



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**REPORT OF THE FIRST MEETING OF THE MID REGION
ELECTRONIC TERRAIN AND OBSTACLE DATA
WORKING GROUP (eTOD WG/1)**

(Amman, Jordan, 2-4 July 2007)

The views expressed in this Report should be taken as those of the eTOD Working 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

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

TABLE OF CONTENTS

	Page
PART I - HISTORY OF THE MEETING	
1. Place and Duration	1
2. Opening	1
3. Attendance.....	1
4. Officers and Secretariat	2
5. Language	2
6. Agenda	2
7. Conclusion and Decisions – Definition.....	2
8. List of Conclusions and Decisions	3
PART II – REPORT ON AGENDA ITEMS	
Report on Agenda Item 1	1-1
Report on Agenda Item 2	2-1
Appendix 2A	
Report on Agenda Item 3	3-1/3-2
Report on Agenda Item 4	4-1/4-4
Appendix 4A - 4E	
Report on Agenda Item 5	5-1
Appendix 5A	
Report on Agenda Item 6	6-1
Appendix 6A - 6B	
Report on Agenda Item 7	7-1

eTOD WG/1
History of the Meeting

PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The first Meeting of the Middle East Region Electronic Terrain and Obstacle Data Working Group (eTOD WG/1) was held at the Rum Hall, Radisson SAS hotel in Amman, Jordan from 2 to 4 July 2007.

2. OPENING

2.1 The meeting was opened by Capt. Suleiman Obeidat, the Director General of Jordan Civil Aviation Authority, who welcomed all the participants of the eTOD Working Group to Amman wishing that the first meeting of the Working Group would be a successful meeting. He indicated that, during the past decade, the air transport sector has observed enormous growth especially in the Middle East Region and that together with passengers' growth, we have witnessed the development of new technologies and the arrival of new larger aircraft.

2.2 Capt. Obeidat, highlighted that to cope with the new technologies and expanding operational needs, the provision of Aeronautical Information Services (AIS) had to move from a provider of traditional services in hard copy (AIP, NOTAM, etc) to a more dynamic service making quality assured and timely information available to users in a digital format. In this regard, he recalled that Amendment 33 to Annex 15 introduced new requirements for the provision of electronic Terrain and Obstacle Data (eTOD). Capt. Obeidat, mentioned that the implementation of eTOD "*won't be an overnight exercise*", however, he enumerated the advantages associated with eTOD confirming that all of them are safety-related and highlighted that the eTOD Working Group was established with the main objective to assist and guide States for a harmonized, timely and cost-effective implementation of eTOD. At the end of his opening remarks, Capt. Obeidat, expressed his appreciation and thanks to the ICAO MID Regional Office for the continued support and assistance provided to States and to the participants for their presence and commitment to participate actively and contribute to the outcome of the eTOD Working Group.

2.3 Mr. Jehad Faqir, Deputy Regional Director of the ICAO Middle East Regional Office, on behalf of Mr. Mohamed R. Khonji, ICAO Regional Director, thanked the Jordanian Civil Aviation Authority for hosting the meeting and for the excellent hospitality provided to all the participants. He mentioned that this constitutes another prove of the active role, Jordan is playing in the MID Region and its good and continuous support to the ICAO MID Regional Office. He welcomed all the participants to Amman and thanked them for their presence and support to the eTOD Working Group.

2.4 Mr. Faqir, re-iterated the benefits derived from the implementation of eTOD and highlighted the commitment of the ICAO MID Regional Office to assist States in the implementation of eTOD requirements. In this, regard, he recalled that a MID eTOD Seminar was successfully held in Cairo from 11 to 14 December 2006 whose recommendations were presented to and endorsed by MIDANPIRG/10 meeting. He was confident that the eTOD WG/1 meeting would provide States, with updated information on the latest developments and experiences related to eTOD and would provide also a forum for open discussions where all issues related to the provision of eTOD could be addressed. He encouraged the sharing of information and exchange of experience.

eTOD WG/1
History of the Meeting

2.5 At the end of his speech, Mr. Faqir highlighted the Terms of Reference of the eTOD Working Group, as endorsed by MIDANPIRG/10, and enumerated the main items of the agenda of the eTOD WG/1 meeting, wishing the participants all the success in their deliberations and a fruitful outcome.

3. ATTENDANCE

3.1 The meeting was attended by a total of 55 participants, which included experts from 9 States, 1 Organization and 3 Companies. The list of participants is at **Attachment A** to the Report.

4. OFFICERS AND SECRETARIAT

4.1 Mr. Mohamed Smaoui, RO/AIS/MET, was the Secretary of the meeting, supported by Mr. Jehad Faqir, Deputy Regional Director, from the ICAO Middle East Office.

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

Agenda Item 2: Follow-up on MIDANPIRG/10 Conclusions and Decisions related to eTOD

Agenda Item 3: Review and analysis of eTOD requirements

Agenda Item 4: MID Region eTOD implementation Strategy/Action Plan

Agenda Item 5: ANP requirements related to eTOD

Agenda Item 6: Future Work Programme

Agenda Item 7: Any other business

7. CONCLUSIONS AND DECISIONS – DEFINITION

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

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

eTOD WG/1
History of the Meeting

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

8. LIST OF CONCLUSIONS AND DECISIONS

DRAFT CONCLUSION 1/1: SURVEY ON THE IMPLEMENTATION OF eTOD IN THE MID REGION

DRAFT CONCLUSION 1/2: MID REGION eTOD IMPLEMENTATION STRATEGY

DRAFT CONCLUSION 1/3: DRAFT FASID TABLE RELATED TO eTOD

DRAFT DECISION 1/4: TERMS OF REFERENCE OF THE eTOD WORKING GROUP

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ADOPTION OF THE PROVISIONAL AGENDA

1.1 The meeting reviewed and adopted the provisional agenda as at paragraph 6 of the history of the meeting.

1.2 The meeting agreed unanimously that Mrs. Hanan Qabartai, Chief AIS HQ, Jordan CAA, acts as the Rapporteur of the Working Group.

**REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG/10 CONCLUSIONS AND DECISIONS
RELATED TO eTOD**

2.1 The meeting recalled that MIDANPIRG/10 held in Doha, Qatar, from 15 to 19 April 2007, developed three Conclusions and one Decision related to eTOD.

2.2 The meeting reviewed an extract of the action plan developed by MIDANPIRG/10, containing the relevant list of Conclusions and Decisions related to eTOD as at **Appendix 2A** to the Report on Agenda Item 2 and noted the follow-up action taken, so far, by the concerned parties.

eTOD WG/1
Appendix 2A to the Report on Agenda Item 2

**FOLLOW-UP TO MIDANPIRG/10 CONCLUSION /DECISIONS RELATED TO eTOD
ACTION PLAN**

CONC/DEC NO. --- STRATEGIC OBJECTIVE	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARK
Conc 10/13 A, C, D, E	MID Region Strategy for the Implementation of the Global Plan Initiatives (GPIs)	That, the MID Region Strategy for the implementation of the Global Plan Initiatives (GPIs) be adopted as at Appendix 5.1C to the Report on Agenda Item 5.1.	Implementation of Strategy	ICAO; States; MIDANPIRG Subsidiary bodies	Feedback from States National Plans Status of implementation of GPIs	Jun 2008	
Con 10/14 A, C, D, E	Implementation of Work Programme in support of Strategic Performance Objectives	That, in support of the evolution from a systems-based approach to a performance-based approach to planning and implementation of air navigation, the following projects are to be reflected in the MID Region implementation plan: a) Improvement of the MID ATS route structure (FUA, dynamic and flexible ATS route management, improved Civil/Military coordination, etc); b) enhancement of MID States' TMA management; c) MID RMA operations continuity; d) support of the introduction and implementation of SMS in the MID States; e) development of MID States' contingency	Follow up progress on each project	ICAO States MIDANPIRG Subsidiary bodies	Feed back on each project	Jun 2008	

CONC/DEC No. --- STRATEGIC OBJECTIVE	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARK
		<p>plans;</p> <ul style="list-style-type: none"> f) improvement of the quality and efficiency of aeronautical information services provided by MID States; g) provision of eTOD by MID States; h) establishment of Initial FPL Processing System (IFPS) in the MID Region; i) implementation of ATN in the MID Region; j) improvement of communication infrastructure; k) implementation of GNSS; l) implementation of Certification of aerodromes and SMS at aerodromes in the MID Region; m) preparedness to accommodate NLA's at some existing/new aerodromes in the MID Region; n) support the establishment and implementation of Runway surface pavement maintenance programme in the MID Region; o) enhancement of Runway incursion prevention programme; and p) enhancement of surface movement guidance and control systems (SMGCS) at 					

