INTERNATIONAL CIVIL AVIATION ORGANIZATION

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

REPORT OF THE SEVENTH MEETING OF CNS SUB-GROUP

(Cairo, Egypt, 31 May - 02 June 2016)

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

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

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PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The Seventh meeting of the MIDANPIRG Communication, Navigation and Surveillance Sub-Group (CNS SG/7) was held at the ICAO MID Regional Office, Cairo, Egypt, 31 May - 02 June 2016.

2. OPENING

2.1 The Meeting was opened by Mr. Mohamed Khalifa Rahma, Regional Director, ICAO Middle East (MID) Regional Office, who extended a warm welcome to all participants to Cairo. Mr. Rahma highlighted few subjects that will be considered by the meeting: the ASBU Block 0 modules, the ADS-B implementation and the outcomes of MID IP Network Workshop held with Support of the ICAO APAC, the MAEP Board and MSG/5 related Conclusions.

2.2 Mr. Rahma highlighted the outcome of the GNSS Workshop held jointly with ACAC and the importance of the GNSS being the sensor that supports all PBN specifications. PBN is ICAO and worldwide priority for implementation. Furthermore, he indicated the issues related to the GNSS signals interference and GNSS vulnerabilities that need to be addressed by the meeting.

2.3 Finally, Mr. Rahma drew the attention of the meeting to the invitation letter sent on 12 April 2016 from ICAO HQ to participate in the ATCO and/or ATSEP Competency-based Training and Assessment Workshop, (Montreal 28 to 30 June 2016). He wished the meeting every success in its deliberations.

3. ATTENDANCE

3.1 The meeting was attended by a total of thirty nine (39) participants, from nine (9) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Oman, Saudi Arabia and United Arab Emirates) and one (1) International Organization (IATA). The list of participants is at the **Attachment A**.

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Mr. Ali Humaid Al-Adawi the Standards Officer, at Directorate General of Civil Aviation and Meteorology (DGCAM) of Oman. He highlighted the importance to discuss issues openly and share the experience in order to gain maximum benefit from the meeting. He mentioned the success of the WRC-15 outcomes in supporting the ICAO position being a great achievement.

4.2 Mr. Raza Gulam RO/CNS was the Secretary of the meeting.

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 MIDANPIRG/15 and other meetings Conclusions and Decisions relevant to CNS

Agenda Item 3: Global Developments related to CNS

Agenda Item 4: CNS planning and implementation in the MID Region

Agenda Item 5: Review of Air Navigation Deficiencies in the CNS Field

Agenda Item 6: Future Work Programme

Agenda Item 7: Any other business

7. CONCLUSIONS AND DECISIONS - DEFINITIONS

7.1 All MIDANPIRG Sub-Groups and Task Forces record their actions in the form of Conclusions and Decisions with the following significance:

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

b) **Decisions** deal with matters of concern only to the MIDANPIRG and its contributory bodies.

8. LIST OF DRAFT CONCLUSIONS AND DRAFT DECISIONS

DRAFT CONCLUSION 7/1:	*FTBP TESTING DOCUMENT*
DRAFT DECISION 7/2:	*TERMS OF REFERENCE OF THE MIDAMC STG*
DRAFT CONCLUSION 7/3:	*MID AFS CONTINGENCY ARRANGEMENTS*
DRAFT CONCLUSION 7/4:	*MID IP NETWORK PROJECT (CRV)*
DRAFT DECISION 7/5:	*MID EANP VOLUMES II AND III –CNS PART*
DRAFT CONCLUSION 7/6:	*ADS-B IMPLEMENTATION STATUS MONITORING TEMPLATE*

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 In accordance with the MIDANPIRG Procedural Handbook, the meeting had the election of chairpersons on its agenda. However the meeting did not reach consensus, accordingly, the meeting agreed to elect the chairpersons during CNS SG/8 meeting.

REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG/15 AND OTHER MEETINGS CONCLUSIONS AND DECISIONS RELEVANT TO CNS

2.1 The meeting noted the status of the MIDANPIRG/15, MAEP Board/2 and MSG/5 Conclusions and Decisions relevant to CNS SG Work Programme and the follow-up actions taken by concerned parties as at **Appendix 2A**.

REPORT ON AGENDA ITEM 3: GLOBAL AND REGIONAL DEVELOPMENTS RELATED TO CNS

Global and Regional Developments

3.1 The subject was addressed in WP/3 and PPT/1 presented by the Secretariat, the meeting was apprised of the outcome of the following panel meetings:

Navigation Systems Panel (NSP)

3.2 The meeting noted that NSP/2 was held from 1 to 11 December 2015, among other developments, the panel among other, has completed work on the rationalization strategy, which will be included in Annex 10, Volume I, as a new Attachment H, as part of Amendment 90 to the Annex (applicable November 2016).

3.3 The two main developments from NSP/2 in the of area GNSS augmentation systems are:

a) Category II/III Ground-based Augmentation System (GBAS): the development of SARPs for this system is approaching finalization as there are some pending validation issues that will be addressed by NSP/3, and will be held in December 2016; and

b) Dual-frequency Satellite-based Augmentation System (SBAS) and GBAS: with the introduction of dual-frequency operation in the core GNSS constellations, augmentation systems will need to evolve accordingly, to support the augmentation of signals on both frequencies (e.g. L1/L5 for GPS). The NSP has undertaken initial work in preparation for the development of the related SARPs.

3.4 The panel developed new guidance material identifying several categories of functions falling under the broad scope of GNSS monitoring (GNSS performance assessment, GNSS operational status monitoring, GNSS interference monitoring and GNSS data recording). The material focuses in particular on providing guidance to States on the possible implementation for the GNSS performance assessment function, defined as a periodic offline activity that may be performed by a State or delegated entity to verify that GNSS performance parameters conform to the relevant Annex 10 Standards. Special consideration was given to ensuring that the new guidance provided did not create any additional regulatory burden. Monitoring provisions considered in the guidance range from basic (such as the use of public reports provided by GNSS service providers) to more advanced (such as dedicated regional or national monitoring networks).

Frequency Spectrum Management Panel (FSMP)

3.5 The FSMP had one Working Group meeting since WRC-15, so it is still early days with this WRC cycle. The “first draft” of a potential ICAO Position is at Appendix E to the Report of FSMP-WG/2, that could be accessed at website:
http://www.icao.int/safety/FSMP/Lists/Meetings/DispForm.aspx?ID=4

3.6 The FSMP-WG/2 proposed updates to the ICAO Frequency Spectrum Policy and to the ICAO Frequency Spectrum Policy (Doc 9718), also reviewed the content of the form to be distributed by IATA to its members for gathering data on actual radio altimeter interference cases.

3.7 With regard to Global Aeronautical Distress Safety System (GADSS), the FSMP-WG/2 found the work of the International Telecommunications Union – Telecommunications Sector (ITU-T) Telecommunication Standardization Advisory Group (TSAG) interesting however its suggestion regarding a "mandate for real time flight data streaming" did not appear to be in-line with other reported approaches directed toward "event driven flight data download". The FSMP-WG/2 discussed the need for technological applications to directly satisfy aviation operational requirements and to result in tangible operational benefits in a cost effective manner. The decision on the approach to be taken would obviously be important to efforts on WRC-19 Agenda Item 1.10 (GADSS).

Aeronautical Surveillance Panel

3.8 The meeting was apprised of outcome the Third meeting of the Surveillance Panel (SP)'s Aeronautical Surveillance Working Group (SP-ASWG/3) that was held in London, United Kingdom, between 11 and 14 April 2016. The meeting among other discussed the Aireon Spaced Based ADS-B Implementation Status, Draft Guidance Material relating to II Code Coordination Procedures, Security Issues associated with Surveillance Systems and Clarification of proposed Guidance Material regarding Security of Surveillance Systems.

3.9 The meeting encouraged States to take into consideration the global and regional developments related to CNS when developing their national plans.

ATSEP Training

3.10 The subject was addressed in WP/7, presented by UAE. The meeting recalled that ICAO had developed competency frameworks for Air Traffic Safety Electronics Personnel (ATSEP) as a means to foster high quality and globally uniform training. However, the ICAO Commission did not come to consensus on whether sufficient safety case was available to justify the development of International Licensing Provisions for personnel outside of the scope of the existing disciplines covered under Annex 1. The Commission noted that the absence of International Licensing Provisions would not preclude States or Regions from establishing their own National Certification or Licensing requirements.

3.11 The meeting reiterated that States develop their training programme for ATSEP in line with the guidance provided in the Training Manual (Doc 7192) Part E-2. In this regards, the meeting noted that UAE has decided to fully implement the programs laid out in ICAO Doc 9868 PANS – Training and Training Manual Doc 7192 part E-2, also adopt and adapt the provisions set down by EASA 1035/2011.

3.12 Based on the above, the meeting encourage UAE to share their experience and framework developed with the Region at CNS SG/8, for further appropriate actions that could benefit the Region.

3.13 The meeting was informed that many States have developed and using their framework for ATSEP. Accordingly, the meeting encourage all States to share their experience and present to the next CNS SG meetings.

REPORT ON AGENDA ITEM 4: CNS PLANNING AND IMPLEMENTATION IN THE MID REGION

Frequency Finder

4.1 The subject was addressed in WP/9 presented by the Secretariat. The meeting noted that the ICAO has started rolling out a special version of Frequency Finder through Workshops in the Regions. This tool provides the option to maintain the ICAO Global COM list 3 database for VHF COM frequency assignments in the band 117.975 – 137 MHz.

4.2 The meeting noted that the ICAO MID Regional Office will conduct Frequency Finder Workshop (Cairo, Egypt, 9-13 October 2016). The Workshop will address incompatibility allocations together with a proposed course of action, also during the Workshop, States will need to update their frequency lists on the Global COM List database.

4.3 The meeting requested ICAO to make the tool available to States before the Workshop in order that the States have first-hand training before the Workshop. Accordingly, the tool will be available for download from the ICAO MID Regional Office website. The meeting urged States to actively participate in the Frequency Finder Workshop.

FSS Spectrum for the use of UAS

4.4 The subject was addressed in WP/6 presented by Egypt. The meeting noted the challenges, integration requirements to establish appropriate Unmanned Aircraft System (UAS), Control and Non-payload Communications (CNPC) links between ATC and UA operator and possible spectrum requirements and regulatory actions, including appropriate spectrum allocations to support integration of UAS into Non-Segregated Airspace (controlled airspace).

4.5 The meeting was informed that WRC-15 (2 – 27 Nov 2015) already allocated FSS spectrum for the use of UAS, based on a new Resolution (ITU Resolution 155 (WRC-15), which has a large number of Resolves, some of which will require further work. The Resolution is expected to come into full force in 2023. The meeting encouraged States to follow-up the relevant developments in the Frequency Spectrum Management Panel and Working Party 5B and Working Party 4A meetings and support the ICAO position at the WRCs.

VSAT Algorithm

4.6 The subject was addressed in WP/17 presented by Iran. The meeting was informed about Iran solution using locally developed algorithm for telecommunication infrastructure networks problems in communication between the control centre and remote control air to ground using VSAT.

Removal of CIDIN

4.7 The subject was addressed in WP/4, presented by Secretariat. The meeting noted that five (5) MID States have CIDIN links (Bahrain, Egypt, Lebanon, Saudi and UAE), and all these States already have AMHS system in place. The meeting urged States to take necessary measures and seek the support from MIDAMC Team, and plan for removal of these outdated connections as soon as possible.

AMHS Communication Paths for ROC

4.8 The subject was addressed in WP/4 presented by the Secretariat. The meeting reviewed and updated the plan to implement AMHS communication paths between Jeddah-Vienna and Bahrain-Vienna to enable the exchange of OPMET data in digital format between the MID and EUR Regions as at **Appendix 4A**. It was noted that Athens and Nicosia, which are the entry/exit points between the MID and EUR Regions, had progressed in the procurement of the AMHS.

AMHS Gateway for the MID with SITA

4.9 The subject was addressed in WP/4 and WP/14 presented by the Secretariat and Jordan. The meeting noted that SITA is currently engaged with Jordan to prepare for IP Network Connectivity and AMHS Interoperability Testing, which is progressing well. Similar effort is initiated for AMHS interconnection with Qatar, according to SITA-AMHS gateway interconnection topology. Furthermore, Lebanon has an AFTN connection with SITA and established IP in order to migrate to SITA type X connection and to be additional connection for the Region.

4.10 The meeting noted that SITA registered new ATS Address, using XF scheme and PRMD value "SITA". For successful implementation, every Com Centre was required to validate the AMHS User Addresses published by the AMC Application. AMHS Com Centres were required to ensure routing exists for the PRMD SITA to either the MTCU or to the Regional SITA Gateway.

4.11 The Validation process involves checking addresses in the User Address Table that they exist for States in coordination with the Airlines. The target completion date was 10th April, 2016. However, it was highlighted that if the User Addresses that are not coordinated/unknown to COM Centre, could be deleted. Eleven (11) MID States validated their addresses (Bahrain, Egypt, Iran, Jordan, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan and UAE). Kuwait had no entries in the table.

4.12 Furthermore, the Validation process decreased significantly the number of entries in the table; some States in the MID and worldwide did not provide inputs. Accordingly, the EANPG AFSG/20 meeting extended the validation exercise one more cycle between 29th April and 6th May 2016. All COM Centres worldwide were encouraged to again validate the AMHS User Addresses. The EUR AMC operator was tasked to reduce the addresses classed as ‘ATC Reserved’ (ICAO Doc 8585) before implementation and to focus the effort on the ‘EUR extended AMHS Island’.

4.13 Furthermore, SITA was requested to coordinate between the remaining State COM Centers that still maintain ‘ATC Reserved’ users in the AMHS User Address Table before it is implemented on 26 May 2016. During the last cycle, Iraq validated their Addresses. Saudi Arabia and UAE have updated their entries as well.

4.14 The meeting noted that some Airlines use same identical address for SITA and AFS networks, which can no more be used with the introduction of SITA type X gateway. The gateway has a mechanism called "White list" which allows traffic from registered users in the User Address Table to pass the gateway from SITA to AFS network and block any others. Therefore, some Airlines had difficulties managing this issue. MIDAMC with concerned States coordinated changing the Addresses with SITA.

4.15 On 26 May 2016, two operational AMHS SITA Gateways in the EUR Region within the AFS: EDDD and LSSS COM Centres were implemented. Due to the fact that the connection between the MID and EUR/NAT Region is still via AFTN, all users within the MID Region were advised not to implement the AMHS User Address Table and to route PRMD= SITA to Gateway. However, this shall not stop the validation of their AMHS User Addresses.

4.16 The meeting noted that large scale change in the routing tables of COM Centers in the MID Region will be activated once any of the regional SITA Type X Connection is ready or when having AMHS Interregional Connection with EUR/NAT.

4.17 The meeting urged States to continue validation of their AMHS User Addresses and coordinate closely with their users and MIDAMC during the coming cutover, and requested the MIDAMC send an official letter to SITA to speed up the establishment of SITA Type X connection is the MID Region. It was also agreed that ICAO MID Regional Office will assist in contacting Syria and Yemen.

File Transfer Body Part (FTBP) Trial

4.18 The meeting recalled that the World Metrological Organization (WMO) initially decided to migrate from alphanumeric codes to BUFR for the representation of Meteorological data; therefore, ATS Extended Service was introduced to meet the Metrological requirement. At a later stage, the WMO decided to use XML.

4.19 The meeting noted that most of the AHMS systems in the MID Region can run the extended services and especially File Transfer Body Part (FTBP), and these services can provide significant operational improvements. Accordingly, the MIDANPIRG/15 meeting agreed that trials be conducted for the use of extended services.

4.20 Based on the above, the MSG/5 meeting supported the MIDAMC STG/3 proposal that trials be conducted between Jordan and Egypt (May 2016). In this regard, the meeting noted that the trials already started. Furthermore, the MIDAMC STG/3 developed testing document for the FTBP trial. The MSG/5 meeting noted the efforts of the MIDAMC STG/3 meeting in developing the testing document for the File Transfer Body Part (FTBP) and urged States to participate in the trials. However, the document is now under validation waiting for the completion of Egypt/Jordan trials. Accordingly, the meeting requested that the results be incorporated in the document and presented to MIDANPIRG/16 for publication as one of the MID Documents and agreed to the following Draft Conclusion:

DRAFT CONCLUSION 7/1: FTBP TESTING DOCUMENT

*That, the First Edition of File Transfer Body Part (FTBP) Testing Document at **Appendix 4B** is endorsed; and be published as MID Document.*

Terms of References of MIDAMC STG

4.21 The meeting noted that the MAEP Board/2 and MSG/5 tasked the MIDAMC STG to follow-up the IP Network Project and to act as the MID CRV-OG (Common aeRonautical VPN – Operational Group). Accordingly, the meeting reviewed and updated the TOR for the MIDAMC STG as at **Appendix 4C** and agreed to the following Draft Decision:

DRAFT DECISION 7/2: TERMS OF REFERENCE OF THE MIDAMC STG

*That, the Terms of Reference and Work Programme of the MIDAMC STG be updated as at **Appendix 4C**.*

4.22 The meeting noted the difficulties in changing the name of the MIDAMC STG due the signed MOU. Accordingly, the meeting highlighted the importance to include the TOR of the MIDAMC STG in the Invitation Letter in order to allow the States to send the appropriate experts including the IP Networks focal points to the MIDAMCS STG meetings.

