible within its Area of Responsibility for separation between the transferred aircraft and other aircraft unknown to the accepting unit/sector, unless otherwise agreed.

A.1.6.2 **Release for Descent**

An authorization for the accepting unit to descend (a) specific aircraft before the transfer of control.

Note: The transferring unit/sector remains responsible within its Area of Responsibility for separation between the transferred aircraft and other aircraft unknown to the accepting unit/sector, unless otherwise agreed.

A.1.6.3 **Release for Turn**

An authorization for the accepting unit to turn (a) specific aircraft away from the current flight path by not more than 45 ^{o} before the transfer of control.

Note: The transferring unit/sector remains responsible within its Area of Responsibility for separation between the transferred aircraft and other aircraft unknown to the accepting unit/sector, unless otherwise agreed.

A.1.7 **State Aircraft**

For the purposes of RVSM, only aircraft used in military, customs or police services shall qualify as State aircraft.

A.1.8 **Transfer of Control Point (TCP)**

A TCP is a defined point, located along a flight path of an aircraft, at which the responsibility for providing ATS to the aircraft is transferred from one ATC unit of control position of the next.

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A.2 Abbreviations. (Should be review at last)

ABI	Advance Boundary Information	ICAO	International Civil Aviation Organization
ACC	Area Control Centre	IFR	Instrument Flight Rules
ACI*	Area of Common Interest	LAM	Logical Acknowledge (Message Type Designator)
ACT	Activation Message	LoA*	Letter of Agreement
ACP	Acceptance	LOF*	Logon Forward Message (OLDI)
AIDC	ATS Inter-Facility Data Communication	MAC*	Message for Abrogation of Coordination
AIP	Aeronautical Information Publication	MFC*	Multi Frequency Coding (telephone system)
AOC	Acceptance of Control	NAN*	Next Authority Notified Message (OLDI)
AoR*	Area of Responsibility	NM	Nautical Mile
APP	Approach Control	OAT	Operational Air Traffic
ATC	Air Traffic Control	OLDI	On Line Data Interchange
ATCA	Air Traffic Control Assistant	PAC	Preliminary Activate
ATCO	Air Traffic Control Officer	RCC	Rescue Coordination Centre
ATS	Air Traffic Services	REV*	Revision Message
CBA*	Cross Border Area	REJ	Rejection
CDN	Coordination Negotiation	RTF	Radio Telephony
CDR*	Conditional Route	RVSM	Reduced Vertical Separation Minimum
COP*	Coordination Point	SAR	Search and Rescue
CPL	Current Flight Plan	SRR	Search and Rescue Region
EST	Coordination Estimate	SID	Standard Instrument Departure
ETO	Estimated Time Over Significant Point	SSR	Secondary Surveillance Radar
FDPS	Flight Data Processing System	STAR	Standard Terminal Arrival Route
FIC	Flight Information Centre	TSA*	Temporary Segregated Airspace
FIR	Flight Information Region	TCP	Transfer of Control Point
FMP*	Flow Management Position	TOC	Transfer of Control
GAT*	General Air Traffic	UIR	Upper flight information region

Note: Abbreviations marked with an * are non-ICAO abbreviations.

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A.3 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between [Unit 1] and [Unit 2].

Date:	Date:
____________________________	____________________________
Name Title Authority 1	Name Title Authority 2

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Appendix B.

Area of Common Interest.

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

Controllers are required to be familiar with the airspace structure and restrictions existing immediately beyond the area of responsibility. This airspace has been called the Area of Common Interest (ACI). The extent to which that airspace will be described will be determined at the level of development of a particular Letter of Agreement. The description of the ACI is a mandatory element of a Letter of Agreement. The ACI, as a minimum, shall contain all of the cross-border ATS Routes.

B.1 Airspace Structure and Classification within the Area of Common Interest.

B.1.1 [Unit 1] FIR/UIR

Area	Vertical limits	Airspace Classification

B.1.2 [Unit 1] FIR/UIR

Area	Vertical limits	Airspace Classification

B.2 Sectorisation within the Area of Common Interest

The sectorisation within the ACI is shown in Attachment 1 of Appendix B.

B.3 Special Areas within the Area of Common Interest

[This section should describe the special areas within the area of common interest]

B.3.1 Areas for Cross-Border Provision of ATS defined with other ATS Units within the ACI

B.3.2 Other Areas

Those areas that can directly influence the exchange of traffic, such as CBAs, TSAs, AMC-manageable Restricted or Danger Areas and Prohibited Areas, shall be depicted here.

B.4 Non-published Co-ordination Points.

COPs that are not related to significant points published in relevant AIPs

COP	Coordinate

B.5 Validity

This Appendix to the LoA takes effect on[xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:

Date:

Name
Title
Authority 1

Name
Title
Authority 2

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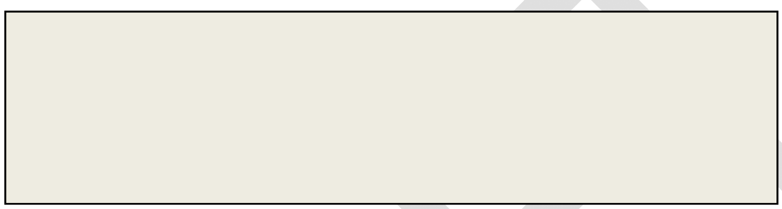
Attachment 1 of Appendix B

Sectorisation.



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Not to scale

UNIT 1 LOGO UNIT 2 LOGO

Appendix C (1).

Exchange of Flight Data.
(With automatic data exchange)

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

C.1 General.

C.1.1 Basic Flight Plans

Basic flight plan data should normally be available at both ATS Units.

C.1.2 Current Flight Plan Data

Messages, including current flight plan data, shall be forwarded by the transferring ATS unit to the accepting ATS unit either by automatic data exchange or by telephone to the appropriate sector/position.

C.1.2.1 Automatic Data Exchange

The agreed exchange messages for OLDI [and/or] AIDC between the two ATS units are at Attachment 1 [and/or] Attachment 2 to Appendix C.

C.1.2.2 Verbal Estimates

For conditions that are not supported by the automatic data exchange, verbal estimates will be exchanged.

A verbal estimate shall be passed to the appropriate sector at the accepting ATS unit at least [value] minutes prior, but not earlier than 30 minutes before the aircraft is estimated to pass the transfer of control point.

A verbal estimate shall contain:

a) Callsign.
   Note: To indicate that the flight plan is available, the accepting ATS unit should state aircraft type and destination after having received the callsign.
b) SSR code:
   Note: Normally, the notification of a SSR code indicates that the selection of that code by the aircraft was verified.
c) ETO for the appropriate COP as laid down in Appendix D to this LoA.
d) Cleared level, specifying climb or descent conditions if applicable, at the transfer of control point.

   Requested level if different from cleared level.

e) Other information, if applicable.

Normally, verbal estimates will not be passed in parallel with ACT messages.

In all cases, verbally passed data shall take precedence over data exchanged automatically.

C.1.2.3 Failure of Automatic Data Exchange

In the event of a failure which prevents the automatic transfer of data, the Supervisors shall immediately decide to revert to the verbal exchange of estimates.

After recovery from a system failure, the Supervisors shall agree as to when they will revert to automatic data exchange.

C.1.3 Non-availability of Basic Flight Plan Data

If the accepting ATS unit does not have basic flight plan data available, additional information may be requested from the transferring ATS unit to supplement the ACT message or a verbal estimate.

Within the context of RVSM, such additional information should include:

a. the RVSM approval status of the aircraft; and
b. whether or not a non-RVSM approved aircraft is a State aircraft.

C.1.4 Revisions.

Any significant revisions to the flight data are to be transmitted to the accepting ATS unit.

Time differences of [value] minutes or more are to be exchanged.

Any levels which different than describe in Appendix D of this LOA are subject to an Approval Request.

C.1.5 Expedite Clearance and Approval Requests

Whenever the minimum time of [value] minutes for a verbal estimate, or those prescribed in Attachment 1 to Appendix C for ACT messages, cannot be met, either an expedite clearance request, an approval request (*or a PAC)*, as appropriate, shall be initiated.

C.2 Means of Communications and their Use

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UNIT 1 LOGO UNIT 2 LOGO

C.2.1 **Equipment.**

The following lines are available between [Unit 1] and [Unit 2]:

Line Type	Amount	Additional Information
Data Line		
Telephone Lines		

"Additional Information" column should indicate if telephone lines meet the requirements for Direct Controller-Controller Voice Communication (DCCVC) or Instantaneous Direct Controller-Controller Voice Communication (ICCVC)

C.2.2 **Verbal Co-ordination**

All verbal communications between non-physically adjacent controllers should be terminated with the initials of both parties concerned.

Exchange of flight plan data, estimates and control messages by voice shall be carried out in accordance with the following tables:

C.2.2.1 Messages from [Unit 1] to [Unit 2]:

Receiving Sector/COPs	Message	Position
Sector Name COPs	Flight Plan Data and Estimates	
	Control Messages, Expedite Clearances, Approval Requests and Revisions	
	Surveillance Co-ordination	

C.2.2.2 Messages from [Unit 1] to [Unit 2]:

Receiving Sector/COPs	Message	Position
Sector Name COPs	Flight Plan Data and Estimates	
	Control Messages, Expedite Clearances, Approval Requests and Revisions	
	Surveillance Co-ordination	

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C.3 Failure of Ground/Ground Voice Communications

C.3.1 Fall-Back Procedures for Co-ordination

To mitigate the effects of failures of direct speech circuits, both parties will establish and maintain dial-up facilities via PABX and ATC Voice Communications Systems (VCS) as follows:

Sector Name	Tel Number (For Both Units)

Stand-alone telephones with auto-dial facilities will be maintained as a second level of fall-back to cover the event of failure of PABX or VCS:

Sector Name	Tel Number (For Both Units)

C.3.2 Alternate Fall-Back Procedures for Co-ordination

In case of communications failure where the alternatives described in paragraph C.3.1 above are not available or practicable, pilots shall be instructed, at least 5 minutes prior to the transfer of control point, to pass flight data on the appropriate frequency of the accepting ATS unit for the purpose of obtaining an ATC entry clearance from the accepting ATS unit.

If the accepting ATS unit cannot issue an entry clearance to the pilot upon his initial contact, the pilot shall be instructed to inform the transferring ATS unit accordingly via RTF.

The transferring ATS unit shall hold the aircraft within its AoR and after a minimum of 10 minutes instruct the pilot to re-establish RTF contact with the accepting ATS unit.

This procedure shall be repeated until an onward clearance has been obtained from the accepting ATS unit.

C.4 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx]and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:	Date:
____________________________	____________________________
Name Title Authority 1	Name Title Authority 2

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UNIT 1 LOGO UNIT 2 LOGO

Attachment 1 to Appendix C (1)

Automatic Data Exchange related to OLDI

ABI/ACT/LAM messages are exchanged between the two ATS units in accordance with the table below:

Messages	COPs	Time and/or Distance Parameters	
		Messages from Unit 1 To Unit 2	Messages from Unit 1 To Unit 2
ABI			
ACT			
LAM			
REV			
PAC			
MAC			
LOF			
NAN			

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<u>**Attachment 2 to Appendix C**</u>
<u>**Automatic Data Exchange related to AIDC**</u>

(Guidelines on the implementation of AIDC/OLDI in the MID Region are provided in the MID Region Strategy for the implementation of AIDC/OLDI available on the ICAO MID website: http://www.icao.int/MID/Pages/meetings.aspx)

AIDC messages are exchanged between the two ATS units in accordance with the table below:

Messages	Parameter	Notes
ABI	***ATSU1:*** *[Sends ABI approx. 80 minutes prior to boundary (73 minutes prior to the 50 nm expanded sector boundary).]* ***ATSU2:*** *[Sends ABI approx. 87 minutes prior to boundary (80 minutes prior to the 50 nm expanded sector boundary).* *(Note: An updated ABI will not be sent once a CPL has been sent.)]*	***ATSU1 : ATSU2*** *[Updated ABI's will be sent automatically if there is any change to profile. ABI is sent automatically and is transparent to the controller. ABI automatically updates the receiving unit's flight data record.]*
CPL	***ATSU1 : ATSU2*** *[Send CPL messages approx. 37 minutes prior to the boundary (30 minutes prior to the 50 nm expanded sector boundary).]*	***ATSU1 : ATSU2*** *[CPL messages should be sent by the transferring controller in sufficient time to allow the completion of coordination at least 30 minutes prior to the boundary or 30 minutes prior to the aircraft passing within 50nmof the FIR boundary for information transfers.]*
CDN	***ATSU1 : ATSU2*** *[CDN messages are sent by either the transferring or receiving facility to propose a change once the coordination process has been completed, i.e., CPL sent and ACP received. CDN's must contain all applicable profile restrictions (e.g. weather deviations, speed assignment, block altitude). If the use of a CDN does not support this requirement, then verbal coordination is required.]*	***ATSU1 : ATSU2*** *[The APS will display a flashing "DIA" until receipt of ACP. If ACPJ not received within ten (10) minutes, controller is alerted with a message to the queue.* *CDN messages are not normally used for coordination of reroutes; however, with the receiving facilities approval a CDN may be used to coordinate a reroute on a critical status aircraft such as in an emergency.]*
PAC	***ATSU1 : ATSU2*** *[PAC messages will normally be sent when the time criteria from the departure point to the boundary is less than that stipulated in the CPL.]*	***ATSU1 : ATSU2*** *[Will respond to a PAC message with an ACP. PAC messages should be verbally verified with receiving facility.]*
ACP	***ATSU1 : ATSU2*** *[……..]*	***ATSU1 : ATSU2*** *[The APS will display a flashing "DIA" until receipt of ACP. If ACP not received within ten (10) minutes, controller is alerted with a message to the queue.]*
TOC	***ATSU1 : ATSU2***	
AOC	***ATSU1 : ATSU2***	
MAC	***ATSU1 : ATSU2*** *[MAC messages are sent when a change to the route makes the other facility no longer the "next" responsible unit.]*	***ATSU1 : ATSU2*** *[Receipt of a MAC message must not be interpreted as meaning that the flight plan has been cancelled. Voice coordination must be conducted by the transferring controller to confirm the status of the flight.]*
REJ	***ATSU1 : ATSU2*** *[REJ messages are sent in reply to a CDN message when the request change is unacceptable]*	***ATSU1 : ATSU2*** *[REJ messages are sent only as a response to a CDN message.]*

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UNIT 1 LOGO UNIT 2 LOGO

Appendix C (2).
Exchange of Flight Data.
(Without automatic data exchange)

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

DRAFT

C.1 General.

C.1.1 **Basic Flight Plans**

Basic flight plan data should normally be available at both ATS Units.

C.1.2 **Current Flight Plan Data**

Messages, including current flight plan data, shall be forwarded by the transferring ATS unit to the accepting ATS unit by telephone to the appropriate sector/position.

C.1.2.1 Verbal Estimates.

A verbal estimate shall be passed to the appropriate sector at the accepting ATS unit at least [value] minutes prior, before the aircraft is estimated to pass the transfer of control point.

A verbal estimate shall contain:

a) Callsign.

Note: To indicate that the flight plan is available, the accepting ATS unit should state aircraft type and destination after having received the Callsign.

b) SSR code:

Note: Normally, the notification of a SSR code indicates that the selection of that code by the aircraft was verified.

c) ETO for the appropriate COP as laid down in Appendix D to this LoA.

d) Cleared level, specifying climb or descent conditions if applicable, at the transfer of control point.

Requested level if different from cleared level.

e) Other information, if applicable.

C.1.3 **Non-availability of Basic Flight Plan Data**

If the accepting ATS unit does not have basic flight plan data available, additional information may be requested from the transferring ATS unit to supplement verbal estimate.

Within the context of RVSM, such additional information should include:

a. the RVSM approval status of the aircraft; and *b. whether or not a non-RVSM approved aircraft is a State aircraft.*

C.1.4 Revisions

Any significant revisions to the flight data are to be transmitted to the accepting ATS unit.

Time differences of [value] minutes or more are to be exchanged.

Any levels which different than describe in Appendix D of this LOA are subject to an Approval Request.

C.1.5 Expedite Clearance and Approval Requests

Whenever the minimum time of [value] minutes for a verbal estimate, cannot be met, either an expedite clearance request, an approval request, as appropriate, shall be initiated.

C.2 Means of Communications and their Use

C.2.1 Equipment

The following lines are available between [Unit 1] and [Unit 2]:

Line Type	Amount	Additional Information
Telephone Lines		

"Additional Information" column should indicate if telephone lines meet the requirements for Direct Controller-Controller Voice Communication (DCCVC) or Instantaneous Direct Controller-Controller Voice Communication (ICCVC)

C.2.2 Verbal Co-ordination

All verbal communications between non-physically adjacent controllers should be terminated with the initials of both parties concerned.

Exchange of flight plan data, estimates and control messages by voice shall be carried out in accordance with the following tables:

C.2.2.1 Messages from [Unit 1] to [Unit 2]

Receiving Sector/COPs	Message	Position
Sector Name COPs	Flight Plan Data and Estimates	
	Control Messages, Expedite Clearances, Approval Requests and Revisions	
	Surveillance Co-ordination	

UNIT 1 LOGO UNIT 2 LOGO

C.2.2.2 Messages from [Unit 2] to [Unit 1]

Receiving Sector/COPs	Message	Position
Sector Name COPs	Flight Plan Data and Estimates	
	Control Messages, Expedite Clearances, Approval Requests and Revisions	
	Surveillance Co-ordination	

C.3 Failure of Ground/Ground Voice Communications

C.3.1 Fall-Back Procedures for Co-ordination

To mitigate the effects of failures of direct speech circuits, both parties will establish and maintain dial-up facilities via PABX and ATC Voice Communications Systems (VCS) as follows:

Sector Name […………….] Tel Number (For Both Units)

Stand-alone telephones with auto-dial facilities will be maintained as a second level of fall-back to cover the event of failure of PABX or VCS:

Sector Name […………………..] Tel Number (For Both Units)

C.3.2 Alternate Fall-Back Procedures for Co-ordination

In case of communications failure where the alternatives described in paragraph C.3.1 above are not available or practicable, pilots shall be instructed, at least 5 minutes prior to the transfer of control point, to pass flight data on the appropriate frequency of the accepting ATS unit for the purpose of obtaining an ATC entry clearance from the accepting ATS unit.

If the accepting ATS unit cannot issue an entry clearance to the pilot upon his initial contact, the pilot shall be instructed to inform the transferring ATS unit accordingly via RTF.

The transferring ATS unit shall hold the aircraft within its AoR and after a minimum of 10 minutes instruct the pilot to re-establish RTF contact with the accepting ATS unit.

This procedure shall be repeated until an onward clearance has been obtained from the accepting ATS unit.

C.4 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date: Date:

___________________________ ______________________

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Name
Title
Authority 1

Name
Title
Authority 2

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Appendix D.

Procedures for Co-ordination.

[Unit 1]	**[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

D.1 General Conditions for Acceptance of Flights.

D.1.1 Co-ordination of flights shall take place by reference to the coordination point (COP) and in accordance with the appropriate levels specified for the relevant route (see paragraphs D.2 and D.3).

D.1.2 Flights shall be considered to be maintaining the co-ordinated level at least (value) prior to transfer of control point unless climb or descent conditions have been clearly stated by use of crossing conditions in the *PAC/*ACT(OLDI) or by verbal co-ordination, except if otherwise described in paragraphs D.2 or D.3.

D.1.3 If the accepting ATS unit cannot accept a flight offered in accordance with the conditions specified above, it shall clearly indicate its inability and specify the conditions under which the flight will be accepted.

D.1.4 For any proposed deviation from the conditions specified in this Appendix (e.g. COP, route or level) the transferring unit shall initiate an Approval Request.

D.1.5 The accepting ATS unit shall not notify the transferring ATS unit that it has established ground-air communications with the transferred aircraft unless specifically requested to do so. The Accepting Unit shall notify the transferring Unit in the event that communication with the aircraft is not established as expected.

Reference to: ICAO Doc 4444, Chapter 10, Paragraph 10.1.2.4.3

D.2 ATS-Routes, Co-ordination Points and Level Allocation.

Available ATS-routes, COPs to be used and level allocation to be applied, unless otherwise described in paragraph D.3, are described in the tables below.

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D.2.1 **Flights from [Unit 1] to [Unit 2]**

D.2.1.1 **General**

D.2.1.1.1 All information regarding transfer procedures shall be included.

ATS-Route	COP	Receiving Sector	Level Allocation	Special Conditions

D.2.2 **Flights from [Unit 2] to [Unit** 1]

D.2.2.1. **General**

D.2.2.1.1 Same shall be applied

ATS-Route	COP	Receiving Sector	Level Allocation	Special Conditions

D.3 Special Procedures

All special procedures which cannot be accommodated in the "Special Conditions" column of paragraph D.2 shall be outlined in this section

D.3.1 **Flights from [Unit 1] to [Unit 2]**

D.3.2 **Flights from [Unit 2] to [Unit 1]**

D.4 Co-ordination of Status of Special Areas in the Area of Common Interest.

Both ATS units shall keep each other advised on any changes of the activation times of CDRs and of activation times for the following CBAs, TSAs and AMC-manageable restricted or danger areas:

D.4.1 [Unit 1] shall inform [Unit 2] about changes for the following areas:

D.4.2 [Unit 2] shall inform [Unit 1] about changes for the following areas:

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D.5 VFR flights

D.5.1 **Flights from [Unit 1] to [Unit 2]**

D.5.2 **Flights from [Unit 2] to [Unit 1]**

D.6 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:	Date:
______________________________	______________________________
Name Title Authority 1	Name Title Authority 2

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Appendix E

Transfer of Control and Transfer of Communications.

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

In order to optimize the provision of ATS, it is recommended that the Transfer of Communication takes place before the Transfer of Control, at a point/time/distance as agreed upon between the transferring and accepting ATS Units.

E.1 Transfer of Control

The transfer of control takes place at the AoR-boundary, unless otherwise specified in paragraph E.3.

E.2 Transfer of Communications

E.2.1 The transfer of communications shall take place not later than [*(time, distance or level parameter)*], and not sooner than [*(time, distance or level parameter)*] before the transfer of control and as specified in paragraph E.3, unless otherwise co-ordinated.

A parameter (time, distance or level) should be specified for the transfer of communications, whenever it is operationally significant. (e.g. for protection of a communication channel).

E.2.2 **Frequencies**

E.2.2.1 [Unit 1]

Sectors	Frequencies	
	Primary	Secondary

E.2.2.2 [Unit 2]

Sectors	Frequencies	
	Primary	Secondary

E.3 Specific Points for Transfer of Control and Transfer of Communications

ATS Route	Transfer of Control Point	Transfer of Communications
	Unit 1 to Unit 2	Unit 2 to Unit 1

E.4 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:	Date:
______________________________	______________________________
Name Title Authority 1	Name Title Authority 2

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Appendix F.

ATS Surveillance Based Co-ordination Procedures.

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

F.1 General

F.1.1. Transfer of identification and transfer of control between [Unit 1] and [Unit 2] will be subject to the serviceability of the respective surveillance systems and two-way direct speech facilities between the controller working positions.

F1.2 In case of any doubt about the identity of an aircraft, nothing in the provisions of this Appendix, prevents the use of others methods for the identification of an aircraft

F.2 Transfer of Aircraft Identification

Subject to the surveillance technology available to both units concerned, the transfer of identification should be effected preferably by one of the methods described below:

- *Designation of the position indication by automated means, provided that only one position indication is thereby indicated and there is no possible doubt of correct identification;*
- *Notification of the aircraft discrete SSR code;*
- *Notification that the aircraft identification transmitted by a Mode S equipped aircraft has been verified;*
- *Notification that the aircraft identification transmitted by an ADS B equipped aircraft has been verified.*

F.2.1 Transfer of aircraft identification between [Unit 1] and [Unit 2] is normally performed by [*one or more methods for the transfer of identification*].

It is recommended that in cases when multiple surveillance technologies are available to both ATS units concerned, paragraph F2.1 should illustrate one or more preferred methods for the transfer of aircraft identification, the conditions in which those apply and the alternatives to be used when the conditions are not met.

For example, at an interface between two ATS units using radar Mode S and MSSR the transfer of identification should normally be performed:

- *by notification of A1000 indicating that the Mode S aircraft identification feature transmitted by the transponder has been verified;*
- *or, in case that the aircraft identification is not correct or has not been verified or the aircraft is not Mode S equipped:*
- *by notification of the aircraft discrete SSR code.*

F.2.2 When discrete SSR codes are used for transfer of identification, they shall be assigned in accordance with ORCAM.

F.2.3 Any change of SSR code by the accepting ATS Unit may only take place after the transfer of control point.

F.2.4 The accepting ATS Unit shall be notified of any observed irregularity in the operation of SSR transponders or ADS-B transmitters.

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Such irregularities should cover at least the following cases:

- *transponders transmitting erroneous aircraft identification;*
- *transponders transmitting SSR codes different then the selection of which have been confirmed by the pilots;*
- *transponders transmitting erroneous Mode C information.*

F.3 Transfer of Control.

F.3.1 All traffic must be transferred “clean” – i.e. clear of all conflicting traffic under control of the transferring unit.

F.3.2 Where separation is based on the use of surveillance as per ICAO DOC 4444, a minimum of 5NM shall be used during transfer.

F.3.3 Transfer of identification of IFR flights shall be accomplished in accordance with ICAO DOC 4444.

F.3.4 If it becomes necessary to reduce or suspend transfers of control, a value prior notification shall be observed, except in emergency situations.

F.3.5 A minimum distance of **value** NM to the boundary line of responsibility shall be observed when vectoring aircraft, except when a transfer of radar control has previously been coordinated.