CONC/DEC NO. --- STRATEGIC OBJECTIVE	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARK
		MID Aerodromes.					
Conc 10/56 A	Roadmap for the Implementation of eTOD Requirements	That MID States, a) develop their plans related to the implementation of eTOD requirements; and b) communicate their implementation roadmap to the ICAO MID Regional Office, prior to 15 June 2007, specifying clearly if they would encounter any difficulty to comply with the dates of applicability.	Follow up with States	ICAO States	- Action Plan/ Roadmap for the implementation of eTOD received from States - Report of eTOD WG/1 meeting	Jun 2007 Jul. 2007	Proposed to be replaced and superseded by Draft Conclusion 1/1
Conc 10/57 A	Collaborative Approach for the Implementation of eTOD	That, in order to expedite the implementation of eTOD requirements, MID States: a) Develop a high level policy for the management of a national eTOD programme; b) define clearly the responsibilities and roles of the different Administrations within and outside the Civil Aviation Authority in the implementation process (AIS, Aerodromes, Military, National Geographic and Topographic Administrations/ Agencies, etc); and c) secure the necessary resources for the eTOD programme.	Comply with the conclusion	States	- National eTOD Programme defined and managed.	Jul.2007	Proposed to be replaced and superseded by Draft Conclusion 1/2

eTOD WG/1-REPORT
APPENDIX 2A

2A-4

CONC/DEC NO. --- STRATEGIC OBJECTIVE	TITLE OF CONCLUSION/ DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARK
Dec 10/58 A	Establishment of an eTOD Working Group	That, for harmonization and coordination of eTOD implementation activities on a regional basis, the electronic Terrain and Obstacle Data Working Group is established with Terms of Reference as at Appendix 5.4D to the Report on Agenda Item 5.4.	Creation of the eTOD WG Follow up the work programme	ICAO States	- Report of meeting - Guidance material	Jul.2007 Dec.2007	Actioned
Conc 10/59 A	Follow up on the Outcome of the MID eTOD Seminar	That, a) the recommendations of the MID eTOD Seminar at Appendix 5.4E to the Report on Agenda Item 5.4 be studied by the concerned MIDANPIRG Subsidiary bodies (eTOD WG, AIS/MAP TF, ATM/SAR/AIS SG and CNS/ATM/IC SG); and b) necessary follow-up action be taken by States and ICAO with a view to implement them.	Follow up on the recommendations of the MID eTOD Seminar	eTOD WG AIS/MAP TF States ICAO	Reports of meetings Follow-up actions taken, as appropriate	Jul 2007 Mar. 2008	Proposed to be replaced and superseded by Draft Conclusion 1/2

eTOD WG/1
Report on Agenda Item 3

REPORT ON AGENDA ITEM 3: REVIEW AND ANALYSIS OF eTOD REQUIREMENTS

3.1 The meeting recalled that significant safety benefits for international civil aviation will be provided by in-flight and ground-based applications that rely on quality electronic terrain and obstacle data. The increasing worldwide equipage of aircraft and air traffic control units with systems that make use of electronic terrain data requires standardization in the provision of supporting data. Furthermore, as terrain information is increasingly finding its primary usage in the cockpit, many other personnel involved with operations will also benefit from the use of quality terrain and obstacle data.

3.2 The meeting noted that the new provisions in Annex 15 deal with the electronic terrain and obstacle data function, coverage, terrain and obstacle numerical requirements, content and structure of terrain and obstacle databases, data product specifications for terrain and obstacle data and their availability. In addition, applications for which quality terrain and obstacle data are required, have also been identified.

3.3 The meeting reviewed and analysed the numerical requirements for terrain and obstacle data for areas 1, 2, 3 and 4 as defined in Annex 15, Appendix 8, Tables A8-1 and A8-2.

3.4 The meeting noted that numerical terrain and obstacle data requirements for Area 2 are defined on the basis of the most stringent application requirement, i.e. determination of contingency procedures for use in the event of an emergency during a missed approach or take-off. It was recognized, however, that some applications listed in paragraph 10.1.1 of Annex 15 could be adequately accommodated with terrain and obstacle data sets that are of lower requirements than those specified in Appendix 8 of Annex 15 and which are readily available from States or other authorized data producers today. Consequently, the meeting agreed that careful evaluation by data users of available data sets will be necessary in order to determine if the products will fit their intended use.

3.5 The meeting noted that, in Annex 15, terrain database and obstacle database contents and structures are defined as two separate databases. This is due, inter-alia, to the different acquisition methods and maintenance periods of data. It is recognized that depending on the acquisition method, the description of the terrain contained in the database could be the bare earth, the top of vegetation (canopy) or something in between.

3.6 The meeting recalled that some difficulties related to the timely implementation of the new eTOD provisions introduced in Annex 15 Chapter 10, have been raised by some States. The meeting recognized that, with a view to expedite the process of implementation of the eTOD requirements, the identification of recommended data formats, review of cross-border issues, clarification of terrain and obstacle data integrity requirements, initial assessment of liability and cost recovery issues, etc, are required. In addition, the need for harmonization and coordination of the implementation activities on a regional basis is required.

3.7 The meeting recalled that MIDANPIRG/10, under Decision 10/58, established the eTOD Working Group with a view to, inter-alia, analyze the eTOD requirements and develop a common understanding of these requirements, recommend the way forward the eTOD timely implementation and develop and maintain a MID Region eTOD implementation strategy. It was highlighted, in this regard, that ICAO has published "*GUIDELINES FOR ELECTRONIC TERRAIN, OBSTACLE AND AERODROME MAPPING INFORMATION – DOC 9881*", which contains a lot of guidance material on electronic Terrain and Obstacle Data (eTOD) as well as on Aerodrome Mapping.

eTOD WG/1
Report on Agenda Item 3

However, it was mentioned that although Doc 9881 is a voluminous and cumbersome document containing detailed information of technical nature, some of the requirements contained in Annex 15, Chapter 10, are subject to different interpretations, since Doc 9881 did not bring clear guidance and clarifications related to these issues. Concern was raised regarding the following issues:

- The precise technical needs of some of the user applications that will make use of electronic Terrain and Obstacle Data and which led to the ICAO requirements, mainly for area 2, are unclear and as a result, the validation of the user requirements must be carried out. It was mentioned in this respect that the requirements for Area 2 are most important for engine-out and accordingly, it was questioned if 45 km is a logic and cost-effective requirements for a small private aerodrome;
- The cross-border issue, mainly with regard to area 2, was identified as being in urgent need for further analysis and clarification. It was highlighted in this regard, that Area 2 can exceed Area 1 and the exceeding Area 2 may be part of Area 1 of a neighboring State. The issue of how to collect the data needed within adjacent States was raised and the question of the liability for the data is not addressed when it is provided by a neighboring State;
- At IFR aerodromes/heliports where a terminal control area has not been established, Area 2 shall be the area within a 45-km radius of the aerodrome/heliport reference point. The meeting was of view that 45 km for heliports may be too much; and
- The cost recovery issue is not addressed, i.e. it is not specified if the State can charge for the provision of eTOD, taking into consideration that eTOD does not fall within the content of the State Integrated Aeronautical Information Package (IAIP). In this regard, the meeting was informed that an ICAO World wide Symposium on Enabling the Net Centric Information Environment will be held in Montreal from 31 March to 2 April 2008 and that the issue of cost-recovery related to the provision of eTOD would be addressed by this Symposium.

3.8 In addition to the above, the meeting noted with concern that although, WGS 84 and EGM 96 are mandated by Annex 15, some States have not yet fully implemented the requirements, especially those related to geoid undulation. How local translations/mathematical transformations are controlled was also questioned.

3.9 Based on the above, the meeting appreciated ICAO's efforts for developing Doc 9881. However, the development of a more concise document addressing directly to the point the requirements of Annex 15 would be of significant value.

3.10 It was concluded that the requirements for areas 1, 3 and 4 are clear enough and that States would not face major difficulties to comply with the applicability date of 20 November 2008 for the provision of eTOD for areas 1 and 4. The implementation of the requirements for area 3 by 18 November 2010 is achievable; but, Area 2 is questionable. Many issues have to be addressed and clarified, as soon as possible, with a view to comply with the applicability date of 18 November 2010.

eTOD WG/1
Report on Agenda Item 4

REPORT ON AGENDA ITEM 4: MID REGION eTOD IMPLEMENTATION STRATEGY/ACTION PLAN

4.1 The meeting recalled that MIDANPIRG/10 was apprised of the outcome of the MID eTOD Seminar, which was held in Cairo from 11 to 14 December 2006 with a view to assist States and expedite the process of implementation of eTOD requirements. The meeting noted that the seminar addressed different subjects related to the implementation of eTOD and developed six (6) Recommendations as at **Appendix 4A** to the Report on Agenda Item 4. The meeting noted also that MIDANPIRG/10, under Conclusion 10/59, tasked the concerned subsidiary bodies, including the eTOD Working Group, to study the Recommendations of the MID eTOD Seminar and to propose follow-up actions which should be implemented by States and ICAO, as appropriate.

4.2 Based on the above, the meeting reviewed the Recommendations of the MID eTOD Seminar and agreed to take them into consideration when developing the MID Region eTOD implementation Strategy/Action Plan.

4.3 The meeting noted that MIDANPIRG/10, under Conclusion 10/56, requested States to develop their plans related to the implementation of eTOD requirements and to communicate their implementation roadmap to the ICAO MID Regional Office, prior to 15 June 2007, specifying clearly if they would encounter any difficulty to comply with the dates of applicability. The meeting further noted that, as a follow-up action, the ICAO MID Regional Office sent Letter Ref.: AN 8/2.4-192 dated 29 May 2007 seeking for national plans related to the implementation of eTOD. However, it was noted with concern that very few replies have been received from States. With a view to collect information from States regarding their Action Plan/Roadmap for the implementation of eTOD and to assist them in the implementation process, the meeting reviewed and endorsed the questionnaire developed by the Secretariat as at **Appendix 4B** to the Report on Agenda Item 4, in order to be used for a survey on the implementation of eTOD in the MID Region. Accordingly, the meeting developed the following Draft Conclusion, which is proposed to replace and supersede MIDANPIRG/10 Conclusion 10/56:

DRAFT CONCLUSION 1/1: SURVEY ON THE IMPLEMENTATION OF eTOD IN THE MID REGION

That, in order to obtain information from MID States regarding their Action Plan/Roadmap for the implementation of eTOD and the difficulties they might encounter to meet the applicability dates specified in Annex 15:

- a) the questionnaire at **Appendix 4B** to the Report on Agenda Item 4, be used for a survey on the implementation of eTOD in the MID Region;*
- b) States send their replies to the questionnaire to the ICAO MID Regional Office, prior to 1 November 2007, specifying clearly if they would encounter any difficulty to comply with the dates of applicability; and*
- c) the results of the survey should serve as a basis for the development/update of the MID Region eTOD implementation Strategy/Action Plan.*

eTOD WG/1
Report on Agenda Item 4

4.4 The meeting recalled MIDANPIRG/10 Conclusion 10/57 and re-emphasized that a collaborative approach for the implementation of eTOD, which is of cross-domain nature, should be endorsed. The importance of development of high level policy for the management of a national eTOD programme was particularly underlined, in order to facilitate the coordination between the different Administrations involved, within and outside the Civil Aviation Authority.