AFS Contingency measures for the MID Region

4.23 The subject was addressed in WP/15 presented by Jordan. The meeting recalled that the MIDAMC STG/3 had brain storming session on the AFS Contingency Plan for the MID Region due to the current situation in the Region. The brain storming covered the content of the plan and developed requirement that could be implemented for the MID AFS contingency, among them were the email/AFTN Gateways that are available in Bahrain and Lebanon. Both States expressed their readiness to provide services for other MID States during contingency cases. Furthermore, Bahrain reconfirmed their offer for the use of the Gateway for all MID States and requested for the conduct of the trials.

4.24 The meeting noted that Jordan and Lebanon discussed in details the deployment of email/AFTN Gateway and agreed on trials that were conducted on 24 May 2016. The trials were very successful and the email Gateway proved to be an efficient alternative mean in contingency cases with degraded level of service; when the AFS network is totally out. Accordingly, both States agreed that Letter of Agreement between Jordan and Lebanon should be developed and signed.

4.25 The meeting commended the initiative and agreed that trials be extended with other States. The meeting reviewed and updated draft trial plan and draft MID AFS contingency arrangements documents as **Appendices 4D and 4E** respectively. The meeting requested Bahrain and Lebanon to provide official letter to the ICAO MID Regional Office for their offer expressing their readiness to provide email/AFTN Gateways services for all MID States during contingency cases. Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 7/3: MID AFS CONTINGENCY ARRANGEMENTS

That, Bahrain and Lebanon provide official letter to the ICAO MID Regional Office for their offer expressing their readiness to provide email/AFTN Gateways Services for all MID States during contingency cases.

MID IP Network

4.26 The subject was addressed in WP/5 presented by the Secretariat. The meeting was apprised of the progress of the MID IP Network Project. The meeting noted that the ICAO MID Regional Office with the support of the ICAO APAC Region conducted the MID IP Network Workshop (Cairo, Egypt 24-25 January 2016). The Workshop discussed in detail the CRV framework, and how it will benefit both the APAC and MID Regions.

4.27 The meeting noted that the MIDAMC STG/3 reviewed the recommendations of the MID IP Network Workshop and agreed that the CRV be renamed as Common aeRonautical VPN (CRV) in order to represent both Regions. Furthermore, seven (7) States (Bahrain, Egypt, Jordan, Kuwait, Lebanon, Saudi Arabia and UAE) conducted an initial basic local CBA.

4.28 As a follow-up action to the outcomes of the MID IP Network Workshop and MIDAMC STG/3 meeting, the ICAO MID Regional Office issued a State Letter requesting details of the focal points, IP Network equipment coordinates and commitment to the Common aeRonautical VPN (CRV). In this respect, Bahrain, Iran, Jordan, Kuwait, Lebanon and Sudan had confirmed their commitment to the project. It was noted that the APAC Region Pioneer States had conducted the Technical Evaluation Meeting (22-24 March 2016) and held the Second meeting (09-10 May 2016), where they continued to discuss the pending issues and had a face-to-face meeting with bidders to discuss the final clarifications.

4.29 It was highlighted that the CRV Framework accommodates the necessary legal framework for all States, where it is possible to adapt the individual service contract between States and the selected common service provider to the national laws and regulation. Furthermore, the selected common service provider will be responsible for dealing with the national telecommunication service providers in the States and may require standard support letter from the State.

4.30 The meeting was apprised that the IP Network will not be used for the AFTN messages only. In this regard the meeting recalled the MID IP Network Project Proposal Document developed by the MID IP Network Action Group that list all the services/application that will be using the Regional IP Network. It was underlined that the network will be foundation infrastructure for SWIM.

4.31 The meeting reviewed and updated the IP Network Focal Points and commitment status table as at **Appendix 4F**, and noted that six (6) States had commitment and three (3) States confirmed Provisional commitment. Accordingly, the meeting agreed that the project to be pursued without delays and agreed that upon successful completion of the procurement process conducted in the APAC Region, (with the support of TCB), States be urged to engage with the recommended supplier to establish individual service contracts within time frame of six month. The meeting urged all States to join the CRV in order to gain the maximum benefits from the project.

4.32 Based on the above, the meeting reiterated the MAEP Board/2, Board Conclusion 2/7: MID IP Network Project (CRV) and agreed to the following Draft Conclusion:

DRAFT CONCLUSION 7/4: MID IP NETWORK PROJECT (CRV)

That,

a) the procurement framework of the APAC Common Regional Virtual Private Network Programme (CRV) be used for the implementation of the MID IP Network Project use;

b) the MID IP Network Project be renamed as Common aeRonautical VPN Network (CRV) in order to be one common IP Network with the APAC;

*c) States, that have not yet confirmed their commitment to join the CRV, be urged to do so before **1 November 2016**; and*

d) further to the successful completion of the procurement process conducted in the APAC Region, States be urged to engage with the recommended supplier to establish individual service contracts not later six months.

GNSS Planning and Implementation

4.33 The subject was addressed in WP/8, PPT/6, WP/13, and WP/16 presented by the Secretariat, Egypt, European Commission and India. The meeting reiterated the importance of protecting the frequency band 1559-1610 MHz used for elements of GNSS. Accordingly, the meeting urged States to provide effective spectrum management and protection including the promulgation of the necessary regulation to reduce the likelihood of interference or degradation of GNSS performance.

4.34 The meeting reviewed the recommendations of the Joint ACAC/ICAO MID Workshop on GNSS and highlighted the importance of sharing information/experience on GNSS related issues, and encouraged States to benefit from the European Commission offer for the conduct of the Cost Benefit Analysis free of charge.

4.35 The meeting underlined the role of ACAC and ICAO to carry out study to assess the likelihood and effects of GNSS vulnerabilities in the MID Region airspace.

4.36 The meeting recalled that MIDANPIRG Conclusion 15/28 invited States to use the guidance prepared by the CNS SG for the development/amendment of their regulatory provisions related to the use of GNSS and associated threats. Furthermore, the meeting noted that ACAC and ICAO are planning to organize a joint Workshop on GNSS vulnerabilities in 2017.

4.37 The meeting noted that ICAO developed new guidance on GNSS monitoring for inclusion in the GNSS Manual (Doc 9849). Corresponding updates to Annex 10 will also become applicable by November 2018.

4.38 IATA reiterated their position for not supporting the SBAS solution. Furthermore, some States informed that they have no plans for SBAS for commercial aviation.

GNSS Vulnerability

4.39 The subject was addressed in PPT/6, presented by Egypt. The meeting recalled Article 28 of the Chicago Convention and its implication related to GNSS. The meeting also noted the views of USA, EUROCONTROL and the African States on the subject. The meeting also recalled the GNSS vulnerabilities mainly the Jamming and Spoofing cases that occurred in the past. The presentation covered the Spectrum regulations, GNSS vulnerabilities mitigation and the ICAO Twelve Air Navigation Conference Recommendations 6/7, 6/8 and 6/9. The presentation concluded that GNSS has a lot of operational benefits and the need to explore the GNSS implementation in view of the Vulnerabilities.

4.40 The meeting recalled that a lot of the work in ICAO/aviation leading to the acceptance of GNSS was spent in defining GNSS signal-in-space performance requirements (Accuracy, Integrity Continuity and Availability) to ensure that GNSS supported performance equal or better to the existing conventional NAVAIDS.

4.41 The meeting also recalled GNSS vulnerabilities to unintentional, intentional interference, ionosphere and solar activity also have effects on GNSS signal. The measures to limit vulnerabilities are effective regulatory framework for spectrum management and protection (national authorities + ITU Radio Regulations) and in future Multiconstellation/Dual frequency.

4.42 The meeting noted that GNSS signal disruption cannot be ruled out completely and States/ANSPs must be prepared to deal with loss of GNSS signals. They need to do the risk assessment, and implement mitigation strategies mainly outlined in ICAO Doc 9849 GNSS Manual Para 7.13.2.

4.43 The meeting was informed of the GNSS signal interference in some States, and it was perceived that it is due to jamming of GNSS signal, therefore the meeting as a first step agreed in gathering data on actual interference cases and requested IATA also to collect data from pilots. A Draft GNSS Interference Report Form for data collection purpose is at **Appendix 4G**.

EGNOS- European SBAS

4.44 The subject was addressed in WP/13, presented by the Secretariat on behalf of European Commission. The meeting was apprised of the progresses achieved in the MID/ACAC States regarding EGNOS (European Geostationary Navigation Overlay Service) that is the European SBAS (Satellite Based Augmentation System). The progresses are the results of implementations carried out in the frame of a European project funded by the European Commission (EC) and carried out with the involvement of the concerned MID/ACAC States.

4.45 The meeting noted that EC is organizing a Workshop on 26 and 27 October 2016, as part of the tutoring activity for progressing in the discussion of the "International Agreement". The "International Agreement" with the EC is required to adopt EGNOS SoL service in aviation and to start the discussion of the "International Agreement" interested ENP State has to officially express the interest through a formal letter to the EC.

4.46 Three ACAC ENP States (i.e. Lebanon, Libya and Tunisia) have already submitted the official expression of interest from their relevant Ministries. The Workshop is open only to the ENP South States that have officially sent the letter, and it is needed that State delegation be formed from representatives of the Ministry of the Foreign Affairs, Ministry of Transport and from Civil Aviation.

4.47 The meeting encouraged concerned States to send the required official letter to EC before 31 August 2016, and participate in the Workshop.

GAGAN- Indian SBAS

4.48 The subject was addressed in WP/16, presented by the Secretariat on behalf of India. The meeting noted that GPS Aided Geo Augmented Navigation (GAGAN) system has been developed by Indian Space Research Organization (ISRO) and Airport Authority of India (AAI) to provide an operational SBAS system. The service area covers the Indian FIR. The GAGAN service provides Non precision approach, RNP-0.1, over Indian FIR and precision approach, APV-1.0 over land mass on nominal days. The system is interoperable with other SBAS system.

4.49 GAGAN system consists of Indian Reference Stations (INRES), Indian Master Control Center (INMCC), Indian Land Uplink Station (INLUS), Space Segment (two spacecraft) and Data Communication Networks. GAGAN is certified for enroute operations (RNP 0.1) in December 2013 and for precision approach service (APV 1.0) in April 2015.

4.50 The meeting was informed that many States of the MID Region, like the Asia Pacific Region including India are at lower latitudes and are affected by high Ionospheric activity. The meeting encouraged States to consider the GAGAN SBAS service within their States GNSS SBAS planning and implementation. India is willing to provide the necessary/appropriate support in this respect.

Review CNS Parts of the MID eANP

4.51 This subject was addressed in WP/10 presented by the Secretariat. The meeting was apprised of the MID Region being the first Region to approve all the three Volumes of the Electronic Air Navigation Plan and the MID eANP MID Volumes I, II and III were made available at http://www.icao.int/MID/MIDANPIRG/Pages/Final%20Report/MID-eANP.aspx.

4.52 The meeting noted that ACAS monitoring table is not included in Vol III. Accordingly, the meeting agreed to include it. Furthermore, the meeting reviewed and updated the CNS Part of VOL II and III as provided at **Appendices 4H** and **4I**, respectively and agreed to the following Draft Decision:

DRAFT DECISION 7/5: MID EANP VOLUMES II AND III –CNS PART

*That, the ICAO MID Regional Office issue a Proposal for Amendment as contained in Appendices **4H** and **4I** according to the established procedures to reflect updates to MID eANP.*

ASBU B0-FICE and B0-ACAS

4.53 This subject was addressed in PPT/2 presented by the Secretariat. The meeting reviewed and updated the detailed status and implementation phases of B0-FICE and B0-ACAS in the MID Region as **Appendices 4J** and **4K**. The meeting noted with concern that the level of implementation of B0-FICE is far below the targets set out by the MID Region Air Navigation Strategy (MID Doc 002). The meeting urged States to do all possible to meet the target, especially that majority of the States already have the necessary capabilities in their system and all necessary tools guidance, LOA template are available. The meeting updated the focal points as at **Appendix 4L** and stressed on the role of the focal points should perform in order to achieve the required target.

4.54 The meeting initiated discussion on the planning for the ASBU B1-FICE. The meeting noted the ASBU document summary for B1-FICE: To introduce FF-ICE, Step 1 providing ground-ground exchanges using common Flight Information Exchange Model (FIXM) and Extensible Markup Language (XML) standard formats before departure.

4.55 The meeting noted that the ICAO MID Regional Office events in support of ASBU Block 1. In this regard, "SWIM Workshop" was held in Bangkok, Thailand, 16-18 May 2016, Interregional Seminar on "Service Improvement through Integration of Digital AIM, MET and ATM Information" will be held in September 2017 and "Workshop on ASBU Block 1 Modules Implementation" in October 2017.

Surveillance Mode S Radar IC Allocation and ADS-B Implementation

4.56 This subject was addressed in PPT/2 presented by the Secretariat. The meeting reviewed with satisfaction "MID Region Process for Mode S Interrogator Codes Allocation" and noted the whole process.

4.57 The meeting was apprised of the following in relation to Mode S Radar IC Allocation:

- Focal Point Nomination Process;
- Focal Point Responsibilities;
- Mode S Operator Responsibilities;
- MICA Cell Responsibilities; and
- IC Allocation Coordination Requirements and Follow-up.

ADS-B out plan and Monitoring

4.58 This subject was addressed in PPT/3 presented by the Secretariat. The meeting discussed the ADS-B implementation and recognized the efficiencies it provides for the operations. It was highlighted that ADS-B implementation is included in the GANP Roadmap as an enabler technology that supports many ASBU Modules. It was noted that ADS-B is/will be mandated in some ICAO Regions and even some MID States.

4.59 The meeting recalled MSG/5 Decision 5/9 tasking the CNS SG to develop a MID Region ADS-B Implementation Plan including the ADS-B Monitoring Template. The meeting developed Template for ADS-B OUT Implementation Status Monitoring as at **Appendix 4M**. The meeting did not support the development of MID Region ADS-B Implementation Plan instead the meeting requested States to develop their ADS-B Implementation, and agreed to the following Draft Conclusion:

DRAFT CONCLUSION 7/6: ADS-B IMPLEMENTATION STATUS MONITORING TEMPLATE

That,

*a) the template at **Appendix 4M** be adopted for the ADS-B implementation Status monitoring; and*

b) States be urged to provide the ADS-B Status using the adopted template.

States' update on CNS Planning and Implementation

4.60 The subject was addressed in PPT/4 to PPT/10 presented by Egypt, Iran, Jordan, Oman, Saudi Arabia, and UAE respectively. Bahrain, Iraq and Kuwait presented verbal updates. The updates covered the plans, implementation status, and implementation challenges.

4.61 The following are the main lessons learned, challenges faced by States and the recommendations that would support States to overcome the identified challenges, highlighted during the meeting:

Lessons Learned/Success Stories:

- importance of utilization the full capabilities of the available technologies;
- advantage of active participation of States to the Regional meeting and at WRC;
- advantages of regional guidance material (MID Documents);
- important to have brain storming session in meeting;
- MID AFS contingency arrangement testing;
- importance of sharing experience;
- important to proof operational improvement will facilitate faster implementation;
- involving the vendors to solve system related issue; and
- post implementation reviews to monitor project objectives and if there are deviations, mitigation strategies to be planned to reach the goals.

Challenges:

- coordination issue related to implementation;
- lack of assessing the effect of GNSS vulnerabilities in the States airspace;
- GNSS vulnerabilities and mainly jamming;
- systems compatibility related issues;
- higher management involvement and support;
- empowerment and accountability of focal points; and
- most of the ICAO standards and guidance material for CNS are concentrating on technical specification of services and equipment.