F.3.6 **Transfer of Control without systematic use of the bi-directional speech facilities (*Silent Transfer of Control*)**

F.3.6.1 Transfer of control of IFR flights without voice coordination will be in accordance with ICAO DOC 4444 Chapter 8 provided that:

a) [Value] surveillance in trail spacing exists, and is constant or increasing.

b) [Value] minutes notice, when possible, is required for an increase in in-trail spacing.

Note: *“Transfer” is defined as transfer of communications and control.*

F.3.6.2 The transferring controller shall inform the accepting controller of any level, speed or vectoring instructions given to aircraft prior to its transfer and which modify its anticipated flight progress at the point of transfer.

Note: When using Mach-number speed control, pilots concerned shall be instructed to report their assigned mach-number to the accepting ATS Unit upon initial contact.

F.3.6.3 The accepting controller may terminate the silent transfer of control at any time, normally with an advance notice of [value] minutes.

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F.3.7 **Transfer of Control with use of the bi-directional speech facilities.**

Transfer of control may be effected with the use of bi-directional speech facilities, provided the minimum distance between the aircraft does not reduce to less than [*value to be specified*] NM, and:

- identification has been transferred to or has been established directly by the accepting controller;
- the accepting controller is informed of any level, speed or vectoring instructions applicable to the aircraft at the point of transfer;
- communication with the aircraft is retained by the transferring controller until the accepting controller has agreed to assume responsibility for providing ATS surveillance service to the aircraft. Thereafter, the aircraft should be instructed to change over to the appropriate frequency and from that point is the responsibility of the accepting controller.

F.4 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:	Date:
____________________________	____________________________
Name Title Authority 1	Name Title Authority 2

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Appendix G.

Air Traffic Flow Management

Unit 1 **Unit 2**

Revision: [Nr.]
Effective: [date]
Revised: [date]

G.1 General

G.1.1 This Appendix to the Letter of Agreement (LOA) between the [Unit 1] and [Unit 2] sets out the details of tactical Air Traffic Flow Management (ATFM) measures for application at times of traffic congestion.

G.1.2 Only tactical ATFM operations will be implemented.

G.1.3 The accepting unit determines the flow rate for transfer.

G.1.4 The general provisions contained in ICAO Appendix 11 and Doc 4444 shall apply to handling of traffic subject to flow control.

G.2 ATFM Procedures

G.2.1 Flow control measures shall, when possible, be implemented in such a manner as to avoid affecting flights already airborne.

G.2.2 **Notification**

The [Unit 1] shall notify [Unit 2] not less than [value] minutes prior to the time ATFM measures will affect departing aircraft.

[Unit 2] shall inform the [Unit 1] about flights which have already started and flight planned on affected ATS Routes.

The notification shall detail the ATS Routes and levels being subject to ATFM as well as the expected duration.

G.2.3 **Implementation**

The accepting unit shall, to the widest possible extent, address limitations in capacity for given routes or destinations by specifying restrictions on available levels and longitudinal separation to enable the transferring unit to forecast delays and plan traffic flows accordingly.

G.3 Reporting

Flow reporting is required for all ATFM measures.

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G.4 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:	Date:
____________________	____________________
Name Title Authority 1	Name Title Authority 2

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Appendix H.

Contingency Procedures

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

H. 1 **General**

H.1.2 In case of technical or catastrophic outage resulting in the disruption of the provision of ATS at [Unit 1] or at [Unit 2], the adjacent coordinating partners are expected to assist the failing ATS-unit as far as possible in order to ensure the safe evacuation of air traffic from the AoR of the failing ATS-unit.

H.1.3 In case of contingency the regulations of this chapter take precedence over the respective provisions of Appendices A to G to this LoA.

H.1.4 In case of activation of contingency plans ATSU's should send the associated Contingency NOTAM.

H.2 **Contingency Contact Points:**

[Unit 1]

....

[Unit 2]
...

H.3 **Definition of Contingency phases**

H.3.1 Phase 1 - Immediate Action (30 min)

A dangerous situation has been identified. Focuses on the safe handling of aircraft in the airspace of failing unit, using all technical means still operationally available. During this phase all traffic will be evacuated and failing unit AoR will be No-Fly Zone until phase 2 is activated.

H.3.2 Phase 2 - Short/ Medium Term Actions (< 48 hours)

Focused on stabilising the situation and, if necessary, preparing for longer term contingency agreements. During this phase AoR of failing unit will be delegated to appropriate units and simplified route structure may be used.

H.3.3 Phase 3 - Initiation of the option

This phase may start when staff of failing unit arrives to emergency facility and focused on recovery from contingency.

The following <u>will</u> be applied during phase 3:
- Termination of delegation of airspace
- Flow control measurements
- Increased separation minimum

The following may be applied during phase 3:

- *Combining ATC sectors or creating new contingency sector*
- *Simplified route structure*

H.3.4 Phase 4 – Optimisation

The aim of Phase 4 is to optimize capacity gradually up to maximum potential within published or ICAO route and sectorisation structure in line with previously agreed end-user and regulator expectation. During this phase minimum separation and flow control measurements may still be in force.

H.3.5 Phase 5 - Recovery

The aim of Phase 5 is to revert back to the original unit and working position in a safe and orderly manner. Appropriate Flow control measurement will be cancelled and separation will be reverted to standard minimums.

H.3.6 Phase 1 lasts approximately 30 minutes. Immediate Action can overlap with Phase 2.

H.3.7 The passage from one phase to another is possible directly from any Contingency Phase.

H.4 Disruption of the provision of ATS at [Unit 1]

H.4.1 **Contingency Phase 1- Immediate Action**

H.4.1.1 When the operational status of Unit 1 becomes impaired to such an extent, that ATS can no longer be provided, the Unit 1 Supervisor shall initiate the immediate actions to be taken in Phase 1.

H.4.1.2 Evacuation of Unit 1 AoR

H.4.1.2.1 When Phase 1 is active the AoR of Unit 1 shall be called the Contingency Area (CA) until full serviceability of Unit 1 is recovered.

H.4.1.2.2 All traffic in Unit 1 AoR will be evacuated and CA will be No-Fly-Zone, entry is prohibited until contingency Phase 2 is activated.

H.4.1.2.3 Phraseology to be used: *Unit 1* ***is out of service; stop ALL entries into the Contingency Area (CA), start evacuation of the CA.***

H.4.2 **Contingency Phase 2- Short/Medium term actions**

H.4.2.1 When the operations of Unit 1 have ceased and all traffic has been transferred to the appropriate agency, the Supervisor in charge of operations may declare Contingency Phase 2 for Unit 1.

H.4.2.2 Delegation of Unit 1 AoR

(*As appropriate)*
The delegation of Unit 1 AoR is shown in Attachment 1 of Appendix H.

H.4.2.3 Simplified route structure

(*As appropriate)*

H.4.2.4 Contingency Flight Level Allocation System - CFLAS

(*As appropriate)*

H.4.3 **Contingency Phase 3 – Initiation of the option**

H.4.3.1 In Contingency Phase 3 Unit 1 re-establishes the provision of ATS within its AoR by combining ATC sectors *(or new contingency sectors may be created)*. These Contingency sectors will be re-located to Unit 1 emergency sector.

H.4.3.2 Contingency sectors

H.4.3.2.1The Contingency Sectors will correspond to existing sectors at Unit 1 ACC:

(As appropriate)	*To*	*Unit 1 Contingency Sector 1*

H.4.3.2.2 Activation / Deactivation

Unit 1 operational Supervisor shall inform Unit 2 about the activation and deactivation of the Contingency Sectors.

H.4.3.2.3 Contingency sectors and communications

Unit 1 Contingency Sectors	**Message**	**Position**	**Phone/ Frequency**
	Flight Plan Data and Estimates		
	Control Messages, Expedite Clearances, Approval Requests and Revisions		
	Surveillance Co-ordination		

H.4.3.2.4 Voice Communication Systems

All coordination partners of Unit 1 shall make sure that they are able to reach the Unit 1 contingency working positions via prescribed phone lines, taking into consideration that Unit 1 is completely off, including the technical systems. Public Phone shall be used as back up system.

H.4.3.2.5 Callsign

Telephone call sign for Unit 1 in case of contingency: Unit 1 + *name of working position* (e.g. Contingency 1)

H.4.3.3 ATFM Procedures

Necessary ATFM-measures to be applied during Contingency Phase 3 will be initiated by the Unit 1 Supervisor.

H.4.3.4 Exchange of Flight Data

(As appropriate)

H.4.3.5 Control Procedures

H.4.3.5.1 Deviations from published ATS-routes shall be coordinated only to prevent dangerous situations or in case of emergencies.

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H.4.3.5.2 Separation minima between succeeding aircraft on transfer shall be a minimum of value constant or increasing.

H.4.3.6 SSR Code Assignment

During contingency, Unit 1 may not be able to transfer aircraft on discrete SSR codes, or on code 1000, assigned in accordance with ORCAM.

H.4.4 **Contingency Phase 4 – Optimisation**

Appropriate associated Phase 3 actions to take place.

H.4.5 **Contingency Phase 5 – Long-term Response and Recovery**

H.4.5.1 Unit 1 will inform Unit 2 of intention to "Normal" operations and will co-ordinate the time at which normal operation will be resumed.

H.4.5.2 Once Unit 1 notifies Unit 2 the end of contingency:

- Unit 1 and Unit 2 will cancel any operational restrictions and will resume the standard ATS.
- Both units will apply the standard operational procedures stated in Appendices A to G of this LoA.

H.5 Disruption of the provision of ATS at Unit 2

H.5.1 **Contingency Phase 1- Immediate Action**

H.5.1.1 When the operational status of Unit 2 becomes impaired to such an extent, that ATS can no longer be provided, the Unit 2 Supervisor shall initiate the immediate actions to be taken in Phase 1.

H.5.1.2 Evacuation of Unit 2 AoR

H.5.1.2.1 When Phase 1 is active the AoR of Unit 2 shall be called the Contingency Area (CA) until full serviceability of Unit 2 is recovered.

H.5.1.2.2 All traffic in Unit 2 AoR will be evacuated and CA will be No-Fly-Zone, entry is prohibited until contingency Phase 2 is activated.

H.5.1.2.3 Phraseology to be used: *Unit 2* ***is out of service; stop ALL entries into the Contingency Area (CA), start evacuation of the CA.***

H.5.1.2.4 Contingency Flight Level Allocation System - CFLAS

(*As appropriate)*

H.5.2 **Contingency Phase 2- Short/Medium term actions**

H.5.2.1 When the operations of Unit 2 have ceased and all traffic has been transferred to the appropriate agency, the Supervisor in charge of operations may declare Contingency Phase 2 for Unit 2.

H.5.2.2 Delegation of Unit 2 AoR

(*As appropriate)*

The delegation of Unit 2 AoR is shown in Attachment 1 of Appendix H.

H.5.2.3 Simplified route structure
(*As appropriate)*

H.5.3 **Contingency Phase 3 – Initiation of the option**

H.5.3.1 In Contingency Phase 3 Unit 2 re-establishes the provision of ATS within its AoR by combining ATC sectors *(or new contingency sectors may be created)*. These Contingency sectors will be re-located to Unit 2 emergency sector.

H.5.3.2 Contingency sectors

H.5.3.2.1The Contingency Sectors will correspond to existing sectors at Unit 2 ACC:

(As appropriate)	*To*	*Unit 2 Contingency Sector 1*

H.5.3.2.2 Activation / Deactivation

Unit 2 operational Supervisor shall inform Unit 1 about the activation and deactivation of the Contingency Sectors.

H.5.3.2.3 Contingency sectors and communications

Unit 2 Contingency Sectors	**Message**	**Position**	**Phone/ Frequency**
	Flight Plan Data and Estimates		
	Control Messages, Expedite Clearances, Approval Requests and Revisions		
	Surveillance Co-ordination		

H.5.3.2.4 Voice Communication Systems

All coordination partners of Unit 2 shall make sure that they are able to reach the Unit 2 contingency working positions via prescribed phone lines, taking into consideration that Unit 2 is completely off, including the technical systems. Public Phone shall be used as back up system.

H.5.3.2.5 Callsign

Telephone call sign for Unit 2 in case of contingency: Unit 2 + *name of working position* (e.g. Contingency 1)

H.5.3.3 ATFM Procedures

Necessary ATFM-measures to be applied during Contingency Phase 3 will be initiated by the Unit 2 Supervisor.

H.5.3.4 Exchange of Flight Data

(*As appropriate)*

H.5.3.5 Control Procedures

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H.5.3.5.1 Deviations from published ATS-routes shall be coordinated only to prevent dangerous situations or in case of emergencies.

H.5.3.5.2 Separation minima between succeeding aircraft on transfer shall be a minimum of value constant or increasing.

H.5.3.6 SSR Code Assignment

During contingency, Unit 2 may not be able to transfer aircraft on discrete SSR codes, or on code 1000, assigned in accordance with ORCAM.

H.5.4 **Contingency Phase 4 – Optimisation**

Appropriate associated Phase 3 actions to take place.

H.5.5 **Contingency Phase 5 – Long-term Response and Recovery**

H.5.5.1 Unit 2 will inform Unit 1 of intention to "Normal" operations and will co-ordinate the time at which normal operation will be resumed.

H.5.5.2 Once Unit 2 notifies Unit 1 the end of contingency:

- Unit 2 and Unit 1 will cancel any operational restrictions and will resume the standard ATS.

Both units will apply the standard operational procedures stated in Appendices A to G of this LoA.

H.4 Validity

This Appendix to the LoA takes effect on [xxx xxxx xxxx] and supersedes previous Appendix to Letter of arrangements between the [Unit 1] and [Unit 2].

Date:	Date:
______________________________	______________________________
Name Title Authority 1	Name Title Authority 2

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Attachment 1 of Appendix H

[Unit 1] Contingency Delegation Map

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Attachment 2 of Appendix H

[Unit 2] Contingency Delegation Map

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APPENDIX I

SEARCH AND RESCUE
BILATERAL ARRANGEMENTS

[Unit 1] **[Unit 2]**

Revision: [Nr.]
Effective: [date]
Revised: [date]

I.1. AREA OF RESPONSIBILITY FOR SAR PROVISION

I.1.1. [UNIT1] Search and Rescue Regions (SRRs) Description:

I.1.2. [UNIT2] Search and Rescue Regions (SRRs) Description:

I.1.3. Each State's Rescue Coordination Centre RCC is responsible for its respective SRR.

I.2. AGREEMENT

I.2.1. Pursuant to the Standards and Recommended Practices of Annex 12 to the Convention on International Civil Aviation, supplemented by the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, (Doc 9731) for the coordination of Search and rescue operations, in particular when an alert phase is declared related to an aircraft on emergency situation; the two Units agree to mutually coordinate and assist each other in the provision of SAR services in their respective Search and Rescue Regions (SRRs).

I.2.2. This operational Bilateral Arrangements supplements the relevant ICAO documents and shall apply equally on both parties.

I.2.3. The two Units recognized the importance of co-operation within [………] SRR and [….…] SRR, for the provision of expeditious and effective SAR services, through the use of available resources.

I.3. SCOPE OF AGREEMENT

Both Air Navigation Service Providers (ANSPs)/ACCs hereby agree that they shall:

I.3.1. Promptly exchange SAR alerting information concerning a distress situation or a potential distress situation.

I.3.2. Coordinate with and assist national SAR agencies to the extent possible.

I.3.3. Assist each other, to the extent possible, in coordinating SAR Operations in their respective SRRs.

I.3.4. Coordinate with their respective national RCC for participation in SAR activities when requested by other States.

I.4. STANDARD OPERATING PROCEDURES FOR THE ACCs

The following procedures are agreed upon:

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I.4.1. The responsibility for declaring an emergency phase and initiating local action rests with the ATS Units (ATSUs) in coordination with their respective RCCs.

I.4.2. ATSUs shall coordinate with their RCC:

a) When the accident position is known, action shall be initiated by the RCC in whose SRR the accident is located.

b) When the accident position is not known, SAR alerting action shall be initiated by:

i. The ATSU first becoming aware of an aircraft needing assistance;

ii. The ATSU in whose area of responsibility the aircraft was operating when the last radio contact was made; or

iii. The ATSU in whose area of responsibility the aircraft was proceeding to if the last radio contact was made on the common SRR boundary.

I.4.3. The two ACCs should ensure appropriate coordination in the event of joint SAR operations.

I.5. LIAISON DURING A SAR MISSION

During the course of a SAR mission, the ANSP/ACC concerned shall maintain close liaison in order to ensure the smooth and successful execution of the SAR mission. If required, the RCC in charge of the mission should periodically keep the ANSP/ACC informed of the number of SAR Units engaged in the SAR mission, areas to be searched, actions taken and the decision to suspend or terminate the SAR mission.

I.6. POINT OF CONTACT

	UNIT 1	UNIT 2
Name:	XXXXX centre…..	YYYYY
AFTN		
Phone(s)		
Fax		
Email(s)		
Other		

I.7. VALIDITY

This Appendix to the LoA takes effect on [xx xxxxxx xxxx] and supersedes previous Appendix to the Letter of Agreement between [Unit 1] and [Unit 2].

Date: Date:

_____________________________ _____________________________

Name Title Authority 1	Name Title Authority 2

APPENDIX 4N

INTERNATIONAL CIVIL AVIATION ORGANIZATION

MIDDLE EAST SECONDARY SURVEILLANCE RADAR CODE MANAGEMENT PLAN (SSR CMP)

Second Edition
NOVEMBER, 2014

THE DESIGNATIONS AND THE PRESENTATION OF MATERIAL IN THIS PUBLICATION DO NOT IMPLY THE EXPRESSION OF ANY OPINION WHATSOEVER ON THE PART OF ICAO CONCERNING THE LEGAL STATUS OF ANY COUNTRY, TERRITORY, CITY OR AREA OF ITS AUTHORITIES, OR CONCERNING THE DELIMITATION OF ITS FRONTIERS OR BOUNDARIES.

TABLE OF CONTENTS

1 SCOPE

1.1 RELATIONSHIP TO MID AIR NAVIGATION PLAN (DOC 9708)

1.1.1 The *Middle East Secondary Surveillance Radar Code Management Plan* has been produced on behalf of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG).

1.1.2 The purpose of MID CMP is to detail the requirements to be met by the States of the ICAO Middle East (MID) Region in order to comply with the provisions of the *Middle East Basic Air Navigation Plan* (MID ANP) (Doc 9708, Volume I) and the *Middle East Facilities and Services Implementation Document* (MID FASID) (Doc 9708, Volume II) as they pertain the management of Secondary Surveillance Radar (SSR) codes in the ICAO MID Region. This document incorporates text that currently comprises **Attachment B** to the MID FASID along with new material to document the management of the regional SSR Code pool.

1.1.3 The technical requirements and associated procedures may also be adopted by States in adjoining ICAO Regions which elect to participate in the Originating Region Code Assignment Methodology (ORCAM) for the management of SSR codes.

1.1.4 All references to SSR Codes are confined to Mode 3/A. The use and allocation of Mode S Interrogator Codes is covered by **Appendix 4A** to Table **CNS 4** to the MID FASID.

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2 DEFINITIONS AND ABBREVIATIONS

2.1 DEFINITIONS

Assigned Secondary Surveillance Radar code (ASSR)	The SSR code assigned by an ATS Unit (ATSU) to a departing aircraft or to an aircraft entering the airspace of the ATSU. *Note: In cases where the Previous Secondary Surveillance Radar code (PSSR) can be retained, PSSR and ASSR can be the same code*
(SSR) Code	The number assigned to a particular multiple pulse reply signal transmitted by a transponder in Mode A or Mode C.
Code allocation	The distribution of SSR Codes to a State, unit or service.
Code assignment	The distribution of SSR codes to aircraft.
Code block	A continuous series of four-digit codes from the same code series.
Code series	A group of 64 four-digit codes having the same first two digits.
Direction of flight	The direction shall be defined as a combination of one or more: a) exit points or receiving Areas of Responsibility (AOR); and b) destinations (defined by the first, the first two, the first three or all four letters of an ICAO location indicator).
Directional assignment	Assignment of an SSR code based on the direction of the flight.
Discrete code	A four-digit code with the last two digits not being "00".
Domestic code	A code allocated to a specific AOR for use by designated ATC unit(s) within that AOR or, subject to certain conditions, across AOR boundaries.
Expectation window	A window of variable size around a 4D position, defined by flight plan information, at which a flight is expected to enter the AOR.
Four-digit code	An SSR identity code containing combinations of A, B, C and D pulses (any reply generated by a 4096-code transponder where the digits fall in the range 0-7).
Geographical correlation	Correlation of a flight with its flight plan using the geographical position of the flight by means of "Expectation Windows" in cases where the SSR code is already in use by one or more other flights within the same AOR.
Mode S Conspicuity Code	In order to maximise SSR code savings through Mode S Elementary Surveillance (ELS), all aircraft identified via the down linked Aircraft Identification (ACID) use the same SSR code, the Mode S Conspicuity Code A1000.
Octal block	A block of 8 four-digit codes from the Same Series and having the first three digits common. They may be identified by indicating their third digit when referring to the Code Series e.g. Codes 0010-0017 may be referred to as Codes 00(1).
Participating area (PA)	An area of specified dimensions comprising the areas of ATS unit responsibility of one or more States.
Previous Secondary Surveillance Radar code (PSSR)	The SSR code transmitted by an aircraft when entering the airspace of an ATSU or when being transferred by the transferring unit. *Note: In cases where the PSSR can be retained, PSSR and ASSR can be the same code.*

Simultaneous code use	Assignment of an SSR code, which is already in use within the same AOR, to an aircraft in accordance with procedures which ensure that the two aircraft will be exiting the AOR in opposite or nearly opposite directions.
Retention of an SSR code	Accepting an aircraft from the transferring unit without changing the SSR code. A code can be retained if no other aircraft within the AOR uses the same code and if the retention of the code is in accordance with the Code Allocation List (CAL).
Transit code	A code allocated to a State for a specified ACC for assignment to an aircraft engaged in transit flights within the originating PA or, subject to certain conditions, to specified locations in succeeding PAs.

2.2 ABBREVIATIONS

ABI	Advance Boundary Information
ACID	Aircraft Identification
ADEP	Aerodrome of Departure
ADES	Aerodrome of Destination
AOR	Area of Responsibility
ASSR	Assigned Secondary Surveillance Radar code
ATC	Air Traffic Control
ATS	Air Traffic Services
ATSU	Air Traffic Services Unit
CAL	Code Allocation List for the Middle East Region
CMP	Code Management Plan
COD	SSR Code Assignment Message
MIDANPIRG	Middle East Air Navigation Planning and Implementation Regional Group
ELS	Elementary Surveillance
FDPS	Flight Data Processing System
FIR	Flight Information Region
NM	Nautical Mile
ORCAM	Originating Region Code Assignment Method
PA	Participating Area
PSSR	Previous Secondary Surveillance Radar code
RDPS	Radar Data Processing System
SSR	Secondary Surveillance Radar
VSP	Variable System Parameter

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3 INTRODUCTION

3.1 OBJECTIVES OF THE MIDDLE EAST SSR CODE MANAGEMENT PLAN

3.1.1 The Middle East SSR Code Management Plan (MID SSR CMP) has been established to provide States in the ICAO MID Region with means to coordinate the use of SSR codes based on the principles of the Originating Region Code Assignment Method (ORCAM), which provides for the most efficient and economical use of codes.

3.1.2 The MID SSR CMP will foster the implementation of ORCAM which will ultimately allow for an assigned discrete code which would, whenever possible, be retained throughout the flight.

3.1.3 For the development of automated SSR code assignment systems, reference should be made to Paragraph 6 below.

3.1.4 On the basis of the above, a detailed Code Allocation List (CAL) for the MID Region Participating Area (PA) and certain adjacent areas was developed. The CAL is maintained by the ICAO MID Regional Office as a Supplement to MID Doc 9708.

3.1.5 The agreed allocation of SSR codes to States and ATS units are documented in Part A of the CAL. The detailed listing of codes serving both transit and domestic purposes is shown in Part B of the CAL. The CAL is at **Attachment B** to the MID FASID, Part V.

3.2 GENERAL PRINCIPLES TO MEET THE OBJECTIVES

3.2.1 The detailed principles governing the use of SSR codes in the MID Region are based on the following general principles which are provided by or are complementary to the worldwide provisions detailed in *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), Chapter 8:

a) codes shall be allocated to States in accordance with regional air navigation agreements, taking into account overlapping radar coverage over adjacent airspace;

b) codes are allocated to Air Traffic Services Units (ATSU) on the basis of duly justified operational requirements; their number is primarily established by taking into account the number of aircraft to be handled simultaneously and the system capabilities;

c) the appropriate ATS authority shall establish a plan and procedures for the allocation of codes to ATSUs;

d) the plan and procedures for the allocation of codes to ATSUs shall be compatible with those practised in adjacent States;

e) codes shall be assigned to aircraft in accordance with the plan and procedures laid down by the appropriate ATS authority;

f) whenever there is a need for individual aircraft identification, each aircraft shall be assigned a discrete code which should, whenever possible, be retained throughout the flight;

g) the assignment of a code should preclude the use of this code for any other function within the area of coverage of the same SSR for a prescribed time period; and

h) to reduce pilot/controller workload and the need for communications, the number of code changes required shall be kept to the minimum.

3.2.2 SSR codes should be used for ATS purposes only.

3.2.3 Code allocations are expressed in terms of complete code series or specified parts thereof. In special cases, such requirements may even cover designated discrete codes.