4.5 The meeting noted with appreciation that Jordan managed the implementation of eTOD as a national project involving a number of experts from different administrations, who have studied and analyzed the requirements of Annex 15, Chapter 10. The responsibilities for the bodies involved were also assigned. It was also noted that Jordan will fully comply with Annex 15 requirements, including the applicability dates. The meeting was apprised of the theoretical study carried out by the Royal Jordanian Geographic Centre (RJGC) with a view to study the candidate techniques which could be used for the provision of eTOD in a cost-effective manner.

4.6 The meeting noted with appreciation that training forms an essential part of the eTOD programme. In this regard, a refresher course on eTOD was conducted for all AIS staff and that an awareness programme will be conducted for all concerned personnel. The meeting was of view that training should be one of the important elements of the MID Region eTOD implementation strategy. The importance of introduction of GIS in the training programmes was particularly highlighted.

4.7 It was also noted that for the terrain data for area 1, the Suttle Radar Topography Mission (SRTM) data will be used after being improved (filling the voids) by the data available in the RJGC. The meeting noted that phase 1 of the project (area 1 and area 4) will cost Jordanian Dinars 90,000.

4.8 The meeting noted with interest the US experience in the development and maintenance of the FAA's Obstacle Repository System (ORS). It was noted that various local obstacle databases were available in the US. However, the data available is not verified/approved for operational use. The challenge was to create a single obstacle database, to cross-verify all existing data sources to avoid "phantom" obstacles and to improve the accuracy of data. From the FAA's experience, it was noted that flight inspection missions could be used as a means of validation of data.

4.9 Based on the above, the responsibility of the regulators was highlighted to ensure that the eTOD provided by the service providers are up-to- the standards in terms of accuracy and integrity.

4.10 The meeting noted that FAA had carried out comparative study to choose the appropriate and cost-effective technique for the provision of eTOD (LIDAR, dual 50 kHz LIDAR, Phase III LIDAR, digital photography). The meeting was apprised of the SmarTopo System/process used by FAA for the provision of Obstacle Data, which demonstrated that 80% of the data improvement could be done in the office. It was noted that the SmarTopo airborne system is composed of a camera system, the SmarTopo software and the user interface display. The meeting noted that the potential benefits of SmarTopo are:

- improvement of the FAA's Obstacle Repository System;
- consolidation of multiple obstruction databases;
- rapid identification of new obstructions into the database;
- interoperability with existing FAA's web-based database technology; and
- enhancement of the productivity of the FAA required flight inspection missions.

eTOD WG/1
Report on Agenda Item 4

4.11 It was also noted that the horizontal accuracy is limited by ground truth imagery and that the vertical obstruction base elevation accuracy is obtained from the best Digital Terrain Data available. It was further noted that, it was demonstrated that the obstacles height which was measured optically was accurate to +/- 1% of the true height. Accordingly, further research is underway to determine if SmarTopo can meet ICAO Area 2 accuracy standards (5m Horizontal and 3m Vertical).

4.12 Based on a presentation made by Jeppesen, the meeting noted that the Shuttle Radar Topography Mission (SRTM) obtained elevation data on a ear-global scale (80% of earth's surface between 60°N and 56°S) to generate the most complete high-resolution digital topographic database of Earth with 1 arc-second / 3 arc-second postspacing (30m / 90m). However, it was noted that only SRTM data with 3 arc-second (90 m) postspacing is made available to public and that this data contains 3,316,753 voids which have to be filled. 5,720 of these voids are larger than 10 Km². The meeting was informed that Jeppesen built a unified terrain database out of the SRTM data with 90 m postspacing and filled all the identified voids using mainly other data sources of similar quality, interpolation technique and, in exceptional cases, other sources of lower quality. It was also mentioned that the data is already available and is compliant with ICAO data quality requirements for area 1.

4.13 Jeppesen offered to license the data for interested States. In this regard, it was mentioned that certain States may not have processes established to deliver its data to other users or may wish to outsource this responsibility. The meeting noted that, in cooperation with States, Jeppesen could establish processes, to maintain a State's terrain database and deliver it as required to the end users, in the USGS Digital Elevation Model (DEM) output raster format and may be able to provide the datasets in other formats.

4.14 Jeppesen's Terrain data files are delivered with two types of metadata: an XML file, describing the source, processing history, accuracy, geospatial characteristics, and contact information about the data and the second type of metadata is an ESRI-standard shape file, which can be geographically displayed and queried for source and accuracy information.

4.15 The meeting was also apprised of the experience of Italy in the implementation of an eTOD programme, which will cover 38 Italian airports with a total cost of Euros 8,700,000. The meeting noted that, so far, work has been finished for 9 Italian airports.

4.16 The meeting noted that Italy has analyzed the requirements contained in Amendment 33 to Annex 15 and decided to define Areas 1, 2, 3 and 4 in a different manner and with different numerical requirements for terrain and obstacles.

4.17 The meeting noted the different phases of the O-CHARTS Project, which includes inter-alia, aerodrome and TMA obstacles and terrain survey and data management, 3D aerodrome/Annex 4-14 model creation and processing and ICAO Obstacle charts automatic production and maintenance.

4.18 The techniques used for the provision of eTOD were also presented. It was noted that a Laserscan terrain survey was performed and for the obstacles survey, the technique used was based on a topographic survey (GPS/Total Station) integrated with photogrammetric check.

eTOD WG/1
Report on Agenda Item 4

4.19 The meeting noted the actions taken by Egypt towards the timely implementation of eTOD. It was noted that in accordance with MIDANPIRG Conclusion 10/57, a multi-disciplinary Committee has been established and responsibilities have been assigned for the implementation of eTOD in compliance with the provisions of Annexes 14 and 15. It was noted that Egypt opted for outsourcing and that technical specifications for the provision of eTOD for 7 Egyptian airports were developed and a call for tenders including a pointing system evaluation was already issued.

4.20 It was noted with appreciation that Egypt will meet the deadlines specified in Annex 15 for the implementation of eTOD requirements for areas 1, 2, 3 and 4.

4.21 Based on the above, the meeting developed the MID Region eTOD Implementation Strategy at **Appendix 4C** to the Report on Agenda Item 4 and agreed, accordingly, to the following Draft Conclusion, which is proposed to replace and supersede MIDANPIRG/10 Conclusions 10/57 and 10/59:

DRAFT CONCLUSION 1/2: MID REGION eTOD IMPLEMENTATION STRATEGY

*That, the MID Region eTOD implementation Strategy is adopted as at **Appendix 4C** to the Report on Agenda Item 4.*

4.22 The meeting recalled that, taking into consideration the new ICAO provisions related to the AIS/MAP field, introduced particularly by Amendment 33 to Annex 15, MIDANPIRG/10 reviewed and updated the MID Region AIS/MAP Timelines. The meeting noted that the timelines related to eTOD were still missing details. Accordingly, the meeting reviewed and updated these timelines as at **Appendix 4D** to the report on Agenda Item 4.

4.23 The meeting recalled that MIDANPIRG/10, under Conclusion 10/13, endorsed the MID Region Strategy for the implementation of the Global Plan Initiatives (GPIs) and in support of the evolution from a systems-based approach to a performance based approach to planning and implementation of air navigation, MIDANPIRG/10, under Conclusion 10/14 agreed on a list of near-term projects to be included in the MID Region implementation plan. This list includes one project related to the provision of eTOD by MID States.

4.24 The meeting noted that the GPIs were considered for the first time by the CNS/ATM/IC SG/3 in February 2007, and that MIDANPIRG/10 agreed that more detailed work regarding implementation, which will include review of tasks under each GPI identified for the MID Region, refinement of target dates and update of the status of implementation, is to be carried out by the MIDANPIRG subsidiary bodies.

4.25 Based on the above, the meeting reviewed the relevant parts of the Attachment to the MID Region Strategy for the implementation of GPIs pertaining to eTOD as at **Appendix 4E** to the Report on Agenda Item 4. However, no update has been made. This was left to the ATM/SAR/AIS SG/9, the AIS/MAP TF/4 and the eTOD WG/2 meetings for further update and refinement.

RECOMMENDATIONS OF THE MID eTOD SEMINAR

RECOMMENDATION 1: eTOD IMPLEMENTATION AWARENESS CAMPAIGNS

Taking into consideration the adopted dates of applicability of eTOD provisions introduced by AMDT 33 to Annex 15 and the resources required for the implementation of these new provisions, the States' AIS should take the lead and carry out awareness campaigns at national level to promote a better understanding of the planning and implementation issues related to eTOD.

RECOMMENDATION 2: MANAGEMENT OF A NATIONAL eTOD PROGRAMME

States, in accordance with the strict management principles and procedures, should:

- a) develop a high level framework and a detailed planning including priorities and timelines for the implementation of a national eTOD programme;
- b) adopt/follow a collaborative approach involving all concerned parties in the implementation of eTOD provisions; and
- c) make an inventory and evaluate the quality of existing terrain and obstacle data sources and in the case of data collection, consider carefully the required level of details of collected terrain and obstacle data with particular emphasis on obstacle data and associated cost.

RECOMMENDATION 3: COORDINATION AND EXCHANGE OF EXPERIENCE FOR THE IMPLEMENTATION OF eTOD REQUIREMENTS

Implementation of eTOD provisions should be considered as a global matter concerning all ICAO Regions, which thereby necessitates coordination and exchange of experience between States, ICAO and other national/international organizations involved.

RECOMMENDATION 4: COORDINATION BETWEEN STATES AND DATA PROVIDERS/INTEGRATORS FOR THE PROVISION OF eTOD

Collaboration between States and data providers/integrators should be considered.

RECOMMENDATION 5: RESPONSIBILITY FOR THE PROVISION OF eTOD

States, while maintaining the responsibility for data quality and availability, should consider to which extent provision of electronic terrain and obstacle data could be delegated to national geodetic Institutes/Agencies, based on Service Level Agreement reflecting such delegation.

RECOMMENDATION 6: ANP REQUIREMENTS RELATED TO eTOD

ICAO should develop an amendment to the Basic Air Navigation Plans (ANP) for all ICAO Regions to include new eTOD requirements and introduce new table in the Facilities and Services Implementation Documents (FASIDs) in which detailed planning of eTOD implementation by States together with an indication of the implementation timelines, will be reflected.