Recommendations:

- States with concerned organizations to conduct assessment of GNSS vulnerabilities;
- proper and continuous reporting of GNSS interferences;
- CNS SG to explore the operational requirement of Regional RAIM;
- States use the available resources including the MID Document;
- encourage bilateral workshops between States to solve any pending issues quickly;
- States having identical systems to share experience on these systems;
- acceleration of MID IP Network implementation using the CRV framework;
- States to consider ADS-B out implementation;
- ATSEP encouragement;
- State share experience on CNS management to enhance the methods of management of CNS services providers and regulators;
- add CNS management related issues to the CNS SG meetings; and
- provide guidance for quality systems of CNS management will help States to comply with technical specification.

REPORT ON AGENDA ITEM 5: REVIEW OF AIR NAVIGATION DEFICIENCIES IN THE CNS FIELD

5.1 The subject was addressed in WP/12 presented by the Secretariat. The meeting recalled MIDANPIRG/15 Conclusion 15/35:

CONCLUSION 15/35: AIR NAVIGATION DEFICIENCIES

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, including the submission of a specific Corrective Action Plan (CAP) for each deficiency; 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.

5.2 Based on the above, the meeting agreed that CAPs be prepared for each deficiency with the Secretariat support. Accordingly, the meeting agreed that CAPs will be provided by concerned States by 10 June 2016.

5.3 The meeting discussed the deficiency related to the AFTN circuit between Iran and Afghanistan. The meeting recalled that Afghanistan was one of the States of the MID Region accordingly this requirement was MID regional requirement. Since Afghanistan is now part of the APAC Region, there is such MID Region AFTN circuit requirement. Accordingly, the meeting agreed to add the deletion of this circuit in the Proposal for Amendment that will be submitted by the CNS SG/7 meeting.

5.4 The meeting reviewed and updated the deficiencies identified in the CNS field as at **Appendix 5A**.

REPORT ON AGENDA ITEM 6: FUTURE WORK PROGRAMME

6.1 The subject was addressed in WP/12 presented by the Secretariat. The meeting reviewed the CNS SG Terms of References (TORs) and agreed that they are still valid and current.

6.2 The meeting noted that MIDANPIRG/16 will be held tentatively in February 2017. Accordingly, the meeting agreed that the CNS SG/8 meeting be held during the first quarter of 2018 in the ICAO MID Regional Office, Cairo, Egypt, unless a State offers to host the meeting. The exact dates and venue will be coordinated with the Chairperson of the CNS SG and communicated to States and concerned organization in due time.

APPENDICES

APPENDIX 2A

FOLLOW-UP ACTION PLAN ON MIDANPIRG/15 CONCLUSIONS AND DECISIONS RELEVENT TO CNS SG WORK PROGRAMME

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 15/10: MID REGION AIR NAVIGATION STRATEGY That, a) the revised MID Region Air Navigation Strategy: i. is endorsed as the framework identifying the regional air navigation priorities, performance indicators and targets; and ii. be published as MID Doc 002. 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 an annual basis (by the end of November), with relevant data necessary for regional air navigation planning, reporting and monitoring.	Implement the Conclusion	MIDANPIRG/15 ICAO ICAO States States	MID AN Strategy MID Doc 002 State Letter National Performance Framework Feedback	Nov. 2015 Nov. 2015	Actioned SL AN 1/7 – 15/191 dated 25 June 2015 MID Doc 002 published (To be replaced and superseded by Draft Conc. 5/4)
CONCLUSION 15/11: ENDORSEMENT OF THE MID EANP That, a) the new MID ANP VOL I, II and III available at: http://www.icao.int/MID/MIDANPIRG/Pages/Final%20Report/MID-eANP.aspx are endorsed; and b) the ICAO MID Regional Office process the necessary Proposals for Amendment, in accordance with the procedure for amendment approved by the Council, for formal approval by the end of 2015.	Issue Proposals for Amendment	ICAO	Proposals for Amendment	Dec. 2015	Completed MID eANP Vol I, II and III, approved and published on the ICAO MID Website

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DECISION 15/12: DISSOLUTION OF THE ANP AD-HOC WORKING GROUP That, the ANP Ad-Hoc Working Group is dissolved.	Implement the Conclusion	MIDANPIRG/15	Dissolve ANP WG	Jun. 2015	Completed
CONCLUSION 15/18: MID REGIONAL GUIDANCE FOR IMPLEMENTATION OF AIDC/OLDI That, the MID Region guidance for the implementation of AIDC/OLDI (Edition 1.1, June 2015) is endorsed as MID Doc 006.	Implement the Conclusion	MIDANPIRG/15	MID Region Guidance for AIDC/OLDI3	Jun. 2015	Competed MID Doc 06
CONCLUSION 15/19: REGIONAL PERFORMANCE DASHBOARDS That, ICAO expedite the expansion of the regional performance dashboards to include the MID Region-specific indicators, metrics and targets, for which the necessary data is available**.**	Implement the Conclusion	ICAO	Dashboards with Regional indicators, metrics and targets	Dec. 2015	Ongoing
CONCLUSION 15/21: MID REGION ACCS LETTER OF AGREEMENT TEMPLATE That, States be encouraged to use the MID Region Area Control Centres (ACCs) Letter of Agreement Template (Edition June 2015) available on the ICAO MID website, to ensure the harmonization of coordination procedures between ACCs.	Implement the Conclusion	ICAO	State Letter	Jul. 2015	Actioned SL AN 6/2.1 – 15/192 dated 28 Jun. 2015
CONCLUSION 15/22: MID REGION HIGH LEVEL AIRSPACE CONCEPT That, the MID Region High Level Airspace Concept (Edition June 2015) is endorsed as MID Doc 004.	Implement the Conclusion	MIDANPIRG/15	MID Region High Level Airspace Concept	Jun. 2015	Completed Endorsed as MID Doc 004

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 15/27: 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.	Implement the Conclusion	States ICAO	States attendance and support State Letter	 July 2015	Completed SL AN 7/30.15.1-15/208 dated 07 Jul. 2015
CONCLUSION 15/28: GNSS RADIO FREQUENCY INTERFERENCE That, States be invited to use the guidance at **Appendix 5.2.2E** for the development/amendment of their regulatory provisions related to the use of GNSS and associated threats.	Implement the Conclusion	ICAO	State Letter	Dec 2015	Completed AN 7/30.21 – 15/345 dated 22 Dec. 2015
CONCLUSION 15/29: WORKSHOP ON THE USE OF THE ICAO FREQUENCY FINDER That, a Workshop on the use of the new Frequency Finder software be scheduled for 2016.	Organize Workshop	ICAO	Workshop	2nd half 2016	Actioned SIP Approved and workshop will be held in Oct. 2016

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 15/30: AFTN/CIDIN AFS CONNECTIVITY AND AMHS IMPLEMENTATION That States be urged to: a) refrain from 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) expedite their AMHS implementation.	Implement the Conclusion	ICAO	State Letter	July 2015	Actioned SL AN 7/5.1-15/209 dated 8 Jul. 2015
CONCLUSION 15/31: MIDAMC ACCREDITATION PROCEDURE That, the accreditation procedure for registering in the MIDAMC be amended as at **Appendix 5.2.2G**.	Amend the procedure	MIDANPIRG/15	The procedure amended	June 2015	Completed
CONCLUSION 15/32: MID REGION PROCESS FOR MODE S IC CODES ALLOCATION That, the Eurocontrol Document "Requirements process for the coordinated allocation and use of Mode S Interrogator Codes in the ICAO Middle East Region" (Edition 1.02 dated August 2014), be used for the allocation of the Mode S IC codes.	Implement the Conclusion	MIDANPIRG/15	Procedure adopted	June 2015	Completed
CONCLUSION 15/33: OPMET EXCHANGE SCHEME That, States be urged to update their OPMET exchange scheme in coordination with ROC Jeddah and back-up ROC Bahrain in order to complete MID ROC implementation by **30 September 2015**.	Implement the Conclusion	ICAO/States	State Letter Updated OPMET exchange scheme	Sep 2015	Actioned SL Ref: AN 10/11-15/206 issued 8 Jul 2015 Status: 8 States FI 5 States PI 2 States NI

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONCLUSION 15/35: AIR NAVIGATION DEFICIENCIES 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, including the submission of a specific Corrective Action Plan (CAP) for each deficiency; 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.	Implement the Conclusion	ICAO States	State Letter CAP and necessary updates/ evidences	 When necessary	Actioned SL AN 2/2 – 15/351 dated 29 Dec. 2015

FOLLOW-UP ACTION PLAN ON MSG/5 CONCLUSIONS AND DECISIONS RELEVENT TO CNS SG WORK PROGRAMME

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 5/2: MID eANP FOCAL POINTS That, States be urged to assign a MID eANP focal point to be the main point of contact for all issues related to the MID eANP, including the validation of amendments to Volume III Part II – "Air Navigation System Implementation".	Implement conclusion	ICAO	Updated Focal points		
MSG CONCLUSION 5/8: MID REGION PBN IMPLEMENTATION PLAN That, the revised version of the MID Region PBN Implementation Plan (MID Doc 007, Edition April 2016) is endorsed.	Implement conclusion	ICAO	post updated guidance		
MSG DECISION 5/9: MID REGION ADS-B IMPLEMENTATION PLAN That, the CNS SG be tasked to develop a MID Region ADS-B Implementation plan including the ADS-B monitoring Template.	Develop plan	CNS SG/7	Plan and template	May 2016	
MSG CONCLUSION 5/11: INTERREGIONAL SEMINAR ON "SERVICE IMPROVEMENT THROUGH INTEGRATION OF DIGITAL AIM, MET AND ATM INFORMATION That, a) ICAO organize an Interregional Seminar on "Service improvement through integration of digital AIM, MET and ATM Information" in 2017; and b) States be encouraged to attend and support the Seminar.	Implement conclusion	ICAO	Interregional seminar	2017	

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
MSG CONCLUSION 5/13: MID eANP VOLUME III – B0-AMET That, a) the MID eANP Volume III – B0-AMET be amended to reflect the changes at **Appendix 5K**; and b) the notification of the amendment of the MID eANP Volume III – B0-AMET be sent to the MID eANP Focal Points.	Implement conclusion	ICAO	Amendment to vol III		
MSG CONCLUSION 5/14: WORKSHOP ON ASBU BLOCK 1 MODULES IMPLEMENTATION That, a Workshop on ASBU Block 1 Modules implementation be organized by ICAO in 2017.	Implement conclusion	ICAO	Workshop	2017	
DRAFT CONCLUSION 5/3: FTBP TESTING DOCUMENT					
That, the First Edition of File Transfer Body Part (FTBP) Trial and Testing Document at **Appendix 5G** is endorsed; and be published as MID Document.	New Document publication	CNS SG/7	FTBP doc endorsement		
DRAFT CONCLUSION 5/4: MID REGION AIR NAVIGATION STRATEGY					
That, the revised MID Region Air Navigation Strategy (MID Doc 002, Edition April 2016) is endorsed.	Implement Conclusion	ICAO	Revised Strategy endorsement		

APPENDIX 4A

AMHS Plan for ROC in Jeddah and Bahrain					
	Task	**Timeframe**	**Assigned to**	**Champion**	**Status**
	AMHS Intra-regional Trunk Connections				
1	Establish Jeddah – Beirut IP Network.	Jul 2015	Saudi Lebanon	IM MS	Completed
2	Establish Bahrain – Beirut IP Network.	Feb 2016	Bahrain Lebanon	YH MS	Completed
3	Establish Cairo – Beirut IP Network.	July 2016	Egypt Lebanon	AF//MR MS	
4	Establish Bahrain – Jeddah IP Network.	Mar 2016	Bahrain Saudi	IM YH	
5	Perform the Interoperability test between Jeddah and Beirut COM Centers.	July 2015	Saudi Lebanon	IB MS	Completed
6	Perform the Interoperability test between Bahrain and Beirut COM Centers.	July 2016	Bahrain Lebanon	MS YH	
7	Perform the Interoperability test between Cairo and Beirut COM Centers	July 2016	Egypt Lebanon	AF/TZ/MR MS/EK	Depends on IP network availability
8	Perform the Interoperability test between Bahrain and Jeddah COM Centers.	July 2016	Bahrain Saudi	YH IM	
9	Perform the Pre-operational test between Jeddah and Beirut COM Centers.	July2015	Saudi Lebanon	IM MS	Completed
10	Perform the Pre-operational test between Bahrain and Beirut COM Centers.	July 2016	Bahrain Lebanon	YH MS	
11	Perform the Pre-operational test between Cairo and Beirut COM Centers.	July 2016	Egypt Lebanon	AF/ /MR MS/EK	
12	Perform the Pre-operational test between Bahrain and Saudi COM Centers.	July 2016	Bahrain Saudi	YH IM	
13	Place the AMHS link into operation between Jeddah and Beirut COM centers, and updating the Routing tables.	July 2015	Saudi Lebanon MID AMC	IM MS/EK MN	Completed
14	Place the AMHS link into operation between Bahrain and Beirut COM centers, and updating the Routing tables.	July 2016	Bahrain Lebanon MID AMC	YH MS/EK MN	
15	Place the AMHS link into operation between Cairo and Beirut COM centers, and updating the Routing tables.	Aug 2016	Egypt Lebanon MID AMC	AF/TZ/MR MS/EK MN	
16	Evaluate the Trunks connections bandwidth and increase it if required between (Bahrain, Beirut, Cairo and Jeddah).	July 2016	Bahrain Beirut Cairo Jeddah	YH MS/EK AF/TZ IM	Depends on testing of digital data exchanged

	The AMHS Interconnection with EUR Region Depends on Nicosia and Athens				
17	Establish Cairo – Tunis IP Network.	*March2016 July 2016*		AF/TZ/MR IB/MA	Both Egypt and Tunisia Ready Coordination in process to implement
18	Establish Nicosia – Beirut IP Network.	*Awaiting reply from EUR*		MS/EK	Lebanon ready
19	Establish Nicosia – Jeddah IP Network.	Dec 2016		IM	Saudi Arabia ready
20	Establish Bahrain – Nicosia IP Network.	Dec 2016		YH	
21	Establish Cairo – Athens IP Network.	Dec 2016		AF/TZ/MR	Egypt Ready Link is ready as same CIDIN link will be used
22	Perform the Interoperability test between Cairo and Tunis COM Centers.	*April 2016 August 2016*		AF/ /MR IB/MA	Both Egypt and Tunisia Ready Coordination in process to implement
23	Perform the pre operational test between Cairo and Tunis COM Centers.	*Q3 2016*		AF/ /MR IB/MA	Both Egypt and Tunisia Ready Coordination in process to implement
24	Place the AMHS link into operation between Cairo and Tunis COM Centers, and updating the Routing tables.	*Aug 2016*		AF/ /MR IB/MA	Both Egypt and Tunisia Ready Coordination in process to implement
25	Perform the Interoperability test between Athens and Cairo COM Centers.	Mar 2017		AF/TZ/MR IB/MA	Athens advised that their system will be installed by Dec. 2016
26	Perform the Interoperability test between Bahrain and Nicosia COM Centers.	Q1 2017		YH	
27	Perform the Interoperability test between Nicosia and Jeddah COM Centers.	Q1 2017		IM	
28	Perform the Interoperability test between Nicosia and Beirut COM Centers.	Q1 2017		MS/EK	Nicosia in tender process
29	Perform the Pre-operational test between Athens and Cairo COM Centers.	Mar 2017		AF/TZ/MR	Athens advised that their system will be installed by Dec 2016
30	Perform the Pre-operational test between Bahrain and Nicosia COM Centers.	Q1 2017		YH	

31	Perform the Pre-operational test between Nicosia and Beirut COM Centers.	Q1 2017		MS/EK	
32	Perform the Pre-operational test between Nicosia and Jeddah COM Centers.	Q1 2017		IM	
33	Place the AMHS link into operation between Athens and Cairo COM Centers, and updating the Routing tables.	Q1 2017		MIDAMC AF/ /MR	same
34	Place the AMHS link into operation between Bahrain and Nicosia COM Centers, and updating the Routing tables.	Q1 2017		MID AMC YH	
35	Place the AMHS link into operation between Nicosia and Jeddah COM Centers, and updating the Routing tables.	Q1 2017		MID AMC IM	
36	Place the AMHS link into operation between Nicosia and Beirut COM Centers, and updating the Routing tables.	Q1 2017		MS/EK	
37	Evaluate the inter-region connections bandwidth and increase it if required.	Q1 2017		MID AMC	
38	Transition of all regional AFTN/CIDIN Connections to AMHS.	Q2 2017	All MID States		