3.2.4 Codes intended to be used for transit purposes are allocated to States for use by specified ATSUs within the MID PA. Where provided for in the *Middle East SSR Code Management Plan* and under clearly defined circumstances, such codes may also be designated for use across PA boundaries.

3.2.5 Codes intended to be used for domestic purposes are allocated to States for use by specified ATSUs requiring limited geographical protection for such codes. Where provided for in the MID SSR CMP and under clearly defined circumstances, such codes may also be designated for use across national boundaries.

3.3 MONITORING OF THE PLAN

3.3.1 Provisions regarding the progressive implementation and monitoring of the MID SSR CMP have been agreed by the MIDANPIRG. In this connection, the management of the MID SSR CMP is exercised by the ICAO MID Regional Office. States expecting to introduce or change SSR facilities are requested to advise the ICAO MID Regional Office at least six months in advance, in order to provide sufficient time to carry out any necessary coordination.

3.3.2 To be effective, the MID SSR CMP must be kept up to date. While its contents will be reviewed regularly, it is the responsibility of all States to inform the ICAO MID Regional Office promptly of any variations proposed or considered necessary with respect to their code allocations, relevant to ATS infrastructure developments and/or the guidance material provided in the MID SSR CMP.

3.3.3 In order to serve their purposes it is imperative that the MID SSR CMP and the CAL are kept up to date. States are therefore required to inform the MID Office of ICAO promptly of any requests for changes, additions or deletions in regard to the use of specific codes, as follows:

ICAO MID Regional Office

Subject: SSR Code Management
E-mail:
icaomid@cairo.icao.int
Fax: +2 (02) 22674843

4 PERMANENT CODE DISTRIBUTION AND CATEGORIES

4.1 DISTRIBUTION OF CODES

4.1.1 Certain codes are reserved for special purposes on a worldwide scale or have been put in a common pool for use in the MID Region. The remaining code series for use in the ICAO MID Region are divided into two distinct types: transit codes and domestic codes. Both domestic and transit codes may be used as directionally assigned codes beyond their normal application under clearly defined and published circumstances, and appropriately coordinated through ORCAM.

4.1.2 The number of codes used for transit purposes has to take account of the extended geographical protection required, in order to reduce to a minimum the chances of confusion between the identities of two different aircraft assigned with the same discrete code. The MIDANPIRG has agreed that the retention time should normally be two hours.

4.1.3 The number of codes used for domestic purposes can be kept relatively small as they may be repeated within the same State or they can be used by other States provided a buffer is established. In some cases, by agreement, they can be used across national boundaries.

4.1.4 Furthermore, the allocation possibilities can be increased significantly by dividing specific code series into smaller contiguous codes. When this method is used for transit flights bilateral agreement may be required.

4.2 SPECIAL PURPOSE CODES

4.2.1 Specific codes in certain series are reserved for special purposes as follows:

Series 00	**Code 0000 is available as a general purpose code for domestic use by any of the following States:** **Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen.**
Series 10	Code 1000 reserved for use as a conspicuity code for Mode S
Series 20	Code 2000 shall be used by flight crews in the absence of any Air Traffic Control (ATC) instructions or regional agreements unless the conditions for the use of codes: 7000,7500, 7600 and 7700 apply.
Series 70	Code 7000 shall be used by flight crews not receiving ATS service in order to improve detection of suitably equipped aircraft in areas specified by States, unless otherwise instructed by ATS.
Series 75	Code 7500 is reserved for use in the event of unlawful interference.
Series 76	Code 7600 is reserved for use in the event of radio communications failure.
Series 77	Code 7700 is reserved for use in the event of emergencies and interception*. Code 7776 and Code 7777 are reserved for SSR ground transponder monitoring.
Codes 7601-7612	Are reserved for humanitarian flights.
Common SSR Code Pool	The following code blocks have been reserved for tactical allocation to States on a temporary basis to support large scale activities:

4.2.2 Discrete codes in the series 00 are allocated to States for use for domestic purposes. States in the MID Region are generally allocated two octal blocks of four-digit codes per State in such a manner that code duplication is avoided at FIR boundaries. The allocation of octal blocks is shown in the CAL.

**Note.— The word “interception” in this context does not include intercept and escort service provided, on request, to an aircraft in distress, in accordance with Volumes II and III of the* International Aeronautical and Maritime Search and Rescue Manual *(Doc 9731).*

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4.3 TRANSIT CODES

4.3.1 Transit codes are allocated for assignment to transit flights. Aircraft will retain the assigned code within the geographical limits of the MID PA or, in the case of an agreement between States concerned, across the PA boundary.

4.3.2 The allocation of transit codes in the MID Region is based on one PA[1] which has been determined on the basis of the flow of air traffic in the region. It is shown on the Chart at **Appendix A** and includes the following States:

PA MID Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen.

4.3.3 Transit codes shall be assigned in accordance with the following principles:

a) when an aircraft enters the MID PA (either on departure or in flight), it will be assigned a discrete code by the first ATSU concerned at a Variable System Parameter (VSP) of not less than 30 minutes prior to activation of the flight entering the MID PA or when departing, upon ATC clearance delivery or at start up, whichever is later;

b) each aircraft will keep the original code assigned on entering the MID PA for the entire flight within the PA. Appropriate code protection criteria have to be applied in order to avoid duplication by too early reassignment of the same code. Efforts should be made to reduce the "protection period" while retaining adequate protection. It has been agreed that the normal retention value shall be two hours; and

c) a code change will be required at the time an aircraft crosses the MID PA boundary, unless special provision has been made for retention beyond the PA boundary.

4.3.4 In establishing the number and series of transit codes for both omni-directional and directional application, account is taken of the following factors:

a) the air traffic flows and main sources of transit traffic in the MID Region and likely trends;

b) the requirement for code series for a given ATC Unit. This requirement is derived from the total number of aircraft requiring assignment of a specific code during the busiest period of activity of that ATC Unit, taking into account a "protection period" after which any specific code assigned to an aircraft by an ATC Unit is normally available for reuse; and

c) the assignment of a specific code to an aircraft is ideally made, as late as possible before take-off, normally on start up or upon ATC clearance delivery, whichever is later or, when an aircraft in flight is imminently due to come under control, normally a VSP value of not less than 30 minutes.

4.3.5 The distribution of the available code series for transit purposes is shown in the CAL.

4.3.6 Specific arrangements are required to ensure that no conflicting situations will arise in border areas.

4.4 DOMESTIC CODES

4.4.1 Domestic codes are allocated for use by aircraft remaining within the boundaries of the agreed area of responsibility (AOR) (normally within one State) or, in the case of agreement between States concerned, across agreed AORs. Domestic codes can also be used for transit

[1] The actual number of PAs to be established will depend on the results of the Secretariat study.

aircraft entering the MID PA and landing at an aerodrome within the AOR of the ATSU that has assigned the SSR code. The relevant code series for domestic purposes are shown in the CAL.

4.4.2 Domestic codes should be used so that utmost economy in the number of codes required is achieved. Domestic codes used for terminal purposes or within specified portions of the airspace (sectors) or across national boundaries will be assured protection in these functions from other uses of the same code through suitable systematic or procedural methods.

4.4.3 More detailed information concerning the procedures to be used for SSR code assignment can be found in **Appendix B**.

5 ORCAM

5.1 OUTLINE OF ORCAM OBJECTIVES

5.1.1 The objectives of ORCAM are:

a) to ensure safety by uniqueness and continuity;

b) enhance safety;

c) reduce workload;

d) improve system capacity; and

e) increase efficiency.

5.1.2 Uniqueness and continuity criteria are intended to provide permanent perceptibility and identification of aircraft with a minimum of errors and interruptions.

5.1.3 *Uniqueness*. Depending on system functionality, only one aircraft should respond using a given code in any particular area and at any given time. This provides an unambiguous code/callsign correlation and consequently an easy identification of aircraft.

5.1.4 *Continuity*. A code assigned to an aircraft should, whenever possible, be retained throughout the flight. This secures permanent display of aircraft identification.

5.1.5 The uniqueness and continuity criteria of ORCAM enhance safety by limiting the likelihood of identification errors. They also assist traffic flows since radar identification and all aspects connected with transfers are facilitated. This results in a reduction of workload (radiotelephony, identification monitoring, etc.) and substantially improves the overall system capacity.

5.1.6 In some areas the number of flights could exceed the number of SSR codes available. Some rationalization according to the nature of the flight (short-, medium- or long-haul, domestic, international or transit) and of the capabilities of the system is necessary for the most intensive possible use of codes.

5.1.7 Permanent code assignments and allocations based on the aircraft callsign, control position or any other systematic distinguishing features cannot be accepted because of the wasteful effects on the efficiency in use of codes required.

6 ORCAM SYSTEM REQUIREMENTS

6.1 INTRODUCTION

6.1.1 Middle East States are relying on the extensive use of SSR in automated ATC ground systems to ensure uninterrupted aircraft identification and maintenance of radar/flight plan correlation.

6.1.2 They have recognized the common availability of specified capabilities in automated ATC ground systems as being essential for:

a) participation of individual automated ATC units in a cooperative environment;

b) application of a common SSR Code assignment method in accordance with the ICAO principles;

c) efficient utilization of codes in automated ATC ground systems.

6.1.3 This “Statement of essential common capabilities for automated ATC ground systems in relation to the use of SSR” shown in paragraph 6.3 below, lists the capabilities concerned. It should be used by States as the basis to determine the minimum operational specifications for automated ground systems.

6.2 GENERAL SYSTEM CONSIDERATIONS

6.2.1 The application of automatic data processing in ATC ground systems allows for great freedom in the definition of system capabilities. This freedom should be exploited to:

a) provide for all essential capabilities related to the use of SSR in the most simple manner having due regard to operational requirements; and

b) enable individual automated ATC ground systems to function as part of an inter-operable environment and to comply with agreed conventions facilitating such cooperation (e.g. principles and basic rules for code assignment, code assignment methods etc.).

6.2.2 Individual automated ATC ground systems should, as part of an inter-operable environment, be capable of making the maximum use of codes previously assigned by other units controlling the aircraft concerned; i.e. they should not introduce any code changes or if this is impossible in some circumstances, require only the minimum of changes.

6.2.3 Taking into account inter-operability of ATC ground systems within the MID Region with others outside that area and the range of codes which may be utilized under such arrangements, automated ATC ground systems should be capable of performing all system functions related to the use of SSR for any 4-digit identity code.

6.2.4 Automated ATC ground systems should be designed to allow the use of a minimum number of codes. The application of sophisticated code correlation methods may reduce the number of codes needed in comparison with those required when simpler methods are used.

6.2.5 The processing of SSR data in automated ATC ground systems should be aimed at reducing the need for controller intervention.

6.2.6 **Appendix C** and **Appendix D** provide greater detail regarding the implications for automation and the development of automated SSR code assignment systems respectively.

6.3 ESSENTIAL CAPABILITIES FOR AUTOMATED ATC GROUND SYSTEMS

6.3.1 It is essential that automated ATC ground systems be designed to have certain capabilities in common, based on the assumption that:

a) the maximum use will be made of previously assigned codes;

b) only where continuing use of previously assigned codes would give rise to ambiguity, new codes will be assigned in accordance with a suitable common SSR code assignment method;

c) the prime use of codes will be to facilitate automatic identification, automatic tracking and automatic radar/flight plan data correlation; and

d) the differentiation of aircraft essential for the execution of these functions can be achieved through the use of a single, adequately protected code per aircraft.

6.3.2 In detail, automated ATC ground systems should be capable of automatic:

a) ***Exchange of codes:*** in particular of timely transmission to adjacent centres concerned of information on the code previously assigned to flights to be transferred.

b) ***Assignment of codes:*** in all instances where no previous code assignment has been made or where previous assignments are found to be unsuitable.

c) ***Processing of SSR code information, including:***

i) initiation of automatic tracking of SSR responses;

Note.— This does not exclude tracking on the basis of primary radar returns in areas where adequate primary coverage is available;

ii) determination for each code whether it meets the criteria to be established for unambiguous correlation;

iii) recognition of any code duplications affecting correlation;

iv) proposing action to controllers to resolve code duplications affecting correlation;

v) establishment of initial correlation between real-time radar information and current flight plan information on the basis of decoded SSR replies (including Mode C information). Correlation should be achieved sufficiently in advance of the time at which an aircraft enters the area of responsibility of a centre;

vi) maintenance of correlation between real-time radar information and current flight plan information on the basis of decoded SSR replies and/or coincidence of flight plan information (route, heading, altitude) or other distinguishing criteria and radar information;

vii) storage of code information until a VSP time at which its activation and protection is desired; and

viii) activation of stored information for correlation at a given VSP time and/or within a given airspace.

d) ***Display of information including:***

   i) presentation in a suitable manner of decoded SSR replies and/or correlated flight plan information;

   ii) filtering of information to be displayed on the basis of SSR-derived data (Mode A/C); and

   iii) indication of code duplications.

e) ***Special codes:*** immediate recognition of special codes, as specified on a regional or world-wide basis, as well as maintenance of tracking and correlation of aircraft using these codes.

f) ***Recovery from ground system degradation:*** in cases of ground system degradation (excluding display component failure) to the extent that essential SSR-derived information is not displayed, automated ATC ground systems should be capable of restoring all essential information within the shortest possible time. Until full serviceability can be restored, the above aim may necessitate suppression of functions of secondary importance.

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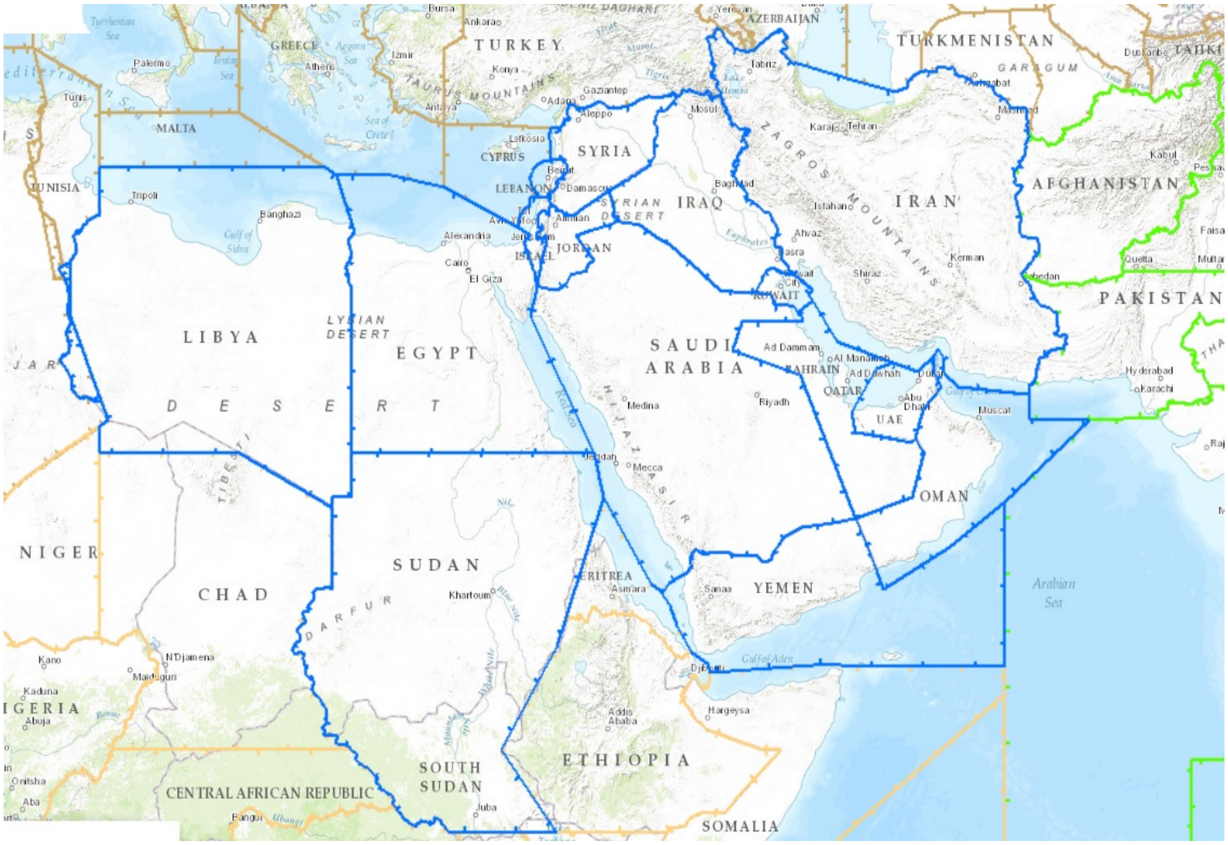
APPENDIX A - PARTICIPATING AREAS



SSR Code Allocation List

STATE FIR	Domestic Code	Domestic Code	Transit Code	Transit Code
Amman	0400 – 0477 1101 – 1177	2400 – 2477	0700 – 0777	
Baghdad	7400 – 7477	1300 – 1377	1001 – 1077	7200 – 7277
Bahrain	2100 – 2177 2700 – 2777	1200 – 1277	2200 – 2277 4400 – 4477	2600 – 2677 3200 – 3277
Beirut	2500 – 2577		4300 – 4377	
Cairo	0600 – 0677 2700 – 2777	2300 – 2377	1600 – 1677 7300 – 7377	3300 – 3377
Damascus	3000 – 3077		5700 – 5777	
Emirates	0400 – 0477 6000 – 6077	0600 – 0677 6100 – 6177	0500 – 0577 3400 – 3477	1700 – 1777 6200 – 6277
Jeddah	0100 – 0177 3500 – 3577 3000 – 3077	0200 – 0277 5000 – 5077 4100 – 4177	3100 – 3177 5200 – 5277	4500 – 4577 4200 – 4277
Khartoum	1200 – 1277 5200 – 5277	5300 – 5377	0100 – 0177	
Kuwait	0600 – 0677		1400 – 1477	
Muscat	6600 – 6677 4600 – 4677	6500 – 6577	4000 – 4077	4700 – 4777
Sana'a	3700 – 3777		7001 – 7077	
Tehran	1101 – 1177 1500 – 1577 5600 – 5677	4100 – 4177 6300 – 6377	3600 – 3677 5400 – 5477	5100 – 5177
Tripoli	1300 – 1377		4000 – 4077	

SSR Code Reserve list

Domestic	Transit
0001 – 0077	2001 – 2077
0300 – 0377	5300 – 5377
6700 – 6777	5500 – 5577
7100 – 7177	6400 – 6477
7501 – 7577	
7601 – 7612 Red Cross/humanitarian	
7613 – 7677	
7701 – 7777	

APPENDIX B - GENERAL PROCEDURES FOR SSR CODE ASSIGNMENT

B.1 Retention of previous code

B.1.1 Every endeavour shall be made to retain the code already assigned to the aircraft. This assumes that the code is known at the time of coordination (either by voice coordination or by transmission of an Air Traffic Services (ATS) Interfacility Data Communications (AIDC) message, or an On- Line Data-Interchange (OLDI) or via the pilot) and input into the system if automated. If a code is not already being used by another aircraft flying in an unprotected area and if the code assigned to the aircraft is acceptable for the flight category[2], the code shall be retained.

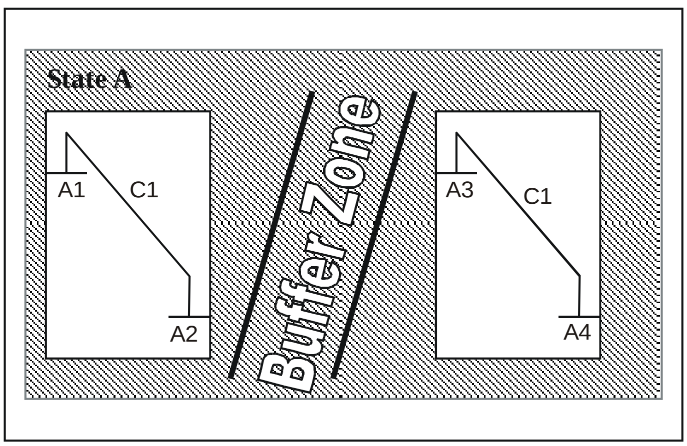
Note.— This should apply if the aircraft comes from an ATSU belonging to the same PA or a unit in another PA, but it may be retained in an area which has no conflicts with the other units in the area.

B.2 Code assignment or re-assignment

B.2.1 The following rules will be applied to departing aircraft within the area of the control unit, or to aircraft whose previously assigned code failed to comply with the rules stated in B.1.1 above and consequently could not be retained:

B.2.2 <u>Where an aircraft remains inside a defined area of the AOR</u>

Directional assignment of a domestic code - Code C1 can be assigned simultaneously to aircraft A1A2 and A3A4. C1 is protected for zone 1 and zone 2:



Note.— Domestic code allocation may be protected by buffer zones of at least 60 NM or separated by another unit. This rule is applicable within States, and also by arrangement between adjacent States. In order to make economic use of this type of allocation the same codes should preferably be disseminated (at most every 120 NM) in different small areas instead of having recourse to allocating codes belonging to an excessive number of different series.

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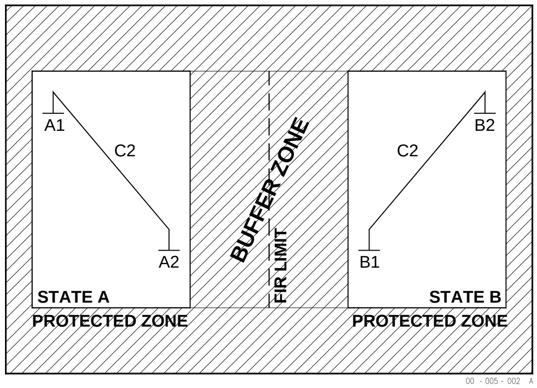
[2] Flight category refers to transit, domestic or common pool codes.

B.2.3 Where an aircraft remains inside a State

Code C2 can be assigned simultaneously to aircraft A1A2 and B1B2 from different States A and B. C2 is protected for State A and State B:

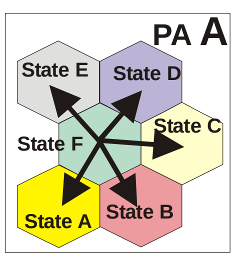


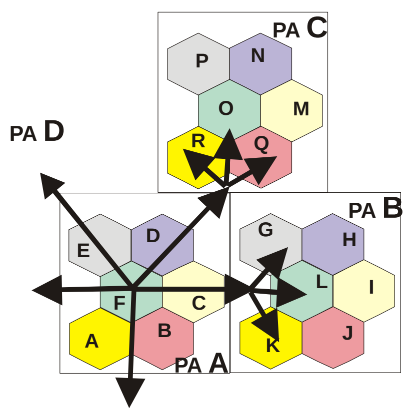
Note.— Domestic code allocation must be protected by buffer zones. Even more than in the case of B.2.2 above; consultation between adjacent States will be necessary to ensure such protection and rationalize excessive domestic code utilization as far as possible.

B.2.4 For an aircraft leaving a State

Transit codes are allocated by the Middle East SSR Code Management Plan to the various States for assignment to this flight category. Transit codes should be retained for the remainder of the flight in all States in the same PA and, if possible, other successive PAs, as agreed and reflected in Part B of the CAL. Transit codes received from a previous unit are maintained provided that they satisfy the assignment criteria.

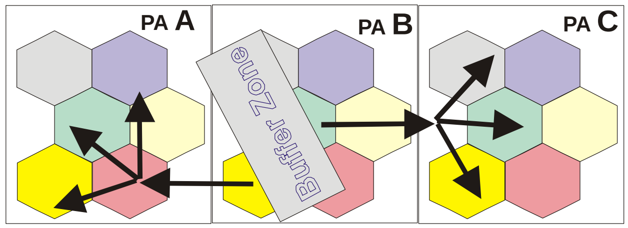
B.2.4.1 Omni-directional assignment of a transit code





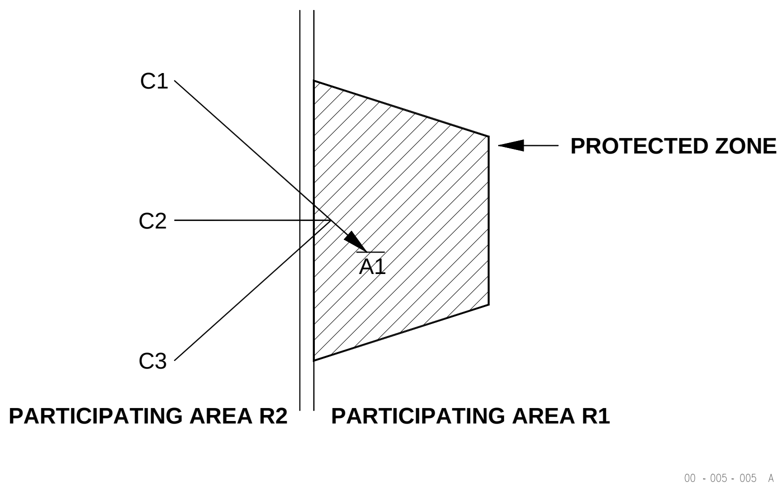
B.2.4.2 Directional assignment of a transit code

Allocated by the Middle East SSR Code Management Plan to the various States for assignment to aircraft under specific conditions: to specific destinations in the same PA or in different PAs; to specific directions of aircraft and/or via specific areas. Special attention shall be given in ensuring that when applying directional assignment of a transit code, no code conflict could occur.



B.2.4.3 Close to PA border, retention of transit codes of other PA

Codes C1, C2 and C3, which belong to R2 transit series are retained until landing at an airport A1 near the border between the two PAs, which is located in a protection area for the codes in question.