**ICAO MIDDLE EAST REGIONAL OFFICE
 SURVEY ON IMPLEMENTATION OF ELECTRONIC TERRAIN AND
 OBSTACLE DATA (eTOD) IN THE MID REGION**

Introduction:

The purpose of this questionnaire on implementation of electronic Terrain and Obstacle Data (eTOD) in the MID Region is to collect information from States regarding their Action Plan/Roadmap for the implementation of the eTOD provisions as specified in Annex 15 and if they will be able to meet the applicability dates (20 November 2008 and 18 November 2010). The results of this survey could be used for the development/update of the MID Region eTOD implementation Strategy/Action Plan.

NAME OF STATE	DATE

Focal point: Who in your State could we contact for further clarification concerning eTOD implementation?

Name:	
Organization:	
Title:	
Telephone:	
Fax:	
e-mail:	

		YES	NO
1	Has your State established a high level framework (regulation, assignment of responsibilities, etc) for the implementation of eTOD?		
2	Has your State established a national eTOD Programme for the implementation of eTOD requirements, as per Annex 15 requirements?		
3	Has your State secured necessary resources for the implementation of eTOD? If, Yes, please give details about the estimated budget:		
4	Has your State developed an Action Plan/Roadmap with clear timelines for the implementation of eTOD?		

		YES	NO
5	Please specify the expected date of implementation of: a) Terrain data for Area 1: b) Terrain data for Area 2: c) Terrain data for Area 3: d) Terrain data for Area 4: e) Obstacle data for Area 1: f) Obstacle data for Area 2: g) Obstacle data for Area 3:		
6	Who are the different parties/Administrations in your State involved in the implementation eTOD (AIS, Aerodromes, Military, National Geographic and Topographic Administrations/Agencies, etc)?		
7	Has your State assigned the responsibility for the collection of Terrain data related to Areas 1 to 4? If Yes, please specify: a) Area 1: b) Area 2: c) Area 3: d) Area 4:		
8	Has your State made any assessment as to who should be responsible for the payment of Terrain data collection related to Areas 1 to 4? If Yes, please specify: a) Area 1: b) Area 2: c) Area 3: d) Area 4:		
9	Has your State assigned the responsibility for the collection of Obstacle data within Areas 1 to 3? If Yes, please specify: a) Area 1: b) Area 2: c) Area 3:		
10	Has your State made any assessment as to who should be responsible for the payment of Obstacle data collection related to Areas 1 to 3? If Yes, please specify: a) Area 1: b) Area 2: c) Area 3:		

		YES	NO
11	<p>Is there any existing Terrain database available in your State? If, Yes: a) In which format the data is available/provided to users? b) Does the data available meet the requirements of Annex 15 for Areas 1 to 4?</p>		
12	<p>Is there any existing Obstacle database available in your State? If, Yes: a) In which format the data is available/provided to users? b) Does the data available meet the requirements of Annex 15 for Areas 1 to 3?</p>		
13	<p>Has your State made any assessment of the candidate techniques that could be used for Terrain and Obstacle Data acquisition? If, Yes: a) was that based on a cost-benefit analysis? b) Which is/are the retained technique(s)? </p>		
14	<p>Has your State made any assessments as to which level of detail obstacle data should be collected? If, Yes, please give details: </p>		
14	<p>Has your State developed a case study for a representative aerodrome? If, Yes, please give details: </p>		
15	<p>Have you published in your AIP (AD 2.10) the description of obstacles separated into Area 2 and Area 3? If, No, when do you intend to revise the AIP to separate the obstacles in this manner? </p>		
16	<p>Any further comments (difficulties encountered, suggestions, etc): </p>		

MID REGION eTOD IMPLEMENTATION STRATEGY

Considering:

- a) the new provisions introduced by Amendment 33 to Annex 15 related to eTOD; and
- b) the guidance material contained in Doc 9881 (Guidelines for electronic Terrain, Obstacle and Aerodrome Mapping Information); and

Recognizing that:

- i) significant safety benefits for international civil aviation will be provided by in-flight and ground-based applications that rely on quality electronic Terrain and Obstacle Data; and
- ii) the implementation of eTOD requirements is a challenging costly and cumbersome task of cross-domain nature;

The MID Region eTOD implementation strategy is detailed below:

- 1) the eTOD implementation should be in compliance with ICAO provisions contained in Annex 15 and Doc 9881;
- 2) the eTOD implementation should be based on national plans/roadmaps;
- 3) eTOD implementation should be managed by each State as a national eTOD programme supported by necessary resources, a high level framework and a detailed planning including priorities and timelines for the implementation of the programme;
- 4) States should adopt/follow a collaborative approach involving all concerned parties in the implementation of eTOD provisions and establish a multi-disciplinary team defining clearly the responsibilities and roles of the different Administrations within and outside the Civil Aviation Authority in the implementation process (AIS, Aerodromes, Military, National Geographic and Topographic Administrations/Agencies, etc);
- 5) eTOD requirements should be analyzed and a common understanding of these requirements should be developed;
- 6) States should make an inventory and evaluate the quality of existing terrain and obstacle data sources and in the case of data collection, consider carefully the required level of details of collected terrain and obstacle data with particular emphasis on obstacle data and associated cost;
- 7) States should carry out theoretical studies of candidate techniques for data acquisition (photogrammetry, LIDAR, etc) based on a Cost-Benefit Analysis and supported by case study for a representative aerodrome;
- 8) in the development of their eTOD programme, States should take into consideration the requirements for update/maintenance of data, especially the obstacle data;
- 9) States, while maintaining the responsibility for data quality and availability, should consider to which extent provision of electronic terrain and obstacle data could be delegated to national geodetic Institutes/Agencies, based on Service Level Agreement reflecting such delegation. Collaboration between States and data providers/integrators should also be considered;

- 10) ICAO and States should undertake awareness and training programmes to promote and expedite the eTOD implementation;
- 11) implementation of eTOD provisions should be considered as a global matter, which necessitates coordination and exchange of experience between States, ICAO and other national/international organizations involved;
- 12) to the extent possible, States should work co-operatively especially with regard to the cross-border issue, for the sake of harmonization and more efficient implementation of eTOD; and
- 13) States encountering difficulties for the implementation of eTOD may seek assistance from ICAO, through a TCB project, and/or from other States.

Middle East Region
AIS/MAP IMPLEMENTATION PLAN
Updated Timelines

TIMELINES:



Global



Regional



National

Middle East — Aeronautical Information Services Implementation																		
		2000	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Global	Provision of Terrain Data for Area 2																	
MID Region																		
States	Afghanistan																	
	Bahrain																	
	Egypt																	
	Iran, Islamic Rep. of																	
	Iraq																	
	Israel																	
	Jordan																	
	Kuwait																	
	Lebanon																	
	Oman																	
	Qatar																	
	Saudi Arabia																	
	Syrian Arab Republic																	
	United Arab Emirates																	
	Yemen																	
Global	Provision of Obstacle Data for Area 2																	
MID Region																		
States	Afghanistan																	
	Bahrain																	
	Egypt																	
	Iran, Islamic Rep. of																	
	Iraq																	
	Israel																	
	Jordan																	
	Kuwait																	
	Lebanon																	
	Oman																	
	Qatar																	
	Saudi Arabia																	
	Syrian Arab Republic																	
	United Arab Emirates																	
	Yemen																	

Middle East — Aeronautical Information Services Implementation		2000	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Global	Provision of Terrain Data for Area 3											█						
MID Region												█						
States	Afghanistan											█						
	Bahrain											█						
	Egypt											█						
	Iran, Islamic Rep. of											█						
	Iraq											█						
	Israel											█						
	Jordan											█						
	Kuwait											█						
	Lebanon											█						
	Oman											█						
	Qatar											█						
	Saudi Arabia											█						
	Syrian Arab Republic											█						
	United Arab Emirates											█						
	Yemen											█						
Global	Provision of Obstacle Data for Area 3											█						
MID Region												█						
States	Afghanistan											█						
	Bahrain											█						
	Egypt											█						
	Iran, Islamic Rep. of											█						
	Iraq											█						
	Israel											█						
	Jordan											█						
	Kuwait											█						
	Lebanon											█						
	Oman											█						
	Qatar											█						
	Saudi Arabia											█						
	Syrian Arab Republic											█						
	United Arab Emirates											█						
	Yemen											█						

Middle East — Aeronautical Information Services Implementation		2000	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Global	Provision of Terrain Data for Area 4																	
MID Region																		
States	Afghanistan										-	-	-	-	-	-	-	-
	Bahrain										-	-	-	-	-	-	-	-
	Egypt																	
	Iran, Islamic Rep. of										-	-	-	-	-	-	-	-
	Iraq																	
	Israel										-	-	-	-	-	-	-	-
	Jordan																	
	Kuwait																	
	Lebanon										-	-	-	-	-	-	-	-
	Oman										-	-	-	-	-	-	-	-
	Qatar																	
	Saudi Arabia																	
	Syrian Arab Republic										-	-	-	-	-	-	-	-
	United Arab Emirates																	
	Yemen										-	-	-	-	-	-	-	-

MID REGION STRATEGY FOR THE IMPLEMENTATION OF THE GLOBAL PLAN INITIATIVES (GPIS)

Considering:

- a) the ICAO strategic objectives;
- b) the ICAO Business Plan;
- c) the Global Air Traffic Management Operational Concept;
- d) the revised Global Air Navigation Plan and associated GPIS; and
- e) the outcome of ALLPIRG/5 meeting; and

Recognizing that:

- i) the evolution continues from a systems-based to a performance-based approach to planning and implementation of the air navigation infrastructure; and
- ii) the Global Air Navigation Plan is a significant component in the development of regional and national plans and that, together with the global ATM operational concept, it provides an effective architecture for achieving a safe, harmonized, interoperable, and seamless Global ATM system;

The MID Region strategy for the implementation of the Global Plan Initiatives (GPIS) is detailed below:

- A) the MID Region implementation plan should:
 - 1) be evolutionary and consistent with the Global Air Navigation Plan taking into consideration the region priorities;
 - 2) cope with the development of an ATM Performance framework;
 - 3) satisfy performance needs just in time and at minimal cost;
 - 4) provide States with clearer objectives for the implementation of ATM and supporting CNS systems;
 - 5) identify the GPIS that would be most effective in achieving the objectives of the region while ensuring continuation of the work already accomplished;
 - 6) take into account the Initiatives across regions, to align work programmes and to develop national and regional plans that facilitate achieving a Global ATM system;
- B) the GPIS status of implementation in the MID Region is at **Attachment 1**;
- C) the progress achieved and the challenges identified in the implementation of GPIS should be monitored and reviewed on a regular basis; and
- D) taking into consideration the above, the implementation plan should be considered as a living document, which should be updated on a regular basis.