Champions:
Bahrain: (YH: Yaseen Hasan)
Egypt: (AF:Ahmed Farghally/TZ:Tarek Zaki/MR: Mohamed Ramzi/Essam Helmi: EH)
Lebanon: (MS: Mohamad Saad / EK: Elias El-Khoury)
Saudi Arabia: (IM: Mr. Ibraheem Mohamed Basheikh)
Tunis: (IB: Issam Bouzid / MA: Mr. Mohamed Ali)
MID AMC/Jordan: (MN: Muna Ribhi Alnadaf)

APPENDIX 4B

ATS Extended Services
File Transfer Body Part (FTBP) Testing Document

Author: ATS extended Services Trial Team (ASTT)
Date: 10/1/2016
Version: 1

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References

[1] ICAO Annex 10 – Aeronautical Telecommunication; Vol.II, Communication Procedure

[2] ICAO doc 9880- Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols, Part II – Ground-Ground Applications - Air Traffic Services Message Handling Services (ATSMHS), First Edition – 2010

[3] EUR Doc 020 – AMHS Manual

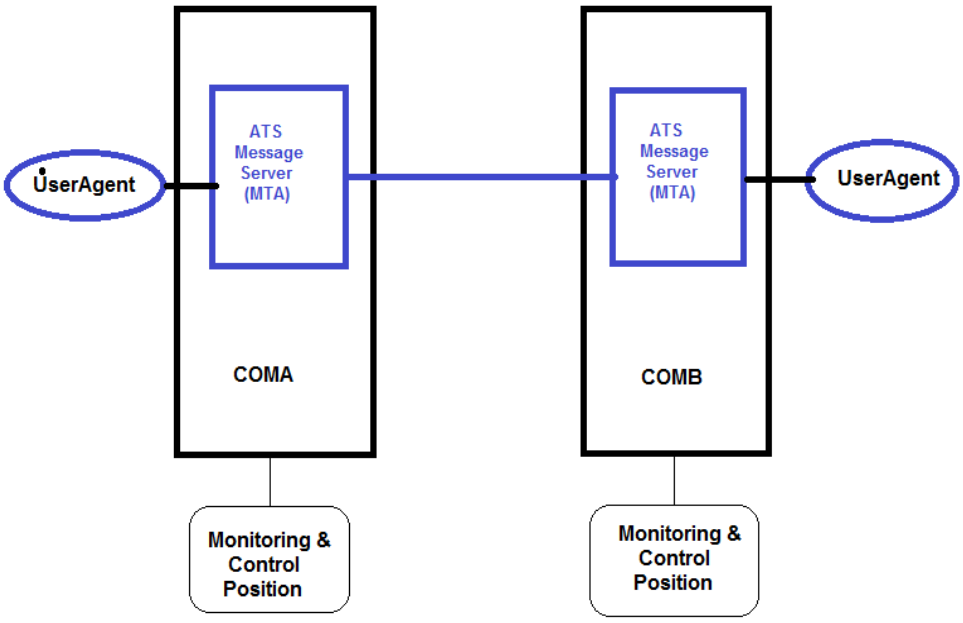
1. Introduction

The Message Handling service provided in the ATN is called the ATS Message Handling Service (ATSMHS). This service is specified using X.400 standards. There are two levels of ATSMHS service: Basic ATS Message Service and Extended ATS Message Service. Basic ATS Message Service provides a nominal capability equivalent from a user perspective to those provided by AFTN. And Extended ATS Message Service provides enhanced features such as supporting transfer of more complex message structures (body parts), use of the directory service, and support for security.

The purpose of this document is to define the functional tests for ATS Extended Service handling specially File Transfer body part (FTBP) in order to ensure the end-to-end capability of AMHS systems and network to exchange this type of messages. These tests are performed after the successful operation of AMHS basic services, through which the compliance of all systems to the AMHS technical specifications has been demonstrated and proved.

2. Test Environment

Both test systems should have operational AMHS link, and P1 connection setup. Two User Agents should be used to exchange traffic with File Transfer Body Part. The testing environment is as shown in the figure below:



The test can be performed in AMHS Network and unnecessary to have direct AMHS link between the two COM centers, the traffic can be exchanged via intermediary(ies) COM center(s), which should be involved in the test activities.

The User Agent address at COM A could be "COMAASTT", and at COM B "COMBASTT". The User Agent can be either P3 or P7 User Agent.

Network Analysis software can be used to monitor X.400 traffic and its effect on network Bandwidth. The software can be agreed on prior the test.

3. Test Procedure

Before the tests, the test partners should coordinate and document the type of body part used in IPMs submitted by their User Agents when submitting text messages, either as:

- IPMs containing a basic ia5-text body part, or
- IPMs containing an extended ia5-text body part, or
- IPMs containing a general-text body part with ISO646 repertoire.

3.1 Submission, Transfer and Delivery of a message including Binary file from UserAgent to UserAgent.

Test01	**Submission of Binary file**
Test Criteria	**The Test is successful if COMB receive the message with Binary file attached with text message from COMA**
Scenario Description	From the UA of COMA send a sequence of five ATS messages (IPMs) to the COMB addressing the COMBASTT. • Message 1 (Test011) shall have ATS-message-priority KK and binary file • Message 2 (Test012) shall have ATS-message-priority GG and binary file • Message 3 (Test013) shall have ATS-message-priority FF and binary file • Message 4 (Test014) shall have ATS-message-priority DD and binary file attached • Message 5 (Test015) shall have ATS-message-priority SS and binary file attached Each message shall have different ATS-filing-time and ATS-message-text. Verify the messages received by the remote UA. In particular, verify: • ATS-message-priority, • ATS-message-filing-time, • ATS-message-text. • The Binary file
Reference	**9880**

Test02	Submission of Binary file
Test Criteria	The Test is successful if COMA receive the message with Binary file attached with text message from COMB
Scenario Description	From the UA of COMB send a sequence of five ATS messages (IPMs) to the COMA addressing the COMAASTT. • Message 1 (Test021) shall have ATS-message-priority KK and binary file • Message 2 (Test022) shall have ATS-message-priority GG and binary file • Message 3 (Test023) shall have ATS-message-priority FF and binary file • Message 4 (Test024) shall have ATS-message-priority DD and binary file attached • Message 5 (Test025) shall have ATS-message-priority SS and binary file attached Each message shall have different ATS-filing-time and ATS-message-text. Verify the messages received by the remote UA. In particular, verify: • ATS-message-priority, • ATS-message-filing-time, • ATS-message-text. • The Binary file
Reference	9880

3.2 Submission, Transfer and Delivery of a message including Binary file from UserAgent to AFTN User

Test031	**Submission of Binary file to AFTN User**
Test Criteria	**The Test is successful if COMA receive Non Delivery report (NDR) from the Gateway of COMB**
Scenario Description	From the UA of COMB send an ATS messages (IPMs) with binary file attached to the COMA addressing an AFTN user like the control tower COMAZTZX. • Message 1 (Test031) shall have ATS-message-priority FF and binary file Verify the messages not received by the remote AFTN User and that the sender receive NDR
Reference	**9880**

Test032	**Submission of Binary file to AFTN User**
Test Criteria	**The Test is successful if COMB receive Non Delivery report (NDR) from the Gateway of COMA**
Scenario Description	From the UA of COMA send an ATS messages (IPMs) with binary file attached to the COMB addressing an AFTN user like the control tower COMBZTZX. • Message 1 (Test032) shall have ATS-message-priority FF and binary file Verify the messages not received by the remote AFTN User and that the sender receive NDR
Reference	**9880**

4. Test Summary

Use the Network Analysis software to analyze the traffic overhead occurred when sending binary files with the message. Also document the message size on system hard disks. Monitor any warning message or alarm during the tests.

Stress tests can be performed, by sending 20, 50 messages repeating test Test01 and Test02. Network and system response should be carefully monitored in order not affecting the life traffic.

5. ATS Extended Services Trial Team (ASTT)

State	Name	Title	Email	Tel. / Mobile
Bahrain	Mr. Mohamed Ali Saleh	Chief, Aeronautical Telecommunication	masaleh@caa.gov.bh	+973 17 321 187 +973 396220202
	Mr. Yaseen Hassan Al Sayed	Head ATN, Senior Computer Network Administrator	y.alsayed@caa.gov.bh	+97317329966/ +97339520025
Egypt	Mohamed Ramzy Mohamed	Director of AFTN/AMHS	mrma_eg@yahoo.com	+2022657981/ +201007736780
	Tarek Zaky Ahmed	Telecommunication Inspector	Tarekzaky6@gmail.com Tarekzaky5@yahoo.com	+201144207020
	Essam Helmy Mohamed Hassanin	Operations Manager for Cairo Com Center	Essamhelmi07@hotmail.com	+20222607946/ +201001122505
	Ahmed Mohamed Ahmed Farghaly	Telecommunication Officer	Ahmed_farghaly222@yahoo.com	+20222607946/ +201226371808
Iran	Aliakbar Salehi Valujerdi	Senior AFTN/AMHS Training Expert	aasalehi@airport.ir akbarsalehi@gmail.com	+982163146413/ +989124202775
Iran	Alireza Mahdavisefat	Senior AFTN/AMHS Network Expert	mahdavi@airport.ir amahdavis@gmail.com	+982161022406/ +989203991356
Jordan	Mona Alnaddaf	Chief of the AFS Engineering	aftn_ais@carc.gov.jo	+9626 488 1473/ +96279 9876710
Kuwait	Hasan Abdul Redah Al-Attar	Comm Engineer	ha.alattar@dgca.gov.kw	+96524721279/ +96599449454
Oman	Abdullah Al Shaaili		alshaaili@paca.gov.om	+96824519492 / +96899334647
	Mashaal Abdul Aziz Al Balushi	AISO – PACA	Mashaal@paca.gov.om	+968 24519120/ +96899628244
Saudi Arabia	Ibraheem Mohammed Basheikh	Senior Software Engineer	Ibasheikh@gaca.gov.sa	+966 12671771/ +966505671231
Sudan	Mubark Galaleldin Abuzaid	System Engineer	Mubark_g@hotmail.com	+249 183770001/ +249123499394
Tunisia	Bouzid Issam	AFTN/AMHS Opération Manager	issam.bouzid@oaca.nat.tn	+216 58379979 +216583799795
U.A.E.	Yousif Al Awadi	Senior Research and Dataset Officer	yawadi@szc.gcaa.ae	+971 25996630 +971504188799

APPENDIX 4C

MIDAMC Steering Group (MIDAMC STG)

1. TERMS OF REFERENCE (TOR)

1.1 The Terms of Reference of the MIDAMC Steering are:

a) to promote the efficiency and safety of aeronautical fixed services in the MID Region through the operation and management, on a sound and efficient basis, of a permanent MID Regional ATS Messaging Management Center (MIDAMC);

b) foster the implementation of the Air traffic service Message handling service in the MID Region through provision of the guidance materials and running facilitation tools, utilizing the MIDAMC;

c) MIDAMC Steering Group will consist of a focal point from each Participating MID State who would represent the State and acts as the Steering Group Member;

d) MIDAMC Steering Group will be responsible for overall supervision, direction, evaluation of the MIDAMC project and will review/update the MIDAMC work plan whenever required;

e) The MID Region is considering the establishment of Reginal MID IP Network; the MIDAMC STG will drive the project which is called Common aeRonautical VPN (CRV), until the Operation Group is established; and

f) provide regular progress reports to the CNS SG, ANSIG and MIDANPIRG concerning its work programme.

1.2 In order to meet the Terms of Reference, the MIDAMC Steering Group shall:

a) Develop/update the accreditation procedure for all users on the MIDAMC;

b) develop and maintain guidance materials for MIDAMC users;

c) discuss and identify solution for operational problems may be arising;

d) provide support/guidance to States for AMHS Implementation, and monitor the AMHS activities;

e) assist and encourage States to conduct trial on Implementation of the ATS extended services, and identify operational requirements;

f) identify the need for any enhancement for the MIDAMC and prepare functional and technical specifications, and define its financial implications;

g) follow-up on ICAO standards and recommendations on the ATS messaging management;

h) define future liabilities and new participating States and ANSPs;

i) follow-up and review the work of similar groups in other ICAO Regions;

j) Follow of the Reginal MID IP Network project (CRV) and act as project manager; and

k) proposes appropriate actions for the early implementation also support the IP Network until the Operational Group is establish.

2. COMPOSITION

a) ICAO MID Regional Office;

b) Members appointed by the MIDANPIRG member States; and

c) other representatives, who could contribute to the activity of the Steering Group , could be invited to participate as observers, when required .

APPENDIX 4D

AFS Contingency Trial Plan				
SN	**Task**	**Timeframe**	**Assigned to**	**Remarks**
	Confirmation From Bahrain and Lebanon			
1	Bahrain to send official letter to ICAO	Sep 2016	Bahrain	
2	Lebanon to send official letter to ICAO	Sep 2016	Lebanon	
Trials/Test with Bahrain email gateway				
5	Jordan	Oct 2016	Bahrain MA Jordan MN	
6	Lebanon	Nov 2016	Bahrain MA Lebanon EK/MS	
7	Egypt	Dec 2016	Bahrain MA Sudan	
8	UAE	Jan 2017	Bahrain MA UAE AO	
9	Saudi Arabia	Feb 2017	Bahrain MA Saudi IB/AT	
Trials/Test with Lebanon email gateway				
10	Jordan	Oct 2016	Lebanon EK/MS Jordan MN	
11	Bahrain	Nov 2016	Bahrain MA Lebanon EK/MS	
12	Sudan	Dec 2016	Lebanon EK/MS Sudan	
13	UAE	Jan 2017	Lebanon EK/MS UAE AO	
14	Egypt	Feb 2017	Lebanon EK/MS	

Champions:
Bahrain: MA: Mohamed Ali
Egypt: AF:Ahmed Farghally/TZ:Tarek Zaki/MR: Mohamed Ramzi/Essam Helmi: EH
Lebanon: (MS: Mohamad Saad / EK: Elias El-Khoury
Saudi Arabia: (IB, Ibraheem Basheikh, AT: Alaa Turki
Jordan: MN: Muna Ribhi Alnadaf
UAE: AO: Ahmed Al Obeidli AO

APPENDIX 4E

AFS Contingency Arrangement

in

Middle East Region

Developed by	MIDAMC Steering Group
Version	V 1.0
Date	2th June, 2016

Change Control

Version	Change	Date
1.0	Initial version	2/6/2016

Table of Contents

No.	Topic	Page

Terminology*

'NORMAL' OPERATIONS	Routine service provision within a non-significant variation in Quality of Service.
'EMERGENCY' MODE	'Emergency' modes are those situations following unforeseen or sudden catastrophic events that may lead to potential unsafe situations and/or partial or full interruption of the ANS provision, therefore prompting an immediate response to contain the adverse impact and where feasible initiate recovery actions.
FALLBACK MODES OF OPERATION	Fallback mode is the use of systems or services that provide redundancy/back-up to those available in support of normal operations, to cope with foreseen or unforeseen unavailability or degradation of the main service provision.
DEGRADED MODES OF OPERATION	A reduced level of service invoked by equipment outage or malfunction, staff shortage or procedures becoming inadequate as a knock-on effect of one or several deficient system elements.

1. Scope of document

This document is the AFS Contingency arrangement in the ICAO MID Region, developed to guide states on the recommended arrangements to continue providing AFS services in all modes of operation. This document developed by the MIDAMC Steering Group and revised by the CNS SG.

2. Recommended Measures during the Fallback mode of Operation

1- Install Backup AFTN/AMHS Switch

2- Establish dual AFTN/AMHS Centres at different physical locations

3- Using different media for communication; Landline, Satellite connections (VSAT), fiber optics, ..., etc.

3. Recommended Measures during the degraded mode of operation

1- Using Email/AFTN or email/AMHS Gateway

2- Using Fax/AFTN or FAX/AMHS gateways

3- Using stand alone Fax. *to be used as a Last option*

4. Using the Regional Email gateway

Bahrain and Beirut COM centers have the email/AFTN Gateway capability; and can support AFS services for other MID States during contingency cases. They are considered the Regional email/AFTN gateway.