B.3 Code occupancy times

B.3.1 In order to ensure uniqueness of the code in the systems concerned by an aircraft, the ICAO MID Regional Office based its calculations on a "protection period" of approximately two hours, when establishing the number and series of transit codes (please see paragraph 4.3.4). At the same time, the protection period should be reduced when possible, while providing adequate protection (please see paragraph 4.3.3 b). Certain suggestions along these lines will be found below.

B.3.2 Point of time for code assignment to aircraft

In order to economize codes as much as possible, it is recommended that codes be assigned to flights which will be performed in the very near future (when ready for departure, or in flight, about to come under control).

Note.— The ideal moment is the flight activation point in the case of automated systems.

B.3.3 Assignment procedures

Codes are normally assigned according to the earliest time of release (a VSP). However, in units assigning codes manually such sophistication may be cumbersome. When sophisticated systems are not available, cyclical assignment of the codes released should be preferred instead of a systematic return to the beginning of the category.

B.3.4 Release of a code by an aircraft

When a system records an aircraft landing or passing a distant MID PA exit point, the code assigned to the aircraft may be regarded as released and be re-used. In the case of distant MID PA exit point, an additional VSP waiting time, normally thirty minutes, shall be added before re-use. In the event that a code has been assigned to flight that has been cancelled or which will not take place, the code assigned should be released for immediate re-use.

B.3.5 Saturation

When the traffic load is such that no code is available for a given flight category it may be necessary to assign codes in accordance with relaxed rules:

a) reduced protection times –
(see B.3.4);

b) using a different code category –
using an omni-directional assignment if no more codes for directional assignment

APPENDIX C - IMPLICATIONS FOR AUTOMATION

C.1 As stated in Appendix B, B.1.1, retention of the code assigned by the previous unit requires foreknowledge, implying capture of the data by the system in the event of automated assignment (direct capture by an AIDC or OLDI message, or indirect by manual input on coordination).

C.2 Assignment according to flight category implies that the system is capable of analysing the origin and destination of flights. If not, capture of units transferring and accepting, where applicable, may be used. For some cases one may need to process all four data items.

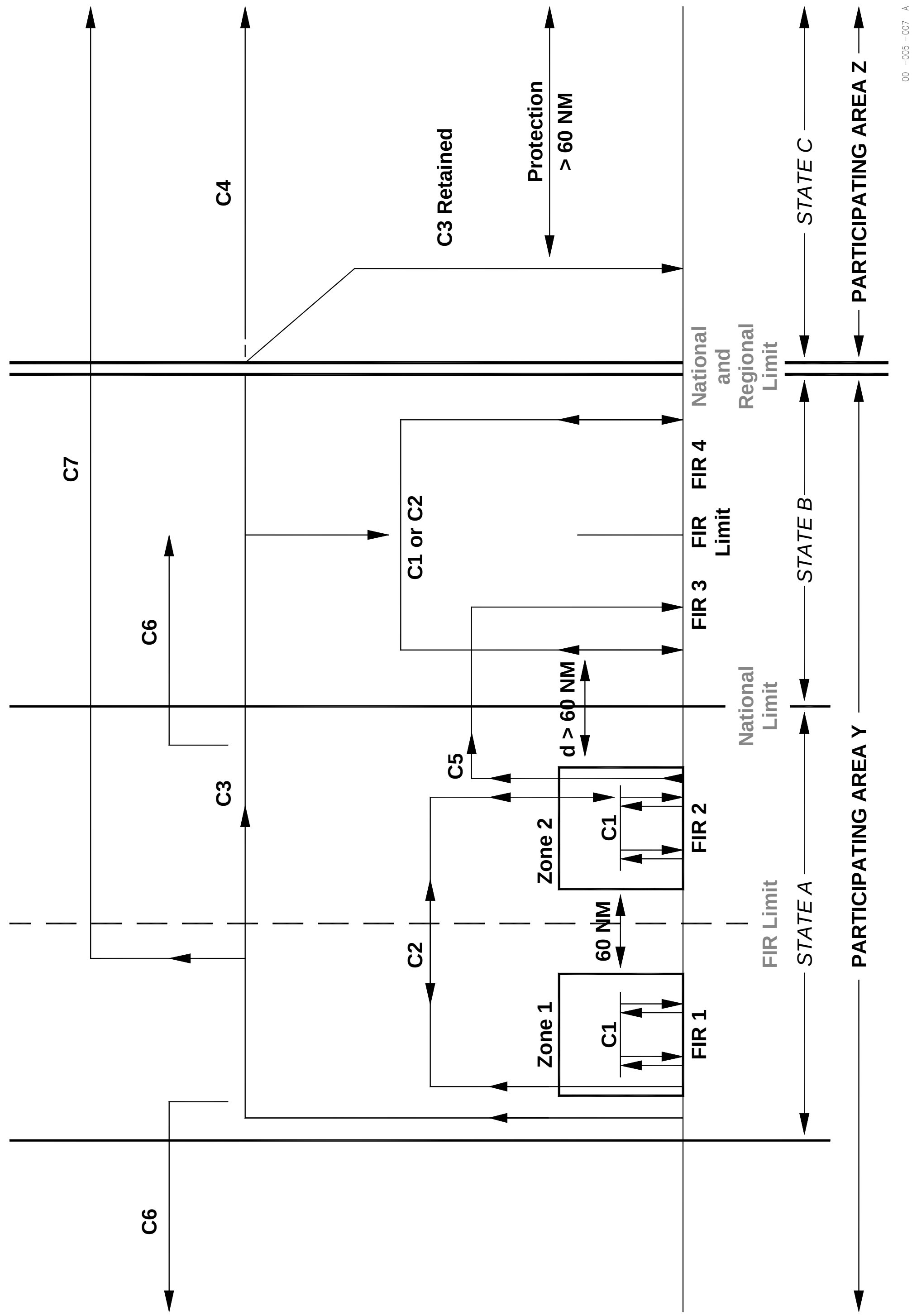
C.3 As in the case of any problem involving the "queuing management", it is abundantly clear in the light of the previous remarks that the more centralized the allocation-assignment system, the more economical it will be. In other words, the less call there will be for allotment type solutions (provision of sub-banks to decentralized units), and the greater the use made of central assignment in accordance with overall criteria the more economical the system will be.

C.4 Likewise it has been seen that proper management of the assignment system presupposes knowledge of the actual traffic situation (entry into the system, route, exit from the system-landing etc.). Consequently, it is desirable that the assignment machinery should be linked with the real-time system.

C.5 A number of examples given in Appendix B show that despite the uniqueness by zone criterion, two codes may be found to be in use simultaneously in the same system (radar range is greater than the 60 NM buffer zone). Accordingly, the correlation systems should at least be capable of accommodating and unambiguously identifying two aircraft responding on the same code separated at the time of correlation by a designated geographical distance which will be a function of the automated system.

> *Note.— A geographical correlation filter should exist such that correlation will not be achieved if the calculated distance between the flight plan derived position based on estimate information and the SSR response corresponding to the SSR code in the flight plan is more than 30 NM.*

C.6 Illustrative diagram for general code allocation and assignment



The following notes relate to the diagram:

Code C1: Domestic code for PA Y (Domestic in STATE A Domestic in STATE B)

These codes can be used inside zone 1, inside zone 2, inside other zones of STATE B, and even inside the whole territory of STATE B if a buffer zone of 60 NM or a FIR separates them.

These codes could be used in PA Z under the same condition of protection against the allocation in STATE B.

Code C2: Domestic code for PA Y (Domestic in STATE A and STATE B)

Condition: a 60 NM buffer zone should be provided between these two assignments.

Code C3: Transit code for PA Y (STATE A)

In general such a code should be assigned to any aircraft originated in STATE A and leaving its boundaries, for overflying STATE B or landing in B.

In general this code may be changed at the entry in PA Z, but it could be retained for an arrival at an aerodrome close to the border and having a protection area of at least 60 NM against any other use in PA Z.

If C3 is planned for transit use from PA Y to PA Z it could be retained inside the whole PA Z.

Code C4: Transit code for PA Z (STATE C)

Such a code will be assigned to any flight whose code cannot be retained and overflying STATE C for a further destination in PA Z.

Code C5: Directional transit code between STATE A FIR2 and STATE B FIR3

C5 should be simultaneously protected in the two FIRs though domestic for PA Y. Such an allocation has the advantage of avoiding assignment of a transit code for such short middle-range flights.

Code C6: Transit code for PA Y

The example given with C6 is a duplication where the directional assignment by STATE A gives a guarantee of no conflicts occurring with the following units.

Code C7: Transit code for use for PA Y (STATE A) and PA Z

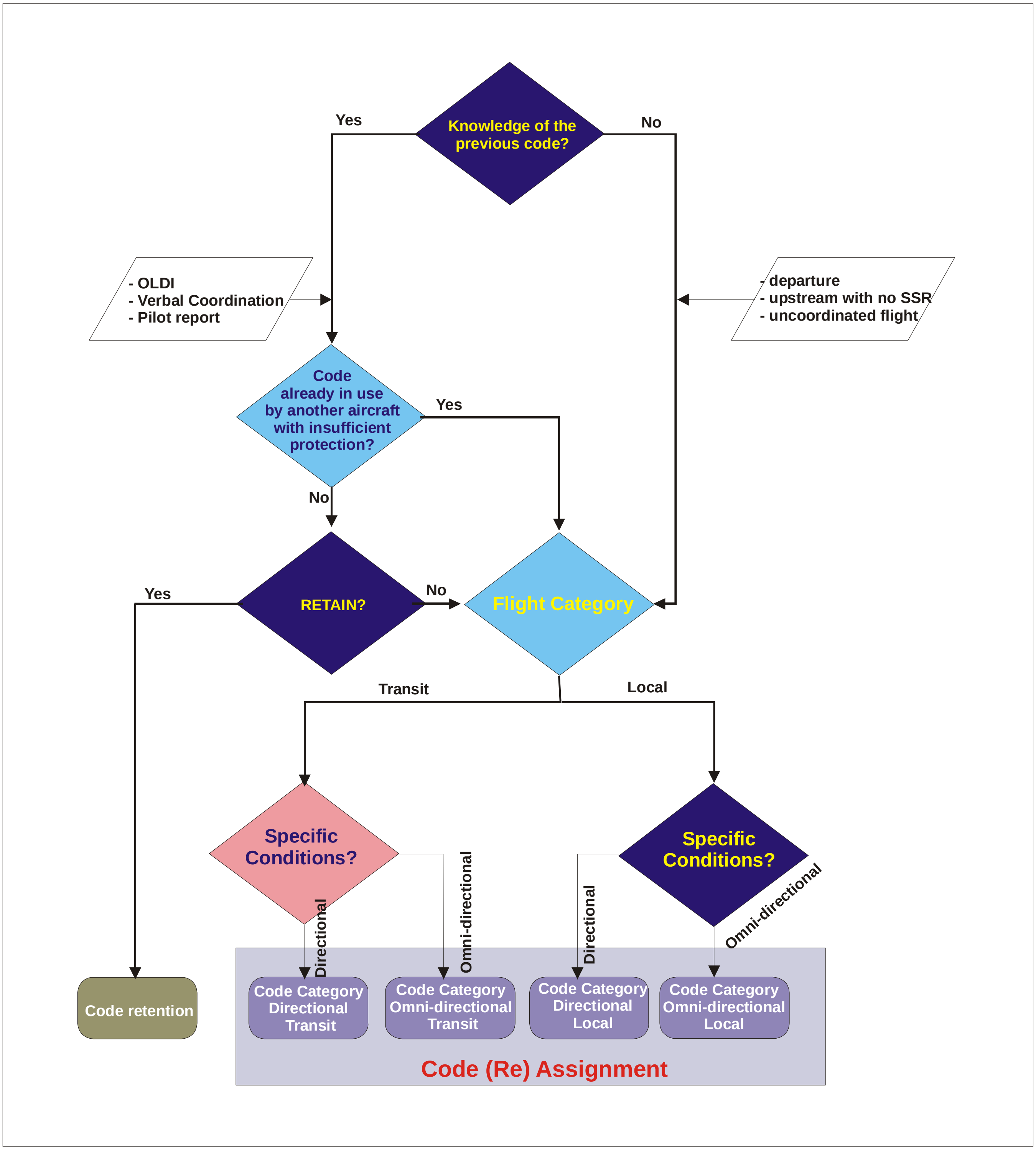
C7 which is at least transit in PA Y and having no domestic use in PA Z will be retained in the two areas.

Management of the code baskets for STATE A:

General:	Domestic basket				: C1, C2
	Transit basket				: C3, C6
Special:	Domestic State A	FIR 2	—	State B FIR 3	: C5
	Transit State A		—	PA Z	: C7
	Directional assignment	FIR 2	—	State B	
		FIR 1	—	Other State of PA Y	: C6

C.7 Flow Chart

The following chart outlines the retention/assignment procedures described above:



APPENDIX D - DEVELOPMENT OF AUTOMATED SSR CODE ASSIGNEMENT SYSTEMS

D.1 As computer capabilities could be a limiting factor in code assignment and thus reflect on the code allocation, the following principles for the development of automated SSR code assignment systems should be observed:

a) automated systems shall be capable of using code blocks (part of a code series) without getting confused if, in a neighbouring system, other blocks of the same code series (with the same first and second digits) are used;

b) automated equipment shall be capable of coping with a limited number of code conflicts rather than preventing code duplications by means of more complicated and less economical code allocation and assignment methods;

Note.— It is expected that this feature will become even more important as traffic increases.

c) automated systems shall be capable of assigning codes with reference to the category of a flight, i.e. transit codes shall be assigned to an aircraft engaged in transit flights and domestic codes to an aircraft confined within the smaller area of use reserved for such codes;

d) automated systems shall permit the addition of a sophisticated capability of assigning codes with reference to the routing or special code protection required for specific aircraft, especially when this will permit economies in the number of codes required;

e) the code assignment logic of an automated system shall not impose any restriction on the free choice of any specific additional codes if this is required to satisfy new requirements;

f) automated code assignment systems shall be designed to conform to international cooperative principles and essential capabilities described in this Document.

APPENDIX 4O

Allocation and Assignment of Secondary Surveillance Radar (SSR) Codes in the MID Region

3.1. The Middle East SSR Code Management Plan (MID SSR CMP), endorsed by MIDANPIRG, provides States in the ICAO MID Region with means to coordinate the use of SSR codes based on the provisions of the ICAO Doc 4444 and the principles of the Originating Region Code Assignment Method (ORCAM).

3.2. Certain codes are reserved for special purposes on a world-wide scale. The remaining codes series for use in the Region are divided into two distinct categories: Transit codes (T) for international use and Domestic codes (D) for national use

3.3. The MID Code Allocation List (CAL) at **Table ATM II-MID-2** reflects the assignment of SSR codes to the MID States among the series of codes allocated to the MID Region, based on the number of aircraft to be handled simultaneously within a specified area and for a determined period of protection during traffic peaks.

3.4. The MID SSR CMP, available on the ICAO MID website, under eDocuments (https://portal.icao.int/RO_MID/Pages/eDocs.aspx), should be managed and maintained up-to-date by the ICAO MID Regional Office.

3.5. States should inform the ICAO MID Regional Office promptly of any deviation from the Plan or proposed changes considered necessary with respect to their code allocations, relevant to ATS infrastructure developments and/or the guidance material provided in the MID SSR CMP.

Special purpose codes

Series 00	Code 0000 is available as a general purpose code for domestic use by any of the MID States.
Series 10	Code 1000 reserved for use as a conspicuity code for Mode S
Series 20	Code 2000 shall be used by flight crews in the absence of any Air Traffic Control (ATC) instructions or regional agreements unless the conditions for the use of codes: 7000, 7500, 7600 and 7700 apply.
Series 70	Code 7000 shall be used by flight crews not receiving ATS service in order to improve detection of suitably equipped aircraft in areas specified by States, unless otherwise instructed by ATS.
Series 75	Code 7500 is reserved for use in the event of unlawful interference.
Series 76	Code 7600 is reserved for use in the event of radio communications failure.
Series 77	Code 7700 is reserved for use in the event of emergencies and interception*. Code 7776 and Code 7777 are reserved for SSR ground transponder monitoring.
Codes 7601-7612	Are reserved for humanitarian flights.

Table ATM II-MID-2 – MID SSR Code Allocation List

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
0001-0077[2]														
0101-0177[1]								D	T					
0200-0277[1]								D						
0300-0377[2]														
0400-0477[2]	D						D							
0500-0577[1]							T							
0600-0677[1]					D		D			D				
0700-0777[1]	T													
1000-1077[1]		T												
1101-1177[1]	D												D	
1200-1277[1]			D						D					
1300-1377[1]		D												D
1400-1477[1]										T				
1500-1577[1]													D	
1600-1677[1]					T									
1700-1777[1]							T							
2001-2077[3]														
2100-2177[1]			D											
2200-2277[1]			T											
2300-2377[1]					D									
2400-2477[1]	D													
2500-2577[1]				D										
2600-2677[1]			T											
2700-2777[1]			D		D									
3000-3077[1]						D		D						
3100-3177[1]								T						
3200-3277[1]			T											
3300-3377[1]					T									
3400-3477[1]							T							
3500-3577[1]								D						
3600-3677[1]													T	
3700-3777[1]												D		
4000-4077[1]											T			T
4100-4177[1]								D					D	
4200-4277[1]								T						

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
4300-4377[1]				**T**										
4400-4477[1]			**T**											
4500-4577[1]								**T**						
4600-4677[1]											**D**			
4700-4777[1]											**T**			
5000-5077[1]								**D**						
5100-5177[1]													**T**	
5200-5277[1]								**T**	**D**					
5300-5377[3]									**D**					
5400-5477[1]													**T**	
5500-5577[3]														
5600-5677[1]													**D**	
5700-5777[1]						**T**								
6000-6077[1]							**D**							
6100-6177[1]							**D**							
6200-6277[1]							**T**							
6300-6377[1]													**D**	
6400-6477[3]														
6500-6577[1]											**D**			
6600-6677[1]											**D**			
6700-6777[2]														
7001-7077[1]												**T**		
7100-7177[2]														
7200-7277[1]		**T**												
7300-7377[1]					**T**									
7400-7477[1]		**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

APPENDIX 4P

MID SAR Capability Matrix (Last Update: 2015)

	Legislation	Oversight	SAR Committee	Training	Alerting	SAR Agreements	Internal cooperation/ coordination	Communications	Quality Assurance	Civil/Military	Resources	SAREX	Library	Computerization	SAR Plan	SAR aircraft	ELTs			SPOC
																	Regulation	Registration	Test	
Bahrain																				
Egypt																				
Iran																				
Iraq																				
Jordan																				
Kuwait																				
Lebanon																				
Libya																				
Oman																				
Qatar																				
Saudi Arabia																				
Sudan																				
Syria																				
UAE																				
Yemen																				

A = Fully meets Annex 12 requirements

B = Meets Annex 12 requirements in most areas

C = Meets Annex 12 requirements in some areas

D = Initial implementation

E = Not implemented

Blank = No response

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<u>SAR Matrix Element Descriptions</u>

Training: The appropriate level and type of training provide to RCCs and RSCs and SAR Inspectorate Staff. Availability of training programme and training plans
Oversight: the effectiveness of the States' oversight activities conducted over the RCC and RSCs
Alerting: Fast and reliable means for the rescue coordination center to receive distress alerts. (IAMSAR Manual Vol. 1, Chapter 2)
Legislative: Provisions that establish a legal foundation for establishing a SAR organization and its resources, policies, and procedures. (IAMSAR Manual Vol. I, Chapter 1)
SAR Committee: Typically established under a national SAR plan, the SAR coordinating committee is comprised of SAR stakeholders. (IAMSAR Manual Vol. 1, Chapter 6 and Appendix J)
Agreements : States should enter into agreements with neighboring States to strengthen SAR cooperation and coordination. (Chapter 3 – *Cooperation*, in both Annex 12 – Search and Rescue, and the International Convention on Maritime SAR)
Internal cooperation/ coordination: Close cooperation between services and organizations which may contribute to improving SAR service in areas such as operations, planning, training, exercises and research and development.
Communications: Communication capability for receipt of distress alerts and operational coordination among the SAR mission coordinator, the on-scene coordinator and SAR facilities. (IAMSAR Manual Vol. 1, Chapter 3)
Quality Assurance: Procedures to focus on improving the quality of SAR services so as to improve results and reduce costs. (IAMSAR Manual Vol. 1, Chapter 6)
Civil/Military: Close cooperation between the various civilian and military organizations.
Resources: The primary operational facilities made available to the national SAR system by various authorities and arrangements with others. (IAMSAR Manual Vol. 1, Chapter 5 and Appendix C)
SAR Exercise: Exercise to test and improve operational plans, provide learning experience and improve liaison and coordination skills. (IAMSAR Manual Vol. 1, Chapter 3; Annex 12, and Annex 14 regarding Airport Emergency Plan)
Library: RCC/RSCs Quick access to the applicable international, national, and agency SAR publications that provide standards, policy, procedures and guidance.
Computerization: RCC/RSCs use of or access to output of various computer resources including databases, computer aids for SAR system management, search planning software, etc. (IAMSAR Manual Vol. 1, Chapter 2)
SAR Plan: National structure to establish, manage and support the provision and coordination of SAR services. (IAMSAR Manual Vol. 1, Chapter 1)
SAR aircraft: Number of aircraft provided with specialized equipment suitable for the efficient conduct of SAR missions (Annex 12, Chapter 2 - *Organization*)
ELT: National regulations for carriage of ELTs, and arrangements for registration of the 406 MHz beacon and rapid access to the beacon registration database. (Annex 6 – Operation of Aircraft and Annex 10 - Aeronautical Telecommunications; and IAMSAR Manual Vol. 1, Chapter 4) and if testing is carried out to ensure proper serviceability.

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SPOC: A SAR Point of Contact (SPOC) designated for receipt of Cospas-Sarsat distress data, and arrangements for efficient routing of the distress data to the appropriate SAR authority (the aeronautical emergency locator transmitter ELT), maritime emergency position-indicating beacon (EPIRB), and personal locator beacon (PLB)). (Annex 12, paragraph 3.2.5 and Section 2.4; and, IAMSAR Manual Vol. 1, Chapter 4)

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APPENDIX 4Q

The main Recommendations emanating for the ICAO/IMO SAR GMDSS Conference related to Civil Aviation, inviting GCC States to:

- provide IMO and ICAO with information related to the availability of SAR services, including information on the areas of responsibility, taking into account IMO's and ICAO provisions, as soon as possible if not already done so, and keep the information up to date on a regular basis;
- noting that close cooperation between maritime and aeronautical SAR services is essential, establish a national SAR Coordinating Committee;
- develop a national SAR Plan, to the extent possible, ensuring harmonization with SAR Plans of the neighboring States, for the benefit of effective and efficient SAR cooperation;
- consider the development of a multilateral agreement on the cooperation of aeronautical and maritime SAR and the establishment of a Regional SAR Coordinating Committee, in the framework of the GCC;
- sign the SAR Letters of Agreement (LoAs) to facilitate and expedite the efficient conduct of SAR operations;
- evaluate SAR and GMDSS facilities and identify actions to be taken to improve the existing situation, including the establishment of Rescue Coordination Centres, as appropriate;
- keep record of all SAR activities and as such built up statistics for national use as well to be used in communication with IMO and ICAO, as appropriate;
- share lessons learned related to SAR activities;
- develop a short and long term programme for training of SAR personnel, including those involved in the oversight of SAR;
- conduct national, bilateral and multilateral SAR exercises and use lessons learned to identify capacity building needs; and
- request, as appropriate, either individually or in cooperation with other GCC States, IMO and/or ICAO to provide technical assistance, in particular to:

  a) assess the existing situation and provide recommendations for improvement; and

  b) support the training of personnel involved in SAR.