GLOBAL AIR NAVIGATION PLAN: GLOBAL INITIATIVES

Table 1. Global Plan Initiatives (GPIs) and their relationships to the major groupings

GPI		En-route	Terminal Area	Aerodrome	Supporting Infrastructure	Related Operational Concept Components
GPI-1	Flexible use of airspace	X	X			AOM, AUO
GPI-2	Reduced vertical separation minima	X				AOM, CM
GPI-3	Harmonization of level systems	X				AOM, CM, AUO
GPI-4	Alignment of upper airspace classifications	X				AOM, CM, AUO
GPI-5	RNAV and RNP (Performance-based navigation)	X	X	X		AOM, AO, TS, CM, AUO
GPI-6	Air traffic flow management	X	X	X		AOM, AO, DCB, TS, CM, AUO
GPI-7	Dynamic and flexible ATS route management	X	X			AOM, AUO
GPI-8	Collaborative airspace design and management	X	X			AOM, AUO
GPI-9	Situational awareness	X	X	X	X	AO, TS, CM, AUO
GPI-10	Terminal area design and management		X			AOM, AO, TS, CM, AUO
GPI-11	RNP and RNAV SIDs and STARs		X			AOM, AO, TS, CM, AUO
GPI-12	Functional integration of ground systems with airborne systems		X		X	AOM, AO, TS, CM, AUO
GPI-13	Aerodrome design and management			X		AO, CM, AUO
GPI-14	Runway operations			X		AO, TS, CM, AUO
GPI-15	Match IMC and VMC operating capacity		X	X	X	AO, CM, AUO
GPI-16	Decision support systems and alerting systems	X	X	X	X	DCB, TS, CM, AUO
GPI-17	Data link applications	X	X	X	X	DCB, AO, TS, CM, AUO, ATMSDM
GPI-18	Aeronautical information	X	X	X	X	AOM, DCB, AO, TS, CM, AUO, ATMSDM
GPI-19	Meteorological systems	X	X	X	X	AOM, DCB, AO, AUO
GPI-20	WGS-84	X	X	X	X	AO, CM, AUO
GPI-21	Navigation systems	X	X	X	X	AO, TS, CM, AUO
GPI-22	Communication infrastructure	X	X	X	X	AO, TS, CM, AUO
GPI-23	Aeronautical radio spectrum	X	X	X	X	AO, TS, CM, AUO, ATMSDM

ABBREVIATIONS:

Airspace Organization and Management	AOM
Demand and Capacity Balancing	DCB
Aerodrome Operations	AO
Traffic Synchronization	TS
Conflict Management	CM
Airspace User Operations	AUO
ATM Service Delivery Management	ATMSDM

DECISION SUPPORT AND IMPROVEMENT OF SITUATIONAL AWARENESS

GPI-9: SITUATIONAL AWARENESS
GPI-16: DECISION SUPPORT AND ALERTING SYSTEMS
GPI-17: DATA LINK APPLICATIONS
GPI-19: METEOROLOGICAL SYSTEMS

Strategic Objectives	Actions	Description/Tasks	Target Date	Initiated by	Benefits	Status
A, D	Implement an IFPS in the MID Region	<ul style="list-style-type: none"> – Develop a feasibility study; – Define the legal framework for the MID IFPS; – Commitment of States through the signature of MOU; – Agreement on a funding mechanism; – Implementation and operation of the MID IFPS 	2010	Bahrain, States, ICAO	<ul style="list-style-type: none"> – Reduce the number of occurrences of non-receipt of FPLs and associated ATS messages; – Improved planning and coordination between adjacent Centres; – Improved safety and efficiency. 	
A, D	Improve surveillance and air/ground data link services	<ul style="list-style-type: none"> – Implement ATS data link surveillance technologies, ADS-B, CPDLC, etc., where applicable ; – Exchange of radar data between adjacent Centres, – Implement automation in coordination tasks between adjacent Centres/Sectors 	2010	ICAO, States, Users	<ul style="list-style-type: none"> – Improvement in safety; – Reduced workload for both pilots and controllers; – Improved efficiency. 	

eTOD WG/1-REPORT
APPENDIX 4E
ATTACHMENT 1

A1-3

A	Implement operations decision support and alerting systems	<ul style="list-style-type: none"> - Implement ground air electronic warnings, as needed for short and for long term conflict predictions: + ACAS II + MSAW + DAIW - Implement D-ATIS, where applicable. 	2009	ICAO, States	<ul style="list-style-type: none"> - Improved safety; - Reduction in risk of CFIT; 	
A	Provision of eTOD	<ul style="list-style-type: none"> - Promote the awareness about the requirements for the provision of electronic Terrain and Obstacle Data (eTOD); - Analyse eTOD requirements develop a common understanding of the requirements (needs in terms of data format, temporality, cross-border harmonisation, etc); - Develop a MID Region eTOD implementation strategy and action plan; - Harmonize, coordinate and support the eTOD implementation activities on a regional basis; - Provide eTOD. 	2009	ICAO, States	<ul style="list-style-type: none"> - Improved safety; - Reduction in risk of CFIT; 	
A, D	Provision of MET information	<ul style="list-style-type: none"> - Implement D-VOLMET, where applicable; - Provision of OPMET information from automated ground-based meteorological systems (automated low-level wind shear alerts and RWY wake vortex reports, hazardous weather phenomena). 	2010	States	<ul style="list-style-type: none"> - Improved safety; - Improved efficiency. 	

ENHANCEMENT OF MID STATES' TMA MANAGEMENT

- GPI-1: FLEXIBLE USE OF AIRSPACE**
- GPI-5: RNAV AND RNP (PERFORMANCE-BASED NAVIGATION)**
- GPI- 8: COLLABORATIVE AIRSPACE DESIGN AND MANAGEMENT**
- GPI-10: TERMINAL AREA DESIGN AND MANAGEMENT**
- GPI-11: RNP AND RNAV STANDARD INSTRUMENT DEPARTURES (SIDS) AND STANDARD TERMINAL ARRIVALS (STARS)**
- GPI-12: FUNCTIONAL INTEGRATION OF GROUND SYSTEMS WITH AIRBORNE SYSTEMS**
- GPI-20: WGS-84**
- GPI-21: NAVIGATION SYSTEMS**

Strategic Objectives	Actions	Description/Tasks	Target Date	Initiated by	Benefits	Status
A, C, D	Improve TMA capacity and efficiency	<ul style="list-style-type: none"> – Collaboration with users on TMA design and management; – Increased accommodation of user-preferred flight profiles; – Remove, as much as possible, permanent restricted airspace close to airports and carry out strategic coordination and dynamic interaction with the military to improve TMA capacity; – Finalize implementation of WGS-84; – Develop MID Region PBN Strategy; – Develop and implement optimized RNP and RNAV SIDs, STARS and approach procedures in accordance with the PBN concept, taking into consideration aircraft capabilities; – Develop and implement GNSS procedures for Non-Precision Approaches and approaches with vertical guidance (APV). 	2010	ICAO, States, Users	<ul style="list-style-type: none"> – Improvement in safety – Increased airspace capacity and efficiency; – Efficient flight trajectories; – Reduction in CFIT; – Reduced fuel consumption; – Reduced environmental impact. 	

eTOD WG/1-REPORT
APPENDIX 4E
ATTACHMENT 1

A1-5

Strategic Objectives	Actions	Description/Tasks	Target Date	Initiated by	Benefits	Status
C, D	Plan for the implementation of Continuous descent procedures and unrestricted climb departure procedures	<ul style="list-style-type: none"> – Enable optimal application of advanced technologies including FMS based arrival procedures; – Develop a plan for the implementation of continuous descent procedures; – Develop a plan for the implementation of unrestricted climb departure procedures. 	2011	States, Users, ICAO	<ul style="list-style-type: none"> – Efficient flight trajectories; – Increased airspace efficiency; – Reduced fuel consumption; – Reduced environmental impact. 	

**IMPROVEMENT OF THE QUALITY AND EFFICIENCY OF AERONAUTICAL INFORMATION SERVICES
 PROVIDED BY MID STATES**

GPI-18: AERONAUTICAL INFORMATION

Strategic Objectives	Actions	Description/Tasks	Target Date	Initiated by	Benefits	Status
A, D	Provide timely and quality assured aeronautical information to users	<ul style="list-style-type: none"> – Improve the compliance with the AIRAC system; – Advance posting of the AIRAC information on the web; – Use of email to enhance the communication between the AIS community in the MID Region; – Implement AIS automation in order to ensure availability, sharing and management of electronic aeronautical information; – Complete the implementation of Quality Management Systems (QMS); – Monitor implementation progress. 	2009	States, ICAO	<ul style="list-style-type: none"> – Improved safety; – Improved planning and management of flights; – Efficient use of airspace. 	

eTOD WG/1
Report on Agenda Item 5

REPORT ON AGENDA ITEM 5: ANP REQUIREMENTS RELATED TO eTOD

5.1 The meeting recalled that MIDANPIRG/10, under Conclusion 10/59 tasked the concerned subsidiary bodies, including the eTOD Working Group, to study the Recommendations of the MID eTOD Seminar and to propose follow-up actions which should be implemented by States and ICAO, as appropriate.

5.2 The meeting recalled that the sixth Recommendation of the MID eTOD Seminar, reproduced here-after, is pertaining to the development of provisions in the Basic ANP to include the new eTOD requirements as well as a new FASID Table in which detailed planning of eTOD implementation by States are reflected:

RECOMMENDATION 6: ANP REQUIREMENTS RELATED TO eTOD

ICAO should develop an amendment to the Basic Air Navigation Plans (ANP) for all ICAO Regions to include new eTOD requirements and introduce new table in the Facilities and Services Implementation Documents (FASIDs) in which detailed planning of eTOD implementation by States together with an indication of the implementation timelines, will be reflected.