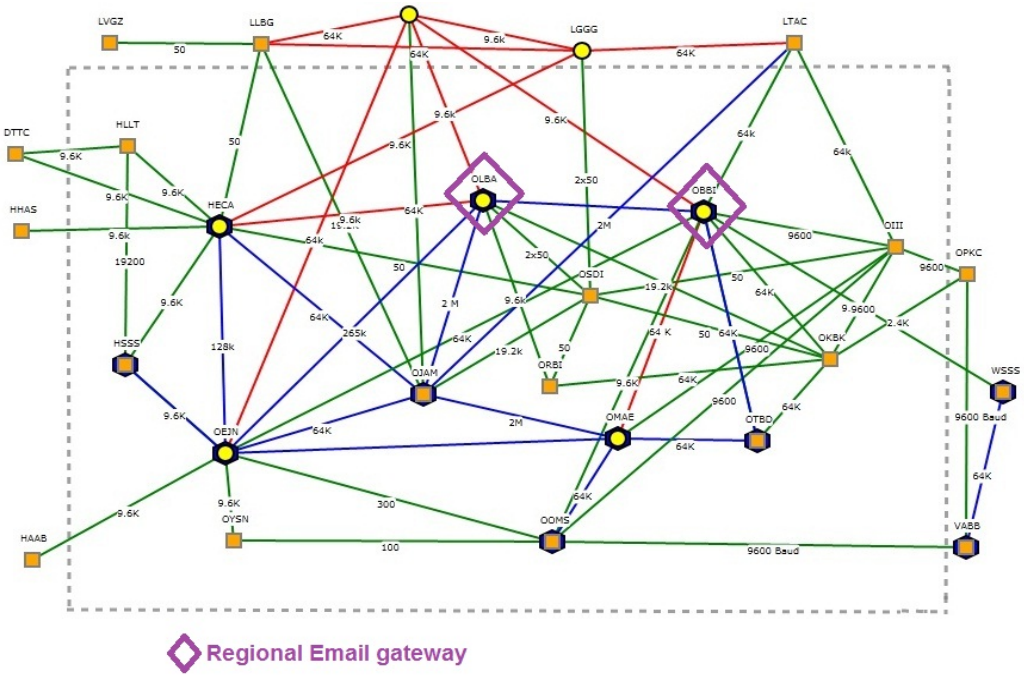


Figure (1)

4.1 The Email Gateway Architecture

The Email/AFTN Gateway is connected to the AFTN switch and convert email to AFTN message format and vice versa, also it's connected to the internet to exchange emails globally. The architecture is shown in Figure (2):

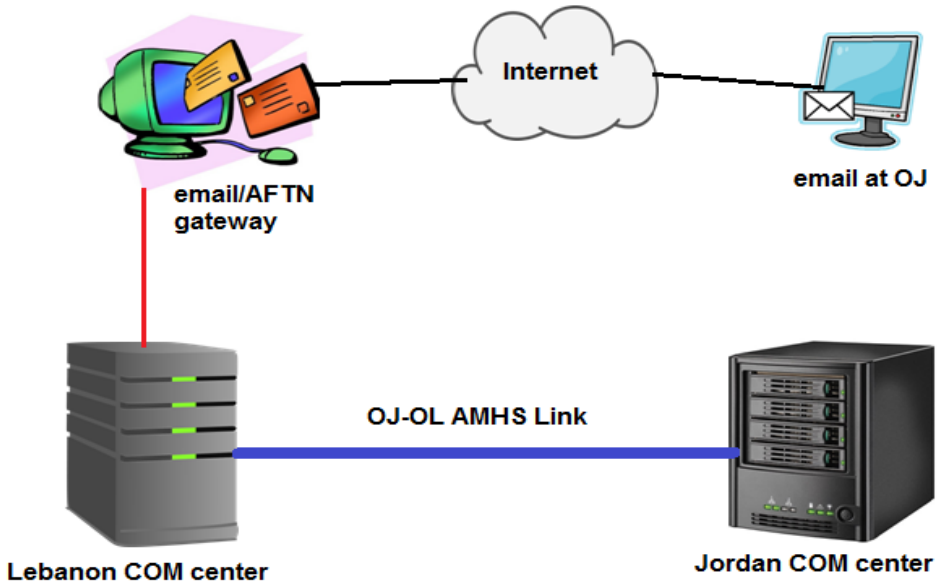


Figure (2)

The Gateway handle the incoming message as "free text" message and does not check the syntax and semantic of the text. The responsibility of information lies with the sender states.

The AIS officer can send email including Flight Plan and its related messages to the Lebanon Gateway email address (lbgateway@beirutairport.gov.lb). A list of addresses of each FIR should be saved to be used by the AIS officer.

Flight plan messages can be saved as template at the email if the last cannot be installed at the same FPL station to allow copy/paste option.

4.2 Exchanged Traffic

During the Contingency cases, Flight plan and related message can be sent; also Rejection/acceptance messages should be passed to the sender.

4.3 Notification procedure

Notification procedure need to be formalized, the AIS offer should inform the regional email/AFTN gateway at the beginning and end of contingency cases. Focal points from both sides should be assigned to follow-up such cases.

4.4 Email Format

Messages filled from email to the Regional gateway, should list destinations Addresses under the ADD part of the email, then the text of the message. Also the origin address should be predefined and inserted by the AFS officer at the regional gateway center.

Example:

4.5 Security Measures

The Regional email Gateway Centers should create a list of allowed email addresses from each state, and those email accounts should be registered on official email domain. For example nof@carc.gov.jo.

APPENDIX 4F

MID IP Network Project Focal Points and Commitment Status

State	Name/Title	Contact Details (Tel./Fax/Mobile/Email)	IP Network Equipment Room Coordinates	Commitment/ No of Location
Bahrain	Mohamed Ali Saleh Chief Aeronautical Telecomm	Fax: +973 17329966 Tel: +973 17321187 Email: masaleh@caa.gov.bh	Air Navigation Directorate Building: 353, Road: 2408, Block:224 Muharraq Bahrain Technical Room coordination point: 2616N 05038E	Y (1)
	Yaseen Hassan AlSayed Head Aeronautical Telecomm Network	Fax: +973 17329966 Tel: +973 17321183 Email: y.alsayed@caa.gov.bh		
Egypt	Mr. Mohamed Ramzy Mohamed Abdallah Director of AFTN/AMHS Technical Department	Tel: +202 22657981 +201007736780 Email: Mrma_eg@yahoo.com	Building Name: Cairo Air Navigation Center (CANC) Address: NANSC Company – Cairo 30° 07’ 01.0” N + 31°23’42.4” E	
	Eng. Haitham Mohamed Ahmed Eldosoki Director of AIM Technical Department	Tel: +202 22650781 +201007810781 Email: Haitham.mohamed@nansceg.net		
Iran	Mr. AliAkbar SalehiValojerdi Senior Expert of IRANAFTN/AMHS Training Department	Fax: +98 21 66025101 Tel: +98 21 6102337 Mobile: +989 124 202775 Email: aasalehi@airport.ir		Y (1)
	Mr. Alireza Mahdavisefat Senior Expert of IRANAFTN/AMHS COM Centre	Fax: +98 21 66025101 Tel: +98 21 6314 6432 Mobile: +989 333510320 Email: mahdavi@airport.ir		
Iraq				
Jordan	Ms. Mona Ribhi AlNaddaf	Tel: +9626 4881473 +96279 9876710 Email: m.al-nadaf@carc.gov.jo		Y (1)
Kuwait	Mr. Hassan Alattar Communication Engineer	Fax: +965-2 4721 279 Tel: +965-2 4732 530 Mobile: +965 99449454 Email: ha.alattar@dgca.gov.kw		Y (1)

State	Name/Title	Contact Details (Tel./Fax/Mobile/Email)	IP Network Equipment Room Coordinates	Commitment/ No of Location
Lebanon	Mr. Mohamad Abdallah Saad Head of Telecommunication Equipment	Lebanese Directorate General of Civil Aviation Fax: +961 1 629 031 Tel: +961 1 628 151 Mobile: +961 3 280 299 Email: msaad@beirutairport.gov.lb		Y (1)
Libya				
Oman	Mr. Nasser Salim Al-Suleimani Chief ATM Systems Mr. Ibrahim Said Al-Hajri ATM Systems Engineer	nassers@paca.gov.om alhajri@paca.gov.om		P-Y (1)
Qatar				
Saudi Arabia	Ibrahim bash Senior Systems Engineer Automation Engineering Branch	Fax: +966 12 671 9041 Tel: +966 12 671 7717 Ext 1119 Mobile: +966 50 567 1231 Email: ibasheikh@gaca.gov.sa		(3 sites) (Riyadh, Jeddah and Dammam)
Sudan	Eng. Yasir Eltayeb Sidahmed	Fax: +249 183 770001 Tel: +249 183 782701 Email: yasirts@gmail.com		Y (1)
Syria				
UAE	Greg Kurten A/Director CNS Communication, Navigation and Surveillance	Fax: +971 2 599 6872 Tel: +971 2 599 6860 Email: gegkurten@szc.gcaa.ae	The co-ordinates are as follows: 24° 26’ 41.82” N 54° 36’ 35.46” E The working number at site is 00971 2 5996900	P-Y (1)
	Shahzad Chaudhary Senior CNS Engineer Communication, Navigation and Surveillance	Fax: +971 2 599 6872 Tel: +971 2 599 6865 Email: shahzad@szc.gcaa.ae		
Yemen				

APPENDIX 4G

- Guidance for GNSS Interference Reporting to States

GNSS Interference Reporting form to be used by ATS Personnel:

Originator of this Report:	
Organisation:	
Department:	
Street / No.:	
Zip-Code / Town:	
Name / Surname:	
Phone No.:	
E-Mail:	
Date and time of report:	
Description of Interference	
Affected GNSS Element:	[ ] GPS [ ] GLONASS [ ] other constellation [ ] EGNOS [ ] WAAS [ ] other SBAS [ ] GBAS (VHF data-link for GBAS)
Observablility of the interference:	Interference was noticeable: [ ] only on board of aircraft [ ] only on ground [ ] both
Source of initial interference report:	Pilot [ ], Engineer/Technician [ ], Other [ ]
Degradation of GNSS performance:	[ ] Large position errors (details): [ ] Loss of integrity (RAIM warning/alert): [ ] Complete outage [ ] Loss of satellites in view/details: [ ] Lateral indicated performance level changed from:___to ___ [ ]Vertical indicated performance level changed from: __ to __ [ ] Indicated Dilution Of Precision changed from __ to__ [ ] Information on PRN of affected satellites (if applicable) [ ] Low Signal-to-Noise (Density) ratio [ ] other

In case of Report by Pilot:	
Airline Name:	
Aircraft Type and Registration:	
Flight Number:	
Airway/route flown:	
Coordinates of the first point of occurrence / Time (UTC):	UTC: Lat: Long:
Coordinates of the last point of occurrence / Time (UTC):	UTC: Lat: Long:
Flight level or Altitude at which it was detected:	
Affected ground station [e.g. GBAS]	Name/Indicator; Lat: Long:
In case of Report by ATS Personnel	
Coordinates of the first point of occurrence / Time (UTC):	UTC: Lat: Long:
Coordinates of the last point of occurrence / Time (UTC):	UTC: Lat: Long:
Affected area:	
Affected flight route:	
Problem duration:	Days, Hours, Minutes, Seconds_____ _____ [ ] continuous [ ] intermittent
Information on Presumed Source of Interference	
Presumed location of interference source:	Lat/Long: or Nearest City or Landmark
Interfering frequency (if known:)	
Signal strength and reference bandwidth: (if known)	
Further descriptions of the interference case:	[ ] Spectrum plot [ ] Map Other material:

- GNSS interference reporting form to be used by pilots:

Note: Only applicable fields need to be filled!

Originator of this Report:	
Organisation:	
Department:	
Street / No.:	
Zip-Code / Town:	
Name / Surname:	
Phone No.:	
E-Mail:	
Date and time of report	

Description of Interference	
Affected GNSS Element	[ ] GPS [ ] GLONASS [ ] other constellation [ ] EGNOS [ ] WAAS [ ] other SBAS [ ] GBAS (VHF data-link for GBAS)
Aircraft Type and Registration:	
Flight Number:	
Airway/route flown:	
Coordinates of the first point of occurrence / Time (UTC):	UTC: Lat: Long:
Coordinates of the last point of occurrence / Time (UTC):	UTC: Lat: Long:
Flight level or Altitude at which it was detected:	
Affected ground station (if applicable)	Name/Indicator; [e.g. GBAS]
Degradation of GNSS performance:	[ ] Large position errors (details): [ ] Loss of integrity (RAIM warning/alert): [ ] Complete outage [ ] Loss of satellites in view/details: [ ] Lateral indicated performance level changed from:___to ___ [ ]Vertical indicated performance level changed from: __ to __ [ ] Indicated Dilution Of Precision changed from __ to__ [ ] information on PRN of affected satellites (if applicable) [ ] Low Signal-to-Noise (Density) ratio [ ] other
Problem duration:	[ ] continuous [ ] intermittent

APPENDIX 4H

TABLE CNS II-1 - AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

EXPLANATION OF THE TABLE

Column

1 The AFTN Centres/Stations of each State are listed alphabetically. Each circuit appears twice in the table. The categories of these facilities are as follows:
M - Main AFTN COM Centre
T - Tributary AFTN COM Centre
S - AFTN Station

2 Category of circuit:
M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and Tributary AFTN Communications Centre.
S - AFTN circuit connecting an AFTN Station to an AFTN Communication Centre.

3 Type of circuit provided:
LTT/a - Landline teletypewriter, analogue (e.g. cable, microwave)
LTT/d - Landline teletypewriter, digital (e.g. cable, microwave)
LDD/a - Landline data circuit, analogue (e.g. cable, microwave)
LDD/d - Landline data circuit, digital (e.g. cable, microwave)
SAT/a/d - Satellite link, with /a for analogue or /d for digital

4 Circuit signalling speed in bits/s.

5 Circuit protocols

6 Data transfer code (syntax):
ITA-2 - International Telegraph Alphabet No. 2 (5-unit code).
IA-5 - International Alphabet No. 5 (ICAO 7-unit code).
CBI - Code and Byte Independency (ATN compliant).

7 Remarks

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
BAHRAIN						
BAHRAIN						
ABU DHABI	M		64 – 9.6Kbps	CIDIN	IA-5	AMHS Plan
BEIRUT	M		64 – 9.6Kbps	CIDIN	IA-5	
DOHA	T		64 – 9.6Kbps	AMHS	IA-5	
JEDDAH	M		64 – 9.6Kbps	CIDIN	IA-5	All: AMHS by 2016
KUWAIT	M		64 – 9.6Kbps	None	IA-5	
MUSCAT	M		64 – 9.6Kbps	None	IA-5	
SINGAPORE	M		64 – 9.6Kbps	None	IA-5	
TEHRAN	M		64 – 9.6Kbps		IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
EGYPT						
CAIRO	M					
AMMAN	M		64-9.6Kbps	AMHS		
ATHENS	M		64-9.6Kbps	CIDIN	IA-5	
BEN GURION	M		64-9.6Kbps	None	IA-5	
BEIRUT	M		9.6 Kbps	CIDIN	IA-5	
JEDDAH	M		128-9.6Kbps	AMHS		
KHARTOUM	T		9.6Kbps	None	IA-5	
NAIROBI	M		9.6Kbps	None	IA-5	
TUNIS	M		64-9.6Kbps	None	IA-5	OPS Test
TRIPOLI	T		64-9.6Kbps	None	IA-5	
TRIPOLI	T		9.6Kbps	None	IA-5	STNDBY
DAMASCUS	T		64-9.6Kbps	None	IA-5	
ASMARA	T		9.6Kbps	None	IA-5	
IRAN						
TEHRAN	M					
BAHRAIN	M		64 Kbps	None	IA-5	
~~KABUL~~	~~T~~		~~-~~	~~-~~		~~Planned~~
KUWAIT	M		64 Kbps	None	IA-5	
ABU-DHABI	M		~~9.6 Kbps~~64Kbps	~~None~~AFTN	IA-5	
KARACHI	M		64Kbps	None	IA-5	
ANKARA	M		64Kbps	None	IA-5	
MUSCAT	M		64Kbps	None	IA-5	
DAMASCUS	T		50 BD	None	ITA-2	
BAGHDAD	T		64Kbps	None	IA-5	Planned
IRAQ						
BAGHDAD	T		-			
AMMAN	T		2MBps	None	IA-5	VPN
BEIRUT	T		2MBps	None	IA-5	VPN Planed
KUWAIT	T	SAT	9.6Kbps	None	IA-5	
ANKARA	T					
JORDAN						
AMMAN						
ABU DHABI	T		2MBps	AMHS	X400	VPN IPSec
BAGHDAD	T		2MBps	AMHS	-	~~VPN Planed~~
BEIRUT	T		2MBps	AMHS	-	VPN Planed
BEN GURION	M		~~9.6 Kbps~~64Kbps	None	IA-5	
CAIRO	T		64 – 9.6Kbps	AMHS		
DAMASCUS	T		64 – 9.6Kbps	None	IA-5	
JEDDAH	M		64Kbps	AMHS	X400	
NICOSIA	T		~~9.6Kbps~~64Kbps	AFTN	IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
KUWAIT	T					
KUWAIT	M	LDD/d	64 – 9.6Kbps	None	IA-5	
BAHRAIN	M	LDD/a	64- 9.6 Kbps	None	IA-5	
DAMASCUS	T	LDD/a	64-9.6 Kbps	None	IA-5	
BEIRUT	T	LDD/a	64 – 9.6Kbps	None	IA-5	Back-up
DOHA	M		256Kbps	None	IA-5	
Hamad-Airport	M	LDD/d	64-9.6 Kbps	None	IA-5	
KARACHI	T	LDD/d	64 – 9.6Kbps	None	IA-5	
TEHRAN		SAT/ad	9.6Kbps	None	IA-5	
BAGHDAD						
LEBANON						
BEIRUT	M					
AMMAN	M		2Mbps	AMHS CIDIN		VPN in process
BAGHDAD	T		2Mbps	CIDIN	IA-	VPN planed
BAHRAIN	M		64-9.6Kbps	None	5IA-5	
CAIRO	M		9.6Kbps	None	IA-5	
DAMASCUS	T		64-9.6Kbps	None CIDIN	IA-5	
JEDDAH	M		64-9.6Kbps		IA-5	
KUWAIT	M		64-9.6Kbps		IA-5	
NICOSIA	M		9.6 Kbps		IA-5	
LIBYA						
TRIPOLI	T					
MALTA	T					
TUNIS	M		9.6Kbps	None		
BENGHAZI	T					
CAIRO	M		64 – 9.6Kbps	None	IA-5	
KHARTOUM	T		9.6Kps	None	IA-5	
OMAN						
MUSCAT						
ABU DHABI	T		64Kbps	AMHS	X400	
BAHRAIN	M		64Kbps	None	IA-5	
MUMBAI	M		64Kbps	None	IA-5	
JEDDAH	M		64Kbps	None	IA-5	
SANA'A	T		100 BD	None	ITA-2	
KARACHI	M		64Kbps	None	IA-5	
TEHRAN	M		64Kbps	None	IA-5	
QATAR						
DOHA						
BAHRAIN	M		2Mbps	AFTN	IA-5 (TCP)	
KUWAIT	M		2Mbps	AMHS	X400(TCP)	
ABU DHABI	T		2Mbps	AMHS	X400(TCP)	