APPENDIX 4R

MID REGION SAR AGREEMENT STATUS BETWEEN ANSPS/ACCS
February 2015

STATE	CORRESPONDING STATES			REMARKS
BAHRAIN	☐ IRAN ☐ SAUDI ARABIA	☐ KUWAIT ☐ UAE	☐ QATAR	0/5
EGYPT	☒ CYPRUS ☐ JORDAN ☐ SUDAN	☐ GREECE ☒ LYBIA	☐ Israel ☐ SAUDI ARABIA	1/7
IRAN	☐ ARMENIA ☐ BAHRAIN ☐ OMAN ☐ TURKMANISTAN	☐ AZERBAIJAN ☐ IRAQ ☐ PAKISTAN ☒ UAE	☐ AFGHANISTAN ☐ KUWAIT ☐ TURKEY	1/11
IRAQ	☐ IRAN ☒ JORDAN	☐ KUWAIT ☐ SAUDI ARABIA	☐ SYRIA ☐ TURKEY	1/6
JORDAN	☐ EGYPT ☒ IRAQ	☐ ISRAEL ☐ SAUDI ARABIA	☐ SYRIA	1/5
KUWAIT	☐ BAHRAIN ☐ IRAN	☐ IRAQ	☐ SAUDI ARABIA	0/4
LEBANON	☒ CYPRUS	☐ SYRIA		1/2
LIBYA	☐ ALGERIA ☐ CHAD ☐ EGYPT	☐ MALTA ☐ NIGER	☐ SUDAN ☐ TUNIS	0/7
OMAN	☐ INDIA ☐ IRAN	☒ SAUDI ARABIA ☐ PAKISTAN	☐ UAE ☐ YEMEN	1/6
QATAR	☐ BAHRAIN	☐ SAUDI ARABIA	☐ UAE	0/3
SAUDI ARABIA	☐ BAHRAIN ☐ IRAQ ☒ OMAN ☐ UAE	☐ EGYPT ☐ JORDAN ☐ Qatar ☐ YEMEN	☐ ERITREA ☐ KUWAIT ☐ SUDAN	1/11
SUDAN	☐ CENTRAL AFRICAN ☐ CHAD ☐ EGYPT	☐ ERITREA ☐ ETHIOPIA ☐ LIBYA	☐ SAUDI ARABIA ☐ SOUTH SUDAN	0/8
SYRIA	☐ IRAQ ☐ JORDAN	☐ LEBANON ☒ CYPRUS	☒ TURKEY	2/5
UAE	☐ BAHRAIN ☒ IRAN	☐ OMAN ☐ SAUDI ARABIA	☐ QATAR	1/5
YEMEN	☐ DJIBOUTI ☐ ERITREA ☐ ETHIOPIA	☐ INDIA ☐ OMAN ☐ SAUDI ARABIA	☐ SOMALIA	0/7

☒ Agreement Signed ☐ Agreement NOT Signed Signed Agreements / Total No. of required Agreements

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APPENDXI 4S

MID REGION SAR POINT OF CONTACT (SPOC) – COSPAS-SARSAT

STATE	SPOC NAME	ADDRESS	EMAIL	TEL	FAX	AFTN	ASS. MCC/ STATE[1]	LAST REVISION	REMARK
Bahrain	RCC ATC Bahrain	Bahrain CAA, Air Navigation Directorate P.O. Box 586 Kingdom of Bahrain	Bahatc@caa.gov.bh	(973) 17321081 17321080	(973) 17321905	OBBISARX	SAMCC Saudi Arabia	16-April-2013	
Egypt	SAR Centre	SAR Centre Almaza Air Base Heliopolis, Cairo, Egypt	jrcc136@afmic.gov.eg mmc@saregypt.net nahedh@tra.gov.eg	(202) 24184537 24184531	(202) 24184537 24184531	HECCYCYX	ALMCC Algeria	22-OCT-2013	TELEX: (91) 21095 RCCC RUN
Iran	RCC Tehran	Civil Aviation Organization SAR Coordination Centre Mehrabad Airport Tehran, Iran	SAR@cao.ir IRAN-SAR@airport.ir rcc.IRAN@airport.ir	(9821) 44544107 44544116 44544060 (9891)2417 6881	(9821) 44544117 44544106	OIIIZRZX	TRMCC Turkey	14-Jan-2013	
Iraq	RCC ATC Baghdad	Baghdad ACC, Baghdad International Airport	atc_iraqcaa@yahoo.com	(974) 7901654653	(974)) 15430764		TRMCC Turkey	18 Mar. 2015	
Jordan	RCC ATC Amman	RCC Civil Aviation Authority Amman Airport, Jordan		(9626) 4451672	(9626) 4451667	OJACZQZX	SAMCC Saudi Arabia	16-Apr-2013	
Kuwait	RCC ATC Kuwait	RCC DGCA Kuwait International Airport, P.O.Box 17, Kuwait		(965) 24760463 24762994	(965) 24346515 24346221	OKBKZQZX OKBKNSAR	SAMCC Saudi Arabia	16-Apr-2013	
Lebanon	RCC Beirut	RCC, DGCA Lebanon, Hariri Int'l Airport- Beirut, Lebanon		(961) 1628161	(961) 1628186 1629035	OLBIZQZX	SAMCC Saudi Arabia	16-Apr-2013	
Libya	CAA	CAA, Tripoli Int'l Airport, Libya	info@sar.caa.ly	(218.21) 5632332 4446799	(218.21) 563 0257 360 6868	HLLTYCYX	ALMCC Algeria	16-May-2013	TELEX (218.21) 5632332

[1] Associated COSPAS-SARSAT Mission Control Center / State where it is located

STATE	SPOC NAME	ADDRESS	EMAIL	TEL	FAX	AFTN	ASS. MCC/ STATE[1]	LAST REVISION	REMARK
				3606868					
Oman	RCC Muscat Air Force	RCC, HQ RAFO P.O.Box 730 Central Post Office Muscat Int'l Airport, Oman		(968) 24519209 24519332	(968) 24334776 24338692	OOMSYAYX	SAMCC Saudi Arabia	16-Apr-2013	
Qatar	RCC ATC			(974) 44616332 44651001 44616429	(974) 44622078 44678512	OTBDZTZX	SAMCC Saudi Arabia	16-Apr-2013	
Saudi Arabia	SAMCC	KSA.GACA / Air Navigation services P.O.Box 929 Jeddah 21421 Saudi Arabia	samcc@gaca.gov.sa	(96602) 6150170 6855812 (96650) 4601445	(96602) 6150171 6402855	OEJNJSAR	SAMCC Saudi Arabia	28-Jun-2013	TEL 3 & FAX 2 for Head of SAMCC
Sudan	ACC Khartoum	Khartoum Airport, Sudan		(249.183) 788192 784925	(249.183) 528323	HSSSYCYX	ITMCC Italy	16-Apr-2013	Thuraya +8821655524 296
Syria	RCC ATC	General Civil Aviation Authority		(963.11) 5400540	(963.11) 5400312	OSDIZQZX	SAMCC Saudi Arabia	16-Apr-2013	
UAE	AEMCC	SAR Coordination Center P.O.Box 906 GHQ Armed Forces UAE	aemcc@uae-jrcc.ae	(971.2) 4056144 4496866	(971.2) 4496844	OMADYCYX	AEMCC UAE	23-Sep-2011	
Yemen	RCC Sanaa	RCC Department of Civil Aviation Sanaa, Yemen		(967) 1344673	(967) 1345916	OYSNYCYX	SAMCC Saudi Arabia	16-April-2013	

APPENDIX 4T

MID REGION SAR FOCAL POINTS CONTACT DETAILS

STATE	NAME	TITLE	ADDRESS	EMAIL/AFS	FAX	TEL	MOBILE
Bahrain	BAHRAIN RCC	HEAD of SEARCH And RESCUE BAHRAIN	Bahrain CAA, Air Navigation Directorate P.O. Box 586 Kingdom of Bahrain	Bahrainsar@mot.gov.bh	(973) 17329949 17321029	(973) 17329969 17329959	(973) 39309003
Egypt	Mr. Khaled AbdElraouf Kamel	General Director of Operations Centers & Crisis Management	Ministry of Civil Aviation Cairo - EGYPT	Operation-center-ecaa@hotmail.com Operation-center-ecaa@yahoo.com	202 22681371	202 22688387 202 22678535	01147710035 01001112375
Iran							
Iraq	Ali Muhsin Hashim	Director ATS	ANS Building, BIAP	Atc_iraqcaa@yahoo.com		964 7815762525	964 7815762525
Jordan	Mr. Khalaf Al-Shawabka	Chief Amman TACC and SAR	Queen Alia Airport	kshowbki@yahoo.co.nz	+962 445132	+ 962 4451672	96) 77790 4724
Kuwait							
Lebanon							
Libya							
Oman	RCC HQ RAFO		P.O.Box 722 Muscat	Hq.rafo.@rafo.gov.om	+968 24334776	+968 24334211	

STATE	NAME	TITLE	ADDRESS	EMAIL/AFS	FAX	TEL	MOBILE
			P.C. 111, Oman	AFS:- OOMSYCYX		+968 24334212	
Qatar							
Saudi Arabia	Mr. Ahmad B. Altunisi	Manager SAR Head of SAMCC	General Authority of Civil Aviation	jaf-2010@hotmail.com	966-2 671 9041	966-2 671 7717/1840	966-50 460 1445
Sudan	Hashim Mohamed Ahmed	Head RCC	Sudan CAA PO BOX 165	BEGER124@gmail.com	249183528323	249183528323	24912327797 249912382433
Syria	Mr. Monif Abdulla	Head of S.A.R. Department Syrian Civil Aviation Authority	Damascus Airport	monif77@hotmail.com	963-11 540 0312	963-11 540 0312	963 932 710351
UAE	UAE ATC Duty Supervisor			atc@szc.gcaa.ae	971 2 599 6850	971 2 599 6969	
Yemen							

APPENDIX 4U

TABLE CNS 1A AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

EXPLANATION OF THE TABLE

Column

1 The AFTN Centres/Stations of each State are listed alphabetically. Each circuit appears twice in the table. The categories of these facilities are as follows:
M - Main AFTN COM Centre
T - Tributary AFTN COM Centre
S - AFTN Station

2 Category of circuit:
M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and Tributary AFTN Communications Centre.
S - AFTN circuit connecting an AFTN Station to an AFTN Communication Centre.

3 Type of circuit provided:
LTT/a - Landline teletypewriter, analogue (e.g. cable, microwave)
LTT/d - Landline teletypewriter, digital (e.g. cable, microwave)
LDD/a - Landline data circuit, analogue (e.g. cable, microwave)
LDD/d - Landline data circuit, digital (e.g. cable, microwave)
SAT/a/d - Satellite link, with /a for analogue or /d for digital

4 Circuit signalling speed in bits/s.

5 Circuit protocols

6 Data transfer code (syntax):
ITA-2 - International Telegraph Alphabet No. 2 (5-unit Baudot code).
IA-5 - International Alphabet No. 5 (ICAO 7-unit code).
CBI - Code and Byte Independency (ATN compliant).

7 Remarks

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
BAHRAIN						
BAHRAIN						
ABU DHABI	M		64 – 9.6Kbps	CIDIN	IA-5	
BEIRUT	M		9.6Kbps	CIDIN	IA-5	
DOHA	T		64 – 9.6Kbps	None	IA-5	
JEDDAH	M		64 – 9.6Kbps		IA-5	
~~KABUL~~	~~T~~		--	~~None~~		
KUWAIT	M		64 – 9.6Kbps	None	IA-5	
MUSCAT	M		64 – 9.6Kbps	None	IA-5	
SINGAPORE	M		9.6Kbps	None	IA-5	
TEHRAN	M		64 – 9.6Kbps		IA-5	

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State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
EGYPT						
CAIRO	M					
AMMAN	M		64 – 9.6Kbps	None	IA-5	
ATHENS	T		64 – 9.6Kbps	CIDIN	IA-5	
BEN GURION	M		64 – 9.6Kbps	None	IA-5	
BEIRUT	M		9.6Kbps	CIDIN	IA-5	
JEDDAH	T		128–9.6Kbps	CIDIN	IA-5	
KHARTOUM	M		9.6Kbps	None	IA-5	
NAIROBI	M		9.6Kbps	None	IA-5	
TUNIS	M		64 – 9.6Kbps	None	IA-5	
TRIPOLI	M		64–19.2Kbps	None	IA-5	
TRIPOLI	M		9.6Kbps	None	IA-5	
DAMASCUS			64 – 9.6Kbps	None	IA-5	
IRAN						
TEHRAN	T					
BAHRAIN	M		64 Kbps	None	IA-5	
KABUL	T		-			
KUWAIT	M		64 Kbps	None	IA-5	
ABU-DHABI						
IRAQ						
BAGHDAD	T					
AMMAN	T		-	None	IA-5	
BEIRUT			-	None	IA-5	
KUWAIT						
ANKARA						
JORDAN						
AMMAN						
ABU DHABI	T		2M	AMHS		
BAGHDAD	T		2-	-	-	
~~BEIRUT~~	~~T~~		-	-	-	
BEN GURION	M		9.6 Kbps	None	IA-5	
CAIRO	T		64 – 9.6Kbps	None	IA-5	
DAMASCUS	T		64 – 9.6Kbps	None	IA-5	
JEDDAH	M		64–19.2Kbps	None		

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State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
KUWAIT						
KUWAIT						
BAHRAIN	M	LDD/d	64 – 9.6Kbps	None	I A-5	
DAMASCUS	T	LDD/a	50 BD	None	ITA-2	
BEIRUT	M	LDD/a	100 BD	None	ITA-2	
DOHA	M	LDD/a	64 – 9.6Kbps	None	IA- 5	
(EUR)	-					
KARACHI	M	LDD/d	64 Kbps	None	IA-5	
TEHRAN	M	LDD/d	64 – 9.6Kbps	None	IA-5	
BAGHDAD	T	SAT/ad	9.6Kbps	None	IA- 5	
LEBANON						
BEIRUT	M					
~~AMMAN~~	~~T~~		-	-	-	
BAGHDAD	M		-	None	-	
BAHRAIN	M		9.6Kbps	CIDIN	IA-5	
CAIRO	T		9.6Kbps	CIDIN	IA-5	
DAMASCUS	M		2 x 50 BD	None	ITA-2	
JEDDAH	M		9.6Kbps	CIDIN		
KUWAIT	M		100 BD	None	ITA-2	
NICOSIA			9.6Kbps	CIDIN	IA-5	
LIBYA						
TRIPOLI	T					
MALTA	T					
TUNIS	M					
BENGHAZI	T					
CAIRO	M		64 – 9.6Kbps	None	IA-5	
KHARTOUM	T		9.6Kps	X21	IA-5	
OMAN						
MUSCAT						
ABU DHABI	T		9.6Kbps	AMHS		
BAHRAIN	M		300 BD	None	IA-5	
MUMBAI	M		9.6Kbps	None	ITA-2	
JEDDAH	M		300 BD	None	ITA-2	
SANA'A	T		100 BD	None	ITA-2	
QATAR						
DOHA						
BAHRAIN	M		9.6Kbps	None	IA-5	
KUWAIT	M		64-9.6 Kps	None	ITA-2	
ABU DHABI	T		6Kbps	AMHS		

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State/Station	Category	Requirement				Remarks
		Type	**Signalling Speed**	**Protocol**	**Code**	
1	**2**	**3**	**4**	**5**	**6**	
SAUDI ARABIA						
JEDDAH						
ADDIS-ABABA	M		9.6Kbps	None	IA-5	
BAHRAIN	M		64 – 9.6Kbps	CIDIN	IA-5	
BEIRUT	M		9.6Kbps	CIDIN	IA-5	
CAIRO	M		128–9.6Kbps	CIDIN	IA-5	
MUSCAT	M		~~300BD~~64Kbps	None	ITA-2	
SANA'A	T		9.6Kbps	None	IA-5	
AMMAN						
SUDAN						
KHARTOUM	M					
ADDIS ABABA	M		9.6Kbps	X21	IA-5	
ASMARA	T		9.6Kbps	X21	IA-5	
CAIRO	M		9.6Kbps	X21	IA-5	
JEDDAH	M		9.6Kbps	X21	IA-5	
TRIPOLI	T		9.6Kbps	X21	IA-5	
NDJAMENA	M		9.6Kbps	X21	IA-5	
SYRIA						
DAMASCUS						
ATHENS	M		2 X 50 BD	None	ITA-2	
AMMAN	T		64 – 9.6Kbps	None		
BEIRUT	M		2 X 50 BD	None	ITA-2	
CAIRO	M		50 BD	None	ITA-2	
KUWAIT	M		50 BD	None	ITA-2	
TEHRAN	T		50 BD	None	ITA-2	
UAE						
ABU DHABI						
BAHRAIN	M		64 – 9.6Kbps	CIDIN	IA-5	
AMMAN	T		2 Mbps	AMHS		
MUSCAT	M				IA-5	
QATAR			9.6Kbps	None		
TEHRAN	M					
			64 – 9.6Kbps	None	IA-5	
YEMEN						
SANA'A						
JEDDAH	M		9.6Kbps	None	IA-5	
MUSCAT	M		9.6Kbps	None	IA-5	

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Use of GNSS pseudolites and repeaters

1. Introduction

1.1 As for all systems using the radio frequency spectrum, GNSS is vulnerable to interference and measures (radio regulatory) are in place through the provisions of the ITU Radio Regulations to protect GNSS systems from harmful interference. Technical measures such as the specification of the GNSS receiver interference mask are in Annex 10.

1.2 Despite various regulatory mechanisms being in place, including those agreed at European (CEPT) level. In the recent years harmful interference that was either caused intentionally or unintentionally has been experienced to GNSS systems.

1.3 In addition to interference caused by RF emissions, GNSS signals are also vulnerable to ionospheric scintillation which may cause loss of GNSS signals in particular in equatorial and auroral regions.

1.4 Detailed material on GNSS vulnerability and GNSS interference is in the ICAO GNSS Manual (Doc. 9849) which is currently being revised by the Navigation Systems Panel. Relevant (draft) material on interference from this Manual is reproduced in **Appendix A**

1.5 Of concern to aviation is the protection of the frequency bands 1559 – 1610 MHz, used by GLONASS and GPS and the band 1164 – 1215 MHz which is foreseen to be used by GLONASS and GPS. Also the European Galileo system and the Chinese BEIDOU system are planning to use these bands to provide GNSS signals for use by aviation. Various satellite based augmentation systems are operating in the frequency band 1559 – 1610 MHz.

2. Interference

2.1 Unintentional interference.

2.1.1 Unintentional interference is normally caused by equipment authorized to operate on GNSS frequencies under strict conditions that are aimed at not causing harmful interference to the reception of GNSS signals. Problematic is that not in all cases such equipment is being used in accordance with these conditions, thus resulting in causing harmful interference.
Equipment that can cause such interference include GNSS repeaters and GNSS Pseudolites

2.1.2 In Europe provisions were developed by the ECC/CEPT to avoid harmful interference by inappropriate use of GNSS pseudolites and GNSS repeaters. These provisions and other relevant material is available from the website of the European Communications Office (ECO) in the following Reports and Recommendation:

ECC Report 129: Technical and operational provisions required for the use of GNSS repeaters
ECC Report 145: Regulatory framework for Global Navigation Satellite System (GNSS) repeaters
ECC Recommendation (10)02, A framework for authorization regime of Global Navigation Satellite System
ECC Report 128: Compatibility Studies between Pseudolites and Services in the frequency bands 1164-1215 MHz, 1215-1300 MHz and 1559-1610 MHz
ECC REC (04)01, which declares jammers as illegal.
ECC Report 183, Regulatory Framework for Outdoor Pseudolites

2.1.3 In addition various ITU-R Recommendations provide relevant information on the compatibility and use of RNSS networks, including:

Recommendation ITU-R M.1904: Characteristics, performance requirements and protection criteria for receiving stations of the radionavigation-satellite service (space-to-space) operating in the frequency bands 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz

Recommendation ITU-R M.1901: Guidance on ITU-R Recommendations related to systems and networks in the radionavigation-satellite service operating in the frequency bands 1 164-1 215 MHz, 1 215-1 300 MHz, 1 559-1 610 MHz, 5 000-5 010 MHz and 5 010-5 030 MHz

Recommendation ITU-R M.1787: Description of systems and networks in the radionavigation-satellite service (space-to-Earth and space-to-space) and technical characteristics of transmitting space stations operating in the bands 1 164-1 215 MHz,1 215-1 300 MHz and 1 559-1 610 MHz

Recommendation ITU-R M.1903: Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service (space-to-Earth) and receivers in the aeronautical radionavigation service operating in the band 1 559-1 610 MHz

Recommendation ITU-R M.1318: Evaluation model for continuous interference from radio sources other than in the radionavigation-satellite service to the radionavigation-satellite service systems and networks operating in the 1 164-1 215 MHz, 1 215-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz bands

Recommendation ITU-R M.2030: Evaluation method for pulsed interference from relevant radio sources other than in the radionavigation-satellite service to the radionavigation-satellite service systems and networks operating in the 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz frequency bands

ITU R M.2220 which provides criteria to determine compatibility between DME and GNSS L5.

2.1.4 States are invited to consult this material with the view to develop national regulations that will enforce the operation of GNSS Pseudolites and Repeater in a manner that harmful; interference to the reception of GNSS signals by aviation is prevented. Particular attention should be given to the practicality to enforce these provisions.

2.2 Intentional interference

Intentional interference is caused by equipment of which the user has the intention to cause harmful interference to the reception of GNSS signals, either on a local (e.g. less than 100 m) scale or a large scale (e.g. in the order of 100 – 200 NM).

Equipment used to cause intentional interference includes jammers and spoofers (intentional interference that may result in an aircraft to follow a false flight path).

The sale and use for jammers developed to cause Intentional interference, (e.g. to avoid tracking of vehicles) and spoofers should be forbidden. Although difficult, these systems should not be allowed on any market (national or international).

2.3 ICAO Electronic Bulletin on Interference to GNSS Signals.

ICAO has drawn the attention of States to the need to ensure protection of GNSS signals from interference and point to the need of cooperation between national aeronautical and telecommunication authorities in the introduction and enforcement of appropriate regulations (Electronic Bulletin EB 2011/56 from 21 November refers). This Electronic Bulletin is, for the ease of reference, reproduced in **Appendix B**

3. Cooperation with ITU

3.1 Interference to GNSS systems can affect international civil aviation and [in some cases] international coordination may be required to solve such interference. A framework for cooperation in the format of a Memorandum of Understanding between the ITU and ICAO has been established with the prime view to maximize the joint efforts of the ITU and ICAO to eliminate cases of harmful interference. This Memorandum is reproduced in Appendix C

4. **Fixed Service**

4.1 The frequency band 1559 – 1610 MHz is shared with the (terrestrial) Fixed Service. Use of this band by both the Radionavigation Satellite Service and the Fixed service in a compatible manner is not feasible. Although the allocation to the Fixed Service is on a secondary basis, attention is drawn to the fact that the Fixed Service may cause harmful interference to the reception of GNSS signals. In 2015 the allocation to the Fixed Service is expected to be withdrawn from the Radio Regulations and attention should be given to the need to secure that any operation of the Fixed Service in this band will cease by that time.

5. **Summary**

5.1 This information material highlights a number of cases where harmful interference can be caused to the reception of GNSS signals by aviation. Measures to prevent such interference are recommended together with an operational evaluation of the interference risks.

Work on the assessment of RF interference (intentional and unintentional) is ongoing in the Navigation Systems Panel.

APPENDIX A of the ICAO GNSS Manual (Doc. 9849)

Source: GNSS Manual – Chapter 5

5.8 GNSS VULNERABILITY

5.8.1 General

5.8.1.1. The most notable GNSS vulnerability lies in the potential for interference, which exists in all radionavigation bands. As with any navigation system, the users of GNSS navigation signals should be protected from harmful interference resulting in the degradation of navigation performance.

5.8.1.2 The GNSS SARPs require a specified level of performance in the presence of levels of interference as defined by the receiver interference mask. These interference levels are generally consistent with the International Telecommunication Union (ITU) regulations. Interference at levels above the mask may cause degradation or even loss of service, but such interference is not allowed to result in hazardously misleading information (HMI).

5.8.1.3 GPS and Global Navigation Satellite System (GLONASS) have filings with the ITU to operate, using spectrum allocated to the Radionavigation Satellite Service (RNSS) in the 1 559 – 1 610 MHz and 1 164 – 1 215 MHz bands. The RNSS allocation in these bands is shared with the Aeronautical Radionavigation Service (ARNS). SBAS also has a filing under the RNSS allocation in the former band. GBAS is operated in the 108 – 117.975 MHz band, shared with ILS and VOR (ARNS).

5.8.2 Sources of Vulnerability

5.8.2.1 There are a number of sources of potential interference to GNSS from both in-band and out-of-band sources. Of particular concern is the use of the 1 559 – 1 610 MHz band by point-to-point microwave links that are allowed by a number of States. The use of these links, as stated in footnotes 5.362B and 5.362C in the Radio Regulations of the ITU, is due to be phased out starting in 2005 and completed by no later than 2015. In addition, no new links should be permitted.

5.8.2.2 *Unintentional interference*. The likelihood and operational effect of interference vary with the environment. Unintentional interference 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. Furthermore, 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.

5.8.2.3 *Intentional interference*. The risk of intentional interference depends upon specific issues that must be addressed by States. For States that determine that the risk is unacceptable in specific areas, operational safety and efficiency can be maintained by adopting an effective mitigation strategy through a combination of on-board mitigation techniques (e.g. use of inertial navigation system (INS)), procedural methods and terrestrial navigation aids.

5.8.2.4 *Ionosphere*. Scintillation can cause loss of GNSS satellite signals in the equatorial and auroral regions, but is unlikely to cause complete loss of GNSS service and will be mitigated with the addition of new GNSS signals and satellites. Ionospheric changes may limit the SBAS and GBAS services that can be provided in the equatorial region using a single GNSS frequency. These changes must be considered when designing operations based on the augmentation systems.

5.8.2.5 *Other vulnerabilities*. System failure, operational errors and discontinuation of service could be significantly mitigated by independently managed constellations, funding and robust system design. Spoofing, the intentional corruption of signals to cause an aircraft to deviate and follow a false flight path, is mitigated through normal procedures and independent ground and collision avoidance systems.

5.8.2.6 States should assess the GNSS vulnerability in their airspace and select appropriate mitigations depending on the airspace in question and the operations that must be supported. These mitigations can ensure safe operations and enable States to avoid the provision of new terrestrial navigation aids, reduce existing terrestrial navigation aids, and discontinue them in certain areas. Fault detection features such as RAIM are built into GNSS receivers, which eliminate the risk of position errors posing threat to navigation availability. To date, no vulnerabilities have been identified that compromise the ultimate goal of a transition to GNSS as a global system for all phases of flight. The assessment of GNSS vulnerability aspects and mitigation alternatives should continue.

5.8.3 Evaluating GNSS vulnerabilities

5.8.3.1 There are three principal aspects to be considered in the evaluation of GNSS vulnerabilities.

a) Interference and atmospheric (ionosphere) effects are of primary concern. Operational experience is the best way to assess the likelihood of unintentional interference. Each State must consider the motivation to intentionally interfere with GNSS based on the potential safety and economic impacts on aviation and non-aviation applications. Atmospheric effects are unlikely to cause a total loss (outage) of GNSS but may impact some services (e.g. approaches with vertical guidance in equatorial regions). The likelihood of specific effects can be categorized as negligible, unlikely or probable.

b) All operations and services dependent on GNSS should be identified and considered together, since GNSS interference can potentially disrupt all GNSS receivers at the same time over a certain area. GNSS is used for navigation services as well as other services such as precision timing with communications and radar systems, and may also be used for ADS services. In these cases, GNSS represents a potential common point of failure.

c) The impact of a GNSS outage on an operation or service should be assessed by considering the types of operations, traffic density, availability of independent surveillance and communications and other factors. The impact can be categorized as none, moderate or severe.