5.3 Based on the above, the meeting reviewed and endorsed the Draft FASID Table prepared by the Secretariat as at **Appendix 5A** to the Report on Agenda Item 5. Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 1/3: DRAFT FASID TABLE RELATED TO eTOD

*That, ICAO consider to include the Draft FASID Table at **Appendix 5A** to the Report on Agenda Item 5 into the MID FASID, Part VIII (AIS), with necessary amendments, as appropriate.*

eTOD WG/1
Appendix 5A to the Report on Agenda Item 5

FASID TABLE AIS-X — eTOD REQUIREMENTS

EXPLANATION OF THE TABLE

Column

- 1 Name of the State, territory or aerodrome for which electronic Terrain and Obstacle Data (eTOD) are required with the designation of the aerodrome use:
- RS — international scheduled air transport, regular use
RNS — international non-scheduled air transport, regular use
RG — international general aviation, regular use
AS — international scheduled air transport, alternate use
- 2 Runway designation numbers
- 3 Type of each of the runways to be provided. The types of runways, as defined in Annex 14, Volume 1, Chapter I, are:
- NINST — non-instrument runway;
NPA — non-precision approach runway
PA1 — precision approach runway, Category I;
PA2 — precision approach runway, Category II;
PA3 — precision approach runway, Category III.
- 4 Requirement for the provision of Terrain data for Area 1, shown by an “X” against the State or territory to be covered.
- 5 Requirement for the provision of Terrain data for Area 2 (TMA), shown by an “X” against the aerodrome to be covered.
- 6 Requirement for the provision of Terrain data for Area 2 (45 Km radius from the ARP), shown by an “X” against the aerodrome to be covered.
- 7 Requirement for the provision of Terrain data for Area 3, shown by an “X” against the aerodrome to be covered.
- 8 Requirement for the provision of Terrain data for Area 4, shown by an “X” against the runway threshold to be covered.
- 9 Requirement for the provision of Obstacle data for Area 1, shown by an “X” against the State or territory to be covered.
- 10 Requirement for the provision of Obstacle data for Area 2 (TMA), shown by an “X” against the aerodrome to be covered.
- 11 Requirement for the provision of Obstacle data for Area 2 (45 Km radius from the ARP), shown by an “X” against the aerodrome to be covered.
- 12 Requirement for the provision of Obstacle data for Area 3, shown by an “X” against the aerodrome to be covered.
- 13 Remarks (timetable for implementation)

Note: For Columns 4 to 12 use the following symbols:

X- Required but not implemented
XI- Required and implemented

STATE, TERRITORY OR AERODROME FOR WHICH eTOD IS REQUIRED			TERRAIN DATA REQUIRED				OBSTACLE DATA REQUIRED			REMARKS		
CITY/AERODROME	RWY No	RWY TYPE	Area 1	Area 2		Area 3	Area 4	Area 1	Area 2		Area 3	
				TMA	45 Km				TMA			45 Km
1	2	3	4	5	6	7	8	9	10	11	12	13
(HETB) Taba				X		X			X		X	
AS	04 22	NPA NINST										
IRAN			X					X				
(OIKB) Bandar Abbass/ Bandar Abbas Intl RS	03R 21L	NPA PA1		X		X			X		X	
	03L 21R	NINST NINST										
(OIFM) Esfahan/ Shahid Beheshti Intl RS	08L 26R	NPA PA1		X		X			X		X	
	08R 26L	NPA NPA										
(OIMM) Mashhad/ Shahid Hashemi Nejad Intl RS	13L 31R	NPA PA1		X		X			X		X	
	13R 31L	NPA PA1										
(OISS) Shiraz/shahid Dastghaib Intl RS	11R 29L	NPA PA1		X		X			X		X	
	11L 29R	NPA PA1										
(OITT) Tabriz/Tabriz Intl RNS	12L 30R	NPA PA1		X		X			X		X	
	12R 30L	NINST NINST										
(OIII) Tehran/ Mehrabad Intl RS	11R 29L	NPA PA1		X		X			X		X	
	11L 29R	NPA NPA										
(OIII) TEHRAN/Emam Khomeini Intl RS	11L 29R	NPA PA1		X		X			X		X	

STATE, TERRITORY OR AERODROME FOR WHICH eTOD IS REQUIRED			TERRAIN DATA REQUIRED				OBSTACLE DATA REQUIRED			REMARKS		
CITY/AERODROME	RWY No	RWY TYPE	Area 1	Area 2		Area 3	Area 4	Area 1	Area 2		Area 3	
				TMA	45 Km				TMA			45 Km
1	2	3	4	5	6	7	8	9	10	11	12	13
JORDAN			X					X				
(OJAI) Amman/ Queen Alia Intl RS	08R 26L	NPA PA2		X		X			X		X	
	08L 26R	PA2 PA2					X X					
(OJAM) Amman/Marka Intl AS				X		X			X		X	
	24 06	PA1 NINST										
(OJAQ) Aqaba/King Hussein Intl RNS					X	X				X	X	
	01 19	PA1 NPA										
(OJJR) JERUSALEM/ Jerusalem RS					X	X				X	X	
	12 30	NPA PA1										
KUWAIT			X					X				
(OKBK) Kuwait Intl. RS				X		X			X		X	
	33L 15R	PA2 PA2					X X					
	33R 15L	PA2 PA2					X X					
LEBANON			X					X				
(OLBA) Beirut Intl. RS				X		X			X		X	
	17 35	PA1 NINST										
	18 36	PA1 NINST										
	03 21	PA1 NINST										
OMAN			X					X				
(OOMS) Muscat/Seeb RS				X		X			X		X	
	26 08	PA1 PA1										
(OOSA) Salalah AS												
	07 25	NPA PA1										
QATAR			X					X				
(OTBD) Doha Int. Airport RS				X		X			X		X	
	34 16	PA2 NPA					X					

STATE, TERRITORY OR AERODROME FOR WHICH eTOD IS REQUIRED			TERRAIN DATA REQUIRED				OBSTACLE DATA REQUIRED			REMARKS		
CITY/AERODROME	RWY No	RWY TYPE	Area 1	Area 2		Area 3	Area 4	Area 1	Area 2		Area 3	
				TMA	45 Km				TMA			45 Km
1	2	3	4	5	6	7	8	9	10	11	12	13
UNITED ARAB EMIRATES			X					X				
(OMAA) Abu Dhabi Int. Airport				X		X			X		X	
	31L 13R	PA3 PA1					X					
	13L 31R	PA3 PA3					X X					
(OMAL) Al Ain Int. Airport				X		X			X		X	
RS	01 19	PA1 NPA										
(OMDB) Dubai Int. Airport				X		X			X		X	
	12L 30R	PA3 PA3					X X					
	12R 30L	PA1 PA1										
(OMFJ) Fujairah Int. Airport				X		X			X		X	
RS	11 29	NPA PA1										
(OMRK) Ras Al Khaimah Int. Airport				X		X			X		X	
RS	16 34	NPA PA1										
(OMSJ) Sharjah Int. Airport				X		X			X		X	
RS	12 30	NPA PA2					X					
YEMEN			X					X				
(OYAA) Aden Intl				X		X			X		X	
RS	08 26	NPA PA1										
(OYHD) Hodeidah Intl				X		X			X		X	
RS	03 21	NPA NPA										
(OYRN) Mukalla/Riyan				X		X			X		X	
RS	06 24	NPA NPA										
(OYSN) Sanna'a Intl				X		X			X		X	
RS	18 36	PA1 NPA										
(OYTZ) Taiz Intl				X		X			X		X	
RS	01 19	NPA NPA										

eTOD WG/1
Report on Agenda Item 6

REPORT ON AGENDA ITEM 6: FUTURE WORK PROGRAMME

6.1 The meeting recalled that MIDANPIRG/10, under Decision 10/58 established the eTOD Working Group, with a view to, inter-alia, harmonize, coordinate and support the eTOD implementation activities on a regional basis.

6.2 Based on the above, the meeting reviewed and updated the eTOD WG Terms of Reference as at **Appendix 6A** to the Report on Agenda Item 6. It was highlighted that the work of the eTOD Working Group shall be carried out mainly through exchange of correspondence (email, facsimile, Tel, etc) between its Members. In this regard, the meeting was of view that States should make use of the ICAO MID Forum for the exchange of information and sharing of experience related to eTOD. Accordingly, the meeting agreed to the following Draft Decision:

DRAFT DECISION 1/4: TERMS OF REFERENCE OF THE eTOD WORKING GROUP

That, the Terms of Reference of the eTOD Working Group be updated as at Appendix 6A to the Report on Agenda Item 6.

6.3 The meeting was informed that the ATM/SAR/AIS SG/9 and the AIS/MAP TF/4 meetings are tentatively scheduled to be held from 10 to 13 December 2007 and from 19 to 21 February 2008, respectively. In accordance with the MIDANPIRG Procedural Handbook, and based on its Terms of Reference, the Working Group was expected to decide on the dates and venue of its next meeting. Accordingly, the meeting agreed that the AIS/MAP TF/4 meeting would decide on the date and venue of the eTOD WG/2 meeting. However, it was suggested that the AIS/MAP TF/4 meeting be a 4 day meeting with a view to give sufficient time for the discussion of eTOD issues and developments.

6.4 In accordance with the ICAO Business plan and the requirements for performance monitoring, the meeting developed a follow-up action plan as at **Appendix 6B** to the Report on Agenda Item 6.