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	
SAUDI ARABIA						
JEDDAH	M					
ADDIS-ABABA	M	SAT	9.6Kbps	None	IA-5	
BAHRAIN	M		64 – 9.6Kbps	CIDIN	IA-5	AMHS (2015
BEIRUT	M		64-9.6Kbps	None	IA-5	AMHS (2015
CAIRO	M		128–9.6Kbps	AMHS	X400	
MUSCAT	M		64 Kbps	None	IA-5	AMHS (2015
SANA'A	T	SAT	9.6Kbps	None	IA-5	
AMMAN	M		64Kbps	AMHS	X400	
KHARTOUM	T		64Kbps	AMHS	X400	
ABUDHABI	T	~~SAT~~	~~64Kbps~~512Kbps	AMHS	X400	
NICOSIA	M		64Kbps	CIDIN	IA-5	AMHS EUR/ MID OPMET
SUDAN						
KHARTOUM	T					
ADDIS ABABA	M		9.6Kbps	None	IA-5	
ASMARA	T		9.6Kbps	None	IA-5	
CAIRO	M		9.6Kbps	None	IA-5	
JEDDAH	M		64Kbps	AMHS		
TRIPOLI	T		9.6Kbps	None	IA-5	
NDJAMENA	M		9.6Kbps	None	IA-5	
SYRIA						
DAMASCUS						
ATHENS	M		2 X 50 BD	None	ITA-2	
AMMAN	T		64 – 9.6Kbps	None	IA-5	
BEIRUT	M		64-9.6Kbps	None	IA-5	
CAIRO	M		9.6Kbps	None	IA-5	
KUWAIT	M		64-9.6Kbps	None	IA-5	
TEHRAN	T		50 BD	None	ITA-2	
UAE						
ABU DHABI						
BAHRAIN	M		9.6Kbps	CIDIN	IA-5	AMHS Plan
AMMAN	T	VPN	2 Mbps	AMHS	X400	VPN IPSec
MUSCAT	M		64Kbps	AMHS	X400	
DOHA	T		128Kbps	AMHS	X400	
TEHRAN	M		~~9.6Kbps~~ 64Kbps	~~None~~AFTN	IA-5	
JEDDAH	T	~~SAT~~	~~64Kbps~~512Kbps	AMHS	X400	
YEMEN						
SANA'A						
JEDDAH	T		9.6Kbps	None	IA-5	
MUSCAT	T		100Kbps	None	IA-5	

TABLE CNS II-2 - REQUIRED ATN INFRASTRUCTURE ROUTING PLAN

EXPLANATION OF THE TABLE

Column

1 Name of the Administration and Location of the ATN Router
2 Type of Router (in end systems (ES) of the Administration shown in column 1)
3 Type of Interconnection:
Inter Regional: Connection between different Regions/ domains
Intra Regional: Connection within a Region/ domain.
4 Connected Router: List of the Administration and location of the ATN routers to be connected with the router shown in column 1.
5 Bandwidth: Link Speed expressed in bits per second (bps)
6 Network Protocol: If Internet Protocol Suite is used, indicate version of IP (IPv4 or IPv6)
7 Via: The media used to implement the interconnection of the routers. (in case of IP service bought from a service provider, indicate VPN)
8 Remarks

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
BAHRAIN, Bahrain	BIS	Inter-Regional Intra Regional	ASIA/PAC Oman, Saudi Arabia Kuwait, Lebanon Iran, Qatar, UAE		IPv4		
EGYPT, Cairo	BIS	Inter-Regional Intra Regional	AFI, EUR Israel, Jordan, Lebanon, Athena Saudi Arabia		IPv4		
IRAN, Tehran	BIS	Intra Regional	ASIA/PAC Kuwait, Bahrain Afganistan		IPv4		
IRAQ, Baghdad	IS	Intra Regional	Jordan, Lebanon		IPv4		
JORDAN, Amman	BIS	Intra Regional	Abu Dhabi, Egypt,Israel Lebanon,Iraq,Syria,		IPv4 VPN	JT	
KUWAIT,Kuwait	BIS	Inter-Regional Intra Regional	EUR, Pakistan, Iran,Qatar,Bahrain, Lebanon		IPv4		
LEBANON, Beirut	BIS	Inter-Regional Intra Regional	EUR Jordan,Syria Iraq,Kuwait,Bahrain Saudi Arabia,Egypt		IPv4		
LIBYA	IS	Intra Regional			IPv4		
OMAN, Muscat	BIS	Inter-Regional Intra Regional	ASIA/PAC Yemen, Bahrain, UAE, Saudi Arabia		IPv4 VPN	OT	
QATAR, Doha	IS	Intra Regional	Kuwait, Bahrain Abu Dhabi		IPv4		
SAUDI ARABIA, Jeddah	BIS	Inter-Regional Intra Regional	AFI Egypt, Lebanon Bahrain,Oman Yemen		IPv4		
SUDAN	IS	Intra Regional			IPv4		
SYRIA, Damascus	IS	Intra Regional	Jordan, Lebanon		IPv4 VPN		
U.A.E, Abu Dhabi	BIS	Intra Regional	Bahrain, Jordan, Oman Qatar		IPv4 VPN		
YEMEN, Sana'a	IS	Intra Regional	Oman, Saudi Arabia		IPv4	YT	

TABLE CNS II-3 - ATS DIRECT SPEECH CIRCUITS PLAN

EXPLANATION OF THE TABLE

Column

1 and 2 Circuit terminal stations are listed alphabetically by the Terminal I.

3 A — indicates ATS requirement for the establishment of voice communication within 15 seconds.
D — indicates requirements for instantaneous communications.

4 Type of service specified:
LTF — landline telephone (landline, cable, UHF, VHF, satellite).
RTF — radiotelephone.
VoIP - Voice over IP .

5 Type of circuits; Direct (DIR) or Switched (SW).
D — indicates a direct circuit connecting Terminals I and II.
S — indicates that a direct circuit does not exist and that the connection is established via switching at the switching centre(s) indicated in column 6.
IDD — International direct dialling by public switch telephone network

Note 1.— Number of D and/or S circuits between Terminals I and II are indicated by numerical prefix, i.e. 2 D/S means 2 direct circuits and one switched circuit.

Note 2.— Pending the implementation of proper ATS voice circuits, and provided that aeronautical operational requirements are met, IDD services may be used for the ATS voice communications in low traffic areas.

6 Location of switching centre(s). Alternate routing location, if available, is indicated in brackets.

7 Remarks

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
BAHRAIN						
Bahrain	Emirates ACC	A	LTF	DIR		4 LINES
	Dammam	A	LTF	DIR		2 LINES
	Doha	A	LTF	DIR		4 LINES
	Jeddah	A	LTF	DIR		2 LINES
	Kuwait	A	LTF	DIR		1 LINES
	Riyadh	A	LTF	DIR		1 LINES
	Tehran	A	LTF	DIR		1 LINES
EGYPT						
Cairo	Amman	A	LTF	DIR		1LINE
	Athens	A	LTF	DIR		2LINES
	Jeddah	A	LTF	DIR		2LINES
	Khartoum	A	LTF	DIR		1LINE
	Nicosia	A	LTF	DIR		1LINE
	Tel Aviv	A	LTF	DIR		1LINE
	Tripoli	A	LTF	DIR		1LINE

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
IRAN (ISLAMIC REPUBLIC OF)						
Abadan	Basrah	A	LTF			
	Shiraz	A	LTF	DIR		
Shiraz	Abadan	A	LTF	DIR		
	Basrah	A	LTF			
	Doha	A	LTF	DIR		
	Karachi	A	LTF	DIR		
	Kuwait	A	LTF	DIR		
	Tehran	A	LTF	DIR		
Tehran	Emirates ACC	A	LTF	DIR		1I
	Ankara	A	LTF	DIR		
	Ashgabat	A	LTF	DIR		
	Baghdad	A	LTF			
	Bahrain	A	LTF	DIR		
	Baku	A	LTF	DIR		
	Basrah	A	LTF			
	Doha	A	LTF	DIR		
	Kabul	A	LTF			
	Karachi	A	LTF	DIR		
	Kuwait	A	LTF	DIR		
	Muscat	A	LTF	DIR		
	Shiraz	A	LTF	DIR		
	Yerevan/Zvartnots	A	LTF	DIR		
IRAQ						
Baghdad	Amman	A	LTF			
	Ankara	A	SAT			
	Basrah	A	LTF			
	Damascus	A	LTF			
	Jeddah	A	LTF			
	Kuwait	A	LTF			
	Mosul	A	LTF			
	Tehran	A				
Basrah	Abadan	A	LTF			
	Baghdad	A	LTF			
	Kuwait	A	LTF			
	Shiraz	A	LTF			
	Tehran	A	LTF			
Mosul	Baghdad	A	LTF			

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
JORDAN						
Amman	Baghdad	A	LTF			VSAT
	Cairo	A	LTF			
	Damascus	A	LTF			
	Jeddah	A	LTF			
	Riyadh	A	LTF			
	Tel Aviv	A	LTF			
KUWAIT						
	Baghdad	A	LTF			
Kuwait	Bahrain	A	LTF	DIR		
	Basrah	A	LTF			
	Jeddah	A	LTF	DIR		
	Shiraz	A	LTF	DIR		
	Tehran	A	LTF	DIR		
LEBANON						
Beirut	Ankara	A	LTF	DIR		
	Damascus	A	LTF	DIR		
	Nicosia	A	LTF	DIR		
LIBYA						
Tripoli	Cairo					
	Malta					
	Khartoum					
OMAN						
Muscat	Emirates ACC	A	LTF	DIR		
	Mumbai	A	LTF	DIR		
	Jeddah	A	LTF	DIR		
	Karachi	A	LTF	DIR		
	Salalah	A	LTF	DIR		
	Sana'a	A	LTF	DIR		
	Tehran	A	LTF	DIR		
Salalah	Muscat	A	LTF			

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
QATAR						
Doha	Emirates ACC	A	LTF	DIR		1I + 1
	Bahrain	A	LTF	DIR		
	Jeddah	A	LTF	DIR		
	Riyadh	A	LTF	DIR		
	Dammam	A			Via Bahrain	
SAUDI ARABIA						
Dammam	Bahrain	A	LTF	DIR		
	Jeddah	A	LTF	DIR		
	Riyadh	A	LTF	DIR		
Jeddah	Addis Ababa	A	LTF			
	Amman	A	LTF	DIR		
	Asmara	A	LTF			
	Baghdad	A	LTF			
	Bahrain	A	LTF	DIR		
	Cairo	A	LTF	DIR		
	Dammam	A	LTF	DIR		
	Khartoum	A	LTF			
	Kuwait	A	LTF	DIR		
	Muscat	A	LTF	DIR		
	Riyadh	A	LTF	DIR		
	Sana'a	A	LTF	SW	Via Bahrain	
Riyadh	Amman	A	LTF			
	Bahrain	A	LTF	DIR		
	Jeddah	A	LTF	DIR		
	Dammam	A	LTF	DIR		
SUDAN						
Khartoum	Cairo	A	LTF			
	Jeddah	A	LTF			
SYRIAN ARAB REPUBLIC						
Damascus	Amman	A	LTF			
	Ankara	A	LTF			
	Baghdad	A	LTF			
	Beirut	A	LTF	DIR		
	Nicosia	A	LTF			

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
UNITED ARAB EMIRATES						
Emirates ACC	Abu Dhabi	A	LTF	DIR		21
	Al Ain	A	LTF	SW		
	Bahrain	A	LTF	DIR		
	Doha	A	LTF	DIR		
	Dubai	A	LTF	DIR		
	Muscat	A	LTF	DIR		
	Tehran	A	LTF	DIR		
Abu Dhabi	Emirates ACC	A	LTF	SW		21
	Al Ain	A	LTF	DIR		21
	Dubai	A	LTF	SW		21
Al Ain	Emirates ACC	A	LTF	SW		21
	Abu Dhabi	A	LTF	DIR		21
	Dubai	A	LTF	SW		21
Dubai	Emirates ACC	A	LTF	DIR		2I + 1
	Abu Dhabi	A	LTF	DIR		2I
	Al Ain	A	LTF	SW		1I
	Fujairah	A	LTF	DIR		1I
	Ras Al Khaimah	A	LTF	DIR		1I
	Sharjah	A	LTF	DIR		3I
Fujairah	Ras Al Khaimah	A	LTF	DIR		1I
	Emirates ACC	A	LTF	DIR		1I
Ras Al Khaimah	Dubai	A	LTF	DIR		1I
Sharjah	Dubai	A	LTF	DIR		31

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
YEMEN						
Aden	Djibouti	A	LTF			
	Sana'a	A	LTF			
Mukalla	Aden	A	LTF			
	Sana'a	A	LTF			
Sana'a	Aden	A	LTF			
	Addis Ababa	A	LTF			
	Asmara	A	LTF			
	Mumbai	A	LTF			
	Djibouti	A	LTF			
	Jeddah	A	LTF		Via	
	Mogadishu	A	LTF	DIR	Bahrain	
	Muscat	A	LTF			
	Riyan	A	LTF			

TABLE CNS II-4 - HF NETWORK DESIGNATORS

EXPLANATION OF THE TABLE

Column

1 Name of station, preceded by its location indicator.

2 Network designators assigned to the facility providing HF radiotelephony en-route communications (selected from the provisions of the allotment plan in Appendix S27 to the ITU Radio Regulations).

NOTES

The ICAO designators for HF MWARA and VOLMET networks in the MID region are derived from the ITU allotment area abbreviations as contained in Appendix S27 to the ITU Radio Regulations.