5.8.3.2 By considering these aspects as a function of airspace characteristics, air navigation service providers can determine whether mitigation is required and, if so, at what level. Appendix D provides examples of assessments. Mitigation is most likely to be required for vulnerabilities with major impacts that have a moderate to high likelihood of occurrence.

5.8.4 Reducing the Likelihood of Unintentional Interference

5.8.4.1 On-aircraft interference can be prevented by proper installation of GNSS equipment, its integration with other aircraft systems (e.g. shielding, antenna separation and out-of-band filtering) and restrictions on the use of portable electronic devices on board aircraft.

5.8.4.2 *Spectrum management*. Effective spectrum management is the primary means of mitigating unintentional interference from man-made transmitters. Operational experience has indicated that the threat of unintentional interference can be virtually eliminated by applying effective spectrum management. There are three aspects of effective spectrum management, namely:

a) creation of regulations/laws that control the use of spectrum;

b) enforcement of those regulations/laws; and

c) vigilance in evaluating new radio frequency (RF) sources (new systems) to ensure that they do not interfere with GNSS.

APPENDIX B of the ICAO GNSS Manual (Doc. 9849)

ELECTRONIC BULLETIN EB 2011/56 AN 7/5 FROM 21 NOVEMBER 2011

INTERFERENCE TO GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) SIGNALS

1. Aviation operations increasingly rely on the global navigation satellite system (GNSS) to improve navigation performance and to support air traffic control surveillance functions.

2. However, the full benefits of GNSS can only be achieved if GNSS signals are adequately protected from electromagnetic interference which can cause loss or degradation of GNSS services.

3. Potential sources of interference to GNSS include both systems operating within the same frequency bands as GNSS and systems operating outside those bands. Interference can be intentional ("jamming") or unintentional.

4. ICAO Member States have an essential role in ensuring protection of GNSS signals from interference. This can be achieved through cooperation of national aviation and telecommunication authorities in the introduction and enforcement of appropriate regulations controlling the use of the radio spectrum.

5. Attachment A briefly describes some sources of interference to GNSS and discusses regulatory means available to States to deal with them. Attachment B contains a list of documents that can be used as guidance for States in developing a regulatory framework.

Enclosures:
A — Sources of interference to GNSS
B — References

ATTACHMENT A to EB 2011/56

SOURCES OF INTERFERENCE TO THE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

1. **INTERFERENCE TO GNSS CAUSED BY SYSTEMS TRANSMITTING IN GNSS FREQUENCY BANDS**

1.1 **GNSS repeaters and pseudolites**

1.1.1 Certain non-aeronautical systems transmit radio signals intended to supplement GNSS coverage in areas where GNSS signals cannot be readily received (e.g. inside buildings). These systems include GNSS repeaters and pseudolites.

1.1.2 GNSS repeaters (also known as "re-radiators") are systems that amplify existing GNSS signals and re-radiate them in real-time. Pseudolites are ground-based systems that generate ranging signals similar to those transmitted by GNSS satellites.

1.1.3 When these systems do not operate under appropriate conditions, harmful interference may be caused to the reception of the original GNSS signals by aircraft and other aeronautical systems (such as the reference receivers used in augmentation systems). This may disrupt a wide range of GNSS applications.

1.1.4 To prevent this disruption, a State needs to create a regulatory framework for the sale, ownership and operation of these systems. The framework must include regulations to ensure that use of the systems be permitted only where they have a legitimate application and their operation is not harmful to existing primary users of GNSS-based services. Additional measures may be necessary when repeaters and pseudolites are used on or in the vicinity of airports (e.g. in hangars, for testing/maintenance purposes).
1.1.5 Attachment B contains a list of documents that can be used as guidance for States developing a regulatory framework. They include interference analyses and examples of regulations currently in force in Europe and the United States.

1.2 **GNSS jammers**

1.2.1 GNSS jammers are devices which intentionally generate harmful interference to GNSS signals to impair or deny their reception. They may be employed for various reasons, typically with the intent of disabling devices that record and/or relay GNSS position information (e.g. for tracking or fee collection purposes). However, the interference they generate can potentially affect all users of GNSS, not only the intended targets of the jamming. Thus, they may have an impact far greater than intended by their operator.

1.2.2 Usage of GNSS jammers may proliferate further if GNSS-based fee collection or tracking services are not adequately designed, e.g. if the simple use of a jamming device enables the avoidance of the charge or tracking.

1.2.3 To prevent degradation of GNSS services due to GNSS jammers, States should implement and enforce policies and regulations that forbid the sale, export, purchase, ownership and use of GNSS jammers, and they should prohibit all actions that lead to an interruption of GNSS signals[1].
Adequate means of enforcement of such policies and regulations require the availability of GNSS signal monitoring capabilities. Furthermore, GNSS-based services should be designed in such a way that simple jamming does not result in denial of the service.

2. **INTERFERENCE TO GNSS CAUSED BY SYSTEMS TRANSMITTING OUTSIDE THE GNSS FREQUENCY BANDS**

2.1 In addition to the threats described above, systems operating outside the GNSS frequency bands that are not properly designed or are inappropriately regulated and operated may interfere with GNSS.

2.2 GNSS frequencies are protected by international agreements (ICAO *Convention on International Civil Aviation* and ITU Radio Regulations), and enable aviation services that have significant economical and societal benefits. However, there is also significant demand for electromagnetic spectrum for new applications, such as mobile phone and broadband data services, which may compromise spectrum compatibility. States should require that any such application will not interfere with GNSS signals through execution of adequate spectrum management practices.

— — — — — — — —

[1] In some States, military authorities test their equipment by occasionally transmitting jamming signals that deny service in a specific area. This activity should be coordinated with State spectrum authorities and air navigation service providers to enable them to determine the airspace affected, advise aircraft operators and develop any required contingency procedures.

ATTACHMENT B to EB 2011/56

REFERENCES

ECC Report 129: “Technical and operational provisions required for the use of GNSS repeaters”, Dublin, January 2009 (available at: http://www.ecodocdb.dk/, see under “ECC Reports”)
ECC Report 145: “Regulatory framework for Global Navigation Satellite System (GNSS) repeaters”, St. Petersburg, May 2010 (available at: http://www.ecodocdb.dk/, see under “ECC Reports”)
ECC Recommendation (10)02, “A framework for authorization regime of Global Navigation Satellite System (GNSS) repeaters” (available at: http://www.ecodocdb.dk/, see under “ECC Recommendations”)

United States National Telecommunications and Information Administration (NTIA) Manual of Regulations and Procedures for Federal Radio Frequency Management (Redbook), sections 8.3.28 – 8.3.30 (available at: http://www.ntia.doc.gov/page/2011/manual-regulations-and-procedures-federalradio-frequency-management-redbook)
Note.— The relevant sections of the NTIA Redbook only apply to the United States Federal Government users. Use of repeaters by non-government users is prohibited in the United States.

-END-

APPENDIX 4W

ADS-B OUT implementation

State	Mandate	Ground Station Capabilities	Flight Level	ATC Procedure	Data sharing Protocol	Data sharing States
Bahrain						
Egypt						
Iran						
Iraq						
Jordan						
Kuwait	April 2016	ADS-B GS Accept DO260,DO260A,DO260B	Will Be Implemented by April 2016	Will be Published by April 2016	ASTERIX (Cat 21 Ver 0.26)	N/A
Lebanon						
Libya						
Oman						
Qatar						
Saudi Arabia						
Sudan						
Syria						
UAE						
Yemen						

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THE MID RVSM SAFETY

MONITORING REPORT 2014

ANSIG/1 Technical Review Edition.

February 2015

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Report Title: The MID RVSM SAFTY MONITORING REPORT

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Focus Area : Middle East Region RVSM Airspace

Period : September 2013 – April 2015

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Edition Number: 0.1 – ANSIG/1 Technical Review Edition	Edition Date: 1st February 2015

Abstract
This document constitutes the RVSM Safety Monitoring Report for the MID RVSM Airspace for the reporting period September 2013 – April 2015 The aim of this document is to highlight by means of argument and supporting evidence that the implementation of RVSM in the Middle East is acceptably safe.

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ACKNOWLEDGMENTS

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DOCUMENT CHANGE RECORD

VERSION NUMBER	EDITION DATE	REASON FOR CHANGE
0.1	01/02/2015	**Draft version presented to the ANSIG/1 Meeting**

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EXECUTIVE SUMMARY

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

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

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

Objective 1 The risk of collision in MID RVSM airspace due solely to technical height-keeping performance meets the ICAO target level of safety (TLS) of **2.5×10^{-9}** fatal accidents per flight hour. The value computed for technical height risk is **3.18×10^{-12}** This meets RVSM Safety Objective 1.

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

The value computed for overall risk is **4.91×10^{-11}** This meets RVSM Safety Objective 2.

Objective 3 Address any safety-related issues raised in the SMR by recommending improved procedures and practices; and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

Conclusions

(i) The estimated risk of collision associated with aircraft height- keeping performance is **3.18×10^{-12}** 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 **4.91×10^{-11}** and meets the ICAO overall TLS of **5×10^{-9}** fatal accidents per flight hour (RVSM Safety Objective 2).

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

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1 INTRODUCTION

1.1 Background

Reduced Vertical Separation Minima (RVSM) was introduced in the Middle East RVSM airspace on 27th November 2003. In compliance with Annex 11 and ICAO Doc. 9574 provisions, a monitoring programme was established by the MIDRMA and a safety monitoring report is presented to each MIDANPIRG meeting. The present document represents the first draft version of the Safety Monitoring Report which will cover the period from 01st September 2013 until 31st December 2014.

1.2 Aim

This Report responds to the official ICAO request to MIDRMA to show by means of argument and supporting evidence that the implementation of RVSM in the ICAO Middle East Region satisfies the safety objectives defined in Section 2 of this Report.

This draft version of the report is issued for the technical review by the ANSIG/1 meeting before it is officially endorsed by MIDANPIRG.

1.3 Scope

The geographic scope of the MID RVSM Safety Monitoring Report covers the MID RVSM Airspace which comprises the following FIRs/UIRs:

Amman	**Bahrain**	**Baghdad**	**Beirut**	**Cairo**	**Damascus**	**Emirates**
Jeddah	**Kuwait**	**Khartoum**	**Muscat**	**Sana'a**	**Tehran**	**Tripoli ***

T-1: FIRs/UIRs of the Middle East RVSM Airspace/ * Tripoli FIR was excluded from the safety analysis due to lack of data.

The Data Sampling periods covered by the SMR 2014 are as displayed in the below table

Report Element	Time Period
Traffic Sample Data	15/01/2014 – 15/02/2014
Operational Errors	01/09/2012 – 31/12/2014 (this version) Will be updated in the final version for the remaining reporting period to include 01/01/2015 until 31/05/2915

T-2: Time period for the reported elements

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1.4 Structure of the Document

The Report is constructed using an approach that claims that the Middle East RVSM operations are acceptably safe. This claim is broken down into three main safety objectives, which represent necessary and sufficient conditions to be met for the above claim to be true. These principal safety objectives are listed in Section 2 and are discussed and assessed in Section 3,4,5 and 6 of this report.

- **Section 2** of this document describes the three RVSM safety objectives and the individual components that relate directly to the on-going safety of MID RVSM.
- **Sections 3, 4, 5** details the assessment made against the safety objectives. Each Section contains Conclusion(s) and Recommendation(s) pertinent to the associated safety objective.
- **Section 6** summarises all the Conclusions and Recommendations raised in the previous sections together with additional Recommendations arising from on-going RMA operations.
- **Appendices**

  - **Appendix A:** Member States Traffic Data Analysis.
  - **Appendix B:** Provides Information on the MID MMR.
  - **Appendix C:** Provides Information on RVSM Minimum Monitoring Requirements (*Updated on 29/06/2014*)
  - **Appendix D:** Includes the MIDRMA duties and responsibilities.
  - **Appendix E:** Provides definitions and explanations of RVSM terms.
  - **Appendix F:** Provides Abbreviations.

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2 MID RVSM SAFETY OBJECTIVES

A key issue for the assessment of RVSM safety is the satisfaction of a number of safety objectives defined in the Safety Policy for RVSM. The following three safety objectives endorsed by MIDANPIRG are directly relevant to the on-going safety of RVSM:

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.

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.

Objective 3 Address any safety-related issues raised in the SMR by recommending improved procedures and practices; and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

2.1 Considerations on the RVSM Safety Objectives

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

1. The assessment of risk against the TLS, both for technical and overall risk estimates, relies on height keeping performance data to assess the risk in the vertical plane and studies of traffic density to calculate the risk in the horizontal plane. There are a number of assumptions that must be verified to satisfy the reliability of the risk assessment. The verification of these assumptions is contained in Section 3 which deals primarily with monitoring aircraft performance issues.
2. The Aircraft performance is assessed by individual airframe and by monitoring group. A monitoring group consists of aircraft that are nominally of the same type with identical performance characteristics that are made technically RVSM compliant using a common compliance method. Monitoring group analysis is necessary to verify that the Minimum Aviation System Performance Standards (MASPS) for that group is valid. Aircraft that are made RVSM compliant on an individual basis are termed non-group.

3. The RVSM Safety Objective 2, dealing with overall risk, takes into account the technical risk presented in Section 3 together with the risk from all other causes. In practice this relates to the human influence and assessment of this parameter relies on adequate reporting of Large Height Deviation (LHD) Reports, and the correct interpretation of events for input to the CRM.
4. RVSM Safety Objective 3 requires the RMA to monitor long term trends and to identify potential future safety issues. This Section compares the level of risk bearing incidents for the current reporting period. It also highlights issues that should be carried forward as recommendations to be adopted for future reports.

2.2 The Collision Risk Model (CRM)

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

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

2.2.3 Three parameters used within the CRM :

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

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

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

3 TECHNICAL HEIGHT KEEPING PERFORMANCE RISK ASSESSMENT

RVSM Safety Objective 1

The risk of collision in MID RVSM airspace due solely to technical height-keeping performance meets the ICAO target level of safety (TLS) of **2.5×10^{-9}** fatal accidents per flight hour.

3.1 Direct evidence of compliance with TLS for technical height-keeping error

The result shows that the risk of collision due to technical height-keeping performance is estimated to be **3.18×10^{-12}** fatal accidents per flight hour, which meets the ICAO TLS of **2.5×10^{-9}**.

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

To demonstrate that the result is reliable, it is necessary to demonstrate that the following assumptions are true:

a. The estimated value of the frequency of horizontal overlap, used in the computations of vertical-collision risk, is valid;

b. Pz(1000) – the probability of vertical overlap due to technical height-keeping performance, between aircraft flying 1000 ft. separation in MID RVSM airspace is **3.28×10^{-9}** valid and is less than the ICAO requirement of **1.7×10^{-8}**.

c. All aircraft flying 1000ft separation in MID RVSM airspace meet the ICAO Global Height Keeping Performance specification for RVSM;

d. All aircraft flying 1000ft separation in MID RVSM airspace meet the individual ICAO performance specification for the components of total vertical error (TVE).

e. The monitoring target for the MID RVSM height-monitoring programme is an on-going process.

f. The input data used by the CRM is valid.

g. An adequate process is in place to investigate and correct problems in aircraft technical height-keeping performance.

3.2.1 Calculating the Probability of Lateral Overlap ($P_y(0)$)

The probability of lateral overlap $P_y(0)$ is the probability of two aircraft being in lateral overlap which are nominally flying on (adjacent flight levels of) the same route. The calculation of the Py (0) for the SMR 2014 has the following to consider:

a. Due to lack of radar data available for most of the congested airspace in the Middle East Region were calculating the probability of lateral overlap probability of lateral overlap $\boldsymbol{P_y(0)}$ is fundamental for the SMR, the MIDRMA decided to calculate the probability of lateral overlap $\boldsymbol{P_y(0)}$ for all the MID RVSM airspace and not only the congested airspace by adopting the ICAO methodology

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developed for this purpose and by adding this feature in the MID Risk Analysis Software (MIDRAS).

b. The MIDRMA calculated the probability of lateral overlap $\boldsymbol{P_y(0)}$ for the whole MID RVSM airspace 5.04 **x 10^{-9}**.

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

3.2.1.2 Method Used For Calculating the Probability of Lateral Overlap ($\mathrm{P_y(0)}$)

To compute the probability of lateral overlap$\mathrm{P_y(0)}$, the probability density of the lateral distance $\mathrm{Y_{12}}$ between the two aircrafts flying with lateral deviations $\mathrm{Y_1}$ and $\mathrm{Y_2}$ from the nominal route i.e. $\mathrm{Y_{12} = Y_1 - Y_2}$is computed.

This probability density denoted by $\mathrm{f_y(y)}$is dependent on the type of navigation equipment being used in the airspace under consideration. The ground-based navigation infrastructure in the MIDRMA Region consists of NDBs and VOR/DMEs. However, more and more aircraft have started to use satellite-based navigation (GNSS).

This is calculated by taking the proportion of time that an airplane is flying using satellite navigation (GNSS) versus radio navigation (VOR/DME). By representing the probability of an aircraft being in a specific lateral position by a normal distribution, the following equation is found:

$$f_y(y) = (1-\alpha)\frac{1}{\sigma_{\mathrm{VOR/DME}} \times \sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{y}{\sigma_{\mathrm{VOR/DME}}}\right)^2} + \alpha \frac{1}{\sigma_{\mathrm{GNSS}} \times \sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{y}{\sigma_{\mathrm{GNSS}}}\right)^2}$$

Where, α is the proportion of flights flying with satellite navigation (GNSS) and $\sigma_{\mathrm{VOR/DME}}$ and σ_{GNSS} are the standard deviations for radio and satellite navigation, respectively. For MIDRAM region it is assumed that 75% of flights (α =0.75) are using GNSS and 23% of flights are using VOR/DME for navigation.

Following the RVSM global system performance specification, the standard deviation for VOR/DME navigation is taken as 0.3 NM and a standard deviation of 0.06123 NM will be used for the GNSS. i.e. $\sigma_{\mathrm{VOR/DME}} = 0.3$ NM and $\sigma_{\mathrm{GNSS}} = 0.06123$ NM.

With this probability distribution function for one aircraft, the function for two aircraft can be found by convoluting the two together;

$$f_{y_{1,2}}(y) = (1-\alpha)^2 \frac{1}{\sigma_{\mathrm{VOR/DME}} \times 2\sqrt{\pi}} e^{-\frac{1}{4}\left(\frac{y}{\sigma_{\mathrm{VOR/DME}}}\right)^2} + 2\alpha(1-\alpha)\frac{1}{\sqrt{\sigma^2_{\mathrm{VOR/DME}} + \sigma^2_{\mathrm{GNSS}}} \times \sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{y}{\sqrt{\sigma^2_{\mathrm{VOR/DME}}+\sigma^2_{\mathrm{GNSS}}}}\right)^2}$$
$$+ \alpha^2 \frac{1}{\sigma_{\mathrm{GNSS}} \times \sqrt{\pi}} e^{-\frac{1}{4}\left(\frac{y}{\sigma_{\mathrm{GNSS}}}\right)^2}$$

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This function then allows the probability of lateral overlap to be calculated as:

$$P_y(0) \approx 2\lambda_y f_{y_{1,2}}(0)$$

where λ_y is the average wingspan of the aircraft within the region.

Frequency of Horizontal Overlap					
Year 2006	Year 2008	Year 2010	Year 2011	Year 2012/13	Year 2014
6.99×10^{-3}	5.1×10^{-11}	2.88×10^{-6}	6.49×10^{-5}	6.49×10^{-5}	5.04×10^{-9}

The Frequency of HOF Values

3.2.2 Pz(1000) compliance

The Pz(1000) is the probability that two aircraft at adjacent RVSM flight levels will lose vertical separation due to technical height keeping errors. The value of the probability of vertical overlap Pz(1000), based on the actual observed ASE and typical AAD data is estimated to be of **3.28×10^{-9}** . This value meets the Global System Performance Specification that the probability that two aircraft will lose procedural vertical separation of 1000ft should be no greater than **1.7×10^{-8}**.

3.3 Evolution of Technical Risk Estimate

Technical Risk Values					
Year 2006	Year 2008	Year 2010	Year 2011	Year 2012/13	Year 2014
2.17×10^{-14}	1.93×10^{-13}	3.96×10^{-15}	5.08×10^{-14}	6.37×10^{-12}	3.18×10^{-12}

The Technical Risk values

According to the technical risk values as shown in the above table the TLS values is continuously increasing, the MIDRMA issued an updated minimum monitoring requirements (MMR) for each MIDRMA member states according to the latest RVSM approvals received from all members valid until December 2014, these tables are available in Appendix B.

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

RVSM Safety Objective 2

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

The objective of this Section is to set out the arguments and evidence that 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. The computed value is **4.91 x 10^{-11}** which meets the ICAO overall TLS of **5 x 10^{-9}** fatal accidents per flight hour.

4.1 Evolution of the overall Risk Estimate

The vertical risk estimation due to atypical errors has been demonstrated to be the major contributor in the overall vertical-risk estimation for the MID RVSM airspace, The final conclusions of the data processed have been severely limited by the continued NIL reporting of Large Height Deviations (LHDs) and Coordination Failure Reports (CFRs) 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.

Overall Risk Values					
Year 2006	**Year 2008**	**Year 2010**	**Year 2011**	**Year 2012/13**	**Year 2014**
Not calculated	4.19×10^{-13}	6.92×10^{-12}	1.04×10^{-11}	**3.63 x 10^{-11}**	**4.91 x 10^{-11}**

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The following Tables present the status of provision of LHDs and RVSM Approvals by States for the period September 2013 – December 2014.

MID States LHDs & RVSM Approvals status report for year 2013

	Months					Sep		Oct		Nov		Dec	
	2013	CFR	RVSM	CFR	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM
1	Bahrain					√	-	-	√	√	√	√	-
2	Egypt					-	-	-	√	-	-	√	√
3	Iran					-	-	-	-	-	-	√	-
4	Iraq					√	√	-	√	-	√	-	√
5	Jordan					-	-	-	-	-	√	-	√
6	Kuwait					√	√	√	√	√	√	√	√
7	Lebanon					-	-	-	-	-	-	-	-
8	Oman					-	-	√	-	√	√	-	-
9	Qatar					N/A	√	N/A	√	N/A	√	N/A	√
10	Saudi					-	√	-	√	-	√	-	-
11	Syria					-	√	-	√	√	√	√	√
12	UAE					-	√	-	√	-	√	√	√
13	Yemen					√	√	√	√	√	√	-	√

MID States LHDs & RVSM Approvals status report for year 2014 (1/2)

										On Line LHD System (Report)			
	Months	Jan		Feb		MAR		Apr		May		Jun	
	2014	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM
1	Bahrain	√	-	√	√	√	√	√	-	√	√	√	√
2	Egypt	-	√	-	-	√	-	-	√	√	-	√	√
3	Iran	√	-	√	√	√	√	√	-	-	√	-	-
4	Iraq	-	√	-	√	-	-	√	√	-	-	-	√
5	Jordan	-	√	√	√	√	-	√	-	√	-	√	√
6	Kuwait	√	√	-	-	-	√	-	√	-	√	-	√
7	Lebanon	-	√	-	-	-	-	√	√	√	√	√	-
8	Oman	-	-	√	-	√	-	√	-	√	-	√	√
9	Qatar	N/A	√	N/A	√	N/A	√	N/A	√	N/A	-	N/A	√
10	Saudi	-	-	-	-	-	√	√	√	√	-	√	-
11	Syria	√	√	-	-	-	√	√	√	-	√	-	√
12	UAE	-	√	√	√	√	√	√	√	√	-	√	√
13	Yemen	-	√	√	√	-	-	-	-	-	-	-	-
14	Sudan	-	-	-	-	-	-	-	-	√	-	√	√
15	Libya	-	-	-	-	-	-	-	-	-	-	-	-

MID States LHDs & RVSM Approvals status report for year 2014 (2/2)

On Line LHD System (Report)													
	Months	July		Aug		Sep		Oct		Nov		Dec	
	2014	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM	LHD	RVSM
1	Bahrain	√	√	√	√	√	√	√	√	√	-	√	√
2	Egypt	√	√	-	√	-	-	-	√	-	√	-	√
3	Iran	-	-	-	-	-	-	-	-	-	-	-	-
4	Iraq	-	-	-	√	-	-	-	-	-	-	-	-
5	Jordan	√	√	√	-	√	-	√	√	√	√	√	-
6	Kuwait	-	√	-	√	-	-	-	-	-	-	-	√
7	Lebanon	√	-	√	-	√	-	√	-	√	-	√	-
8	Oman	√	√	√	√	√	√	√	-	-	√	√	√
9	Qatar	N/A	√	N/A	√	N/A	√	N/A	√	N/A	√	N/A	√
10	Saudi	√	-	√	-	√	√	√	-	√	-	-	-
11	Syria	-	√	-	√	-	-	-	-	-	-	-	√
12	UAE	√	√	√	√	√	√	√	√	√	√	-	√
13	Yemen	-	-	-	-	-	-	-	-	-	-	-	-
14	Sudan	√	-	√	-	-	-	√	-	√	-	√	-
15	Libya	-	-	-	-	-	-	-	-	-	-	-	-

4.2 Effects of future traffic growth

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

It is clear that even for the most optimistic forecast range of 13%~~,~~ the overall risk of collision will continue to meet the TLS at least until 2017. With the current uncertainty over traffic growth this issue will be revisited when the Middle East economic conditions return to more normal growth.