**MID REGION ELECTRONIC TERRAIN AND OBSTACLE DATA WORKING GROUP
(eTOD WG)**

A) TERMS OF REFERENCE

With a view to harmonize, coordinate and support the eTOD implementation activities on a regional basis, the MID Region eTOD Working Group shall:

- 1) analyse the eTOD requirements and develop a common understanding of these requirements (clarify the needs in terms of data format, temporality, cross-border harmonisation and develop associated guidelines as required);
- 2) recommend the way forward the eTOD timely implementation;
- 3) develop and maintain a MID Region eTOD implementation strategy;
- 4) guide the development and support the roll-out of an awareness campaign for eTOD implementation within MID States;
- 5) carry out a theoretical study of candidates techniques for electronic Terrain and Obstacle Data acquisition including a cost benefit analysis;
- 6) develop a high level MID Region business case for eTOD implementation;
- 7) carry out a study case for a representative aerodrome from the MID Region;
- 8) assist States in the development of mandate/policy pertaining to the implementation of eTOD requirements;
- 9) develop an action plan for the implementation of eTOD requirements in the MID Region;
- 10) monitor the cost-conscious and timely implementation of eTOD requirements in the MID Region;
- 11) monitor and review latest developments pertaining to eTOD; and
- 12) develop its work programme within the scope of its Terms of Reference.

B) COMPOSITION

The eTOD Working Group will be composed of Experts nominated by Middle East Provider States from different technical areas within and outside the Civil Aviation Authority (AIS/MAP, Aerodrome, Military, Procedure Designers, ATC, Navigators, surveyors, National Geographic Administration/Agency, etc).

ICAO, IATA and IFALPA are Observers.

Other representatives from industry and user Organisations having a vested interest in Aeronautical Information Services and eTOD in particular could participate in the work of this Working Group.

C) WORKING ARRANGEMENTS

The eTOD Working Group shall report to the AIS/MAP Task Force.

The work of the eTOD Working Group shall be carried out mainly through exchange of correspondence (email, facsimile, Tel, etc) between its Members. The Working Group shall meet as required and at least once a year. The convening of the Working Group meetings should be initiated by the Rapporteur in coordination with the Members of the Group and ICAO MID Regional Office.

eTOD WG/1
 Appendix 6B to the Report on Agenda Item 6

DRAFT FOLLOW-UP ACTION PLAN

DRAFT CONC/DEC NO. --- STRATEGIC OBJECTIVE	TITLE OF CONCLUSION/D ECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
Conc 1/1 - A	Survey on the implementation of eTOD in the MID Region	<p>That, with a view to obtain information from MID States regarding their Action Plan/Roadmap for the implementation of eTOD, the difficulties they might have encountered to expedite the implementation and meet the applicability dates specified in Annex 15 ,</p> <p>a) the questionnaire at Appendix 4B to the Report on Agenda Item 4, be used for a survey on the implementation of eTOD in the MID Region;</p> <p>b) States send their replies to the questionnaire to the ICAO MID Regional Office, prior to 1 November 2007, specifying clearly if they would encounter any difficulty to comply with the dates of applicability; and</p> <p>c) The results of the survey should serve as a basis for the development/update of the MID Region eTOD implementation Strategy/Action Plan.</p>	Carry out survey and analyze results	ICAO States	State Letter States' replies MID Region eTOD implementation Strategy/Action Plan updated	Jul 2007 Nov 2007 Mar 2008

DRAFT CONC/DEC NO. --- STRATEGIC OBJECTIVE	TITLE OF CONCLUSION/DECISION	TEXT OF CONCLUSION/DECISION	FOLLOW-UP ACTION	TO BE INITIATED BY	DELIVERABLE	TARGET DATE
Conc 1/2 - A	MID Region eTOD implementation Strategy	That, the MID Region eTOD implementation Strategy is adopted as at Appendix 4C to the Report on Agenda Item 4.	Implementation of Strategy	ICAO States eTOD WG AIS/MAP TF	Feedback from States	Feb 2008
Conc 1/3 - A	Draft FASID Table related to eTOD	That, ICAO consider to include the Draft FASID Table at Appendix 5A to the Report on Agenda Item 5 into the MID FASID, Part VIII (AIS), with necessary amendments, as appropriate.	Endorsement of the Table by MIDANPIRG	ICAO	MIDANPIRG/11 report Amendment proposal to the MID FASID	Feb 2009 Mar 2009
Dec 1/4 - A	Terms of Reference of the eTOD Working Group	That, the Terms of Reference of the eTOD Working Group be updated as at Appendix 6A to the Report on Agenda Item 6.	Follow up the work programme	eTOD WG AIS/MAP TF	Report of AIS/MAP TF/4	Mar 2008

eTOD WG/1
Attachment A to the Report

NAME	TITLE & ADDRESS
<u>STATES</u>	
BAHRAIN Mr. Fareed Abdullah Al Alawi	Head, Aeronautical Informatics & Airspace Planning Civil Aviation Affairs P.O. Box 586 KINGDOM OF BAHRAIN Fax: (973) 17 32 1992 Tel: (973) 1732 1180 Mobile: (973) 396 51596 Email: falalawi@caa.gov.bh
Mr. Mohammed Yousif Bumtaia	Aeronautical Cartography Specialist Bahrain International Airport P.O. Box 586 KINGDOM OF BAHRAIN Fax: (973) 17 323 876 Tel: (973) 17 321 179 Mobile: (973) 3962 5550 Email: mbumtai@caa.gov.bh
EGYPT Eng. Angie Ahmed Abdellah	General Manager of Safeguarding Department Ministry of Civil Aviation Complex, Cairo International Airport Cairo Airport Road Cairo - EGYPT Fax: (202) 2268 5424 Tel: (202) 2268 5424 Mobile: (012) 778 7034 Email: angie-elyazzy@hotmail.com
Mr. Mohamed Ahmed Fadl Allah	General Manager National Air Navigation Services Company Cairo - EGYPT Tel: (202) 2616 1344 Mobile: (010) 554 1947 Email: mohammed.fedelalla@nansceg.org

NAME	TITLE & ADDRESS
Mr. Naeyl Abd El Aziz	Director of Procedure Design AIS Sector National Air Navigation Services Company Cairo International Airport Cairo - EGYPT Fax: (202) 67888512 Tel: (202) 253 22581 Mobile: (010) 154 6857 Email: naeyl_abdelaziz@yahoo.com
Mr. Saed Rabee Abdel Azeem	Survey and Geodesy Ministry of Civil Aviation Complex, Cairo International Airport Cairo Airport Road Cairo - EGYPT Fax: (202) 2268 5424 Tel: (202) 2268 5424 Mobile: (010) 654 7347
JORDAN Mrs. Hanan Qabartai	Chief AIS HQ Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 489 1266 Tel: (962-6) 489 2282 Mobile: (962-79) 676 8012 Email: ais.hq@jcaa.gov.jo qati_hanan@yahoo.com
Col. Ahmed Abu Moghli	Royal Jordanian Air Force P.O.Box Amman - JORDAN Fax: (962-6) 4874121 Tel: (962-6) 4890357 Mobile: (962-79) 5157956
Mr. Zaki Maali	Manger SMS Unit Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 489 1266 Tel: (962-6) 489 2282 Mobile: (962-77) 7711996 Email: sms.ans@jcaa.gov.jo

NAME	TITLE & ADDRESS
Eng. Dherar Ababneh	Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 4451216 Tel: (962-6) 4452402 Mobile: (962-77) 7418856 Email: Bahd_1@yahoo.com
Mr. Ziad Al. Shedifat	AIC Inspector Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 4883170 Tel: (962-6) 4883170 Mobile: (962-79) 5531854 Email: ziadaubi@jcaa.gov.jo
Mr. Ra'ed Ghazawi	AIS officer Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 4891266 Tel: (962-6) 489 2282 Mobile: (962-79) 5500662 Email: raedmays@fastlink.jo
Captain Jaser Dalou'	Flight Safety Department Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 4874710 Tel: (962-6) 4892282 Ext: 3682 Mobile: (962-78) 8724982 Email: jasserawad@hotmail.com
Mr. Mohamad Khero	Chief AIS unit /Queen Alia Aerodrome Jordan Civil Aviation Authority P.O. Box 7547 Amman - JORDAN Fax: (962-6) 4451642 Tel: (962-6) 4452709 Mobile: (962-77) 7880666 Email: nof@jcaa.gov.jo

NAME	TITLE & ADDRESS
Mr. Ahmad Gharib	AIS Supervisor Jordan Civil Aviation Authority P.O.Box 7547 Amman - JORDAN Fax: (962-6) 4451654 Tel: (962-6) 4452706 Mobile: (962-77) 9243147 Email: amt661@yahoo.com
Lt. Colonel Hussien Hassan	Royal Jordanian Geographic Centre P.O.Box 414 Code 11941 Amman - JORDAN Fax: (962-6) 5347694 Tel: (962-6) 5348145 Mobile: (962-77) 7441178 Email: hussain11_hassan00@yahoo.com
Lt. Colonel Mohamed Enizat	Royal Jordanian Geographic Centre P.O.Box 414 Code 11941 Amman - JORDAN Fax: (962-6) 5347694 Tel: (962-6) 5345188 Mobile: (962-77) 7415499 Email: aburaad1@yahoo.com
Lt. Colonel Ayman wadi	Royal Jordanian Geographic Centre P.O. Box 414 Code 11941 Amman - JORDAN Fax: (962-6) 5347694 Tel: (962-6) 5345188 Mobile: (962-77) 7770285 Email: aymanwadi@yahoo.com
Mr. Ezz El deen Mazhar	Royal Jordanian Geographic Centre P.O. Box 414 Code 11941 Amman - JORDAN Fax: (962-6) 5347694 Tel: (962-6) 5345188 Mobile: (962-77) 7438083
Mr. Hamad Hussein	Royal Jordanian Geographic Centre P.O.Box 414 Code 11941 Amman - JORDAN Fax: (962-6) 5347694 Tel: (962-6) 5345188 Mobile: (962-79) 5685331 Email: hamad-hu@yahoo.com