ITU allotment area:

Two- and three-letter alpha entries indicate major world air route areas (MWARA):

Four-letter alpha entries indicate VOLMET areas:

Location Indicator and Name of location	HF en-route family
1	2
Aden	MID-1, AFI-3
Cairo	AFI-3
Jeddah	AFI-3
Khartoum	AFI-3
Riyan	MID-1, AFI-3
Sanaa	MID-1, AFI-3
Shiraz	MID-1, MID-2
Tehran	MID-1, MID-2
Tripoli	AFI-3

HF FREQUENCIES AND THEIR ICAO NETWORK DESIGNATORS BASED ON ITU APPENDIX S27 ALLOTMENT AREAS

Frequency (kHz)	ITU allotment area	AFI-3	MID-1	MID-2	MID-3	V MID	Remarks
1	2	3	4	5	6	7	8
2944	MID				X		
2956	V MID					X	
2992	MID		X				
3467	MID, AFI	X		X			
3473	MID (1)						
4669	MID				X		
5517	AFI	X					
5589	V MID					X	
5658	MID, AFI	X		X			
5667	MID		X				
6625	MID (1)						
6631	MID			X			
8918	MID		X				
8945	V MID					X	
8951	MID				X		
10018	MID, AFI	X		X			
11300	AFI	X					
11375	MID				X		
11393	V MID (2)					X	
13288	MID, AFI	X		X			
13312	MID		X				
17961	AFI, MID	X			X		

APPENDIX 4I

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

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 – Not Implemented

5 Status of AIDC/OLDI Implementation, where:
Y – If AIDC/OLDI is implemented at least with one neighbouring ACC
N – 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	Y	Y	N		
Egypt	Y	Y	Y	Y		
Iran	N	N	Y	N		Contract signed for AMHS
Iraq	N	N	N	N		
Jordan	Y	Y	Y	N		
Kuwait	Y	Y	Y	N		
Lebanon	Y	N	Y	Y		
Libya	Y	N	Y	N		
Oman	Y	Y	Y	N		
Qatar	Y	Y	Y	Y		local implementation for OLDI
Saudi Arabia	Y	Y	Y	Y		local implementation for AIDC
Sudan	Y	Y	Y	N		AMHS Int. Feb 2015
Syria	N	N	N	N		
UAE	Y	Y	Y	Y		Local implementation for OLDI
Yemen	N	N	N	N		Contract signed for AMHS
Total Percentage	**73%**	**60%**	**80%**	**33%**		

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

TABLE B0-ACAS

EXPLANATION OF THE TABLE

Column
1 Name of the State
2 Status of implementation of the requirement, where:
Y – Fully Implemented
N – Not Implemented
3 Content of the State's requirement
6 Reference to the State's requirement/regulation
7 Remarks

State	Status	ACAS V7.1 Requirement	Regulation Reference	Remarks
1	2	3	4	5
Bahrain	N	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	Y	ACAS II mandated	ECAR Part 121.356 & ECAR Part 91.221	ECAA will ensure the conformity through its surveillance program starting from Jan 2017
Iran	Y	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 by law, 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	Y	Version 7.1 of ACAS II is mandated	JCAR OPS 1.668 & AIP GEN 1.5	
Kuwait	Y			Reference needs to be provided
Lebanon	Y	Mandated		Reference needs to be provided
Libya				
Oman	Y	All turbine-powered aircraft having a certified take-off mass in excess of 5,700 KG, or a maximum approved passenger seating configuration of more than 19, are required to be equipped with a serviceable Airborne Collision Avoidance System (ACAS II) in the Muscat FIR.	Civil Aviation Regulation 91.221 of The Sultanate of Oman	The minimum system performance of the equipment must meet the requirements of ICAO Annex 10 Volume IV.

Qatar	Y	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 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-185Astandards (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 – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system QCAR Part 10 - Volume 4 Chapter 4 Airborne Collision Avoidance System	References: http://www.caa.gov.qa/en/safety_regulations

Saudi Arabia				
Sudan	Y	Mandated	Amended ANNEX 10(V4)-ANNESX 6(V2)	According to adopted ANNEXEX TO SUDAN REGULATION (SUCAR 10 V4 Par. 4.3.5.3.1 AND SUCAR 6 V2 par 2.05.15)
Syria				
UAE	Y	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	Y	From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1		Reference needs to be provided

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APPENDIX 4J

B0 – FICE: Increased Interoperability, Efficiency

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 – Not Implemented

5 Status of AIDC/OLDI Implementation, where:
Y – If AIDC/OLDI is implemented at least with one neighboring ACC
N – 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	Y	Y	N		
Egypt	Y	Y	Y	Y		
Iran	N	N	Y	N		Contract signed for AMHS
Iraq	N	N	N	N		
Jordan	Y	Y	Y	N		
Kuwait	Y	Y	Y	N		
Lebanon	Y	N	Y	Y		
Libya	Y	N	Y	N		
Oman	Y	Y	Y	N		
Qatar	Y	Y	Y	Y		local implementation for OLDI
Saudi Arabia	Y	Y	Y	Y		local implementation for AIDC
Sudan	Y	Y	Y	N		AMHS Int. Feb 2015
Syria	N	N	N	N		
UAE	Y	Y	Y	Y		Local implementation for OLDI
Yemen	N	N	N	N		Contract signed for AMHS
Total Percentage	**73%**	**60%**	**80%**	**33%**		

State/Administration	Location of AIDC/OLDI End System	AIDC/OLDI Pair		AIDC/OLDI Standard Used	Target Date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Bahrain	Bahrain	Jeddah	Saudi Arabia	OLDI	Q2 2017	
	Bahrain	Riyadh	Saudi Arabia	OLDI	Q2 2017	
	Bahrain	Doha	Qatar	OLDI	Q4 2016	
	Bahrain	Kuwait	Kuwait	OLDI	Q1 2017	
	Bahrain	Abu Dhabi	UAE	OLDI	Q3 2016	
	Bahrain	Tehran	Iran	OLDI	TBD	
	Bahrain	Muscat	Oman	OLDI	Q2 2017	
Egypt	Cairo	Athens	Greece	OLDI	Implemented	
	Cairo	Jeddah	Saudi Arabia	OLDI	Q2 2017	Implemented then suspended
	Cairo	Khartoum	Sudan	OLDI	Q3 2016	
	CAIRO	Tripoli	Libya	OLDI	Q2 2017	
	CAIRO	Nicosia	Cyprus	OLDI	TBD	
	CAIRO	Amman	Jordan	OLDI	Q2 2017	
Iran	Tehran	Bahrain	Bahrain	OLDI	TBD	
	Tehran	Abu Dhabi	UAE	OLDI	TBD	
	Tehran	Ankara	Turkey	OLDI	TBD	
	Tehran	Kabul	Afghanistan	AIDC	TBD	
	Tehran	Kuwait	Kuwait	TBD	TBD	
	Tehran	Baghdad	Iraq	TBD	TBD	
	Tehran	Ashgabat	Turkmenistan	OLDI	TBD	
	Tehran	Turkmenbashi	Turkmenistan	OLDI	TBD	
	Tehran	Muscat	Oman	TBD	TBD	
	Tehran	Karachi	Pakistan	AIDC	TBD	

State/Administration	Location of AIDC/OLDI End System	AIDC/OLDI Pair		AIDC/OLDI Standard Used	Target Date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
	Tehran	Baku	Azerbaijan	OLDI	TBD	
	Tehran	Yerevan	Armenia	OLDI	TBD	
Iraq	Baghdad	Kuwait	Kuwait	OLDI	TBD	
	Baghdad	Tehran	Iran	OLDI	TBD	
	Baghdad	Amman	Jordan	OLDI	TBD	
	Baghdad	Ankara	Turkey	OLDI	TBD	
	Baghdad	Damascus	Syria	TBD	TBD	
	Baghdad	Jeddah	Saudi Arabia	TBD	TBD	
Jordan	Amman	Jeddah	Saudi Arabia	OLDI	Q2 2017	
	Amman	Baghdad	Iraq	OLDI	TBD	
	Amman	Damascus	Syria	OLDI	TBD	
	Amman	Cairo	Egypt	OLDI	Q2 2017	
Kuwait	Kuwait	Bahrain	Bahrain	OLDI	Q1 2017	
	Kuwait	Riyadh	Saudi Arabia	OLDI	Q1 2017	
	Kuwait	Tehran	Iran	TBD	TBD	
	Kuwait	Baghdad	Iraq	OLDI	TBD	
Lebanon	Beirut	Nicosia	Cyprus	OLDI	Implemented	
	Beirut	Damascus	Syria	OLDI	TBD	
Libya	Tripoli	Tunis	Tunis	OLDI/AIDC	TBD	
	Tripoli	Malta	Malta	OLDI/AIDC	TBD	
	Tripoli	Cairo	Egypt	OLDI	Q2 2017	
	Tripoli	Khartoum	Sudan	OLDI/AIDC	Q3 2017	

State/Administration	Location of AIDC/OLDI End System	AIDC/OLDI Pair		AIDC/OLDI Standard Used	Target Date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
	Tripoli	Chad	Chad	OLDI/AIDC	TBD	
	Benghazi	Malta	Malta	OLDI/AIDC	TBD	
	Benghazi	Tripoli	Libya	OLDI/AIDC	TBD	
Oman	Muscat	Abu Dhabi	UAE	OLDI	Q1 2017	
	Muscat	Jeddah	Saudi Arabia	OLDI	Q2 2017	
	Muscat	Mumbai	India	AIDC	Q2 2017	
	Muscat	Bahrain	Bahrain	OLDI	Q2 2017	
	Muscat	Sanaa	Yemen	TBD	TBD	
	Muscat	Tehran	Iran	TBD	TBD	
	Muscat	Karachi	Pakistan	AIDC	TBD	
Qatar	Doha	Abu Dhabi	UAE	OLDI	Implemented 2010	
	Doha	Bahrain	Bahrain	OLDI	Q4 2016	
Saudi Arabia	Riyadh	Jeddah	Saudi Arabia	AIDC	Implemented 2012	
	Riyadh	Dammam	Saudi Arabia	AIDC	Implemented 2012	
	Jeddah	Cairo	Egypt	OLDI	Q2 2017	
	Jeddah	Amman	Jordan	OLDI	Q2 2017	
	Jeddah	Abu Dhabi	UAE	OLDI	Q2 2017	
	Jeddah	Muscat	Oman	OLDI	Q2 2017	
	Jeddah	Khartoum	Sudan	OLDI	Q2 2017	
	Jeddah	Sanaa	Yemen	OLDI	TBD	
	Jeddah	Baghdad	Iraq	TBD	TBD	
	Riyadh	Kuwait	Kuwait	OLDI	Q1 2017	
	Jeddah	Bahrain	Bahrain	OLDI	Q2 2017	
	Riyadh	Bahrain	Bahrain	OLDI	Q2 2017	

State/Administration	Location of AIDC/OLDI End System	AIDC/OLDI Pair		AIDC/OLDI Standard Used	Target Date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
Sudan	Khartoum	Cairo	Egypt	AIDC/OLDI	Q3 2016	
	Khartoum	Jeddah	Saudi Arabia	AIDC/OLDI	Q2 2017	
	Khartoum	N'Djamena	Chad	AIDC	Implemented 2012	No Daily operations
	Khartoum	Brazzaville	Congo	AIDC	Implemented 2012	No Daily operations
	Khartoum	Tripoli	Libya	AIDC/OLDI	Q3 2017	
	Khartoum	Entebbe	Uganda	TBD	TBD	
	Khartoum	Addis Ababa	Ethiopia	TBD	TBD	
	Khartoum	Asmara	Eritrea	TBD	TBD	
	Khartoum	Nairobi	Kenya	TBD	TBD	
Syria	Damascus	Beirut	Lebanon		TBD	
	Damascus	Amman	Jordan		TBD	
	Damascus	Baghdad	Iraq		TBD	
	Damascus	Ankara	Turkey		TBD	
UAE	SZC Abu Dhabi	Abu Dhabi Int'l Airport	ADAC	OLDI V4.2	Implemented Apr2009	FMTP 2.0
	SZC Abu Dhabi	Dubai Int'l Airport	DANS	OLDI V4.2	Implemented Jun 2012	FMTP 2.0
	SZC Abu Dhabi	Sharjah Int'l Airport	Sharjah DCA	OLDI V4.2	Implemented Feb 2011	FMTP 2.0
	SZC Abu Dhabi	Ras al Khaimah Int'l Airport	Ras al Khaimah DCA	OLDI V4.2	Implemented Mar 2011	FMTP 2.0
	SZC Abu Dhabi	Al Ain Int'l Airport	ADAC	OLDI V4.2	Implemented Oct 2010	FMTP 2.0
	Abu Dhabi	Doha	Qatar	OLDI V4.2	Implemented	FMTP 2.0

State/Administration	Location of AIDC/OLDI End System	AIDC/OLDI Pair		AIDC/OLDI Standard Used	Target Date of Implementation	Remarks
		Correspondent Location	Correspondent State/Administration			
1	2	3		4	5	6
					Jan 2010	
	Abu Dhabi	Jeddah	Saudi Arabia	OLDI	Q2 2017	
	Abu Dhabi	Tehran	Iran	OLDI	TBD	
	Abu Dhabi	Bahrain	Bahrain	OLDI	Q3 2016	
	Abu Dhabi	Muscat	Oman	OLDI	Q1 2017	
Yemen	Sanaa	Jeddah	Saudi Arabia		TBD	
	Sanaa	Muscat	Oman		TBD	
	Sanaa	Djibouti	Djibouti		TBD	
	Sanaa	Mogadishu	Somalia		TBD	
	Sanaa	Asmara	Eritrea	TBD	TBD	

Details of the ATM Systems to Support Implementation

State	Focal Point Contact for AIDC/OLDI	ATM System	Protocol and Version used	Number of Adjacent ATSUs/ Connections	Number of Adjacent ATSUs connected by AIDC/OLDI and Type of Connection	ATM System Capability		Current Use		Planned Use		Intention of using AIDC only	Reasons and Remarks
						AIDC	*OLDI*	*AIDC*	*OLDI*	*AIDC*	*OLDI*		
Bahrain	Mr. Mohamed Ali Saleh masaleh@caa.gov.bh	Thales TopSky-C	OLDI 2.3 FMTP 2.0	7	None	☐	☐			☐	☐	No	OLDI to connect to Neighbouring ATSUs
Egypt	Mr.Ahmed Abdel Rasoul raad_mourad@yahoo.com	TOPSKY (THALES) Support X25 Protocol only	OLDI V2.3 AIDC V2.0	7	1 OLDI	☐	☐		☐	☐	☐	No	OLDI in use to connect to EUR (Athens)
Iran	Mr. Sayed Mahmood & Mr. A. Khodaei mirsaeed@airport.ir, a-khodaei@cao.ir	Thales	OLDI	11	None		☐						OLDI messages are sent to Ankara
Iraq				5	none								
Jordan	Mr.Mohammadal Rousan m.rousan@carc.gov.jo	Aircon 2100 Indra	OLDI 4.1 AIDC 2.0	5	none	☐	☐			☐	☐	No	Planned with Jeddah Q2 2015
Kuwait	Hamad Alnaser And Naser Alhubail ha.alnaser@dgca.gov.kw nj.alhubail@dgca.gov.kw	Aircon 2100 INDRA	OLDI v4.2 AIDC v3.0	4	none	☐	☐				☐	No	OLDI to connect to Bahrain and Riyadh
Lebanon				3	- 1 OLDI with Cyprus		☐				☐	No	OLDI in use to connect to EUR

Libya		Aircon 2000 Indra	OLDI 2.3 AIDC 2.0	7	None	☐	☐					No	Can connect with Sudan Chad and Egypt AIDC. OLDI Tunis Malta and Egypt
Oman	Mr. Ibrahim Said Al-Hajri alhajri@paca.gov.om	Indra Itec	OLDI 4.1 AIDC 2.3	5	none	☐	☐					No	UAE Q1 2015 Jeddah Q2 2015 Mumbai Q1 2015
Qatar	Mr. Ahmed Al Eshaq ahmed@caa.gov.qa	Selex	OLDI V4.2 FMTP 2.0 AIDC 2.0	3	1	☐	☐		☐		☐		OLDI in use with UAE and planned for use with Bahrain
Saudi Arabia	Khaled Khodari kkhodari@gaca.gov.sa	PRISMA from COMSOFT	OLDI V4.2 FMTP 2.0 AIDC xx	11	- None - AIDC Connected between Riyadh and Jeddah	☐	☐	☐		☐	☐	No	AIDC for internal and OLDI for neighbouring units requests
Sudan	Mr. Abdulmonem Alshkaieh	TopSky	OLDI 4.3 AIDC 2.0	8	2	☐	☐	☐	☐	☐	☐	No	Both AIDC and OLDI to cater to neighbouring units requests
Syria				4	none								

UAE	Mr. Hamad Al Belushi hbelushi@szc.gcaa.ae	PRISMA from COMSOFT	OLDI V4.2 FMTP 2.0	10	-3 two-way integrated OLDI connections -2 two-way standalone OLDI -1 one-way Standalone OLDI connection Total 6 OLDI connections		☐		☐		☐	No	OLDI already in use with 6 partners and all neighbouring ATSUs are OLDI capable
Yemen				5	none								

Implementation Phases

In line with ASBU Block 0 time lines, the AIDC/OLDI implementation shall be completed by 2018. The implementation should be accomplished in phases. The actual targets set for the MID Regional are in the MID Air Navigation Strategy MID Doc 002.