5 ASSESSMENT OF SAFETY-RELATED ISSUES RAISED IN THIS REPORT

RVSM Safety Objective 3

Address any safety-related issues raised in the SMR by recommending improved procedures and practices; and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

5.1 Methodology

The identified safety-related issues are:

a. Confirmation of the approval status of aircraft filling RVSM flight plan (W in field 10).

b. Accuracy contents and quantity of supplied data is detaining the accurate determination of operational risk assessment.

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

Reference c. the recommended practice in this case is addressing all operators in the Middle East region which required conducting height monitoring**;** the MIDRMA published a new MMR for all member states. **Appendix-B** shows all operators requiring height monitoring in the MID Region.

5.2 Conclusions

a. Current risk-bearing situations have been identified and actions will be taken to ensure resolving all violations and information was collected during the MID RVSM Scrutiny Group meeting on 10th March 2014 in order to identify operational issues and potential mitigations.

b. The MIDRMA has developed the LHD on line reporting tools which facilitate and expedite the LHD reporting process

c. The MIDRMA continue to will include in its work program training activity and briefings on RVSM safety assessment requirements to raise the awareness of ATC, RVSM approval Authorities and Air Operators personnel.

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

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5.3 Recommendations Applicable To Safety Objective 3

(i) MIDRMA to continue monitoring RVSM operations in the whole Middle East RVSM airspace over the months by the collection the Large Height Deviation reports from the participating States in accordance with the new MIDRMA requirements as detailed in the MIDRMA manual

(ii) MIDRMA shall coordinate with all member states to assist their airline operators requesting to conduct GMU monitoring.

(iii) MIDRMA to address the Minimum Monitoring Requirements for all member states.

(iv) The MIDRMA will continue to coordinate with the RMACG (Regional Monitoring Agencies Coordination Group) to conduct a global audit of flight plans for the verification of RVSM approvals.

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6 Conclusions and Recommendations

a. The 2014 value computed for technical height risk is **3.18×10^{-12}**, this value meets the ICAO Target Level of Safety (TLS) of **2.5×10^{-9}** fatal accidents per flight hour.

b. The computed 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 is **4.91×10^{-11}** which meets the ICAO overall TLS of **5×10^{-9}** fatal accidents per flight hour.

c. The value of the probability of vertical overlap Pz(1000), based on the actual observed ASE and typical AAD data is estimated to be of **3.28×10^{-9}** . This value meets the Global System Performance Specification that the probability of two aircraft will lose procedural vertical separation of 1000ft should be no greater than **1.7×10^{-8}**.

d. The MIDRMA purchased two Enhanced GMUs which will improve the monitoring capabilities and will expedite the monitoring process. and plan to conduct height monitoring during 2015 for all airline operators registered in the Middle East Region to achieve the performance target for height monitoring of 95% from the total number of the RVSM approved aircraft in the region.

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

f. The MIDRMA will continue to encourage States to submit their Large Height Deviation Reports using the MIDRMA online reporting tool.

g. The MIDRMA will continue to enhance the (MIDRAS) Software and shall include hot spot and other visualization features in phase 2 of the software project.

h. Current risk-bearing situations have been identified and actions will be taken to ensure resolving all violations and information was collected during the MID RVSM Scrutiny Group meeting on 10th March 2014 in order to identify operational issues and potential mitigations.

i. The MIDRMA will continue to include in its work program training activity and briefings on RVSM safety assessment requirements to raise the awareness of ATC, RVSM approval Authorities and Air Operators personnel.

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C.3.1.2 Scrutiny Group Technical Observations:

The MID RVSM Scrutiny Group convened on 10th March 2014 in Bahrain during the MIDRMA Board 13 Meeting (09-12 March 2014) and chaired by the MIDRMA and attended by representatives from 7 Member States (Bahrain, Egypt, Iran, Saudi Arabia, Sudan, Oman and Yemen) , also participated by Airworthiness Inspectors from Bahrain and Qatar and monitored by representatives from Euro RMA, the developer of the MIDRAS Software from the University of New South Wales in Canberra-Australia and the ICAO MID Office.

The MIDRMA Board decided to include in its work programme the agenda of the MID RVSM Scrutiny Group to improve its efficiency and to facilitate the implementation of its outcome and to ensure States involved in contributing large height deviation reports that adverse trends can be identified and remedial actions can be taken to ensure that risk due to operational errors will not be increased and can be reduced or eliminated.

The MIDRMA presented to the Scrutiny Group all Coordination Failure Reports (CFRs) and Large Height Deviation Reports (LHDs) received from all MIDRMA member states during the period of 1st September 2013 until 08th March 2014. The MIDRMA validated and endorsed the rest of the reports received from 09th March 2014 until 31st December 2014.

The lack of reporting Large Height Deviations and Coordination Failures by some of the MIDRMA Member States was addressed again during this meeting, also the continuous filing of “NIL LHDs” especially by FIRs with high volume of traffic continued for the fifth consecutive SMRs which has a negative effect on the computed Targets Level of Safety. The MIDRMA reported to the meeting concerning the overall reporting of LHDs is not acceptable and must be improved.

In response to the request made by MIDRMA Board 12 meeting to develop an online reporting tool for the submission of LHD reports and to improve the level of reporting by States, the MIDRMA announced during this meeting the availability of this system in the MIDRMA website and provided the necessary training and the instructions manual for all Member States to start for the submission of LHD reports via this tool.

The MIDRMA reported to the meeting that with effect of 01st May 2014 will not accept any more the old format of Coordination Failure Reports (CFRs) and Altitude Deviation Reports (ADRs) as the online LHD reporting tool will be the only recognised and approved method for reporting LHD and all Member States are NOT required to send CFRs or ADRs anymore.

A total of **29** LHD reports contributed in the risk analysis, the MIDRMA evaluated the rest of the reports filed for the period followed the Scrutiny Group meeting until 31st December 2014. The meeting noticed the same main reasons for filing the LHD reports still exist from the last SMR as the extreme majority of the reports were because of the transferring units failed to coordinate their traffic to the accepting units, the participants analysed the LHD reports filed during that period and discussed their impact on the implementation of RVSM in the Middle East region and determined parameter values necessary for the collision risk estimation.

The total Altitude Deviation period gathered from the validated LHD occurrences in the MID Region airspace = **38.33 minutes**.

The following observations were addressed and discussed during the meeting:

a. During this reporting period, Bahrain submitted LHD reports to the MIDRMA related to all the neighbouring FIRs, the Scrutiny Group noticed the extreme majority of these reports were concentrated at waypoints RABAP and LONOS (FIR boundary points with Kuwait) and NARMI, LADNA, DAROR and ULIKA (FIR Boundary Points with Jeddah & Riyadh FIR), also some other reports at the boundary points with Emirates and Tehran FIRs.

   Note 1: The MIDRMA noticed the LHD reports started to build up at waypoint KUVER (Bahrain/Tehran FIR boundary Waypoint), both ATC units are required to act immediately and review the reasons for these occurrences to ensure safe RVSM operations always exist.

   Note 2: The number of LHD reports at the Bahrain FIR boundary points with Kuwait and Jeddah/Riyadh FIRs found to be the highest in the ICAO Middle East Region (Jeddah & Riyadh ATCUs reported after investigated these LHD reports that some reports are NOT Valid) Bahrain ATC must make sure before filing any LHD report that the occurrence is valid and meets the conditions for filing the LHD Report.

   Note 3 :The MIDRMA excluded all the non-relevant reports and validated the occurrences which has direct impact to the RVSM operations as most of these occurrences were observed and rectified by the controllers working in Bahrain ACC well in advance, but that does not mean the situation is safe all the time. All concerned ATC Units involved in these LHD reports are required to take all necessary measures to rectify the problems at these waypoints and must work with each other to eliminate or reduce these errors as soon as possible. The MIDRMA consider the level of reporting LHD by Bahrain is Satisfactory.

b. The LHD reports received from Egypt were very few , the sudden decrease in the number of LHD reports submitted by Egypt were discussed during the meeting and Egypt MIDRMA Board Member promised to address this issue to the concerned ATC Authority to improve the level of reporting , but despite several attempts to remind the concerned focal point to submit the required reports, the MIDRMA didn't see any improvement at all, therefore the MIDRMA consider the level of reporting LHD by Egypt is Unsatisfactory.

c. The Scrutiny Group evaluated the reports received from the I.R. of Iran and found most the reports were related to Kabul ATCU at position CHARAN, also there were a few at SOKAM and PIRAN, the meeting noticed a good improvement concerning the reports filed at position DENDA related to Muscat ATCU comparing to the last reporting period although there were very few reported from Muscat ATCU side at the same position.

   Note 1: The MIDRMA didn't receive any LHD reports related to Baghdad ATCU from Tehran, this conclude the problems addressed between the two ATCUs in the last Scrutiny Group meeting have been resolved.

Note 2: The MIDRMA received LHD reports through MAAR (Monitoring Agency for Asia Region) filed by Kabul ATCU related to Tehran ATCU and MAAR raised their serious concern in the number of LHD occurrences near position GADER, which is a transfer of control point between Tehran and Kabul ACCs. The frequency seems to have increased quite a lot in 2014 and immediate action and necessary measures must be taken by both ATCUs to ensure safe RVSM operations exist all the time.

Note 3: Since May 2014, the MIDRMA didn't receive any LHD report from I.R. of Iran focal point, therefore the MIDRMA consider the level of reporting LHD by Iran is Unsatisfactory.

d. During this reporting period, the MIDRMA received LHD reports from Jeddah & Riyadh ATCUs but not related to all their neighbouring FIRs, half of these reports were filed at position KITOT which is the transfer of control point with Cairo ATCU. The same problems exist at this point since last meeting, these occurrences are critical for RVSM operations due to the close proximity to NWB which is a converging point west of KITOT inside Cairo FIR. The traffic converging at same flight levels transferred by Cairo to Jeddah at KITOT without prior coordination or approval from Jeddah ATCU can cause serious incidents. The MIDRMA consider the level of reporting LHD by Saudi Arabia is Satisfactory.

Note 1: Jeddah addressed several safety issues required to be considered by the concerned ATCU to improve safety in handling traffic within their RVSM airspace:

LADNA: This is a transfer control point with Bahrain ATC, located on AWY UN318 which serves traffic landing Qatar airports, this WP can gets very busy especially during peak hours as Bahrain ATC accept FL 310 only at this point and FL 290 by prior approval.

KITOT: This is a transfer control point on AWY UN697 with Cairo ATC where the accepting ATCU accept one westbound flight level from Jeddah ATC which can put the controllers in Jeddah at tremendous pressure during peak hours to regulate traffic at this point.

MIPOL: This is a transfer control point on AWY G660 (used for eastbound TFC only) this point located 82 NM west of Jeddah VOR, the proximity of this point to OEJN is causing serious problems to Jeddah ATC for traffic transferred at this point landing OEJN as Khartoum ATC use FL330 ONLY, this is a very high level for landing OEJN especially during periods with strong tail wind, Khartoum ATC required to consider another flight levels to facilitate traffic landing OEJN without any difficulties.

e. Sudan MIDRMA Board member attended the Scrutiny Group meeting for the first time and because there were no reports filed during the meeting the group was unable to discuss any issues related to Khartoum FIR, the MIDRMA would like to confirm that the level of reporting LHD by Sudan focal point is Satisfactory.

f. Yemen filed LHD reports for the month of February 2014 ONLY and nothing has been received from March until December 2014. The filed reports were concentrated at position NADKI north of Sanaa FIR which is the transfer control

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point with Jeddah ATCU, the meeting discussed these occurrences of traffic entering Sanaa FIR without coordination with the presence of representatives from Jeddah ATC, this kind of coordination failures can cause risk to other known traffic under their control within the RVSM airspace .

Note 1 : Yemen MIDRMA focal point stopped sending LHD reports since Feb 2014, despite the reminders sent for submitting the required data each month, the MIDRMA didn't receive any response from the concerned focal point, therefore the level of reporting LHD by Yemen LHD found to be Unsatisfactory.

g. Oman regularly submits LHD reports on time and the MIDRMA never experienced any difficulties for obtaining the required data from the MIDRMA focal point. The LHD reports received from Oman were distributed mainly at DENDA (transfer control point with Tehran ATCU) and at position TAPDO (transfer control point with Karachi ATCU), the meeting noticed the number of reports filed at DENDA reduced a lot comparing to the last reporting period, Oman focal point reported the same problems still exist but not in the same volume as Muscat ATC still working very hard to reduce the LHD occurrences. The level of reporting LHD by Oman is Satisfactory.

h. The Scrutiny Group could not evaluate all the reports submitted by the Member States which didn't attend the meeting (Iraq, Lebanon, Jordan, Libya, Syria, UAE and Kuwait) , the MIDRMA followed the same evaluation mechanism during this meeting for the reported LHDs by the absent states and determined which reports from those are influence in the risk of collision associated with the implementation of RVSM, although this process was supposed to be carried out by the absent member states , the MIDRMA could not find any other way to overcome the lack of endorsing the reports other than validating and calculating the total deviations period by themselves.

Note 1: The level of reporting LHD by Iraq is Unsatisfactory.

Note 2: The level of reporting LHD by Lebanon, Jordan, Syria and UAE is Satisfactory.

Note 3: The MIDRMA reported to the meeting that the LHD reports received from UAE found to be the best in the ICAO Middle East region in terms of quality, regularity and reasons for filing these reports.

Note 4: Kuwait reports received from Sep 2013 until Jan 2014 related to Bahrain, Jeddah/Riyadh and Tehran FIRs filed by Kuwait were discussed and validated. Kuwait also filed reports related to Baghdad FIR and most of these reports were concentrated at position SIDAD, the Scrutiny Group was unable to comment in the situation because both MIDRMA board members did not attend the meeting. The level of reporting LHD by Kuwait is Unsatisfactory.

Note 5: Libya was excluded from the safety analysis

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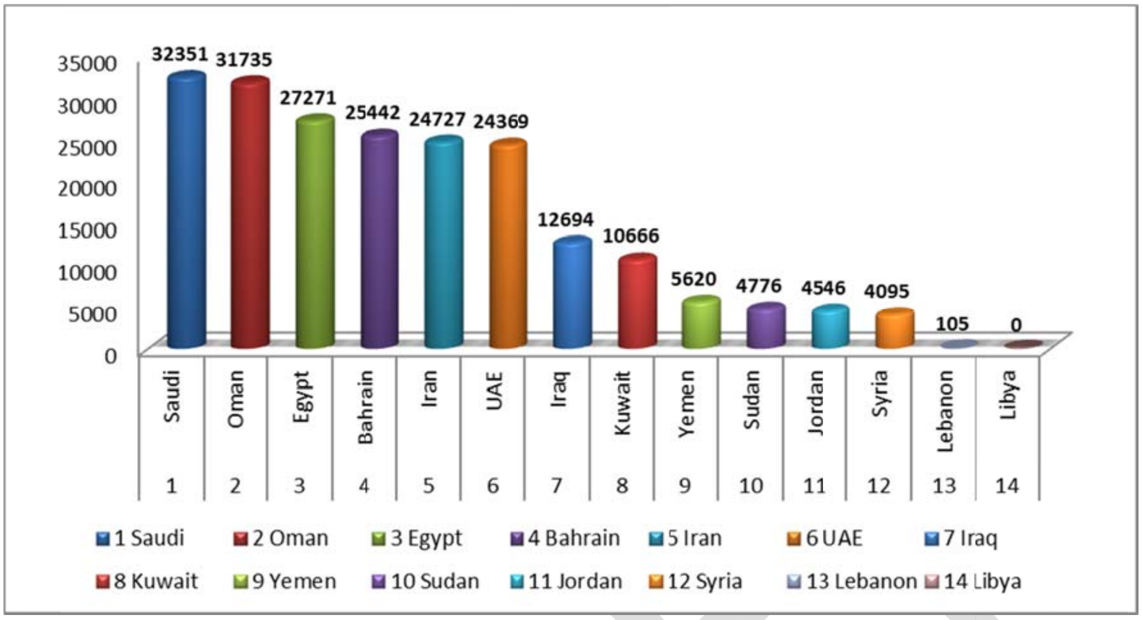
6.1 Appendix A – Member States Traffic Data Analysis:

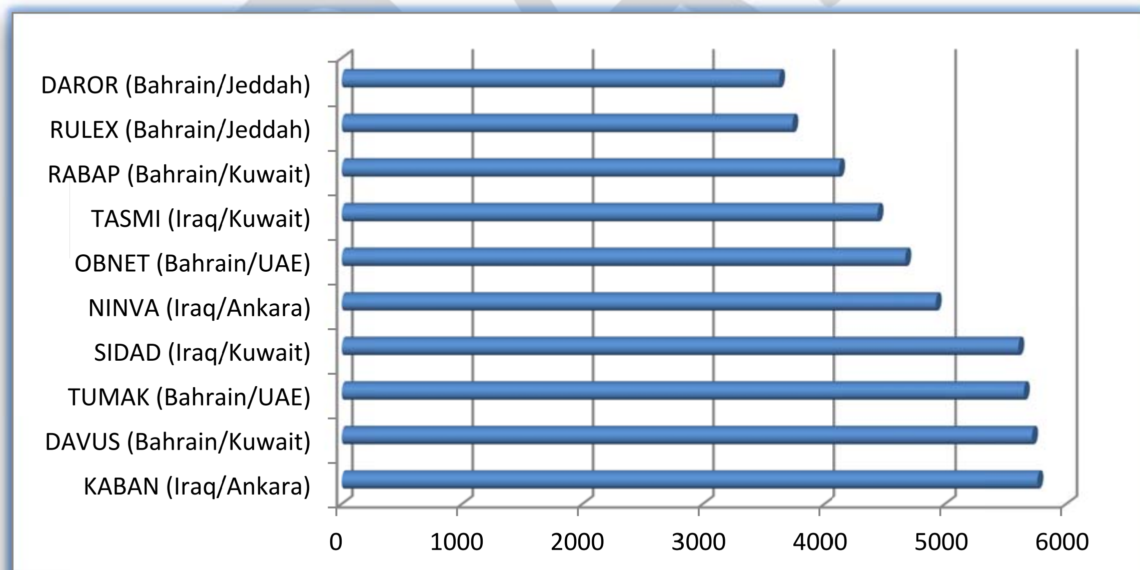
The quality of the SMR traffic data received from all State members varies from one State to another. The MIDRMA monitoring team spent a considerable time to correct the contents and fill all missing fields,

MID States RVSM Traffic Data used for the SMRs

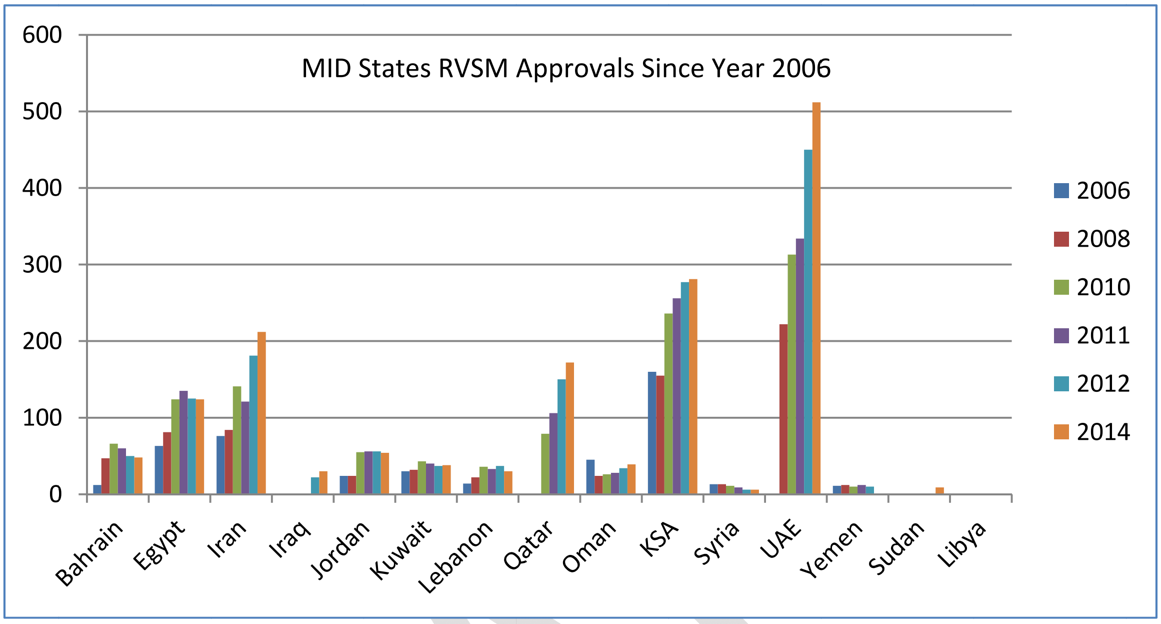
SN	MID States	Jun. 2009	Jan. 2011	Oct. 2012	Jan - Feb 2014	2012 vs.2014
1	Jeddah/Riyadh	22422	25499	30944	32351	4.55%
2	Muscat FIR	22520	28224	30357	31735	4.54%
3	Cairo FIR	19228	14270	26332	27271	3.57%
4	Bahrain FIR	24285	30099	39345	25442	**-35.34%**
5	Tehran FIR	10479	10638	17523	24727	41.11%
6	Emirates FIR	15868	21076	24676	24369	**-1.24%**
7	Baghdad FIR	0	0	10496	12694	**20.94%**
8	Kuwait FIR	3570	10364	13596	10666	**-21.55%**
9	Sana'a FIR	3490	4305	5170	5620	8.70%
10	Khartoum FIR	0	0	0	4776	
11	Amman FIR	8554	10689	6857	4546	**-33.70%**
12	Damascus FIR	9774	11719	8027	4095	**-48.98%**
13	Beirut FIR	2949	3845	1286	105	**-91.84%**
14	Tripoli FIR	0	0	0	0	
	Total	**143,139**	**170,728**	**214,609**	**28,397**	**-2.89%**



MID States FIRs Total Flights Number for SMR 2014 *(15 Jan. Till 15 Feb)*



The Busiest 10 Reporting Points in the MID Region FIRs (*15 Jan. Till 15 Feb)*



MID States RVSM Approvals Since Year 2006

6.2 Appendix B – MID States Registered ACFT Required Monitoring

The following tables show all Middle East registered ACFT requiring either HMU or GMU monitoring due to the absence of monitoring results during the period of data analysis.

Bahrain – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	Delmun Aviation Services	B732	1
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			**1**

Egypt – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	AIR ARABIA EGYPT	A320	1
2	AIR LEISURE	A342	2
3	AIRGO EGYPT	A320	1
4	AVIATOR	B735	1
5	CAIRO AVIATION	T204	1
6	EGYPTAIR AIRLINES	A342	2
7	EGYPTAIR CARGO	A30B	1
8	EGYTPTIAN AIRFORCE	GLF3	1
9	FLY EGYPT	B738	1
10	EXECUTIVE WINGS AVIATION	C680	1
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			**12**

Republic of Iran – Minimum Monitoring Requirements for RVSM Height Monitoring

eq.#	Operator	ACFT Type	Required Monitoring
1	ATA AIR	A320	2
2	ATRAK AIR	A320	2
3	Caspian Airlines	MD80	2
4	Civil Aviation	F2TH	1
5	Iran Air	A30B	2
6	Iran Air	A320	1
7	Iran Air	B722	2
8	Iran Air	B732	1
9	Iran Air	B742	2
10	Iran Air	B74S	2
11	Iran Air	F100	1
12	Iran Airtour	MD82	1
13	Iran Aseman Airlines	B722	2
14	Iran Aseman Airlines	F100	2
15	Iranian Air Transport Company	F100	1
16	Kish Air	F100	2
17	Mahan Air	A30B	2
18	Mahan Air	A320	2
19	Mahan Air	A310	2
20	Mahan Air	A343	2
21	Mahan Air	B744	2
22	Mahan Air	B743	2
23	Mahan Air	A30B	1
24	MERAJ AIR	A30B	1
25	MERAJ AIR	A320	1
26	QESHM AIR	A320	2
27	QESHM AIR	F100	1
28	QESHM AIR	A306	2
29	Pouya Air	IL76	2
30	Taban Air	MD80	1
31	ZAGROS	MD80	1
32	ZAGROS	A320	2

TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED	52

Iraq – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	Zagros Jet	A321	1
2	Al-Naser Airlines	B732	1
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			2

Jordan - Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	PETRA AIRLINES	A320	1
2	ROYAL JORDANIAN	B788	2
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			3

Kuwait - Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
Fully Compliant			

Lebanon - Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	Emerald Jets s.a.l	CL60	1
2	IBEX Air Charter	H25B	1
3	Wings of Lebanon	B737	1
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			3

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Oman – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT	Required
		Type	Monitoring
Fully Compliant			

Qatar – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT	Required
		Type	Monitoring
Fully Compliant			

Saudi Arabia - Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT	Required
		Type	Monitoring
1	Aeromedical Evacuation	GLF5	1
2	Aviation Knights	GLF3	1
3	Najd Aviation	C560	1
4	NAS 91	C550	2
5	Saudi Arabian Airlines	E170	2
6	Saudi Arabian Airlines	B748	1
7	SPA-EM	F900	1
8	SPA-EM	BE40	2
9	Alpha Star	A332	1
10	AIRASIA X BERHAD	A343	1
11	Orient Thai Airlines	B763	2
12	Orient Thai Airlines	B744	1
13	Wallan Aviation	C650	1
14	Glamor Aviation	LJ60	1

TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED	18

Syria – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
Fully Compliant			

Yemen – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	Yemen Airways	A310	2
2	Felix Airways	CRJ7	2
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			4

UAE – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	Al Jaber Aviation	H25B	1
2	Eastern Sky Jets	B733	2
3	Empire Aviation	CL60	1
4	Gulf Wings	RA40	1
5	Presidential Flight	B748	1
TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED			6

Sudan – Minimum Monitoring Requirements for RVSM Height Monitoring

Seq.#	Operator	ACFT Type	Required Monitoring
1	Air Sudan	A300	2
2	Air Sudan	A320	1
3	Air Sudan	E135	2
4	Nova Airline	CRJ2	2
5	Bard Airline	IL76	2

TOTAL NUMBER OF ACFT REQUIRED TO BE MONITORED	9

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6.3 Appendix C - RVSM MINIMUM MONITORING REQUIREMENTS (Updated on June 2014)

1. UPDATE OF MONITORING REQUIREMENTS TABLE AND WEBSITE. As significant data is obtained, monitoring requirements for specific aircraft types may change. When Table 1 below, is updated, The MIDRMA will advise all State members. The updated table will be posted on the MIDRMA website.