NAME	TITLE & ADDRESS
Mr. Mohamed Subeh	Royal Jordanian Geographic Centre P.O. Box 414 Code 11941 Amman - JORDAN Fax: (962-6) 5347694 Tel: (962-6) 5345188 Mobile: (962-78)8388519 Email: mohmad-subeh@yahoo.com
Mr. Raslan Issa	CH.AIS Instructor Queen Noor Civil Aviation Technical College P.O.Box 15352 Amman - JORDAN Fax: (962-6) 4894553 Tel: (962-6) 4892484 Mobile: (962-79) 7159600 Email: raslan111@yahoo.com
Capt. Mohammad Fayad	Navigator/Ground Instructor MEA Mideast Aviation Academy P.O.Box 7547 Amman - JORDAN Fax: (962-6) 4897873 Tel: (962-6) 4875151 Mobile: (962-79) 5963066
Mr. Omar Darawsheh	Operation Manager Aerial Survey and Photography Company (ASP) P.O.Box Amman - JORDAN Fax: (962-6) Tel: (962-6) Mobile: (962-77) 7782244 Email: omardarawsheh@mirsal.com
Capt. Yahya Karaimeh	Jordan Aviation P.O.Box 922358 Code 11192 Amman - JORDAN Fax: (962-6) 5675319 Tel: (962-6) 5100888 Ext: 1311 Mobile: (962- 77) 7066310 Email: ykar49@hotmail.com

NAME	TITLE & ADDRESS
Capt. Rafeed Abu-Darweesh	F/O Arab Wings P.O.Box 15031 code 11134 Amman - JORDAN Fax: (962-6) 4899793 Tel: (962-6) 4899797 Mobile: (962-77) 7969634 Email: rafeed@arabwings.com.jo
Mr. Mousa Al-Zawahreh	Royal Jordanian Air Academy P.O.Box 340513 Code 11134 Amman - JORDAN Fax: (962-6) 4894670 Tel: (962-6) 4894677 Mobile: (962-77) 7131200 Email: mosazawahreh@yahoo.com
Capt. Ramzi Matalqa	Managing Director Raya Jet P.O.Box 7676 adlibldg shmesani 11118 Amman - JORDAN Fax: (962-6) 5676671 Tel: (962-6) 5606037 Mobile: (962-77) 77600220 Email: rmatalqa@rayajet.com
Capt. Mohammad Rashid	Operations Manager Jordan International Air Cargo (JIAC) P.O.Box 340956 Amman - JORDAN Fax: (962-6) 4888973 Tel: (962-6) 4895345 Mobile: (962-79) 554632
Capt. Jibril El. Razem	Manager Training & Standards A340 Royal Jordanian Airlines P.O.Box 302 Q.A.I.A. Amman - JORDAN Fax: (962-6) 4451184 Tel: (962-6)4793511 Mobile: (962-79) 5699415 Email: jibril.razem@rj.com

NAME	TITLE & ADDRESS
Capt. Issa Qumri	Director Quality Assurance Royal Jordanian Airlines P.O.Box 302 Q.A.I.A Amman - JORDAN Tel: (962-6) 4451360 Ext: 600 Mobile: (962-77) 7600185 Email: i.qumri@rja.com
KUWAIT Mr. Esam Juma Ahmad Ali	AIS Officer Director General of Civil Aviation Kuwait International Airport P.O.Box 6837 - Hawalli State of KUWAIT Fax: (965) 476 5512 Tel: (965) 4737583 Mobile: (965-6) 630735 Email: smais@hotmail.com
Mr. Salah H. Al Mushaiti	AIS Officer Directorate General of Civil Aviation Kuwait International Airport P.O. Box 17 Safat 13001 State of KUWAIT Fax: (965) 476 5512 Tel: (965) 4737583 Mobile: (965) 668 1897 Email: smais@hotmail.com
OMAN Mr. Hamood Said Salim Al-Yahyai	MGRC AIR NSA (RAFO) P.O. Box 113 Code 113 Muscat, SULTANATE OF OMAN Fax: (968) 24312443 Tel: (968) 24312681 Mobile: (968) 99415696 Email: nsaom@omantel.net.om
Mr. Nasser Hamood Al-Mabsali	Airport Engineer Department of Planning Projects P.O. Box 1, C.P.O, Code 111 Muscat, SULTANATE OF OMAN Fax: (968) 24519678 Mobile: (968) 99635023 Email: n.almabsali@dgcam.gov.om

NAME	TITLE & ADDRESS
Mr. Nasser Salim Al-Towiyah	SVR ATC P.O. Box 1, C.P.O, Code 111 Muscat, SULTANATE OF OMAN Mobile: (968) 95180233 Email: nass20_08@yahoo.com
Mr. Salim Khamis Al-Najashi	Photo Archive Officer P.O. Box 113 Code 113 Muscat, SULTANATE OF OMAN Fax: (968) 24312443 Tel: (968) 24312589 Mobile: (968) 99878017 Email: salnajashi@yahoo.com
Mr. Saud Humaid Al-Adhoobi	Airspace Management Directorate General of Civil Aviation and Meteorology Seeb International Airport P.O. Box 185– Code 111 Muscat, SULTANATE OF OMAN Fax: (968) 24 519 523 Tel: (968) 24 519 305 Mobile: (968) 99 321 664 Email: saud@dgcam.gov.om
Mr. Zakariya Ali Al-Salmi	S02 MGRC RAFO-MOD P.O. Box 722 – Code 111 Muscat, SULTANATE OF OMAN Fax: (968) 24320696 Tel: (968) 24 333228 Mobile: (968) 99333218 Email: z1118k@gmail.com
SAUDI ARABIA Mr. Abdulhakeem Ahmed Al-Harhi	Safety & Economic Regulation Air Navigation Safety Fax: (966) 26855506 Tel: (966) 26855031 Mobile: (966) 555336789 Email: hekeemaus@yahoo.com

NAME	TITLE & ADDRESS
Mr. Fahed Al-Malki	Manger of Planning & Analyses Air Navigation Services CNS/ATM Department P.O.Box 1116 Makkah KINGDOM OF SAUDI ARABIA Fax: (966) 26717717 Ext: 594 Tel: (966) 26717717 Ext: 161 Mobile: (966) 555544014 Email: fahadmalki@hotmail.com
Mr. Gharman Abdel Aziz El Shahri	Chief of Charring Office General Authority of Civil Aviation P.O.Box 2142 KINGDOM OF SAUDI ARABIA Fax: (966) 6405000 Ext. 2302 Tel: (966) 640 5000 Ext 2300 Mobile: (966) 504 700 111 Email: abu-bander1@yahoo.com
Mr. Hamad M. Al Alaufi	Head of AIS General Authority of Civil Aviation P.O. Box 929 Jeddah 21421 KINGDOM OF SAUDI ARABIA Fax: (966-2) 640 1477 Tel: (966-2) 640 5000 ext. 5520 Mobile: (966) 555 611136 Email: alaufi@naseej.com alaufi@gawab.com
Mr. Mamoun Hassan	FLT Procedures Specialsit General Authority of Civil Aviation KINGDOM OF SAUDI ARABIA Fax: (966) 2 685 5506 Tel: (966) 2 685 5392 Mobile: (966) 5 0637 4289 Email: moun555@yhao.com
SYRIA Mr. Allith Hammoud	Air Nav. Procedure Design ATC Aleppo International Damascus - 1/2 Bo. Damascus - SYRIA Fax: (963) 11 3315547 Tel: (963) 11 961 3662 Mobile: 099941 5188 Email: laith_green73@yahoo.com

NAME	TITLE & ADDRESS
Mr. Ousama Ibrahim	Training Center Syrian Civil Aviation Authority 1, Al Najmeh Square P.O.Box 6257 Damascus - SYRIA Fax: (963) 11 646700 Tel: (963) 11 646701 Mobile: 0932369953 Email: dgca@sy.net
UNITED ARAB EMIRATES Mr. Asim Rizwan	Airfield/Airspace Planner Abu Dhabi , Airports Company P.O.Box 94449 UNITED ARAB EMIRATES Fax: (971-2) 509 5059 Tel: (971-2) 505 5022 Mobile: (971-50) 818 9073 Email: arizwan@adac.ae
Mr. Bruce Snowsill	ATM Inspector Civil Aviation Authority Abu Dhabi UNITED ARAB EMIRATES Fax: (971-2) 405 4406 Tel: (971-2) 405 4381 Mobile: (971-50) 812 2757 Email: bsnowsill@gcaa.ae
Mr. Ian Waller	Managing Director Emirates Nortech Surveys Inc., L.L.C. P.O.Box 26140, Sharjah UNITED ARAB EMIRATES Fax: (971-6) 573-4412 Tel: (971-6) 573 4416 or 4417 Mobile: (971-50) 628 1043 Email: nortech@gmail.com
USA Mr. Fred Anderson	Federal Aviation Administration (FAA) National Flight Procedures Office Mike Monroney Aeronautical Center 6500 S. MacArthur Blvd. Oklahoma City, OK 73169 Fax: (405) 9544236 Tel: (405) 9543027 Email: fred.anderson@faa.gov

NAME	TITLE & ADDRESS
ORGANIZATIONS	
IFALPA Capt. Mohamed Kheir Hassoun	Executive Vice President, Africa & Middle/East Kontary, Clemenceau St., Al Khorafi Bldg, 2022 -6403 Beirut - LEBANON Fax: (961-1) 623 875 Tel: (961-1) 378 778 Mobile: (961-3) 385 555 Email: hassounm@mea.com.lb
<u>COMPANIES</u>	
JEPPESEN Mr. Werner Kurz	Director International Aviation Affairs Jeppesen GmbH Frankfurter Strasse 233, 63263 Neu -Isenburg - Germany Fax: (49) 6102 50 72 39 Tel: (49) 6102 81 70 Mobile: (0173) 880 5515 Email: werner.kurz@jeppesen.com
IDS & ROLTA Mr. John M. Sasser	President Rolta Middle East FZC P.O.Box: 500106 Dubai, UAE Fax: (971) 43918684 Tel: (971) 43915211 Mobile: (967) 50653 2855 Email: john.sasser@rolta.com
Mr. Marcllo Mannino	AREA Manager IDS – VIA FLAMINIA 1068 ROLTA Tel: (39) 63327452 Mobile: (39) 3351359236 Email: m.mannino@ids-spa.it
WX GEO SYSTEMS LIMITED Mr. Nils Lundström	Director WX GeoSystems Limited Chalet Gummfluh -Hornbergstrasse Saanenmoser CH-3777 SWITZERLAND Fax: (46) 709241229 Tel: (46) 707680213 Mobile: (46) 763383385 Email: nils@wx-systems.ch