Phase 1 2014 - 2016	• OLDI/AIDC capable ATSUs should start implementation activities with a planned implementation date of Q4 2014. The activity should cover the following: ➢ test activities ➢ operator training ➢ Revision of LoA ➢ transition activities ➢ implementation ➢ post-implementation reviews • The ATSUs not capable of OLDI/AIDC should avail the facility of Standalone OLDI terminals with a planned implementation date of Q1 2015 , and budget full OLDI Integration for FY2015 with a planned implementation date of Q2 2016.
Phase 2 2016 – 2017	• The ATSUs using OLDI/AIDC in an Operational environment should assist other ATSUs to implement OLDI/AIDC • The OLDI/AIDC software is readily available therefore the ATSUs waiting for software upgrade should expect a software package by Q4 2015. On receipt of it they should start implementation activities with a planned implementation date of Q2 2016. The activity should cover the following: ➢ test activities ➢ operator training ➢ Revision of LoA ➢ transition activities ➢ implementation ➢ post-implementation reviews
Phase 3 2018	• All ATSUs are connected by Integrated OLDI/AIDC or Standalone OLDI terminals

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APPENDIX 4K

TABLE B0-ACAS

EXPLANATION OF THE TABLE

Column

1 Name of the State

2 Status of implementation of the requirement, where:
- Y – Fully Implemented
- N – Not Implemented

3 Content of the State's requirement

6 Reference to the State's requirement/regulation

7 Remarks

State	Status	ACAS V7.1 Requirement Description	Regulation Reference	Remarks
1	*2*	*3*	*4*	*5*
Bahrain	N	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	Y	ACAS II mandated	ECAR Part 121.356 & ECAR Part 91.221	ECAA will ensure the conformity through its surveillance program starting from January 2017.
Iran	Y	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 be implemented by Iranian AOC holders.
Iraq				
Jordan	Y	Version 7.1 of ACAS II is mandated	JCAR OPS 1.668 & AIP GEN 1.5	
Kuwait	Y			Reference needs to be provided
Lebanon	Y	Mandated		Reference needs to be provided

Libya				
Oman	Y	All turbine-powered aircraft having a certified take-off mass in excess of 5,700 KG, or a maximum approved passenger seating configuration of more than 19, are required to be equipped with a serviceable Airborne Collision Avoidance System (ACAS II) in the Muscat FIR.	Civil Aviation Regulation 91.221 of the Sultanate of Oman	The minimum system performance of the equipment must meet the requirements of ICAO Annex 10 Volume IV.
Qatar	Y	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 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 – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system QCAR Part 10 - Volume 4 Chapter 4 Airborne Collision Avoidance System	References: http://www.caa.gov.qa/en/safety_regulations

Saudi Arabia				
Sudan	Y	Mandated	Amended Annex 10(V4)- Annex 6(V2)	According to adopted ANNEXEX TO SUDAN REGULATION (SUCAR 10 V4 Par. 4.3.5.3.1 AND SUCAR 6 V2 par 2.05.15)
Syria				
UAE	Y	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	Y	From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1		Reference needs to be provided

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APPENDIX 4L

AIDC/OLDI FOCAL POINTS

State	Name	Tel.	Fax	Mobile	Email
Bahrain	Mohamed Ali Saleh	+973 17 321 187	+973 17 329 966	+973 3962 2202	masaleh@caa.gov.bh
Egypt	Ahmed Abdel Rasoul M. Ahmed		+202 22685293	+2010 60241692	Raad_mourad@yahoo.com
Iran	Sayed Mahmood Arash Khodaei	+98 21 66073534	+98 21 44665576	+98 9121483840	mirsaeed@airport.ir a-khodaei@cao.ir
Iraq	Ali Mohsin Hashim	+964 7815762525		+964 7815762525	atc_iraqcaa@yahoo.com
Jordan	Mohammad Al Rousan	+962-6 4451665	+962-6 4451677	+962-6 4451677	m.rousan@carc.gov.jo
Kuwait	Hamad Al-Naser Naser Alhubail	+965 24760421	+965 24343417	+965 97652527	ha.alnaser@dgca.gov.kw , nj.alhubail@dgca.gov.kw
Lebanon	Amin Jaber	+961 1 628199	+ 961 1 629021		jabera@beirutairport.gov.lb
Libya					
Oman	Mr. Ibrahim Said Al-Hajri	+968 24 518 448		+968 99 416 280	alhajri@paca.gov.om
Saudi Arabia	Khaled Mohamed Khodari	+966 126 717717 Ext. 1247		+966 55 5580714	kkhodari@gaca.gov.sa
Sudan	Eltahir Abdelatif Hassan	+249 183784925	+249 183784925	+249 123499352	eltahir5@yahoo.com
Syria					
UAE	Hamad Al Belushi	+971 2 599 6633	+971 2 599 6836	+971 50 616 4350	hbelushi@szc.gcaa.ae
Yemen					

APPENDIX 4M

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						
Lebanon						
Libya						
Oman						
Qatar						
Saudi Arabia						
Sudan						
Syria						
UAE						
Yemen						

APPENDIX 5A

Deficiencies in the CNS Field

IRAN

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date First Reported	Remarks/ Rationale for Non-elimination		Description	Executing Body	Date of Completion	Priority for Action
1	MID ANP (AFTN Rationalized Plan).	Afghanistan-Iran-Kabul-Tehran AFTN Circuit	The circuit is not yet implemented.	Oct, 1998	VSAT network to be implemented. Iran advised that they are ready. No information from Afghanistan	O	No Corrective Action Plan submitted by the State	Afghanistan-Iran	Dec, 2015	A

(1) Rationale for non-elimination: "F"= Financial "H"= Human Resources "S"= State (Military/political) "O"= Other unknown causes

Deficiencies in the CNS Field

IRAQ

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date First Reported	Remarks/ Rationale for Non-elimination		Description	Executing Body	Date of Completion	Priority for Action
1	ATS Direct Speech Circuit Iraq-Syria.	ATS Direct Speech circuit	ATS Direct speech circuit is needed.	Oct, 2008	In progress between Iraq and Syria. Iraq advised that they can provide VSAT.	O	No Corrective Action Plan submitted by the State	Iraq- Syria	Dec, 2015	A
2	MID FASID.	Baghdad VOR	VOR not installed.	Jan, 2009	In progress. Iraq advised that all NAV AIDs will be installed according to the master plan.	O	No Corrective Action Plan submitted by the State	Iraq	Dec, 2015	A
3	MID FASID.	Baghdad DME	DME not installed.	Jan, 2009	In progress.Iraq advised that all NAV AIDs will be installed according to the master plan.	O	No Corrective Action Plan submitted by the State	Iraq	Dec, 2015	A

(1) Rationale for non-elimination: "F"= Financial "H"= Human Resources "S"= State (Military/political) "O"= Other unknown causes

Deficiencies in the CNS Field

OMAN

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date First Reported	Remarks/ Rationale for Non-elimination		Description	Executing Body	Date of Completion	Priority for Action
1	Direct Speech Circuit (LIM MID RAN) in Oman and Yemen.	Direct speech Circuit	Direct Speech circuit is required.	Oct, 1998	Under implementation. Oman Ready. Oman and Yemen are working to implement the circuit	O	Oman is ready to connect with Yemen however Yemen is still not ready. No Corrective Action Plan submitted by the State	Oman- Yemen	Dec, 2015	B

(1) Rationale for non-elimination: "F"= Financial "H"= Human Resources "S"= State (Military/political) "O"= Other unknown causes

Deficiencies in the CNS Field

SYRIA

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date First Reported	Remarks/ Rationale for Non-elimination		Description	Executing Body	Date of Completion	Priority for Action
1	ATS Direct Speech Circuit Syria- Iraq.	ATS Direct Speech Circuit	Direct Speech circuit required between Syria and Iraq.	Oct, 2008	Matter pending in Syria. Iraq advised they are ready to provide VSAT for the implementation	O	No Corrective Action Plan submitted by the State	Syria- Iraq	Dec, 2015	A

(1) Rationale for non-elimination: "F"= Financial "H"= Human Resources "S"= State (Military/political) "O"= Other unknown causes

Deficiencies in the CNS Field

YEMEN

Item No	Identification		Deficiencies				Corrective Action			
	Requirement	Facilities/ Services	Description	Date First Reported	Remarks/ Rationale for Non-elimination		Description	Executing Body	Date of Completion	Priority for Action
1	Direct Speech Circuit with Adjacent Centre in Djibouti.	Direct Speech Circuit	Requirement for a Direct Speech Circuit with Adjacent Centre Djibouti.	Oct, 1998	No updates received from Yemen.	O	No Corrective Action Plan submitted by the State	Yemen-Djibouti	Dec, 2015	A
2	Direct Speech Circuit with Adjacent Centre in India.	Direct Speech Circuit	Direct speech Circuit with Adjacent Centre in India.	Oct, 1998	No updates received from Yemen.	O	No Corrective Action Plan submitted by the State	Yemen- India	Dec, 2015	A
3	Direct Speech Circuit with Adjacent Centres in Oman and Yemen.	Direct Speech Circuit	Requirement for a Direct SPeech Circuit with Adjacent center Oman.	Oct, 1998	No updates received from Yemen. Establish a direct Speech Circuit with Adjacent centre in Oman. Oman Ready.	O	No Corrective Action Plan submitted by the State	Yemen- Oman	Dec, 2015	A
4	Direct speech Circuits with Adjacent Centres in Eritrea and Somalia.	Direct Speech Circuit	Requirement for direct speech Circuits with adjacent Centres in Eritrea and Somalia.	Oct, 1998	No updates received from Yemen.	O	No Corrective Action Plan submitted by the State	Yemen- Eritrea-Somalia	Dec, 2015	A

(1) Rationale for non-elimination: "F"= Financial "H"= Human Resources "S"= State (Military/political) "O"= Other unknown causes

Note:* Priority for action to remedy a deficiency is based on the following safety assessments:

'U' priority = Urgent requirements having a direct impact on safety and requiring immediate corrective actions.

Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.

'A' priority = Top priority requirements necessary for air navigation safety.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

'B' priority = Intermediate requirements necessary for air navigation regularity and efficiency.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

Definition:

A deficiency is a situation where a facility, service or procedure does not comply with a regional air navigation plan approved by the Council, or with related ICAO Standards and Recommended Practices, and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.

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(1) Rationale for non-elimination: "F"= Financial "H"= Human Resources "S"= State (Military/political) "O"= Other unknown causes

ATTACHMENT A

LIST OF PARTICIPANTS

NAME	TITLE & ADDRESS
STATES **BAHRAIN** Mr. Mohamed Ali Saleh	 Chief, Aeronautical Telecommunication Civil Aviation Affairs KINGDOM OF BAHRAIN
EGYPT Eng. Abdelaal El Sayed Abdelaal El Zarie	 General Manager for Air Navigation Facilities Safety and Standards Egyptian Civil Aviation Authority (ECAA) Ministry of Civil Aviation Cairo, EGYPT
Mr. Ahmed Saied Abdel Monsef Abdel Aziz	CNS Inspector – ANS Engineer Egyptian Civil Aviation Authority (ECAA) Cairo, EGYPT
Mr. Ahmed Samy Nazir	Director of Aeronautical Charts & Procedure Designer National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority (ECAA) Cairo, EGYPT
Mr. Amro Mohamed Abdelhamid	Safety Manager for National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority (ECAA) Cairo, EGYPT
Mr. Ahmed Mohamed Ahmed Farghaly	Communication Officer/Safety Observer National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Ahmed Abdel Wahab Mohamed	CNS Inspector Egyptian Civil Aviation Authority (ECAA) Cairo, EGYPT
Mr. Ehab Raslan Mohamed	Minister Assistant and the Official Spokesperson Ministry of Civil Aviation Complex Cairo - EGYPT

NAME	TITLE & ADDRESS
Mr. Essam Helmy Mohamed	Operations Manager for Cairo Communication Centre National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Haitham Mohamed El Dosoki	Aeronautical Information Engineer National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Kamal Moustafa Ali	Engineer National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Khaled Mohamed Reda Ahmed	CNS Inspector/ANS Engineer Ministry of Civil Aviation Egyptian Civil Aviation Authority (ECAA) Cairo, EGYPT
Mr. Mohamed Aly Abdel Sadek	National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Mohamed Khattab	Air Traffic Officer National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Mohamed Lotfy Ebrahim	Manager of Distribution and Description National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Mohamed Mamdouh Saddiek	Air Traffic Controller National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Naeyl Abd Elaziz	General Manager of Aero Chart and Procedure Design National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Osama Wagih Gharied	Air Traffic Controller National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT

NAME	TITLE & ADDRESS
Mr. Tarek A. Ellatif Hamed	General Manager of ADAIS National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Tarek Zaky Ahmed	Telecom Officer National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
Mr. Wessam Salah El-Din	Engineering National Air Navigation Services (NANSC) Egyptian Civil Aviation Authority Cairo, EGYPT
ISLAMIC REPUBLIC OF IRAN Mr. Arash Khodaei	General Director of Research and Quality Assurance Civil Aviation Organization of I.R. Iran Mehrabad International Airport Tehran - ISLAMIC REPUBLIC OF IRAN
Mr. Kaveh Parto	Air Navigation Expert Tehran Mehrabad International Airport Civil Aviation Organization Tehran - ISALAMIC REPUBLIC OF IRAN
Mr. Siamak Behnam Deylami	Deputy of General Director of CNS Iran Airport Company (IAC) Mehrabad International Airport Tehran - ISLAMIC REPUBLIC OF IRAN
IRAQ Mr. Brian Evans	Consultant Iraq Civil Aviation Authority Baghdad International Airport Baghdad - IRAQ
JORDAN Mrs. Muna Ribhi Alnadaf	Chief of Communication and Navigation ANS HQ Civil Aviation Regulatory Commission Amman - JORDAN
Mr. Omar Mustafa Al-Qqudah	Chief of Safety and Standards Civil Aviation Regulatory Commission Amman - JORDAN

NAME	TITLE & ADDRESS
KUWAIT	
Mr. Hamed Abdul Rahman	Director of Navigational Equipment Dept Director General of Civil Aviation Kuwait International Airport KUWAIT
Mr. Fahad Albaloushi	Superintendent of Communication Equipment Director General of Civil Aviation Kuwait International Airport KUWAIT
OMAN	
Mr. Ali Humaid Al-Adawi	STANDARDS Officer Directorate General of Civil Aviation and Meteorology (DGCAM) Seeb International Airport Muscat, SULTANATE OF OMAN
SAUDI ARABIA	
Mr. Ahmed Matar Almajnuni	Air Traffic Control Instructor King Abdulaziz International Airport General Authority of Civil Aviation Air Navigation Jeddah 21444, KINGDOM OF SAUDI ARABIA
Mr. Alaa Mohammad Al-Turki	Communication Engineer General Authority of Civil Aviation Air Navigation Services Jeddah 21444, KINGDOM OF SAUDI ARABIA
Mr. Rami Zaki Sulaimani	Computer Engineer King Abdulaziz International Airport General Authority of Civil Aviation Air Navigation Jeddah 21444, KINGDOM OF SAUDI ARABIA
UNITED ARAB EMIRATES	
Mr. Ahmed Al Obeidli	Senior Air Navigation Inspector (CNS) General Civil Aviation Authority Sheikh Zayed Air Navigation Centre UNITED ARAB EMIRATES
Mr. Greg Kurten	Director of CNS General Civil Aviation Authority Sheikh Zayed Air Navigation Centre UNITED ARAB EMIRATES

NAME	TITLE & ADDRESS
ORGANIZATIONS/INDUSTRIES **IATA** Mr. Amir Mohamed Ahmed M. Aziz	 Traffic Officer Egyptair Cairo Airport Road Cairo - EGYPT
Ms. Haidy Mohamed Kamal	Flight Dispatcher – Navigation Department Egyptair Cairo Airport Road Cairo - EGYPT
Mr. Jehad Faqir	Head of Safety and Flight Operations IATA, MENA King Abdallah II Street Amman 11194, JORDAN
Mr. Peter Green	Aeronautical Services Manager Emirates Airline Dubai-UNITED ARAB EMIRATES

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