2. MONITORING PROGRAM. All operators that operate or intend to operate in the Middle East Region airspace where RVSM is applied are required to participate in the regional RVSM monitoring programme. Table 1 addresses requirements for monitoring the height-keeping performance of aircraft in order to meet regional safety objectives. In their application to the appropriate State authority for RVSM approval, operators must show a plan for meeting the applicable monitoring requirements. Initial monitoring should be completed as soon as possible but not later than 6 months after the issue of RVSM approval, the State of Registry that had issued an RVSM approval to an operator would be required to establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height-keeping performance monitored, at least once every two years or within intervals of 1000 flight hours per aeroplane, whichever period is longer.

3. AIRCRAFT STATUS FOR MONITORING. Aircraft engineering work that is required for the aircraft to receive RVSM airworthiness approval must be completed prior to the aircraft being monitored. Any exception to this rule will be coordinated with the State authority.

4. APPLICABILITY OF MONITORING FROM OTHER REGIONS. Monitoring data obtained in conjunction with RVSM monitoring programmes from other Regions can be used to meet regional monitoring requirements. The RMAs, which are responsible for administering the monitoring programme, have access to monitoring data from other Regions and will coordinate with States and operators to inform them on the status of individual operator monitoring requirements.

5. MONITORING PRIOR TO THE ISSUE OF RVSM OPERATIONAL APPROVAL IS NOT A REQUIREMENT. Operators should submit monitoring plans to the responsible civil aviation authority and to the MIDRMA that show how they intend to meet the requirements specified in Table1. Monitoring will be carried out in accordance with this table.

6. AIRCRAFT GROUPS NOT LISTED IN TABLE 1. Contact the MIDRMA for clarification if an aircraft group is not listed in Table 1 or for clarification of other monitoring related issues. An aircraft group not listed in Table 1 will probably be subject to Category 2 or Category 3 monitoring requirements.

7. TABLE OF MONITORING GROUPS. Table 2 shows the aircraft types and series that are grouped together for operator monitoring purposes.

8. TRAILING CONE DATA. Altimetry System Error estimations developed using Trailing Cone data collected during RVSM certification flights can be used to fulfill monitoring requirements. It must be documented, however, that aircraft RVSM systems were in the approved RVSM configuration for the flight.

9. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY. If an operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached table, the new airframes are not required to be monitored. If an operator adds new RVSM compliant airframes of an aircraft type for which it has NOT previously received RVSM operational approval, then the operator should complete monitoring in accordance with the attached table.

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MONITORING IS REQUIRED IN ACCORDANCE WITH THIS TABLE NOTE: MONITORING PRIOR TO THE ISSUE OF RVSM APPROVAL IS **NOT** A REQUIREMENT			
CATEGORY		**AIRCRAFT GROUP**	**MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP**
1	GROUP APPROVED: DATA INDICATES COMPLIANCE WITH THE RVSM MASPS	A124, A300, A306, A310-GE, A310-PW, A318, A320, A330, A340, A345, A346, A380, A3ST, AVRO, B712, B727, B737C, B737CL, B737NX, B747CL, B74S, B744-5, B744-10, B752, B753, B764, B767, B772, B773, BD100, BE40, C25A, **C25B**, C510, C525, C560, C56X, C650, C680, C750, CARJ, CL600, CL604, CL605, CRJ7, CRJ9, DC10, E135-145, E170-190, E50P, E55P, F100, F900, FA7X, GALX, GLEX, GLF4, GLF5, H25B-800, J328, LJ40, LJ45, LJ60, MD10, MD11, MD80, MD90, PRM1, T154	Two airframes from each fleet of an operator to be monitored
2	GROUP APPROVED: INSUFFICIENT DATA ON APPROVED AIRCRAFT	Other group aircraft other than those listed above including: A148, A158, **A350**, AC90, AC95, **AJ27**, AN72, ASTR, ASTR-SPX, B701, B703, B731, B732, B744-LCF, B748, B787, **BCS1**, BD700, BE20, BE30, C25C, C441, C500, C550-B, C550-II, C550-SII, CRJ10, D328, DC85, DC86-87, DC91, DC93, DC94 DC95, **E120**, E45X, EA50, F2TH, F70, FA10, FA20, FA50, G150, G280, GLF2, GLF2B, GLF3, GLF6, H25B-700, H25B-750, H25C, HA4T, **HDJT**, IL62, IL76, IL86, IL96, L101, L29B-2, L29B-731, LJ23, LJ24, LJ25, LJ28, LJ31, LJ35-36, LJ55, MU30, P180, PAY4, PC12, SB20, SBR1, SBR2, **SU95**, T134, T204, T334, TBM, WW24, YK42	60% of airframes (round up if fractional) from each fleet of an operator **or** individual monitoring
3	Non-Group	Aircraft types for which no generic compliance method exists: A225, AN12, AN26, B190, B462, B463, B720, B74S-SOFIA, BA11, BE9L, GSPN, H25A, L29A, PAY3, R721, R722, SJ30, STAR	100% of aircraft shall be monitored

Table 1: MONITORING REQUIREMENTS TABLE (Civilian)

Table 2: MONITORING GROUPS FOR AIRCRAFT CERTIFIED UNDER GROUP APPROVAL REQUIREMENTS

Monitoring Group	A/C ICAO	A/C Type	A/C Series
A124	A124	AN-124 RUSLAN	ALL SERIES
A148	A148	AN-148	100
A300	A30B	A300	B2-100, B2-200, B4-100, B4-100F, B4-120, B4-200, B4-200F, B4-220, B4-220F, C4-200
A306	A306	A300	600, 600F, 600R, 620, 620R, 620RF
A310-GE	A310	A310	200, 200F, 300, 300F
A310-PW	A310	A310	220, 220F,320
A318	A318	A318	ALL SERIES
A320	A319 A320 A321	A319 A320 A321	CJ , 110, 130 110, 210, 230 110, 130, 210, 230
A330	A332 A333	A330 A330	200, 220, 240 300, 320, 340
A340	A342 A343	A340 A340	210 310
A345	A345	A340	500, 540
A346	A346	A340	600, 640
A380	A388	A380	800, 840, 860
A3ST	A3ST	A300	600R ST BELUGA
AC95	AC95	AERO COMMANDER 695	A
AN72	AN72	AN-72 AN-74	ALL SERIES
ASTR	ASTR	1125 ASTRA	ALL SERIES
ASTR-SPX	ASTR	1125 ASTR SPX, G100	ALL SERIES
AVRO	RJ1H RJ70 RJ85	AVRO AVRO AVRO	RJ100 RJ70 RJ85
B701	B701	B707	100, 120B
B703	B703	B707	320, 320B, 320C
B703-E3	B703	B707	E-3
B712	B712	B717	200
B727	B721 B722	B727 B727	100, 100C, 100F,100QF 200, 200F
B731	B731	B737	100
B732	B732	B737	200, 200C
B737CL	B733 B734 B735	B737 B737 B737	300 400 500

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Monitoring Group	A/C ICAO	A/C Type	A/C Series
B737NX	B736 B737 B738 B739	B737 B737 B737 B737	600 700, BBJ 800, BBJ2 900
B737C	B737	B737	700C
B747CL	B741 B742 B743	B747 B747 B747	100, 100B, 100F 200B, 200C, 200F, 200SF 300
B74S	B74S	B747	SR, SP
B744-5	B744	B747	400, 400D, 400F (With 5 inch Probes up to SN 25350)
B744-10	B744	B747	400, 400D, 400F (With 10 inch Probes from SN 25351)
B744-LCF	B744	B747	LCF
B748	B748	B747	8F, 81
B752	B752	B757	200, 200PF, 200SF
B753	B753	B757	300
B767	B762 B763	B767 B767	200, 200EM, 200ER, 200ERM, 300, 300ER, 300ERF
B764	B764	B767	400ER
B772	B772	B777	200, 200ER, 200LR, 200LRF
B773	B773	B777	300, 300ER
BD100	CL30	CHALLENGER 300	ALL SERIES
BD700	GL5T	GLOBAL 5000	ALL SERIES
BE20	BE20	200 KINGAIR	ALL SERIES
BE30	BE30	B300 SUPER KINGAIR B300 SUPER KINGAIR 350	ALL SERIES
BE40	BE40	BEECHJET 400 BEECHJET 400A BEECHJET 400XP HAWKER 400XP	ALL SERIES
C130	C130	HERCULES	H, J
C17	C17	C-17 GLOBEMASTER 3	ALL SERIES
C441	C441	CONQUEST II	ALL SERIES
C5	C5	C5	ALL SERIES
C500	C500	500 CITATION 500 CITATION I 501 CITATION I SINGLE PILOT	ALL SERIES
C510	C510	MUSTANG	ALL SERIES
C525	C525	525 CITATIONJET 525 CITATIONJET I 525 CITATIONJET PLUS	ALL SERIES
C25A	C25A	525A CITATIONJET II	ALL SERIES
C25B	C25B	CITATIONJET III	ALL SERIES

Monitoring Group	A/C ICAO	A/C Type	A/C Series
		525B CITATIONJET III	
C25C	C25C	525C CITATIONJET IV	ALL SERIES
C550-552	C550	552 CITATION II (USN)	ALL SERIES
C550-B	C550	550 CITATION BRAVO	ALL SERIES
C550-II	C550	550 CITATION II 551 CITATION II SINGLE PILOT	ALL SERIES
C550-SII	C550	S550 CITATION SUPER II	ALL SERIES
C560	C560	560 CITATION V 560 CITATION V ULTRA 560 CITATION V ENCORE	ALL SERIES
C56X	C56X	560 CITATION EXCEL	ALL SERIES
C650	C650	650 CITATION III 650 CITATION VI 650 CITATION VII	ALL SERIES
C680	C680	680 CITATION SOVEREIGN	
C750	C750	750 CITATION X	ALL SERIES
CARJ	CRJ1 CRJ2 CRJ2 CRJ2	REGIONALJET REGIONALJET CHALLENGER 800 CHALLENGER 850	100, 100ER, 200, 200ER, 200LR ALL SERIES ALL SERIES
CRJ7	CRJ7	REGIONALJET	700, 700ER, 700LR
CRJ9	CRJ9	REGIONALJET	900, 900ER, 900LR
CL600	CL60	CL-600 CL-601	CL-600-ALL SERIES CL-601- ALL SERIES,
CL604	CL60	CL-604	CL-604- ALL SERIES
CL605	CL60	CL-605	CL-605- ALL SERIES
DC10	DC10	DC-10	10, 10F, 15, 30, 30F, 40, 40F
D328	D328	328 TURBOPROP	100
DC85	DC85	DC-8	50, 50F
DC86-87	DC86 DC87	DC-8 DC-8	61, 62, 63 71, 72, 73
DC93	DC93	DC-9	30, 30F
DC95	DC95	DC-9	51
E135-145	E135 E145	EMB-135 EMB-145	ALL SERIES
E170-190	E170 E170 E190 E190	EMB-170 EMB-175 EMB-190 EMB-195	ALL SERIES
E120	E120	EMB-120 BRASILIA	ALL SERIES
E50P	W50P	PHENOM 100	ALL SERIES
EA50	EA50	ECLIPSE	ALL SERIES
F100	F100	FOKKER 100	ALL SERIES

Monitoring Group	A/C ICAO	A/C Type	A/C Series
F2TH	F2TH	FALCON 2000 FALCON 2000-EX FALSON 2000LX	ALL SERIES
F70	F70	FOKKER 70	ALL SERIES
F900	F900	FALCON 900 FALCON 900DX FALCON 900EX	ALL SERIES
FA10	FA10	FALCON 10	ALL SERIES
FA20	FA20	FALCON 20 FALCON 200	ALL SERIES
FA50	FA50	FALCON 50 FALCON 50EX	ALL SERIES
FA7X	FA7X	FALCON 7X	ALL SERIES
G150	G150	G150	ALL SERIES
GALX	GALX	1126 GALAXY G200	ALL SERIES
GLEX	GLEX	BD-700 GLOBAL EXPRESS	ALL SERIES
GLF2	GLF2	GULFSTREAM II (G-1159)	ALL SERIES
GLF2B	GLF2	GULFSTREAM IIB (G-1159B)	ALL SERIES
GLF3	GLF3	GULFSTREAM III (G-1159A)	ALL SERIES
GLF4	GLF4	GULFSTREAM IV (G-1159C) G300 G350 G400 G450	ALL SERIES
GLF5	GLF5	GULFSTREAM V (G-1159D) G500 G550	ALL SERIES
H25B-700	H25B	BAE 125 / HS125	700A, 700B
H25B-750	H25B	HAWKER 750	ALL SERIES
H25B-800	H25B	BAE 125 / HS125 HAWKER 800XP HAWKER 800XPI HAWKER 800 HAWKER 850XP HAWKER 900XP HAWKER 950XP	800A, 800B ALL SERIES
H25C	H25C	HAWKER 1000	ALL SERIES
HA4T	HA4T	HAWKER 4000	ALL SERIES
IL62	IL62	ILYUSHIN-62	ALL SERIES
IL76	IL76	ILYUSHU-76	ALL SERIES
IL86	IL86	ILYUSHIN-86	ALL SERIES
IL96	IL96	ILYUSHIN-96	ALL SERIES

Monitoring Group	A/C ICAO	A/C Type	A/C Series
J328	J328	328JET	ALL SERIES
KC135	B703	KC-135	ALL SERIES
L101	L101	L-1011 TRISTAR	ALL SERIES
L29B-2	L29B	L-1329 JETSTAR 2	ALL SERIES
L29B-731	L29B	L-1329 JETSTAR 731	ALL SERIES
LJ31	LJ31	LEARJET 31	ALL SERIES
LJ35-36	LJ35 LJ36	LEARJET 35 LEARJET 36	ALL SERIES ALL SERIES
LJ40	LJ40	LEARJET 40	ALL SERIES
LJ45	LJ45	LEARJET 45	ALL SERIES
LJ55	LJ55	LEARJET 55	ALL SERIES
LJ60	LJ60	LEARJET 60	ALL SERIES
MD10	MD10	MD-10	ALL SERIES
MD11	MD11	MD-11	COMBI, ER, FREIGHTER, PASSENGER
MD80	MD81 MD82 MD83 MD87 MD88	MD-80 MD-80 MD-80 MD-80 MD-80	81 82 83 87 88
MD90	MD90	MD-90	30, 30ER
MU30	MU30	MU-300 DIAMOND	1A
P180	P180	P-180 AVANTI	ALL SERIES
PC12	PC12	PC-12	ALL SERIES
PRM1	PRM1	PREMIER 1	ALL SERIES
SB20	SB20	SAAB 2000	ALL SERIES
SBR1	SBR1	SABRELINER 40 SABRELINER 60 SABRELINER 65	ALL SERIES
SBR2	SBR2	SABRELINER 80	ALL SERIES
T134	T134	TU-134	A, B
T154	T154	TU-154	A, B, M, S
T204	T204 T224 T234	TU-204 TU-224 TU-234	100, 100C, 120RR 200, 214, C
T334	T334	TU-334	ALL SERIES
TBM	TBM7 TBM8	TBM-700 TBM-850	ALL SERIES
WW24	WW24	1124 WESTWIND	ALL SERIES
YK42	YK42	YAK-42	ALL SERIES

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6.4 Appendix D – MIDRMA Duties and Responsibilities

The Middle East Regional Monitoring Agency (MIDRMA) has the following duties and responsibilities:

1- To establish and maintain a central registry of State RVSM approvals of operators and aircraft using the Middle East Region airspace where RVSM is applied.

2- To initiate checks of the "approval status" of aircraft operating in the relevant RVSM airspace, identify non-approved operators and aircraft using RVSM airspace and notify the appropriate State of Registry/State of the Operator and other RMAs, accordingly.

3- To establish and maintain a database containing the results of height keeping performance monitoring and all altitude deviations of 300 ft or more within Middle East Region airspace, and to include in the database the results of MID RMA requests to operators and States for information explaining the causes of observed large height deviations.

4- Provide timely information on changes of monitoring status of aircraft type classifications to State Authorities and operators.

5- To assume overall responsibility for assessing compliance of operators and aircraft with RVSM height keeping performance requirements in conjunction with RVSM introduction in the Middle East Region.

6- To facilitate the transfer of approval data to and from other RVSM Regional Monitoring Agencies.

7- To establish and maintain a database containing the results of navigation error monitoring.

8- To conduct safety analysis for RVSM operations in the MID Region and prepare RVSM Safety Monitoring Reports (SMR) as instructed by MIDANPIRG and the MID RMA Board.

9- To conduct readiness and safety assessments to aid decision-making in preparation for RVSM implementation in those FIRs where RVSM is not yet implemented.

10- To carry out post-implementation safety assessments, as appropriate.

11- Based on information provided by States related to planned changes to the ATS routes structure, advise States and MIDANPIRG on the effects of such changes on the safe RVSM operations in the MID Region.

12- To liaise with other Regional Monitoring Agencies and organizations to harmonise implementation strategies.

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6.5 Appendix E – Definitions and Explanations of RVSM Terms

Note: The following definitions are taken from ICAO Document 9574 (2nd Edition) **[1]** - Manual on Implementation of a 300m (1000ft) vertical separation minimum between FL290 and FL410 inclusive.

Collision Risk

The expected number of mid-air aircraft accidents in a prescribed volume of airspace for a specific number of flight hours due to loss of planned separation.

Flight technical error (FTE)

The difference between the altitude indicated by the altimeter display being used to control the aircraft and the assigned altitude/flight level.

Height-keeping Performance

The observed performance of an aircraft with respect to adherence to cleared flight level.

Probability of vertical overlap (Pz(1000))

The probability that two aircraft nominally separated by the vertical separation minimum are in fact within a distance of λz of each other, i.e. in vertical overlap. This probability can be calculated from the distribution of total vertical error.

Target level of safety

A generic term representing the level of risk which is considered acceptable in particular circumstances.

Technical height-keeping performance (or error)

That part of the height-keeping performance (or error) which is attributable to the combination of ASE and autopilot performance in the vertical dimension.

Total vertical error (TVE)

The vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level). TVE can be split into two components, altimetry system error (ASE) and flight technical error (FTE). TVE=ASE + FTE.

Vertical-collision risk

That expected number of mid-air aircraft accidents in a prescribed volume of airspace for a specific number of flight hours due to loss of planned vertical separation. Note: one collision is considered to produce two accidents.

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6.6 Appendix F – Abbreviations

AAD	Assigned altitude deviation
ACAS	Airborne collision avoidance system
ACC	Area control center
AD	Altitude deviation
ADR	Altitude deviation report
ASE	Altimetry system error
ATC	Air traffic control
ATM	Air traffic management
ATS	Air traffic services
CAA	Civil aviation authority
CFL	Cleared flight level
CFR	Coordination failure report
CRA	Collision risk assessment
CRM	Collision risk model
DE	Double exponential density
FIR	Flight information region
FL	Flight level
FPL	Flight plan
FTE	Flight technical error
GAT	General air traffic
GDE	Gaussian double exponential density
GMU	GPS height-monitoring unit
GPS	Global positioning system
HMU	Height-monitoring unit
HOF	Horizontal overlap frequency
ICAO	International Civil Aviation Organization
JAA	Joint Aviation Authorities
LHD	Large height deviations
MASPS	Minimum aircraft system performance specification
MIDRAS	MID Risk Analysis Software
MMR	Minimum Monitoring Requirement
MTCD	Medium term conflict detection
OAT	Operational air traffic
OLDI	On-line data interchange
OVR	Overall vertical risk
PISC	Pre-implementation safety case
PSSA	Preliminary system safety assessment
RMA	Regional Monitoring Agency
RVSM	Reduced vertical separation minimum

SMR	Safety Monitoring Report
TCAS	Traffic Alert and Collision Avoidance System
TLS	Target level of safety
TVE	Total vertical error
TVR	Technical vertical risk
UAC	Upper Area Control Center
UIR	Upper Flight Information Region
VSM	Vertical Separation Minimum

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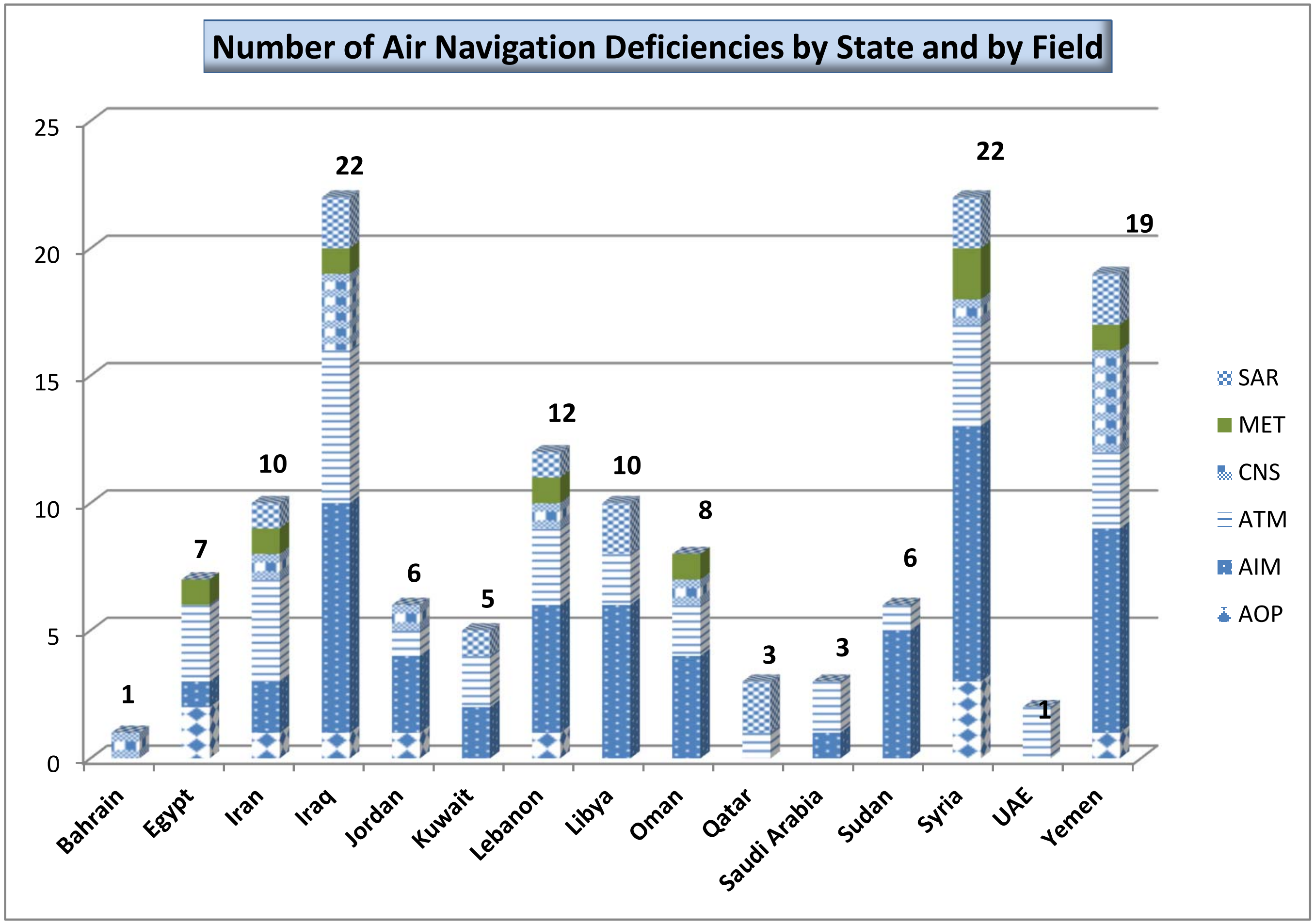

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
AOP	0	2	1	1	1	0	1	0	0	0	0	0	3	0	1	**10**
AIM	0	1	2	9	3	2	5	6	4	0	1	5	10	0	8	**56**
ATM	0	3	4	6	1	2	3	2	2	1	2	1	4	2	3	**36**
CNS	1	0	1	3	1	0	1	0	1	0	0	0	1	0	4	**13**
MET	0	1	1	1	0	0	1	0	1	0	0	0	2	0	1	**8**
SAR	0	0	1	2	0	1	1	2	0	2	0	0	2	0	2	**13**
TOTAL	**1**	**7**	**10**	**22**	**6**	**5**	**12**	**10**	**8**	**3**	**3**	**6**	**22**	**2**	**19**	**136**

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